



DRAFT
ENVIRONMENTAL ASSESSMENT
RUNWAY SAFETY AREA PROJECT
LEBANON MUNICIPAL AIRPORT
LEBANON, NEW HAMPSHIRE

Submitted by:

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June 17, 2022

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

Responsible FAA Official: _____ Date: _____



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Table of Contents

LIST OF ACRONYMS	iv
1 Introduction	1
1.1 Background.....	1
1.2 Public and Agency Involvement.....	2
2 Purpose and Need	3
2.1 Purpose	3
2.2 Need.....	3
3 Alternatives & Proposed Action	5
3.1 Introduction.....	5
3.2 Critical Design Elements.....	5
3.3 Evaluation Process	6
3.4 Evaluation Results.....	8
3.5 Conclusion of Evaluation Process	13
3.6 Proposed Action.....	14
3.7 Timeline and Phasing of Proposed Action	17
4 Affected Environment	19
4.1 Resources Not Affected.....	19
4.2 General Location.....	22
4.3 Geology, Soils, and Topography	22
4.4 Air Quality.....	23
4.5 Biological Resources (Fish, Wildlife, and Plants).....	23
4.6 Hazardous Materials, Solid Waste, and Pollution Prevention	27
4.7 Land Use	28
4.8 Natural Resources and Energy Supply	30
4.9 Noise and Noise-Compatible Land Use	31
4.10 Socioeconomics, Environmental Justice, and Children’s Health & Safety Risks.....	31
4.11 Water Resources.....	34



5	Environmental Consequences, Mitigation, and Permits Required.....	38
5.1	Alternatives and Significance Overview	38
5.2	Summary of Impacts by Significance Threshold	39
5.3	Overview of Impact Categories Evaluated	41
5.4	Geology, Soils and Topography	42
5.5	Air Quality.....	44
5.6	Biological Resources.....	45
5.7	Hazardous Materials, Solid Waste, and Pollution Prevention.....	52
5.8	Land Use Compatibility	53
5.9	Natural Resources and Energy Supply	54
5.10	Noise and Noise-compatible Land Use	55
5.11	Socioeconomic, Environmental Justice, and Children’s Health & Safety Risks	57
5.12	Water Resources.....	59
5.13	Summary of Impacts by Project and Affected Resource.....	69
5.14	Temporary Construction Impacts	70
5.15	Cumulative Effects	74
5.16	Summary of Mitigation	78
5.17	Summary of Required Actions and Permits	83
6	Consultation and Coordination	84
6.1	Agency Coordination.....	84
6.2	Public Outreach.....	85
7	List of Preparers	86

LIST OF APPENDICES

Appendix A	References
Appendix B	Section 106 Consultation – NH Division of Historical Resources Documentation
Appendix C	Wetlands and Rare Plants Report
Appendix D	NH Natural Heritage Bureau (NHNHB) Correspondence
Appendix E	USFWS Correspondence
Appendix F	NHDES Hazardous Waste Table
Appendix G	Former Noise Analyses (Maps)
Appendix H	Wetlands Mitigation Conservation Easement Materials
Appendix I	NHDOT Natural Resource Agency Coordination Meeting Minutes
Appendix J	Public Meeting Minutes
Appendix K	Comments Received on Draft EA & Responses to Comments



LIST OF FIGURES

NOTE: All figures are meant to be inserted following the text where first referenced

Section	Figure No.	Figure Name
1.1	Figure 1	Locus Map
3.3	Figure 2	Phasing Plan [Print size 11x17]
3.4	Figure 3	Obstruction/Vegetation Removal Areas
4	Figure 4	Project Limits in Relation to Wetlands and Obstruction Removal
4.2	Figure 5	Landscape Features
4.3	Figure 6	Soils
4.5.3	Figure 7	Rare Plants
4.7.1	Figure 8	Existing Zoning
4.11.1	Figure 9	Wetlands and Waterways
5.4	Figure 5.4-A	Cross-Sectional View of Runway 18-36 in Vicinity of ILS Localizer
5.6	Figure 5.6-A	Illustration of Vegetative Penetration of Approach Surface
5.12.1.1	Figure 10	Existing Mitigation Conservation Easements in Project Vicinity

LIST OF TABLES

Section	Table No.	Table Name
3.3	3.3-1	Alternatives Evaluated
3.4	3.4-1	Summary of Alternatives Retention Results
3.6	3.6-1	Key Cost Considerations of Retained/Preferred Alternatives
3.7	3.7-1	Timeline of Proposed Actions (2022-2026)
4.10	4.10-1	Population Demographics for the City of Lebanon and Grafton County, NH
5.2	5.2-1	Significance Thresholds and Impact Determination by Year
5.6	5.6-1	Approximate Vegetation/Habitat Conversion Impacts Gains and Losses
	5.6-2	Project Areas with Potential Impacts to Federal- and State-Listed Plant and Wildlife Species' Habitats
5.10	5.10-1	Noise Levels by Design Aircraft
5.12	5.12-1	Wetlands Within or Adjacent to Project Area and Impacts by Year
	5.12-2	Impacted Wetlands Summary by Year Prior to Mitigation
	5.12-3	Impacted Wetlands' Principals Functions and Values
	5.12-4	Existing Airport-Related Conservation Easements
5.13	5.13-1	Summary of Impacts by Project and Affected Resource Category
5.15	5.15-1	Impact Area Total Estimates by Year and Project Area
	5.15-2	Summary of Cumulative Effects on Resource Areas from Proposed Action by Year
5.16	5.16-1	Summary of Mitigation for Impacts by Year and Project
	5.16-2	Summary of Mitigation by Affected Resource Category



LIST OF ACRONYMS

A	AC	Advisory Circular	
	ADG	Aircraft Design Group	
	AMSL	Above Mean Sea Level	
	ALP	Airport Layout Plan	
	AOT	Alteration of Terrain Permit	
	ARC	Airport Reference Code	
	ATCT	Air Traffic Control Tower	
B	BMP	Best Management Practice	
C	CAA	Clean Air Act	
	CEQ	Council on Environmental Quality	
	CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	
	CFR	Code of Federal Regulations	
	CGP	Construction General Permit	
	CLS	Conservation Land Stewardship Program	
	CWA	Clean Water Act	
	CY	Cubic Yards	
	D	dB	Decibel
		DHR	New Hampshire Division of Historical Resources
DNL		Day Night Average Sound Level	
E	EA	Environmental Assessment	
	ESA	Endangered Species Act	
	EPA	US Environmental Protection Agency	
	Env-Wm	New Hampshire Code of Administrative Rules, Waste Management Rules	
	Env-Wt	New Hampshire Code of Administrative Rules, Wetland Rules	
	Env-Wq	New Hampshire Code of Administrative Rules, Water Quality Rules	
F	ERSA	Extended Runway Safety Area	
	FAA	Federal Aviation Administration	
	FAR	Federal Aviation Regulations	
	FBO	Fixed Base Operator	
	FEMA	Federal Emergency Management Agency	
	FONSI	Finding of No Significant Impact	
	FPPA	Farmland Protection Policy Act	
	FWCA	Fish and Wildlife Coordination Act	
G	GA	General Aviation	
	GC	General Commercial Zone	
	GP	[USACE New Hampshire] General Permit	
I	ILF	In-Lieu Fee	
	ILS	Instrument Landing System	
	IND-L	Light Industrial Zone	
	IND-H	Heavy Industrial Zone	
	INM	Integrated Noise Model	
J	ISR	Indirect Source Review	
	JD	Jurisdictional Determination	
L	LF	Linear Feet	
	LOC	Localizer	
M	MPU	Master Plan Update	
	MS4	Separate Storm Sewer Systems	
	MSGP	Multi-Sector General Permit	
N	NAAQS	National Ambient Air Quality Standards	
	NEPA	National Environmental Policy Act	



	NHDES	New Hampshire Department of Environmental Services
	NHDOT	New Hampshire Department of Transportation
	NHDHR	New Hampshire Division of Historical Resources
	NHNHB	Natural Heritage Bureau
	NHPA	National Historic Preservation Act
	NLEB	Northern Long-eared Bat
	NPDES	National Pollution Discharge Elimination System
	NRCS	Natural Resources Conservation Service
	NRHP	National Register of Historic Places
	NRI	Natural Resource Inventory
O	OFA	Object Free Area [see ROFA]
P	PAPI	Precision Approach Path Indicator
	PEM	Palustrine Emergent (wetland)
	PFO	Palustrine Forested (wetland)
	PGP	Programmatic General Permit
	PM	Particulate Matter
	PSS	Palustrine Scrub Shrub (wetland)
R	R3	Residential 3 Zone
	RAO	Response Action Outcome
	RTN	Release Tracking Number
	RL1	Rural Land 1 Zone
	RL2	Rural Land 2 Zone
	RDC	Runway Design Code
	ROFA	Runway Object Free Area [see OFA]
	ROFZ	Runway Obstacle Free Zone
	RSA	Runway Safety Areas (or Revised Statutes Annotated)
	RPZ	Runway Protection Zone
	RCRA	Resource Conservation Recovery Act
	RVZ	Runway Visibility Zone
	RW	Runway
	SDWA	Safe Drinking Water Act
	SF	Square Feet
	SHPO	State Historic Preservation Office
	SIP	State Implementation Plan
	SWPPP	Stormwater Pollution Prevention Plan
	SWQPA	Shoreline Water Quality Protection Act
T	TDG	Taxiway Design Group
	TERPS	Terminal Instrument Procedures
	THPO	Tribal Historic Preservation Office
	TMDL	Total Maximum Daily Loads
	TSP	Total Suspended Particulates
	TSS	Total Suspended Solids
	TW	Taxiway
U	USACE	US Army Corps of Engineers
	USC	US Code
	USDOT	US Department of Transportation
	USFWS	US Fish and Wildlife Service
	UST	Underground Storage Tank
V	VA-OIS	Visual Area-Obstacle Identification Surface
	VASI	Visual Approach Slope Indicator

1 Introduction

The City of Lebanon (City), in cooperation with the New Hampshire Department of Transportation (NHDOT) and Federal Aviation Administration (FAA) as the Lead Federal Agency, has prepared this Environmental Assessment (EA) for the Lebanon Municipal Airport (Airport). The proposed improvements include runway, taxiway, and airfield navigational instrument location modifications. This EA contemplates proposed improvements to the runway safety areas (RSAs) as well as other safety-related improvements that are intended to make the Airport safer and bring it into compliance with FAA safety criteria.

This document is intended to satisfy the requirements of the National Environmental Policy Act (NEPA) and regulations issued by the Council on Environmental Quality (CEQ). It follows requirements for Environmental Assessments (EA) in *National Environmental Policy Act Implementing Instructions for Airport Actions* (FAA Order 5050.4B April 28, 2006) and *Environmental Impacts: Policies and Procedures* (FAA Order 1050.1F, July 16, 2015). In 2012, the City submitted an EA under NEPA for proposed improvements under a different set of alternatives and Proposed Action recommended in the 2010 Airport Master Plan but did not act on the subsequent Finding of No Significant Impact (FONSI) before the three-year EA deadline (FAA Order 5050.4B, Chapter 14). Since then, the Airport created the 2017 Master Plan and developed a Master Plan Update (MPU) that was signed off on by the FAA on September 27, 2021. Additional options and modifications have been contemplated, evaluated, and analyzed in the MPU resulting in a revised set of alternatives that now require a new EA. The current project proposes to provide changes to the length and configuration of Runway 18-36, relocations and replacements of multiple taxiways, relocation of two navigational aids, a proposed aviation easement, and removal of vegetation obstructions.

1.1 Background

Lebanon Municipal Airport is a “Non-hub Primary” Commercial Service Airport owned by the City of Lebanon, New Hampshire (Figure 1). This designation is given to airports with greater than 10,000 enplanements. The Airport is not currently a Part 139 certified airport. In the 2017 Comprehensive Airport Master Plan Final Report, the Vision Statement is:

“The Lebanon Airport will be a community asset with optimized air service through financially self-sustaining means, while minimizing negative environmental and social impacts.”

The Airport (KLEB) provides airline service and general aviation access to users in eastern Vermont and western New Hampshire. Airline service is provided by Cape Air which consists of four daily round trips to Boston, Massachusetts (BOS) and two to White Plains, New York (HPN) using the Cessna C-402 aircraft. General aviation users operate helicopters and fixed-wing aircraft ranging from small light propeller aircraft, to business jets that currently fall into the “large” category under Runway Design Code (RDC) specifications.

The Airport is one of three commercial service airports in the state, and one of four airports in New Hampshire to have an air traffic control tower. Manchester-Boston Regional Airport is located 64 miles (by air) and 82 miles (by driving) southeast and is the closest airport offering jet airline service. Rutland-Southern Vermont Regional Airport is the only airport within a 30-mile radius which offers airline service. Rutland offers daily round trips to Boston via Cape Air using the Technam P-2012 aircraft.

The layout consists of two nearly perpendicular runways. Runway 18-36 is 5,200 feet long and 100 feet wide, and Runway 7-25 is 5,496 feet long and 100 feet wide. Whereas Runway 7-25 was formerly the primary runway due to its longer length, it is now considered an “additional runway” (ALP 2021). Runway 18-36 is now considered the primary runway based on better wind coverage, a full Instrument Landing System (ILS) approach, and a compliant RSA at both ends with an identified RDC of B-II. Additional improvements to Runway 18-36 are proposed to provide safer landing conditions for the existing aircraft fleet. Both runways are supported by parallel taxiway systems. Runway 18-36 is served by Taxiway A, which extends only 1,900 feet south of the Runway 18 end. This is less than half the length of the runway. Aircraft are required to backtaxi approximately 2,700 feet and complete a full turn for takeoffs on Runway 36 and full-length landings on Runway 18 which decreases safety by requiring aircraft to spend more time than necessary on the runway. Runway 7-25 is served by Taxiway B for its entire length. Both Taxiways are proposed for updates presented herein to create a safer on-airport and off-airport traffic flow and improved demarcations for better pilot awareness.

1.2 Public and Agency Involvement

In accordance with 40 C.F.R. §1501.9, 1503 and 1506.6, the FAA initiated public involvement and agency scoping activities to identify significant issues related to the Proposed Action. The FAA has consulted with appropriate local, state, and Federal government agencies throughout the EA process (Chapter 6).

A 30-day public review and comment period for this draft environmental assessment begins upon acceptance by the FAA, anticipated in mid-July 2021. At that time, Notices of Availability (NOA) will be published in a local newspaper, and the Draft EA will be posted on the Airport’s website for public review and comment. Interested agencies, organizations, Native American tribes, and members of the public will be invited to submit comments on all aspects of the draft environmental assessment. In accordance with CEQ regulations, all substantive comments will be considered in preparing the final environmental assessment (40 CFR 1503.4).

2 Purpose and Need

The Purpose and Need Statement in a NEPA document is a formal statement of the need and the overall purpose of a proposed project considering the statutory objectives of the proposed Federal actions, as well as the Sponsor’s goals and objectives (FAA Order 5050.4B). The statement documents the justification for the project and provides the basis for evaluating the effectiveness of alternatives. Based upon the *Airport Layout Plan Update (2021)*, a number of different project alternatives were developed for both Runway 18-36 and Runway 7-25 in order to address the current safety and compliance issues at hand. The process and progression of the evaluation of the alternatives and the alternatives that were selected for further study are detailed in Chapter 3 of this EA. These selected alternatives comprise what is referred to below as the “project.” FAA Order 5050.4B indicates that the purpose and need should be one or two short paragraphs. This EA document separates the two to provide clarity regarding the multiple purposes that have evolved since the earlier 2012 Environmental Assessment for the Runway Safety Area improvements.

Though the earlier 2012 EA resulted in a FONSI, it was only valid for three years. The project was stalled due to concerns relating to the ILS localizer location as related to a taxiway traversing the LOC critical area. Since then, there have been additional changes to the proposed improvements and alternatives considered since the 2012 EA that need to be further evaluated (FAA Order 5050.4B[906][d]). The FAA was consulted to determine if a new EA would be required to evaluate these changes under NEPA, and the determination was that an EA, rather than individual Categorical Exclusions (CATEX), would be required to adequately evaluate the current alternatives and their cumulative impacts. Because the deadline for the currency of the 2012 EA expired, and because the project involves multiple alternatives and outcomes that were deemed to exceed the thresholds and should be evaluated for their cumulative impacts, the FAA determined that an EA is necessary to adequately address the requirements under NEPA.

2.1 Purpose

The purpose of the project is to meet the following objectives in order to comply with FAA safety standards:

- Improve safety by providing, to the extent practicable, runway safety area layouts that meet FAA standards for the design aircraft.
- Improve safety by providing, to the extent practicable, full parallel taxiways and stub taxiways that do not directly connect a runway with an apron.
- Provide sufficient landing and takeoff length on Runway 18-36 to support the design aircraft.
- Improve the all-weather availability and reliability of the Airport by providing a full-length parallel taxiway, thereby potentially allowing the opportunity to seek lower approach minima.
- Improve safety by meeting, to the extent practicable, FAA obstruction removal standards at the south end of Runway 18-36.
- Improve safety by providing navigational aids situated per the FAA’s best practices.

2.2 Need

In the context of an EA, “need” refers to the problem that the Proposed Action is intended to resolve. Under existing conditions and design criteria, the Airport does not meet FAA standards and continues to pose a safety problem.

First, the Airport's primary Runway 18-36, does not fully support business jet activity. The existing length of Runway 18-36 is 5,200 feet, whereas a runway length analysis determination in the *ALP Update* (2021) and associated supporting documentation concluded that a minimum runway length of 5,400 feet was required to meet current aircraft operations. This length is based on worst-case landing length requirements during contaminated runway conditions. The runway length determination was based upon the criteria in FAA AC 150/5325-4B. This minimum runway length is needed to meet the operational requirements of the existing design aircraft fleet, and to improve the safety of landing and takeoff operations. Though Runway 7 has a takeoff length that will remain at 5,496 feet, which is more than what is proposed for Runway 18-36, Runway 7-25 is an "additional runway" that does not meet the requirements to be designated a secondary runway and has a non-compliant RSA on the Runway 7 end. With the proposed change to RDC from C-II to B-II, the Runway 25 RSA is now compliant. However, the Runway 7 RSA remains out of compliance even after the RDC change with approximately 100 feet between the end of the runway and Airpark Road (with a required length of 300 feet). Runway 7 landing, Runway 25 takeoff, and Runway 25 landing lengths would be reduced to 5,296 feet, which is 104 feet less than what is proposed for Runway 18-36.

Second, FAA Advisory Circular (AC) 150/5300-13 specifies full parallel taxiways along all runways with Instrument Landing Systems (ILS). Full parallel taxiways improve airport safety by allowing taxiing aircraft to clear of runways and thereby reducing the chances of conflicts between aircraft. Currently, aircraft must both backtaxi approximately 2,700 feet and execute a 180 degree turn on the runway when taxiing to and from the Runway 36 end.

Third, a number of the existing instrument approaches at the Airport are authorized for use only with higher minimums than typically required for both cloud height and visibility. These higher minimums decrease the availability of the Airport, and when these minimums cannot be met, it will require aircraft to divert to other airports. Existing obstructions pose safety concerns and limit the Airport's ability to meet FAA runway end siting criteria. Moreover, due to the alignment of the current localizer antenna, the Airport is impacted with additional approach minimum height and visibility penalties. The Proposed Action is to shift Runway 36 by adding 200 feet to its length and to relocate the localizer, which will result in additional obstructions in the Runway 36 approach zone. With vegetation clearance, the obstructions due to the 200 foot extension will be removed.

The Airport is one of four airports in NH to have an air traffic control tower, including Manchester (MHT) Nashua (Boire Field, ASH), and Portsmouth (Pease, PSM), all of which have a runway longer than 5,400 feet. It is one of the largest airports in the region and provides critical aviation services that cannot be met comparably or better elsewhere given logistics, existing users and aircraft fleet (*e.g.*, Dartmouth Hitchcock Advanced Response Team, DHART), and other factors. Therefore, the Airport needs to resolve the non-compliance issues and meet current FAA standards. The reasonable alternatives that have been considered and are presented in this EA represent a broad range of considerations that have been narrowed down to what is achievable in terms of economics, sustainable operations, and reduced environmental impacts.

3 Alternatives & Proposed Action

3.1 Introduction

Chapter 3 summarizes an alternatives refinement conducted by the FAA and Airport that evaluated multiple potential alternatives for each of the proposed improvements against specific screening criteria and which concluded with the identification of the two alternatives assessed in this EA – the No Action Alternative and Proposed Action. This chapter is based on information presented in the Lebanon Municipal Airport’s *ALP Update* (Stantec, December 30, 2021). The objective of the analysis therein was to identify improvements “necessary to accommodate aviation activity 20 years into the future” based on the Airport’s 2017 *Comprehensive Master Plan*.

3.2 Critical Design Elements

In order to address the Airport’s current and future needs, potential alternatives for future development were considered in the ALP Update. One of the challenges in creating the alternatives was finding an appropriate balance between FAA regulations and safety requirements, aircraft operational needs, and minimizing negative environmental and social impacts. While many design elements were incorporated to meet the Purpose and Need, runway length, runway safety area dimensions, object free areas, and approach surfaces determine the overall footprint of the project, which results in the various project impacts. Other references included FAA Order 5200.8 *Runway Safety Area Program*, FAA Advisory Circular (AC) 150/5070-6B, *Airport Master Plans*; AC 150/5300-13A, *Airport Design*; *FAA Standard Operating Procedure (SOP) 2.00*; *Standard Procedure for FAA Review and Approval of Airport Layout Plans* (ALPs); and AC 150/5325-4B, *Runway Length Requirements for Airport Design*.

The previous designation included an Airport Reference Code (ARC) of C-II based on operations and aircraft activity. Design criteria are determined in part by the “critical aircraft”, which is the type of aircraft with the fastest Airport Approach Category (AAC) and largest wingspan or Aircraft Design Group (ADG) that operate at the Airport at least 500 times per year. The higher the AAC and the larger the ADG, the larger the facility (such as a Runway Safety Area; RSA) required to accommodate the aircraft. The current recommended design aircraft for the Airport is proposed to be the Embraer Phenom 300 based on the highest number of operations and other factors (ALP Update; data from 2019). The recommended ARC is therefore B-II.

Under ARC C-II, the RSA dimensions required by FAA for these critical aircraft categories are normally 500 feet (ft) wide and 1,000 ft beyond the runway end. With a reduction in the RDC from C-II to B-II, the RSA size changes from a 500 ft width and 1,000 ft length beyond the runway end to 150 ft and 300 ft, respectively. With the change in the ARC to B-II, the recommended runway width changes from 100 ft to 75 ft. The width of the Runway Object Free Area (ROFA/OFA) decreases from 800 ft to 500 ft, and the required length beyond the end of the runway is reduced from 1,000 ft to 300 ft. The size of the Runway Obstacle Free Zone (ROFZ) remains the same at 400 ft wide and 200 ft beyond the runway ends. Changing the ARC from C-II to B-II brings the RSA and OFA for Runway 18-36 into compliance with FAA criteria.

3.3 Evaluation Process

To evaluate the potential build alternatives and identify the Proposed Action, the FAA and Airport performed a two-step evaluation process. Alternatives considered in this EA were developed and evaluated as part of the *ALP Update* (December 2021) development. A detailed analysis therein resulted in a recommended change in the ARC from C-II to B-II and subsequent changes to the former 2017 Master Plan runway configurations. Thereafter, a total of five Runway 7-25 alternatives and two Runway 18-36 alternatives were evaluated in this EA. All of the alternatives developed and evaluated are briefly described below, along with results of the evaluation.

- *ALP Update Evaluation:* This initial screening level resulted from the analysis presented within the *ALP Update* (2021) wherein alternatives were evaluated using the following criteria and thereafter were either “Recommended” or not. The baseline “environmental costs” were briefly addressed.
 - Operational Performance. Does the alternative improve or reduce airport functions in terms of capacity, capability, and efficiency? Grade: Positive, Negative, Neutral
 - Meets FAA Standards. Does the alternative meet or exceed FAA design standards? Yes or No
 - Technically Feasible. Is the alternative technically possible given current technology? Yes or No
 - Cost. What is the estimated cost based on planning level calculations? The estimates provided include design, construction, local permitting, and other related costs.
 - Overall environmental costs are included in the Capital Improvement Plan summary (*ALP Update*, Chapter 6). It noted “All of the projects identified in the CIP will require environmental documentation.”

Those alternatives proposed to resolve each improvement area must be compatible with the dimensional requirements for the current (Embraer Phenom 300) and future critical aircraft. As determined by the *ALP Update* (2021) and the proposed change from ARC C-II to B-II therein, alternatives would have to maintain the existing runway lengths to be compatible with current and future critical aircraft. This is a “fatal flaw” step of the evaluation; alternatives that would not provide the needed primary Runway 18-36 length and width based on average stage length for 60% useful load and other factors presented for critical aircraft did not “pass” the evaluation and were not advanced. In other words, they were not “Recommended” in the ALP Update.

- *EA Evaluation:* Alternatives that passed initial screening in the *ALP Update* were retained for detailed analysis in the EA; alternatives that did not pass were eliminated from further analysis. Within the EA, additional screening occurs where impacts are analyzed and multiple mitigation strategies are presented. Chapter 5 presents several alternatives to mitigation and screening based on factors that include cost, operational impacts, and environmental impacts.

All alternatives considered under Screening Level 1 are summarized in Table 3.3-1 below. Those in *italics* with blue highlight are the Preferred Alternative for each improvement action and were carried forward for evaluation in the EA. They are illustrated in Figure 2 (Phasing Plan). Alternatives that would not achieve the purpose and need and/or would not be feasible were not considered in the analysis of alternatives. As required by NEPA, the No Action Alternative is also studied in the EA, although it would not resolve the deviations from FAA design standards.

TABLE 3.3-1 Summary of Alternatives Evaluated in ALP Update*

ACTION	ALTERNATIVES					
	ALT 1 No Action/ Existing Condition	ALT 2		ALT 3	ALT 4	
Runway 7 RSA	Do Nothing	Construct in Place		Shift Runway	4A Displace Threshold (replace lights)	4B Displace Threshold (relocate/ reuse lights)*
Runway 18-36 Length	Do Nothing	Extend 200 Feet*				
Taxiway A Length	Do Nothing	2A Extend w/ TW A3*	2B Extend w/o TW A3			
Taxiway A1 Direct Taxi Route	Do Nothing	Relocate*		Add Island		
Taxiway A2 Direct Taxi Route	Do Nothing	Relocate*				
Taxiway B1-B2 Direct Taxi Route ("Hot Spot 2") [TW A North Extension]	Do Nothing	2A Close / Mark TW B1	2B Close / Remove TW B1	Replace*	Close TW B1, Add Island	
Taxiway B on Runway 25 ("Hot Spot 1")	Do Nothing*	2A Partially close TW B w/ Markings Only	2B Partially close TW B Remove Pavement	Partially close TW B, Relocate Threshold		
ILS Localizer ("Hot Spot 3")	Do Nothing	Relocate*				
PAPI	Do Nothing	Relocate*				
Runway 36 Obstacle Clearance	Do Nothing	Remove Vegetation*				

*NOTE: Preferred alternative based on "Lebanon Municipal Airport ALP Update", December 30, 2021 [Stantec]

3.4 Evaluation Results

3.4.1 Alternatives Considered

The following summaries present proposed improvements in Table 3.3-1 above, as well as describe three additional projects under the Proposed Action required to bring the navigational aids and RSA into compliance. The Preferred Alternative for each project area is shown below in *bold italics*.

Runway Alternatives

- Runway 7 – Runway Safety Area (RSA):
Runway 7-25 is 5,496 ft long and 100 ft wide, which is wider than FAA standards. There is a non-standard Extended Runway Safety Area (ERSA) on the Runway 7 end. The ERSA extends approximately 100 ft beyond the end of the runway, falling 200 ft short of the required 300 ft length. An adjustment must be made because the size of the RSA cannot be modified or waived. The ERSA on the opposite Runway 25 end complies with FAA standards but is geographically constrained due to minimal or insufficient space to extend to the northeast. There are five alternatives evaluated under this action:
1) No Action/Do Nothing, 2) Construct in Place, 3) Shift Runway, 4A) Displace Threshold [Replace Lights], 4B) *Displace Threshold [Relocate/Reuse Lights]*
- Runway 18-36 Length:
Runway 18-36 is 5,200 ft long and 100 ft wide with a recommended length of 5,400 ft and a width of 75 ft. The recommended length would require a 200 ft extension. The Runway 18 ERSA is constrained by the steep terrain beyond it, so the proposed direction is to the south of Runway 36. Therefore, there are only two alternatives evaluated for this improvement action.
1) No Action/Do Nothing, 2) *Extend 200 Feet to the south*

Taxiway Alternatives

The taxiway design standards are based on ADG II and Taxiway Design Group (TDG) 1B in the short-term, increasing to ADG II and TDG-2 in the long-term based on aircraft in the RDC C-II group operating at the Airport. Even though they are not the design aircraft (Embraer Phenom 300), the parallel runway and taxiway configuration must facilitate safe operations by the larger aircraft. There are several design issues that need to be addressed to bring the taxiways into compliance. Three of these are designated as “Hot Spots”, creating hazardous conditions for pilots. The following actions with alternatives for each were considered.

- Taxiway A Length
Taxiway A is 1,855 ft long and 50 ft wide and parallels Runway 18-36 from Runway 7-25 to a point directly across from the Echo Ramp (formerly “Executive Ramp”; see Figure 2). The taxiway does not extend to the end of Runway 36 due to the location of the ILS Localizer. This layout creates “Hot Spot 3” whereby aircraft must enter the primary runway and taxi to the end of Runway 36 in order to take off on Runway 36 or complete a full-length rollout from a landing on Runway 18. The preferred configuration is a full-length parallel taxiway that connects with the approach end of Runway 36.
1) No Action/Do Nothing, 2A) *Extend with Taxiway A3*, 2B) *Extend without Taxiway A3*

- Taxiway A1 Direct Taxi Route
Taxiway A1 is located between the Terminal Apron and Runway 18-36 and provides direct access to the runway from the terminal apron without requiring a turn. This configuration can lead to confusion and a safety hazard when a pilot typically expects to encounter a parallel taxiway but instead inadvertently enters a runway. Taxiway A1 also serves as a vital exit taxiway for aircraft landing on Runway 36. This direct access creates a safety hazard area for potential runway incursion for aircraft accessing Runway 18-36 from the Terminal Ramp.
1) No Action/Do Nothing, 2) *Relocate*, 3) No-Taxi Diversionary Island
- Taxiway A2 Direct Taxi Route
Taxiway A2 is located between the Echo Ramp and Runway 18-36 and provides direct access to the runway from the apron without requiring a turn. This configuration can lead to confusion and hazardous conditions when a pilot typically expects to encounter a parallel taxiway but instead inadvertently enters a runway. Taxiway A2 serves as an exit taxiway for aircraft landing on Runway 18 and on Runway 36.
1) No Action/Do Nothing, 2) *Relocate*
- Taxiways B1-B2 Direct Taxi Routes (aka “Hot Spot 2”)
Taxiway B1 is designated as Hot Spot 2, and combined, Taxiways B1 and B2 are configured so that aircraft can taxi directly from the North Ramp onto Runway 7-25 creating a confusion and safety hazard for potential runway incursion. Elevated guard lights are used to temporarily mitigate the condition. There were four options evaluated in the initial screening within the ALP Update.
1) No Action/Do Nothing, 2A) Close and Mark TW B1, 2B) Close and Remove TW B1, 3) *Replace*, 4) Close TW B1, add Island
- Taxiway B on Runway 25 – Hold Line (aka “Hot Spot 1”)
The easterly portion of Taxiway B serving Runway 25 is currently configured at an angle rather than parallel to the runway because the steep terrain to the north and east precludes a standard parallel layout. Therefore, the taxiway to runway separation distance decreases to less than the 300 ft required for an RDC B-II runway. The hold position is farther west down the taxiway than most pilots expect. Elevated runway guard lights already exist to help mitigate the condition. Three alternatives were evaluated.
1) *No Action/Do Nothing*, 2A) Partially close TW B with Markings Only, 2B) Partially close TW B and Remove Pavement, 3) Partially close TW B and Relocate Threshold

Navigational Aids and Obstructions

- Navigational Aids –
 - ILS Localizer (aka “Hot Spot 3”) – The Instrument Landing System (ILS) Localizer is one of the problematic “Hot Spots” identified through the Airport Layout Plan development. It is affecting safety and pilot decision-making in landing on Runway 18, takeoffs on Runway 36, as well as during taxi operations on Taxiway A. Before a full-length parallel taxiway becomes feasible along Runway 18-36, the localizer antenna must be moved from its current location. Therefore, both Alt 1) No Action/Do Nothing and Alt 2) *Relocation* options were evaluated.
 - PAPI – The Precision Approach Path Indicator (PAPI) systems at Runways 7 and 36 are proposed to be *relocated* to support the new position of the landing thresholds and are considered within the relevant alternatives.

- Obstruction/Vegetation Removal – Results of the airspace analysis identified on-airport and off-airport obstructions to the Runway 36 approach surface under the existing and proposed conditions (Figure 3). The proposed 200’ extension would result in additional obstructions to those that already exist. In order to extend Runway 36, off-airport obstruction removal must occur to comply with all relevant clearance and safety regulations. A relatively small area off-airport to the southeast contains several tall trees that are within proposed removal area. On-airport and off-airport obstruction removal projects utilizing federal funding are subject to review within an EA. Prior to acquiring rights to manage off-airport vegetation, either by purchase of land in fee-simple or by purchase of an avigation easement, the EA must be completed and a FONSI issued.

3.4.2 Alternatives Eliminated

In accordance with Order 1050.1F, §6-2.1(d), this section briefly describes why each of these alternatives was eliminated from further consideration.

- Runway 7 – Runway Safety Area (RSA)
Three of the five alternatives shown in Table 3.3-1 were eliminated from further analysis.
 - Alt 2) Construct in Place – Based on the alternatives analysis, the high cost and impacts of constructing a compliant safety area outweigh the benefits derived.
 - Alt 3) Shift Runway – Eliminated because the alternative would require extending the safety area into a geographically-constrained area on the Runway 25 end, which would increase the high construction cost. The high cost (including all new runway lights) and impacts outweigh the benefit of shifting the entire runway and retaining the existing 5,496 ft runway length for Runway 7 landings and Runway 25 takeoffs and landings.
 - Alt 4A) Displace Threshold [Replace Lights] – Alternatives 4A and 4B displace the existing 100’ Runway 7 threshold approximately 200 ft to result in a 300 ft safety area. Option 4A includes replacing the runway edge lights and 4B would retain the existing runway edge lights. Both would result in a reduced Runway 7 Landing Distance Available (LDA) from 5,496 to approximately 5,296 ft, but the Runway 7 and Runway 25 Takeoff Run Available, Takeoff Distance Available, and Accelerate-Stop Distance Available is equal to the full length of pavement (5,496 ft). Furthermore, both would require an amendment to existing RNAV and VOR instrument approach procedures and a survey performed under FAA 18B standards. Both Options also include replacing applicable runway signage and relocating the Runway 7 PAPI. Option 4A was eliminated because the alternative is much more expensive than Option 4B, as the replacement lighting is estimated to more than double the cost of the improvement (from \$1,113,580 without lights to \$2,397,580 to include replacing the runway edge lights).
- Runway 18-36 Length
Because only the Do Nothing and one alternative are considered, both are retained to evaluate.
- Taxiway A Length
Alt 2B) Extend without Taxiway A3 – Though this option allows for the extension of Taxiway A approximately 2,935 ft to the approach end of Runway 36 (including the proposed 200’ extension under runway alternatives), no bypass Taxiway A3 would be constructed. The extension without the bypass solves the Hot Spot 3 issue, but creates a subsequent hot spot issue of having no bypass taxiway during busy periods and aircraft delay periods.

- Taxiway A1 Direct Taxi Route
 - Alt 3) No-Taxi Diversionary Island – This option would keep Taxiway A1 in the current location but construct a diversionary island on the apron to impede an aircraft’s ability to taxi directly to the runway without making a series of turns. Though it has a relatively low cost, eliminates the direct apron to runway taxi route, and reduces the potential for runway incursion, diversionary islands can be confusing for pilots. Furthermore, the loss of apron space is not operationally preferable, especially when larger aircraft use the terminal apron.
- Taxiway A2 Direct Taxi Route

Because only the No Action/Do Nothing and Preferred Alternative are considered, both are retained for further evaluation.
- Taxiways B1-B2 Direct Taxi Routes (Hot Spot 2)
 - Alt 2A) Close and Mark TW B1 and Alt 2B) Close and Remove TW B1 – Both Options for closing Taxiway B1 were eliminated during the *ALP Update (2021)* alternative evaluation process. While the alternative resolves the ATCT line of sight issue identified therein, simply marking it would not resolve the direct apron to runway taxiway route. Removing the pavement would remove the route, but would add additional costs. [NOTE: The Airport is one of 31 airports that have a tower replacement in the 2023 budget request. The proposed new tower height would be at least 100’.]
 - Alt 4) Close TW B1, Construct No-Taxi Diversionary Island – This option removes Taxiway B1 to eliminate the Hot Spot 2 problem but retains Taxiway B2 in the current location and includes construction of a diversionary island on the apron. The aircraft cannot taxi directly to the runway without making a series of turns, thus reducing the current safety hazard situation. The North Apron is already too small for many of the larger jets, and the island would require utilizing some of this space and negatively impacting operational area. Furthermore, reducing the runway width from 100’ to 75’, as recommended in the *ALP Update (2021)*, results in additional constraints to larger jets operating safety in this Hot Spot 2 area. Therefore, this alternative was eliminated.
- Taxiway B on Runway 25 – Hold Line (Hot Spot 1)
 - Alt 2A) Partially close TW B with Existing Threshold and Markings Only – This option would result in closing the section of Taxiway B from B4 to the approach end of Runway 25 and simply marking the pavement. However, the Runway 25 threshold would remain in the same location and require departing aircraft to taxi on the runway for approximately 920 ft for Runway 25 departures and full-length Runway 7 landings. This creates a new potential safety hazard and opportunity for runway incursion (similar to the current condition on Runway 36 for which the project is trying to make corrections by adding a parallel taxiway).
 - Alt 2B) Partially close TW B and Remove Pavement – As with Option 2A, this option results in aircraft having to taxi on the runway for departure and landing. The difference is that Option 2B proposes to remove the taxiway pavement at an additional cost, thereby raising the total cost of the improvement and making it even less feasible.
 - Alt 3) Partially close TW B and Relocate Threshold – This alternative reduces the available runway by approximately 920 ft. It would result in changing the declared distance of Runway 7-25 to 4,376 ft with a 920 ft stopway, which unavailable for landings or takeoffs.

TABLE 3.4-1 Summary of Alternatives Retention Results

ACTION	Alternative	EVALUATION RESULTS	
		Retained/ Not Retained	Reason for Result
ALL ACTIONS	1) No Action	Retained for Detailed Analysis	NEPA requires evaluation of environmental consequences for No Action alternative
Runway 7			
	Alt 2	Not retained	Airport Rd proximity constraints, extensive earthwork, high cost
	Alt 3	Not retained	Geographically constrained, high cost
	Alt 4A	Not retained	High cost vs same benefit for 4B
	Alt 4B	Retained for detailed analysis	Passes all screening criteria
Runway 18-36			
	Alt 2	Retained for detailed analysis	Passes all screening criteria
Taxiway A Length			
	Alt 2A w/TW A3	Retained for detailed analysis	Passes all screening criteria
	Alt 2B	Not retained	Creates potential new hot spot area
Taxiway A1 Direct Taxi Route			
	Alt 2	Retained for detailed analysis	Passes all screening criteria
	Alt 3	Not retained	Potential to increase pilot error and reduce operational area
Taxiway A2 Direct Taxi Route			
	Alt 2	Retained for detailed analysis	Passes all screening criteria
Taxiway B1-B2 Direct Taxi Route ("Hot Spot 2") [TW A North Extension]			
	Alt 2A	Not retained	Does not resolve direct apron to runway issue
	Alt 2B	Not retained	Does not resolve direct apron to runway issue
	Alt 3	Retained for detailed analysis	Passes all screening criteria
	Alt 4	Not retained	Reduces available operational space for larger airplanes; reduced RW 7 width
Taxiway B on Runway 25 ("Hot Spot 1")			
	Alt 2A	Not retained	Requires on-runway taxi and creates potential safety hazard
	Alt 2B	Not retained	Same issue w/Alt 2A with higher cost to remove TW B
	Alt 3	Not retained	Change in RW 7-25 declared distance and landing space
ILS Localizer ("Hot Spot 3")			
	Alt 2	Retained for detailed analysis	Passes all screening criteria
PAPI			
	Alt 2	Retained for detailed analysis	Passes all screening criteria
Obstruction Removal			
	Alt 2	Retained for detailed analysis	Passes all screening criteria

3.4.3 Alternatives Retained

With the exception of Taxiway B on Runway 25 (“Hot Spot 1”), two alternatives were retained for a detailed analysis in the EA: 1) No Action Alternative; and 2) Preferred Alternative as highlighted in Table 3.3-1 and Table 3.4.1. For Hot Spot 1, the No Action was the only alternative retained.

Alternative 1 – No Action Alternative (aka “Existing Condition” or “Do Nothing”)

Alternative 1 – No Action – is required by NEPA to be evaluated within the EA. For each of the Alternatives and Options, no physical or operational changes would be implemented, and this would not resolve the RSA non-compliance status. The Airport would continue to operate in a deficient manner, adversely impacting safety on the runways and the safety of operations. These conditions do not meet federal safety standards and FAA would ultimately require improvements that bring the facilities, to the extent practicable, into compliance with safety standards.

Alternative 2 – Preferred Alternative

- Runway 7 – Runway Safety Area – 4B) Displace Threshold (Relocate/Reuse Lights)
- Runway 18-36 Length – 2) Extend 200 feet
- Taxiway A Length – 2A) Extend with Taxiway A3
- Taxiway A1 Direct Taxi Route – 2) Relocate
- Taxiway A2 Direct Taxi Route – 2) Relocate
- Taxiway B1-B2 Direct Taxi Route – 3) Replace
- Taxiway B on Runway 25 – Hold Line – No Action (Do Nothing)
- ILS Localizer – 2) Relocate
- Obstruction/Vegetation Removal

The EA evaluates the “No Action” and “Proposed Action” and further evaluated environmental and other impacts under 14 primary NEPA Categories (FAA Order 1050.1F). Details regarding the retained “Preferred Alternative” for each project is explained within Section 3.6 below.

3.5 Conclusion of Evaluation Process

For the above reasons, the Preferred Alternative in Table 3.6-1 was determined to be the only feasible build alternative that would meet the purpose and needs of the Airport. This alternative was recommended for more detailed study. It was determined that additional design work would be necessary during the EA process to further evaluate the impacts, particularly for those involving stormwater management. Each of the alternatives are proposed within a five-year construction phasing in order to address negative impacts to Airport operations and pilots using the airfield.

The CEQ NEPA regulations at 40 CFR 1502.14 require that an EA examine “all reasonable alternatives to a proposed project”. If an alternative is not reasonable, it is eliminated from detailed study. The CEQ has defined the term “reasonable alternatives” to include “those that are practical or feasible from a technical and economic standpoint...”.

Numerous alternatives were investigated and analyzed within the ALP Update (December 30, 2021). The screening analysis concludes that only one alternative for each runway is practical and feasible relative to meeting the project need, detailed in Chapter 2. These two alternatives, the “No Action” and “Preferred Alternative” are summarized and detailed below.

3.6 Proposed Action

The “Proposed Action” is comprised of the recommended projects in Table 3.6-1. These projects are discussed below in order of priority and with additional project considerations such as constructability and environmental issues.

As presented in the screening section above, each of the Preferred Alternatives examined during the *ALP Update* (2021) process evaluated the following.

- Operational Performance to include capacity, capability, and efficiency.
- Best Planning Tenets and Other Factors such as safety, design standards, technical feasibility, social and political feasibility, and how they satisfy users’ needs.
- Fiscal Factors with a summary analysis with reasonable cost estimates. Note that the Engineer’s Opinion of Probable Cost is based on the *ALP Update* (Stantec, December 30, 2021; Table 3.6-1).
- Environmental Factors that were considered in the *ALP Update* were limited to wetlands and social impacts, and the need for further environmental review is considered within this EA.

Table 3.6-1 summarizes the Key Cost Features of the Preferred Alternatives. The potential resource impacts are detailed in Chapter 5 – Environmental Consequences. For one of the projects, Taxiway B on Runway 25 (Hot Spot 1), the No Action or “Do Nothing” alternative is the Preferred Alternative. Figure 2 in section 3.3 illustrates the approximate location of each project under the Proposed Action.

TABLE 3.6-1 Key Cost Considerations of Retained/Preferred Alternatives

ACTION	RETAINED ALTERNATIVES	Key Features
		Estimated Cost*
Runway 7		
	Alt 1 – No Action/Do Nothing	\$0
	Alt 4B - Displace Threshold	\$2,397,580 - w/new edge lights; \$1,113,580 - use existing edge lights
Runway 18-36		
	Alt 1 – No Action/Do Nothing	\$0
	Alt 2 - Extend 200'	\$2,892,162 [includes NEPA EA, ~50 acres of tree clearing (per ALP), limited stormwater improvements, RW 36 PAPI mods, and GIS survey*; does not include edge lights]
Taxiway A Length		
	Alt 1 – No Action/Do Nothing	\$0
	Alt 2A - Extend	\$5,456,472
	w/Taxiway A3	\$729,595
Taxiway A1 Direct Taxi Route		
	Alt 1 – No Action/Do Nothing	\$0
	Alt 2 - Relocate	\$860,142

ACTION	RETAINED ALTERNATIVES	Key Features
		Estimated Cost*
Taxiway A2 Direct Taxi Route		
	Alt 1 – No Action/Do Nothing	\$0
	Alt 2 - Relocate	\$683,604
Taxiway B1-B2 Direct Taxi Route ("Hot Spot 2"; TW A North Extension)		
	Alt 1 – No Action/Do Nothing	\$0
	Alt 3 - Replace	\$747,579
Taxiway B on Runway 25 ("Hot Spot 1")		
	Alt 1 – No Action/Do Nothing	\$0
ILS Localizer ("Hot Spot 3")		
	Alt 1 – No Action/Do Nothing	\$0
	Alt 2 - Relocate	\$1,676,723 [includes 18B survey, FAA flight check, and NEPA EA]
PAPI**		
	Alt 1 – No Action/Do Nothing	\$0
	Alt 2 - Relocate	[included in RW 7 Option 4B & RW 18-36 Alt 2]
Runway 36 Obstacle Clearance		
	Alt 1 – No Action/Do Nothing	\$0
	Alt 2 - Remove	[included in RW 18-36 Alt 2]

NOTES: * Estimated Cost is based upon the "Engineer's Opinion of Probable Cost" as presented in the ALP Update (Stantec, December 30, 2021).

**PAPI relocation considered within Taxiway B on Runway 25.

3.6.1 Runway 7 – Displace Threshold

This project provides a compliant RSA by displacing the Runway 7 threshold approximately 200 ft. When combined with the existing 100-ft ERSA, this additional distance provides a compliant 300-ft runway safety area for aircraft landing on Runway 7. Therefore, this RSA modification is a critical safety improvement mandated by the FAA. The runway length analysis addressed in the ALP Update suggests that most aircraft using the Airport would have minimal operational disadvantages with a slightly shorter runway. This is particularly true if Runway 18-36 is extended as presented herein.

One tradeoff is that it slightly reduces the landing distance available from 5,496-ft to approximately 5,296 ft. (3.7%). The Declared Distances must be modified and Landing Distance Available (LDA) in both directions must be reduced by approximately 200 ft to compensate for the ERSA adjustment on the Runway 25 end. The Takeoff Run Available, Takeoff Distance Available, and Accelerate-Stop Distance Available are equal to the full length of pavement (5,496 ft). Overall, the safety enhancement is worth the reduction in designated runway length.

3.6.2 Runway 18-36 – Extend 200-ft

This project extends Runway 18-36 by 200 ft (100-ft wide) on the southerly end for a total length of 5,400 ft. This project meets user needs and improves the Airport's utility. The extension results in additional obstructions in Obstacle Clearance Surface No. 4, which are described separately below and must be mitigated. Figure 3 in Section 3.4 shows the obstructions in this surface based on a 200-ft runway extension.

3.6.3 Taxiway A – Extend and Construct New Taxiway A3

This project extends Taxiway A approximately 2,935-ft to the southern end of an extended Runway 18-36. It eliminates Hot Spot 3, as taxiing 2,700 ft on the Runway 18-36 between the terminal apron and the approach end of Runway 36 will no longer be required. Though a full-length parallel taxiway is recommended, but not required, for a runway with approach minimums of one mile or greater, the need to taxi over 2,700-ft on the runway make this an important project. The proposed taxiway would be 35-ft wide and separated from the runway by 300-ft. This project is one that the Airport has planned for many years. It is shown on the current *ALP Update* and has had widespread support from airport users and tenants. It would lie directly in the existing ILS Localizer Critical Area, thereby requiring relocation of the ILS localizer. The ILS localizer project is also described in a separate Section 3.6.8 below.

This project envisions the construction of a new A3 taxiway. Parallel taxiway systems provide safety benefits by simplifying operations, reducing air traffic control workload, and minimizing the risk of vehicle-aircraft conflicts. Although not a factor at the Airport, they also increase capacity, consequently reducing delays. The addition of bypass Taxiway A3 would allow aircraft traveling to the Runway 36 end for Runway 36 takeoffs or from Runway 18 landings to bypass other aircraft parked on the parallel or entrance taxiways. This prevents delays due to enroute clearance, conducting engine runups, and other delays, especially during busy periods. Stormwater drainage conveyance replication and other mitigation measures will be implemented.

3.6.4 Taxiway A1 – Relocate

This project enhances safety by eliminating the direct apron to runway taxi route. This is accomplished by shifting Taxiway A1 approximately 300 ft south to a point where it is clear of the Terminal Apron. While aircraft will not have the direct taxi route from the terminal apron to the runway, the requirement to execute two turns before entering the runway is a positive safety enhancement that reduces the potential for a runway incursion. The relatively low cost of this project makes this an easy fix for an identified safety concern. The proposed taxiway would be 35-ft wide.

3.6.5 Taxiway A2 – Relocate

Relocating Taxiway A2 meets FAA design standards and enhances safety by eliminating the direct apron to runway taxi route from the Echo Apron to Runway 18-36. This is accomplished by shifting Taxiway A2 approximately 300-ft south to a point where it is clear of the Echo Apron. While aircraft will not have the direct taxi route from the terminal apron to the runway, the requirement to execute two turns before entering the runway is a positive safety enhancement that reduces the potential for a runway incursion. The relatively low cost of this project makes this an easy fix for an identified safety concern. The proposed taxiway would be 35-ft wide.

3.6.6 Taxiway B1 and B2 – Replace with Taxiway A North Extension

Removing/closing Taxiways B1 and B2 meets FAA design standards by eliminating the direct apron to runway taxi routes and reducing the potential for a runway incursion. This project removes both taxiways and thus removes the direct apron to runway design issue. The preferred replacement is an extension of Taxiway A across Runway 7-25. This project enhances safety by 1) eliminating the direct apron to runway taxi routes, and 2) mitigating Hot Spot 2, which is a tower visibility issue. This is accomplished by removing Taxiways B1 and B2 and extending Taxiway A across Runway 7-25 to connect with Taxiway B. It also creates a simplified taxiway layout resulting in a smoother transition of traffic along the primary runway (Figure 2).

3.6.7 Taxiway B on Runway 25 – No Action/Do Nothing

Following the analysis of four alternatives for this project, it was determined that Alternative 1, the No Action or “Do Nothing” is the Preferred Alternative. Due to the physical constraints posed by the surrounding steep terrain, need to modify the RSA on the Runway 7 end affecting the total available landing length, and other factors, the other three alternatives considered would not result in a net positive benefit. There are guard lights installed at the Runway 25 end as visual aids. Therefore, No Action is proposed at this time.

3.6.8 ILS Localizer – Relocate

This project entails moving the localizer antenna from the runway's side to the standard location at the end of the runway, as illustrated in Figure 2. This project is recommended only if 1) the revised location will not result in higher approach minimums, and 2) there is a commitment to the extension of Taxiway A to the approach end of Runway 36. Moving the localizer to the traditional location on the extended runway centerline will permit a full-length parallel taxiway, which results in removing Hot Spot 3. This project meets user needs by finally allowing the full-length taxiway construction to the south end of Runway 18-36 and eliminates the need to taxi on the runway. [Reference ALP Update (2021) page 4.64 “Technical Feasibility”; AIP 066 Feasibility Study for localizer relocation is in process.]

3.6.9 PAPI – Relocate

PAPI relocation is proposed as part of Option 4B under the Runway 7 threshold displacement and the 200’ Runway 18-36 extension at the Runway 36 end. (The PAPI relocations are within the Reimbursable Agreement [RA] #2 in 2022 and RA #3 in 2023.)

3.6.10 Obstruction Clearance

Based on a review of the existing *ALP Update (2021)* and redelination of wetlands in this vicinity in 2021, it appears Runway 18-36 can be extended by 200 feet on the south end of the runway to accommodate a 300-foot ERSA without impacting wetlands. Appendix B in the *ALP Update (2021)* illustrates that the proposed Runway 36 200-ft extension would infringe into off-airport property. Therefore, the acquisition of an avigation easement granting the Airport control rights to manage vegetation height will be necessary. The avigation easement is presented in the *ALP Update* to occur in 2022 (see Timeline in section 3.7 below). Additional obstruction clearance is proposed on-airport for a total of 21.4 acres. Those trees that are in wetlands will be felled in place. No stumping or grinding is proposed.

3.7 Timeline and Phasing of Proposed Action

Table 3.7-1 presents an overview of the anticipated timeframe required to implement the projects under the Proposed Action between 2022 through 2026 as shown in Figure 2.

Table 3.7-1 Timeline of Proposed Action*

Fiscal Year (FY)		Notes
2022	June – Complete Draft NEPA Environmental Assessment	30-day Public Comment period and subsequent Final EA thereafter
	Easement Acquisition	Obstruction/tree removal area off-airport at southwest
	Design TW A, TWA1, TWA2, and RW36 Extension & ILS localizer Relocation	EA based on 30% design
	Design Stormwater Systems and Mitigation for environmental impacts	Mitigation for stormwater drainage proposed at 1:1.5 ratio (per NHDES)
	FAA RA #2 – Localizer Facility & RW 36 PAPI relocation design & bid phase services	Localizer needs to be relocated to allow Taxiway A extension
	Obtain regulatory permits needed for early phase	NHDES Wetlands Dredge & Fill (assuming <3 acres; otherwise USACE Individual Permit needed); NHDES AOT; others (Section 5.15)
2023	FAA RA #3 – Localizer Facility & RW 36 PAPI relocation construction phase services	Pending permits; Localizer needs to be relocated to allow Taxiway A extension
	Relocate Localizer	Pending permits; Localizer needs to be relocated to allow Taxiway A extension
	Construct Taxiway A South Extension – Phase 1	Pending permits and localizer relocation
	Construct Taxiway A2 Relocation	Pending permits and Taxiway A South extension
	Design Taxiway A North Extension	Pending permits and Taxiway A South extension
	Obtain regulatory permits needed for subsequent phase(s)	NHDES Wetlands Dredge & Fill (assuming <3 acres; otherwise USACE Individual Permit needed); NHDES AOT; others (Section 5.15)
2024	Construct Runway 36 Extension & Obstruction/Tree Removal (south of Runway 36)	May require second round of consultation with USFWS pending changes to species' statuses
	Construct Taxiway A South Extension – Phase 2	Pending permits and Taxiway A South Extension Phase 1
	Obtain regulatory permits needed for modifications or extensions; or new permits for subsequent phases	NHDES Wetlands Dredge & Fill (assuming <3 acres; otherwise USACE Individual Permit needed); NHDES AOT; others (Section 5.15)
2025	Construct Taxiway A North Extension and remove Taxiways B1 & B2	Pending permits and Taxiway A North Extension design
	Construct Taxiway A1 Relocation	Pending permits and Taxiway A1 relocation design
	Obtain regulatory permits/amendments needed for subsequent phase(s)	Pending design work for each subsequent phase
2026	Design & construct displaced Runway 7 threshold	Pending permits
	Design & construct new Taxiway A3 bypass	Pending permits

*Note: Phasing based in part on ALP Update, Table 6.1 – Proposed Capital Improvement Program – and colored to match (Stantec, December 30, 2021)

4 Affected Environment

Per FAA Order 1050.1F, Paragraph 6-2.1(e), this section describes the environmental conditions of the potentially affected geographic area at the Lebanon Municipal Airport (“the study area”). The study area for each of the resource categories varies according to area of potential impact (Figure 4), and the relevant study areas are described within each below. The resource categories are presented in the order given in FAA Order 1050.1F, Exhibit 4-1. The data and analyses are presented in detail commensurate with the importance of the impact; lower impact areas are described in brief summaries, while higher impact areas are described in more detail. Where applicable, the description provides references to information or analysis that is reasonably available to the public. This section describes other relevant activities (past, present, and reasonably foreseeable future actions), their interrelationships, and cumulative impacts. The discussion includes only those environmental impact categories affected by the Proposed Action (or any reasonable alternatives to demonstrate the likely impacts). For resources that do not occur in the vicinity and could not be affected by the Proposed Action, a general description is provided and the resource is dismissed from further consideration (per Order 1050.1F, Para 4-2.c).

4.1 Resources Not Affected

4.1.1 Climate

Since the project is primarily a runway safety area (RSA) improvement project, it is primarily an airport action. The Proposed Action would not increase GHG emissions compared to the No Action alternative. This is an RSA improvement project, and as such, is not anticipated to increase the number of aircraft using the Airport. Overall operations are expected to remain at similar levels [reference the 2017 Master Plan and 2021/22 Master Plan if available], and resulting air emissions are expected to remain well within National Ambient Air Quality Standards (NAAQS). The Taxiway A extension will prevent lengthy backtaxiing and associated delays with approaching aircraft trying to land. This is a positive benefit of the Proposed Action. The Proposed Action will not result in a net increase in GHG emissions. Therefore, no negative impact on the climate or GHG emissions is expected and this resource is dismissed from further consideration.

4.1.2 Coastal Resources

The Airport is not located within any of New Hampshire’s coastal counties or near any special management areas. Per Order 15 CFR 930.35 and FAA Order 5050.4B(706[e]), it is acceptable to state that the No Action, Proposed Action, would not affect coastal resources. Therefore, this resource is dismissed from further consideration.

4.1.3 Department of Transportation (DOT) Act: Section 4(f) Resources

Section 4(f) of the US Department of Transportation (DOT) Act of 1966 (49 USC § 303) protects significant publicly owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. There are no Section 4(f) properties immediately adjacent to the Airport. Based on this information, the No Action, Proposed Action, would not affect Section 4(f) resources in the primary study area. Therefore, this resource is dismissed from further consideration.

4.1.4 Farmlands

As indicated in the NRCS Custom Soil Resource Report for Grafton County, New Hampshire, Lebanon

Municipal Airport (NRCS Report), approximately one quarter of the Airport soils have been categorized as “Farmland of Local Importance” or “Prime Farmland.” The Farmland Protection Policy Act (FPPA) of 1994 and Chapter 432 rules do not apply to land already committed to “urban development or water storage” regardless of its importance as defined by the NRCS. The Airport property is zoned Industrial and dedicated to and actively used for aviation activities. Therefore, these soils are exempt from the FPPA. There are two farm operations in the vicinity of the Airport, one to the east and one to the southeast. The proposed activities would not directly or indirectly affect those operations. Therefore, the No Action and Proposed Action would not affect farmlands in the primary study area and this resource is dismissed from further consideration.

4.1.5 Historical, Architectural, Archeological, and Cultural Resources

Under the National Historic Preservation Act (NHPA), a historic property is “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in the National Register of Historic Places (NRHP) maintained by the Secretary of the Interior” as stated in 36 CFR Part 800. NHPA Section 106 requires federal agencies to consider the effects of their actions on such historic properties, including any projects involving state or federal permitting, funding, or approval. Federal regulations for implementing Section 106 (36 CFR 800, Protection of Historic Properties) require FAA projects to meet Section 106 by means of consultation with the State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Officer (THPO) to review the project’s potential to adversely affect historic properties. In New Hampshire, this project comes under the jurisdiction of the New Hampshire Division of Historical Resources (NH DHR), which functions as the state’s SHPO.

The Area of Potential Effect (APE) for historic and archeological resource review generally followed the Airport’s property boundary. As part of the due diligence and investigations that occurred in conjunction with the earlier 2012 EA, a previous Request for Project Review was made to the NH DHR on behalf of the Airport. At that time, a complete Phase 1A & 1B archeological investigation was conducted by Hartgen Archeological Associates (September 2011). Based on those surveys, the NH DHR completed a National Register Determination of Eligibility (DOE) for the Lebanon Airport in July 2012. The documents supporting that determination of “Not Eligible” are now part of the records within the DHR’s online “*Enhanced Mapping & Management Information Tool*” (EMMIT) system. At that time, it was concluded that the Airport overall is not eligible for the National Register as a historic district due to the loss of character-defining features in the few remaining historic structures.

A subsequent Request for Project Review was submitted to the NH DHR on October 8, 2021 for this EA. The DHR responded on November 8, 2021, with the following summarial Agency Comment:

“No archaeological concerns. Project area surveyed in 2011 (1A & 1B). Lebanon Airport was determined not eligible for listing in the National Register in 2012 due to lack of integrity. No additional survey is necessary. Be sure to complete the Section 106 process as projects proceed.”

After review of the relevant information, the FAA is issuing a finding of “No Historic Properties Affected” in accordance with Section 106 for this undertaking. Concurrence from the NH SHPO is pending.

The response communications are included in Appendix B. Therefore, this resource is dismissed from further consideration.

4.1.6 Visual Effects and Light Emissions

The FAA is required to consider the potential for lighting associated with a proposed development action that may become an annoyance to people in the vicinity or interfere with their normal activities. Because most air navigational systems and other airport development actions produce relatively low levels of light intensity compared to background levels, adverse effects on human activity or the use or characteristics of protected properties, when present, are unlikely. Under the Proposed Action, any lights that will be replaced will be replaced in situ, with lighting of similar intensity. Lights on the Runway 36 approach end will be placed in a pattern similar to the existing layout, but relocated to the south. Due to the minimal changes in the light emissions proposed with the alternatives, adverse effects to the surrounding land uses are not anticipated. Therefore, this resource is dismissed from further consideration.

4.1.7 Wild and Scenic Rivers

The National Wild and Scenic Rivers System was created by Congress in 1968 (PL 90-542; 16 US Code 1271) to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. Currently, there are no federally listed Wild and Scenic Rivers in Grafton County, New Hampshire.

Section 5(d) of the National Wild and Scenic Rivers Act requires that “In all planning for the use and development of water and related land resources, consideration shall be given by all Federal agencies involved to potential national wild, scenic, and recreational river areas.” To comply with this provision, the National Park Service has compiled a list of river segments that potentially qualify as national wild, scenic or recreational river areas. This list of river segments is known as the Nationwide Rivers Inventory (NRI; not to be confused with natural resources inventory described elsewhere herein). There are no designated rivers in Lebanon; the Mascoma River is not designated, and the Connecticut River is designated upstream and downstream of the City limits. Therefore, this resource is dismissed from further consideration.

4.1.8 Floodplains and Floodways

Airport development actions must avoid impacting floodplains if a practicable alternative exists in order to comply with Executive Order 11988 *Floodplains* and the US Department of Transportation (USDOT) Order 5650.2 *Floodplain Management and Protection*. Floodplains are the lowland or flat areas that are adjacent to coastal or inland waters, including areas prone to flooding during a 100-year flood as defined by the Federal Emergency Management Agency (FEMA). These floodplain areas are protected from encroachment to preserve and restore the natural and beneficial values that floodplains provide. According to the FEMA Flood Insurance Rate Map for Grafton County, NH (Panel 893 of 1185) there are no regulated areas identified as 100-year floodplains or floodways on Airport property. The airport stormwater flows to the Mascoma River at the north of Runway 7-25 and to the Connecticut River on the west side of Runway 18-36. This resource is dismissed from further consideration.

4.1.9 Groundwater

The Safe Drinking Water Act (SDWA) of 1974 as amended protects the public health by regulating the nation’s public drinking water supply. Under the SDWA, EPA has set standards for drinking water quality at the sources such as rivers, lakes, reservoirs, and groundwater wells supplying water to more than 25 individuals. EPA oversees the states, localities, and water suppliers who implement the SDWA standards that protect the water supply from man-made and naturally occurring contaminants. The SDWA gives

the EPA the authority to designate aquifers which are the sole or principal drinking water source for an area, and which, if contaminated, would create a significant hazard to public health. A Sole Source Aquifer is one that supplies at least 50 percent of the drinking water consumed by the human population in the area overlying the aquifer where there is no other alternative to this water supply. According to the EPA Sole Source Aquifer Protection Program, the Airport is not situated over any portion of an EPA designated Sole Source Aquifer. The City of Lebanon acquires its potable water from the Greater Mascoma River. The Proposed Action would not result in groundwater withdrawals or commercial discharges of wastewater, and would not affect groundwater usage. Therefore, it is considered a Resource Not Affected and is dismissed from further consideration.

4.2 General Location

The City is located in northwestern New Hampshire adjacent to the Connecticut River in Grafton County. The Airport is approximately three miles southwest of the City's center (Figure 1), just south of I-89, west of Poverty Lane, south and east of New Hampshire State Route 12A (Route 12).

The Airport land area is approximately 600 acres and consists of aviation related buildings; impervious areas, including a 250-space parking lot, runways, aprons, and taxiways; mowed expanses; wooded hillside slopes; and wetland areas. The airfield elevation as presented on flight charts was surveyed at 603 feet above mean sea level (AMSL). Figure 5 shows the various relevant landscape features and habitat types in relation to the project limits.

The Airport is adjacent to the intersection of two interstate highways, Interstate 89 (I-89) and Interstate 91 (I-91). Interstate 89, combined with US Route 4, provides an east/west route, while just over the Vermont border to the west I-91 provides a major north/south route through New England. The intersection of these two controlled access highways forms a major transportation hub that interconnects the interstate system with several state and local roadways. In New Hampshire, these non-controlled access roadways include Route 120; Route 12A, which contains most of the commercial development in the City; and Route 10 (North Main Street) paralleling the Connecticut River on the north side of I-89.

4.3 Geology, Soils, and Topography

The Airport is located on a hilltop above the Connecticut River and Mascoma River between the Green Mountains of Vermont and the White Mountains of New Hampshire. The Airport is generally situated at approximately 600 feet AMSL in hilly terrain that has been excavated and filled during the original Airport construction and subsequent projects. The landscape drops off steeply on the north side to I-89 and the Mascoma River, and to the west to Route 12A and the Connecticut River. Hills rise just to the east, south, and southwest of the airfield.

According to the US Department of Agriculture Natural Resources Conservation Service (NRCS; 2006) the Airport is situated within the Connecticut Valley Major Land Resource Area. According to the NRCS Custom Soil Resource Report for Grafton County, New Hampshire, Lebanon Municipal Airport (NRCS Report), bedrock may be visible on the surface or encountered at depths as shallow as ten inches in the several soil types located to the south and southwest of the Runway 36 end and on the hill to the east of the middle of Runway 18-36. During wetland field studies for this EA, investigators observed surface bedrock in these areas.

According to the NRCS Soil Survey of Grafton County Area (1999) and custom online reporting tool (NRCS Web Soil Survey, WSS), soils found on the Airport are primarily either undisturbed soils, Pits or Udorthents (Figure 6). The pits are gravel mining sites and the Udorthents are areas which have been altered with cuts and fills to provide a smooth surface for the main runway surfaces. The unaltered soils in this area are generally loams with silts or sands. These soils possess drainage capacities ranging from excessively well drained to moderately well drained. The exceptions are areas identified as Stissing soils that are poorly drained and very poorly drained Chocorua mucky peat. Many of the soils are considered to be “partially hydric”; hydric soils form under saturated or flooded conditions and are typically an indicator of wetland conditions. (Wetlands are discussed in detail in Section 4.11.)

4.4 Air Quality

The study area for air quality is the entire geographic area that could be either directly or indirectly affected by the Proposed Action. The Clean Air Act Amendments of 1990 (104 Stat. 2468, P.L. 101-549) requires the US Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. The EPA Office of Air Quality Planning and Standards has set NAAQS for six principal “criteria” pollutants: These pollutants include ozone (O₃), carbon monoxide (CO), nitrogen dioxide (NO₂), lead (Pb), particulate matter (PM_{2.5} and PM₁₀) and sulfur dioxide (SO₂). According to the FAA 1050.1F Desk Reference (February 2020), Section 1.1, the USEPA has designated areas with poor air quality that have concentrations of criteria pollutants above the NAAQS as “nonattainment areas.” Areas possessing monitored outdoor air concentrations within the NAAQS are considered “attainment” areas. As of the most recent EPA Green Book report (<https://www.epa.gov/green-book>; accessed 9/20/21) Grafton County, New Hampshire is considered as *in attainment* for each of the six criteria pollutants. Since the air quality in the immediate region of the Airport is *in attainment*, this category would generally be considered a “Resource Not Affected”. However, because there are construction activities that may have temporary impacts on air quality, it is retained for further evaluation.

4.5 Biological Resources (Fish, Wildlife, and Plants)

Biologic resources refer to the various types of vegetation and wildlife (invertebrates, fish, birds, reptiles, amphibians, and mammals). This includes terrestrial and aquatic plant and animal species; game and non-game species; special status species (state- or federally-listed threatened or endangered species, marine mammals, or species of concern, such as species proposed for listing or migratory birds); and environmentally sensitive or critical habitats.

4.5.1 Vegetation

The geography in the vicinity of the Airport contains forested hills dominated by northern deciduous hardwood stands of sugar maple, beech, oaks and hickory plus stands of softwoods (conifers) of white pine and hemlock (Figure 5). Wetter areas are present and tend to be dominated by red maple stands. The forests in the vicinity were historically cleared for their timber and the land then used for agricultural production. Other habitats common to the area include the Connecticut and Mascoma riparian areas and floodplains plus higher elevation tributaries, freshwater wetlands, marshes, and swamps. The vegetation on the Airport includes numerous habitat types, including forested, scrub-shrub, successional field, grasslands and maintained turf. Both upland and wetland areas are present.

Typical tree species within the forested sections of the Airport south of Runway 36 include white ash (*Fraxinus caroliniana*), sugar maple (*Acer saccharum*), paper birch (*Betula papyrifera*), red maple (*Acer rubrum*), quaking aspen (*populus tremuloides*), white pine (*Pinus strobus*), and hop hornbeam (*Ostrya virginiana*). Shrub species include witch hazel (*Hamamelis virginiana*), European buckthorn (*Rhamnus cathartica*), and American hornbeam (*Carpinus caroliniana*). A variety of fern species are present such as cinnamon fern (*Osmunda cinnamomeum*), sensitive fern (*Onoclea sensibilis*), crested wood fern (*Dryopteris cristata*), maidenhair fern (*Adiantum pedatum*), Christmas fern (*Polystichum acrostichoides*), New York fern (*Thelypteris noveboracensis*), lady fern (*Athyrium filix-femina*), and intermediate fern (*Dryopteris intermedia*), along with sedges, grasses (*Poa* spp), and sphagnum moss (Sphagnum). A composite vegetation species list can be found in a separately bound document entitled, Lebanon Airport Area B-1 Wetland Delineation, Lebanon, NH (Appendix C). Rare plant species found on or near airport property are described in Section 4.4.3.

4.5.2 Wildlife

The Airport property and surrounding lands contain various habitats that are suitable for numerous species. FAA AC 150/5200-33: *Hazardous Wildlife Attractants on or near Airports* provides guidance on certain land uses that have the potential to attract hazardous wildlife on or near public-use airports. It also discusses airport development projects (including airport construction, expansion, and renovation) affecting aircraft movement near hazardous wildlife attractants. In order to determine which wildlife and habitats may fall within the parameters of this guidance, a general assessment of habitat types and likely wildlife was conducted using desktop and field observations.

The Airport is mostly surrounded by an 8-foot high security fence. The area inside the fence is managed to minimize wildlife usage, and larger mammals are excluded from habitat inside the fence.

The extensive undeveloped forests and wetlands beyond the fenced area provide habitat for many species, including mammals such as moose (*Alces alces*), white-tailed deer (*Odocoileus virginianus*), black bear (*Ursus americanus*), bobcat (*Lynx rufus*), and coyote (*Canis latrans*). The upland and wetland forest and meadows provide habitat for raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), weasel (*Mustela frenata*), red fox (*Vulpes vulpes*), gray fox (*Urocyon cinereoargenteus*), fisher (*Martes penanti*), porcupines (*Erethizon dorsatum*), opossum (*Didelphis virginiana*), gray squirrels (*Sciurus carolinensis*), red squirrels (*Sciurus vulgaris*), short-tailed shrews (*Blarina brevicauda*), voles (*Microtus* spp.), deer mice (*Peromyscus maniculatus*), various moles, bats, and other mammals.

Amphibians and reptiles that inhabit the forest may include two-lined salamanders (*Eurycea b. bislineata*), red-backed salamanders (*Plethodon cinereus*), eastern newts or red efts (*Notophthalmus viridescens*), wood frogs (*Rana sylvatica*), gray tree frogs (*Dryophytes versicolor*), spring peepers (*Hyla crucifer*), green frogs (*Rana clamitans*), garter snakes (*Thamnophis sirtalis*), and ring necked snakes (*Diadophis punctatus*), and others.

Birds may include woodpeckers (*Dryobates* spp., *Melanerpes* spp., *Colaptes auratus*, *Dryocopus pileatus*, *Sphyrapicus varius*, *Picoides* spp.), Canada warblers (*Wilsonia canadensis*), northern waterthrush (*Parkesia noveboracensis*), other warblers, crows (*Corvus brachyrhynchos*), turkeys (*Meleagris gallopavo*), grouse (*Bonasa umbellus*), blue jays (*Cyanocitta cristata*), veery (*Catharus fuscescens*), gray catbirds (*Dumetella carolinensis*), white-throated sparrow (*Zonotrichia albicollis*), and others. Extensive avian surveys have occurred on the property over the years. New Hampshire Audubon staff recently completed a field survey of grassland bird activity in the vicinity of both runways in May, June, and July,

2021 (P. Hunt, personal communication). The survey resulted in observations of Eastern meadowlark (*Sturnella magna*), bobolink (*Dolichonyx oryzivorus*), Savannah Sparrow (*Passerculus sandwichensis*), Wilson's Snipe (*Gallinago delicata*), and one observation of a Grasshopper Sparrow (*Ammodramus savannarum*). Grasshopper sparrows are a NH state-listed Threatened species. In addition to numerous species listed, those encountered during wetland surveys in July 2021 included common yellowthroat (*Geothlypis trichas*), black-throated green warbler (*Setophaga virens*), ovenbird (*Seiurus aurocapilla*), hermit thrush (*Catharus guttatus*), wood thrush (*Hylocichla mustelina*), red-eyed vireo (*Vireo olivaceus*), song sparrow (*Melospiza melodia*), house wren (*Troglodytes aedon*), black-capped chickadee (*Poecile atricapillus*), savannah sparrow, and American goldfinch (*Spinus tristis*).

A recent survey by NH Audubon in summer 2021 resulted in observations that include two NH state-listed bird species – eastern meadowlark (*Sturnella magna*) and grasshopper sparrow (*Ammodramus savannarum*) [pers. comm. and draft report provided by P. Hunt, October 2021] (Table 5.5-2). Seven visual and audible observations of eastern meadowlarks were made during three separate visits in May, June, and July. The birds were observed at various locations that included south of the maintenance facilities along the western edge of Runway 18-36, south of the extreme end of Runway 18-36, and east of Runway 18-36. These three areas contain suitable open grassland habitat to support nesting meadowlarks, and this species has been observed using the Airport since at least 1997. There was one observation of a single male grasshopper sparrow along Runway 7-25 at the eastern end north of Taxiway B, and it was not determined if this was a transient individual.

Emergent wetland areas located inside the perimeter fence that contain a thick vegetative cover provide habitat for small mammals such as weasels, shrews, voles, and mice; birds such as song sparrows (*Melospiza melodia*), tree swallows (*Tachycineta bicolor*), turkeys, woodcocks (*Scolopax minor*), snipe (*Gallinago* spp.), Eastern meadowlarks, and bobolinks; birds of prey such as great horned owls (*Bubo virginianus*), red tailed hawks (*Buteo jamaicensis*), and northern harriers (*Circus cyaneus*); snakes such as garter snakes, ribbon snakes (*Thamnophis sauritus*), and smooth green snakes (*Opheodrys vernalis*); amphibians such as green frogs, pickerel frogs (*Rana palustris*), and American toads (*Bufo a. americanus*), and arthropods, including crayfish (*Faxonius* spp.). Numerous gray treefrogs were encountered adjacent to a wetland ditch near one of the hangars during July 2021 wetlands delineations.

A search for vernal pools was conducted as part of the wetland delineation efforts in the study area. A large potential vernal pool (Wetland A) was delineated in the southeast area of the property outside of the fenced area. Another vernal pool had previously been identified within the earlier 2010 study area just outside Airport property (November 2012 Final EA). In that case, over 200 spotted salamander (*Ambystoma maculatum*) egg masses, along with numerous wood frog egg masses were found in the pool. Both of these species are most often found breeding in vernal pools, seasonal pools, which periodically dry out and lack fish. Because of the relatively limited extent of vernal pool habitat regionally, this pool has high wildlife habitat value.

4.5.3 Threatened and Endangered Species and Critical Habitats

Several sources were referenced for an initial verification of the presence of any vegetation or wildlife species within the Airport or vicinity that are federally-listed as threatened or endangered species under the Endangered Species Act (ESA) of 16 USC Section 1531 – 1544 or state-listed threatened or endangered under the New Hampshire Endangered Species Conservation Act (RSA 212-A) and the New Hampshire Native Plant Protection Act (RSA 217-A). These sources include the *USFWS' Information for*

Planning and Consultation (IPaC) online tool, the Lebanon *Natural Resources Inventory* (NRI), the NH Natural Heritage Bureau's (NHNHB) web-accessible DataCheck Tool, and the NHNHB listing of *Rare Plants, Rare Animals, and Exemplary Natural Communities in New Hampshire Towns* (July 2020).

The NHNHB was contacted to request a search of their database records to determine the potential presence of any state or federally listed threatened or endangered species, or other rare plants, animals or natural communities. Appendix D contains copies of the listings for New Hampshire towns; the New Hampshire state-listed rare species compiled by the NHNHB; and NHNHB correspondence. In addition, the Rare Species Occurrence Form for state-listed species identified on the Airport property during the wetland delineation is included in Appendix C.

The NHNHB listing by towns (July 2020) indicated that there are numerous state-listed threatened and endangered plant and animal species in Lebanon. Only two were previously observed on the Airport property prior to 2021. In its written response, the NHNHB reported recorded observations of the barren strawberry (*Geum fragarioides*, formerly *Waldsteinia fragarioides*) in a location outside the property. During the 2021 field surveys, several locations of barren strawberry were identified on and adjacent to the Airport property in the vicinity of proposed vegetation management work and reported to the NHNHB. The NHNHB also noted the state-threatened Eastern Meadowlark (*Sturnella magna*) as observed on the Airport during surveys by NH Audubon in 1997, 1999, 2013, and 2021 (described under Wildlife above). In addition, NH Audubon recorded a state-threatened Grasshopper Sparrow just north of runway 7-25 in July, 2021. This species had not been formerly identified on the list for Lebanon.

Wetland delineation field work conducted in 2010, identified a population of state-threatened Greater Fringed Gentian (*Gentianopsis crinita*) on airport property (Figure 7). Most of the plants were reportedly observed growing along a mowed area just outside the eastern security fence along Runway 18-36. During a subsequent field survey in September 2021, the population of this gentian was confirmed, and plants were surveyed in emergent wetlands on both sides of Runway 36. The fringed gentian grows to 24 inches tall, with several individual four-petaled blue flowers at the end of each stem that bloom during September to November. The plant is biennial (has a two-year life cycle) and grows in magnesium-rich soil in wet meadows, wet woods, and stream banks. In 2012, there were only seven confirmed populations of greater fringed gentian in New Hampshire according to the NHNHB Rare Plant List. In 2021, there were nine towns with observed specimens of greater fringed gentian.

In addition to the fringed gentian identified during the 2010 and 2021 wetland delineations and natural resources inventory, several other rare species were located in July and September 2021 (Figure 7). Specifically, four state-threatened species were observed: northern tubercled bog orchid (*Platanthera flava* var. *herbiola*), American ginseng (*Panax quinquefolius*), barren strawberry (*Geum fragarioides*), and greater fringed gentian (*Gentianopsis crinita*).

Two small populations of the state-threatened barren strawberry (*Geum fragarioides*, formerly *Waldsteinia fragarioides*) were identified at the southerly end of the Airport property and just over the property line to the abutting property on the southeast. In addition, a population of state-threatened Greater fringed gentian (*Gentianopsis crinita*), previously reported to the NHNHB in 2010, was confirmed growing within a mowed area along the security fence east of Runway 18-36. Multiple additional specimens were identified in Wetland F on the west side of Runway 36 during a survey in September 2021. A population of the state-threatened northern tubercled bog orchid (*Platanthera flava* var. *herbiola*) was recorded in frequently mowed wetlands west and east of Runway 36. Approximately 30 specimens were observed in the southern

part of Wetland F, and five specimens were observed just south of the chain link fence at the northern end of Wetland E. A single specimen of American ginseng (*Panax quinquefolius*) was identified in an enriched hemlock-northern hardwood forest west of Wetland A. Wetland B, in the extreme southeast corner of the property, could likely be classified as a Northern hardwood-black ash-conifer swamp, a rare (S2) natural community type in New Hampshire.

These occurrences were reported to the NHHNB as part of the wetlands and resources report (Appendix C), but due to the sensitive nature of species locations, the exact location has been redacted/randomized. The species are classified by the NHHNB as either S3, which is defined as “either very rare and local throughout its range (generally 21 to 100 occurrences), or found locally (even abundantly at some of its locations) in a restricted range, or vulnerable to extinction because of other factors”; or SU “status uncertain, but possibly in peril; more information needed.”

Based on published information and USFWS correspondence, there are no known federally listed or proposed threatened or endangered wildlife species or critical habitat within the fenced area of the Airport property. Beyond the fence, forested areas support habitat to the Northern long-eared bat (NLEB; *Myotis septentrionalis*). The USFWS letter and supporting documentation are located in Appendix E. The New Hampshire Fish and Game and NHHNB include NLEB as a state-listed endangered species, but there were no recorded observations within the vicinity of the project area.

In addition, the USFWS notes one “Candidate Species”, the Monarch Butterfly (*Danaus plexippus*). The information provided by the USFWS field office (letter dated May 3, 2022) indicates that “Candidate species that appear on the enclosed species list have no current protections under the ESA,” and “...the Service recommends that all project proponents incorporate measures into projects to benefit candidate species and their habitats wherever possible.” The Airport grassland areas may have suitable habitat containing milkweed around the periphery, but in those areas that are maintained and mowed, the herbaceous species are kept below the level that milkweed would typically grow.

4.6 Hazardous Materials, Solid Waste, and Pollution Prevention

Hazardous materials are those that are capable of posing an unreasonable risk to human health, safety, and property. Solid waste is defined as garbage, refuse, sludges, wastes, and other discarded materials resulting from residential and non-industrial operations and activities. Multiple applicable federal regulations control the use, storage, handling, and disposal of solid waste and hazardous materials (e.g., Comprehensive Environmental Response, Compensation, and Liability Act, CERCLA; Resource Conservation and Recovery Act, RCRA; Toxic Substances Control Act, TSCA).

The Airport currently uses a variety of hazardous or potentially toxic materials, such as vehicle and aviation fuels and solvents, which could be released to the environment in the event of a spill, aircraft crash, or ground support equipment accident. The Airport addresses pollution prevention through a Multi-Sector General Permit (MSGP) Stormwater Pollution Prevention Plan (SWPPP) and Spill Prevention Control and Countermeasures (SPCC) Plan. To determine the potential for encountering soils contaminated from historical releases or former land development practices during excavation and grading activities associated with the Proposed Action, the New Hampshire Department of Environmental Services (NHDES) OneStop online database was reviewed for spills at sites located in the vicinity of the Proposed Action site.

Underground storage tanks (UST) must be registered and monitored under the New Hampshire statute RSA-146-C and corresponding regulations Env-Wm 1400 Petroleum Storage Facilities. The regulations require annual inspections of tank gauges, other equipment and monitoring wells by a trained, certified inspector. The Airport has two 5,000 gallon USTs for propane that are located to the west of Runway 18-36 outside the Airport’s maintenance building off of Airpark Road. These USTs serve the maintenance garages. The Airport also maintains an above-ground diesel storage tank (AST) located south of the terminal building used for the Airport’s ground vehicles. These tanks are located between the Airport Rescue Fire Fighting (ARFF) building and the terminal building. Two additional USTs containing Jet-A fuel are located by the Granite Air Center building. An oil/water separator is located adjacent to the Airport’s maintenance building and is a component of the stormwater drainage system. Granite Air has AvGas tanks, as well.

The NHDES data was reviewed for potential hazardous material sites within the vicinity of the Proposed Action. There are multiple records in NHDES’s site remediation and groundwater hazard inventory database for the terminal area, maintenance building, and Granite Air Center. However, none of the reported sites are in the vicinity of the Proposed Action contemplated by this EA. A review of these records is included in Appendix F.

The City of Lebanon operates its own solid waste facility at the Lebanon Landfill located approximately one mile to the west of the Airport on Route 12A in West Lebanon. The facility includes a lined landfill, composting facilities, and recycling center. Solid waste is disposed of by contract by twenty-two nearby Upper Valley communities in Vermont and New Hampshire. The facilities provide adequate disposal capacity for the Airport and the businesses that operate there. The Airport currently participates in the City’s required recycling program.

4.7 Land Use

4.7.1 Existing Zoning

The City of Lebanon’s Zoning Ordinance was last revised in March 2021. As shown on Figure 8, the Airport, the Phase I Business Park and the Phase II Business Park are zoned Light Industrial (IND-L). A portion of the southern end of the Airport property is zoned Rural Land-3 (RL-3). The Airport is also included as part of the Airport Protection Overlay District under the City of Lebanon’s Zoning Article IV Section 407. The overlay district closely mimics the imaginary surfaces defined in FAR Part 77 and defined in the Conceptual Airport Master Plan (2017). The goal of the overlay district is to maximize the compatibility of off-Airport areas with Airport operations. The 2012 Master Plan indicates the Airport Protection District was “Designated to ensure that adequate safety is provided for aircraft landing and taking off from the Lebanon Municipal Airport”. The Airport Protection Overlay District restricts the height of any structure proposed to be built or extended above the Part 77 imaginary surfaces; restricts any land use within the District that would interfere with radio aids or communications between the Airport and air traffic; and restricts land use that would endanger air traffic safety with lights, smoke, steam, or dust.

Much of the land area between the Airport and the Connecticut River is zoned as Heavy Industrial (IND-H) or General Commercial (GC). The IND-H area is dominated by industrial facilities and a quarry, while much of the area to the west of the southern portion of the Airport is dominated by forested tracts with low-density residential properties. The GC zone is dominated by commercial, retail, and restaurant facilities.

To the east of the Airport, there are three zoning districts, including Rural Land 1 (RL1), Rural Land 2 (RL2) and Residential 3 (R3). The rural zone areas are dominated by large forested tracts, with an active orchard and low-density residential properties. The Airport property outside of the perimeter fence south of Runway 36 is within RL3 zoning and is likewise dominated by a mix of open and forested habitats (described in “Biological Resources”, section 4.4 above). North of the Mascoma River and I-89 is a mix of IND-H, R3, GC, plus Industrial Light (IND-L) and Residential Office (RO) areas. Additional industrial and commercial land is zoned further northeast along Route 120, with the Dartmouth Hitchcock Medical Center zoned “Medical Center.”

A portion of the Airport is also included as part of the Wetland Conservation Overlay District under the City of Lebanon’s Zoning Article IV Section 401 (2013, Amended 2021). The general purposes of this district are to: prevent the destruction of wetlands; prevent development on wetlands that would contribute to surface or groundwater pollution; prevent unnecessary expenses to the City; provide habitat; and preserve aesthetic values associated with wetlands.

4.7.2 Existing Land Use

The Airport is located in a mixed use of commercial, industrial, and rural area approximately three miles southwest of the City’s downtown business district (Figure 8). The Airport vicinity originally was dominated by the old growth forest known as the Appalachian oak forest. Large sections were cleared for settlement, resulting in numerous small agricultural operations and homesteads. Many of these lands were developed into dairy and other agricultural operations, many of which were abandoned from active agriculture by the 1960’s. Most of these lands have now reverted into second and third growth forests.

The existing land use surrounding the Airport consists primarily of forested hills with a mixture of light industrial development and low-density rural residential development. To the east, on the adjacent hillside along Poverty Lane, the City of Lebanon Police headquarters and a privately owned apple orchard and cider operation are present. Low-density rural residential developments are located approximately 0.5 miles to the southeast of Runway 36 end off of Poverty Lane and approximately 0.6 miles to the southwest along Trues Brook Road.

The Lebanon Business Park, consisting of 16 separately owned buildings with parking lots, is located off of Airpark Road adjacent to the Airport’s west side. Further west and at a lower elevation along Route 12A are four individual shopping plazas with combinations of retail and restaurant businesses. A private gun club operates a shooting range approximately one mile south of the Runway 36 end. A half mile west of the Airport, is a privately owned granite quarry. A housing development and a privately owned public golf course are located approximately one mile to the east of the Runway 25 end. On the north side of the airport, near the base of a steep, wooded hillside, lies I-89. To the north of the Airport, across I-89, is the Mascoma River and a smaller industrial development of about a dozen commercial and light industrial properties along what is locally referred to as the “Miracle Mile,” a commercial concentration located on US Route 4/NH Route 10.

Lebanon has several churches with various religious affiliations that are generally centered in either downtown Lebanon (east of the Airport) or in West Lebanon (north of the Airport). The closest church is the West Lebanon Baptist Church on Seminary Road, approximately 0.3 mile north of the Runway 25

end. Both public and private schools are likewise located in these two communities. The closest private school to the Airport is a small pre-school on Airport Road approximately one half mile down the hill from the Airport terminal. The closest public school is the Mount Lebanon Elementary School in West Lebanon approximately 1 mile from the Airport.

An existing conservation easement is located on Airport property south of the 36 end of Runway 18-36. The easement is controlled by the City of Lebanon and is intended to preserve wildlife habitat and to prevent the placement of any man-made structures within the easement. In addition, three parcels adjacent to the Airport are under the jurisdiction of the New Hampshire Conservation Land Stewardship (CLS) Program (RSA 162-C:6). These include a narrow 4.7-acre strip south of Runway 25 between the Airport and Poverty Lane; a 7.4-acre parcel on the hillside west of the Runway 36 end; and a 28.56-acre area directly south of the Runway 36 end. The CLS Program is responsible for monitoring and protecting the conservation values of conservation easement lands in which the state holds an interest.

4.7.3 Future Land Use

The 2012 *City of Lebanon Master Plan* includes a “Future Land Use” map and accompanying narrative. The narrative details the past, current, and projected land use in each district of the City. Surrounding the Airport, the plan notes that Phase 1A of the Airport Business Park is built out, with very little unoccupied space (as of 2012). The plan further notes that Phase 1B is under consideration for development (on the west side of the Airport) but that Phases II and III on the east side of the Airport, are “physically and economically constrained”. Relative to the Airport, the land use chapter (Chapter 2) of the 2012 Master Plan states:

“The land area southwest of the airport contains an existing business park comprised of light industrial uses. The area was developed primarily during the 1990s with some significant additions completed in recent years. South of the existing business park there is land available for additional development by both the City and private property owners.”

Chapter 6 of the City’s 2012 Master Plan addresses the economic development potential of the Airport: “Lebanon Airport is a key transportation asset, valued by the region’s many businesses and institutions, as well as by area residents attracted by the efforts of the City and Cape Air to expand scheduled airline service.”

In 2019, the City set aside 86 acres of undeveloped land on the airport’s west side for more than a dozen new buildings to be developed off Airport Road (Valley News, 2019). Current efforts are under way to develop the property immediately adjacent and uphill from the most southerly on-Airport building into additional commercial facilities. In the 2017 Airport Master Plan, Appendix D, this is identified as the Phase 1B area. The City created a Tax Increment Financing (TIF) district in 2019. Construction of a 1700’ extension of Airpark Road is under way and is anticipated to be completed by the end of 2021.

4.8 Natural Resources and Energy Supply

This section addresses the project’s consumption of natural resources, including water, asphalt, aggregate, wood, along with use of energy supplies (such as coal, natural gas, and fuel for aircraft), as described by the FAA NEPA guidance in the 1050.1F Desk Reference (February 2020). There will also be

typical energy use for the construction projects, including stand-alone power (generators, trucks/ vehicles, equipment, etc.).

The City of Lebanon has been working diligently to improve its energy efficiency and curb GHG. [This topic is also covered briefly in the “Air Quality” and “Emissions” sections (4.2) and in the Climate Section (4.3)]. Liberty Utilities supplies electricity to the Airport and vicinity. Propane is available from several dealers. Sufficient electricity, heating oil and propane supplies are available for lighting and heating requirements.

The potable water supply and wastewater treatment are provided by the City of Lebanon’s Public Works Department. The Greater Mascoma River is the City’s potable water source. Wastewater is treated at the City’s West Lebanon facility.

4.9 Noise and Noise-Compatible Land Use

As part of the 2017 Comprehensive Airport Master Plan, a supplemental noise analysis and sustainability assessment were completed based on the Recommended Airport Development Strategy at that time (Appendix G). No part of the DNL 65 dB contour extended onto any land uses identified as non-compatible per FAA guidance. The current requirement under Order 1050.1F is that noise analysis is not needed for projects involving Design Group 1 and II airplanes (wingspan less than 79 feet) in Approach Categories A through D (landing speed less than 166 knots) operating at airports whose forecast operations in the period covered by this NEPA document do not exceed 90,000 annual propeller operations (247 average daily operations) or 700 annual jet operations (2 average daily operations) [FAA 1050.1F Desk Reference 2020]. Because the Airport exceeds the annual jet operations, additional consideration was given in the evaluation. Even so, noise is considered as a Resource Not Affected based on the two earlier noise studies, along with other factors considered in the evaluation as presented in Section 5.9.

There are anticipated noises associated with temporary construction activities that require large equipment utilization for the taxiway extension and stub taxiway removals and relocations. However, the areas of construction activity are well within the Airport property and mitigation relating to all temporary construction activities and short-term impacts is discussed in Section 5.13.

4.10 Socioeconomics, Environmental Justice, and Children’s Health & Safety Risks

4.10.1 Socioeconomics

Airport development must take into account the socioeconomics and human environment surrounding the facilities, including the population density, demographics and living conditions. This section discusses the existing population, racial composition and general economic conditions of the City of Lebanon. The Airport is located within the City of Lebanon, Grafton County, New Hampshire.

4.10.1.1 Economic Activity and Income

The City of Lebanon is bordered on the New Hampshire side by the municipalities of Enfield, Plainfield, and Hanover. Hartford, Vermont (including the Village of White River Junction) is located across the Connecticut River. As defined by the US Census, Lebanon today is the center of the “Lebanon Micropolitan Statistical Area” that encompasses 30 towns within three counties (Grafton County in New Hampshire and Orange and Windsor Counties in Vermont).

The area is mostly rural but contains areas of concentrated development. Immediately north and west of the Airport are gravel mining operations, an active stone quarry, light industrial development, and densely developed commercial strip malls and big box stores. Further afield are the more densely populated areas of West Lebanon, downtown Lebanon, White River Junction, and downtown Hanover. Hanover, to the north, is home to historic Dartmouth College and the Army Corps of Engineers Cold Regions Research and Engineering Laboratory. The Dartmouth Hitchcock Medical Center has facilities in Lebanon, Hanover and Lyme, NH.

Lebanon is situated within an area known as the Upper Valley in the Dartmouth-Lake Sunapee region of western New Hampshire. The area is well known for its collegiate activities, lakes and mountains. The Lebanon area itself supports year round cultural and recreational activities. Performing arts, historic town centers, scenic vistas, outdoor pursuits, and travelers' amenities lead visitors to stop in Lebanon on their way through northern New England. There is one small ski area in Lebanon, the Storrs Ski Hill, operated by the Lebanon Outing Club. The Connecticut and the Mascoma Rivers are used by motorized and non-motorized recreational boats. The City of Lebanon maintains a recreational trail network for hiking, mountain biking, and snowmobiling.

Data from the 2019 US Census American Community Survey (ACS) reports the median household income in the City of Lebanon was \$67,698, which is a gain of more than \$10,000 annually over 2010. The median household income in the County of Grafton was \$63,389. The 2019 ACS data indicated that 11.3 percent of Lebanon's population is below the poverty level compared to 9.2 percent for the County of Grafton and 8.5 percent statewide.

The 2017 Lebanon Airport Master Plan reported that the Airport generates a significant amount of property tax revenue that gets contributed to the City's General Fund, as well as to the school and county tax systems. The Airport-generated tax revenue amounts rose year over year between 2009-2015, ranging from \$151,485 to \$189,905 over that period. The 2017 Airport Master Plan also notes that the Airport is a critical resource for Dartmouth-Hitchcock Advanced Response Team (DHART). It indicates that the LEB Air Traffic Control Tower (ATCT) personnel at that time estimated that DHART lands at LEB approximately six times per month, but utilizes the Airport's ATCT services approximately 8 to 10 times per day for non-LEB flight. Other users include both general aviation users and commercial service passengers divided into business/corporate and recreational. The Plan states, "Business/corporate users are most critical given the direct and indirect economic impacts their activity has on the local and regional economics surrounding Lebanon."

4.10.1.2 Employment

Unemployment rates in the Lebanon NH-VT Micropolitan area, as of August 2021, were reported at 2.7 percent by the New Hampshire Employment Security (NHES), Economic and Labor Market Information Bureau. This is slightly more favorable than the US Bureau of Labor Statistics (BLS) for the same period that reported New Hampshire as possessing the nation's fifth lowest unemployment rate of 3.0 percent. Grafton County had a 2.8 percent unemployment rate. NHES (2019) reported that major employers in Lebanon include the Dartmouth Hitchcock Medical Center and Clinic, with 7,000 employees, FujiFilm with 506 employees, and Alice Peck Day/Lifecare Center (health care services) with 451 employees, and Hypertherm with 451 employees.

As of July 2021, there were 43 aircraft reported to NHDOT as based at the Airport. The 2017 Airport

Master Plan indicated there were an estimated 66 jobs on-airport. Of those, five were directly employed by the City, while the remaining were employed by the TSA, Cape Air, Granite Air, Sharkey's Helicopters, the contract control tower, Lebanon Hangar Associates, Avis rental cars, White Mountain Insurance, Catamount Air, and Big Green Aviation. At that time, all on-airport employees received an estimated \$4.43 million in employee compensation (2013). The indirect economic impacts supported an additional 62 jobs, \$2.97 million in labor income, \$7.6 million in output at businesses located throughout the state, and additional state tax revenues. The Master Plan also reported that approximately 44% of commercial service passengers arriving at LEB in 2013 were visitors and contributed a combined total of \$2.41 million on lodging, driving, entertainment, transportation, and retail (NHSASP 2015 source).

In general, airports such as the Lebanon Municipal Airport not only serve air travelers, but also provide economic benefits to the communities in which they are located. Airports create jobs for local residents, through both the aviation enterprises based on the airport and the associated businesses that locate in the area to support the activities of the airport. In turn, these employers generate tax revenues for municipalities, counties, and states. Furthermore, airports may help keep existing employers in a community and may attract new ones to a region as companies look to capitalize on the transportation and competitive business advantages offered by airports – most importantly, efficient access to world markets.

TABLE 4.10-1 Population Demographics for the City of Lebanon and Grafton County, NH

	City of Lebanon	Grafton County
Population	13,651	89,886
Race Percentages ¹ :		
White	85.1	90.4
Black or African American	2.2	1.3
Asian	6.6	3.9
Hispanic or Latino	5.2	2.5
Median Household Income	\$67,698	\$63,389

Source: US Census Bureau's American Community Survey "ACS 1-Year Estimates Data Profiles" (2019)

4.10.1.3 Population and Housing

The most recently available census data as of the date of this EA is from the US Census Bureau's American Community Survey "ACS 1-Year Estimates Data Profiles" (2019). The larger Lebanon, NH-VT Micropolitan NECTA has an estimated population ages 16 and over of 70,400. The US Census estimate from July 2019 estimates the population of Lebanon at 13,651, which is a gain of 500 people over 2010. Grafton County's population was 89,886. The 2019 US Census data indicates that the City is predominantly "White alone" (not Hispanic or Latino; 85.1 percent), with 2.2 percent African American, 5.2 percent Hispanic or Latino populations, and 6.6 percent Asian alone. These percentages closely parallel the County of Grafton racial demographics of 90.4 percent "White alone", 1.3 percent as African American, 2.5 percent Hispanic, and 3.9 percent "Asian alone".

Between 2015-2019, owner-occupied housing units in the City of Lebanon accounted for 50.9% of all housing units. The median value of these units during that timeframe was \$245,400. Median selected owner costs with a mortgage were \$2,022 per month and without a mortgage were \$904 per month. Median gross rent was \$1,098. The number of households in the City between 2015-2019 is reported as

6,083 with 2.21 persons per household. Language other than English spoken at home for persons over five years old was 11.5%. The percentage of high school graduates or higher for persons 25 years and older during that period was 92.8 percent. Percent of persons over 25 years with a Bachelor's degree was 53.5%

4.10.2 Environmental Justice

The US EPA defines Environmental Justice as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. The local population documented in the US Census demographics for the City of Lebanon and Grafton County (July 2019) are shown in Table 4.10-1. Lebanon is a more urban area with a higher minority population than the surrounding rural area primarily due to the draw of the city's medical facilities and several nearby colleges, including Dartmouth College and Franklin Pierce University. In addition, the median income of the City of Lebanon is greater than the County median. Regardless of the minority and income status of the surrounding community, the project will have little effect on adjacent property or residents. Mitigation is not proposed.

4.10.3 Children's Environmental Health and Safety Risks

As part of this EA process, the FAA is required, as appropriate and consistent with its mission, to identify and assess environmental health and safety risks that may disproportionately affect children.

4.11 Water Resources

This section discusses the existing conditions of potentially affected water resources including wetlands, floodplains, surface waters (streams, rivers, ponds, and lakes), and groundwater.

4.11.1 Wetlands

The study area for the wetland evaluation included land primarily within Airport property, with an additional area off the property to the southeast in the vicinity of proposed vegetation removal. The wetlands in areas with proposed activity were delineated in accordance with the US Army Corps of Engineer's "1987 Wetland Delineation Manual" (USACE, 1987) and the "Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region" (USACE, 2012). The wetland study area and the location of the delineated wetlands that are present on the Airport are depicted on Figures 2-4 and Figure 9.

Wetlands are transitional areas between upland ecosystems and deep water habitats. According to the 1987 USACE/ACOE Wetlands Delineation Manual, wetlands are "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, fens and similar areas." Wetlands are federally designated by Section 404 of the CWA as "waters of the US". Activities involving dredging or filling of wetland areas are allowed under 33 CFR Parts 320-330 by permitting authorized by the USACE. Wetlands are protected in New Hampshire under RSA 482-A, which regulates impacts to those areas "wherever the tide ebbs and flows", or "freshwater flows or stands." Dredge and fill activities in wetlands, water bodies and waterways require permitting, adjacent landowner notifications, and mitigation of wetland losses of acreage and value.

The US Fish and Wildlife Service’s (USFWS) National Wetland Inventory (NWI) mapping shows two wetland areas to the south of Runway 36. The NWI mapping is typically used to determine the potential presence of federal wetlands prior to any site reconnaissance. NWI mapping indicates potential wetland areas identified by the USFWS using aerial photography. These maps do not have any regulatory consequence, but rather approximate areas that may meet federal wetland criteria.

As described above, additional wetland areas located within the study area of the Airport were field-delineated in 2021. Under the USACE/ACOE Methodology, wetlands are identified by the observed presence of hydric soils, hydrophytic vegetation and evidence of hydrology. Utilizing the USACE/ACOE Highway Methodology Workbook Supplement, wetlands were also evaluated for their functions and values.

Wetlands on the airfield have been altered historically by earth moving for the Airport’s original construction and by subsequent airport improvement projects. Wetlands outside of the airfield have also been altered historically by logging, agricultural practices, land development, and by the construction of I-89 during the 1960’s. Many of these wetlands have also been affected by Airport-related obstruction removal and related vegetation management activities. A comparison of current conditions with the 1908 US Geological Survey topographic map suggests that much of the current airfield was formerly forested wetland. At the time the Airport was built in the 1940’s, however, much of the area where the runways are currently located had been previously cleared and likely drained for agricultural purposes.

The Airport property is partially situated within the Martin’s Brook watershed. According to “Natural Lebanon: Results of the Phase II Natural Resources Inventory of the City of Lebanon” (NRI, June 2010), this watershed, which surrounds much of the Runway 36 end hilltop, is considered to be of high value to the ecosystem and to the human community. Martin’s Brook meanders south and eastward from the wetland complex associated with Wetland B towards Trues Brook and the Connecticut River (Figure 8). This wetlands complex is ranked third in the NRI with an Ecological Integrity Mean Score of 1.14 of 5. The score assigned to the wetlands evaluated in the NRI is based upon a method developed by NatureServe. This method considers 20 rating questions which result in a score indicating ecological integrity.

The Martin's Brook wetland complex retains an exceptional habitat quality that possesses a high capacity to retain floodwaters via soils, vegetation and at least six active beaver-dammed ponds. Evaluation of water at the mouth of Martin’s Brook found the brook to be of exceptional value, and previously reported to support healthy populations of brook trout (*Salvelinus fontinalis*) and blacknosed dace (*Rhinichthys atratus*). According to the NRI, Martin’s Brook is considered to be a “Candidate Prime Wetland” that is “worthy of retaining this [unspoiled character and fragile condition] if protected as prime wetlands.” As of the date of this EA, there are no state designated prime wetlands within the City. According to the NRI, the primary functions of the Martin’s Brook wetland complex are its capacity for floodwater storage, sediment trapping, and nutrient attenuation.

A portion of the Airport is also included as part of the Wetland Conservation Overlay District under the City of Lebanon’s Zoning Article IV Section 401 (2013; Amended 2021). A horizontal buffer of 100 feet applies to all wetlands of “High” or “Very High Value” as designated in the NRI (2010). The wetlands identified in one of these two categories are in the far southeasterly corner and along the southeastern edge of the property (Figures 2-4 and Figure 8).

Individual wetlands identified on the Airport and on adjacent land are identified by letters (Figure 2-4). A full description of each wetland is included in the report in Appendix C. In addition, the habitat classification, based upon the USFWS’s classification system (Cowardin et al., 1979) is discussed for each wetland. Wetland types include palustrine forested and palustrine scrub shrub wetlands found outside the perimeter fence south of Runway 36, palustrine emergent wetlands both south of the perimeter fence, and palustrine emergent wetlands within the fence that were originally constructed to receive stormwater flows adjacent to Runway 36 and have now become naturalized. Several of these naturalized wetlands are maintained in an herbaceous state only due to regular mowing patterns. Descriptions of the delineated wetlands start at the easternmost portion of the study area, east of the Runway 25 end, and continue clockwise around the study area.

4.11.2 Surface Waters

Three watersheds are present on Airport property. These surface waters are further described under the Wetlands portion of this section and depicted on Figure 9. The lower Mascoma watershed to the north includes the land draining down the slope to a wetland adjacent to I-89 that in turn drains under the highway and into the Mascoma River. The Plainfield tributaries, located within the Connecticut River watershed, include land draining generally west off the runways, through the commercial district on Route 12A, and into the Connecticut River. The southern part of the Airport and off-airport areas in the vicinity drain into the Trues (Bloods) Brook watershed, which includes the Stockwell Brook watershed to the southwest and the Martin Brook wetland complex and watershed to the southeast. Trues Brook drains into the Connecticut River to the west.

The Federal Water Pollution Control Act (PL 92-500, commonly called the Clean Water Act [CWA]), as last reauthorized by the Water Quality Act of 1987, requires that each state submit two separate surface water quality documents to the EPA every two years. Section 305(b) of the CWA requires submittal of a report (commonly called the 305[b] Report) that describes the quality of its surface waters and an analysis of the extent to which such waters provide for the protection and propagation of a balanced population of shellfish, fish, and wildlife, and allow recreational activities in and on the water. The second document is typically called the 303(d) List which is so named because it is a requirement of Section 303(d) of the CWA. The 303(d) List includes surface waters that are:

- 1) impaired or threatened by a pollutant or pollutant(s);
- 2) not expected to meet water quality standards within a reasonable time even after application of best available technology standards for point sources or best management practices for nonpoint sources; and
- 3) require development and implementation of a comprehensive water quality study (called a Total Maximum Daily Load or TMDL study) that is designed to meet water quality standards.

The final 2010 List of Threatened or Impaired Waters That Require a TMDL as submitted to the EPA includes a portion of the Mascoma River. Airport surface waters drain to this river, a portion of which is considered an “impaired water” for aquatic life due to the heightened presence of aluminum. However, it is listed as a “Low” TMDL Priority and is not scheduled to be re-evaluated until 2019. The New Hampshire Water Pollution Control Act (RSA 485-A:12) requires addressing pollution sources that contribute to violations of water quality standards. NHDES maintains a list of impaired waters that do not meet water quality standards and need improvement. After the waters are listed as impaired and prior to the implementation of a TMDL study, no additional pollutant loading that would contribute to

the impairment is allowed. Therefore, new activities on the Airport in areas where surface water runoff would contribute to violations of water quality standards are required to include BMPs for stormwater pollution control. Pollutant loading from the new activity cannot be greater than the pre-existing loading.

To assist in implementing these standards, the NHDES has set forth a one-mile buffer extending from the Mascoma and Connecticut Rivers. Pollutant loading from new activities applies within this buffer. The Airport is located within this regulatory one-mile buffer area. Individual Section 401 Water Quality Certification addresses impaired waters during the 401 Certification review process. However, the programmatic 401 Certification (No. 2007-003), issued for the USACE's New Hampshire State Programmatic General Permit (PGP), does not necessarily address impaired waters and may require modification relative to impaired waters. This needs to be determined and addressed during permitting efforts for each phase and project under the Proposed Action.

The New Hampshire Shoreland Program implements the state's Shoreland Water Quality Protection Act (SWQPA) set forth at RSA 483-B. The SWQPA protects public waters which are surface waters greater than ten acres and fourth order streams. SWQPA jurisdiction extends 250 feet from the regulatory shoreline. The SWQPA establishes minimum standards for activities within the protected shoreland to safeguard the water quality of the state's public waters. Although there are several protected water bodies listed for the City of Lebanon, including the Connecticut River, Mascoma River, Bloods Brook, Great Brook, Boston Lot Lake and Mascoma Lake, none of the proposed alternatives affect regulated shoreland areas of these water bodies.

5 Environmental Consequences, Mitigation, and Permits Required

5.1 Alternatives and Significance Overview

The CEQ Regulations for Implementing NEPA (40 CFR 1500.1; 2021) state that NEPA requires Federal agencies to provide a detailed statement on proposals for “major Federal actions significantly affecting the quality of the human environment.” The definition for “major” is found at 40 CFR 1508.1(q). Such federal actions must fully and fairly address significant environmental effects and any reasonable alternatives to avoid or minimize effects resulting from a project upon the human or natural environment. Under 40 CFR 1501.3(b)(2) as revised in 2021, significant impact determinations must include: (i) short term and long term, (ii) beneficial and adverse, (iii) effects on human health and safety, and (iv) effects that would violate Federal, State, Tribal, or local law protecting the environment. *Significance thresholds* are evaluated differently for each of the categories as required by FAA Order 1050.1F (July 16, 2015) keeping in mind the NEPA revisions from 2021. They are summarized in Section 5.2 and are described within each impact category presented further below.

In accordance with FAA Order 1050.1F, Paragraphs 4-1, 4-2, 6-2.1.f., and 7-1.1.g., this section identifies the environmental consequences of the two alternatives brought forward for further evaluation – the No Action and the Preferred Alternative. The alternatives presented are based on the 30% project design, which is subject to modifications as the on-site conditions are further studied and evaluated, as well as considering agency feedback and public review process.

Per Order 1050.1F, Paragraph 4-3.2, the impacts may be both beneficial and adverse. Therefore, where impacts produce a positive outcome (*e.g.*, reduced air quality impacts from fewer taxiway delays), these will be discussed briefly. Table 5.2-1 summarizes the Significance Thresholds that are carried over from the Affected Resources evaluation in Chapter 4. From there, potential effects on resource areas are more efficiently evaluated by phase and year and with further discussion of direct and indirect impacts in Sections 5.2-5.15 below. Section 5.16 presents cumulative impacts in a summary fashion, though the effects are expected to occur intermittently over the course of five years as related to each action.

The project alternatives have been evaluated to determine the anticipated environmental consequences in comparison to the significant impact thresholds set forth by the FAA. The following discussion details the evaluation.

5.2 Summary of Impacts by Significance Threshold

Table 5.2-1 summarizes those remaining NEPA categories that have been carried forward from Chapter 4 along with the applicable Significance Threshold and demonstration of No Significant Impacts for both the No Action and Proposed Action across the five years analyzed.

TABLE 5.2-1 Significance Thresholds (FAA Order 1050.1F, Exhibit 4-1) and Impact Determination by Year

Environmental Impact Category	Significance Threshold	Significant Impact – Y/N?				
		2022	2023	2024	2025	2026
Air Quality	The action would cause pollutant concentrations to exceed one or more of the National Ambient Air Quality Standards (NAAQS), as established by the EPA under the Clean Air Act, for any of the time periods analyzed, or to increase the frequency or severity of any such existing violations.	No	No	No	No	No
Biological Resources	The USFWS and NMFS determines that the action would be likely to jeopardize the continued existence of a federally-listed threatened or endangered species, or would result in the destruction or adverse modification of federally designated critical habitat. The FAA has not established a significance threshold for non-listed species. Other factors in considering whether an action would impact biological resources are discussed in Section 5.5.	No	No	No	No	No
Haz Materials, Solid Waste, and Pollution Prevention	The FAA has not established a significance threshold for this category. Factors considered in determining whether or not an action would have impacts are discussed in Section 5.6.	No	No	No	No	No
Land Use	The FAA has not established a significance threshold for this category. The determination of whether or not significant impacts exist in this category is normally dependent on the significance of other impacts (see Section 5.7).	No	No	No	No	No
Natural Resources & Energy Supply*	The FAA has not established a significance threshold for this category. Factors considered in determining whether or not an action would have impacts are discussed in Section 5.8.	No	No	No	No	No
Noise and Noise-Compatible Land Use	The action would increase noise by Day-Night Average Sound Level (DNL) 1.5 dB or more for a noise-sensitive area that is exposed to noise at or above DNL 65 dB, or that will be exposed at or above DNL 65 dB level due to a DNL 1.5 dB or greater increase when compared to the No Action Alternative for the same timeframe (e.g., an increase from DNL 65.5 dB to 67 dB is considered a significant impact, as is an increase from DNL 63.5 to 65 dB). See Section 5.9	No	No	No	No	No
Socioeconomics, Environmental Justice, Children’s Environmental Health & Safety	The FAA has not established a significance threshold for this category. Factors considered in determining whether or not an action would have impacts is discussed in Section 5.10.	No	No	No	No	No

Environmental Impact Category	Significance Threshold	Significant Impact – Y/N?				
		2022	2023	2024	2025	2026
Water Resources [in order to match 1050.1F, Exhibit 4-1 and narrative] – Wetlands, Surface Waters [no impact to floodplains and floodways; no impacts to groundwater; resources not affected]	<p>Wetlands – The action would:</p> <ol style="list-style-type: none"> 1. Adversely affect a wetland’s function to protect the quality or quantity of municipal water supplies, including surface waters and sole source and other aquifers; 2. Substantially alter the hydrology needed to sustain the affected wetland system’s values and functions or those of a wetland to which it is connect; 3. Substantially reduce the affected wetland’s ability to retain floodwaters or storm runoff, thereby threatening public health, safety or welfare (the term welfare includes cultural, recreational, and scientific resources or property important to the public); 4. Adversely affect the maintenance of natural systems supporting wildlife and fish habitat or economically important timber, food, or fiber resources of the affected or surrounding wetlands; 5. Promote development of secondary activities or services that would cause the circumstances listed above to occur; or 6. Be inconsistent with applicable state wetland strategies. <p>Factors to consider whether or not an action would impact groundwater, surface water, and wetlands are discussed in Section 5.11.</p> <p>Surface Waters – The action would:</p> <ol style="list-style-type: none"> 1. Exceed water quality standards established by Federal, state, local, and tribal agencies; or 2. Contaminate public drinking water supply such that public health may be adversely affected. 	No	No	No	No	No
Cumulative Effects	Factors considered in determining whether an action would result in cumulative impacts are discussed in Section 5.12.	No	No	No	No	No
*NOTE: “Natural Resources” in this NEPA-defined context refers to materials/aggregate to provide base fill for the runway and taxiway improvements.						

5.3 Overview of Impact Categories Evaluated

FAA Order 1050.1F, Paragraph 4-2.c. states, “If an environmental impact category is not relevant to the Proposed Action or any of the reasonable alternatives identified (*i.e.*, the resources included in the category are not present or the category is not otherwise applicable to the Proposed Action and alternatives), the reason why should be briefly noted and no further analysis is required.” Therefore, alternatives that have been previously screened out, as described in Chapter 4 (per Order 5050.4B [706(e)]), are not addressed in this chapter. Note that “impacts” and “effects” are used synonymously and interchangeably throughout this section to refer to changes to the human environment from the Proposed Action or alternatives that are reasonably foreseeable and include direct, indirect, and cumulative (per 40 CFR § 1508.7 as of May 20, 2022).

5.3.1 Resources Not Affected

- Climate – No change over existing condition as a result of the Proposed Action
- Coastal Resources – Not present in the project area or vicinity
- Farmlands – No farmlands within the project area and no impacts to the farmlands in the vicinity of the project area (e.g., Xmas tree farm east; farm to the southwest) as a result of the Proposed Action
- Department of Transportation (DOT) Act: Section 4(f) Resources – Not present in the project area or vicinity
- Historical, Architectural, Archeological, and Cultural Resources – No impacts due to the Proposed Action
- Visual Effects – No change over existing condition as a result of the Proposed Action
- Floodplains and Floodways – No anticipated impacts to floodplains and floodways due to the Proposed Action; onsite stormwater controls are proposed to maintain flows at or below existing conditions
- Wild and Scenic Rivers – Not present within project area

5.3.2 Affected Resources

Within each applicable environmental impact category, as required by Order 1050.1F Paragraph 4-2.d. and 6-2.1.f., there is a discussion of the following types of impacts (also referred to as “effects”):

- Direct effects – caused by the action and occur at the same time and place
- Indirect (including induced) effects – caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable; may include growth-inducing impacts and other effects related to induced changes in the pattern of land use, population density or growth rate, and related impacts on air, water, and other natural systems
- Short-term and temporary impacts are described in sub-section 5.14. These include construction/equipment noise, fugitive dust, and construction equipment movement and associated traffic. The area of analysis for direct impacts is shown in Figure 2 and Figure 4 and the area of analysis for indirect impacts is the Lebanon Municipal Airport and, where necessary, is expanded to include adjacent parcels or properties in the vicinity. Specifically, air quality is discussed based on potential regional impacts.
- Cumulative effects are described in sub-section 5.15.

The following impact categories were carried forward from Chapter 4 for further evaluation and discussion.

- Biological Resources (including fish, wildlife, and plants)
- Hazardous Materials, Solid Waste, and Pollution Prevention
- Land Use
- Natural Resources and Energy Supply
- Socioeconomics, Environmental Justice, and Children’s Environmental Health and Safety Risks
- Water Resources (wetlands, surface waters, groundwater)

5.3.3 Temporary Impacts

The following categories are temporary construction impacts only during the construction phases. Though Air Quality and Noise impacts are considered to be temporary, overview summaries are included as sub-sections for each following the same order as Chapter 4.

- Air Quality (regional)
- Noise and Noise-Compatible Land Use
- Construction Traffic (air and noise)

5.4 Geology, Soils and Topography

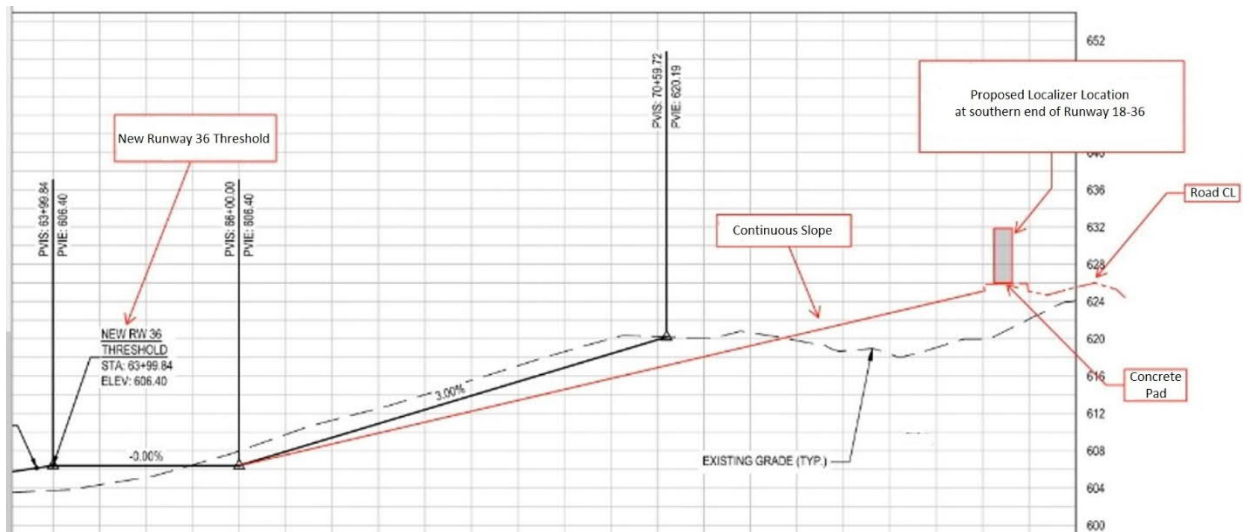
In order to evaluate the effects to land use and earthwork in the Natural Resources and Land Use sections below, geology, soils, and topography are presented here in an introductory manner (consistent with Section 4.3). Additional discussion of materials is included under the “Natural Resources” category.

The geology of this region of New Hampshire consists of exposed granite mountains and thin soils over granite formations. Previous construction and regular airport maintenance activities have occasionally encountered granite bedrock at depths less than 12 inches from the surface in some locations, especially south of the Runway 36 end. Bedrock outcrops are visible in places on this hill. Earthwork required to implement the alternatives includes the following (gross estimates):

Activity Area	Cut (CY)	Imported Common Fill (CY)	Imported Gravel (CY)
• Runway 18-36 extension	8,670	2,715	4,740
• ILS driveway and pad	1,925	1,240	2,430
• <i>ILS shed pad/ grading</i>	<i>Included above</i>	<i>Included above</i>	<i>Included above</i>
• Taxiway A south extension	45,530	13,290	20,150
• Taxiway A north extension	3,620	500	2,495
• TW A1	3,340	500	2,050
• TW A2	2,620	1,130	2,155
• TW A3	2,185	1,940	2,240
• <i>TW B1-B2</i>	<i>No earthwork, just pavement demo</i>	<i>No earthwork, just pavement demo</i>	<i>No earthwork, just pavement demo</i>

The proposed alternatives include the excavation of portions of the area south of Runway 18-36 within the runway approach. Soils will be impacted by this construction activity. In addition, soils will be impacted due to the re-grading that is proposed within the airfield turf areas. A cross-sectional view of the preferred alternative for the ILS localizer relocation is shown in Figure 5.4-A.

FIGURE 5.4-A Cross-Sectional View of South End of Runway 18-36 in Vicinity of Proposed Localizer Location Illustrating Cut and Fill Areas to Reach Continuous Slope (view easterly) [Source: Stantec]



5.4.1 Mitigation for Terrain Impacts

Impacts to geology, soils and topography do not in and of themselves require mitigation. However, efforts will be made to ensure that soil erosion and other impacts considered under the Land Use, Natural Resources, and Water Resources sections do not extend beyond the areas of proposed work, and that the earthwork does not affect other resources (e.g., surface waters).

Specific permit programs regulate earth-moving activities and require adherence to mitigation measures and monitoring of BMPs for the duration of construction and site stabilization. The work relating to the extension of Runway 18-36 and the various taxiway improvements will require a NHDES Alteration of Terrain (AOT) Permit issued under the New Hampshire AOT Program if the applicable threshold is exceeded. This permit is intended to protect New Hampshire’s surface waters and groundwater by controlling soil erosion and managing stormwater runoff from developed areas. An AOT permit is required whenever a project proposes to disturb more than 100,000 square feet of contiguous terrain, or 50,000 square feet if a portion of the project is within the protected shoreland (not applicable to this project) within a 10-year cumulative period. The AOT permitting program applies to industrial, commercial, and residential developments as well as to earth-moving operations, such as gravel pits. AOT regulations include specific requirements governing the extent and duration of exposure of site soils, and the implementation of erosion and sediment control measures during construction.

This project will comply with the AOT requirements pursuant to an anticipated permit for the greater than 100,000 square feet of terrain alteration proposed (within a ten year period). In addition, when more than one acre of land is disturbed, a National Pollution Discharge Elimination System (NPDES) Construction General Permit (CGP) is needed for regulated stormwater runoff discharges associated with construction

activities. The CGP requires the use of best management practices during construction, preparation of a Stormwater Pollution Prevention Plan (SWPPP), and filing of a Notice of Intent (NOI) prior to construction. The project will comply with these requirements.

Based on this information, there are NO SIGNIFICANT IMPACTS to the geology, soils, and topography (considered under Land Use and Natural Resources) beyond the existing condition as a result of the Proposed Action based on the Preferred Alternative. There are NO SIGNIFICANT IMPACTS due to the No Action alternative, though the existing condition would not meet the Purpose and Need..

5.5 Air Quality [Temporary Only Impact]

The procedures for determining whether the proposed development would significantly impact air quality are described in the Environmental Desk Reference for Airport Actions (FAA, 2007). The three overlapping regulatory processes applicable to assessing the air quality effects from airport development are Indirect Source Review (ISR); NAAQS Assessment; and Transportation or General Conformity. Indirect sources of air pollutants are locations such as airports, highways, and parking lots that attract or may attract sources of pollutants (vehicles) and thereby indirectly cause or increase air contaminant emissions. ISR is not required in New Hampshire and therefore it is not applicable to this project.

A NAAQS assessment is used to analyze airport projects in states without ISR, but applicability depends upon the class of the airport and the airport's activity levels. Lebanon Airport is considered a "Non-hub Primary" airport (greater than 10,000 enplanements and less than 0.05% of nation's total enplanements) and is not currently a Part 139 certified commercial airport. The Airport is well below this threshold with less than 50,000 operations annually and therefore further NAAQS assessment is not necessary.

Transportation or General Conformity is required for projects receiving federal highway funding or approval under various programs. General Conformity is required under Clean Air Act (CAA) Section 176(c) for federal actions, including FAA actions, to meet the state's applicable State Implementation Plan to achieve or maintain the NAAQS within CAA timeframes. At this time, Grafton County is listed as *in attainment* and is therefore considered in compliance with New Hampshire's State Implementation Plan. This project is not subject to these program funds or approvals and therefore does not need to meet Transportation Conformity requirements.

To summarize, the Airport is located in a NAAQS attainment area; is not in an ISR designated area of New Hampshire; does not exceed operational or enplanement thresholds for a NAAQS assessment; is not a federally funded highway project; and is not located in an area with State Implementation Plan requirements. Therefore, no formal Emissions Dispersion and Modeling System or other air quality analysis is required. Furthermore, the proposed alternatives will have little effect on air traffic volume and will have minor effects on air traffic patterns, and therefore are not expected to have an adverse effect on air quality. Mitigation is not proposed.

Based on this information, there are NO SIGNIFICANT IMPACTS to the air quality (neither onsite within project area nor vicinity/regional) beyond the existing condition as a result of the Proposed Action based on the Preferred Alternative. There are NO SIGNIFICANT IMPACTS due to the No Action alternative, though the existing condition would not meet the Purpose and Need.

5.6 Biological Resources

This section evaluates the fish, wildlife, and plants and includes various types of vegetative communities that provide wildlife habitat. Wetlands are treated separately within the “Water Resources” section below. In addition to the considerations given under NEPA, when a federal action might affect water resources, such as wetlands, Section 662(a) of the Fish and Wildlife Coordination Act (FWCA) specifically requires consideration of the project area’s biotic resources.

In addition to the significance thresholds presented above in Table 5.2-1, FAA Order 1050.1F, Paragraph 4-3.3 (Exhibit 4-1; 7/16/15) includes “Factors to Consider” for Biological Resources, as follows:

“The action would have the potential for:

- A long-term or permanent loss of unlisted [*sic*] plant or wildlife species, *i.e.*, extirpation of the species from a large project area (*e.g.*, a new commercial service airport);
- Adverse impacts to special status species (*e.g.*, state species of concern, species proposed for listing, migratory birds, bald and golden eagles) or their habitats;
- Substantial loss, reduction, degradation, disturbance, or fragmentation of native species’ habitats or their populations; or
- Adverse impacts on a species’ reproductive success rate, natural mortality rates, non-natural mortality (*e.g.*, road kills and hunting), or ability to sustain the minimum population levels required for population maintenance.”

There are no long-term or permanent losses of plant or wildlife species anticipated. There are no anticipated adverse impacts to special status species or their habitats. There will be no substantial loss, reduction, degradation, disturbance, or fragmentation of native species’ habitats or their populations. In some cases, the Airport habitat has provided valuable habitat improvements that have benefited several rare plant species as detailed below. There will be no adverse impacts to species’ reproductive success rate, natural mortality rates, non-natural mortality, or ability to sustain the minimum population levels for population maintenance. The current Airport efforts are in line with FAA and other agency guidance as described under Section 5.6.1 below.

5.6.1 Vegetation and Wildlife

In identifying impacts to wildlife or habitat and attempting to mitigate for them, FAA AC 150/5200-33C: *Hazardous Wildlife Attractants on or near Airports* (2020) provides guidance on certain land uses that have the potential to attract hazardous wildlife on or near public-use airports. The airport development projects mentioned include airport construction, expansion, and renovation affecting aircraft movement near hazardous wildlife attractants. The large tracts of open, undeveloped land add safety and noise mitigation needed to comply with other regulations related to health and safety in the vicinity of operations (*e.g.*, nearby residences) and the region (*e.g.*, air quality). The AC specifically mentions:

“These areas can also present potential hazards to aviation if they encourage wildlife to enter an airport’s approach or departure airspace or aircraft operations area. Constructed or natural areas— such as poorly drained locations, detention/retention ponds, roosting habitats on buildings, landscaping, odor-causing rotting organic matter (putrescible waste) disposal operations, wastewater treatment plants, agricultural or aquaculture activities, surface mining, wetlands, or some conservation-based land uses — can provide wildlife with ideal locations for feeding, loafing, reproduction, and escape.”

There is a *Memorandum of Agreement Between Federal Resource Agencies* that acknowledges their respective missions in protecting aviation from wildlife hazards. The FAA, the US Air Force, the USACE, the US EPA, the USFWS, and the US Department of Agriculture (USDA) - Wildlife Services.

As described in Chapter 4, the entirety of the Airport, both within and outside of the safety fence, contains various habitat types, including the following generalized types: upland and wetland turf grass; upland and wetland meadows and scrub-shrub including successional field; upland and wetland forest; open water; constructed stormwater ditches; and streams. Within the fenced area, the square footage of project impacts on existing habitats was estimated in terms of both habitat gained from asphalt removal areas and habitat lost where asphalt materials for the new taxiways will replace existing turf areas (Table 5.6-1). There are three major types of impacts resulting: 1) tree clearing at the southern end of Runway 18-36; 2) earthwork affiliated with 200' Runway 18-36 extension at the southern end and various taxiway modifications; and 3) stormwater management reconfiguration (*e.g.*, filling existing drainage ditches and swales to extend Taxiway A, grading, and new stormwater ditches constructed). Tree clearing will convert forests to early successional habitat, meadows and shrublands that are infrequently cut or mowed. Earthwork will convert a portion of the existing grassland/meadow to frequently mowed turf grass. These impact areas are mostly south of Runway 36 and associated with the Taxiway A extension (Phases 1 and 2). Refer to Figures 2-4 and Table 5.6-1 below for details on these habitat impacts.

The loss of forested habitat for the hazard tree/obstacle clearing to comply with FAA requirements includes impacts to both vegetation and wildlife and is offset by the increase in early successional habitat (meadows and shrublands). Furthermore, the tree clearing will convert existing forest land, which is relatively abundant in this region, to early successional habitats, which are less common throughout the state. In the long term the gain of early successional habitat will provide a benefit to both vegetation and wildlife species. The impacts to the habitat provided by the wetlands, both naturally occurring and constructed stormwater ditches is treated separately under the Water Resources. No further mitigation is proposed to offset the habitat conversions of the on-airport turf areas.

Based on this information and proposed avoidance, minimization, and mitigation, there are NO SIGNIFICANT IMPACTS to the vegetation/plants beyond the existing condition as a result of the Proposed Action based on the Preferred Alternative. There are NO SIGNIFICANT IMPACTS due to the No Action alternative, though the existing condition would not meet the Purpose and Need.

TABLE 5.6-1 Approximate Vegetation/Habitat Conversion Gains and Losses (Square Feet, SF)*

Year	Action	Upland tree clearing (conversion of forest to meadows and shrublands)		Earthwork (conversion of meadows/turf to mowed turf grass/runways areas)		Stormwater Management Reconfiguration (Ditches to asphalt; conversion of mowed turf to new ditches)		Net change in overall habitat availability** [gain or loss]
		LOSS (-)	GAIN (+)	LOSS (-)	GAIN (+)	LOSS (-)	GAIN (+)	
	No Action (Existing Condition)	0		0		0		0
		LOSS (-)	GAIN (+)	LOSS (-)	GAIN (+)	LOSS (-)	GAIN (+)	NET CHANGE ESTIMATED
2023	ILS localizer (Hot Spot 3) [shed/driveway/ditches]	N/A		Lose (- 82,000) Grass/Turf & (- 35,200) Wetland D	N/A	N/A	New Ditches + SF TBD	LOSS – (- 117,200); GAIN – TBD = NET LOSS
	TW A extension Phase 1	N/A		(- 482,506) Add New A2 (- 20,000)*	Remove Old A2 + 20,000*	(- 45,994)	+ 45,994*	LOSS – (- 548,500); GAIN – 65,994 = NET LOSS (- 482,506)
	TW A2 Remove/ Relocate	N/A						
2024	Obstacle/Tree Clearing	21.4 acres Forest	21.4 acres Meadow/Shrub	N/A		N/A		0
	RW 18-36 extension	N/A		(- 207,000)	N/A	N/A (- 44,886)	New Ditches + SF TBD	LOSS (- 207,000); GAIN TBD = NET LOSS
	TW A extension Phase 2	N/A		(- 319,400)	N/A			
	PAPI	N/A		Relocate PAPI	Remove PAPI	N/A		0
2025	TW A1 Remove/Relocate	N/A		Add New (-50,000+/-)	Remove Old +50,000+/-	N/A		0
	TW B1-B2 Direct (TW A North ext)	N/A		Add TW A (-80,000+/-)	Remove B1/B2 +80,000+/-	N/A		0
2026	TW A3	N/A		(-37,300) Previously impacted	N/A	N/A		0

NOTES: *All numerical figures are preliminary estimates based on 30% design by Stantec; NA means "Not Applicable" or "Not Affected", i.e., this type of work is not proposed in the designated area.
 **The estimations include graded areas, which will be potentially available grassland/turf habitat.

5.6.2 Threatened and Endangered Species and Critical Habitat

5.6.2.1 Plants and Natural Communities

The NHHNB reports several species of concern and one significant natural community within the immediate project area, as reported in the records provided by the NHHNB (Appendix D). Field surveys were conducted for listed plant species in July, August, and September, 2021, as part of the natural resource and wetland field surveys. Table 5.6-2 shows that four state-listed rare plant species were observed within the project vicinity. A full report that includes discussion of these observations is in Appendix C. No permanent impacts are anticipated within this area due to the Proposed Action.

A prior commitment was made to survey proposed disturbance areas for greater fringed gentian prior to construction. Following consultation with NHHNB, mitigation measures such as collecting and dispersing seeds of this biennial plant, along with similar measures, may be implemented if this is the approach recommended by NHHNB (see Tables 5.12-1, 5.13-1, 5.15-2, 5.16-1, and 5.16-2 for additional information on impacts and mitigation). All required actions and recommended BMPs will be implemented during design and construction to avoid any adverse effects to the four observed rare plant species. “Critical habitat” is a term defined and used in the Endangered Species Act (ESA) for specific geographic areas that contain features essential for the conservation of a threatened or endangered species. Since no federally listed threatened or endangered species are found in the airport vicinity, no federally-designated critical habitat has been identified and none will be affected.

5.6.2.2 Birds

Several bird species were observed on Airport areas within the fence that require consideration in this evaluation. The two NH state-listed bird species – eastern meadowlark (*Sturnella magna*) and grasshopper sparrow (*Ammodramus savannarum*) – were observed in 2021 as using grassland habitats that are maintained as mowed turf area. The single grasshopper sparrow along Runway 7-25 at the eastern end north of Taxiway B was in an area not proposed for any project activities, so no direct or indirect impacts are anticipated. The eastern meadowlarks were observed flying across areas where project activities will occur, including perching directly on the Runway 36 end lights. Several avoidance, mitigation, and management measures are proposed to reduce potential impacts to the habitat in accordance with hazard avoidance and safety requirements to ensure safe airport operations. These are summarized in Section 5.16.

TABLE 5.6-2. Project Areas with Potential Impacts to Federal- and State-Listed Plant and Wildlife Species’ Habitats

		Greater Fringed Gentian	Tuberled Bog Orchid	Barren Strawberry	Ginseng	Eastern Meadowlark	Grasshopper Sparrow	Northern Long-eared Bat (NLEB)
Status*		ST	ST	ST	ST	ST	ST	FT**/SE
Year	Action							
	No Action (Existing)	0	0	0	0	0	0	0
2023	ILS (Hot Spot 3) [shed/driveway]	Wetland D	Wetland D, Wetland F	N/A	N/A	RW 36 end [south/west]	N/A	N/A
	TW A ext Ph 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	TW A2 relocate	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2024	RW 36 end Obstacle/ Tree Clearing	N/A	Wetland E 0 SF	0 SF	0 SF	N/A	N/A	Hazard Tree Exemption [†] Impending Hazard Trees [†]
	RW 18-36 ext [36 end 200’]	N/A	N/A	N/A	N/A	RW 36 end [south]	N/A	N/A
	PAPI relocate	Wetland F	Wetland F	N/A	N/A	N/A	N/A	N/A
	TW A ext Ph 2	Wetland F	Wetland F	N/A	N/A	RW 36 end [west]	N/A	N/A
2025	TW A1 relocate	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	TW B1-B2 Direct (TW A North ext)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2026	TW A3	N/A	N/A	N/A	N/A	RW 36 end [south/west]	N/A	N/A
	RW 7 end 200’ RW Displace & PAPI relocate	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes: “N/A” = Not Affected – No observed presence in the vicinity of the work activity.

*Status Abbreviations – FT - Federally Threatened; SE – State (NH) Endangered; ST – State (NH) Threatened

**NLEB is currently listed as federally threatened, but is under a current proposal for a status change to federally endangered (anticipated to change in November 2022 and go into effect December 2022).

[†]Immediate “Hazard Trees” are considered those trees at or above 5 feet under the defined Approach Surface at the time of the evaluation (*ALP Update*, December 2021; reference Appendix B). “Impending Hazard Trees” are those that are within 10-15 feet below the Approach Surface and are likely to penetrate (or emerge) into or above the Approach Surface within the period considered in this EA (2022-2026).

5.6.2.3 Mammals

The USFWS consultation identified a single mammal species for evaluation (Appendix E). There was a single federally-listed species for consideration within the project area, the federally Threatened Northern Long-eared Bat (*Myotis septentrionalis*; NLEB). The USFWS has specified restrictions in the “Final 4(d) Rule for the Northern Long-Eared Bat” (effective February 16, 2016; aka “4[d] rule”). The 4(d) rule restricts activities based on certain life stage habitat requirements that include hibernacula (winter habitat) and maternity roosts (summer female and pup habitat). The NLEB is also state-listed as Threatened (S1 – critically imperiled) and occurs at 23 sites in New Hampshire, but there are no known sites within Lebanon (NH NHB “Rare Animal List for New Hampshire”, July 2020). There are no known NLEB hibernacula or known maternity roost trees on the Airport property or in the vicinity of the project (within 0.25 miles).

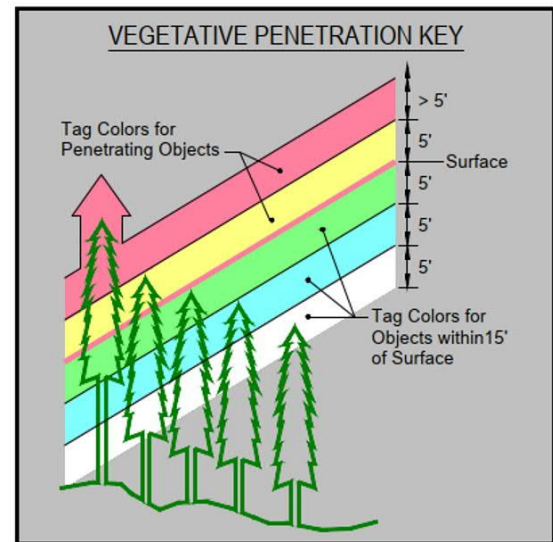
Because the FAA’s statutory mission is to ensure the safe and efficient use of navigable airspace, the FAA has defined a set of standards to create protected airspace in 14 CFR Part 77. There are several imaginary surfaces established within these regulations that require great precision to determine, including a basic obstruction evaluation. Trees and the interferences caused by their heights are a significant factor in developing options which affect the management of the safe flight environment, including: the height and characteristics of the surrounding terrain; the operating capabilities of the aircraft; the prevailing winds, weather, and visibility; the sensitivity and location of detection equipment (e.g., AWOS); the length, breadth, and strength of the runway; and other factors. The proposed tree removal is part of enhancing and ensuring the safety of aircraft in the approach and landing zones. The tree clearing is specifically to remove trees that pose a hazard to pilots during approach and takeoff due to their height within the approach surface. Figure 5.6-A illustrates the Approach Surface and penetration effects of hazard trees.

The NLEB 4(d) Rule does not provide a definition of “hazard tree”, but does specifically exempt the purposeful take of NLEB related to the protection of human health and safety. It states, “Incidental take of northern long-eared bats as a result of the removal of hazardous trees for the protection of human life and property is also not prohibited.” Whereas “hazard trees” from a timber management perspective are comprised of those that may fall and injure a person or property, from an airport perspective, a hazard tree is one that will grow to tall and prevent the safe and effective operation of aircraft. We refer to the definitions used by other public agencies as examples. For example, the Snohomish County Planning and Development Services defines “hazardous tree” under Snohomish County Code 30.91H.040 as “a tree which poses an imminent danger of falling on structures, or constitutes an airport hazard.” [Bold added for emphasis.] Similarly, Dover, PA, under their Zoning regulations (2010) Chapter 27, Section 27-411 – “AH – Airport Hazard Overlay Section” defines “Airport hazard” as “any structure or object, natural or manmade, or use of land which obstructs the airspace required for flight or aircraft in landing or taking off at an airport or is otherwise hazardous as defined by ‘airport hazard’ in 74 Pa CSA 5102.”

Based on this perspective of the trees as hazards, the removal of those trees that are emerging above the approach surface would be exempted from the purposeful take of NLEB related to the protection of human health and safety, as they pose an immediate hazard to human life. Those trees that pose an impending hazard within the project period (2022-2026) are proposed to be cleared as part of the effort but are identified and quantified together with the existing obstacles in Figure 5.6-A.

Regardless of the designation and exemption of hazard trees from the current USFWS 4(d) rule, the tree clearing activities are currently proposed to take place outside of Time of Year (TOY) restrictions specified by the 4(d) rule. Specifically, no tree removal is currently proposed to occur during the NLEB active season between April and October or during the pup season from June 1 through July 31. Any timing or phasing modifications to this proposed timeline would require additional consultation with the USFWS and potentially an incidental take permit or other actions to ensure compliance with the 4(d) rule.

FIGURE 5.6-A Illustration of Vegetative Penetration into the Approach Surface
[SOURCE: Airport Layout Plan Update, Lebanon Municipal Airport, December 2021, Stantec]



As of March 2022, the USFWS has introduced a proposal to change the status of NLEB to federally "Endangered". This is proposed to occur before the end of 2022. If that happens, additional consultation with the USFWS may be needed to comply with the new status and associated regulatory and permit requirements at that time.

5.6.2.4 Federal Candidate Species

The Monarch Butterfly (*Danaus plexippus*) is a Federal Candidate Species for listing and was not analyzed further as described in Chapter 4 (see Biological Opinion, Appendix E). The Airport grassland areas may have suitable habitat containing milkweed around the periphery, but in those areas that are maintained and mowed, the herbaceous species are kept below the level that milkweed would typically grow. Therefore, the impact to potential habitat for Monarchs based on the Proposed Action is minimal.

Additional details on proposed avoidance, minimization, and mitigation measures is provided in the summary in Sections 5.16.

Based on this information and proposed avoidance, minimization, and mitigation, there are NO SIGNIFICANT IMPACTS to the listed species beyond the existing condition as a result of the Proposed Action based on the Preferred Alternative. There are NO SIGNIFICANT IMPACTS due to the No Action alternative, though the existing condition would not meet the Purpose and Need.

5.7 Hazardous Materials, Solid Waste, and Pollution Prevention

Actions funded or approved by the FAA are subject to the Resource Conservation Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). RCRA defines hazardous wastes and governs the generation, treatment, storage, and disposal of hazardous wastes. CERCLA defines hazardous substances, requires notification of releases and regulates the cleanup of any release of a hazardous substance into the environment, excluding petroleum. The EPA administers the RCRA and CERCLA regulations.

FAA Order 1050.1F, Paragraph 4-3.3 (Exhibit 4-1; 7/16/15) includes “Factors to Consider” for this category, as follows:

“The action would have the potential to:

- Violate applicable Federal, state, tribal, or local laws or regulations regarding hazardous materials and/or solid waste management;
- Involve a contaminated site (including but not limited to a site listed on the National Priorities List). Contaminated sites may encompass relatively large areas. However, not all of the grounds within the boundaries of a contaminated site are contaminated, which leaves space for siting a facility on non-contaminated land within the boundaries of the contaminated site. An EIS is not necessarily required. Paragraph 6-2.3.a of this Order [1050.1f] allows for mitigating impacts below significant levels (*e.g.*, modifying an action to site it on non-contaminated grounds within a contaminated site). Therefore, if appropriately mitigated, actions within the boundaries of a contaminated site would not have significant impacts;
- Produce an appreciably different quantity or type of hazardous waste;
- Generate an appreciably different quantity or type of solid waste or use a different method of collection or disposal and/or would exceed local capacity; or
- Adversely affect human health and the environment.”

There are substantial management and operations procedures in place to ensure that the Airport is in compliance with all applicable Federal, state, and local laws regarding hazardous materials and solid waste management. Any potential impacts are anticipated to be avoided or mitigated below significant impact levels. The Airport’s Proposed Action is not anticipated to produce any appreciably different quantities or types of hazardous or solid waste, nor is the Proposed Action likely to adversely affect human health and the environment as outlined under Socioeconomic Impacts and elsewhere in this evaluation.

Based upon NHDES data, there are six cases on record for site remediation; however, the sites are not in the vicinity of the area of disturbance proposed for the alternatives. The alternatives involve excavation and filling for the Runway 18-36 extension, Taxiway A extension and stub taxiway relocations (A1, A2, and B1/B2 replacement by TW A north extension), pavement installation, and restoration of disturbed areas. Areas will be graded or filled as needed to provide an adequate base for both the Runway 18-36 extension to the south and Taxiway A extension. A large portion of Runway 18-36 and Taxiway A extension has been previously graded with earthen materials to achieve the current elevations. Therefore, there are no anticipated impacts associated with hazardous materials, wastes or substances resulting from this project. However, any hazardous materials inadvertently discovered during construction will be reported and handled according to applicable state and federal regulations. Erosion controls and other measures will be designed and implemented in accordance with best management practices and standards to ensure water quality compliance and prevent runoff.

Construction of the Proposed Action would generate construction waste. The Airport minimizes construction waste by recycling construction materials when it is possible to do so. Solid waste generated during construction of the Proposed Action would be reused and recycled as appropriate. As part of its sustainability practices, the Airport continues to examine ways to reduce waste generation through its waste management efforts, which includes waste segregation and recycling.

Best management practices are proposed to avoid pollution impacts due to stormwater runoff. Avoidance, containment devices, and other pollution control measures will be implemented to comply with all permits and regulations.

Based on this information, there are NO SIGNIFICANT IMPACTS to hazardous materials, solid waste, and pollution beyond the existing condition as a result of the Proposed Action based on the Preferred Alternative. There are NO SIGNIFICANT IMPACTS due to the No Action alternative, though the existing condition would not meet the Purpose and Need.

5.8 Land Use Compatibility

Many aviation infrastructure projects, including runway and taxiway extensions, have the potential to cause off-airport land use impacts. The compatibility of existing and planned land uses in the vicinity of an airport are usually associated with the extent of the airport's noise impacts. However, it can also be associated with disruptions of the surrounding community, residential or business relocations, changes in vehicular traffic patterns, induced socioeconomic effects, and even off-airport effects from on-airport facilities such as lighting units. Noise effects are regulated under 49 US Code Section 47501 (formerly the Aviation Safety and Noise Abatement Act of 1979) and addressed in Section 5.9 below.

The proposed improvements are not intended to change the Airport's operational capacity or air traffic volumes, although they will allow aircraft to operate with greater safety under a broader range of weather conditions. Therefore, the proposed improvements are not anticipated to result in changes in scheduled operations, but may result in a slight increase in annual operations. The proposed alternatives would occur largely on Airport property, and there would be no direct takings of land. A single aviation easement is necessary from adjacent owners on the southeast for tree clearing purposes only (refer to Section 5.8.1 for further detail).

The surrounding land use and zoning are compatible with the Airport operations. The Airport Protection Overlay District illustrates the City's intent to maintain land uses compatible with the airport and to preserve conditions that support it. Most of the surrounding properties are zoned IND-L, IND-H and GC which support industrial and commercial land uses which would typically not be affected by changes in operations or flight patterns. Since little or no change in Airport operations is associated with the alternatives, the land use and zoning areas are anticipated to remain compatible and no adverse effects are anticipated.

The City's 2012 Master Plan states there is capacity for expansion of the airport and adjacent business park, but notes that effects on Route 12A as well as traffic congestion and protection of residential areas and scenic roadways east of the airport should be considered. The Master Plan also commented that lighting should be designed to minimize adverse impacts. As described in Sections 5.14 below, the

Proposed Action is expected to have little or no effect on traffic conditions (other than during construction). There will also be a buffer of forested land between the proposed work and residential properties to the east. A lighting plan will be prepared during the design phase of the project that will meet FAA standards for airport lighting. Mitigation is not proposed.

5.8.1 Land Acquisitions and Easements

Land acquisition is not required for the proposed alternatives; however, one aviation easement is required for tree clearing purposes only. The general location of the proposed aviation easement can be seen on Figure 2. The easement will encompass the proposed tree clearing area located off of the Airport property. The property is identified by the City as Map 161, Lot 3 and owned by S&M Forest Trust (John Conde, Trustee). The easement will allow for tree clearing to occur off Airport property in order to meet the FAA criteria necessary for safe operations. In addition, there are several existing on-Airport easements and off-Airport conservation easements that are presented within Section 5.12.1.1 under Wetlands Mitigation.

Based on this information, there are NO SIGNIFICANT IMPACTS on land use (including air and noise) beyond the existing condition as a result of the Proposed Action based on the Preferred Alternative. There are NO SIGNIFICANT IMPACTS due to the No Action alternative, though the existing condition would not meet the Purpose and Need.

5.9 Natural Resources and Energy Supply

FAA Order 1050.1F, Paragraph 4-3.3 (Exhibit 4-1; 7/16/15) indicates under “Factors to Consider” for this category, “The action would have the potential to cause demand to exceed available or future supplies of these resources.” Construction materials considered under this category would be used during construction of the Proposed Action. As described in Section 5.3, *Geology, Soils, and Topography*, the total amount of fill materials for the new surfaces is estimated at 43,585 CY. These calculations are approximate totals and the assumption is that the majority will be comprised of offsite virgin materials rather than reuse of existing onsite materials.

Material from existing stockpiles on the airport property could be used as a source of fill in the RSA pending availability and suitability evaluations. In addition, topsoil would be brought onto the site. Construction activities would also use other typical building materials such as asphalt, aggregate, and drainage pipes. All of these materials are typically readily available in the region, so the Proposed Action would not consume any materials that are anticipated to be in short supply.

The Proposed Action would also require the use of energy and water for construction activities, generating additional output into the sanitary sewer system. All of the municipal systems have adequate supply of these resources, and BMPs would be implemented to conserve water and power during construction to the extent possible. Other energy requirements associated with a proposed airport improvement project generally fall into two categories: (1) those that relate to changed demands for stationary facilities (i.e. airfield lighting and terminal building heating), and (2) those that involve the movement of air and ground vehicles.

The Proposed Action would not affect the energy use from electricity, heating oil, and propane/fuel beyond the temporary impact from construction activities. The proposed new taxiway and runway lights will not result in significant impacts to energy use beyond the existing condition.

The highest consumption of natural resources related to the project will be the use of fill materials and asphalt to extend the taxiway and install the new stub taxiways. This will result in additional new asphalt surfaces and the related materials. The new pavement is anticipated to be sourced from regional commercially available locations.

The Proposed Action will have no significant effect on energy consumption at the airport, nor will the use of any rare materials or natural resources in short supply required for the actions proposed in this EA. There will be a negligible change in energy consumption – the 2 NAVAIDs are simply relocations and will not require additional energy draws. Construction activities will self-support their energy needs and not draw from the Airport.

Based on this information, there are NO SIGNIFICANT IMPACTS to natural resources and energy supply beyond the existing condition as a result of the Proposed Action based on the Preferred Alternative. There are NO SIGNIFICANT IMPACTS due to the No Action alternative, though the existing condition would not meet the Purpose and Need.

5.10 Noise and Noise-compatible Land Use

Title 49 of the US Code (49 USC 471 [Airport Development] § 47101[a][2], [c] and [h]) established the national policy to minimize the current and projected noise impacts that result from the construction of and operation of aviation facilities. The FAA has determined that the cumulative noise energy exposure of individuals to noise resulting from aviation activities must be established in terms of the day-night average sound level (DNL), which is a 24-hour average sound level in decibels (dB).

Under FAA Order 1050.1F, paragraph 4-3.3, the Significance Threshold for Noise and Noise-Compatible Land Use is:

“The action would increase noise by DNL 1.5 dB or more for a noise sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level, or that will be exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase, when compared to the No Action alternative for the same timeframe. For example, an increase from DNL 65.5 dB to 67 dB is considered a significant impact, as is an increase from DNL 63.5 dB to 65 dB.”

FAA Order 1050.1F, Paragraph 4-3.3 (Exhibit 4-1; 7/16/15) indicates under “Factors to Consider” for this category,

“Special consideration needs to be given to the evaluation of the significance of noise impacts on noise sensitive areas within Section 4(f) properties (including, but not limited to, noise sensitive areas within national parks; national wildlife and waterfowl refuges; and historic sites, including traditional cultural properties) where the land use compatibility guidelines in 14 CFR part 150 are not relevant to the value, significance, and enjoyment of the area in question. For example, the DNL 65 dB threshold does not adequately address the impacts of noise on visitors to areas within a national park or national wildlife and waterfowl refuge where other noise is very low and a quiet setting is a generally recognized purpose and attribute.”

As noted in Chapter 4, Affected Environment, there are not any Section 4(f) properties within the project area or adjacent vicinity in consideration.

FAA Order 1050.1F, Appendix B indicates that no noise analysis is needed for the following projects:

- Those involving Design Group I and II airplanes (wingspan less than 79 feet) in Approach Categories A through D (landing speed less than 166 knots) operating at airports whose forecast operations in the period covered by the NEPA document do not exceed 90,000 annual propeller operations (247 average daily operations) or 700 annual jet operations (2 average daily operations).
- Projects involving existing heliports or airports whose forecast helicopter operations in the period covered by the NEPA document do not exceed 10 annual daily average operations with hover times not exceeding 2 minutes.

According to the FAA 1050.1F Desk Reference (v2), “these numbers of propeller and jet operations result in DNL 60 dB contours of less than 1.1 square miles to extend no more than 12,500 feet from start of takeoff roll. The DNL 65 dB contour areas would be 0.5 square mile or less and extend no more than 10,000 feet from start of takeoff roll.” Regarding the helicopter operations, the 1050.1F Desk Reference (v2) indicates that “these numbers result in DNL 60 dB contours of less than 0.1 square mile that extend no more than 1,000 feet from the pad. The document notes that the rule applies to the Sikorsky S-70 with a maximum gross takeoff weight of 20,224 pounds and any other helicopter weighing less or producing equal or less noise levels.”

The Airport’s annual operations in 2019 were just under 33,000, of which at least 2,975 were jets (ALP, January 2020). Similarly, the Airport operations presented in the 2017 Master Plan indicate prior actual operations (2014) were below 30,000, but this included over 1,000 jets. Because the number of jets exceeds the FAA threshold for noise analysis (700), we present the information from the 2017 Master Plan supplemental noise analysis and rationale to support a reduced impact over the previous noise analyses based on the current Proposed Action within the project area (Appendix G). Noise modeling using the FAA-approved Integrated Noise Model (INM) system was completed at that time. INM is a computer-based model for airport-specific noise generation. The number of annual flights, aircraft types, flight tracks, runway use and time of day are the critical input values for noise contour modeling. The 2017 supplemental noise analysis shows there were no non-compatible land uses within the 65 DNL contour, therefore there were no predicted adverse noise effects as a result of the alternatives. The numerical figures used within the 2017 noise analysis included a 2020 forecast of 30,453 operations. This was exceeded in 2019 at 31,781 (per ATCT plus 2.9% for after hours estimate; ALP January 2020).

Under the previous ALP, the design aircraft was the Embraer EMB-35 BJ (Table 5.10-1), and the future design aircraft was the Challenger 300/600. Both aircraft have an approach speed and wingspan that classifies them in the ARC C-II group. Using the updated information from the current Airport Layout Plan (*ALP Update*; 2021), the current critical design aircraft is the Embraer Phenom 300 (“E55P” in *ALP Update* 2021; EMB 505 in FAA FSB Report Rev 4, 11/02/2017). Based on that change, the Airport Reference Code (ARC) has been reduced from C-II to B-II thereby reducing the size of the RSA from a width of 500 feet to 150 feet and the length beyond the end of the runway from 1,000 feet to 300 feet. Therefore, the 65 DNL is reduced from the earlier proposal to extend the runway by 1,000 feet to only 200 feet under the current Proposed Action. Furthermore, the earlier design and future design aircraft had higher Noise Levels (measured as “Effective Perceived Noise Level” [EPNdB] per FAA AC 36-1H) than the current design aircraft – Embraer Phenom 300 as shown in Table 5.10-1. These factors result in lower noise levels under the current proposed conditions.

Table 5.10-1 Noise Levels by Design Aircraft

Identifier	Noise Level Measurement Location (EPdB)				
	Takeoff	Sea Level	Flyover	Lateral	Approach
2020 Design Aircraft					
EMB-505 (FAA) E55P (ALP January 2020) "Phenom 300"*			69.9	88.8	88.5
2017 Design Aircraft**					
EMB 135 BJ***	77.9	84.4			92.3
Challenger 300 – CL300	75.3	87.6			89.6
Challenger 600 – CL 600	78.7-85.5	82.2-93.3			89.2-92.6

NOTES: * Source: FAA FSB Report Rev 4, 11/02/17

**Sources: Comprehensive Airport Master Plan Final Report, November 2017; AC 36-1H (05/25/12); CL 600 noise levels given for range based on modified configurations

*** ALP (January 2020) identifies this as the "EMB 35-BJ".

Noise impacts due to the Proposed Action will be limited to temporary impacts associated with construction activities. Minimization and mitigation to offset the temporary impacts is proposed as presented in Section 5.16 below. No additional mitigation measures are proposed due to the proposed project actions occurring entirely within the project area.

Based on this information, there are NO SIGNIFICANT IMPACTS to noise and noise-compatible land use beyond the existing condition as a result of the Proposed Action based on the Preferred Alternative. There are NO SIGNIFICANT IMPACTS due to the No Action alternative, though the existing condition would not meet the Purpose and Need.

5.11 Socioeconomic, Environmental Justice, and Children’s Health & Safety Risks

5.11.1 Socioeconomics

Aviation infrastructure projects have the potential to directly or indirectly affect socioeconomic conditions in surrounding communities. CEQ regulations at 40 CFR 1500, specifically 1500.1, 1508.1(g), and 1508.1(m), require that the “human environment” be addressed concerning the relationship of people with their natural and physical environments. These effects may include, but are not necessarily limited to, shifts in populations, incomes and growth patterns, public service demands, business and economic activity changes, creating a notable change in employment, and disruption to established neighborhoods.

Socioeconomic impacts may also lead to other, induced or “secondary” resource impacts. For example, aviation projects causing increased noise or requiring land acquisition could affect residential settlement patterns. These changes could, in turn, cause impacts that alter demands on fire and police protection, educational or utility services, businesses, and job opportunities.

The FAA has not established a significance threshold for the Socioeconomics sub-category. Guidance within Order 1050.1F, Paragraph 4-3.3 (Exhibit 4-1; 7/16/15) “Factors to Consider” includes:

“The action would have the potential to:

- Induce substantial economic growth in an area, either directly or indirectly (e.g., through establishing projects in an undeveloped area);
- Disrupt or divide the physical arrangement of an established community;
- Cause extensive relocation of community businesses that would cause severe economic hardship for affected communities;
- Disrupt local traffic patterns and substantially reduce the levels of service of roads serving an airport and its surrounding communities; or
- Produce a substantial change in the community tax base.”

As stated previously, there will be little or no change in Airport operations due to the implementation of any of the proposed alternatives. The proposed alternatives do not require households to relocate, alter public service demands, and are not anticipated to reduce the local tax base or change the assessed value of local properties. The proposed alternatives are not of the size or magnitude to alter the community’s transportation patterns, public services, utility services, business facilities, or employment opportunities. The Airport is operated as a revenue-generating entity owned by the City, and as such, plans and operates in a manner that attempts to anticipate projected growth and income opportunities. Furthermore, no increases to other City services (such as Fire) are anticipated as a result of the proposed project. If, in the future, airline aircraft with 10 or more seats were to serve the Airport, it would require re-certification under Federal Aviation Regulations Part 139 and return of City fire fighters in position at the Airport. There could also be a return of Customs service at the Airport. In these cases, additional related costs would be expected to be borne by the carrier or operation requiring such additional services.

In addition, the alternatives are not anticipated to induce adverse socioeconomic effects such as shifts in populations and growth patterns, public service demands, and business and economic activity changes. Mitigation is not proposed.

5.11.2 Environmental Justice

The FAA has not established a significance threshold for the Environmental Justice sub-category. Guidance within Order 1050.1F, Paragraph 4-3.3 (Exhibit 4-1; 7/16/15) “Factors to Consider” includes:

“The action would have the potential to lead to a disproportionately high and adverse impact to an environmental justice population, i.e., a low-income or minority population, due to:

- Significant impacts in other environmental categories; or
- Impacts on the physical or natural environment that affect an environmental justice population in a way that the FAA determines are unique to the environmental justice population and significant to that population.”

Executive Order 12898 (1994) requires consideration of project impacts to minority and low-income populations. Updates to the NEPA regulations by the CEQ (July 16, 2020) only requires evaluation within the NEPA framework of direct impacts and those impacts that are “reasonably foreseeable and have a reasonably close causal relationship”.

The Airport and this Proposed Action actively seek fair treatment and meaningful involvement of all citizens in the EA process. The Proposed Action is meant to provide improved airport safety to all users. There is not anticipated to be any disproportionate effect on environmental justice concerns as a result of the Proposed Action.

5.11.3 Children’s Health and Safety Risks

The FAA has not established a significance threshold for this sub-category. Guidance within Order 1050.1F, Paragraph 4-3.3 (Exhibit 4-1; 7/16/15) “Factors to Consider” includes:

“The action would have the potential to lead to a disproportionate health or safety risk to children.”

Executive Order 13045 (1997), *Protection of Children from Environmental Health Risks and Safety Risks*, defines the risks to children’s safety that are attributable to products or substances that the child is likely to touch or ingest including the air we breathe, the food we eat, the water we drink or use for recreation, and the soil we use to grow food. The proposed alternatives have been evaluated for their potential to have a disproportionate effect on children’s environmental health or safety.

The effects of the Proposed Action are primarily limited to the Airport study area. There is not anticipated to be any disproportionate effect on children’s health and safety as a result of the Proposed Action. We include the section here as part of the comprehensive consideration of socioeconomic factors. The nearest daycare is approximately a half mile away, and the nearest school is nearly a mile to the north.

The Proposed Action would not increase exposures to the air, food, drinking water, or soil for food. Therefore, they are not of the nature or magnitude to have an adverse effect upon the health and safety of children. Mitigation is not proposed.

Based on this information, there are NO SIGNIFICANT IMPACTS to socioeconomic, environmental justice communities, or children’s health and safety risks beyond the existing condition as a result of the Proposed Action based on the Preferred Alternative. There are NO SIGNIFICANT IMPACTS due to the No Action alternative, though the existing condition would not meet the Purpose and Need.

5.12 Water Resources

The Clean Water Act (CWA) grants statutory authority to the federal government to establish water quality standards; control discharges into surface and subsurface waters; develop waste water treatment systems and practices; prevent or minimize the loss of wetlands; regulate project siting with regard to an aquifer or sensitive ecological areas such as wetlands; and regulate other issues concerning water quality. CWA Sections 401 and 404 address the protection of water quality and waters of the US, including wetlands, respectively. Under the CWA, the EPA has implemented industrial wastewater standards and water quality standards for all surface water contaminants.

The EPA administers these controls through the NPDES permit program which regulates the point discharge of pollutants into waters. The State of New Hampshire has not been delegated by EPA to administer this program; therefore EPA is the issuing authority for NPDES permits within this state. NPDES permits in New Hampshire are issued for three general activity categories including discharges from municipal separate storm sewer systems (MS4s), construction activities (NPDES CGP), and industrial activities. The City of Lebanon is not designated as a MS4 community under the NPDES Phase II regulations. The NHDES must certify that the limitations and conditions contained in the NPDES permit will ensure that the proposed discharge will not violate any state law or regulation. The NPDES CGP requires the applicant to first obtain a CWA Section 401 Water Quality Certification from the NHDES.

For purposes of NEPA, water resources are evaluated in four sub-categories following the same order as presented in Chapter 4, Affected Environment:

- 1) Wetlands
- 2) Floodplains (Resource Not Affected)
- 3) Surface Water
- 4) Ground Water (Resource Not Affected)

Each sub-category is evaluated using a different set of Significance Thresholds and “Factors to Consider” as given in FAA Order 1050.1F, Paragraph 4-3.3 (Exhibit 4-1; 7/16/15) and included within each applicable subsection below.

5.12.1 Wetlands

As described in Chapter 5, the Airport property contains several notable wetland areas. Those wetlands within the project area were delineated most recently in July and September 2021 (Figures 2-4). Areas outside of the designated project area, even if on Airport grounds, were not delineated. Therefore, any changes to the proposed location of alternatives would require updates to the wetlands delineation in areas outside of the depicted project area.

Under Section 404 of the CWA, inland waters and wetlands of the US are regulated with the USACE as the permitting authority. The USACE has issued a PGP for the State of New Hampshire (GP No: NAE-2016-02415, 8/18/17-8/18/22) to expedite the review of minimal impact work in coastal waters, inland waters, and wetlands. Projects meeting certain PGP criteria affecting 3,000 square feet to three acres require a single application to NHDES, but will receive USACE simultaneous review. Projects affecting more than one acre MAY require an Individual Permit review, and projects greater than three acres of wetlands SHALL require authorization under an Individual Permit application submitted to the USACE.

The NHDES is responsible for wetland management and permitting under the Water Division’s Wetlands Bureau. Under the State of New Hampshire’s Title L Section 482-A:3.I.(a) and Env-Wt 100-900, permitting is required for any work involving the excavation, removal, filling, dredging or construction of any structures in or on any bank, flat, marsh, or swamp in and adjacent to any waters of the state. State law requires that dredging and filling of jurisdictional areas must be avoided and impacts minimized, however permits may be issued for situations with unavoidable impacts. The proposed alternatives would impact wetlands as detailed by wetland type in Table 5.12-1 (and Figure 2-3). However, following the construction of the new Taxiway A extension, Wetlands F, G, and I, which are all constructed stormwater conveyance ditches, will be replaced at a size estimated at a 1:1.5 ratio in accordance with NHDES guidance, thereby resulting in approximately 0 sf of impacts to drainage ditch wetlands. Additional surficial stormwater drainage conveyance structures, either ditches or swales, are currently proposed in the vicinity of the new ILS localizer driveway access and pad locations.

TABLE 5.12-1 Wetlands Within or Adjacent to Project Area and Permanent Impacts by Year

Wetland ID	Type/Location	2022	2023	2024	2025	2026
A	Small natural Palustrine Forested (PFO) wetland outside of fence southeast of Airport	0	0	0	0	0
B	Palustrine Forested (PFO) wetland to the far southeast corner of the Airport property boundary (outside of fence)	0	0	0	0	0
C	Small, herbaceous Palustrine Emergent (PEM) wetland south of RW 18-36 just beyond the fence	0	0 SF Obstacle/ Tree Clearing ³	0	0	0
D	Large wetland complex that includes herbaceous palustrine emergent (PEM) wetland area extending from southwest corner inside fence into the southwest area outside the fence south of RW 18-36	0	a) 35,217 SF ILS Localizer Hot Spot 3 (shed/drive) b) 0 SF Obstacle/ Tree Clearing ³	0	0	0
E	Palustrine Emergent (PEM) wetland beyond south end of RW 18-36 outside the perimeter fence with scrub-shrub area at southern edge	0	0 SF Obstacle/ Tree Clearing ³	0	0	0
F ^{1/2}	Constructed stormwater management area with emergent herbaceous wetland perched on upper plateau area to the west of RW 18-36 and south of maintenance buildings; contains 18-36 PAPI with ILS shed at edge; includes ditch/swale at south end; entirety is frequently mowed	0	9,335 SF TW A Ext Phase 1	43,754 SF TW A Ext Phase 2	0	0
G ^{1/2}	Constructed stormwater conveyance ditch parallel to Runway 18-36 with naturalized wetland characteristics	0	33,039 SF TW A Ext Phase 1 (and TW A2)	1,132 SF TW A Ext Phase 2	0	0
H ^{1/2}	Constructed stormwater conveyance ditch/ naturalized wetland with palustrine emergent (PEM) characteristics	0	0	0	0	0
I ^{1/2}	Series of three vegetated stormwater conveyance ditches with naturalized Palustrine Emergent/Scrub Shrub (PEM/PSS) wetland characteristics	0	3,620 SF	0	0	0

Wetland ID	Type/Location	2022	2023	2024	2025	2026
J ⁴	Small Palustrine Emergent (PEM) wetland at southerly end of Runway 18-36 just inside the fence	0	0	0	0	0
K ^{1,4}	Small Palustrine Emergent (PEM) wetland at southern end of Runway 18-36	0	0	0	0	0
SUB-TOTAL WETLAND IMPACTS BY YEAR		0	81,211	44,886	0	0
TOTAL WETLAND IMPACT		126,097 SF				
¹ Turf areas are grass/low herbaceous areas that include frequently mowed areas on the open airfield. ² Managed vegetation includes tall grass or shrubby areas that are off the open airfield but are mowed or cut as necessary to meet Part 77 obstruction removal requirements. ³ Mitigation is not required for tree clearing within wetlands on this project, as no stumping/grubbing will occur. ⁴ Wetlands J and K were delineated in a second field effort and are not included in the Wetlands Report (Appendix C). They are showing in Figures 2, 3, 7, and 10.						

The No Action alternative would not affect any wetlands whereas the preferred alternative would impact an estimated 126,097 SF (<3 acres) of wetlands over the course of five years (Table 5.12-1 and Table 5.12-2). The locations of the tree clearing areas are depicted on Figure 3. The majority of the impacted wetlands near the runway and proposed Taxiway A extension are located within frequently mowed turf areas and constructed stormwater ditches that have reverted to naturalized wetlands. The turf vegetation areas undergo regularly scheduled maintenance to meet FAA Part 77 obstruction guidelines. They are infrequently cut or mowed and comprised of wet meadows and shrub areas. A portion of Wetland D within the security fence will be impacted by the shed associated with the localizer.

Tree clearing is proposed in the vicinity of Wetlands A, B, and E and will include removal within 100 feet of portions of Wetlands B and E. Although not a jurisdictional area regulated by the USACE or NHDES, the City of Lebanon designates a 100-ft buffer around those wetlands identified in the Natural Resource Inventory (NRI, 2010) as “High Value” or “Very High Value” under Section 401.2(B) of the *City of Lebanon Zoning Ordinance #2* (2022). Tree clearing that will occur within 100 feet of wetlands is presented in Figure 3. In order to avoid impacts to wetland substrate, no stumping or grubbing of the trees is proposed within wetland areas.

TABLE 5.12-2 Summary of Permanent Wetland Impacts by Year Prior to Mitigation

		Wetland ID					
		D	E	F	G	H	I
Year	Action						
	No Action (Existing)	0	0	0	0	0	0
2023	ILS Localizer (Hot Spot 3) [shed/driveway]	35,217 SF	0	0	0	0	0
	TW A ext Ph 1	0	0	9,335 SF	33,039 SF	0	3,620 SF
	TW A2 relocate	0	0	0		0	0
2024	RW 36 end Obstacle/ Tree Clearing	0	0	0	0	0	0
	RW 18-36 ext [36 end 200']	0	0	0	0	0	0
	PAPI relocate	0	0	0	0	0	0
	TW A ext Ph 2	0	0	43,754 SF	1,132 SF	0	0
2025	TW A1 relocate	0	0	0	0	0	0
	TW B1-B2 Direct (TW A North ext)	0	0	0	0	0	0
2026	TW A3	0	0	0	0	0	0
	RW 7 end 200' RW Displace & PAPI relocate	0	0	0	0	0	0
SUB-TOTAL WETLAND IMPACTS		35,217	0	53,089	34,171	0	3,620
TOTAL WETLAND IMPACTS		126,097					

Additionally, the wetland impacts have been evaluated relative to “functions” and “values”. Functions are self-sustaining properties of a wetland ecosystem that relate to the ecological significance of the wetland’s properties without regard to subjective human values. Values are benefits derived from one or more functions and the physical characteristics associated with a wetland. The following Table 5.12-3 details the functions and values of each wetland area that would be impacted by the preferred alternative (also see full wetlands report in Appendix C; see Table 5.6-1 regarding wildlife habitat type conversions). The “No-Build”/“No Action” alternative would result in conditions remaining the same, in other words, no impacts to the wetlands would occur due to leaving the hazardous tree obstructions in place. However, the potential impacts to airport operations and risk to human life could be significant. Furthermore, the Airport would be out of compliance with FAA Part 77 regulations.

TABLE 5.12-3 Impacted Wetlands’ Principal Functions and Values

Wetland	Principal Function/Value	Impact (Square Feet; SF)	Comments (Avoidance/Minimization/Mitigation)
D	Wildlife Habitat	0 due to tree clearing 35,217 SF – shed & ILS localizer access driveway	Trees will be felled in place and removed; stumps will remain in wetland areas creating alternative wildlife habitat attributes (e.g., ruffed grouse drumming logs; amphibian cover)
E	Noteworthiness, Wildlife Habitat	0 due to tree clearing	Trees will be felled in place and removed; stumps will remain in wetland areas; area will revert from forested wetland (PFO) to scrub/shrub (PSS) and emergent (PEM)
F	Noteworthiness, Groundwater Recharge	53,089 SF – grading adjacent to new Taxiway A extension Phase 1 and Phase 2; fill in ditch/swale due to new ILS driveway	Majority of wetland will remain intact on upper plateau; swale/ditch at southern end in location of new ILS driveway will be replaced approximately in-kind for stormwater conveyance
G	Flood Storage, Sediment Trapping	34,171 SF – filled to locate Taxiway A extension	In-kind/1:1.5 replacement by new stormwater conveyance ditch
H	Flood Storage, Sediment Trapping	0 SF – fill due to grading for Taxiway A Extension Phase 1	Wetland H is just outside the proposed limits of grading for TW A extension
I	Flood Storage, Sediment Trapping	3,620 SF – fill due to Taxiway A extension Phase 1 improvements and grading	Wetland I proposed in-kind replacement allowing same volume of flood storage
TOTAL WETLAND IMPACT		126,097	

The tables above show summaries of impacts by year. However, the impacts would be mitigated by the implementation of wetland mitigation as required by the USACE and NHDES which is described in detail below.

5.12.1.1 Wetland Mitigation

The USACE and the NHDES require that project sponsors complete compensatory mitigation in the same watershed in which the wetland impacts occurred to replace or protect wetland functions and values impacted by a project. The USACE *New England District’s Compensatory Mitigation Guidance* (2016) refers to the watershed as the 8-digit Hydrologic Unit Code (HUC). The Airport is within the Connecticut-White River to Bellows Falls Watershed, HUC 01080104. This watershed extends along the Connecticut River and includes adjacent communities from roughly Lebanon, NH south to Charlestown, NH and east roughly to Canaan, Springfield and Newbury.

The mitigation required is based upon a ratio of mitigation acreage as compared to the impact acreage. Based upon a meeting with the natural resource agencies on April 20, 2022, attended by the USACE and the NHDES, a recommended wetland mitigation ratio was determined for the purposes of NHDES permitting. The NHDES mitigation ratio for the stormwater conveyance ditches was determined to be 1.5 : 1 (i.e., 1.5 acres of wetland creation or restoration for every 1 acre of wetland impact). Wetland impact acreage is to be based on the total direct wetland impacts, without tree clearing acreage. Although tree clearing affects wetlands, the impact is offset by the plan to leave the stumps and roots in place, along with the relatively low

value of some of the directly impacted wetlands. Wetlands F, G, and I are constructed stormwater conveyance ditches that will be replaced approximately in kind immediately adjacent to the new Taxiway A extension. The USACE's mitigation ratios differ from NHDES's ratios, but it was believed the ultimate mitigation proposal would satisfy both agencies' requirements.

It was also discussed during this meeting that proposing NHDES's In-lieu Fee Program method to compensate for permanent wetland losses was appropriate as long as justification was provided that no other alternative was practicable. The In-lieu Fee Program allows an applicant to pay funds, based upon a formula, that are equivalent to the cost incurred if a wetland of the same type were constructed at the agreed upon ratios. The In-lieu Fee Program is not a substitute for the requirement to avoid or minimize impacts to wetlands. Where NHDES requires compensatory wetland mitigation, an applicant must still evaluate available opportunities for upland buffer preservation and wetland restoration and creation.

Wetland mitigation for Airport projects is presented in Table 5.12-4. An easement has already been placed on a 28.56-acre portion of the Airport immediately south of Runway 18-36 (Figure 10). This easement was originally intended to provide mitigation for 12.71 acres of permitted wetlands impacts for the Taxiway A extension, ILS localizer and vehicle access projects, and Runway Safety Area improvements at the south end of Runway 18-36. This project has been contemplated as far back as 1994, and the easement was put into conservation by the Airport in 1996 in a good faith effort in advance of expected project completion in conjunction with permits issued by the USACE and NHDES (in 1994 and 1997) as indicated in Table 5.12-4. The Taxiway A extension and other actions were thereafter delayed and have not been built to date, but revisions to these projects are included within this EA's Preferred Alternative.

The primary purpose of the 28.56-acre conservation easement is to preserve wildlife habitat, and the easement prohibits the placement of any structures. Structures within the easement area are not proposed. The existing conservation easement will be impacted due to the proposed tree clearing. However, the easement does allow for removal of trees to clear FAA approach surfaces as may be needed. The tree clearing will provide opportunities for early successional habitat. The easement area will continue to provide wildlife habitat. No long-term impacts contrary to the intent and purpose of this easement are anticipated. Refer to Figure 3 for the locations of these impacts.

The runway extension was previously designed for 1000 feet but is now designed for 200 feet, an 800 foot reduction. Furthermore, the width of the Taxiway A extension was proposed at 2700 feet long and 50 feet wide based on different design criteria than the current 35 foot-wide Taxiway A extension design. Since the project as previously proposed was never completed before the easement was recorded, the easement will be included in the proposed mitigation package to be presented to the state and federal agencies as part of the permitting efforts (Appendix H). This pre-banked 28.56-acre conservation easement area, which contains approximately 26.59 acres of uplands and 1.97 acres of portions of Wetland B, is proposed to mitigate the total project impacts for all activities contemplated by this EA up to the previously permitted 12.71 acres to be confirmed by the USACE, NHDES, and EPA. The final determination of total wetland impacts will need to occur to confirm the ratio and total value available to offset the wetland impacts. The wetland impacts, after factoring out approximately one (1) acre of stormwater conveyance ditch replication for Wetlands G, H, and I, is estimated at <2 acres. The NHDES ratio for upland preservation (without factoring inclusive wetland areas) is 10:1 and the USACE is anticipated at 20:1 for upland (only) preservation. Since the 28.56-acre conservation easement includes 1.97 acres of existing wetland, the easement would perceivably cover the current proposed impacts under the 30% design scenario of approximately two acres of the more naturalized wetlands areas in Wetland D due to shed and driveway construction.

TABLE 5.12-4 Existing Airport-Related Conservation Easements (Completed, Contemplated, and Banked)

Easement Area Name/Location	Size [acres]	Location	Purpose	Year Easement Recorded; Book & Page	Project Completed [Y/N]
“Boston Lot”	93	Off-Airport	South Apron/ T-Hangar Project Wetlands Mitigation (5.25 ac wetland = 18:1 upland preservation/wetland) [USACE Permit #NAE-2005-1015; NHDES 2006-000535]	November 9, 2009 Book 3667, Pg 531-546	Yes
“Haggerty Lot”	41	Off-Airport	South Apron/ T-Hangar Project Wetlands Mitigation, Alternative 5	Contemplated; Rejected*	Yes
Strip south of RW 25 end between Airport and Poverty Lane	4.70	On-Airport Adjacent property	Mitigation for wetlands impacts for projects between 1994-1998	March 9, 1998 Book 2302, Pg 838-841	Yes
Hillside west of RW 36 end	7.36	On-Airport			Yes
Directly south of Runway 36 end	28.56 [26.59 upland; 1.97 ac wetland]	On-Airport	Proposed and completed/recorded as mitigation for Taxiway A Extension, RW 36 1000' Extension, and ILS localizer /driveway Projects (originally 12.71 ac of wetland impact proposed) [1994 USACE Permit #94-01376; NHDES Permit #94-00936; 1997 USACE & NHDES Permits #97-01598]	January 12, 1996 Bk 2178; Pg 621-623 Easement recorded prior to project getting built; Mitigation Credit Pending/ Banked /Available	NO; TAXIWAY A EXTENSION PROJECT NOT COMPLETED
*Source: “Technical Memorandum, Lebanon Municipal Airport Mitigation Alternatives for South Apron Construction” (2 nd Draft 1-12-06); Haggerty Lot contemplated and included for historic clarity.					

The economic value of the easement when it was originally conserved in 1996 was very likely less than the pre-easement value in 2021. It would presumably be even greater resulting in a higher monetary valuation for the easement under current conditions. Based on current USACE and NHDES mitigation ratios, the easement is anticipated to mitigate a substantial portion, if not all, of the proposed wetlands impacts. Additional mitigation may be needed and would likely consist of In-Lieu fees as noted above.

Wetland mitigation is typically specified and agreed upon by regulatory agencies prior to FAA issuing a Finding of No Significant Impact (FONSI) for the project. All appropriate state and federal permits will be acquired for the work affecting state and federally regulated wetland areas (see list in Section 5.17). These permits will be adhered to and incorporated into the design and construction of the project.

Based on this information and the proposed avoidance, minimization, and mitigation, there are NO SIGNIFICANT IMPACTS to wetlands beyond the existing condition as a result of the Proposed Action based on the Preferred Alternative. There are NO SIGNIFICANT IMPACTS due to the No Action alternative, though the existing condition would not meet the Purpose and Need.

5.12.2 Surface Water

The Significance Thresholds designated for Surface Water by the FAA at 1050.1F, Paragraph 4-3.3 (Exhibit 4-1; 7/16/15) previously shown in Table 5.2-1 are:

“The action would:

1. Exceed water quality standards established by Federal, state, local, and tribal agencies; or
2. Contaminate public drinking water supply such that public health may be adversely affected.”

The FAA has provided guidance further provides guidance under “Factors to Consider”, which includes:

“The action would have the potential to:

- Adversely affect natural and beneficial water resource values to a degree that substantially diminishes or destroys such values;
- Adversely affect surface waters such that the beneficial uses and values of such waters are appreciably diminished or can no longer be maintained and such impairment cannot be avoided or satisfactorily mitigated; or
- Present difficulties based on water quality impacts when obtaining a permit or authorization.”

Snow removal is conducted by Airport personnel using the Airport’s truck-mounted plows and brushes. The impervious surfaces of the runways, taxiways and aprons are treated with sand (without the addition of salts or urea). Liquid deicer, potassium acetate, is used only after an icing event. Storage of these materials is provided in the snow removal equipment building. Aircraft are deiced by Cape Air on the terminal apron where deicing chemicals are carted to individual aircraft. The deicing agent, a propylene glycol mixture, is prepared as needed and sprayed onto waiting aircraft. Excess propylene glycol currently runs off onto the nearby turfgrass areas. Granite Air Center performs similar deicing procedures for aircraft on the apron outside their facilities. Propylene glycol causes some oxygen demand in surface waters, but is biodegradable and has much lower toxicity than an alternative deicing chemical, ethylene glycol.

The proposed alternatives will not relocate or change aircraft deicing procedures. However, due to the addition of impervious areas for aircraft operations with the extension of runway and taxiway surfaces under the preferred alternative, winter airfield maintenance will require additional amounts of sand and potassium acetate. It is anticipated that a maximum of 15% more sand and potassium acetate will be necessary to treat the additional impervious runway and taxiways under any of the proposed alternatives compared to the current surface areas. However, exact volumes of these materials required each year vary according to weather conditions.

A SWPPP is required at the Airport since it is considered to be a municipally owned industrial facility under NPDES Phase II of 40 CFR 122.26(b) (14) (i)-(xi). As an air transportation facility, the Airport needs authorization to discharge surface waters under the General Permit for Stormwater Discharges Associated with an Industrial Activity for typical stormwater runoff from the entire exposed facility surface. This General Permit is needed for any facility where stormwater runs off the property through a ditch, swale, catch basin, or similar feature into a wetland, brook, stream, river, other waterway or municipal drainage system. The areas designated as “Wetland F”, “Wetland G”, “Wetland H”, and “Wetland I” are all constructed stormwater conveyance ditches and swales. Any industrial materials and activities that do not come into contact with stormwater runoff at such a facility may be exempted from NPDES Phase II permitting by the “No Exposure Exclusion”. The Airport’s 2008 SWPPP was updated in early 2012 to comply with the General Permit and is in the process of another update. The SWPPP addresses stormwater runoff from the permanent structures, deicing activities, and vehicle maintenance operations to meet state and federal water quality standards. The SWPPP also addresses runoff from the deicing areas as part of the normal operations.

In addition, since construction for the preferred alternative is anticipated to disturb more than one acre, a NPDES Construction General Permit will be required with a corresponding Section 401 Water Quality Certification and project-specific SWPPP. The project-specific SWPPP will specifically address the prevention of soil erosion and particle-laden stormwater runoff during all phases of project construction. Project-specific BMPs will be designed and implemented to ensure runoff meets state and federal surface water quality standards.

Runoff from proposed new impervious surfaces, turfgrass areas, and other project components will be treated using permanent stormwater BMPs. These BMPs will follow the guidelines, to the extent practicable, of the New Hampshire Stormwater Manual (2008). One goal of such treatment is to not exceed pre-construction discharge rates for certain storm events. Preliminary study of site drainage patterns shows that the site receives runoff from the hills both east and west of Runway 18-36. The volume of stormwater that needs to be accommodated by the proposed BMPs is therefore substantially greater than the runoff generated on the airfield. However, there is limited space available on Airport property for stormwater management. Three areas have preliminarily been identified for stormwater BMPs, with sufficient capacity to meet regulatory requirements.

Additional stormwater management may be required in tree-clearing areas to ensure post-construction runoff rates do not exceed pre-construction rates. Measures such as non-maintained detention basins are likely to be sufficient for tree-clearing areas. The need to minimize the presence of standing water in the runway approach will be considered during design.

As the project proceeds, there will be additional research into stormwater management options, and coordination with NHDES and other agencies as appropriate to ensure the design meets all requirements to the extent practicable. Mitigation is anticipated to occur by implementation of stormwater control measures that will be determined and designed as the project is advanced.

The Airport property contains three ponded wetlands beyond the Runway 36 end, as well as a reported vernal pool on the hillside to the west of Runway 18-36, a potential vernal pool to the southeast (Wetland A), and an intermittent ponded area down slope of Runway 18 adjacent to I-89. The alternatives would not affect the vernal pool, potential vernal pool, or the intermittent ponded area. Several areas of wetland will be adversely affected by the alternatives as discussed in detail in Section 5.11.1. There are no streams or rivers directly affected by this project under any of the alternatives. All appropriate state and federal permits will be acquired for the work affecting surface waters as a result of this project (see Section 5.15 for a list). These permits will be adhered to and incorporated into the design and construction plans and specifications of the project.

Based on this information and the proposed avoidance, minimization, and mitigation, there are NO SIGNIFICANT IMPACTS to surface waters beyond the existing condition as a result of the Proposed Action based on the Preferred Alternative. There are NO SIGNIFICANT IMPACTS due to the No Action alternative, though it would not meet the Purpose and Need.

5.13 Summary of Impacts by Project and Affected Resource

TABLE 5.13-1 Summary of Impacts by Project and Affected Resource

ACTION	CONSTRUCT YEAR	AFFECTED RESOURCE CATEGORY	ALTERNATIVES	
			No Action	Proposed Action
Runway 7			ALT 1 Do Nothing	ALT 4B Displace Threshold (relocate/reuse lights)
	2026	[Temp Noise; Eqpt; Dust]	Existing	[Temp only]
Runway 18-36			Do Nothing	ALT 2 - Extend 200 Feet
	2024	Natural Resources*	Existing	New base materials
Taxiway A South Extension			Do Nothing	ALT 2A Extend w TW A3
Phase 1	2023	Natural Resources*	Existing	New base materials
		Wetlands/Stormwater	Existing	Stormwater ditches/swales filled/replicated (offset)
Phase 2	2024	Wetlands/Stormwater	Existing	Stormwater ditches/swales filled/replicated (offset)
		RTE Plants	Existing	Greater Fringed Gentian; Northern Tubercled Orchid
TW A3	2026	Natural Resources*	Existing	New base materials (within previously disturbed areas)
Taxiway A1 Direct Taxi Route			Do Nothing	ALT 2 - Relocate
	2025	Haz/Solid Waste	Existing	Removal of Taxiway materials
		Natural Resources*	Existing	New base materials
Taxiway A2 Direct Taxi Route			Do Nothing	ALT 2 - Relocate
	2023	Haz/Solid Waste	Existing	Removal of Taxiway materials
		Natural Resources*	Existing	New base materials
		Wetlands/Stormwater	Existing	Stormwater ditches
Taxiway B1-B2 Direct Taxi Route ("Hot Spot 2") [TW A North Extension]			Do Nothing	ALT 3 - Replace
	2025	Haz/Solid Waste	Existing	Removal of Taxiway materials
		Natural Resources*	Existing	New base materials
Taxiway B on Runway 25 ("Hot Spot 1")			Do Nothing	
	N/A	N/A	Existing	
ILS Localizer ("Hot Spot 3")			Do Nothing	ALT 2 - Relocate
	2023	Haz/Solid Waste	Existing	Remove/relocate base materials
		Natural Resources*	Existing	New base materials
		Wetlands/Stormwater	Existing	Wetland F (swale) filled/replicated (offset); Wetland D access/shed fill
PAPI			Do Nothing	ALT 2 - Relocate
	2024	[within Runway 36 Alt 2]	Existing	[within Runway 36 Alt 2]
	2026	[within Runway 7 Alt 4B]	Existing	[within Runway 7 Alt 4B]

ACTION	CONSTRUCT YEAR	AFFECTED RESOURCE CATEGORY	ALTERNATIVES	
			No Action	Proposed Action
Runway 36 Obstacle Clearance			Do Nothing	ALT 2 - Clear Obstacles / Tree Removal
	2024	Wetlands/Stormwater	Existing	No impact if roots remain (no stumping/grinding per permit)
		RTE Wildlife (NLEB)	Existing	No impact during non-TOY period

*NOTE: "Natural Resources" in this NEPA-defined context refers to materials/aggregate to provide base fill for the runway and taxiway.

5.14 Temporary Construction Impacts

In accordance with Section 5.2.2 above and the FAA NEPA guidance in the 1050.1F Desk Reference (February 2020), short-term, temporary impacts are separated out from long-term, permanent impacts (prior to mitigation). Construction activities during the construction phase of this RSA project are anticipated to have localized effects on the built and natural environment in the immediate areas of construction as well as short duration impacts to the Airport’s operations. Effects resulting from construction activity are anticipated in the following areas, which are described below. Note that Roadway Traffic and the Local Transportation System are considered here, along with short-term, temporary Air Traffic and Airport Operations effects. These are not contained within the 14 NEPA categories originally listed, but are given consideration as related to BMPs for potentially affected resources (e.g., noise, air quality, and water resources) to emphasize the need to implement impact avoidance measures.

- Roadway Traffic/Local Transportation System
- Noise
- Air Quality
- Surface Water
- Wetlands
- Vegetation
- Wildlife
- Hazardous Materials
- Air Traffic / Airport Operations

5.14.1 Roadway Traffic/Local Transportation System

The Proposed Action would not affect the volumes of air traffic or vehicular traffic to and from the Airport over the long term. However, during the construction period, there could be a temporary increase in heavy truck traffic on local roads. Other past, present, and reasonably foreseeable future actions that could affect roadway system wear and life expectancy include the Lebanon Business Park and commercial development along Route 12A, the completed Phase I of the City’s Lebanon Business Park, and anticipated development at Phase II. These developments are part of the City’s planned growth and development, and presumably the City has taken the roadway system into account as part of the planned developments. The Route 12A and I-89 corridors were reconstructed circa 2012 to allow for better traffic flow through the area and are currently undergoing improvements. This roadway project includes improved entrances and egress for I-89 at the Exit 20 Interchange, local shopping centers and the Airport Road intersection with Route 12A. These improvements are primarily designed to reduce problems encountered during high traffic volume periods and improved conditions for the only access to the Airport and adjacent businesses. The current construction projects are only temporarily delaying traffic through the corridor.

Providing access to the site, material storage sites (if off-site), construction staging areas as well as truck traffic for the transportation of the excavated material will impact the transportation network and surrounding areas. Truck and construction traffic will be commensurate with typical large construction projects. The anticipated volume of truck traffic per day does not trigger a formal traffic or impact study; however, it can be anticipated that truck traffic will reduce the life expectancy of the existing pavement of those roads selected for the off-site transportation route. This could accelerate wear and shorten the life expectancy of the local road system. This roadway was designed to accommodate heavy truck traffic associated with the existing concrete ready-mix plant, asphalt pavement plant, and landfill operations in the Route 12A corridor.

Access to the site and transportation of the material must be carefully planned and coordinated to preserve the movement of traffic and the quality of pavement throughout the immediate area. Construction traffic volumes and traffic patterns will be coordinated with City officials prior to construction and when the end-user of the excavated material is identified since this will dictate the route for the truck traffic. Impacts are anticipated to be short-term in duration; therefore, mitigation is not proposed. Any damage to area roadways caused by specifically due to construction of the proposed project will be repaired as part of the proposed project.

5.14.2 Noise

Temporary noise effects will result from construction activities and include noise generated from chainsaws, heavy equipment, truck traffic, blasting of bedrock, and other construction activity. These construction activities will be carried out during normal daylight hours but are anticipated to occur over a duration of 3 to 4 years (2023-2026). The nearest residential noise receptor to the Airport is located approximately 1,065 feet to the south of the Runway 25 end. While construction activities may be audible from this or other nearby residences and businesses in closer proximity of the nearby Lebanon Business Park, the effects are considered to be temporary and depend upon the nature of the operation. Construction noise is also intermittent and depends on the location and function of the equipment. Impacts are anticipated to be short-term in duration. Best management practices (BMPs) will be implemented to reduce noise, such as:

- Mufflers on construction equipment leaving airport property and passing through sensitive areas
- Measures to limit noise from machinery or trucks as they traverse streets in noise sensitive areas (schools, churches, wildlife/conservation areas)

Additional mitigation is not proposed for temporary noise impacts.

5.14.3 Air Quality

Air quality impacts from the runway safety area improvements are primarily temporary in nature and limited to the Airport property due to construction activity. The Airport does not have any activities requiring source-specific EPA approval (<https://www.epa.gov/sips-nh/epa-approved-new-hampshire-source-specific-requirements>; acc 9/20/21).

Construction activity may have some temporary, short-term adverse effect on ambient air quality, primarily in the area immediately adjacent to the area of disturbance. Construction activity would result in the short-term emission of air pollutants originating from fugitive dust and as the by-product of construction equipment fuel combustion. The emission of such pollutants would be reduced by the use of properly

maintained and operated construction equipment and by the use of tarp covers on trucks transporting refuse and construction materials to and from the site. Impacts are anticipated to be short-term in nature. Therefore, mitigation is not proposed.

5.14.4 Surface Water

Soils will be disturbed by construction activities during excavation and grading. The exposure of the soils to erosion processes during rain events has the potential to affect water quality in receiving waters. Water quality may be adversely affected by increased concentrations of suspended solids and the introduction of contaminants that may be adsorbed onto sediment particles or dissolved in runoff waters. In addition, pollutants associated with accidental spills related to construction activities can be transported to receiving waters.

Surface water impacts from construction activities will be minimized by the use of soil erosion and sediment controls. These BMPs will follow current state and federal guidelines and will be detailed in the SWPPP prepared to comply with the NPDES Construction General Permit (CGP). Proper maintenance and inspection will be followed to minimize the discharge of pollutants in receiving waters. Impacts to surface waters are not anticipated. Therefore, mitigation is not proposed.

5.14.5 Wetlands

Construction activities in and adjacent to wetlands have the potential to cause temporary direct and indirect impacts, such as the disturbance and removal of vegetation by vehicles and equipment, the exposure of soils causing soil erosion and sedimentation within wetlands, and the compaction of soils from heavy equipment. These particular impacts would be limited to the construction phase of the project and would also be minimized through the use of appropriate construction practices, such as soil erosion and sediment controls and snow-fence barriers to limit vehicle access and equipment disturbance. Additional temporary wetland impacts may occur based upon the selected location of a haul road on Airport property for the purpose of truck ingress and egress.

Any specific conditions attached to wetland permits from the USACE and the NHDES will also be followed during construction to further minimize potential wetland impacts. If additional temporary wetland impacts are determined to be necessary as part of construction, these impacts will be coordinated with the regulatory agencies (with appropriate permitting) ahead of time. Impacts to vegetated areas will be minimized by limiting clearing and grubbing activities to only those areas necessary for project construction. Areas surrounding construction activities will be restored to original contours, where practicable, and all construction debris will be removed.

Invasive species were found in several places around the airfield. For example, reed canary grass was abundant south of the Runway 36 RSA. Precautions will be implemented by the use of specific BMPs during construction to prevent the introduction or spread of such species. These BMPs are intended to curtail the spread of invasive insects, plants, and pathogens that may negatively impact the agricultural, natural, and human ecosystems. This includes, but is not limited to, such practices as the use of native seed mixes during restoration; not planting species listed in the NHDOT *Best Management Practices for Roadside Invasive Plants*; and the implementation of other listed BMPs in this NHDOT manual. Impacts to vegetation during construction are anticipated to be temporary in nature. Therefore, mitigation is not proposed.

5.14.6 Wildlife and Plants

In locations where the construction activity is located within existing wildlife habitat, there will be a decrease in the quality of habitat immediately adjacent to the project due to increased noise levels, vehicular movement, increased lighting and other human activities during the construction phase. However, after construction has been completed, it is expected that species displaced by construction will return and utilize the remaining habitat.

Where rare species occur in the vicinity of proposed tree clearing and wetland and rare plant habitats, field visits in advance of construction will occur during the growing season to demarcate areas where construction equipment must avoid. A second field visit may occur during specific rare plant blooming periods to ensure the demarcated areas are accurate and may be adjusted to encompass populations or specimens. Additionally, seed collection would occur during these blooming periods to facilitate later reseeding, as approved by the state and federal agencies.

5.14.7 Hazardous Materials

Involvement with hazardous material is not anticipated to occur; however, if construction activities encounter contaminated soil, surface water or groundwater all state and federal regulations will be followed and worker protection measures will be implemented.

5.14.8 Air Traffic / Airport Operations

There will be short-term interruptions to the Airport's operations and the construction work will require Notice to Airmen (NOTAM). Regular communication between the operations staff, contractor and ATC will be required. The blasting schedule will be coordinated as well. Runway 18-36 is proposed to be shut down during the construction time of Taxiway A and the localizer relocation due to proximities of the safety areas for the runway. If an emergency landing was necessary during this timeframe, the Airport would communicate with the construction contractors as necessary. There should be no impact to Runway 07-25 during the drilling and excavation work other than possible redirection of air traffic to that runway.

5.15 Cumulative Effects

The CEQ regulations at 40 CFR § 1508.1(g) (revised April 20, 2022) define “cumulative effects” as “effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.” Therefore, this evaluation considered those effects that are “reasonably foreseeable” and within the geographic area of concern for this analysis, which is generally the Airport and its immediate vicinity, *i.e.*, the land adjacent to the Airport. For some resources, such as water quality or traffic, impacts may extend further and the geographic area of concern is larger.

This document takes into account recent Airport projects, those included in the *Comprehensive Airport Master Plan Final Report* (November 2017), and other past, present, and reasonably foreseeable future projects located within the project vicinity. Past projects include Phase I of the City’s Lebanon Business Park, the Airport’s South Apron and T-hangar project, development on nearby Route 12A, and miscellaneous other development on and around the Airport. Reasonably foreseeable projects include the City’s Phase II of the Lebanon Business Park and miscellaneous projects anticipated to occur on and around the Airport property within the next five years.

Table 5.15-1 presents the cumulative project impact areas by year (also reference Table 5.13-1 for impacts by project area). Table 5.15-2 presents the cumulative project impacts by year and resource category. Other reasonably foreseeable Airport projects include a single avigation easement and tree clearing at the south end of Runway 18-36 as required to meet FAA Part 77 obstruction removal criteria. The projects contemplated by this EA are considered to be reasonably foreseeable projects which are anticipated to occur at the Airport within the next five years. The projects proposed within this EA were all previously permitted at a much larger scale and level of impact to a total of 12.71 acres of wetlands. The current proposal has significantly reduced these impacts due to a shorter Runway 18-36 extension of 1000’ down to 200’, along with the parallel Taxiway A extension, which is likewise shorter. Furthermore, Taxiway A is now designed at 35 feet wide rather than the formerly proposed 50 feet wide.

In terms of other potential future development, the 2012 *City of Lebanon Master Plan* recommends that growth be concentrated in the area around the Airport along Route 12A; the Miracle Mile, across the river and I-89; and along Mechanic Street, a little further north from the Airport. These areas are targeted because they are already developed for non-residential uses, they have the necessary transportation facilities in place, and the land uses are considered compatible with the airport.

TABLE 5.15-1 Total Impact Area Calculations by Year and Project Location

CONSTRUCT YEAR	PREFERRED ALTERNATIVE		
	ACTION	PROPOSED ACTION IMPACT AREA – SQUARE FEET	PROPOSED ACTION IMPACT AREA – ACRES
N/A	Taxiway B on Runway 7-25 [east] (“Hot Spot 1”)	0	0
2023**	ILS Localizer (“Hot Spot 3”) ALT 2A – Relocate	117,200	2.69
	Taxiway A South Extension Phase 1 ALT 2A – Extend (w/TW A3)	548,500	12.59
	Taxiway A2 Direct Taxi Route ALT 2 – Relocate		
2024	Runway 18-36 ALT 2 – Extend 200 Feet	207,000	4.75
	PAPI [RW 18-36] ALT 2 – Relocate		
	Taxiway A South Extension Phase 2 ALT 2A – Extend (w/TW A3)	319,400	7.33
2025	Taxiway A1 Direct Taxiway Route ALT 2 – Relocate	111,300	2.56
	Taxiway B1-B2 Direct Taxi Route (“Hot Spot 2”) [TW A North Extension]	164,600	3.78
	ALT 3 - Replace		
2026	PAPI [RW 7-25 west] ALT 2 - Relocate	0 net	0 net
	Runway 7-25 [west] ALT 4B – Displace Threshold	0 permanent Temporary Only [noise; fugitive dust] Pavement Remarking Only	0 permanent Temporary Only [noise; fugitive dust] Pavement Remarking Only
	Taxiway A South Extension Phase 3 ALT 2A – Extend – TW A3 Construction	37,300 [portions within previously disturbed area in 2024]	0.86 [portions within previously disturbed area in 2024]
TOTAL SF IMPACTS OVER 5 YEARS		1,505,300	34.56
2024**	Runway 18-36 [south end] Obstacle Clearance ALT 2 – Clear Obstacles / Trees (no stumping/grinding in wetlands)	932,184 [2,000 within wetland areas]	21.4 [0.05 within wetland areas]

NOTES: *Based on Figure 2

**2024 Obstacle/Tree Removal separated from permanent terrain alteration areas; see Figure 3 based on “Proposed Runway 18-36 Vegetation Removal Plan” by Stantec, 12/22/2020

TABLE 5.15-2. Summary of Cumulative Effects on Resource Areas from Proposed Action by Year

			ALTERNATIVES
CONSTRUCT YEAR	ACTION	AFFECTED IMPACT CATEGORIES	Proposed Action
Taxiway B on Runway 25 ("Hot Spot 1")			
N/A		N/A	
2023	ILS Localizer ("Hot Spot 3")	Haz/Solid Waste	ALT 2 - Relocate Remove/relocate base materials
		Natural Resources*	New base materials
		Wetlands/Stormwater	Wetland F (swale) filled/replicated (offset); Wetland D access/shed fill
		Taxiway A South Extension	ALT 2A Extend w TW A3
	Phase 1	Natural Resources*	New base materials
		Wetlands/Stormwater	Stormwater ditches/swales filled/replicated (offset)
		RTE Plants	Fringed gentian
	Taxiway A2 Direct Taxi Route		ALT 2 - Relocate
		Haz/Solid Waste	Removal of Taxiway materials
		Natural Resources*	New base materials
Wetlands/Stormwater	Stormwater ditches/swales		
2024	Runway 36 Obstacle Clearance	Wetlands/Stormwater	ALT 2 - Clear Obstacles / Tree Removal No impact if roots remain (per permit)
		RTE Wildlife (NLEB)	No impact during non-TOY period
		RTE Plants	Avoidance
		Runway 18-36	ALT 2 - Extend 200 Feet
		Natural Resources*	New base materials
	PAPI – Runway 36		ALT 2 - Relocate
		[within Runway 36 Alt 2]	[within Runway 36 Alt 2]
	Taxiway A South Extension		ALT 2A Extend w TW A3
		Phase 2	Wetlands/Stormwater
	RTE Plants	Greater Fringed Gentian; Northern Tubercled Orchid	
2025	Taxiway A1 Direct Taxi Route		ALT 2 - Relocate
		Haz/Solid Waste	Removal of Taxiway materials
		Natural Resources*	New base materials
2025	Taxiway B1-B2 Direct Taxi Route ("Hot Spot 2") [TW A North Extend]		ALT 3 - Replace
		Haz/Solid Waste	Removal of Taxiway materials
		Natural Resources*	New base materials

			ALTERNATIVES
CONSTRUCT YEAR	ACTION	AFFECTED IMPACT CATEGORIES	Proposed Action
2026	PAPI – Runway 7		ALT 2 - Relocate
		[within Runway 7 Alt 4B]	[within Runway 7 Alt 4B]
	Runway 7		ALT 4B Displace Threshold (relocate/reuse lights)
		[Temp Noise; Eqpt; Dust]	[Temp only]
	Taxiway A South Extension		ALT 2A Extend w TW A3
	TW A3	Natural Resources*	New base materials (within previously disturbed areas)

*NOTE: "Natural Resources" in this NEPA-defined context refers to materials/aggregate to provide base fill for the runway and taxiway.

The resources affected by this project include local noise, wetlands, water quality, wildlife habitat, and rare plants. The project will have minimal effects on other resources, so the project’s contribution to overall effects on those other resources will be negligible, and they are not addressed in this analysis. Potential effects on each of these resource is briefly summarized below.

Noise: The project will not result in any long-term noise impacts and therefore will not significantly contribute to long-term negative effects on the noise environment. The project will affect the noise environment during construction because of truck traffic, blasting, and other temporary construction activities. Any blasting that may occur would be minimal and less impactful than the nearby Pike Industries quarry operations, which are ongoing to the west of the Airport. These effects will be short term (over approximately a three year duration). If other construction projects (such as Phase II of the Lebanon Business Park) are implemented within the same time period, they are expected to be far enough from other residences that the effects will not be significant.

Wetlands: The Proposed Action would result in the net-negative permanent loss of less than an estimated 3 acres of wetlands, primarily Wetland D where the access driveway, shed, and ILS are proposed to be installed. Existing stormwater ditches are proposed to be replaced by similarly sized and located above-ground ditches offset from the new Taxiway A extension and relocated stub taxiways. Past projects affecting wetlands in the immediate Airport vicinity include the Airport’s South Apron construction (about 5.25 acres of impact) and Phase I of the City’s Lebanon Business Park (acreage unknown). The South Apron project resulted in mitigation which compensated for project impacts, and the Proposed Action will also include mitigation sufficient to compensate for impacts. For these reasons, the wetland impacts are considered to be insignificant based on FAA criteria.

Water quality: The Proposed Action will increase the amount of impervious surfaces and will result in application of more deicing materials. Permanent BMPs will be implemented to minimize effects on receiving waters. Temporary BMPs will be implemented during construction to minimize input of sediments or other pollutants in receiving waters. It is assumed other past or future actions have or will comply with applicable laws and regulations and implement appropriate temporary and permanent BMPs, and that these measures will prevent significant impacts to surface waters.

Wildlife habitat and plants: The Proposed Action will change the structure of the wildlife habitat south of Runway 36 and may directly impact rare plant species. Mitigation measures (such as reseeded) will prevent long-term adverse effects to rare plant species, so the project’s impacts to rare plants is assumed to be negligible. No known rare wildlife species have been affected in the immediate Airport vicinity, and the principal type of habitat affected (forest land) is abundant in the general area. The project will increase the amount of early successional habitat (meadows and shrublands) in the area. Therefore the effects on wildlife habitat or populations will not be significant.

5.16 Summary of Mitigation

The CEQ Regulations at 40 CFR § 1508.20 define mitigation as including:

- (a) Avoiding the impact altogether by not taking a certain action or parts of an action;
- (b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation;
- (c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
- (d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action;
- (e) Compensating for the impact by replacing or providing substitute resources or environments.

Several of the components have been minimized over the previously proposed and permitted project elements. Specifically, the Runway 18-36 extension at the south end has been reduced from 1000 feet down to 200 feet due to changes in the design aircraft and status from ARC C-II to B-II, which further reduces the size and impacts from the RSA. The hill was previously proposed to be lowered to accommodate the longer extension, but that former hill lowering proposal has been eliminated. Also, the Taxiway A extension has been reduced from 50 feet wide to 35 feet wide and the length reduced from 2700 feet to match the length of the Runway 18-36 extension.

Table 5.16-1 below summarizes the mitigation for the environmental categories for each Proposed Action.

TABLE 5.16-1 Summary of Mitigation for Impacts by Year and Project

YR	ACTION	IMPACT CATEGORY	Proposed Action	Proposed Mitigation Measures
	ILS Localizer ("Hot Spot 3")		ALT 2 - Relocate	
2023		Haz/Solid Waste	Remove/relocate base materials	No anticipated impacts; Erosion controls and regrade; no permanent mitigation proposed
		Natural Resources*	New base materials	Reuse materials from existing ILS, if appropriate; additional materials sourced from existing regional commercial operations
		Wetlands/ Stormwater	Wetland F (swale) filled/replicated (offset); Wetland D access/shed fill	Replace ditches in-kind (volume) with new stormwater drainage ditches, swales, and/or detention ponds (1.5:1); Existing 28.56-ac Conservation Easement (26.59-acre upland, 1.97-acre wetland); Additional impacts - In-Lieu fees to state for offsite wetlands project

YR	ACTION	IMPACT CATEGORY	Proposed Action	Proposed Mitigation Measures
Taxiway A South Extension		ALT 2A – Extend w TW A3		
2023	Phase 1	Wetlands/ Stormwater	Stormwater ditches/swales filled/replicated (offset)	Replace ditches in-kind (volume) with new stormwater drainage ditches, swales, and/or detention ponds (1.5:1); Existing 28.56-acre Conservation Easement previously recorded to mitigate to extent feasible
		Natural Resources*	New base materials	Reuse materials from existing on-Airport projects, if appropriate; additional materials sourced from existing regional commercial operations
Taxiway A2 Direct Taxi Rte		ALT 2 - Relocate		
2023		Haz/Solid Waste	Removal of Taxiway materials	No anticipated impacts; Erosion controls and regrade; no permanent mitigation proposed
		Natural Resources*	New base materials	Reuse materials from existing A2, as appropriate
		Wetlands/ Stormwater	Stormwater ditches	Replication of stormwater drainage conveyance ditches (1.5:1 ratio)
Runway 36 Obstacle Clearance		ALT 2 - Clear Obstacles / Tree Removal		
2024		Wetlands/ Stormwater	No impact if roots remain (per permit)	Avoidance (no stumping or grinding); mark wetlands in vicinity of work; No additional mitigation proposed
		RTE Wildlife (NLEB)	No impact during non-TOY period	Avoidance; Clearing to occur outside of TOY restrictions
		RTE Plants	Ginseng, Barren Strawberry	Avoidance; advance flagging in field before clearing operations
Runway 18-36		ALT 2 - Extend 200 Feet		
2024		Natural Resources*	New base materials	Reuse materials from existing on-Airport projects, if appropriate; additional materials sourced from existing regional commercial operations
PAPI		ALT 2 - Relocate		
2024		[in RW 36 Alt 2]	[in RW 36 Alt 2]	None proposed
Taxiway A South Extension		ALT 2A – Extend w TW A3		
2024	Phase 2	Wetlands/ Stormwater	Stormwater ditches/swales filled/replicated (offset)	Replace ditches in-kind (volume) with new stormwater drainage ditches, swales, and/or detention basins (1.5:1); Existing 28.56-acre Conservation Easement previously recorded to mitigate to extent feasible; Additional impacts - In-Lieu fees for offsite wetlands project(s)

YR	ACTION	IMPACT CATEGORY	Proposed Action	Proposed Mitigation Measures
		RTE Plants	Greater Fringed Gentian; Northern Tubercled Orchid	Collect mature seedheads during fall flowering and save to replant in appropriate existing or replacement wetlands
		Natural Resources*	New base materials	Reuse materials from existing on-Airport projects, if appropriate; additional materials sourced from existing regional commercial operations
	Taxiway A1 Direct Taxi Rte		ALT 2 - Relocate	
2025		Haz/Solid Waste	Removal of Taxiway materials	Erosion controls and regrade; no permanent mitigation proposed
		Natural Resources*	New base materials	Reuse materials from existing A1, if appropriate
		Wetlands/ Stormwater	Stormwater ditches/swales filled/replicated (offset)	Replication of stormwater drainage conveyance ditches (1.5:1 ratio)
	Taxiway B1-B2 Direct Taxi Route ("Hot Spot 2")		ALT 3 – Replace [TW A North Extension]	
2025		Haz/Solid Waste	Removal of B1-B2 Taxiway materials	Erosion controls and regrade; no permanent mitigation proposed
		Natural Resources*	New base materials	Reuse B1-B2 materials for portion of TW A Extension, if appropriate; additional materials sourced from existing regional commercial operations
	PAPI		ALT 2 - Relocate	
2026		[within Runway 7 Alt 4B]	[within Runway 7 Alt 4B]	None proposed
	Runway 7		ALT 4B - Displace Threshold (relocate/reuse lights)	
2026		[Temp Noise; Eqpt; Dust]	[Temp only]	Temp Construction Mitigation Measures; No Permanent Mitigation Proposed
	Taxiway A South Extension		ALT 2A - Extend w TW A3	
2026	TW A3	Natural Resources*	New base materials	Reuse materials from existing on-Airport projects, if appropriate; additional materials sourced from existing regional commercial operations

*NOTE: "Natural Resources" in this NEPA-defined context refers to materials/aggregate to provide base fill for the runway and taxiway.

The goals of the mitigation measures are to reduce or eliminate potential environmental impacts that could occur as a result of construction or operation of the Proposed Action. Table 5.16-2 provides a summary of the proposed mitigation measures for the Proposed Action. In addition, Best Management Practices (BMPs) are briefly noted under Temporary Project Impacts to address measures anticipated to offset construction phase impacts.

TABLE 5.16-2 Summary of Mitigation by Affected Resources*

Impact Category	Impact Requiring Mitigation	BMPs & Mitigation Options
Permanent Project Impacts		
Haz Waste, Solid Waste, Pollution Prevention	Removal of potentially contaminated material as part of Taxiway relocations	No impacts anticipated; Best management practices for erosion and sedimentation control
Natural Resources & Energy	Acquiring suitable new runway/ taxiway base materials	Reuse existing base materials, as appropriate and permitted (if needed), to the extent feasible to reduce need for new offsite materials and to reduce cost
Rare, Threatened, and Endangered Plants	Insignificant impacts west of the southern end of RW 36 are anticipated to individual or small isolated patches of the state-threatened Greater fringed gentian and northern tubercled orchid that have spread from historical locations. The impacts are due to construction and regrading actions for Taxiway A extension, ILS localizer access and shed. Potential impacts to the state-threatened barren strawberry are due to vegetation removal activities outside of the fenced area to the south of Runway 36.	A follow-up field survey will be conducted just prior to construction to confirm presence within the construction or cutting area(s). Non-construction areas will be demarcated in the field to prevent unauthorized impacts. Collection of seeds from two impacted designated rare plant species will occur prior to construction. Replanting seeds on-site within suitable habitat area, not proposed for future disturbance, will mitigate impacts. Mitigation regarding the barren strawberry and other plants identified during field surveys will be implemented as determined in consultation with the NH Natural Heritage Bureau.
Rare, Threatened, and Endangered Wildlife	Federally listed Northern long-eared bat State listed [birds]	Obstacle/vegetation removal outside of Time-of-Year restriction periods [address measures to avoid, minimize, and mitigate for bird impacts, including nest protection, grass mowing, shrub trimming/removal, etc]
Socioeconomics	Potential positive impact to employment	No significant negative impacts anticipated
Soils, Geology, Topography	[filling and regrading; utility installation]	Best management practices will be implemented in conjunction with the requisite AOT permit(s).

Impact Category	Impact Requiring Mitigation	BMPs & Mitigation Options
Vegetation	Removal of ~21.4 acres in designated clearance areas within the approach surface	Trunks and root masses will be left in place within wetlands areas to reduce disturbance and impacts. Best management practices will be implemented in accordance with all permits and construction plans, to include wetland silt prevention barriers and other visual demarcations identifying the work and vehicle access areas.
Surface Water	stormwater drainage; volume/flow patterns; culvert configuration/ installation and ditch/basin design	Compensatory stormwater management and runoff BMPs
Wetlands	Filling in Wetlands D for shed and vehicle access to ILS relocation pad and grading; fill in Wetlands F, G, H, and I to extend Taxiway A and relocate TW A1 and A2 with grading; obstruction clearance/vegetation removal in Wetlands D and E.	Stormwater design to include replication of constructed stormwater drainage ditches and swales in-kind but offset from new Taxiway A extension to accommodate volume and flow requirements without increasing safety hazard due to naturalizing wetland creating bird hazard areas. An existing 28.56-acre conservation easement previously recorded to mitigate for 12.71 acres of wetland impact under previous scenarios for the Proposed Action will be utilized to mitigate for existing Alternatives, as acceptable to the USACE, NHDES, and EPA. Suitable native plantings and grading design in Wetland D may replace/convert some of the habitat area lost for the shed pad at the south end of RW 36 (near southern fence). Trees will only be cut in winter; clearing will only result in the main trunk being removed from the wetlands. Roots and stumps will be left in place.
Temporary Project Impacts		
Air Quality	Fugitive Dust Truck Traffic & Equipment	Specific staging areas will be utilized and dust control measures implemented, to include watering high dust areas, covering stockpile areas and erosive material mounds as appropriate given size and cover options, etc.
Noise	General construction noise & potential drilling/ blasting; Noise due to trucks and equipment	Specific times of day and designated haul routes adjacent to the site will be imposed to reduce impacts to neighboring businesses and residences in the vicinity.
Traffic	Truck Traffic & Equipment	A truck/construction equipment plan will be implemented to alleviate impacts during construction phases.

Impact Category	Impact Requiring Mitigation	BMPs & Mitigation Options
Soil Erosion	Potential erosion in the vicinity of new stormwater ditch installation, taxiway removal and construction, and grading areas	BMPs to include wetlands silt prevention fencing, water quality filter strips, and other methods as designed and permitted according to plans to prevent erosion into wetlands and surface waters
Surface Water Quality	Runoff from taxiway removal and construction areas, runway extension, and ILS localizer, access, and shed construction	BMPs to include wetlands silt prevention fencing, water quality filter strips, and other methods will be installed to manage water quality and site runoff
Impacts to Air Traffic due to temporary runway and taxiway configuration changes	Temporary shortened runway(s), temporary runway closures, and/or temporary taxiway closures	Phasing schedule will be created in conjunction with Airport Manager and Air Traffic Control. Suitable NOTAMS and other notifications to be updated by the Contractor(s). Pavement re-marking will be conducted for each phase prior to construction implementation.
*NOTE: After eliminating Resources Not Affected, each of the two primary categories “Permanent Impacts” and “Temporary Impacts” then follows the order in FAA Order 1050.1F, Exhibit 4-1		

5.17 Summary of Required Actions and Permits

A summary of the federal, state and local actions and permits is listed below.

Federal Actions and Permits

- Federal Aviation Administration Finding of No Significant Impact (FONSI) based upon this Environmental Assessment prepared pursuant to NEPA
- US Army Corps of Engineers Section 404 Wetlands Permit
- Section 401 Water Quality Certification (state administered)
- Section 106 review pursuant to the National Historic Preservation Act (completed)
- National Pollutant Discharge Elimination System (NPDES) Construction General Permit

State Actions and Permits

- New Hampshire Wetlands Dredge and Fill Permit
- New Hampshire Site Specific/Alteration of Terrain (AOT) Permit
- New Hampshire Natural Heritage Bureau (NHNHB) Coordination

Local Actions and Permits

- City of Lebanon Conservation Commission Review

6 Consultation and Coordination

This section summarizes consultations that occurred with the resource agencies during the development of this EA, as well as the public involvement and outreach efforts. Meeting minutes from NHDOT Natural Resource Agency Coordination (NRAC) meetings are included in Appendix I and Public Meeting Minutes are in Appendix J. (NOTE: Minutes for the Lebanon Municipal Airport project are excerpted out of a larger set of meeting minutes discussing projects by other project proponents at other locations in the State of NH.) Appendix K includes the compiled public comments on the Draft EA and responses.

6.1 Agency Coordination

Agency	Date	Event	Location	Description/ Comments
NHDOT (Lead)	December 15, 2021	Natural Resource Agencies Coordination (NRAC) Meeting 1	Remote Conference Call	Presentation to collective agency group – NHDES, USACE, TNC, etc – regarding introductory project overview of 5-year phasing for RSA improvements
NHDOT (Lead)	April 20, 2022	Natural Resource Agencies Coordination (NRAC) Meeting 2	Remote Conference Call	Second presentation to collective agency group with updated description and discussion of proposed mitigation for potential wetlands impacts
EPA	May 6, 2022	Mitigation Materials Submission	Email Communication	Materials package sent to USACE, NHDES, and EPA for review and approval of 28.56-acre conservation easement mitigation
NHDES	May 6, 2022	Mitigation Materials Submission	Email Communication	Materials package sent to USACE, NHDES, and EPA for review and approval of 28.56-acre conservation easement mitigation
NH DHR	November 8, 2021	Response from agency	Email Communication	No Historic Properties Affected - memo
NH Fish & Game	December 15, 2021; April 20, 2022; multiple other	NRAC Meeting 1; NRAC Meeting 2; Phone calls; Emails	Remote Multi-Agency Conference Call; Phone Calls and Emails	Outreach to K. Tuttle to confirm acceptable level of review for rare species based on NRAC meetings, NHNHB records search, and interactions with P. Hunt (Audubon staff and NHF&G contracted grassland bird specialist providing Airport observation data)
NH NHB	July 22, 2021	Response and Report from agency	Email Communication	Report noting presence of known/ reported rare species on Airport (Appendix D)
USACE	May 6, 2022	Mitigation Materials Submission	Email Communication	Materials package sent to USACE, NHDES, and EPA for review and approval of 28.56-acre conservation easement mitigation
USFWS	May 3, 2022	Agency consultation	IPaC Online system	Species List and Verification Letter (Appendix E)

6.2 Public Outreach

Date	Event	Location	Description/ Comments
[TBD]	Draft EA Public Released and Posted	Online – City/ Airport Website; Local Library	Following FAA review and approval, the notice and Draft EA was released for public review and 30-day comment period
[TBD]	Public Information Session	Remote Zoom meeting	Public Information Session to present and allow for public comments on the Draft EA

7 List of Preparers

NAME/TITLE	YRS EXP.	CERTIFICATION/ EDUCATION	ROLE/AREA OF RESPONSIBILITY
FEDERAL AVIATION ADMINISTRATION – FEDERAL PROJECT SPONSOR			
Richard Doucette Environmental Program Manager (Rtd)	35	MS, Natural Resource Management and Administration Antioch University New England	FAA Project Manager, General Consultation,
Cheryl Quaine Environmental Protection Specialist	26	MS, Environmental Science Christopher Newport University	FAA Project Manager, General Consultation, Document Review
John Carli Community Planner	11	MS, Architecture Northeastern University	FAA Project Manager, General Consultation Document Review
NH DEPARTMENT OF TRANSPORTATION – STATE SPONSOR			
Carol L. Niewola Sr. Aviation Planner	36	BS, Civil Engineering Michigan State University	NHDOT Project Manager, General Consultation, Document Review
Richard Dymant Aviation Planner	42	BS, Aviation Management Daniel Webster College	General Consultation, Document Review
CITY OF LEBANON – PROJECT PROPONENT			
Carl Gross Airport Manager	36	BS, Aviation Management Embry-Riddle Aeronautical Univ. MA Public Administration – Texas A&M Corpus Christi	Proponent Agent, EA Document Review, Public Outreach
DUBOIS & KING – NEPA ENVIRONMENTAL ASSESSMENT LEAD			
Brenda Bhatti Sr. Environmental Planner/ Wildlife Biologist	25	MS, Environmental Studies Antioch University New England	EA Task Manager, Lead EA Author, Agency Collaboration, Public Outreach, Field Studies
Chris Sargent, Planning Program Manager	20	MS, Resource Management & Administration Antioch University New England	EA Document Peer Review
Guy Rouelle, Director Aviation Division	36	MAS Airport Operations Embry-Riddle Aeronautical Univ.	EA Document Peer Review
Aimee Rutledge Sr. Environmental Technical Lead	22	BS, Environmental Management University of Rhode Island	GIS Mapping and Figure Production and Analysis, Document Peer Review
Grace Glynn Field Naturalist/Wetland Scientist	6	MS, Plant Biology University of Vermont	Biological and Wetland Field Studies and Reports
STANTEC – AIRSIDE FACILITY DESIGN LEAD; AIRPORT LAYOUT PLAN UPDATE (2021)			
Ervin Deck, Principal, Sr. Aviation Planner	54		Lead Planner, ALP Update (2021), Alternatives Analysis
David Rich, PE, Principal, Sr. Project Manager	20		Project Manager, ALP Update (2021), Alternatives Analysis
Leslie Merrithew, P. Eng (Canada), EIT (US) Associate, Sr. Civil Engineer	11		Design Engineer, ALP Update (2021)
Katie L. Hogue, Aviation Planner	9		ALP Update (2021)



APPENDICES

Appendix A	References
Appendix B	Section 106 Consultation – NH Division of Historical Resources Documentation
Appendix C	Wetlands and Rare Plants Report
Appendix D	NH Natural Heritage Bureau (NHNHB) Correspondence
Appendix E	USFWS Correspondence
Appendix F	NHDES Hazardous Waste Table
Appendix G	Former Noise Analyses (Maps)
Appendix H	Wetlands Mitigation Conservation Easement Materials
Appendix I	NHDOT Natural Resource Agency Coordination Meeting Minutes
Appendix J	Public Meeting Minutes
Appendix K	Comments Received on Draft EA & Responses to Comments



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APPENDIX B SECTION 106 CONSULTATION –
NH DIVISION OF HISTORICAL RESOURCES DOCUMENTATION



APPENDIX C WETLANDS AND RARE PLANTS REPORT



APPENDIX D NH NATURAL HERITAGE BUREAU (NHNHB) CORRESPONDENCE



APPENDIX E USFWS CORRESPONDENCE



APPENDIX F. Airport hazardous waste records in NH DES OneStop (accessed October 11, 2021).

Entity	NHDES ID #	Year	Action
Lebanon Municipal Airport/ Lebanon Airport Development Corporation 4 Airpark Drive [also TSA at Lebanon Municipal Airport]	12699 16216 16217	1993-2003	NHDES files include three separate file numbers for Lebanon Airport Development Corporation. Two of these, 16216, and 16217, appear to refer to the same NHDES file, 1994-06006. This file includes documents (construction specifications) pertaining to the installation of four USTs in 1971. Two of the original USTs were replaced in 1986, with the other two replaced in 1993. During the 1993 removal, contaminated soil was encountered and subsequently removed. The NHDES issued a Letter of No Further Action on September 26, 2002. On November 21, 2003, NHDES issued a Certificate of No Further Action for groundwater concerns related to the presence of a former drywell associated with the building that had since been demolished. Groundwater wells that had been installed to monitor groundwater at this location were then decommissioned.
Master ID: 64610	Handler ID: 0045501 EPA ID: NHD51020167 6	2009-2010	Hazardous Waste Generator Current Status: Inactive
Master ID: 2831	Handler ID: 0000329 EPA ID: NHD51001412 9	1999-2021	Hazardous Waste Generator TSA at Lebanon Municipal Airport, Generator Size – SQG (CESQG), RCRA Regulated (e.g., waste lighters, waste matches, waste flammable liquids, waste paint, waste aerosols, waste corrosive liquids)
	Facility ID: 0001192 Site No.: 199810070	2017-2020	Aboveground Storage Tank Program Tank 1 – Diesel, 2000 gallons Installed 11/1/17 Annual Leak Monitoring through 4/22/20
	Facility ID: 0110445 Site No.: 199810070	1992-2021	Underground Storage Tank Program Tank 1 – Jet Fuel, 15,000 gallon capacity, installed 11/1/1984; permanently closed 1993 Tank 2 - #2 Heating Oil, 5000 gallon capacity, installed 10/12/1998; still In operation
Lebanon Airport Maintenance Facility 15 Airpark Road Master ID: 2830	Handler ID 0016941 EPA ID NHD51018232 2	2003-2015	Hazardous Waste Generator Current Status: Inactive

Entity	NHDES ID #	Year	Action
	Facility ID 0110806; Site No 199408057	1979- 2018	Underground Storage Tank Program Tank 1 - #2 Heating Oil, 10000 gallons, installed 1/1/1979; permanently closed 11/25/1998 Tank 2 – Gasoline, 500 gallons, installed 1/1/1979; permanently closed 8/11/1994 Tank 3 – Diesel fuel, 500 gallons, installed 1/1/1979; permanently closed 8/11/1994 Tank 4 – Diesel fuel, 1000 gallons, installed 1/1/1979; permanently closed 8/11/1994 Tank 5A – Diesel fuel, 1000 gallons, installed 8/8/1994; permanently closed 4/12/2018 Tank 5B – Diesel fuel, 1000 gallons, installed 8/8/1994; permanently closed 4/12/2018
6 Airport Road Master ID: 2821 Names at Location:	EPA ID: NHD51006292 0 Handler ID: 0004033	1989/ 1999	Hazardous Waste Generator 500 Gallons Recycling Exempt Federal Small Quantity Generator (SQG) less than 100 kg/mo (220 lbs) of non-acute haz waste Current Status: Inactive
Granite Air Center LLC [Fixed Base Operator, FBO]	Facility ID: 0113020 Site No: 199406006	1970- 1994	Underground Storage Tank Program Two 15,000 gallon jet-A fuel tanks removed 12/3/93
LADCO Lebanon Airport Development Co	Facility ID: 0115095 Site No: 199406006	Vario us recor ds, and report s from 1998- 2/17/ 21	Underground Storage Tank Program Tank 1 – Jet Fuel, Capacity 20,000 gallons; installed 6/30/1998 Tank 2A – Jet Fuel, Capacity 10,000 gallons; installed 6/30/1998 Tank 2B – Aviation Gas, Capacity 12,000 gallons; installed 6/30/1998 Registration Date 7/19/2012 2/17/21 letter from NHDES to Granite Air Center, 58 Airport Road, indicates “no deficiencies”
	Site No: 199406006 Project No. 0010978	1999- 2001	Underground Injection Control [groundwater monitoring wells] Discovery Date: 8/8/1999 Responsible Party: Signal Aviation Services, Inc. 58 Airport Road Closed 2001
	Site No.: 199406006 Project No: 0027768	2012	Initial Response Spill Site 2/9/2012 - Plane Crash Site in wetland ~340 feet east of Runway 36 end Contaminated soil excavated and site remediated Closed
	Site No.: 199406006	1994- 1999	Hazardous Waste Project; Lebanon Airport water supply well

Entity	NHDES ID #	Year	Action
	Project No: 0005415		LADCO Responsible Party: Signal Aviation Services Discovery Date: 12/15/1994; Closed 1999
	Site No.: 199406006 Project No: 004857	1994- 1999	Leaking Underground Storage Tank 15,000-gallon, Jet-A formerly located southeast of the airport terminal; removed on 9/2/1993 Discovery Date 11/29/1993 Contaminated soil excavated 6/29/94 Responsible Party – Signal Aviation Services 58 Airport Road; Closed
	Site No.: 199406006 Project No: 0010997	1999- 2001	On-premise use facility containing fuel oil (500 gallon heating oil tank discharge) Responsible Party: Signal Aviation Services, Inc. Discovery Date: 8/1/1999; Closed 12/6/01
	Site No.: 199406006 Project No.: 0010979	1999- 2002	Oil spills/releases Discovery Date 8/23/1999 Release of petroleum hydrocarbons and other contaminants Correspondence 1/5/2000-11/6/2002 Responsible Party: Signal Aviation Services 58 Airport Road; Closed
Precision Airlines 17 Airpark Drive	12135	1993- 2010	Precision Airlines was investigated in 1993 as potentially having a leaking UST (15,000 jet fuel tank); tank closure report submitted 9/20/1993; additional information was filed on April 7, 1999 and the case was closed on January 6, 2010.
Sharkey's Helicopters	57743	2002- 2003	Sharkey's Helicopters was investigated in 2002 for material discharged through the floor drain in the building. A Site Characterization Report was requested and provided on May 1, 2003, showing the site to be in compliance. The file was subsequently closed on June 25, 2003.
Signal Aviation	18966	2007	Signal Aviation operating out of the Airport, has two USTs containing Jet-A fuel. In November 2007, during a tank refueling, a spill occurred, and approximately 300 gallons spilled onto the grass next to the tanks. Signal Aviation hired CHES, an independent consulting firm, to respond to the spill. No additional information, other than photos of the spill, is on file.
		1994- 2002	Signal Aviation was investigated starting in 1994 related to a drywell contaminated with hazardous sludge. The contamination was removed, drywell replaced. Groundwater monitoring in the vicinity was conducted. Closed September 2002.



APPENDIX G FORMER NOISE ANALYSES (MAPS)



APPENDIX H WETLANDS MITIGATION CONSERVATION EASEMENT MATERIALS



APPENDIX I NHDOT NATURAL RESOURCE AGENCY COORDINATION MEETING MINUTES



APPENDIX J PUBLIC MEETING MINUTES

[PLACEHOLDER – PENDING AS OF 6/17/22;
TO BE ATTACHED TO FINAL ENVIRONMENTAL ASSESSMENT]



APPENDIX K COMMENTS RECEIVED ON DRAFT EA & RESPONSES TO COMMENTS

[PLACEHOLDER – PENDING AS OF 6/17/22;
TO BE ATTACHED TO FINAL ENVIRONMENTAL ASSESSMENT]