

DRAFT  
ENVIRONMENTAL ASSESSMENT  
RUNWAY 6 EXTENSION PROJECT & 5 YEAR CIP IMPROVEMENTS  
PLYMOUTH MUNICIPAL AIRPORT  
PLYMOUTH, MA

EEA # 16692





DRAFT

NEPA ENVIRONMENTAL ASSESSMENT  
&  
MASSACHUSETTS  
MEPA ENVIRONMENTAL IMPACT REPORT  
EEA File Number: 16692

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PLYMOUTH MUNICIPAL AIRPORT  
Extensions to Runway 6-24, Taxiway A, and Taxiway E  
and 5-year Capital Improvement Plan

PLYMOUTH, MA

Submitted by:

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October 31, 2023

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

Responsible FAA Official: \_\_\_\_\_ Date: \_\_\_\_\_



DRAFT NEPA EA & MEPA EIR  
PLYMOUTH MUNICIPAL AIRPORT  
RUNWAY 6-24 AND TAXIWAYS E AND A EXTENSIONS  
& 5-YEAR CAPITAL IMPROVEMENT PLAN

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## LIST OF ACRONYMS

A	AC	Advisory Circular
	ADG	Aircraft Design Group
	AEDT	Aviation Environmental Design Tool
	AMSL	Above Mean Sea Level
	ALP	Airport Layout Plan
	ARC	Airport Reference Code
	ASA	Airport Service Area
	ATCT	Air Traffic Control Tower
	AWOS	Automated Weather Observing System
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
	CIP	Capital Improvement Plan
	CISA	Climate-Informed Science Approach
	CLS	Conservation Land Stewardship Program
	CWA	Clean Water Act
	CY	Cubic Yards
D	dB	Decibel
	DGA	Designated Geographic Area
	DNL	Day Night Average Sound Level
E	EA	Environmental Assessment
	EEA	Massachusetts Executive Office of Energy and Environmental Affairs
	EIR	Environmental Impact Report
	EJ	Environmental Justice
	ESA	Endangered Species Act
	EPA	US Environmental Protection Agency
F	FAA	Federal Aviation Administration
	FAR	Federal Aviation Regulations
	FBO	Fixed Base Operator
	FEMA	Federal Emergency Management Agency
	FFRD	Future of Flood Risk Data
	FFPA	Farmland Protection Policy Act
	FFRMS	Federal Flood Risk Management Standard
	FIRM	Flood Insurance Rate Map
	FONSI	Finding of No Significant Impact
	FPPA	Farmland Protection Policy Act
	FVA	Freeboard Value Approach
G	FWCA	Fish and Wildlife Coordination Act
	GA	General Aviation
	GP	[USACE Massachusetts] General Permit
I	ILS	Instrument Landing System
	INM	Integrated Noise Model
	ISR	Indirect Source Review
L	LF	Linear Feet
	LID	Low Impact Design



<b>M</b>	<b>MPU</b>	Master Plan Update
	MassDEP	Massachusetts Department of Environmental Protection
	MassDOT	Massachusetts Department of Transportation
	MassWildlife	Massachusetts Division of Fisheries and Wildlife
	MEPA	Massachusetts Environmental Policy Act
	MESA	Massachusetts Endangered Species Act
	MSGP	Multi-Sector General Permit
<b>N</b>	<b>NAAQS</b>	National Ambient Air Quality Standards
	NEPA	National Environmental Policy Act
	NHESP	Natural Heritage and Endangered Species Program
	NHPA	National Historic Preservation Act
	NLEB	Northern Long-eared Bat
	NPDES	National Pollution Discharge Elimination System
	NPIAS	National Plan of Integrated Airport Systems
	NRCS	Natural Resources Conservation Service
	NRHP	National Register of Historic Places
	NRI	Natural Resource Inventory
<b>P</b>	<b>PAPI</b>	Precision Approach Path Indicator
	PGP	Programmatic General Permit
	PM	Particulate Matter
<b>R</b>	<b>RTN</b>	Release Tracking Number
	RDC	Runway Design Code
	RMAT	Resilient Massachusetts Action Team
	RSA	Runway Safety Areas (or Revised Statutes Annotated)
	RPZ	Runway Protection Zone
	RCRA	Resource Conservation Recovery Act
	RVZ	Runway Visibility Zone
	RW	Runway
<b>S</b>	<b>SDWA</b>	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
<b>T</b>	<b>TAF</b>	Terminal Area Forecast
	TBD	To Be Determined
	TDG	Taxiway Design Group
	TERPS	Terminal Instrument Procedures
	THPO	Tribal Historic Preservation Office
	TMDL	Total Maximum Daily Loads
	TMPU	Technical Master Plan Update
	TSP	Total Suspended Particulates
	TW	Taxiway
<b>U</b>	<b>USACE</b>	US Army Corps of Engineers
	USC	US Code
	USDOT	US Department of Transportation
	USFWS	US Fish and Wildlife Service
	UST	Underground Storage Tank
<b>V</b>	<b>VA-OIS</b>	Visual Area-Obstacle Identification Surface
	VASI	Visual Approach Slope Indicator

Pursuant to MEPA regulations at 301CMR 11.02(3) – Abbreviations and Acronyms, the following abbreviations and acronyms shall have the following meanings:

adt	Average Daily Trips [per MEPA 11.02(3)]
ACEC	Area of Critical Environmental Concern [per MEPA 11.02(3)]
CAC	Citizens Advisory Committee [per MEPA 11.02(3)]
CO2	Carbon dioxide [per MEPA 11.02(3)]
cy	Cubic yards [per MEPA 11.02(3)]
ENF	Environmental Notification Form [per MEPA 11.02(3)]
EIR	Environmental Impact Report [per MEPA 11.02(3)]
GHG	Greenhouse Gas [per MEPA 11.02(3)]
gpd	Gallons per day [per MEPA 11.02(3)]
HAP	Hazardous Air Pollutant [per MEPA 11.02(3)]
kv	Kilovolts [per MEPA 11.02(3)]
MEPA	The Massachusetts Environmental Policy Act, MGL c 30, §§ 61-62L [per MEPA 11.02(3)]
MW	Megawatts [per MEPA 11.02(3)]
NOx	Oxides of Nitrogen [per MEPA 11.02(3)]
PM10	Particulate matter less than or equal to 10 microns in diameter [per MEPA 11.02(3)]
PM 2.5	Particulate matter less than or equal to 2.5 microns in diameter [per MEPA 11.02(3)]
sf	Square feet [per MEPA 11.02(3)]
SO2	Sulfur Dioxide [per MEPA 11.02(3)]
tpd	Tons per day [per MEPA 11.02(3)]
tpy	Tons per year [per MEPA 11.02(3)]
VOC	Volatile Organic Compound [per MEPA 11.02(3)]



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May 26, 2023

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS  
ON THE  
ENVIRONMENTAL NOTIFICATION FORM

PROJECT NAME : Plymouth Municipal Airport  
PROJECT MUNICIPALITY : Plymouth/Carver  
PROJECT WATERSHED : South Coastal and Buzzards Bay  
EEA NUMBER : 16692  
PROJECT PROPONENT : Plymouth Municipal Airport  
DATE NOTICED IN MONITOR : April 26, 2023

Pursuant to the Massachusetts Environmental Policy Act (M.G.L. c. 30, ss. 61-62L) and Section 11.06 of the MEPA Regulations (301 CMR 11.00), I hereby determine that this project **requires** the submission of an Environmental Impact Report (EIR). The Proponent should submit a Draft EIR (DEIR) in accordance with the Scope included in this Certificate.

Project Description

As described in the Environmental Notification Form (ENF), the Proponent proposes several improvements to the Plymouth Municipal Airport (the Airport) as outlined in the 2022 Technical Master Plan Update (TMPU), which evaluated aviation demand forecasts, facility requirements, airport access and geometry, and airside facility requirements over a 20-year planning horizon through 2042. According to the ENF, the TMPU has been developed with a focus on airside infrastructure (areas of the airport that support aircraft activity) needed to meet Federal Aviation Administration (FAA) airport safety standards as well future aviation demand. While the primary purpose of the proposed improvements is safety and efficiency, improvements also support future Airport growth.

According to the ENF, the work described as the “Runway 6 extension project” (referred to as “Runway 6 project” herein) consists of the construction of a 351 foot (ft) long by 75 ft wide extension to the Runway 6 end of Runway 6-24 for a new total runway length of 5,001 ft. The extension of Runway 6 will be accompanied by 351 ft long by 35 ft wide extension of Taxiway E, a full-length

parallel taxiway on the north side of the runway.<sup>1</sup> The Runway 6 project will also construct a 351 ft extension to Taxilane A, a partial length taxilane located on the south side of the runway; a new run-up apron area along the southwestern end of the extended Taxiway A; and two new aircraft hangars approximately 100 ft by 100 ft (20,000 square feet (sf) total) located along Taxilane A.<sup>2</sup> Additional work will include the relocation of the Medium Intensity Runway Lighting (MIRL), Medium Intensity Approach Light System with Sequenced Flashing Lights (MALSF), Precision Approach Path Indicator (PAPI), and Runway End Identifier Lights (REILS) for Runway 6. Pending an analysis being conducted by the FAA, relocation and realignment of the adjacent Gate 6 Access Roadway and perimeter fence may also be required to avoid interference with the Runway 6 landing instrumentation and navigational aids.

Although the ENF focuses on the Runway 6 extension, the short term, five-year Airport Capital Improvement Plan (ACIP), as detailed in the TMPU, describes other work anticipated to occur at the Airport between 2023 and 2027. These include:

- Water/ Wastewater Sewer Main Upgrades
  - Construction of 3,000 linear feet (lf) of gravity sewer main and associated appurtenances on the southwest side of the Airport.
- Gate 3 Taxilane Reconstruction
  - Full depth pavement reconstruction of the Gate 3 Taxilane (50,000 sf) immediately adjacent to the porta-port hangars
- Reconstruction of Runway 6-24
  - Full depth pavement reconstruction of a 4,350 ft by 75 ft section of Runway 6-24
- Emergency Generator Airside Infrastructure
  - Purchase and installation of an emergency generator which will serve as a backup power supply to operate airside infrastructure during a power outage.

Projects identified in the TMPU are anticipated to be constructed over five years as funding is allocated as part of the FAA and Massachusetts Department of Transportation (MassDOT) Aeronautics Division capital planning cycle. As discussed below, conceptual details about this future work should be disclosed in the DEIR so as to allow review of the cumulative impacts of the entire TMPU. This is consistent with reviews of other airport master plans (EEA #15964, 16128, 16640).

### Segmentation

The MEPA regulations include provisions (301 CMR 11.01(2)(c)) to ensure that a project is not phased or segmented to evade, defer or curtail MEPA review. In determining whether a project is subject to MEPA jurisdiction or meets or exceeds any review thresholds, and during MEPA review, the Proponent, any Participating Agency, and the Secretary shall consider the entirety of the Project, including any likely future Expansion, and not separate phases or segments thereof. The Proponent, any Participating Agency, and the Secretary must consider all circumstances as to “whether various work or activities constitute one Project, including but not limited to: whether the work or activities, taken

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<sup>1</sup> A taxiway is a path used by aircrafts to travel from one area to another (such as from an airport terminal to a runway); unlike a runway, it is not used for takeoff/landing.

<sup>2</sup> A taxilane is the portion of the aircraft parking area used for access between taxiways, aircraft parking positions, and hangars. An apron is an area where aircraft are parked, loaded or unloaded, refueled, boarded, or maintained. A hangar is a building or structure designed to house aircrafts.

together, comprise a common plan or independent undertakings, regardless of whether there is more than one Proponent; any time interval between the work or activities; and whether the environmental impacts caused by the work or activities are separable or cumulative.” As noted above, the TMPU describes several other projects identified in the TMPU that are tentatively planned for construction between 2023 and 2027, depending on funding availability. All work activities appear related, as they are identified in a master (common) plan that governs work at the Airport over a defined time frame. Similar airport master plans have been reviewed as a single project in prior MEPA reviews (EEA #15964, 16128, 16640). As directed in the Scope below, the DEIR should provide conceptual information regarding these projects so as to allow for a cumulative review of all impacts associated with the TMPU, which shall be treated as a single project for purposes of this MEPA review. The DEIR should re-characterize the project undergoing review as the entire master plan, and update all impacts calculations to reflect the full buildout. To the extent details are not known of future projects, the DEIR should propose a procedure for review of future projects through Notice of Project Change (NPC) filings.

### Project Site

The Airport is located on approximately 785 acres in the towns of Plymouth and Carver. The Airport has operated since 1934 and now supports multiple businesses including flight schools, aircraft maintenance, aircraft sales, and corporate flight departments. Approximately half of the site is developed and consists of paved runways, taxiways, hangars, an administration building, several office buildings, and other ancillary buildings. The undeveloped areas on the Airport include wetlands, upland grasslands, and forested habitats. Portions of South Meadow Pond and an unnamed pond, associated with a nearby cranberry bog, are located on the southern portion of the Airport. According to the TMPU, the Airport is also located over an EPA-designated Sole Source Aquifer (SSA). Land uses adjacent to the Airport include residential, commercial, agricultural (cranberry bogs) and open space.

The Airport operates two runways: Runway 15-33 is 4,650 ft long by 75 ft wide and is aligned in a northwest to southeast direction and Runway 6-24 (primary runway) is 4,650 ft long by 75 ft wide and is aligned in a northeast to southwest direction. Three of the four Airport approaches extend over the Town of Plymouth; however, approximately 250 acres, including the approach end of Runway 6, Gate 6 access, and associated access roadway lie in the Town of Carver. The Town of Plymouth has also incorporated the Airport Zone to protect the airspace surrounding the Airport. Existing developed land within the Airport Zone includes a mixture of cranberry bogs, office space associated with the Airport, residential development, and some industrial/commercial development along South Meadow Road.

State and local wetland resource areas located within and adjacent to the Airport include Bordering Vegetated Wetlands (BVW), Isolated Vegetated Wetlands (IVW), and Bordering Land Subject to Flooding (BLSF).<sup>3</sup> According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) (Panel No. 25023C0361K, 25023C0363K, and 25023C0364K effective July 6, 2021), portions of the Airport are located within Zone A. Additionally, according to the Massachusetts Natural Heritage and Endangered Species Program (NHESP) Atlas (15th Edition), the Airport also contains approximately 352 acres of mapped Estimated Habitat of Rare Wildlife and/or

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<sup>3</sup> Potential for wetland alterations will be determined pending an analysis by the FAA relative to relocation and realignment of the Gate 6 Access Roadway and perimeter fence line within the project area to avoid interference with the runway landing instrumentation and navigational aids.

Priority Habitat of Rare Species; of this total, approximately 60 acres are managed pursuant to the Airport's NHESP-approved Grassland Management Plan for grassland bird species.

The Airport is located within one mile of one EJ Population characterized as Income within the Town of Carver. The site is located within five miles of four additional EJ Populations characterized as Minority (3) and Income (1) within the Town of Plymouth.<sup>4</sup> As described below, the ENF identified the "Designated Geographic Area" (DGA) for the project as one mile around EJ Populations, included a review of potential impacts and benefits to the EJ Populations within this DGA, and described public involvement efforts undertaken to date.

### Environmental Impacts and Mitigation

Potential environmental impacts associated with the Runway 6 project include the direct alteration of 7.04 acres of land, the creation of 2.46 acres of impervious surface, and the construction of two 10,000 sf aviation hangars. This work is also expected to generate 4 New average daily trips (adt) and may result in impacts to wetland resource areas on and adjacent to the Runway 6 project area. Additionally, the work will result in a permanent loss of Priority Habitat for state-listed species. As noted, additional impacts are associated with future work to be conducted under the TMPU.

Measures proposed to avoid, minimize and mitigate environmental impacts include traditional stormwater management measures such as groundwater recharge including infiltration basins, infiltration trenches, and/or detention basins; use of construction-period Best Management Practices (BMPs) to minimize noise, air and water quality impacts; removal of pavement and restoration of grassland habitat for state-listed species; and restorative plantings for temporarily disturbed areas and replication for any wetland losses. Additional measures should be identified in the DEIR.

### Permitting and Jurisdiction

The Runway 6 project is subject to MEPA review because it requires Agency Action and meets/exceeds the MEPA review thresholds at 301 CMR 11.03(2)(b) for greater than two acres of disturbance of designated habitat, as defined in 321 CMR 10.02, that results in a take of a state-listed endangered or threatened species or species of special concern and 301 CMR 11.03(6)(b)(3) for the expansion of an existing runway at an airport. The Runway 6 project is required to prepare an EIR pursuant to 301 CMR 11.06(7)(b) because it is located within a DGA of one or more EJ Populations. The Runway 6 project will require an Agency Action in the form of an Amended Conservation and Management Permit (CMP) from NHESP. Additional thresholds may be exceeded based on future projects proposed under the TMPU.

The Runway 6 project will require an Order of Conditions (OOC) from the Carver Conservation Commission (or in the case of an appeal, a Superseding Order of Conditions from Massachusetts Department of Environmental Protection (MassDEP)). The Runway 6 project will also require the preparation and review of an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA), and a National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP) from the U.S. Environmental Protection Agency (EPA). Additional permitting may be needed for future work under the TMPU.

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<sup>4</sup> The EEA EJ Mapper is available at: <https://www.mass.gov/info-details/environmental-justice-populations-in-massachusetts>

The Runway 6 project, as well as other future work, will seek Financial Assistance from the Massachusetts Department of Transportation Department (MassDOT) Aeronautics Division. Therefore, MEPA jurisdiction is broad in scope and extends to all aspects of the Runway 6 project that may cause Damage to the Environment, as defined in the MEPA regulations.

### Review of the ENF

The ENF includes a project description, an analysis of alternatives, existing and proposed conditions plans, and a review of its impacts and proposed mitigation measures for the Runway 6 project. Consistent with the MEPA Interim Protocol on Climate Change Adaptation and Resiliency, the ENF contains an output report from the MA Climate Resilience Design Standards Tool prepared by the Resilient Massachusetts Action Team (RMAT) (the “MA Resilience Design Tool”).<sup>5</sup>

### *Alternatives Analysis*

The ENF analyzed a series of alternatives pertaining to the Runway 6 project only. All alternatives would allow for extending Runway 6 to meet the current and future needs of the Airport based on air safety, ability to serve the critical aircraft, impact on adjacent land use, environmental considerations, and financial impact. The Falcon 2000 is the critical design aircraft for the Airport and based on a FAA Runway Length Analysis has a recommended unconstrained runway length of 5,500 ft. A No-Build Alternative was considered; however, because the Airport cannot currently fulfill the minimum runway length required for the critical aircraft, it was dismissed. As described below, the ENF evaluated three alternatives (Alternative 1, Alternative 2, and the Preferred Alternative) for extending Runway 6 based on the needs of the critical aircraft. Additionally, all alternatives considered would include similar extensions of Taxiway E and Taxilane A, relocation of navigational aids, and construction of two aviation hangars.

Alternative 1 would involve the extension of the Runway 6 approach end to the southwest by 550 ft resulting in a total runway length of 5,200 ft. Although this length does not meet the recommended unconstrained runway length of 5,500 ft, it does provide increased pavement use and increases safety margins while allowing aircraft to take a higher payload, including more fuel which would lead to higher revenue for the airport. Two additional easements would also be required to maintain a clear and unobstructed approach. Additionally, this alternative would likely have a greater impact on adjacent wetland resource areas and Priority Habitat of state-listed species compared to the Preferred Alternative due to the increase in additional pavement. Based on these factors, this alternative was dismissed.

Alternative 2 would involve the extension of the Runway 6 approach end to the southwest by 850 ft resulting in a total length of 5,500 ft. This alternative would meet the recommended unconstrained runway length of 5,500 ft, but at a higher cost and more resulting impacts on adjacent wetland resource areas and Priority Habitat of state-listed species than other alternatives considered. Four additional easements would also be required to maintain clear and unobstructed approach. Although this alternative would fully meet the demands of the critical aircraft, due to the number of properties that would be impacted, the number of easements to be acquired, and the number of environmental impacts, this alternative was dismissed.

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<sup>5</sup> Available at: [https://resilientma.mass.gov/rmat\\_home/designstandards/](https://resilientma.mass.gov/rmat_home/designstandards/)



The Preferred Alternative would involve the extension of the Runway 6 approach end, southwestward by 351 ft for a total runway length of 5,001 ft. Although this length does not meet the recommended unconstrained runway length of 5,500 ft, it does provide increased pavement use and increases safety margins while allowing aircraft to take a higher payload, including more fuel which would lead to higher revenue for the airport. No additional easements would be required to be obtained and only one tree is currently within 10 ft of the approach surface and would be required to be removed to maintain a clear and unobstructed approach path.

As noted, alternatives were reviewed solely with respect to extending Runway 6 and did not comprehensively consider alternatives or associated environmental impacts for the hangar construction or for other projects proposed as part of the TMPU. The alternatives analysis should be supplemented in the DEIR in accordance with the Scope.

### *Environmental Justice (EJ) / Public Health*

The Airport is located within one mile of one EJ Population characterized as Income within the Town of Carver. The site is located within five miles of four additional EJ Populations characterized as Minority (3) and Income (1) within the Town of Plymouth. Additionally, no languages were identified as being spoken by 5% or more of Limited English Proficiency (“LEP”) residents within one mile of the Airport.

The Proponent was not required to provide advance notification under Part II.A of the *MEPA Public Involvement Protocol* as it is not seeking expedited review under 301 CMR 11.06(8) or 11.06(13). However, advance notification of the ENF filing was voluntarily provided to a list of community-based organizations (CBOs) and tribes/indigenous organizations (the “EJ Reference List”) provided by the MEPA Office. The Proponent circulated an EJ screening form with an overview of the Runway 6 project to these entities and information on ways to request a community meeting. According to the ENF, public involvement activities also included the creation of a Runway 6 project specific email address ([PlymouthMAAirportRW6EA@dubois-king.com](mailto:PlymouthMAAirportRW6EA@dubois-king.com)) for communication from interested parties and a dedicated webpage for providing meeting notices, project information, and project filings to enhance public access.<sup>6</sup> During the MEPA review period, the Proponent offered to provide an additional remote evening meeting upon request (no such requests were received). Prior to filing the DEIR, an updated EJ Screening Form should be circulated making clear that the entire TMPU is undergoing MEPA review, and indicating opportunities for public involvement as to both current and future work.

Prior to filing the ENF, the Proponent planned and hosted three evening public meetings, a combination of in-person and virtual meetings, to inform the public of the Master Planning process and to solicit comments. A fourth in-person public meeting was held on March 29, 2023, specifically to address final recommendations and to provide the public with information about the projects anticipated to be included in the TMPU, including the Runway 6 project. The Proponent plans to continue efforts to engage with community members and stakeholder groups during the MEPA review process to provide opportunities for the public to learn more about projects undertaken under the TMPU.

The ENF states that the Runway 6 project is not anticipated to have significant impacts to EJ Populations, with any anticipated impacts being minor and temporary due to construction related activities. Potential construction period impacts could include increased vehicle emissions, temporary

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<sup>6</sup> See <https://pymairport.com/technical-master-plan-update>.

impacts to air quality during construction, and increased noise levels due to construction equipment. The ENF also states that the Runway 6 project will result in overall benefits including improved safety and efficiency, providing new construction related job opportunities, and economic enhancement. However, supporting analyses were not included in the ENF. The DEIR should supplement the EJ analysis as indicated in the Scope.

#### *Land Alteration, Impervious Area, and Stormwater*

As noted above, the Runway 6 project will result in the direct alteration of 7.04 acres of land (consisting on grassland habitat) and create 2.46 acres (net increase after pavement removals) of impervious surface. Land alteration and addition of imperious surface are a direct result of the runway, taxiway, and taxilane extension; construction of a new run-up apron and two aviation hangars; and the relocation of associated navigational aids. Additionally, one tree obstruction is currently within 10 ft of the approach surface and will likely need to be removed in order to maintain a clear and unobstructed approach path to Runway 6.

According to the ENF, stormwater runoff from the Runway 6 project area will be managed through the Airport's existing stormwater management system, and the installation of a new drainage system. The stormwater management system will be designed to prevent an increase in peak stormwater runoff and to provide treatment when and where necessary. To meet this goal, management of runoff will include both temporary and permanent BMPs so that runoff will be appropriately managed both during and after construction. The ENF states the proposed stormwater management system will be designed to comply with current MassDEP's stormwater management regulations to the extent practicable. Information on the stormwater management system design and proposed BMPs should be provided in accordance with the Scope.

As noted, a full accounting of land impacts associated with the TMPU should be provided in the DEIR.

#### *Rare Species*

The Airport's grassland habitats support four state-listed grassland-nesting avian species. These species and their habitats are protected pursuant to the Massachusetts Endangered Species Act (M.G.L. c. 131A) and its implementing regulations (MESA, 321 CMR 10.00). Portions of Plymouth Airport are currently managed to maintain habitat for state-listed species in accordance with the provisions of the MESA CMP (005-049.DFW, 014-240.DFW, & 018-329). The Runway 6 project will impact 7.04 acres of mapped Priority Habitat. Of this area, 2.46 acres (net of pavement removals) will result in a permanent loss of habitat while another 4.58 acres will be temporarily disturbed and restored (with appropriate seed mix) due to grading for Runway 6 extension side areas, taxiway extension, and hangar development.

All projects that will occur within Priority and Estimated Habitat for state-listed species, which are not otherwise exempt from MESA review pursuant to 321 CMR 10.14, require a direct filing with the NHESP for compliance with the MESA. Comments provided by NHESP note that although a formal MESA filing has not yet been submitted, NHESP anticipates, based on previously submitted information and ongoing consultations with the Proponent, that the Runway 6 project, as proposed, will likely result in a Take (321 CMR 10.18 (2)(b)) of state-listed species.

Projects resulting in a Take of state-listed species may only be permitted if they meet the performance standards for a CMP, as detailed at 321 CMR 10.23. In order for a project to qualify for a CMP, the Applicant must demonstrate that the Runway 6 project has avoided, minimized and mitigated impacts to state-listed species consistent with the following performance standards:

- (a) adequately assess alternatives to both temporary and permanent impacts to the state-listed species;
- (b) demonstrate that an insignificant portion of the local population will be impacted; and
- (c) develop and agree to carry out a conservation and management plan that provides a long-term net benefit to the conservation of the state listed species.

Comments provided by NHESP note that the Proponent has started the consultation process on a pre-filing basis and intends to meet the performance standards of a CMP. Although the full scope of the project impacts to state-listed species and their habitats have not been determined, NHESP anticipates that a suitable long-term net benefit could be achieved through the protection of suitable, high-quality habitat, or management of habitat. The Proponent should continue the consultation process with NHESP and provide an update on how the proposed work will meet the performance standards of a CMP in accordance with the Scope. The DEIR should report on whether NHESP consultation will pertain to the Runway 6 project only, or the entire TMPU.

#### *Wetland Resources*

As noted above, wetland resource areas are located on and adjacent to the Airport. According to the ENF, the Runway 6 project does not currently propose any direct impacts to wetland resource areas but will result in alteration within the 100 ft buffer zone. As stated above, the Carver Conservation Commission (or MassDEP in the case of an appeal) will review the Runway 6 project for its consistency with the WPA, Wetlands Regulations (310 CMR 10.00) and associated performance standards including the Massachusetts Stormwater Management Standards (SMS), and local bylaws.

The potential for direct wetland resource alterations will be determined pending an analysis by the FAA relative to relocation and realignment of Gate 6 Access Roadway and perimeter fence line to avoid interference with the runway landing instrumentation and navigational aids. This information should be supplemented in accordance with the Scope.

#### *Solid and Hazardous Waste*

According to the ENF, the primary demolition waste associated with the Runway 6 project will be asphalt, which will be reused on site where feasible. The TMPU states that any remaining waste construction materials (i.e. scrap material, concrete, etc.) will be disposed of in accordance with local regulations.

The TMPU states that excavated soils which are unsuitable for reuse on the Runway 6 project area can be distributed elsewhere within Airport property. As noted in comments by MassDEP, there is one closed disposal site, regulated under M.G.L. c. 21E, and the Massachusetts Contingency Plan [MCP – 310 CMR 40.0000], located on the property and upgradient of the Runway 6 project area. The historic release (RTN 4-0026005) was due to a plane crash that resulted in the sudden release of approximately 25 gallons of aviation fuel. The release impacted surficial soils, but groundwater and surface water

impacts were not observed. The impacted soil was removed, and the site achieved a Permanent Solution with no Conditions under the MCP. MassDEP advises that if oil and/or hazardous material are identified during the implementation of the Runway 6 project, a Licensed Site Professional (LSP) must be employed or engaged to manage, supervise or actually perform the necessary response actions at the site for excavating, removing and/or disposing of contaminated soil or contaminated media (which includes contaminated sediment) must be conducted under the provisions of the MCP and all other applicable federal, state, and local laws, regulations, and bylaws.

### *Historical and Archaeological Resources*

According to the ENF, the Runway 6 project is located in previously disturbed and constructed portions of the airfield. An Archaeological Reconnaissance Survey and Intensive (Locational) Archaeological Survey completed at the Airport property in September 2003 assigns the Airport project area a “Low Sensitivity” designation for both prehistoric archaeological sensitivity and historic archeological sensitivity.

### *Climate Change*

#### *Adaptation and Resiliency*

Effective October 1, 2021, all MEPA projects are required to submit an output report from the MA Resilience Design Tool to assess the climate risks of the Runway 6 project. Based on the output report attached to the ENF, the Runway 6 project has a “High” exposure rating based on the Runway 6 project’s location for the following climate parameters: extreme precipitation (urban and riverine flooding) and extreme heat. Based on the 20-year useful life and the self-assessed criticality identified for the extension of Runway 6 and Taxiways A & E, the MA Resilience Design Tool recommends a planning horizon of 2050 and a return period associated with a 10-year (10% chance) storm event when designing this asset. Based on a 75-year useful life and self-assessed criticality of the aircraft hangars, the MA Resilience Design Tool recommends a planning horizon of 2070 and a return period associated with a 25-year (4% chance) storm event for these assets. Additionally, it recommends planning for the 50th percentile for applicable extreme heat parameters and the Runway 6 project location scores Moderate in ecosystem benefits.

The MA Resilience Design Tool output indicates that the maximum annual daily rainfall exceeds 10” within the overall Runway 6 project's useful life; the Runway 6 project area is anticipated to have a 30+ day increase in days over 90 degrees Fahrenheit within Runway 6 project's useful life; and the Runway 6 project proposes to remove trees and create new impervious surface. These factors are indicated in the Tool as contributing to the High exposures for the extreme precipitation (urban flooding) and heat climate parameters. According to the MA Resilience Design Tool output, the projected 24-hour precipitation depth associated with a 2070 10-year storm event is 6.1”; the projected 24-hour precipitation depth for the 2070 25-year storm event is 7.9”. The ENF indicates that traditional stormwater management measures such as infiltration basins, infiltration trenches, and/or detention basins will be incorporated into the Runway 6 project design. Additionally, the ENF states that the addition of pavement is not anticipated to result in any increases to impacts that would lessen the Airport’s ability to withstand or remain resilient to future climate impacts. This information should be supplemented in accordance with the Scope.

## SCOPE

### General

The DEIR should follow Section 11.07 of the MEPA regulations for outline and content and additional information and analyses required by this Scope. It should clearly demonstrate that the Proponent will pursue all feasible measures to avoid, minimize and mitigate Damage to the Environment to the maximum extent feasible.

### Project Description and Permitting

As discussed above, the ENF was filed as to the Runway 6 project only, even though it is part of a larger master plan (TMPU) that governs work at the Airport over a common time frame. Consistent with prior reviews of other airport master plans (EEA #15964, 16128, 16640), the DEIR should reframe the project under review as the TMPU (the “project” will be re-named in the DEIR), and provide a description of all projects proposed under the TMPU. All impacts calculations should be updated to reflect the full master plan. To the extent full details are not known of future projects, the DEIR should provide a conceptual description sufficient to estimate cumulative impacts associated with all projects. The DEIR should also describe a mechanism for conducting more detailed reviews of future projects through the filing of NPCs.

The DEIR should include plans of existing and proposed conditions at a legible scale that identify all major project components (existing and proposed buildings, access roadways, runways, taxiways, etc.), public areas, impervious areas, subsurface utilities, surface elevations, wetland resource areas, rare species habitat, ownership of parcels including easements, and stormwater and utility infrastructure. Conceptual plans should be provided for on-site work as well as any proposed off-site work for transportation or utility improvements that will benefit the project. The DEIR should clearly describe the number, location and size of existing aviation easements and proposed aviation easements that will be acquired. It should identify any changes to activities contemplated under the TMPU, including changes in proposed phasing or additional proposed activities, since the filing of the ENF.

The DEIR should identify any additional MEPA thresholds met/exceeded and/or additional permits or approvals needed, and should identify thresholds and Agency Actions associated with the entire TMPU and not just the Runway 6 project. The DEIR should identify and describe applicable state, federal and local permitting and review requirements associated with each project and provide an update on the status of each of these pending actions. The DEIR should include a description and analysis of applicable statutory and regulatory standards and requirements, and a discussion of the project’s consistency with those standards.

To provide context for the proposed activities under the TMPU, the DEIR should provide an overview of the Airport’s functions and activities related to general aviation and commercial services, with a focus on the role each of the project components plays in the operation of the Airport. It should provide a general description of Airport operations, including hours of operation, conditions under which each runway is used, airplane taxiing and parking, and use of hangars and other Airport buildings.

It should include data on past (at least for the last 15 years), current and projected levels of passenger volumes and aircraft operations on both an annual basis and for peak summer months, so as to provide a clear and full justification for the need to expand runway and taxiway capacity to accommodate projected airport and passenger growth over time. The DEIR should clarify which project components are intended to support a growth in airport operations, and how implementation of each project component will be phased to accommodate growth projections over a specified time horizon. It should clearly identify relevant FAA design guidelines or standards to be addressed by each project, as applicable.

### Alternatives Analysis

The DEIR should identify the purpose and need of each project proposed in the TMPU, and provide an alternatives analysis for all major components and not just the Runway 6 extension. Several of the proposed improvements will be designed to meet FAA safety guidelines; however, improvements are also intended to facilitate future growth in airport operations. If projects are intended to support expansion, the DEIR should estimate the increase in flight activity and associated impacts that will result from such expansion; less impactful alternatives to such expansion should also be described. The DEIR should describe the relevant safety guidelines and how the proposed design will achieve safety goals. For improvements that are not directly safety-related, the DEIR should identify any alternative configurations or locations that would avoid or minimize impacts to land alteration and impervious area. The alternatives analysis and project narrative should support the selection of the Preferred Alternative for each project component that includes all feasible measures to avoid Damage to the Environment, or to the extent Damage to the Environment cannot be avoided, to minimize and mitigate Damage to the Environment to the maximum extent practicable.

### Environmental Justice (EJ)

The DEIR should include a separate section on “Environmental Justice,” and contain a full description of measures the Proponent intends to undertake to promote public involvement by such EJ Populations during the remainder of the MEPA review process, including a discussion of any of the best practices listed in the MEPA EJ Public Involvement Protocol that the project intends to employ. The DEIR, or a summary thereof, should be distributed to the EJ Reference List that was used to provide notice of the ENF. The Proponent should obtain a revised EJ Reference List from the MEPA Office to ensure that contact information is updated. As noted above, an updated EJ Screening Form should be circulated making clear that the entire TMPU is undergoing MEPA review, and indicating opportunities for public involvement as to both current and future work.

The DEIR should include a baseline assessment of any existing unfair or inequitable Environmental Burden and related public health consequences impacting EJ Populations in accordance with 301 CMR 11.07(6)(n)1 and the MEPA Interim Protocol for Analysis of EJ Impacts. Specifically, the DEIR should use the DPH EJ Tool to identify any census tract or municipality in which the EJ Populations are located as exhibiting “vulnerable health EJ criteria”; this term is defined in the DPH EJ Tool to include any one of four environmentally related health indicators that are measured to be 110% above statewide rates based on a five-year rolling average. In addition, sources of potential pollution should be identified within the identified EJ Populations, based on the mapping layers available in the DPH EJ Tool.

The DEIR should provide an estimate the total number of adt of diesel vehicles that the project is

anticipated to generate during construction. The DEIR should describe the anticipated routes of travel for project-generated vehicular traffic to determine whether such traffic would extend near EJ Populations, and should discuss whether air quality may be affected in those neighborhoods. The DEIR should discuss the extent to which Transportation Demand Management (TDM) measures will serve to reduce vehicle traffic, associated with project operations and construction. To the extent construction traffic for future projects other than the Runway 6 project is unknown, the DEIR should provide estimates based on current work.

The DEIR should also analyze land alteration and impervious surfaces added by the master plan project, including implications for potential stormwater flooding and urban heat island effects in the surrounding neighborhoods. Consistent with the Scope related to Climate Change and Land Alteration below, analysis of the stormwater management system should assess whether flooding risks may be exacerbated for nearby EJ Populations, including under future climate conditions, and whether existing conditions would be worsened or improved by the project design. The DEIR should assess whether tree removal near EJ Populations may affect urban heat island effects, and should discuss whether anticipated growth in airport operations may disproportionately affect EJ neighborhoods in terms of noise, air pollution, and traffic. The DEIR should analyze any other relevant short-term and long-term environmental or public health impacts of the project, including construction period activities. If any disproportionate adverse effects or increased risks of climate change are identified, the DEIR must include a discussion of proposed mitigation and include such measures in draft Section 61 findings. I note that generalized project benefits should not be analyzed to “net out” project impacts, unless the benefit serves to mitigate the specific impact analyzed. Particular focus should be given to benefits that serve to promote the equitable distribution of Environmental Burdens, or reduce any existing Environmental Burdens identified for the EJ Population.

### Public Health

The DEIR should include a separate section on “Public Health,” and discuss any known or reasonably foreseeable public health consequences that may result from the environmental impacts of the project. Particular focus should be given to any impacts that may materially exacerbate “vulnerable health EJ criteria,” in accordance with the MEPA Interim Protocol for Analysis of EJ Impacts. In addition, other publicly available data, including through the DPH EJ Tool, should be surveyed to assess the public health conditions in the immediate vicinity of the project site, in accordance with 301 CMR 11.07(6)(g)10. Any project impacts that could materially exacerbate such conditions should be analyzed. To the extent any required Permits for the project contain performance standards intended to protect public health, the DEIR should contain specific discussion of such standards and how the project intends to meet or exceed them. The DEIR should discuss whether Per- and Polyfluorinated Substances (PFAS) remediation will be included as part of any projects proposed under the TMPU, and describe any ongoing efforts to address PFAS releases that may have been identified during Airport operations.

### Noise

The ENF and TMPU indicate that the proposed improvements are intended increase safety and efficiency for both airport users and the surrounding communities as well as to support future growth of airport operations. Such growth will likely result in increased noise impacts on surrounding neighborhoods. The TMPU notes that the noise contour map generated for the base year (Year 2007) was based on existing aircraft operations, fleet mix, and runway orientation at the time and is still an accurate portrayal of current noise at the airport. However, the TMPU also notes that additional aircraft



forecasted to utilize the airfield could have some adverse noise impacts to the surrounding residential community, particularly on the final approach. Additionally, the TMPU states that implementation of the Preferred Alternative for the Runway 6 extension project could reduce noise above the properties northeast of the airfield.

The DEIR should include an assessment of noise levels associated with existing airport operations, as well as anticipated increases that are projected as a result of future expansion of the Airport. It should describe existing noise levels, identify all noise-generating activities and components of the project and model noise levels under proposed conditions. The DEIR should discuss what regulatory requirements, such as FAA guidelines or MassDEP regulations or policies, apply to noise impacts of airport operations. The DEIR should discuss whether noise impacts are likely to disproportionately affect surrounding EJ neighborhoods or other vulnerable populations (including those that may be considered “sensitive receptor”) and what mitigation could be considered to minimize the noise impacts of airport operations. For instance, the DEIR should discuss whether hours of operations could be adjusted to minimize noise impacts, particularly during nighttime hours.

#### Land Alteration, Impervious Area and Stormwater

The DEIR should provide an updated table which quantifies the land alteration and impervious area associated with each project component in the TMPU in a tabular format. The DEIR should clarify the amount of alteration including the type of vegetation that will be cleared (i.e., mature trees, scrub shrub, etc.). It should clarify the location, type and amount of alteration in previously undisturbed areas. The DEIR should identify how each project is designed to avoid and minimize land alteration and impervious area. The DEIR should quantify open space that will remain undisturbed and/or restored upon completion of construction. The DEIR should include site plans that clearly locate and delineate areas proposed for development and those to be left undisturbed.

The DEIR should identify all measures that will be employed to protect the water quality of the SSA, provide a description of the proposed stormwater management system for each project/phase and identify BMPs that will be incorporated into its design. The DEIR should describe how the proposed stormwater management system will fully comply with the SMS. The Proponent should take all feasible measures to manage stormwater runoff, including by exceeding stormwater management standards and incorporating Low Impact Design (LID) strategies and green infrastructure wherever practicable; such measures should be described in the DEIR. Green infrastructure is an effective way to treat stormwater generated by impervious surfaces and provide cooling and other benefits for the community and should be incorporated to the maximum extent possible. LID designs should be carefully considered, and where not used, the DEIR should provide a thoughtful explanation as to why they are infeasible for implementation on-site. The DEIR should identify any infiltration systems that may require registration under MassDEP’s Underground Injection Control (UIC) program. Additionally, the DEIR should identify how the stormwater management system will conform to the guidelines and performance standards related to discharges of pollutants from airplane deicing operations and other discharges covered by the NPDES Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity (MSGP).

As described further below, the DEIR should demonstrate the stormwater management system will be designed to accommodate larger storm events. The DEIR should provide quantitative modeling and analysis to assess the rainfall volumes that will be accommodated by the stormwater design, including under current and future climate conditions. It should include a plan showing the location of

BMPs.

### Rare Species

Prior to filing the DEIR, the Proponent should continue consulting with NHESP and through said coordination determine whether the existing CMP will be amended, or if a new CMP will be required. The DEIR should identify the full scope of impacts to state-listed species and their habitats resulting from the Runway 6 extension project and other work proposed as part of the TMPU. The DEIR should identify a suitable long-term net benefit for state-listed species and whether the proposed work will meet the performance standards of a CMP. The DEIR should also demonstrate compliance with the existing CMP(s) for the Airport and identify whether the Proponent intends to request a Certificate of Permit Compliance from NHESP.

### Wetland Resources

The DEIR should provide updated wetlands calculations which reflect the most recent design of the Runway 6 project and identify all temporary and permanent impacts to wetland resource areas associated with the master plan. The DEIR should demonstrate how the project will comply with performance standards outlined in the WPA for each resource area. It should provide an updated summary table of all wetland resource area and Buffer Zone impacts. The DEIR should consider impacts associated with surface and subsurface hydrology, wildlife habitat, and describe compliance with BMPs for stormwater management and sedimentation and erosion control. The DEIR should ensure that estimates for impacts to wetland resource areas are conservative and account for all temporary impacts.

### Climate Change

#### *Adaptation and Resiliency*

The DEIR should include a comprehensive discussion of the potential effects of climate change on the Airport and describe features incorporated into the project design (including climate-related design specifications and standards) that will increase the resiliency of the site to these changes. The DEIR should include information about the potential adaptation of the project to future conditions.

The DEIR should describe the precipitation data used for the design of the stormwater management system and how the system will be sized to address future climate conditions. The MA Resilience Design Tool provides rainfall volumes associated with a 24-hour storm for the project as input by the user. The DEIR should discuss whether the proposed stormwater design is anticipated to meet the recommended 2050 10-year return period (24-hour rainfall volume of 6.1”) from the MA Resilience Design Tool for the runway extension, as well as the 2070 recommendation for the aviation hangars corresponding to a 25-year return period as of 2070 (24-hour rainfall volume of 7.9”). The DEIR should discuss whether the stormwater management system will attenuate peak flows and meet pollutant loading requirements based on future climate conditions in 2050 and 2070 and should provide a copy of the Stormwater Report for the project. Estimates can be provided in lieu of exact calculations, to the extent stormwater design is not advanced enough by the time of the DEIR. To the extent the project is unable to accommodate future year storm scenarios, the DEIR should discuss whether the project has engaged in flexible adaptative strategies, and whether current designs allow for future upgrades to be made to adapt to climate change.

The MA Resilience Design Tool also identified the site as exposed to “High” risk for riverine flooding, and portions of the site have been identified as located in a 100-year flood plain (FEMA Zone A). The DEIR should discuss whether the elevation of Airport infrastructure currently meets applicable standards for flood plain development, and whether efforts will be taken as part of the proposed work under the TMPU to improve resiliency to future climate conditions. The DEIR should specify any base flood elevations (BFEs) that may been determined for the site or nearby locations, and compare the elevations of proposed infrastructure to the BFE. The values generated from the MA Resilience Tool (such as “riverine peak flood elevation”) can be used as a resource in estimating a future BFE for a 2070 planning horizon, assuming effects of climate change. If the Airport is not taking steps as part of the TMPU to address climate change, the DEIR should discuss the reasons why and address overall planning efforts under way to improve resiliency to future conditions.

#### Solid and Hazardous Waste

The DEIR should identify the nature and volume of solid waste to be generated by the project. It should describe handling, reuse, recycling and disposal of solid waste. The Proponent should review MassDEP’s comment letter for solid waste handling and disposal requirements. The DEIR should describe how the project will comply with all applicable requirements.

The DEIR should describe if proposed improvements will be located within any of the disposal sites previously or currently regulated under the MCP. The DEIR should include a plan that clearly identifies the location of disposal sites and project elements. The DEIR should describe any potential excavation or disturbance in disposal sites and identify any necessary mitigation measures or handling and disposal requirements.

#### Construction Period

The DEIR should describe how construction activities will be managed in accordance with applicable MassDEP regulations regarding Air Pollution Control (310 CMR 7.01, 7.09-7.10), and Solid Waste Facilities (310 CMR 16.00 and 310 CMR 19.00, including the waste ban provision at 310 CMR 19.017). The DEIR should describe all construction-period impacts and mitigation relative to state-listed species, wetlands, stormwater, noise, air quality, water quality, and traffic. It should describe truck routes and other mitigation measures that may be implemented to minimize impacts to residential areas by trucks travelling to the site during the construction period. Construction equipment should use engines meeting Tier 4 federal emissions standards, or if unavailable, confirm that the project will require its construction contractors to use Ultra Low Sulfur Diesel fuel, and discuss the use of after-engine emissions controls, such as oxidation catalysts or diesel particulate filters.

The DEIR should provide detailed information regarding the project’s generation, handling, recycling, and disposal of construction and demolition debris (C&D) and identify measures to reduce solid waste generated by the project. I strongly encourage the Proponent to commit to C&D recycling activities as a sustainable measure for the project. The Proponent is reminded that any contaminated material encountered during construction must be managed in accordance with the MCP and with prior notification to MassDEP. The project will be required to develop a Stormwater Pollution Prevention Plan (SWPPP) in accordance with its NPDES CGP to manage stormwater during the construction period. The DEIR should describe stormwater management measures that will be implemented during construction. It should describe potential construction period dewatering activities and associated permitting (i.e., NPDES) and identify mitigation measures. All construction-period mitigation measures

should be listed in the draft Section 61 Findings. I refer the Proponent to the comprehensive review of construction-period regulatory requirements in MassDEP's letter. The DEIR should describe how the project will comply with all applicable requirements.

#### Mitigation and Draft Section 61 Findings

The DEIR should include a separate chapter summarizing proposed mitigation measures including construction-period measures. This chapter should also include a comprehensive list of all commitments made by the Proponent to avoid, minimize and mitigate the environmental and related public health impacts of the project, and should include a separate section outlining mitigation commitments relative to EJ Populations. The filing should contain clear commitments to implement these mitigation measures, estimate the individual costs of each proposed measure, identify the parties responsible for implementation, and contain a schedule for implementation. The list of commitments should be provided in a tabular format organized by subject matter (traffic, water/wastewater, GHG, EJ, etc.) and identify the Agency Action or Permit associated with each category of impact. Draft Section 61 Findings should be separately included for each Agency Action to be taken on the project. The filing should clearly indicate which mitigation measures will be constructed or implemented based upon project phasing to ensure that adequate measures are in place to mitigate impacts associated with each development phase.

#### Responses to Comments

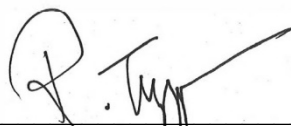
The DEIR should contain a copy of this Certificate and a copy of each comment letter received. It should include a comprehensive response to comments on the DEIR that specifically address each issue raised in the comment letter; references to a chapter or sections of the DEIR alone are not adequate and should only be used, with reference to specific page numbers, to support a direct response. This directive is not intended, and shall not be construed, to enlarge the scope of the DEIR beyond what has been expressly identified in this certificate.

#### Circulation

In accordance with 301 CMR 11.16(3), the Proponent should circulate the DEIR to those parties who commented on the ENF, each Agency from which the Project will seek Permits, Land Transfers or Financial Assistance, and to any other Agency or Person identified in the Scope. Per 301 CMR 11.16(5), the Proponent may circulate copies of the DEIR to commenters in CD-ROM format, by directing commenters to a project website address, or electronically. However, the Proponent must make a reasonable number of hard copies available to accommodate those without convenient access to a computer and distribute these upon request on a first-come, first-served basis. A copy of the DEIR should be made available for review in the Plymouth and Carver Public Library.

May 26, 2023

Date

  
Rebecca L. Tepper

Comments received:

5/16/2023	Massachusetts Department of Environmental Protection (MassDEP)
5/23/2023	Natural Heritage and Endangered Species Program (NHESP)

RLT/NJM/njm

## MEPA Compliance Checklist

MEPA ENF Certificate Pg / Section	Topic	MEPA 301 CMR 11.07(6) [etc]	Section(s)/ EA/EIR
	Title Page	(a)	Front
	Table of Contents	(b)	Front
16	Secretary's Certificate(s)	(c)	Front
	Summary (Purpose & Need)	(d)	2
1	Project Description	(e) [11.05(5)]	1.2
	[Alternatives to the Project]	(f)	3
2	TMPU Projects 2023-2027; conceptual details	(e)	1.2.2, 2.2
	Segmentation	(h) [11.01(2)(c)]	4.1, 5.14
	[Existing Environment; integrated into 14 NEPA categories]	(g)[1-9]	4
3	Common plan; TMPU 2023-2027; conceptual information	[11.01(2)(c)]	1.2.2, 2.2, 5.14
	Notice(s) of Project Change (NPC)	[11.06(11)] [11.10]	5.17
	Project Site	(e), (g)	4.1
	Sole Source Aquifer	(g2)	1.2.1, 4.2.8
	<ul style="list-style-type: none"> <li>Wetlands</li> <li>Floodplain</li> </ul>	(g2)	<ul style="list-style-type: none"> <li>4.3.9.1, 5.12.1, 5.13.5;</li> <li>4.2.7</li> </ul>
	Natural Heritage & Endangered Species Program (NHESP) habitat maps	(g4)	1.1.2, 1.2.1, 1.3, 4.3.2.2, 5.5.3, 5.5.4, 5.13.6, 5.14.4, APP A, APP E
4	Environmental Justice Populations	(g9),(g10),(n) [11.05(4)]	1.5, 4.3.8.5, 4.3.8.6 5.11.2, 5.11.4
	Environmental Impacts and Mitigation (multiple sub-topics) <ul style="list-style-type: none"> <li>MEPA Thresholds [per 11.01(2)(b), 11.03]</li> <li>Avoid, Minimize, Mitigate</li> <li>Stormwater, groundwater, infiltration, detention</li> <li>Construction BMPs for noise, air, water quality</li> <li>Restore grassland habitat</li> <li>Replicate wetland losses</li> <li>Additional measures</li> </ul>	(g3), g(4), (h), (j)	<ul style="list-style-type: none"> <li>1.1.2, 1.4</li> <li>5.14, 5.15</li> <li>4.2.8, 4.3.9.2, 5.12.2</li> <li>5.7.3, 5.13, 5.14.4</li> <li>4.3.2.4, 5.5.4, 5.14.4</li> <li>(replicate – N/A)</li> <li>5.13, 5.14.4</li> </ul>
	Permitting and Jurisdiction; MEPA Thresholds	(i) [11.01(b),11.03]	1.1.2, 1.4, 5.17
5	Review of the ENF <ul style="list-style-type: none"> <li>MEPA Interim Protocol on Climate Change Adaptation and Resiliency,</li> <li>MA Climate Resilience Design Standards Tool by Resilient Massachusetts Action Team (RMAT)</li> </ul>	(g3), (n)	1.1.2, 5.6.3, APP M
	Alternatives Analysis (ENF); Alternatives 1 (550') and 2 (850')	(f)	3

MEPA ENF Certificate Pg / Section	Topic	MEPA 301 CMR 11.07(6) [etc]	Section(s)/ EA/EIR
6	Preferred Alternative (351')	(f)	3.3-3.6
	TMPU supplemental alternatives analysis	(f)	1.2.2, 2.2, 3.6, 5.3.4
	Environmental Justice (EJ) / Public Health	(g3),(g9), (g10),(n) [11.05(4)]	1.5, 4.3.8.5, 4.3.8.6, 5.11.2, 5.11.4, 5.11.5
	Updated Screening Form distribution; entire TMPU and public involvement opportunities	[11.01(1), 11.05(4),11.15]	APP C
7	Land Alteration, Impervious Area, Stormwater; TMPU land impacts	(g1), (g8)	5.3.4
	Rare Species; grassland habitat and four state-listed avian species	(g4)	1.1.2, 1.2.1, 1.3, 4.3.3.2, 5.5.4, 5.13.6, 5.14.4, APP A, APP E
8	Comments by NHESP; TMPU consultation	(g4)	APP E
	Wetland Resources; perimeter fence	(g2)	3.1, 3.3, 3.4.1, 3.4.3, 4.3.9.1, 5.12.1, 5.13.5
	Solid and Hazardous Waste	(g8)	4.3.4, 5.7, 5.13.7
9	Historical and Archaeological Resources	(g7)	4.2.4, APP D
	Climate Change, Adaptation and Resiliency; MA Resilience Design Tool (aka "RMAT" tool/report)	(g3), (n)	1.1.2, 4.3.3, 5.6, 5.6.3, APP M
10	Scope; General Project Description and Permitting MEPA thresholds	(e), (i) [11.01(b), 11.03]	1.1.2, 1.2.2, 1.4, 2, 5.17
11	Data on past (at least 15 yrs), current and projected levels of passenger volumes and aircraft operations on annual basis and peak summer months (" <i>clear and full justification for need to expand runway and taxiway capacity to accommodate projected airport and passenger growth...</i> ")	g(8)	1.2.3
	Clarify which project components are intended to support a "growth" in airport operations How implementation of each project component will be phased to accommodate "growth" projections over a specified time horizon.	g(8)	2.2 3.7
	Identify relevant FAA design guidelines or standards to be addressed by each project.	(i)	2.2
	<ul style="list-style-type: none"> <li>Alternatives Analysis</li> <li>Purpose and Need of each project in TMPU</li> <li>Avoidance, minimization, and mitigation</li> </ul>	(d), (f), (j)	3 2.2 5.14.3, 5.15
	Environmental Justice (EJ) <ul style="list-style-type: none"> <li>Total number of adt of diesel vehicles during construction, routes, air quality</li> </ul>	(g3), (n)	• 4.3.8.5, 4.3.8.6, 5.13.1, 5.13.2;



MEPA ENF Certificate Pg / Section	Topic	MEPA 301 CMR 11.07(6) [etc]	Section(s)/ EA/EIR
	<ul style="list-style-type: none"> <li>Transportation Demand Management (TDM) measures</li> </ul>		<ul style="list-style-type: none"> <li>5.13.1</li> </ul>
12	EJ (continued) <ul style="list-style-type: none"> <li>Land alteration by TMPU</li> <li>Stormwater flooding</li> <li>Climate Change</li> <li>Draft Section 61 findings; no “net out”</li> </ul>	(g3), (k), (n)	<ul style="list-style-type: none"> <li>5.3.4</li> <li>4.2.7</li> <li>1.1.2, 4.3.3, 5.6</li> <li>APP P</li> </ul>
	Public Health	(g9), (g10), (h), (j)	4.3.8.8, 5.11.4
	Noise	(g3)	4.3.7, 5.10, 5.13.2, 5.14.3
13	<ul style="list-style-type: none"> <li>Land Alteration, Impervious Area and Stormwater/BMPs</li> <li>Water Quality of SSA</li> <li>Low Impact Design (LID) and green infrastructure</li> <li>MassDEP Underground Injection Control (UIC) program</li> <li>Airplane deicing and discharges by NPDES Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity (MSGP)</li> <li>Stormwater Quantitative Modeling – Current and Future Climate Conditions; BMPs</li> </ul>	(g1), (g2), (g3), (g8)	<ul style="list-style-type: none"> <li>5.3.4, 5.7.3, 5.12.2, 5.12.4</li> <li>1.2.1, 4.2.8, 5.12.3</li> <li>4.2.8, 5.12.2, 5.12.4.2</li> <li>APP I</li> <li>4.2.9, 5.12.2, 5.14.3, APP E</li> <li>5.6.1, 5.6.2, 5.6.3.1, 5.12, 5.17</li> </ul>
14	Rare Species	(g4)	1.1.2, 1.2.1, 1.3, 4.3.2.2, 5.5.3, 5.5.4, 5.13.6, 5.14.3, APP A, APP E
	Wetland Resources	(g2)	3.1, 3.3, 3.4.1, 3.4.3, 4.3.9.1, 5.12.1, 5.13.5
	Climate Change; Adaptation and Resiliency	(g3)	
15	MA Resilience Design Tool (aka “RMAT” tool/report)	(g3)	1.1.2, 4.3.3, 5.6, 5.6, APP J
	Discussion of TMPU steps to address climate change	(g3)	
	Solid and Hazardous Waste	(g8)	4.3.4, 5.7, 5.13.7
	Construction Period	(e) [11.08(10)]	5.12.4, 5.13, 5.14.3
16	Copy of Secretary Certificate	(c)	Front Materials
	Mitigation and Draft 61 Findings	(j), (k), (n) [11.12(5)]	5.15; APP P
	Copy of EA/EIR Comment Letters		APP E
	Responses to [ENF] Comments	(l)	APP E
	Circulation [distribution]	(m) [11.16]	6.2

# 1 Introduction

The Plymouth Airport Commission (PAC) and Plymouth Municipal Airport (Airport), in cooperation with the Massachusetts Department of Transportation (MassDOT) and Federal Aviation Administration (FAA) as the Lead Federal Agency, has prepared this Environmental Assessment (EA) to fulfill obligations under the National Environmental Policy Act of 1969 (NEPA; 42 USC §§ 4321 *et seq* as amended) and regulations issued by the Council on Environmental Quality (CEQ; 40 CFR Parts 1500-1508, 2021). It follows requirements for Environmental Assessments (EA) in the 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). It also encompasses and fulfills the requirements of an Environmental Impact Report (EIR) under the Massachusetts Environmental Policy Act (MEPA; MGL c 30, §§ 61 through 62L; 301 CMR 11.00). On May 26, 2023, the Secretary of the Massachusetts Executive Office of Energy and Environmental Affairs (EEA) issued a Certificate on the Environmental Notification Form (“MEPA Certificate”; EEA Number 16692 attached in front matter). The MEPA Certificate requires the submission of an EIR that addresses a range of environmental categories generally referred to as the “scope”.

## 1.1 NEPA and MEPA Joint Document

### 1.1.1 National Environmental Policy Act – NEPA Overview

NEPA was created to ensure federal agencies consider the environmental impacts of their actions and decisions. Federal agencies are required to systematically assess the environmental impacts of their proposed actions and consider alternative ways of accomplishing their missions, which are less damaging to and protective of the environment (Figure 1-1). Under NEPA, there are “Extraordinary Circumstances” under consideration for each of the projects within the Proposed Action for the Airport in this Draft EA/EIR. Because each project will occur within state-mapped habitat for state-listed bird species under the Massachusetts Endangered Species Act (MESA; MGL Chapter 131A), the Proposed Action requires an Environmental Assessment under NEPA. In addition to the requirements under FAA Order 5050.4B (2006) and Order 1050.1F (2015) identified above, a broad range of legislation and regulations has been released in the interim through March 2023, including multiple Executive Orders from The White House relating to climate change, flooding, and environmental justice. These are described and discussed in more detail in the relevant sections of Chapter 4 – Affected Environment (aka, “existing conditions”) – and Chapter 5 – Environmental Consequences.



FIGURE 1-1. NEPA Environmental Assessment Funnel

## 1.1.2 Massachusetts Environmental Policy Act – MEPA Overview

The stated purpose of MEPA is “*to provide meaningful opportunities for public review of the potential environmental impacts of Projects for which Agency Action is required, and to assist each Agency in using (in addition to applying any other applicable statutory and regulatory standards and requirements) all feasible means to avoid Damage to the Environment or, to the extent Damage to the Environment cannot be avoided, to minimize and mitigate Damage to the Environment to the maximum extent practicable.*” Under 301 CMR 11.01(1)(b), “*MEPA review is an informal administrative process that is intended to involve any interested Agency or Person as well as the Proponent and each Participating Agency.*” This EA/EIR is a continuation of efforts that have taken place over more than a year as part of the 2022 Technical Master Plan Update (TMPU) that included significant public outreach efforts that have and will continue through the environmental assessment phase.

The MEPA process was initiated with the filing of an Environmental Notification Form (ENF), which was submitted to MEPA on April 18, 2023, and noticed in the Environmental Monitor on April 26, 2023. MEPA assigned the EEA number 16692 to the project.<sup>1</sup> At that time, the public was given a mandated 20-day review period to provide comments. There were two comment letters received from state agencies, but there were no comments during the ENF phase from the public. A MEPA Scoping Session took place on May 10, 2023. The meeting presentation is currently posted on the Airport website ([www.pymairport.com](http://www.pymairport.com)).

The projects proposed under the 5-year Capital Improvement Plan (CIP) and the subject Runway 6-24 and associated taxiway extensions (“Runway 6 Project”) “*are subject to MEPA review because they require a state Agency Action and meet/exceed the MEPA review thresholds.*” The thresholds are not included in 301 CMR 11.03 “*ENF and Mandatory EIR*” thresholds, but are instead based on the Secretary’s findings in the Certificate on the ENF. The Certificate indicates that “*the Runway 6-24 extension currently under design exceeds review thresholds at 301 CMR 11.03(2)(b) for greater than two acres of disturbance of designated habitat, as defined in 321 CMR 10.02, that results in a take of a state-listed endangered or threatened species or species of special concern and 301 CMR 11.03(6)(b)(3) for the expansion of an existing runway at an airport.*” Neither state-listed species nor runway expansions fall within “*Mandatory EIR*” thresholds, but rather under “*ENF and Other MEPA Review if the Secretary So Requires*”. In other words, there were no thresholds met or exceeded for an “*ENF and Mandatory EIR*”, but still warrant further MEPA review.

The Runway 6 project is also required to prepare an EIR pursuant to 301 CMR 11.06(7)(b) because it was determined to require an EIR AND it is located within the one-mile Designated Geographic Area (DGA) of one or more Environmental Justice (EJ) Populations considered under MEPA review. The Runway 6 project will require an Agency Action in the form of an *Amended Conservation and Management Permit* (CMP) from the Massachusetts Natural Heritage and Endangered Species Program (NHESP). Additional thresholds may be exceeded based on future projects proposed under the TMPU. The Runway 6 project, as well as other future work, will seek Financial Assistance from the Massachusetts Department of Transportation Department (MassDOT) Aeronautics Division. Therefore, MEPA jurisdiction is broad in scope and extends to all aspects of the Runway 6 project that may cause “*Damage to the Environment*”.

<sup>1</sup> The ENF and the Certificate are available on the MEPA website at:

<https://eeaonline.eea.state.ma.us/EEA/MEPA-eMonitor/home> [Search EEA No./Project ID 16692] or directly at <https://eeaonline.eea.state.ma.us/EEA/MEPA-eMonitor/project/e3106198-444c-4cf5-884b-6c399e198d06>.

In addition, MEPA has additional requirements related to Climate Change and Environmental Justice Populations under new requirements for MEPA project filings under (i) Section 58 of the Acts of 2021: *An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy* (the “Climate Roadmap Act”) and the 2021 update to the Executive Office of Energy and Environmental Affairs (EEA) Environmental Justice Policy (2021 EEA EJ Policy). From that policy stems the “*MEPA Public Involvement Protocol for Environmental Justice Populations*” and “*MEPA Interim Protocol for Analysis of Project Impacts on Environmental Justice Populations*” (January 1, 2022).

### 1.1.3 Joint NEPA EA / MEPA EIR

In accordance with section 1506.4 of NEPA, federal agencies “*should combine, to the fullest extent practicable, any environmental document with any other agency document to reduce duplication and paperwork.*” Under MEPA, the EIR structure (outline and content) is provided at 301 CMR 11.07. Under additional MEPA guidance and 11.07(6)(m), “*The Proponent may vary the outline of ordinary EIR sections to address one aspect of the project or issue at a time, provided that the EIR addresses the substance of each section.*” Therefore, as approved by the MEPA office (via email June 13, 2023), this document is presented as a Joint NEPA Environmental Assessment (EA)/MEPA Environmental Impact Report (EIR) for the Plymouth Municipal Airport (Airport; PYM). MEPA regulations are more stringent and require additional levels of detail beyond what NEPA would typically encompass. The MEPA Certificate identifies additional requirements for plans, easement information, proposed phasing or additional proposed activities, and identification of MEPA thresholds that are met or exceeded. These MEPA threshold categories differ from the 14 NEPA categories under FAA implementation regulations.

Smaller Figures are included directly within the narrative chapters. Larger 11”x17” figures (maps) are separated into Appendix A. Appendix B includes References and source information.

## 1.2 Background and General Project Description

### 1.2.1 Airport Description

The Airport is located on approximately 758<sup>2</sup> acres in the towns of Plymouth and Carver (Figure 1-2, Appendix A, USGS Locus Map). The Airport has operated since 1934 and now supports multiple businesses including a restaurant in the terminal, flight schools, aircraft maintenance, aircraft sales, and corporate/charter flight operations. Portions of the Airport property are developed consistent with the purpose of a General Aviation (GA) or “Non-primary” airport. This means that the Airport is a public-use GA airport that does NOT operate as a commercial airport under FAA 14 CFR Part 139. Further, the Airport has no current intent of growing beyond its GA confines or becoming an FAA Part 139 commercial service airport. Developed areas consist of paved runways, taxiways, hangars, an

<sup>2</sup> The ENF presented a table and narrative describing the Airport acreage total as 785, which was the condition presented in the 2018 “Final Environmental Assessment: Plymouth Municipal Airport, Taxiway D and Master Plan Improvements”. This did not account for subsequent property acquisitions and earlier mitigation involving the USACE in 2015 that resulted in a swap of land and a resulting conservation area on the easterly side of the Airport. The total resulting acreage thereafter is 758 as presented herein, of which 41.5 acres has a permanent conservation restriction (CR) resulting from USACE mitigation (FR Vol 80, No 15, January 23, 2015).

administration building (terminal), several office buildings, and other ancillary buildings. The Airport website ([www.pymairport.com](http://www.pymairport.com)) contains a substantial amount of information, including hours of operation (6:00 am to 10:00 pm ET), operation and traffic pattern details for pilots, noise abatement procedures, runway/taxiway information, on-Airport business list and links, and other useful information.

The Airport operates two runways. Runway 15-33 is 4,350 ft long (with 300' long stopway) by 75 ft wide and is aligned in a northwest to southeast direction, and Runway 6-24 (primary runway) is 4,650 ft long (with 300' long displaced threshold) by 75 ft wide and is aligned in a northeast to southwest direction. Runway 6-24 is served by Taxiway E, which is currently a full-length parallel taxiway (4,650 ft by 35 ft) located on the northwesterly side of the runway. Taxiway E provides access to existing hangars, administration building/terminal, and the fixed base operator's (FBO) ramp. Runway 15-33 is served by Taxiway S, which is a full-length parallel taxiway (4,350 ft by 35 ft) located at the south side of the runway. Taxiway D is a 2,500 ft-long parallel taxiway that connects Taxiway K to Taxiway S and Runway 15-33. It provides access from hangars located on the south side of the Airport along the Gate 6 access road, including the Cape Cod Community College hangar.

Three of the four Airport approaches extend over the Town of Plymouth; however, approximately 250 acres, including the approach end of Runway 6, Gate 6 access, and associated access roadway lie in the Town of Carver. The Town of Plymouth has also incorporated the Airport Zone to protect the airspace surrounding the Airport. Existing developed land within the Airport Zone includes a mixture of commercial agriculture (cranberry bogs), office space associated with the Airport, residential development, and some industrial/commercial development along South Meadow Road.

The undeveloped areas on the Airport include wetlands, upland grasslands, scrub shrub areas around the wetlands, and forested habitats on the rear portions of the Airport beyond Runway 33 end and beyond the Gate 6 access road. Portions of South Meadow Pond and an unnamed pond, associated with a nearby cranberry bog, are located on the southern portion of the Airport. The Airport is also located over an EPA-designated Sole Source Aquifer (SSA). State and local wetland resource areas located within and adjacent to the Airport include Bordering Vegetated Wetlands (BVW), Isolated Vegetated Wetlands (IVW) and/or Isolated Land Subject to Flooding (ILSF), and Bordering Land Subject to Flooding (BLSF)<sup>3</sup>. According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) (Panel No. 25023C0361K, 25023C0363K, and 25023C0364K effective July 6, 2021), portions of the Airport are located within Zone A.

Additionally, according to the NHESP Atlas (15th Edition), the Airport also contains a blanket overlay of approximately 352 acres of mapped *Estimated Habitat of Rare Wildlife* and/or *Priority Habitat of Rare Species* due to presence of state-listed grassland birds. Portions of this overlay map includes the entirety of the developed and impervious areas of the Airport, which are not grassland, but which are included within the NHESP mapped areas. Of this total, approximately 60 acres are managed pursuant to the Airport's NHESP-approved Grassland Management Plan for grassland bird species.

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<sup>3</sup> Wetland resource areas under the jurisdiction of The Wetlands Protection Act (Massachusetts General Laws [MGL] Chapter 131, Section 40) and 310 CMR 10.00: Wetlands Protection Act [WPA] Regulations.



### 1.2.2 General Project Description

The proposed improvements under this EA/EIR include minimal runway and taxiway extensions, airfield navigational instrument relocation, two hangars, and airfield infrastructure (sewer line extension and backup generator; Table 1-1). This EA/EIR 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. In addition, two hangars are added to the environmental assessment that are proposed to align with the Runway 6 project plans and supplement previously approved hangars that have not yet been built.

In 2022, the Airport created the Technical Master Plan Update (TMPU) and Airport Layout Plan (ALP). The FAA accepted the TMPU and approved the ALP on March 20, 2023. The TMPU evaluated aviation demand forecasts, facility requirements, airport access and geometry, and airside facility requirements over a 20-year planning horizon through 2042. The 2022 builds off of the earlier 2011 Master Plan that projected similar baseline information and improvements 2021. The 2022 TMPU contemplated, evaluated, and analyzed an updated and revised set of alternatives that now require an Environmental Assessment of these alternatives and their potential environmental impacts. The forecast prepared in the TMPU determined that the Airport will remain a General Aviation (GA) airport in the “B-II” category throughout the planning period. The “B” indicates the Aircraft Approach Category of 91 knots or more, but less than 121 knots. The “II” indicates that the Airplane Design Group has a wingspan of 49 feet or more but less than 79 feet. The tail height is 20 feet or more but less than 30 feet.

Within the TMPU, a series of runway length alternatives were developed to meet the current and future needs of the Airport. These alternatives are focused on the airport’s primary deficiency, which is the current inability to serve the “critical aircraft”, defined as “the most demanding aircraft (or family of aircraft) with at least 500 annual operations that operates, or is expected to operate, at the Airport.” Within the TMPU, the alternatives were evaluated based on: 1) air safety, 2) ability to serve the critical aircraft, 3) impact on adjacent land use, 4) environmental considerations, and 5) financial impact. The fourth criterion evaluated whether the alternative has any negative environmental impacts as defined under NEPA. Environmental impacts were gauged on a scale from *No Impact* to *Significant Impact*. Environmental impacts included multiple categories, such as wetlands, bogs, and drainage ditches/swales. Bordering Vegetated Wetlands (BVW) also include a 100’ state-jurisdictional buffer zone under the Massachusetts Wetlands Protection Act (WPA; MGL 131 §40 and regulations at 301 CMR 10.00). Other environmental considerations included floodplains and groundwater resources (e.g., aquifers), grassed turf areas, forested vegetation (tree obstructions), noise, and air quality.

The TMPU presented a 5-year “Capital Improvement Plan” (CIP) from 2023-2027 (Table 1-1). The current project proposed for 2023-2025 is to minimally extend the length of Runway 6-24, extend Taxiway A and Taxiway E to align with the new Runway 6-24 length, relocate navigational aids, and install a sewer main extension along a portion of the Gate 6 access road. The TMPU describes other work anticipated to occur in the short term, five-year CIP, which include: water/wastewater sewer main upgrades, Gate 3 taxilane reconstruction, reconstruction of Runway 6-24, and emergency generator airside infrastructure (Table 1-1). Projects presented in the CIP and currently proposed are described and evaluated within this EA/EIR as specified in the MEPA Certificate. The Certificate indicates, *“...conceptual details about this future work should be disclosed in the DEIR so as to allow review of the cumulative impacts of the entire TMPU....which shall be treated as a single project for purposes of this MEPA review. The DEIR should re-characterize the project undergoing review as the entire master plan,*

and update all impacts [sic] calculations to reflect the full buildout."

For projects after the 5-year CIP period, the FAA-approved Airport Layout Plan (ALP) identifies projects projected through 2042. In addition to the "No Build" alternative, the TMPU evaluated three additional alternatives for extending Runway 6 based on the needs of the critical aircraft (Dassault Falcon 2000) – 351', 550', and 850'. The unconstrained runway length calculation for the critical aircraft based on 60% useful load<sup>4</sup> is 5,500 feet, which would require a runway extension of 850'. Due to feasibility and environmental considerations, the 351' extension was selected as a preferred alternative by the Airport in the TMPU. The resulting runway length will be 5001'.

TABLE 1-1. 5-Year Capital Investment Program Projects and Funding Overview

Planning Period	Project	Estimated Project Cost	Estimated FAA Funding	Estimated MassDOT Match	Estimated Local Match
2023	Runway 6/24 & Taxiway E** Extension EA/EIR	\$350,000	\$315,000	\$17,500	\$17,500
2024	Design and Permit Runway 6 Extension / Taxiway E**	\$480,000	\$432,000	\$24,000	\$24,000
	Water / Wastewater Upgrades Sewer Main Construct <3,000 LF and associated appurtenances (Gate 6 Access Rd)	\$700,000	\$0	\$560,000	\$140,000
2025	Extend Runway 6/24 (351' x 75')	\$4,600,000	\$4,140,000	\$230,000	\$230,000
	Extend Taxiway E/A (700'x35')	\$3,000,000	\$2,700,000	\$150,000	\$150,000
	Gate 3 Taxilane Reconstruction Full depth pavement reconstruction (~50,000 sf) near porta-port hangars	\$525,000	\$472,500	\$26,250	\$26,250
2026	Reconstruction Runway 6/24 [partial depth]	\$5,700,000	\$5,130,000	\$285,000	\$285,000
	Emergency Generator Infrastructure	\$275,000	\$247,500	\$13,750	\$13,750
5-Year AICP Total		\$15,630,000	\$13,437,000	\$1,289,000	\$886,500

NOTES:

\*Source – 2022 Plymouth Municipal Airport Technical Master Plan Update, pg 67, Table 6-1.

\*\* 2023 and 2024 \$\$ figures include Taxiway/lane A

\*\*\*TMPU does not include or contemplate two additional hangars that are proposed under the NEPA EA/ MEPA EIR to be built in the vicinity of the taxilane apron at the Runway 6 end of Taxilane A. It also did not include 5 hangars under the 2018 EA for Taxilane D that were in the NEPA FONSI but have not yet been built. The Massachusetts Conservation and Management Permit for five unbuilt hangars expires September 2023.

<sup>4</sup> "Useful load" is used in General Aviation only and refers to the weight of the pilot, crew, passengers, baggage, usable fuel, and drainable oil. (NOTE: Commercial operations refer to "payload", which implies customers pay for their baggage to be transported.)



### 1.2.3 Economics and Forecast

The MEPA Certificate requested that additional information be provided to give context for the proposed actions under the TMPU. The TMPU itself provided substantial background information regarding the Airport operations and proposed purpose of each of the projects under the Preferred Alternative herein.

The Airport is considered a regional General Aviation (GA) Airport under FAA definitions serving small aircraft and regional charter service. The Airport has no intent of growing beyond its current confines and does NOT desire to become an FAA Part 139 commercial service airport. It supports daily Air Taxi and Charter services, daily medivac, daily agricultural, daily law enforcement, daily flight training, and weekly Angel Flights in support of life-sustaining medical transfers. The “*growth*” that is referred to repeatedly in the MEPA Certificate could be interpreted that the Airport is trying to attract larger jets and commercial passenger operations. Rather, the Airport is trying to come into compliance with FAA design criteria, as well as accommodate the existing types of aircraft in a manner that will attract and retain them at the Airport. As shown in Tables 1-2, 1-3, and 1-4 below, the historic operations at the Airport (<2008) were impacted heavily by the 2008-2011 recession. More recently, the pandemic further exacerbated the aviation industry (circa 2020-2022), and the Airport experienced additional operational losses. The Proposed Action is intended to more safely accommodate the existing aircraft types and recover from the operational losses posed by the pandemic. Furthermore, future opportunities are anticipated to include compatible commercial businesses that could generate additional revenues to support the Airport and the surrounding region with jobs and economic opportunities.

Two state-produced documents are available that provide details on the economic benefits of airports to the regions wherein they exist. These are the earlier Massachusetts Statewide Airport System Plan Technical Report (2010 System Plan) and the latest Massachusetts Statewide Airport Economic Impact Study Update (2019 Study Update), which goes into depth on the 39 public-use airports included in the study with specific details about the Plymouth Municipal Airport throughout the documents. Of the 30 GA airports featured in the 2019 update, Plymouth Municipal Airport ranked fourth behind Westfield-Barnes Regional Airport (Westfield/Springfield), Norwood Memorial Airport, and Lawrence Municipal Airport in terms of employment figures with “Total Employment” of 368 jobs (includes direct “on-airport” [213] and multiplier “off-airport” [155]). The Airport ranked fourth out of 30 in terms of total payroll after Westfield-Barnes and Norwood with over \$19 million in total payroll and nearly \$63 million in total output according to the study measures. This demonstrates that the Plymouth Municipal Airport provides a significant economic benefit to the region in the form of jobs and revenue generation.

The earlier 2010 System Plan divided all Massachusetts airports into four role categories – Commercial Service, Corporate/Business, Community/Business, and Essential/Business based on criteria and objectives under three categories – Airside Facilities, Landside Facilities, and Services. The study categorized Plymouth as one of ten “Corporate/Business” airports, as the Airport “serve(s) a primary role in regional economic activities, connecting to state and national economies.” The factor thresholds included a 4000’ *minimum primary runway length* (or 40 Based Aircraft), but the *minimum facility objective* for Primary Runway Length is 5,000’ or greater. So the Airport fits within the *minimum* criteria for a Corporate/Business airport, but falls short of the *objective* for the primary runway length (and other criteria) stated within the 2010 System Plan.

Based on the purpose of safely serving the critical aircraft at a higher useful load (still less than 60% of total aircraft useful load available), the primary goal of extending Runway 6 by 351' is to allow for the minimal extension alternative that facilitates a higher useful load than the current undersized runway. This is especially important under anticipated climate change impacts that will increase heat, thereby making longer runway areas necessary to avoid grounding or takeoff issues. The extension also allows for a second runway of this length so there are two runways to opt between in times of bad weather, heavy wind, emergency situations, and so forth. The inability for based and visiting critical aircraft to fuel to a higher volume/capacity impacts operators and pilots' decisions to land and remain at the Airport versus choosing another airport to utilize, purchase fuel, and base their aircraft where runways are longer. In addition, the lack of suitable hangar space in contrast to the number of inquiries the Airport regularly receives indicates a need for the additional hangar spaces contemplated by the EA/EIR. These two factors negatively impact the Airport's ability to attract and retain based and visiting aircraft and generate additional revenues. This represents a potential loss to the Airport of both revenues and associated jobs and operational sustainability. Table 1-2 and Table 1-3 below illustrates that in general, the trend in numbers of based aircraft has fallen from original and earlier forecasted numbers. The Airport is working with the FAA, MassDOT Division of Aeronautics, and other stakeholders to overcome the challenges, remain competitive, continue looking to near-term technologies that will overcome impending climate change effects, and sustain a viable asset to the Massachusetts statewide airport system.

Additional details on passenger numbers and aircraft operations are provided in Table 1-2, Table 1-3, Table 1-4, and Section 5.10 as related to Noise Analysis in response to the MEPA ENF Certificate. The TMPU provided additional details on Airport and aircraft operations (reference TMPU Chapter 3, Section 3.4).

TABLE 1-2. Historical Terminal Area Forecast Operations (Source: TMPU Table 3-4 based on FAA TAF)

YEAR	Local	Itinerant	Total
2000	26,500	40,000	66,500
2010	30,000	23,200	53,200
2020	30,000	21,000	51,000
2021	33,103	27,918	61,021

TABLE 1-3. Based Aircraft History and Forecast – 1990-2041

Aircraft Type	1990	1995	2000	2005	2007*	2009**	2027 Forecast*	2022 Tech MP Update***	August 2023 Actual <sup>tt</sup>	2041 Forecast***
Single Engine	[detail N/A]				102	103	113	79	77	65
Multi-Engine					13	22	13	10	14	9
Turbo-Prop					5		9	7	N/A	8
Business Jet					9	11	29	5	6	8
Helicopter					13	8	22	4	8	5
Glider					0	0	0	0	0	0
Ultra-Light					0	1	4	0	0	0
<b>Total</b>	<b>186*</b> [220 <sup>t</sup> ]	<b>189*</b> [179 <sup>t</sup> ]	<b>168*</b> [179 <sup>t</sup> ]	<b>168***<sup>tt</sup></b>	<b>142</b> [154 <sup>t</sup> ]	<b>105</b>	<b>190</b> [167-207]	<b>105</b>	<b>105</b>	<b>98</b>
NOTES:	<p>*Source: 2011 Plymouth Municipal Airport Master Plan (MP) The 2011 MP Figure 3-2: "Jet Operation Estimates by Based Aircraft" includes the note "Due to the 2008-2011 economic recession, the growth reflected in the near-term forecast does not reflect actual experience...", which indicates that the number of based aircraft may have been negatively affected. Note differences between the 2011 MP, the current FAA TAF reporting system for the same report years, and 2022 TMPU for years 2005 and others. However, the trends are generally in the down direction.</p> <p>**Source: 2010 Massachusetts Statewide Airport System Plan</p> <p>***Source: 2022 TMPU utilizing 2021 data.</p> <p><sup>t</sup>Source: 2022 TMPU and FAA Terminal Area Forecast (TAF) – <a href="https://taf.faa.gov">https://taf.faa.gov</a> Includes note "Impact of COVID-19 Pandemic on TAF Forecasts" [accessed most recently 8/7/23] "In the 2022 TAF the forecasts account for the downturn and recovery from the COVID-19 pandemic to varying degrees based on airport type. For a discussion of this see Forecast Process for 2022 TAF."</p> <p><sup>tt</sup>Source: FAA National Based Aircraft Inventory Program – <a href="https://basedaircraft.com">https://basedaircraft.com</a></p>									

TABLE 1-4. Forecasted PYM Annual Operations Summary by Aircraft Type  
(Source: TMPU Table 3-12 and Table 3-14)

	YEAR							
TYPE	2021		2026		2031		2041	
	Local	Itinerant	Local	Itinerant	Local	Itinerant	Local	Itinerant
Single Engine	22,510	18,984	22,970	19,372	23,445	19,751	24,397	20,535
Multi Engine	2,979	2,513	3,034	2,558	3,058	2,590	3,150	2,685
Turbo-Prop	3,972	3,350	4,069	3,431	4,168	3,515	4,362	3,679
Turbo-Jet	2,317	1,954	2,370	1,998	2,458	2,073	2,630	2,217
Rotorcraft	1,324	1,117	1,379	1,163	1,432	1,207	1,539	1,295
TOTAL	61,021		62,344		63,696		66,489	
Net Change	-		1,323 (4/day more than 2021)		1,352 (4/day more than 2026)		2,793 (8/day more than 2031; total 16/day over 2021)	
% Change	-		0.98%		0.98%		0.96%	
NOTES:	"Local" refers to aircraft that take off and land from PYM; "Itinerant" refers to aircraft that either take off or land from other airports.							

### 1.3 Public and Agency Involvement

The Airport has a tradition of working side-by-side and engaging with the community that exceeds FAA participation guidelines (AC 150/5050-4A *Community Involvement in Airport Planning*). Throughout the process of developing the 2022 TMPU and this EA/EIR, the Airport actively conducted agency and public outreach for over a year that included the general public, Environmental Justice (EJ) community members, Tribal organizations, and other community stakeholders. The TMPU outlined the Guiding Principles for the effort, including Guiding Principal #1 *"Create a transparent track to encourage public involvement in the Master Planning process to ensure that airport Stakeholders have the opportunity to provide input on future development."* The TMPU contained a *Draft Public Engagement Plan*, and this Draft EA/EIR contains a *Final Public Engagement Plan* (Appendix C).

Under NEPA Section 1506.2, the FAA and Airport have sought to eliminate duplication with State, Tribal, and local procedures where applicable. This environmental assessment takes into account MEPA regulations and incorporates additional information to address subject areas that require further analysis than might otherwise be required under NEPA. Section 1.5, Chapter 6, and several appendices identified throughout the narrative contain additional information on agencies involved, stakeholders contacted, and other outreach efforts, including details about each of the four public information meetings held from January 2022 through March 23, 2023. The public was also invited to participate in the MEPA Scoping Session on May 10, 2023, which was detailed in Section 1.1 above. Under FAA Order 5050.4B (April 2006), Section 704(a), *"If Tribal consultation is needed, the airport sponsor must contact the responsible FAA official to comply with FAA Order 1210.20, American Indian and Alaska Native Tribal Consultation Policy and Procedures, dated January 28, 2004."* The regional FAA office is coordinating with federally-recognized tribes to consult on any tribal concerns.

All of the materials reviewed and provided at the meetings have been posted on the Airport's website under *"Environmental Assessment"*, *"Technical Master Plan Update"*, and/or *"Public Notices"* (current as of 8/1/23; see [www.pymairport.com](http://www.pymairport.com)). As part of this Draft EA/EIR effort, a public information meeting is proposed to be held during the review period to seek additional public comments. The date has yet to be set, but is expected to occur approximately 14-21 days after the Draft EA/EIR is released to the public to allow ample time for interested stakeholders to review the document and come informed and prepared to effectively participate in the environmental review process.

In addition, substantial agency consultations have occurred throughout the TMPU process and continue to date. Consultations specific to the Draft EA/EIR effort have included the Massachusetts Division of Fisheries and Wildlife, Natural Heritage and Endangered Species Program (NHESP) regarding the potential take of state-listed grassland bird habitat. There have been multiple remote and in-person meetings with NHESP to determine what mitigation options may be appropriate for any potential effects to the subject grassland bird species and habitats. In addition, NHESP provided a comment letter to MEPA outlining efforts to date and requesting continued consideration during the Draft EA/EIR and Final EA/EIR phases (refer to Section 5.5). The MEPA Certificate also requested: *"Prior to filing the DEIR, the Proponent should continue consulting with NHESP and through said coordination determine whether the existing CMP will be amended, or if a new CMP will be required."* The Airport project team has continued to coordinate with the NHESP during the interim between the ENF Certificate and Draft EA/EIR.

The Massachusetts Historical Commission was consulted regarding any resources under 950 CMR 71.00 “*Protection of Properties Included in the State Register of Historic Places*” and consultation under Section 106, the National Historic Preservation Act of 1966. Details about the process and “*No Effect*” outcome are provided in Section 4.2.4. In addition, the FAA conducted outreach to the Tribal Historic Preservation Officers for federally recognized tribes. The letters were submitted on August 10, 2023, with no response as of the date of this Draft EA/EIR (Appendix D).

The United States Fish and Wildlife Service (USFWS) was consulted via the agency’s online system “*Information for Planning and Consultation*” (IPaC) tool. The results of the consultation are included in Section 4.3.2.

## 1.4 Additional MEPA Considerations

The MEPA ENF Certificate (inserted in front matter above) requested a summary, which was substantially provided under Sections 1.1 and 1.2 above. The specific MEPA thresholds and summary of potential environmental impacts and mitigation measures are summarized here with additional details presented in Chapter 5.

### 1.4.1 MEPA Thresholds

The ENF filed on April 18, 2023, and noticed in the EEA Environmental Monitor on April 26, 2023, detailed MEPA thresholds (see Section 1.1.2). The Certificate indicates that the project exceeds the MEPA review thresholds at 301 CMR 11.03(2)(b) for greater than two acres of disturbance of designated habitat, as defined in 321 CMR 10.02, that results in a take of a state-listed endangered or threatened species or species of special concern and 301 CMR 11.03(6)(b)(3) for the expansion of an existing runway at an airport. Under 301 CMR 11.06(7)(b), because the project is within 1-mile of a Designated Geographic Area (DGA) of an Environmental Justice (EJ) Community, an EIR is required under MEPA.

Potential environmental impacts associated with the Runway 6 project include the direct alteration of 6.67 acres of land. Of that, 4.18 is temporary impacts for all projects for construction over a three-year period (2024-2026). The remaining net area is 2.49 acres is new impervious surface, of which 1.71 is for the runway and taxiway extensions and 0.78 acres is for the construction of two 10,000 sf aviation hangars. This work is also expected to generate 4 New average daily trips (adt), but is not expected to result in impacts on wetland resource areas on and adjacent to the Runway 6 project area (based on determination by the FAA on September 22, 2023, that the fence and Gate 6 access road will NOT need to be relocated due to ILS glideslope location shift). Additionally, the work will result in a permanent loss of Priority Habitat for state-listed species.

The Runway 6 project will require an Agency Action in the form of an Amended Conservation and Management Permit (CMP) from NHESP. The Runway 6 project, as well as other future work, will seek Financial Assistance from the Massachusetts Department of Transportation Department (MassDOT) Aeronautics Division. The MEPA Certificate notes, “Therefore, MEPA jurisdiction is broad in scope and extends to all aspects of the Runway 6 project that may cause Damage to the Environment, as defined in the MEPA regulations.”

## 1.5 Environmental Justice Overview

Under EO 12898 *Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations* (1994) and recent federal administrative requirements (EO 13990, EO 14008, EO 14057), projects using federal funds must include various planning and outreach under NEPA. Under the state MEPA program, effective January 1, 2022, all new MEPA projects located in a “Designated Geographic Area” (301 CMR 11.02) around Environmental Justice (EJ) populations are required to submit an Environmental Impact Report (EIR) under MEPA (301 CMR 11.06[7]). A DGA is defined as “the area within one mile of the project or EJ population; or, for a project that meets or exceeds MEPA review thresholds at 301 CMR 11.03(8)(a) and (b) or that generates 150 or more New adt of diesel vehicle traffic over a duration of one year or more, excluding public transit trips, the area within five miles of the project or EJ population.” In the case of this Airport project, that latter criteria are not met or exceeded. Therefore, the DGA is presented as a one-mile radius from the Airport boundary (Figure 1-3; Appendix A).

The Airport is located within one mile of one EJ Population characterized as “Income” within the Town of Carver. The site is located within five miles of four additional EJ Populations characterized as Minority (3) and Income (1) within the Town of Plymouth. Additionally, no languages were identified as being spoken by 5% or more of Limited English Proficiency (“LEP”) residents within one mile of the Airport.

The Airport was not required to provide advance notification under Part II.A of the MEPA Public Involvement Protocol as it is not seeking expedited review under 301 CMR 11.06(8) or 11.06(13). However, advance notification of the ENF filing was voluntarily provided to a list of community-based organizations (CBOs) and tribes/indigenous organizations (the “EJ Reference List”) provided by the MEPA Office. The Airport circulated an EJ screening form with an overview of the Runway 6 project to these entities and information on ways to request a community meeting. Public involvement activities also included the creation of a Runway 6 project specific email address<sup>5</sup> for communication from interested parties and a dedicated webpage on the Airport website ([www.pymairport.com](http://www.pymairport.com)) for providing meeting notices, project information, and project filings to enhance public access. During the MEPA review period, the Airport offered to provide an additional remote evening meeting upon request (no such requests were received). Prior to filing the DEIR, an updated EJ Screening Form will be circulated making clear that the entire TMPU is undergoing MEPA review, and indicating opportunities for public involvement as to both current and future work (Appendix C).

As stated in the ENF the Runway 6 project is not anticipated to have significant impacts on EJ Populations, with any anticipated impacts being minor and temporary due to construction related activities. Potential construction period impacts could include increased vehicle emissions, temporary impacts on air quality during construction, and increased noise levels due to construction equipment. The ENF also states that the Runway 6 project will result in overall benefits including improved safety and efficiency, providing new construction related job opportunities, and economic enhancement. This Draft EA/EIR supplements the EJ analysis as indicated in the MEPA Certificate Scope with details in Chapter 4 and Chapter 5.

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<sup>5</sup> [PlymouthMAAirportRW6EA@dubois-king.com](mailto:PlymouthMAAirportRW6EA@dubois-king.com) (NOTE: This email address will only be valid during the EA/EIR phase and will not work or be monitored thereafter.)



## 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. 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. The MEPA Certificate requires that the purpose and need of each project proposed in the TMPU should be identified. Table 2-1 further below includes that basic information.

The 2022 *Technical Master Plan Update (TMPU) and Airport Layout Plan (ALP)* identified a series of Airport Improvements under the 5-year Capital Improvement Plan (CIP). The TMPU focused primarily on the projects relevant to the Runway 6 extension and associated Taxiway E and Taxiway A extensions. The TMPU also included additional projects identified in Table 2-1. Based upon the TMPU, a number of different project alternatives were developed for the Runway 6-24 and taxiway layouts 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 and individual projects in the 5-year CIP comprise what is referred to below as the *"Proposed Action."*

### 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 and taxiway lengths and runway safety area layouts that meet FAA standards for the design/critical aircraft.
- Proposed Action is projected to be constructed and operation by 2026 to address operational deficiencies.
- Construct all facilities to comply with applicable design and safety standards (e.g., FAA, Building Code, etc.).
- Accommodate current and forecasted aircraft operations during peak hours.
- In order to avoid impacts on land use and adjacent property and utilize the existing airport land, the proposed airport improvements should be constructed within existing PYM property boundaries and/or easement areas.
- Improve the resiliency of the Airport under projected climate change scenarios. In accordance with the United States 2021 Aviation Climate Action Plan, elements of the project would be designed to ensure that federal dollars are used wisely and that buildings and infrastructure would be planned, designed, and constructed to be resilient to climate change as appropriate.
- Continue PYM's role to operate safely and efficiently in regional economy by enhancing Airport ability to accommodate the critical aircraft at a minimal capacity to attract and retain on-Airport amenities (fuel, hangars, terminal facilities, etc).
- Through retaining aircraft and pilots, continuing on-Airport education opportunities, and similar actions, increase ability for job creation for aviation related jobs for employees from Plymouth, Carver, and the surrounding region.

The Proposed Action would allow PYM to respond effectively and efficiently to current needs, future changes, and towards air service improvements. Specifically, the Project would address operational constraints through the runway extension and parallel taxiway and taxilane with associated navaid shifts to adhere to FAA design requirements.

## 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 requires modification to meet certain FAA design standards and achieve the highest level of safety.

As noted in the TMPU (section 1.5), the Airport is subject to a broad range of regulatory constraints. The TMPU determined that the Airport was in need of various design improvements to bring it into compliance and to be able to accommodate the critical aircraft. In particular, the design criteria was updated by AC 150/5300-13B, which was released by the FAA on March 31, 2022. That Advisory Circular (AC) contains the Federal Aviation Administration’s (FAA) standards and recommendations for airport design. For each of the projects in the Proposed Action, the need varies.

First, the Airport’s primary Runway 6-24, does not fully support the critical aircraft at desired capacity (per TMPU Chapter 3). The existing length of Runway 6-24 is 4,650 feet (including 300’ displaced threshold), whereas a runway length analysis determination in the TMPU and associated supporting documentation concluded that a minimum runway length of 5,500 feet was required to meet current aircraft operations. This length is based on 60% useful load and worst-case landing length requirements during “contaminated” runway conditions (*i.e.*, standing water, ice, snow, slush, frost in any form, heavy rubber, or other substances). 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. The Proposed Action is for less than the minimum for 60% useful load. Therefore, the critical aircraft would need to operate at a reduced capacity under the proposed conditions (351’ extension rather than 850’ extension).

Second, FAA Advisory Circular (AC) 150/5300-13B specifies full parallel taxiways along all runways with Instrument Landing Systems (ILS). Full parallel taxiways improve airport safety by allowing taxiing aircraft to steer clear of runways and thereby reduce the chances of conflicts between aircraft. The current need to extend the runway will result in a non-compliant Taxiway A and Taxiway E condition. Therefore, these two taxiways will need to be extended to meet the FAA requirements.

Third, a number of the existing instrument approaches at the Airport are reliant upon ground-based instrumentation systems that include glideslope and localizer antennas. In order to properly serve an updated Instrument approach based on the new runway end, the ground based glideslope antenna must be repositioned in accordance with AC 150/5340-30G. In addition,

- Land use considerations need to be accounted for to accommodate the runway extension.
- Need to accommodate existing and projected demands including adequate runway length, apron and taxilane space to provide efficient operations and reduce useful load / weight penalties, imposed by the existing runway length for existing and anticipated aircraft, while complying with FAA safety and design standards.
- Address and reduce incompatible land use immediately surrounding the Terminal area in an



effort to mitigate the impact of terminal operations on nearby residential areas.

- Need to utilize existing Airport property, to avoid land use impacts and environmental impacts to the extent necessary, to accomplish the Proposed Action.

TABLE 2-1. Purpose and Need of Each Project in the CIP (as requested in MEPA certificate)

Year	Project	ENF Category And/or MEPA Threshold	Purpose & Need
2023	Runway 6/24 & Taxiway E/A Extension Environmental Assessment	<ul style="list-style-type: none"> <li>• 301 CMR 11.03(2)(b)(2) Non-mandatory EIR; Other MEPA review per ENF Certificate State-listed species under MGL c 131A MESA &gt;2 acres of disturbance of Priority Habitat;</li> <li>• 301 CMR 11.03(6)(b)(3) Non-mandatory EIR; Other MEPA review per ENF Certificate for Expansion of an existing runway;</li> <li>• 301 CMR 11.05(4)(a) - 1-mile DGA</li> </ul>	NEPA & MEPA Review as precursor to RW 6/24 & TW E/A Extensions to improve safety by providing, to the extent practicable, runway and taxiway lengths and runway safety area layouts that meet FAA standards for the design/critical aircraft (AC 150/5300-13B, Airport Design AC 150/5325-4B, Runway Length Requirements)
2024	Design and Permit Runway 6 Extension/ Taxiway E/A	[See 2023 above]	Meet FAA design requirements at AC 150/5300-13B, Airport Design AC 150/5325-4B, Runway Length Requirements
	Water / Wastewater Upgrades Sewer Main	[Subsurface installation within or immediately adjacent to existing Gate 6 access road footprint outside of fenced; Below thresholds for Water withdrawal and Wastewater]	Construction of <3,000 linear feet (lf) of gravity sewer main and associated appurtenances on the southwest side of Airport to upgrade substandard systems to meet applicable state design and capacity requirements to meet demand
2025	Extend Runway 6/24 (351' x 75')	[See 2023 above]	Meet FAA design requirements at AC 150/5300-13B, Airport Design AC 150/5325-4B, Runway Length
	Extend Taxiway E/A (700'x35'/1000'x35')		
	Gate 3 Taxilane Reconstruction	MEPA Exempt 301 CMR 11.01(2)(b)(3) Routine Mtc; Replacement	Full depth pavement reconstruction (~50,000 sf) immediately adjacent to the porta-port hangars
2026	Reconstruction Runway 6/24	MEPA Exempt 301 CMR 11.01(2)(b)(3) Routine Mtc; Replacement	Partial depth pavement reconstruction within existing footprint / envelope of RW 6/24
	Emergency Generator Airside Infrastructure	[Does not meet or exceed thresholds for Land, Energy, Air]	Impervious pad <~100 SF (10'x10') to hold generator providing emergency backup to existing energy system.
[TBD]	Hangars – 2 x each approximately 100' x 100' (20,000 sq ft)	301 CMR 11.03(1) Does not meet/exceed threshold; 301 CMR 11.03(2)(b) [reviewed under EA/EIR 2023] [Per MEPA ENF under Structures]	Meet existing demand for hangar space (located north of the Gate 6 Access Road and along Taxilane A)

### 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 Plymouth Municipal Airport's *TMPU* (2022). The primary goal of the evaluation therein was to determine the preferred projects under the 5-year CIP and a twenty year forecast and analyze the alternatives (Figure 3-1). In the MEPA ENF, the alternatives were reviewed solely with respect to extending Runway 6 and did not comprehensively consider alternatives or associated environmental impacts for the hangar construction or for other projects proposed as part of the *TMPU*. Therefore, as directed in the MEPA Certificate, the alternatives analysis in this Draft EA/EIR is supplemented in accordance with the Scope to include evaluation of projects that were not considered in the ENF but are within the 5-year CIP.

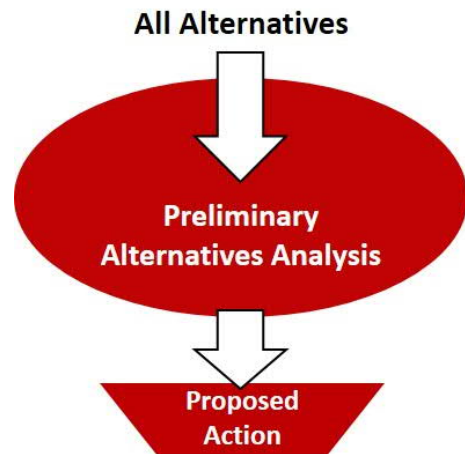


FIGURE 3-1. NEPA Step 1 – Alternatives Analysis

This Draft EA/EIR provides an alternatives analysis for all major components and not just the Runway 6 extension. The MEPA Certificate stated, *“Several of the proposed improvements will be designed to meet FAA safety guidelines; however, improvements are also intended to facilitate future growth in airport operations. If projects are intended to support expansion, the DEIR should estimate the increase in flight activity and associated impacts that will result from such expansion; less impactful alternatives to such expansion should also be described. The DEIR should describe the relevant safety guidelines and how the proposed design will achieve safety goals.”* This statement implies that the Airport is intending to grow in the number of operations beyond historic levels. As described and detailed in Section 1.2.3 *“Economics and Forecast”*, the Airport is NOT attempting to grow in a manner to support bigger operations (*i.e.*, FAA Commercial Part 139). Instead the Airport is taking measures to recover from recession and pandemic impacts and to regain some of the historic operational figures and stay viable.

The MEPA Certificate also requested, *“For improvements that are not directly safety-related, the DEIR should identify any alternative configurations or locations that would avoid or minimize impacts to land alteration and impervious area. The alternatives analysis and project narrative should support the selection of the Preferred Alternative for each project component that includes all feasible measures to avoid Damage to the Environment, or to the extent Damage to the Environment cannot be avoided, to minimize and mitigate Damage to the Environment to the maximum extent practicable.”* Other than the safety improvements associated with the RW 6 and taxiway extensions, the other projects involving existing impervious surfaces can only occur in-kind, *e.g.*, Gate 3 taxilane and RW 6 rehabilitation. As shown in Table 1-1 and Table 2-1, the wastewater treatment line and the two hangars proposed adjacent to Taxilane A are in conceptual phase (<30% design). The exact location and sizing, *etc.*, have been approximated, as those elements of the Proposed Action are beyond the scope of the *TMPU* and Draft EA/EIR.

However, the location of each is within the footprint of the project area outline shown on Figure 1-2 (red box). As for the Runway 6 reconstruction project, that will entail existing impervious areas, as will the Gate 3 taxiway reconstruction. The proposed new generator is planned for a very small area (<~100 SF) adjacent to the easterly side of the school in the vicinity of existing power generation infrastructure. Table 2-1 above outlined the MEPA Thresholds and Purpose and Need for each of the projects considered in the Proposed Action. The Gate 3 Taxiway Reconstruction and Runway 6/24 Reconstruction are both considered “Routine Maintenance” and/or “Replacement” under MEPA definitions (301 CMR 11.02) and are not included in the full alternatives analysis, as no other location is feasible. The water/wastewater line will occur within the Project/Study Area shown in Figure 1-2 (Appendix A) along the existing footprint of the Gate 6 access road to reduce any new environmental impacts. The emergency generator is shown on Figure 1-2 as a 10’x10’ area in a disturbed sand/gravel area immediately adjacent to the flight school near existing energy infrastructure. No other location is feasible for this installation. The impacts from that necessary equipment are considered *de minimus* and are not further analyzed.

The Proposed Action relating to the remainder of the projects involves the extension of the RWY 6 approach end, southwestward by 351-ft for a total runway length of 5001-ft. The projects contains the following physical elements:

- Construct a 351-ft long, 75-ft wide extension on the approach to Runway 6 for a total runway length of 5001-ft;
- Construct a 351-ft long, 35-ft wide extension to the parallel taxiway (E) in order to serve the runway with a full-length parallel taxiway to meet the requirements of Parallel Taxiway Standards of AC/5300-13B in order to maintain less than mile visibility on Precision Approaches or Approaches with vertical guidance;
- Relocated medium intensity runway lighting (MIRL), Medium Intensity Approach Light System with Sequenced Flashing Lights (MALSF), Precision Approach Path Indicator (PAPI), and Runway 6 ILS glideslope.

### 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 TMPU. 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 14 CFR, Part 77, Safe, Efficient Use, and Preservation of Navigable Airspace; Order 5200.8 Runway Safety Area Program; FAA Advisory Circular (AC) 150/5070-6B, Airport Master Plans; AC 150/5300-13B, 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 B-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 Dassault Falcon 2000

based on the highest number of operations and other factors (TMPU 2022). The recommended ARC therefore remains at B-II.

### 3.3 Evaluation Process

To evaluate the potential build alternatives and identify the ultimate “*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 *TMPU and ALP Update* (2022) development. A detailed analysis therein resulted in a recommended length for Runway 6-24 of 5500’ to accommodate the critical aircraft at 60% of its useful capacity. Thereafter, a total of four Runway 6-24 alternatives were evaluated in this EA (including the “No Action”). All of the alternatives developed and evaluated are briefly described below.

- *TMPU/ALP*: This initial screening level resulted from the analysis presented within the *TMPU/ALP* wherein alternatives were evaluated using the following criteria and thereafter were either “Recommended” or not. The baseline “environmental costs” were briefly addressed.

As outlined in the *TMPU* Chapter 5, the evaluation criteria were comprised of:

- Air Safety
- Ability to Serve the Critical Aircraft
- Impact on Adjacent Land [includes consideration of EJ Communities]
- Environmental Impacts
- Financial Impact

Those alternatives proposed to resolve each improvement area must be compatible with the dimensional requirements for the current and future critical aircraft, both of which are modeled as the Dassault Falcon 2000. As determined in the *TMPU*, alternatives would have to maintain the existing runway lengths to be compatible with current and future critical aircraft. This is a typically a “fatal flaw” step of the evaluation; alternatives that would not provide the needed primary Runway 6-24 length and width based on average stage length for 60% useful load and other factors presented for critical aircraft would not “pass” the evaluation and would not advance. In other words, they would not be “Recommended” in a *TMPU* and brought to a “Proposed Action” stage in an EA. However, because of the need to balance the Airport’s needs with considerations of surrounding communities and potential environmental affects, the Recommended Alternative in the *TMPU* preliminarily differs from the Proposed Action.

- *EA Evaluation*: Alternatives that passed initial screening in the *TMPU* were retained for detailed analysis in the EA. 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.

The four alternatives considered are summarized in Table 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 1-2 and Figure 3-2. Together, those preferred alternatives are considered the “*Proposed Action*”. 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 3-1. Summary of Alternatives Evaluated in *Technical Master Plan Update (2023)*

ACTION	ALT 1 No Action/ Existing Condition	ALT 2 Preferred Alternative	ALT 3	ALT 4
Runway 6 Approach Length	Do Nothing [Non-Compliant w/FAA design requirements]	351' x 75' [Total RW length = 5001'*; meets RSA; does not meet 60% useful load]	550' x 75' [Total RW length = 5200'*; does not meet 60% useful load]	850' x 75' [Total RW length = 5500'*; meets 60% useful load]
Taxiway A	Do Nothing	1000' x 35' [351' + 649' stub*]	1199' x 35' [550' + 649' stub*]	1499' x 35' [850' + 649' stub*]
Taxiway E	Do Nothing	700' x 35' [351' + 349' stub*]	899' x 35' [550' + 349' stub*]	1199' x 35' [850' + 349' stub*]
NAVAIDS:				
MIRL**	Do Nothing	Relocate	Relocate	Relocate
MALSF**	Do Nothing	Relocate	Relocate	Relocate
PAPI**	Do Nothing	Relocate	Relocate	Relocate
Glideslope	Do Nothing	Relocate [remove old access; create new access]	Relocate [remove old access; create new access]	Relocate [remove old access; create new access]
Fence	Do Nothing	Do not relocate***	Likely to relocate	Likely to relocate
Driveway	Do Nothing	Do not relocate***	Likely to relocate	Likely to relocate
Obstructions (Tree Removal)	Do Nothing	0	1-group current; 5-groups in near future	8-groups current; additional in future
Property Acquisitions/Easements	Do Nothing	None/0	3	4
NOTES: *Even though the 850' extension is the only option that accommodates the critical aircraft at 60% load capacity, the 351' extension was presented as the Preferred Alternative in the TMPU based on all factors that include public engagement and environmental concerns. This EA/EIR presents the 351' as the "Proposed Action" for RW 6 Approach based on ultimate Airport Commission determination that resulted from those same factors with additional cost, stakeholder outreach, and future growth considerations considered; total lengths given for TW A and E include total length of asphalt to include the extension to meet RW 6 extension length + stub/turn section.				
**MIRL – Medium Intensity Approach Light System; MALSF – Medium Intensity Light System w/Sequenced Flashing Lights; PAPI – Precision Approach Path Indicator				
***The FAA is responsible for conducting an analysis of the glideslope location in conjunction with a proposed extension of RW 6 approach end. Based on the outcome of this analysis, they will determine if the fence (and driveway) would need to be relocated to avoid interference with the glideslope equipment and accuracy.				



### 3.4 Evaluation Results

#### 3.4.1 Alternatives Considered

The following summaries present proposed improvements in Table 3-1 above, as well as describe 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

The runway design standards are based on the Runway Design Code (RDC) for aircraft design group B-II for both the current critical aircraft and projected future critical aircraft.

- Runway 6 Approach:  
Runway 6-24 is 4,650 ft long and 75 ft wide, which includes 4,350 foot runway and 300 foot displaced threshold at the RW 24 approach end. The runway length analysis presented in the *TMPU* determined that a minimum length of 5,500 ft would be needed to reach the minimums for 60% useful load for the critical aircraft.  
There are four alternatives evaluated under this action:  
1) No Action/Do Nothing, 2) *351 ft extension*, 3) 550 ft extension, 4) 850 ft extension

##### Taxiway Alternatives

The taxiway design standards are based on ADG II and Taxiway Design Group TDG-2. The following actions with alternatives for each were considered.

- Taxiway A Length  
Taxiway A parallels Runway 6-24 and connects stub Taxiway K and the southern development area to the approach end of Runway 6. The preferred configuration following an extension of the Runway 6 approach is a full-length parallel taxiway that connects with the new end of the approach.  
1) No Action/Do Nothing, 2) *Extend with Runway 6 approach 351-ft extension (plus 649-ft stub connection totaling 1000 ft)*, 3) Extend with Runway 6 approach 550-ft extension (plus 649-ft stub connection totaling 1200 ft), 4) Extend with Runway 6 approach 850-ft extension (plus 649-ft stub connection totaling 1500 ft). If Taxiway A is extended, the new segment will need to maintain a 240-ft separation from the runway centerline. This will determine the length of the stub connector at the end of Runway 6 approach.
- Taxiway E  
Taxiway is located between the Terminal Apron and Runway 6-24 and provides access to the runway from the terminal apron via four stub taxiways and the end of the Runway 6 approach end. The taxiway is 4,650 ft by 35 ft and parallels the length of Runway 6-24. As noted in the *TMPU*, the northerly end of the Taxiway has a 200-ft separation from the runway centerline. However, at the southwestern-most portion of Taxiway meets the FAA-required separation distance of 240 ft. If Taxiway E is extended, the new segment will need to maintain the 240-ft separation. This will determine the length of the stub connector at the end of Runway 6 approach.  
1) No Action/Do Nothing, 2) *Extend with Runway 6 approach 351-ft extension (plus 349-ft stub connection totaling 700 ft)*, 3) Extend with Runway 6 approach 550-ft extension (plus 349-ft stub connection totaling 899 ft), 4) Extend with Runway 6 approach 850-ft extension (plus 349-ft stub connection totaling 1199 ft)

## Navigational Aids and Obstructions

The navigational aids, fence, access road, and obstruction considerations presented in Table 3-1 above are carried forward in the EA analysis for all evaluated alternatives.

- Navigational Aids –
  - Medium Intensity Runway Lighting (MIRL) – The MIRL lights are located along all edges of Runway 6. Note that the Future Condition is to exchange the MIRL system for the HIRL system on Runway 6-24 (see ALP).
  - Medium Intensity Approach Light System (MALSF) – The MALSF lights are located prior to the approach to Runway 6. Depending on if and to what extent the Runway 6 approach is extended, the MALSF system will be shifted further from the end of the approach in a southerly direction.
  - Precision Approach Path Indicator (PAPI) – The PAPI system is situated between Taxiway E and the Runway approach end just southerly of stub Taxiway H. Depending on if and to what extent the Runway 6 approach is extended, the PAPI system will be shifted further in a southerly direction. The PAPI is proposed to be *relocated* to support the new position of the landing thresholds and are considered within the relevant alternatives.
  - Glideslope – The glideslope is part of the Instrument Landing System (ILS) Localizer identified on the ALP between Taxiway A and the Runway 6 approach end. It is affecting safety and pilot decision-making in landings and takeoffs on RW 6-24, as well as during taxi operations on TW A and TW E. Before a runway and taxiway extensions becomes feasible along Runway 6-24, the glideslope must be moved from its current location. Therefore, both Alt 1) No Action/Do Nothing and Alt 2) *Relocation* options were evaluated.
- Obstruction/Vegetation Removal – Results of the airspace analysis identified on-airport and off-airport obstructions to the RW 6 approach surface under the existing and proposed conditions. Alternative 2 (351') resulted in no obstructions/trees requiring removal. A single mature tree was deemed to be below the resulting approach surface (Figure 3-2). The Alternative 3 (550') and Alternative 4 (850') extensions would result in additional obstructions to those that already exist. In order to extend RW 6 under Alternatives 3 and 4, off-airport obstruction removal must occur to comply with all relevant clearance and safety regulations. 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

Two of the four alternatives shown in Table 3-1 for the Runway 6 extension were eliminated from further analysis. In accordance with Order 1050.1F, §6-2.1(d), this section briefly describes why each of these alternatives was eliminated from further consideration.

- Alt 3) 550-ft extension – Based on the alternatives analysis presented in the *TMPU*, this was the initially Recommended Alternative, even though it still would not meet the 60% useful load for the critical aircraft. However, the Airport determined that the higher cost and potentially higher environmental and adjacent community impacts outweighed the benefits derived. The Opinion of Probable Cost for engineering and construction of Alternative 3 presented in the *TMPU* is \$9,300,000, which is primarily due to a higher construction cost (Alt 2 OPC for construction is \$5,600,000; total is \$7,600,000. The design cost is estimated at \$100,000 more than Alt 2.)
- Alt 4) 850-ft extension – This alternative is the only one of the three that results in meeting the 60% useful load for the critical aircraft under the runway length analysis conducted and presented in the *TMPU*. Alternative 4 was eliminated by the Airport because the alternative would require extending the safety area and NavAids into a geographically-constrained area beyond the Runway 6 end, which would increase the high construction cost, potential environmental impacts, and resulting potential affects to neighboring community. The Airport determined that the high cost (including all new runway lights) and impacts outweigh the benefit of extending the runway to this extent. Alternative 4 was not considered to be “reasonable” or “feasible”. Therefore, the *TMPU* did not evaluate the total probable cost of Alternative 4.

### 3.4.3 Alternatives Retained

Two alternatives were retained for a detailed analysis in the EA: 1) No Action Alternative; and 2) Preferred Alternative as highlighted in Table 3-2.

#### *Alternative 1 – No Action Alternative (aka “No Build”, “No Project”, 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 minimum runway length needs. 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.

As presented in the *TMPU* (Chapter 5), the total amount of asphalt along RW 6-24 would remain at 4,650-ft and the Airport would continue to operate as it currently does with the ability to serve the critical aircraft at a substantially reduced capacity.

#### *Alternative 2 – Preferred Alternatives & “Proposed Action”*

- Runway 6 – Extend 351 ft
- Taxiway A Length – Extend 351 ft with 349-ft stub
- Taxiway E – Extend 351 ft with 649-ft stub
- NavAids (MIRL, MALSF, PAPI, Glideslope) – Relocate

This retained alternative proposes a 351-ft extension to the RW 6 approach end, southwesterly for a total runway length of 5001 ft. Based on the runway length analysis, this does not meet the 60% useful load for the critical aircraft. However, it does increase the runway length to allow for safer approach and takeoff distances.



TABLE 3-2. 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 6 Approach			
	Alt 2 – 351'	Retained for detailed analysis	Passes all screening criteria
	Alt 3 – 550'	Not retained	Eliminated from EA evaluation based on public outreach and potential impacts
	Alt 4 – 850'	Not retained	The only alternative that would reach the 60% critical aircraft threshold, but eliminated from EA evaluation based on potential public and environmental impacts
Taxiway A Length			
	Alt 2 – 351' +stub	Retained for detailed analysis	Passes all screening criteria
	Alt 3 – 550' +stub	Not retained	Eliminated based on elimination of RW 6 Alt 3
	Alt 4 – 850' +stub	Not retained	Eliminated based on elimination of RW 6 Alt 4
Taxiway E Length			
	Alt 2 – 351' +stub	Retained for detailed analysis	Passes all screening criteria
	Alt 3 – 550' +stub	Not retained	Eliminated based on elimination of RW 6 Alt 3
	Alt 4 – 850' +stub	Not retained	Eliminated based on elimination of RW 6 Alt 4
NAVAIDS			
MIRL, MALSF, PAPI			
	Alt 2 – 351'	Retained for detailed analysis	Passes all screening criteria
	Alt 3 – 550'	Not retained	Eliminated based on elimination of RW 6 Alt 3
	Alt 4 – 850'	Not retained	Eliminated based on elimination of RW 6 Alt 4
Fence & Access Road			
	Alt 2 – 351'	Retained for detailed analysis	Passes all screening criteria
	Alt 3 – 550'	Not retained	Eliminated based on elimination of RW 6 Alt 3
	Alt 4 – 850'	Not retained	Eliminated based on elimination of RW 6 Alt 4
Glideslope			
	Alt 2 – 351'	Retained for detailed analysis	Passes all screening criteria
	Alt 3 – 550'	Not retained	Eliminated based on elimination of RW 6 Alt 3
	Alt 4 – 850'	Not retained	Eliminated based on elimination of RW 6 Alt 4
Obstruction Removal			
	Alt 2 – 351'	Retained for detailed analysis	Passes all screening criteria
	Alt 3 – 550'	Not retained	Eliminated based on elimination of RW 6 Alt 3
	Alt 4 – 850'	Not retained	Eliminated based on elimination of RW 6 Alt 4

### 3.5 Conclusion of Evaluation Process

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 *TMPU* (2023). The screening analysis concludes that only one alternative for each project component is practical and feasible relative to meeting the project need, detailed in Chapter 2. This EA/EIR evaluates the “No Action” and “Proposed Action” 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.

The Preferred Alternative and resulting Proposed Action in Table 3-2 was determined to be the only feasible scenario that would meet the purpose and needs of the Airport when public engagement, economic factors, and preliminary environmental concerns versus forecast conditions and long-term goals were considered. 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.

### 3.6 Proposed Action

As presented in the screening section above, each of the Preferred Alternatives examined during the *TMPU* (2022) process evaluated the following.

- Air Safety – meets current FAA standards in accordance with AC 150-5300-13B
- Ability to Serve the Critical Aircraft – meets the current and projected needs of the facility based on the forecasted airport operations (currently the Dassault Falcon 2000)
- Impact on Adjacent Land – considered potential effects on neighboring communities
- Environmental Impacts – provided preliminary consideration for the environmental resources to be further evaluated under NEPA
- Financial Impact – evaluated the costs associated with the alternative with a standard 20% contingency. [Note that the “Estimated Project Cost” is based on the *TMPU*’s Table 6-1; see Table 3-3 below).

The “Proposed Action” is comprised of the recommended projects in Table 3-2, along with those presented earlier in Table 1-1 and 2-1 and summarized in the bullets immediately below.

- Design and Permit Runway 6 Extension/ Taxiway E
- Water / Wastewater Upgrades Sewer Main
- Extend Runway 6/24 (351’ x 75’)
- Extend Taxiway E/A (700’x35’)
- Gate 3 Taxilane Reconstruction
- Reconstruction Runway 6/24
- Emergency Generator Airside Infrastructure
- Hangars – 2 x each approximately 100’ x 100’ (20,000 sq ft)

Table 3-3 summarizes the Key Cost Features of the Preferred Alternatives (not including the cost of preparing the NEPA EA). The potential resource impacts are detailed in Chapter 5 – Environmental Consequences.

TABLE 3-3. Key Cost Considerations of Retained/Preferred Alternatives

		Key Features
ACTION	RETAINED ALTERNATIVES	Estimated Cost*
Runway 6		
	Alt 1 – No Action/Do Nothing	\$0
	Alt 2 – Extend 351’ [= 26,325 SF of asphalt]	\$480,000 – Design & Permitting (includes TW A/TW E) \$4,600,000 – RW 6 Extension Construction
Taxiway A		
	Alt 1 – No Action/Do Nothing	\$0
	Alt 2 - Extend 351’ + 649’ stub [= 35,000 SF of asphalt]	[Design & Permitting included under RW 6 above] \$3,000,000 (includes TW E)
Taxiway E		
	Alt 1 – No Action/Do Nothing	\$0
	Alt 2 - Extend 351’ + 349’ stub [=24,500 SF of asphalt]	[Design & Permitting included under RW 6 above] [Construction included in TW A above]
NavAids (MIRL, MALSF, PAPI, Glideslope)		
	Alt 1 – No Action/Do Nothing	\$0
	Alt 2 - Relocate	\$1,100,000
*Source: Plymouth Municipal Airport, Technical Master Plan Update (Section 7.5), August 2022.		

### 3.7 Timeline and Phasing of Proposed Action

The timeline of the CIP projects from the TMPU was presented in Table 1-1 and Table 2-1. Table 3-4 presents an overview of the anticipated timeframe required to implement the projects under the Proposed Action between 2022 through 2026. Each of the alternatives are proposed within a four-year construction phasing in order to address financing and reduce disruption to Airport operations and pilots using the airfield.

Table 3-4 General Timeline of Proposed Action Based on TMPU Proposed 5-Year CIP (2022)

Year	Project	Notes
2023	Complete NEPA / MEPA Review	<December 31, 2023; [Expedited Schedule]
2024	<ul style="list-style-type: none"> <li>Design and Permit RW 6/24 Extension, TW E, TW A</li> <li>Install Water/Wastewater Upgrades; Sewer Main</li> </ul>	Pending NEPA FONSI and MEPA approval
2025	<ul style="list-style-type: none"> <li>Extend RW 6/24, TW E, TW A</li> <li>Gate 3 Taxiway Reconstruction</li> </ul>	Will include navaid relocations
2026	Emergency Generator Airside Infrastructure	Tying into existing infrastructure

## 4 Affected Environment

This section is often referred to as “*Existing Conditions*”, those that are currently present as of the submission of this EA/EIR document to the determining federal and state agencies. Per FAA Order 1050.1F outlining the agency’s NEPA requirements (specifically Paragraph 6-2.1[e]), this section describes the environmental conditions of the geographic area at the Airport potentially affected by the Proposed Action (Figure 4-1).

The resource categories are presented in the order given in FAA Order 1050.1F, Exhibit 4-1. The data and analyses are presented in the level of detail associated 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 associations. 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).

Under MEPA regulations at 301 CMR 11.07(6), this section fulfills the requirements for the section identified as “*Existing Environment*” and includes a description of the physical, biological, chemical, economic, and social conditions of the Project site, its immediate surroundings, and the region.

### 4.1 Study Area

The Introduction noted that the Project Proponent is the Airport, which manages the property comprised of 758 acres. Under NEPA, the “*Study Area*” is considered to be a smaller sub-section of the Airport property. Within the Airport boundary, the *Study Area*, aka *Project Area*, is identified as the area within which all of the project components from the CIP and presented in Section 1.2 above are located (referred to as “*Project Site*” by MEPA Certificate). Figure 1-2 (Appendix A) identifies the *Project Area* within a red box.

The entire Airport is considered a Project Area in a broader sense, and under NEPA, *cumulative* impacts must be considered to determine the sum total of affects resulting from projects conducted over time. Similarly, project *segmentation* is prohibited under MEPA. This Draft EA/EIR describes the Airport generally and focuses in on the portions of the Airport under consideration in the TMPU and 5-year CIP. All of the proposed improvement projects are located on existing Airport property and are consistent with existing aviation uses.

The “*Study Area*” for each of the resource categories varies according to area of potential impact. The projects related to the Runway 6 extension project proposed for 2023 through 2025 will occur within the study area shown in Figure 1-2 (*Locus*) and Figure 4-2 (*Existing Conditions*). The water/wastewater upgrades to the sewer main are likewise contained within the red study area box in those figures to be aligned with the Gate 6 access road up to the vicinity of the flight school at the northerly end of Taxi Lane A. The Gate 3 taxi lane reconstruction proposed for 2025 is shown in Figure 1-2 in a previously disturbed impervious area near South Meadow Road and the T-hangars. The Runway 6/24 partial depth reconstruction project in 2026 is contained within the disturbed and impervious footprint of the existing Runway 6/24. That project is only proposing to remove and replace the top layer(s) of the pavement,

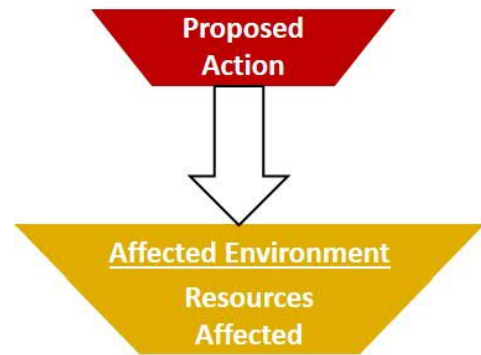


FIGURE 4-1. NEPA Step 2 – Resources Affected Determination

but not the entire depth. The relevant study areas are described within each resource area described below. Figure 4-3 illustrates the *Environmental Constraints* (referred to under NEPA as “resources affected”) in the RW 6 extension area.

## 4.2 Resources Not Affected

### 4.2.1 Coastal Resources

Federal activities involving coastal resources are governed by the Coastal Barriers Resources Act (CBRA), the Coastal Zone Management Act (CZMA), and Environmental Order (EO) 13089, Coral Reef Protection. Due to the geographic location of the Plymouth airport, no coastal barrier resources or coastal zones will be affected by any proposed airfield development, whether by direct physical impact on beaches, coastal waters, subaqueous lands, coastal strips, or by runoff pollution. The Airport is not located within any a Coastal Zone Management (CZM) area. Per Title 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.

### 4.2.2 Section 4(f) and Section 6(f) Resources

Areas protected under Section 4(f), 49 U.S.C. § 303,3 and Section 6(f) of the Land and Water Conservation Fund Act (16 U.S.C. §§ 460l-8(f)(3)) must be included in the NEPA evaluation. Both programs and regulations affect recreational and open space lands, so the review and approval by federal and state agencies under both regulations typically runs concurrently. Figure 4-4 illustrates protected public open space in the vicinity of the Airport (Source: MassMapper).

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 project areas within the Airport. Section 4.2.5 regarding archeological and cultural resources also addresses the findings by the MHC of “no effect” to the one state-registered property in the vicinity of the Airport. Any potential construction on Airport property would not require the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance, or land of an historic site of national, State, or local significance. The 5-acre former Carver State Forest was previously state-owned but is now owned by the Airport (purchased with FAA AIP grant funds; 1999). It is now owned and actively managed by the Airport, and is located within Carver’s Airport District.

The Land and Water Conservation Fund Act of 1965 was enacted to preserve, develop, and assure accessibility to outdoor recreational resources. The federal government established the Land and Water Conservation Fund (LWCF) Program to increase the net quantity of public, outdoor recreational space and parkland. Section 6(f) of the Act provides matching funds to states or municipalities for planning, improvements, or acquisition of outdoor recreational lands. Any property that was planned, purchased, or improved with LWCF money is considered a 6(f) property. If a property was acquired or improved with Land and Water Conservation Fund Act money, the property cannot be converted to a use other than public outdoor recreation without the approval of the Secretary of the Interior. A Section 6(f) conversion may also occur as a result of a temporary use equal to or greater than six months in duration.

The Proposed Action does not involve impacts on land regulated under Section 4(f) or Section 6(f). Myles Standish State Forest is the only state-protected land near Plymouth Municipal Airport. The state forest is located in the approach to Runway 33, approximately two-thirds of a mile southeast of the Runway 33 threshold. The Town of Plymouth has local parks near the airfield, but none are located within or adjacent to the Project area. There is open space located east of the Runway 24 threshold that is designated as conservation land on Town land use plans and open space north of the Runway 15 threshold that is held for recreation. The Town of Carver owns land located southeast of the Runway 6



threshold that is marked as conservation and recreation land on the Town's Land Use Plan. Based on this information, the Proposed Action, would not affect Section 4(f) or Section 6(f) resources in the primary study area. Therefore, this resource is dismissed from further consideration.

#### 4.2.3 Farmlands

Soils are shown on Figure 4-5. The Farmland Protection Policy Act (FPPA; 7 U.S.C. 4201-4209; PL 97-98 amended by section 1255 of the Food Security Act of 1985, PL 99-198) addresses the conversion of farmland to non-agricultural uses. The FPPA requires coordination with the local office of the Natural Resources Conservation Service (NRCS) if the proposed project entails irreversible conversion of prime farmland to nonagricultural uses. This requirement is intended to monitor the impact that federal programs or federally funded projects have on the conversion of this resource. Farmland subject to this requirement does not have to be currently used for cropland; it may also be forestland or pastureland, but *not urban or built-up land*. The FPPA 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.

In Massachusetts, Executive Order 193 (March 19, 1981) is likewise intended to avoid or minimize the conversion of farmland to non-agricultural uses. There are no Prime Farmlands or Farmland of Local Importance at the Airport. Neither Plymouth nor Carver have soils designated as Farmland of Local Importance as of 7/18/22<sup>6</sup>. There are no areas in agricultural production since the Airport started operating. The Project area contains soils that are considered farmland of statewide importance and farmland of unique importance, including "Farmland of Statewide Importance" soils like the Deerfield series and "Farmland of Unique Importance" soils like the Tihonet series. Project areas proposed for development are not currently in agricultural use and therefore will not have any impact. A small area of farmland soils is proposed for grassland habitat mitigation and will not have any impact on the potential for future use as farmland. There are active cranberry bog operations in the vicinity of the Airport to the south and east. 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.

#### 4.2.4 Historical, Architectural, Archeological, and Cultural Resources

Under the National Historic Preservation Act of 1966 (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 implementation regulations 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 Massachusetts, this project comes under the jurisdiction of the Massachusetts Historical Commission (MHC), which functions as the State Historic Preservation Officer (SHPO). Under Massachusetts CMR 950 71.00, specifically 71.04, initiation of review under Section 106 may be accomplished by submission to the MHC of the ENF. The ENF was submitted on April 18, 2023, and public notice was released in the Environmental Monitor on April 26, 2023. The FAA conducted federal THPO consultation to request review from the Wampanoag Tribe of Gay Head (Aquinnah) and the Mashpee Wampanoag Tribe (Appendix D).

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<sup>6</sup> Source: <https://www.nrcs.usda.gov/sites/default/files/202208/Farmland%20of%20Local%20Importance%20MA-STC%202022-07-21.pdf> ; accessed 8/8/23

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 earlier improvements, two prior submittals to MHC were provided:

- 2003 Project Notification Form for Taxiway E Relocation and Gate 6 Access Road
- 2011 Intensive (Locational) Archeological Survey Report, Runway 33 Extension.

Under a permit issued by the MHC in 2003 under which the Airport's consultant, Public Archaeology Lab (PAL) conducted a reconnaissance archaeological survey of the Airport and an intensive (locational) archaeological survey of the area now containing the 9,500 Gate 6 Access Road. The intensive survey of the road did not identify any archaeological sites. PAL's survey also determined that the central Airport areas have low archaeological sensitivity due to land disturbances. A subsequent survey for the Runway 15-33 Extension Area in 2010 revealed no pre-contact cultural material or evidence of subsurface features. Both of these findings were reported to MHC (reference EEA 4700, 2018 Taxiway D Environmental Assessment).

A subsequent review as part of the 2022 TMPU confirmed that there are no historic districts within the immediate vicinity of the Airport. All of the historic districts within Plymouth are located in the historic district near the downtown harbor area and will not be affected by the Airport improvements. Within Carver, the MHC's Massachusetts Cultural Resource Information System (MACRIS) online database identifies the nearest Inventoried Property as the circa 1773 Benjamin Ward House at 4 Carver Street (ID: CAV.606), located approximately 0.95 miles to the southwest. The Proposed Action will not have any significant effect on the resource.

No comments were received from the MHC during the 30-day review period under CMR 950 71.04, and a written request was submitted for a "no effect" determination based on this collective information. The response communications are included in Appendix D. 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. Therefore, this resource is dismissed from further consideration.

#### 4.2.5 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. Light emissions at the Airport are associated with runway and taxiway edge lighting, a rotating beacon, PAPIs, approach lighting systems and other visual navigational aids that help a pilot locate the Airport and execute a safe landing. Additionally, apron ramp lighting and street lighting on access roadways create light emissions from the Airport. Under the Proposed Action, any lights that will be replaced will be replaced in situ, with lighting of similar intensity. Lights on the Runway 6 approach end will be placed in a pattern similar to the existing layout, but relocated approximately 351' equidistant to the south.

No parks, recreation areas, or other light-sensitive areas are located close enough to the Airport property to be significantly impacted by an increase in lighting. If necessary, measures can be taken to minimize light intrusion on residents and light-sensitive areas via the installation and/or maintenance of an evergreen tree buffer. Operation of lighting systems are controlled by the FAA, not the Airport. LED lights may be installed for approach lighting systems. All lighting would be designed with reduced energy use in mind with LED lighting utilized for signage and signals. In 2015, the FAA assembled a Significant Safety Issues (SSI) team and Safety Risk Management Panel (SRMP) to study the integration of LED lighting into the aviation system. The use of LED lighting will adhere to FAA regulations. All proposed development is consistent with the existing visual character of the airfield environment

The no action alternative would not create visual impacts. However, it would not meet the need for Airport infrastructure that complies with FAA planning and design standards and improves overall operational safety and efficiency at the Airport. 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.

#### 4.2.6 National 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. 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 Wild and Scenic Rivers located on or near the Airport. The only currently designated Wild and Scenic Rivers in Massachusetts are: Nashua, Squannacook and Nissitissit Rivers; Sudbury, Assabet and Concord Rivers; Taunton River; and Westfield River. Therefore, this resource is dismissed from further consideration.

#### 4.2.7 Water Resources: Floodplains and Floodways

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. Airport development actions must avoid impacting floodplains if a practicable alternative exists in order to comply with Executive Order 11988 (1977) *Floodplain Management* and the US Department of Transportation (USDOT) Order 5650.2 *Floodplain Management and Protection*. In addition, the FAA has provided guidance for floodplain analysis that needs to be incorporated in NEPA evaluations to adhere to EO 14030 *Climate-Related Financial Risk* (May 20, 2021) and the earlier EO 13690 (January 30, 2015) *Establishing a Federal Flood Risk Management Standard [FFRMS] and a Process for Further Soliciting and Considering Stakeholder Input*. This policy outlines federal efforts to improve the resilience of communities and the Federal assets against the impacts of flooding, which are anticipated to increase over time due to the effects of climate change and other factors. [Climate change is also considered in Sections 4.3.3 and 5.6.]

EO 13690 and the FFRMS seeks to "ensure agencies expand management from the current base flood level to a higher vertical elevation and corresponding horizontal floodplain to address current and future flood risk and *ensure that projects funded with taxpayer dollars last as long as intended.*" Agencies, where possible, shall use natural systems, ecosystem processes, and "nature-based approaches" in the development of all actions to which EO 11988 applies. EO 11988 applies to all actions, but the approaches for determining the vertical flood elevation and corresponding horizontal floodplain described in the FFRMS "must be used for federally funded projects."

The FAA provides additional guidance to NEPA practitioners to utilize the *Guidelines for Implementing Executive Order 11988, Floodplain Management, and Executive Order 13690, Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input* ("Guidelines"; October 8, 2015). It states, *"Although the FFRMS describes various approaches for determining the higher vertical flood elevation and corresponding horizontal floodplain for federally funded projects, it is not meant to be an 'elevation' standard. The FFRMS is a resilience standard."* The Guidelines include the phrase *"vertical elevation and corresponding horizontal floodplain"* as a substitute for the phrase *"elevation and flood hazard area"* used in EO 13690 and the FFRMS when referring to the elevation approaches that must be used for federally funded projects. It states, *"This was done to emphasize that the resilience standard is based on both the vertical elevation and the horizontal extent of the floodplain and to avoid any confusion with the term 'Special Flood Hazard Area.'"*



There are three primary methods described to determine the subject flood elevation, but the *Climate-Informed Science Approach (CISA)* is the preferred method. The FAA especially notes in the *Guidelines' Appendix G Federal Flood Risk Management Standard and Appendix H Climate-Informed Science Approach and Resources* (2015). Under EO 13690, "the elevation and flood hazard area that result from using a climate-informed science approach that uses the best-available, actionable hydrologic and hydraulic data and methods that integrate current and future changes in flooding based on climate science. This approach will also include an emphasis on whether the action is a critical action as one of the factors to be considered when conducting the analysis." A "Critical Action" is defined in EO 11988, as amended, to include "any activity for which even a slight chance of flooding is too great". According to the *Guidelines, Appendix G* (2015), the concept of Critical Action reflects "a concern that impacts of flooding on human safety, health, and welfare for many activities could not be minimized unless a higher degree of protection or resilience than that delivered by the base flood elevation was provided." EO 13690 amended 11988 to require agencies, where possible, to use natural systems, ecosystem processes, and nature-based approaches in the development of Federal actions implementing EO 11988.

According to the *Guidelines* (2015), "The FFRMS provides approaches to establishing a higher vertical elevation to ensure that uncertainties associated with climate change and other future changes are more adequately accounted for in the decision process for future federally funded projects. For federally funded projects, the FFRMS flood hazard elevation established the level to which a structure or facility must be resilient."

There are multiple existing resources available for desktop review of the subject project area. Each of the screening tools has inherent strengths and weaknesses based on the dataset and source, assumptions, and gaps in knowledge. Since the FEMA Flood Insurance Rate Maps (FIRMs) for the vicinity of Plymouth Municipal Airport were most recently updated in 2021 (FIRM panels 25023C0361K, 25023C0362K, 25023C0363K, and 25023C0364K, effective 7/2021), they provide a baseline using the latest science (Figure 4-6 and Figure 4-7; Appendix A). The latest mapping illustrates that there have been some modeling that results in changes over the previous maps (July 17, 2012). In particular, there is one additional flowage now showing that was not evident under earlier models in the 2012 FIRM maps. It is a large drainage swale to the southwest of Runway 6 end that originates across South Meadow Road. That drainage flows into a large constructed drainage/stormwater basin, and southerly to an existing large, wide and deep swale and then downgradient to previously delineated areas.

Using additional desktop analysis based on the USGS National Mapper and generally supported by a Google Earth profile, Figure 4-8 and Figure 4-9 illustrate that the deep swale is sufficiently sized to avoid any overtopping during a major stormwater event (Appendix F). In addition, a review of the available Lidar data shows that the swale is over 10 feet below the existing Taxiway E and has substantial volume (Figure 4-10; Appendix A). As illustrated by the USGS and Google profiles, the bottom of the swale is at approximately 120' elevation where it is nearest to the proposed Taxiway E extension, which is at an elevation of approximately 131'. That results in nearly 11' of depth available ("how high" per EO 13690). The swale in this vicinity at its lowest depth (120') is greater than 100' across ("how wide") so overtopping is not likely to occur (also reference Section 5.6.1 regarding CISA). Furthermore, these additional exhibits and imagery in Appendix F illustrate that the swale has capacity to prevent flooding events in the higher elevation areas of the Runway 6 end of the airfield.

In other areas of the Airport not included under any projects in the Proposed Action, there is a band of Zone A (without Base Flood Elevation information) that crosses the existing Runway 15-33, where Runway 33 was extended in 2016 (Figure 4-6 and Figure 4-7; Appendix A). This Zone A band is subject to inundation by a 1-percent-annual-chance flood event and is in approximately the same location as mapped DEP wetlands (per MassMapper). There are no other floodplain areas indicated beyond the ends of any of the runways or taxiways/taxilanes. Therefore, any occurring in these areas would not impact any 100-year floodplains or areas or be considered "Critical Actions".

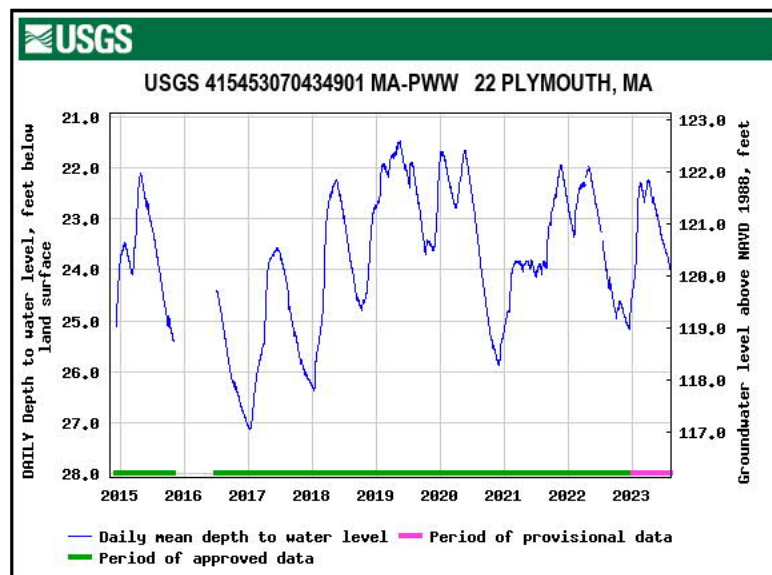
Based on this information, no fill is proposed within 100-year floodplains, and no areas evaluated using CISA will impact the Airport thereby ensuring that the Airport will remain resilient to climate factors for those projects that utilize federal funding. Stormwater design for the project is proposed to occur outside of the floodplain and in accordance with all FAA design standards to meet or exceed requirements, including Low Impact Design (LID) and green infrastructure, where appropriate and within cost and other constraints. Therefore, this resource is dismissed from further consideration.

#### 4.2.8 Water Resources: Groundwater

The Safe Drinking Water Act (SDWA; 42 U.S.C. § 300f *et seq* 1974) 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. The 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 (SSA) 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 that could physically, legally, and economically supply the water.

Plymouth Municipal Airport is located in the Buzzards Bay watershed (10 digit Hydrologic Unit Code 0109000203). The Airport overlies the Plymouth-Carver Aquifer (PCA), an EPA-designated Sole Source Aquifer (Figure 4-11). Covering 199 square miles, including all or portions of six communities, the PCA is one of the largest designated aquifers in New England and the second largest in Massachusetts. Hydrologic studies indicate that groundwater in the PCA generally moves in a north to south direction from Middleborough toward Wareham, and in an east to west direction, toward Plymouth Harbor. As shown on Figure 4-11, there are no Interim Wellhead Protection Areas nor Zone II Protection areas as mapped by MassDEP on Airport property. There is a USGS groundwater monitoring well located at South Meadow Road on the northwest side of the Airport. It came online on December 5, 2014, and monitors continuously for depth to groundwater. Data from December 2014 through August 2023 indicate that the water levels are fairly consistent with monthly and seasonal fluctuations that show similar trends (Figure 4-12).

FIGURE 4-12. USGS Groundwater Monitoring Well 415453070434901 Ma-PWW graph for period from December 5, 2014 to August 9, 2023, shows fluctuating levels with seasonal variation.



In addition, the Airport maintains a Groundwater Management Plan. The Groundwater Management Plan includes procedures and policies to minimize potential impact on groundwater from Airport activities and addresses the following topics: (1) storage, handling, and disposal of hazardous materials, (2) aircraft fueling, (3) maintenance of septic systems and stormwater systems, and (4) a groundwater monitoring program.

A Stormwater Pollution Prevention Plan (SWPPP) exists for the Airport and was most recently updated in September 2022 in accordance with the National Pollutant Discharge Elimination System (NPDES) Multi-Sector General Permit (MSGP) that controls maintenance activities and operations on the site that have the potential to impact stormwater. The Airport conducts snow removal operations for measurable snowfall events. Snow removal operations at the Airport comply with MassDEP's Snow Removal Guidance (December 2020). Snow removed from runways, taxiways, and aprons is stored in upland areas. Some snow pile consolidation may occur as necessary. No chemicals or salt are used on the runways, taxiways, or aprons. Approximately 20 yards of "FAA sand" (very fine, 2 mm screen) are used annually. The Airport's SWPPP prohibits the use of deicing chemicals on aircraft which are deiced by heat in hangars instead. New pavement will be treated in the same manner as existing pavement.

The Airport is served by the municipal water supply. It has its own on-site wastewater treatment plant located to the west of Runway 33. This plant was constructed in 2003 and is permitted under a Groundwater Discharge Permit from MassDEP to operate at a capacity of 25,000 gpd (Permit No. 720-0). It currently handles approximately 5,000 gpd, well below its permitted capacity. Associated with the leach field for the wastewater treatment plant are three groundwater monitoring wells that are monitored quarterly for specific conductance, pH, total nitrogen, and nitrate nitrogen. MW-3 well is located near the S-1 hangar, SHA-2 well is in the middle of the leach field, and SHA-3 well is located down gradient of the leaching field. The Airport began collecting water quality monitoring data in 2002; the data indicate that nutrient loading is highest at SHA-2, which is to be expected given its location in the leach field, but minimal to non-detectable at the other two wells. Therefore, it is considered a Resource Not Affected and is dismissed from further consideration.

#### 4.3 Resources Affected

##### 4.3.1 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. It is difficult to disconnect the topics of Air Quality, Climate Change, and Greenhouse Gases.

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 (O<sub>3</sub>), carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), lead (Pb), particulate matter (PM<sub>2.5</sub> and PM<sub>10</sub>) and sulfur dioxide (SO<sub>2</sub>). The EPA regulates these pollutants through human health-based (primary standards) and environmental-based (secondary standards) criteria. Table 4-1 lists the current NAAQS. In Massachusetts, the state air quality standards are the same as the NAAQS.

TABLE 4-1. National Ambient Air Quality Standards (NAAQS)

Pollutant	Averaging Period	NAAQS (µg/m <sup>3</sup> )	
		Primary	Secondary
NO <sub>2</sub>	Annual <sup>(1)</sup>	100	Same
	1-hour <sup>(2)</sup>	188	None
SO <sub>2</sub>	3-hour <sup>(3)</sup>	None	1300
	1-hour <sup>(4)</sup>	196	None
PM <sub>2.5</sub>	Annual <sup>(1)</sup>	12	15
	24-hour <sup>(5)</sup>	35	Same
PM <sub>10</sub>	24-hour <sup>(3)</sup>	150	Same
CO	8-hour <sup>(3)</sup>	10,000	Same
	1-hour <sup>(3)</sup>	40,000	Same
Ozone	8-hour <sup>(6)</sup>	147	Same
Pb	3-month <sup>(1)</sup>	0.15	Same

Source: <http://www.epa.gov/ttn/naaqs/criteria.html> and 310 CMR 6.04

<sup>(1)</sup> Not to be exceeded.

<sup>(2)</sup> 98th percentile of one-hour daily maximum concentrations, averaged over three years.

<sup>(3)</sup> Not to be exceeded more than once per year.

<sup>(4)</sup> 99th percentile of one-hour daily maximum concentrations, averaged over three years.

<sup>(5)</sup> 98th percentile, averaged over three years.

<sup>(6)</sup> Annual fourth-highest daily maximum eight-hour concentration, averaged over three years.

According to the FAA 1050.1F Desk Reference (ver 4, September 2023), 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 with measured outdoor air concentrations below the NAAQS are considered “attainment” areas. The EPA makes final determinations (called designations) as to whether states meet the NAAQS. As of the most recent EPA Green Book report (<https://www.epa.gov/green-book>; updated July 31, 2023) the counties within the Airport Service Area (ASA), which consists of Plymouth, Norfolk, Bristol, and Barnstable, are considered in attainment for all criteria pollutants.

Since the air quality in the immediate region of the Airport is *in attainment*, and project-related impacts to air quality will be limited to temporary construction impacts that will be mitigated to the extent feasible, only a qualitative analysis is included to describe the current air quality in the region as described below.

#### 4.3.1.1. Background Air Quality

To estimate background pollutant levels representative of the area, the most recent US EPA design values<sup>7</sup> were obtained for 2020 to 2022 for the criteria pollutants. The closest and most representative monitoring station for which data are available for all air pollutants is generally selected. The monitoring station at Harrison Avenue in Boston was selected for this project. This station is located in an urban area near major roads and therefore considered a conservative estimate of background air concentrations. Table 4-2 presents the background air quality concentrations for all the criteria air pollutants.

<sup>7</sup> [Air Quality Design Values | US EPA](#). A design value is reported by US EPA in the correct format for comparison with the NAAQS

TABLE 4-2. Background Air Pollutant Concentrations

Pollutant	Averaging Time	Background Concentration (µg/m³)	NAAQS	Percent of NAAQS
NO <sub>2</sub> <sup>(1)</sup>	1-Hour	83	188	44%
	Annual	18.8	100	19%
SO <sub>2</sub> <sup>(2)</sup>	1-Hour	5.2	196	3%
PM <sub>2.5</sub>	24-Hour <sup>(3)</sup>	14	35	40%
	Annual <sup>(3)</sup>	5.9	12	49%
PM <sub>10</sub>	Max 24-hr	28	150	19%
CO <sup>(4)</sup>	1-Hour	1840	40000	5%
	8-Hour	1840	10000	18%
Ozone <sup>(5)</sup>	8-Hour	121.7	147.0	83%
Pb	Max 24-hr	0.003	0.15	2%

Notes:

From [Air Quality Design Values | US EPA](#), or EPA's AirData Website

(1) NO<sub>2</sub> concentrations are reported in ppb. Converted to µg/m³ using factor of 1 ppb = 1.88 µg/m³.

(2) SO<sub>2</sub> reported ppb. Converted to µg/m³ using factor of 1 ppb = 2.62 µg/m³.

(3) Background level is the average concentration of the three years.

(4) CO is reported in ppm. 1 ppm = 1150 µg/m³.

(5) O<sub>3</sub> reported in ppm. Converted to µg/m³ using factor of 1 ppm = 1963 µg/m³.

As shown in Table 4-2 the background air quality is generally very good even in urban areas with high traffic volumes, with air concentrations that are well below the current NAAQS. The airport project will not result in additional emissions from any changes in operation that would result in an exceedance of the NAAQS.

#### 4.3.1.2 Backup Generators

The Proposed Action includes infrastructure and installation of an emergency backup generator. As noted by the MassDEP Bureau of Air and Waste (BAW; MEPA Certificate, May 26, 2023), Emergency generator engines are subject to MassDEP's Industry Performance Standards at 310 CMR 7.26(42). These regulations require that the engine operator submit a one-time certification in accordance with the provisions of 310 CMR 70.00: Environmental Results Program Certification. The certification includes established emission limits and design criteria, engine operation limits, and recommendations to reduce sound impacts. The Proposed Action will comply with all requisite regulations related to the emergency generator installation (e.g., MassDEP's noise regulations at 310 CMR 7.10, which prohibits a nuisance condition due to excess sound).

#### 4.3.2 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. The relevant resources and habitats are shown on Figure 4-13 (Appendix A). The FAA 1050.1F Desk Reference breaks the categories into *Federally-Protected Species* (and federally identified Critical Habitats), *State-Protected Species*, and *Migratory Birds*. In addition, a section has been added to describe *State-Designated Significant Habitat*.



#### 4.3.2.1 Federally-Protected Species

The consideration of endangered and threatened species is required under multiple regulations for actions that would directly or in some cases, indirectly impact listed species or affect critical habitats. These include the Endangered Species Act as amended (16 USC §§ 1531 – 1544; 50 CFR Part 17), the Fish and Wildlife Coordination Act (16 USC §§ 661-667d; 50 CFR Part 402), the Migratory Bird Treaty Act (50 CFR part 22), and the Bald and Golden Eagle Protection Act (50 CFR Part 22).

According to the United States Fish and Wildlife Service's (USFWS) Information for Planning and Consultation (IPaC) database most recently consulted on October 23, 2023, there are three listed species on or immediately adjacent to the Airport property, and 11 migratory birds that may visit or travel through the area of the Airport property or its vicinity. The formal IPaC-generated Species List (Appendix H) identifies three listed species that may be on or immediately adjacent to the Airport property:

- Northern Long-Eared Bat (*Myotis septentrionalis*) – Federally Endangered
- Plymouth Redbelly Turtle (*Pseudemys rubriventris bangsi*) – Federally Endangered  
[Note that the USFWS Ecos profile illustrates a broad range map for this species that does encompass the Airport and a regional polygon that includes unsuitable habitat types, but the federally-identified critical habitat for this turtle species is mapped to the east of the property, in a watershed complex associated with Great Pond, over 1.5 miles east of the end of Runway 33.]
- Monarch Butterfly (*Danaus plexippus*) - Candidate species

#### 4.3.2.2 State-Protected Species

The Airport's grassland habitats support four state-listed grassland-nesting avian species. These species and their habitats are protected pursuant to the Massachusetts Endangered Species Act (MESA; MGL Chapter 131A) and its implementing regulations (321 CMR 10.00). The Airport is within the regulatory Priority Habitat of Rare Species (PH591). Prior to filing the MEPA ENF on April 18, 2023, ongoing consultation with the Massachusetts Division of Fisheries and Wildlife (MassWildlife) Natural Heritage and Endangered Species Program (NHESP) was initiated for compliance with MESA (Appendix E). The Airport has been coordinating with the NHESP for many years on projects at the Airport under previous MEPA and NEPA filings.

Approximately 352 acres of the Airport property is mapped by NHESP as Estimated Habitat, Priority Habitat or both. Of this total, approximately 60 acres are actively managed for state-listed bird species pursuant to the Airport's NHESP-approved Grassland Management Plan. Portions of the Plymouth Airport are currently managed to maintain habitat for state-listed species in accordance with the provisions of the current Conservation and Management Permit (CMP) for state-listed grassland bird species that will be updated as part of the Proposed Action efforts (see MESA CMP # 005-049.DFW, # 014-240.DFW, and # 018-329).

##### *Grasshopper Sparrow (Massachusetts Status: Threatened)*

Grasshopper sparrows (*Ammodramus savannarum*) forage, breed, and sleep on the ground in grassland, upland meadow, pasture, hayfield, and old field habitats. Nesting grasshopper sparrows may occur on agricultural lands and airports where such habitats occur. Although grasshopper sparrows may use small grasslands, open areas of over 100 acres are favored. Optimal habitat for these sparrows contains short- to medium-height bunch grasses interspersed with patches of bare ground, a shallow litter layer, scattered forbs, and few shrubs. Clumped grasses provide cover and foraging areas and are consequently favored over sod or matting grasses. Nests are built at the base of these clumped grasses. Grasshopper sparrow chicks leave the nest after nine days and follow the mother around until they fledge. Breeding season for grasshopper sparrow is generally identified by NHESP as May 1 to July 31 in

southeastern Massachusetts. Shrubs, fence posts, and tall forbs are used as song perches. Habitats may become unsuitable for nesting grasshopper sparrows if shrub cover becomes too dense. Regular disturbance (during the non-breeding season) is necessary to maintain these habitat conditions. Habitat use during the non-breeding season is similar, although less restrictive, to that of the breeding season, as these sparrows may inhabit thickets, weedy lawns, vegetated landfills, fence rows, open fields, or grasslands. Once the young have fledged, the birds can move readily out of the way of any disturbance such as mowing. Grasshopper sparrows usually migrate by mid-September. Grasshopper sparrow habitat on the Airport is generally restricted to the Cultural Grassland areas, as shown in Figure 4-13. The Airport manages a portion of the cultural grassland habitat as a long-term grassland habitat management area in accordance with the Grassland Habitat Management Plan (2018) and various NHESP Permits and Permit Amendments. Grassland Habitat is managed north and south of Runway 6 end and within the infield of Runway 6-24 and Taxiway D, these areas are delineated in Figure 4-13.

#### *Vesper Sparrow (Massachusetts Status: Threatened)*

Vesper sparrows (*Pooecetes gramineus*) typically inhabit sparsely vegetated areas with patches of bare ground, low vegetation (one to eight inches), and scattered shrubs and saplings. Inhabitants of open areas, vesper sparrows reside in cultivated fields, grasslands, fallow fields, and pastures. Habitats are typically dry and well drained. Nests are placed within clumps of herbaceous cover that afford protection from predators. Vesper sparrows build bulky, loose, cup-like nests of grasses and rootlets on the ground in small depressions, often near the base of a grass clump, weed, or shrub. Vesper sparrow chicks usually fledge within 14 days but remain dependent on adults for another three weeks. Breeding season for vesper sparrow is generally May 1 to July 31 in southeastern Massachusetts. Elevated perches, such as fence posts, shrubs, or weeds, provide singing posts from which males can advertise their territories and attract mates. Territory size may range from 1.2 to 7.9 acres (New Jersey Division of Fish and Wildlife). Vesper sparrows winter in the southern to east-central U.S. south to the Gulf Coast and central Mexico and generally start to migrate south in mid-September. Suitable vesper sparrow habitat includes those areas mapped as Cultural Grassland and identified on Figure 4-13 and within the Grassland Habitat Management Plan (2018).

#### *Upland Sandpiper (Massachusetts Status: Endangered)*

Native grasslands are the preferred habitat of the upland sandpipers (*Bartramia longicauda*). They typically feed in short grass areas, where they are found in migration and during winter. They typically arrive at the Airport in mid-April to early May to breed. During the breeding season, upland sandpipers often perch on fence posts or utility poles. They forage by walking quickly through the grass with jerky movements, picking up items from the ground or from low vegetation. The upland sandpiper requires taller grass for nesting. Nesting typically occurs from late May through June, with the young hatching from mid-June through July. Nests usually consist of a grass-lined depression on the ground, well concealed by over-arching grasses. Upland sandpiper chicks usually fledge by early to mid-August, 32 to 34 days after hatching. In most years, upland sandpipers form flocks and start their migration to South America from mid- to late-September. Suitable upland sandpiper habitat includes the areas mapped as Cultural Grassland on Figure 4-13 and within the Grassland Habitat Management Plan (2018).

#### *Eastern Meadowlark (Massachusetts Status: Special Concern)*

Suitable habitat for the Eastern Meadowlark (*Sturnella magna*) in Massachusetts includes grasslands, pastures, and hayfields. They prefer moderately tall grasslands with abundant litter cover, and moderate to high forb density. Breeding presence is directly correlated to unfragmented patch size. They prefer grasslands of at least ten acres and are reported as requiring greater than 100 acres of contiguously suitable habitat to support a breeding population with multiple pairs. Pairing typically occurs in early April, and the female creates a domed nest of grasses placed on the ground under thick cover. She will lay between three to five eggs (sometimes up to 7) and incubate them until they hatch at approximately 13-15 days. Both parents contribute to feeding the nestlings, which will leave the nest

after approximately 12 days, though still unable to fly. The parents will feed them for about two more weeks before they fully fledge. Meadowlark pairs can raise two broods each year. In warm weather, they eat invertebrates, insects, grubs, spiders, and such. From fall through early spring, their diet shifts to a wide variety of seeds and grains. In some areas, they are resident to short-distance migrants, but some birds from northerly populations will migrate over 600 miles to the southern US. Long-distance migrants typically depart by the end of November and return after snow melt in the spring. Suitable habitat for this state-listed Species of Special Concern overlaps with the areas mapped for the other three species above and shown in Figure 4-13.

#### 4.3.2.3 Migratory Birds

The 11 migratory birds that may visit or travel through the area of the Airport property or its vicinity are as follows:

- Bald Eagle (*Haliaeetus leucocephalus*)
- Black-billed Cuckoo (*Coccyzus erythrophthalmus*)
- Blue-winged Warbler (*Vermivora pinus*)
- Eastern Whip-poor-will (*Antrostomus vociferous*)
- Hudsonian Godwit (*Limosa haemastica*)
- Lesser Yellowlegs (*Tringa flavipes*)
- Prairie Warbler (*Dendroica discolor*)
- Ruddy Turnstone (*Arenaria interpres morinella*)
- Rusty Blackbird (*Euphagus carolinus*)
- Willet (*Tringa semipalmata*)
- Wood Thrush (*Hylocichla mustelina*)

All of these birds, except for the Bald Eagle, are on the USFWS list of Birds of Conservation Concern (BCC). The Bald Eagle is considered “Vulnerable” under the Bald and Golden Eagle Protection Act. There may be other species that are not currently known or expected to occur on or immediately adjacent to the Airport property, but are covered by the Endangered Species Act (ESA) wherever they are found.

#### 4.3.2.4 Significant Habitat (State-designated)

Within MESA (MGL c 131A<sup>8</sup>, Section 1 Definitions), “*Significant Habitats*” are “*specific areas of the commonwealth, designated in accordance with section four, in which are found the physical or biological features important to the conservation of a threatened or endangered species population and which may require special management considerations or protection. Priority and Estimated Habitat maps are used for determining whether or not a proposed project must be reviewed by the NHESP for MESA and WPA compliance.*”

“*Priority Habitat*” is based on the known geographical extent of habitat for all state-listed rare species, both plants and animals. Habitat alteration within Priority Habitats may result in a take of a state-listed species, and is subject to regulatory review by the NHESP. “*Estimated Habitats*” are a sub-set of the Priority Habitats, and are based on the geographical extent of habitat of state-listed rare wetlands wildlife and the classification is codified under the WPA (MGL 131 §40), which does not protect plants. State-listed wetland wildlife species are protected under MESA as well as the WPA. Figure 4-13 shows Priority Habitat and Estimated Habitats for rare species. Much of the Airport property, including the current extents of all runways, is included within designated Priority Habitat for rare species. Mass Mapper identifies three (3) NHESP Certified Vernal Pools to the south of Runway 33, approximately 600 feet, 700 feet and 1,350 feet from the end of Runway 33. Such seasonal pools of water may provide habitat for distinctive plants and animals.

<sup>8</sup> MESA statute - <https://malegislature.gov/Laws/GeneralLaws/PartI/TitleXIX/Chapter131A>



#### 4.3.3 Climate, Climate Change, and GHG

The Airport is located within a “subtropical highland” according to the Koppen climate classification (Cfb subset of oceanic climate featuring cool summers and winters). According to the National Weather Service (NWS NOWData, October 2021 and February 2022; source: PYM ASOS), summer temperatures on occasion reach the upper 90 degrees Fahrenheit (F) temperature range, but the highest average daily high temperature typically reached in July and is 82.1 degrees F. The lowest average low temperature of 20.3 degrees F occurs in January. Precipitation is evenly distributed throughout the year with historic averages of 48 inches per year.

This environmental assessment is concerned with the topic of Climate Change and those statutes that pertain to clean air, emissions, and GHGs. The Clean Air Act (discussed under Section 4.3.1, Air Quality) at 42 USC §§ 7408, 7521, 7571, 7661 *et seq* and 40 CFR parts 85, 86, and 600 for surface vehicles and 40 CFR part 60 for stationary power generation sources, regulates GHG emissions from on-road surface transportation vehicles and stationary power generation sources. In addition, there are at least a dozen Executive Orders between 2009 and 2022 that resulted in additional legislation and regulations that affect the evaluation of infrastructure projects. These will be discussed further in Chapter 5.

The primary concern related to airports is the influence of operations on climate change that revolves around Greenhouse Gases (GHG) and their influence on climate, temperature regimes, and resulting effects. GHG gases include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>). CO<sub>2</sub> is often tracked as the primary human-induced (“*anthropogenic*”) GHG due to its presence in the atmosphere for up to 100 years. GHG emissions result from a variety of sources that include combustion of fossil fuels, including several sources that originate from aviation operations. As stated in the TMPU, “*If any proposed alternatives affect operations, any increases in GHG emissions compared to the no action alternatives should be considered. Projects and alternatives that would not increase operations are not likely to result in increased negative climate impacts, but need to take into account the specific types and numbers of aircraft.*”

Forecasted operations were identified in Table 1-3 and Table 1-4, and show that based aircraft are far fewer than they were in past years. Though the goal is to recover from losses experienced in the 2008-2011 recession and 2020-2022 pandemic and retain based aircraft, the increase is very slight over the next 20 years with no significant increases in the GHGs within the Airport Service Area (ASA). As noted under 4.3.1, the ASA consists of Plymouth, Norfolk, Bristol, and Barnstable.

#### 4.3.4 Hazardous Materials, Solid Waste, and Pollution Prevention

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).

As noted in FAA Order 1050.1F, the terms “*hazardous material*”, “*hazardous waste*”, and “*hazardous substance*” are often used interchangeably during informal conversations. However, each term has a specific technical meaning under the applicable federal regulations. RCRA’s definition of “*solid waste*” includes any garbage or refuse, sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, resulting from industrial, commercial, mining, and agricultural operations, and from community activities. It can include refuse and scrap metal, spent materials, and chemical by-products. Under RCRA, “*hazardous waste*” is a type of solid waste that possesses at least one of the following four characteristics: ignitability, corrosivity, reactivity, or toxicity under relevant regulations. The EPA maintains a list of hazardous wastes that have stringent handling requirements.

“Hazardous substances” are broadly defined under CERCLA and include hazardous wastes, hazardous air pollutants (under Section 112 of the Clean Air Act [CAA]), and others. However, under CERCLA, the term excludes petroleum products, unless specifically listed or designated. “Hazardous materials” are those that are capable of posing an unreasonable risk to human health, safety, and property. The term is used broadly to include both hazardous wastes and hazardous substances. Therefore, this category under the FAA Order 1050.1F includes Hazardous Materials, Solid Waste, and Pollution Prevention (also considered under Section 4.3.1 – Air Quality)

Airport actions that relate only to airfield development (runways, taxiways, and related improvements) will not normally include any direct relationship to solid waste collection, control, or disposal other than that associated with the construction itself. General aviation (GA) airports are not typically large generators of solid waste. Airport buildings include hangars for storage and maintenance of aircraft, office space and public terminal buildings.

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 has a Spill Prevention Control and Countermeasures (“SPCC”) Plan that establishes procedures for handling these substances. Aircraft fuel storage and refueling areas are limited to the apron areas on the northern side of the Airport near South Meadow Road. Hazardous materials used for operation and maintenance of aircraft, runways, and taxiways include fuels, degreasers, and aviation lubricants and oils. No hazardous material are anticipated with the Proposed Action and construction.

To determine the potential for encountering soils contaminated from historical releases or former land development practices during excavation and grading activities associated with the runway and taxiway extensions, the MassDEP reportable release database<sup>9</sup> was reviewed for spills at sites located within 300 feet of the proposed Project. There were no releases reported within 300 feet of any of the proposed projects. There is one closed disposal site, regulated under MGL c 21E, and the Massachusetts Contingency Plan [MCP – 310 CMR 40.0000] located on the property and upgradient of the Runway 6 project area (Appendix I). The historic release (RTN 4-0026005) was due to a plane crash in February 2016 that resulted in the sudden release of approximately 25 gallons of aviation fuel. The release impacted surficial soils, but groundwater and surface water impacts were not observed. The impacted soil was removed, and the site achieved a Permanent Solution with no Conditions under the MCP. Additional measures relating to the control and handling of materials under this category will be discussed and evaluated in Chapter 5 – Environmental Consequences.

#### 4.3.5 Land Use

As identified in FAA Order 1050.1F, FAA actions may affect land use compatibility in a variety of manners – disruption of communities, relocation, induced socioeconomic impacts, land uses protected under Section 4(f) of the US DOT Act, *etc.* Those categories are each described in other sections of this Chapter as directed in Order 1050.1F. In most cases, the concept of *compatibility* is linked directly to noise. Noise is defined generally as “unwanted sound” and is treated in more detail in Section 4.3.7 - Noise. In this section, the concept of *compatibility* is described in a broad context to take into consideration the landscape within which the Airport operates as a basis of understanding for the other categories.

<sup>9</sup> ([https://eeaonline.eea.state.ma.us/portal#!/search/wastesite/results?](https://eeaonline.eea.state.ma.us/portal#!/search/wastesite/results?TownName=PLYMOUTH&SiteName=PLYMOUTH%20MUNICIPAL%20AIRPORT)

TownName=PLYMOUTH&SiteName=PLYMOUTH%20MUNICIPAL%20AIRPORT; accessed repeatedly, most recently 8/10/23)

The Airport is located on the western border of the Town of Plymouth, and approximately 500 acres of the Airport's 758 acres are located within the Town of Plymouth. Three of the four Airport approaches extend over the Town of Plymouth. Each of these three approaches has an associated Instrument Approach. Approximately 250 acres of the Airport are within the Town of Carver. The precision instrument approach to Runway 6 extends southwest over portions of the Town of Carver.

#### 4.3.5.1 Existing Zoning

As the Plymouth Municipal Airport comprises land in both the Town of Plymouth and the Town of Carver, both have incorporated airport zoning language into their zoning ordinances (Figure 4-14).

In accordance with the Town of Plymouth Zoning Map adopted in 2012 and the latest Zoning Ordinance from 2022, the Airport property and several surrounding properties are within the AP-Airport Zoning District. The Town of Plymouth incorporated the Airport Zone to protect the airspace surrounding the Airport, which was created to:

- 1) Provide for a wide range of by-right and light-intensity Industrial and Commercial Uses of a non-polluting nature, and to allow by Special Permit more intensive Industrial Uses;
- 2) Provide for future expansion of the existing airport facility to serve community needs; and
- 3) Encourage Uses that support or are compatible with airport operation.

The Town of Carver has an Airport District as well, where 250 acres of the 750 total acres of Airport property are located, plus surrounding agricultural uses and forested areas. Carver has also issued height restrictions on buildings in all zoning districts to prevent erection of structures that would cause hazardous obstructions to air navigation.

Areas immediately surrounding both of these communities' Airport districts are in rural zones. Plymouth residential land uses adjacent to the Airport are zoned either Rural Residential (RR) or Residential Medium Lot (R-25). Rural Residential zoning requires a minimum lot size of 120,000 square feet or 2.75 acres, while R-25 zoning to the northeast of the approach to Runway 24 requires a minimum lot size of 25,000 square feet or 0.57 acres. The area zoned R-25 is found to the east of the Airport on the approach to Runway 24.

Parcels of land within Town of Carver in the approach to Runway 6 primarily include land zoned as Residential/ Agriculture (RA); however, the southwestern portion of the Approach Surface includes land zoned General Business (GB). Large parcels of land beneath this approach service are in agricultural use as cranberry bogs. There is residential development beneath the Approach Surface with neighborhoods located off South Meadow Road. Residential Agriculture zoning allows residential development with a minimum lot size of 60,000 square feet (1.37 acres).

#### 4.3.5.2 Existing Land Use

Developed land surrounding the Airport includes areas adjacent to South Meadow Road and areas along Federal Furnace Road to the east (Figure 1-2 and Figure 4-2). Land uses within the AP District include a mix of commercial, light industrial residential and agricultural uses, as well as recreation open space use (approximately one-half of the Village Links Golf Club). Existing developed land within the Town of Plymouth located to the north and east of Airport property includes cranberry bogs, office space associated with the Airport, residential development, and industrial and commercial development along South Meadow Road.

Residentially developed land within the Town of Plymouth includes areas adjacent to South Meadow Road beneath the Runway 24 approach and adjacent to the Runway 33 approach along Federal Furnace Road to the east. Residentially developed land near the Airport within the Town of Carver is located off of South Meadow Road beneath the Runway 6 approach surface. As a result of this development, there are areas of non-compatible residential land uses adjacent to the Airport.

The approach to Runway 15 in Plymouth contains some light industrial development (e.g., light manufacturing) and non-retail commercial uses (e.g., mini-storage), which are considered compatible land uses. The approach to Runway 33 contains open space, Myles Standish State Park, and Souther's Marsh Golf Club, which are considered to be compatible with the Airport development and operations. In 2016, a solar field of approximately four (4) acres in footprint area was installed on Piney Wood Cranberry Company property. The nearest corner of this solar field is 632 feet southeast of Runway 33. Glint and glare from solar arrays can cause unwanted visual impacts on pilots.

The 5-acre Carver State Forest, which is protected in perpetuity but owned by the Airport, is located within Carver's Airport District. A separate 41.5-acre conservation parcel owned by the Airport on the easterly side adjacent to Runway 33 approach is also permanently protected land as part of a wetlands mitigation project approved by the USACE in 2015. The approach to Runway 24 includes West Plymouth Recreation Area Park, one half mile to the east. These open spaces are considered to be compatible land uses with the Airport development and operations.

South Shore Early Education is adjacent to the Airport property on South Meadow Road. Also, Federal Furnace Elementary School (Pre-Kindergarten to 5<sup>th</sup> grades) is located near the Airport approximately 0.9 miles southeast of the Runway 33 threshold (Figure 4-15). Carver Middle School (located approximately one mile southwest of the Airport) as well as Carver High School (located approximately 1.5 miles southwest of the Airport) are both on South Meadow Road and are within the approach to Runway 6. The Church of Jesus Christ of Latter Day Saints constructed a temple on Federal Furnace Road in 2017, approximately 0.4 miles to the south of the Runway 33 threshold.

#### 4.3.5.3 *Planned and Future Land Use*

FAA Order 1050.1F indicates that the affected environment for land use should include *Existing* land uses within the study area and *Planned and Future* land uses within the study area. All of the proposed improvement projects are located on existing Airport property and are consistent with existing aviation uses. Additional development in the immediate vicinity of the Airport and Airport approaches could increase the level of non-compatible land uses. Any additional residential development in the vicinity of the Airport approaches could further lead to potential adverse impacts by airport operations. However, by establishing the Airport zoning districts, the Towns of Plymouth and Carver have reduced the likelihood of the development of additional incompatible land uses along either runway approach.

#### 4.3.6 Natural Resources and Energy Supply

As described in the FAA 1050.1F Desk Reference (February 2020), this category 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, keeping in mind the applicability to the Proposed Action). The existing condition is used as the baseline reference for any additions requiring sourcing additional natural resources for future Airport improvements. Section 5.9 addresses the use of materials for runway and taxiway additions that require base materials (e.g., gravel/stone, sand, rocks, asphalt, fill). There will also be typical energy use for the construction projects, including stand-alone power (generators, trucks/ vehicles, equipment, etc.).

The Airport has been working diligently to improve energy efficiency and curb GHG as part of operations under Airport control. [This topic is also covered briefly in the "Air Quality" and "Emissions" Sections 4.3.1 and 5.4 and in the Climate Section 5.6]. The Town of Plymouth supplies the water used for general operations and potable water sources, and Eversource is the utility company that supplies electricity to the Airport. Energy consumption at an airport consists predominantly of electricity and fuel for aircraft and ground vehicles and lighting along runways and taxiways, approach lighting systems, administrative/ terminal facilities, and ramp lighting (Lighting is also discussed in Section 5.9). Sewer and wastewater is treated onsite via Airport and Plymouth Municipal facilities.

#### 4.3.7 Noise and Noise-Compatible Land Use

Under Section 4.3.5 *Land Use*, noise was introduced as one of the contributing factors to determining if surrounding land use is compatible with Airport operations. By planning and developing compatible surrounding land uses, potential conflicts with non-compatible uses can be avoided. Over the years since the Airport was originally built in 1934, the surrounding communities have built up to include non-compatible land uses. The Airport strives to acknowledge and facilitate ongoing efforts to offset the noise impacts from Airport operations.

As part of previous Master Plan efforts, a noise analysis was completed in 2007 based on the Master Plan at that time for a forecast that estimated changes through 2027 (Appendix J). No part of the DNL 65 dB contour for Runway 6-24 extended onto any land uses identified as non-compatible per FAA guidance. An updated 2023 noise analysis based on the TMPU forecast was completed for the Proposed Action and is presented in Chapter 5 – Environmental Consequences, specifically Section 5.10 (Appendix K, 2023 Contour Map).

The FAA and the Airport continuously acknowledge the concerns of communities and citizens over noise associated with Airport operations. As part of their commitment to listening to stakeholders, the FAA and the Airport engages with communities on aviation noise. As stated on the FAA's Net-Zero website (2021), *"While there are many benefits to air travel, aviation noise can be a concern for communities. Addressing this concern requires collaboration and community engagement among all aviation stakeholders including the FAA, air carriers, airports, aircraft manufacturers, research universities, other stakeholders and industry partners, local communities, and elected officials."* The Airport has had noise abatement procedures in place for many years and reminds pilots continuously of the requisite procedures (Appendix L).<sup>10</sup>

#### 4.3.8 Socioeconomics, Environmental Justice, and Children's Health & Safety Risks; Public Health

FAA Order 1050.1F indicates, "For socioeconomics, the study area may be larger than the study area for other impact categories, as a proposed action could have an effect on the social fabric of the surrounding community. The environmental review should consider the impacts of the alternatives on the following broad indicators: economic activity, employment, income, population, housing, public services, and social conditions." Therefore, a broader region that includes all of Plymouth, Carver, and an area approximately one to five miles from the Airport is included in this evaluation.

As they pertain to Socioeconomic Impacts, Environmental Justice (EJ), and Children's Environmental Health and Safety Risks under NEPA, the following goals are among those included in the National Plan of Integrated Airport Systems (NPIAS 2021-2025, September 2020). These are factored into the Plymouth Municipal Airport (PYM) operations (as appropriate, keeping in mind that it is a smaller General Aviation (GA) airport and NOT a larger Part 139 commercial airport):

- Airports should be safe and efficient, located where people will use them, and developed and maintained to appropriate [FAA] standards.
- Airports should be affordable to both users and the Government, relying primarily on producing self-sustaining revenue and placing minimal burden on the general revenues of the local, State, and Federal Governments.

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<sup>10</sup> Links to the Airport (PYM) Noise Abatement pages posted online: [https://pymairport.com/noise\\_abatement](https://pymairport.com/noise_abatement); [https://o.b5z.net/i/u/10130906/f/PYM\\_Noise\\_Abatment\\_Procedures.pdf](https://o.b5z.net/i/u/10130906/f/PYM_Noise_Abatment_Procedures.pdf); [https://pymairport.com/aircraft\\_arrival\\_noise\\_abatement](https://pymairport.com/aircraft_arrival_noise_abatement); [https://pymairport.com/corporate\\_noise\\_abatement](https://pymairport.com/corporate_noise_abatement); [https://pymairport.com/ga\\_noise\\_abatement](https://pymairport.com/ga_noise_abatement); [https://pymairport.com/helicopter\\_noise\\_abatement](https://pymairport.com/helicopter_noise_abatement)



- Airports should be compatible with surrounding communities, maintaining a balance between the needs of aviation, the environment, and the requirements of residents.
- The airport system should be extensive, providing as many people as possible with convenient access to air transportation.  
[Note that PYM is part of a much larger *system*, but has a valuable role to fulfill.]
- Effects on the human environment are classified under social impacts, and encompass a wide range of activities. The principal social impacts considered with any proposed airport actions include relocation of residences and businesses, alteration of surface transportation patterns, disruption of established communities or planned developments, and significant changes in employment.

The recently updated NPIAS 2023-2027 (September 2022) emphasizes that the “guiding principle for Federal infrastructure investment, as stated in Executive Order 12893 [1994 – *Principles for Federal Infrastructure Improvements*], is that Federal investments should be cost beneficial.” This EO also included other key principles that the FAA supports through its administration of the NPIAS, including support of State and local planning and information management systems; support for private sector participation; and support for effective administration of grant programs. The more recent and related EO 14030 – *Climate-Related Financial Risk* (2021), which was introduced in Section 4.3.3 above, aims to achieve net-zero emissions economy by 2050 and sets the stage for a *Climate-Related Financial Risk Strategy* that ensures federal dollars are spent efficiently and the resulting infrastructure assets are resilient to climate change.

Other recent relevant EOs address socioeconomic and related factors under which the FAA (and Airport) must operate. They include EO 13990 – *Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis* (2021), which invoked substantial consideration for public health factors. EO 14008 *Tackling the Climate Crisis at Home and Abroad* (2021) required Climate Action Plans from federal agencies and introduced EJ stipulations under the *Justice40 Initiative* on how federal investments must be made toward a goal that 40 percent of overall benefits flow to disadvantaged communities. Under EO 14008, agencies shall address actions taken to advance EJ as part of sustainable operations within the annual Sustainability Plans and Climate Adaptation and Resilience Plans. Further, EO 14057 – *Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability* (2021) incorporated EJ considerations into sustainability and climate adaptation planning, programs, and operations. EO 14008 and EO 14057 builds upon prior efforts to incorporate environmental justice into federal agency actions and public infrastructure projects that dates back to 1994 with the release of EO 12898 *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*.

In addition to the above listed principles from the NPIAS and EOs, the US Department of Transportation’s (DOT) Strategic Plan for FY 2022–FY 2026 (2022) sets the direction for DOT to provide a safe, efficient, convenient, and competitive transportation system. These are reflected in six strategic goals (safety; economic strength and global competitiveness; equity; climate and sustainability; transformation; and organizational excellence) supported by strategic objectives that reflect the outcomes DOT is seeking to achieve.

All of these factors are at work in the FAA’s various programs and funding mechanisms that must be considered for the grants and funding that flow down to the Plymouth Municipal Airport. In order to determine if and how EJ communities can best be integrated into the review process and outcomes, an understanding of the socioeconomic indicators and data needs is presented in addition to Environmental Justice details and Public Health considerations.



#### 4.3.8.1 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 in the vicinity of the Airport. The Airport is located within the Towns of Plymouth and Carver in Massachusetts. Various data portals and mapping sites provide information, including the US Census data and EJ screening tools described below.

#### 4.3.8.2 Economic Activity and Income

As discussed in the TMPU, there are three primary measurements of income: median household income, median family income and per capita income. With the exception of Bristol County, the income of individuals in the ASA is well above the national average according to the 2020 Census Estimates of Population and Housing. According to Census 2020 data (through 2019; Table 4-3), the median household income for the United States was \$62,843 while for the Commonwealth of Massachusetts the median household income was \$81,215 and for Plymouth County, the median household income was \$89,489. A majority of this increase in per capita and median household income has come about since 1980. The median household income in the ASA has increased from \$17,917 in 1980 to \$52,119 in 2000 and to \$84,052 in 2020, which is similar for Plymouth County. Per capita income is defined as the total personal income in a geographic region divided by the total population in the region, regardless of age or employment status. In the ASA, per capita income increased from \$7,372 in 1980 to \$31,093 in 2005 which yields an annual rate of growth of approximately 6%, and to \$44,388 in 2020 with a rate of 2.85% in the past 15 years. Within Plymouth County, the increase in per capita income between 1980 and 2005 mirrors that of the ASA. In 1980, Plymouth County's per capita income totaled approximately \$6,978. Plymouth County again mirrors the ASA with a per capita income in 2019 of \$43,412. Table 4-4 includes updated measures of income acquired during the 2020 population Census.

TABLE 4-3. Measures of Income for Plymouth County, Airport Service Area, and Massachusetts [Source: TMPU Table 2-13. Numbers in this table were from 2019 vs Table 4-2 below with updated Census figures from 2020.]

Table 2-13: Measures of Income for Plymouth County, Airport Service Area, and Commonwealth of Massachusetts 1980-2018						
Year	Plymouth County		ASA		Massachusetts	
	Median HH	Per Capita	Median HH	Per Capita	Median HH	Per Capita
1980	\$18,749	\$6,978	\$17,917	\$7,372	\$17,575	\$10,103
1990	\$40,905	\$16,523	\$37,602	\$16,967	\$36,952	\$17,224
2000	\$55,615	\$24,789	\$52,119	\$25,892	\$50,502	\$25,952
2010	\$72,076	\$37,637	\$64,782	\$35,120	\$62,072	\$35,547
2019	\$89,489	\$43,412	\$84,052	\$44,388	\$81,215	\$43,761

TABLE 4-4. Updated Measures of Income

	Town of Carver	Town of Plymouth	Plymouth County
Median Household Income	\$61,811	\$97,956	\$98,190
Per Capita Income	\$36,257	\$52,711	\$48,785
Source: US Census Bureau, <a href="https://www.census.gov/data.html">https://www.census.gov/data.html</a> and <a href="https://www.census.gov/quickfacts/">https://www.census.gov/quickfacts/</a> (acc 8/11/23) Population Census, April 1, 2020.			

#### 4.3.8.3 Employment

Historically since 2010, the ASA and Plymouth County have had unemployment rates that roughly mirror state and national trends. Unemployment and labor force are inversely related. The unemployment rate in the ASA, Massachusetts and the United States was the highest in 2010 and steadily fell for the next decade, while the labor force was the lowest in 2010 and steadily grew over the same period (Figure 4-16). COVID19 created an anomaly of high unemployment and low labor force beginning in April 2020, both of which are slowly dropping and rising respectively, though neither back to their ultimate lows/highs of late 2019. The overall labor force has increased in the ASA from approximately 1,039,268 in 2010 to 1,117,817 in 2019 which equates to an 0.84% annual rate of growth, dropping by -0.92% to 1,097,179 in 2021. Total employed persons increased from 931,880 in 2010 to 1,058,545 in 2019 which equates to an annual growth rate of 1.51%.

Within Plymouth County, the labor force, employment and unemployment rates are consistent with regional trends (Figure 4-17). Since 2010, the labor force in Plymouth County was lowest in 2010, with approximately 265,158 persons, and increased to a maximum of 289,635 persons in 2019, which amounts to a 1.66% annual growth rate (to account for seasonal fluctuations, highs and lows analyzed are within the same season). The number of employed persons in Plymouth County has increased at a similar annual growth rate, from 240,867 in 2010 to 277,711 in 2019. The unemployment rate in Plymouth County has decreased since 2010 from 10.10% to 2.5% in 2019 with a spike due to COVID that jumped to 18.3% in April 2020. The rate has significantly fallen since then to 5.4% in October 2021. Both the regional and Plymouth County unemployment rates appear to follow national unemployment rates for the same period, being highest in 2010 and falling consistently until late 2019/early 2020 then spiking due to COVID and gradually falling again through late 2021. Nationally, the unemployment rate in 2010 was approximately 9.8% which decreased to 3.5% in early 2020 before spiking to 14.8% a month later, falling back to 4.2% in late 2021.

The top five industry sectors for Plymouth County for full-time, year-round employees are healthcare, professional and technical services, finance and real estate, retail, and construction, followed closely by manufacturing and education. The top five sectors make up 57% of the employment in the county. When taking into account all employees, the top five sectors shift slightly to include healthcare, retail, professional and technical services, education, and accommodation and food for 58% of employment, followed by finance and real estate and construction. The number of business establishments in Plymouth County has increased at a rate of 0.35% annually between 2004 and 2019 with approximately 12,832 establishments in 2019. Plymouth Airport directly employs nine people, for the public 7 days a week from 6am-10pm EST. Positions held are Airport Manager, Assistant Manager, Office manager, and six airport operations/ maintenance personnel. The airport's many businesses provide jobs for approximately 250 people.

FIGURE 4-16. Unemployment chart from the TMPU (Figure 2-11).

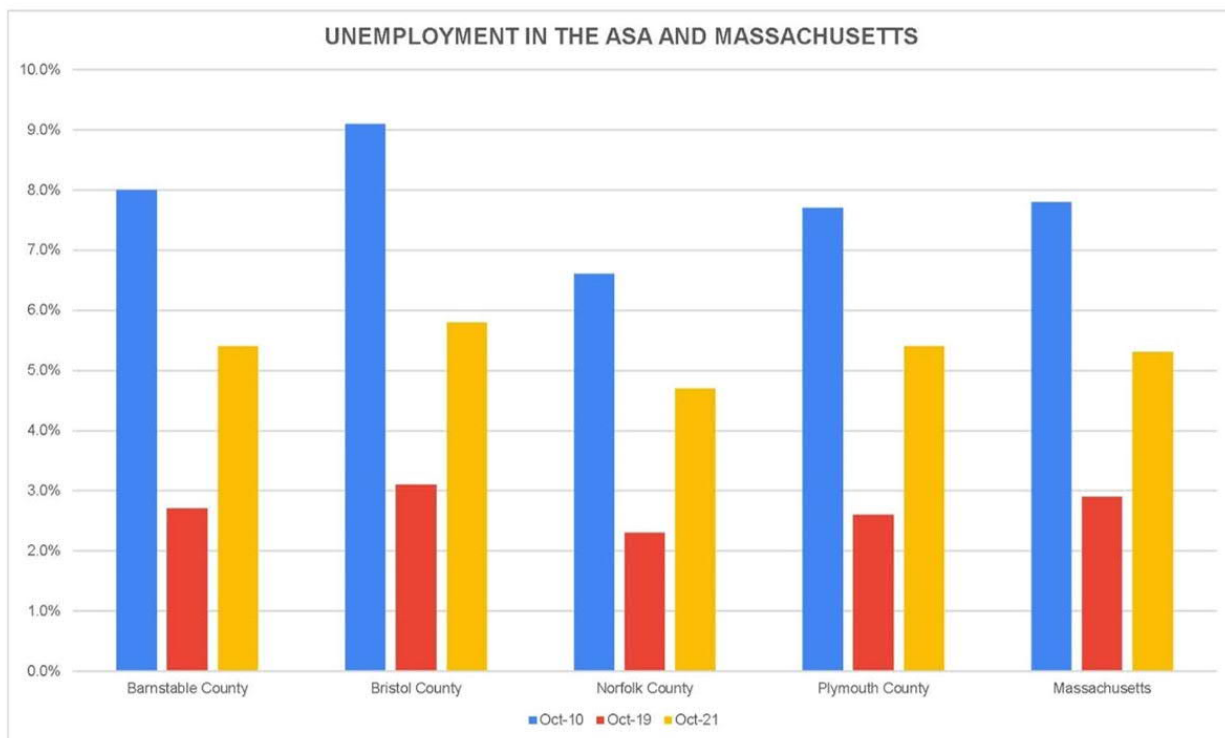
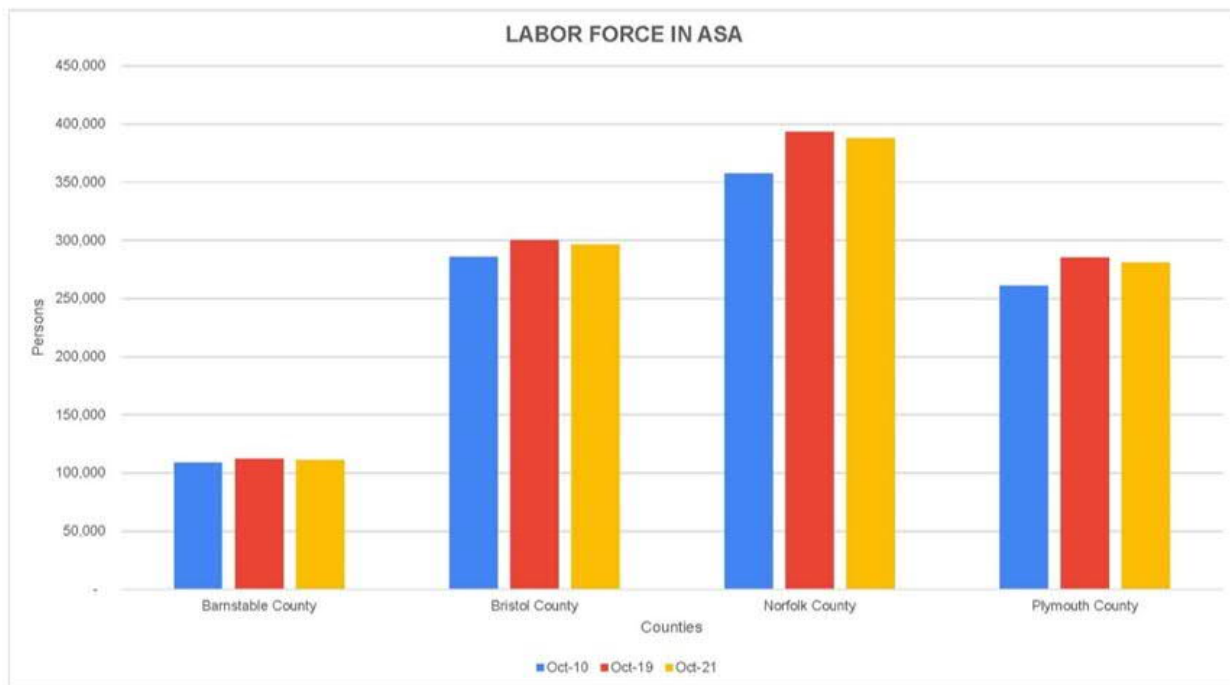


FIGURE 4-17. Labor Force chart from the TMPU (Figure 2-12).



#### 4.3.8.4 Population and Housing

Population Demographics for the Town of Carver and the Town of Plymouth are in Table 4-5 below. Table 4-6 below from the TMPU shows the County of Plymouth, Massachusetts has had an average annual growth rate of 2.52% since 1930, increasing from 162,300 to 531,000 people. Since 1930, the ASA has had an annual compounded rate of growth in population of over 1.5% increasing from 0.86 million people in 1930 to over 2.06 million in 2020. The growth rate for the ASA is below the national growth rate (1.87%), but above the state growth rate (0.73%). The growth rate for Plymouth County is above both the national and state rates. Most of the growth in the region occurred between 1950 and 1970, achieving a rate of 2.15% in the 1950s. The growth of Plymouth County has consistently remained above the growth rate of the ASA since the 1950s.

TABLE 4-5. Population Demographics for Carver, Plymouth, and Plymouth Co, MA.

	Town of Carver	Town of Plymouth	Plymouth County
Population	11,626	61,217	530,820
Number of Households (2017-2021)	4,648	24,985	196,307
Race Percentages <sup>1</sup> :			
White	92.6%	92.4%	83.1%
Black or African American	0.3%	1.4%	12.5%
Asian	1.5%	0.9%	1.8%
Hispanic or Latino	0.9%	2.7%	4.7%
Median Household Income	\$61,811	\$97,956	\$98,190
Per Capita Income	\$36,257	\$52,711	\$48,785
Persons in poverty (percent)	8.5%	5.6%	7.5%
Owner-occupied housing unit rate (2017-2021)	88.7%	80.9%	77.5%
Median value of owner-occupied housing units (2017-2021)	\$321,200	\$391,400	\$409,600
Median gross [monthly] rent (2017-2021)	\$1,573	\$1,588	\$1,406
Source: US Census Bureau, <a href="https://www.census.gov/data.html">https://www.census.gov/data.html</a> and <a href="https://www.census.gov/quickfacts/">https://www.census.gov/quickfacts/</a> (acc 8/11/23) Population Census, April 1, 2020.			

TABLE 4-6. Population Growth in the ASA for Plymouth Municipal Airport (Source: TMPU 2022).

Population Growth by ASA Municipality: 1930-2020												
Area	Population (In Thousands)										Rate of Growth	
	1930	1940	1950	1960	1970	1980	1990	2000	2010	2020	'20-'30	'10-'20
Barnstable County	32.3	37.3	46.8	70.3	96.7	147.9	186.6	222.2	215.8	229	6.76%	0.61%
Bristol County	364.6	364.6	381.6	398.5	444.3	474.6	506.3	534.7	548.2	579.2	0.65%	0.56%
Norfolk County	299.4	325.2	392.3	510.3	605	606.6	616.1	650.3	671	726	1.58%	0.82%
Plymouth County	162.3	168.8	189.5	248.5	333.3	405.4	435.3	472.8	495	531	2.25%	0.72%

#### 4.3.8.5 Environmental Justice

The term “*environmental justice*” has been around since 1982, and first became embedded in federal legislation following the release of EO 12898 (1994) *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. EO 12898 requires that each federal agency incorporate EJ into its mission. This is to be accomplished “*by identifying and addressing disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low income populations.*” Since then numerous additional EOs, laws, regulations, and “screening tools” have been released by federal and state agencies to assist practitioners in determining where and how EJ considerations need to be accounted for in planning, administration, and project implementation. Several of those EOs were described in the introduction to Section 4.3.8 above, including EO 13990, EO 14008, and EO 14057. Each of the screening tools has inherent strengths and weaknesses based on the dataset and source, assumptions, and gaps in knowledge. These include the Aviation Environmental Design Tool (AEDT) described and utilized under the Noise category, the tools used under Section 4.2.7 under Floodplains, as well as several described and utilized below.

The US Department of Transportation (US DOT) defines “environmental justice” as “*the fair treatment and meaningful involvement of all people, regardless of race, ethnicity, income, national origin, or educational level with respect to the development, implementation and enforcement of environmental laws, regulations and policies*” (Order 5610.2C, 2021). Following release of EO 14008 in January 2021 and the associated *Justice40 Initiative* mentioned above, the new Climate & Economic Justice Screening Tool (CEJST) was released (ver 1.0) that the US DOT utilizes as a first step in determining if an EJ community is within a project or study area (US DOT Justice40 website, accessed 8/10/23).

Using the federal CEJST screening tool for the Plymouth Municipal Airport project and searching the general study area, as well as the Towns of Plymouth and Carver specifically, determined that there are no designated EJ communities in the project area using CEJST criteria<sup>11</sup>. The CEJST model relies upon “burdens data” from a variety of “publicly available, nationally consistent data on income, education, environment, climate, health, and other burdens” to provide the backdrop for the tool analysis, including US Census data. One of those datasets from First Street Foundation (2022) is used to project risk to properties from floods, tides, rain, riverine, and storm surges within 30 years (CEQ 2022). [Note: That same data set was used to generate one of the predicted floodplain maps presented earlier in Section 4.2.7 Floodplains (a “*Resource not affected*”).]

Where air quality is of particular interest in the assessment of EJ communities, the US EPA’s “EJScreen Tool” provides additional information (Appendix G). The EPA defines EJ 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*” (FAA Order 1050.1F). The EPA’s EJScreen is an environmental justice mapping and screening tool provided that combines environmental and demographic indicators and allows users to compare designated project areas with regional and national data. The EPA indicates that this is a “pre-decisional” tool to help identify areas that may warrant additional consideration, analysis, or outreach. A preliminary review using EJScreen indicates that the socioeconomic indicators of primary concern fall below the State, EPA Region 1, and national averages (see additional details below).

#### 4.3.8.6 Environmental Justice – MEPA

Environmental Justice as it relates to MEPA varies slightly from the federal definitions above and was introduced in Section 1.3 and Section 1.5. Under MEPA, *environmental justice* is based on the principle

<sup>11</sup> CEJST link – <https://screeningtool.geoplatform.gov/en/#11.91/41.9077/-70.73254>; accessed 7/26/23



that “all people have a right to be protected from environmental hazards and to live in and enjoy a clean and healthful environment regardless of race, color, national origin, income, or English language proficiency” (Massachusetts EO 552). Environmental justice is defined by the Environmental Justice Policy of the EOEAA (updated June 24, 2021) as “the equal protection and meaningful involvement of all people and communities with respect to the development, implementation, and enforcement of energy, climate change, and environmental laws, regulations, and policies and the equitable distribution of energy and environmental benefits and burdens.”

During the preparation of MEPA ENF filed prior to this Draft EA/EIR, the determination was made that review thresholds for air under 301 CMR 11.03(8)(a) and (b) would NOT generate 150 or more New adt of diesel vehicle traffic over a duration of 1 year or more (excluding public transit trips). The EEA EJ Maps Viewer, which was updated and started applying to MEPA filings on January 4, 2023, was utilized to determine the Designated Geographic Area (DGA) for identifying EJ population(s) under the MEPA Public Involvement Protocol (2022). Since the air thresholds were not met or exceeded, the determination was a 1-mile radius around the project. The 1-mile radius was measured from the Airport property boundary, even though the projects in the Proposed Action are a much smaller subset of the total property (Figure 1-3; Appendix A). Based on the EEA EJ Mapper<sup>12</sup>, a single EJ Population was identified within one mile of the Airport. The Airport is located within one mile of one EJ Population characterized as “Income” within the Town of Carver. The project site is located within five miles of four additional EJ Populations characterized as Minority (3) and Income (1) within the Town of Plymouth. Additionally, no languages were identified as being spoken by 5% or more of Limited English Proficiency (“LEP”) residents within one mile of the Airport.

As shown in the MEPA ENF, the Massachusetts EJ Maps Viewer shows the following EJ population within one mile of the Airport:

Block Group	Census Tract	County	Town	Criteria	Total Minority Population	Median Household Income
3	5442	Plymouth	Carver	Income	9.1%	\$44,000 (52.1% of the MA median)

The summary below provides a breakdown of EJ populations within 5 miles of the Airport as presented in the MEPA ENF:

Block Group	Census Tract	County	Town	Criteria	Total Minority Population	Median Household Income
1	5302	Plymouth	Plymouth	Income	18.9%	\$49,223 (58.3% of the MA median)
2	5303	Plymouth	Plymouth	Income	14.7%	\$46,053 (54.6% of the MA median)
2	5303	Plymouth	Plymouth	Income	15.4%	\$54,693 (64.8% of the MA median)
5	5306	Plymouth	Plymouth	Minority	38.5%	\$138,929 (164.6% of the MA median)
1	5442	Plymouth	Carver	Income	8.7%	\$47,109 (55.8% of the MA median)

The ENF also presented data on languages spoken by 5 percent or more of the EJ population who also identify as not speaking English “very well”. The language isolation is identified for each census tract located

<sup>12</sup> MEPA EJ Mapper link – <https://www.mass.gov/info-details/environmental-justice-populations-in-massachusetts>



in whole or in part within one mile and five miles of the project site, regardless of whether such census tract contains any designated EJ populations (per ENF question). No census tracts within the 1-mile Designated Geographic Area (per MEPA) contain language isolation communities. Within the 5-mile buffer to the project site, the other languages spoken identify three census tracts with language isolation for Portuguese or Portuguese Creole.

Block Group	Census Tract	County	Town	Language Isolation (%)
1	5302	Plymouth	Plymouth	6.5%
2	5305	Plymouth	Plymouth	11.4%
3	5442	Plymouth	Carver	7.6%

Prior to development of the Draft EA/EIR, a series of four public meetings was held between January 2022 and March 2023. In compliance with the MEPA Public Involvement Protocol for Environmental Justice Populations (MEPA Public Protocol), the fourth outreach meeting on March 29, 2023, was specifically noticed and presented as described in the ENF to address final outcomes of the Master Plan update and to provide EJ communities with project information. As noted in Section 1.5, all materials have been posted on the Airport website (<https://pymairport.com/home>) under “Public Notices” and “Environmental Assessment”. The Airport plans to continue efforts to engage with community members and groups to provide opportunities for the public to learn more about the project, ask questions, and share concerns. The *Final Public Engagement Plan* is attached (Appendix C).

#### 4.3.8.7 Children’s Environmental Health and Safety Risks

The Proposed Action is 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. This section is included here as part of the comprehensive consideration of socioeconomic factors.

South Shore Early Education is adjacent to the Airport property on South Meadow Road. Also, Federal Furnace Elementary School (Pre-Kindergarten to 5<sup>th</sup> grades) is located near the Airport approximately 0.9 miles southeast of the Runway 33 threshold (Figure 4-15). Carver Middle School (located approximately one mile southwest of the Airport) as well as Carver High School (located approximately 1.5 miles southwest of the Airport) are both on South Meadow Road and are within the approach to Runway 6.

#### 4.3.8.8 Public Health [per MEPA Certificate pg 12]

Public health is the underlying factor that pushes the latest changes in environmental advocacy and the ultimately resulting regulations. Public health and pollution prevention is a thread through many of the categories already contemplated above, including Air Quality, Climate Change, Children’s Environmental Health, Environmental Justice, Noise, and elsewhere in Water Resource categories. This Draft EA/EIR breaks it out into a separate sub-section as required by the MEPA Certificate.

In addition to the information presented above under Air Quality that showed the six criteria pollutants being in attainment (under threshold limits), the EPA EJScreen Community Report for the one-mile radius around the Airport within Plymouth County reports multiple health-related variables for the 1-mile project radius as under the State Average, including lower particulate matter, ozone, diesel particulate matter, air toxics cancer risk, air toxics respiratory, and toxic releases to air (Appendix G).

The Proposed Action is based on very minimal projected increases in forecasted operations over the next 20 years, which is still below historic levels (Table 1-2 and Table 1-3), and projections out to 2041 bring the operations back to near 2000 levels based on forecast assumptions and today’s model aircraft

types. This only considers numbers, but doesn't elaborate on the types of aircraft that are likely to replace current aircraft. As mentioned under Air Quality, Climate Change, and Noise categories, phase-outs of older aircraft and introduction of newer, cleaner and quieter aircraft will serve to reduce air pollution, GHG emissions, and noise.

#### 4.3.9 Water Resources

This section discusses the existing conditions of potentially affected water resources including wetlands and surface waters (streams, rivers, ponds, and lakes). Note that *Floodplains* and *Groundwater* generally considered under Water Resources per FAA Order 1050.1F are not included herein, as they were determined to be a *"Resource Not Affected"* for reasons explained in Section 4.2.7 above.

##### 4.3.9.1 Wetlands

The study area for the wetland evaluation included land within Airport property in the vicinity of the activities included in the Proposed Action (Figure 1-2).

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 Clean Water Act (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 Massachusetts under the Massachusetts Wetlands Protection Act (WPA; MGL 131 §40) and regulations at 301 CMR 10.00.

The US Fish and Wildlife Service's (USFWS) National Wetland Inventory (NWI) online mapping tool (<https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/>) shows various wetlands around the Airport, including the rectangular bogs at the southerly end of Runway 6 off of Airport property (Figure 4-18). The NWI mapping is typically used on a preliminary desktop basis 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. [NOTE: The swale does not show up on the USFWS NWI Mapper as any type of water resource or flowage (neither intermittent nor perennial) and was outside of the project study area for previous project work, so it is not included under water/wetland resources (Figure 4-18; Appendix F).]

Massachusetts Department of Environmental Protection (DEP) mapping is available via MassMapper. This system provides more refined data based on the regulations under the Massachusetts Wetlands Protection Act (MGL 131 §40). NWI-mapped wetland resource areas are located throughout the Airport, as depicted on Figure 4-18. On-site vegetated wetlands are regulated by the WPA as Bordering Vegetated Wetlands ("BVW") and BVWs have a 100' jurisdictional buffer around them. Some of the wetland resource area boundaries proximate for the Runway 6 end in Carver were delineated by Epsilon Associates, Inc. in December 2016 (Figure 4-3, *Environmental Constraints*). The limits of BVW are coincident with the limits of federal jurisdictional vegetated wetlands, *i.e.* waters of the US. Wetlands on the Airport were delineated in accordance with the US Army Corps of Engineer's "1987 Wetland Delineation Manual" (USACE, 1987) and the "Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0)" (USACE, 2012) and the Massachusetts Wetlands Protection Act and implementing regulations (310 CMR 10.00); and the MassDEP handbook entitled "Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act" (MassDEP, 1995).

A desktop review of wetlands and review of previously field-delineated areas under the USACE and WPA requirements indicated that there are no wetlands in the vicinity of the proposed projects that would be affected by the work. The glideslope, which is a navigational aid in the airfield between the Runway 6 end and Taxilane A, will be shifted southerly as part of the Runway 6 extension project. According to an evaluation of the shifted glideslope location conducted by the FAA (September 20, 2023), the fence adjacent to Taxilane A running perpendicular to the Runway 6 end along the Gate 6 access road will NOT need to be relocated. Therefore, there are no wetlands in the study area that would be affected.

#### 4.3.9.2 Surface Waters

Plymouth Municipal Airport is located at the northerly edge of the Buzzards Bay watershed. The watershed is approximately 250 square miles and drains southerly through Carver and Wareham and enters the Weweantic River before reaching Buzzards Bay. Figures 4-2, 4-3, 4-6, 4-7, 4-10, and 4-18 illustrate surface water areas. The Airport property contains three ponded wetlands beyond the Runway 6 end, as well as two ILSF areas. There are no perennial streams, ponds, or lakes in the immediate vicinity of the Proposed Action. South Meadow Pond extends up onto Airport property at the extreme southerly end.

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 BMPs for nonpoint sources; and
- 3) require development and implementation of a comprehensive water quality study ("Total Maximum Daily Load" or TMDL study) designed to meet water quality standards.

MassDEP 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. Individual Section 401 Water Quality Certification (WQC) addresses impaired waters during the 401 Certification review process.

Existing stormwater management at the Airport has evolved as stormwater regulations have changed. In the vicinity of the Runway 6 end, drainages currently associated with the area feed into an existing constructed system, downgradient detention areas, and a swale. Much of the land immediately adjacent to the Runway 6 end, Taxiway E, Taxilane A are treated via overland flow and infiltration/groundwater recharge. This area contains no stormwater structures.

Future hangar development is proposed along the Gate 6 Access Road and Taxilane A. Stormwater runoff along South Meadow Road is currently directed to a deep swale located along the north side of the Gate 4 Backtaxilane. Runoff is directed to the swale either by overland flow or through catch basins and pipe. The swale is configured to function as an infiltration basin. The proposed hangar site located along Taxilane A is currently flat, undeveloped land, covered with grassland. Stormwater runoff generally flows southwest via overland flow towards the cranberry bogs.

## 5 Environmental Consequences, Mitigation, and Permits Required

### 5.1 NEPA 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.

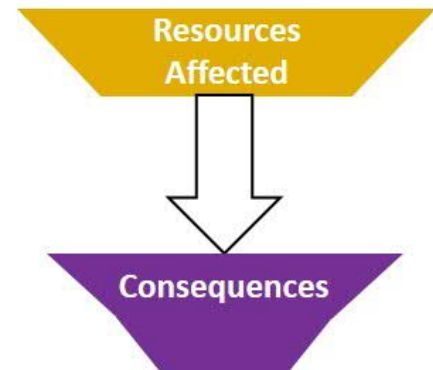


FIGURE 5-1. NEPA Step 3 –  
Consequences  
(Effects / Impacts)

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 (Figure 5-1). The alternatives presented are based on a conceptual (e.g., less than <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.

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). Per Order 1050.1F, Paragraph 4-3.2, the impacts may be both beneficial (positive) and adverse (negative). Therefore, where impacts produce a positive outcome (e.g., reduced air quality impacts from fewer taxiway delays), these will be noted or discussed briefly.

### 5.2 MEPA Assessment of Impacts and Mitigation Measures Overview

Under MEPA regulations at 301 CMR 11.07(6), this section fulfills the requirements for the sections identified as “Assessment of Impacts” and “Mitigation Measures”. To fulfill the former, this section includes “A detailed description and assessment of the negative and positive potential environmental impacts of the Project and its alternatives.” Under the latter, there is “A description and assessment of physical, biological and chemical measures and management techniques designed to limit negative environmental impacts or to cause positive environmental impacts during development and operations of the Project.”

### 5.3 Overview of Impact Categories Evaluated

This section summarizes the Affected Resources evaluation in Chapter 4. Under NEPA and FAA Order 1050.1F, the resources presented in Chapter 4 were divided into 14 categories under which certain laws are considered. Within 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 in Chapter 4 (per Order 5050.4B [706(e)]), are not addressed in this chapter.

Categories under MEPA 301 CMR 11.03 (Review Thresholds) have been included within the relevant NEPA category (e.g., state listed species are under *"Biological Resources"*). Several of the categories are very intertwined, and an effort has been made to avoid excessive duplication of information (e.g., Air Quality contains air pollutants; Climate Change discusses greenhouse gases [GHGs]). The MEPA category *"Transportation"* is described within the temporary construction impacts. [Note: The *"MEPA Compliance Checklist"* inserted before Chapter 1 provides a cross-reference for all MEPA topics presented in the MEPA ENF Certificate.]

The effects on resource areas with potential impacts are more efficiently evaluated by phase and year and with further discussion of direct and indirect impacts in Sections 5.4-5.12 below. Section 5.14 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. From there, the Significance Thresholds identified in Order 1050.1F for each of the retained *"Resources Affected"* are summarized in Section 5.16.

Some of the categories, e.g., wildlife and climate change impacts, have potentially negative effects in both directions. In other words, the natural resource can negatively impact the Airport operations. This will be explained further in the relevant sections.

#### 5.3.1 Resources Not Affected

- Coastal Resources – Not present in the project area or vicinity.
- Department of Transportation (DOT) Act: Section 4(f) and LWCA Section 6(f) Resources – Not present in the project area or vicinity.
- Farmlands – No farmlands within the project area and no impacts on the farmlands in the vicinity of the project area; exempt from FFPAs as "urbanized land".
- 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.
- Water Resources: Floodplains and Floodways – No anticipated impacts on floodplains and floodways due to the Proposed Action; onsite stormwater controls are proposed to maintain flows at or below existing conditions.
- Water Resources – Groundwater – No anticipated impacts on groundwater levels or water quality from Proposed Action.
- Water Resources: Federal/National 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 5.13. 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 1-2 and Figure 4-2 and the area of analysis for indirect impacts is the Plymouth 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 5.14.

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

- Air Quality [in attainment for NAAQS criteria pollutants; retained relating to Climate Change and GHGs, and temporary construction impacts]
- Biological Resources (including fish, wildlife, and plants)
- Climate Change [retained under MEPA, based primarily on MEPA Certificate requirements for comprehensive discussion on the potential effects of climate change ON THE AIRPORT, not because evaluation of TMPU alternative result in a negative impact]
- Hazardous Materials, Solid Waste, and Pollution Prevention [retained relating to temporary construction impacts]
- Land Use [As related to Noise analysis and MEPA thresholds]
- Natural Resources and Energy Supply
- Noise and Noise-compatible Land Use [anticipate no effect, but retained to present analysis]
- Socioeconomics, Environmental Justice, and Children’s Environmental Health and Safety Risks
- Water Resources (wetlands, surface waters)

### 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
- Noise and Noise-Compatible Land Use
- Construction Equipment and Traffic (air quality, potential hazardous waste, and noise)



### 5.3.4 Summary of Land Alteration, Impervious Area, and Stormwater under MEPA

As shown in TABLE 5-1 below, the Proposed Action will result in the direct alteration of 6.67 acres of undisturbed land (consisting of grassland habitat), which consists of 4.18 acres total TEMPORARY impacts OVER THREE YEARS and 2.49 acres of impervious surface (net increase after 0.89 acres pavement removals for glideslope and existing taxiways). Land alteration and addition of impervious surface are a direct result of the runway, taxiway, and taxilane extension; construction of a new run-up apron and two new aviation hangars (that will utilize the existing taxilane A apron rather than creating all new impervious surface); and the relocation of associated navigational aids.

TABLE 5-1. Summary of Land Alteration and Impervious Area (per MEPA Certificate)

Year	Project	Type of Activity	Undisturbed Areas (acres)	
			Temp Impact	Permanent Impact
2023	[no construction]			
2024	Water / Wastewater Upgrades Sewer Main	Install line(s) subgrade (below surface) within existing ROW and restore grade [~1,400 LF from existing southerly hanger on Taxilane A to proposed hangars at Taxilane A apron; 1,400x5=7,000 sf= 0.16]	0 [Within existing <i>disturbed</i> ROW footprint]	0 [Within existing <i>disturbed</i> ROW footprint]
2025	Extend Runway 6/24 (351' x 75')	Construction of Runway and Taxiways w/associated stormwater measures; Relocate nav aids; and grading	3.78	1.71 [net of -0.89 remove/ restored grassland]
	Extend Taxiway E/A (700'x35')			
	Gate 3 Taxilane Reconstruction		0 [Replace In-kind]	0 [Replace In-kind]
2026	Reconstruction Runway 6/24	Partial depth (top layers) reconstruct/ rehabilitate of entire runway (excluding 15-33 junction)	0 [Replace In-kind]	0 [Replace In-kind]
	Emergency Generator Airside Infrastructure	Construct 10'x10' concrete pad in existing disturbed area adjacent to flight school	[~<0.05 earthwork/staging; existing <i>disturbed</i> sand/gravel area]	-0.002 [ <i>de minimus</i> ]
[TBD]	Hangars – 2 x	Construct two new GA hangars along Taxilane A utilizing existing apron area; each approximately 100' x 100' (20,000 SF total)	0.40 [earthwork, staging, grading]	0.78
SUB-TOTAL			4.18	2.49
TOTAL IMPACT (TEMP AND PERMANENT)			6.67	

## 5.4 Air Quality

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) and the FAA Order 1050.1F (2020). The three overlapping regulatory processes applicable to assessing the air quality effects from airport development are Indirect Source Review (ISR); NAAQS Assessment; and General Conformity. Since the project is not an FHWA/FTA project, nor is it regionally significant, a Transportation Conformity determination is not necessary. Additionally, the Commonwealth of Massachusetts does not require indirect source permits, so that review is also not necessary.

Attainment with the NAAQS is based on data that is collected from a network of air monitoring sites across the country. The primary responsibility to ensure compliance with the NAAQS is assigned in the Clean Air Act (CAA) to the individual states and any nonattainment areas require states to establish a State Implementation Plan (SIP) to reach compliance. The FAA is responsible for ensuring that airport actions conform with SIPs, which is also known as General Conformity (Title 40 CRF Part 93). The general conformity rules only apply to areas that have been deemed to be in nonattainment or in maintenance (*i.e.*, areas that were formally in nonattainment but have been in attainment for a period of 10-20 years).

As noted in Section 4.3.1, the Airport is located in a NAAQS attainment area and therefore General Conformity does not apply. In addition, the qualitative analysis shows that background air quality is well below the current NAAQS. The proposed action will have little effect on air traffic volume (Tables 1-2, 1-3, 1-4) and will have minor effects on air traffic patterns (*i.e.*, direction of approach and landing), and therefore is not expected to have an adverse effect on air quality. However, temporary air quality impacts during construction periods will be mitigated as described in the Mitigation section below under “Temporary Impacts”.

Based on this information, there are NO SIGNIFICANT IMPACTS on 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.

## 5.5 Biological Resources

### 5.5.1 Biological Resources Overview

This section evaluates the fish, wildlife, and plants and includes various types of vegetative communities that provide wildlife habitat. This section follows the order of Section 4.3.2 (Federally-Protected Species, State-Protected Species). In addition, state-designated *Significant Habitat* information is included. 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.

FAA Order 1050.1F (Paragraph 4-3.3; Exhibit 4-1; 7/16/15) includes “Factors to Consider” for Biological Resources, as “*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 on 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.”

Because of the relatively small footprint of the project areas and availability of adjacent habitat areas, there

are no long-term or permanent losses of plant or wildlife species anticipated at this GA Airport due to the Proposed Action (*i.e.*, extirpation of the species from the Airport). There are no anticipated adverse impacts on special status species or their habitats due to Proposed Action (based on mitigation measures described below). There will be no substantial loss, reduction, degradation, disturbance, or fragmentation of native species' habitats or their populations. Permanent impervious surfaces of less than three (2.49) acres are proposed as part of the Proposed Action, leaving a large portion of the undeveloped areas on the 758-acre Airport still available as a function of Airport grassland management (of which 320 are mapped by NHESP as *Priority Habitat*; Figures 4-3 and 4-13). Based on mitigation measures and the habitat management plan described below that avoids and minimizes impacts to the extent practicable, there will be no adverse impacts on species' reproductive success rate, natural mortality rates, non-natural mortality, or ability to sustain the minimum population levels for population maintenance.

### 5.5.2 Federally-Protected Species

There are two federally protected species – Northern Long-eared Bat (*Myotis septentrionalis* – federally endangered), Plymouth Redbelly Turtle (*Pseudemys rubriventris bangsi* – federally endangered). The Proposed Action will not negatively affect these federally-listed species.

Within IPaC, a Determination Key (DKey) was completed for the Northern Long-eared Bat (NLEB), and a USFWS Consistency Letter was acquired (Appendix H). Based on the information provided and the Project Description aligning with the description in Section 1.2 above, the Proposed Action will have no effect on the endangered northern long-eared bat (*Myotis septentrionalis*). *"If the Proposed Action is not modified, no consultation is required for these two species. If the Proposed Action is modified, or new information reveals that it may affect the [Indiana bat and/or] northern long-eared bat in a manner or to an extent not considered in the PBO, further review to conclude the requirements of ESA section 7(a)(2) may be required."* The Consistency Letter was generated under the amended February 5, 2018, FHWA, FRA, FTA "Programmatic Biological Opinion (dated March 23, 2023) for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat (NLEB)."

The Plymouth redbelly turtle is not likely to be present within the project study area, as suitable habitat is in downgradient wetlands and further to the east (Great South Pond Watershed).

Because the preferred alternative would not alter suitable habitats for the two federally listed species, pursuant to Section 7 of the Endangered Species Act (ESA), the FAA finds that the Proposed Action would have no effect on the Northern Long-eared Bat and no effect on the Plymouth Redbelly Turtle.

### 5.5.3 State-Protected Species

There are four state-listed bird species as identified and described in Chapter 4 – grasshopper sparrow (*Ammodramus savannarum*) – ST, vesper sparrow (*Pooecetes gramineus*) – ST, and upland sandpiper (*Bartramia longicauda*) – SE, and eastern meadowlark (*Sturnella magna*) – SC. Several avoidance, mitigation, and management measures are proposed to reduce potential impacts on the habitat and species. These are summarized immediately below in Section 5.5.4.2, and temporary construction mitigation measures are described in Section 5.13.6.

#### 5.5.4 Significant Habitat (State-designated)

##### 5.5.4.1 Impacts on Significant Habitat (state-designated)

The Airport's grassland habitats support four state-listed grassland-nesting avian species. These species and their habitats are protected pursuant to the Massachusetts Endangered Species Act (MGL c 131A) and its implementing regulations (MESA, 321 CMR 10.00). Portions of the Airport are currently managed to maintain habitat for state-listed species in accordance with the provisions of the MESA CMP (005-049.DFW, 014-240.DFW, & 018-329). The Runway 6 project (including two new hangars) will impact 6.67 acres of mapped Priority Habitat. Of this area, 2.49 acres (net of pavement removals) will result in a permanent loss of habitat while another 4.18 acres will be temporarily disturbed and restored (with appropriate seed mix) due to grading for Runway 6 extension side areas, taxiway extension, and hangar development.

All projects that will occur within Priority and Estimated Habitat for state-listed species, which are not otherwise exempt from MESA review pursuant to 321 CMR 10.14, require a direct filing with the NHESP for compliance with the MESA. Comments were provided by NHESP as part of the MEPA Certificate (Appendix E) note that, although a formal MESA filing has not yet been submitted, NHESP anticipates, based on previously submitted information and ongoing consultations with the Proponent, that the Runway 6 project, as proposed, will likely result in a Take (321 CMR 10.18 (2)(b)) of state-listed species.

Projects resulting in a Take of state-listed species may only be permitted if they meet the performance standards for a CMP, as detailed at 321 CMR 10.23. In order for a project to qualify for a CMP, the Airport intends to demonstrate that the Proposed Action, including the Runway 6 project and other projects in the 5-year CIP, has avoided, minimized and mitigated impacts on state-listed species consistent with the following performance standards:

- (a) adequately assess alternatives to both temporary and permanent impacts on the state-listed species;
- (b) demonstrate that an insignificant portion of the local population will be impacted; and
- (c) develop and agree to carry out a conservation and management plan that provides a long-term net benefit to the conservation of the state listed species. (Note: the existing CMP can be revised, and the existing GHMP can be updated to identify the mitigation areas to offset impacts from the proposed project).

A total of 2.49 acres of Priority Habitat for state-listed bird species will be permanently altered by the proposed projects over a period of five years due to additional impervious areas associated with the 351' Runway 6 extension project or new hangar construction. A summary of projects and impacts on mapped habitat is presented in Table 5-1. The habitat types are shown in Figures 5-2, 5-3, and 5-4 (Appendix A).

Based on preliminary conversations with the Massachusetts NHESP regarding amendments and renewal of an existing Conservation and Management Permit (CMP # 018-329, September 19, 2018; "work must be completed by" September 19, 2023), potential impacts on nesting state-listed bird species will be mitigated. Details will be determined through permitting efforts and a revised Grassland Habitat Management Plan (2018) as part of the permitting phase of the Proposed Action [also reference MESA CMP # 005-049.DFW, # 014-240.DFW].

#### 5.5.4.2 Proposed Grassland Mitigation Areas

Preliminary consultation with the NHESP has occurred prior to filing this EA/EIR (Appendix E). The Airport intends to continue this consultation as part of the mitigation effort, and to request a Certificate of Permit Compliance from the NHESP. As part of the mitigation efforts, the Airport proposes to update the existing Airport-wide Grassland Habitat Management Plan (“GHMP”; 2018) in order to improve upon the comprehensive mitigation strategy that will not only provide a net benefit to the species of concern (upland sandpiper, grasshopper sparrow, vesper sparrow, and eastern meadowlark), but enable the Airport to develop Airport projects with the agreement of mitigation factors already completed. This GHMP will be submitted as part of the amended and renewed Conservation and Management Permit (CMP) application for this Project. To compensate for the Project’s unavoidable alteration of state-listed species habitat, the Airport proposes to place additional Airport property under management to improve the land’s habitat functions for the state-listed species that occur on the site, as it has done for prior projects. The Airport has acreage in a “mitigation bank”<sup>13</sup> from the prior construction project per the existing CMP and intends to utilize that to meet the performance standards of the CMP, along with other BMPs and modifications in consultation with the NHESP. The consultation to date has focused on the Runway 6 project. As shown on Table 5-1, the other projects in the Proposed Action are located in areas that have the Priority Habitat overlay map, but are existing impervious surfaces and not grassland (Figures 1-2 and 4-2; Appendix A).

Additional details on proposed avoidance, minimization, and mitigation measures are provided in the summary in Sections 5.13.6. 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 on the Biological Resources 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 Climate Change

### 5.6.1 High-level Impact Overview

Whereas, Air Quality (Section 4.3.1) is concerned with the six criteria pollutants – CO, NO<sub>2</sub>, O<sub>3</sub>, PM, SO<sub>2</sub>, and Pb, Climate Change is concerned with the greenhouse gases (GHGs). GHGs are defined as including carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>).

The Proposed Action is primarily a series of on-Airport projects that are not anticipated to create significant amounts of new GHGs due to resulting operations. The FAA guidance includes preference for Climate Informed Scientific Approach (CISA; EO 13690 [2015], EO 14030 [2021]) for floodplain analysis, which was covered in Section 4.2.7. However, the FAA indicates, “...it is not currently useful for the NEPA analysis to attempt to link specific climate impacts to the proposed action or alternative(s) given the small percentage of [GHG] emissions aviation...projects contribute” (Order 1050.1F, 2020). Even so, it is included here to provide additional discussion, especially as it relates to the analysis required by the MEPA Certificate (May 26, 2023). Climate change is intricately tied to other categories and subject

<sup>13</sup> “Mitigation Bank” – determined under MESA 321 CMR 10.23)



### Climate Effects on Airport: Risk & Infrastructure Resilience

- Pressures on Airport from climate change need to be overcome by resilience measures
- Increased weather phenomenon impacting airport operations and economics
- More frequent, heavier rain (pluvial) events and flash flooding
- Increased heat resulting in aircraft down time
- Increased heat requiring longer takeoff and landing runway lengths



### Airport Operations Effects on Climate

- Increased impervious surface offset with stormwater BMPs
- Improvements in hangar and vertical structure/energy design to reduce GHG emissions
- On-Airport availability of Sustainable Aviation Fuels (SAF) & Electric Vehicles
- FAA aircraft design mandates resulting in lower aircraft noise (non-Airport controlled)
- FAA aircraft design mandates result in aircraft w/energy technologies resulting in better fuel efficiency per aircraft (non-Airport controlled)

FIGURE 5-5. Bilateral Effects of Climate Change

areas, including Air Quality, GHGs, environmental justice (EJ) communities, public health, stormwater and water resources.

The effects of climate change are bilateral (Figure 5-5). In other words, the changing climate is having an impact on the Airport (*"external inward"*) and the Airport is potentially influencing climate change (*"internal outward"*). All human-induced (*"anthropogenic"*) GHG-producing activities are contributing to climate change (e.g., driving cars). Through efforts to overcome various weather, heat, and related phenomenon, the federal government is making strides in trying to overcome the negative effects through resiliency, sustainability, and *"whole-of-government"*<sup>14</sup> approaches that will ensure *federal dollars are spent on projects that last as long as they were meant to*. This includes efforts and funding through the federal Department of Transportation and FAA that ultimately affect the Airport operations and funding. Though the Airport is municipally-owned, it is a partnership with the FAA and federal funding that keeps it well-maintained and functioning.

<sup>14</sup> *"Whole-of-Government"* or *"Whole of Government"* (WoG) is a term used variously in relation to multiple Executive Orders (EOs) since President Biden took office, as well as the 2021 Aviation Climate Action Plan.



TABLE 5-2 Executive Orders Relating to Climate Change

Year	EO #	Title
2022	14072	<i>Strengthening the Nation's Forests, Communities, and Local Economies</i>
2021	14057	<i>Executive Order on Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability</i>
2021	14030	<i>Climate-Related Financial Risk</i> [reinstated EO 13690]
2021	14008	<i>Tackling the Climate Crisis at Home and Abroad</i>
2021	13990	<i>Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis</i> [revoked EO 13807]
2018	13834	<i>Efficient Federal Operations</i> [revoked EO 13693; revoked in part by EO 13990; revoked by EO 14057]
2017	13783	<i>Promoting Energy Independence and Economic Growth</i> [revoked 13653; revoked by EO 13990]
2017	13807	<i>Establishing Discipline and Accountability in the Environmental Review and Permitting Process for Infrastructure</i> [revoked EO 13690; revoked by EO 13990]
2015	13693	<i>Planning for Federal Sustainability in the Next Decade</i> [revoked EO 13514; revoked by EO 13834]
2015	13690	<i>Establishing of a Federal Flood Risk Management Standard [FFRMS] and a Process for Further Soliciting and Considering Stakeholder Input</i> [revoked by EO 13807]
2013	13653	<i>Preparing the United States for the Impacts of Climate Change</i> [revoked by EO 13783]
2009	13514	<i>Federal Leadership in Environmental, Energy, and Economic Performance</i>

Since 1977, a series of Executive Orders (EOs) have been released with various recognitions and efforts to combat what is now referred to as Climate Change (also generally referred to as “*global warming*”; Table 5-2). More recently, as climate change increasingly becomes a recognizable phenomenon, various EOs and legislation has passed in an attempt to curb the negative impacts on humans and infrastructure (e.g., Airports, terminals/administration buildings, runways, taxiways, nav aids), as well as reduce the impacts humans have that negatively affect the climate.

Given the ever evolving EOs, agency legislation, regulations, and terminology<sup>15</sup>, it can be difficult to keep up and make informed decisions about Airport operations and bilateral impact avoidance based on the most recent science. Furthermore, there are ever-changing and advancing models and tools based on different sets of assumptions and accuracies, many of them seemingly contradictory, e.g., “*frequent episodic droughts*” [Carver, 2019] vs pluvial flooding and “*extreme precipitation*” (ResilientMA.org, 2023).

Among the EOs are many that directly affect the FAA decision-making and local Airport operations. There are several that specifically relate to floodplain and stormwater management, such as EO 13690

<sup>15</sup> The 2021 Aviation Climate Action Plan refers to various terms, such as “*decarbonize*”, “*carbon neutral*”, and “*carbon offsetting*”. These are all related to efforts to reduce the emission of carbon, a greenhouse gas. Also see Massachusetts EOEEA and Massachusetts Global Warming Solutions “*Massachusetts 2050 Decarbonization Roadmap*” (<https://www.mass.gov/doc/ma-2050-decarbonization-roadmap/download>) and the related “*Transportation Sector Report – A Technical Report of the Massachusetts 2050 Decarbonization Roadmap Study*” (December 2020).

that was implemented “to improve the resilience of communities and federal assets against the impacts of flooding”. It established FFRMS and the Climate Informed Science Approach (CISA) described in Section 4.2.7 (flood elevation [“how high”] and flood hazard area [“how wide”]). EO 14030 aims to achieve net-zero emissions for federal agencies by 2050 and set the stage for a Climate-Related Financial Risk Strategy that affects where and how the FAA spends federal dollars on projects such as those under the Proposed Action.

Several other EOs directly affect efforts related to Climate Change and the impacts on public health and EJ communities (EO 13990 [2021], EO 14008 [2021], EO 14057 [2021]). These will be discussed further under Section 5.11 – Socioeconomics. In addition, the current federal administration (2022) launched the Initiative to Modernize Building Codes, Improve Climate Resilience, and Reduce Energy Costs. This effort is anticipated to affect approaches to design and buildings at the Airport (e.g., new hangars)

The FAA is committed to making aviation cleaner, quieter, and more sustainable (FAA 2021). The latest in the series of EOs were released by the current White House administration in 2022 with the latest guidance documents released in March 2023. Following the release of EO 14008, the FAA released the *US Aviation Climate Action Plan* (2021), which sets out to achieve net-zero greenhouse gas emissions from the US aviation sector by 2050. The Action Plan outlined a series of actions with the intent of decreasing emissions through nine broad initiatives. The Action Plan sets a “whole-of-government approach and policy framework for the aviation sector to contribute to broader, economy-wide objectives”. The findings indicate that while *US aviation has seen increases in passenger use over the past 30 years (except during the pandemic slump), aviation’s share of US CO2 emissions has remained relatively constant. Aircraft in the US airspace are operating much more efficiently overall, in other words, moving more passengers using the same amount of energy.* The fleet of US aircraft will continue to be more fuel efficient, quieter, and logistically faster based on the latest federal mandates and resulting FAA regulations.

In addition, FAA is assisting with the move to Sustainable Aviation Fuels (SAFs) produced from renewable and waste feedstock, as well as moving to eliminate aviation gasoline lead emissions (EAGLE Partnership) by the end of 2030. Furthermore, the FAA provides grants to replace or convert on-road vehicles for zero-emission vehicles through the Zero Emission Vehicle (ZEV) Program. The Airport may be eligible for assistance from the FAA for these three initiatives, *but no specific projects are contained within the Proposed Action.* Even so, this demonstrates that the Airport is part of a much bigger move to substantially reduce its GHG emissions through a broad range of approaches.

The Proposed Action is not anticipated to substantially increase the number of aircraft using the Airport. Overall operations are expected to remain at similar levels, resulting air emissions are expected to remain well within National Ambient Air Quality Standards (NAAQS; see Section 4.3.1, Air Quality), and GHG emissions are generally projected to be reduced based on a combination of factors – e.g., introduction to the fleet of electric aircraft, phasing out of older aircraft (Stage 3 and 4 aircraft in favor of Stage 5 aircraft with reduced emissions and quieter systems [CRS 2021; FAA 2021]), and continued efforts by the FAA that will ultimately result in the Airport benefitting from a NAS system-wide effort to make aviation cleaner, quieter, and more sustainable (FAA 2021). The Proposed Action will not result in a net increase in GHG emissions. The Proposed Action under the 5-year CIP does not contemplate Airport vehicle additions, but does include a new emergency generator and airside infrastructure (Section 4.3.1.1).

The projects under the Proposed Action are not anticipated to negatively affect Climate Change, as they are not substantially increasing the operations at the Airport. As shown in Section 1.3 above under “*Economics and Forecast*”, the number of based aircraft is projected to decrease between 2021 and 2041. The annual operations show a slight projected uptick, but that is due in part to recovery from pandemic lows (Tables 1-2, 1-3, 1-4). Since the Runway 6 extension project is primarily a minimal extension and runway safety area (RSA) improvement project, it is primarily an airport action. The Proposed Action would not significantly increase Greenhouse Gas (GHG) emissions compared to the No Action alternative. Overall operations are expected to remain at similar levels, and resulting air emissions are expected to remain well within National Ambient Air Quality Standards (NAAQS). As such, is not anticipated to significantly increase the number of aircraft using the Airport.

#### 5.6.2 Airport-Specific Bilateral Climate Change Effects / Impacts

FAA guidance will evolve as new federal requirements are established. With so many unknowns in economics, airport and aircraft design regulations, operations, demand, climate change, modeling tools with different indicators, and other variables, it is difficult for this EA/EIR to contemplate or predict all of the potential impacts and mitigation that may be required. However, it is the intent of the Airport to fulfill the obligations required by the FAA regulations, public expectations regarding Airport availability, and efforts to remain resilient and economically viable into the future.

Of those initiatives in the 2021 Action Plan, the Plymouth Municipal Airport is attempting to integrate and improve its operations for practices and procedures that are under its responsibility relating to available energy sources and advancement in airport operations.

As a relatively small, General Aviation (GA) airport without commercial service under FAA Part 139, Plymouth Municipal Airport adheres to the effective resulting regulations and guidance that the FAA ultimately releases related to each of these initiatives, if applicable. The Airport, in general, does not control the types of aircraft that operate at the facility, but can make improvements to ensure that the Airport is doing its part to contribute to forward-thinking and effective methods framed by the Action Plan objectives that are relevant to its operations. Though the SAF (Figure 5-5) are not yet available at the Airport and are NOT PART OF THE PROPOSED ACTION, there are efforts under way to work these into the system, with electrification possible in the future for both aircraft and Airport operations vehicles. The TMPU (2020) noted, “*Although no electric aircraft are forecasted to be based at Plymouth in this grouping due to a current count of zero, it is unlikely that in the next 20 years there remains zero-based electric aircraft in the fleet. It is expected that multiple electric aircraft will be added to the fleet in the next several years and that the number will continue to increase per the provided growth rate of 0.18%.*”

These future anticipated efforts are included to demonstrate that the Airport is increasingly aware of its onsite GHG emissions and the need to mitigate these impacts and is committed to actively seeking reduction measures. These specific GHG emissions are a result of Airport operations related to operational vehicles and facility usages, rather than the aircraft that utilize the Airport, over which the Airport has limited control. The FAA mandates restrictions on types of aircraft, design of aircraft, and resulting fuel emissions, noise, and so forth. The FAA offers grants to assist airports, and these are under consideration by the Airport leadership.

#### 5.6.2.1 Effects by Airport on Climate Change (“internal outward”)

The Proposed Action is meant to improve safe takeoff and landing conditions for the aircraft that are forecasted to utilize the Airport (Tables 1-2, 1-3, and 1-4). There is a minimal increase in operations projected over the next twenty years (*i.e.*, between 2021 and 2041, an increase of only 16 operations per day of GA aircraft), so the anticipated increases in GHG emissions compared to the No Action Alternative (baseline) is minimal. Aircraft design is expected to improve over that 20 year timeframe to alleviate additional GHG emissions. Further, the vast area of open/space and grassland surrounding the pavements act as a buffer to surrounding off-airport areas and reduces the potential for “heat island” effects due to ample evapotranspiration available. “*Heat islands*” are urban areas that have higher temperatures than rural or forested areas due to a higher percentage of impervious surfaces (*e.g.*, roads, parking lots, buildings). Based on the projected reduced number of based aircraft (Table 1-3), emergence of and likely addition of electric aircraft in the near-term (per TMPU forecast narrative), and operations (local and itinerant) that are forecasted through 2041 to be below what they were in 2000 (Table 1-2 and Table 1-4), no significant change from the existing condition or negative impact on the climate or GHG emissions is expected.

#### 5.6.2.2 Effects of Climate Change on Airport (“external inward”)

For the Buzzards’ Bay drainage basin, the average temperature is predicted to increase across all seasons by mid-century with the number of extremely hot days expected to increase and the number of extremely cold days expected to decrease (Carver, 2019). The Town of Carver (2019), The Town of Plymouth, and the Airport are exceedingly aware of the impacts on the municipal infrastructure. For example, the Airport recently hosted one of eight public engagement forums as part of the “Climate-Ready Healthy Plymouth” municipal vulnerability preparedness effort (2020).

The Massachusetts State Hazard Mitigation and Climate Adaptation Plan (“State Hazard and Climate Plan”, 2018), notes that under the State’s Sustainable development goals, MassDOT (project funder) supports climate resilience through investments that improve system reliability and modernize the Commonwealth’s transportation infrastructure, including improving airport pavement conditions. The 2018 report notes that “high temperatures may also impact airplane operations. If the length of existing runways is not sufficient under higher temperature conditions, planes may not be able to take off when there is less lift available (MassDOT, 2017)”. High temperatures and dense air conditions could lead to increased runway length requirements for aircraft due to diminished performance in such conditions (Resilient MA, 2018). Moreover, heat can soften the asphalt of airport runways, impairing airplane movement” (page 4-168). The proposed Project is consistent with, and responds to, future climate scenarios by adding runway length to maintain safe operations.

The potential for wildfire is one additional concern, as the potential increase in drought conditions and the associated number of extremely hot days make surrounding conditions favorable for wildfires. Barnstable and Plymouth Counties are most vulnerable due to their vegetation, sandy soils, and wind conditions (State Hazard and Climate Plan, 2018). Hot weather events are often associated with drought, as evaporation increases with temperature. High temperatures can cause vegetation to dry out and become more flammable, thereby raising the risk for wildfire.

The addition of pavement is not anticipated to result in any increases to impacts that would lessen the Airport’s ability to withstand or remain resilient to future climate impacts (*e.g.*, increased pluvial events, increased drought and extreme heat). Other impacts (sea level rise/storm surge, extreme precipitation,

urban or riverine flooding) are not anticipated to result in climate impacts on the Project site that would necessitate resiliency or adaptation measures.<sup>16</sup>

### 5.6.3 MEPA – Resilient Massachusetts Action Team (RMAT) Report

As of October 1, 2021, all MEPA projects are required to submit an output report from the MA Climate Resilience Design Standards Tool prepared by the Resilient Massachusetts Action Team (RMAT) (the “MA Resilience Design Tool”). The tool is used to assess the climate risks to assets. Consistent with the MEPA Interim Protocol on Climate Change Adaptation and Resiliency (January 1, 2022), the ENF contained an output report using that tool (Appendix M). The ENF version only included the actions associated with the Runway 6 extension project. An updated report was also generated that includes the other projects in the 5-year CIP (Appendix M).

As with other screening tools presented in this EA and elsewhere, especially relating to Climate Change, the MA Resilience Design Tool has strengths and weaknesses based on model inputs and assumptions. The tool provides outputs and a report that screen for *effects of climate on the Airport*, or in this EA/EIR what are referred to as “external inward” effects (*i.e.*, the effects of Climate Change on the Airport/asset) rather than “internal outward” (*i.e.*, effects of the Airport on Climate Change). This is to ensure that the Airport stays resilient to Climate Change (rather than evaluating the Airports effects on Climate Change). Some of the output results in the two attached reports are counterintuitive and include a range of “Limitations” that indicate the report has a broad range of possible interpretations. For example, under “Extreme Precipitation – Riverine Flooding”, the bulleted summary indicates “No historic riverine flooding” and “Project is not likely susceptible to riverine erosion”, and yet, all projects in the Proposed Action were rated as “High Risk” for exposure to riverine flooding.

As discussed under Section 4.2.7 – Floodplains – no floodplains are proposed to be affected by the Proposed Action (“*internal outward*”). No rivers are nearby that could flood the Airport in the vicinity of the Proposed Action (“*external inward*”). The Runway 6 project, impervious surfaces, stormwater BMPs, and aircraft hangars will be designed according to the latest FAA requirements and federal, state, and local building regulations for minimizing impacts on the assets due to storm events (see Section 5.12 – Water Resources for more information on stormwater measures). The latest Flood Factor mapping by First Street Foundation (Figure 4-10; Appendix F) indicates that there are no rivers or water bodies in the vicinity of the Proposed Action that would flood using the latest climate prediction models therein. This is one of the underlying data sources for the “*burdens data*” used by the federal Climate and Economic Justice Screening Tool (CEJST, version November 22, 2022), and is used for climate prediction by numerous federal agencies and others.

### 5.6.4 Climate Change Effect Summary

The FAA echoes what so many experts are saying, “*Climate change is leading to an increase in the intensity and frequency of severe weather events, higher temperatures, and more frequent heat waves that will severely impact some airports...*” (FAA Action Plan 2021). The projects under the Proposed Action are in line with the efforts of the Airport to be safer, more efficient, and mindful of Climate Change from both an internal outward and an external inward perspective. There are no anticipated effects on the Airport as a result of the Proposed Action, and no project work under the Proposed Action

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<sup>16</sup> Note: Hurricane Sandy is the highest hurricane surge on record in 2012, and did not come far enough inland to reach the Airport.



that will result in any significant effects related to Climate Change.

The No-Action alternative assumes that the Proposed Action is not implemented, and greenhouse gases from aircraft operations would remain unchanged. The No Action alternative would not result in a reduction or increase in GHG overall.

#### 5.6.4.1 Increased Flooding

In a 2018 model of the Buzzards Bay Drainage Area conducted by the Northeast Climate Adaptation Science Center (NECASC) at the University of Massachusetts Amherst, the number of days with precipitation change (increase) 1 inch over baseline (47.8 inches) was expected to increase slightly annually with winter showing the greatest increase of the four seasons (Carver, 2019). The number of days with precipitation change 2 inches (over baseline) was not expected to increase substantially over the next century. The same study predicted, “The number of days with precipitation over 4 inches is not expected to increase annually or seasonally by mid-century or the end of the century.” The study showed that annual change in total precipitation projections varied from +0.3 to +6.8 (Carver, 2019, Table 5.).

A more recent study showed that due to climate change, the Northeast is expected to experience more frequent and intense storms, with an average annual precipitation *increase* of 4.42 inches by 2090 – 67 years from now (ResilientMA.org/maps, RCP4.5 scenario). These variations in model outputs demonstrate that the many unknowns make it difficult to project actual figures. Trying to adapt and remain resilient will be an ongoing priority for the Airport and will be a continuous effort based on continued planning and available funding.

#### 5.6.4.2 Drought

Extended periods of drought are predicted due to climate change, with the occurrence of droughts lasting longer and the effects on water resources and operations likely. To minimize susceptibility to drought conditions, the Proposed Action and mitigation under biological resource efforts would utilize an appropriate native plant seed mix for the upland maintained grassy areas and native wetland plants within the wetland replication area. Drought is not anticipated to have any effects on the actual Runway and Taxiway pavement.

#### 5.6.4.3 Extreme Heat

Under general climate change considerations, “*heat sinks*” are areas of earth (soil or terrain) that can absorb heat (compare to “*heat islands*” in Section 5.6.2.1). To address “*heat sinks*” and mitigate increased temperatures, the Airport will encourage green infrastructure, white roofs, landscaping for parking lots and redevelopment, where feasible (e.g., Gate 3 taxiway reconstruction, new hangars).

#### 5.6.3.4 Wildfire

The potential for wildfire is one additional concern, as the potential increase in drought conditions and the associated number of extremely hot days make surrounding conditions favorable for wildfires (Carver, 2019). The Airport will continue to be diligent in management of grasslands to prevent increased potential for airfield fires.



### 5.6.5 Additional Climate Change Mitigation and Best Management Practices (BMPs)

The Proposed Action is not expected to increase GHG emissions based on very minimal forecasted increase in operations over the next twenty years (4/day every 5 years for a total of 16 additional operations/day by 2041; Table 1-4). Regardless, Plymouth Municipal Airport is committed to curbing GHG emissions through various strategies, as appropriate based on funding, construction phasing, and other factors allow. In addition to the measures listed in Section 5.4 (Air Quality), the following best management practices and minimization measures would be considered during the design phase as related to Climate Change, energy, and emissions, where applicable as part of the Proposed Action.

- Integration of low-cost energy efficiency measures,
- Installing low-energy use lighting to promote energy efficiency,
- Design of mechanical, electrical and plumbing systems to minimize operating costs while providing the highest level of control over interior building environments (e.g., hangars),
- Climate change resilient design of the proposed hangars (for areas under Airport control), and
- Reduce energy consumption by monitoring the efficiency of heating, ventilation, and cooling systems.

Other elements NOT UNDER PROPOSED ACTION but contemplated under Airport planning initiatives:

- Limiting idling by aircrafts and Aircraft operations vehicles,
- Using motion sensors on lights to reduce energy waste,
- Exploring the possible installation of solar canopies at the airport parking lot on Access Road to provide cleaner energy and reduce energy costs,
- Upgrading airport maintenance vehicles and requiring low sulfur diesel fuel use by contractors,
- Carrying out regular energy audits of on-site buildings.

### 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.

In accordance with FAA Order 1050.1F, this category includes the evaluation of the following:

- waste streams that would be generated by the project, potential for the wastes to impact environmental resources, and the impacts on waste handling and disposal facilities that would likely receive the wastes;
- potential hazardous materials that could be used during construction and operation of a project and applicable pollution prevention measures;
- potential to encounter existing hazardous materials at contaminated sites during construction, operation, and decommissioning of a project; and
- potential to interfere with any ongoing remediation of existing contaminated sites at the proposed project site or in the immediate vicinity.

FAA Order 1050.1F, Paragraph 4-3.3 (Exhibit 4-1; 7/16/15) includes the following “*Factors to Consider*”:

“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.

#### 5.7.1 Hazardous materials

Based upon data presented in Section 4.3.4, there is one remediated site at the Airport (Appendix I; closed 2016). However, it is not in the vicinity of the area of disturbance related to the Proposed Action. The Proposed Action is not anticipated to result in the release of hazardous materials and is not anticipated to generate hazardous waste. Therefore, there are no anticipated impacts associated with hazardous materials, wastes or substances resulting from this project.

Any hazardous materials inadvertently discovered during construction will be reported and handled according to applicable state and federal regulations. If oil and/or hazardous material are identified during the implementation of this project, MassDEP will be notified pursuant to the Massachusetts Contingency Plan (MCP; 310 CMR 40.0000), if necessary. A Licensed Site Professional (LSP) would be retained to determine if notification is required and, if need be, to render appropriate opinions. The LSP may evaluate whether risk reduction measures are necessary if contamination is present. The MassDEP Bureau of Waste Site Cleanup may be contacted for guidance if questions arise regarding cleanup.

##### 5.7.1.1 Contaminated Soils Management

As noted above, there is one closed disposal site, regulated under MGL c. 21E, and the Massachusetts Contingency Plan [MCP – 310 CMR 40.0000], located on the property and upgradient of the Runway 6 project area (Appendix I, includes map of site locus). The historic release (RTN 4-0026005) was due to a plane crash that resulted in the sudden release of approximately 25 gallons of aviation fuel. The release impacted surficial soils, but groundwater and surface water impacts were not observed. The impacted soil was removed, and the site achieved a Permanent Solution with no Conditions under the MCP.

If contaminated media is encountered, an LSP will be employed or engaged to manage, supervise or actually perform the necessary response actions at the site for excavating, removing and/or disposing of contaminated soil or contaminated media (which includes contaminated sediment) to be conducted under the provisions of Massachusetts General Law Chapter 21E (and, potentially, c 21C) and all other applicable federal (including the Environmental Protection Agencies Toxic Substance Control Act - TSCA), state, and local laws, regulations, and bylaws. Contaminated media cannot be managed without prior submittal of appropriate plan to MassDEP (such as a Release Abatement Measure [RAM] Plan), which describes the proposed handling and disposal approach for any contaminated media encountered and health and safety precautions for those conducting the work.

#### 5.7.1.2 Spills Prevention and Control

A spills contingency plan addressing prevention and management of potential releases of oil and/or hazardous materials from pre- and post-construction activities will be presented to workers at the site and enforced. The plan will include refueling of machinery, storage of fuels, and potential on-site activity releases. The proposed projects are not expected to introduce new sources of hazardous material storage or discharges, and do not require the use of hazardous materials for the long-term. Construction will require storing, handling and using fuels, oils and other potentially hazardous materials. These materials will be managed per industry standards and applicable federal and state laws to avoid and minimize accidental releases to the environment. A detailed spill prevention and control plan will be included in the SWPPP.

Elements of the plan relative to spill prevention will include, at a minimum, the following mitigation measures:

- Routine vehicle and equipment maintenance and re-fueling will occur only in designated areas, outside of ecological wetland resource areas and sensitive habitats. At each designated area, spill clean-up equipment will be stored for use in the event of an accidental spill.
- All fuel, oil, solvents, etc., will be stored in original containers, or in containers manufactured for storing such material and that are clearly labeled with contents.
- The contractor(s) will immediately clean up any and all spills of fuel, oil, or other potentially hazardous materials. Any and all reportable spills will be reported to the proper authorities (Plymouth Fire Department, Plymouth Board of Health, Carver Fire Department, MassDEP, etc.).
- The SWPPP will include the contact information for hazardous materials release response, including the Plymouth Fire Department, Plymouth Board of Health, and MassDEP.

#### 5.7.2 Solid Waste

General aviation airports ordinarily do not generate significant quantities of solid waste. Aviation-related activities generate only minimal amounts of solid waste. Airport buildings, hangars for storage and maintenance of aircraft, office space, and administration buildings, generate solid waste normally associated with business activity. 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. As the Proposed Action is not intended to increase aviation activity at the Airport, the volume of solid waste generated is not expected to change.

Construction of the Proposed Action would generate construction waste. The Airport is committed to minimizing construction waste. Proposed construction activities would generate solid waste, predominantly as a result of earth moving operations. Any solid waste generated during project implementation, including construction waste, would be recycled to the extent feasible and/or disposed of appropriately per federal, state, and local regulations addressing such materials.

Waste disposal during project construction will be managed separately from normal airport solid waste management operations, and will not generate solid waste during post-construction period, *i.e.*, long-term. 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. *The reuse of any materials requires the submittal of a MassDEP BWP SW41 – Beneficial Use Determination – Restricted Applications.* The determination and permit “is intended to protect public health, safety, and the environment by comprehensively regulating the reuse of waste materials as effective substitutes.” [See MEPA ENF Certificate, MassDEP Bureau of Air and Waste (BAW) comments and <https://www.mass.gov/doc/instructions-sw-39-40-41-42-beneficial-use-determinations/download>.]

The primary demolition waste associated with the Proposed Action will be asphalt removed as part of Gate 3 taxiway reconstruction and Runway 6 reconstruction projects. Any asphalt, brick, or concrete (ABC) rubble associated with the Proposed Action must be handled in accordance with the MassDEP Solid Waste regulations. These regulations allow, “and MassDEP encourages”, the recycling/reuse of ABC rubble. The Airport will utilize the guidelines in the MassDEP information sheet, entitled “Using or Processing Asphalt Pavement, Brick and Concrete Rubble” (updated February 27, 2017) and the related regulations and policy (<https://www.mass.gov/files/documents/2018/03/19/abc-rubble.pdf>). Any remaining waste construction materials (*i.e.* scrap material, *etc.*) will be disposed of in accordance with state and local regulations. The Proposed Action will comply with the Solid Waste Regulations, including 310 CMR 19.017: Waste Ban, which prohibit the disposal, transfer for disposal, or contracting for disposal of certain hazardous, recyclable, or compostable items. The Airport continues its commitment to seeking ways to promote reuse, reduce waste, recycle, and reduce adverse impacts of solid waste on the environment.

Tree removal related to land clearing, and handling/processing of clean wood, will be handled according to state regulations, including 310 CMR 16.00 and 310 CMR 19.00. No wood will be buried or disposed of at the Site unless otherwise approved by MassDEP.

### 5.7.3 BMPs for Erosion Control and Emissions

Best management practices are proposed to avoid pollution impacts due to stormwater runoff and controls for construction equipment during the construction phase. 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. Avoidance, containment devices, and other pollution control measures will be implemented to comply with all permits and regulations. Temporary construction mitigation efforts are further described under Section 5.13.

Based on this information, there are NO SIGNIFICANT IMPACTS on 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

A Proposed Action may create conflicts or impacts when it is incompatible with existing and/or future planned land uses in the study area. Multiple definitions of “*Land Use*” in FAA regulations and guidance reinforce the concept that noise is the most likely factor in determining whether or not surrounding land uses are compatible with existing Airport operations. Noise effects are regulated under 49 US Code Section 47501 (formerly the Aviation Safety and Noise Abatement Act of 1979) and addressed in Section 5.10 below.

Incompatible land uses 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. Land uses that are often most compatible with airports include industrial, commercial, farmland and open space. Many aviation infrastructure projects, including runway and taxiway extensions, have the potential to cause off-airport land use impacts.

The Proposed Action is not intended to substantially change the Airport’s operational capacity or air traffic volumes, although the projects 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 (Table 1-4; forecasted increase of 4/day over each 5 year period for twenty years to 2041). The proposed alternatives would occur largely on Airport property, and there would be no direct takings of land or land acquisition.

### 5.8.1 Wildlife Hazard Avoidance

The FAA Order 1050.1F *Guidelines* (September 2023) specify that the presence of any of the land uses within the distances referenced by FAA Advisory Circular 150/5200-33C, *Hazardous Wildlife Attractants on or Near Airports* (2020), should be disclosed in this land use section. In identifying impacts on airport operations and attempting to mitigate for them, FAA AC 150/5200-33C (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.”* [See Appendix N, Slide 24, Approach & Departure]

There is a *Memorandum of Agreement [MOA] Between Federal Resource Agencies* (2002), including the FAA, the USFWS, and others that acknowledges their respective missions in protecting aviation from wildlife hazards. Though airports have large open spaces that provide suitable habitats for wildlife, plants, and other taxa, the agencies have established procedures necessary to coordinate their missions to address the future environmental conditions contributing to collisions between wildlife and aircraft.



Plymouth Municipal Airport completed a comprehensive year-long *Wildlife Hazard Assessment* (2020) in accordance with FAA AC 150/5200-33C in 2018-2019 that identified potential hazards at that time. Among the recommendations were habitat management and wildlife deterrence measures. 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. Earthwork will convert a portion of the existing grassland/ meadow to frequently mowed turf grass. These impact areas are mostly south of Runway 6 and associated with the Taxiway A and E extensions. Refer to Figures 5-2, 5-3, and 5-4 (Appendix A) for details on these habitat impacts.

### 5.8.2 Land Use Impact Summary

All of the proposed improvement projects are located on existing Airport property and are consistent with existing aviation uses. The surrounding land use and zoning are compatible with the Airport operations, and there are no proposed zoning changes. Both Carver and Plymouth have zoned Airport Districts, which illustrate their intent and commitment to maintain land uses compatible with the airport and to preserve conditions that support it. Portions of the surrounding communities are zoned as Rural Residential or Residential/Agriculture, and noise abatement procedures are in place to diminish negative effects. Other areas around the Airport are 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.

Off-site impacts are expected to be *de minimus* and consistent with ongoing activities. The proposed action will not result in community disruption, business relocations, or negative induced socioeconomic impacts (also see Section 5.11). Mitigation is not proposed specifically for land use. Mitigation specific to wildlife hazards (e.g., impacts to aircraft and loss of human life) is not proposed (see Section 5.5 for mitigation specific to wildlife impacts).

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.” This category 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, keeping in mind the applicability to the Proposed Action).

### 5.9.1 Natural Resource Materials

Construction materials considered under this category would be used during construction of the Proposed Action. 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 total amount of fill materials presented in Table 5-2 for the new and reconstructed surfaces is grossly estimated and not specifically designed for the designated areas in accordance with FAA design requirements under Advisory Circular (AC) 150/5320-6G (June 7, 2021), as the Proposed Action is only at the conceptual phase (<30% design for Runway 6 extension projects in 2025) and has not yet been designed for the other projects. These calculations are approximate totals and the assumption is that the total will be comprised of offsite virgin materials and reuse of existing onsite materials, as described under Section 5.7 regarding reusable asphalt.

The new pavement materials are anticipated to be sourced from readily available regional commercially available locations. Material from existing stockpiles on the airport property could be used as a source of fill pending availability and suitability evaluations (see Section 5.7). 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.

TABLE 5-3. Estimated Volumes of Common and Reused Materials for New and Reconstructed Surfaces

Year	Project Area	Imported Common Fill, Gravel, & Reused Materials (CY)
2024	Water/Wastewater Extension (~1400 LF)	In situ placement of new subgrade lines
2025	Runway 6 extension (351'x75'xdepth – grossly assume 30")	2,437 CY
	Taxiway A extension (700'x35'xdepth – grossly assume 24")	1,815 CY
	Taxiway E extension (1000'x35'xdepth – grossly assume 24")	2,593 CY
	MALSF pad and VASI (estimate 10'x10' x 6 units x 18" depth)	5.5 CY
	Glideslope Pad (estimate 20'x20' x 24" depth)	30 CY
	Glideslope Access (estimate 400'x15' x 12" depth)	2,667 CY
	Old Glideslope	No earthwork, just pavement demo; possible materials reuse
	Gate 3 Taxilane Reconstruction (160'x330'x full depth – assume 24")	3,911 CY
2026	Runway 6 Reconstruction (partial depth rehabilitation; <4,650'x75'xdepth – grossly assume top layer 10")	10,764 CY
	Emergency Generator infrastructure/pad (10'x10' x depth – assume 18")	5.5 CY
[TBD]	Hangars x 2 (100'x100' = 10,000x2=20,000 x depth – assume 24")	1,481 CY
TOTAL ALL YEARS		25,709 CY

### 5.9.2 Energy Consumption

During construction, there would be a temporary increase in energy consumption; this temporary increase can be accommodated by local supplies. Any additional lighting associated with potential construction, such as for runways, associated taxiways, approach lighting system, and ramp lighting would require additional energy but it should be easily accommodated within the regional network based on existing capacity requirements. Any improvements to the Airport's power distribution system and the use of new materials (e.g., fixtures, transformers and cables) will improve the efficiency and reduce energy requirements. In particular, the installation of LED light fixtures in new construction, or installation via retrofit of existing lighting, would reduce per-light energy use while increasing fixture longevity.

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 (2) those that involve the movement of air and ground vehicles.

### 5.9.3 Fuels

The proposed safety improvements are not anticipated to significantly increase aviation activity at the Airport (Tables 1-2, 1-3, 1-4). Therefore, the use of aviation fuels at the Airport is not anticipated to increase substantially. Assuming no change in the type of aircraft (Stage 3 and Stage 4), the use of aviation fuels at Plymouth Municipal Airport would increase minimally due to increased use of the facility. Though slight, additional aviation demand may also result in the need for additional fueling infrastructure. Therefore, any such fuel usage increases would be tied directly to the growth of the aviation business. However, given FAA advances in supporting Sustainable Aviation Fuels, electric aircraft, phasing out of older aircraft and phasing in newer Stage 5 aircraft, and other energy reduction measures, the minimal increase in forecasted aircraft operations is anticipated to be offset. [See Section 5.4 – Air Quality regarding emissions, and Section 5.6 – Climate Change regarding GHGs.]

Additionally, during any future construction, there would be a temporary increase in energy/fuel consumption to power the construction that will be irrevocably lost to the project. However, this should be easily accommodated by the local supplies. Propane is available from several dealers.

### 5.9.4 Water and Sewer

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.

### 5.9.5 Impact Summary

The FAA has not established a significance threshold for natural resources and energy supply in FAA Order 1050.1f. Rather the one factor includes "*...whether or not the Proposed Action would have the potential to cause demand to exceed available or future supplies of these resources.*" The factor given "*...is not intended to be a threshold*" (FAA 1050.1f Desk Reference, v4, September 2023). The Proposed Action would not affect the energy use from electricity, heating oil, and propane/fuel beyond the temporary impact from

construction activities. There will be a negligible change in energy consumption – the NAVAIDs are primarily relocations and will not require additional energy draws. Construction activities are anticipated to self-support their energy needs and not draw from the Airport.

The proposed new taxiway and runway lights will not result in significant impacts on energy use beyond the existing condition. 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. For these reasons, impact on the energy supply and natural resources are anticipated to be minimal in conjunction with the Proposed Action.

The no action alternative would not meet the need for Airport infrastructure that complies with FAA planning and design standards and improves overall operational safety and efficiency at the Airport.

Based on this information, there are NO SIGNIFICANT IMPACTS on 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

### 5.10.1 Executive Orders and FAA Noise Reduction Implications

As part of FAA's continuing efforts, especially multiple recent Executive Orders (EOs) that have been released since 2009 (Section 5.6.1, Table 5-2), efforts to address climate change, GHGs, fuel emission reductions, and noise have been at the forefront of research. EO 14008 (January 27, 2021) required agencies to develop "*Climate Action Plans*" that outlined each agency's plans and proposed actions to address Climate Change. Within the FAA's *2021 Aviation Climate Action Plan*, a multi-pronged approach was outlined that included significant efforts to reduce noise.

In addition to the FAA Action Plan, the Congressional Research Service (CRS) produced a summary report (2021) outlining Airport Noise Regulations and Programs that provides an in-depth review of FAA efforts through regulations, studies and community outreach, and research and design collaborations with aircraft manufacturers. Newer aircraft, both conventional engine and electric, are being designed to be quieter (Stage 4 and Stage 5), and older aircraft that are noisier and less fuel efficient are being phased out over time (Stage 3; Stage 1 and 2 banned long ago). Even so, FAA's data indicate that while aircraft have continuously been designed to be quieter, community and neighboring residents' tolerance to noise has consistently gone down, as well. With advances in noise reductions, the FAA has estimated that the number of Americans exposed to *significant* levels of aircraft noise has fallen from 7 million in the 1970s to 430,000 in 2018 (CRS 2021).

These FAA outcomes have served to assist the Airport in further improving its efforts to reduce noise impacts. The Airport does not control aircraft design restrictions, but has a responsibility to control operations that serve to reduce noise. For many years, the Airport has had a full noise abatement plan and procedures in place to direct pilots and aircraft on flight procedures that will reduce noise to neighboring communities (Appendix L). Appropriate zoning controls and development permit review processes should be continually assessed to protect the local community and airport operations, and allow the Airport to make modifications to meet forecasted demand.

### 5.10.2 2007 Noise Study

Based on an earlier noise study in 2007 (Appendix J), along with an updated analysis using the Aviation Environmental Design Tool (AEDT) presented below, noise contours at the threshold limits due to the Proposed Action are contained within Airport property and Noise would be considered a “Resource Not Affected”. However, it is carried forward to present the impact analysis, as well as take into consideration noise associated with temporary construction of the Proposed Actions.

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 Section 4.2.2, there are no Section 4(f) properties within the project area or adjacent vicinity in consideration.

### 5.10.3 2023 Noise Modeling

The FAA does not require full Part 150 AEDT noise studies for GA airports, as they are typically conducted for larger Part 139 commercial airports (e.g., Boston Logan International). FAA Part 150 *Noise Control and Compatibility Planning for Airports* is a voluntary FAA program that sets guidelines for airport operators to document aircraft noise exposure, and to establish noise abatement and compatible land use programs.

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.

Because the number of jets exceeds the FAA threshold for noise analysis (700), this information from the 2011 Master Plan is presented and supplemented with an updated noise analysis based on the current Proposed Action and Preferred Alternative of a 351' extension of Runway 6 within the project. Noise modeling using the FAA-approved Aviation Environmental Design Tool (AEDT) system was completed using 2021 data. The Airport's total annual operations were 61,021, of which 4,271 were jets (Section 1.2, Table 1-2 and Table 1-4; Table 5-4; also see *TMPU*, 2023).

Under the *TMPU*, the design aircraft is the Dassault Falcon 2000 (Table 5-4), and the future design aircraft is likewise the Falcon 2000. This aircraft have an approach speed and wingspan that classifies them in the ARC B-II group. Based on that condition, the Airport Reference Code (ARC) is B-II, so the RSA width is 150 feet and the length beyond the end of the runway is 300 feet. These factors result in lower noise levels under the current proposed conditions.

An update to the previous Environmental Overview Noise section written in 2011 (Appendix J) was needed to address the potential changes the 351' runway extension to runways 6-24 would have on the environment. In 2022 the Plymouth Municipal Airport Technical Master Plan Update was written and the following will illustrate the changes and similarities between the 2011 Plymouth Master Plan and the 2021 Technical Master Plans Update. Contours for the 2023 NEPA EA were generated using the Federal Aviation Administration (FAA) Aviation Environmental Design Tool (AEDT) Version 3d area (Appendix K).

TABLE 5-4. Based Aircraft Used in AEDT Noise Contour Analysis

2021 B-II Operations			
Aircraft	Approach	Departure	Total
Falcon 2000	75	75	150
Falcon 900	37	37	74
Citation Latitude	35	35	70
Citation Excel	35	35	70
Hawker 4000	27	27	54
King Air 350	63	63	126
Total B-II Operations for 2021			544

Source: DuBois & King

#### 5.10.3.1 2022 Technical Master Plan Forecast Review

Much has changed in the General Aviation Industry since the previous Forecast (2007-2027) was written. Though the airline industry saw an end to eleven years of profitability, halted by the COVID-19 pandemic, the general aviation industry was less affected. Since 2020, the pandemic brought about an increase in business aviation as passengers unable to travel to their destinations utilizing the airlines, took to corporate jet travel. The outlook for general aviation is promising, calling for a 0.1% increase in fleet size during the forecasting period (2021-2041). In the wake of the COVID-19 crisis, forecasting the rate at which airports recover from the downturn in operations has been challenging worldwide.

Historical data provided by the FAA Terminal Area Forecast (TAF), shows a decrease in based aircraft at Plymouth over the previous 25-year period. Prior to the turn of the century, Plymouth reported 179 based aircraft, which fluctuated over the next 20 years, decreasing rapidly after the 2008 recession, climbing again in 2015, and decreasing once more by 2020. Today the based aircraft count at PYM is 105. Compared to the 2011 Master Plan Forecast, that's a difference of 37 fewer based aircraft. The number of business jets based at PYM was also reduced from 9 aircraft in 2007 to 5 aircraft in 2021.

Given the limitations of certain data sources, an average of Invisible Intelligence GARD data and FAA 5010 data was used to form the accepted baseline, which was compared to FAA TAF and MassDOT System Plan forecasts for accuracy. The average baseline for 2021 is 60,021. This baseline was used to create the forecast for aircraft operations for Plymouth for the forecast period (2021–2041). The baseline operations can further be defined by fleet mix. The number and percentage of the total operations of 61,021 aircraft types. Single-engine aircraft comprised 68% of the operations, with the next highest aircraft type shown as Turbo-props.

Additionally, the operational data was separated by Aircraft Approach Category and Airplane Design Group. The Airplane Design Group (ADG) is an FAA-defined grouping of aircraft types based on wingspan and tail height, while the Aircraft Approach Category is an FAA-defined grouping based on aircraft approach speed. PYM is currently designated as a B-II airport and each runway, taxiway, taxilane, and apron are designed with this in mind. This method was not practiced in the 2011 Master Plan but it should be noted that the Critical aircraft from the 2011 Masterplan was the Hawker 850 which falls under the B-II ADG. In the 2021 Technical Master Plan Update, the Dassault Falcon 2000 was dubbed the critical aircraft as it made the majority of the B-II operations. The critical, or design aircraft is defined as the most demanding aircraft that either operates or is projected to operate at least 500 or more itinerant operations annually. Itinerant operations are defined as operations between one location and another, and therefore local operations that begin and end at PYM are not considered in this calculation. At many small airports, a single aircraft type does not meet the 500 operation minimum and so the FAA allows a composite of several aircraft types to meet the minimum operational number. For Plymouth, a composite of aircraft that operate in and out of Plymouth regularly was developed.

What the Summary of Forecast (Table 5-5; 2021-2041) revealed was although the GA operations showed slight annual growth (0.43%), specific groups like the single-engine and multi-engine aircraft who fall under ADG A-I which makes up 95.2% of total operations at Plymouth are on the decline. The second largest ADG that contributed to 1.8% of total operations fell under B-II. As noted before, the Hawker 850 was the Critical Design Aircraft from 2007 but it was replaced by the Falcon 2000 in the 2022 Forecast. Both aircraft fall under the ADG B-II and both can be considered “Business Jets” given the portion of the GA industry they serve.



TABLE 5-5. Summary of Forecast (2021-2041) from 2022 Technical Master Plan Update

Summary of Forecast (2021-2041)					
Forecast Period	Base Year 2021	2026	2031	2041	Average Annual Growth Rate
Operations	61,021	62,344	63,696	66,489	0.43%
Itinerant	27,919	28,522	29,136	30,411	
Local	33,102	33,822	34,560	36,078	
Based Aircraft	105	102	101	95	-0.24%
Single Engine (SE)	79	75	72	65	-0.90%
Multi-Engine (ME)	10	10	10	9	-0.40%
Turbo-Prop	7	7	8	8	0.60%
Turbo-Jet	5	6	6	8	2.30%
Rotorcraft	4	4	5	5	1.40%
Forecasted Operations by FAA Grouping					
AAC/ADG		Operations		% Total Operations	
A-I		63,845		95.2%	
A-II		759		1.1%	
A-III		3		0.0%	
B-I		419		0.6%	
B-II		1,222		1.8%	
B-III		3		0.0%	
C-I		98		0.1%	
C-II		105		0.2%	
C-III		3		0.0%	
Source: DuBois & King					

The difference in total operations when the 2007 Forecast (APPENDIX J) as compared to the 2022 Forecast tells a similar story. In the 2007 Forecast, 68,843 operations were expected by 2017 and 86,374 operations by 2027. In 2021, the base year for the 2022 Forecast, total operations were 61,021. Almost 8,000 fewer operations than where PYM was expected to have five years earlier and a difference of over 25,000 fewer operations to where PYM was forecasted to see in the next five years. Contributors to this difference could be found in the number of fewer based aircraft at PYM. The 2007 Forecast estimated that by 2017 there would be 162 based aircraft. In 2021, the based aircraft count was 105. With fewer aircraft on the field, there would be fewer operations annually.

### 5.10.3.2 2023 Noise Study

From the 2022 Technical Master Plan Update's (2021-2041) Forecast, although the number of operations has increased slightly since 2011 when the last Master Plan was completed, the results were not as high as expected by 2022. Therefore, PYM has remained an ADG B-II airport. Information typically required to perform a noise analysis includes the number of aircraft operations by the time of day, aircraft type, number of operational runway usage, departure and arrival profiles, and flight tracks.

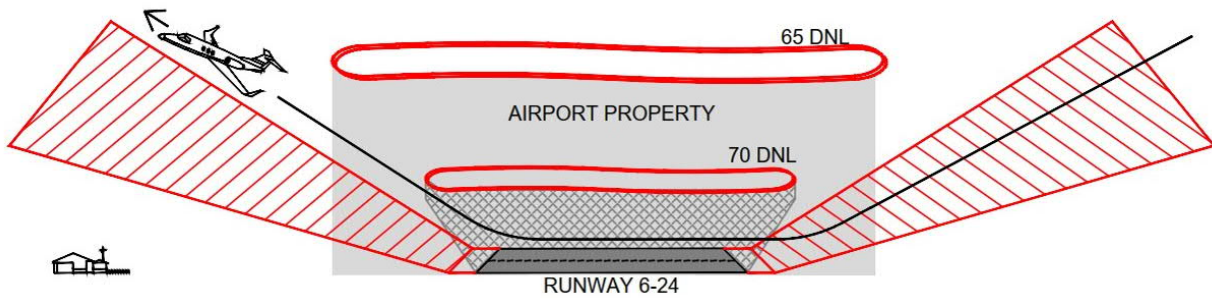


FIGURE 5-7. Profile illustration of 65 DNL and 70 DNL contours based on AEDT model output. (NOT TO SCALE)

The base year aircraft operations were determined by the annual operation count of B-II aircraft from 2021 for PYM (see Table 5-5, 2021 B-II Operations). Each aircraft makes up more than 10% of the annual B-II operations at PYM with the Falcon 2000 topping the list at 30%. Aircraft operations were modeled with half of all operations using Runway 6-24 (with the 350' extension to RWY 6) and half using Runway 15-33. A model was then constructed with a 24hr annualization to illustrate the 2021 Noise Contours (See Appendix J, Figure 5-6, plan view and Figure 5-7 above, profile/cross-section view). The contours associated with the Proposed Action remain within the Airport property boundary at the Runway 6 extension end.

#### 5.10.4 Noise Abatement

The Airport has had a formal noise abatement program in place for many years, and the documents are on the website for the following four elements (Appendix L):

- Aircraft Approach – flight procedures and a map provided for pilots and aircraft to minimize noise impacts on surrounding residential communities ([https://pymairport.com/aircraft\\_arrival\\_noise\\_abatement](https://pymairport.com/aircraft_arrival_noise_abatement))
- Corporate – flight procedures and a map depicting a “quicker right” turn off of departure from Runway 6 (heading northerly off the RW 24 end) and a “slow left” turn off the Runway 24 departure heading southerly off the RW 6 end towards the bogs on the southwest end of the Airport ([https://pymairport.com/corporate\\_noise\\_abatement](https://pymairport.com/corporate_noise_abatement))
- General Aviation (non-corporate jet) – flight procedures for three runway departure patterns with maps identifying “noise sensitive” areas ([https://pymairport.com/ga\\_noise\\_abatement](https://pymairport.com/ga_noise_abatement))
- Helicopter – map depicting helicopter departure patterns that avoid specific noise sensitive areas ([https://pymairport.com/helicopter\\_noise\\_abatement](https://pymairport.com/helicopter_noise_abatement))

The Airport typically has fewer than 20 noise complaints per year (TMPU, 2022; Chapter 2.1). Issues are handled promptly and brought to resolution. The Airport works to identify the nature of all noise complaints and works diligently to minimize noise impacts whenever possible.

The FAA prohibits Airport-mandated restrictions of flight paths, hours of operation, and undue prohibition of open access to airports. Therefore, the Airport’s noise abatement program can only be voluntary. The Airport is prohibited by federal law from levying fines, restricting hours of operation, or restricting access to the airport (or the route by which an aircraft has access to the airport) to aid with

noise abatement. Pilots have ultimate control over their flight procedures to ensure safe takeoff and landings based on weather patterns and other factors. The Airport must rely solely on the continual notification, education, and compliance of aircraft operators. Noise abatement is dictated by safety considerations as well as federal law. Plymouth Municipal Airport works with pilots utilizing the Airport on a voluntary basis to abate and mitigate noise issues as much as possible.

Title 14 Code of Federal Regulations, Section 91.119, *Minimum safe altitudes*, prohibits low flying except under the specific conditions:

*"General. Except when necessary for takeoff or landing, no person may operate an aircraft below the following altitudes: (a) Anywhere. An altitude allowing, if a power unit fails, an emergency landing without undue hazard to persons or property on the surface. (b) Over congested areas. Over any congested area of a city, town, or settlement, or over any open air assembly of persons, an altitude of 1,000 feet above the highest obstacle with a horizontal radius of 2,000 feet of the aircraft. (c) Over other than congested areas. An altitude of 500 feet above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure. (d) Helicopters. Helicopters may be operated at less than the minimums prescribed in paragraph (b) or (c) of this section if the operation is conducted without hazard to persons or property on the surface. In addition, each person operating a helicopter shall comply with any routes or altitudes specifically prescribed for helicopters by the FAA."*

If operations were to increase at the airport, or additional infrastructure added, the potential for expanding non-compatible land-uses within the 65 DNL could present unwanted impacts on the local community. Local planning agencies should take steps to prevent incompatible land-uses within noise contours and other airport operating surfaces (*i.e.*, critical areas, FAR Part 77 surfaces and RPZs).

#### 5.10.5 Temporary Construction Noise

There are anticipated noises associated with temporary construction activities that require large equipment utilization for the Runway 6 and Taxiway A/E extensions, Taxiway 3 and Runway 6 reconstruction and other smaller projects. Short-term noise impacts due to the Proposed Action over the course of the three-year construction window (2024-2026) will be limited to temporary impacts associated with construction activities. Minimization and mitigation to offset the temporary impacts is proposed as presented in Section 5.13 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 on noise and noise-compatible land use beyond the existing condition as a result of the Proposed Action based on the Preferred Alternative, which minimizes impacts to the extent practicable. The Preferred Alternative for the Runway 6 extension – 351' – is the shortest of the alternatives considered under the TMPU and has the lowest impact on noise other than the "No Action" alternative. The noise contours for the 65 DNL and 70 DNL remain within the Airport property boundary for the 351' extension. 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, 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. As described in Section 5.13 below, the Proposed Action is expected to have little or no effect on ground 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.

Additional aircraft forecasted to utilize the airfield could have some minimal adverse noise impacts on the surrounding residential community, though the noise model in Section 5.10 illustrates the study contours are within the Airport boundary. The increases are very minimal over the twenty year forecast (4 more operations/day over each 5-year window; Table 1-4). There are substantial noise abatement procedures in place to avoid and minimize those impacts (see Section 5.10; Appendix L). There is some industrial development off the end of Runway 15, but as this type of development is considered to be compatible with airport operations, it should not be a concern for airport development.

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

Environmental Justice was introduced in Sections 1.5 and 4.3.8 and outlined substantial considerations for FAA and Airport efforts to include EJ communities and outreach throughout the planning process for the TMPU and environmental assessment.

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 on minority and low-income populations. Updates to the NEPA regulations by the CEO (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*”.

Several more recent EOs tie climate change, public health, and EJ concerns together for consideration. EO 13990 (2021) *Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis* and EO 14057 (2021) *Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability* incorporated EJ considerations into sustainability and climate adaptation planning, programs, and operations. EO 14008 *Tackling the Climate Crisis at Home and Abroad* included the Justice40 Initiative aimed at directing certain federal investments might be made toward a goal that 40% of the overall benefits flow to disadvantaged communities. One of the tools used in this initiative is the Climate and Economic Justice Screening Tool (CEJST). The dataset upon which the tool relies includes new projected flood risk data from First Street Foundation’s Climate Risk Data Access from 2022 (which was included under Section 4.2.7 - Floodplain).

In addition, the EPA EJScreen Tool provides data for multiple parameters, including air quality, public health parameters, flood and coastal surge risk data, and other information to supplement CEJST reporting regarding potential EJ impacts. The results of the EJScreen (Appendix G) indicate that there are no disproportionate effects on EJ communities in the vicinity 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. This section is included here as part of the comprehensive consideration of socioeconomic factors. South Shore Early Education is adjacent to the Airport property on South Meadow Road. Also, Federal Furnace Elementary School (Pre-Kindergarten to 5<sup>th</sup> grades) is located near the Airport approximately 0.9 miles southeast of the Runway 33 threshold. Carver Middle School (located approximately one mile southwest of the Airport) as well as Carver High School (located approximately 1.5 miles southwest of the Airport) are both on South Meadow Road and are within the approach to Runway 6.

The Proposed Action would not have a disproportionate effect on children’s environmental health or safety, including 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.

#### 5.11.4 MEPA EJ Considerations – Public Health – DPH Tool

Under MEPA, additional evaluation occurred to determine if there were any existing unfair or inequitable Environmental Burden and related public health consequences impacting EJ Populations in accordance with 301 CMR 11.07(6)(n)1 and the MEPA Interim Protocol for Analysis of EJ Impacts. Specifically, the MEPA DPH EJ Tool was utilized to identify any census tract or municipality in which the EJ Populations are located as exhibiting “vulnerable health EJ criteria”; this term is defined in the DPH EJ Tool to include any one of four environmentally related health indicators that are measured to be 110% above statewide rates based on a five-year rolling average. In addition, sources of potential pollution should be identified within the identified EJ Populations, based on the mapping layers available in the DPH EJ Tool. The results from the tool indicated:

- Elevated Blood Lead Prevalence (per 1,000) – 0-26.67 (lowest rate)
- Low Birth Rate (per 1,000) – 180-270 (block included Towns of Plymouth, Carver, Wareham; Statewide Rate – 216.8
- Heart Attack Rate (per 10,000) – Plymouth 35, Carver 40.6; Statewide Rate 26.4
- Childhood Asthma Ed Visits (per 10,000) – Plymouth 51.4, Carver 25.9; Statewide Rate – 83.1

The report is attached in Appendix O (<https://matracking.ehs.state.ma.us/Environmental-Data/ej-vulnerable-health/environmental-justice.html>; Note: mapping does not allow EJ population overlay, printed projection shows zoomed area only on portrait view.) There are no Per- and Polyfluorinated Substances (PFAS) remediation included as part of any projects proposed under the TMPU. As described under Section 4.2.7 – Floodplains, there are no flooding risks exacerbated for nearby EJ Populations, including under future climate conditions.

#### 5.11.5 Impact Summary

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. The Project is located within one mile of an EJ population. The Project is not anticipated to have disproportionate impacts on EJ populations. Impacts anticipated will be minor and temporary primarily due to construction related activities. Impacts include:



- Increased vehicle emissions from construction vehicles
- Temporary impacts on air quality during construction
- Increased noise levels during construction (due to construction equipment).

Pursuant to US DOT Order 5610.2C (2021), the evaluation and Proposed Action is consistent with the following:

- The Proposed Action does not impose adverse effects on minority and low-income communities through overly burdensome requirements that hinder projects and deprive communities of economic opportunity;
- The Proposed Action does not disproportionately affect environmental justice communities;
- The Proposed Action occurs within one mile of an environmental justice community, and measures have been taken to avoid, minimize, and mitigate any potential adverse environmental and public health effects and interrelated social and economic effects.
- The Airport made substantial efforts throughout the NEPA environmental review to elicit public engagement of the environmental justice community and the general public.

The Proposed Action would not result in a negative or adverse regional impact and would not trigger shifts in land use, rapid population growth, high public service demands, negative pressure over business and economic activity, disruption or displacement of established neighborhoods, uncontrolled urban proliferation, increased public service (utility) demands, or incompatible changes on transportation or traffic patterns.

All work is proposed on Airport property to meet FAA requirements. The Proposed Action is primarily for safety improvements and not to facilitate substantial increased Airport operations or cause substantial growth or change the type or size of aircraft using the Airport (Tables 1-2, 1-3, 1-4). Therefore, impacts on nearby communities and other potential socioeconomic impacts are not expected. There are no disproportionate impacts to Environmental Justice communities. The proposed Project will not modify existing Airport uses, therefore, the proposed action will not modify environmental health or safety risks from existing conditions.

Based on this information, there are NO SIGNIFICANT IMPACTS on 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 Proposed Action will require permitting under NPDES (Section 5.17). 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 by Proposed Action; Section 4.2.7)
- 3) Surface Water
- 4) Ground Water (Resource Not Affected by Proposed Action; Section 4.2.8)

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 sub-section below.

#### 5.12.1 Wetlands

As described in Chapter 4, the Airport property contains several notable wetland areas. Those wetlands within the project area were delineated most recently in 2016 (Figure 4-3). The Proposed Action as currently planned would NOT directly impact wetlands or buffers. An evaluation by the FAA determined that the relocation of the glideslope would not require a relocation or realignment of the Gate 6 Access Roadway and perimeter fence line within the project area. Therefore, no impacts to wetlands are proposed.

Based on this information and the proposed avoidance, minimization, and mitigation, there are NO SIGNIFICANT IMPACTS on 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) 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 further 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.”

Plymouth Municipal Airport is located in the Buzzards Bay watershed and has multiple procedures in place to protect surface water quality. 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). The proposed alternatives will not relocate or change aircraft deicing procedures.

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 runoff from proposed new impervious surfaces, turfgrass areas, and other project components will be treated using permanent stormwater BMPs, including LID and green infrastructure, as practicable and within budget and other constraints. These BMPs will follow the guidelines, to the extent practicable. One goal of such treatment is to not exceed pre-construction discharge rates for certain storm events. The volume of stormwater that needs to be accommodated by the proposed BMPs is therefore substantially greater than the runoff generated on the airfield.

As the project proceeds, there will be additional research into stormwater management options, and coordination with MassDEP 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 6 end, as well as two ILSF areas (Figures 4-2, 4-3, 4-6, 4-7, 4-10, 4-18). The alternatives would not affect the vernal pool, potential vernal pool, or the intermittent ponded area. There are no streams or rivers directly affected by the Proposed Action. All appropriate state and federal permits will be acquired for the work affecting surface waters as a result of this project (see Section 5.17 for a list). These permits will be adhered to and incorporated into the design and construction plans and specifications of the project.

The Proposed Action is at the conceptual phase (<30%). Potential water quality impacts would be mitigated through effective stormwater management and soil erosion and sediment control measures implemented as part of the design process, in accordance with all governing local, state and federal requirements and oversight during any construction. Erosion and Sediment Control Plans will need to be approved by the governing municipalities (Plymouth and/or Carver) and/or other governing agencies prior to any construction activities. Furthermore, all construction activities will need to comply with the latest FAA Advisory Circular 150/5370-10H (12/21/2018, or as updated) Standards for Specifying Construction on Airports. The design and construction of any proposed facilities can be done in such a manner as to minimize or eliminate the potential of water quality degradation through a prudent storm water management program.

### 5.12.3 Construction Mitigation

Construction period stormwater management will ensure protection of adjacent surface waters and wetlands as described below.

#### 5.12.3.1 Construction Period Stormwater Management

The proposed action is not anticipated to have negative impacts on water quality. Because it will disturb more than one acre of land, it will need to be conducted in accordance with the NPDES Construction General Permit. The proponent will prepare and implement a SWPPP pursuant to the NPDES Construction General Permit to protect the quality of receiving waters during construction. The built conditions will include stormwater best management practices to control the quality and quantity of runoff directed to receiving waters for the long-term.

In addition, construction activities will comply with the latest FAA Advisory Circular 150/5370-10H Standards for Specifying Construction on Airports. Grading associated with runway, taxiway, taxilane, and hangar construction, construction access, storage and laydown areas have the potential to cause short-term erosion and sedimentation in the vicinity of sensitive areas. The existing gravel maintenance access road will be used for construction access as much as possible. Sideslopes will be stabilized and re-vegetated as soon as practicable. Properly designed erosion control measures will be used throughout the construction period.

### 5.12.3.2 Post-Construction Stormwater Management

Stormwater runoff from the Project area will be managed through; 1) the Airport's existing stormwater management system, and 2) the installation of a new drainage system in each discrete project area. The stormwater management system will be designed to prevent an increase in peak stormwater runoff and to provide treatment when and where necessary. To meet this goal, management of runoff will include both temporary and permanent Best Management Practices ("BMPs") so that runoff will be appropriately managed both during and after construction. The proposed stormwater management system will be designed to comply with MassDEP's stormwater management regulations to the extent practicable. The designs may include LID and green infrastructure where practicable. The BMPs proposed for the Project are expected to meet the goal of no increase in peak stormwater runoff and provide stormwater treatment where needed. A series of deep sump catch basins and oil water grit separators will be constructed to collect the runoff from Taxiway D and Taxiway E. The oil water and grit separators will target runoff from areas with higher pollutant loads such as the fueling station and apron adjacent to Taxiway E.

Based on this information and the proposed avoidance, minimization, and mitigation, there are NO SIGNIFICANT IMPACTS on 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 Temporary Construction Impacts and Mitigation

In accordance with 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 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 on 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 all 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. All construction-period mitigation measures are listed in the draft Section 61 Findings (Appendix P).

- Roadway Traffic/Local Transportation System
- Noise
- Air Quality
- Surface Water
- Wetlands
- Vegetation
- Wildlife

- Hazardous Materials
- Air Traffic / Airport Operations

All construction activities will be managed in accordance with applicable MassDEP regulations regarding Air Pollution Control (310 CMR 7.01, 7.09-7.10), and Solid Waste Facilities (310 CMR 16.00 and 310 CMR 19.00, including the waste ban provision at 310 CMR 19.017), and other applicable regulations. Construction phase impacts and mitigation relative to state-listed species, wetlands, stormwater, noise, air quality, water quality, and traffic are described below, along with truck routes and other mitigation measures that may be implemented to minimize impacts on residential areas by trucks travelling to the site during construction.

#### 5.13.1 Roadway Traffic/Local Transportation System

The Proposed Action would not significantly 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. The estimated Average Daily Trips (adt) will vary depending on phase of the project and year, but for the larger projects (e.g., Runway 6 extension phase, Runway 6 reconstruction, Gate 3 taxiway reconstruction) is projected to occur in very narrow windows similar to other reconstruction projects (i.e., days to weeks rather than months or years). Table 5-6 below shows a gross estimate of adt based on the earlier calculations under Section 5.9.1 (Table 5-3) above. The result is approximately 9 adt for diesel dump trucks over the course of the 3-year construction period. The peak period is estimated to be during the reconstruction of Runway 6-24 in 2026, resulting in approximately 22 adt over a 90-day timeframe. Based on the short-term construction phases, no Transportation Demand Management (TDM) measures are projected due to construction.

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 temporarily impact the transportation network and surrounding areas. Truck and construction traffic will be commensurate with typical large, short-term construction projects. The anticipated volume of truck traffic per day does not trigger a formal traffic or impact study. 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 project 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 Town 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.

The construction contract will require contractors to use several measures to reduce potential emissions and minimize impacts, as appropriate and if available, from construction vehicles including:

- Encouraging contractors to use EPA Tier 4 construction equipment or equipment retrofitted with diesel emission control devices to the greatest extent practicable;
- Using Ultra-Low Sulphur Diesel for all trucks and construction machinery;
- Use of after-engine emissions controls, such as oxidation catalysts or diesel particulate filters;
- Maintaining an "idle free" work area;
- Minimizing exposed storage of debris on-site through measures such as wetting soils prior to disturbing and covering stockpiles.

TABLE 5-6. Estimated Average Daily Trips (adt) for Diesel Vehicles Over 3-Year Construction Period

Year	Project Area	Imported Common Fill, Gravel, & Reused Materials (CY)	Total # Dump Trucks (assume 16 CY each)
2024	Water/Wastewater Extension (~1400 LF)	In situ placement of new subgrade lines	[assume no new materials; onsite only]
2025	Runway 6 extension (351'x75'xdepth – grossly assume 30")	2,437 CY	152
	Taxiway A extension (700'x35'xdepth – grossly assume 24")	1,815 CY	113
	Taxiway E extension (1000'x35'xdepth – grossly assume 24")	2,593 CY	162
	MALSF pad and VASI (estimate 10'x10' x 6 units x 18" depth)	5.5 CY	0.34 (<1)
	Glideslope Pad (estimate 20'x20' x 24" depth)	30 CY	1.9 (<2)
	Glideslope Access (estimate 400'x15' x 12" depth)	2,667 CY	167
	Old Glideslope	No earthwork, just pavement demo; possible materials reuse	0
2026	Gate 3 Taxilane Reconstruction (160'x330'x full depth – assume 24")	3,911 CY	244
	Runway 6 Reconstruction (<4,650'x75'x partial depth – grossly assume 10")	10,764 CY	673
[Peak Truck Trip Period = ~ 90 days; adt peak ~22 trips/day]			
	Emergency Generator infrastructure/pad (10'x10' x depth – assume 18")	5.5 CY	0.34 (<1)
[TBD]	Hangars x 2 (100'x100' = 10,000x2=20,000 x depth – assume 24")	1,481 CY	93
TOTAL ALL YEARS		25,709 CY	1,606 Total Truckloads
/365 = per day (ALL YEARS combined)		70 CY/day [varies per year]	(4.5 x 2 back/forth) = 9 adt [varies by year/project]

### 5.13.2 Noise

Temporary noise effects will result from construction activities and include noise generated from heavy equipment, truck traffic, and other construction activity. Construction noise will be generated by construction vehicles and construction equipment performing earth work, paving and delivering construction materials. These construction activities will be carried out during normal daylight hours but are anticipated to occur over a duration of 3 to 4 years (2024-2026). While construction activities may be audible from this or other nearby residences and businesses in closer proximity of the nearby business parks, 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:



- Requiring all construction equipment to be equipped with exhaust mufflers, and requiring mufflers to be maintained and lubricated to minimize engine noise;
- Mufflers on construction equipment leaving airport property and passing through sensitive areas;
- Muffling enclosures on continuously running equipment, such as air compressors and welding generators;
- Measures to limit noise from machinery or trucks as they traverse streets in noise sensitive areas (schools, churches, wildlife/conservation areas);
- Specifying site construction hours of normal daytime hours 7 AM to 5 PM to avoid early morning, evening, and night time periods to minimize disturbing the adjacent receptors;
- Scheduling equipment operations to keep average noise levels low, to synchronize the noisiest operations with times of highest ambient levels, and to maintain relatively uniform noise levels;
- Turning off idling equipment;
- Locating noisy equipment at locations that protect sensitive locations by shielding or distance.
- Ensuring construction vehicle operators abide by the Massachusetts Vehicle Idling Regulations (Massachusetts 5-Minute idle Law), idling of construction equipment would comply with 310 CMR 7.11;
- Replacing specific construction operations and techniques by less noisy ones where feasible;
- Selecting the quietest of alternative items of equipment where feasible; and,
- To the extent practicable, specific activities such as crushing and pulverizing, as well as equipment staging areas, would be located at appropriate distances from residential receptors.

Additional mitigation is not proposed for temporary noise impacts.

### 5.13.3 Air Quality

Construction and operation activities shall not cause or contribute to a condition of air pollution due to dust or odors in accordance with 310 CMR 7.09 Dust, Odor, Construction, and Demolition. Air quality impacts during construction of the Proposed Action are primarily temporary in nature and limited to the Airport property. 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.

As mentioned in 5.13.1 and shown in Table 5-6, the estimated Average Daily Trips (adt) will vary depending on phase of the project and year, but for the larger projects (*e.g.*, Runway 6 extension phase, Runway 6 reconstruction, Gate 3 taxiway reconstruction) is projected to occur in very narrow windows similar to other reconstruction projects (*i.e.*, days to weeks rather than months or years). Dust and odor related to construction and demolition would be controlled in accordance with applicable regulations.

Potential measures to mitigate air quality impacts from the construction activities include:

- Implementing dust abatement techniques (*e.g.*, water application) on unpaved or unvegetated surfaces to minimize airborne dust during construction;
- Revegetating disturbed areas as soon as possible after disturbance. This could include interim revegetation along road beds, once heavy construction is completed; and

- Covering construction materials and stockpiled soils if they are a source of fugitive dust.
- Encouraging contractors to use EPA Tier 4 construction equipment or equipment retrofitted with diesel emission control devices to the greatest extent practicable (*e.g.*, EPA-verified, CARB-verified, or MassDEP-approved diesel oxidation catalysts (DOCs) or Diesel Particulate Filters (DPFs)).
- Maintain a list of the engines, their emission tiers, and, if applicable, the best available control technology installed on each piece of equipment on file for MassDEP departmental review.
- Using Ultra-Low Sulphur Diesel for all trucks and construction machinery.
- Maintaining an “idle free” work area and ensuring construction vehicle operators abide by the Massachusetts Vehicle Idling Regulations (Massachusetts 5-Minute idle Law), idling of construction equipment would comply with 310 CMR 7.11 (efforts to include driver training, periodic inspections by site supervisors, and posting signage to limiting idling to five minutes or less on-site);
- Minimizing exposed storage of debris on-site through measures such as wetting soils prior to disturbing and covering stockpiles to avoid fugitive dust.

#### 5.13.4 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 on surface waters are not anticipated. Therefore, mitigation is not proposed.

#### 5.13.5 Wetlands

The project as currently designed and based on the assumption that the pending FAA analysis and subsequent design will not result in direct impacts on wetlands or their jurisdictional buffers. Even so, the project will be required to develop a Stormwater Pollution Prevention Plan (SWPPP) in accordance with its NPDES CGP to manage stormwater during the construction period. The SWPPP will include management measures that will be implemented during construction and potential construction period dewatering activities and associated permitting and identify mitigation measures. All construction-period mitigation measures are listed in the draft Section 61 Findings (Appendix P).

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.

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 on 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 (*Phragmites* sp.) was abundant south of the Runway 6. 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 and the implementation of other listed BMPs in the MassDOT manual. Impacts on vegetation during construction are anticipated to be temporary in nature. Therefore, mitigation is not proposed.

#### 5.13.6 Rare Species and Critical Habitats

All activities will comply with MESA Conservation and Management Permit(s). 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 activities, field visits in advance of construction will occur during the growing season to demarcate areas where construction equipment must avoid. Additional field visit(s) may occur during specific periods to ensure the demarcated areas are accurate and may be adjusted to encompass populations or specimens.

#### 5.13.7 Hazardous Materials and Solid Waste

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. (Also refer to Section 5.7).

#### 5.13.8 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) and ongoing communications between the operations staff and contractor(s). Runway 6-24 is proposed to be shut down during the construction/reconstruction periods and the glideslope relocation. If an emergency landing was necessary during this timeframe, the Airport would communicate with the construction contractors as necessary. There should be no impact on Runway 15-33 during the work other than redirection of air traffic to that runway.

#### 5.14 Indirect, Cumulative, and Segmentation Effects

The proposed project is not expected to result in any negative or long-term significant indirect or cumulative impacts.

#### 5.14.1 Indirect Effects

Under NEPA, “indirect effects” are those *“caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable”*. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems (40 CFR 1508.8). The proposed project is not expected to cause any significant indirect impacts in any of the impact categories that have been considered. All impacts are expected to occur only at the specific locations where construction will occur. The potential for indirect impacts occurring later on or distant from the site due to on-going operations at the hangars will be minimized by the mitigation measures described herein, such as proper stormwater management, noise control measures, and light emissions control. The Proposed Action will not create any significant secondary air quality impacts as the projects are not expected to significantly affect the amount of air traffic (Tables 1-2, 1-3, 1-4).

#### 5.14.2 Cumulative Effects and MEPA Segmentation

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.

In addition, the MEPA Certificate indicates, *“...conceptual details about this future work should be disclosed in the DEIR so as to allow review of the cumulative impacts of the entire TMPU.”* The MEPA regulations include provisions (301 CMR 11.02[2][c]) to ensure that a project is not phased or segmented *“...to evade, defer or curtail MEPA review...the Proponent, any Participating Agency, and the [EEA] Secretary shall consider the entirety of the Project, including any likely future Expansion, and not separate phases or segments thereof.”* Table 2-1 presented the components of the 5-year CIP to occur from 2023-2026. Section 5.14.3 below presents the Airport projects over time since the first MEPA filing.

This section takes into account recent Airport projects, those included in the *TMPU (2023)*, and other past, present, and reasonably foreseeable future projects located within the project vicinity. Past projects include Reasonably foreseeable projects include miscellaneous projects anticipated to occur on and around the Airport property within the next five years.

In terms of other potential future development, the Carver and Plymouth Master Plans (2017 and 2006, respectively) recommend that growth be concentrated in the area around the Airport South Meadow Road. 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.

### 5.14.3 MEPA Timeline

Throughout its history, the Airport has continued to add improvements and continuously maintains its existing assets in an economically responsible manner consistent with its purpose and in collaboration as part of a system of Massachusetts Airport assets with MassDOT Aeronautics Division, the Massachusetts Airport Managers' Association (MAMA), and other affiliates. The Airport is currently 758 acres, and all projects are consistent with improvements on airports. Since MEPA was enacted, the following projects have been undertaken at the Airport:

MEPA #	Year	Project
	2018-2020	Demolish and Reconstruct New Terminal [within existing disturbed impervious areas]
15663	2017-2018	TW D extended, New hangar constructed
	2015-2016	Extended Runway 15-33 (1000 LF) and Taxiway S; constructed 300-foot stopways at the end of 15 and 24; cleared obstructions in 75 acres near RW 15 end
	2011	Relocated Taxiway E (3500 LF)
14801	2011-2013	Technical Master Plan Update; Runway and Taxiway Improvements
	2010	Constructed Taxiway D (south, 1200 LF)
14511	2009	Constructed Taxiway A (south, 2100 LF)
	2008	Constructed perimeter road (3500 LF) and privately constructed 3 hangars (54,000 SF)
	2007	Privately constructed hangar (south, 18,000 SF); constructed commercial building along South Meadow Road (6,500 SF; off Airport)
	2006	Constructed commercial building along South Meadow Road (7,400 SF; off Airport)
	2005	Constructed Taxiways "J" and "K" and parking apron, south of Runway 6/24 (2,200 LF)
13289	2004	Relocated Taxiway "S," east of Runway 6/24, 2,500 LF
	2003	Additional perimeter fence (2,500 LF); privately constructed 18,000 SF hangar for State Police
[9689]	2003	Instrument Landing System on Runway 6
[9033]	1999	Runway, Taxiway, Apron and Lighting Improvements
8636	1991-93	Airport MP Study ; Rehab Runway and widen to 75-ft; Construct Apron and Taxiway
8093	1990	Runway 15-33 Reconstruction
4707	1983	Airport Master Plan Study Runway Rehabilitation Projects; Installation of NAVAIDS
3024		[unknown filing]
2817	1977	New Hangar
2591	1977	Pave Apron
2590	1977	New Hangar
2437		[unknown filing]
	1977	Massachusetts Environmental Policy Act enacted

#### 5.14.4 Summary of Cumulative Effects

The resources affected by this project include noise, wetlands, water quality, and state-designated Priority Habitat and four state-listed bird species. 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.

##### 5.14.4.1 Noise

The Proposed Action will not result in any expansion of the noise contours beyond the Airport property at the Runway 6 end. Based aircraft and resulting operations may increase slightly at the airport over the long term (Tables 1-2, 1-3, 1-4). Noise impacts associated with construction will be short term and last only as long as the construction project. Impacts will be minimized through conscientious construction management and implementation of BMPs. Construction of the reasonably foreseeable future projects, of which the majority of the projects are pavement reconstruction, would have temporary noise impacts minimized through project planning with no long-term adverse impacts.

##### 5.14.4.2 Wetlands

Past wetland impacts occurred as part of the Runway 15-33 end extension in 2013. The wetland resource area impacts included permanent fill of 1.1 acres of BVW and vegetation removal in approximately 13 acres of wetland resource areas. Permanent wetland impacts resulting from filling were replicated at a 2:1 ratio to meet mitigation requirements under the Plymouth Wetlands Protection Bylaw and the Massachusetts WPA. Federal wetland mitigation resulting from filling and secondary impacts resulted in the preservation of over 40 acres of land.

Subsequent work was presented in the 2018 EA for Taxiway D and Master Plan Improvements. No wetlands were in close proximity to projects in that EA. Mitigation for the loss to grassland habitat at that time included the conversion of forested and scrub upland areas to grassland in an area located off the end of Runway 6 in Carver, contiguous with existing mitigation areas. The conversion required work within state and local jurisdiction buffer zones to wetlands, as well as tree cutting within the wetlands themselves. No fill or other alteration was required. All work in vegetated wetlands required authorization from USACE pursuant to Section 404 of the CWA, and concomitantly from the Carver Conservation Commission pursuant to the Massachusetts WPA.

The current Proposed Action will not result in any impacts to wetlands, as the only location where work occurs in the vicinity of wetland resources as part of the proposed CIP improvements is at the southerly end of Runway 6. Implementation of MassDEP and EPA Best Management Practices for wetlands and groundwater protection will be implemented.

##### 5.14.4.3 Water quality

The Proposed Action will increase the amount of impervious surfaces. 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 on surface waters.

##### 5.14.4.4 Rare Species

The Project will involve a conversion of approximately 2.5 acres of NHESP-mapped Priority Habitat for the grasshopper sparrow, vesper sparrow, and upland sandpiper to impervious area for the construction of the runway, taxiway extensions, taxilane reconstruction, runway reconstruction, two hangars, and backup generator infrastructure. These habitat areas are now managed habitat under the Airport's Grassland Habitat Management Plan (GHMP; 2018). To mitigate potential impacts, additional acreage will be added to the area managed under the Airport's GHMP and an Airport-wide management plan will be developed during MESA permitting as detailed in Section 5.5 in order to provide a net-benefit to the listed species.



### 5.15 Mitigation Summary

The CEQ Regulations at 40 CFR § 1508.20 define mitigation (Figure 5-8, Figure 5-9) 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.

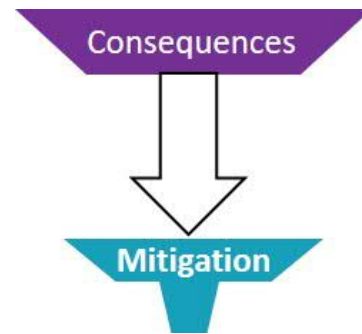


FIGURE 5-8. NEPA Step 4 – Mitigation (Offset Effects / Impacts)

Several of the components have been minimized over the previously proposed and permitted project elements. Specifically, the Runway 6 extension at the south end has been reduced from 850 feet down to 351 feet due to the Airport's concerns regarding potential impacts on the neighboring communities and potential environmental impacts. Mitigation measures were included in each of the subsequent categories in Sections 5.4-5-12 above with construction phase mitigation measures detailed in Section 5.13.

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. Section 5.14.3 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.

FIGURE 5-9. Public Info Meeting (March 2023) slide illustrating the process of the NEPA review.



## 5.16 Final Determination of NEPA Significance Thresholds

Table 5-7 summarizes those remaining NEPA categories that have been carried forward from Chapter 4 and evaluated in Chapter 5 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. Following the NEPA process, the table demonstrates that through avoidance, minimization, and mitigation, there are no significant impacts on the natural resources within the 14 categories identified and evaluated and justification for a *Finding of No Significant Impacts* by the Proposed Action (Figure 5-10).

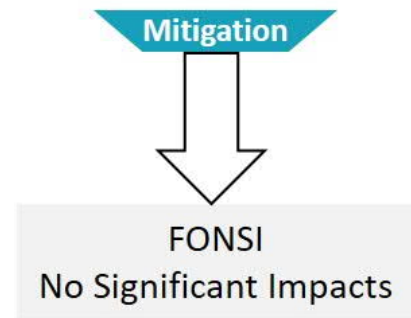


FIGURE 5-10 NEPA Step 5 – FONSI

TABLE 5-7. Significance Thresholds (FAA Order 1050.1F, Exhibit 4-1) and Impact Determination by Year

Environmental Impact Category	Significance Threshold	Significant Impact – Y/N?				
		2022 TMPU	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.	N/A	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.	N/A	No	No	No	No
Climate Change	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.	N/A	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 5.7.	N/A	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 5.8).	N/A	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 5.9.	N/A	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	N/A	No	No	No	No

Environmental Impact Category	Significance Threshold	Significant Impact – Y/N?				
		2022 TMPU	2023	2024	2025	2026
	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 5.10.					
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 5.11.	N/A	No	No	No	No
Water Resources [in order to match 1050.1F, Exhibit 4-1 and narrative] –  Wetlands, Surface Waters  [no impact on floodplains and floodways; no impacts on groundwater; resources not affected]	Wetlands – The action would: 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. Factors to consider whether or not an action would impact groundwater, surface water, and wetlands are discussed in Section 5.12.  Surface Waters – 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.	N/A	No	No	No	No
Cumulative Effects	Factors considered in determining whether an action would result in cumulative impacts are discussed in Section 5.14.	N/A	No	No	No	No
SOURCE: FAA Order 1050.1F, Exhibit 4-1 (September 2023) *NOTE: "Natural Resources" in this NEPA-defined context refers to materials/aggregate to provide base fill for the runway and taxiway improvements.						

### 5.17 Summary of Required Actions and Permits\*

A summary of the federal and state actions and permits is listed below Table 5-8. There are no local permits or approvals needed for the Proposed Action, since no wetlands impacts are proposed. In compliance with MEPA regulations at 301 CMR 11.07(6) for the section referred to as “Statutory and Regulatory Standards and Requirements”, there is also a list of Financial Assistance and Land Transfers that may be required. The applicable statutory and regulatory standards is referenced. Existing avigation easements are identified. There are no additional avigation easements as part of the Proposed Action. Any projects in the TMPU and future projects that may occur beyond 5 years may require an NPC under MEPA that will be evaluated at that time.

TABLE 5-8 State, Federal, and Local Permitting

Agency	Action or Permit	Statutory Reference / Regulatory Standard
Federal		
Federal Aviation Administration (FAA)	Finding of No Significant Impact (FONSI) based upon this NEPA EA	NEPA
Massachusetts Department of Environmental Protection (DEP)	Water Quality Certificate (state administered)	Section 401
US Environmental Protection Agency (EPA)	Construction General Permit	National Pollutant Discharge Elimination System (NPDES)
Massachusetts Historical Commission (MHC)	Section 106 clearance	Section 106 National Historic Preservation Act
State		
Executive Office of Energy and Environmental Affairs	Section 61 Findings	MEPA
Massachusetts DEP	Water Quality Certificate	Section 401
MassWildlife’s Natural Heritage & Endangered Species Program (NHESP)	Amendment to Conservation and Management Permit (CMP)	Massachusetts Endangered Species Act (MGL Chapter 131A) and Regulations (321 CMR 10.00)
Local		
[NONE]		
* Additional permitting may be needed for future work under the TMPU. For work beyond the 5-year CIP, there may be a need to complete one or more Notice of Project Change (NPC) filings under MEPA. The ALP projects 20 years into the future and has many variables that will evolve and are difficult to predict in that timeframe.		

TABLE 5-9 Proposed 5-Year Capital Improvement Plan (2023-2027) – Financial Assistance\*

Planning Period (Federal Fiscal Year)	Project	Estimated Project Cost	Estimated FAA Funding	Estimated MassDOT Match	Estimated Local Match
2023	Runway 6/24 & TW E Extension Environmental Assessment	\$350,000	\$315,000	\$17,500	\$17,500
2024	Design and Permit RW 6 Extension/TWE	\$480,000	\$432,000	\$24,000	\$24,000
2024	Water/Waste- water Upgrades Sewer Main	\$700,000	\$0	\$560,000	\$140,000
2025	Extend RW 6/24 (351' x 75')	\$4,600,000	\$4,140,000	\$230,000	\$230,000
2025	Extend TW E/A (700'x35')	\$3,000,000	\$2,700,000	\$150,000	\$150,000
2025	Gate 3 Taxilane Reconstruction	\$525,000	\$472,500	\$26,250	\$26,250
2026	Reconstruct RW 6/24	\$5,700,000	\$5,130,000	\$285,000	\$285,000
2026	Emergency Generator Airside Infrastructure	\$275,000	\$247,500	\$13,750	\$13,750
5-Year ACIP Total		\$15,630,000	\$13,437,000	\$1,289,000	\$886,500

Source: Plymouth Municipal Airport Technical Master Plan Update (Table 6-1), August 2022.

NOTE: Proposed hangars anticipated to be privately financed per TMPU, Section 1.7.

TABLE 5-10 Land Transfers and Existing Avigation Easements

Land Transfers					
[NONE]					
Existing Avigation Easements**†					
Parcel No.	Acquisition Date	Grantor	Registry of Deeds Reference	Acreage	FAA Project Number
6	2/10/68	Plymouth Rod and Gun	3426/797-800	0.5	FAAP 9-19-032-6604
7	1/21/69	Rolkin TR.	3575/797-800	3.7	
26	11/17/14	Piney Wood	44949/200	23.3	AIP 3-25-0042-36
18A			44949/200	5.3	
L			44949/206	13.38	
V	3/22/21	HALLCO Properties, LLC	54638/45	0.04	N/A

\*\*The MEPA Certificate requires the number, location and size of existing avigation easements.

†Source: ALP Sheet 11 – Exhibit A; revision 2, dated 4/6/21

## 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. Appendix E includes the compiled agency/public comments on the Draft EA and responses. Meeting materials from the EA/EIR meetings, along with a revised EJ Screening Form (per the MEPA ENF Certificate) are included in Appendix C.

### 6.1 Agency Coordination and Communications

Agency	Contact	Date	Activity/Event	Location	Description/ Comments
MEPA	Carline Lemoine, Page Czepiga	February 2, 2023	MEPA EJ and Pre-Application Consultation Session	Via remote online video conference	Introduction of Project to MEPA agency staff
		April 18, 2023	ENF Submitted	Via MEPA portal	Copies provided digitally to required parties and hard copies circulated to three libraries (See Draft EA/EIR Section 6.2)
		April 26, 2023	ENF notice in Environmental Monitor	Via MEPA portal	20-day public comment period commences
		May 10, 2023	MEPA Scoping Session	Remote Online Video Conference	Public permitted to attend meeting with primary focus on identifying scope / information to include in Draft EIR
	Nicholas Moreno	[Multiple May 17- July 17, 2023]	Preliminary Outreach	Via email and phone	Communications re: Scoping, Joint EA/EIR, etc.
		May 26, 2023	Certificate on ENF Issued		Specified scope of Draft EIR
EPA Region 1	Kira Jacobs	May 1, 2023	Emails re: EPA Sole Source Aquifer oversight	Via emails	Confirmation of SSA and Draft EA/EIR Review
MassDEP	Jonathan Hobill	May 16, 2023	Comments on ENF	Attached to MEPA ENF Certificate	Included comments from multiple MassDEP Bureaus: BAW, Air and Waste BWR, Water Resources BWSC, Waste Site Cleanup
Mass Division of Marine Fisheries	Emma Gallagher	April 19, 2023	Email	Email	Confirming no marine resources associated with project



Agency	Contact	Date	Activity/Event	Location	Description/ Comments
Mass NHESP	Amy Hoenig	April 19- June 13, 2023	MESA and CMP Preliminary Consultation; Coordination and Initial Meeting	Emails and MassDFW HQ, Westborough	Consultation regarding existing Conservation Management Permit(s) under MESA, Grassland Management Plan, and Mitigation for Proposed Action impacts
Mass Historical Commission/ SHPO	Edward Bell	<ul style="list-style-type: none"> <li>July 28, August 4</li> <li>Sept 5, 2023</li> </ul>	<ul style="list-style-type: none"> <li>Outreach regarding ENF comments (past 30 days);</li> <li>Incoming response letter</li> </ul>	Phone calls (x2) and email; Letter from MHC	Confirmation that MHC received the ENF on April 20, 2023, with additional guidance.
Tribal Historic Preservation Officers <ul style="list-style-type: none"> <li>Mashpee Wampanoag Tribe</li> <li>Wampanoag Tribe of Gay Head (Aquinnah)</li> </ul>	<ul style="list-style-type: none"> <li>David Weeden</li> <li>Bettina Washington</li> </ul>	August 10, 2023	Government- to- Government Consultation Invitation	Letters from FAA to Tribes	Section 106 Consultation under National Historic Preservation Act, Federal Executive Order 13175
USFWS	Maria Tur	October 17, 2023	Phone consultation	Via phone	Confirmation of no need for formal consultation

## 6.2 MEPA Circulation

In accordance with 301 CMR 11.16(3), the Draft EA/EIR has been circulated to the following parties:

### Federal Agencies

Federal Aviation Administration  
New England Region, Airports Division  
1200 District Avenue  
Burlington, MA 01803-5078

### State and Regional Agencies

Rebecca Tepper, Secretary  
Executive Office of Energy and  
Environmental Affairs  
Attn: MEPA Office  
100 Cambridge Street, Suite 900  
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Department of Environmental Protection  
Commissioner's Office  
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Boston, MA 02108  
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Department of Environmental Protection  
MassDEP Southeast Regional Office  
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Old Colony Planning Council (OCPC)

Massachusetts Department of Transportation  
Public/Private Development Unit  
10 Park Plaza, Suite #4150  
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MassDOTPPDU@dot.state.ma.us

Massachusetts Department of Transportation,  
District #5  
Attn: MEPA Coordinator  
1000 County Street  
Taunton, MA 02780  
Cindy.McConarty@dot.state.ma

Massachusetts Historical Commission  
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220 Morrissey Boulevard  
Boston, MA 02125

MEPA Office, Attn: EEA EJ Director  
100 Cambridge Street, Suite 900  
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MEPA-EJ@mass.gov

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paul.ormond@mass.gov

Natural Heritage and Endangered Species Program  
Massachusetts Division of Fisheries & Wildlife  
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melany.cheeseman@mass.gov  
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Massachusetts Water Resources Authority  
Attn: MEPA Coordinator

70 School Street  
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DMF – South Shore  
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New Bedford, MA 02744  
DMF.EnvReview-South@mass.gov

#### Local Agencies and Representatives

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26 Court Street  
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Lee Harmann, AICP, Director of Planning and  
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lhartmann@plymouth-ma.gov

Plymouth Conservation Commission  
Richard Vacca, Conservation Planner  
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rvacca@plymouth-ma.gov

Plymouth Board of Health  
Karen Keane, Director  
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Plymouth, MA 02360  
kkeane@plymouth-ma.gov

#### Local Libraries

Main Library  
132 South Street  
Plymouth, MA 02360  
plref@ocln.org

Manomet Branch  
12 Strand Avenue  
Plymouth, MA 02360  
plmlib@ocln.org

100 First Avenue  
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katherine.ronan@mwra.com

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Robert Fennessy, Town Administrator  
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robert.fennessy@carverma.gov

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Gary.Flaherty@carverma.gov

Carver Board of Health  
Kevin Forgue, Board of Health, Health Agent  
Jill Martins, BOH Clerk  
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Kevin.Forgue@carverma.gov  
Jill.Martins@carverma.gov

Carver Public Library  
2 Meadowbrook Way  
Carver, MA 02330  
cjulius@carverpl.org

### 6.3 Public Outreach

Date	Event	Location	Description/ Comments
January, April, June 2022	3 Master Plan Meetings	Plymouth Airport	Conducted as part of public outreach and engagement efforts throughout the development of the Airport's Technical Master Plan Update (TMPU) and Airport Layout Plan (ALP) prior to commencing EA
March 17, 2023	MEPA Screening Form Distribution		>200 parties emailed, including all public agencies and organizations on MEPA requisite EJ distribution list, members of EJ community, and Airport email list from previous meetings and Airport activities
March 29, 2023	Public Outreach Session	Plymouth Airport	
May 10, 2023	MEPA Scoping Session	Remote Online Video Conference	Public permitted to attend meeting with primary focus on identifying scope / information to include in Draft EIR
October 25, 2023	NEPA Draft (EA) approved for public release and notice to Federal Register		30-45 day agency review period under NEPA
November 8, 2023	MEPA Draft (EIR) released on Environmental Monitor for public review and comment		Following release on Environmental Monitor, the public has 30 days to comment. The MEPA office has 37 days to make a determination on DEIR.
[TBD]	Draft EA/EIR Public Meeting	Plymouth Airport	Public Meeting proposed for two weeks after release of Draft EA/EIR on Environmental Monitor website

## 7 List of Preparers

In accordance with FAA Order 5050.4B (2006), this List of Preparers identifies each person who has prepared a section of the EA or a substantial background paper used in preparing the EA and that person's respective employer, along with the FAA lead personnel.

NAME/TITLE	YRS EXP.	CERTIFICATION/ EDUCATION	ROLE/AREA OF RESPONSIBILITY
<b>FEDERAL AVIATION ADMINISTRATION – FEDERAL PROJECT SPONSOR</b>			
Cheryl Quaine Environmental Protection Specialist	26	MS, Environmental Science Christopher Newport University	FAA Project Manager, General Consultation, Document Oversight and Review
Colleen Mailloux, AICP Community Planner	20	MS Resource Economics University of Maine	FAA Community Planner, QA/QC
<b>DUBOIS &amp; KING – NEPA ENVIRONMENTAL ASSESSMENT &amp; MEPA EIR LEAD</b>			
Brenda Bhatti Sr. Environmental Planner/ Wildlife Biologist	25	MS, Environmental Studies Antioch University New England	EA/EIR Project Manager, Lead EA/EIR Author, MEPA ENF QA/QC, Agency Collaboration, Public Outreach
Jeff Adler Senior Civil Engineer	41	MS, Civil Engineering University of Maine – Orono	CIP Project Manager
Jennifer Ricciardi Senior Aviation Planner	23	Sr. Aviation Planner	Quality Assurance, TMPU/ALP Manager and Verification
Guy Rouelle, Director Aviation Division	36	MAS Airport Operations Embry-Riddle Aeronautical Univ.	EA Document Peer Review, Public Outreach
Mark Goodrich, PE Sr. Project Manager	27	BS, Civil Engineering University of New Hampshire	Sr. Aviation Engineer
Brian Pinsonault Aviation Planner	11	BA, Multidisciplinary Studies Castleton State College	AEDT Noise Modeling
Andrew Lewis Civil Engineering Technician	2	AS, Civil Engineering Technology Eastern Maine Community College	CADD/GIS Mapping
<b>EPSILON – MEPA ENF LEAD (ENF Preparation; ENF/EIR GIS Figures)</b>			
Alyssa Jacobs	20+	MS, Environmental Science	MEPA ENF Lead; EIR QA/QC; NHESP Coordination
Nathan Rawding	16+	MS, Environmental Planning and Policy	MEPA ENF Primary Author, EA/EIR Coordination, QA/QC
Hiromi Hashimoto	5	MS, Environmental Planning and Policy	MEPA ENF Preparation
Rob Sheldon	12+	MS, Geographic Information Science	GIS Mapping/Figures