Draft Environmental Assessment

HARTNESS STATE AIRPORT

Runway Safety Area, Obstruction Removal and Apron Improvement Project

Federal Aviation Administration
Vermont Agency of Transportation

Final Draft March 2016

Draft Environmental Assessment

Runway Safety Area and Apron Improvement Project

Hartness State Airport
Springfield, Vermont

Prepared for

Vermont Agency of Transportation
Federal Aviation Administration
(Cover photo source: VTrans)

Prepared by

Jacobs

March 2016

This Environmental Assessment becomes a Federal document when evaluated, signed, and dated by the Responsible FAA Official.

_____ _____

Responsible FAA Official Date

3-50-0016-010-2014
AIP No.

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Note: Unless otherwise noted, all photos by Jacobs

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List of Acronyms

AC	Advisory Circular
ACOE	Army Corps of Engineers
ALP	Airport Layout Plan
ANR	Agency of Natural Resources (Vermont)
ASDA	Accelerate Stop Distance Available
ASOS	Automated Surface Observing System
AVGAS	100 Low Lead Aviation Fuel
BMP	Best Management Practices
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CIP	Capital Improvement Program
EA	Environmental Assessment
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
GA	General Aviation
GIS	Geographic Information System
LDA	Landing Distance Available
NAAQS	National ambient Air Quality Standards
NAS	National Airspace System
NAVAID	Navigational Aids
NEPA	National Environmental Policy Act
NLEB	Northern Long-eared Bat
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
OFA	Object Free Area
OHW	Ordinary High Water
RCRA	Resource Conservation and Recovery Act
REILs	Runway End Identifier Lights
ROFA	Runway Object Free Area
RPZ	Runway Protection Zone
RSA	Runway Safety Area
RW	Runway
SRE	Snow Removal Equipment
SPCCP	Spill Prevention Control and Countermeasures Plan
STP	Stormwater Treatment Plan
SWPPP	Storm Water Pollution Prevention Plan
TERPS	U.S. Standard for Enroute Terminal Instrument Procedures
TODA	Takeoff Distance Available
TOFA	Taxiway Object Free Area
TORA	Takeoff Runway Available
TSS	Threshold Siting Surface
TW	Taxiway
USDA	US Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
VALE	Voluntary Airport Low Emissions Program
VASI	Visual Approach Slope Indicator
VFWD	Vermont Fish and Wildlife Department
VSWI	Vermont Significant Wetland Inventory
VSF	Hartness State Airport Reference Code
VTDEC	Vermont Department of Environmental Conservation
VTrans	Vermont Agency of Transportation (also **VAOT**)

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Chapter 1 Overview

1.1 Introduction

This Environmental Assessment (EA) evaluates the potential impacts of safety improvement projects proposed by the Vermont Agency of Transportation (VTrans) to meet Federal Aviation Administration (FAA) design criteria and ensure the safety of flight operations at Hartness State Airport. The EA also evaluates the proposed expansion of the airside apron area, and the landside terminal building and auto parking facilities. The purpose and need for the project is discussed in Chapter 2.

The EA has been prepared in compliance with National Environmental Policy Act (NEPA) requirements, the Council on Environmental Quality (CEQ) Regulations 40 Code of Federal Regulations (CFR) 1500 & 1508, FAA Order 5050.4B, NEPA Implementing Instructions for Airport Actions, and Order 1050.1F, Environmental Impacts: Policies and Procedures.

1.2 Proposed Project

VTRANS proposes the following safety and facility improvements (collectively referred to as "the Project" within this EA) as identified in the 2014 Master Plan recommendations.

- The currently non-standard Runway Safety Areas (RSAs) for Runways 05, 23, and 11 will be re-constructed to meet FAA safety design criteria standards to the extent practicable;
- Vegetation will be removed from within the Federal Aviation Regulation (FAR) Part 77 Protected Airspace Surfaces for Runways 05-23 and 11-29 to the extent practicable to maintain safe approaches for arriving and departing aircraft at each runway end. Easements will be obtained for the clearing that is not on airport property. Where it is not feasible to clear the entire FAR Part 77 surface, VTrans will maintain those airspace surfaces identified in FAA AC 150/5300-13A, (Airport Design, Table 3-2) (Threshold Siting Surfaces);
- Airside Terminal Apron improvements include additional aircraft apron area and hangars to meet current and anticipated demand; and reconfiguration of the apron to meet the aircraft parking and taxilane separation of FAA design criteria. Landside improvements include expansion of the terminal building and auto parking area.

The proposed action (preferred alternative) for each project element is discussed in Chapter 3. Several alternatives have been evaluated and are discussed in Chapter 4.

1.3 Project Phasing

The Project is proposed to be completed in phases over the 10-year Capital Improvement Program (CIP). Purchase of avigation easements, obstruction clearing and construction of the Runway Safety Areas (RSAs) are programed for the early years and are the highest priority. As private funding sources become available, the hangars and landside development will proceed forward, and as consistent upon permitting, proposed construction phasing is provided below.

FY 2017

Avigation Easements
Tree clearing
RSA for Runway 05 (referred to as RW 23 End in this document)

FY 2018

Avigation Easements
Tree clearing
RSA for Runway 23 (referred to as RW 05 End in this document)

FY 2019

Avigation Easements
Tree clearing

FY 2020

Avigation Easements
Tree clearing
RSA for Runway 29 (referred to as RW 11 End in this document)

FY 2021 and beyond

Apron and Hangars
Terminal Expansion and related auto parking

1.4 Airport Overview

Hartness State Airport (Airport) is located in southeastern Vermont (see **Figures 1-1 and 1-2** on pages 1-5 & 1-6). Most of the airport is in the Town of Springfield with a portion of Runway 23 in the Town of Weathersfield. It is owned and managed by the State of Vermont. Hartness State Airport is classified within the Vermont State Airport System as a Regional Service Airport serving general aviation (GA) and business activity including small jet and multi-engine aircraft. It has approximately 7,000 annual operations. The 3-letter FAA designation for the Airport is VSF.

The airport has two paved runways. Runway 05-23, the primary runway, is 5,501 feet long and 100 feet wide. Runway 11-29, the crosswind runway is 3,000 feet long and 75 feet wide. The Airport has visual approaches to Runways 23, 11, and 29 with a non-precision instrument

approach to Runway 05. Non-precision approaches provide lateral, but not vertical course guidance to arriving aircraft. Airside facilities include the runways, taxiways, several public and private hangars, apron tie-downs, fuel and maintenance facilities. The existing airport facilities and natural resources are discussed in Chapter 5.

1.5 Permits and Approvals

Federal and state environmental regulations were reviewed to identify those that are applicable to the Project. It is anticipated that the Project will require the permits and approvals listed below.

- NEPA Clearance
- National Historic Preservation Act Section 106
- Army Corps of Engineers (ACOE) Clean Water Act Section 404 Vermont General Permit
- Section 401 Water Quality Certification
- National Pollutant Discharge Elimination System (NPDES) Construction Phase Permit
- Vermont Act 250 Land Use Permit
- Multi-Sector Stormwater Discharge Permits
- Title 19 Stream Alteration Consultation
- Federal and State Endangered and Threatened Species Review
- Vermont Wetland Permit
- General Permit 3-9015 for Stormwater Discharges
- Flood Hazard Area and River Corridor General Permit

The permits for elements of the Project will be obtained as funded, during the design phase. The project elements will be designed and constructed in compliance with the various federal and state environmental requirements. Potential impacts and mitigation are discussed in Chapter 6.

A summary of the permits and regulatory reviews is provided in **Table 1-1** on the following page.

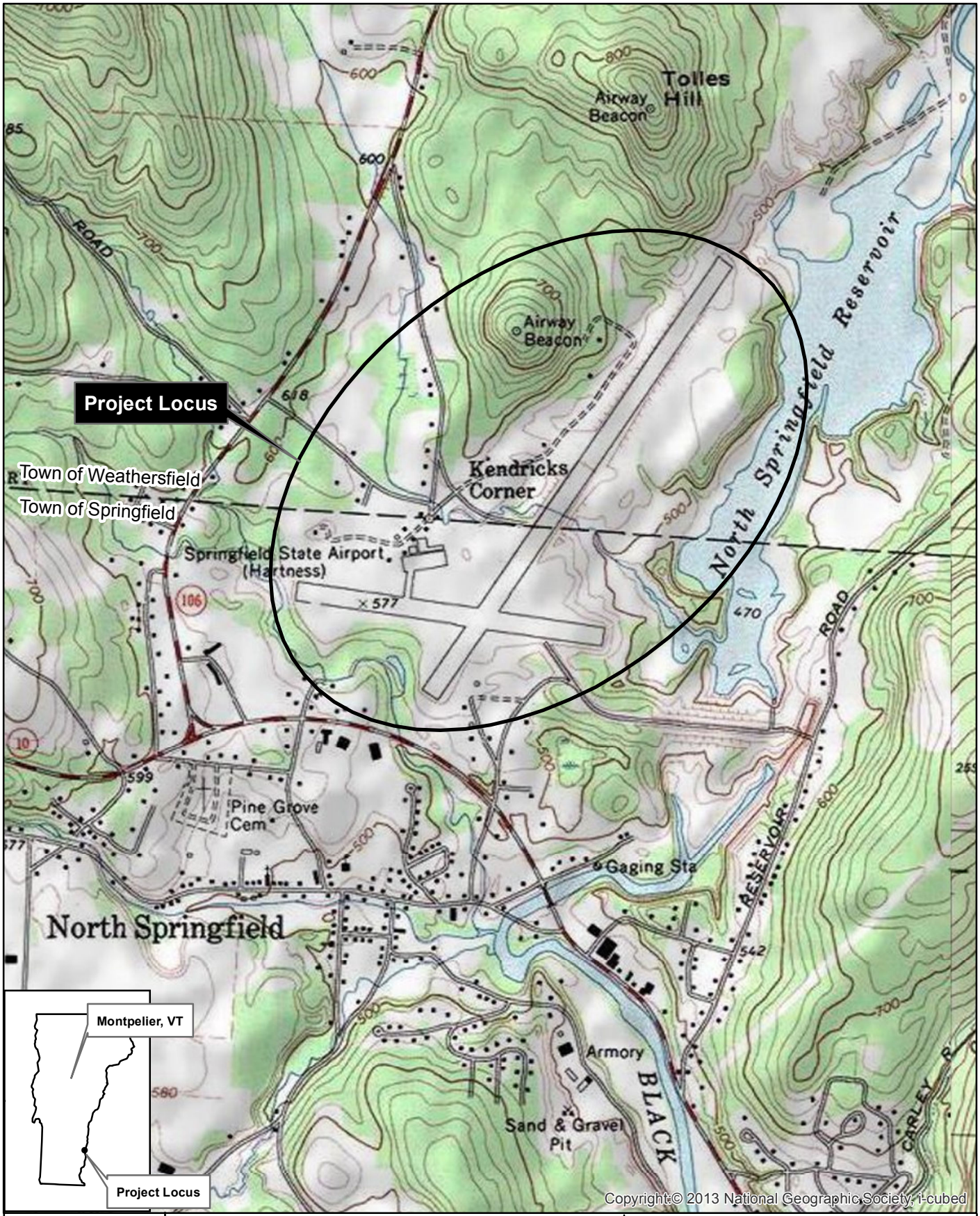
1.6 Coordination

Coordination has been carried out with several federal, state and local agencies as well as other stakeholders during the development of the draft EA. Coordination has included informal phone/email exchanges, field agency site visits, door-to-door notification to abutting property owners, and public meetings.

A public information meeting was held on July 28, 2015 at the Airport to introduce the project. A second public information meeting will be held in spring (2016) to discuss the draft EA. Chapter 7 provides additional information on agency coordination and public outreach.

Table 1-1 Permits and Approvals Summary

Permit/Review	**Issuing/Reviewing Agency**	**Type of Permit/Review**	**Status**
NEPA Clearance	FAA	Finding of No Significant Impacts (FONSI)	Draft EA under Public Review.
National Historic Preservation Act, Section 106	FAA /Vermont State Historic Preservation Officer	No Historic Properties Affected	Determination pending. Phase IB Investigations completed. No historic resources within project impact area
Clean Water Act Section 404	Army Corps of Engineers	General Permit	Permits for specific elements will be obtained as design and funding go forward.
Clean Water Act Section 401	Agency of Natural Resources (ANR)	Federal Water Quality Certification	Obtained with 404 permits.
Federal Endangered Species Act	U.S. Fish & Wildlife Service	Streamlined Section 7 Consultation	Final 4(d) Rule in effect.
Vermont Endangered Species Law	Vermont Fish and Wildlife Department, ANR	VT Taking Permit	Letter of no adverse effect to Northern Long-eared Bat (NLEB) issued with mitigation.
NPDES	VT Dept. of Environmental Conservation (VTDEC) for EPA	Construction General Permit 3-9020	Construction permits will be obtained as design and funding go forward for project with 1 or more acres of disturbance.
NPDES	VTDEC	Multisector General Permit for stormwater associated with industrial activities	Ongoing. Existing SWPPP will be updated as projects go forward.
VT Act 250 Land Use and Development Law	Natural Resources Board District Commission	Act 250 Permit	Permits for apron, landside auto parking and hangars will be obtained during design phase. A jurisdictional opinion will be obtained to confirm if RSAs and tree clearing require Act 250 review.
Vermont Wetland Rules	Vermont Agency of Natural Resources (ANR)	Wetland permit for impacts to Class II wetlands and 50' Buffer	Permits for tree clearing and RSAs will be obtained during design. No wetland permit needed for apron development.
Vermont Stormwater Management Rule	ANR, VTDEC, Stormwater Management Section	Stormwater Discharge General Permit 3-9015	Permits for apron, landside auto parking and hangars will be obtained during design phase. Projects will meet criteria in 2002 Vermont Stormwater Management Manual.
Title 19 stream alteration consultation	ANR, Department of Environmental Conservation, Watershed Management Division	No formal permit issued for VTrans infrastructure projects	No impacts in streams below Ordinary High Water (OHW). During design phase of the obstruction removal, consultation will be completed to confirm that a permit is not required.
Flood Hazard Area and River Corridor Rule	ANR	General Permit	Applies to development exempt from municipal regulations such as state owned airports. Consultation will be during the design phase of the RW 23 End RSA to determine permit requirements.



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Data compiled from the following sources:
(1) GIS Information from Vermont Center for Geographic Information (VCGI);
(2) Quad Sheet from National Geographic Society, 2012.

0 1,000 2,000 Feet

USGS Project Locus

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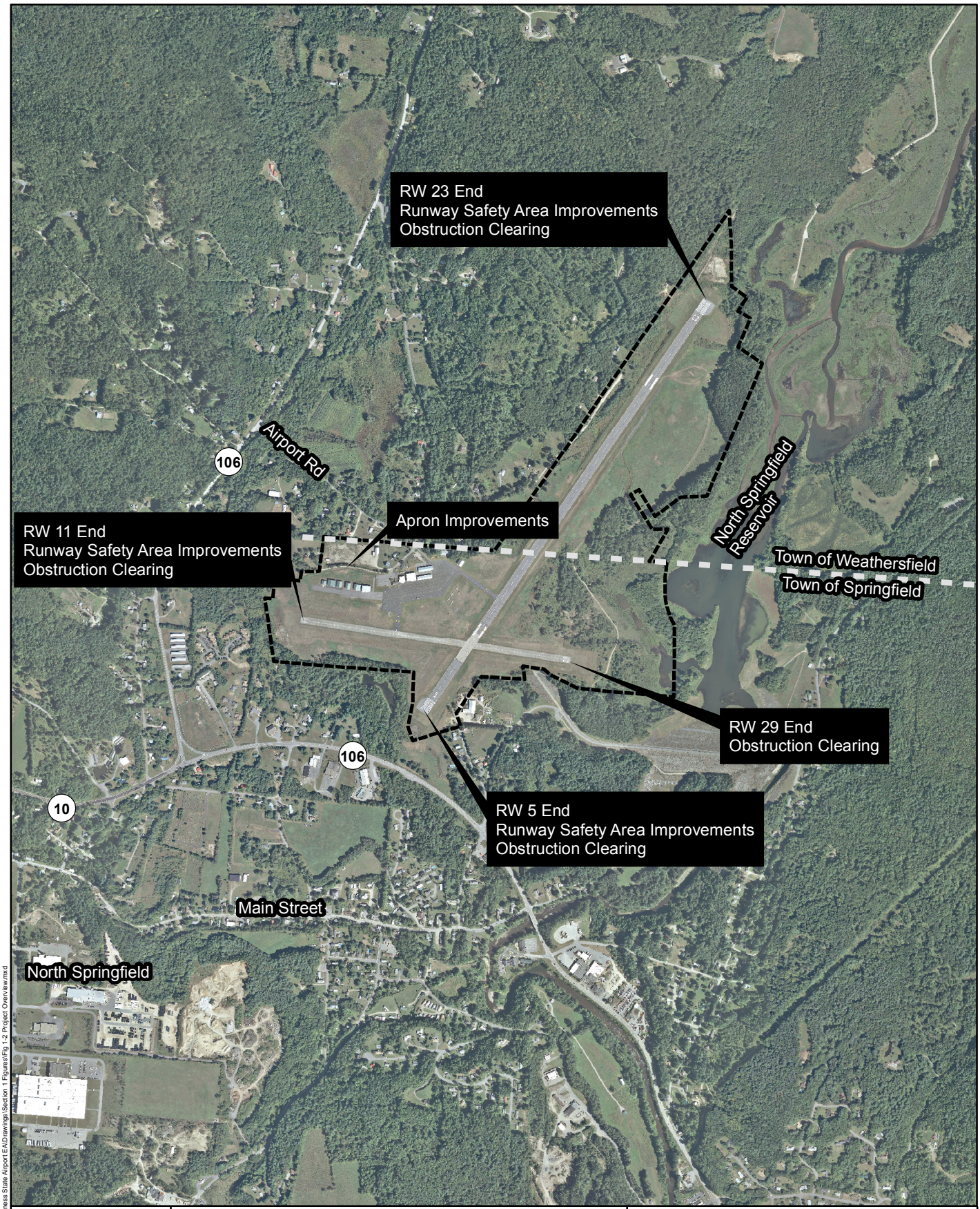
Hartness State Airport
Springfield, VT

Figure 1-1

Document Path: P:\2014\E2X60709 - VTrans Hartness State Airport EA\Drawings\Section 1 Figures\Fig 1-1 Project Locus.mxd



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Data compiled from the following sources:
(1) GIS Information from Vermont Center for Geographic Information (VCGI);
(2) Imagery acquired from The Sanborn Mapping Co. Inc. on August 29, 2013;
(3) Property line based on "Airport Property Map" prepared for Vermont Agency of Transportation (VAOT) by Clough Harbour Associates, March 1999.

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Project Overview

Environmental Assessment

Hartness State Airport
Springfield, VT

Figure 1-2

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Chapter 2 Purpose and Need

Purpose

The purpose of the project is to enhance airport safety by addressing airport design standard deficiencies, and to enhance the ability of the Airport to meet existing and anticipated demand, thereby providing for the long-term sustainability of the Airport and economic vitality of the region.

Need

The safety improvements are needed because Runways 05, 23, and 29 do not meet the current FAA design criteria for RSA length beyond runway end, and there are vegetative penetrations to the FAR Part 77 protected airspace surfaces.

The *Airspace Analysis and Runway Safety Area Study*, completed in May 2013, identified the non-standard RSA's to Runways 05, 23, and 29. As an airport that receives federal funding, it is required to meet certain FAA design standards. With the exception of Runway 11, the RSA's on each runway end do not meet the FAA standard for length beyond the runway end as shown in the following **Table 2-1.**

Table 2-1 Runway Safety Area Deficiencies

Runway End	Standard RSA[1.] (L x W in ft.)	Existing RSA (L x W in ft.)	Deficient by (Length in ft.)
5	300' x 150'	100' x 150'	**200'**
23	300' x 150'	100' x 150'	**200'**
11	240' x 120'	165' x 120'	**75'**
29	240' x 120'	240' x 120'	N/A

1. Source: AC 150/5300-13A Table 3-8 Runway Design Standards Matrix

The Airspace Study also identified penetrations to several protected FAR Part 77 airspace surfaces. There are numerous penetrations to the Primary Surface, the Approach Surface, the Transitional Surface, the Horizontal Surface, and the Conical Surface for Runway 05-23 and Runway 11-29 as shown in the following **Table 2-2**. This EA addresses obstruction clearing of the approach surfaces, including the threshold siting surfaces.

Table 2-2 Summary of FAR Part 77 Surface Penetrations[1]

Airspace Surface [2]	Penetrations (vegetative)	Parcels Affected [3.]
Runway 05-23 Primary Surface	105	3
Runway 11-29 Primary Surface	0	0
Runway 05 Approach Surface	32	5
Runway 23 Approach Surface	65	1
Runway 11 Approach Surface	86	15
Runway 29 Approach Surface	88	2
Runway 05-23 Transitional Surface	810	34
Runway 11-29 Transitional Surface	185	16
Horizontal Surface	4,488	>280
Conical Surface	4,783	>200

1. Adapted from *Airspace Analysis and Runway Safety Area Study*, Jacobs Engineering, May, 2013.
2. Surfaces are explained in Chapter 4.
3. Includes both on and off-airport property.

Facility improvements are needed to meet the existing and anticipated demand, especially by corporate type aircraft.

The 2014 Airport Master Plan identified the need for additional corporate aircraft storage and parking space. Aircraft owner/operators prefer to store aircraft in a hangar as a means of securing the aircraft and protecting it from the elements. The 2008 Hartness Airport Business Plan identified improved terminal services as a way to increase revenues for the Airport. The existing terminal building is inadequate to accommodate the current need for meeting space and pilot facilities for pilots' weather briefings and flight planning activities.

A relocation of tie-downs will allow the airport to meet the FAA's required clearances for taxilanes. The larger corporate aircraft require a greater safety margin than the smaller GA airplanes when moving around the airport. FAA Advisory Circular (AC) 150/5300-13A provides the criteria for aircraft taxilane and parking apron wingtip separation standards. The apron improvements will address the taxilane standards and aircraft circulation.

The proposed project will also support the goals of the Airport's Mission Statement. The 2008 Airport Business Plan identified several goals related to the Airport's Mission Statement including:

- Continue to operate the Airport safely and efficiently;
- Pursue funding for necessary capital improvement projects to improve safety and usability of the Airport;
- Facilitate business activity and access to the region's businesses.

Chapter 3 Project Description (Proposed Action)

3.1 Introduction

This section presents a description of each of the elements of the proposed project that were analyzed for this Environmental Assessment. The alternatives analysis which identified the preferred alternative is described in Chapter 4. The project elements will be implemented over several years of the Airport's Capital Improvement Program.

3.2 Runway Safety Area Improvements

FAA compliant Runway Safety Area (RSA) improvements are proposed for the ends of Runways 05, 23, and 11. Runway 29 currently meets the FAA RSA standards for length and width as shown in **Table 2-1** in Chapter 2.

FAA compliant RSAs will be provided by making use of a combination of declared distances and minimal grading/fill. Use of declared distances minimizes fill and grading, reduces environmental impacts and reduces costs.

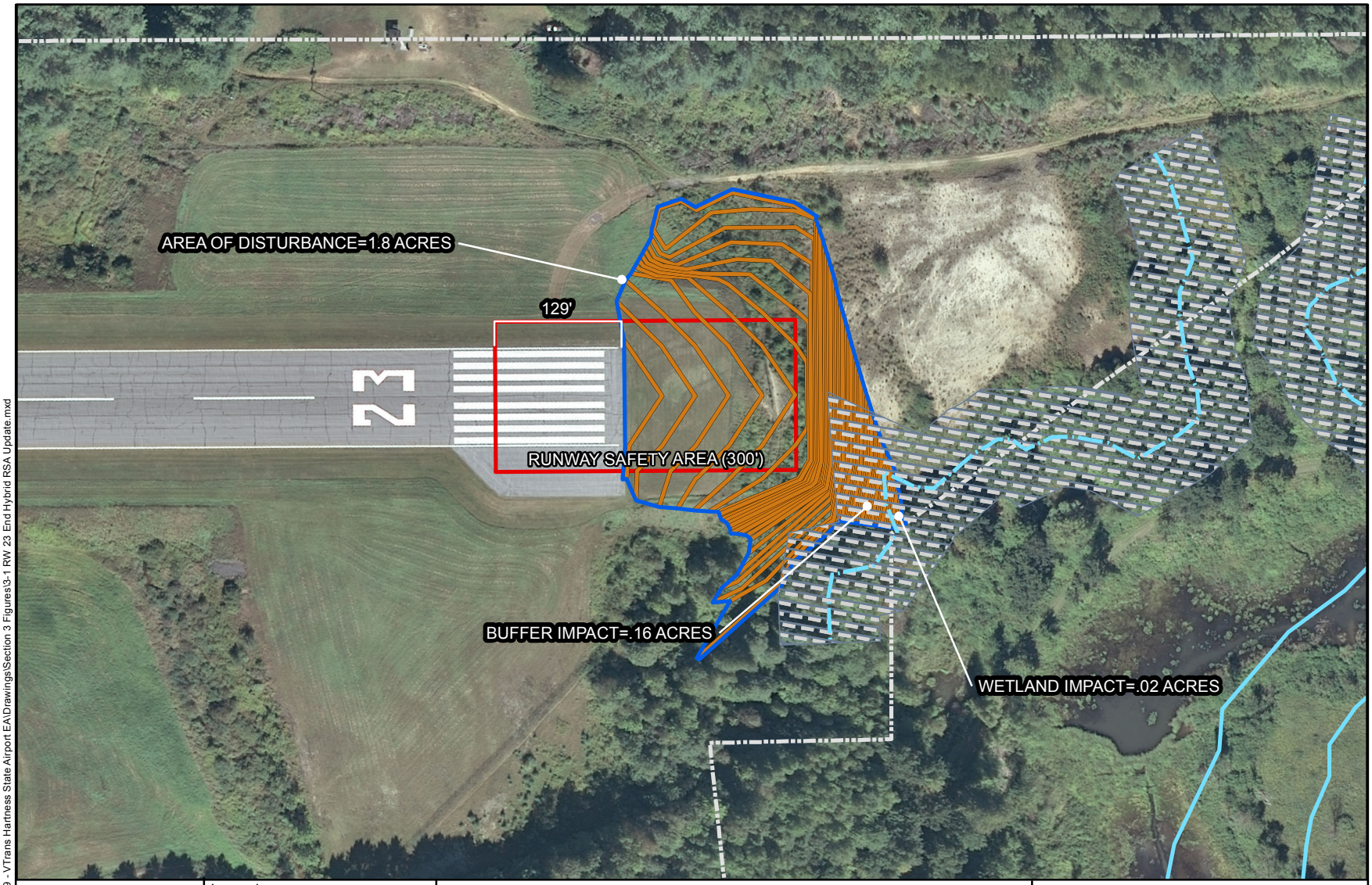
Declared distance is the published length of runway available for takeoff or landing operations, within full RSA, which is less than the actual length of paved surface. The threshold is the beginning of the portion of the runway available for landing. As shown in **Figures 3-1, 3-2,** and **3-3** (beginning on page 3-3), a portion of the existing runway will be used for the RSA.

Declared distances will be used for the Takeoff Runway Available (TORA), the Takeoff Distance Available (TODA) the Accelerate Stop Distance Available (ASDA) and the Landing Distance Available (LDA) for Runways 05, 23, and 29 as shown in **Figures 3-4, 3-5,** and **3-6** respectively. The declared distances are not significant changes from the current runway distance available for these operations and will not impact current corporate jets using the Airport or impact future anticipated demand.

The proposed RSAs are within airport property boundaries with the exception of the RW 05 end. A land taking or permanent easement will be further evaluated during the final construction design phase. Construction easements may also be required as some of the work may extend off-airport for the other RSAs. Erosion controls will be implemented during construction. There are unavoidable direct impacts to wetlands and work will take place within the 50-foot state-regulated buffer zone for Class II wetlands. The project will be designed to be in compliance with the various federal and state environmental requirements. Permits will be finalized during the design phase. **Table 3-1** details the safety area improvements for the proposed action.

Table 3-1 Summary of Proposed Hybrid Runway Safety Areas

Runway End[1]	**RSA Dimensions**	**Potential Land Taking**	**Potential Construction Easements**	**Fill (Approx. CY)**	**Area of Grading (Acres)**	**Floodplain Impacts (acres)**	**Wetland Impacts (Acres)**	**50 foot Buffer Impact (Acres)**
05	300' x 150'	yes	yes	7,500	1.7	0	0	0
23	300' x 150'	no	yes	10,400	1.8	1.8	.02	0.16
11	240' x 120'	no	no	2,500	0.9	0	0	0.1
TOTAL				20,400	4.4	1.8	0.2	0.26



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Legend

- Field Delineated Wetlands (EIV)
- Wetlands (VT ANR)
- Airport Property Line
- State Regulated 50ft Buffer
- Proposed Grading
- Limit of Grading/Area of Disturbance
- Runway Safety Area

NOTES:

(1) Runway 05-23 is 5,500'.
(2) Orthophoto acquired from The Sanborn Mapping Co. Inc on Auguist 29, 2013.
(3) The Runway Safety standard for RW 5 is 150'x300'. 129' of the departure end of RW 5 is used as Runway Safety Area.
(4) Approximately 10,404 CY of fill and grading required.
(5) Property lines are based on "Airport Property Map" prepared for VT Agency of Transportation (VAOT) by Clough Harbour Associates, March 1999.

0 150 Feet

RW 23 End Runway Safety Area Hybrid Option - Wetland Impacts

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Figure 3-1

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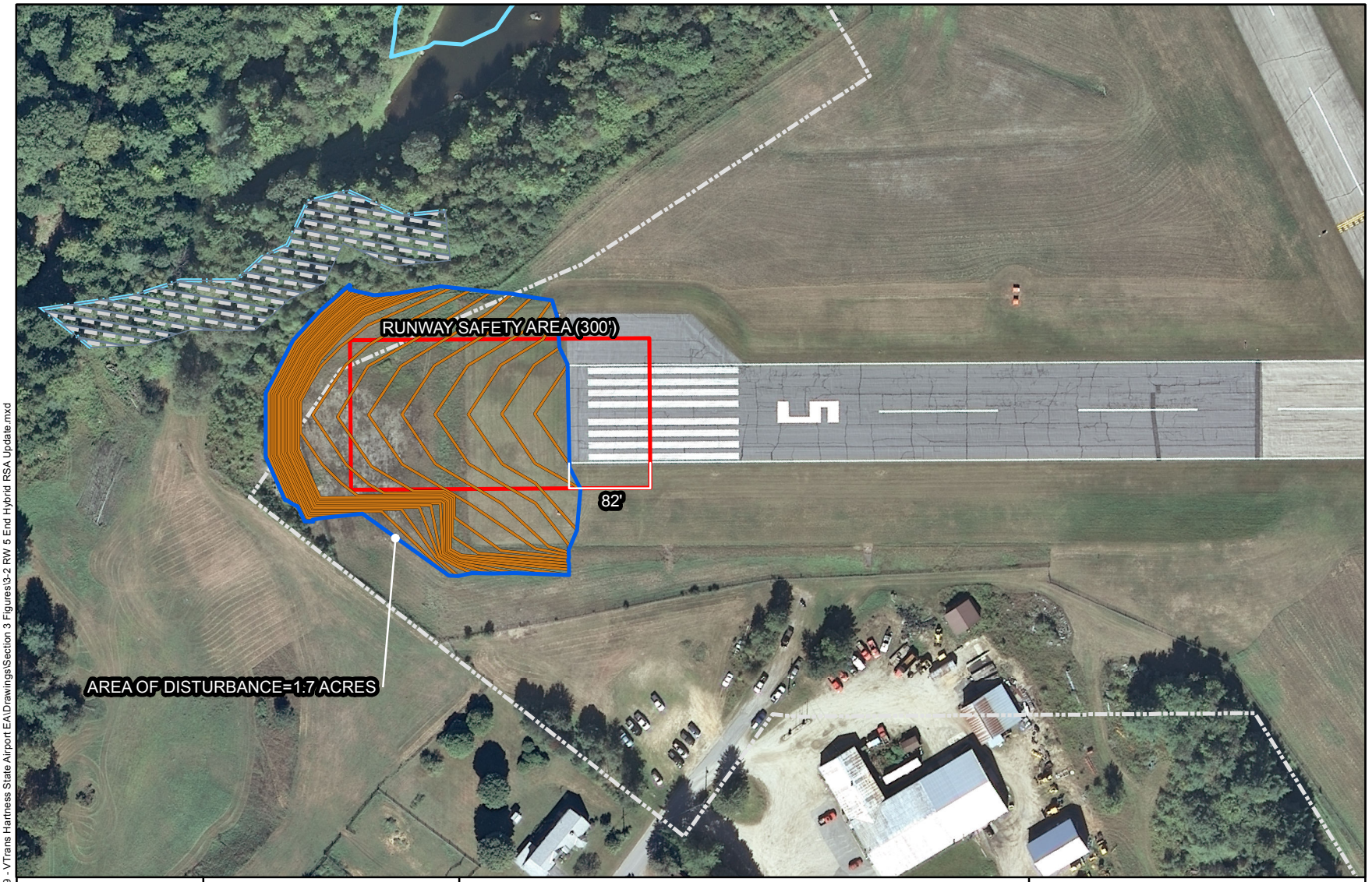

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- Airport Property Line
- Wetlands (VT ANR)
- State Regulated 50ft Buffer
- Field Delineated Wetlands (EIV)
- Proposed Contours
- Limit of Grading/Area of Disturbance
- Runway Safety Area

NOTES:

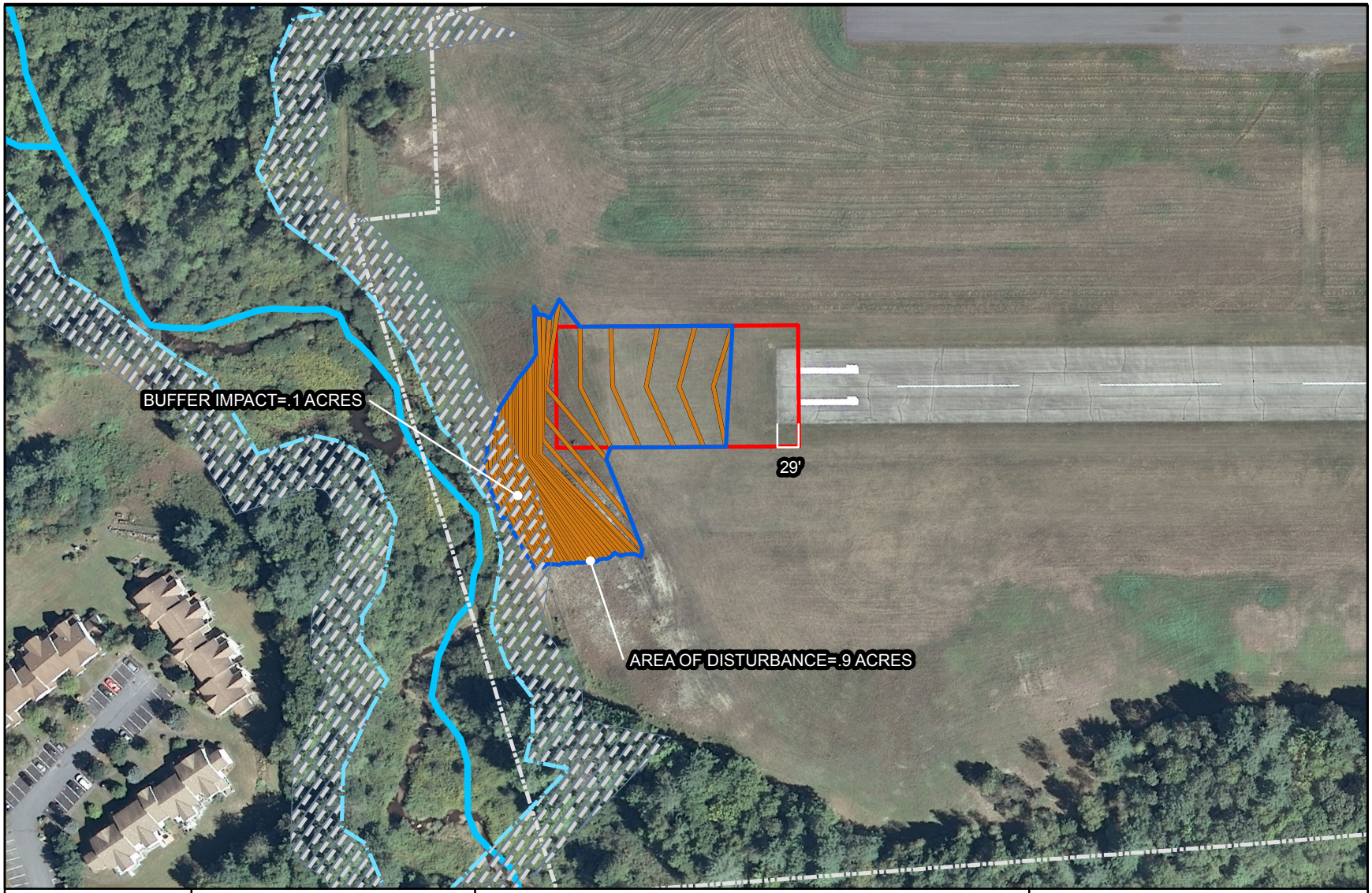
(1) Runway 05-23 is 5,500'.
(2) The Runway Safety Area standard for RW 23 is 150'x300'. 82' of the departure end of RW 23 is used as Runway Safety Area.
(3) Approximately 7,458 CY of fill and grading required.
(4) Orthophoto acquired from The Sanborn Mapping Co. Inc. on August 29,2013.
(5) Property lines are based on "Airport Property Map" prepared for VT Agency of Transportation (VAOT) by Clough Harbour Associates, March 1999.

0 150 Feet

RW 5 End Runway Safety Area Hybrid Option - Wetland Impacts

Environmental Assessment
Hartness State Airport
Springfield, VT

Figure 3-2



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Legend

- Field Delineated Wetlands (EIV)
- State Regulated 50ft Buffer
- Airport Property Line
- Stream (VT ANR)
- Proposed Grading
- Limit of Grading/Area of Disturbance
- Runway Safety Area

Notes:

(1) Runway 11-29 is 3,000'.
(2)The Runway Safety Area standard for RW 29 is 120'x240'. 22' of the departure end of RW 29 is used as Runway Safety Area.
(3) Approximately 2,468 CY of fill and grading required.
(4) Orthophoto acquired from The Sanborn Mapping CO. on August 29, 2013.
(5) Property lines are based on "Airport Property Map" prepared for VT Agency of Transportation (VAOT) by Clough Harbour Associates, March 1999.

0 150 Feet

N

RW 11 End Runway Safety Area Hybrid Option- Wetland Impacts

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Figure 3-3

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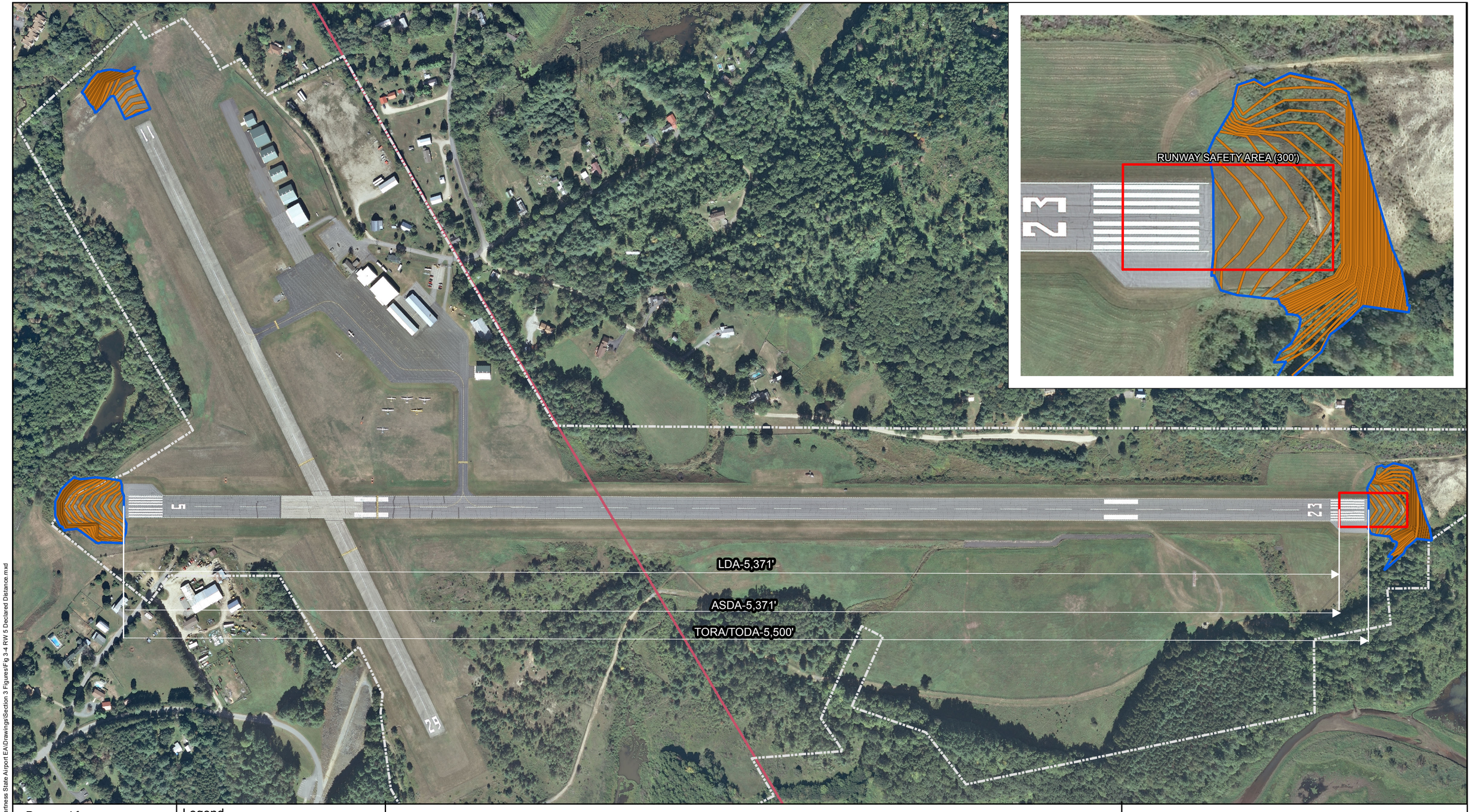

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Legend

- Runway Safety Area
- Proposed Grading
- Limit of Grading/Area of Disturbance
- Airport Property Line
- Town Boundary

RUNWAY 05 OPERATION →

NOTES:
(1) Runway 05-23 is 5,500'.
(2) The Runway Safety Area standard for RW 05 is 150'x300'. 129' of the departure end of RW 05 is used as Runway Safety Area.
(3) Approximately 10,404 CY of fill and grading required.
(4) Orthophoto acquired from The Sanborn Mapping Co. Inc. on August 29,2013.
(5) Property lines are based on "Airport Property Map" prepared for Vermont Agency of Transportation (VAOT) by Clough Harbour Associates, March 1999.
(6) Take off Run Available (TORA) = 5,500' Take off Distance Available (TODA) = 5,500' Accelerate Stop Distance Available (ASDA) = 5,371' Landing Distance Available (LDA) = 5,371'.

0 200 400 Feet

Runway 05 Declared Distances Option 3 Hybrid

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Figure 3-4

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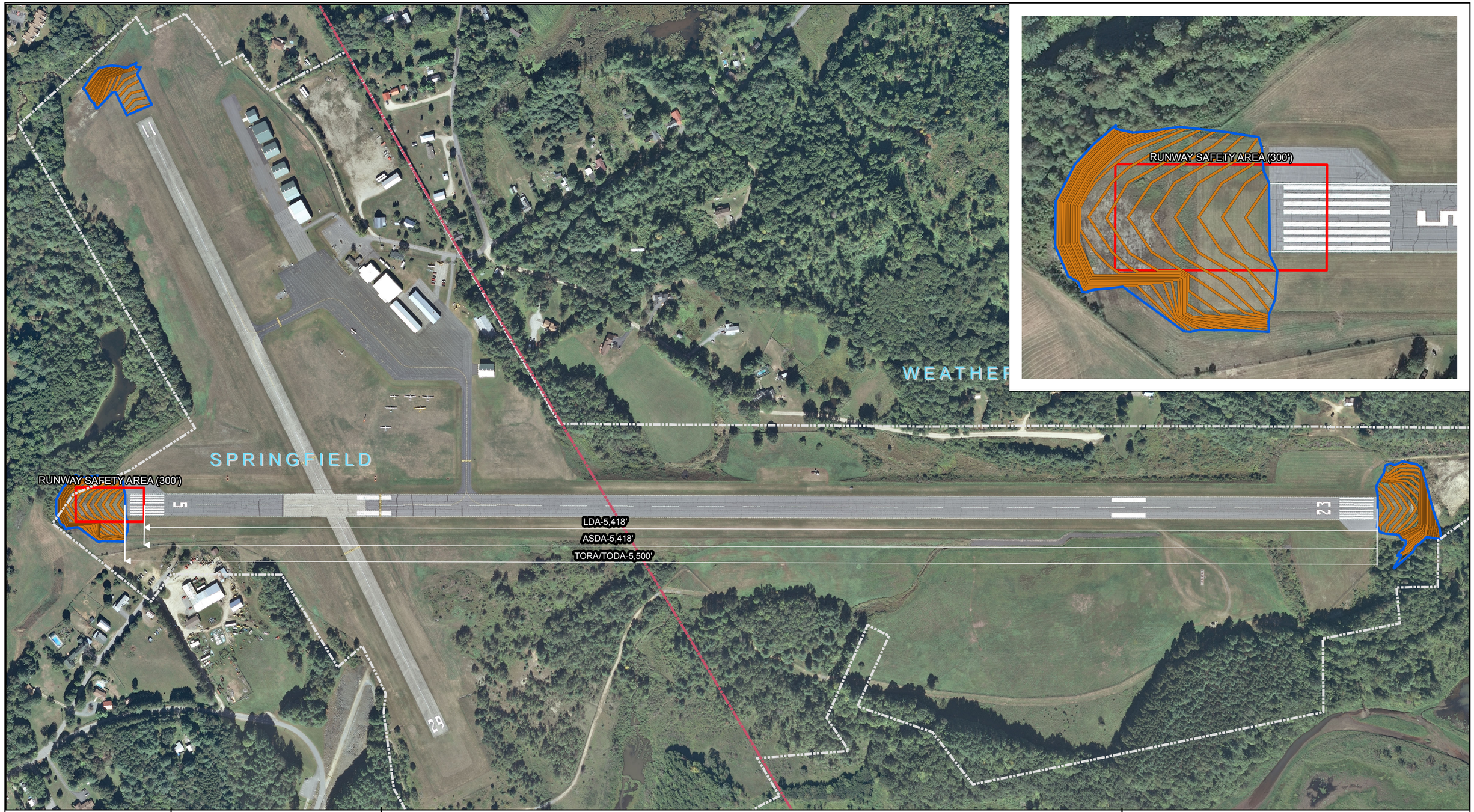

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Legend

- Airport Property Line
- Town Boundary
- Proposed Grading
- Limit of Grading/Area of Disturbance
- Runway Safety Area

NOTES:

RUNWAY 23 OPERATION

(1) Runway 05-23 is 5,500'.
(2) The Runway Safety Area standard for RW 23 is 150'x300'. 82' of the departure end of RW 23 is used as Runway Safety Area.
(3) Approximately 7,458 CY of fill and grading required.
(4) Orthophoto acquired from The Sanborn Mapping Co. Inc. on August 29,2013.
(5) Property lines are based on “Airport Property Map” prepared for VAOT by Clough Harbour Associates, March 1999.
(6) Take off Run Available (TORA) = 5,500' Take off Distance Available (TODA) = 5,500' Accelerate Stop Distance Available (ASDA) = 5,418' Landing Distance Available (LDA) = 5,418'.

0 200 400 Feet

Runway 23 Declared Distances Option 3 Hybrid

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Figure 3-5

Document Path: P:\2014\E2X60709 - VTrans Hartness State Airport EA\Drawings\Section 3 Figures\Fig 3-5 RW 23 Declared Distance.mxd

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- Runway Safety Area
- Proposed Grading
- Limit of Grading/Area of Disturbance
- Airport Property Line
- Town Boundary

RUNWAY 29 OPERATION

NOTES:
(1) Runway 11-29 is 3,000'.
(2) The Runway Safety Area standard for RW 29 is 120'x240'. 22' of the departure end of RW 29 is used as Runway Safety Area.
(3) Approximately 2,468 CY of fill and grading required.
(4) Orthophoto acquired from The Sanborn Mapping Co. Inc. on August 29,2013.
(5) Property lines are based on "Airport Property Map" prepared for Vermont Agency of Transportation (VAOT) by Clough Harbour Associates, March 1999.
(6) Take off Run Available (TORA) = 3,000' Take of Distance Available (TODA) = 3,000' Accelerate Stop Distance Available (ASDA) = 2,978' Landing Distance Available (LDA) = 2,978'.

0 125 250 Feet

N

Runway 29 Declared Distances
Option 3 Hybrid

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Springfield, VT

Figure 3-6

Document Path: P:\2014\E2X60709 - VTrans Hartness State Airport EA\Drawings\Section 3 Figures\Fig 3-6 RWY 29 Delcared Distance.mxd

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3.3 Airspace Obstruction Clearing

There are vegetative obstructions within the approach surface off the runway ends of Runways 05-23 and 11-29. These need to be removed or marked. The areas are shown on **Figure 3-7** (page 3-17) and summarized in **Table 3-2**, below. The areas will be either clear-cut or have selective tree removal. The tree clearing will be phased over two to three years of the CIP. The operation will take place during the winter when the ground is frozen to minimize impacts to the ground surface and disturbance of wildlife. Access to the areas will avoid stream crossings, but there will be some unavoidable indirect impacts to wetland areas as they will be converted to a less forested and more shrub vegetative community.

It is important to note that the extensive area of penetrations that have been identified to the Runway 29 approach (Area 7 on Fig. 3-7) includes high terrain. A hazard beacon is in place to mark this area in low light condition in accordance with FAA AC 70/7460-1K. Due to the high cost of obstruction removal versus the net gain, it has been determined that avigation easements and tree removal would not be planned for the Runway 29 approach surface penetrations.

The Airport will obtain avigation easements prior to removing the vegetation. Extensive coordination will take place between VTrans and the land owners to discuss the easements and tree removal.

Table 3-2 Obstruction Clearing Areas

Area No.[1]	**Runway**	**Size (acres)**	**Work in Wetlands and or Buffer[2]**
1	5	2.3	No
2	5	6	No
3	5	3.5	Yes (Wetland B and Buffer)
4	11	10	Yes (Wetland A and Buffer)
5	11	44	Yes (Wetland E and Buffer)
6	23	7	Yes (Wetland D and Buffer)[3]
7	29	46	No
		Total: 118.8	

1. See **Figure 3-7** for locations, (page 3-17).
2. See Chapter 6 for discussion of wetland impacts.
3. Mitigation proposed for work in NLEB habitat.

3.4 Terminal and Apron Improvements

The terminal and apron improvements will expand the apron area by approximately 8 acres on airport property to provide space for additional corporate hangars, reconfigure the existing apron to improve circulation, reconstruct the drainage to meet current stormwater Best Management Practices (BMPs), and relocate existing tie downs to comply with the FAA's taxiway object free area (TOFA) standards. **Figure 3-8** on page 3-19 illustrates the proposed apron improvements. A summary of new impervious surface is provided in **Table 3-3**.

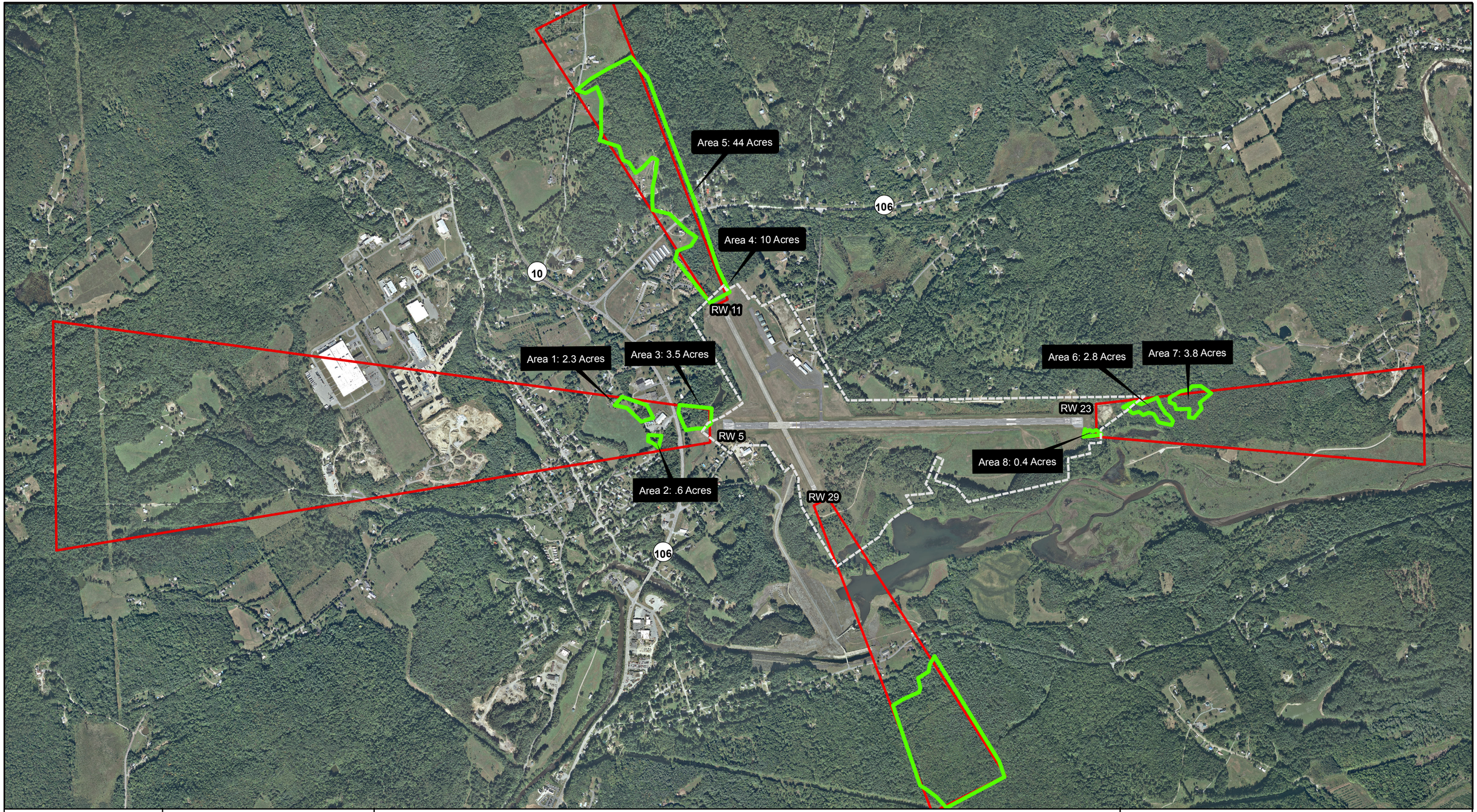
The new apron area will be developed on a recently acquired parcel directly adjacent to the existing apron. This parcel is a former truck storage site for a driving school and was the subject of a Phase 1 Site Environmental Site Assessment. One of the existing buildings on the site (Building # 17 on **Figure 3-8**) will be re-used to house equipment that is currently stored outside. The existing access road to the property adjacent to the parcel will be relocated as shown on **Figure 3-8** and the driveway will be reconstructed to meet the new access road. The apron site will be graded and will be paved as proposals for private hangars are submitted and approved. As part of the apron development, the west side auto parking area will be eliminated and combined with a reconstructed parking area northeast of the terminal building as shown on **Figure 3-8**.

An existing drainage pipe discharges into Wetland C (see **Figure 5-2**, on page 5-18, Existing Terminal Apron). This drainage outlet will be relocated to accommodate the expanded apron and will discharge into a new stormwater detention system.

Building #13 (**Figure 5-2** on page 5-18) is planned to be demolished as part of the terminal area improvements. The separation between Buildings 13 and 3 is 45 feet. The typical wingspan of a Cessna 172 is 36 feet. The distance between the buildings does not leave an adequate margin for wingtip clearance. Furthermore, both the north and south sides of the building are susceptible to snow and ice buildup. The removal of Building #13 would establish proper taxilane separation criteria between Building #3 and the five relocated aircraft parking tie-down positions on the apron which need to be relocated because of FAA design criteria. The apron pavement will be expanded along the edge of the apron to accommodate a shift in existing tie downs to comply with Taxiway Object Free Area (TOFA). This configuration will allow for a safer flow of traffic when accessing the aircraft tie-downs on this portion of the aircraft parking apron.

Landside improvements include a 3,500 square foot addition to the existing terminal building, consolidation of auto parking to the northeast of the terminal, and relocation of the electrical vault.

Table 3-3 New Impervious Area		
Project Element	New Pavement (acres)	New Hangars (acres)
Terminal Apron	6.43	1.68
Landside Auto Parking	1.7	NA
Shifted Tiedowns	0.18	NA
Total	**8.31**	**1.68**
Note: Does not include 3 40'x50' hangars and associated pavement currently under separate permit review.		



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Prepared by:

JACOBS

Legend

- Airport Property Line
- Proposed Tree Clearing Areas
- Part 77 Approach Surface

Data compiled from the following sources:
(1) Orthophoto acquired from The Saborn Mapping Co. Inc on August 29, 2013;
(2) GIS Information from Vermont Center for Geographic Information (VCGI);
(3) Proposed obstruction clearing based on Airspace Analysis and Runway Safety Area Study; Jacobs, May 2013.
(4) Property lines are based on "Airport Property Map" prepared for Vermont Agency of Transportation (VAOT) by Clough

0 700 1,400 Feet

N

Proposed Obstruction Clearing

Environmental Assessment
Hartness State Airport
Springfield, VT

Figure 3-7

Document Path: P:\2014\E2X60709 - VTrans Hartness State Airport EA\600DISC\850 DRAWINGS\Section 3 Figures\Fig 3-7 Proposed Obstruction Clearing.mxd

Back of 11 x 17

BUILDING DATA	
BUILDING #	NAME
1	BUILDING (STATE OWNED)
2	HANGAR (STATE OWNED)
3	T-HANGAR (STATE OWNED)
4	TERMINAL BUILDING
5	HANGAR (STATE OWNED)
6	HANGAR (PRIVATE)
7	HANGAR (PRIVATE)
8	HANGAR (PRIVATE)
9	HANGAR (PRIVATE)
10	HANGAR (PRIVATE)
11	BUILDING (VT. FISH & WILDLIFE)
12	HANGAR (PRIVATE)
13	T-HANGAR (TO BE REMOVED)
14	CAP (CIVIL AIR PATROL)
15	BUILDING TO BE REMOVED
16	BUILDING TO BE REMOVED
17	SRE BUILDING
18	ELECTRICAL VAULT (TO BE RELOCATED)
B	PROPOSED HANGARS (56'x62')
C	PROPOSED HANGAR (140'x120')
D	PROPOSED HANGAR (140'x140')
E	PROPOSED HANGARS (280'x52')
F	PROPOSED HANGARS (62'x65')
G	PROPOSED HANGARS (40'x50')
H	PROPOSED HANGARS (64'x59')
I	PROPOSED HANGARS (50'x70')

*ALL PROPOSED HANGARS TO BE COMPLETED BY OTHER

AIRPORT RD
N RUNWAY RD
TOWN OF WEATHERSFIELD
TOWN OF SPRINGFIELD
GATE
20'
RELOCATED ACCESS ROAD
LANDSIDE:
1.7 ACRES PROPOSED PAVEMENT
APPROXIMATE AIRPORT PROPERTY LINE
ACCESS ROAD
SRE BUILDING
AUTO PARKING (63 SPACES)
RELOCATED ELECTRICAL VAULT
HANDICAP PARKING AREA
RELOCATED AIRCRAFT TIEDOWN (5 SPACES)
TDG II TAXILANE
TAXILANE CL SHIFTED 2 FT TO MEET TDG II TOFA STANDARDS
TO BE REMOVED
TO BE RELOCATED
GATE
WALKWAY
HANGARS BY OTHERS
TDG III TAXILANE
AIRSIDE:
6.43 ACRES PROPOSED PAVEMENT
73,466 SQ FT PROPOSED HANGARS
EXISTING TERMINAL BUILDING (2,428 SQ FT)
PROPOSED TERMINAL EXPANSION (3,550 SQ FT)
TERMINAL APRON
9 SPACES ELIMINATED TO MEET GROUP II TOFA STANDARDS
CURRENTLY UNDER SEPARATE PERMITTING REVIEW
PROPOSED PAVEMENT .25 ACRES
SHIFT TIEDOWNS AND EXPAND PAVEMENT .18 ACRES
ASOS
JET A
FUEL FARM
100 LL
TOFA

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Data compiled from the following sources:
(1) Base Mapping compiled by planimetric mapping from Aerial imagery acquired by The Sanborn Mapping Co. Inc. on August 29, 2013.
(2) Property lines are based on "Airport Property Map" prepared for Vermont Agency of Transportation (VAOT) by Clough Harbour Associates, March 1999.

-Drawing Not to Scale-

Terminal Area Improvement Concepts

Environmental Assessment

Hartness State Airport
Springfield, VT

Figure 3-8

Back of 11 x 17

Chapter 4 Alternatives Analysis

4.1 Runway Safety Area Alternatives

A Runway Safety Area (RSA) is a defined unpaved surface surrounding the runway that is graded smooth and free of obstructions in order to reduce the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway. As discussed in Chapter 2, Runways 05, 23, and 11 have deficient, non-standard RSAs for those runway ends. Three alternatives were evaluated to comply with the FAA RSA standard:

1. Full build RSA
2. Displaced Thresholds (No Build)
3. Hybrid – Construct Partial RSA / Use of Declared Distances

Each alternative was evaluated in terms of maximizing runway length while achieving FAA compliant RSAs with minimal environmental impact and cost. The Runway 29 end meets the standard for RSA length beyond runway end and therefore alternatives were only developed for Runways 05, 23, and 11. Each alternative is illustrated and described as follows.

4.1.1 Alternative 1 – Full Build

The Full Build alternative involves constructing a fully compliant RSA on Runway 05-23 and Runway 11 with no loss of operating runway length. Runways 05-23 and 11-29 would remain at 5,501 and 3,000 feet long respectively, as shown on **Figure 4-1** (on page 4-5). Each location would involve the clearing of vegetation, adding fill and grading to meet the standard. This alternative would require environmental coordination and permitting as work to fill and grade the RSA's to standard would take place near streams and wetlands. Retaining walls would be constructed for both RSA's on Runway 05-23 to minimize the area needed for fill and grading. To allow the thresholds to remain in place the Threshold Siting Surfaces (TSS) would need to be cleared of obstructions. Airport surfaces and clearing are discussed further in **Section 4.2**.

Table 4-1 Alternative 1-Full Build RSAs Summary

Runway End[1]	RSA	RW Length Change	Fill (CY)	Area of Grading (acres)	Wetland Impacts (acres)	Buffer Impacts
05	300' x 150'	No change	10,496	1.6	none	none
23	300' x 150'	No change	24,126	1.8	.02	.15
11	240' x 120'	No change	3,499	1.2	none	.16

1. See **Figure 4-1** on page 4-5 for locations.

Based on the potential environmental impacts and cost and the availability of another alternative with fewer environmental impacts that would meet the Purpose and Need, the Full Build Alternative (Alternative 1) was not selected.

4.1.2 Alternative 2 – Displaced Threshold (No Build)

The Displaced Threshold alternative involves displacing the runway thresholds to achieve a compliant runway safety area without any construction, as shown on **Figure 4-2** (on page 4-7). This alternative is therefore also the No Build since continuing to have non-compliant RSAs is not feasible for the long-term. This alternative would have no environmental impacts. The runway pavement would be repainted to indicate the new threshold location, runway numbers and striping. In addition, the runway end and threshold lights would be relocated. A threshold displacement for Runways 05, 23, and 11 would be necessary to achieve compliant RSAs.

Table 4-2 Alternative 2- Displaced Threshold (No Build) RSAs

Runway End[1]	RSA	RW Length Change	Fill (CY)	Area of Grading (acres)	Wetland/Buffer Impacts (acres)
05	300’ x 150’	-200 ft.	none	none	none
23	300’ x 150’	-200 ft.	none	none	none
11	240’ x 120’	-75 ft.	none	none	none

1. See **Figure 4-2** on page 4-7 for locations.

This alternative would significantly reduce the operating runway length and impact current users of the airport. **Runway 05-23 landing length would be reduced by 200’ on each end and Runway 11-29 would be reduced to 2,925.** For these reasons and the availability of another alternative with fewer aviation impacts that would meet the Purpose and Need, the Displaced Threshold (No Build) Alternative (Alternative 2) was not selected.

4.1.3 Alternative 3 – Hybrid (Preferred Alternative)

The Hybrid alternative makes use of declared distances in addition to extending the RSAs to the extent practicable without extensive grading and fill and minimizing wetland and floodplain environmental impacts, as shown on **Figure 4-3** (on page 4-9). As discussed in Chapter 3 declared distance is the length of runway available for takeoff or landing operations.

This alternative is also the most cost effective solution to achieving compliant RSA’s while maintaining the most runway length. The Threshold Siting Surface (TSS) would need to be cleared of obstructions to keep the thresholds in the current locations.

Table 4-3 Alternative 3 – Hybrid (Preferred Alternative)						
Runway End[1]	**RSA**	**RW Length change**	**Fill (CY)**	**Area of Grading (acres)**	**Wetland Impacts (acres)**	**Buffer Impacts (acres)**
05	300’ x 150’	-82	7,458	1.2	none	0
23	300’ x 150’	-129 ft.	10,404	1.8	.02	.16
11	240’ x 120’	-22	3,499	1.7	none	.16
1. See **Figure 4-3** on page 4-9 for locations.						

The Hybrid Alternative has been identified as the Preferred Alternative and the Proposed Action.

This alternative reduces the amount of runway length that would be lost in the previous alternatives. As shown in **Table 4-3** above, Runway 05 takeoff and landing distance would be reduced by 129 feet. Runway 23 takeoff and landing distance would be reduced by 82 feet. Runway 11 takeoff and landing would be reduced by only 22 feet.

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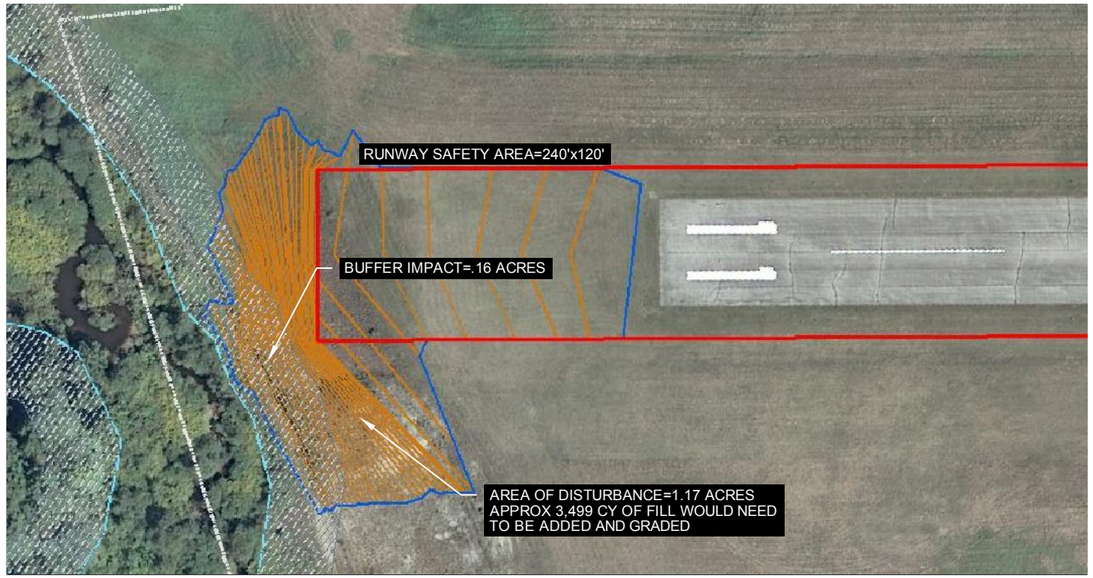
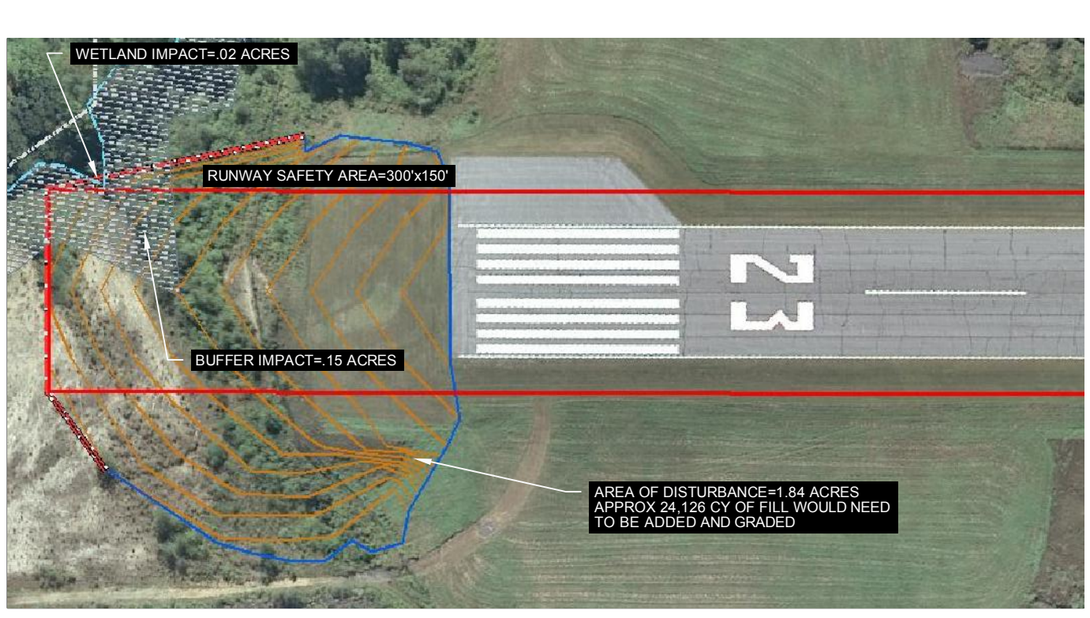
Legend

- Runway Safety Area
- Proposed Grading
- Limit of Grading/Area of Disturbance
- Retaining Wall
- State Regulated 50 Ft. Buffer
- Field Delineated Wetlands (EIV)
- Airport Property Line





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Data compiled from the following sources:

(1) Base Mapping compiled by planimetric mapping from Aerial imagery acquired by The Sanborn Mapping Co. Inc. on August 29, 2013.
(2) Stream information from Vermont Agency of Natural Resources (VT ANR);
(3) Wetland delineated flagging surveyed by EIV Technical Services, 2015.
(4) Property lines are based on "Airport Property Map" prepared for Vermont Agency of Transportation (VAOT) by Clough Harbour Associates, March 1999.

-Drawing Not to Scale-

Full Build RSA Alternative

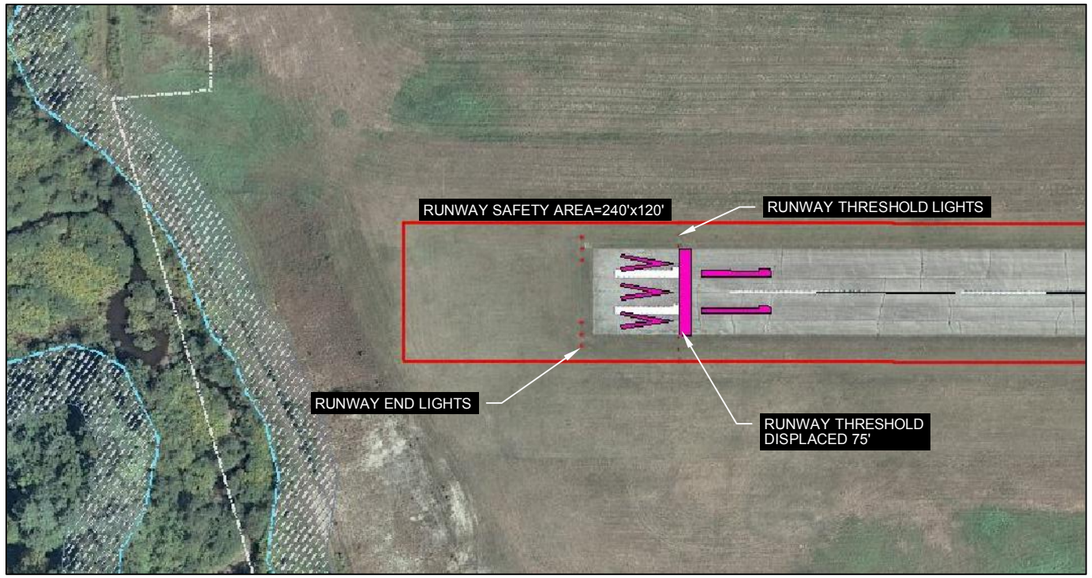
Environmental Assessment
Hartness State Airport
Springfield, VT

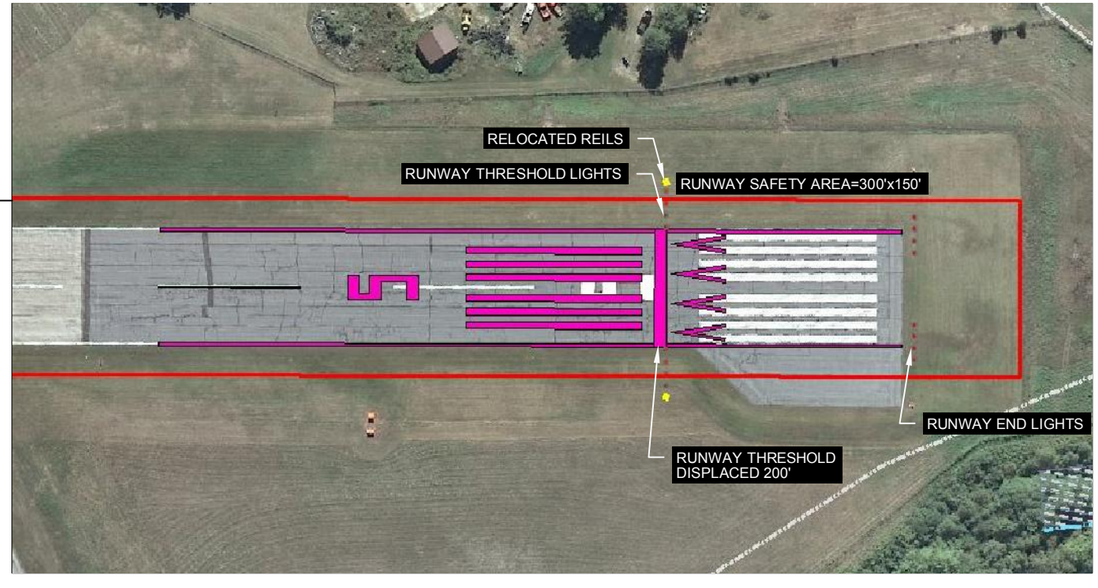
Figure 4-1

Back of 4-1

Legend

- Runway Safety Area
- Runway Threshold Lights
- Runway End Lights
- Relocated REILS
- State Regulated 50 Ft. Buffer
- Field Delineated Wetlands (EIV)
- Airport Property Line
- Displaced Threshold Markings





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(2) Wetland delineated flagging surveyed by EIV Technical Services, 2015.
(3) Property lines are based on "Airport Property Map" prepared for Vermont Agency of Transportation (VAOT) by Clough Harbour Associates, March 1999.

-Drawing Not to Scale-

Displaced Threshold RSA Alternative

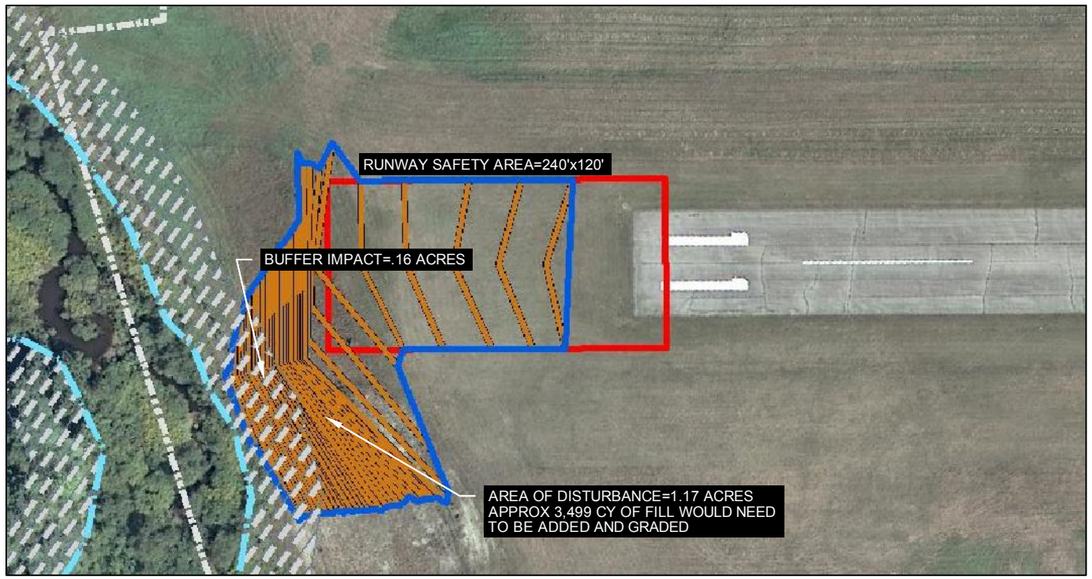
Environmental Assessment
Hartness State Airport
Springfield, VT

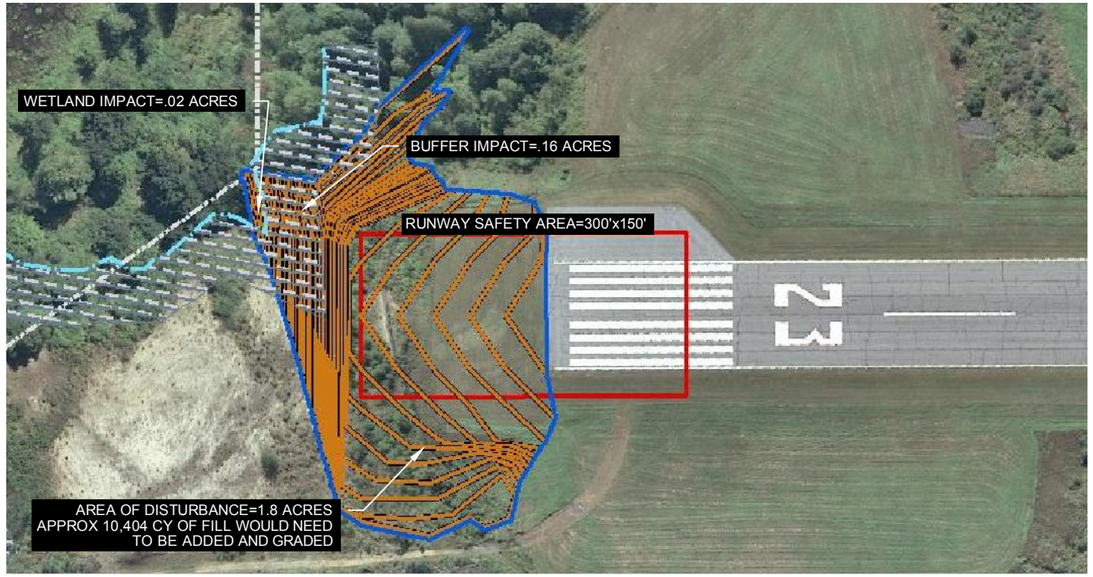
Figure 4-2

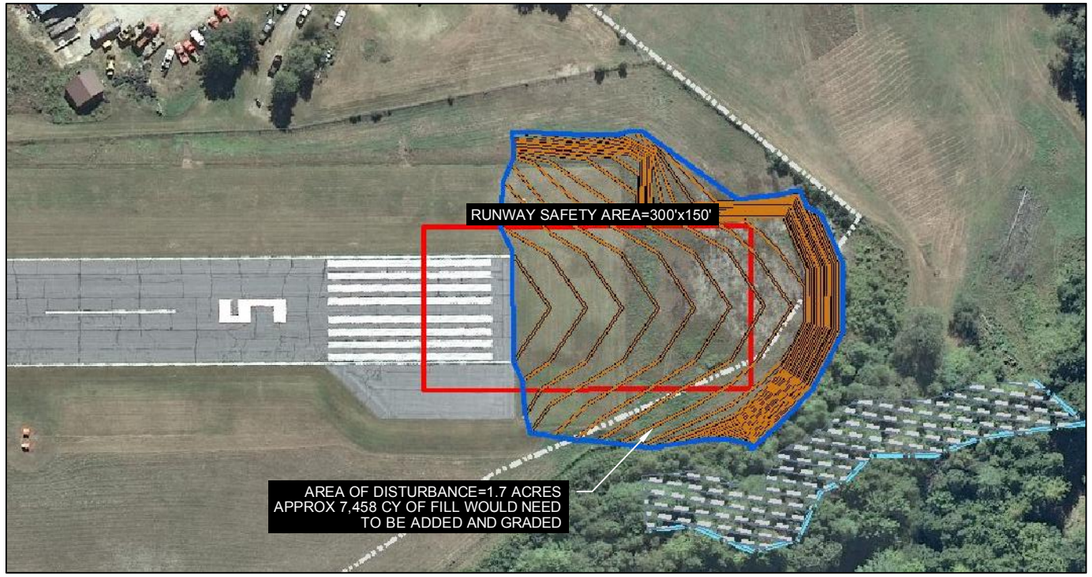
Back of 4-2

Legend

- Runway Safety Area
- Proposed Grading
- Limit of Grading/Area of Disturbance
- State Regulated 50 Ft. Buffer
- Field Delineated Wetlands (EIV)
- Airport Property Line







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Data compiled from the following sources:
(1) Base Mapping compiled by planimetric mapping from Aerial imagery acquired by The Sanborn Mapping Co. Inc. on August 29, 2013;
(2) Wetland delineated flagging surveyed by EIV Technical Services, 2015.
(3) Property lines are based on "Airport Property Map" prepared for Vermont Agency of Transportation (VAOT) by Clough Harbour Associates, March 1999.

-Drawing Not to Scale-

Hybrid Runway RSA Alternative

Environmental Assessment
Hartness State Airport
Springfield, VT

Figure 4-3

Back of 4-3

4.2 Tree Clearing Alternatives

4.2.1 Navigable Airspace

An analysis of the airspace regulations (commonly referred to as "Part 77") for the airport was completed to determine the extent of obstructions (trees, structures, or land contours). Because the Airport is a public use airport and receives grant money from the FAA, it is obligated to keep the navigable airspace surfaces free and clear of obstructions.

The airspace surrounding an airport is defined by geometrical planes in relation to the runway. These surfaces (sometimes referred to as imaginary or protected surfaces) consist of the five separate components listed below and illustrated in **Figure 4-4**.

- Primary Surface: a rectangular surface centered on the runway centerline and conforming to the runway centerline profile;
- Approach Surface: a surface longitudinally centered on the extended runway centerline and extending outward and upward from the periphery of the Primary surface;
- Transitional Surface: a surface that extends outward and upward from the periphery of the Primary and Approach surfaces and at right angles to the runway centerline;
- Horizontal Surface: a horizontal plane situated 150' above the airport surface;
- Conical Surface: a surface that extends outward and upward from the periphery of the Horizontal surface.

The dimension of the various surfaces is determined by the type of aircraft using the airport, the instrument approach to the runway, and runway classification as either utility or other than utility. Each of the airspace surfaces are intended to protect aircraft arriving and departing the airport. Obstructions that cannot be removed must be lowered, marked, or lighted.

Clearing of obstructions within the Approach Surface is the subject of this EA. The Approach Surface for each runway end is defined by a trapezoid that begins at the end of the Primary Surface (which extends 200-feet beyond the runway end) and extends outward in the direction of the approach. Runway 05 is served by a non-precision instrument approach. Therefore the Approach Surface extends out 10,000 feet compared to the 5,000 feet for the other runways with only visual approaches.

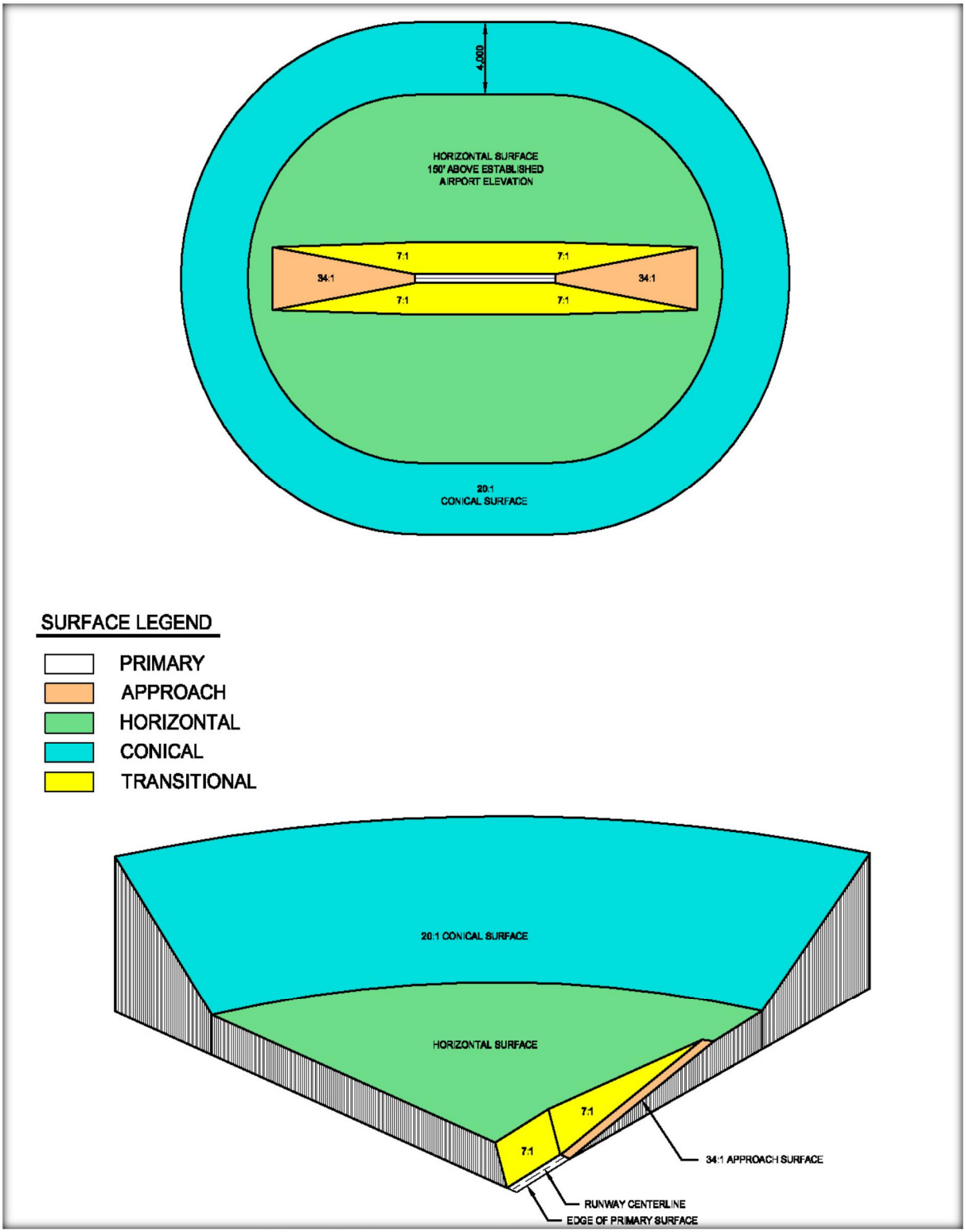

Figure 4-4 Airspace Surfaces (Source: FAA)

4.2.2 No Build Alternative

The No Build alternative would allow obstructions within the Part 77 airspace surfaces to remain. The 2013 Airspace Analysis and Runway Safety Area study identified numerous Part 77 penetrations as shown in **Table 4-4** below.

Table 4-4 Summary of FAR Part 77 Surface Penetrations

Airspace Surface	**Penetrations (vegetative)**	**Parcels Affected[1]**
Runway 05-23 Primary Surface	105	3
Runway 11-29 Primary Surface	0	0
Runway 05 Approach Surface	32	5
Runway 23 Approach Surface	65	1
Runway 11 Approach Surface	86	15
Runway 29 Approach Surface	88	2
Runway 05-23 Transitional Surface	810	34
Runway 11-29 Transitional Surface	185	16
Horizontal Surface	4,488	>280
Conical Surface	4,783	>200

[1] Includes both on and off airport property

This alternative would result in significant impacts to the length of the runways due to the need to relocate the runway thresholds and thereby reducing the runway length available for landing. This would have the biggest impact on corporate aircraft as the high performance aircraft require the most amount of runway length for landing. Removing obstructions in the Approach Surface while maintaining current runway length is a safety priority of VTrans and the FAA. Therefore this alternative has been deemed unfeasible and has not been selected.

4.2.3 Approach Surface Tree Clearing

As noted in Section 4.2.2, there are trees within the approach surfaces of Runways 5-23 and 11-29. These need to be removed, lowered or marked. The areas are shown on **Figure 3-7** in Chapter 3. The areas will be either clear-cut or have selective tree removal. The tree clearing will be completed using a phased approach over two to three years. The operation will take place during the winter when the ground is frozen to minimize impacts to the ground surface and disturbance of wildlife. Access to the areas will avoid stream crossings, but there will be some unavoidable indirect impacts to wetland areas as they will be converted to less forested and more shrub vegetative community. Erosion control Best Management Practices (BMPs) will be incorporated to protect wetland and stream resources.

The Airport will obtain avigation easements to remove the vegetation (with the exception of the Runway 29 approach which is mitigated through an obstruction beacon). Extensive coordination will take place between VTrans and the land owners to discuss the easements and tree removal.

4.2.4 Threshold Siting Surface Obstruction Clearing Alternative

When it is not possible to remove or mitigate all penetrations within the FAR Part 77 Approach surface, FAA allows airport sponsors to apply criteria known as Threshold Siting Surface (AC 150/5300-13A Table 3-2). This surface dictates the location of the runway threshold and is often a narrower and steeper trapezoid when compared to the Part 77 Approach surface. If there are penetrations to this protected surface, then the location of the runway threshold must move further down the runway until all obstacles are below the surface. By comparison, there are fewer penetrations to the Threshold Siting Surface. **Table 4-5** below provides a summary of the Threshold Siting Surface penetrations.

Table 4-5 Summary of Threshold Siting Surface Penetrations

Runway	# Vegetative Penetrations	# Parcels	Acres (estimated)	Estimate to Clear ($$)	Easement Acquisition ($$)
05	16	5	1.5	$9,375	$15,000
23	59	3	7	$93,750	$150,000
11	64	14	32	$200,000	$320,000
29	52	2	26	$162,500	$260,000

Source: Airspace Analysis and Runway Safety Area Study, Jacobs, May 2013.

4.3 Apron Improvement Alternatives

4.3.1 No Build

The No Build alternative would maintain the size of the current apron and provide new hangar space where feasible within the current apron area. This alternative would not respond to current and future demand for hangar space or address the non-standard aircraft taxi lanes on the current aircraft tie-down apron. A No Build alternative would limit the financial viability of the Airport by capping the current area available for lease revenue.

This alternative does not meet the purpose and need for meeting existing service demands. It has been deemed unfeasible and has not been selected.

4.3.2 Phased Development of Airport Parcel

The 2014 Airport Master Plan identified the need to support the demand for additional aircraft storage space for corporate aircraft. The airport does not currently have the aircraft storage hangar space available to store transient corporate aircraft. Operators of these aircraft prefer secure, weather resistant storage for their aircraft.

Situated in a region that boasts strong tourism as well as several large corporate businesses, the airport has seen an increase in operations by corporate aircraft for both business and pleasure travel. The proposed development of the 7.7 acre parcel shown in **Figure 3-8** would be done in multiple phases as demand warrants. VTrans would be responsible for constructing the pavement and providing aircraft access to the airside facilities (taxiways, runways, etc.). The aircraft storage hangars would be erected through private development. The proposed airside development includes 73,500 sq. ft. (1.7 acres) of aircraft storage hangar space and 6 acres of apron pavement. Landside improvements include a reconfigured paved automobile parking area, terminal building access and improved access to the existing storage hangars.

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Chapter 5 Affected Environment (Existing Conditions)

5.1 Introduction

This chapter describes existing environmental resources within the project area. FAA Orders 5050.4B and 1050.1F were reviewed to screen environmental categories. Additionally, the Vermont Aeronautics Environmental Program Guidance document was followed and consultation with resource agencies was carried out during this evaluation.

To determine what resources were present, Geographic Information System (GIS) natural resource layers from the Vermont Agency of Natural Resources (ANR) and Environmental Protection Agency (EPA) were reviewed, on-site field surveys were carried out, and environmental/cultural studies and reports previously prepared for the Airport were reviewed. To make an initial assessment of the environmental setting, a natural resource assessment was prepared and is provided in **Appendix 1**.

Some categories are not present at the Airport or are not likely to have impacts associated with planned improvements as discussed below. The results of the screening of all categories are summarized in **Table 5-1** on the following page.

Table 5-1 Identification of Potential Impact Categories	
Environmental Impact Category	**Determination**
Air Quality	No impacts. [1.]
Coastal Resources	No impacts.
Land Use Compatibility	No impacts.
Dept. of Transportation Act Section 4(f)	No impacts.
Energy Supplies, Natural Resources, and Sustainable Design	No impacts.
Environmental Justice	No impacts.
Farmlands	No impacts.
Floodplains	Evaluated in EA
Hazardous Materials / Solid Waste	No impacts.
Induced Socioeconomic	No impacts.
Light Emissions and Visual Effects	No impacts.
Noise	No impacts.
Socioeconomic Impacts	No impacts.
Wild and Scenic Rivers	No impacts.
Federally-listed Endangered and Threatened Species	Evaluated in EA
State-listed Species, Significant Natural Communities and Necessary Wildlife Habitat (Biotic Communities)	Evaluated in EA
Historic and Archeological Resources	No impacts.
Water Quality (Drinking Water)	No impacts.
Cumulative Impacts	No impacts.
Wetlands and Water Resources	Evaluated in EA
Construction Phase Impacts	Evaluated in EA
Stormwater Management	Evaluated in EA
Source: Adapted from FAA Order 1050.1F, Appendix A and Environmental Desk Reference for Airport Actions, October 2007 1. Dismissed from further analysis.	

5.2 Airport Facilities

Hartness State Airport, built in 1920, was the first airport in the State of Vermont and is the second largest airport in Vermont today in terms of runway length. The Airport is categorized as a general aviation (local service) airport with approximately 7,000 annual operations and 28 based aircraft, including 2 multi-engine aircraft. The airport facilities are shown on **Figures 5-1** and **5-2** (beginning on page 5-4) and illustrated in the following photos.

The Airport consists of airside and landside facilities. Airside facilities have restricted access and consist of runways, taxiways, navigational aids, hangars, and a fuel farm. Landside facilities include the terminal, auto parking, and other facilities such as the Civil Air Patrol (CAP) building.

Airside Facilities

Runways

Runway 5-23 is the primary runway, extending in a southwest-northeast direction at 5,501' long. Runway 11-29 is the crosswind runway which extends in a west-east direction at 3,000' long. Runway 5 provides pilots with non-precision instrument approach capability through a Localizer (LOC)/Distance Measuring Equipment (DME) approach, and an Area Navigation (RNAV/GPS) approach. Each of these approaches has circling minimums associated with them as well. Runway 11-29 is a visual approach only runway.

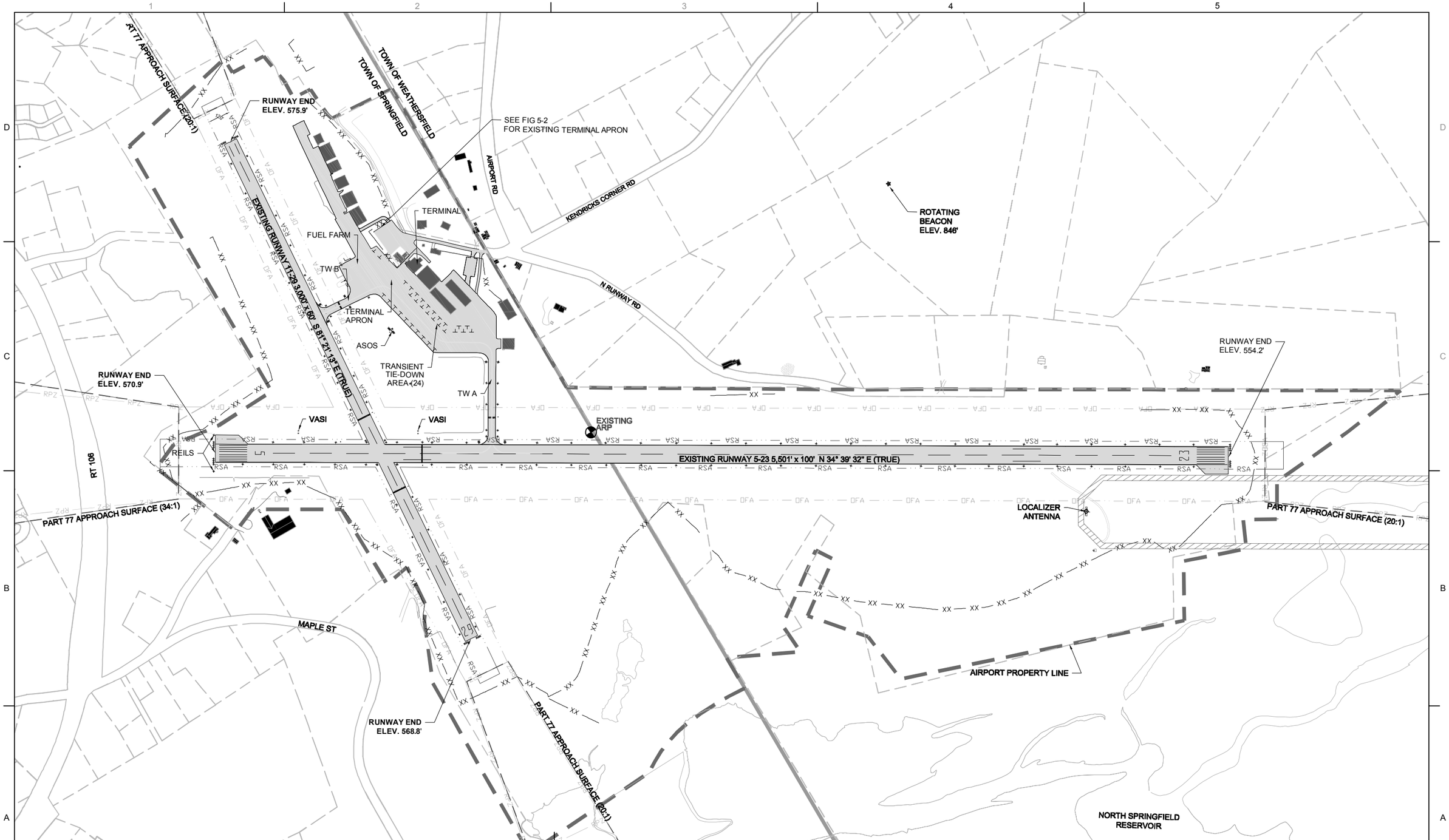
Photo 5-1 Aerial showing stub taxiways and apron

Taxiways

Two stub taxiways provide a means of accessing the runway(s) from the terminal area. Since there are no parallel taxiways to either Runway 05-23 or 11-29, aircraft must back taxi down the active runway and turn around at the end for takeoff and for exiting the active runway.

Aircraft Parking Apron

The main aircraft parking apron located in front of the terminal building, encompasses approximately 193,000 square feet. There are 32 aircraft tie-down spaces marked on the apron pavement. Nine of the marked tie-down spots do not meet B-II taxilane object free area (TOFA) design standard criteria and would be removed as part of the apron improvements (based on FAA AC 150-5300/13A Design Standards).



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Data compiled from the following sources:
(1) Base Mapping compiled by planimetric mapping from Aerial imagery acquired by The Sanborn Mapping Co. Inc. on August 26, 2013.
(2) GIS information from Vermont Center for Geographic Information (VGCI).
(3) Property lines are based on "Airport Property Map" prepared for Vermont Agency of Transportation (VAOT) by Clough Harbour Associates, March 1999.

Graphic Scale
0 250 500
Feet

Existing Airport Conditions

Environmental Assessment
Hartness State Airport
Springfield, VT

Figure 5-1

Back of 5-1

BUILDING DATA	
BUILDING #	NAME
1	BUILDING (STATE OWNED)
2	HANGAR (STATE OWNED)
3	T-HANGAR (STATE OWNED)
4	TERMINAL BUILDING
5	HANGAR (STATE OWNED)
6	HANGAR (PRIVATE)
7	HANGAR (PRIVATE)
8	HANGAR (PRIVATE)
9	HANGAR (PRIVATE)
10	HANGAR (PRIVATE)
11	BUILDING (VT. FISH & WILDLIFE)
12	HANGAR (PRIVATE)
13	T-HANGAR- TO BE REMOVED
14	CAP (CIVIL AIR PATROL)
15	BUILDING TO BE REMOVED
16	BUILDING TO BE REMOVED
17	BUILDING (STATE OWNED) - FUTURE SRE BUILDING
18	ELECTRICAL VAULT

Prepared for: VTrans Working to Get You There

Prepared by: JACOBS

Data compiled from the following sources:
(1) Base Mapping compiled by planimetric mapping from Aerial imagery acquired by The Sanborn Mapping Co. Inc. on August 26, 2013.
(2) Stream information from Vermont Agency of Natural Resources (VT ANR);
(3) Wetland delineated flagging surveyed by EIV Technical Services, 2015.
(4) Property lines are based on "Airport Property Map" prepared for Vermont Agency of Transportation (VAOT) by Clough Harbour Associates, March 1999.

-Drawing Not to Scale-

Existing Terminal Apron

Environmental Assessment
Hartness State Airport
Springfield, VT

Figure 5-2

Back of Figure 5-2

Fuel Farm

The aviation fuel farm is located at the southwest corner of the terminal ramp. It is owned and operated by VTrans. The fuel farm has underground storage tanks, with the capacity to store 10,000 gallons of Jet A fuel and 10,000 gallons 100LL aviation fuel (Avgas).

Photo 5-2 Fuel Farm

Navigational Aids

The Airport has two published non-precision instrument approaches to Runway 05. Runway 05 is equipped with a Visual Approach Slope Indicator (VASI) and Runway End Indicator Lights (REILs). A Localizer antenna is located at the RW 23 end. The FAA also maintains an Automated Surface Observing System (ASOS) to provide weather information.

Aircraft Storage Hangars

Aircraft storage hangars offer based and transient aircraft a safe and secure form of storage. More and more aircraft owners are opting to store their aircraft in a hangar versus outside on a tie-down. There are several types of aircraft storage hangars available at Hartness State Airport. These are in the form of conventional box type hangars and T-hangars. Aircraft storage hangars are described in detail on the following page.

Photo 5-3 Typical Hangars

State Owned Hangars

VTrans owns and maintains five hangars at Hartness State Airport (shown below). Four of these hangars are located to the east of the terminal building and one hangar is located to the west of the terminal building. Each hangar currently has a variety of tenants. The largest hangar has 8 aircraft stored within, while the other hangars have four tenants each.

Building # 1

Building #2

Building # 3

Building #5

Building #13

Photo 5-4 State owned hangars

Private Hangars
VTrans leases land to numerous hangar owners. The hangars are all box type conventional hangars and are capable of storing several aircraft of various sizes in each hangar (see photos below). Currently, all the hangars are occupied. The hangars are all located along the northwest edge of the terminal apron, with the exception of one which is located adjacent to the taxiway.

Building #'s 6-10

Building #12

Photo 5-5 Private Hangars

Landside Facilities

The landside facilities adjoin the airfield and include the terminal building, automobile parking areas, airport perimeter fencing, utilities, and other buildings such as the civil air patrol building.

Terminal Building

The airport terminal building is a 2,000 square foot one-story structure, 25 feet wide by 60 feet long. The terminal building includes a pilot lounge, a telephone, a conference area, restrooms, and counter space for a fixed based operator. In addition, artifacts and pictures detailing the history of Hartness State Airport and the Springfield area are maintained within the terminal building.

The terminal building is used as meeting space for the Springfield Airport Commission meetings as well as by the pilots and airport administration for airport events and day-to-day airport administrative tasks. VTrans and the Airport Commission have stated that the building does not meet the spatial needs of the airport community and it should be expanded. The airport has seen growth in corporate activity over the last several years and has begun extensive outreach programs to attract additional users to Hartness State Airport, all of which require additional and updated meeting space.

Photo 5-6 Terminal Building

Civil Air Patrol Building

The Civil Air Patrol (CAP) Building is primarily utilized for meetings and training activities. The building has limited office space. The Civil Air Patrol is the official auxiliary of the United States Air Force and is tasked with conducting the majority of civilian search and rescue missions in the US. The CAP also has a cadet program which introduces youth to aviation. The location of the CAP building does not afford the users with direct access to airside facilities such as apron space or taxiways. Members of the CAP conduct extensive glider training at Hartness State Airport as well as cadet orientation flights. Activity at the CAP building has decreased over time, and options for the CAP building to be either relocated or renovated should be addressed, as it a difficult environment to conduct the CAP mission from. A new facility should have space for a communications room, classrooms, sufficient storage and office space.

Photo 5-7 Civil Air Patrol Building

Automobile Parking

The state of Vermont maintains two automobile parking lots at Hartness State Airport. The larger lot is located directly west of the terminal building and provides 51 marked spaces that are intended for short-term parking. The second lot is intended for airside parking for those with

airside access, and is secured by a perimeter fence. It is located northeast of the terminal building and has 24 marked spaces. The last master plan update indicated that both auto parking lots were in need of flood lights.

Snow removal and airfield maintenance equipment

VTrans is responsible for maintaining the airfield, and as such, conducts the plowing and mowing operations as well as routine airfield maintenance at Hartness State Airport. Several pieces of maintenance equipment are kept on site such as the loader. Other equipment includes several grass mowers, plows, and a snow blower attachment for the loader. The loader, snow blower and mowing equipment are housed inside of Building #13. The plows and material buckets are stored outside, adjacent to Building # 11 (Vermont Department of Fish and Wildlife).

5.3 Air Quality

The assessment of the potential for air quality impacts followed the FAA Aviation Emissions and Air Quality Handbook Version 3 Update 1, January 2015 and the Airports Desk Reference, October 2007.

The project is located within an attainment area which is a geographical area where the levels of all criteria air pollutants meet the National Ambient Air Quality Standards (NAAQS). The EPA Green Book Nonattainment Areas for Criteria Pollutants website was reviewed for all the criteria pollutants (http://www.epa.gov/airquality/greenbook/). As of May 20, 2015, no counties in Vermont were listed as non-attainment areas. The proposed project would provide runway safety improvements at an existing airport where future activities will be similar to current activities. The proposed apron improvements have been included in the 2014 Airport Master Plan which forecasts a modest increase in operations from approximately 6,600 to 7,400 over the 20-year planning period, well below the number of operations that would require an analysis.

The project is not expected to change aircraft and vehicle travel patterns. BMPs will be implemented during construction to minimize short-term air quality impacts. The projects will not result in an increase in air emissions and has been dismissed as an impact category for more detailed study.

5.4 Coastal Zone Resources

Coastal Zones include areas adjacent to the Great Lakes as well as the Atlantic and Pacific coastlines. There are no coastal areas within Vermont. The project would not affect coastal resources and has been dismissed as an impact category for more detailed study.

5.5 Land Use Compatibility

Land use in the vicinity of the Airport consists of residential, commercial, industrial, and recreational uses. VTrans owns avigation easements on several properties in the vicinity of the Airport and the 2014 Airport Master Plan recommends that additional easements be acquired. The Town of Springfield has a zoning code to ensure compatible development in the vicinity of the Airport. The proposed project will not alter the fleet mix or the noise levels at the Airport and therefore land uses in the vicinity will remain compatible. Land Use compatibility has been dismissed as an impact category for more detailed study.

5.6 Dept. of Transportation Act Section 4(f)

The project will not impact any park, recreational area or wildlife refuge. The North Springfield Reservoir, beneath the approach for Runways 29 and 23, is under the jurisdiction of the Corps of Engineers. The project will not result in any change in flight patterns, fleet mix or noise levels. Dept. of Transportation Act Section 4(f) has been dismissed as an impact category for more detailed study.

5.7 Energy Supplies, Natural Resources, and Sustainable Design

The proposed projects will not result in an increase in energy demands or other natural resource consumption. VTrans has installed solar-powered Hazard Beacons and implemented building efficiencies at the Airport. Future hangars would incorporate green design to the extent practicable. Lighting on the apron could incorporate LED lighting. Wood from trees that are removed from under the protected airspace surfaces may be made available through Wood for Warmth, managed by the Vermont Agency of Human Services. No significant impacts are anticipated and Energy Supplies, Natural Resources, and Sustainable Design have been dismissed as an impact category for more detailed study.

5.8 Environmental Justice and Children's Health and Safety Risks

Environmental Justice

Executive Order 12898 requires federal agencies to provide meaningful opportunities for public participation by minority and low-income populations. It requires a demographic analysis to identify and address potential impacts that are disproportionately high on these populations.

The Airport is located in Windsor County, population 56,666 (2010). The population in the two census tracts around the airport, (9666 and 9777) is 9,262. For two measures of environmental

justice populations, Windsor County fares slightly better than the state in terms of percent persons below poverty level and has slightly fewer minority residents than the state as a whole.

Table 5-2 Environmental Justice Populations		
	Windsor County	Vermont
% Minority	4.7	6.2
% below poverty level	10.3	11.8
Source: U.S. Census Bureau: State and County QuickFacts. Data derived from Population Estimates, American Community Survey, 2013		

In Windsor County, the impacts of the proposed projects are not expected to be borne predominantly by minority or low-income populations. These populations are not expected to suffer due to the proposed work and are not expected to experience more severe impacts compared to the non-minority and populations above poverty level.

Children's Health and Safety Risks

Executive Order 13045, "Protection of Children from Environmental Health Risks and Safety Risks," requires federal agencies to "identify and assess the environmental health risks and safety risks that may disproportionately affect children" and "ensure that its policies, programs, activities and standards address disproportionate risks to children that result" from these risks.

The proposed projects (with the exception of tree clearing) are located on the Airport. The proposed project will not impact existing or planned recreation areas, daycare or schools. The proposed projects, reconstructing existing non-standard Runway Safety Areas (RSAs) for Runways 05, 23 and 11; removing vegetation from within the FAR Part 77 Protected Airspace Surfaces for Runways 05-23 and 11-29; and building additional aircraft parking apron area for aircraft parking and taxi separation, will not result in an increase in air emissions. Children will not suffer disproportionate health and safety impacts.

No significant impacts are anticipated. Both Environmental Justice and Children's Health and Safety Risks have been dismissed as an impact category for more detailed study.

5.9 Farmlands (Prime and Unique)

Areas on and around the Airport are mapped as Prime Agricultural Land. As defined in Farmland Classification Systems for Vermont Soils, June, 2006 (United States Department of Agriculture - Natural Resources Conservation Service), soil map units are Prime Farmland if they have the

best combination of physical and chemical characteristics for producing food, feed fiber, forage, and oilseed crops and are also available for these uses.

The area proposed for the apron/hangar development is a former truck driving school storage area directly adjacent to the existing apron which has been acquired by the Airport. The site will be cleared of all buildings (two) except one building which will be reused for snow removal equipment storage. Additionally, the area for the proposed runway safety area improvements and tree clearing are designated aviation protection zones and not available for agricultural uses. It may be necessary for the aviation program to pay a mitigation fee for any prime agricultural impacts due to the safe area and apron improvements.

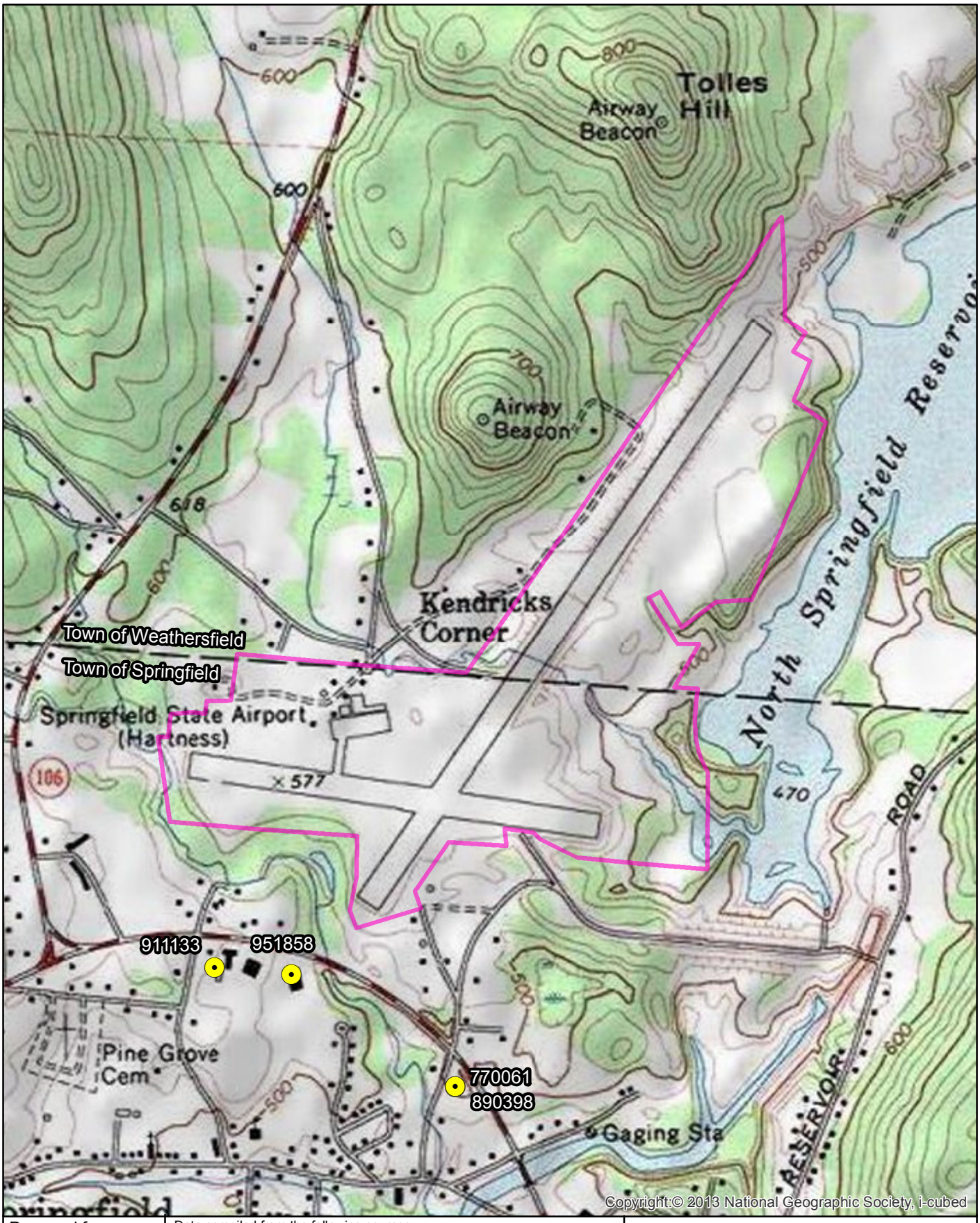
5.10 Hazardous Materials/Solid Waste

EPA and State databases were reviewed. On the VT Agency of Natural Resources (ANR) Hazardous Waste database, the Airport is listed as a hazardous waste generator because there are oil and aviation fuel at the Airport.

There are several off-site listed locations along Route 106 as shown on **Figure 5-3** on the following page. The Springfield Fence Company Site (#951858) was contaminated by an oil spill and is currently listed as a Medium Priority Waste Site (MED) which indicates there is potential for contamination. The other sites are either closed or have low potential for contamination. None of the projects proposed by the Airport would impact any soils or drainage at these sites.

The airport has one 10,000 gallon steel double wall underground storage tank for Avgas Fuel, one 10,000 gallon steel double wall underground storage tank for Jet A fuel, one 275 gallon aboveground steel double wall storage tank for heating oil and one 500 gallon above ground diesel tank. These tanks are checked regularly. Hartness State Airport has a Spill Prevention Control and Countermeasures Plan and also operates under an EPA Multi-Sector General Permit.

The proposed site for the apron development is a former truck driving school truck storage area. One of the existing buildings will be renovated as a maintenance building to store equipment. An existing house and barn on the property are planned to be demolished. Contaminated soils are not anticipated at this site. Tree clearing and grading for the Runway Safety Areas are not within any listed sites and will not generate any solid waste. No impacts relative to Hazardous Materials and Solid Waste will result from the project and therefore this category has been dismissed as an impact category for more detailed study.



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Data compiled from the following sources:
(1) GIS Information from Vermont Center for Geographic Information (VCGI);
(2) Quad Sheet from National Geographic Society, 2012.

Legend

- Hazmat Sites
- Airport Property

0 750 1,500 Feet

Hazmat Sites

Environmental Assessment

Hartness State Airport
Springfield, VT

Figure 5-3

Document Path: P:\2014\E2X60709 - VTrans Hartness State Airport EA\Drawings\Section 5 Figures\Fig 5-3 Hazmat Sites.mxd

5.11 Light Emissions and Visual Effects

No change in light emissions is anticipated as a result of the proposed improvements. The grading and construction of the RSA areas would result in some change in the visual appearance of the airfield as seen by adjacent properties. The removal of trees for obstruction clearance has the potential to open the view to the airport and other business properties. The airport has conducted clearing operations in the past and worked closely with abutting properties. It is not anticipated that the changes would be deemed significant. Light Emissions and Visual Effects have been dismissed as an impact category for more detailed study.

5.12 Noise

The proposed project will not alter the fleet mix or the noise levels at the Airport. No shifting or lengthening of the runways is proposed. Therefore it did not meet the threshold criteria for further analysis.

5.13 Socioeconomic Impacts

The project will not displace any businesses or residential properties. The existing access road to the property located adjacent to the proposed apron improvements will be relocated along the back of the proposed apron as shown on **Figure 3-8** and the owner's driveway will be reconstructed. The proposed project is not a major development project and does not have the potential to induce any shifts in population patterns, increase in public service demands, or changes in economic activity. Proposed improvements at the Airport will support existing airport operations and demand and will not induce additional development in the communities. The Airport is seen as an economic asset to the community.

5.14 Wild and Scenic Rivers

The Missisquoi and Trout Rivers in northern Vermont recently became the first Wild and Scenic Rivers in Vermont. There are no Wild and Scenic Rivers within the project area. Therefore, impacts are not expected and Wild and Scenic Rivers has been dismissed as an impact category for more detailed study.

5.15 Federally-listed Endangered and Threatened Species

As of April 2015, the Northern Long-eared Bat (NLEB) is listed by the United States Fish and Wildlife Service (USFWS) as Threatened with 4(d) Rule. This listing applies statewide in Vermont. Under the final rule, intentionally harming, harassing or killing the northern long-eared bat is prohibited throughout the specie's range, except for removal of northern long-eared bats from human structures, and when necessary to protect human health and safety. The NLEB hibernates in winter in caves and abandoned mine portals (hibernaculum), and in summer they roost in cavities, underneath bark, crevices, or hollows of live and dead trees (typically greater than 3 inches diameter at breast height).

The VT Fish and Wildlife Department reports that there is a known maternity colony near the RW 23 end. Coordination has taken place with the USFWS and Vermont Fish & Wildlife Department to identify measures to avoid adverse impacts to NLEB. FAA will fulfill their project-specific Section 7 responsibilities by using the USFW framework which is based on the finding of a programmatic biological opinion that the Service prepared for the northern long-eared bat 4(d) rule. The framework also includes several voluntary conservation measures that the Service recommends agencies incorporate into projects when possible.

Therefore a standard Section 7 consultation is not required. Mitigation measures are discussed in Chapter 6.

5.16 State-listed Species, Significant Natural Communities and Necessary Wildlife Habitat (Biotic Communities)

State-listed Species

The list of Vermont's rare and uncommon animals is produced by the Vermont Natural Heritage Inventory, a unit of the Vermont Fish & Wildlife Department, Vermont Agency of Natural Resources. Species with a state status of Rare, Threatened or Endangered (RTE) are protected by Vermont's Endangered Species Law (10 V.S.A. Chap. 123).

As shown on **Figure 5-4**, the Airport is mapped (ID No. 2006) for two upland bird species, the Grasshopper Sparrow (*Ammodramus savannarum*, State listed as Threatened) and the Upland Sandpiper (*Bartramia longicauda*, State listed as Endangered). These species were last sited at the Airport in 2008 and 2002 respectively. The Upland Sandpiper is now considered extirpated from Vermont. Although the species were not observed during field investigations in 2014, suitable grassland habitat exists at the Airport for upland bird species. There are several listed

fish (blacknose shiner and eastern silvery minnow) and plant species (prickly hornwort and pursh's bulrush) recorded in the adjacent North Springfield Reservoir and identified on the figure.

The Lists of Rare and Uncommon Native Vascular Plants of Vermont published by the Vermont Natural Heritage Inventory, Vermont Fish & Wildlife Department (07 April 2015) was also reviewed. Listed fish and plant species have been recorded at the North Springfield Reservoir, which is east of the Airport. These include the Blacknose Shiner (*Notropis heterolepis* State ranked as Very Rare), the Eastern Silvery Minnow (*Hybognathus regius* State ranked as Uncommon), the Prickly Hornwort (Ceratophyllum echinatum State ranked as Rare and Uncommon), and the Pursh's Bulrush (*Schoenoplectiella purshiana* var. State ranked as Uncommon). At the request of the wetland ecologist for VT DEC, a plant assessment was completed for Wetland C to specifically check for presence of the uncommon Pursh's bulrush because this small wetland will be filled for the apron improvements. No RTE plant species were found.

As shown on **Figure 5-4**, the Airport is mapped (ID No. 8431) by the State of Vermont for the NLEB, a state endangered species. The VT Fish and Wildlife Department reports that there is a known maternity colony near the RW 23 end. Therefore the project has the potential to impact habitat of the NLEB. However no adverse impacts to NLEB are anticipated as discussed in Chapter 6.2.

Grading for the runway safety areas would incorporate BMPs to prevent erosion and stabilize slopes. There will be no direct or indirect impacts to the Reservoir habitats. The project would not impact the grassland areas at the Airport.

Significant Natural Communities

A query of the Agency of Natural Resource Environmental Atlas found no significant natural communities within the project area, and no such communities were found during site assessments. No further evaluation is required.

Necessary Wildlife Habitat

The Agency of Natural Resource Environmental Atlas identifies a state-mapped white-tailed deer wintering area located approximately 3/4 mile northeast of the Airport. The North Springfield Reservoir acts as a natural buffer between the deer wintering area and the Airport. The North Springfield Reservoir also acts as a buffer between the Airport and the North Springfield State Park natural area. Field review of the various undeveloped airport habitats did

not identify any areas that would meet the criteria of Necessary Wildlife Habitat Areas. No further evaluation is required.

5.17 Historic and Archeological Resources

Several archaeological investigations (Phase I, IB and Phase II) have been conducted at the Airport between 1999 and 2014 (**Appendix 2**). The State Hangar (Building No. 1 on **Figure 5-2**) has been documented as historical infrastructure. The various areas off the runways were deemed as archeologically sensitive in previous assessments because the soils were relatively undisturbed and located adjacent to and overlooking the Black River, Baltimore Brook and/or the North Springfield Reservoir.

A Phase 1B investigation was performed in 2014 which included the areas for the proposed apron development, tree clearing and runway safety areas. The survey entailed excavation of shovel test pits within the four sensitivity areas. The investigation documented in the October 17, 2014 letter from Hartgen Archeological Associates did not identify any intact natural soil stratigraphy within Area 1 (Apron) and no precontact artifacts or potentially significant historic deposits were identified in Area 2 (off Runway 23), Area 3 (off Runway 05), or Area 4 (off Runway 11). No further archeological investigation was recommended.

Impacts are not expected as a result of the proposed project. Historic and Archeological Resources has been dismissed as an impact category for more detailed study.

5.18 Water Quality (Drinking Water)

The Airport is not within a well-head or other drinking water protection zone. The Airport is served by the municipal water system. There are likely private drinking water wells in the vicinity of the Airport. The proposed projects would not impact groundwater. Stormwater BMPs would treat runoff prior to discharge or infiltration in accordance with the airports Stormwater Pollution and Prevention Plan. Water Quality has been dismissed as an impact category for more detailed study.

5.19 Wetlands and Water Resources

The State of Vermont Wetlands Inventory Map (VSWI) was initially consulted to identify mapped wetlands at the Airport. Field investigations and wetland delineation within the potential impact areas were conducted in September 2014 and the Army Corps of Engineers (ACOE) Wetland Data Forms were completed. A Wetland Report is provided in **Appendix 3**.

The Vermont Agency of Natural Resources (ANR) classifies and regulates wetlands at the state level pursuant to the Vermont Wetland Rules. The Rules establish a 3-tier wetland classification system to identify wetlands. The first two classes of wetlands (Class I and Class II) are considered significant and protected under the wetland rules along with their buffer zones (generally 100-foot for Class I and 50-foot for Class II). Wetlands that are not Class I or II are designated Class III and may be regulated by the ACOE. Wetland habitats are located off the ends of each of the runways as described below and shown on **Figure 5-5**.

Wetland A

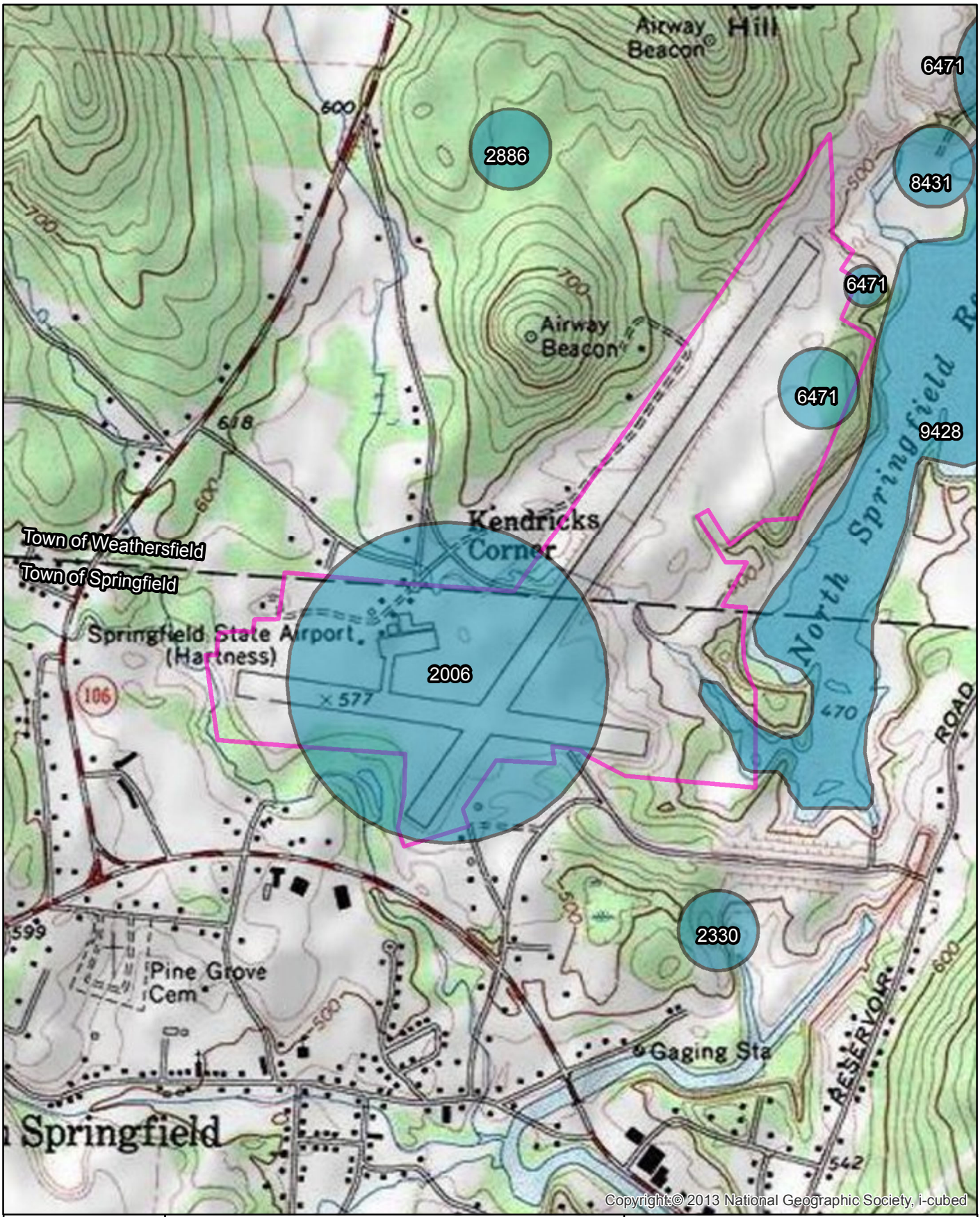
Wetland A is situated prior to the Runway 11 threshold and is a Class II wetland as shown on the ANR Wetland Inventory Map. The wetland is associated with an unnamed stream. The stream is fed by several seeps along the slopes of the stream valley. The dominant wetland plant is Box Elder *(Acer negundo)*. This wetland would have a 50 foot regulated buffer. (See **Photo 5-8**).

Photo 5-8 Wetland A

Wetland A is associated with an unnamed stream located off the approach end of Runway 11 and meanders through this Class II wetland. **(Source: EIV)**

Photo 5-9 Wetland B

Wetland B is located off the approach end of Runway 5 is a Class II wetland. **(Source: EIV)**



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Data compiled from the following sources:
(1) GIS Information from Vermont Center for Geographic Information (VCGI);
(2) Quad Sheet from National Geographic Society, 2012.

Legend

Rare and Endangered Species
Airport Property

0 750 1,500 Feet

Listed Species

Environmental Assessment

Hartness State Airport
Springfield, VT

Figure 5-4

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Wetland B

Wetland B is located off the approach end of Runway 5. Although Wetland B is not shown on the ANR Wetland Map it would be considered Class II because it is connected to the Vermont State Wetlands Inventory (VSWI) mapped Wetland A through the stream that flows through both wetlands. Wetland B is characterized by Red Maple *(Acer rubrum)* and Eastern Hemlock *(Tsuga Canadensis)*. This wetland would have a 50 foot regulated buffer. (See **Photo 5-9**).

Wetland C

Wetland C is located behind the hangars in an area that is routinely mowed. This wetland is a Class III wetland because it is not shown on the VSWI map and is not contiguous or connected to the VSWI mapped wetland. It is also not the same type or size of a mapped wetland and is not a vernal pool. The wetland has a mono culture of grasses and rushes and appears to have developed in response to the drainage outlet for the apron drainage system. As mentioned above in Section 5.17, no listed plant species, specifically Pursh's bulrush were found. Class III wetlands are not regulated by ANR and do not have a buffer. The ACOE may take jurisdiction. (See **Photo 5-10**).

Photo 5-10 Wetland C

Wetland C is a mowed area that collects runoff.

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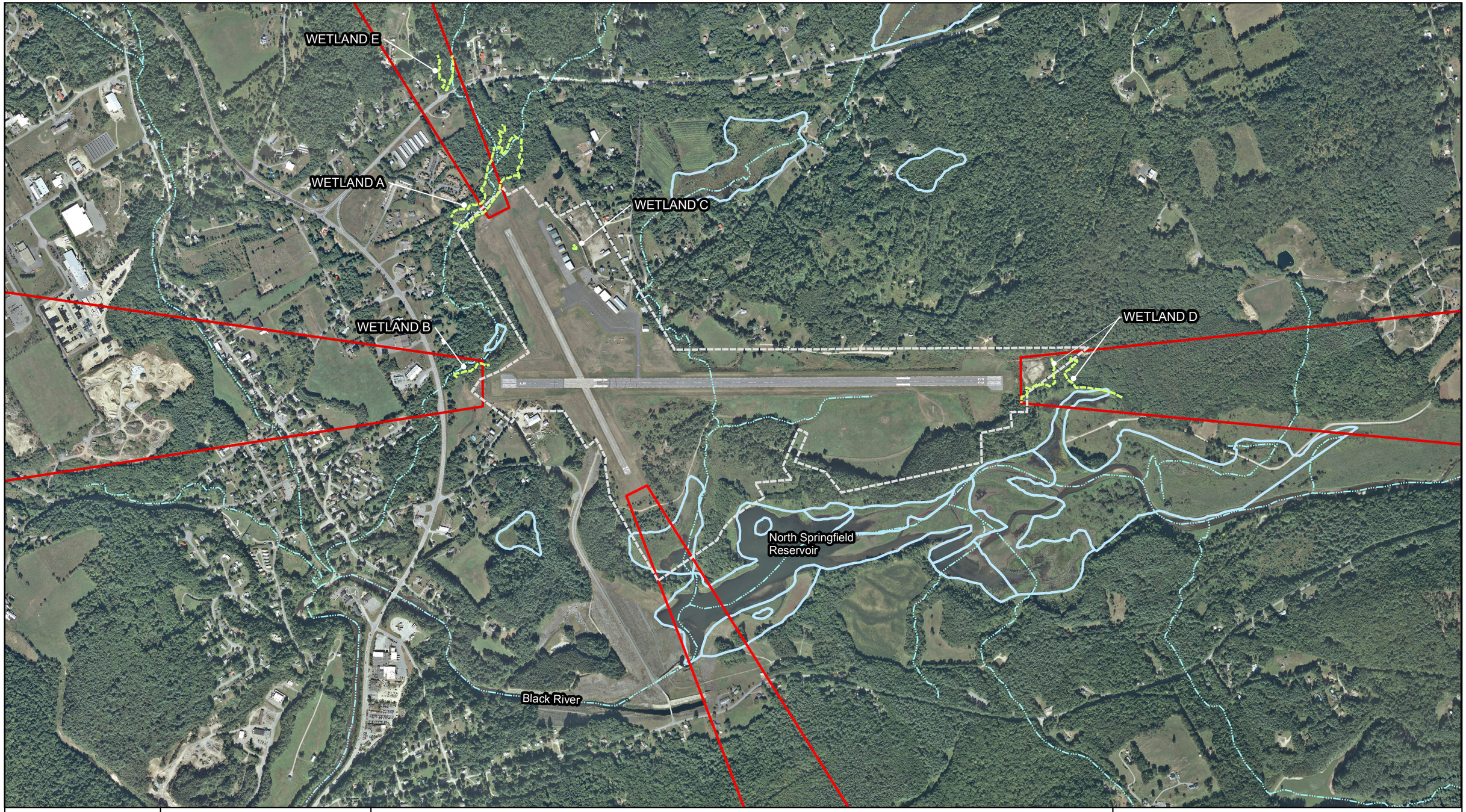

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Legend

- Airport Property Line
- Part 77 Approach Surface
- Stream (VT ANR)
- Wetlands (VT ANR)
- Field Delineated Wetlands

Data compiled from the following sources:
(1) Orthophoto acquired from The Saborn Mapping Co. Inc on August 29, 2013;
(2) Stream and Weland information from Vermont Agency of National Resources (VT ANR);
(3) Field Delineated Wetlands surveyed by EIV Technical Services, 2015.
(4) Property lines are based on “Airport Property Map” prepared for Vermont Agency of Transportation (VAOT) by Clough Harbour Associates, March 1999.

0 500 1,000 Feet

N

Existing Wetlands and Streams

Environmental Assessment
Hartness State Airport
Springfield, VT

Figure 5-5

Document Path: P:\2014\E2X60709 - VTrans Hartness State Airport EA\Drawings\Section 5 Figures\Fig 5-5 Wetlands and Streams.mxd

Back of 5-5

Photo 5-11 Wetland C

Drainage outlet and swale flows to **Wetland C**.

Wetland D

Wetland D is located off the end of Runway 23 and consists of two linear seeps. It would be considered Class II because it is contiguous to the mapped wetland that is associated with the Springfield Reservoir/Black River wetland system. The area is on a slope and dominated by Jewel weed *(Impatiens capensis)*. This wetland would have a 50 foot regulated buffer on either side of each seep.

Photo 5-12 Wetland D

Wetland D is located off the approach end of Runway 23 and is hydraulically connected to the large wetland system shown in the photo. **(Source: EIV)**

Wetland E

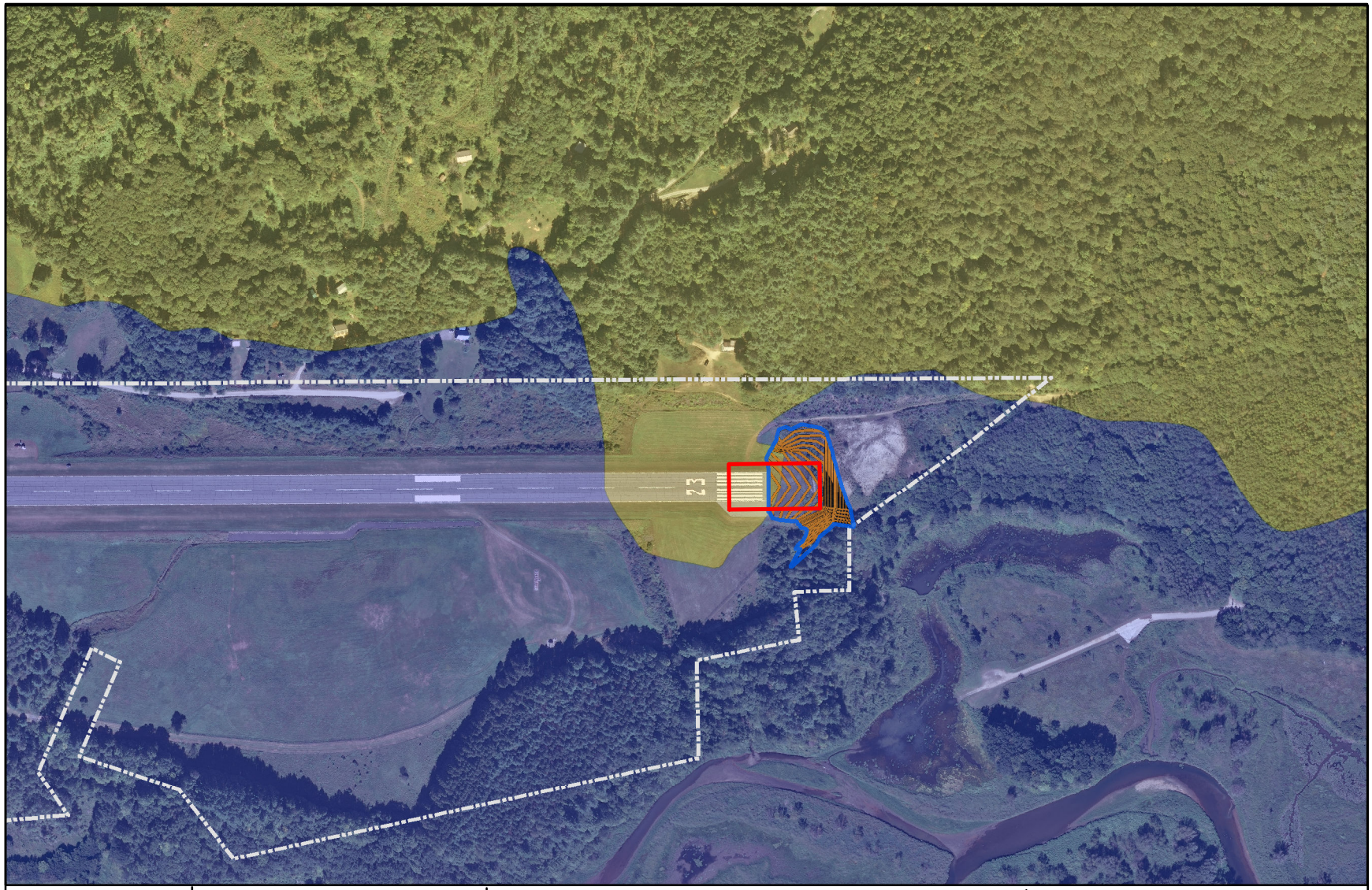
Wetland E is located off the approach end of Runway 11 on the other side of Route 106. Wetland E is a Class II wetland with a 50 foot regulated buffer and is shown on the VSWI map. It is a gently sloping wetland complex that is dominated by two different species of vegetation. These species are Eastern hemlock (*Tsuga Canadensis)* and Spotted Touch-Me-Not (*Impatiens capensis)*. There was evidence of standing water and amongst the Spotted Touch-Me-Not there was sensitive fern mixed in. The area of the wetland closest to Route 106 appeared to have been created by the shifting alignment of the road leaving an earthen berm to the West of Route 106.

Photo 5-13 Wetland E

Wetland E is located off the approach end of Runway 11 is a Class II wetland.
(Source: EIV)

5.20 Floodplains

The Airport is located west of the North Springfield Dam and Reservoir. The dam is operated by the U.S. Army Corps of Engineers, with the primary function of storing flood waters and seasonal runoff associated with the Black River. As shown on **Figure 5-6 (**on the following page), a portion of RW 5-23 is mapped as being within the 100-year floodplain (Zone A-1% annual chance Flood Hazard). The remaining portion of the airfield is within the 500-year floodplain.



Prepared for:

VTrans Working to Get You There

Prepared by:

JACOBS

Legend

- Runway Safety Area
- Proposed Contours
- Limit of Grading
- "A"- 1% Annual Chance Flood Hazard
- "AE"- Floodway
- "X"- .2% Annual Change Flood Hazard
- Airport Property Line

Data compiled from the following sources:
(1) Orthophoto acquired from The Sanborn Mapping Co. Inc on August 29, 2013.
(2) Floodway layers from Vermont Center for Geographic Information (VGCI).
(3) Property lines are based on "Airport Property Map" prepared for Vermont Agency of Transportation (VAOT) by Clough Harbour Associates, March 1999.

0 500 Feet

RW 23 End Floodplains

Environmental Assessment
Hartness State Airport
Springfield, VT

Figure 5-6

Document Path: P:\2014\E2X60709 - VTrans Hartness State Airport EA\Drawings\Section 5 Figures\Fig 5-6 Floodplains-RSA Hybrid.mxd

5.21 Stormwater Management System

Existing stormwater runoff from the runways and taxiways and some of the terminal apron drains via sheet flow to surrounding grass areas and infiltrates to underlying soils. VTrans does not treat any of the airport with salt. Vtrans does apply limited unsalted sand to pavement surfaces during extreme icing events. Limited applications of the deicing chemicals sodium formate and/or potassium acetate are used on the runway surfaces when winter conditions require treatment of the airfield.

Roof drains from the buildings and hangars all flow to the ground and either drain off the pavement and infiltrate into the ground or flow into the catch basins that are located on the apron. There are no known floor drains in the buildings. The portion of the apron runoff that drains to the catch basins is discharged to a swale behind the private hangars west of the terminal building and ultimately to Wetland C (See **Figure 5-2** and **Photos 5-10** and **5-11**), or to a stream that is behind the Fish and Wildlife building (See **Figure 5-2**).

A Stormwater Pollution Prevention Plan (SWPPP) and a Spill Prevention Control and Countermeasures Plan (SPCCP) have been prepared for the Airport.

Chapter 6 Environmental Consequences of the Proposed Action and Proposed Mitigation

6.1 Wetlands Impacts

Wetland impacts can be direct or indirect. Direct impacts are the result of filling a wetland. Indirect impacts are the result of actions that change the vegetative composition of a wetland but the area still remains a wetland in form and function. Wetland impacts are regulated by the Army Corps of Engineers (ACOE) under Section 404 of the Clean Water Act and by the Vermont Agency of Natural Resources (ANR) under the Wetland Rule. Wetland delineations have been reviewed and verbally approved by the District Wetland Ecologist. Preliminary coordination has also been carried out with the ACOE. It is anticipated that a vegetation management plan to assess the ongoing effects and impacts of the tree clearing will be required. An Army Corp of Engineers Section 404 Category 2 Permit application will be required. Permitting requirements for specific project elements will be identified as the design and funding phases go forward.

Runway Safety Area Work

The RSA project will result in a minor amount of direct alteration to a Class II wetland and/or VT-regulated buffer for some of the RSAs. Approximately 0.02 acres of Wetland D and approximately 0.16 acres of its 50-foot regulated buffer will be altered as a result of the grading for the RSA for the RW 23 End. Slopes have been steepened to the extent feasible to minimize impacts. The RSA for the RW 11 End will alter approximately 0.1 acres of the regulated buffer for Wetland A. The RSA for the RW 05 End will not impact wetland or buffer.

Tree Clearing

Obstruction clearing will require some tree cutting within Class II wetland areas. This may result in an indirect impact to the wetlands as there would be a habitat change from forested wetlands to a wetland community dominated by tall shrubs. The cutting would take place in the winter when the ground is frozen. Access to the areas will be designed to avoid crossing any streams. Some areas would require clear cutting and other areas may have selective cutting. Additional analysis of the obstructions will be completed to quantify the impacts. Coordination with land owners will take place as part of the acquisition of easements.

Clearing for the approach off the RW 23 End will impact the linear seeps identified as Wetland D. Wetland impacts due to proposed tree clearing have been summarized in Table 6-1. Off the RW 05 end, Wetland B will be impacted. Wetlands A and E are located off the approach for the RW 11 End. No wetlands have been identified off the RW 29 End.

Table 6-1 Summary of Wetland Impacts				
Wetland	Class	Direct Impact (acres)	Indirect Impact (Acres)	Buffer Impact (Acres)
A	II	0	1.7	1.18
B	II	0	.5	0.43
C	III	.02	NA[1]	NA
D	II	0.02 (RSA)	0.03 (300'l x 2'w x 2 seeps 1,200 SF)	1.93
E	II	0	1.0	1.48
1. Class III wetlands do not have a regulated buffer.				

Terminal and Apron Improvements

The terminal and apron improvements will expand the apron area by approximately 8 acres to provide space for additional corporate hangars, reconfigure the existing apron to improve circulation, and reconstruct the drainage to meet current stormwater Best Management Practices (BMPs). Wetland C, is an approximately 1,039 SF Class III wetland would be filled for the new apron. The wetland consists of grasses and other herbaceous plants and primarily provides water quality functions.

Vermont ANR does not regulate Class III wetlands. During the design phase, the Corps of Engineers will be requested to make a jurisdictional determination on Wetland C.

6.2 Northern Long-eared Bat

According to the Vermont Fish & Wildlife Department, the proposed tree clearing off the RW 23 End is within close proximity to a known maternity colony. There is also suitable roosting and foraging habitat within this area of proposed tree clearing.

As outlined in the March 14, 2016 letter included in **Appendix 4**, tree clearing will be done between October 1 and April 14. A vegetation management plan for the forested corridor along the ACOE reservoir and wetland area will be created during the design phase of the tree clearing in cooperation with VTrans, ACOE, and the Vermont Fish and Wildlife Department. The management plan will retain forested connectivity and retain potential roost trees. With this mitigation there will be no adverse impact.

6.3 Floodplain Impacts

A portion of the airfield is within the floodplain, which includes the RW 23 end. The RSA improvements for the RW 23 end call for the filling of approximately 1.8 acres within the 100-year floodplain. The volume of floodplain impact would be determined during final design and minimized to the extent feasible. The ACOE and ANR will be consulted to assess the potential for impacts and applicability of Flood Hazard Area and River Corridor Rule.

As the project proceeds through the design phase there will be coordination with ANR and other agencies to review the design so that it meets the permitting requirements for the Flood Hazard Area and River Corridor General Permit.

6.4 Stormwater Management Impacts

Approximately 10 acres of new impervious surface (either pavement or building) will be constructed as a result of the proposed projects. Approximately 8 acres of new impervious surfaces are associated with the airside terminal apron; approximately 2 acres are associated with the upgraded landside auto parking. As shown on **Table 3-3**, approximately 0.2 acres of pavement will also be added to shift several existing tiedowns to comply with TOFA standards by extending the apron pavement.

Guidelines in the Vermont Stormwater Management Manual will be followed to develop the stormwater BMPs for the runoff from the proposed new impervious surfaces within the airside apron and landside parking area. The stormwater management system will include both water quality and water quantity controls. The stormwater treatment practices (STPs) will be designed to meet the treatment standards for water quality, channel protection, groundwater recharge, overbank flood protection and extreme flood control. During construction, erosion and sedimentation controls will be implemented to protect water quality.

Proposed Development Stormwater Impacts

The proposed improvements overlay two watersheds. Watershed 1 (see **Figure 6-1** on page 6-9), to the west of the Airport access road, flows to the west to an unnamed stream. Watershed 2, to the east of the Airport access road, flows to the east to an unnamed stream.

The US Department of Agriculture (USDA) National Resources Conservation Service (NRCS) soil mapping was reviewed for the site. The soils in the project area are loamy fine sands, gravelly sandy loam and sand. These soils represent moderately high to very high infiltration characteristics. The depth to groundwater was not investigated. The site's location some 12-30

feet above the elevation of the nearby streambeds is an indicator that groundwater could be deep. The proposed stormwater management measures are discussed for each watershed below.

Watershed 1 includes an 8.2 acre hangar development consisting of new and existing hangars, new grassed areas and new aircraft pavements. The site is bounded to the north and west by the airport property line. The majority of the 8.2 acres will be new impervious surface to watershed 1. Utilizing the native soils infiltration characteristics, the stormwater from the proposed 8.2 acre site will be directed from hangar roof tops toward the available grass areas for infiltration. Drainage from the paved surfaces will be directed toward closed drainage pipes that will outlet to the south of the site into a proposed infiltration basin. The infiltration basin will be sized to treat the runoff and release the larger storm events to maintain the pre and post flow conditions of watershed 1 in accordance with the Vermont Stormwater Management Manual - Volume I Stormwater Treatment Standards. The infiltration basin's overflow will be directed to the unnamed stream via an outlet pipe.

Watershed 2 includes 1.3 acres of existing buildings, new grassed area and new auto drives and parking. The site is constrained to the west, south and east by existing airport development. Approximately 1.2 acres of new impervious pavement will be added to watershed 2. The site's presumed sandy soil will be used to infiltrate the stormwater. Porous pavements are proposed to infiltrate and capture the additional stormwater. Overflow drainage will be directed via a drainage pipe to unnamed stream to the northeast of the site. Proposed stormwater treatments are shown in **Figure 6-1** on page 6-9.

6.5 Cumulative Impacts

Cumulative impacts are the summation of impacts on a resource resulting from the incremental impact of the action when combined with other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or individual undertakes those actions. Cumulative impacts are evaluated to determine the potential of individually minor but collectively significant actions taking place over a period of time within a resource. These actions may occur over a period of time and a distance from the proposed action.

Cumulative effects are evaluated within defined spatial (geographic) and temporal boundaries. The time period for this analysis is a minimum of 5 years past, current activities, and future to 2019. The geographic limits of the analysis include the Airport and adjacent parcels.

The selection of resource categories for the analysis assumed that if the project will not cause direct or indirect impacts on a resource, it would not contribute to a cumulative impact on the resource. Environmental categories included in the cumulative impact analysis are the resources where there are direct or indirect impacts associated with the proposed projects.

Wetlands

To identify past projects within wetlands, the Vermont Agency of Natural Resources Wetlands Inventory Map was reviewed. Wetland Projects identified within the vicinity of the Airport were queried. These projects spanned the time frame of 1992 to 2014. Details were not available but the descriptions included a recreational trail, beaver dams and clearing at School Street. One project dated 1994 appeared to be located near the Airport but no data was available. The VTrans website was also queried to see if there were any road projects in the vicinity but none were listed. Pavement and intersection improvements were listed for Springfield and Weathersfield, but these did not involve wetland impacts and were not near the Airport. Future projects at the Airport that have potential wetland impacts are the subject of this EA. Given the surrounding land use, it is unlikely that there would be other projects off-Airport that would have impacts to wetlands. Much of the land to the north and east is managed by the Corps of Engineers for flood control and recreation. Other parcels are in residential use or existing commercial/industrial development.

Consequently, there would be no cumulative adverse impact to wetland resources as a result of the implementation of the proposed improvement at the Airport.

Floodplains

A portion of the airfield is within the floodplain. Construction of the RSA for the RW 23 End will fill a small area of floodplain. The volume of floodplain impact would be determined during final design and minimized to the extent feasible. No other projects in the past or future have been identified. The Corps of Engineers manages flood levels with the dam and the Springfield Reservoir. During the permitting process necessary mitigation would be developed to minimize impacts to flood plain.

Consequently, there would be no cumulative adverse impact to floodplain as a result of the implementation of the proposed improvement at the Airport.

Northern Long-eared Bat

Implementation of the tree clearing project will include mitigation measures as discussed above in 6.2 so as to not have an adverse effect on the species. The areas of cutting have been minimized to the extent possible. A forested connection will be maintained with the ACOE property that is maintained as a natural area. This combined with other efforts by resource agencies to enhance habitat for the NLEB when possible will serve to avoid cumulative adverse impact to NLEB.

Cumulative impacts Summary

In summary, the total impact of the projects in this EA, combined with the other known past and projects at the Airport and immediate vicinity, will not cause a cumulative significant impact to environmental resources.

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BUILDING DATA	
BUILDING #	NAME
1	BUILDING (STATE OWNED)
2	HANGAR (STATE OWNED)
3	T-HANGAR (STATE OWNED)
4	TERMINAL BUILDING
5	HANGAR (STATE OWNED)
6	HANGAR (PRIVATE)
7	HANGAR (PRIVATE)
8	HANGAR (PRIVATE)
9	HANGAR (PRIVATE)
10	HANGAR (PRIVATE)
11	BUILDING (VT. FISH & WILDLIFE)
12	HANGAR (PRIVATE)
13	T-HANGAR (TO BE REMOVED)
14	CAP (CIVIL AIR PATROL)
15	BUILDING TO BE REMOVED
16	BUILDING TO BE REMOVED
17	SRE BUILDING
18	ELECTRICAL VAULT (TO BE RELOCATED)
B	PROPOSED HANGARS (56'x62')
C	PROPOSED HANGAR (140'x120')
D	PROPOSED HANGAR (140'x140')
E	PROPOSED HANGARS (280'x52')
F	PROPOSED HANGARS (62'x65')
G	PROPOSED HANGARS (40'x50')
H	PROPOSED HANGARS (64'x59')
I	PROPOSED HANGARS (50'x70')

*ALL PROPOSED HANGARS TO BE COMPLETED BY OTHER

Prepared for: VTrans Working to Get You There

Prepared by: JACOBS

Data compiled from the following sources:
(1) Base Mapping compiled by planimetric mapping from Aerial imagery acquired by The Sanborn Mapping Co. Inc. on August 29, 2013.
(2) Property lines are based on "Airport Property Map" prepared for Vermont Agency of Transportation (VAOT) by Clough Harbour Associates, March 1999.
(3) Airside proposed pavement: 6.3 Acres and 73,466 Sq Ft proposed hangars. Landside proposed pavement: 1.7 Acres.

-Drawing Not to Scale-

Proposed Stormwater Treatment

Environmental Assessment

Hartness State Airport
Springfield, VT

Figure 6-1

Back of 6-1

Chapter 7 Agency Coordination/Public Participation

This Chapter provides a discussion of the correspondence and coordination that occurred with resource agencies, abutters and other stakeholders during the preparation of this Environmental Assessment.

7.1 Agency Coordination

State and federal agencies were contacted and notified of the proposed project. A project factsheet was circulated via email and mail with details regarding the project, date of the public information meeting, and the public outreach manager's contact information, attached in **Appendix 5**.

Additionally, consultant staff met with the Vermont Agency of Natural Resources' district wetlands ecologist, Rebecca Chalmers, to discuss the wetland areas delineated and protected species findings. Subsequent phone conversations and emails were made with the Ms. Chalmers and the Vermont Fish and Wildlife Department Biologist, Bob Popp. (See **Appendix 4**).

Ms. Martha Abair of the Army Corps of Engineers Vermont Project Office reviewed the conceptual plans for this project and her questions and comments were documented via email.

Consultant staff coordinated with VTrans' Archeologists, Jeannine Pinkham-Russell and Brennan Guathier, regarding a Phase I Archeological Resource Assessment of the project area.

Potential impacts to the Northern Long Eared Bat (NLEB) due to proposed tree clearing on USACOE property were reviewed by Vermont Agency of Natural Resources' district biologist Mr. James Brady and Vermont Fish and Wildlife Department Biologists Ms. Alyssa Bennet and Mr. Scott Darling. After extensive coordination and a site walk, the VT Fish and Wildlife Department issued a formal letter of no adverse impact with conditions which is included in **Appendix 4**.

7.2 Public Participation

A public outreach plan and a project stakeholder list were developed and are provided in **Appendix 5**. Public outreach occurred throughout the development of the project. Contact was initially made with abutters during the field work for wetland delineation and archaeological surveys. A Public Information Meeting was held on July 28, 2015, and a Project Fact Sheet and the draft EA have been posted to the VTrans Hartness State Airport website http://aviation.vermont.gov/airports/hartness.

The Public Information Meeting was held on July 28th, 2015. Abutting property owners were notified of the meeting by the public outreach manager, Jacqueline Dagesse, traveling door-to-door. At these door-to-door meetings, Ms. Dagesse explained the project, alternatives being considered, and showed conceptual plans developed by Jacobs Engineering. The Project factsheet and a notification of the public information meeting were also mailed to all abutters. The meeting was noticed in *The Brattleboro Reformer*, *The Message*, and *The Eagle Times*.

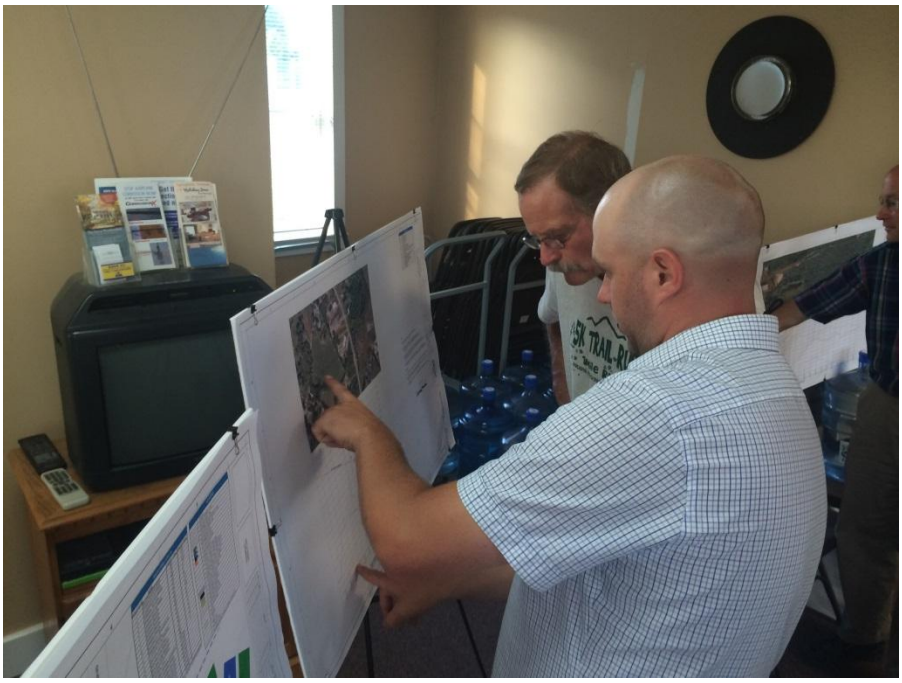

Photo 7-1 Public Information Meeting

The public information meeting was recorded and an official transcript of the meeting is included in **Appendix 5** along with comments received during the pre-meeting door-to-door conversations and the meeting sign-in sheet.

A second public information meeting to present the draft Environmental Assessment is being planned for Spring 2016.

7.3. Agencies and Individuals Consulted

The EA is posted on the VTrans website (http://aviation.vermont.gov/airports/hartness). Paper copies were provided at the Airport Terminal Building, Springfield and Wethersfield Town Halls, Town Libraries, and at the Regional Planning Office.

Public notice was published in *The Brattleboro Reformer*, *The Message* and *The Eagle Times* of the availability of the Draft EA on the VTrans website and paper copies at selected locations. The following federal, state, and local agencies, organizations and other stakeholders were consulted during the preparation of the draft EA.

Federal

Federal Aviation Administration
- Richard Doucette, Environmental Program Manager, Airports Division, FAA New England Region

US Army Corps of Engineers
- Martha Abair, Biologist / Angela Rappella, Biologist

US Fish and Wildlife Service
- Susi vonOettingen, Endangered Species Biologist

State/Region

Vermont Agency of Transportation (VTrans)
- Tammy Ellis, VTrans District 2 Office

VTrans Archaeologist
- Brennan Gauthier, Project Delivery Bureau, Environmental Section

VTrans Historic Preservation Officer
- Judith Ehlrich

Vermont Fish & Wildlife
- Alyssa Bennet, Small Mammals Biologist / Scott Darling, Biologist

Vermont Agency of Natural Resources
- Rebecca Chalmers, Wetland Specialist / James Brady, Biologist

Southern Windsor Regional Planning Commission
- Katharine Otto

Local

Town of Springfield
Town of Weathersfield
Springfield Airport Commission
Springfield Town Library
Weathersfield Proctor Library

Other Stakeholders

Airport Hangar Tenants
Civil Air Patrol
New England Soaring Association

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Chapter 8 List of Preparers

The EA was prepared by Jacobs (Boston, MA and Bedford, NH offices) in association with EIV of Williston, Vermont and Hartgen Archeological Associates of Putney, Vermont.

Key participants in the preparation of this document include the following:

Federal Aviation Administration, New England Region, Airports Division
Richard Doucette, Environmental Program Manager
Role: General Consultation/Document Review
Michelle Ricci, Environmental Protection Specialist
Role: General Consultation/Document Review

Vermont Agency of Transportation
Guy Rouelle, State Aeronautics Administrator
Role: Coordinator, Reviewer
Jason Owen, Aviation Project Manager
Role: Contract Manager/Reviewer
Larry Lackey, Aviation Project Developer
Role: Project Developer

Springfield Airport Commission
Peter MacGillivray, Chairman
Peter Andrews
Kathleen Fellows
Bruce Johnson
Michael Knoras
Walter Striedieck
John Graves

Jacobs
Heath Marsden, Senior Airport Planner
Role: Project Manager/Project Development
Maryann Magner, Senior Environmental Scientist
Role: Principal Author
Katie L. Hogue, Aviation Planner
Role: Graphics/GIS
John Gorham, Senior Engineer
Role: Stormwater Evaluation

EIV Technical Services

Jacqueline Dagesse, Director of Operations
Role: Project Management / Public Participation
Jason Waysville, Director of Engineering
Role: Wetland Scientist
Scott Hance, Arborist/Field Naturalist
Role: Habitat Assessment

Hartgen Archeological Associates

Elise Manning Sterling, Project Manager
Role: Phase IB Archeological Survey

Chapter 9 References

The following documents were used to support the preparation of the EA. Documents marked **bold** are included in the Appendix. Other references are mentioned directly in the document where appropriate.

Airport Master Plan, Jacobs, September 2014.

Airspace Analysis and Runway Safety Area Study, Jacobs, May 2013.

Business Plan, Hartness State Airport, McFarland Johnson, March 2008.

End-of-Field Letter, Archeological Assessment and Phase 1B Investigation, Hartgen Archeological Associates, October 17, 2014.

End-of-Field Letter for Limited Archaeological Phase II Evaluation for site VT-WN-452, Hartness State Airport, University of Vermont Consulting Archaeology Program, July 22, 2008.

FAA Order 1050.1F, Environmental Impacts: Policies and Procedures.

Natural Resource Assessment Letter, EIV Technical Services, October 27, 2014.

Phase 1B Archeological Investigation, Hartness State Airport, Hartgen Archeological Associates, Inc. May 2015.

Springfield Town Plan, Adopted June 16, 2014

VTrans website: http://vtrans.vermont.gov/

Vermont Agency of Natural Resources website: http://www.anr.state.vt.us/

Weathersfield Town Plan, Re-Adopted September 17, 2009

Wetlands Delineation Letter, EIV Technical Services, September 2, 2015.

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APPENDICES

Appendix 1 Habitat Assessment Report

Appendix 2 Archeological Assessments and Phase IB Investigations

Appendix 3 Wetland Report

Appendix 4 Agency Correspondence

Appendix 5 Public Outreach Materials

Appendix 6 Aviation Glossary

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Appendix 1 Habitat Assessment Report

Natural Resource Assessment Letter, EIV Technical Services, October 27, 2014

Note: At the time of this report, the Northern Long-eared Bat was not a listed species

EIV TECHNICAL SERVICES

55 Leroy Rd, Suite 15
Williston, VT 05495
Tel: 802-497-3653 Fax: 802-497-3656

October 27th, 2014

Heath Marsden
Jacobs Engineering
Senior Airport Planner
Two Executive Park Drive, Suite 205
Bedford, NH 03110

Mr. Marsden:

EIV Technical Services has completed a natural resource assessment for the project study area at the Hartness State Airport in Springfield, Vermont. We understand that the proposed project at this location incorporates several runways, including the surrounding approach and departure areas, and proposed hangar buildings. Jurisdictional resources found within the study area have been identified within this report. We believe the information provided below will be useful in developing alternatives which will avoid or minimize, to the extent possible, any potential natural resource impacts.

Rare, Threatened and Endangered (RTE) Species
The VT Nongame Natural Heritage Inventory has documented several rare, threatened, and endangered (RTE) species that occur on and in the direct vicinity of the airport. Two protected upland bird species, the Grasshopper Sparrow (listed by Vermont as 'Threatened') and the Upland Sandpiper (Vermont 'Endangered') are known to have existed on the airport grounds. The last documented occurrence of the upland sandpiper at this site was in 2002, the grasshopper sparrow in 2008. The Upland Sandpiper is now considered extirpated from Vermont but the Grasshopper Sparrow can still be found in the state where suitable habitat exists.

Suitable grassland habitat for both species was confirmed during an October 2014 visit to the Hartness State Airport by Matthew Montgomery and Scott Hance. During the site visit, numerous sparrows were observed in a mature stand of red clover growing on sandy soils found near the terminal apron. It could not be determined if these sparrows observed on-site were the protected grasshopper sparrows since breeding plumage and song observed in May or June are indicative. It would be unlikely since they are early seasonal migrants, however, the habitat and behavior were consistent with the species.

In the mid 1990's a Memorandum of Understanding (MOU) was developed between Vermont Agency of Transportation (VTrans) and the Audubon Society specifically for the Vermont State Airport system. The MOU represented an effort by VTrans to maintain suitable breeding habitat for these and other grassland bird species that could be found around air fields in the State. The MOU is no longer recognized, but it detailed seasonal mowing regimes (postpone the first mowing of the season until August 1 if possible) and other open grassland management options that ensure the birds' reproductive success.

There are several RTE fish (blacknose shiner and eastern silvery minnow) and plant species (prickly hornwort and pursh's bulrush) recorded in the adjacent North Springfield Reservoir. Any proposed work at the airport which could affect this habitat would need to be evaluated for potential impacts to these species. Tree clearing on the runway approaches, as is being considered currently, would be unlikely to adversely affect the grassland bird habitat at the airport. Any other proposed work that could impact the grassland bird species may require obtaining a Vermont Threatened and Endangered Species Taking's Permit.

Prime Agricultural Soils

A database search of Natural Resources Conservation Service (NRCS)-mapped soils indicates there are mapped prime agricultural soils within the project study area. The soil type includes Ninigret fine sandy loam. The project should not reduce the agricultural potential of the prime agricultural soils if work occurs within a previously disturbed area. If work is to occur beyond existing disturbed soil, coordination with the Vermont Department of Agriculture is recommended.

Wetlands

The project study area has hydric soils throughout several of the areas adjacent to the runways, and most of these areas are dominated by shrubs and wetland plant flora. Wetland areas were delineated in September 2014 by Jason Waysville and Scott Hance. Both small and large wetland areas are found surrounding the airport. The approximate locations of these areas have been delineated and surveyed for inclusion on Jacob's planset. The wetland community types are jurisdictional wetlands, believed to be Class II. The majority of wetland area is comprised of dense wooded vegetation and are dominated by hydric soils and shrubs. They provide an important resource for native wildlife. The wetland delineation data forms have been included with this report.

Significant Natural Communities

A query of the Agency of Natural Resource Environmental Atlas found no significant natural communities within the area of our project, and no such communities were found during site assessments.

Necessary Wildlife Habitat

The Agency of Natural Resource Environmental Atlas review identified a state-mapped white-tailed deer wintering area located approximately 3/4 mile northeast of the project area. The North Springfield Reservoir acts as a natural buffer between this deer wintering area and the Hartness State Airport project area. The North Springfield Reservoir also acts as a buffer between the airport and the North Springfield State Park natural area. Field review of the on-site habitat within the project area found no necessary wildlife habitat areas.

Hazardous Waste Sites
There are two listed sites on or near the project area:

- The Hartness State Airport is listed as a hazardous waste generator, however our project limits occur away from areas of potential contamination for airport activities.
- The Springfield Fence Company, located across Route 10 from the Hartness State Airport, is a hazardous waste site (# 951858). The site was contaminated with waste oil spills, and it is currently listed as a medium grade site. This project should have no impact on the site as it is down gradient, and there will be no disturbance of soil.

Feel free to contact myself or Matthew Montgomery regarding the natural resource information above, 802-497-3653.

Sincerely,

Jacqueline Dagesse, MBA, PMP, CPESC
EIV Technical Services
Environmental Engineer

VEGETATION – Use scientific names of plants.

Sampling Point: (2C)

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Prunus Serotina	100%		
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')			
1. Rubus (raspberry)	50%	X	
2. Pinus Strobus	25%		
3. Prunus Serotina (black cherry)	25%		
4.			
5.			
6.			
7.			
	= Total Cover		

Herb Stratum (Plot size: 5' radius)			
1. moss polytrichum	60%	X	
2. Solidago — 2-3' Narrow leaf alternate leaf	10%		
3. Carex — small clumping grass (tool 6)	10%		
4. (look alike)	10%		
5.	10%		
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	= Total Cover		

Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes _____ (No)

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

REPORT DOCUMENTATION PAGE

Form Approved
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January 2012	Final report	

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U.S. Army Corps of Engineers

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U.S. Army Engineer Research and Development Center
Environmental Laboratory
3909 Halls Ferry Road
Vicksburg, MS 39180-6199

8. PERFORMING ORGANIZATION REPORT NUMBER

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Headquarters U.S. Army Corps of Engineers
Washington, DC 20314-1000

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12. DISTRIBUTION / AVAILABILITY STATEMENT

Approved for public release; distribution is unlimited.

13. SUPPLEMENTARY NOTES

14. ABSTRACT

This document is one of a series of Regional Supplements to the Corps of Engineers Wetland Delineation Manual, which provides technical guidance and procedures for identifying and delineating wetlands that may be subject to regulatory jurisdiction under Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act. The development of Regional Supplements is part of a nation-wide effort to address regional wetland characteristics and improve the accuracy and efficiency of wetland-delineation procedures. This supplement is applicable to the Northcentral and Northeast Region, which consists of all or portions of 15 states: Connecticut, Illinois, Indiana, Maine, Massachusetts, Michigan, Minnesota, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, and Wisconsin.

15. SUBJECT TERMS

Delineation	Plant communities	Vegetation
Hydrology	Soil	Wetlands

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			19b. TELEPHONE NUMBER *(include area code)*
UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED		175	

Upland

SOIL

Sampling Point: L20

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-35+	Kaki Sand	100%					VF	medium grain Sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L, M)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: NA

Depth (inches): ___

Hydric Soil Present? Yes ___ No X

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: C20

Applicant/Owner: _____ State: _____ Sampling Point: _____

Investigator(s): _____ Section, Township, Range: _____

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	If yes, optional Wetland Site ID: _____

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

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? Yes _____ No X

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

Remarks:

REPORT DOCUMENTATION PAGE

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5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)

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7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

U.S. Army Engineer Research and Development Center
Environmental Laboratory
3909 Halls Ferry Road
Vicksburg, MS 39180-6199

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Approved for public release; distribution is unlimited.

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This document is one of a series of Regional Supplements to the Corps of Engineers Wetland Delineation Manual, which provides technical guidance and procedures for identifying and delineating wetlands that may be subject to regulatory jurisdiction under Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act. The development of Regional Supplements is part of a nation-wide effort to address regional wetland characteristics and improve the accuracy and efficiency of wetland-delineation procedures. This supplement is applicable to the Northcentral and Northeast Region, which consists of all or portions of 15 states: Connecticut, Illinois, Indiana, Maine, Massachusetts, Michigan, Minnesota, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, and Wisconsin.

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Hydrology
Plant communities
Soil
Vegetation
Wetlands

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UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED		175	

VEGETATION – Use scientific names of plants.

Sampling Point: C 20

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	10%		
2. Carya ovata	60%	X	
3. Fraxinus pennsylvanica	30%		
4.			
5.			
6.			
7.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. Honeysuckle Lonicera	15%		
2. Dogwood Cornus	70%	X	
3. Hammamelis Virginiana	15%		
4.			
5.			
6.			
7.			
	= Total Cover		

Herb Stratum (Plot size: 5' radius)			
1. Silver Fern	60%	X	
2. Sensitive Fern	40%		FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	= Total Cover		

Woody Vine Stratum (Plot size: 30')			
1. NA			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes X No

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____

Applicant/Owner: _____ State: _____ Sampling Point: _____

Investigator(s): _____ Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X No	**Is the Sampled Area within a Wetland?** Yes X No
Hydric Soil Present?	Yes X No	
Wetland Hydrology Present?	Yes X No	If yes, optional Wetland Site ID: _____

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

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): 1"

Water Table Present? Yes X No _____ Depth (inches): >1

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): >1

Wetland Hydrology Present? Yes X No

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

Remarks:

SOIL

Sampling Point: C20

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4"	10yr 2/1						VF	loam, Silt Sand
4-23"	10yr 4/3						F	Sandy Fine loam
23+	greyish brown	85%	7.5yr	8	C	M	Firm	
				7	D	m		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L, M)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Sandy Fine Loam Firm

Depth (inches): 23"

Hydric Soil Present? Yes X No ___

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: D(12) C(12)

Tree Stratum (Plot size:)		Absolute % Cover	Dominant Species?	Indicator Status
1. B	Beaked Elder	100%		
2.				
3.				
4.				
5.				
6.				
7.				
	= Total Cover			

Sapling/Shrub Stratum (Plot size: 15)				
1. Sambucus canadensis	Elderberry	60%		
2.	Beaked Elder	40%		
3.				
4.				
5.				
6.				
7.				
	= Total Cover			

Herb Stratum (Plot size:)				
1. Solidago	Canadian goldenrod	95%		
2. Cornus	Dogwood	2%		
3. Spiraea	Shrubby bush	2%		
4. Rubus	Blackberry	1%		
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
	= Total Cover			

Woody Vine Stratum (Plot size:)				
1.				
2.				
3.				
4.				
	= Total Cover			

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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

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

Hydrophytic Vegetation Present? Yes X No

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

Upland test not performed at location (end of runway) (lack of veg)

(D)

SOIL

Sampling Point: C/2

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2"	10yr 2/1						VF	loamy Fine Sand
2"-23"				60			VF	Sand medium Coarse

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- X Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
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- X Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
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Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L, M)**
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- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: ___

Depth (inches): 23"

Hydric Soil Present? Yes X No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: _____

Applicant/Owner: _____ State: _____ Sampling Point: D12 C12

Investigator(s): _____ Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

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

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

Hydrophytic Vegetation Present?	Yes X No	**Is the Sampled Area within a Wetland?** Yes X No
Hydric Soil Present?	Yes X No	
Wetland Hydrology Present?	Yes X No	If yes, optional Wetland Site ID: _____

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

HYDROLOGY

Wetland Hydrology Indicators:

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

- _ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
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- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
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- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes X	No _____	Depth (inches): 1'+
Water Table Present?	Yes X	No _____	Depth (inches): 1'+
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches): <20"

Wetland Hydrology Present? Yes X No

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

Remarks:

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. REPORT DATE (DD-MM-YYYY)	2. REPORT TYPE	3. DATES COVERED (From - To)
January 2012	Final report	

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5e. TASK NUMBER

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Environmental Laboratory
3909 Halls Ferry Road
Vicksburg, MS 39180-6199

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13. SUPPLEMENTARY NOTES

14. ABSTRACT

This document is one of a series of Regional Supplements to the Corps of Engineers Wetland Delineation Manual, which provides technical guidance and procedures for identifying and delineating wetlands that may be subject to regulatory jurisdiction under Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act. The development of Regional Supplements is part of a nation-wide effort to address regional wetland characteristics and improve the accuracy and efficiency of wetland-delineation procedures. This supplement is applicable to the Northcentral and Northeast Region, which consists of all or portions of 15 states: Connecticut, Illinois, Indiana, Maine, Massachusetts, Michigan, Minnesota, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, and Wisconsin.

15. SUBJECT TERMS

Delineation
Hydrology
Plant communities
Soil
Vegetation
Wetlands

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			19b. TELEPHONE NUMBER (include area code)
UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED		175	

Appendix 2 Archeological Assessments and Phase IB Investigations

The following items are provided in this Appendix:

1. Phase 1B Archeological Investigation, Hartness State Airport, Hartgen Archeological Associates, Inc., July 2015.

2. End-of-Field letter, Archeological Assessment and Phase 1B Investigation, Hartgen Archeological Associates Inc., October 17, 2014.

3. End-of-Field Letter for Limited Archaeological Phase II Evaluation, the University of Vermont, Consulting Archaeology Program, July 22, 2008.

HARTGEN
archeological associates inc

PHASE IB ARCHEOLOGICAL INVESTIGATION

Hartness State Airport

Town of Springfield
Windsor County, Vermont

HAA # 4776.21

Submitted to:

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July 2015

INTRODUCTION

Hartgen Archeological Associates, Inc. (Hartgen) conducted a Phase IB Archeological Investigation for the proposed improvements at Hartness State Airport located in the Town of Springfield, Windsor County, Vermont (Map 1). The Hartness State Airport was originally established in 1919, as the first airport in the State of Vermont. The airport property consists of a 185 acre (74.9 ha) parcel straddling the boundary between the Towns of Springfield to the south and Weathersfield to the north (Map 1). It is located approximately 0.6 kilometers (0.4 miles) north of the Village of North Springfield, and is situated between Route 106 to the west and the North Springfield Reservoir to the east.

In 1999, Hartgen completed an archeological assessment of the Hartness State Airport, as well as five other Vermont airport properties (Hartgen 1999). At that time, historic and precontact areas of archeological sensitivity were identified in order to streamline future development projects at the airport. The currently proposed improvements are located in four areas of archeological sensitivity, as designated by the 1999 archeological assessment, which are shown on Map 2. In Area 1, proposed work includes the construction of new airport buildings (hangars), as well as grading and paving of adjacent areas. The proposed improvements in Areas 2-4 primarily include tree-clearing.

The 2014 Phase IB investigation entailed the excavation of eighty-three 50 centimeter (1.6 ft) square shovel test pits within the four areas of archeological sensitivity. Several shovel tests were also excavated near the Fish and Wildlife buildings located at the southern end of the hangar buildings in anticipation of the construction of a new building in that locale (Map 2).

No precontact or significant historic artifacts or deposits were identified during the Phase IB testing. No further archeological investigation is recommended for the present proposed improvement projects.

ENVIRONMENTAL BACKGROUND

Environmental characteristics of an area are significant for determining the sensitivity for archeological resources. Precontact and historic groups often favored level, well-drained locations near wetlands and waterways. Therefore, topography, proximity to wetlands, and soils are examined to determine if there are landforms in the project area that are more likely to contain archeological resources. In addition, bedrock formations or other lithic sources may contain resources that may have been quarried by precontact groups. Other locations can also be special purpose sacred and traditional use sites. Soil conditions can provide a clue to past climatic conditions, as well as changes in local hydrology.

The airport property is located on a high relatively level broad terrace at an elevation of 176 meters (577 ft) above mean sea level (amsl). The project area is bordered by the Black River to the east and Baltimore Brook to the south. Both of these waterways are part of the Black River drainage which flows into the Connecticut River. To the northeast, the land drops approximately 33 meters (107 ft) in elevation down to the manmade reservoir on the Black River. To the southwest, the land drops less drastically down to Baltimore Brook. To the north the topography remains relatively level and uniform while the hill slope to the west rises sharply towards the high foothills of the Green Mountains.

Hartness State Airport is located the southern portion of the Vermont Piedmont physiographic region, characterized by deep river valleys, flat upland hills, and high isolated mountains bordered to the west by the Green Mountains and to the east by the Connecticut River Valley (Meeks 1986:5-7). At the maximum extent of glacial lakes, this area was part of the Connecticut Valley Lake and its outwash plain (Meeks 1986).

The airport borders the Brattleboro Syncline which parallels the Connecticut River Valley. The surficial geology is characterized by delta gravel and delta sand, deposited into glacial Lake Hitchcock. The bedrock of the project area is primarily the Bailey Mills tonalitic gneiss that consists of biotite-quartz-plagioclase gneiss (Radcliffe et al. 2011).

The central portion of the airport property is comprised of man-made fill which is clearly visible on the soils maps, broadly bordering the east-west runway (11-29), and explicitly demarcating the north-south runway (5-23). The predominant intact soil type at the airport property is comprised of the Adams soil series, ranging in slope from 0-15% (USDA 2015). These soils are commonly formed in sandy glaciofluvial or glaciolacustrine deposits on outwash plains, deltas, lake plains, moraines, terraces and eskers. The excessively drained soils are very deep to bedrock, and they often have low water retention capacity, tending toward droughtiness.

The general project vicinity is located in the transition zone between the Appalachian Oak Forest and the Northern Hardwood zone. The Appalachian Oak Forest is dominated by White and Northern Red Oak while the Northern Hardwoods are dominated by Sugar Maple, Beech, and Hemlock. Currently the heart of the project area is cleared landscaped grassland with mature forests dominated by hardwoods located in the avigation easements to the north, west, and east. There are a few planted stands of coniferous trees located on the fringes of the project area.

PRECONTACT SENSITIVITY

A review of the Archeological Inventory at the Vermont Division of Historic Preservation identified three precontact sites located within one mile of the airport property.

- Site VT-WN-48 is a small flake scatter located adjacent to the Black River, approximately one half mile southeast of the airport property.
- Site VT-WN-263 is an isolated find site containing two quartzite flakes located directly adjacent to the Black River, situated approximately 1,000 feet south of the airport runway.
- Site VT-WN-452 was identified based on the recovery of three pieces of lithic debitage, and a 'spurred" scraping implement, possibly dating to the Paleoindian period. The site is located on the airport property, several hundred feet north of the proposed hangar location in Area 1 (Map 2, Photo 1). Additional details about the findings at this site are outlined below, and the 2008 end-of-field report is included with this report as Appendix 1.

The airport's location near Baltimore Brook, and the Black River and its associated drainages suggests that the dearth of identified precontact sites in vicinity is more likely the result of a lack of archeological investigation than a lack of precontact use and occupation. The 1999 archeological assessment provided a VDHP predictive model form indicating the archeological sensitivity of the airport property. This was attributed to its location on a prominent high terrace cut by small stream drainages above the banks of the Black River. These level landforms, situated adjacent to streams or overlooking the river valley would have been attractive to precontact people for small hunting camps.

It was noted that score may have been much higher were it not for the extent of the disturbances in the area from airport construction. Historically, there were likely additional streams and wetlands in the area that were affected – removed or diverted - by airport construction. The extant wetlands and waterways in the project vicinity, including the Black River and Baltimore Brook, are all located at the periphery of the airport property. The assessment indicated that the primary precontact sensitivity areas were located along the borders of the airport property and in avigation easements

PHASE IB ARCHEOLOGICAL INVESTIGATION

The Phase IB archeological field survey was conducted on September 4, 16, 17, and 22-24, 2014 by a crew of Hartgen archeologists. The survey entailed the excavation of 83-50 centimeter (1.6 ft) square shovel test pits (STPs) systematically placed at 10 meter (33 foot) intervals, within the four sensitivity areas, and one Fish and Wildlife Building area, described above and shown on Map 2.

Excavation of shovel tests was conducted with hand tools, including shovels and trowels. All of the shovel tests were excavated into an intact C horizon subsoil. The deposits were excavated by natural strata, and cultural materials recovered from the excavations were assigned to the soil stratum from which they were obtained. Modern artifacts and trash were noted and discarded. Stratigraphic profiles of each shovel test were photographed and recorded with soil type, Munsell color, depths, and artifacts encountered. Photographs were taken characterizing the project area and archeological excavations.

Fish and Wildlife Building Area

A new structure is proposed to be constructed in the present location of the Fish and Wildlife buildings, situated southeast of the southernmost airport hangar. While this area was not specifically designated as a sensitivity area in archeological resource assessments, the project engineer, Heath Marsden, requested that shovel tests be excavated in order to determine whether any intact archeological deposits could potentially be present and affected by the proposed construction. The area is presently level grass lawn in front of the Fish and wildlife buildings, on a terrace above a dry stream channel to the west.

Four shovel tests were excavated in the grass lawn areas adjacent to the Fish and Wildlife buildings (Map 3, Photos 10 and 11). The two shovel tests excavated on the northern property exhibited a 10YR3/3 dark brown fine sand loam with dense gravels plow zone topsoil, below which was 7.5YR 4/6 strong brown B horizon of fine sand and gravels. The subsoil consisted of a 10YR5/8 yellowish brown fine sand with small gravel. The two shovel tests excavated on the southern lawn encountered a thick layer of banded coarse sand fill overlying a buried A horizon plow zone. The buried A horizon contained a number of modern artifacts, including brick, coal, and macadam, indicating the relatively recent deposition of fill in the area. Beneath the buried A horizon was a 10YR6/4 light yellowish brown fine sand spodosol soil situated over a 10YR 5/8 yellowish brown find sand subsoil.

No precontact material was identified within the shovel test excavations in the Fish and Wildlife Building Area. No further archeological investigation is recommended in this area.

Area 1

The airport property line is proposed to be altered in the area north of the airport terminal and hangar, due east of Runway 11 (Map 2). The property line would be extended northward to encompass a parcel of land on which new airport buildings will be constructed. This entire area would also be graded and paved. Based on the EA project plans map, the proposed area of potential disturbance within the sensitivity area measures approximately 200 feet north-south by 600 feet east-west, encompassing an area of approximately 2.75 acres (1.11 ha).

In the 1999 archeological assessment, this general area was determined to be sensitive for precontact resources because of its location on a high level terrace overlooking Baltimore Brook (Photo 1). During archeological testing conducted by the University of Vermont Consulting Archaeology Program (UVM CAP), a precontact site -VT-WN-452 was identified, based on the recovery of three pieces of lithic debitage, and a "spurred" scraping implement, possibly dating to the Paleoindian period. In 2008, a limited archeological Phase II evaluation of site VT-WN-452 was conducted by UVM CAP for the proposed Hartness State Airport Hangar Expansion and Access Road project (UVM CAP 2008). Based on the excavation of 67 shovel test pits located east of the site, in which no precontact material was recovered, it was determined that the Native American site VT-WN-452 did not extend into the western portion of the proposed airport project's APE (Appendix 1).

The present Phase IB archeological investigation conducted by Hartgen included the excavation of four shovel test pits in the location of the proposed new hangar building, directly adjacent to the northernmost hangar (Map 4, Photo 2). The visual inspection of this area suggested that it had been graded and leveled during earlier phases of construction for the hangars, adjacent taxiway and nearby runway. The excavation of the four shovel tests substantiated this evaluation, with the soil stratigraphy comprised of hardpacked silt and cobble fill overlying subsoil.

No intact natural soil stratigraphy was identified within the APE for the hangar construction and no precontact cultural material recovered. No further archeological study is recommended for this portion of the APE.

Area 2

Tree clearing is proposed at the north end of Runway 23, located outside of the airport property line (Map 2). The proposed tree clearing will be conducted to maintain a clear viewshed along the runway alignment, and may entail the clearing of trees in an area measuring approximately 1,500 feet (457 m) north-south in length (continuing along the Runway 23 alignment) and measuring between 300 to 600 feet (91.4 to 183 m) in width (10 to 20 acres/4.2 to 8.4 ha).

This runway approach area was designated as archeologically sensitive in the 1999 Hartgen assessment, as it appears to be a relatively undisturbed elongated terrace landform located adjacent to and overlooking the Black River and the North Springfield Reservoir. The entire sensitivity area is designated as Sensitivity Area 2. Because the tree clearing activities are proposed only for the southern half of Sensitivity Area 2, the archaeological testing was limited to this area, as shown on Maps 1 and 2.

Area 2 contains sections of sloping terrain near gullies and drainages, as well as level, elevated terraces. The southernmost end of Area 2, located directly north of the runway outside of the airport perimeter fence, has previously been mined for sand and clearcut (Photo 3). The terrain considered to maintain the highest precontact sensitivity in Area 2 are level terraces close to the edge of the landform overlooking seasonal draws or the Black River valley (Photo 4).

A total of 38 shovel test pits was excavated in areas considered to have precontact archeological sensitivity in the southern half of Area 2 (Map 5). The areas of high archeological sensitivity included level and slightly rounded terraces and fingers of land near heads of drainages and situated adjacent to ravines with seasonal drainages (Photo 5). The excavation of shovel tests revealed natural soil stratigraphy in all the areas surveyed. There was some variation in the soils encountered, but a general soil profile included a 10YR2/1 black to a 10YR3/3 dark brown fine sand loam topsoil and forest duff overlying a 7.5YR 5/3 brown to a 10YR5/6 yellowish brown fine sand loam B horizon over a 10YR6/6 brownish yellow to a 7.5YR4/6 strong brown fine sand C horizon.

No precontact cultural material was encountered in the excavated shovel tests. Because there will be limited effects to the ground surface by the proposed tree clearing, it is recommended that the proposed project proceed with no further archeological investigation. If future projects are planned within the northern half of Sensitivity Area 2, an archeological assessment of the specific project effects should be made, as there are potentially sensitive archeological areas located within the remaining portion of this elongate and complex landform.

Area 3

Tree clearing for runway approach safety has been completed at the western end of Runway 5, on the west side of Route 106 (Map 2). This area is considered archeologically sensitive as it constitutes a level terrace overlooking Baltimore Brook. This wooded parcel is bound to the north and east by the Springfield Fence Company property, to the south by Baltimore Brook, and to the west by a housing development *cul-de-sac* and farmland (Photo 6). Some portions of the level terrace had been previously disturbed by earthmoving activities associated with the construction of the fence company buildings and its operations (Photo 7). A total of 16 shovel test pits was excavated in undisturbed areas on this stream terrace (Map 6, Photo 8).

The shovel test soils were relatively consistent throughout this area, exhibiting a natural soil profile. A 10YR3/3 dark brown fine sand topsoil with rounded gravels and cobbles overlay a 7.5YR4/6 strong brown loam sand spodosol with rounded gravels and cobbles. The subsoil was evident as a dense sand with rounded gravel and cobbles that ranged in color from 10YR5/8 yellowish brown to a 7.5 YR5/8 strong brown.

No precontact material was identified within the shovel test excavations in Area 3. No further archeological investigation is recommended in this area.

Area 4

Tree clearing is proposed outside of the airport property line, north of Runway 11, on the opposite bank of Baltimore Brook (Map 2). Sensitivity Area 4 is comprised of one large level terrace and two smaller terraces, one situated above, and the other situated below, the large terrace (Photo 9). To the east and south, the land slopes steeply downward to Baltimore Brook and an associated wetland. This area is located across the brook and wetland from Site VT-WN-452, situated on a similar terrace landform, at a similar elevation. This wooded parcel is bound to the north by an open farmhouse yard and field and to the west by the yards and buildings of a 20th-century housing complex.

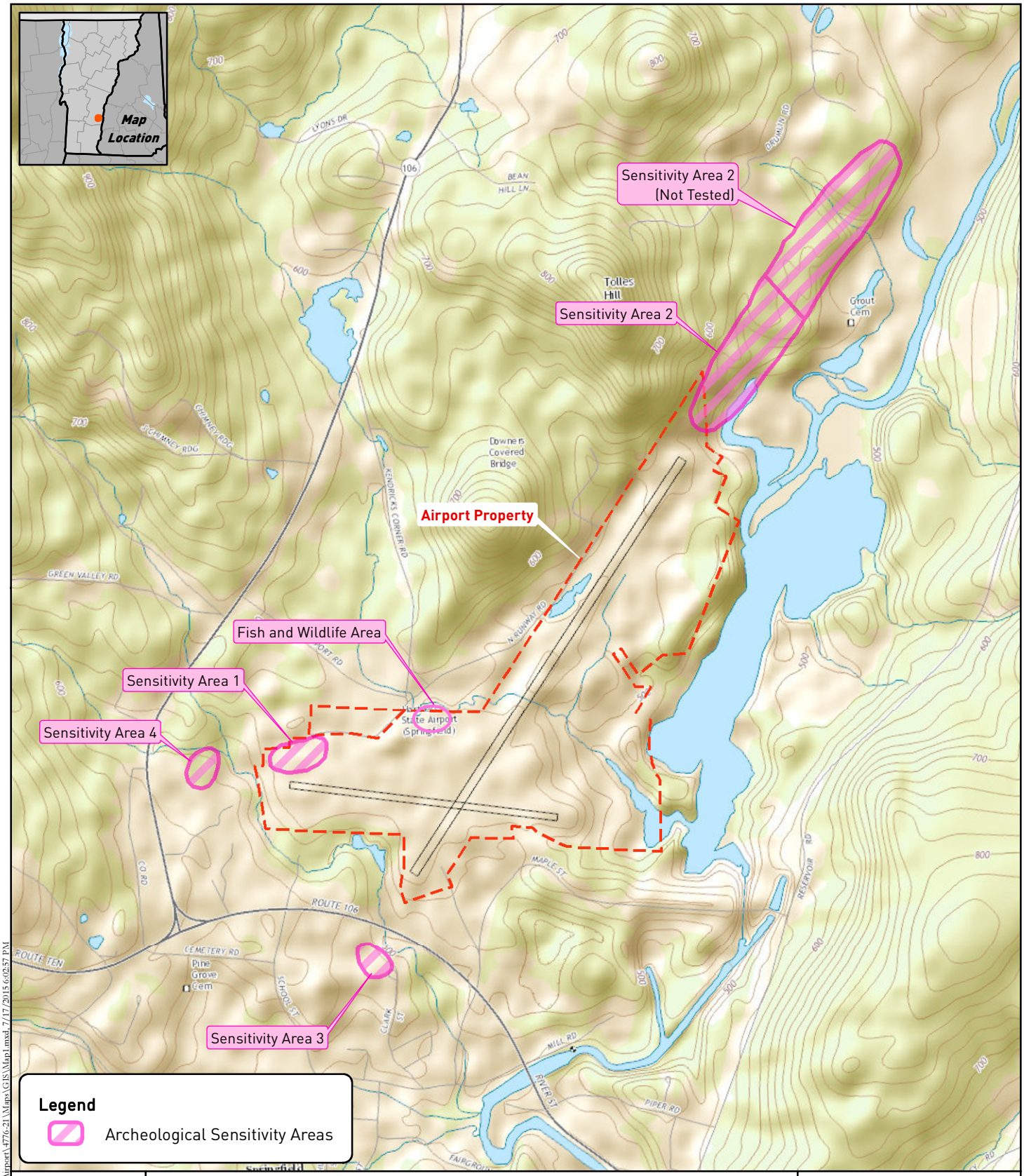
A total of 21 shovel test pits was excavated in undisturbed areas on these terraces (Map 4). The shovel test soil stratigraphy was relatively consistent throughout this area, and indicated a relatively undisturbed natural soil profile. A 10YR3/2 very dark grayish brown fine silt forest duff overlay a 10YR4/4 dark yellowish brown fine sand loam topsoil and a 10YR5/6 yellowish brown medium coarse sand. The subsoil was comprised of a 10YR4/6 dark yellowish brown very coarse sand and gravel.

No precontact material was identified within the shovel test excavations in Area 4. No further archeological investigation is recommended in this area.

SUMMARY AND RECOMMENDATIONS

The Phase IB archeological survey conducted for the proposed improvements at the Hartness State Airport identified no precontact artifacts or potentially significant historic deposits. No further archeological investigation is recommended for the portions of the APE tested in this Phase IB investigation.

Maps



750 0 750 1,500 Feet

220 0 220 440 Meters

Note: Contour interval is 20 feet.

Project Location (USGS 2013)

HARTGEN archeological associates inc

Map 1

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BUILDING DATA			
BUILDING #	NAME	HEIGHT (MSL)	HEIGHT (AGL)*
1	BUILDING (STATE OWNED)	599'	22.5'
2	HANGAR (STATE OWNED)	602'	25.4'
3	T-HANGAR (STATE OWNED)	599'	22.4'
4	TERMINAL BUILDING	598'	20.3'
5	HANGAR (STATE OWNED)	604'	27'
6	HANGAR (PRIVATE)	603'	27'
7	HANGAR (PRIVATE)	604'	28'
8	HANGAR (PRIVATE)	604'	27.3'
9	HANGAR (PRIVATE)	608'	30.7'
10	HANGAR (PRIVATE)	600'	22.6'
11	BUILDING (VT. FISH & WILDLIFE)	596'	22'
12	HANGAR (PRIVATE)	601'	28'
13	T-HANGAR (TO BE REMOVED)	600'	25'
14	CAP (CIVIL AIR PATROL)	590'	13'
15	BUILDING TO BE REMOVED	608'	32'
16	BUILDING TO BE REMOVED	597'	22'
17	BUILDING (STATE OWNED)	600'	25'
18	ELECTRICAL VAULT	586'	9'
A	PROPOSED TERMINAL	634' MAX	-
B	PROPOSED HANGARS (56'x62')	675' MAX	-
C	PROPOSED HANGAR (140'x120')	665' MAX	-
D	PROPOSED HANGAR (140'x140')	665' MAX	-
E	PROPOSED HANGARS (280'x52')	634' MAX	-
F	PROPOSED HANGARS (62'x65')	683' MAX	-
G	PROPOSED HANGARS (40'x50')	630' MAX	-
H	PROPOSED HANGARS (64'x59')	631' MAX	-
I	PROPOSED HANGARS (50'x70')	631' MAX	-

Sensitivity Area 4
21 STPs

Sensitivity Area 1
4 STPs

Fish and Wildlife Building
4 STPs

Sensitivity Area 2
38 STPs

Sensitivity Area 2
Not Tested

Sensitivity Area 3
16 STPs

100 0 100 200 Feet

30 0 30 60 Meters

Legend

Archeological Testing Areas

Project Map
(Jacobs 2014)

HARTGEN archeological associates inc

Map 2

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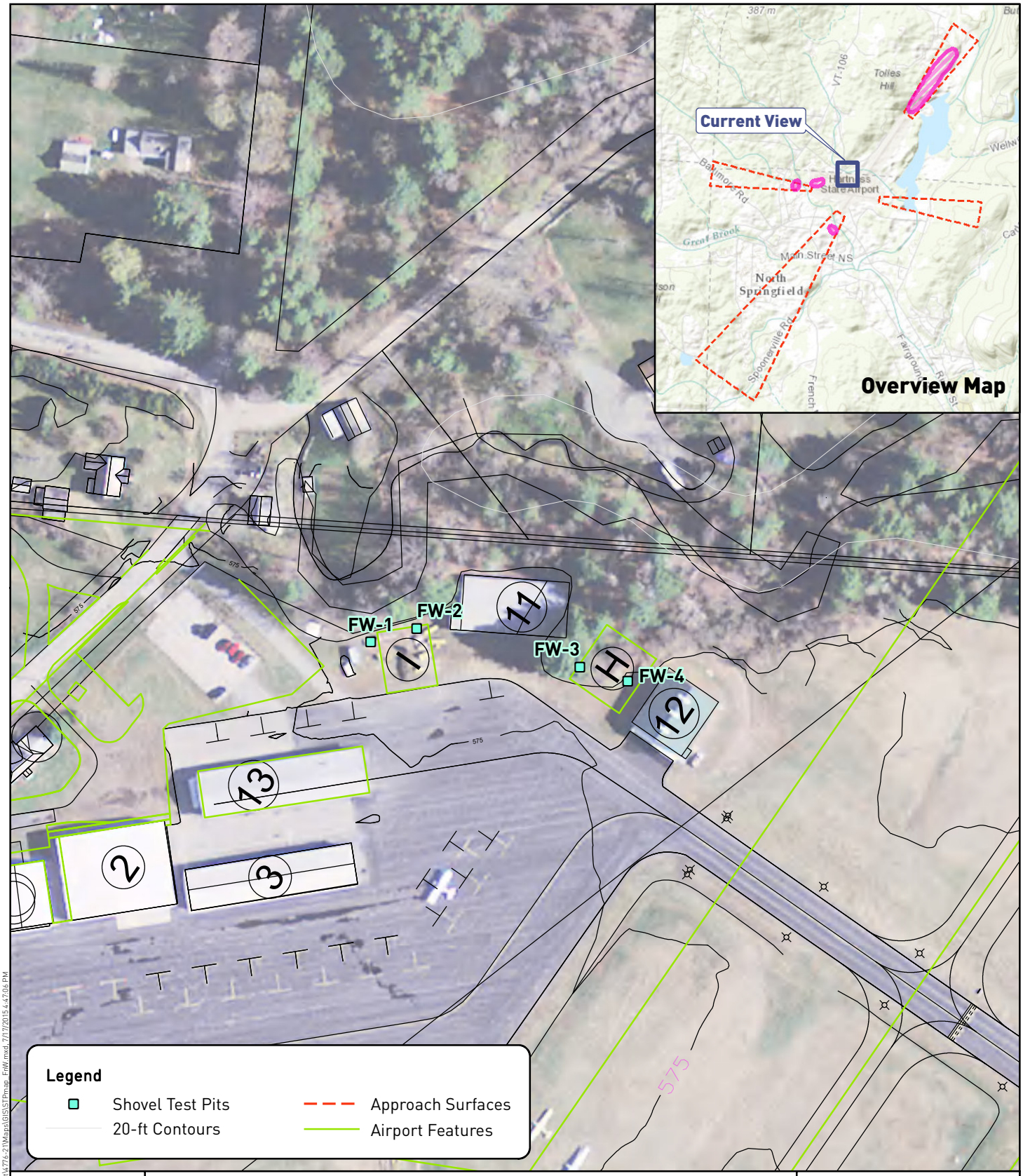

20 0 20 40 Meters

65 0 65 130 Feet

Fish and Wildlife Area
(Hartgen 2014;
Jacobs Engineering Group Inc.2014;
Esri Inc. 2014)

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archeological associates inc

Map 3

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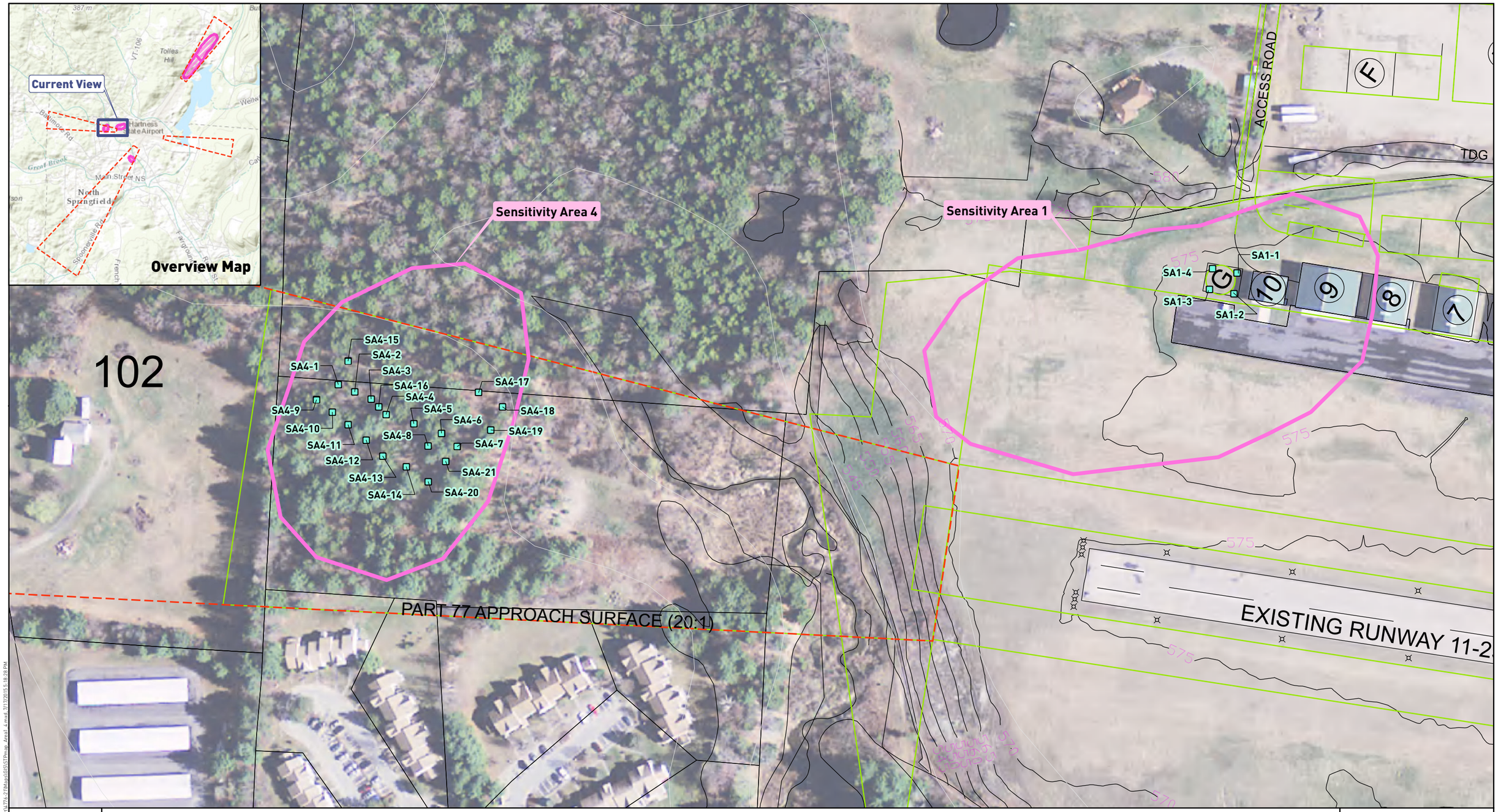

Archeological Sensitivity Areas 1 and 4 Map
(Hartgen 2014; Jacobs Engineering Group Inc.2014; Esri Inc. 2014)

HARTGEN archeological associates inc

Map 4

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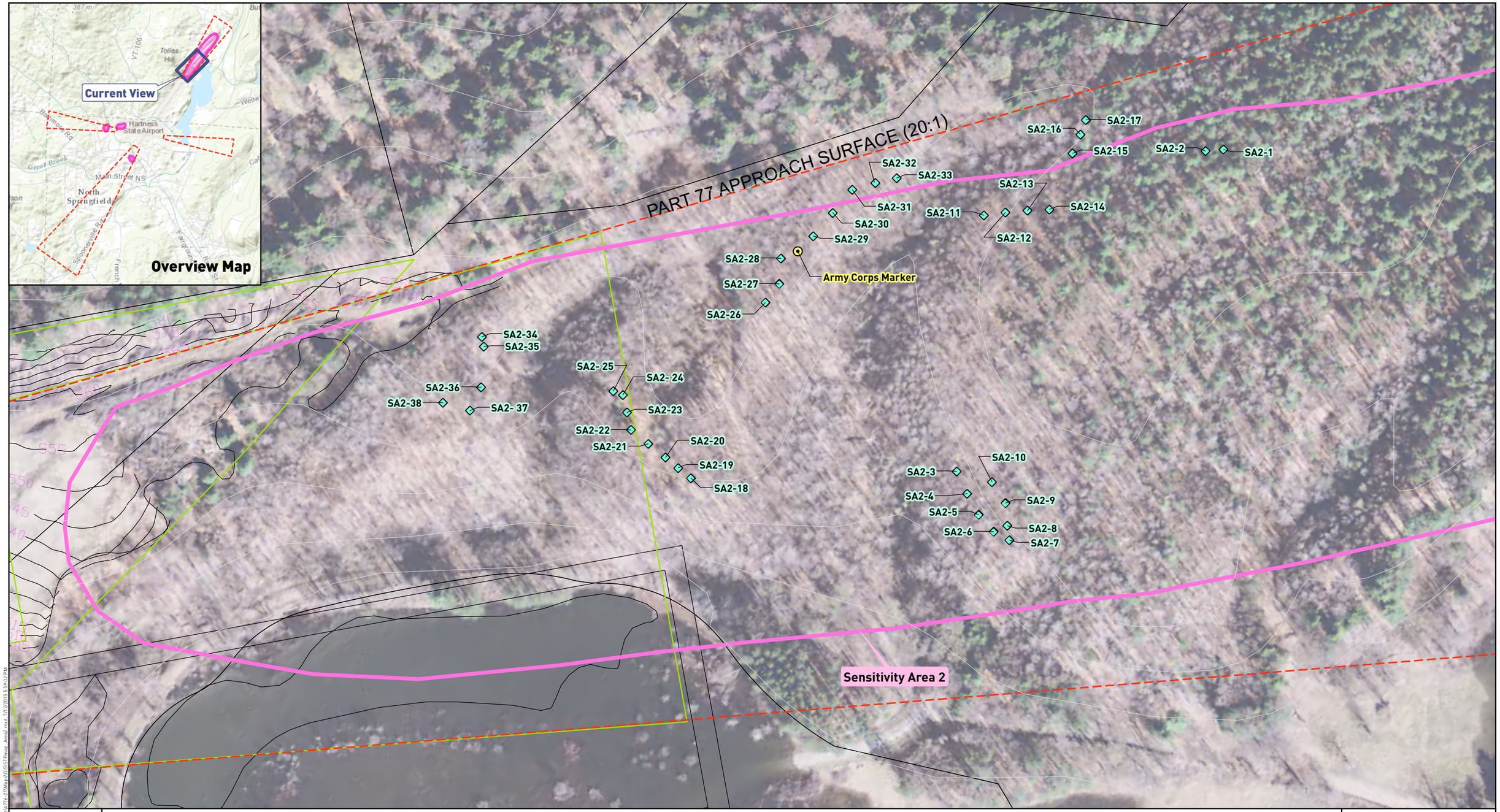
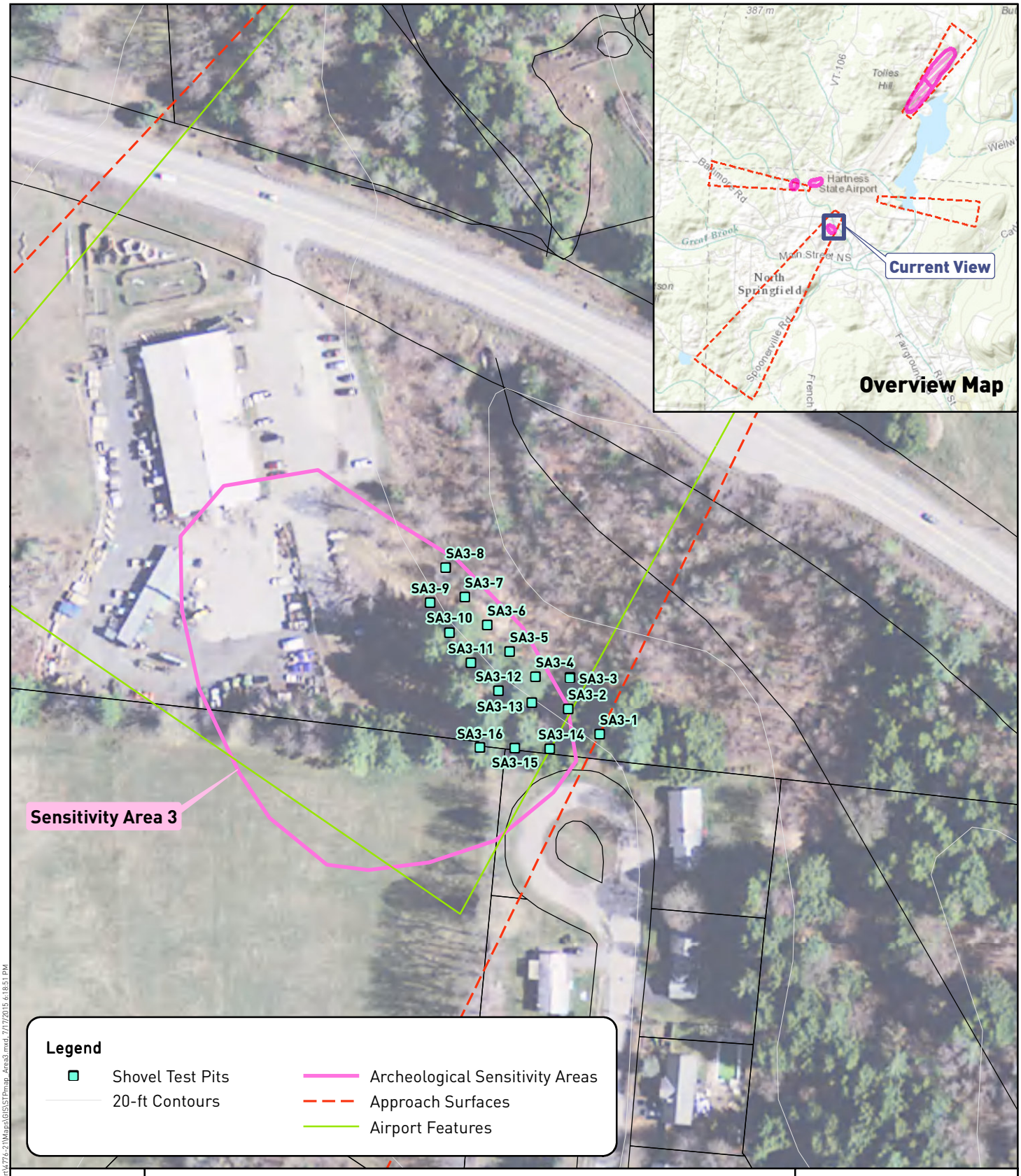


Archeological Sensitivity Area 2 Map
(Hartgen 2014; Jacobs Engineering Group Inc.2014;
Esri Inc. 2014)

HARTGEN archeological associates inc

Map 5



Archeological Sensitivity Area 3 Map
(Hartgen 2014;
Jacobs Engineering Group Inc.2014;
Esri Inc. 2014)

HARTGEN archeological associates inc

Map 6

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Photographs

Photo 1. Photo shows the general location of Site VT-WN-452, located north of the Area 1 project area. View is to the west.

Photo 2. Shovel testing in the proposed location of a new hangar in Area 1. View is to the east..

Photo 3. The southern end of Area 2 which had been previously mined for sand. View is to the north.

Photo 4 Photo shows the edge of one of the terrace landforms where shovel tests were excavated in Area 2. View is to the east.

Photo 5. Photo shows a wide terrace where shovel tests were excavated in Area 2. View is to the northeast.

Photo 6. Photo shows the southern end of Area 3 and housing division cul-de-sac in the background. View is to the south.

Photo 7. Photo shows evidence of ground disturbance at the western end of Area 3 near the fence company operation. View is to the northwest.

Photo 8 Photo shows a portion of the level terrace landform located in Area 3. View is to the southeast.

Photo 9. Photo shows the level terrace landform that was tested in Area 4. View is to the west.

Photo 10. Photo shows the excavation of a shovel test near the northern Fish and Wildlife Building. View is to the north

Photo 11. Photo shows the location of shovel tests excavated near the southern Fish and Wildlife Building. View is to the east.

Appendix I: UVM Report

The UNIVERSITY of VERMONT

CONSULTING ARCHAEOLOGY PROGRAM

July 22, 2008

Jeannine Russell-Pinkham
Vermont Agency of Transportation
National Life Building, Drawer 33
Montpelier, VT 05633-5001

RE: End-of-Field Letter for Limited Archaeological Phase II Evaluation for site VT-WN-452 within the Hartness State Airport, Hanger Expansion and Access Road (PIN #07P061) Project Area, Springfield, Windsor County, Vermont

Dear Jen:

On July 2nd and 3rd, 2008, the University of Vermont Consulting Archaeology Program (UVM CAP) conducted a limited archaeological Phase II evaluation of site VT-WN-452 within the proposed Hartness State Airport Hanger Expansion and Access Road project area, in Springfield, Windsor County, Vermont (Figure 1). Site VT-WN-452 was first identified by the UVM CAP in November, 2007, during a Phase I site identification survey of the project's Area of Potential Effects (APE) (Figure 2). The APE included an archaeologically sensitive portion of the landform that was initially defined and buffered by Hartgen Archaeological Associates, Inc. in 2004. The buffer encompassed an area northwest of existing runway 11-29 and included a prominent terrace edge overlooking a tributary to the Black River.

In accordance with the Section 106 review process, the Phase I archaeological investigation was designed to determine the presence/absence of Native American cultural deposits within sensitive portions of the project envelope. As a result, site VT-WN-452 was recorded in the Vermont Archaeological Inventory (VAI) based on the recovery of four lithic artifacts from four separate test pits within the project parcel (see Figure 2). A fifth test pit produced one burned bone fragment, possibly attributable to prehistoric Native American cooking activity.

Following the Phase I investigation, a review of the project design plans indicated that the main site area could be avoided by construction. As a result, a limited archaeological Phase II site evaluation was proposed to determine whether or not the site extends east into the presently defined APE required for proposed hanger and associated roadway construction. The results of the limited Phase II study are presented below.

Methods and Results

For the purposes of the limited Phase II site evaluation, nine linear transects containing a total of 67, 50 x 50 cm (20 x 20 in) test pits, were used to sample the eastern portion of the project parcel (Figure 3). The Phase II survey encompassed an

approximate 50 x 40 m (164 x 131 ft) area immediately east of the Phase I investigation leading up to the existing hangers and roadway. The majority of the test pits were spaced at 5 m (16 ft) intervals along eight linear parallel transects (TR 10-16, and 18), oriented on the same grid angle used during the Phase I survey (see Figure 3). Transect 17, which contained two test pits spaced 10 m (33 ft) apart, was used to confirm disturbed soil profiles in an area of graded fill nearest the most recent hanger construction (see Figure 3).

All test pits were excavated in 10 cm vertical levels with respect to natural stratigraphic soil horizons. Most of the excavations terminated at an average depth of 50-60 cm (20-24 in) below the ground surface. In a few cases, test pits ranged from shallower, ca. 30 cm (12 in), to deeper, ca. 90 cm (35 in) depths below the ground surface depending on the presence of shallow impenetrable bedrock or upper fill deposits. Soils were sieved through 6.4 mm (1/4 in) mesh hardware cloth, and stratigraphic soil profiles were recorded for all excavations according to both texture and Munsell chart colors.

Soil types generally ranged from dark brown fine sandy loam in the upper plow-disturbed horizon, to yellowish brown and light olive brown medium sand in the intact subsoil. The stratigraphic soil profiles revealed an average 20-30 cm (8-12 in) thick plow zone followed by intact "B" and "BC" subsoils. Increasingly extensive fill deposits were encountered within 10-12 m (33-39 ft) of the end of the existing tarmac/hangers. Excavations along Transect 17, on the leveled "hanger platform", revealed hard compact fill mixed with large gravel and asphalt reaching a depth of 60 cm (24 in) or more. Efforts to core deeper could not be performed due to the compact and rocky nature of the fill layer.

Though the eastern portion of the project's APE was sampled extensively, no definitive pre-Contact era Native American cultural deposits were recovered during the Phase II investigation. Fragments of burned bone were recovered from several test pits throughout the sampled area, yet all were identified within the upper, plow-disturbed horizon. Furthermore, one test pit which contained multiple fragments of burned bone also yielded a piece of melted glass. Finally, no lithic artifacts, fire affected rock fragments, or cultural fire hearth features were identified to link the burned bone to pre-Contact era Native American cultural activity. Ultimately, based on these indications, it seems most probable that the burned bone and melted glass are the result of the same historic era burn event.

Conclusions and Recommendations

Based on the results of the limited Phase II archaeological investigation for the proposed hanger expansion and access road project, Native American site VT-WN-452 does not extend into the western portion of the proposed project's APE.

In review, the lithic artifacts recovered during the Phase I survey appear to represent material processing and/or tool refurbishment activities. These activities are likely associated with a temporary encampment focused along the western edges of the alluvial terrace. The recovered inventory includes "a 'spurred' scraping implement temporally diagnostic of the Paleoindian period, ca. 9500-7000 B.C., and three specimens of lithic debitage produced as a byproduct of stone tool manufacture. Preliminary analysis of the three debitage specimens suggests that one may be derived from a source

located in southeastern Pennsylvania, and two may be derived from Little Mount Ascutney, located roughly 5 miles to the north near a small tributary of the North Branch of the Black River. The 'spurred' scraper has been exposed to intense heat, as [indicated by] a large spall that has been removed from the ventral surface of the tool," (Crock 2008: 2, Phase II Scope of Work).

Ultimately, based on the distribution of the known artifact scatter, site VT-WN-452 minimally encompasses 400 m^2. Because the site remains potentially significant and is likely to contain additional deposits, and tighter interval Phase II-level testing has not been conducted in the immediate site area, it is recommended that the entire Phase I survey area be avoided during proposed construction activities (Figure 4). Pin flags marking the locations of the Phase I test pits were left in place as an indicator of the area to be protected.

Because no additional prehistoric Native American cultural deposits were identified during extensive sampling of the eastern portion of the project parcel, no further archaeological work is recommended in the area covered by the limited Phase II testing (see Figure 4). All Phase II pin flags were pulled to reflect the cleared portion of the project's APE between the end of the existing roadway and Phase I Transect 9. Pin flags were left in place in and around the VT-WN-452 site area Should construction be required to the west of Transect 9 (see Figures 2-4), additional archaeological work will be necessary to provide a better assessment of the site's size, function, age, integrity, and potential eligibility for inclusion on the National Register of Historic Places (NRHP).

Thank you for working with us on this project. We appreciate your patience and cooperation over the course of our investigation. Please feel free to contact us anytime if you have any questions regarding the results of this study.

Sincerely,

Andrew M. Fletcher
Research Supervisor

John G. Crock, Ph.D.
Director

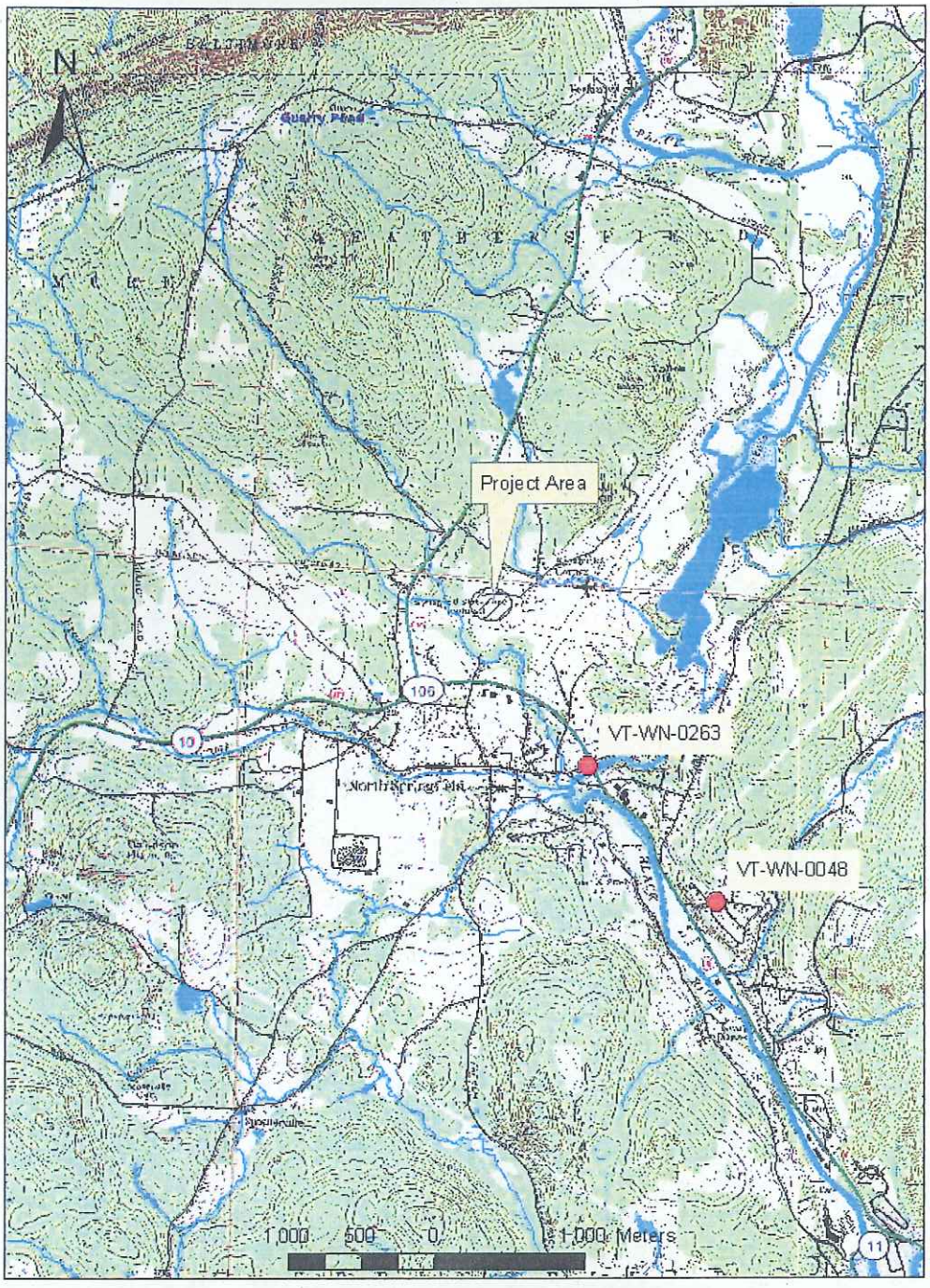

Figure 1. USGS map showing the location of the Hartness Airport project area and previously recorded archaeological sites known nearby.

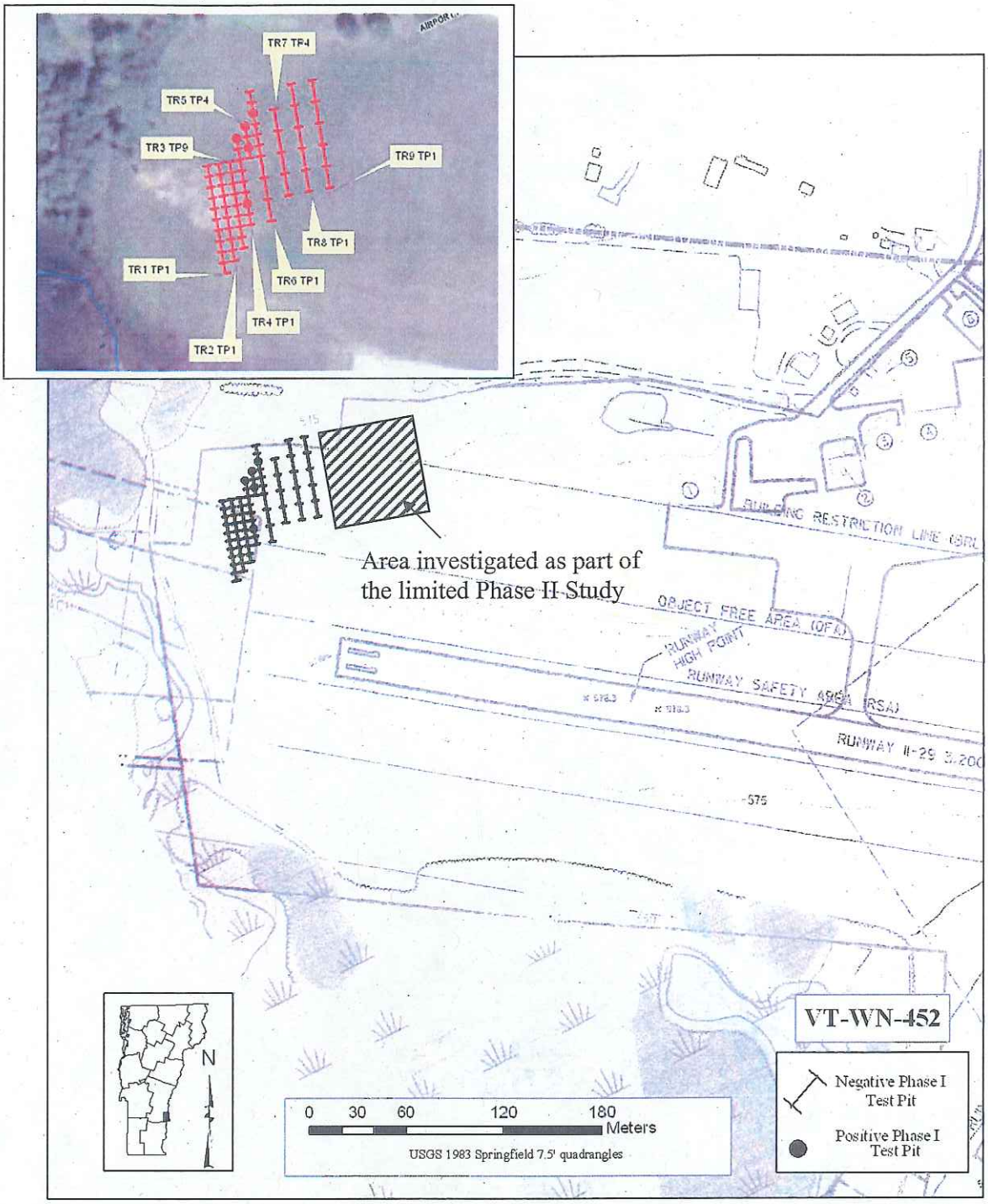

Figure 2. Project map and aerial photo insert showing the location of previously completed Phase I Survey transects and location of site VT-WN-452 relative to existing conditions at the Hartness Airport in Springfield, Vermont. Note approximate extent of the area studied during the recently completed limited Phase II investigation.

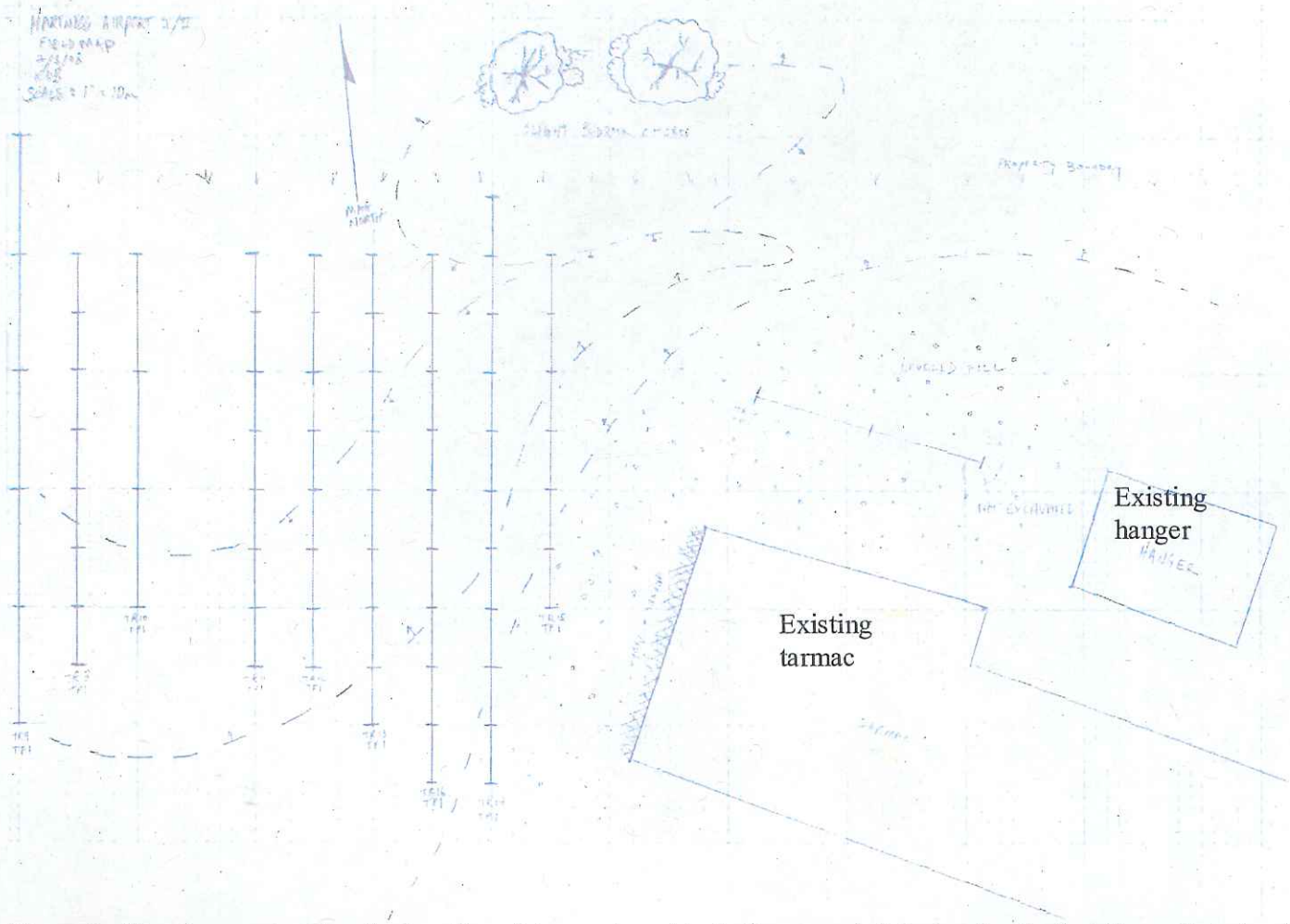

Figure 3. Sketch map showing the location of transects and test pits excavated during the limited Phase II study of the site VT-WN-452. Note that all but TR9, the westernmost transect shown, were completed during the limited Phase II field work. Area east of easternmost north-south transect, TR1 5, disturbed by existing tarmac and hanger area.

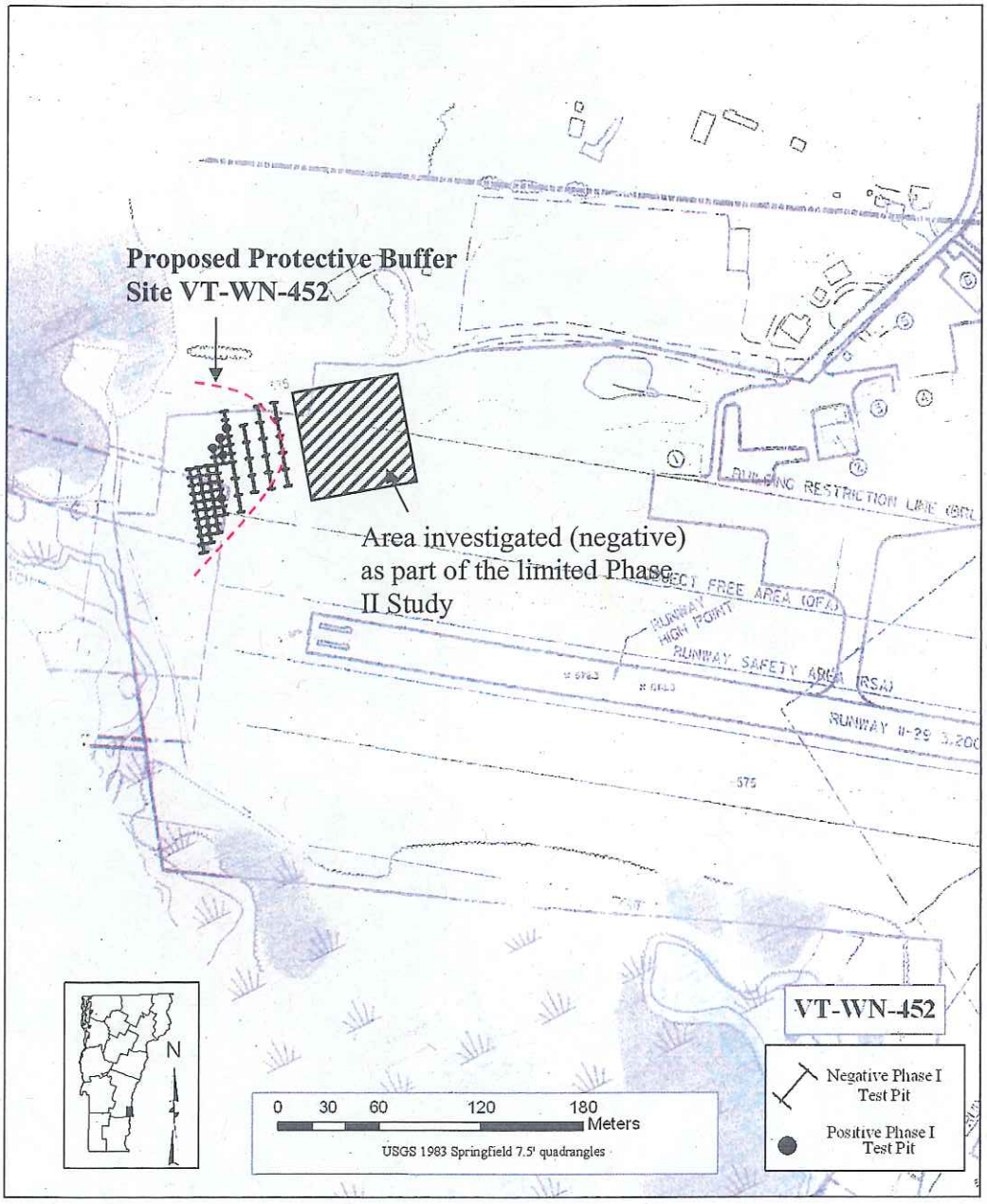

Figure 4. Project map showing the proposed protective buffer around the known extents of site VT-WN-452 within the Hartness Airport project area, Springfield, Vermont.

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October 17, 2014

Elise Manning Sterling
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Jacqueline Dagesse, PMP
EIV Technical Services
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jdagesse@eivtech.com

Subject: End-of-Field Letter, Archeological Assessment and Phase IB Investigation
Environmental Assessment of Hartness State Airport
Town of Springfield, Windsor County, Vermont

Dear Jacquie,

Hartgen Archeological Associates, Inc. (Hartgen) recently conducted a Phase IB Archeological Investigation for the Environmental Assessment (EA) and proposed improvements to Hartness State Airport, located in the Town of Springfield, Windsor County, Vermont (Map 1). The archeological investigation is being performed in support of Section 106 of the National Historic Preservation Act (NHPA). The investigation is performed to all relevant standards and guidelines of the State of Vermont. The project will be under review by the Vermont Agency of Transportation (VTrans).

The Phase IB investigation entailed the excavation of eighty-three 50 cm. square shovel test pits within four areas of archeological sensitivity, as designated by an archeological resources assessment conducted by Hartgen in 1999, and shown on Map 2. The proposed improvements in Area 1 include the construction of new airport buildings (hangars), as well grading and paving of adjacent areas. The proposed improvements in Areas 2-4 primarily include tree-clearing. Also, at the request of the project engineer, several shovel tests were excavated near the Fish and Wildlife buildings located at the southern end of the hangar buildings in anticipation of the construction of a new building in that locale.

PHASE IB ARCHEOLOGICAL INVESTIGATION

The Phase IB archeological field survey was conducted on September 4, 16, 17, and 22-24, 2014 by a crew of Hartgen archeologists. The survey entailed the excavation of 83-50 cm square shovel test pits (STPs) systematically placed at 10 meter (33 foot) intervals, within the four sensitivity areas, and one Fish and Wildlife Building area, described above and shown on Map 2. Excavation of shovel tests was conducted with hand tools, including shovels and trowels. All of the shovel tests were excavated into an intact C horizon subsoil. The deposits were excavated by natural strata, and cultural materials recovered from the excavations were assigned to the soil stratum from which they were obtained. Modern artifacts and trash were noted and discarded. Stratigraphic profiles of each shovel test were photographed and recorded with soil type, Munsell color, depths, and artifacts encountered. Photographs were taken characterizing the project area and archeological excavations.

Area 1

The airport property line is proposed to be altered in the area north of the airport terminal and hangar, due east of Runway 11. The property line would be extended northward to encompass a parcel of land on which new airport buildings will be constructed. This entire area would also be graded and paved. Based on the EA project plans map, the proposed area of potential disturbance within the sensitivity area measures approximately 200 feet north-south by 600 feet east-west, encompassing an area of approximately 2.75 acres.

In the 1999 archeological assessment, this general area was determined to be sensitive for precontact resources because of its location on a high level terrace overlooking Baltimore Brook, a tributary of the Black River (Hartgen 1999). During archeological testing conducted by University of Vermont Consulting Archaeology Program (UVM CAP), a precontact site -VT-WN-452 was identified, based on the recovery of three pieces of lithic debitage, and a 'spurred" scraping implement, possibly dating to the Paleoindian period. In 2008, a limited archaeological Phase II evaluation of site VT-WN-452 was conducted by UVM CAP for the proposed Hartness State Airport Hangar Expansion and Access Road project (UVM CAP 2008). Based on the excavation of 67 shovel test pits located east of the site, in which no precontact material was recovered, it was determined that the Native American site VT-WN-452 did not extend into the western portion of the proposed airport project's APE.

The present Phase IB archeological investigation conducted by Hartgen included the excavation of four shovel test pits in the location of the proposed new hangar building, directly adjacent to the northernmost hangar. The visual inspection of this area suggested that it had been graded and leveled during earlier phases of construction for the hangars, adjacent taxiway and nearby runway. The excavation of the four shovel tests substantiated this evaluation, with the soil stratigraphy comprised of hardpacked silt and cobble fill overlying subsoil.

No intact natural soil stratigraphy was identified within the APE for the hangar construction and no precontact cultural material recovered. No further archeological study is recommended for this portion of the APE.

Area 2

Tree clearing is proposed at the north end of Runway 23, located outside of the airport property line. The proposed tree clearing will be conducted to maintain a clear viewshed along the runway alignment, and may entail the clearing of trees in an area measuring approximately 1,500 feet north-south in length (continuing

along the Runway 23 alignment) and measuring between 300 to 600 feet in width (10 to 20 acres). This area is designated as Area 2 on Map 2.

This runway approach area was designated as archeologically sensitive in the 1999 Hartgen assessment, as it appears to be relatively undisturbed and is located adjacent to and overlooking the Black River and the North Springfield Reservoir. Based on the site visit and study of topographic maps of this area, there are sections of sloping terrain near gullies, or drainages, as well as level, elevated terraces. A total of 38 shovel tests were excavated in the areas of highest archeological sensitivity, which included level and slightly rounded terraces and fingers of land near heads of drainages and situated adjacent to ravines with seasonal drainages. The areas tested were considered to constitute the areas of highest archeological sensitivity, but should be considered only a sample of this very large project area. There may be other smaller terraces and fingers of land overlooking ravines or heads of drainage that could be considered archeologically sensitive that were not tested.

The excavation of shovel tests revealed natural soil stratigraphy in all the areas surveyed. There was some variation in the soils encountered, but a general soil profile included a 10YR 2/1 black to a 10YR 3/3 dark brown fine sand loam topsoil and forest duff overlying a 7.5 YR 5/3 brown to a 10YR 5/6 yellowish brown fine sand loam B horizon over a 10YR 6/6 brownish yellow to a 7.5YR 4/6 strong brown fine sand subsoil.

No precontact cultural material was encountered in the excavated shovel tests. Because there will be limited impact to the ground surface by the proposed tree clearing, it is recommended that the proposed project proceed with no further archeological investigation. However, if future projects or impacts are planned within this area, an archeological assessment of the specific project impacts should be made, as there are other potentially sensitive archeological areas located within this elongate, varied and complex landform.

Area 3

Tree clearing for runway approach safety has been completed at the western end of Runway 5, on the west side of Route 106. This area is considered archeologically sensitive as it constitutes a level terrace overlooking Baltimore Brook. This wooded parcel is bound to the north and east by the Springfield Fence Company property, to the south by Baltimore Brook, and to the west by a housing development *cul-de-sac* and farmland. A total of 16 shovel test pits were excavated in undisturbed areas on the stream terrace.

The shovel test soils were relatively consistent throughout this area, exhibiting a natural soil profile. A 10YR 3/3 dark brown fine sand topsoil with rounded gravels and cobbles overlay a 7.5YR 4/6 strong brown loam sand spodosol with rounded gravels and cobbles. The subsoil was evident as a dense sand with rounded gravel and cobbles that ranged in color from 10YR 5/8 yellowish brown to a 7.5 YR 5/8 strong brown.

No precontact material was identified within the shovel test excavations in Area 3. No further archeological investigation is recommended in this area.

Area 4

Tree clearing is proposed located outside of the airport property line, north of Runway 11, on the opposite bank of Baltimore Brook. Sensitivity Area 4 is comprised of one large level terrace and two smaller terraces, one situated above, and the other situated below, the primary terrace landform. To the east and south, the land slopes steeply downward to Baltimore Brook and an associated wetland. This area is located across the brook and wetland from Site VT-WN-452, situated on a similar terrace landform, at a similar elevation. This

wooded parcel is bound to the north by an open farmhouse yard and field and to the west by the yards and buildings of a 20th century housing complex.

A total of 21 shovel test pits were excavated in undisturbed areas on these terraces. The shovel test soil stratigraphy was relatively consistent throughout this area, and indicated a relatively undisturbed natural soil profile. A 10YR 3/2 very dark grayish brown fine silt forest duff overlay a 10YR 4/4 dark yellowish brown fine sand loam topsoil and a 10YR 5/6 yellowish brown medium coarse sand. The subsoil was comprised of a 10YR 4/6 dark yellowish brown very coarse sand and gravel.

No precontact material was identified within the shovel test excavations in Area 4. No further archeological investigation is recommended in this area.

Fish and Wildlife Building Area

A new structure is proposed to be constructed in the present location of the Fish and Wildlife buildings, situated southeast of the southernmost airport hangar. While this area was not specifically designated as a sensitivity area in archeological resource assessments, the project engineer, Heath Marsden, requested that shovel tests be excavated in order to determine whether any intact archeological deposits could potentially be present and impacted by the proposed construction. The area is presently level grass lawn, situated in front of the Fish and wildlife buildings, on a terrace situated above a dry stream channel to the west.

Four shovel tests were excavated in the grass lawn areas adjacent to the Fish and Wildlife buildings. The two shovel tests excavated on the northern property exhibited a 10YR 3/3 dark brown fine sand loam with dense gravels plow zone topsoil, below which was 7.5 YR 4/6 strong brown B horizon of fine sand and gravels. The subsoil consisted of a 10YR 5/8 yellowish brown fine sand with small gravel. The two shovel tests excavated on the southern lawn encountered a thick layer of banded coarse sand fill overlying a buried A horizon plow zone. The buried A horizon contained a number of modern artifacts, including brick, coal, and macadam, indicating the relatively recent deposition of top fill in the area. Beneath the buried A horizon was a 10YR 6/4 light yellowish brown fine sand spodosol soil situated over a 10YR 5/8 yellowish brown find sand subsoil.

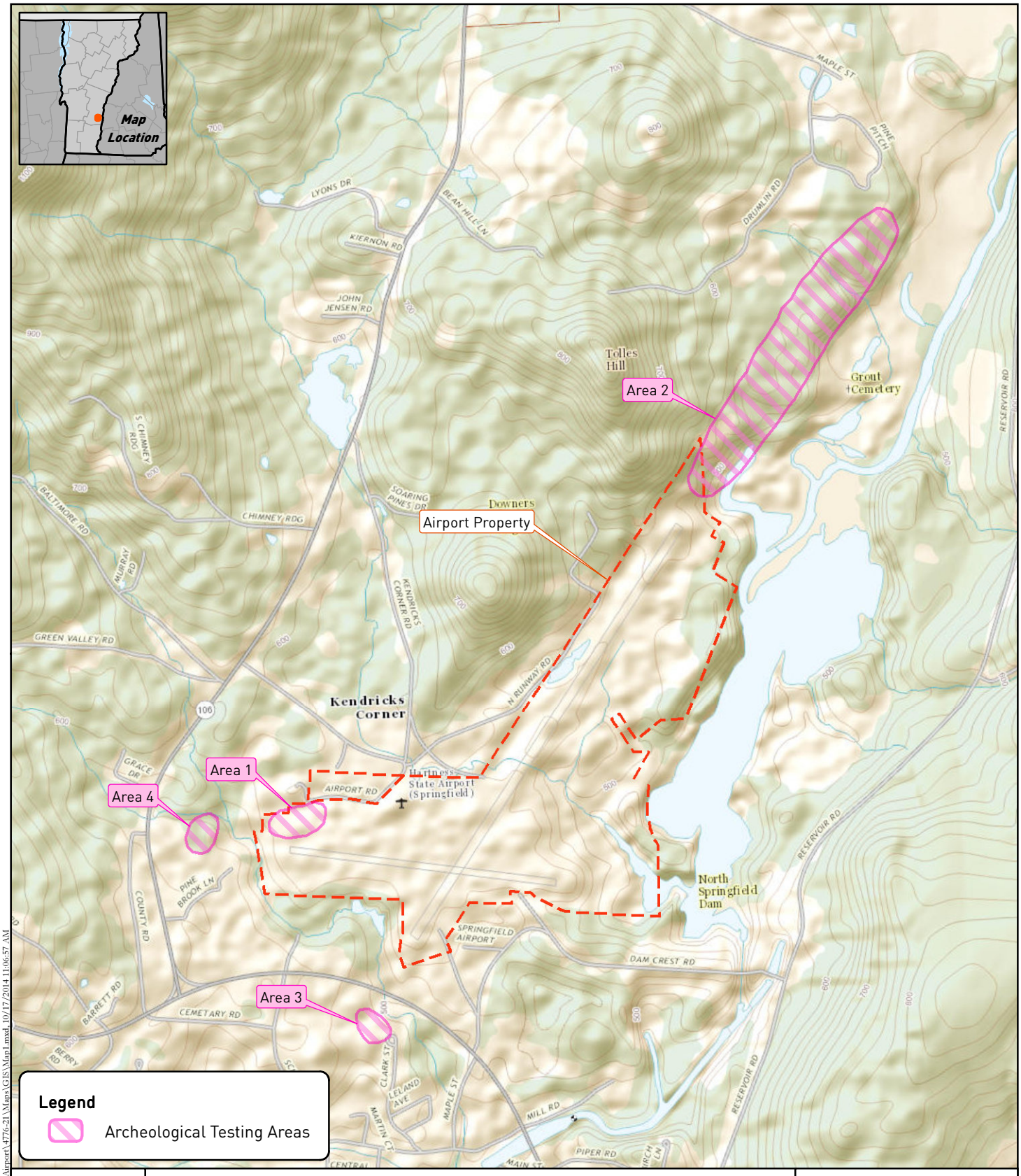
No precontact material was identified within the shovel test excavations in the Fish and Wildlife Building Area. No further archeological investigation is recommended in this area.

SUMMARY AND RECOMMENDATIONS

The Phase IB archeological survey conducted for the proposed improvements at the Hartness State Airport identified no precontact artifacts or potentially significant historic deposits. No further archeological investigation is recommended for the portions of the APE tested in this Phase IB investigation. A draft narrative report of the archeological excavations will be produced in the near future. If you have any questions, please contact me at emanning@hartgen.com or 802.380.2845.

Sincerely yours,

Elise Manning-Sterling
Project Manager



750 0 750 1,500 Feet

220 0 220 440 Meters

Note: Contour interval is 20 feet.

Project Location (USGS 2013)

HARTGEN archeological associates inc

Map 1

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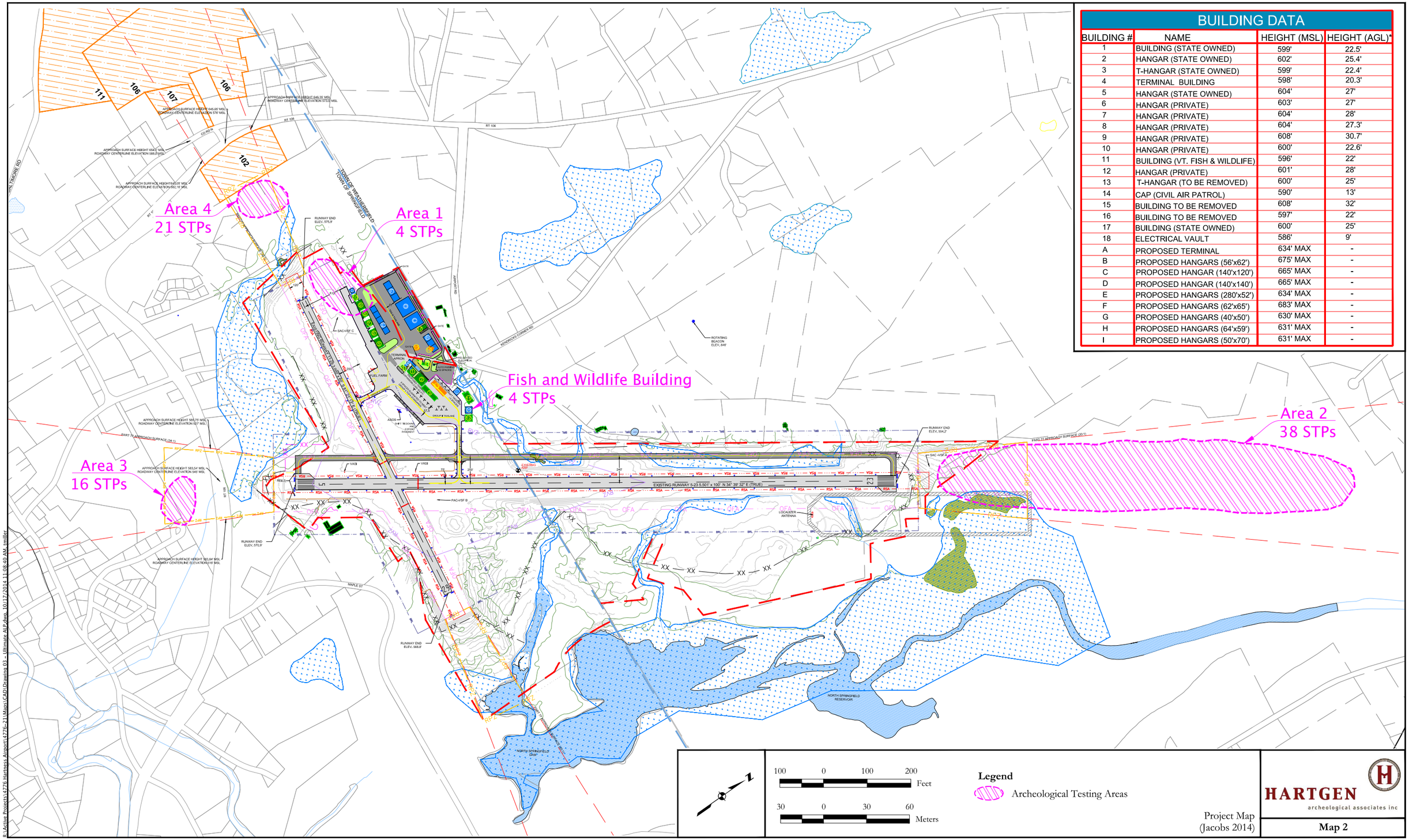
Archeological Assessment Update and Phase IB Investigation
Environmental Assessment of Hartness State Airport
Town of Springfield, Windsor County, Vermont



BUILDING DATA			
BUILDING #	NAME	HEIGHT (MSL)	HEIGHT (AGL)*
1	BUILDING (STATE OWNED)	599'	22.5'
2	HANGAR (STATE OWNED)	602'	25.4'
3	T-HANGAR (STATE OWNED)	599'	22.4'
4	TERMINAL BUILDING	598'	20.3'
5	HANGAR (STATE OWNED)	604'	27'
6	HANGAR (PRIVATE)	603'	27'
7	HANGAR (PRIVATE)	604'	28'
8	HANGAR (PRIVATE)	604'	27.3'
9	HANGAR (PRIVATE)	608'	30.7'
10	HANGAR (PRIVATE)	600'	22.6'
11	BUILDING (VT. FISH & WILDLIFE)	596'	22'
12	HANGAR (PRIVATE)	601'	28'
13	T-HANGAR (TO BE REMOVED)	600'	25'
14	CAP (CIVIL AIR PATROL)	590'	13'
15	BUILDING TO BE REMOVED	608'	32'
16	BUILDING TO BE REMOVED	597'	22'
17	BUILDING (STATE OWNED)	600'	25'
18	ELECTRICAL VAULT	586'	9'
A	PROPOSED TERMINAL	634' MAX	-
B	PROPOSED HANGARS (56'x62')	675' MAX	-
C	PROPOSED HANGAR (140'x120')	665' MAX	-
D	PROPOSED HANGAR (140'x140')	665' MAX	-
E	PROPOSED HANGARS (280'x52')	634' MAX	-
F	PROPOSED HANGARS (62'x65')	683' MAX	-
G	PROPOSED HANGARS (40'x50')	630' MAX	-
H	PROPOSED HANGARS (64'x59')	631' MAX	-
I	PROPOSED HANGARS (50'x70')	631' MAX	-

100 0 100 200 Feet

30 0 30 60 Meters

Legend

Archeological Testing Areas

Project Map
(Jacobs 2014)

HARTGEN archeological associates inc

Map 2

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The UNIVERSITY of VERMONT

CONSULTING ARCHAEOLOGY PROGRAM

July 22, 2008

Jeannine Russell-Pinkham
Vermont Agency of Transportation
National Life Building, Drawer 33
Montpelier, VT 05633-5001

RE: End-of-Field Letter for Limited Archaeological Phase II Evaluation for site VT-WN-452 within the Hartness State Airport, Hanger Expansion and Access Road (PIN #07P061) Project Area, Springfield, Windsor County, Vermont

Dear Jen:

On July 2nd and 3rd, 2008, the University of Vermont Consulting Archaeology Program (UVM CAP) conducted a limited archaeological Phase II evaluation of site VT-WN-452 within the proposed Hartness State Airport Hanger Expansion and Access Road project area, in Springfield, Windsor County, Vermont (Figure 1). Site VT-WN-452 was first identified by the UVM CAP in November, 2007, during a Phase I site identification survey of the project's Area of Potential Effects (APE) (Figure 2). The APE included an archaeologically sensitive portion of the landform that was initially defined and buffered by Hartgen Archaeological Associates, Inc. in 2004. The buffer encompassed an area northwest of existing runway 11-29 and included a prominent terrace edge overlooking a tributary to the Black River.

In accordance with the Section 106 review process, the Phase I archaeological investigation was designed to determine the presence/absence of Native American cultural deposits within sensitive portions of the project envelope. As a result, site VT-WN-452 was recorded in the Vermont Archaeological Inventory (VAI) based on the recovery of four lithic artifacts from four separate test pits within the project parcel (see Figure 2). A fifth test pit produced one burned bone fragment, possibly attributable to prehistoric Native American cooking activity.

Following the Phase I investigation, a review of the project design plans indicated that the main site area could be avoided by construction. As a result, a limited archaeological Phase II site evaluation was proposed to determine whether or not the site extends east into the presently defined APE required for proposed hanger and associated roadway construction. The results of the limited Phase II study are presented below.

Methods and Results

For the purposes of the limited Phase II site evaluation, nine linear transects containing a total of 67, 50 x 50 cm (20 x 20 in) test pits, were used to sample the eastern portion of the project parcel (Figure 3). The Phase II survey encompassed an

approximate 50 x 40 m (164 x 131 ft) area immediately east of the Phase I investigation leading up to the existing hangers and roadway. The majority of the test pits were spaced at 5 m (16 ft) intervals along eight linear parallel transects (TR 10-16, and 18), oriented on the same grid angle used during the Phase I survey (see Figure 3). Transect 17, which contained two test pits spaced 10 m (33 ft) apart, was used to confirm disturbed soil profiles in an area of graded fill nearest the most recent hanger construction (see Figure 3).

All test pits were excavated in 10 cm vertical levels with respect to natural stratigraphic soil horizons. Most of the excavations terminated at an average depth of 50-60 cm (20-24 in) below the ground surface. In a few cases, test pits ranged from shallower, ca. 30 cm (12 in), to deeper, ca. 90 cm (35 in) depths below the ground surface depending on the presence of shallow impenetrable bedrock or upper fill deposits. Soils were sieved through 6.4 mm (1/4 in) mesh hardware cloth, and stratigraphic soil profiles were recorded for all excavations according to both texture and Munsell chart colors.

Soil types generally ranged from dark brown fine sandy loam in the upper plow-disturbed horizon, to yellowish brown and light olive brown medium sand in the intact subsoil. The stratigraphic soil profiles revealed an average 20-30 cm (8-12 in) thick plow zone followed by intact "B" and "BC" subsoils. Increasingly extensive fill deposits were encountered within 10-12 m (33-39 ft) of the end of the existing tarmac/hangers. Excavations along Transect 17, on the leveled "hanger platform", revealed hard compact fill mixed with large gravel and asphalt reaching a depth of 60 cm (24 in) or more. Efforts to core deeper could not be performed due to the compact and rocky nature of the fill layer.

Though the eastern portion of the project's APE was sampled extensively, no definitive pre-Contact era Native American cultural deposits were recovered during the Phase II investigation. Fragments of burned bone were recovered from several test pits throughout the sampled area, yet all were identified within the upper, plow-disturbed horizon. Furthermore, one test pit which contained multiple fragments of burned bone also yielded a piece of melted glass. Finally, no lithic artifacts, fire affected rock fragments, or cultural fire hearth features were identified to link the burned bone to pre-Contact era Native American cultural activity. Ultimately, based on these indications, it seems most probable that the burned bone and melted glass are the result of the same historic era burn event.

Conclusions and Recommendations

Based on the results of the limited Phase II archaeological investigation for the proposed hanger expansion and access road project, Native American site VT-WN-452 does not extend into the western portion of the proposed project's APE.

In review, the lithic artifacts recovered during the Phase I survey appear to represent material processing and/or tool refurbishment activities. These activities are likely associated with a temporary encampment focused along the western edges of the alluvial terrace. The recovered inventory includes "a 'spurred' scraping implement temporally diagnostic of the Paleoindian period, ca. 9500-7000 B.C., and three specimens of lithic debitage produced as a byproduct of stone tool manufacture. Preliminary analysis of the three debitage specimens suggests that one may be derived from a source

located in southeastern Pennsylvania, and two may be derived from Little Mount Ascutney, located roughly 5 miles to the north near a small tributary of the North Branch of the Black River. The 'spurred' scraper has been exposed to intense heat, as [indicated by] a large spall that has been removed from the ventral surface of the tool," (Crock 2008: 2, Phase II Scope of Work).

Ultimately, based on the distribution of the known artifact scatter, site VT-WN-452 minimally encompasses 400 m^2. Because the site remains potentially significant and is likely to contain additional deposits, and tighter interval Phase II-level testing has not been conducted in the immediate site area, it is recommended that the entire Phase I survey area be avoided during proposed construction activities (Figure 4). Pin flags marking the locations of the Phase I test pits were left in place as an indicator of the area to be protected.

Because no additional prehistoric Native American cultural deposits were identified during extensive sampling of the eastern portion of the project parcel, no further archaeological work is recommended in the area covered by the limited Phase II testing (see Figure 4). All Phase II pin flags were pulled to reflect the cleared portion of the project's APE between the end of the existing roadway and Phase I Transect 9. Pin flags were left in place in and around the VT-WN-452 site area Should construction be required to the west of Transect 9 (see Figures 2-4), additional archaeological work will be necessary to provide a better assessment of the site's size, function, age, integrity, and potential eligibility for inclusion on the National Register of Historic Places (NRHP).

Thank you for working with us on this project. We appreciate your patience and cooperation over the course of our investigation. Please feel free to contact us anytime if you have any questions regarding the results of this study.

Sincerely,

Andrew M. Fletcher
Research Supervisor

John G. Crock, Ph.D.
Director

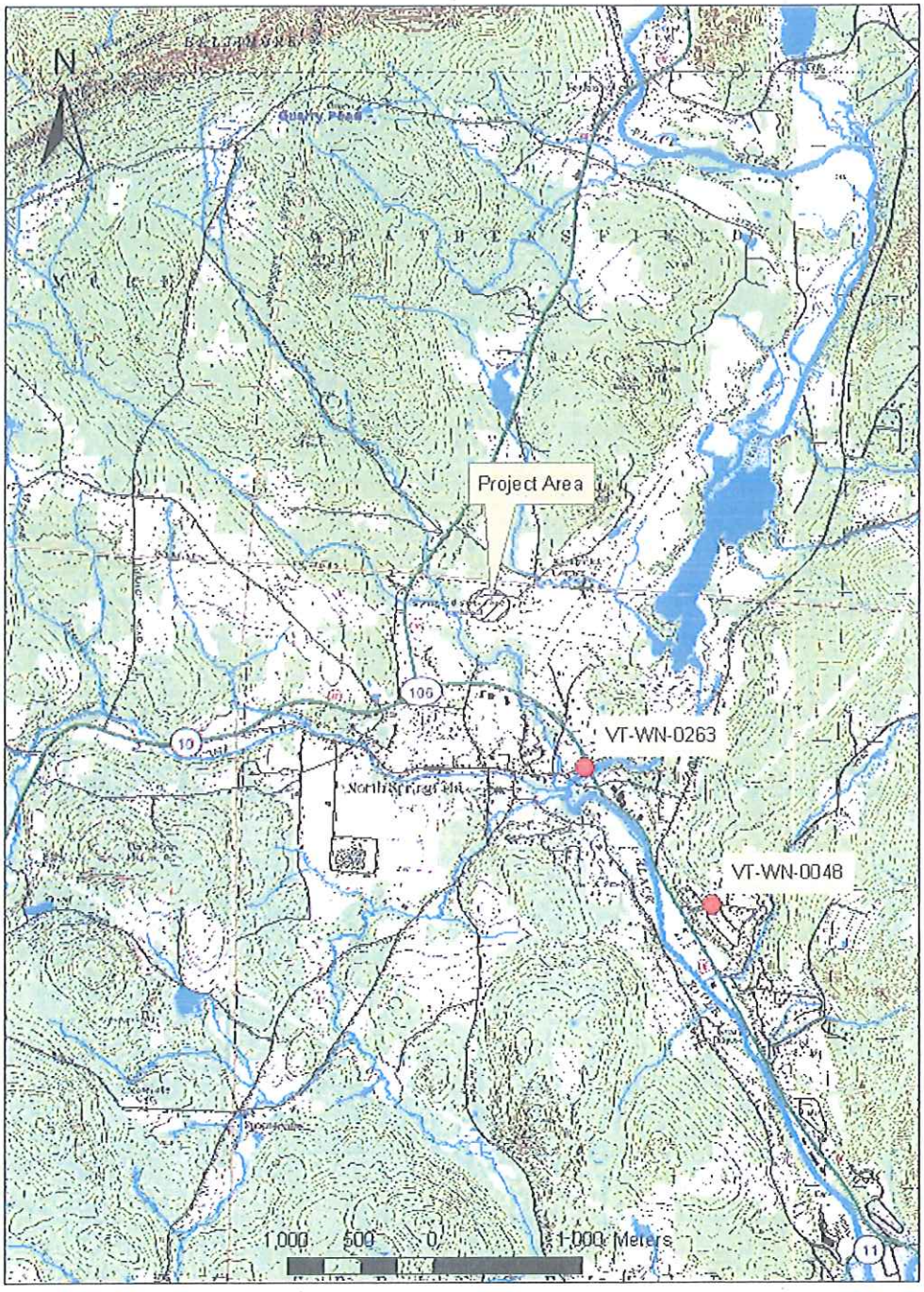

Figure 1. USGS map showing the location of the Hartness Airport project area and previously recorded archaeological sites known nearby.

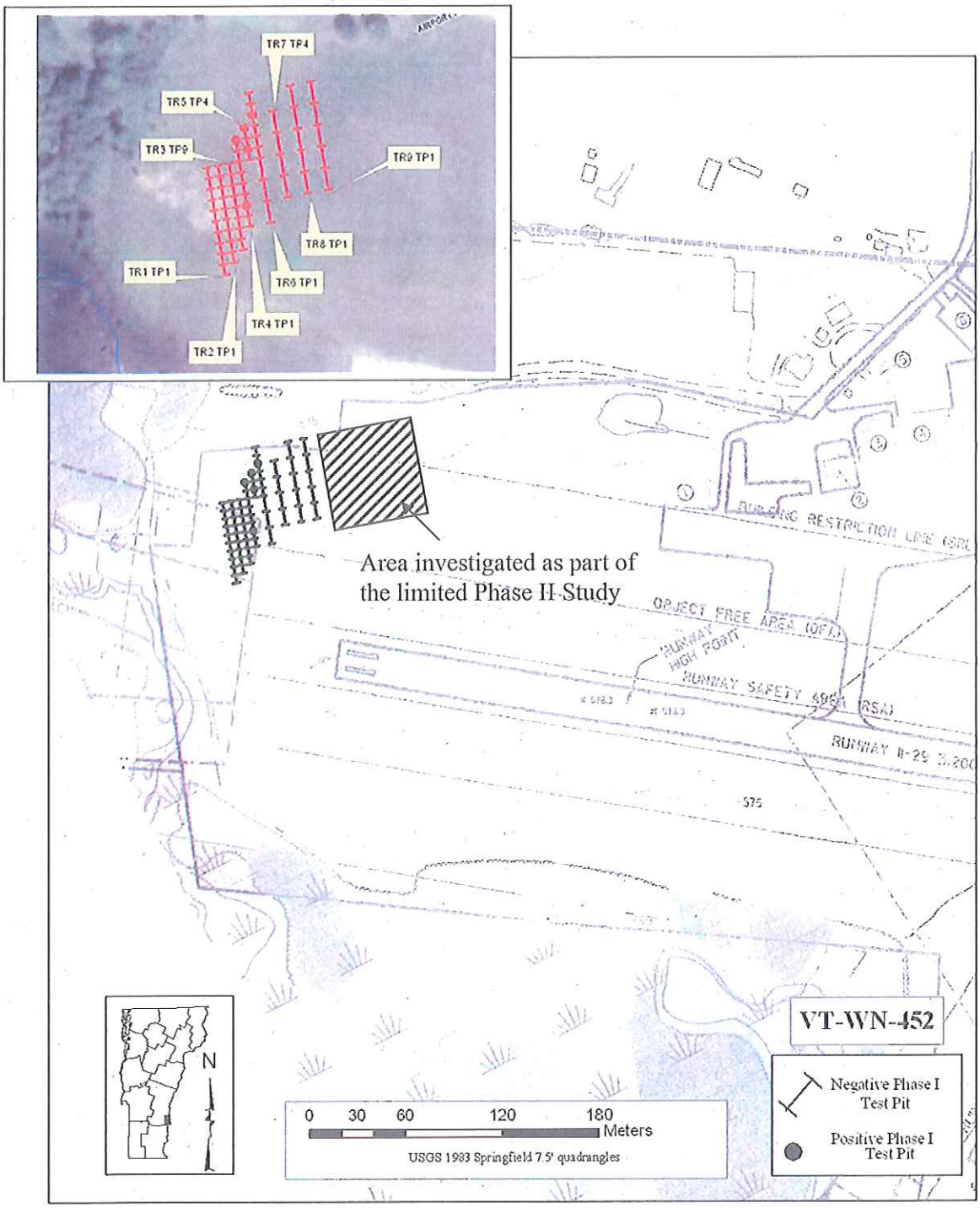

Figure 2. Project map and aerial photo insert showing the location of previously completed Phase I Survey transects and location of site VT-WN-452 relative to existing conditions at the Hartness Airport in Springfield, Vermont. Note approximate extent of the area studied during the recently completed limited Phase II investigation.

Figure 3. Sketch map showing the location of transects and test pits excavated during the limited Phase II study of the site VT-WN-452. Note that all but TR9, the westernmost transect shown, were completed during the limited Phase II field work. Area east of easternmost north-south transect, TR15, disturbed by existing tarmac and hanger area.

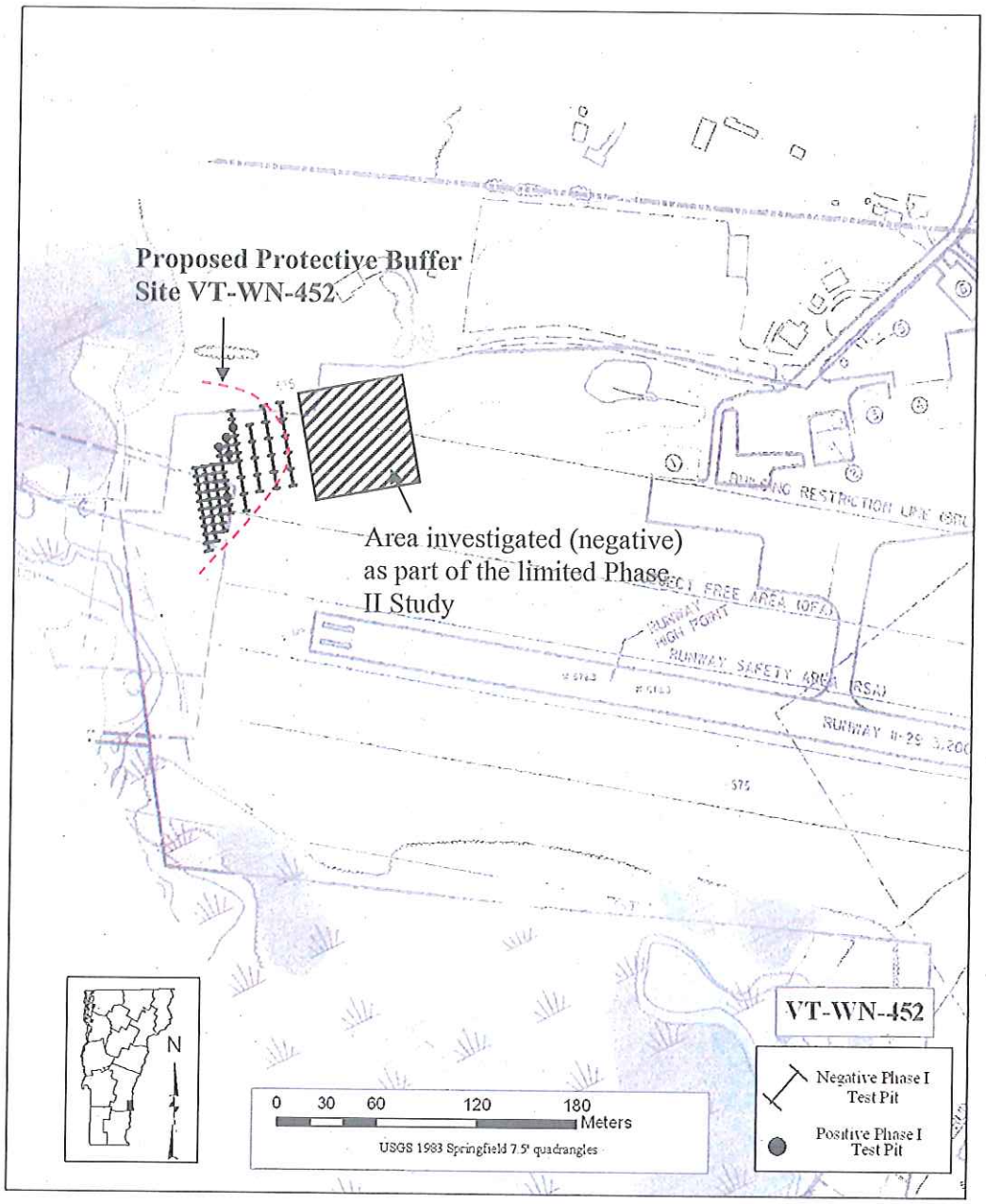

Figure 4. Project map showing the proposed protective buffer around the known extents of site VT-WN-452 within the Hartness Airport project area, Springfield, Vermont.

Appendix 3 Wetland Report

Wetlands Delineation Letter, EIV Technical Services, September 2, 2015

EIV TECHNICAL SERVICES
55 Leroy Rd, Suite 15
Williston, VT 05495
Tel: 802-497-3653 Fax: 802-497-3656

September 2, 2015

Heath Marsden
Senior Airport Planner
Jacobs Engineering
Two Executive Park Drive, Suite 205
Bedford, NH 03110

Re: Hartness (Springfield) State Airport
Wetlands Delineation

Mr. Marsden:

EIV Technical Services has completed wetland identification and delineations for the project study area at Hartness State Airport in North Springfield, Vermont. We understand that the proposed project at this location incorporates corrections to Runway Safety Area (RSA) deficiencies for the currently non-standard RSA's for Runways 05, 23, and 11 to meet FAA safety design standards. Secondly, it includes vegetation removal within the protected airspace surfaces for Runways 05-23, and 11-29 to maintain safe approaches for arriving and departing aircraft. The third goal is to increase the terminal apron to meet the anticipated demand for aircraft storage. Jurisdictional resources found within the study area and their permitting requirements have been identified within this report. We believe the information provided below will be useful in developing alternatives which will avoid, minimize or mitigate, to the extent possible, any potential wetland impacts.

Wetlands

The project study area encompasses several different locations, each associated with a runway for the airport. The approximate locations of these areas are highlighted within the graphic below and several of these areas would most likely be jurisdictional wetlands requiring permitting for impacts to them and the associated buffers. Wetlands in Vermont are determined by three parameters: hydraulic soils, hydrophytic vegetation, and hydrology. In most cases, all 3 parameters need to exist for the area to be considered wetland. The Vermont Wetland Rules identify and protect 10 functions and values of significant wetlands and establishes a 3-tier wetland classification system to identify such wetlands. The first two classes of wetlands (Class I and Class II) are considered significant and protected under the wetland rules along with their buffer zones (generally 100-foot for Class I and 50-foot for Class II). Class I represents a wetland area which is exceptional or irreplaceable in its contribution to Vermont's natural heritage and therefore merits the highest level of protection. Class II wetlands are listed with the Vermont Significant Wetland Inventory (VSWI) map, and unmapped Class II wetland area, and is regulated by the Army Corp of Engineers. Class III wetlands are not regulated by the Vermont Agency of Natural Resources.

EIV TECHNICAL SERVICES
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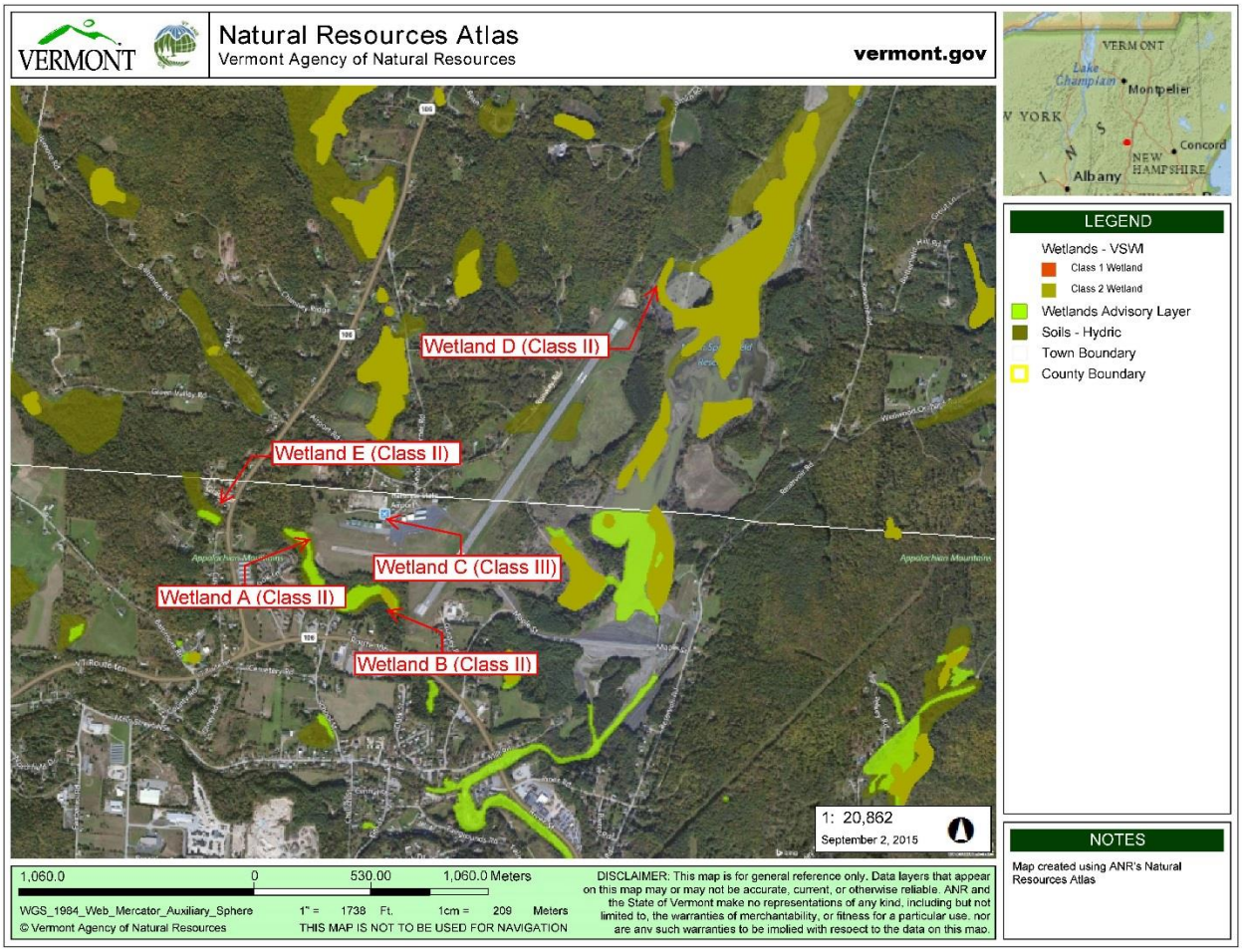
Williston, VT 05495
Tel: 802-497-3653 Fax: 802-497-3656



The area identified on the map above as Wetland A was determined to be a class II wetland during the wetland delineation in October 2014, and it is also shown on the VSWI map. An unnamed stream travels through this wetland and hydraulically connects it to Wetland B, making the two wetland areas contiguous. The area surrounding the stream, within the Wetland A boundary, is a concave valley with plateaus on either side sloping down to the wetland. The stream is fed through several seeps that occur up-gradient within a *Tsuga Canadensis* (Eastern hemlock) forest. Wetland B was determined to be a Class II wetland area. The stream meanders through the two wetland areas and will not be impacted below the ordinary high water mark (OHW) during the obstruction removal phase of this project. Equipment will travel over frozen ground within the 50 ft. stream buffer and some tree removal is proposed within this stream buffer. Coordination with the Vermont Agency of Natural Resources' River Management Engineer will be completed for approval of stream buffer impacts.

The two wetlands are close in proximity, and consist of widely different species of trees. Wetland A consists mainly of small diameter vegetation species, ranging from 1-3 inches in diameter, much of which is dominated by the *Acer negundo* (Boxelder). *Acer negundo* is listed on the National

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Wetland Plant List (NWPL) as a Facultative Wetland species (FACW). FACW is defined as usual occurring in a wetland but may occur in non-wetlands. Wetland B is comprised of small trees with a DH (diameter at breast height) of 3-6", consisting of two main species, *Acer rubrum* (Red maple) and *Tsuga Canadensis* (Eastern hemlock).

The area identified on the map as Wetland C is a Class III wetland. This wetland is not shown on the VSWI inventory list as it is not a Class I or II wetland. It is small in area and consists of a mono culture of grasses and rushes. It is isolated and surrounded by routinely mowed grass. However, this area meets the parameters for wetland area and was determined to be Class III during the October 2014 wetland delineation.

The wetland identified as Wetland D on the map is a Class II wetland. This is shown on the VSWI list. It is a large and diverse wetland which is hydraulically connected to the US Army Corps of Engineers' North Springfield Lake. There is a large and diverse collection of herbaceous perennials, shrubs and trees within this wetland. The dominate plant species is *Impatiens capensis* (Jewel weed) and is listed as a FACW. The dominate tree species is *Acer rubrum* (Red maple). There are several areas with standing water just below the delineated line.

Finally, the last area that was identified on the map is Wetland E. Wetland E is a Class II wetland and is shown on the VSWI map. It is a gently sloping wetland complex that is dominated by two different species of vegetation. These species are *Tsuga Canadensis* (Eastern hemlock) and *Impatiens capensis* (Spotted Touch-Me-Not). There was evidence of standing water and amongst the Spotted Touch-Me-Not there was sensitive fern mixed in. The area of the wetland closest to Route 106 appeared to have been created by the shifting alignment of the road leaving an earthen berm to the West of Route 106 which appears to have created the wetland area.

A Vermont Wetland Permit through the Agency of Natural Resources will need to be acquired prior to disturbing any jurisdictional wetlands or their buffers (50 feet from the delineated wetland area) for Wetlands A, B, and D. Additionally any impacts to Wetlands A, B, C, D or E and their buffers will need to be permitted through the Army Corps of Engineers.

Significant Natural Communities
It is EIV's opinion that wetlands A, B, and D of the onsite natural or otherwise vegetative communities should be considered significant. Representative photographs of on-site habitat conditions and wetland data forms are enclosed with this report.

Feel free to contact me directly regarding the natural resource information above, 802-497-3653.

Sincerely,

 for

Jason Waysville, P.E.
Wetland Scientist
EIV Technical Services

EIV TECHNICAL SERVICES
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Wetland A
An unnamed stream located off the approach end of Runway 11 and meanders through this Class II wetland.

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Wetland B
This photo represents the Class II wetland off the approach end of Runway 5.

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Wetland C
This photo is of the class III wetland located inside the fence of the airport.

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55 Leroy Rd, Suite 15
Williston, VT 05495
Tel: 802-497-3653 Fax: 802-497-3656

Wetland D
This Class II wetland is located off the approach end of Runway 23.

EIV TECHNICAL SERVICES
55 Leroy Rd, Suite 15
Williston, VT 05495
Tel: 802-497-3653 Fax: 802-497-3656

Wetland E
This Class II wetland is located off the approach end of Runway 11, and west of Route 106 and Wetland A.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Hartness Airport City/County: Springfield Sampling Date: 10/17/14
Applicant/Owner: Vermont Agency of Transportation State: VT Sampling Point: Wetland A
Investigator(s): Jason Waysville and Scott Hance of EIV Technical Services Section, Township, Range:
Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%):
Subregion (LRR or MLRA): Lat: Long: Datum:
Soil Map Unit Name: 33 Rumney Fine Sandy Loam NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?** Yes X No
Hydric Soil Present?	Yes X	No	
Wetland Hydrology Present?	Yes X	No	

Remarks:
This wetland area is subject to frequent flooding and has evidence of drift wood.

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- X Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
The State of Vermont has mapped this area as a wetland based upon IR photo's

Remarks:
This wetland area has a stream running through the center of it. The wetland area is the surrounding low lands which are subject to flooding.

There also was evidence of Beavers and damming in recent past.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: Wetland A

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. none			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Sapling Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Shrub Stratum (Plot size: 15')			
1. Silky Dogwood	10	y	Facw
2. Black Elderberry	5	n	FACW
3. Honey Suckle	5	n	Fac
4.			
5.			
6.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Herb Stratum (Plot size: 5')			
1. Late Golden Rod	60	y	Facw
2. Spotted Touch-Me-Not	20	n	Facw
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Woody Vine Stratum (Plot size: 15')			
1. None			
2.			
3.			
4.			
5.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	95	x 2 =	190
FAC species	5	x 3 =	15
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		205 (B)

Prevalence Index = B/A = 2.05

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X No _____

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

SOIL

Sampling Point: Wetland A

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10yr2/1	99						
4-8								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: n/a

Depth (inches): ___

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

Remarks:

Sandy with Redox, Thin dark soil overlaying a sandy soil with signs of Redox.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Hartness Airport City/County: Springfield Sampling Date: 10/17/14
Applicant/Owner: Vermont Agency of Transportation State: VT Sampling Point: Wetland B
Investigator(s): Jason Waysville and Scott Hance of EIV Technical Services Section, Township, Range:
Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 2-4
Subregion (LRR or MLRA): Lat: Long: Datum:
Soil Map Unit Name: 70E Adams Fine Sandy Loam NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?** Yes X No
Hydric Soil Present?	Yes X	No	
Wetland Hydrology Present?	Yes X	No	

Remarks:
The wetland is connect via stream to the up gradient wetland as well as what appears to be a man made pond which appears to be feed via seeps and springs.

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- X Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ____ Depth (inches): 1-2
Water Table Present? Yes X No ____ Depth (inches): ____
Saturation Present? (includes capillary fringe) Yes X No ____ Depth (inches): ____

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
The State of Vermont has mapped this area as a wetland based upon IR photo's

Remarks:
This wetland area has a stream running through the center of it. The wetland area is the surrounding low lands which are subject to flooding.

The wetland is connected to what appears to be a man made pond. Along with the up stream wetland.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: Wetland B

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer Rubrum	5	y	Facw
2. Eastern Hemlock	5	n	facu
3.			
4.			
5.			
6.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Sapling Stratum (Plot size: 15')			
1. Acer Rubrum	10	y	Facw
2.			
3.			
4.			
5.			
6.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Shrub Stratum (Plot size: 15')			
1. None			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Herb Stratum (Plot size: 5')			
1. Sensitive Fern	60	y	Facw
2. Spotted Touch-Me-Not	20	n	Facw
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Woody Vine Stratum (Plot size: 15')			
1. None			
2.			
3.			
4.			
5.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	95	x 2 =	190
FAC species	5	x 3 =	15
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		205 (B)

Prevalence Index = B/A = 2.05

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X No _____

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

SOIL

Sampling Point: Wetland B

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10yr2/1	99			lfs		vf	
4-8	10yr 3/2	95	10R4/6	5	sfl		fr	Depletions not seen
8-24	10yr5/3				sg		firm	Parent Material

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- _X_ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- _X_ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: n/a

Depth (inches): ___

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

Remarks:

Sandy with Redox, Thin dark soil overlaying a sandy soil with signs of Redox.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Hartness Airport City/County: Springfield Sampling Date: 8-1-15
Applicant/Owner: Vermont Agency of Transportation State: VT Sampling Point: Wetland C
Investigator(s): Jason Waysville and Scott Hance of EIV Technical Services Section, Township, Range:
Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0%
Subregion (LRR or MLRA): Lat: Long: Datum:
Soil Map Unit Name: 70E Adams Sandy Loam NWI classification: III
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?** **Yes X** **No**
Hydric Soil Present?	Yes X	No	
Wetland Hydrology Present?	Yes X	No	

Remarks:
This wetland is in a small concave area that has water deposited to it via parking lot drainage structures that discharge to area.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- X Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- X Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): ____
Water Table Present? Yes X No ____ Depth (inches): 3"
Saturation Present? (includes capillary fringe) Yes x No ____ Depth (inches): 1"

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

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Soil Data was taken from Hand Auger Samples

Remarks:
Area consist only of grasses at it is mowed multiple times throughout the year.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: Wetland C

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 25')			
1.			
2.			
3.			
4.			
5.			
6.			
= Total Cover			
50% of total cover: ____ 20% of total cover: ____			
Sapling Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
= Total Cover			
50% of total cover: ____ 20% of total cover: ____			
Shrub Stratum (Plot size: 15')			
1. Echinochloa crusgalli	60%	y	facw
2. Setaria spp	40%	n	Facw
3.			
4.			
5.			
6.			
= Total Cover			
50% of total cover: ____ 20% of total cover: ____			
Herb Stratum (Plot size: 15')			
1. Echinochloa crusgalli	60%	y	Fac W
2. Setaria spp	40%	n	Fac w
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
= Total Cover			
50% of total cover: ____ 20% of total cover: ____			
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
50% of total cover: ____ 20% of total cover: ____			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species 100	x 2 = 200
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: 100 (A)	200 (B)

Prevalence Index = B/A = 2.0

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X No ____

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

SOIL

Sampling Point: Wetland C

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10yr2/1	99	7.5 YR 3/4	2	Ris		V.F.	WSAB
4-8	10YR 4/1						VF	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- _X_ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- _X_ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- _X_ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- _X_ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: n/a

Depth (inches): ___

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

Remarks:

Sandy with Redox, Thin dark soil overlaying a sandy soil with signs of Redox.

Saturation within 3" of the surface of the area.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Hartness Airport City/County: Springfield Sampling Date: 8-1-15
Applicant/Owner: Vermont Agency of Transportation State: VT Sampling Point: Wetland D
Investigator(s): Jason Waysville and Scott Hance of EIV Technical Services Section, Township, Range:
Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 5%
Subregion (LRR or MLRA): Lat: Long: Datum:
Soil Map Unit Name: 70E Adams Sandy Loam NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?** **Yes X** **No**
Hydric Soil Present?	Yes X	No	
Wetland Hydrology Present?	Yes X	No	

Remarks:
This wetland area is subject to frequent flooding and has evidence of drift wood. This area also abuts the US Army Corps North Springfield Lake which is subject to flooding.

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- X Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- X Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No X Depth (inches): ____
Water Table Present? Yes X No ____ Depth (inches): 3"
Saturation Present? (includes capillary fringe) Yes x No ____ Depth (inches): 1"

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

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Soil Data was taken from Hand Auger Samples

Remarks:
No Large Dia Veg in subject area

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: Wetland D

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 25')			
1. Tilia Americana	5%	n	Fac U
2. Salix Nigra	10%	y	Obl
3.			
4.			
5.			
6.			
= Total Cover			
50% of total cover: ____ 20% of total cover: ____			
Sapling Stratum (Plot size: 15')			
1. Tilia Americana	2%	y	Facu
2.			
3.			
4.			
5.			
6.			
= Total Cover			
50% of total cover: ____ 20% of total cover: ____			
Shrub Stratum (Plot size: 15')			
1. Prunus Viginaiana	3%	y	Fac
2.			
3.			
4.			
5.			
6.			
= Total Cover			
50% of total cover: ____ 20% of total cover: ____			
Herb Stratum (Plot size: 15')			
1. Onoglex Senseus	50%	y	Fac W
2. Typha Naustifolia	5%	n	OBL
3. Maianthemum Racemosum	3%	n	fac
4. Solidago Rugosa	2%	n	fac
5. Didens Cernua	10%	n	Obl
6.			
7.			
8.			
9.			
10.			
11.			
= Total Cover			
50% of total cover: ____ 20% of total cover: ____			
Woody Vine Stratum (Plot size: 15')			
1. Vitios Vinifera	10%	y	Fac
2.			
3.			
4.			
5.			
= Total Cover			
50% of total cover: ____ 20% of total cover: ____			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 8 (A)

Total Number of Dominant Species Across All Strata: 10 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25	x 1 =	25
FACW species	50	x 2 =	100
FAC species	18	x 3 =	54
FACU species	7	x 4 =	28
UPL species		x 5 =	
Column Totals:	100 (A)		207 (B)

Prevalence Index = B/A = 2.07

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

_X_ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X No ____

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

SOIL

Sampling Point: Wetland D

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10yr2/1	99	7.5 YR 3/4	2	Ris		V.F.	WSAB
8-10	10YR 4/1						VF	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- _X_ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- _X_ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- _X_ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- _X_ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: n/a

Depth (inches): ___

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

Remarks:

Sandy with Redox, Thin dark soil overlaying a sandy soil with signs of Redox.
Saturation within 1" of Surface

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Hartness Airport City/County: Springfield Sampling Date: 9-1-15
Applicant/Owner: Vermont Agency of Transportation State: VT Sampling Point: Wetland E
Investigator(s): Jason Waysville and Scott Hance of EIV Technical Services Section, Township, Range:
Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 2%
Subregion (LRR or MLRA): Lat: Long: Datum:
Soil Map Unit Name: Rumney Fine Sandy Loam NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?** **Yes X** **No**
Hydric Soil Present?	Yes X	No	
Wetland Hydrology Present?	Yes X	No	

Remarks:
This wetland area is in a basin area that appears to hold back and flood during storms.

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- X Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- X Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ____ Depth (inches): ____
Water Table Present? Yes X No ____ Depth (inches): 2"
Saturation Present? (includes capillary fringe) Yes x No ____ Depth (inches): 1"

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

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Soil Data was taken from Hand Auger Samples

Remarks:
Mucky Black Material in the area that was tested, with thin organic layer

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point:_____

Tree Stratum (Plot size: 25')	Absolute % Cover	Dominant Species?	Indicator Status
1. Tsuga Canadensis	5%	y	Fac U
2. Acer Rubrum	2%	n	Fac W
3.			
4.			
5.			
6.			
= Total Cover			
50% of total cover: _____ 20% of total cover:_____			
Sapling Stratum (Plot size: 15')			
1. Acer Rubrum	3%	y	Fac W
2.			
3.			
4.			
5.			
6.			
= Total Cover			
50% of total cover: _____ 20% of total cover:_____			
Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
= Total Cover			
50% of total cover: _____ 20% of total cover:_____			
Herb Stratum (Plot size: 15')			
1. Onoglex Senseus	10%	n	Fac W
2. Inpatiens Capensis	80%	y	Fac W
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
= Total Cover			
50% of total cover: _____ 20% of total cover:_____			
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
50% of total cover: _____ 20% of total cover:_____			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species 95	x 2 = 188
FAC species _____	x 3 = _____
FACU species 5	x 4 = 20
UPL species _____	x 5 = _____
Column Totals: 100 (A)	208 (B)

Prevalence Index = B/A = 2.08

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

_X_ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** _X_ **No**_____

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

SOIL Sampling Point: _____

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10yr2/1	99	7.5 YR 3/4	2	Ris		V.F.	WSAB
8-10	10YR 4/1						VF	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- _X_ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- _X_ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- _X_ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- _X_ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: n/a

Depth (inches): _____

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

Remarks:

Sandy silty with Redox, Thin dark soil overlaying a sandy soil with signs of Redox.
Saturation within 1" of Surface

Appendix 4 Agency Correspondence

1. VTrans Archaeology – Ms. Jennifer Russell and Mr. Brennan Gauthier
2. US Army Corps of Engineers – Ms. Martha Abair
3. VT Department of Fish and Wildlife – Mr. Bob Popp
4. VT Agency of Natural Resources – Ms. April Hensel
5. VT Agency of Natural Resources – Ms. Rebecca Chalmers
6. Minutes of Field Site Walk
7. VT Fish and Wildlife Department – Ms. Alyssa Bennet

Zimbra **jdeiv@gmavt.net**

RE: Springfield - Hartness State Airport Improvements Ph 1 EOF report Response

From : Gauthier, Brennan <Brennan.Gauthier@vermont.gov> Tue, Aug 18, 2015 08:25 AM

Subject : RE: Springfield - Hartness State Airport Improvements Ph 1 EOF report Response

To : 'Jacqueline Dagesse' <jdagesse@eivtech.com>

Cc : Russell, Jeannine <Jeannine.Russell@vermont.gov>, Goldstein, Lee <Lee.Goldstein@vermont.gov>, Slesar, Chris <Chris.Slesar@vermont.gov>, Wright, Andrea <Andrea.Wright@vermont.gov>

Jacquie,

No issues with the report. Still waiting to get a formal clearance request from the PM. As you know, aviation projects come through our section a bit differently than normal requests. To keep everything streamlined, we ask that the project managers approach an environmental specialist to help facilitate. I will CC our regional environmental specialist to get this moving.

Thanks,

Brennan

Brennan Gauthier
VTrans Archaeologist
Vermont Agency of Transportation
Project Delivery Bureau
Environmental Section
1 National Life Drive
Montpelier, VT 05633
tel. 802-828-3965
fax. 802-828-2334
Brennan.Gauthier@state.vt.us

From: Jacqueline Dagesse [mailto:jdagesse@eivtech.com]
Sent: Sunday, August 16, 2015 10:11 AM
To: Gauthier, Brennan
Subject: Re: Springfield - Hartness State Airport Improvements Ph 1 EOF report Response

Brennan,

Did you have any additional concerns or questions regarding the report we provided?

Thank you,
Jacquie

From: "Gauthier, Brennan" <Brennan.Gauthier@vermont.gov>
To: "Jacqueline Dagesse" <jdagesse@eivtech.com>, "Russell, Jeannine" <Jeannine.Russell@vermont.gov>
Cc: "Goldstein, Lee" <Lee.Goldstein@vermont.gov>, "Slesar, Chris" <Chris.Slesar@vermont.gov>, "Marsden, Heath" <heath.marsden@jacobs.com>, "Elise Manning-Sterling" <emanning@hartgen.com>
Sent: Tuesday, July 28, 2015 9:33:34 AM
Subject: RE: Springfield - Hartness State Airport Improvements Ph 1 EOF report Response

Jacqueline,

Thanks for sending this along. I look forward to seeing the clearance request from Lee. She will work with the aviation section to coordinate a formal request.

Chris, can you work with aviation on this one?

Brennan

Brennan Gauthier
VTrans Archaeologist
Vermont Agency of Transportation
Project Delivery Bureau
Environmental Section
1 National Life Drive
Montpelier, VT 05633
tel. 802-828-3965
fax. 802-828-2334
Brennan.Gauthier@state.vt.us

From: Jacqueline Dagesse [mailto:jdagesse@eivtech.com]
Sent: Monday, July 27, 2015 1:10 PM
To: Russell, Jeannine; Gauthier, Brennan
Cc: Goldstein, Lee; Slesar, Chris; Marsden, Heath; Elise Manning-Sterling
Subject: Re: Springfield - Hartness State Airport Improvements Ph 1 EOF report Response

Hi Jen and Brennan,

Attached please find a report from Hartgen regarding the archeological comments / questions below.

I will definitely be working with Lee regarding proposed tree removal and time of year as the project moves forward.

Feel free to contact me with any additional questions.

Thank you,
Jacquie
--
Jacqueline Dagesse, MBA, CPESC, PMP
Environmental Engineer

EIV Technical Services
www.eivtech.com
55 Leroy Rd., Suite 15
Williston, VT 05495
off: 802.497.3653
cell: 802.324.5522
fax: 802.497.3656

From: "Russell, Jeannine" <Jeannine.Russell@state.vt.us>
To: "Jacqueline Dagesse" <jdagesse@eivtech.com>
Cc: "Gauthier, Brennan" <Brennan.Gauthier@state.vt.us>, "Goldstein, Lee" <Lee.Goldstein@state.vt.us>, "Slesar, Chris" <Chris.Slesar@state.vt.us>
Sent: Wednesday, July 1, 2015 4:50:05 PM
Subject: Springfield - Hartness State Airport Improvements Ph 1 EOF report

Hi Jacquie,

I have completed my review of Hartgen's End of Field letter for the Springfield Hartness State Airport proposed improvements including tree clearing and a new structure.
The overall report looks good although I do have a couple of comments/questions.

Hartgen included maps showing very general testing locations but they did not include the actual locations of the test pits, transects, etc. within the larger areas. This is especially important in Area 2 where much of the tree clearing is taking place. They state that they chose the highest sensitive areas to test but that there are others of lower sensitivity but still sensitive that they did not test. I'd like to know where those were and if they are sensitive, why were they not tested? Was it because of the scope of tree removal, etc.?

Will there be any grubbing of the trees or are stumps being left? What time of year will the tree clearing take place? It is obviously preferable to have tree removal done in the winter on frozen ground and if that's the case, then maybe we don't need to test the other areas in Area 2 but it wasn't explained. There are new regulations concerning tree removal and bat habitat. That will need to be considered (not archaeology but I wanted to let you know). You can contact one of our Biologists to find out more about that. They will probably recommend winter tree removal as well.

Also, given that we know the site area of VT-452 (found by UVM), this area will need to be fenced off during construction (orange snow fence) in the same manner that it was for previous work in that area of the airport. This will be a stipulation of the

clearance for archaeology.

In summary, I would like to see maps showing the exact testing locations for the 4 areas and a bit more explanation, supporting summary as to why some of the sensitive areas in Area 2 were left untested. As soon as I receive that information, we should be all set.

In answer to your question, yes, Brennan and I did divide up the state. I now have the northwest and northeast and he has the southwest and southeast regions. However, we are trying to finish up work that we started even if it's no longer in our region so there is some overlap. If you're not sure which one of us has the project, feel free to email us both. I've cc'd Brennan in this email so he is up to speed on the latest information.

Thanks and please let me know if you have any questions!
Jen

Zimbra **jdeiv@gmavt.net**

RE: Hartness State Airport Runway Safety and Apron Improvements Project- Information Meeting July 28 at 6 PM

From : Russell, Jeannine <Jeannine.Russell@state.vt.us> Tue, Jul 21, 2015 04:19 PM

Subject : RE: Hartness State Airport Runway Safety and Apron Improvements Project- Information Meeting July 28 at 6 PM

To : 'Jacqueline Dagesse' <jdagesse@eivtech.com>

Hi Jacquie,

Thanks for the information on this project.

Jen

From: Jacqueline Dagesse [mailto:jdagesse@eivtech.com]
Sent: Monday, July 20, 2015 12:23 PM
To: Jacqueline Dagesse
Subject: Hartness State Airport Runway Safety and Apron Improvements Project- Information Meeting July 28 at 6 PM

Jacob's Engineering has been working with VTrans to identify areas for safety improvements at the Hartness State Airport. These improvements include: correcting runway safety area deficiencies, vegetation removal to maintain safe approaches for arriving and departing aircraft, and adding additional parking apron area. The project is currently in the early design phase, and we are completing the National Environmental Policy Act (NEPA) documentation.

We highly encourage you to attend a public information meeting on July 28th at the Hartness State Airport to learn more about the proposed project. The meeting will begin at 6 PM. If you are unable to attend but have comments or questions regarding the project, please email me at jdagesse@eivtech.com. You can also reach me directly at 802-324-5522.

More information on this project is included within the attached project factsheet.

We look forward to seeing you on the 28th!

Jacquie
--
Jacqueline Dagesse, MBA, CPESC, PMP
Public Outreach Manager

EIV Technical Services

www.eivtech.com
55 Leroy Rd., Suite 15
Williston, VT 05495
off: 802.497.3653
cell: 802.324.5522
fax: 802.497.3656

Zimbra **jdeiv@gmavt.net**

Re: Hartness State Airport Runway Safety and Apron Improvements Project- Information Meeting July 28 at 6 PM (UNCLASSIFIED)

From : Jacqueline Dagesse <jdagesse@eivtech.com> Thu, Aug 06, 2015 08:56 AM

Subject : Re: Hartness State Airport Runway Safety and Apron Improvements Project- Information Meeting July 28 at 6 PM (UNCLASSIFIED)

To : Abair, Martha A NAE <Martha.A.Abair@usace.army.mil>

Hi Marty,

The project will involve tree removal within wetland areas to eliminate obstructions within the airport's approach surfaces. This is a significantly smaller area than the Newport State Airport and we are working now to quantify areas. The proposed logging operations for the Hartness State Airport project will occur on frozen ground during the winter.

We are currently completing the NEPA documentation, and we will setup a time to meet with you in person once we move into the permitting phase.

Feel free to contact me with any further questions, 802-324-5522.

Best,
Jacquie

----- Original Message -----
From: "Abair, Martha A NAE" <Martha.A.Abair@usace.army.mil>
To: "Jacqueline Dagesse" <jdagesse@eivtech.com>
Cc: "Abair, Martha A NAE" <Martha.A.Abair@usace.army.mil>
Sent: Tuesday, August 4, 2015 8:31:47 AM
Subject: RE: Hartness State Airport Runway Safety and Apron Improvements Project- Information Meeting July 28 at 6 PM (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Hey Jacquie
What's this project going to involve from the Corps' standpoint?

Marty

-----Original Message-----
From: Jacqueline Dagesse [mailto:jdagesse@eivtech.com]
Sent: Monday, July 20, 2015 12:23 PM
To: Jacqueline Dagesse
Subject: [EXTERNAL] Hartness State Airport Runway Safety and Apron Improvements Project- Information Meeting July 28 at 6 PM

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Jacqueline Dagesse, MBA, CPESC, PMP

Public Outreach Manager

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55 Leroy Rd., Suite 15

Williston, VT 05495

off: 802.497.3653

cell: 802.324.5522

fax: 802.497.3656

Classification: UNCLASSIFIED
Caveats: NONE

Zimbra **jdeiv@gmavt.net**

RE: Hartness airport

From : Popp, Bob <Bob.Popp@vermont.gov> Wed, Sep 02, 2015 08:46 AM
Subject : RE: Hartness airport 1 attachment
To : 'Scott Hance' <sheiv@gmavt.net>, Chalmers, Rebecca <Rebecca.Chalmers@vermont.gov>
Cc : 'Jacqueline Dagesse' <jdagesse@eivtech.com>

Thanks Scott, the Pursh's bulrush is an annual that seeds into exposed muddy shores so unlikely it would be in the area depicted in the photo.
Thanks for checking.
Bob

Bob Popp
Department Botanist
VT. Dept of Fish and Wildlife
Natural Heritage Inventory
(802) 476-0127

Please Note New Email: bob.popp@vermont.gov

From: Scott Hance [mailto:sheiv@gmavt.net]
Sent: Tuesday, September 01, 2015 5:50 PM
To: Chalmers, Rebecca
Cc: Popp, Bob; 'Jacqueline Dagesse'
Subject: RE: Hartness airport

Rebecca,
I finished conducting the R,T,E, inventory on August 28, 2015 at the Hartness state airport. I didn't find any species of concern during my assessment. In particular the area of concern that you mentioned which is a class III wetland was very dry. I believe that this area is absent of the Pursh's Bulrush. I have attached a photo to give you a better sense of the site. Please feel free to give me a call with any questions that you may have regarding my findings.

Scott Hance, ISA
Arborist/Field Naturalist

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55 Leroy Rd., Suite 15
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off: 802.497.3653
cell: 802.922.2370
fax: 802.497.3656

Hello Scott,

Could you conduct an R,T,E inventory for the uncommon Pursh's bulrush (Schoenoplectialla purshiana)? Bob Popp says it grows only in open wet areas so no need for a search if there is no impact to such areas. It is also an annual so it may or may not still be where he originally observed it or conversely it may have seeded in elsewhere.

I would like this information to be able to classify a small wetland that I understand is proposed for complete filling in for a hangar.

Rebecca

New email suffix for all State employees beginning July 27th:
rebecca.chalmers@vermont.gov

Wetland Program website: http://wsmd.vt.gov/wetlands.htm
Maps: http://anrmaps.vermont.gov/websites/WetlandProjects/default.html

VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION
WETLANDS PROGRAM

Rebecca, Chalmers, District Wetlands Ecologist
100 Mineral Street, Suite 303 Springfield, VT 05156
802-490-6192 cell / Rebecca.Chalmers@vermont.gov
www.watershedmanagement.vt.gov

From: Scott Hance [mailto:sheiv@gmavt.net]
Sent: Sunday, July 26, 2015 7:12 PM
To: Chalmers, Rebecca <Rebecca.Chalmers@state.vt.us>
Subject: Re: Hartness airport

Rebecca,
Thanks for getting back to me. My duties at Hartness is to complete all RTE work. I also assisted my coworker in completing the Wetland delineation. I was contacting you to discuss the particulars of the species located at the Hartness airport. Bob provided me with great information for other projects that have assisted me in finding other species that might otherwise be left out.
Thanks,
Scott

Scott Hance, ISA
Arborist/Field Naturalist

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55 Leroy Rd, Suite 15
Williston, VT 05495
off: 802.497.3653
cell: 802-922-2371
fax: 802-497-3656

From: "Chalmers, Rebecca" <Rebecca.Chalmers@state.vt.us>
To: "Scott Hance" <shance@eivtech.com>
Sent: Friday, July 24, 2015 3:50:34 PM
Subject: RE: Hartness airport

Hello Scott,

I received your voicemail. What can I help you with? What is your scope of duties on this project?

Sincerely,
Rebecca

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rebecca.chalmers@vermont.gov

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From: Jacqueline Dagesse [mailto:jdagesse@eivtech.com]
Sent: Tuesday, July 21, 2015 9:53 AM
To: Chalmers, Rebecca <Rebecca.Chalmers@state.vt.us>
Cc: Popp, Bob <Bob.Popp@state.vt.us>; Scott Hance <shance@eivtech.com>; jwaysville <jwaysville@eivtech.com>
Subject: Re: Hartness airport

Rebecca,

We can certainly do that. Scott will be giving you a call shortly to begin coordinating early in the process.

Thank you,
Jacquie

From: "Chalmers, Rebecca" <Rebecca.Chalmers@state.vt.us>
To: "Jacqueline Dagesse" <jdagesse@eivtech.com>
Cc: "Popp, Bob" <Bob.Popp@state.vt.us>
Sent: Tuesday, July 21, 2015 9:48:33 AM
Subject: RE: Hartness airport

Hello Jacquie,

I will also need to know about RTE species when they occur in the wetland or its buffer zone, per the Vermont Wetland Rules. Sometimes Bob and I get different data from consultants that does not allow us to understand which species are in wetlands. This lack of coordination slows down the process so I am reaching out to suggest we all be in the loop to try to figure out a smooth way to coordinate.

Rebecca

From: Jacqueline Dagesse [mailto:jdagesse@eivtech.com]
Sent: Tuesday, July 21, 2015 9:08 AM
To: Chalmers, Rebecca
Cc: Jason Waysville; Mojo, Jennifer; Popp, Bob; Scott Hance
Subject: Re: Hartness airport

Hi Rebecca,

Scott Hance of EIV completed an RTE assessment last year. Scott is also available to complete any additional field investigation if it is warranted. Scott has worked with Bob Popp in the past on a project in Burke for a similar assessment, and he will be following up directly with Bob to discuss his findings at Hartness.

I spoke to April Hensel yesterday regarding Act 250. We understand that as we move forward into the permitting phase for this project an Act 250 permit will be required.

I appreciate your thoughts and questions below.

Best,
Jacquie

From: "Chalmers, Rebecca" <Rebecca.Chalmers@state.vt.us>
To: "Jason Waysville" <jweiv@gmavt.net>
Cc: "Mojo, Jennifer" <Jennifer.Mojo@state.vt.us>, "Popp, Bob" <Bob.Popp@state.vt.us>, "Jacqueline Dagesse" <jdagesse@eivtech.com>

Sent: Tuesday, July 21, 2015 8:57:52 AM
Subject: RE: Hartness airport

Hello Jason,

I just noticed on the attached map that there are State Threatened and State Endangered plant species mapped at the airport, including in areas that are Class II Wetlands. Has a rare plant survey been conducted yet? I assume the Hartness Airport expansion project will go through Act 250?

Sincerely,
Rebecca

From: Chalmers, Rebecca
Sent: Tuesday, July 21, 2015 8:35 AM
To: Jason Waysville
Subject: RE: Hartness airport

Hello Jason,

Can you provide a wetland delineation map on a plan? It is helpful to reference the delineation as shown on a particular plan, when possible, when I give an email summary of a site visit.

From the attachments you emailed, it looks like runways 5 and 23 will have wetland impacts due to tree clearing. What about runway 11?

Thanks,
Rebecca

From: Chalmers, Rebecca
Sent: Friday, July 17, 2015 1:44 PM
To: Jason Waysville
Subject: Hartness airport

Hello Jason,
The airport safety tree cutting in the Class two wetland and buffer will require a Vermont Wetland Permit and a vegetation management plan so we know what the ongoing effects and impacts would be. Newport airport is an example veg mgt plan that we could provide if you wish.
Rebecca

Sent from my Verizon Wireless 4G LTE smartphone

Zimbra **jdeiv@gmavt.net**

Re: Hartness State Airport Runway Safety and Apron Improvements Project- Information Meeting July 28 at 6 PM

From : Jacqueline Dagesse <jdagesse@eivtech.com> Mon, Jul 20, 2015 12:35 PM

Subject : Re: Hartness State Airport Runway Safety and Apron Improvements Project- Information Meeting July 28 at 6 PM

To : Hensel, April <April.Hensel@state.vt.us>

Thank you April. We will coordinate during the permitting process to obtain an Act 250 permit.

Jacquie

From: "Hensel, April" <April.Hensel@state.vt.us>
To: "Jacqueline Dagesse" <jdagesse@eivtech.com>
Sent: Monday, July 20, 2015 12:30:29 PM
Subject: RE: Hartness State Airport Runway Safety and Apron Improvements Project- Information Meeting July 28 at 6 PM

Please note that the airport is under an Act 250 permit and a permit will be required. Thanks April Hensel

---

From: Jacqueline Dagesse [mailto:jdagesse@eivtech.com]
Sent: Monday, July 20, 2015 12:23 PM
To: Jacqueline Dagesse <jdagesse@eivtech.com>
Subject: Hartness State Airport Runway Safety and Apron Improvements Project- Information Meeting July 28 at 6 PM

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fax: 802.497.3656

Zimbra **jdeiv@gmavt.net**

Fwd: Hartness airport

From : Scott Hance <sheiv@gmavt.net> Thu, Aug 27, 2015 01:56 PM
Subject : Fwd: Hartness airport 2 attachments
To : Jacqueline Dagesse <jdagesse@eivtech.com>,
Jason Waysville <jwaysville@eivtech.com>

Sent from my iPhone

Begin forwarded message:

From: "Chalmers, Rebecca" <Rebecca.Chalmers@vermont.gov>
Date: July 28, 2015 at 10:35:54 AM EDT
To: 'Scott Hance' <sheiv@gmavt.net>
Cc: "Popp, Bob" <Bob.Popp@vermont.gov>
Subject: RE: Hartness airport

Hello Scott,

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Sent from my Verizon Wireless 4G LTE smartphone

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image001.jpg
8 KB

image001.jpg
8 KB

JACOBS

Project Notes

Two Executive Park Drive
Bedford, New Hampshire 03110
United States
T +1.603.666.7181
F +1.603.666.7185
www.jacobs.com

Client	VTrans Aviation	**Date**	March 1, 2016
Project	Hartness State Airport Environmental Assessment	**Project No.**	E2X60709
Prepared by	Heath Marsden	**File**	2-29-16 Field visit NLEB assessment.docx
Subject	**Field visit - NLEB maternity roost tree assessment**		
Participants	Alyssa Bennett, VTFWS; Scott Darling, VTFWS; Jason Farnsworth, USACOE; Jason Owen, VTrans Aviation; James Brady, VTrans Environmental; Kyle Obenauer, VTrans Environmental; Brennan Gauthier, VTrans Environmental; Scott Hance, EIV Technical;	**Copies to**	Participants; Richard Doucette, FAA; Files

Notes		Action
1	A field visit to Hartness State Airport (VSF) was conducted on Monday, February 29th. The purpose of the visit was to determine the suitability of the project area (see attached) as maternity roost habitat for the Northern Long Eared bat. Representatives from VT Fish and Wildlife Service (VTFWS), US Army Corps of Engineers (USACOE), Vermont Agency of Transportation (VTrans), EIV Technical Services (EIV) and Jacobs were present for the field walk.	
2	Mr. Farnsworth presented the group with a drawing showing the areas over USACOE property where the State of Vermont has avigation easements or deeded rights for vegetation removal. There is a small piece of property where it is unclear as to whether the State of Vermont has an avigation easement or deeded rights to clear. Mr. Farnsworth said that it would be up to the State to provide the research as to what the agreement is with USACOE.	
3	The team walked the project area identified on the attached drawings. It was widely accepted by VTFWS representatives (Ms. Bennett and Mr. Darling) that the location shown on the attached drawing as Area 1 is not indicative of typical NLEB roost habitat. Mr. Darling asked whether an area of connectivity might be preserved. Heath noted on the drawing where this could be possible.	
4	Mr. Farnsworth, USACOE had several concerns regarding	

	Notes	Action
	long-term maintenance of the project area to keep vegetation from encroaching on the protected airspace surfaces. Since the tree tops were mostly of similar height, it would appear as though the area would need to be clear cut. Mr. Marsden said that yes, a large area of trees would need to be removed within Area 1.	
5	Mr. Farnsworth also had concerns as to how the trees on the steep bank to the east within Area 1 would be handled. He said that he would like to know what the maximum height the trees could be before they would be a problem with the airspace and what would be the long-term maintenance plan once the trees were removed. At this time VTrans does not have a vegetation management plan in place to address the long-term maintenance of the area if/when the trees are cut. Mr. Marsden said he would look into what the maximum height above ground that the trees could be before they became penetrations to the overlying airspace surfaces. A future planning effort would be to develop a vegetation management plan for the area north of Runway 23 to insure that te	Jacobs to prepare a maximum tree height (above ground) drawing depicting the maximum height of trees above ground within each area proposed to be cleared.
6	The team proceeded to project Area 2. Ms. Bennett and Mr. Darling noted that this area has more mature trees that may support NLEB roosting activity. The idea of topping trees or girdling certain trees was brought forth. It was suggested that this would create additional habitat. Mr. Farnsworth said that trees that would be topped or girdled would eventually die and Mr. Farnsworth was concerned that dead trees may create a man-made hazard to visitors on the trail system. There are hiking trails which provide public access to this area.	
7	The team proceeded east/southeast to the access road, observing the trees within the proposed "cut" area. Several additional trees were observed at the bottom of the slope adjacent to the wetland area by the access road that would be good habitat for bats, woodpeckers, and other small animals.	
8	After the field walk, the team gathered at the terminal building to debrief the walk. It was generally accepted that Area 1 does not have sufficient habitat preferred by the NLEB. The trees within this area are small in diameter and not representative of the type generally preferred by the NLEB for roosting.	Jacobs will prepare a height map for maximum height above ground for trees within the project area. Jacobs to refine the tree clearing drawing to consider terrain and long-term clearing needs based on a maximum tree height. Jacobs will use a site index to determine what the maximum potential tree height is for the project area. Jacobs will depict an area where

JACOBS

Project Notes

Field visit - NLEB maternity roost tree assessment
March 1, 2016

Notes	Action
	forest connectivity can remain.

Heath Marsden

Heath Marsden
Senior Airport Planner
603.666.7181
Heath.Marsden@jacobs.com

These minutes were prepared by Heath Marsden of Jacobs Engineering Group. Please review and notify Heath of any comments or corrections (heath.marsden@jacobs.com Phone 603.518.1779). Failure to notify Jacobs of any correction will imply acceptance of the minutes as provided.

Area 1
3 ACRES
Area 2
4 ACRES
Area 3
.5 ACRES

PT#	Species	Avg_DBH
1	Beech; Eastern Hemlock; White Ash; Pin Cherry	11
2	Green Ash; Red Maple; Aspen; Black Cherry;	8
3	Beech saplings; Poplar	6
4	Beech saplings; Aspen; Cherry	5
5	Poplar; Sugar Maple; Beech saplings; Grey Birch;	6
6	Aspen; Beech; Cherry; Red Oak;	5
7	Cherry; Grey Birch; Beech; Aspen	4
8	Poplar; Cherry	6
9	Aspen; Cherry	5
10	Poplar; Beech saplings	4
11	Poplar; Beech; Cherry	4
12	Cherry; Poplar; Beech	8
13	Yellow Birch; White Ash; Poplar	10
14	Pitch pine; Poplar	
15	Beech; Pitch pine; Cherry	7
16	White pine; Cherry; Beech	6
17	Cherry; Poplar	6
18	Poplar; Beech; Cherry	5
19	Poplar; Beech; Cherry	5

Legend

- Tree species - Field survey location 02-08-2016
- Penetrations to AC 150/5300-13A Table 3-2 Row 3 Surface
- Objects within 10' of AC 150/5300-13A Table 3-2 Row 3 Surface
- Runway 23 Row 3 Threshold Siting Surface (400'x1,000'x10,000'@20:1 slope)
- Proposed Tree Clearing Areas - 7.5 acres
- RWY 23 RPZ
- Parcel Boundaries

Notes:
(1) Assumes Runway 23 remains a visual approach only runway. Runway end elevation = 554.2'msl;
(2) Threshold Siting guidance provided in FAA AC 150/5300-13A Table 3-2 Row 3. Approach end of runways expected to serve large airplanes (Visual day/night); or instrument minimums >1 statute mile (day only);
(3) Obstructions based on aerial photography captured on August 29, 2012 by The Sanborn Mapping Co.
(4) In wooded areas, tree canopy elevations were reported for the highest portion of the canopy using an average point spacing of 200-feet for the area within 4,000-feet of the runway and an average point spacing of 400-feet fo the remaining Part 77 area.
(5) 59 penetrations on 4 parcels. Only vegetative objects were identified within 10-feet of surface. Runway 23 threshold will need to be displaced 1,300-feet if controlling obstructions can not be removed, marked, or lighted.
(6) Field survey of tree species, diameter at breast height and canopy estimates conducted by biologist/arborist Scott Hance, EIV Technical Services with Jacobs and VTrans on 02-08-2016.

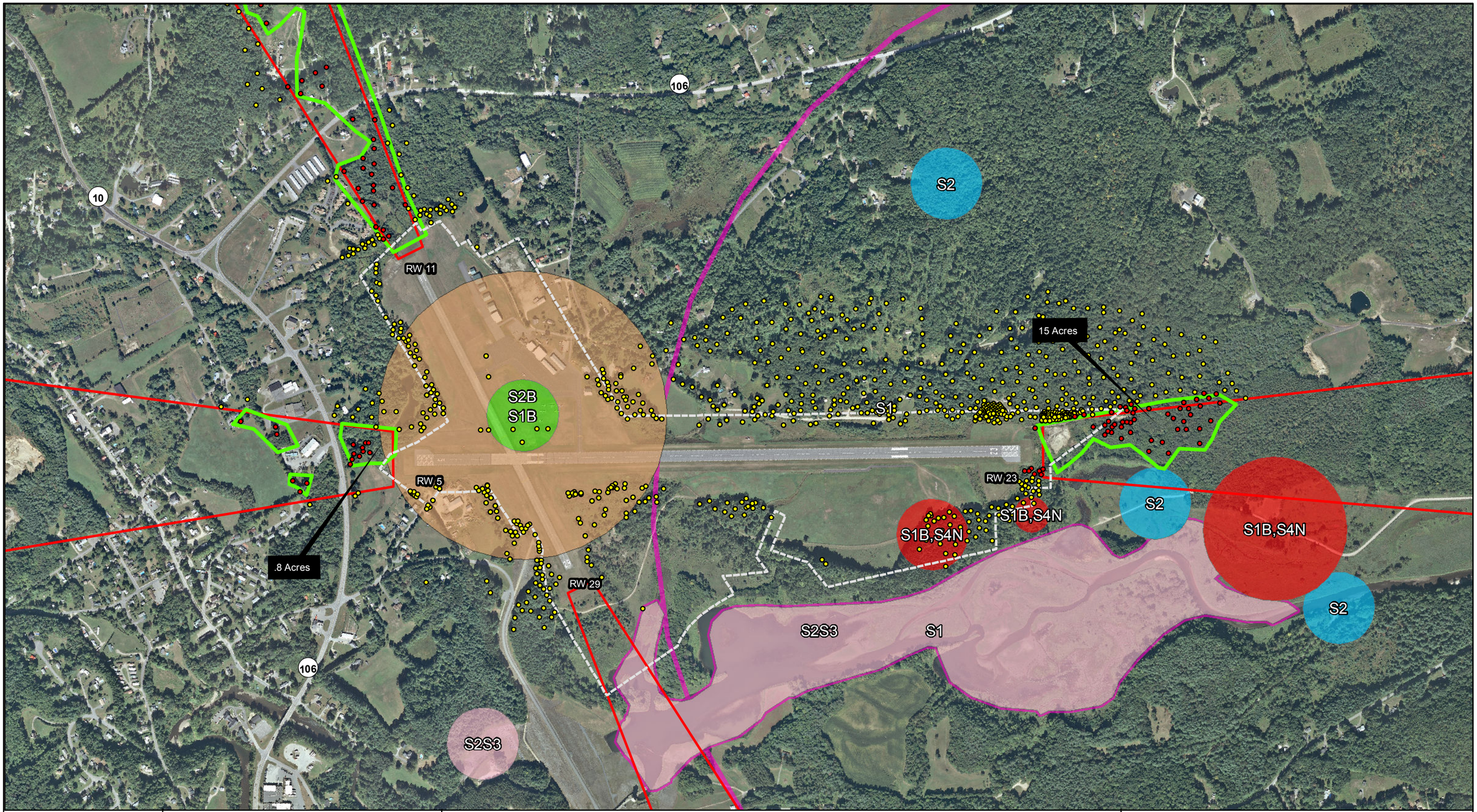
100 0 200 Feet

JACOBS™

Recommended Tree Clearing - Field Survey RUNWAY 23

NAME: hmarsden DATE: Feb. 2016 | DWG. A

Document Path: P:\2014\E2X60709 - VTrans Hartness State Airport EA\600\ISC\850 DRAWINGS\ArcMap\Runway 23 Proposed Tree Clearing Areas.mxd



Prepared for:

Prepared by:

JACOBS

LEGEND

- Penetrations to FAA AC 150/5300-13A Threshold Siting Surface
- Transitional Surface Penetrations
- Airport Property Line
- Proposed Tree Clearing Areas
- Part 77 Approach Surface

S_RANK
- S1
- S1B
- S1B,S4N
- S2
- S2B
- S2S3

Data compiled from the following sources:
(1) Orthophoto acquired from The Saborn Mapping Co. Inc on August 29, 2013;
(2) GIS Information from Vermont Center for Geographic Information (VCGI);
(3) Proposed obstruction clearing based on Airspace Analysis and Runway Safety Area Study; Jacobs, May 2013.
(4) Property lines are based on "Airport Property Map" prepared for Vermont Agency of Transportation (VAOT) by Clough Harbour Associates, March 1999.

0 500 1,000 Feet

Proposed Obstruction Clearing / Potential Northern Long Eared Bat Habitat

Environmental Assessment
Hartness State Airport
Springfield, VT

Figure 3-7

Document Path: C:\Users\hmarsden\Desktop\VSF Easement\NLEB habitat drawing.mxd

VERMONT

Fish & Wildlife Department
Rutland District Natural Resources Office
271 North Main Street, Ste. 215
Rutland, VT 05701
www. VtFishandWildlife.com

[phone] 802-786-0040
[fax] 802-786-3870
[tdd] 802-828-3345

Agency Of Natural Resources

[direct line] 802-786-0098
alyssa.bennett@state.vt.us

14 March 2016

Heath Marsden
Jacobs
Senior Airport Planner
Two Executive Park Drive
Suite 205
Bedford, NH 03110

RE: Hartness State Airport tree clearing and northern long-eared bat impacts

Mr. Marsden,

Thank you for contacting us regarding planned tree clearing and selective cutting within the Hartness State Airport right of way. As we discussed, the proposed tree clearing and cutting is within close proximity to a known maternity colony, based on the post-White-nose Syndrome capture of a reproductive female northern long-eared bat on US Army Corp of Engineer (USACE) lands in 2010.

Because of the proximity to a known maternity colony and the presence of suitable roosting and foraging habitat within the four acre patch indicated on the maps you have provided, the project has the potential to impact habitat of the northern long-eared bat, a state endangered and federally threatened species. Specifically, the proposed clear cutting and selective cutting of mature, large diameter trees will reduce the availability of potential roost trees. If; however, the cutting or trimming of trees greater than 4 inches DBH is conducted between October 1 and April 14 and the following condition is met, we would consider this project not likely to adversely affect the northern long-eared bat based on the fact that suitable roosting and foraging habitat would be maintained as mitigation:

1. In cooperation with the Vermont Agency of Transportation, USACE, and the Vermont Fish and Wildlife Department, create a vegetation management plan for the forested corridor along the reservoir and wetland area. The management plan must retain forested connectivity along the southern border of the right of way between forested habitat blocks. This forested connection must maintain a 60% canopy closure and retain potential roost trees.

Please do not hesitate to contact me should you need clarification or have questions.

Sincerely,

Alyssa Bennett
Small Mammals Biologist

cc. Scott Darling (VFWD)
Jason Owen
Scott Hance (EIV Technical Services)
James Brady (VTRANS)
Richard Doucette (FAA)
Jason Farnsworth (USACE)

Clear cut

Clear cut

Selective cut

Selective cut

Selective cut

Selective cut

3 ACRES

4 ACRES

.5 ACRES

Green area represents areas where trees can reach a maximum height of 90' above the ground and remain below federally protected airspace surfaces without needing to be removed or topped. This area could be maintained for forrest connectivity.

Legend

- USGS Contours (10' interval)
- Proposed Tree Clearing Areas - 7.5 acres
- Penetrations to AC 150/5300-13A Table 3-2 Row 3 Surface
- Runway 23 Row 3 Threshold Siting Surface (400'x1,000'x10,000'@20:1 slope)
- Tree Height 90' AGL or less allowed

100 0 200 Feet

Notes:
(1) Assumes Runway 23 remains a visual approach only runway. Runway end elevation = 554.2'msl;
(2) Threshold Siting guidance provided in FAA AC 150/5300-13A Table 3-2 Row 3. Approach end of runways expected to serve large airplanes (Visual day/night); or instrument minimums >1 statute mile (day only);
(3) Obstructions based on aerial photography captured on August 29, 2012 by The Sanborn Mapping Co.
(4) In wooded areas, tree canopy elevations were reported for the highest portion of the canopy using an average point spacing of 200-feet for the area within 4,000-feet of the runway and an average point spacing of 400-feet fo the remaining Part 77 area.
(5) 59 penetrations on 4 parcels. Only vegetative objects were identified within 10-feet of surface. Runway 23 threshold will need to be displaced 1,300-feet if controlling obstructions can not be removed, marked, or lighted.

JACOBS™

Recommended
Tree Clearing - Field Survey
RUNWAY 23

NAME: hmarsden DATE: Feb. 2016 | DWG. A

Document Path: P:\2014\E2X60709 - VTrans Hartness State Airport EA\600\DSC\850.DRAWINGS\ArcMap\Max tree height map - RW23 end.mxd

Appendix 5 Public Outreach Materials

The following items are provided in this Appendix:

1. Stakeholder List
2. Project Fact Sheet
3. Public Outreach Plan
4. EIV Technical Services Letter Summary of Door-to-Door Comments, July 15, 2015
5. Public Information Meeting Transcript

Hartness State Airport Stakeholder List

Interest	Stakeholder	Email	Address	Phone Number
Cultural	Jen Russell, VTrans Archaeology Officer	jeannine.russell@state.vt.us	1 National Life Drive, Davis 2, Montpelier, VT 05620-3702	802-828-3981
	Judith Ehlrich, VTrans Historic Preservation Officer	Judith.Ehrlich@state.vt.us	1 National Life Drive, Davis 2, Montpelier, VT 05620-3702	802-828-1708
Planning	Southern Windsor Regional Planning Commission (Katharine Otto)	kotto@swcrpc.org	38 Ascutney Park Road, Ascutney, VT	802-674-9201
	VTrans District 2 Office (Tammy Ellis)	Tammy.Ellis@state.vt.us	870 US Route 5, Dummerston, Vermont 05301	802-254-5011
	Airport Commission (Chair) - Peter MacGillivray	sandymac@vermontel.net	199 Highland Road, Springfield, VT 05156	802-376-5252
	Civil Air Patrol		13 Airport Road, No. Springfield VT 05150	802-886-8199
	Dartmouth Hitchcock Advanced Response Team		Dartmouth Hitchcock Medical Center, Lebanon, NH	603-650-4600
	New Engalnd Soaring Association	info@flynsea.com	13 Airport Road, No. Springfield VT 05150	
	Springfield Selectboard (Chair) - Kristi Morris	kmorris@lovejoytool.com	59 Coolidge Road Springfield, VT 05156	802-885-2949
	Springfield Development Review Board (Chair) - Joseph Wilson	breezyhill@vermontel.net	806 Breezy Hill Road, Springfield, VT 05156	802-591-2812
	Springfield Planning Commission (Chair) - Wilbur Horton	Whorton67@yahoo.com	383 South Street, Springfield, VT 05156	802-591-4326
	Springfield Town Manager - Tom Yennerell	tosmanager@vermontel.net	96 Main Street, Springfield VT 05156	802-885-2104
	Springfield Town Clerk - Barbara A. Courchesne	tosclerk@vermontel.net	96 Main Street, Springfield VT 05156	802-885-2104
	Springfield Planning and Zoning - William G. Kearns	toszoning@vermontel.net	96 Main Street, Springfield VT 05156	802-885-2104
	Weathersfield Town Manager - Jim Mullen	townmanager@weathersfield.org		802-674-2626
	Weathersfield Town Clerk - Flo-ann Dango	townclerk@weathersfield.org		802-674-9500
	Weathersfield Land Use - Charles Wise	landuse@weathersfield.org		802-674-2626
	Weathersfield Select Board	wthrsfld@weathersfield.org		
	Springfield On the Move (Downtown Organization)		6 Valley Street, Springfield VT 05156	802-885-1527
Environmental	Army Corps of Engineers (Martha Abair)	Martha.A.Abair@usace.army.mil	11 Lincoln St, #200, Essex Junction, VT 05452	802-872-2893
	VTFWD (Bob Popp)	Bob.Popp@state.vt.us	5 Perry Street, Suite 40, Barre, VT 05641	802-476-0127
	Stream Alterations Engineer (Todd Menees)	Todd.menees@state.vt.us	100 Mineral St, Suite 303 Springfield, Vermont 05156	802-345-3510
	VT ANR Stormwater Specialist (Chris Gianfagna)	chris.gianfagna@state.vt.us	1 National Life Drive, Davis 2, Montpelier, VT 05620-3702	802-490-6174
	VT ANR Wetland Specialist (Rebecca Chalmers)	rebecca.chalmers@state.vt.us	1 National Life Drive, Davis 2, Montpelier, VT 05620-3702	802-490-6192
	ACT 250 District Coordinator (April Hensel)	april.hensel@state.vt.us	100 Mineral Street, Suite #305, Springfield, VT 05156	802-885-8844
	VTrans Environmental Specialist (Lee Goldstein)	lee.goldstein@state.vt.us	1 National Life Drive, Montpelier, VT 05620-3702	802-828-3985
	VTrans Stormwater Management Engineer (John Armstrong)	jon.armstrong@state.vt.us	1 National Life Drive, Montpelier, VT 05620-3702	802-828-1332
	VTrans Biologist (John Lepore)	john.lepore@state.vt.us	1 National Life Drive, Montpelier, VT 05620-3702	802-828-3963
	VTrans Operations Stormwater (Jennifer Callahan)	Jennifer.Callahan@state.vt.us	1 National Life Drive, Montpelier, VT 05620-3702	802-498-4947
Abutters / Tenants	Hartness State Airport Hangar Tenants			
	Donald and Arlene Gurney		8 Gurney Road, No Springfield VT 05150	
	Donald Gurney		14 Gurney Road, No Springfield VT 05150	
	Jeffrey W and Deborah S Blauw		65 Stewart Place, Chester VT 05143-9444	
	Susan P Dana		35 Clark Street, No Springfield VT 05150	
	Joan M Alles and Virginia M Baker		33 Clark Street, No Springfield VT 05150	
	Gerald G Roundy		22 Maple Street, No Springfield VT 05150	
	James W and Patricia A Meyer		29 Clark Street, No Springfield VT 05150	
	Edward J Sloan		23 School Street, No Springfield VT 05150	
	Jonathan and Thedora Kingsbury Revocable Trust		105 Baltimore Road, No Springfield VT 05150	
	Stephen B and Donna K Brunnquell		107 Kline Street, Harrington Park NJ 07640	
	Larry and Sueann Griswold		Box 74, No Springfield VT 05150	
	Joseph Fletcher		72 County Road, No Springfield VT 05150	
	Howard and Marlene Hill		76 County Road, No Springfield VT 05150	
	Larry and Sueann Griswold		74 County Road, No Springfield VT 05150	
	Duane Kingsbury c/o Steven Kingsbury		545 Kirk Meadow Road, Springfield VT 05156	
	Rachel Lyles		68 County Road, No Springfield VT 05156	
	Daniel V Hadwen		4 Grace Drive, No Springfield VT 05150	
Legislators	Senator John F. Campbell	jcampbell@leg.state.vt.us	P.O. Box 1306, Quechee, VT 05059	802-295-6238
	Representative Leigh Dakin	ldakin@leg.state.vt.us	P.O. Box 467, Chester, VT 05143	802-875-3456
	Representative Alice M. Emmons	aemmons@leg.state.vt.us	318 Summer St., Springfield, VT 05156	802-885-5893
	Representative Robert Forguites	rforguites@leg.state.vt.us	P.O. Box 303, N. Springfield, VT 05150	802-886-2654
	Senator Dick McCormack	rmccormack@leg.state.vt.us	127 Cleveland Brook Rd., Bethel, VT 05032	802-234-5497
	Senator Alice W. Nitka	anitka@leg.state.vt.us	P.O. Box 136, Ludlow, VT 05149-0136	802-228-8432

Project Factsheet July 2015

VERMONT
AGENCY OF TRANSPORTATION

Project Manager:
Jason Owen
Aviation Project Manager
VTrans

Design Consultant:
Jacobs Engineering

Design Subconsultants:
EIV Technical Services
Hartgen Archaeological Associates

PROJECT MILESTONES

Project Information Meeting
July 28, 2015
Public Hearing
August / September 2015
Project Design
Winter / Spring 2016
Environmental Permitting
Summer 2016
Target Construction Schedule
Begin: Winter 2016/2017

The environmental documentation for this project is posted to the following website: http://aviation.vermont.gov/airports/hartness

VERMONT
AGENCY OF TRANSPORTATION

Hartness State Airport
Runway Safety and Apron Improvement Project

Project Information Meeting:
July 28, 2015 at 6PM at the Hartness State Airport
15 Airport Road, North Springfield, VT

Project Location: The Hartness State Airport is located at 15 Airport Road in North Springfield, Vermont and is owned and operated by the Vermont Agency of Transportation (VTrans). Most of the airport is in Springfield with a portion of Runway 23 in Weathersfield.

Project Background: The Hartness State Airport is designated by the FAA as a general aviation airport, which means that it does not accommodate airline service. The airport is designated by VTrans as a "Regional Service Airport", which accommodates a variety of different types of GA activity from business and corporate aircraft, to public service including the Civil Air Patrol (CAP), Dartmouth Hitchcock Advanced Response Team (DHART) medical helicopters, law enforcement agencies, privately owned/owner-flown aircraft, as well as gliders (the New England Soaring Assoc.), and other recreational aircraft.
VTrans has sponsored a number of studies at Hartness State Airport analyzing aviation demand, facility requirements, financial management, as well as compliance with FAA design standards, specifically the protection of the FAA-defined imaginary surfaces and runway safety areas.

Project Description: As a result of these studies, VTrans has identified several safety and facility improvements as part of Jacobs Engineering Master Plan recommendations. These recommendations include:

1. Correct Runway Safety Area (RSA) deficiencies for the currently non-standard RSA's for Runways 05, 23, and 11 to meet FAA safety design standards;
2. Vegetation removal within the protected Airspace Surfaces for Runways 05 -23 and 11-29 to maintain safe approaches for arriving and departing aircraft; and
3. Increase aircraft parking apron area to meet the anticipated demand for aircraft parking.

Project Status: The project is currently in the early design phase, and the project team is completing the National Environmental Policy Act (NEPA) documentation. This documentation includes: collection of existing conditions data, evaluation of design alternatives, and analysis of resource impacts. As a result of this process a preferred alternative will be selected and advanced through design and construction.

For technical questions regarding this project, please contact the Design Project Manager, Heath Marsden, at 603-518-1779.

For general questions or information regarding project meetings, please contact the Project Outreach Manager, Jacqueline Dagesse at 802-324-5522.

EIV TECHNICAL SERVICES
55 Leroy Rd, Suite 15
Williston, VT 05495
Tel: 802-497-3653 Fax: 802-497-3656

July 15th, 2015

Heath Marsden
Senior Airport Planner
Jacobs Engineering
Two Executive Park Drive, Suite 205
Bedford, NH 03110

Re: Hartness (Springfield) State Airport
Public Outreach Door-to-Door

Mr. Marsden:

As part of our project outreach plan for the Hartness State Airport during the NEPA process, I went door-to-door to abutting property owners and those who have proposed tree clearing near their properties on July 14, 2015. At several properties I left copies of the project factsheet as no one was home. We will also be mailing copies of the project factsheet to ensure they are received.

The following individuals expressed their concerns and comments regarding the proposed project:

- The owner of the ***Springfield Fence Company*** was very pleased that we stopped by her property prior to the project information meeting. She was leaving for vacation later that afternoon and would not be back until after July 28th. She had a copy of the newspaper public notice on the project and is very interested in learning more details as the project continues to move forward. Her main concern was the visual and noise impacts from clearing numerous trees on and near her property. The removal of these trees would allow direct view of their commercial operation to four residential homes. These trees also provide a buffer to the noise from her equipment and trucks during the early morning hours and later afternoon / evening hours. She also recommended that the orthographic imagery that we use on our draft plans be updated to 2015, if possible. There were several trees cut on her property in 2014 that she would like reflected within the plans.
- A residential home located at ***35 Clark Street*** is faced towards the Springfield Fence Company property. They feel that the trees between the two properties allows for a natural screen between their residential neighborhood and the commercial activities at Springfield Fence Company. They would like the trees to remain.
- The residential home located at ***33 Clark Street*** understands the safety concerns regarding obstruction removal. The owner of this home is ok if the trees are removed on the Springfield Fence Company property.

EIV TECHNICAL SERVICES
55 Leroy Rd, Suite 15
Williston, VT 05495
Tel: 802-497-3653 Fax: 802-497-3656

- Donald Gurney was not home when I stopped by his home on July 14, 2015. His neighbor highly recommended that we meet with him in person early in the process for this project. The proposed work will have little impact on him, but as an abutting property owner he would like to be informed. His neighbor believes he plans on attending the project information meeting on July 28, 2015.

Any subsequent phone calls or comments will be documented to be included within our NEPA documentation.

Sincerely,

EIV Technical Services

Jacqueline Dagesse, MBA, PMP, CPESC
Project Outreach Manager

STATE OF VERMONT

IN RE:)
HARTNESS STATE AIRPORT)
RUNWAY AREA,OBSTRUCTION)
REMOVAL AND APRON)
IMPROVEMENT)

PUBLIC INFORMATION MEETING

Recorded on Tuesday, July 28, 2015
Hartness State Airport
15 Airport Road
N. Springfield, Vermont 05150
Commencing at 6:04 p.m.

Present:
Jacqueline Dagesse, EIV Technical Services
Heath Marsden, Jacobs Engineering
Jason Owen, Aviation Project Manager
Jason Waysville, EIV Technical Services
Public in Audience

Transcribed by: Pamela Mayo Hamel

TUESDAY, JULY 28, 2015; 6:04 P.M.

MS. DAGESSE: So good evening, and welcome to the public information meeting for the Hartness State Airport Runway Safety and Apron Improvements Project.

I'd like to introduce our project team. Jason Owen, he's the aviation project manager; Jason Waysville, who's the civil engineer and wetland scientist from EIV; Heath Marsden, who is the design project manager from Jacobs Engineering; myself, who is a project outreach manager and environmental engineer from EIV. And those who are not here tonight include the design and planning staff of Jacobs Engineering, environmental staff of EIV Technical Services, an archaeologists at Hartgen Archaeology and Associates.

So the NEPA process, number 2 on your agenda, what is "NEPA"? "NEPA" stands for the National Environmental Policy Act, and it requires the environmental review of proposed projects under one of three thresholds. The first and lowest threshold is a categorical exclusion; next is an environmental assessment, and the highest threshold is an environmental impact statement. So depending

on the project impacts and environmental impacts, cultural resources within the proposed project area, the threshold is determined. And for this project, we will have an environmental assessment completed.

Generally an EA, or environmental assessment, includes the need for the project, the alternatives which are developed, environmental impacts per alternative and the listing of agencies and persons contacted regarding the project. This includes all of you here tonight learning more information about the project.

So far we have collected existing conditions data, where some of you may have received a letter in the mail last fall requesting access to your property; that was for the environmental and cultural resource investigation. We have that data included on some of these posters here. We also recently went door to door, where I met some of you folks and property owners who would be most impacted by this project, we discussed the project, handed out the project fact sheet and documented some comments that we received.

We've also developed project alternatives, and we started the process for early coordination with regulators regarding our project. A draft

environmental assessment will be complete over the next month, or so, which will be followed by a public hearing. If you have your information on the sign-up sheet, I can reach out to you again to let you know the timing for the public hearing.

I will now turn it over to Heath Marsden, who's going to discuss the safety analysis that was completed and the alternatives that his firm developed.

MR. MARSDEN: Hello, Heath Marsden with Jacobs Engineering. A couple years ago we started a master plan for the airport, and as a result of that, a runway safety area study. In the master plan process, we look at all the safety areas around the airport and protected air space around the airport. As a result of that, the FAA requires the airport to keep a distance beyond and prior to each runway end free and clear objects and to certain grading criteria.

Here at Hartness, at the four runway ends, three of them do not meet the FAA'S criteria for clear and graded safety areas. On the 5 end, if you look at the boards here, on the 5 end, 5/23 is the airport's longest and primary runway. There's an instrument approach for this runway, so it is one of

the most critical runways for the airport, it's 5,501 feet long. So off the end of each runway, there's supposed to be an area for the aircraft to overrun the runway or undershoot the runway, and that's to prevent loss of life or substantial damage to an aircraft. It also will allow firefighting people to be able to access the end of the runway safely.

So off the 5 end, they're actually short in the required safety area for clearing and grading by 82 feet on this end. On the 23 end, they're short by 129 feet. On the 11 end, they're short by 22 feet. So as a result of that, the safety error deficiencies and what led to the EA, we have to look at alternatives to provide the airport with full safety areas for the safety of flight and aircraft flying in and out of the airport.

So we looked at several alternatives. One is full-build safety areas, and the full-build option would be basically building out another 82 feet in this direction for the 5 end, another 129 feet on this end, which involves clearing -- I mean -- yeah, clearing, a lot of fill, grading. And then on the 11 end, it would be 22 feet in that direction. That's the full-build option,

that's most likely extremely expensive, there's wetlands impact and a host of other issues -- and tree-clearing, as well.

The second option we looked at is displacing the airport's threshold. That would have a negative impact on the airport, because then you're reducing the landing length available for aircraft to operate in and out of this airport. One of the attractions as an airport is, it gets quite a bit of corporate activity, and that in turn for the community -- is a return on the community because you're bringing in corporations, and you want to be attracting business and corporate-type activity to stimulate economic growth in the area. So we never want to reduce runway length to the airport here because that's a hit on a type of aircraft that operate in and out of this airport with corporate-type jets. So that would reduce Runway 5/23 by 200 feet on each end if we couldn't get the full safety areas on them.

The third alternative we looked at is what we call the hybrid option. That's a use of -- it's a mix of utilizing what we currently have for existing safety areas off of each runway, and then using what's called declared distances. It's

basically paperwork for the FAA saying that the airport, instead of building out 129 feet this way, we're going to use 129 or 82 feet, in this case, 82 feet of runway as safety area. So now your safety area starts as part of the runway and extends out the required 300 feet this way.

The effect that that has on the airport is that the corporate operator, the turbine aircraft, they have to do calculations when they take off and land on the runway. It's called take-off run available, landing distance available and accelerate-stop distance available. What that would effect is their landing distance available; it would reduce it by 129 feet on -- 82 feet on this end and 129 feet on this end, which is still better than displacing the thresholds 200 feet.

The other problem with displacing the thresholds is, it's not just a painting exercise. If we were to displace the threshold, the striping would end up here, you'd have a threshold line here and markings indicating that this was a threshold here formerly 5/23, because as an electronic navigational aid associated with the runway, you also have the expense of relocating all those navigation aids, so it becomes very expensive

quickly. Same thing on this end. The threshold line would be up here, you'd have displaced threshold markings along with relocated nav aids.

So those are the three alternatives that we looked at as part of the master plan and will be evaluating any environmental assessment.

The other component of the environmental assessment is tree-clearing and wetlands impacts associated with that. The green outlines here represent areas of tree-clearing. As I mentioned at the start of this, the airport's required to keep protected air space surfaces clear. There's two different surfaces that we look at when it comes to protected air space.

One is called the approach surface, and these drawings over here -- you'll get a chance to look at all these boards after we finish talking in depth and let people station by them, but -- for example, on the Runway 5 end, we've identified specific trees or areas of trees that need to be cut to meet the clearing requirements of the approach surface, which is this red line here, and that is called the threshold sighting surface. If the approach surface can't be cleared, and that's the ultimate goal is to clear the approach surface,

because that provides the landing path that is free and clear of obstacles for pilots operating at the airport.

Now when you're operating visually on a day like this, it's generally not a problem to stay away from high trees, but because this airport has a missed approach, when you're going down to minimums, you know, 300 feet above the ground, and you can't see anything, you're hoping that the airport has clear approach surfaces. So that's what these surfaces are intended to do, is to provide a safe landing and take-off path for aircraft operating in and out of the airport.

When you get around to the board, you'll see these little sticks and numbers sticking up through each of these surfaces. Those objects are the ones that are required to be cleared and cut. Now we have identified areas on here. This doesn't mean that this whole area has to be clear-cut, there are specific areas within here that we can do selective cutting in, so we're not proposing to go clear-cut all these areas here. For one thing, it would be extremely cost-prohibitive.

And then the other thing is, the airport and VTrans will be trying to get avigation

easements to clear these areas. What a avigation easement is, it just allows the airport -- or VTrans, rather, to come on somebody's property and keep those surfaces clear. So any growth that comes up in the future, VTrans will be able to come and cut those trees down that obstruct the surfaces.

So that, in a nutshell, is our portion of the EA. We're evaluating alternatives now and refining the concepts.

What was the next thing on the agenda? I think that was it, right?

MS. DAGESSE: Yes, we talked about the alternatives, so now I'll open it up to questions and comments.

MR. MARSDEN: Comments, questions?

MR. NELSON: Yeah, you're talking 5 -- what is it 5 3 and 11?

MR. MARSDEN: Yeah, 5 --

MR. NELSON: I know 11 is down that end. Where's 5 and where's 23 at?

MR. MARSDEN: If you look out in this direction here, --

MR. NELSON: Yeah.

MR. MARSDEN: -- 5 is that way, 23.

MR. NELSON: Okay. But -- (unclear), sir.

UNIDENTIFIED SPEAKER: 5's that end.
MR. MARSDEN: Yeah, 5 here, 23 that way.
MS. DAGESSE: And if you can just state your name before a question or comment. Sir, if I could just --
MR. NELSON: Dan Nelson.
MS. DAGESSE: Dan Nelson, thank you.
MR. MARSDEN: Anything else? If there's no other questions, feel free to walk around the boards. You can ask us questions individually. I urge you to take a look at these planned profiles around here, too, because this identifies the trees that need to be cut and the surfaces, and it's a pretty clear indication as to why we need those structures removed.
UNIDENTIFIED SPEAKER: Did you want to mention about the piece --
MR. MARSDEN: Oh, I'm sorry, yeah, there was one other -- the other component, major component of this is, because the airport receives corporate activity here, and demand is increasing, one of the things the airport would like to provide, a safe and secure area for corporate airplanes to hangar-overnight, in addition to meeting any kind of hangar demands that evolve at the airport.

So we developed a concept to take a piece of property over here, which is a former trucking school, I believe, and pave it and then add several corporate-type hangars. This green thing here is the existing tractor-trailer storage building over there. The barn and the house, they could be removed. And there's a couple additional hangars for medium-sized general aviation aircraft, these would be larger jets, like a Gulfstream.

Now this concept does not mean the airport's going to get a bunch more traffic, it probably will not change the amount of aircraft operations here at all. What it will do is allow a high-dollar aircraft that comes in here to safely store their aircraft overnight or for an extended period of time, so that's what this concept is, and it's purely demand-driven. This is multiple years out, most likely, and only if the demand occurs that it necessitates building this concept.

Any questions on that? Yes, Peter.

MR. MACGILLIVRAY: Peter MacGillivray with the Springfield Airport Commission. Could you go over the time line of what this process is and kind of reiterate? You know, in other words, you said that there would be a finalization of the project

like October of this year and --

MR. MARSDEN: Yes.

MR. MACGILLIVRAY: Could you go over that just again?

MR. MARSDEN: So in terms of the environmental assessment schedule, we're looking to route the entire project up by November. There is one more chance for the public to come out for a public hearing. Once we've analyzed all the alternatives, a draft report will be made available on VTrans' web site, and we'll also have hard copies here at the two town offices, Weathersfield and Springfield, and at the library of each, for people to pick up a hard copy.

Then we have the public information -- public hearing, I'm sorry. Then it goes to FAA for comment. Everybody gets a chance to comment on it. We address the comments, and then the EA gets finalized, and we're hoping again for that to occur in November.

After that, if the FAA and all the agencies agree, and we've refined the concepts, to move forward from that, the airport would then most likely, over the next couple years, try to seek avigation easements so they can complete the

clearing. And then as I said, this alternative over here is purely demand-driven. What this EA does is, it clears all these projects through the environmental process, so at the end of this EA, the VTrans has a go-ahead from the Federal agencies to begin these projects. And again, that's getting the navigation easements and then doing site design and permitting for this stuff over here, as well, and the construction of the safety areas.

Did I miss anything, Jackie?

MS. DAGESSE: No, but just to expand on that, the web site link for where the draft EA will be posted is included on the project fact sheet at the bottom left.

MR. FORGAYS: Bob Forgays from Springfield. A couple questions. One, is the shortening of these air strips going to cause any problems with the usability of them?

MR. MARSDEN: I don't believe so. The Runway 5/23 will be the one most likely impacted because they're the ones -- that's the runway that most of the corporate activity occurs on. It's currently a 5,501 feet. With the use of the cleared distances, that would affect the landing distance available, the LDA, and reduce it by 129 feet on one

end and 82 feet on the other end. So you still effectively have over a 5300-foot runway, and from 5,000 feet is generally the magic number for these types of aircraft to operate.

What it might effect is when you have a contaminated runway condition, and a contaminated runway is when there's rain or snow on the runway. Then the aircraft operating take additional penalties in runway length reductions because of that, in addition to any obstacles that are up there, too. So we hope that by clearing the obstacles, getting clear approach surfaces and/or threshold sign surfaces, that that helps accelerate-stop distance calculations, take-off run available, all that stuff, as well. So it's actually a very complicated mix of stuff that goes into this.

Anybody else?

MR. JOHNSON: Bruce Johnson, Springfield. On the easements for the tree-clearing, will that be a -- will that easement be something that the State can continually go in to remove upcoming because what we'ere seeing is forests continue to grow --

MR. MARSDEN: Yeah.

MR. JOHNSON: -- and keep impinging in those areas.

MR. MARSDEN: Yes, sir. The easements, required easements, it has to go through the FAA process, which is, as you can imagine, anything with the Federal Government is very cumbersome. So VTrans would be required to get fair market value appraisals for everything -- if I'm right, I think they get two different appraisals, if I recall correctly. And it's a lengthy process, it's not something that's going to happen over a month or two, --

MR. JOHNSON: Right.

MR. MARSDEN: -- it will most likely be a couple years.

MR. JOHNSON: Okay.

MR. SMALLER: And -- Jay Smaller -- just to add to that, that the sooner we get through that process with the individual property owners, that would be a permitted easement in perpetuity for as long as they're --

MR. MARSDEN: Yes, that's right, so they're allowed to clear, and that's why the FAA makes them go through this process because they want to make sure that if they spend the money for that, that

they have the right to go in there and keep the obstructions and the trees down.

UNIDENTIFIED SPEAKER: And that would be a no cost to the land?

MR. MARSDEN: Oh, absolutely, yeah, --

UNIDENTIFIED SPEAKER: Yeah.

MR. MARSDEN: -- yeah.

UNIDENTIFIED SPEAKER: The landowners would be getting --

UNIDENTIFIED SPEAKER: Reimbursed.

UNIDENTIFIED SPEAKER: -- a few dollars back.

UNIDENTIFIED SPEAKER: Okay.

MR. MARSDEN: Yes. Yeah, they would get fair market value for the appraised value of the property, yes, that the easement's over. And it only gives avigation easement, it doesn't give rights to the property on the ground, --

UNIDENTIFIED SPEAKER: Right.

MR. MARSDEN: -- it's just anything above that surface.

Anybody else? No? All right.

Jackie, nothing else?

MS. DAGESSE: No, we're pretty good --

MR. MARSDEN: All right.

MS. DAGESSE: -- (unclear-in background).

MR. MARSDEN: Feel free to get up and talk to us individually or --

(End of recording)

C E R T I F I C A T E

I, PAMELA MAYO HAMEL, hereby certify that the foregoing pages, numbered 2 through 18, inclusive, are a true, accurate and complete transcription, to the best of my ability, of the Recorded Meeting, at 6:04 p.m., at Hartness State Airport, 15 Airport Road, N. Springfield, Vermont 05150, on July 28, 2015, in the matter of IN RE: HARTNESS STATE AIRPORT RUNWAY SAFETY AND APRON IMPROVEMENT

Pamela Mayo Hamel

Appendix 6 Aviation Glossary

Glossary of Terms

Airport Master Plan Update (AMPU) – A long-range business plan normally updated every 20 years for those airports in the NPIAS that outlines existing as well as future airport development.

Airport Reference Code (ARC) – designation used by the FAA to specify a range of planning criteria when planning airport facilities such as runways, taxiways, aircraft parking aprons, etc. It is comprised of a letter and number designation. The letter represents the approach category, which is based on an aircrafts' approach speed. The number designation represents the aircraft wingspan.

Airside – used generically to include runways, taxiways, navigational aids, aircraft parking aprons, tie-downs, hangars and fuel farms within the airport environment.

Approach Light Systems (ALS) – Provide a way for pilots to identify the airport runway environment by using various lighting configurations. Approach light systems may be precision or non-precision and may be in any one of a number of configurations.

Automated Surface Observing System, or ASOS – as defined by the Federal Aviation Administration (FAA) and the National Weather Service (NWS), is a suite of weather sensors which measure, collect and disseminate weather data to help meteorologists, pilots and flight dispatchers prepare and monitor weather forecasts, plan flight routes, and provide necessary information for correct takeoffs and landings. ASOS systems are a joint program between the FAA, NWS, and Department of Defense (DOD) to provide a primary network of surface observing weather stations.

Automated Weather Observation Station (AWOS) – A type of weather reporting station used by airports to convey weather information to pilots. The most basic AWOS broadcasts current local altimeter via landline, VHF radio or navigational aids. More sophisticated stations can convey additional information such as wind speed and direction, temperature, dew point and density altitude.

Controlled Airspace – That airspace within the National Airspace System (NAS) that pilots must communicate with Air Traffic Control (ATC) and where ATC provides navigational and aircraft separation services to ensure the safety of flight within the NAS.

Critical Design Airplane – Category and class of airplane (as related to ARC) that utilizes the airport on a regular basis (500 or more operations per year).

Declared Distance – represents the maximum distances available and suitable for meeting takeoff, rejected takeoff, and landing distances performance requirements for turbine powered aircraft.

Displaced Threshold – A displaced threshold is a threshold located at a point on the runway other than the designated beginning of the runway. Displacement of the threshold reduces the length of runway available for landings. The portion of runway behind a displaced threshold is available for takeoffs in either direction and landings from the opposite direction.

Federal Aviation Administration (FAA) – Government agency responsible for the regulation and oversight of the National Airspace System and pilot and aircraft certification.

Federal Aviation Regulation (FAR) Part 77 – This is the regulation that establishes standards for determining obstructions (i.e. trees, towers, buildings) on and around the airport. The regulation defines imaginary airport surfaces that should be cleared within certain heights and maintained to those heights to keep a clear approach path to the runway end.

Fixed Base Operator (FBO) – the term for aviation related businesses on the airport. Typically, these include aircraft engine repair, painting, avionics installation, fuel sales, flight training etc.

Glide Slope Antenna (GSA) – Provides vertical guidance to a specific runway end. When used with a localizer, it provides the lowest landing minimums of any other navigation aid.

Global Positioning System (GPS) – The GPS utilizes satellite coverage to aid pilots in navigation. Currently, GPS is approved for use in non-precision instrument approaches and it is expected that in the near future, GPS will be able to be used for precision approaches.

Instrument Approach – Any approach to land at an airport while operating in IMC or under and IFR flight plan.

Instrument Flight Rules (IFR) – This set of flight rules applies when weather minimums fall below those specified under VFR (generally when visibility falls below 1 statute mile and cloud height below 1,000'). Pilots operating under IFR must be certified and maintain a certain level of proficiency to operate safely and within the law.

Instrument Landing System (ILS) – The ILS is a two-part system (glide slope and localizer) providing precision approach guidance to a specific runway end when both the glide slope and localizer are used together. Currently, it is the only approach aid that allows descent below 200' above the airport surface. The localizer may be used as a sole source for a non-precision instrument approach.

Instrument Meteorological Conditions (IMC) – Used to describe the set of weather minima that constitutes flight under Instrument Flight Rules (IFR).

Landside – generally this term describes airport access roads, automobile parking areas and the airport terminal/administration building.

Localizer – One of two parts to an Instrument Landing System (ILS). The localizer provides lateral guidance to the runway and is considered a non-precision approach. When used in conjunction with a glide slope the approach procedure becomes a precision approach.

Medium Approach Light System (MALS-F) – An approach light system with sequenced flashing lights at the runway end that provide a means for the pilot to transition from instrument flight to visual flight.

Non-Directional Beacon (NDB) – Navigation aid that emits a low or medium frequency that a properly equipped aircraft and trained pilot can track and navigate by. When used as part of an instrument approach procedure, the NDB provides a non-precision approach to the airport.

Non-Precision Approach – An instrument approach procedure that provides only lateral guidance to the runway end.

NPIAS (National Plan of Integrated Airport System) – 10 year plan for airports as they relate to the entire national system of airport which is prepared and updated on a biennial basis by the FAA. The plan summarizes development plans for public-use airports that are eligible for federal funding.

Precision Approach – An instrument approach procedure that provides lateral and vertical guidance to the runway end.

Precision Approach Path Indicator (PAPI) – Uses light units similar to the VASI but are installed in a single row of either two to four lights.

Runway End Identifier Lights (REILs) – Provides identification of the runway end by using a pair of synchronized flashing lights at the approach end of a runway.

Runway Safety Area (RSA) – 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 RSA enhances the safety of aircraft which undershoot, overrun, or veer off the runway, and it provides greater accessibility for firefighting and rescue equipment

during such incidents. The RSA must be capable under normal (dry) conditions of supporting aircraft without causing structural damage to the aircraft or injury to the their occupants. The RSA must be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations. The RSA must be free of objects, except for objects that need to be located in the RSA because of their function.

Runway Protection Zone (RPZ) - An area at ground level prior to the threshold or beyond the runway end to enhance the safety and protection of people and property on the ground.

Snow Removal Equipment (SRE) – equipment used for the removal of snow from airport surfaces. Typically this includes a pick-up truck with snowplow and loader with attachments.

Threshold - The beginning of that portion of the runway available for landing. In some instances, the threshold may be displaced. "Threshold" always refers to landing, not the start of takeoff.

Uncontrolled Airspace – All airspace that does not fall under the jurisdiction of ATC and does not have a communication require for pilots to communicate with ATC prior to entering and operating within.

Very High Frequency Omni-directional Range (VOR) – An upgrade to the NDB, the VOR emits a signal that can be tracked to and from the station from a properly equipped aircraft. When used as part of an instrument approach procedure, the VOR provides a non-precision approach to the airport.

Visual Approach – Type of approach to land at an airport while operating under IFR flight when conditions in the vicinity of the airport allow the pilot to see the airport visually. Weather at the airport must be reported as having a cloud ceiling greater than 1,000' and visibility greater than 3 miles.

Visual Approach Aides – Type of ground equipment that allows the pilot to visually acquire the airport such as a rotating beacon or runway end identifier lights.

Visual Approach Slope Indicator (VASI) – Airport facility that provides visual vertical guidance to landing aircraft by projecting red and white colored lights at a set slope from a specific runway end. The colors alternate patterns depending on the height of the aircraft above or below the projected slope of the VASI light projection.

Visual Flight Rules (VFR) – These are the rules of the sky for those pilots flying in good weather. Depending on the type of airspace (controlled or uncontrolled) generally good weather

means visibility greater than 1 mile and clear of clouds during the day and 3 miles, clear of clouds at night.

Visual Meteorological Conditions (VMC)– Used to describe the set of weather minima that constitutes flight under Visual Flight Rules (VFR).

Visibility Minimums – Indicate the minimum forward distance (in statute miles) from the cockpit that a pilot must be able to see.