



Draft Environmental Assessment Proposed Air Traffic Control Tower and Associated Improvements

**Baltimore/Washington International Thurgood Marshall Airport
Linthicum, Maryland**

Prepared for:

Maryland Aviation Administration
Office of Planning and Environmental Services

March 14, 2024

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

Responsible FAA Official _____

Date _____

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ACRONYMS AND ABBREVIATIONS

AACPS	Anne Arundel County Public Schools
AC	Advisory Circular
ACBM	Asbestos-containing building materials
ACEIT	Airport Construction Emissions Inventory Tool
ADA	Americans with Disabilities Act
AFFF	Aqueous Film Forming Foam
AFTIL	Airways Facility Terminal Integration Laboratory
AGL	Above Ground Level
AIP	Airport Improvement Program
ALP	Airport Layout Plan
ALV	Airfield Lighting Vault
AMSL	Above Mean Sea Level
APE	Area of Potential Effect
APU	Auxiliary Power Unit
ARFF	Aircraft Rescue and Firefighting
ASDE	Airport Surface Detection System
ATC	Air Traffic Control
ATCT	Airport Traffic Control Tower
BCC	Birds of Conservation Concern
BFE	Base Flood Elevation
BGE	Baltimore Gas and Electric
BGEPA	Bald and Golden Eagle Protection Act
BMC	Baltimore Metropolitan Council
BMP	Best Management Practices
BOD	Biochemical Oxygen Demand
BWI Marshall Airport	Baltimore Washington International Thurgood Marshall Airport
CAA	Clean Air Act
CBFO	Chesapeake Bay Field Office
CBRS	Coastal Barrier Resources System
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH₄	Methane
CISA	Climate Informed Science Approach
CO	Carbon Monoxide
CO₂	Carbon Dioxide
CO_{2e}	Carbon dioxide equivalent
COMAR	Code of Maryland
Critical Area Act	Chesapeake Bay Critical Area Protection Act
CSA	Comparative Safety Assessment
CT	Census Tract
CTP	Consolidated Transportation Program
CWA	Clean Water Act
CZMA	Coastal Zone Management Act of 1972

ACRONYMS AND ABBREVIATIONS

CZMP	Coastal Zone Management Program
DBH	Diameter at breast height
DMS	Dynamic Messaging Sign
DOE	Determination of Eligibility
DOT	Department of Transportation
DSA	Direct Study Area
EA	Environmental Assessment
EAC/A	Elizabeth Anderson Comer Archaeology
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ERP	Environmental Review Program
ESA	Endangered Species Act
ESD	Environmental site design
F3	Fluorine-free foam
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FCA	Forest Conservation Act
FCP	Forest Conservation Plan
FEMA	Federal Emergency Management Agency
FFRMS	Federal Flood Risk Management Standard
FIDS	Forest Interior Dwelling Species
FIRM	Flood Insurance Rate Map
FMP	Forest Maintenance Plan
FONSI	Finding of No Significant Impact
FSD	Forest Stand Delineation
FWS	U.S. Fish and Wildlife Service
FVA	Freeboard Value Approach
GHG	Greenhouse Gas
GGRA	Greenhouse Emissions Reduction Act
GRV	Glycol Recovery Vehicles
GSE	Ground Support Equipment
GWP	Global Warming Potential
HE	Healthy Economy
HFCs	Hydrofluorocarbons
HPP	Historic Preservation Plan
IART	Impervious Area Requiring Treatment
IMP	Institutional Management Plan
IPaC	Information for Planning and Consultation

ACRONYMS AND ABBREVIATIONS

IPCC	Intergovernmental Panel on Climate Change
ISA	Indirect Study Area
JPA	Joint Federal /State Application
LOD	Limit of Disturbance
LOS	Line-of-Sight
LTR	Light Rail
MAA	Maryland Aviation Administration
MBTA	Migratory Bird Treaty Act
MCCC	Maryland Commission on Climate Change
MD	Maryland
MDE	Maryland Department of Environment
MDNR	Maryland Department of Natural Resources
MDOT	Maryland Department of Transportation
MEPA	Maryland Environmental Policy Act
MHT	Maryland Historical Trust
MILSPEC	Military specification
MIHP	Maryland Inventory of Historic Properties
MOU	Memorandum of Understanding
MOVES	Motor Vehicle Emissions Simulator
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MSL	Mean Sea Level
MT	metric tons
MTA	Maryland Transit Administration
MTN	Martin State Airport
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act of 1969
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NLEB	Northern Long-eared Bat
NO₂	Nitrogen Dioxide
N₂O	Nitrous Oxide
NO_x	Nitrogen Oxides
NOA	Notice of Availability
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NPIAS	National Plan of Integrated Airport Systems
NPL	National Priorities List
NPS	National Park Service
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places

ACRONYMS AND ABBREVIATIONS

NRI	National Rivers Inventory
O₃	Ozone
P2	Pollution Prevention
Part 77	CFR Title 14 Part 77- Safe, Efficient Use, and Preservation of the Navigable Airspace
Pb	Lead
PFAS	Poly-Fluoroalkyl Substances
PFCs	Perfluorocarbons
PFO	Palustrine Forested
PM_{2.5}	Particulate Matter with a diameter of 2.5 microns or less
PM₁₀	Particulate Matter with a diameter of 10 microns or less
PPA	Pollution Prevention Act
ppm	parts per million
PSS	Palustrine Scrub-Shrub
RCRA	Resource Conservation and Recovery Act
SAF	Sustainable Aviation Fuel
SC-GHG	Social cost of GHG emissions
SDWA	Safe Drinking Water Act
SF₆	Sulfur Hexafluoride
SHA	State Highway Administration
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO₂	Sulfur Dioxide
SRM	Safety Risk Management
SWM	Stormwater Management
TAF	Terminal Area Forecast
THPO	Tribal Historic Preservation Officer
TIP	Transportation Improvement Plan
TMDL	Total Maximum Daily Load
TRACON	Terminal Radar Approach Control
TSS	Total Suspended Solids
USACE	U.S. Army Corp of Engineers
USC	United States Code
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
UST	Underground Storage Tank
USGCRP	United States Global Change Research Program
USGS	United States Geological Survey
VOC	Volatile Organic Compounds

ACRONYMS AND ABBREVIATIONS

Washington D.C.	District of Columbia
WHS	Wildlife and Heritage Service
WQC	Water Quality Certification
WSSC	Wetlands of Special State Concern
WOTUS	Waters of the U.S.

Chapter 1: PURPOSE AND NEED

The Maryland Aviation Administration (MAA), owner and operator of Baltimore/Washington International Thurgood Marshall Airport (BWI Marshall Airport), located in Anne Arundel County, Maryland (MD), is preparing this Environmental Assessment (EA) to assist the Federal Aviation Administration (FAA) in evaluating potential environmental effects resulting from a proposed Airport Traffic Control Tower (ATCT) and associated improvements at BWI Marshall Airport. This EA is being completed in accordance with the National Environmental Policy Act of 1969 (NEPA), which requires environmental review of proposed Federal actions. The MAA is requesting FAA approval of the Proposed Action as depicted on the Airport Layout Plan (ALP) and a determination that applicable elements of the Proposed Action would be eligible for Federal funding.

In addition to NEPA, this EA is being prepared in accordance with the Council on Environmental Quality implementing regulations [(CEQ); 40 Code of Federal Regulations (CFR) 1500-1508]; FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*; FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*; and all applicable special purpose laws, e.g., Section 106 of the National Historic Preservation Act. The EA will also satisfy the requirements of the Maryland Environmental Policy Act (MEPA) (Annotated Code of Maryland, Natural Resource Article, 1-301 to 1-305).

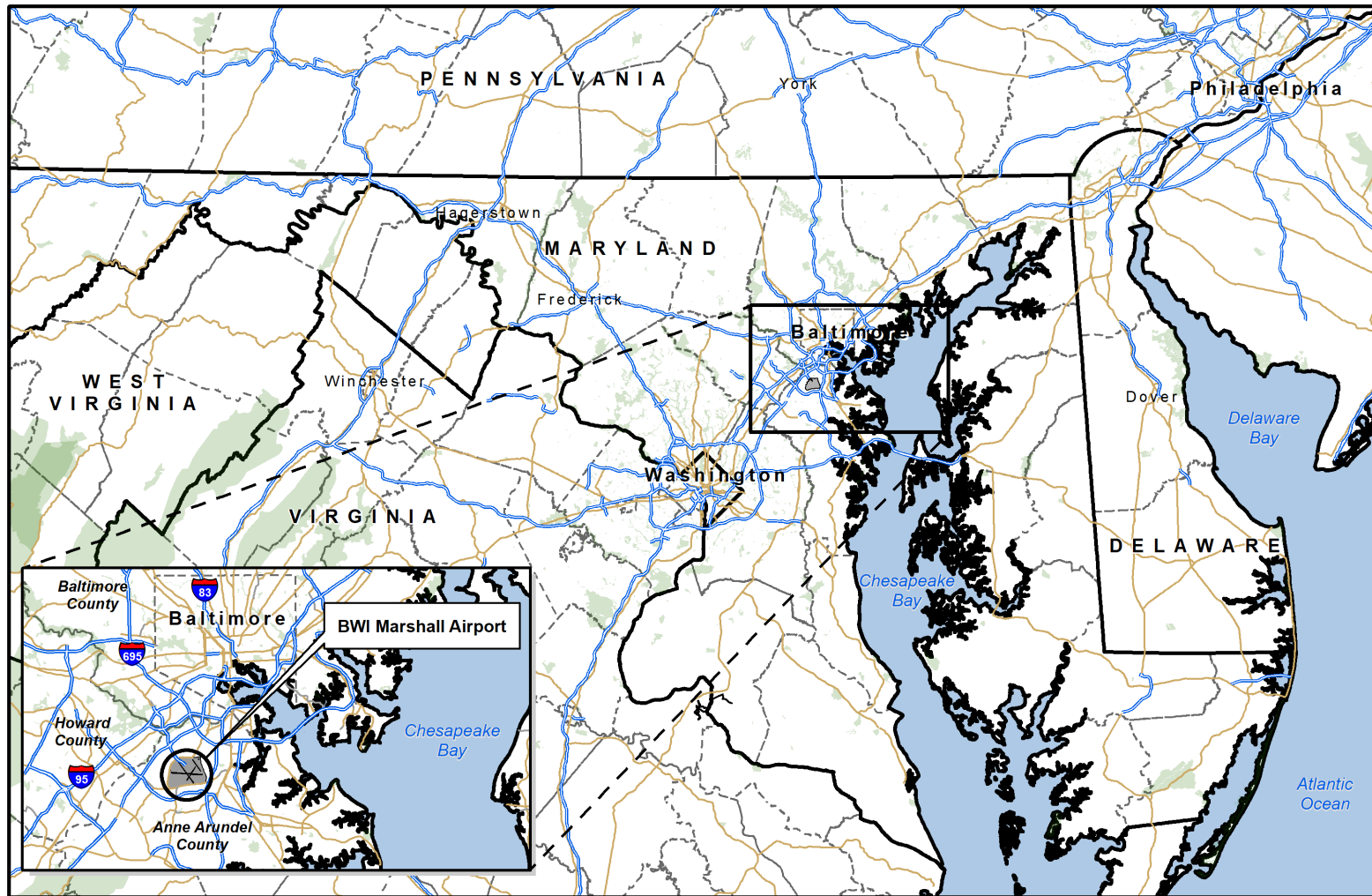
1.1 Background

1.1.1 Airport Background

BWI Marshall Airport is a large hub primary commercial service airport as defined in the FAA's National Plan of Integrated Airport Systems (NPIAS). BWI Marshall Airport has been owned and operated by the State of Maryland since 1972.

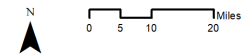
BWI Marshall Airport is located approximately 10 miles southwest of Baltimore, MD and 27 miles northeast of the District of Columbia (Washington, D.C.), as shown in **Figure 1-1**. The Airport consists of approximately 3,600 acres in the northwest portion of Anne Arundel County, MD. The main Airport campus, containing the runways, terminal complex, and landside/support facilities (approximately 3,200 acres), is bordered on the west, north, and east by Aviation Boulevard (MD 170/MD 162) and by Dorsey Road (MD 176) on the south. Interstate 195 (I-195) provides access to the passenger terminal, as shown in **Figure 1-2**. Approximately 400 acres of airport property is located to the north, west, south, and southeast of the main Airport campus. Defense contractor Northrop Grumman is located adjacent to the northwest of the Airport campus and accesses the airfield via a secured gate and Taxilane W.

Figure 1-1. Location Map



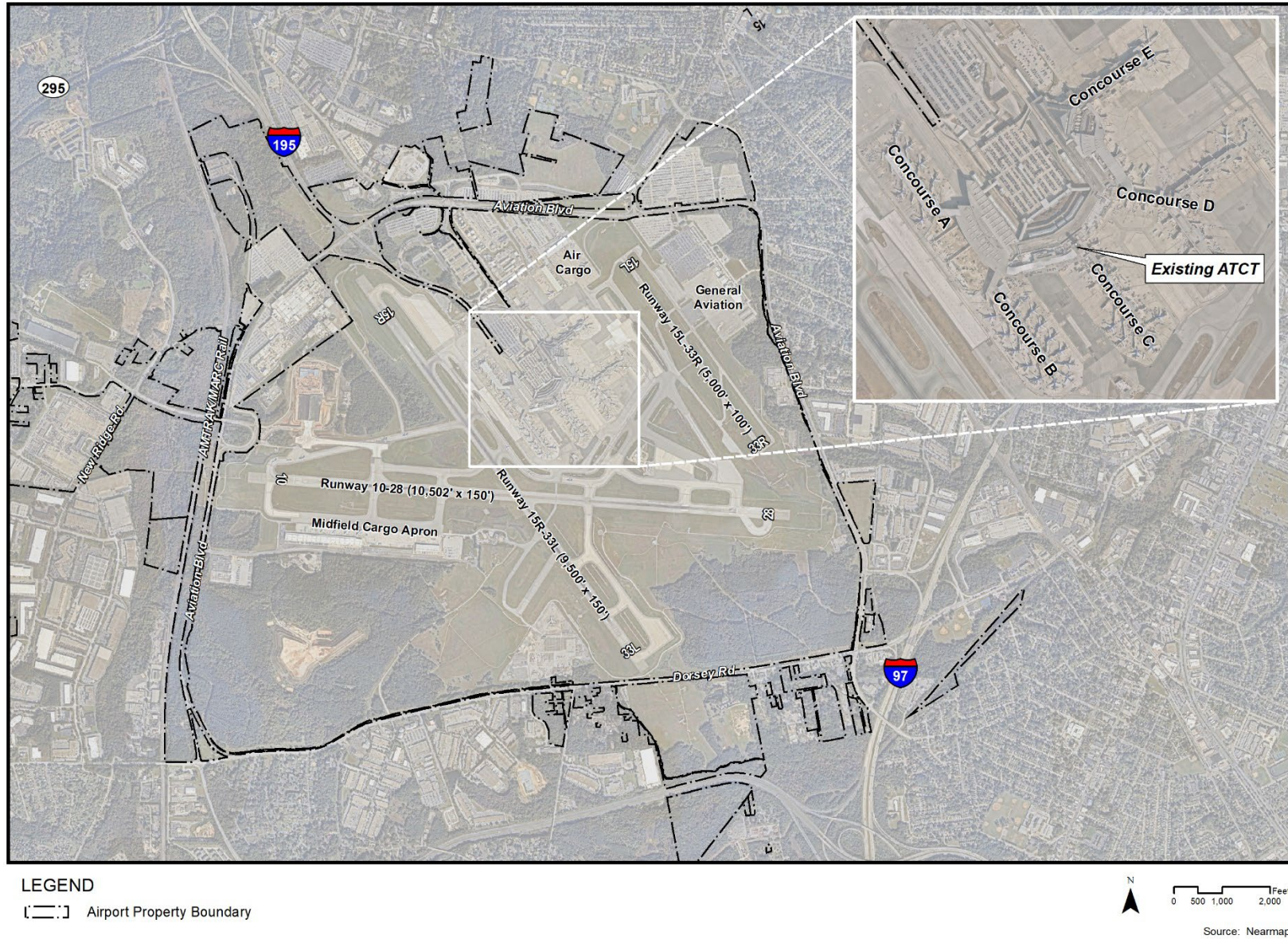
LEGEND

-  Interstate
-  Highway / Major Road
-  Park / Wilderness Area / Recreation Area
-  State Boundary
-  County Boundary



Source: ESRI

Figure 1-2. Airfield Facilities



1.1.1 Terminal Area Background

The passenger terminal is made up of the main terminal building, concourses, aircraft gates, and adjacent aircraft parking apron pavement. There are five commercial concourses (A, B, C, D and E) and a commuter concourse. As shown on Figure 1-2, Concourses A, B, C, D and E each extend out from the main terminal building with 73 full aircraft gates and four additional arrival only gates spread throughout the concourses. Existing concourse connectors allow passengers to travel on the secure side of the terminal between Concourses A, B and C and between Concourses D and E. There is currently no connector between Concourses C and D. However, a Passenger C-D Connector is currently planned.¹ The Passenger C-D Connector is planned as part of a larger C-D Connector and ATCT Program that incorporates the passenger connector, as well as project components and connected actions which are the subject of this EA.

The main terminal building also houses administrative offices and the existing ATCT located on top of Concourse C. The base of the existing ATCT was constructed in the 1950s and the tower was raised and topped with a new control room in 1983.

1.1.2 Airport Traffic Control Tower Siting

MAA has worked with the FAA to determine the most viable site location, tower height and cab orientation using FAA Order 6480.4A (previous version)/6480.4B (current version), *Airport Traffic Control Tower Siting Criteria*. The initial study completed in April of 2013 reviewed numerous site locations and four alternative ATCT sites were reviewed within an EA completed in 2013.² The 2013 EA relied on an FAA commissioned ATCT siting study that established potential tower heights by studying the line-of-sight (LOS) to all active movement areas. The initial study determined eye heights³ within the ATCT to range from 298 to 349 feet (ft) above mean sea level (AMSL).

Since 2017, MAA has worked with FAA to reconsider the location of a new ATCT in consideration of the C-D Connector Program. This EA includes a preferred alternative that is different than the preferred location proposed in the 2013 EA/Finding of No Significant Impact (FONSI) and is the result of additional analysis. In keeping with FAA Order 6480.4B, FAA's Airways Facility Terminal Integration Laboratory (AFTIL) has reviewed and agreed to the site included as the Proposed Action.⁴ The eye height within the ATCT for the preferred site as modeled at AFTIL is 357 ft AMSL. MAA is proposing an eye height of 358 ft AMSL with a roof height of 387 ft AMSL or 236 feet above ground level (AGL).

1.1.3 Airport Layout Plan

An ALP documents the existing airport facilities and shows proposed future airport development. The ALP is prepared by the airport sponsor and submitted to the FAA for review and approval.

The FAA conditionally approved the ALP for BWI Marshall Airport in November 2020.⁵ The ALP identifies multiple phases of improvements needed at BWI Marshall Airport to comply with FAA design standards and meet projected demand. All proposed improvements under consideration in this EA are identified on

¹ The Passenger C-D Connector was environmentally approved by FAA in November 2022 as part of the Categorical Exclusion for the C-D Connector Program at BWI Marshall Airport.

² MAA, Baltimore/Washington International Thurgood Marshall Airport Proposed Airport Traffic Control Tower and Base Building Final EA/FONSI, December 13, 2013.

³ Eye height of tower measured to the eye level of the controller in the cab (5 feet above the cab floor).

⁴ The final FAA Siting Study and Comparative Safety Assessment (CSA) for the proposed site is expected by May 2024.

⁵ The ALP was conditionally approved by FAA on November 6, 2020, in conjunction with the FONSI/Record of Decision (ROD) for the Final EA and Section 4(f) Determination for ALP Phase I Improvements at BWI Marshall Airport.

the Draft BWI Marshall Airport ALP, submitted to FAA for review in November 2022 (see **Appendix A, BWI Marshall Airport Planning Documents** for the November 2022 ALP).

1.1.4 Aviation Activity Forecast

MAA prepared an aviation activity forecast for BWI Marshall Airport in line with the FAA’s Terminal Area Forecast issued February 2023 as part of on-going airport facility planning efforts. The MAA responded to one round of FAA comments on the draft forecast in July 2023 and is in the process of reconciling additional FAA comments received in the fall of 2023. **Table 1.1** provides a comparison of the draft MAA forecast and the 2022 FAA TAF.

Table 1.1. Comparison of MAA Forecast and 2022 FAA TAF

Forecast Year	Draft MAA Forecast	2022 FAA TAF	% Variance MAA vs 2022 TAF
<i>Enplaned Passengers</i>			
2022	11,121,826 ¹	10,826,970	2.7%
2027	16,641,000	16,641,388	0.0%
2032	18,435,000	18,435,453	0.0%
2037	20,296,000	20,295,617	0.0%
<i>Total Operations</i>			
2022	218,649 ¹	218,649	0.0%
2027	281,200	273,900	2.7%
2032	307,100	299,478	2.5%
2037	334,200	326,244	2.4%

Notes: ¹ 2022 MAA values assume adoption of the FAA TAF operations figures, but shows airport reported enplanements.
Source: Federal Aviation Administration, 2022 FAA TAF; L&B analysis, 2022.

1.2 Proposed Action

The Proposed Action consists of the following projects as shown on **Figures 1-3 and 1-4**:

- Construct an ATCT, 387-feet AMSL (including ASDE⁶ and antenna) to replace the existing ATCT⁷; this would include all necessary new equipment and utilities;
- Construct Operational Spaces (i.e., “base building”) for FAA Staffing Offices within the Passenger C-D Connector;
- Construct a hotel on top of the Passenger C-D Connector;
- Remove Part 77⁸ Obstructions,⁹ and
- Remove LOS obstructions for Existing ATCT and completed Future Taxiway F.

⁶ Airport Surface Detection System (ASDE) consisting of an enclosed rotating radar array.

⁷ Demolition of the existing ATCT is not part of the Proposed Action. Plans for the existing ATCT have not been determined at this time.

⁸ CFR Title 14 Part 77- Safe, Efficient Use, and Preservation of the Navigable Airspace (Part 77).

⁹ The Proposed Action includes Part 77 obstructions located adjacent to line-of-sight (LOS) obstructions associated with the existing ATCT. Some Part 77 obstructions are also ATCT LOS obstructions between the existing and proposed ATCT and future Taxiway F (see Figure 1-4).

1.1.1 Connected Actions

Connected actions are those which are closely related to the Proposed Action and would not occur unless the Proposed Action occurs. The following actions are connected to the Proposed Action.

- Construct upgrades to existing but unused ramp control tower in order to function as a supplemental ATCT during construction of the C-D Connector and ATCT Program, including upgrades needed to make it compliant with the Americans with Disabilities Act (ADA);
- Remove LOS obstructions between the proposed ATCT and future Taxiway F; and
- Construct duct bank from Concourse D to new Airfield Lighting Vault (ALV) to supply power to proposed ATCT.

1.3 Purpose and Need

Defining the Purpose and Need is essential in providing a sound justification for the Proposed Action. In addition, the Purpose and Need is used as the primary foundation to develop reasonable alternatives to the Proposed Action. This section provides a description of the Purpose and Need for the Proposed Action.

1.1.1 Purpose

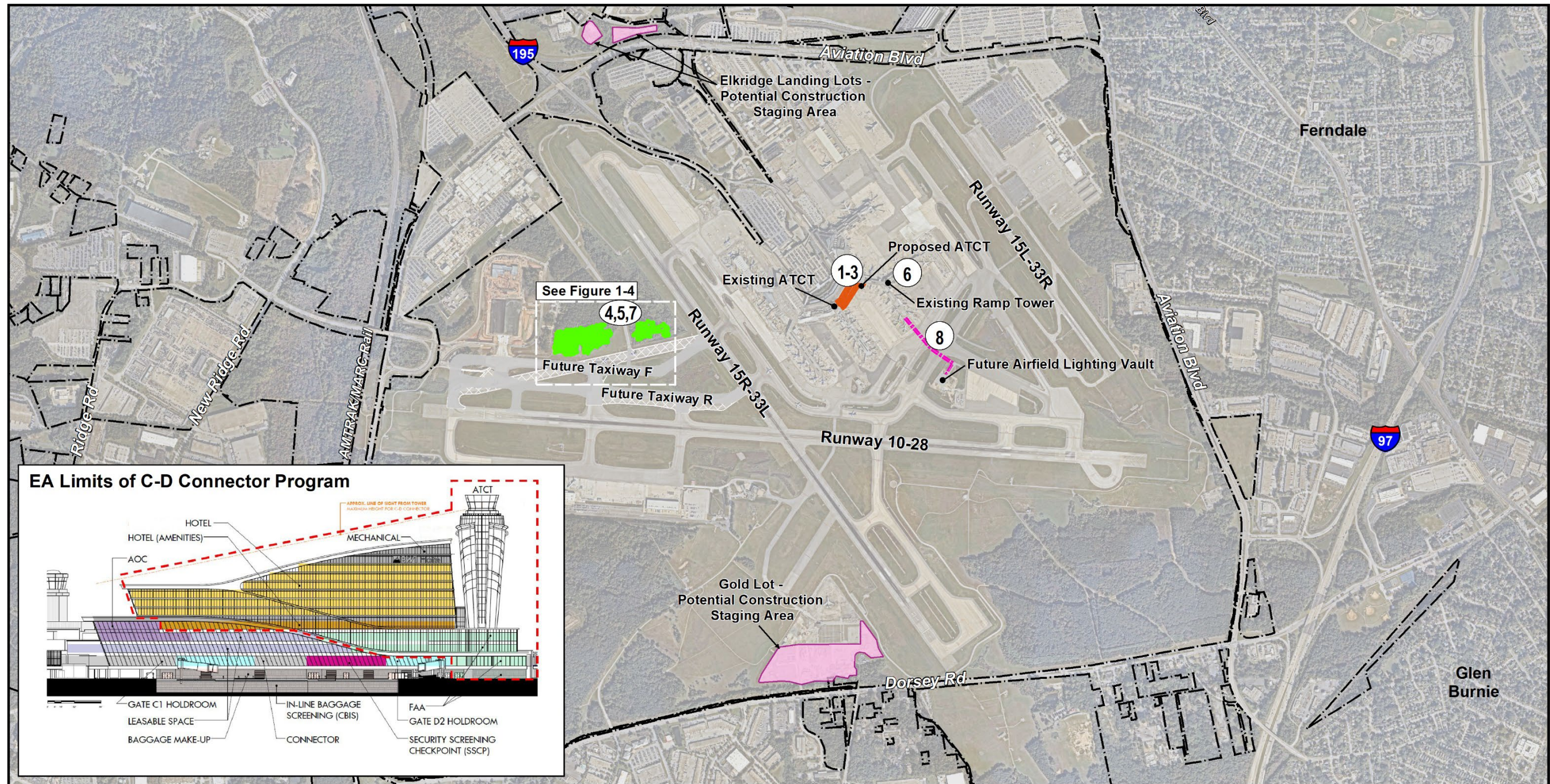
The purpose of the Proposed Action is to:

- Provide a replacement ATCT and FAA office and operational spaces that meet the space and height requirements as specified in FAA Order 6480.7E, *Airport Traffic Control (ATCT) and Terminal Radar Approach Control (TRACON) Design Policy* and FAA Order 6480.4B, *Airport Traffic Control Tower Siting Criteria*.
- Provide a convenient, high-quality hotel for BWI Marshall Airport users within the main terminal area which maximizes both passenger experience and revenue for the Airport.
- Ensure safe air navigation that meets the requirements specified in *CFR Title 14 Part 77- Safe, Efficient Use, and Preservation of the Navigable Airspace (Part 77)*.
- Ensure safe movement of aircraft with cleared LOS between the existing ATCT and all active movement areas.

1.3.1 Need

The specific *needs* for the Proposed Action are discussed in the following sections by project component. Note that the improvements under review in this EA are not connected to Airport activity levels; they are needed to remedy existing deficiencies and do not induce additional aircraft operations at BWI Marshall Airport.

Figure 1-3. Proposed Action



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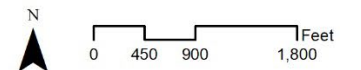
- EA Limits of C-D Connector Program
 - C-D Connector Program
 - Future Taxiway Alignment
 - Future Taxiway Pavement Demolition
 - Proposed Utility Connection
 - Airport Property Boundary
 - Potential Construction Staging Areas
 - Vegetative Obstruction Removal* (Projects #4,5 and 7)
- *See **Figure 1-4: Proposed Action – Obstruction Removal** for a detailed view of the Part 77 and ATCT LOS obstructions.

Proposed Action Projects

- 1 Proposed Airport Traffic Control Tower (ATCT)
- 2 FAA Staffing Offices
- 3 Hotel
- 4 Part 77 Obstruction Removal
- 5 Existing ATCT LOS Obstruction Removal

Connected Action Projects

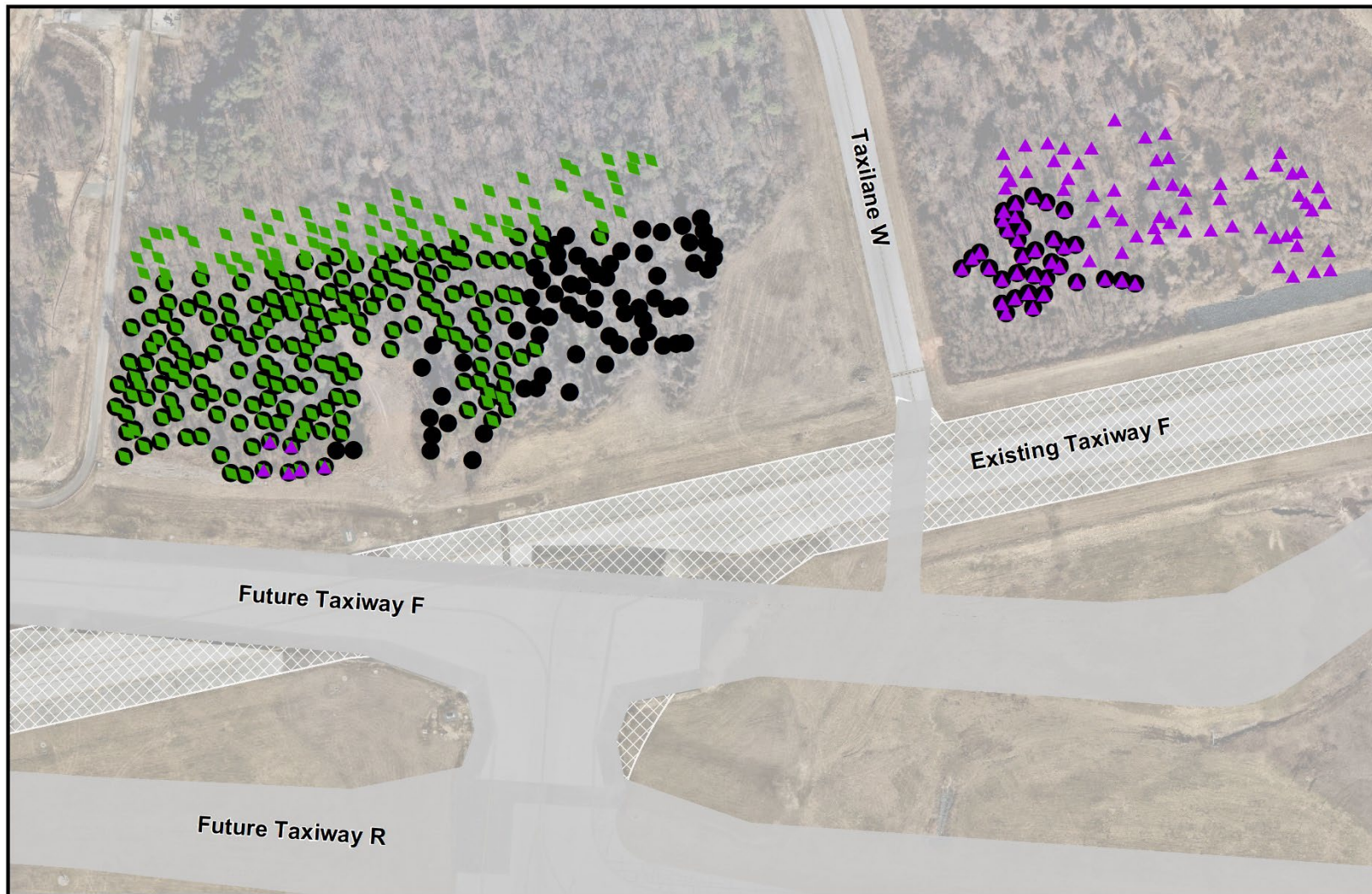
- 6 Supplemental ATCT Upgrades to Existing Ramp Tower
- 7 Proposed ATCT LOS Obstruction Removal
- 8 Connection to Airfield Lighting Vault



Sources: MDOT MAA, Nearmap, C-D Connector Project Definition Document (2018)

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Figure 1-4. Proposed Action – Obstruction Removal

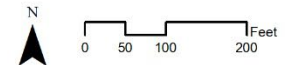


LEGEND

- Future Taxiway Alignment
- Future Taxiway Pavement Demolition

Vegetative Obstruction Removal

- Existing ATCT LOS Obstructions
- Future ATCT LOS Obstructions
- Part 77 Obstructions



Sources: MDOT MAA, Nearmap,
C-D Connector Project Definition Document (2018)

1.3.1.1 ATCT

The existing ATCT was commissioned in 1983. The existing ATCT was constructed to meet FAA ATCT design guidelines of the initial version of Order 6480.7, which has been superseded four times. The current and most recently published design policies were issued in 2009 (*FAA Order 6480.7E, ATCT and TRACON Design Policy*). The existing ATCT is beyond its useful life, is physically too small and does not meet ADA requirements. The existing ATCT lacks sufficient space to accommodate new functionalities in ATC mission requirements, new technologies and equipment, and their associated staffs. Additionally, the existing ATCT has LOS issues which interfere with ATC, including Taxiway A between Taxiways E and H, the Runway 33L run-up area, Taxilane W, the north cargo ramp, and the Runway 33R approach end.¹⁰

Therefore, the proposed ATCT is needed to replace outdated facilities and correct LOS issues with an adequately sized, code compliant facility that meets the current FAA tower operational (i.e., staffing and equipment) and design standards.

1.3.1.2 FAA Staffing Offices

FAA Staffing Offices are needed to meet staffing needs of the FAA that cannot be accommodated within the ATCT. The existing FAA staffing offices are located within the existing ATCT shaft, on floors four through eight. New technologies require additional FAA operator and personnel space, as well as more space to test systems and train staff. Space for FAA Technical Operations (Tech Ops) personal that repair and maintain equipment in the Tower and on the airfield, as well as storage for FAA equipment is deficient.

1.3.1.3 Hotel

A hotel is needed to provide an enhanced level of service to BWI Marshall Airport users through meeting their hospitality and meeting space demands. There are currently no hotels within a convenient walking distance of the main terminal. Additionally, an airport hotel would provide revenue generation and further promote BWI Marshall Airport as the airport of choice in the region. MAA continues to seek additional revenue to support current and future operations and maintenance needs. The lack of convenient, high-quality lodging and conference space accommodations on Airport property translates to missed revenue for the Airport and reduces customer service for BWI Marshall Airport travelers.

1.3.1.4 Part 77 Obstruction Removal

Removal of these Part 77 obstructions are needed to meet FAA standards for a safe and navigable airspace. Vegetation obstructions penetrate Part 77-surfaces in the area directly north of the realigned Taxiway F and adjacent to LOS obstructions associated with the existing and proposed ATCT (see *Connected Actions*). Forty percent of the Part 77 obstructions are also LOS obstructions (see Figure 1-4).

Part 77 defines the standards used to determine if an object is an obstruction to air navigation. Any object that exceeds the height of the Part 77 defined imaginary surfaces is considered an obstruction. Objects that are determined to be obstructions are presumed to be hazards to air navigation unless further aeronautical study concludes that the objects are not a hazard. A variety of imaginary surfaces are defined in Part 77 based on the type of airport. The Part 77 transitional surfaces of Runway 10 and 15R are relevant to this EA because these Part 77 obstructions are adjacent to and overlap with some of the

¹⁰ A taller ATCT would accommodate the extension of Concourses C, D and E by eliminating LOS blockages from the current ATCT to movement areas. The timing for the need to extend any of these concourses is unknown and would be the subject of environmental review(s) once it is determined that additional gates are required to accommodate projected activity levels.

existing and proposed ATCT LOS obstructions.¹¹ The transitional surface is a surface that extends outward and upward from the sides of the primary surface and the approach surfaces upwards at a slope of 7 to 1.

1.3.1.5 Existing ATCT LOS Obstruction Removal

The realignment of Taxiway F (environmentally approved in the *Final EA and Section 4(f) Determination for Airport Layout Plan Phase I Improvements at BWI Marshall Airport* dated November 2020) has been broken into phases for construction and funding purposes, construction of Phase 1, between Taxiways 'G' and 'F1' is nearing completion. The remaining phases are currently under design and construction is anticipated to be completed in 2025. Existing vegetation in the area directly north of Taxiway F and directly west of Runway 15R will obstruct the ability of Air Traffic Control (ATC) to see aircraft operating on the realigned Taxiway F from the existing ATCT. Because of the expected timing for the proposed ATCT, with potential occupation in 2028 if environmentally approved in 2024, removal of LOS obstructions between the existing ATCT and future Taxiway F is needed in order for the existing ATCT to safely function until the proposed ATCT is operational.¹²

1.3.1.6 Connected Actions

- **Supplemental ATCT Upgrades** are needed so that the existing, unused ramp control tower can function as a supplemental ATCT by providing adequate airfield line-of-sight (LOS) coverage during construction of the C-D Connector and ATCT Program.
- **Proposed ATCT LOS Obstruction Removal** is needed to clear LOS obstructions to the end of future Taxiway F from the proposed ATCT. As shown in Figure 1-4, approximately 60% of the existing ATCT LOS obstructions are also future ATCT LOS obstructions.¹³ Figure 1-4 also illustrates the LOS Vegetation Obstruction Removal and the overlap of LOS and Part 77 obstructions.
- **Connection to ALV** is needed to supply power to the proposed ATCT. The ALV is located in the infield area bound by Taxiway P, C and U and a utility duct bank would need to be constructed from the end of Concourse D to the ALV in order to power the proposed ATCT.

1.4 Timeline for Implementation

The Proposed Action projects would be constructed as part of the larger C-D Connector and ATCT Program. The overall design and construction schedule for all project components, including enabling projects would be between six and seven years. It is anticipated that ATCT design would begin in 2024. Enabling project construction, including LOS vegetation removal and supplemental ATCT upgrades would be completed in 2024 and 2025, respectively. Due to proximity, the Part 77 obstructions would be removed at the same time as the LOS vegetation obstructions. Construction of the proposed ATCT and C-D Connector (including FAA staffing offices and hotel) would be completed between 2027-2029. All Proposed Action projects would be operational by 2030. Dependent on timing of construction, two potential locations would be utilized for construction staging, as illustrated on Figure 1-3: the Gold Lot to the south of the Terminal Area off Dorsey Road and Elkridge Landing Road lots north of the Airport. These lots are either currently or have been utilized for construction staging for MAA projects in the past.

¹¹ Roughly 40% of the Part 77 obstructions in this area are also ATCT LOS obstructions.

¹² The Supplemental ATCT upgrades to the existing unused ramp tower are proposed solely for use of the ramp tower during construction of the proposed ATCT due to LOS issues that will be caused by the construction.

¹³ All existing ATCT LOS obstructions east of Taxilane W are also obstructions to Part 77 surfaces. With this considered, approximately 75% of the existing ATCT LOS obstructions west of Taxilane W are also proposed ATCT LOS obstructions.

1.5 Requested Federal Actions

This EA, which was prepared for the FAA by MAA, presents the evaluation of impacts to the environment and provides a detailed review of the proposed development actions as required by FAA Order 1050.1F and Order 5050.4B.

This EA is being submitted in accordance with the CEQ's *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act*.

The requested federal actions associated with the preparation and submission of this EA by the MAA include:

- FAA unconditional approval of the Proposed Action pursuant to 49 USC 40103(b) and 47107(a)(16). The FAA's approval includes a determination that the EA satisfies the applicable environmental statutes and regulations, including those identified in FAA Orders 1050.1F and 5050.4B.
- Funding in the form of Airport Improvement Program (AIP), Passenger Facility Charges (PFC), and/or other federal grants. Environmental approval would allow the MAA to establish eligibility for funding through these programs for eligible airport development, assuming the independent program requirements are met (49 U.S.C. Section 47101 et seq.).

Based on the environmental findings in this EA, the FAA will either make a decision to issue a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) or prepare a FONSI that will support and explain the decision on the Proposed Action. Should the FAA issue a FONSI, Federal financial participation for the design and construction of the Proposed Action would then be requested.

Chapter 2: ALTERNATIVES

The evaluation of reasonable alternatives to the Proposed Action is considered the heart of the NEPA process. To comply with NEPA, alternatives must be rigorously explored and objectively evaluated. This chapter describes the alternatives evaluation process and results for BWI Marshall Airport.

2.1 Alternatives Considered

Alternatives were identified and screened to determine if they were reasonable and met the Purpose and Need identified in *Chapter 1, Purpose and Need*, and either eliminated from further consideration or carried forward for environmental analysis. Both “action” and “no action” alternatives were considered. While a “no action” alternative may not address an identified area of need, evaluation of the “no action” alternative is required per CEQ regulations. The “no action” alternative serves as a basis of comparison with other alternatives retained for environmental analysis. In keeping with the Proposed Action’s Purpose and Need only alternatives within BWI Marshall Airport property are considered.

Alternatives for each component of the Proposed Action were identified by reviewing advanced planning efforts completed by MAA for the projects. The identification and evaluation of alternatives for Proposed Action components is described in detail in the following sections.

2.1.1 ATCT

In order to meet the space and height requirements as specified in FAA Order 6480.7E, *Airport Traffic Control (ATCT) and Terminal Radar Approach Control (TRACON) Design Policy* and FAA Order 6480.4B, *Airport Traffic Control Tower Siting Criteria*, a replacement ATCT is needed at BWI Marshall Airport. The FAA and MAA have participated in multiple ATCT siting studies beginning in 2012. The following alternatives are considered in the analysis of proposed ATCT site locations. See **Figure 2-1** for the alternative ATCT sites, and see *Appendix A, BWI Marshall Airport Planning Documents* for past ATCT studies and reports.

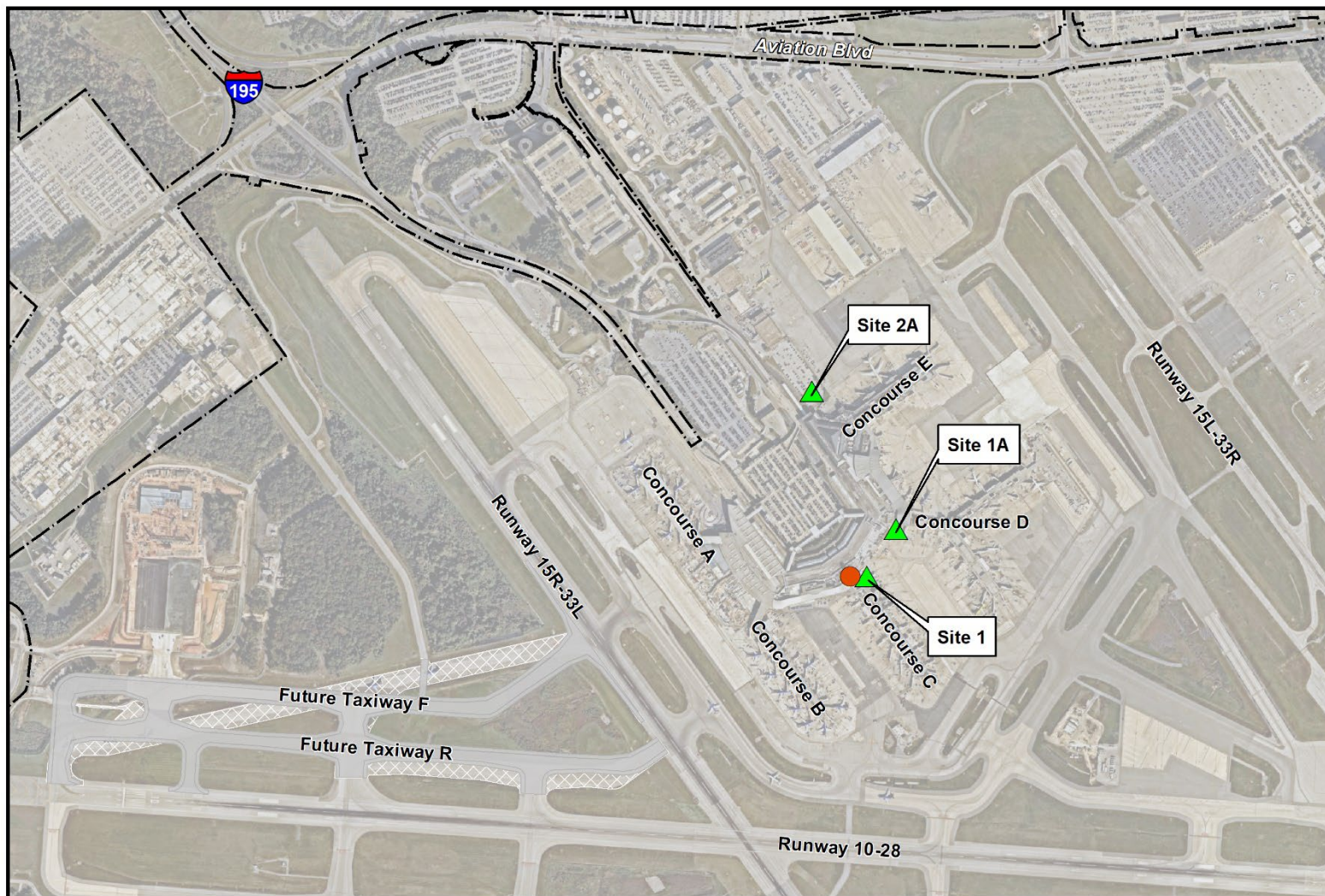
2.1.1.1 Alternative 1 – Site 2A

FAA originally commissioned an ATCT siting study for a proposed ATCT at BWI Marshall Airport in 2012 in accordance with FAA Order 6480.4A, *Airport Traffic Control Tower Siting Criteria*.¹⁴ An ATCT siting and Comparative Safety Assessment (CSA) initially conducted at the AFTIL during AFTIL-1 in 2012 and AFTIL-2 in 2013 considered four alternative site locations and resulted in a preferred site near the existing Concourse E (Site 2A). An EA was approved for a Proposed ATCT and Base Building at BWI Marshall Airport in 2013, which carried forward Site 2A as the Proposed ATCT site.

Site 2A is located immediately northwest of Concourse E and has a top of tower height of 376 ft AMSL and a tower eye height of 346 AMSL. Siting studies indicated that this site would cause minor visual impairments related to the existing ATCT which would need to be demolished prior to the proposed ATCT became operational. In 2013, Site 2A was the FAA’s recommended site and provided the shortest possible ATCT that met the siting and safety criteria.

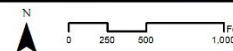
¹⁴ FAA Order 6480.4A was cancelled by 6480.4B on 8/13/2018.

Figure 2-1. ATCT Alternatives



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- | | |
|-------------------------------------|------------------------------------|
| [- - -] Airport Property Boundary | Future Taxiway Alignment |
| ● Existing ATCT Site | Future Taxiway Pavement Demolition |
| ▲ Alternative ATCT Site | |



Source: MDOT MAA, Nearmap

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Due to subsequent changes to the ALP and MAA's preference for a new ATCT location, an additional assessment to validate Site 2A and search for new sites was conducted. An additional AFTIL-1 meeting was conducted in 2018 to review Site 1, Site 1A and Site 2A. During a 2019 AFTIL-2 meeting, Site 2A was deemed non-viable due to the unavailability of area required and significant LOS conflicts with developable areas at BWI Marshall Airport. Therefore, Site 2A is eliminated from further consideration.

2.1.1.2 Alternative 2 - Site 1

As a result of changes to the ALP and MAA's preference for a new ATCT location, Site 1 and Site 1A were evaluated during AFTIL-1 and AFTIL-2 meetings in 2018 and 2019, respectively. Site 1 is located adjacent to Concourse C, approximately 142 feet east of the existing ATCT.

At additional AFTIL-2 meetings between 2020 and 2022, the BWI Marshall Airport ATCT Safety Risk Management (SRM) Panel followed the SRM process to analyze the safety hazards associated with Sites 1 and 1A. The potential impacts of the proposed hotel were reviewed during a meeting held in March 2021.

MAA advised FAA that, consistent with the agency's Draft Long Range Strategic Plan, the proposed hotel is an integrated component of the planned C-D Connector and is expected to be constructed concurrently with the proposed BWI Marshall Airport ATCT. Integration of these structures in the central terminal area provides a high level of passenger service, convenience and efficiency while also maximizing overall airport land use. During this meeting, it was determined that a proposed hotel within the area of the C-D Connector would produce LOS issues from Site 1, blocking a portion of Runway 15L/33R and accompanying taxiways. Additionally, construction of the proposed tower at Site 1 would have greater controller distraction and larger areas of LOS blockage due to the proximity of the existing tower and orientation of construction activity as compared to Site 1A.

Site 1 has a top of tower height of 351 ft AMSL and a tower eye height of 171 AGL. Site 1 was determined to be viable with the limitation that the proposed hotel could not be built as planned within the C-D Connector. MAA agreed that the proposed hotel would not be feasible with a proposed ATCT at Site 1, therefore Site 1 was rejected at AFTIL for this reason specifically.

2.1.1.3 Alternative 3 - Site 1A

Like Site 1, Site 1A was evaluated during AFTIL-1 and AFTIL-2 meetings in 2018 and 2019, respectively. Site 1A is located adjacent to Concourse D, approximately 542 feet northeast of the existing ATCT. The eye height within the Site 1A ATCT as modeled at AFTIL is 357 ft AMSL. MAA is proposing an eye height of 358 ft AMSL with a roof height of 387 ft AMSL.

The eye height of Site 1A is more than 30 ft higher than Site 1, thus providing better LOS to the airfield and approach areas, and planned terminal area development including extensions of concourses D and E, and future concourse F. These were documented in the AFTIL 2 Comparative Safety Analysis with Hazards (CSA) which also found "Site 1A offered the best LOS visibility to all movement areas with future conditions (ALP & Draft Long Range Strategic Plan) modeled."¹⁵

¹⁵ FAA, Baltimore/Washington International Thurgood Marshall Airport (BWI) Replacement Airport Traffic Control Tower AFTIL-2 Comparative Safety Analysis with Hazards, p. 43.

2.1.1.4 Connected Actions to Proposed ATCT

To allow for construction of the proposed ATCT, and dependent on the proposed ATCT site location, the following connected actions would need to be completed:

- **Supplemental ATCT Upgrades** of the vacated US Airways Ramp Control Tower located on top of Concourse D would be completed in order to function as a temporary supplemental ATCT by providing adequate airfield LOS coverage during construction of the C-D Connector and ATCT Program. During the AFTIL-2 assessment in 2019 and 2020, it was determined construction of an ATCT at either Site 1 or 1A would pose a partial blockage of Runway 15L-33R and associated taxiways. BWI Marshall Airport ATC personnel would utilize the temporary ATCT, equipped with the associated necessary equipment, when needed to control traffic on Runway 15L-33R. At other times, the option to *'not'* use 15L-33R is available. This connected action applies to the proposed ATCT at Site 1 or 1A and would not be required for Site 2A.
- **Proposed ATCT LOS Obstruction Removal** is needed to clear LOS vegetative obstructions between the proposed ATCT and the end of Future Taxiway F.¹⁶ The realignment of Taxiway F (environmentally approved in the *Final EA and Section 4(f) Determination for Airport Layout Plan Phase I Improvements at BWI Marshall Airport* dated November 2020) is anticipated to be completed in 2025.
- **Connection to ALV** located in the infield area bound by Taxiway P, Taxiway C and Taxiway U is required to provide necessary power for the proposed ATCT. A utility duct bank from the ALV to Concourse C is already in place to provide power to a proposed ATCT at Site 1. For a proposed ATCT at Site 1A, a utility duct bank would be constructed from the end of Concourse D to the ALV. ATCT Site 2A would likely connect to existing power at that location and no new connection to the ALV would be needed.

2.1.1.5 No Action

The need for a proposed ATCT would not be met under the No Action Alternative. If a proposed ATCT is not constructed, operations would continue at the existing ATCT although FAA operational needs and design standards would not be met. Under the No Action Alternative, supplemental ATCT upgrades would not be needed to allow for proposed ATCT construction, a connection to the ALV would not be needed to power the proposed ATCT, and LOS vegetative obstruction removal would not be needed between the proposed ATCT and future Taxiway F.

2.1.2 FAA Staffing Offices

FAA Staffing Offices are needed to meet workforce and operational needs of the FAA that cannot be accommodated within the existing ATCT or within the proposed ATCT shaft. FAA staffing offices are currently located within the shaft of the existing ATCT on floors four through eight.

¹⁶ LOS vegetative obstructions would exist between the end of future Taxiway F and the proposed ATCT at all Alternative locations (Site 2A, 1 and 1A), with variation in obstruction extents dependent on proposed ATCT location.

2.1.2.1 Alternative 1

As part of the construction of the proposed ATCT and Passenger C-D Connector, FAA operational space and staffing offices (i.e., base building) would be provided within the shaft of the proposed ATCT, and within hardened controlled access portions of the 3rd and 4th floors of the C-D Connector building. Additionally, per FAA Order 6480.7D *Airport Traffic Control Tower and Terminal Radar Approach Control Facility Design Guidelines*, the operational needs of the FAA are better met when office space is concentrated near the ATCT providing convenient, safe, and efficient circulation of people.

FAA ATC parking will continue to be provided in the Managers Lot, adjacent to and northwest of Concourse E. An additional four to six vehicle parking positions would likely be provided for FAA staff at the base of the proposed ATCT.

2.1.2.2 No Action

Under the No Action Alternative, FAA staff would continue to utilize office space within the shaft of the existing ATCT. The existing staffing space would continue to be deficient for the needs of FAA operations and the noncompliant ADA conditions due to no elevator access to the ATCT cab would go unremedied.

2.1.3 Hotel

Since 2004, several hotel market studies, feasibility studies and site selection studies have been conducted for MAA that identified and confirmed there is a market and need for a full-service commercial hotel on Airport property that is convenient and accessible. See *Appendix A* for past hotel studies. **Figure 2-2** illustrates the early hotel sites considered and eliminated, as well as the alternative sites considered in this EA.

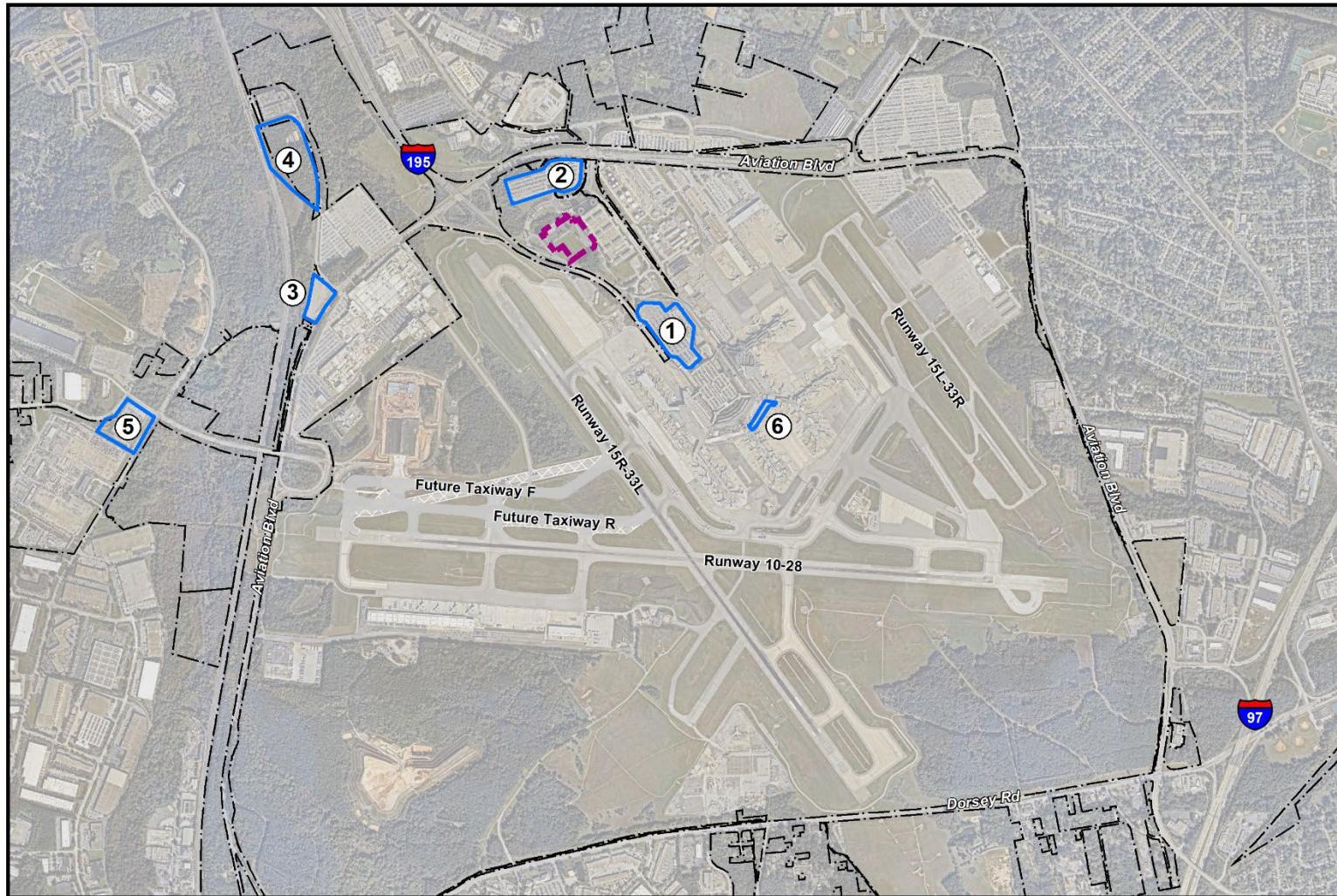
In 2006, MAA conducted a *BWI Hotel Site Selection Study* to identify a preferred location for a proposed airport hotel. The study evaluated five locations for a proposed hotel: Terminal Core Area, Express Service Parking Lot Site, Manager's Lot, Amtrak Station Area Site, and Consolidated Rental Car Facility Area (see Figure 2-3). The 2006 Study identified the Terminal Core Area location as the recommended site based on evaluation criteria.

A 2012 *Hotel Market Analysis* was conducted, confirming again that the hotel market can support an airport hotel. The 2012 market analysis compared two of the sites evaluated in the 2006 *BWI Hotel Site Selection Study*: (1) Airport Site (Terminal Core Area); and (2) Amtrak Station Area Site. The study found the Airport Site to be "excellent" for a hotel development and the Amtrak Station Area Site to be "below average" for the same use.

It is worth noting that a hotel was previously located on airport property: the Sheraton Four Points Hotel located adjacent to the Daily Garage. This hotel was built in 1966 and was the oldest three-star hotel in the BWI Marshall Airport market area and was not within walking distance to the Terminal. In 2013, the Sheraton lease was not renewed, and MAA was not successful in procuring another hotel operator. A Categorical Exclusion for the hotel demolition was completed in February 2014 and the aging hotel was demolished in 2015.

The *2006 Hotel Site Selection Study* and *2012 Hotel Market Analysis* both led to the conclusion that the alternative hotel sites (not within the Terminal Core Area) are not feasible or reasonable alternatives. Although the alternative locations considered in the earlier studies would likely generate revenue, they would not meet the purpose and need of the Proposed Action to provide a convenient hotel within the main terminal area. Therefore, these alternative sites are not carried forward for detailed analysis.

Figure 2-2. Hotel Alternatives

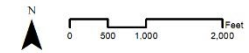


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- Airport Property Boundary
- Previous Sheraton Four Points Hotel Site (Demolished in 2015)
- Future Taxiway Alignment
- Future Taxiway Pavement Demolition

Alternative Hotel Sites

1. Terminal Core Area
2. Express Service Parking Lot Site
3. Manager's Lot
4. Amtrak Station Area Site
5. Consolidated Rental Car Facility Area
6. C-D Connector



Source: MDOT MAA, Nearmap

2.1.3.1 Alternative 1 – Terminal Core Area

The 2006 *Hotel Site Selection Study* and 2012 *Hotel Market Analysis* identified the Terminal Core Area as the preferred site for a hotel. A Short Form EA was completed in October 2013 for a proposed hotel within the Terminal Core Area, in the area of the existing employee parking lot located northwest of the Hourly Garage. In 2015, MAA solicited for a contractor to build and operate a hotel in the Terminal Core Area but received no responses.

In 2018, the BWI Marshall Airport “Hotel Program” was derived as part of the C-D Connector and ATCT Program to construct a hotel within the C-D Connector footprint of the main terminal. Additionally, as part of on-going airport facility planning efforts, the Terminal Core Area has been identified as an area needed for future landside improvements to relieve curbside congestion and improve passenger experience. Therefore, a hotel within the Terminal Core Area, in the area of the existing employee parking, is eliminated from further consideration.

2.1.3.2 Alternative 2 – C-D Connector

As further defined through airport planning efforts in 2023, t, Alternative 2 would construct a 257-guest room hotel within the C-D Connector and ATCT Program footprint of the main terminal building. The hotel would also include a full-service restaurant, cocktail lounge, and café, 7,500 square foot grand ballroom, 4,000 square feet of board rooms and meeting spaces, fitness center, and additional business and corporate traveler amenities.

2.1.3.3 No Action Alternative

The need for an Airport Hotel would not be met under the No Action Alternative. Under the No Action Alternative, no hotel development would occur as part of the C-D Connector and ATCT Program and additional revenue would not be generated for the Airport. BWI Marshall Airport travelers’ level of service would not be improved by access to lodging and meeting space within the Main Terminal Building.

2.1.4 Part 77 Obstruction Removal

In order to meet Federal Aviation Regulation (FAR) Part 77, which governs the safe and efficient use of navigable airspace in the vicinity of BWI Marshall Airport, vegetative obstructions must be removed.

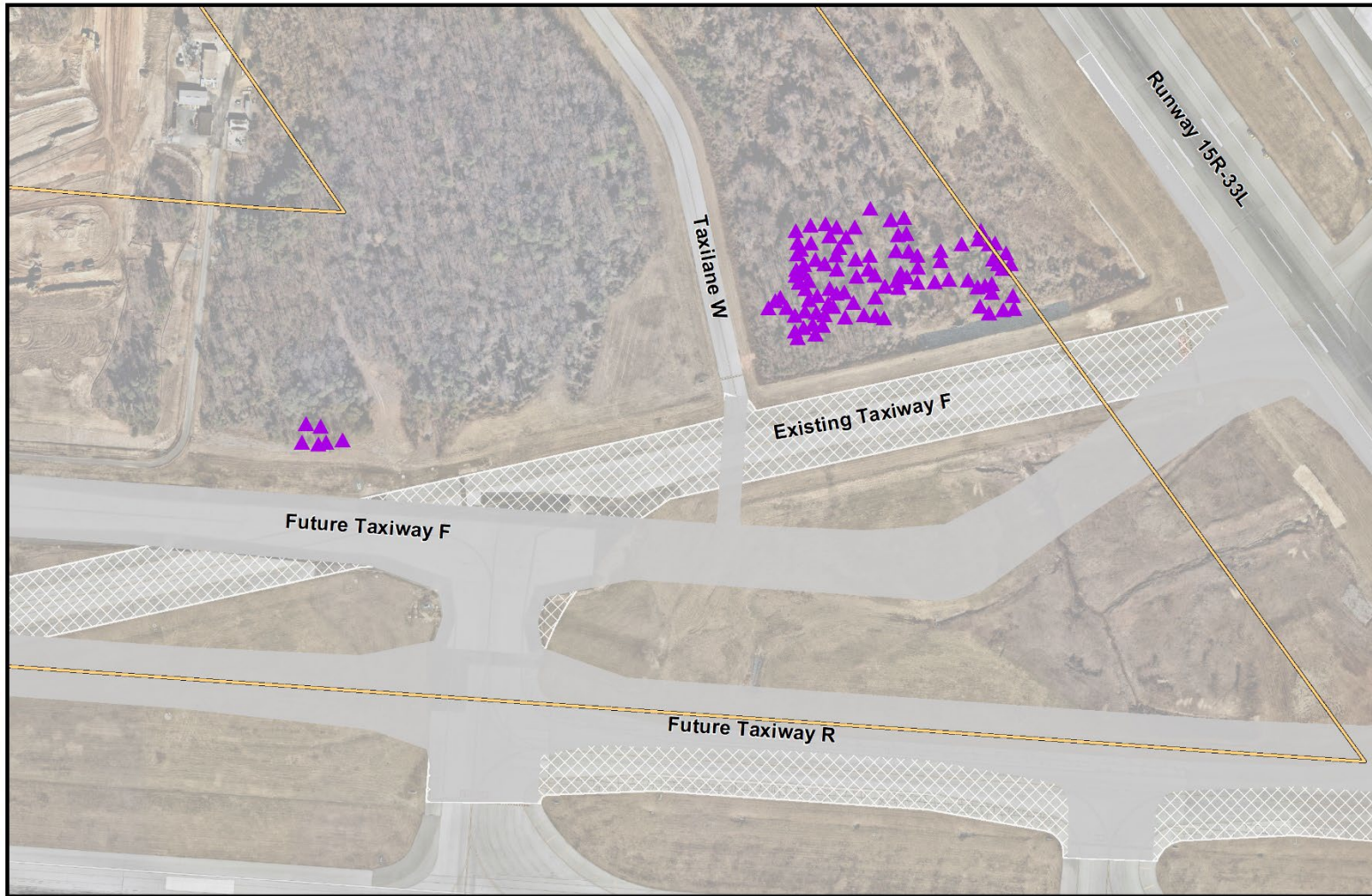
2.1.4.1 Alternative 1

Figure 2-3 shows the Part 77 vegetative obstructions to be removed, as identified in an obstruction analysis for BWI Marshall Airport using data collected and analyzed from aerial photogrammetry completed in 2018. These Part 77 obstructions penetrate the transitional surfaces of Runway 15R and Runway 10. These Part 77 obstructions are considered in the Proposed Action due to their proximity and overlap with ATCT LOS obstructions considered in the connected actions. Under Alternative 1, 100 trees identified as Part 77 transitional surface obstructions would be removed.

2.1.4.2 No Action

Under the No Action Alternative, the penetrations to Part 77 transitional surfaces in the area adjacent to LOS vegetation obstructions would be removed. The obstruction removal is necessary to address FAR Part 77 and the safety concerns of the aircraft movement areas and navigable airspace and therefore included under both the Proposed Action and No Action Alternatives.

Figure 2-3. Part 77 Obstruction Removal



LEGEND

-  Future Taxiway F and R Alignment
-  Future Taxiway Pavement Demolition
-  Part 77 Surface Limits
-  Part 77 Obstructions

N
0 75 150 300 Feet
Sources: MDOT MAA, Nearmap,
C-D Connector Project Definition Document (2018)

2.1.5 Existing ATCT LOS Obstruction Removal

Removal of LOS obstructions between the existing ATCT and future Taxiway F is needed in order for the existing ATCT to safely function until the proposed ATCT is operational.

2.1.5.1 Alternative 1

Existing vegetative obstructions exist between the existing ATCT and the end of future Taxiway F. The realignment of Taxiway F (environmentally approved in the *Final EA and Section 4(f) Determination for Airport Layout Plan Phase I Improvements at BWI Marshall Airport* dated November 2020) has been broken into phases for construction and funding purposes. Construction of Phase 1, between Taxiways 'G' and 'F1' is nearing completion. The remaining phases are currently under design and construction of Phase 2, which connects Taxiway F to the Runway 10 end, is anticipated to be completed in 2025.

As the realigned Taxiway F will be completed before completion of the proposed ATCT,¹⁷ the LOS vegetation obstructions between the existing ATCT and end of future Taxiway F end would need to be removed prior to operation of the realigned Taxiway F. Approximately 60% of the existing ATCT LOS obstructions are also LOS obstructions associated with the proposed ATCT (Site 1A), included as a connected action to the proposed ATCT.¹⁸

2.1.5.2 No Action

Under the No Action Alternative, the LOS vegetative obstructions between the existing ATCT and future Taxiway F would be removed. The obstruction removal is necessary in order for ATC to see aircraft operating on the realigned Taxiway F prior to the taxiway becoming operational in 2025. Therefore, this project element is included under both the Proposed Action and No Action Alternatives.

2.2 Alternatives Recommended for Further Consideration

As described in Section 2.1, various potential alternatives were identified to meet the needs at BWI Marshall Airport. These alternatives were screened and either eliminated from further consideration or carried forward for environmental evaluation. Retained project alternatives were combined to form the Proposed Action Alternative. Per CEQ regulations the No Action Alternative is also retained for further consideration.

The results of the evaluation of alternatives are summarized in **Table 2.1**.

2.2.1 Proposed Action Alternative

Figures 2-4 and 2-5 illustrate the Proposed Action Alternative. MAA identified this alternative as their preferred alternative because it addresses all the identified needs of the Proposed Action with consideration of all project alternatives vetted through advanced planning efforts previously completed by MAA and FAA.

2.2.2 No Action Alternative

This alternative serves as a basis of comparison with the Proposed Action Alternative. Under the No Action Alternative, the Airport would remain in its current configuration and continue operation of the existing ATCT. The only projects to be advanced under the No Action Alternative would be removal of LOS obstructions between the existing ATCT and the realigned Taxiway F end, and removal of Part 77

¹⁷ In environmentally approved in 2024, the proposed ATCT would be completed with potential occupancy in 2028.

¹⁸ All existing ATCT LOS obstructions east of Taxilane W are also obstructions to Part 77 surfaces. With this considered, approximately 75% of the existing ATCT LOS obstructions west of Taxilane W are also proposed ATCT LOS obstructions.

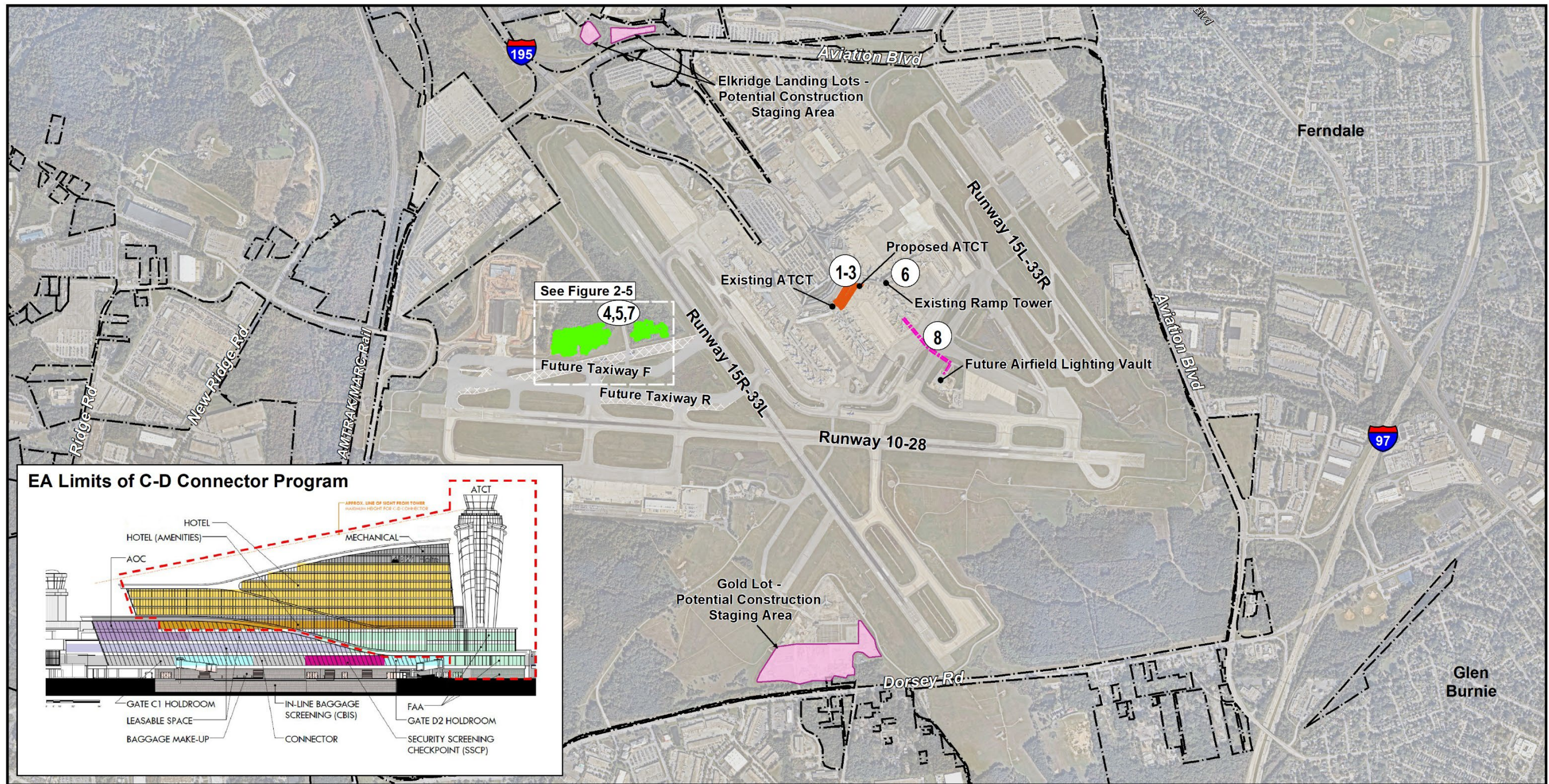
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Proposed Airport Traffic Control Tower and Associated Improvements at BWI Marshall Airport**

obstructions in the area adjacent to these LOS obstructions, as shown in **Figure 2-6**. While the No Action Alternative would retain these two project elements, the No Action Alternative would not meet the full purpose and need for the Proposed Action (i.e., provide a replacement ATCT, FAA office space, and hotel). Regardless, the No Action Alternative was retained for detailed environmental analysis as required by CEQ regulations.

Table 2.1. Evaluation of Alternatives

Project	Alternatives Identified (connected actions)	Meets Purpose and Need	Retained for Detailed Analysis	Proposed Action	No Action
ATCT	1 – Site 2A	No	No	N/A	N/A
	2 – Site 1	Yes	No	N/A	N/A
	3 – Site 1A	Yes	Yes	X	N/A
	<i>Supplemental ATCT Upgrades</i>	N/A	N/A	X	N/A
	<i>Connection to ALV</i>	N/A	N/A	X	N/A
	<i>Proposed ATCT LOS Obstruction Removal</i>	N/A	N/A	X	N/A
	No Action	No	Yes	N/A	X
FAA Staffing Offices	Alternative 1	Yes	Yes	X	
	No Action	No	Yes	N/A	X
Part 77 Obstruction Removal	Alternative 1	Yes	Yes	X	N/A
	No Action	Yes	Yes	N/A	X
Hotel	Alternative 1 – Terminal Core Area	Yes	No	N/A	N/A
	Alternative 2 – C-D Connector	Yes	Yes	X	
	No Action	No	Yes	N/A	X
Existing ATCT LOS Obstruction Removal	Alternative 1	Yes	Yes	X	N/A
	No Action	No	Yes	N/A	X

Figure 2-4. Proposed Action Alternative



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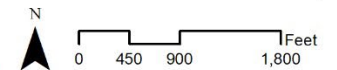
- | | | | |
|--|------------------------------------|--|--|
| | EA Limits of C-D Connector Program | | Potential Construction Staging Areas |
| | C-D Connector Program | | Vegetative Obstruction Removal*
(Projects #4,5 and 7) |
| | Future Taxiway Alignment | | |
| | Future Taxiway Pavement Demolition | | |
| | Proposed Utility Connection | | |
| | Airport Property Boundary | | |
- *See **Figure 2-5: Proposed Action Alternative – Obstruction Removal** for a detailed view of the Part 77 and ATCT LOS obstructions.

Proposed Action Projects

- ① Proposed Airport Traffic Control Tower (ATCT)
- ② FAA Staffing Offices
- ③ Hotel
- ④ Part 77 Obstruction Removal
- ⑤ Existing ATCT LOS Obstruction Removal

Connected Action Projects

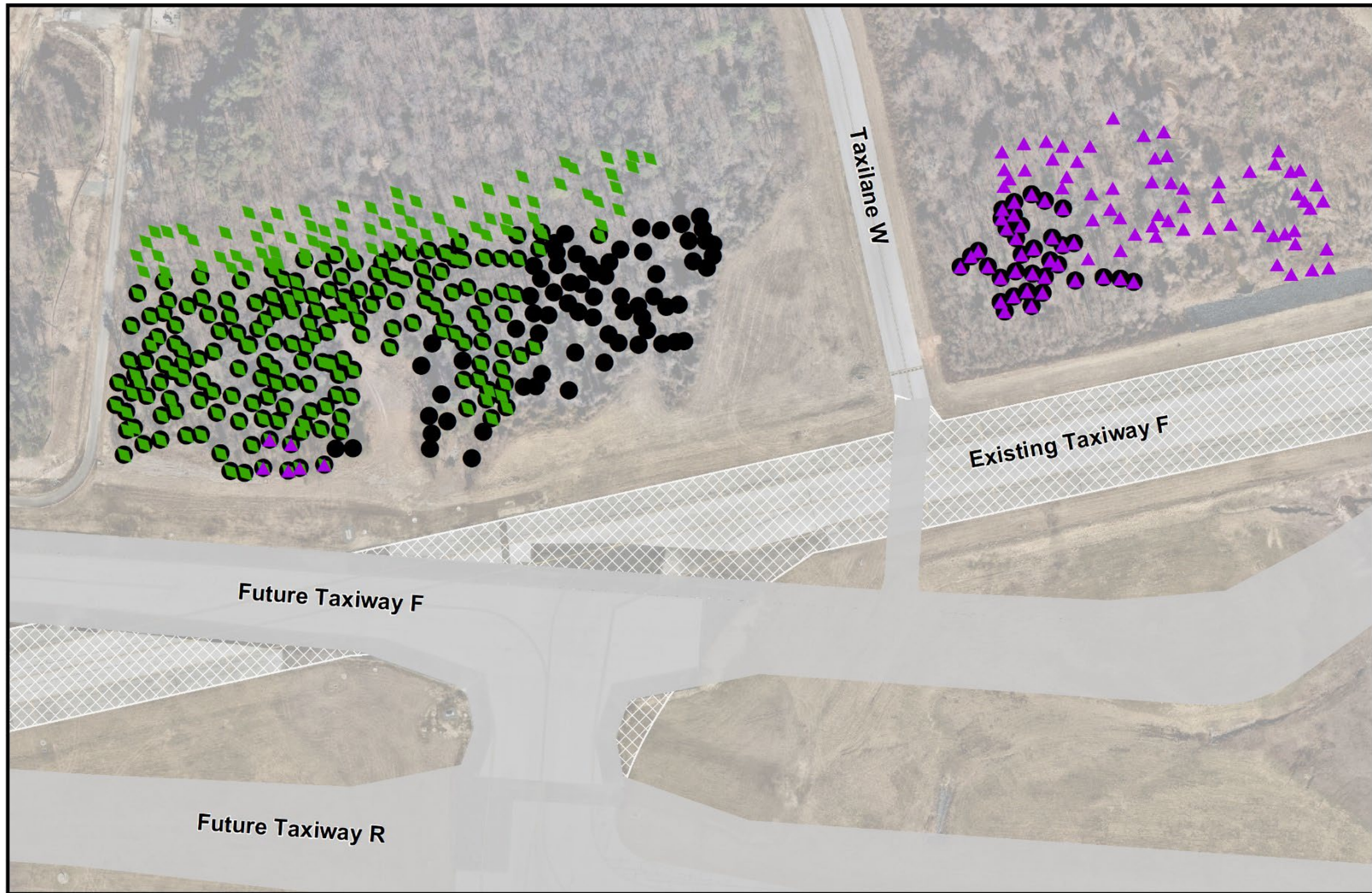
- ⑥ Supplemental ATCT Upgrades to Existing Ramp Tower
- ⑦ Proposed ATCT LOS Obstruction Removal
- ⑧ Connection to Airfield Lighting Vault





Sources: MDOT MAA, Nearmap, C-D Connector Project Definition Document (2018)

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Figure 2-5. Proposed Action Alternative – Obstruction Removal



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-  Future Taxiway F and R Alignment
-  Future Taxiway Pavement Demolition

Vegetative Obstruction Removal

-  Existing ATCT LOS Obstructions
-  Future ATCT LOS Obstructions
-  Part 77 Obstructions

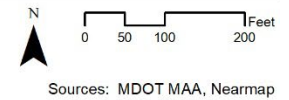
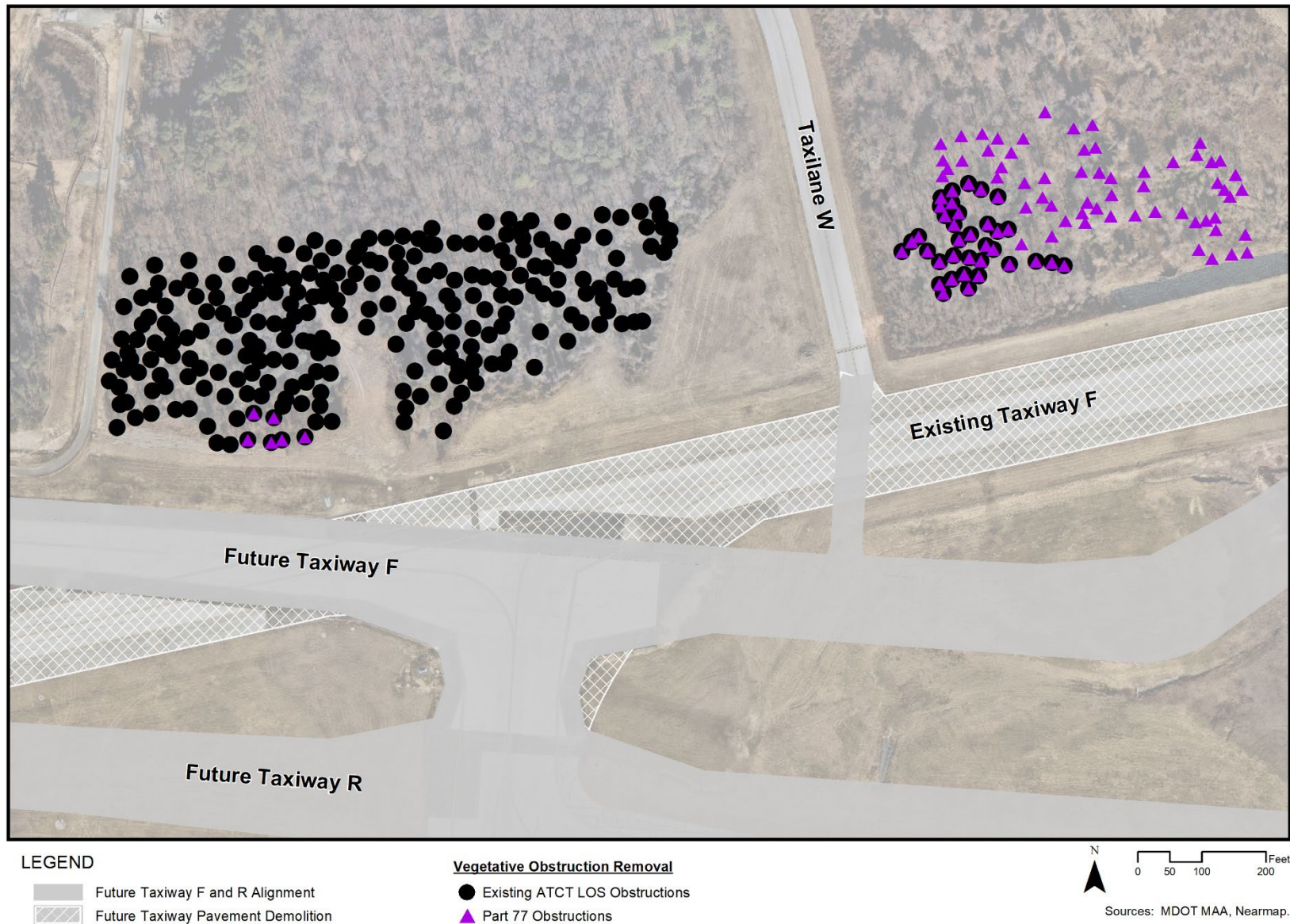


Figure 2-6. No Action Alternative



Chapter 3: AFFECTED ENVIRONMENT

This chapter provides a description of the existing conditions within the study areas identified in *Section 3.1, Study Areas and Years of Analysis*, or within specific environmental resource categories. The environmental resource categories are organized as identified in FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures* and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*. The potential environmental impacts of the No Action and Proposed Action Alternatives are presented in *Chapter 4, Environmental Consequences*, of this EA.

This chapter also identifies environmental resources that would not be affected by the Proposed Action and documents existing conditions for potentially affected resources. **Table 3.1** presents the environmental resource categories that would not be affected by the alternatives, along with the rationale for no further review of these categories. In accordance with guidance provided in FAA Orders 5050.4B and 1050.1F, environmental resources not present within the study areas would not be affected by the alternatives, and therefore are not discussed within this chapter.

Table 3.1. Environmental Resource Categories Not Affected

Category	Description
Section 6(f) Resources	Section 6(f) resources are those properties that were acquired or developed with assistance from the Land and Water Conservation Fund Program. Based on the US Department of the Interior National Park Service (NPS) listing of Land & Water Conservation Fund grants for Anne Arundel County, there are no Section 6(f) resources with the Direct Study Area (DSA) or Indirect Study Area (ISA). ¹
Farmlands	The U.S. Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) Web Soil Survey indicates portions of the DSA soils are considered to be “areas of prime farmland” or “farmland of statewide importance”, however, these areas are currently dedicated to non-agricultural use. Therefore, the proposed improvements have no potential to result in impacts to farmlands.
Noise	The Proposed Action would not increase operations, nor affect the number or type of aircraft using BWI Marshall Airport and would not result in any permanent change to the Airport noise environment. There are no noise sensitive sites within the DSA. The closest noise-sensitive sites to the DSA are residential properties located within the ISA approximately 1,200 feet northeast of the potential construction staging area off Elkridge Landing Road, which includes 300 feet of forested buffer. Therefore, the proposed improvements have no potential to result in noise impacts. Section 3.1 describes the DSA and ISA.
Wild and Scenic Rivers (of Water Resources)	There are no river segments listed in the Wild and Scenic River System nor the National Rivers Inventory (NRI) located within the vicinity of BWI Marshall Airport and the DSA.

Note: ¹ The US Department of the Interior NPS no longer provides a detailed listing of Land & Water Conservation Fund Grants by County. As of 10/1/2015, there were no 6(f) resources within the vicinity of the Airport.
Source: HNTB analysis, 2023.

3.1 Study Areas and Years of Analysis

The study area is the geographic area where the potential impacts of the alternatives retained for further study are analyzed. The extent of the study area depends upon the environmental resource being evaluated and whether the direct or indirect impacts are being considered. Therefore, for the purposes of this EA, two general study areas were identified: the DSA and the ISA. As illustrated in **Figure 3-1**, the DSA was determined by the extent of the proposed construction activity that could experience ground disturbance (e.g., demolition, site grading, and construction), and construction staging areas. The ISA is defined by the BWI Marshall Airport campus and adjacent areas identified within the viewshed of the Proposed Action projects. In cases where these study areas were not applicable (e.g., Air Quality; Climate; Socioeconomic, Environmental Justice, and Children’s Environmental Health and Safety Risks; and Cumulative Impacts), the criteria used to define the specific study area is described in the section addressing the associated resource.

Analysis years were established for the existing conditions and forecast years to be used for environmental analysis. The existing conditions (base year) for this EA is 2023. The forecast years are 2030, the first full year of implementation, and 2035, five years thereafter.

3.2 Air Quality

This section summarizes regulatory setting and existing air quality conditions in the area surrounding BWI Marshall Airport. **Appendix B, Air Quality and Climate** provides additional details and presents the findings of the construction air quality assessment conducted for this EA. For purposes of air quality analysis, the study area is considered the entire geographic area that could be impacted by the Proposed Action. Therefore, the study area for air quality is the Metro Baltimore Region, as defined by Maryland Department of Environment (MDE), which includes Anne Arundel and parts of Baltimore Counties.¹⁹

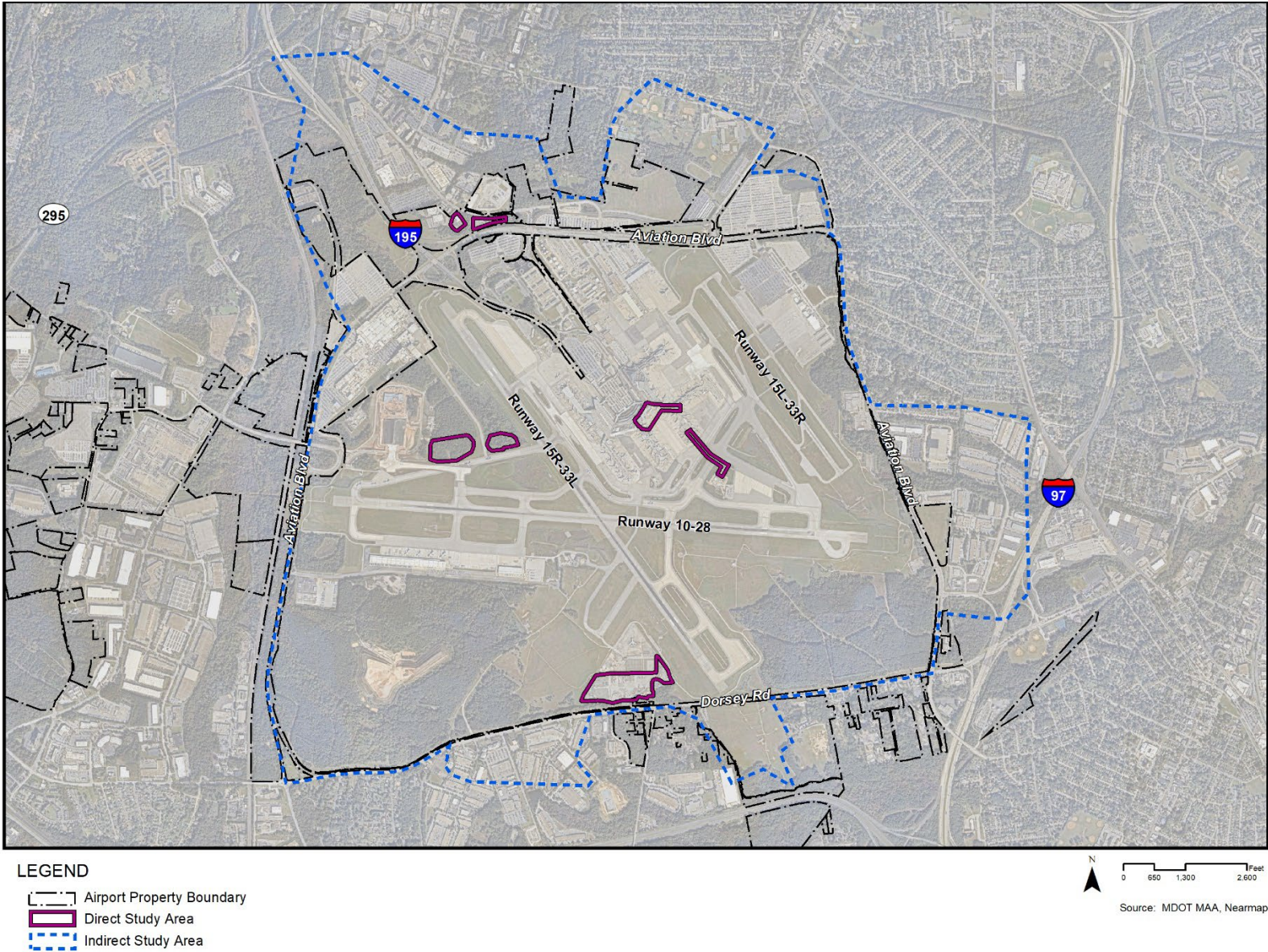
3.2.1 Regulatory Information

Federal, state, and local governments all share responsibility for air quality management. The federal Clean Air Act (CAA) is the primary statute that establishes National Ambient Air Quality Standards (NAAQS). It also establishes regulatory authorities to design and enforce air quality regulations. The U.S. Environmental Protection Agency (EPA) promulgates the NAAQS to safeguard public health and environmental welfare against the detrimental effects of ambient air pollution. See *Appendix B* for additional details on federal, state and local agencies involved with air quality management in Maryland.

The NAAQS set threshold levels for ambient (i.e., outdoor) air quality for six common air pollutants, referred to as “criteria” air pollutants: carbon monoxide (CO), ozone (O₃), nitrogen dioxide (NO₂) sulfur dioxide (SO₂), coarse and fine particulate matter (PM₁₀ and PM_{2.5}), and lead (Pb). Each state has the option to impose stronger air quality standards than those promulgated by the EPA, however Maryland has opted to retain the NAAQS. The NAAQS are provided in **Table 3.2** along with the air monitoring data for the BWI Marshall Airport area.

¹⁹ Maryland Department of the Environment, Air Quality Forecast, [Air Quality Forecast \(maryland.gov\)](https://www.mde.state.md.us/air-quality/forecast), accessed 10/11/23.

Figure 3-1. Study Areas



**Draft Environmental Assessment for
Proposed Airport Traffic Control Tower and Associated Improvements at BWI Marshall Airport**

Table 3.2. Air Monitoring Data in the BWI Marshall Airport Area (2021-2023)

Site Name, Address, and ID (Distance)	Pollutant	Averaging Period	NAAQS	Year		
				2021	2022	2023
Anne Arundel County Public Works Building 7409 Baltimore Annapolis Blvd. Glen Burnie, MD 24-003-1003 (1 mile E)	O ₃	8-hour ¹	0.07 ppm	0.07 ppm	0.07 ppm	0.07 ppm
	PM ₁₀	24-hour ²	150 µg/m ³	31 µg/m ³	26 µg/m ³	47 µg/m ³
Essex 600 Dorsey Avenue Baltimore County, MD 024-005-3001 (13 miles NE)	SO ₂	3-hour ³	0.5 ppm	0.01 ppm	0.003 ppm	0.005 ppm
		1-hour ⁴	75 ppb	7 ppb	5 ppb	4 ppb
	CO	8-hour ⁵	9 ppm	1 ppm	1 ppm	1 ppm
		1-hour ⁵	35 ppm	2 ppm	2 ppm	3 ppm
	PM _{2.5}	Annual ⁶	12 µg/m ³	8 µg/m ³	7 µg/m ³	8 µg/m ³
		24-hour ⁷	35 µg/m ³	20 µg/m ³	14 µg/m ³	42 µg/m ³
	NO ₂	Annual	53 ppb	9 ppb	9 ppb	9 ppb
		1-hour ⁸	100 ppb	37 ppb	38 ppb	38 ppb

Notes: ppm = parts per million, µg/m³ = micrograms per cubic meter, and NAAQS = National Ambient Air Quality Standards. n/a = not applicable (monitoring station did not record pollutant level in given year). There are no active lead (Pb) monitoring stations in the vicinity of BWI Marshall.

- (1) Standard based on the annual fourth-highest daily maximum 8-hour concentration, averaged over three years.
- (2) Not to be exceeded more than once per year on average over three years.
- (3) The SO₂ 3-hour standard is a “secondary” standard not to be exceeded more than once per year.
- (4) Standard based on the 99th percentile of 1-hour daily maximum concentrations, averaged over three years.
- (5) Not to be exceeded more than once per year.
- (6) Standard based on annual mean, averaged over three years.
- (7) Standard based on the daily 98th percentile, averaged over three years.
- (8) Standard based on the 98th percentile of 1-hour daily maximum concentrations, averaged over three years.

Sources: EPA AirData – Monitor Value Reports, <http://www.epa.gov/airdata/>, 2021, 2022 and 2023 Annual Reports, accessed 2/6/24.

BWI Marshall Airport is in Anne Arundel County, which is currently designated “non-attainment” by the EPA for O₃ (2008²⁰ and 2015 standards) and SO₂ (2010 standard). This signifies that exceedances of the NAAQS have occurred within recent years.

The CAA also requires individual states to develop, update and maintain State Implementation Plans (SIPs) that will demonstrate compliance with the NAAQS. Common features of a SIP include attainment timeframes or milestones, area-wide emissions inventories and budgets and control/mitigation strategies that are to be employed to achieve attainment. See *Appendix B* for details and status of Maryland’s SIPs.

²⁰ The EPA made a final determination that Baltimore, MD (including Anne Arundel County) attained the 2008 ozone standard by its applicable attainment date of July 20, 2018. As designated by the determinations published in the Federal Register on August 23, 2019, “These determinations of attainment do not constitute a redesignation to attainment as provided for under CAA section 107(d)(3). Redesignations require states to meet additional statutory criteria, including the EPA approval of a state plan demonstrating maintenance of the air quality standard for 10 years after redesignation, as required under CAA section 175A. As for all NAAQS, the EPA is committed to working with states that choose to submit redesignation requests for the 2008 ozone NAAQS.”

3.2.2 Existing Conditions Emissions

Airport-related air emissions associated with BWI Marshall Airport can be classified into six typical source categories: aircraft, motor vehicles, ground support equipment (GSE)/auxiliary power units (APUs), fuel storage and transfer facilities, stationary sources, and construction activities. See *Appendix B* for details on these airport-related emissions sources, their general characteristics, and pollutants emitted.

Because the Proposed Action will not affect aircraft operations or other airside activities, an existing operational emissions inventory was not prepared. Only construction activities associated with the Proposed Action are analyzed for criteria pollutants and presented in Chapter 4.

3.2.3 Existing Ambient Air Quality Monitoring

MDE maintains and operates 24 air quality monitoring stations throughout Maryland as part of its permanent, state-wide air monitoring program. These monitoring stations are used to measure concentrations of air pollutants in the ambient (i.e., outdoor) air to determine compliance with the NAAQS. Table 3.2 shows the most recent three years (2021 – 2023) of ambient air quality monitoring data for the monitors closest to BWI Marshall Airport. For ease of reference, the applicable NAAQS for each monitored pollutant is included. Although BWI Marshall Airport is only within “non-attainment” areas for O₃ and SO₂, based on these ambient air quality data, the NAAQS for all criteria pollutants are being met, with the exception of the 24-hour NAAQS for PM_{2.5} in 2023 at the Essex monitoring station 13 miles NE of the Airport.

3.2.4 Existing and New Permits

Air emissions from BWI Marshall Airport are regulated under their current Title V Air Permit, which is administered by the EPA.²¹ Any additional air emission sources that are operated as a result of the proposed projects at BWI Marshall Airport would operate under this permit²².

3.3 Biological Resources

Fish, wildlife, and plants within the DSA are described in the following sections. The ISA is not relevant to this resource category as there would be no indirect impacts to biological resources from the Proposed Action.

3.3.1 Fish

The BWI Marshall Airport Campus and the DSA occurs within two subwatersheds, Patapsco Lower North Branch (MDE No. 02130906) and Baltimore Harbor (MDE No. 02130903). One tributary associated with the Patapsco Lower North Branch subwatershed occurs within the DSA. These systems are designated by MDE for use as water contact recreation and protection of nontidal warmwater aquatic life. However, the Maryland Department of Natural Resources (MDNR) Environmental Review Program (ERP) Aquatic Resources Screening Tool did not indicate the presence of any sensitive aquatic resources within the DSA. The degree to which fish utilize the streams within the DSA is unknown and is influenced by the

²¹ The current Title V permit expired on January 31, 2024. MAA applied for a new Title V permit and is administratively covered by the old permit until the new permit is issued by MDE.

²² Emissions inventories of existing generators and boilers, including the existing Central Utility Plan (CUP), at BWI Marshall Airport have found VOC and SO₂ emissions to be 1 ton per year or less. These inventories have also reported the combined NO_x emissions for generators and boilers at BWI Marshall Airport to be approximately 20 tons/year. Maryland Aviation Administration, Task 1 Air Emission & Greenhouse Gas Goals Formulation Report, July 2017.

presence of culverts and other impediments to fish passage. *Section 3.13, Water Resources*, provides greater detail on the water resources within the DSA.

3.3.2 Wildlife

The BWI Marshall Airport airfield is managed in a way to be the least attractive to wildlife species that can be hazardous to airport operations. Therefore, the airfield is maintained as turfgrass with little to no trees or shrubs, weedy areas, or tall grass. Suitable wildlife habitat within and near the DSA occurs within the forested areas on the BWI Marshall Airport Campus.

Common mammals found on or near BWI Marshall Airport include white-tailed deer (*Odocoileus virginianus*), red fox (*Vulpes vulpes*), gray fox (*Urocyon cinereoargenteus*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), groundhog (*Marmota monax*), beaver (*Castor canadensis*), eastern gray squirrel (*Sciurus carolinensis*), eastern chipmunk (*Tamias striatus*), eastern cottontail (*Sylvilagus floridanus*), and several bat and small rodent species.²³

Numerous bird species occur on or near BWI Marshall Airport. European starlings (*Sturnus vulgaris*), rock pigeons (*Columba livia*), and house sparrows (*Passer domesticus*) are invasive, non-migratory species that use developed areas on BWI Marshall Airport. Migratory songbirds and birds of prey use the forest, wetlands, and edge habitats on and off the Airport.²⁴

Many reptile and amphibian species are expected to occur in the lesser-developed areas on or near BWI Marshall Airport. Common species expected within forested and wetland habitats include eastern box turtle (*Terrapene carolina carolina*), eastern rat snake (*Pantherophis alleghaniensis*), eastern garter snake (*Thamnophis sirtalis*), green frog (*Lithobates clamitans melanota*), southern leopard frog (*Lithobates sphenoccephalus utricularius*), wood frog (*Lithobates sylvaticus*), and American toad (*Anaxyrus americanus americanus*).²⁵

3.3.3 Plants

Much of the BWI Marshall Airport Campus is maintained as turf grass. Grass is maintained at a height of 6 to 12 inches, except around runway and taxiway marker lights, where it is cut to 3 inches for purposes of visibility. Shrub lands and transitional or edge habitats are prevented from establishing on BWI Marshall Airport. Forest resources within and surrounding the DSA primarily consist of mixed deciduous forests, which are dominated by red maple, pine, oak, and other hardwood species.²⁶ See *Section 3.3.5, State Regulations* for details on the forest stands and specimen trees identified within the DSA. **Figure 3-2** shows the forest resources as they relate to the DSA.

The wetlands present within the DSA contain additional plant community types. Wetlands occurring within the DSA are discussed in *Section 3.13.1, Wetlands*.

²³ USDA-WS Wildlife Hazard Assessment (WHA) for BWI Marshall Airport, 2012.

²⁴ USDA-WS WHA for BWI Marshall Airport, 2012.

²⁵ Ibid.

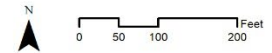
²⁶ CRI, Forest Stand Delineation, November 2023.

Figure 3-2. Vegetation within DSA



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- | | |
|---|--|
|  Direct Study Area |  Future Taxiway F and R Alignment |
|  Forest Stand |  Future Taxiway Pavement Demolition |
|  Specimen Tree | |



Source: MDOT MAA, Nearmap

3.3.4 Federal Regulations

Federally protected species include endangered, threatened, proposed, and candidate species protected by the Endangered Species Act of 1973 (ESA) (16 United States Code [U.S.C.] 1531 et seq.). Critical habitat, also protected under the ESA, is defined as a specific geographic area that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. Other federally-protected species/habitat include migratory birds protected by the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703–712) and the Bald and Golden Eagle Protection Act (BGEPA) (16U.S.C 668-668d), and Essential Fish Habitat (EFH) protected by the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (Public Law 94-265).

3.3.4.1 Federally-listed Threatened and Endangered Species

Under Section 7(a) of the ESA, federal agencies are required to consult with the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (as appropriate) regarding federally-listed threatened or endangered species or their habitats in the proposed project area. The USFWS was consulted via its Information for Planning and Consultation system (IPaC). Through the IPaC, the USFWS provides a list of threatened, endangered, and proposed species, designated critical habitat, and candidate species that may occur within the boundaries of the DSA. **Appendix C, Biological Resources** includes the USFWS provided list of species (*Attachment 1*). One mammal species is listed as endangered within the DSA: the northern long-eared bat/ NLEB (*Myotis septentrionalis*), and one insect is listed as a candidate species: the monarch butterfly (*Danaus plexippus*). According to the IPaC website, no federally designated critical habitat for federally listed species occurs in the DSA. On October 10, 2023, the USFWS issued a concurrence letter (*Appendix C, Attachment 2*) indicating that the Project “may affect but [is] not likely to adversely affect” the NLEB; therefore, no additional consultation with USFWS regarding the NLEB is required.²⁷ As a candidate species for listing, no critical habitat has been designated for monarch butterfly and there are generally no Section 7 requirements for the species at this time. It was noted during field investigations for forest habitats that the majority of the DSA is not conducive habitat for the monarch butterfly’s host plant, milkweed species (*Asclepias* spp.), thus impacts to the monarch butterfly are not expected.

3.3.4.2 Migratory Birds

The MBTA prohibits anyone from taking, possessing, importing, exporting, transporting, selling, purchasing, or bartering any migratory bird or the parts, nests, or eggs of such a bird except under the terms of a valid Federal permit. The BGEPA prohibits the taking, possessing, selling, purchasing, or bartering of any bald or golden eagle alive or dead including any part, nest or egg without a valid permit. BWI Marshall Airport has a current Federal depredation permit to take migratory birds except eagles and threatened or endangered species. MDNR allows the take of these species under the Federal permit without obtaining an additional state permit.

In North America, general migratory pathways, or flyways, between winter feeding grounds and summer breeding grounds occur along coastlines, major rivers, and mountain ranges. BWI Marshall Airport lies within the Atlantic Flyway. In the United States, the Atlantic Flyway generally spans from the Atlantic coast to the Appalachian Mountains, and it is the most densely populated of the four flyways in North America. Many habitats in the Atlantic Flyway are threatened by development and urban sprawl.

²⁷ The current NLEB determination key is valid through April 1, 2024, and will need to be resubmitted if the obstruction removal has not taken place prior to that date.

Migratory bird species protected by the MBTA are listed in 50 CFR 10.13. The USFWS IPaC lists 10 migratory bird species that could occur within the project area, because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in the project area. See *Appendix C*, for the list of migratory birds.

3.3.5 State Regulations

The state of Maryland protects state-listed rare, threatened, and endangered species as well as their supporting habitats. Forest resources are also protected in Maryland with an emphasis on protection of habitats that support life stages of migratory songbirds and other Forest Interior Dwelling Species (FIDS).

3.3.5.1 State-Listed Rare, Threatened, and Endangered Species

State-listed rare, threatened, and endangered species are protected by the Maryland Nongame and Endangered Species Conservation Act (Annotated Code of Maryland 10-2A). The MDNR Wildlife and Heritage Service (WHS) was contacted in September 2023 requesting state records for rare, threatened, or endangered species within the project area. Additionally, the MDNR ERP Aquatic Resources Screening Tool was used to assess potential impacts to fisheries and other aquatic resources. (See *Appendix C*). MDNR WHS responded on November 8, 2023, and indicated there were no official records for State or Federal listed, candidate, proposed, or rare plant or animal species within the project area and that the agency had no specific concerns or recommendations for protection measures at the time of the issuance of the letter. In addition, the ERP screening tool does not indicate the presence of any sensitive aquatic resources within the study area.

Wetlands known to support (or have the potential to support) individuals or populations of federally or state designated species are classified by MDE as Wetlands of Special State Concern (WSSC). Wetlands associated with the Stony Run floodplain are WSSC. There are no WSSC within the DSA.

3.3.5.2 Forest Resources

The Maryland Forest Conservation Act (FCA), enacted in 1991, requires identification of existing forest stands²⁸, protection of the highest priority forest stands, and establishment of areas where new forests can be planted. Prior to the approval of any public or private construction, grading, or sediment control activity exceeding 40,000 square feet, applicants must submit a Forest Stand Delineation (FSD) and a Forest Conservation Plan (FCP) for approval by the MDNR Forest Service.

Prior to development of this EA, MAA's Forest Maintenance Plan (FMP) Update (MAA, 2014) served as the FSD for MAA-owned properties and was recognized as such by the MDNR Forest Service. As part of this EA, MDNR Forest Service requested that an updated FSD be completed within the DSA. A FSD was conducted on November 16, 2023. The FSD map and report were submitted to MDNR Forest Service for review and approval on January 16, 2024. Approval from MDNR is pending. *Appendix C* includes the FSD map and report.

A total of three forest stands were identified within the DSA. **Table 3.3** summarizes the forest stands and specimen trees identified during the FSD field investigations conducted on November 16, 2023. The boundaries of the forest stands and locations of specimen trees are shown in Figure 3-2.

²⁸ A forest stand is defined as "a grouping of trees with similar characteristics (such as species, age, or condition) that can be distinguished from adjacent groups."

Table 3.3. Forest Stands in the Study Area

Stand	Area (Acres)	Specimen Trees	Description
A	1.70	0	Early to mid-successional mixed forest dominated by Virginia pine (<i>Pinus virginiana</i>) and various oak species (<i>Quercus</i> spp.). Co-dominant species include black cherry (<i>Prunus serotina</i>), red maple (<i>Acer rubrum</i>), and tuliptree (<i>Liriodendron tulipifera</i>).
B	9.26	3	Early to mid-successional deciduous forest dominated by red maple. Co-dominant species include sweetgum (<i>Liquidambar styraciflua</i>), tuliptree, and black gum (<i>Nyssa sylvatica</i>).
C	0.57	0	Early successional mixed deciduous forest dominated by black willow (<i>Salix nigra</i>), American sycamore (<i>Platanus occidentalis</i>), tuliptree, common persimmon (<i>Diospyros virginiana</i>), red maple, and black locust (<i>Robinia pseudoacacia</i>).
Total	11.53	3	

Source: FSD, CRI, November 16, 2023.

3.3.5.3 Forest Interior Dwelling Species Habitat

Forest Interior Dwelling Species (FIDS) are birds that require forest interior habitat conditions to successfully breed and survive. Many FIDS are migratory songbirds that are federally protected under the MBTA. Populations of FIDS are declining in Maryland and throughout the eastern United States. Designated FIDS habitat is afforded special protection under the Critical Area Law in Maryland. MDNR strongly encourages the conservation of FIDS habitat throughout the state and recommends potential guidelines to incorporate into site design to minimize a project's impact on FIDS and other native forest plants and wildlife.

MDNR classifies forested areas as either Potential FIDS Habitat (Class 3), High Quality Potential FIDS Habitat (Class 2), or Potential FIDS Core Areas (Class 1). As shown on **Figure 3-3**, FIDS habitat within the Study Area is designated as FIDS Class 3. This classification is based on several factors including extent, species composition (which can vary by physiographic province), and presence of streams. To be considered Potential FIDS Habitat (Class 3) an area of contiguous forest must be at least 50 acres in size and either have 10 acres of forest interior habitat or a forested stream corridor at least 450 feet long averaging 300 feet in width. Due to modifications to forested land associated with the construction of the airline maintenance facility, which was initiated in 2022 and continues at the writing of this EA, it is expected that the area identified in Figure 3-3 will no longer classify as FIDS Class 3 when MDNR updates FIDS mapping.

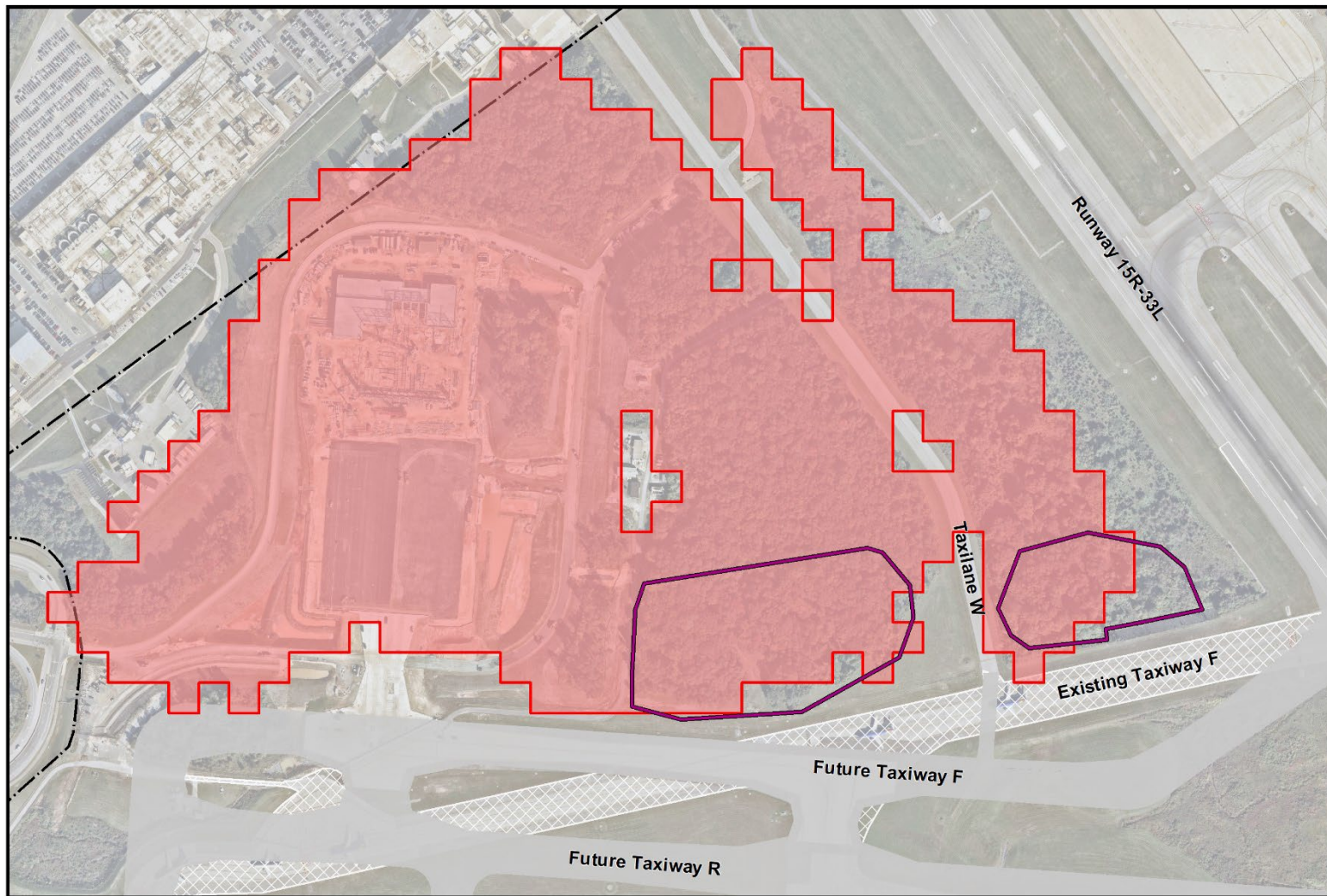
3.4 Climate

This section includes information on existing climate regulations at BWI Marshall Airport (and the surrounding areas). Because activities at BWI Marshall Airport contribute to climate change, the Airport is subject to any federal, state or local greenhouse gas (GHG) guidance or regulations.

GHGs include CO₂, methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). Increasing concentrations of GHGs in the atmosphere affect climate change and GHG emissions from anthropogenic sources include the combustion of fossil fuels, including aircraft fuel. GHG emissions are reported in metric tonnes (MT) of carbon dioxide equivalent (CO₂e).²⁹

²⁹ FAA, 1050.1F Desk Reference, Version 2, Chapter 3. Climate, February 2020.

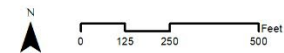
Figure 3-3. Forest Interior Dwelling Species Habitat



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- Airport Property Boundary
- Direct Study Area
- FIDS Habitat Class 3

- Future Taxiway F and R Alignment
- Future Taxiway Pavement Demolition



Source: MDOT MAA, Nearmap, Maryland DNR Geospatial Data

3.4.1 Federal Guidance

Research has shown that the increase in atmospheric GHG emissions is significantly affecting the Earth's climate. These conclusions are based upon a scientific record that includes substantial contributions from the United States Global Change Research Program (USGCRP)—a program mandated by Congress in the Global Change Research Act to “assist the Nation and the world to understand, assess, predict, and respond to human-induced and natural processes of global change.”³⁰

Although there are currently no federal standards for ambient concentrations of GHGs, by the summer of 2016, the EPA acknowledged that scientific assessments by that time “highlight the urgency of addressing the rising concentration of carbon dioxide (CO₂) in the atmosphere” and formally announced that GHG emissions from certain classes of aircraft engines contribute to climate change.^{31,32} EPA data indicates that of the five major sectors nationwide—residential and commercial, industrial, agriculture, transportation, and electricity—the transportation industry accounts for the largest portion of U.S. GHG emission (28.5 percent) in 2021, followed by emissions from electric power generation (25 percent), and emissions from industry (23.5 percent). Of the 28.5 percent attributed to transportation industry, 8.6 percent is attributed to aircraft (or 2.5 percent of all GHG emissions).³³

Executive Order 13990, *Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis* was signed on January 20, 2021, rescinded the 2019 CEQ *Draft NEPA Guidance on Consideration of GHG Emissions*. On January 9, 2023, CEQ issued interim *NEPA Guidance on Consideration of GHG Emissions and Climate Change*, with an extended comment period to April 10, 2023. The interim guidance explains how agencies should immediately apply best practices to climate change analyses, including but not limited to: recommendations for quantifying a proposed action's reasonably foreseeable direct and indirect GHG emissions or reductions, guidance on translating climate impacts into social cost, and guidance in considering reasonable alternatives and mitigation measures for short and long term climate effects.

3.4.2 State Guidance

On April 4, 2016, Maryland's Greenhouse Gas Emissions Reduction Act (GGRA) of 2016 was signed into law. The bill (i.e., SB 323/HB 610) renews the 2009 Maryland law that set goals to reduce GHG emissions statewide by 25 percent by 2020 (from 2006 levels). The 2016 extended the GHG reduction goal to reduce GHG emissions by 40 percent by 2030. In a September 2022 progress report, MDE announced a 30% reduction in statewide GHG emissions in 2020. The Maryland Climate Solutions Now Act of 2022 updated the requirements of the GGRA, including a net-zero carbon emissions goal by 2045, and requiring MDE to submit an updated plan to the Governor by the end of 2023 to reduce statewide emissions by 60% by 2031.

³⁰ Global Change Research Act of 1990, Pub. L. 101–606, Sec. 103 (November 16, 1990). For additional information on the United States Global Change Research Program, <http://www.globalchange.gov>. (January 2017)

³¹ EPA, Final Rule for Carbon Pollution Emission Guidelines for Existing Stationary Sources Electric Utility Generating Units, 80 Fed. Reg. 64661, 64677 (October 23, 2015).

³² EPA finalized findings that GHG emissions from certain classes of engines used in aircraft contribute to the air pollution that causes climate change endangering public health and welfare under section 231(a) of the Clean Air Act.

³³ GHG allocation by economic sector. U.S. Environmental Protection Agency (2016). Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2021, <https://www.epa.gov/system/files/documents/2023-04/US-GHG-Inventory-2023-Main-Text.pdf> (April 23, 2023).

The GGRA requires MDE to publish an inventory of statewide GHG emissions on a three-year cycle. The latest inventory was completed in 2020 and includes 29.8 million MT CO₂e emissions from the transportation sector, accounting for 35% of the total GHG inventory, with approximately 2.4 million MT CO₂e from aircraft emissions.³⁴

The 2015 Maryland Commission on Climate Change (MCCC) Act requires the MCCC and participating agencies to maintain action plans with 5-year benchmarks to achieve Maryland's GHG reduction goals. As a member of the MCCC, MDOT works with MDE and other state agencies to develop strategies for the transportation sector to reduce GHG emissions. The 2022 MDOT Progress Report on the Maryland GGRA details various MDOT strategies to reduce GHG emissions, including transportation technologies, VMT reduction, congestion mitigation, and infrastructure design.³⁵

3.4.3 Local/MAA

MAA is in the process of developing a Sustainability Plan which will establish performance metrics across four pillars of sustainability – environment, social, human and economic - to achieve GHG emission reduction goals at both BWI Marshall Airport and Martin State Airport (MTN) which is also owned and operated by MAA. The Sustainability Plan will help MAA align their investments for a more sustainable future, with a focus on protecting the environment, conserving resources, maintaining economic growth, and benefitting local communities.

3.4.4 GHG Emissions Inventory

Because the Proposed Action will not affect aircraft operations or other airside activities, an existing GHG emissions inventory for BWI Marshall Airport was not prepared. Only construction activities associated with the Proposed Action are analyzed for GHG emissions and presented in Chapter 4.

3.5 Coastal Resources

Pursuant to the Coastal Zone Management Act (CZMA) of 1972, the National Oceanic and Atmospheric Administration (NOAA) approved the Maryland Coastal Zone Management Program (CZMP) in 1978. Any federal activities that have the potential to affect any land or water use, or natural resources in Maryland's designated coastal zone must be conducted according to the enforceable policies of the CZMP. Maryland's CZMP is administered by MDE.

Coastal resources include all natural resources occurring within coastal waters and their adjacent shorelands.³⁶ Maryland's designated coastal zone includes the counties that border the Chesapeake Bay. Thus, Anne Arundel County, BWI Marshall Airport, and the DSA and ISA are within Maryland's coastal zone. As such, MAA is required to comply with the regulations set forth and administered by MDE and MDNR.

A federal consistency review by MDE is required to determine whether the Proposed Action is consistent with Maryland's CZMP. MDE will provide their coastal zone consistency determination for inclusion in the Final EA. Coordination with MDE was initiated on February 16, 2024, **Appendix F, Coastal Resources** includes the correspondence.

³⁴ MDE, 2020 Greenhouse Gas Inventory, <https://mde.maryland.gov/programs/air/ClimateChange/Pages/GreenhouseGasInventory.aspx>, accessed 6/23/23.

³⁵ Maryland Greenhouse Gas Reduction Act, 2022 MDOT Status Report, [MDOT_MCCC_State_Agency_Report_MSAR_14367.pdf \(maryland.gov\)](https://mde.maryland.gov/programs/air/ClimateChange/Pages/GreenhouseGasInventory.aspx), accessed 10/23/23.

³⁶ FAA Order 1050.1F Desk Reference (February 2020), p. 4-1.

The Chesapeake Bay Critical Area Protection Act (Critical Area Act) of 1984 created the Critical Area Commission to regulate activities within the Critical Area. The Chesapeake Bay Critical Area is defined as all land within 1,000 feet landward from the tidal waters and wetlands of the Chesapeake Bay and its tributaries. BWI Marshall Airport is not located within a Critical Area, and no further analysis is required.

The Coastal Barriers Resources Act of 1982 prohibits federal financing for development within the Coastal Barrier Resources System (CBRS), which consists of undeveloped coastal barriers along the Atlantic and Gulf coasts. BWI Marshall Airport is not in or near a CBRS; no further analysis is required.

3.6 Department of Transportation Act, Section 4(f) Resources

Section 303(c), Title 49 USC, commonly referred to as Section 4(f) of the Department of Transportation Act of 1966, states that the “...*Secretary of Transportation will not approve a project that requires the use of any publicly-owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance or land from a historic site of national, state, or local significance as determined by the officials having jurisdiction thereof, unless there is no feasible and prudent alternative to the use of such land...and [unless] the project includes all possible planning to minimize harm resulting from the use.*”

There are no Section 4(f) resources within the DSA. Two parks, Friendship Park – Thomas A. Dixon Observation Area and Andover Park/Equestrian Center; two recreation areas, the BWI Trail and Lindale Middle School; and one historic site, the Benson-Hammond House, are within the ISA. Refer to **Figure 3-4** for the locations of these Section 4(f) resources.

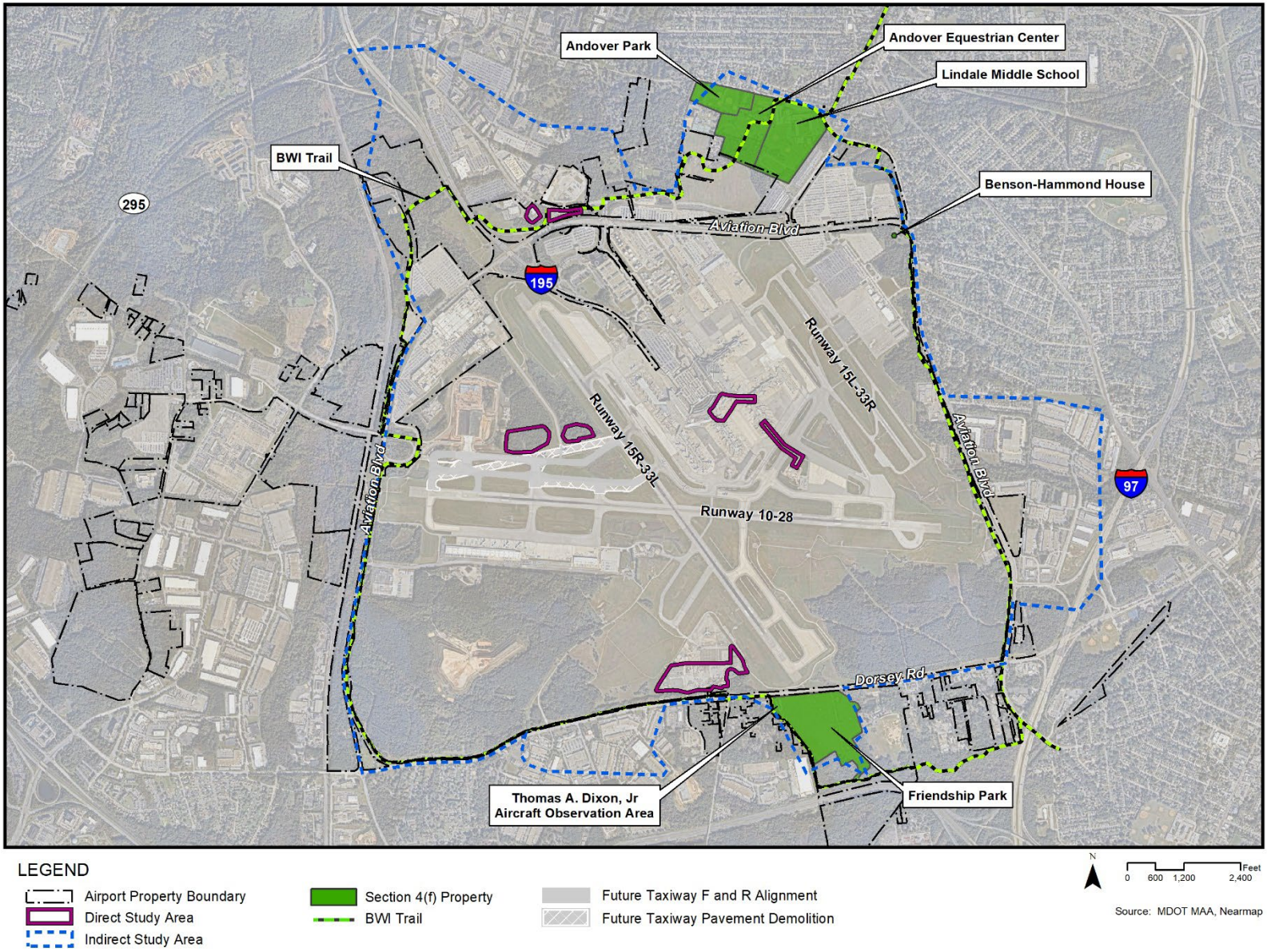
3.6.1 Parks

Friendship Park – Thomas A. Dixon Observation Area is located on airport property off Dorsey Road, south of the Runway 33L end. The park provides an area for the public to watch aircraft arrivals and departures and includes a playground and parking for access to the BWI Trail. Note that while the park is leased to Anne Arundel County, portions of the park are within the Airport Runway Protection Zone (RPZ) and include user restrictions (i.e., no trespassing areas).

Andover Park is located north of the airport at the corner of Andover Road and Main Avenue. The 41-acre park is owned by the Anne Arundel County Department of Recreation and Parks and includes various sports fields, picnic areas and an equestrian center. Andover Equestrian Center is a training, boarding and lesson horse farm that operates out of Andover Park. The equestrian center is situated between the sports fields of Andover Park to the west and Lindale Middle School to the east.

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Figure 3-4. Section 4(f) Resources



3.6.2 Recreation Areas

The BWI Trail is a 12.5-mile recreational trail that encompasses the main airport campus, running parallel to much of Aviation Boulevard and Dorsey Road. The trail has an asphalt surface, with the exception of wooden boardwalks which are utilized in environmentally sensitive areas. Most of the trail is on MAA property; however, it was built and is maintained through a Memorandum of Understanding (MOU) between MAA, Anne Arundel County Department of Recreation and Parks, and the Maryland Department of Transportation's State Highway Administration (SHA).

Lindale Middle School is located north of the airport off Andover Road and in the viewshed of the new ATCT. The school is located on 38 acres of land owned by Anne Arundel County Public Schools (AACPS) and includes various sports fields. This EA considers the sports fields as public recreation areas.

3.6.3 Historic Site

The Benson-Hammond House is located in the northeast corner of the Airport. The house is listed on the National Register of Historic Places (NRHP). *Section 3.9, Historical, Architectural, Archaeological, and Cultural Resources* provides further details on the Benson-Hammond House.

3.7 Hazardous Materials, Solid Waste and Pollution Prevention

Federal legislation, enforced by the EPA, jointly regulates the release, handling, disposal, and remediation of hazardous materials. The Resource Conservation and Recovery Act (RCRA) sets standards and practices regarding the generation and management of hazardous wastes. The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, or Superfund) allocates government funds and resources to ensure timely remediation of accidental or unintentional release of hazardous material and environmental contaminants.

At the state level, the MDE is primarily responsible for making sure federal hazardous materials regulations are enforced and upheld. State-level regulations meant to ensure proper enforcement of federal regulations have been incorporated into the Code of Maryland Regulations (COMAR). The presence of environmental contaminants and hazardous materials within the DSA is presented in this section. The ISA is not relevant to this resource category as there would be no indirect impacts to hazardous resources from the Proposed Action, however storage of hazardous materials as they relate to a typical airport environment are discussed.

3.7.1 Hazardous Materials

The operation of the Airport involves the storage, use and transport of hazardous materials and the generation of hazardous wastes. Hazardous materials are transported to and from the Airport by pipeline and ground vehicles, as well as by passenger and all-cargo aircraft. The largest quantity of hazardous material used at the Airport is aviation fuel, which is consumed in operations and, therefore, generates minimum hazardous waste. Additional hazardous materials are used at the Airport during maintenance and cleaning of aircraft, ground vehicles, and equipment. Hazardous wastes generated at the Airport are transported off-site for recycling, treatment, and/or disposal by licensed waste disposal contractors. Tenants are responsible for the management and disposal of the hazardous waste they generate, and they have their own storage areas and arrangements with disposal companies. There are no hazardous

waste sites within the DSA that are on or proposed for listing on the National Priorities List (NPL).³⁷ According to the EPA's EnviroMapper database, there are no Superfund sites in the vicinity of BWI Marshall Airport.

Many facilities at the Airport store, use, or dispose of hazardous materials, including for airport and aircraft maintenance, for fuel storage, and for fire training activities. Hazardous materials are stored, used and disposed of in accordance with federal and state regulations, and best practices are used to prevent and minimize impacts to surface and groundwaters, soil and air.

An EDR® report was run for the BWI Marshall Airport area to gather information on the presence of hazardous materials within the DSA.³⁸ Additionally, MAA provided information on known hazardous materials associated with the DSA. While there are hazardous materials at the Airport, the EDR report included no hazardous materials within the DSA.

The following summarizes typical hazardous materials found at the Airport and MAA provided information related to hazardous material storage or use within the DSA.

3.7.1.1 Fuel Storage Locations/Generators

The utilization and storage of hazardous materials and other regulated substances at BWI Marshall Airport are typical of most international airports.

The materials and substances currently used at BWI Marshall Airport that are classifiable as hazardous, regulated, or have the potential to cause environmental contamination are aircraft and other petroleum-based fuels. These fuels are contained in underground storage tanks (USTs/) ranging in size from 550 to 15,000 gallons and aboveground storage tanks (ASTs). The majority of the ASTs reside at the fuel farm area on the northeast side of the airport campus outside of the DSA, with the largest AST having a capacity of 1,250,000 gallons. The fuel types currently stored include aviation fuel, gasoline, diesel, gasohol, and kerosene. Due to the double-wall tanks and containment dikes utilized, aviation fuel stored in ASTs pose minimal risk to the surrounding environment. The existing ATCT, located just outside the DSA, includes an FAA generator with 1,000-gallon fuel tank.

Within the DSA, contractors use the Gold Lot and Elkridge Landing Lots as staging areas to store construction materials, including diesel tanks for day-to-day construction operations. All contractor tanks are permitted and staging areas are routinely inspected by MAA for compliance with stormwater issues to ensure they are not contaminating the site. The Elkridge Landing Lots were also formally the site of rental car quick-turn maintenance facilities. MDE monitored the removal of the original rental car fuel tanks and took samples to confirm no contamination at these sites.

³⁷ United States Environmental Protection Agency, Superfund National Priority List (NPL) Sites – by State, <https://www.epa.gov/superfund/national-priorities-list-npl-sites-state#MD>, accessed 11/13/23.

³⁸ Environmental Data Resources, Inc (EDR), The EDR Radius Map Report, BWI Friendship Rd. Baltimore, MD 21240, October 23, 2023.

3.7.1.2 Asbestos-Containing Materials

Some of the building materials in areas of the existing concourse (proposed to be disturbed as part of the Proposed Action) are asbestos-containing. MAA maintains a comprehensive Location Manual for Asbestos-Containing Building Material (ACBM), which is updated on a three-year cycle (last updated May 2022). The manual indicates the presence of ACBM throughout the existing Concourse C and Concourse D areas, and MAA and FAA office spaces, part of the DSA, specifically around fire doors, tile mastic, and miscellaneous sealants and vinyl flooring.

3.7.1.3 Deicing Fluid

Use of deicing fluids at BWI Marshall Airport is primarily completed at deicing pads, but at times deicing is started at the gates. Although deicing chemicals are not classifiable as hazardous materials under federal or state regulations, spent deicing fluids have a high biochemical oxygen demand (BOD) which can have impacts on water quality and aquatic ecosystems. MAA collects spent deicing fluids at the deicing pads using glycol recovery vehicles (GRVs), which is either pumped into tanks and transported for recycling at Washington Dulles International Airport via a contract with Inland Technologies, or the spent glycol is stored in one of MAAs glycol waste tanks. The glycol recycling program allows MAA to maintain waste tank volume for future storms and it also allows MAA to avoid sanitary sewer surcharge rates. MAA has a sanitary disposal permit with Baltimore County that limits the pounds of oxygen consumed per day at the Patapsco wastewater treatment plant.

3.7.1.4 Per- and Poly-fluoroalkyl Substances (PFAS)

Many firefighting foams, often referred to as Aqueous Film Forming Foam (AFFF) contain per- and poly-fluoroalkyl substances (PFAS). In recent years, the EPA has identified PFAS as emerging contaminants of concern and has identified fire training facilities and airports as potential sources of PFAS contamination. These highly soluble contaminants pose a soil leaching concern due to their mobility; they readily migrate in groundwater and are bioaccumulative. AFFF is stored at the Aircraft Rescue and Fire Fighting (ARFF) facility located directly east of the Midfield Cargo Complex and southwest of the intersection of Runway 15L-33R and 10-28, and also stored in Cargo Building 112. In May of 2023, FAA issued a transition plan to eliminate the use of PFAS containing AFFF at Part 139 airports. The timeline for transition away from PFAS-containing AFFF is incumbent on the availability of non-fluorinated firefighting foam (e.g., fluorine-free foam (F3) military specification (MILSPEC))³⁹. MAA is preparing for a transition to non-fluorinated foam and has begun testing these foams at their ARFF facility. See *Section 3.13.3, Surface Waters*, for details on EPA's proposed PFAS drinking water regulation.

3.7.2 Solid Waste

The Millersville Landfill, located five miles south of BWI Marshall Airport, is the permitted solid waste facility capable of disposing of solid waste from the proposed improvements at BWI Marshall Airport. See *Section 3.7.3, Pollution Prevention* for discussion of MAA solid waste management and recycling programs.

³⁹ Federal Aviation Administration, Aircraft Firefighting Form Transition Plan, May 8, 2023, https://www.faa.gov/sites/faa.gov/files/FAA_Aircraft_F3_Transition_Plan_2023.pdf, accessed 11/9/23

3.7.3 Pollution Prevention

The Federal Pollution Prevention Act (PPA) of 1990 encourages pollution prevention (P2) through source reduction, and recycling, treatment, and disposal in an environmentally safe manner. The PPA defines source reduction as any practice which “(i) reduces the amount of any hazardous substance, pollutant, or contaminant entering any waste stream or otherwise released into the environment (including fugitive emissions) prior to recycling, treatment, or disposal; and (ii) reduces the hazards to public health and the environment associated with the release of such substances, pollutants, or contaminants. The term includes equipment or technology modifications, process or procedure modifications, reformulation or redesign of products, substitution of raw materials, and improvements in housekeeping, maintenance, training, or inventory control (42 USC 13102 (5)(A)).”

MAA is actively focused on waste management and recycling activities, including tracking the percentage of waste diverted from landfills and developing a Solid Waste Management and Recycling Plan. MAA piloted a composting program in 2019 and has been expanding the program to include additional vendors, sending collected materials to the Prince George’s County Organics Composting Facility. A variety of vendors collect used cooking oil, which supports the production of Sustainable Aviation Fuel (SAF). Along with an active recycling program, MAA has also added staff resources focused on sustainability efforts. These initiatives, and others, will be incorporated and expanded upon as part of MAA’s existing Sustainability Roadmap, which outlines the path to planning and implementing an MAA-wide Sustainability Program focused on the pillars of Environmental, Economic, Social, and Human.

3.8 Historical, Architectural, Archaeological, and Cultural Resources

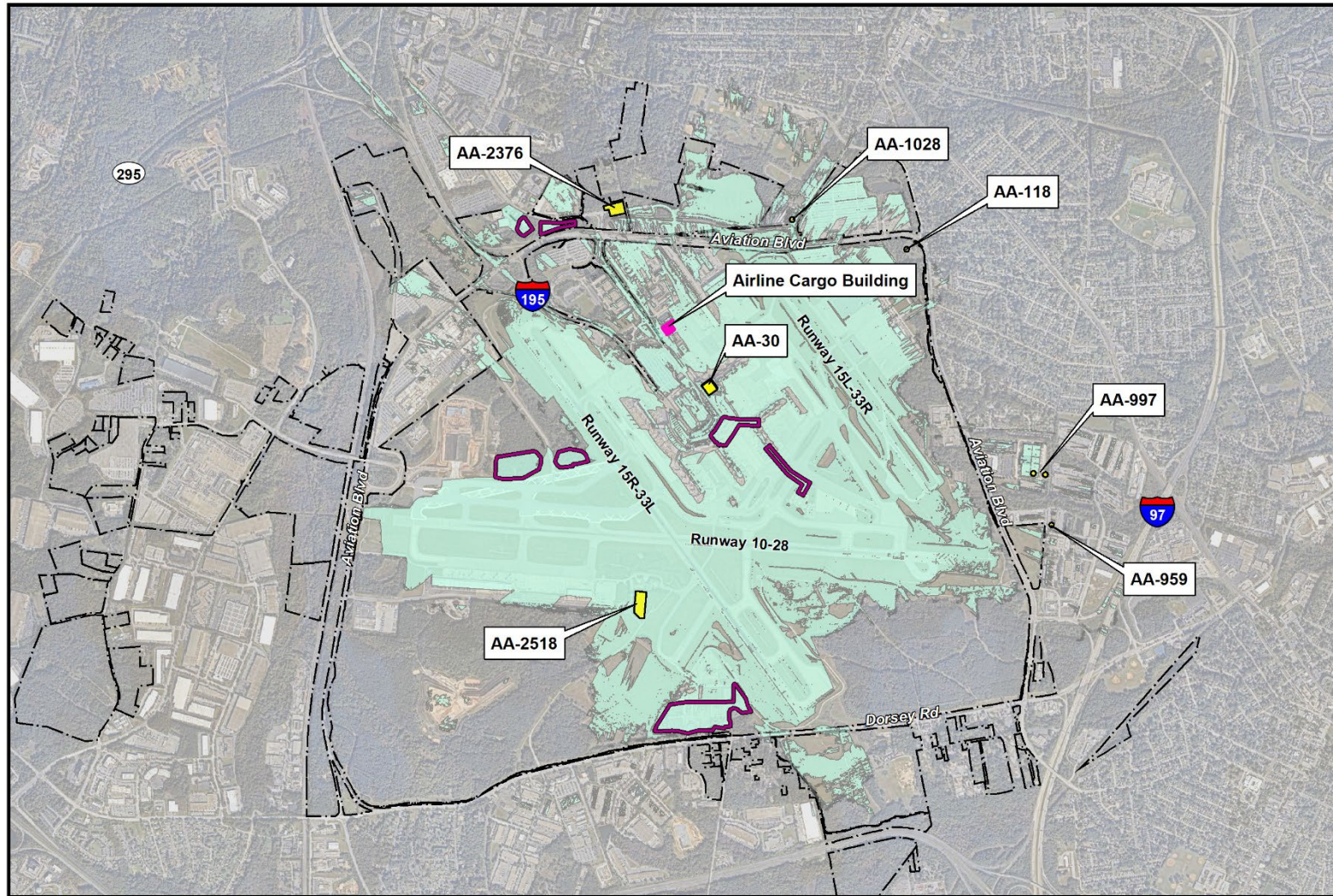
Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations 36 CFR Part 800 *Protection of Historic Properties* requires Federal agencies to consider the effects of their actions on historic properties included or eligible for inclusion in the National Register of Historic Places (NRHP) in consultation with the Maryland Historical Trust (MHT), State Historic Preservation Office (SHPO). **Appendix D, Cultural Resources** contains information related to cultural resources and consultation between the FAA and MHT.

3.8.1 Area of Potential Effect

The Area of Potential Effect (APE), as illustrated in **Figure 3-5**, is the geographic area within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The Direct APE, identical to the DSA, is approximately 46 acres and defines the extent of ground-disturbing activities for the Proposed Action and includes the potential construction staging areas. The Indirect APE encompasses the viewshed around the proposed ATCT as determined by the viewshed analysis and is expanded to include all Direct APE areas. The viewshed analysis, provided in *Appendix D*, is focused on the visual impact that the proposed ATCT would have on the surrounding area. Both the Direct and Indirect APE were defined by the FAA in consultation with the MHT per 36 CFR § 800.4(a)(1). MHT concurred with the APEs on October 13, 2023. The SHPO concurrence letter is provided in *Appendix D*.

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Figure 3-5. Area of Potential Effect



LEGEND

- | | | |
|------------------------------------|--|------------------------------------|
| Airport Property Boundary | Maryland Inventory of Historic Properties (MIHP) | Future Taxiway F and R Alignment |
| Direct Area of Potential Effects | 50-Year Old Building | Future Taxiway Pavement Demolition |
| Indirect Area of Potential Effects | | |

0 600 1,200 2,400 Feet

 Source: MDOT MAA, Nearmap, MIHP and EAC/A analysis, 2023

3.8.2 Identification of Resources and Determination of Eligibility (DOE)

The following sections identify the historical, architectural, archaeological, and cultural resources located within the Direct APE and Indirect APE. For the purposes of discussion, the term “architectural resources” refers to standing buildings, sites, structures, objects, or districts. “Archaeological resource” refers to prehistoric and historical subsurface sites.

3.8.2.1 Historical/Architectural Resources

Historical resources, or historic properties, as outlined in the NHPA, are any properties including buildings, sites (both surface and subsurface), structures, and objects listed or determined eligible for listing on the NRHP, the nation’s inventory of historic properties of value on a state, local, or national level. There are no historical resources within the Direct APE. There is one historical resource identified within the Indirect APE: the NRHP-listed Benson-Hammond House. While the proposed ATCT would not be visible from the house, a small portion of the property falls outside the pine tree buffer and thus may have a view of the ATCT during winter months.

Within the Indirect APE, six properties mapped with MEDUSA (Maryland’s online cultural resources GIS) were identified which intersect the current viewshed for the proposed ATCT but have since been demolished: AA-30 (Hanger No. 1, BWI), AA-959 (W. T. Shipley Farm), AA-997 (W. Downs House and Cemetery), AA-1028 (Buren Smith House), AA-2376 (Unidentified Farmstead), and Friendship Cemetery (AA-2518). Friendship Cemetery (AA-2518) is the only property that still exists in its original location; however, this cemetery, which is nestled within the main airport campus, has been evaluated and determined not eligible for the NRHP. Additionally, a spatial database of properties that contain buildings older than 50 years that are either owned by the Airport or within the Airport Noise Zone (ANZ) was reviewed. One property 50 years or older falls within the current viewshed for the proposed ATCT: the Airline Cargo Building which has not been evaluated for eligibility for the NRHP. The existing ATCT is currently also visible from the Airline Cargo Building and therefore this building does not require evaluation for the Proposed Action. These properties are listed in **Table 3.4** and the resources are illustrated in **Figure 3-5**.

Table 3.4. Architectural Resources within Indirect APE

Property	Status
Hanger 1 (AA-30)	Not Eligible (Demolished)
W. T. Shipley Farm (AA-959)	Not Eligible (Demolished)
W. Downs House and Cemetery (AA-997)	Not Eligible (Demolished)
Buren Smith House (AA-1028)	Not Eligible (Demolished)
Unidentified Farmstead (AA-2376).	Not Eligible (Demolished)
Friendship Cemetery (AA-2518)	Not Eligible
Benson-Hammond House (AA-118)	Listed on NRHP
Airline Cargo Building	Not Evaluated (Building over 50 years old)

Source: Maryland Inventory of Historic Places (MIHP) and EAC/A analysis, 2023.

The Benson-Hammond House (AA-118) is in the northeast corner of the Airport within the Indirect APE. The brick farmhouse was first built between 1820 and 1830, with a Greek Revival addition constructed to the north of the original structure sometime between 1855 and 1870.⁴⁰ The property was operated as a truck farm following the Civil War, serving the market of Baltimore. The house was determined to be an unusual and atypical nineteenth-century brick farmhouse in this area of the County.

⁴⁰ Richard Meyer, National Register of Historic Places Registration Form for Benson-Hammond House.

Due to the major development focused in this area following the Second World War, few farmhouses from the historic period remain that exemplify Anne Arundel County's rural roots and pastoral identity. Many historic brick farmhouses similar to the Benson-Hammond House were destroyed by development in the immediate area, as well as in the County at large. As a result, the Benson-Hammond House provides a unique perspective into the County's rural past, which is now almost completely hidden under modern development. This property is further important to the study of vernacular architecture and is also associated with the truck-farming industry that developed around Baltimore in the early twentieth century. The addition to the house is unique in its portrayal of the Greek Revival style, which at the time of its construction had largely waned as a popular architectural motif.

Although the Benson-Hammond House is now surrounded by BWI Marshall Airport, as well as major roadways that grant access to the Airport terminal, the structure itself is relatively sequestered behind both a metal fence that surrounds the property and a grove of relatively thick trees to the structure's west and south. The surrounding landscape of the property has been drastically changed through the course of the twentieth century, with modern residential neighborhoods and parking lots visible from the front of the house, and the sounds of air and road traffic.

In 1990, the house was listed in the NRHP under criterion C (the embodiment of distinctive characteristics of a type, period, or method of construction, a representation of the work of a master, high artistic value, or a significant and distinguishable entity whose components may lack individual distinction), and now serves as the headquarters for the Anne Arundel County Historical Society.

3.8.2.2 Archaeological Resources

There are no archaeological sites identified within the Direct APE. The areas of proposed obstruction removal are located within an area previously subjected to archaeological survey in 2016 as Area 5. See Figure 5 of the *Attachment to Project Review Form in Appendix D*. The area was full of modern debris resulting from extensive grading, and no archaeological sites were identified in the location of the proposed obstruction removal. The area is within 440 feet of a former cemetery site. Burials were relocated by the aviation commission after it acquired the property in the late 1940s. No evidence of the cemetery was identified during the 2017 archaeological survey.

The Indirect APE is not relevant to this resource category as there would be no indirect impacts to archaeological resources from the Proposed Action.

3.8.2.3 Cultural Resources

Cultural resources, which include historic resources, may be defined as the physical evidence or place of past human activity. As such, the definition includes the historical resources discussed in the previous sections, along with landscapes or natural features of significance to a group of people traditionally associated with it. The only cultural resources within the affected environment of the project are those historic resources which are discussed above.

3.8.3 Tribal Resources

Tribal consultation was conducted with Indian tribes that may be affected by the Proposed Action, including Delaware Nation and Delaware Tribe. *Appendix D* contains the November 14, 2023 coordination letters (*Attachment 2*) that were sent as well as the response received from the Delaware Nation Historic Preservation Officer on December 13, 2023 (*Attachment 3*) stating that they have no concerns regarding the Proposed Action.

3.9 Land Use

Local land use plans, comprehensive plans, and zoning laws provide context for land use compatibility. “Plan2040” is the Anne Arundel County General Development Plan (Plan) and includes a Planned Land Use Map which guides future development patterns in the County based on the “Plan2040” vision, goals, polices and development policy areas. BWI Marshall Airport and the areas immediately west are identified within the “Critical Economic” growth area: “Existing or planned regional-scale destinations, employment centers, or areas supporting the County’s major economic drivers where development, redevelopment and revitalization are encouraged. These areas are primarily industrial, commercial, and mixed land uses within the Priority Funding Area, and have flexible land use policies to facilitate business growth and job creation.”⁴¹

The following sections describe land use and zoning on and around BWI Marshall Airport, with reference to the DSA and ISA.

3.9.1 On-Airport Land Use

The DSA is entirely on Airport property and consists of developed areas (terminal area and paved parking lots) and forest stands. The majority of the ISA is also on Airport property and consists of aeronautical and non-aeronautical land use. On-airport facilities are described in further detail in *Chapter 1, Section 1.1, Background*.

3.9.2 Surrounding Land Use

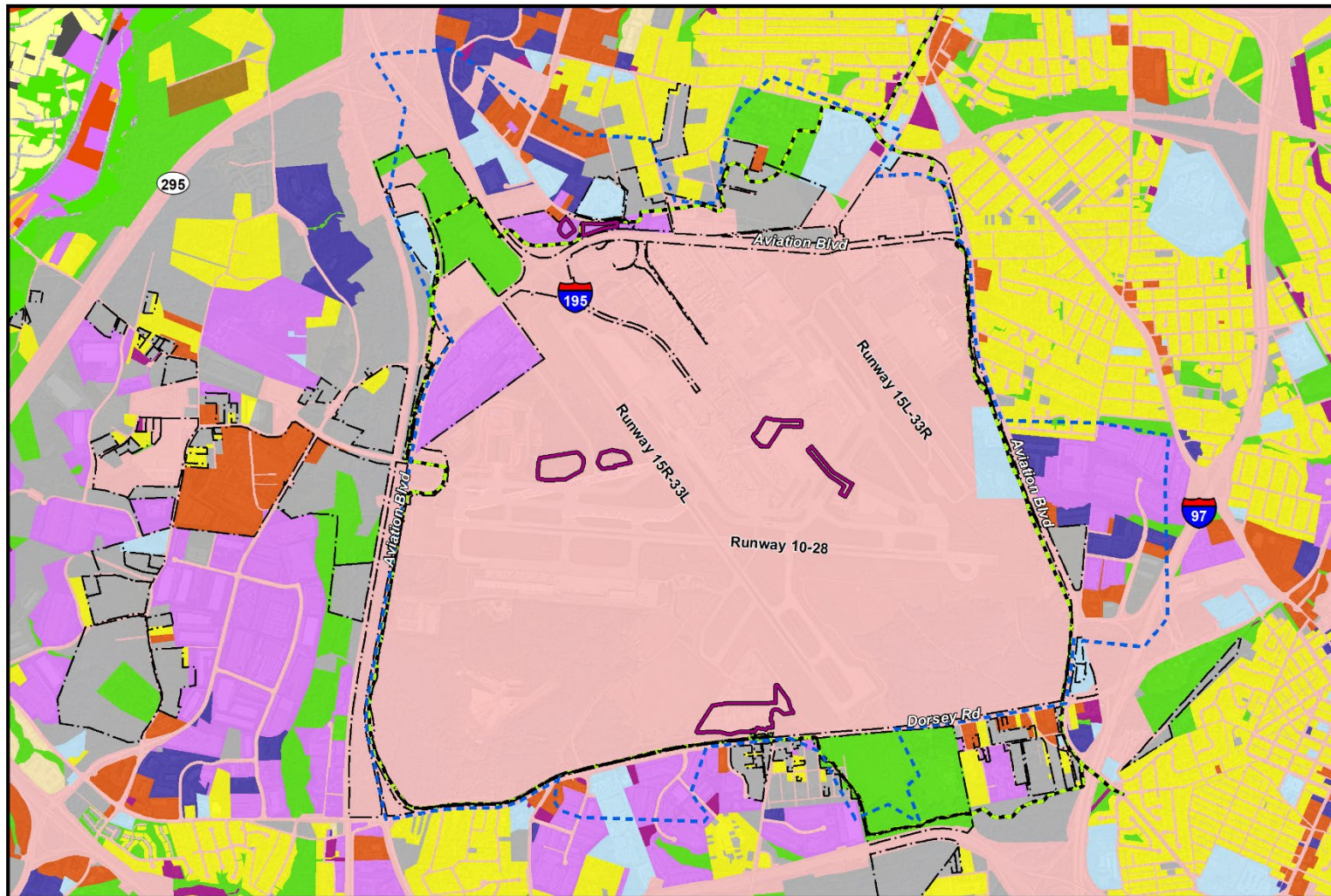
Figure 3-6 illustrates land use in the vicinity of BWI Marshall Airport. The Airport is bounded on the west, north, and east by Aviation Boulevard and on the south by Dorsey Road. Commercial and manufacturing and production are the primary land uses west and northwest of the Airport as well as pockets adjacent to the south and east. Residential is the primary land use north, east and southeast of the Airport.

3.9.3 Zoning

Figure 3-7 illustrates the existing zoning classifications within the DSA, ISA and surrounding areas. The airport is bordered by industrial, residential, open space, and small areas of commercial zones. Industrial zones are concentrated in the area west of the airport. Residential zones are scattered around the airport and are concentrated northeast of the airport.

⁴¹ Plan2040, Anne Arundel County General Development Plan, Adopted May 3, 2021, page 38, <https://www.aacounty.org/departments/planning-and-zoning/long-range-planning/general-development-plan/plan2040-vol1-adopted/>

Figure 3-6. Land Use

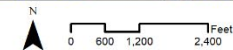


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- Airport Property Boundary
- Direct Study Area
- Indirect Study Area

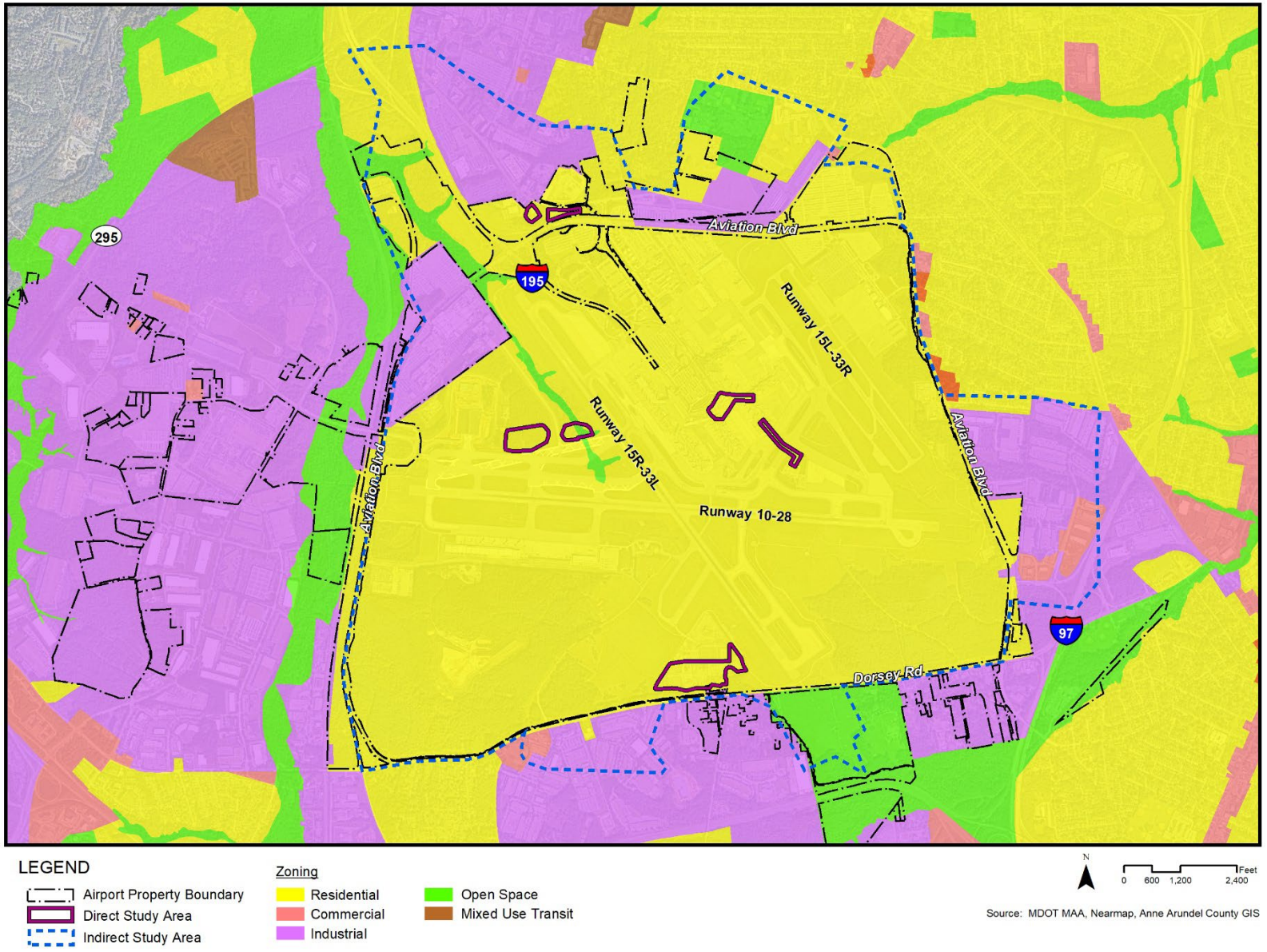
Existing Land Use

- | | | |
|---------------------------|-------------------------|----------------|
| Single Family Residential | Recreational Open Space | Transportation |
| Multi-Family Residential | Mixed Use | Utility |
| Mobile Home | Institutional Facility | Undeveloped |
| Commercial | Office | BWI Trail |
| Industrial | Agriculture | |



Source: MDOT MAA, Maryland Department of Planning,
 Anne Arundel County GIS, Nearmap

Figure 3-7. Zoning



3.10 Natural Resources and Energy Supply

The DSA is entirely within BWI Marshall Airport property. Power, water, communications, gas, sanitary system and closed storm drain systems are all within the Airport property. Where the ISA extends off Airport property, there are forested, undeveloped areas, private residences, businesses, and public parks (i.e., Friendship Park and Andover Park). Baltimore Gas and Electric (BGE) provides natural gas and electricity to the Airport, Verizon provides communication services, and the Anne Arundel County Bureau of Utility Operations (Department of Public Works) provides water services. Communication services are available from Verizon and other industry service providers.

There are no known deposits of valuable natural resources located within the DSA or ISA. Natural resources needed for airport projects or construction come from a variety of suppliers. Concrete for larger projects involves setting up an on-site batch plant. Smaller projects use “ready mix” that is available from multiple local suppliers. Aggregates that are needed for Airport projects are typically provided from LaFarge quarry in Texas, Maryland and/or Savage quarry in Jessup, Maryland. If fly ash is needed, an out-of-state source would be needed as fly ash is in high demand and is not readily available locally.

Asphalt is available locally from several suppliers, including: P. Flanigan and Sons (Baltimore, Maryland); Independence Construction (Pennsylvania and Delaware); Gray & Son, Inc. (Timonium, Maryland); and Image Asphalt Maintenance, Inc. (Pasadena, Maryland). For earth material, MAA maintains an on-Airport stockpile south of Mathison Way.

Building materials needed for airport projects come from various suppliers dependent on the application. Generally, AIP funding and the state of Maryland enforces Buy American requirements. This results in primarily domestic providers for MAA projects, typically from PA, OH and TN.

3.11 Socioeconomics, Environmental Justice and Children’s Environmental Health and Safety Risks

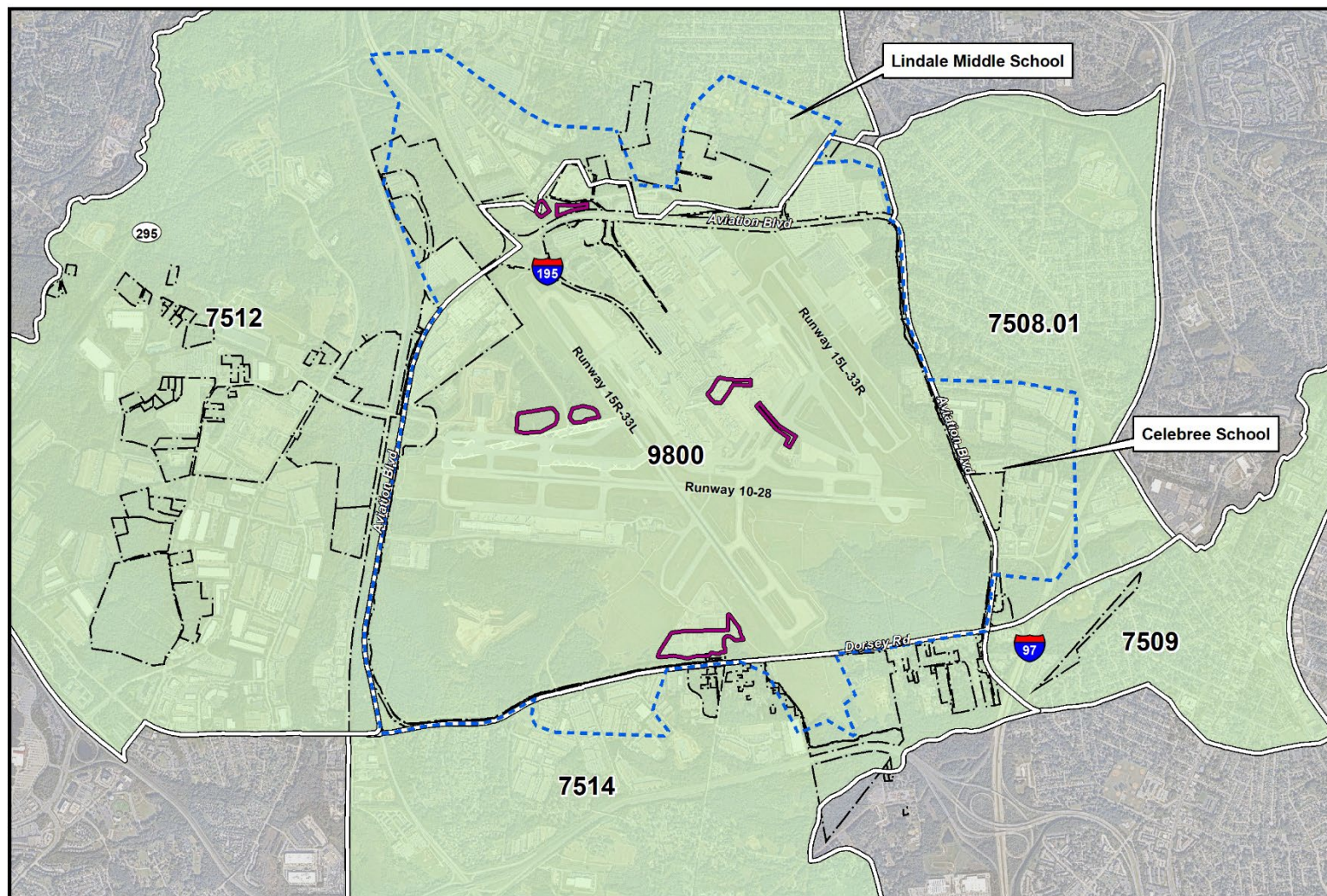
This section describes the existing socioeconomic conditions in the vicinity of BWI Marshall Airport, using U.S. Census tracts within and bordering the ISA. Data at the U.S. Census tract level (2021) was used to develop a profile of the population, housing, and employment characteristics. The issues relevant to the evaluation of environmental impacts include population, the ethnicity of the population and its poverty status, income and housing distribution, surface transportation and traffic, environmental justice, children’s environmental health and safety, and public services.

3.11.1 Socioeconomics

BWI Marshall Airport is in northern Anne Arundel County. Anne Arundel County is located just south of Baltimore and is part of the Baltimore-Washington Metropolitan Area. The County has a total land area of approximately 415 square miles and is primarily suburban in nature.

As illustrated in **Figure 3-8**, there are five Census tracts (CTs) within or bordering the ISA: 9800, 7512, 7508.01, 7509 and 7514. **Table 3.5** provides a description of the five CTs within the ISA, four of which are included in the analysis. For comparison, the relevant CTs are compared to Anne Arundel County and Maryland.

Figure 3-8. Census Tracts



LEGEND

- Airport Property Boundary
- Census Tract (#)
- ▭ Direct Study Area
- ▭ Indirect Study Area

0 750 1,500 3,000 Feet
Source: MDOT MAA, Nearmap, U.S. Census Bureau

Table 3.5. Census Tracts within Indirect Study Area

Census Tract	Description
CT 9800 ¹	Within the DSA and ISA; BWI Marshall Airport property, inclusive of the DSA, makes up much of CT 9800, with no residential land use within CT 9800. Therefore, CT 9800 is not included in the demographic analysis.
CT 7512	Borders BWI Marshall Airport to the north and west. This CT includes a variety of land use, with residential and commercial prominent to the north of the Airport, and open space and industrial prominent to the west of the Airport.
CT 7508.01	Borders BWI Marshall Airport to the east. This CT is mostly residential, with areas of commercial and manufacturing land uses on the south end of the CT.
CT 7509	Borders BWI Marshall Airport to the southeast and includes mostly residential.
CT 7514	Borders BWI Marshall Airport to the south. This CT includes mostly park/open space, with some commercial, industrial, and residential areas.

Note: ¹ Excluded from analysis due majority of property within BWI Marshall Airport with population of 7.
Source: HNTB analysis, 2023.

As shown in **Table 3.6**, the demographic profile of the CTs varies greatly from 23 percent (CT 7512) to 35 percent (CT 7514) minority population. All four of the CTs have comparable minority populations to Anne Arundel County (34 percent). The Black or African American population makes up the largest percent of the minority population in Anne Arundel County and all but one CT. The Hispanic or Latino population makes up the largest percent of minority population in CT 7512.

Table 3.7 provides the median household income and poverty status for families in the surrounding CTs, Anne Arundel County and Maryland. The median household income in the four CTs varies from \$78,534 (CT 7309) to \$129,010 (CT 7514), with a median household income of Anne Arundel County of \$108,048. The percent of families below the poverty line ranges from 0 percent (CT 7508.01) to 5.8 percent (CT 7509), and the percent of individuals below the poverty line ranges from 5.0 percent (CT 7508.01) to 6.7 percent (CT 7509). The percent of families and percent of individuals below the poverty line in all four CTs is comparable to that of Anne Arundel County (3.9 percent and 5.6 percent, respectively). All CTs have lower percentages of poverty than the State.

Table 3.8 provides the educational attainment and employment rates of the CTs, Anne Arundel County and Maryland. The CTs have high school graduation rates between 91 percent (CT 7508.01) and 97 percent (CT 7514), consistent with the County (93 percent). The percent of population (25 years and over) with a bachelor's degree or higher in the CTs is between 17 percent (CT 7509) and 46 percent (CT 7514) in the nearby CTs. The percent of the labor force population employed in the CTs is generally comparable to that of the County (64 percent). The unemployment rates in the CTs range from 1.1 percent (CT 7514) to 5.5 percent (CT 7509), with a County unemployment rate of 4.4 percent.

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Table 3.6. Study Area Demography by Census Tract (CT), Anne Arundel County and Maryland

Subject	CT 7512		CT 7508.01		CT 7509		CT 7514		Anne Arundel County		Maryland		
	North/West		East		South/East		South		Est.	%	Est.	%	
	Est.	%	Est.	%	Est.	%	Est.	%					
Total Population	4,838	100%	6,370	100%	2,908	100%	4,314	100%	584,064	100%	6,148,545	100%	
Children (Under 18 years old)	944	20%	1,656	26%	595	20%	802	19%	131,196	22%	1,373,149	22%	
Not Hispanic or Latino	White	3,739	77%	4,592	72%	1,926	66%	2,819	65%	385,783	66%	3,035,807	49%
	Black or African American	299	6%	564	9%	446	15%	761	18%	97,133	17%	1,806,220	29%
	American Indian & Alaska Native	0	0%	0	0%	10	0%	0	0%	669	0%	9,657	0%
	Asian	116	2%	141	2%	172	6%	439	10%	22,643	4%	394,720	6%
	Native Hawaiian and Other Pacific Islander	0	0%	0	0%	43	1%	0	0%	284	0%	2,102	0%
	Other Race	0	0%	43	1%	0	0%	21	0%	2,164	0%	27,751	0%
	Two or More Races	229	5%	595	9%	162	6%	234	5%	26,750	5%	221,931	4%
Hispanic or Latino	455	9%	435	7%	149	5%	40	1%	48,638	8%	650,357	11%	
Total Minority	1,099	23%	1,778	28%	982	34%	1,495	35%	198,281	34%	3,112,738	51%	

Source: US Census Bureau, American Community Survey 5-year estimates (2021).

Table 3.7. Median Household Income and Poverty Status by CT, Anne Arundel County and Maryland

Subject	CT 7512	CT 7508.01	CT 7509	CT 7514	Anne Arundel County	Maryland
	North/West	East	South/East	South		
Number of Households	1,961	2,059	1,266	1,607	218,682	2,294,270
Average Household Size	2.45	3.08	2.29	2.63	2.6	2.62
Median Household Income (\$)	101,658	89,208	78,534	129,010	108,048	91,431
Poverty Status						
Number of families	1,187	1,430	635	1,325	151,198	1,516,689
Percent of families below poverty line	2.2%	0.0%	5.8%	3.9%	3.9%	6.2%
Population for whom poverty status is determined	4,816	6,294	2,899	4,229	568,465	6,006,777
Number of individuals below the poverty line	270	316	195	233	32,049	550,074
Percent individuals below the poverty line	5.6%	5.0%	6.7%	5.5%	5.6%	9.2%

Source: US Census Bureau, American Community Survey 5-year estimates (2021).

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Table 3.8. Educational Attainment and Employment Rates by CT, Anne Arundel County and Maryland

Subject	CT 7512	CT 7508.01	CT 7509	CT 7514	Anne Arundel County	Maryland
	North/West	East	South/East	South		
<i>Educational Attainment</i>						
Population 25 years and over	3,336	4,041	2,114	3,208	403,202	4,240,795
Less than 9 th grade	1%	2%	2%	1%	2%	4%
9 th to 12 th grade, no diploma	4%	7%	5%	2%	4%	5%
High school graduate (includes equivalency)	23%	29%	35%	22%	23%	24%
Some college, no degree	19%	23%	33%	21%	20%	18%
Associate's degree	12%	10%	9%	8%	8%	7%
Bachelor's degree	25%	15%	13%	27%	25%	22%
Graduate or professional degree	16%	15%	4%	19%	18%	20%
Percent high school graduate or higher	95%	91%	93%	97%	93%	91%
Percent bachelor's degree or higher	41%	30%	17%	46%	43%	42%
<i>Employment Status</i>						
Population 16 years and over (Total)	3,955	4,783	2,348	3,722	466,466	4,931,565
In labor force (%)	66.7%	67.6%	68.7%	60.5%	66.7%	66.8%
Employed (%)	64.7%	64.8%	64.9%	59.8%	63.7%	63.3%
Unemployment rate (%)	3.0%	4.2%	5.5%	1.1%	4.4%	5.3%

Source: US Census Bureau, American Community Survey 5-year estimates (2021).

3.11.2 Environmental Justice

Executive Order (EO) 14096, *Revitalizing Our Nation's Commitment to Environmental Justice for All* was issued in April of 2023, to guide a whole-of-government approach to addressing environmental justice in the U.S. EO 14096 requires that Federal agencies advance environmental justice by developing internal mechanisms (i.e., Strategic Plans) to achieve the goals of the Order. Federal agency Strategic Plans must be completed within 18 months and updated every four years thereafter. EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*, foundational to EO 14096, requires federal agencies to identify and address the disproportionately high and adverse human health or environmental effects of their actions on minority and low-income populations with the goal of achieving environmental protection for all communities.

In accordance with Department of Transportation (DOT) Order 5610.2(c), *Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, minority refers to people who classified themselves as African American or Black; Hispanic or Latino; Asian American; American Indian or Alaskan Native; or Native Hawaiian or Other Pacific Islander. Minority populations are defined as “any readily identifiable group of minority persons who live in a geographic proximity, and if circumstances warrant, geographically dispersed/transient persons who will be similarly affected by a proposed DOT program, policy or activity.”⁴²

As summarized in Table 3.6, the Black or African American population makes up the largest percent of the minority population in the County and all but one CT. The CTs all have minority populations comparable to or less than the County (34 percent).

As summarized in Table 3.7, three of four the CTs have median household incomes less than the County (\$108,048), with the lowest in CT 7509 (\$78,534). CT 7509 is also the only CT with a greater percent of families and individuals below the poverty line (5.8 percent and 6.7 percent) as compared to the County (3.9 percent and 5.6 percent).

3.11.3 Children's Environmental Health and Safety Risks

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, directs federal agencies to identify and assess disproportionate impacts to children's environmental health and safety risks. EO 13045 states that, “Environmental health risks and safety risks’ mean risks to health or to safety that are attributable to products or substances that the child is likely to encounter or ingest (such as the air we breathe, the food we eat, the water we drink or use for recreation, the soil we live on, and the products we use or are exposed to).” Therefore, the assessment of potential air quality, hazardous materials and water quality impacts are pertinent to this category.

As summarized in Table 3.6, the population of children (under 18 years old) within the CTs range from 19 percent (CT 7514) to 26 percent (CT 7508.01), which are all comparable to the population of children in the County (22 percent).

There is one daycare facility located within the ISA, Celebree School of Glen Burnie directly east of the Airport. *Section 3.6, Department of Transportation, Section 4(f) Resources* includes a discussion of the parks and school (Lindale Middle School) located within the ISA.

⁴² FAA, Order 1050.1F Desk Reference (July 2015), p. 12-9.

3.11.4 Surface Transportation and Traffic

Interstate 195 (I-195) and Maryland Route 170 (Aviation Boulevard) provide the main connections from the surrounding highways to BWI Marshall Airport's terminal. Primary access from the north and west is afforded by Interstates 95 and 695, as well as Maryland Route 295 (the Baltimore/Washington Parkway). Access from the Washington, D.C. area and surrounding counties in Virginia and Maryland also occurs via Interstate 95 and Maryland Route 295. From the east, access is somewhat limited by the proximity to the Chesapeake Bay, however, the eastern shore of Maryland and state of Delaware is provided relatively direct access to BWI Marshall Airport via Highway 50/301 to Interstate 97 and Maryland Route 100. Areas to the south/ southeast of BWI Marshall Airport are provided access via Interstates 95 and 97 and Maryland Route 100.

The primary inbound roadway to the passenger terminal is I-195. I-195 SB terminates at the passenger terminal where it becomes Friendship Roadway before splitting to the upper and lower level curbside roadways. See Figure 3-1 for roadways surrounding the Airport.

3.12 Visual Effects

Visual effects can be the result of light emission impacts as well as impacts to the aesthetics or visual character of a site. There are no federal regulations for airport related light emissions or visual effects. The following sections describe visual effects related to the DSA and ISA.

3.12.1 Light Emissions

The primary sources of existing light emissions within the DSA and ISA are from airfield and apron flood lighting, navigational aids, terminal and parking facility lighting, roadway lighting, safety lighting, and adjacent commercial, manufacturing, and residential lighting. All lighting at the Airport, including that for ramps, vehicle parking areas, roadways, fuel storage areas, and the buildings, is adequately adjusted or shielded to prevent interference with air traffic control or aircraft operations. There are no light sensitive areas located within the DSA, and the small residential area within the ISA is shielded from the Airport by 300 feet of forested buffer north of the Airport.

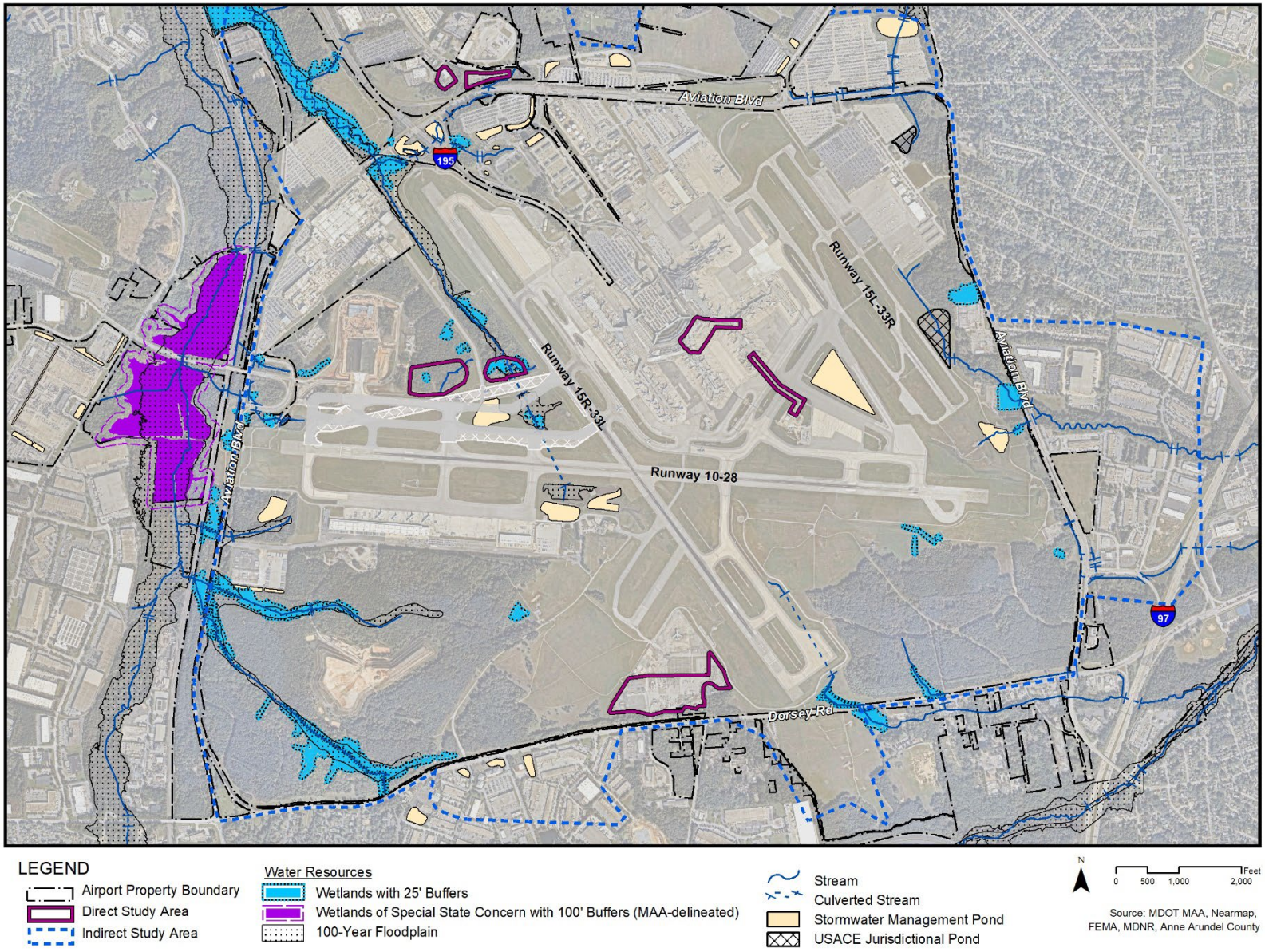
3.12.2 Visual Resources and Visual Character

Visual resources can include buildings, sites, historic properties, and other landscape features that are visually important. Visual character refers to the visual makeup of an environment, such as urban, open fields, or mountains. The DSA and ISA are within or immediately adjacent to the Airport and therefore the existing visual character and visual resources are of an urban nature. The most notable visual feature within the DSA is the existing terminal building and ATCT, and the vegetation located with the LOS obstruction removal area. The small residential area within the ISA is shielded from the Airport by 300 feet of forested buffer north of the Airport.

3.13 Water Resources

For purposes of this EA, water quality standards include adherence to provisions of the federal Clean Water Act (CWA). The CWA promulgates the establishment of water quality standards, the control of discharges, the development of waste treatment management plans and practices, and the prevention or minimization of the loss of wetlands. The following sections describe water resources within the DSA and ISA. **Figure 3-9** illustrates the water resources within the DSA and ISA, note the impact analysis will only consider the DSA as described in *Chapter 4, Environmental Consequences*.

Figure 3-9. Water Resources



3.13.1 Wetlands

Federal and State of Maryland regulations address activities conducted in Waters of the US (WOTUS), including jurisdictional wetlands, to minimize reduction and degradation of these resources and achieve a no net loss of wetlands.

3.13.1.1 Federal Regulations

Section 404 of the Clean Water Act (CWA) (33 U.S.C. 1344) regulates proposed discharges of dredged or fill materials into WOTUS, including jurisdictional wetlands. The United States Supreme Court ruling in *Sackett v. U.S. Environmental Protection Agency* (EPA) and the subsequent final rule issued by the EPA and U.S. Army Corp of Engineers (USACE) on September 8, 2023 (88 FR 61964) narrowed the regulatory authority of the EPA and USACE by redefining WOTUS as traditionally navigable waters, regularly flowing tributaries to those waters, and only those wetlands with continuous surface connection to these bodies of water.

3.13.1.2 State Regulations

The Maryland Nontidal Wetlands Protection Act was enacted in 1991 to further protect nontidal wetlands by regulating and restricting all activities that could impact nontidal wetlands or waters of the State. Maryland law differs from Federal law through additional regulations of the 25-foot nontidal wetland buffer and isolated wetlands. The regulated nontidal wetland buffer is increased to 100 feet for Nontidal WSSC. These wetlands are those designated by the State as having exceptional ecological or educational value of statewide significance. The nontidal WSSC associated with the Stony Run floodplain are located outside of the DSA and ISA.

The COMAR 26.23.01 definition of an isolated wetland is a nontidal wetland that is not hydrologically connected, through surface or subsurface flow to streams, tidal or nontidal wetlands, or tidal waters. MDE, through their Wetland and Waterways Program, is responsible for regulating and permitting use of tidal and nontidal wetlands and their buffers and waterways in Maryland.

3.13.1.3 WOTUS, Including Jurisdictional Wetlands Identification

MAA maintains a WOTUS, including jurisdictional wetlands, inventory for the BWI Marshall Airport Campus, which is routinely re-verified by USACE and MDE when projects require Section 404 authorization. A WOTUS, including jurisdictional wetlands verification was conducted within the DSA between October and December 2022 to confirm previous wetland delineations and to identify additional wetlands that may be impacted by Proposed Action. The wetland delineation report is provided in **Appendix E, Water Resources, Attachment 1**. During the 2022 wetland verification, three streams and five wetlands were identified within the DSA. **Figure 3-10** provides a closer look at the wetlands and streams within the DSA.

Wetland types present within the DSA include two palustrine scrub-shrub (PSS) and three palustrine forested (PFO), and stream types include a lower perennial, upper perennial, and intermittent/ephemeral. **Table 3.9** lists the cover type, size and jurisdictional status of the identified wetlands and streams within the DSA.

Figure 3-10. Wetlands within DSA

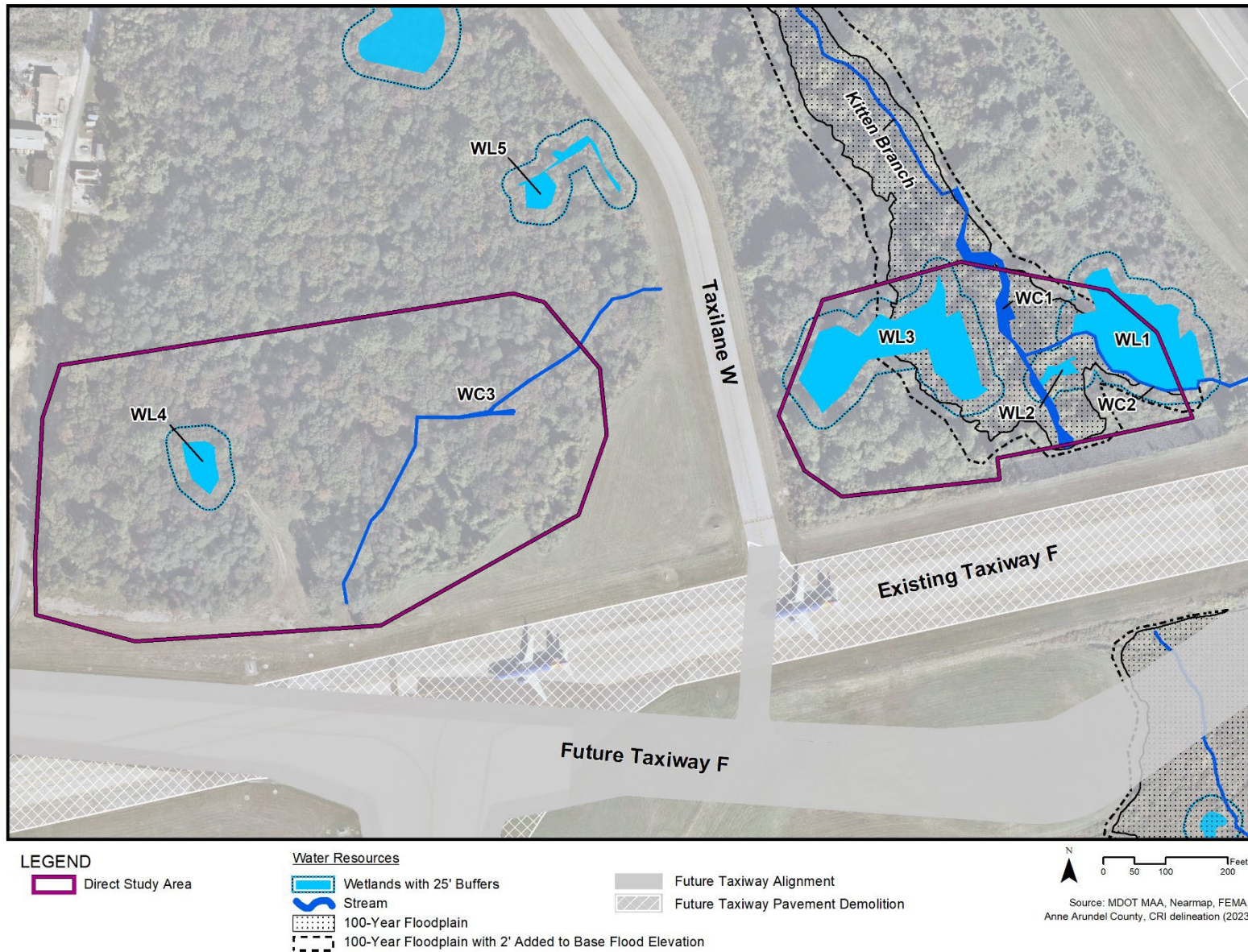


Table 3.9. Wetlands within the Direct Study Area

2022 Delineation	BWI Wetland Inventory	Wetland Cover Type	Acreage/Length	WOTUS	Jurisdiction
WL1	Kitten Branch-1	PSS	0.51 ac	No	MDE/USACE
WL3	Kitten Branch-5	PFO	0.58 ac	No	MDE/USACE
WL2	NEW – Kitten Branch-8	PSS	0.03 ac	Yes	MDE/USACE
WL4	Kitten Branch Tributary-2	PFO	0.08 ac	No	MDE
WL5	Kitten Branch Tributary-4	PFO	0.09 ac	No	MDE
WC1	Kitten Branch	Lower Perennial	469 lf	Yes	MDE/USACE
WC2	Kitten Branch Tributary	Upper Perennial	491 lf	Yes	MDE/USACE
WC3	Kitten Branch Tributary	Ephemeral/ Intermittent	838 lf	No	MDE/USACE

Note: 2022 delineation determined that previous Kitten Branch Tributary-1 (KBT-1) did not meet wetland parameters.
Source: CRI, Wetland Delineation Report, 2023.

3.13.2 Floodplains

Executive Order 11988 directs federal agencies to “take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains...”⁴³

DOT Order 5650.2, *Floodplain Management and Protection*, contains DOT’s policies and procedures for implementing Executive Order 11988. Per DOT Order 5650.2, “Federal agencies are directed to avoid conducting, allowing, or supporting actions on the base [100-year] floodplain unless the agency [FAA] finds that base floodplain is the only practical alternative location...”⁴⁴

Executive Order 13690, *Establishing a Federal Flood Risk Management Standard and Process for Further Soliciting and Considering Stakeholder Input*, was signed in 2015 and established a Federal Flood Risk Management Standard (FFRMS) to address current and future flood risk.⁴⁵ FFRMS increases the resilience of federally funded projects by considering changes in future flood risk to ensure projects last as long as intended.

EO 13690 was revoked in 2017 but reinstated through EO 14030, *Climate-Related Financial Risks*, which “articulates a policy to advance the disclosure of climate-related financial risk and act to mitigate that risk and its drivers while achieving a net-zero emissions economy by 2050.” EO 14030 clarifies that FFRMS and guidelines for floodplain management under EO 11988 remain in effect.

Portions of the DSA are located within the 100-year floodplain boundaries as indicated on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Panels 24003C0040E and 24003C0041E for Anne Arundel County, Maryland, dated October 16, 2012. **Figure 3-10** shows the 100-year (one percent annual chance flood) floodplain boundaries located along Kitten Branch within the DSA.

⁴³ Executive Order 11988-Floodplain Management, May 24, 1977, Section 1.

⁴⁴ Department of Transportation Order 5650.2, *Floodplain Management and Protection*, 4/23/79, pp. 1-2.

⁴⁵ EO 13690 was signed on January 30, 2015, revoked by EO 13807 on August 15, 2017, and reinstated by EO 14030 on May 25, 2021.

The FFRMS requires agencies to identify floodplains using one of the following approaches for establishing the flood elevation: (1) Climate Informed Science Approach (CISA); (2) Freeboard Value Approach; or (3) 500-year Floodplain Approach. Because the 500-year floodplain is not designated with the DSA, the Freeboard Value Approach (FVA) was utilized to identify the flood elevation. The FVA considers the flood hazard area that results from adding 2-feet to the base flood elevation (BFE) for non-critical actions or 3-feet for critical actions. Anne Arundel County provided floodplain mapping data includes the BFE along Kitten Branch within the DSA. The floodplain illustrated in Figure 3-10 shows the flood hazard area identified using the FVA.

3.13.3 Surface Waters

BWI Marshall Airport and the DSA are located within two watersheds: the Baltimore Harbor watershed (Maryland 8-digit watershed number 02130903) and the Patapsco River Lower North Branch watershed (Maryland 8-digit watershed number 02130906). The Airport sits on a low peak in the landscape. Several small intermittent and ephemeral streams have their sources on the Airport, draining radially from the center. Most of the headwaters of these streams have been graded over or incorporated into the Airport drainage system as the Airport has developed and expanded over the years. There are no tidal waters within the DSA.

3.13.3.1 Stormwater

MAA has developed and maintains the *BWI Marshall Airport Stormwater Institutional Management Plan* (IMP). The IMP includes an Existing Conditions and Future Conditions report, which analyze stormwater runoff quantities by subwatershed. The latest Existing Conditions IMP was approved in January 2015. The Future Conditions report provides conceptual best management practice (BMP) designs for future proposed projects to meet Maryland stormwater regulations for quality and quantity. The Future Conditions IMP was approved in June 2017. As part of the IMP, MAA maintains water quality credit tables by subwatershed at BWI Marshall Airport. *Appendix E, Attachment 2, Stormwater Management*, details the available water quality credits by subwatershed affected by the Proposed Action. As shown on **Figure 3-9**, there are stormwater management ponds and USACE jurisdictional ponds located at the Airport, some of which treat stormwater runoff from the DSA.

As required by the FAA for airports of its size, MAA maintains a National Pollutant Discharge Elimination System (NPDES) permit for stormwater runoff at BWI Marshall Airport. In Maryland, NPDES permits are authorized by MDE.

3.13.3.2 TMDLs

Total Maximum Daily Loads (TMDLs) are required under the Clean Water Act of 1972 (CWA) and are used as a tool for implementing State water quality standards (WQs). “A TMDL establishes the maximum amount of an impairing substance of stressor that a waterbody can assimilate and still meet WQs and allocates that load among pollution contributors.”⁴⁶ Estuaries of Baltimore Harbor watershed have TMDLs for nitrogen, phosphorus, pesticides (Chlordane), and sediment/total suspended solids (TSS).⁴⁷ Non-tidal waters of the Patapsco River Lower North Branch watershed have TMDLs for E. coli

⁴⁶ MDE, Total Maximum Daily Loads (TMDL), [Total Maximum Daily Loads \(TMDL\) \(maryland.gov\)](https://www.maryland.gov/npdes/total-maximum-daily-loads-tmdl/).

⁴⁷ MDE, TMDLs and Water Quality Plans for the Baltimore Harbor Watershed, [Baltimore Harbor \(maryland.gov\)](https://www.maryland.gov/npdes/baltimore-harbor-tmdl/), accessed 2/5/24.

(fecal bacteria) and sediment/TSS.⁴⁸ Additionally, BWI Marshall Airport is part of the Chesapeake Bay TMDL. The Chesapeake Bay TMDL established limits for nitrogen, phosphorus, and sediment/TSS.⁴⁹

3.13.3.3 PFAS

The EPA issued a proposed National Primary Drinking Water Regulation for six PFAS on March 14, 2023, which would regulate PFAS as contaminants under the Safe Drinking Water Act (SDWA), including setting health-based Maximum Contaminant Level Goals for PFAS. The EPA submitted the final PFAS regulation for interagency review in the winter of 2023. This final rule considers public comments and EPA will issue the final rule after interagency review concludes.⁵⁰

3.13.3.4 Waters of the U.S.

The term “waters of the United States” applies to the jurisdictional limits of the authority of USACE under the CWA. Table 3.9 summarizes the streams that qualify as WOTUS within the DSA.

3.13.4 Groundwater

Two aquifers, the Patapsco and the Patuxent, have been identified to lie beneath BWI Marshall Airport. Groundwater recharge for both the Patuxent and Patapsco aquifers is primarily through precipitation or stream recharge flow in their outcrop areas.

BWI Marshall Airport is not located over an EPA designated sole source aquifer. The closest sole source aquifer is the Piedmont Aquifer located 25 miles west of the Airport.

3.14 Past, Ongoing and Reasonably Foreseeable Projects

The recently revised *CEQ Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (40 CFR § 1508.1(g)) requires effects or impacts that are reasonably foreseeable and have a reasonably close causal relationship to the Proposed Action, including those effects that occur at the same time and place as the Proposed Action, and effects that occur later in time or place removed from the Proposed Action, be addressed as part of the NEPA process.

A review of several information sources was conducted to determine past, present, and reasonably foreseeable development actions at BWI Marshall Airport and the surrounding area. The primary source of information used is the BWI Marshall ALP, which identifies multiple phases of improvements needed at BWI Marshall Airport to comply with FAA design standards and meet projected demand. Sources for off-airport projects are summarized in *Section 3.14.2, Off-Airport Projects*.

The analysis of cumulative impacts in this EA considers the development actions, both on and off the Airport, that are related in terms of time or proximity. The construction activities associated with the Proposed Action are anticipated to occur between 2025 and 2029. Past (2020-2022), current (2023), and future (2024-2034)⁵¹ projects in the vicinity of the Proposed Action are considered for cumulative impacts.

⁴⁸ MDE, TMDLs and Water Quality Plans for the Lower North Branch Patapsco River, [Lower North Branch Patapsco River \(maryland.gov\)](https://www.maryland.gov), accessed 2/5/24.

⁴⁹ USEPA, Chesapeake Bay TMDL, [Chesapeake Bay Total Maximum Daily Load \(TMDL\) | US EPA](https://www.epa.gov), accessed 2/5/24.

⁵⁰ USEPA, Proposed PFAS National Primary Drinking Water Regulation, [Per- and Polyfluoroalkyl Substances \(PFAS\) | US EPA](https://www.epa.gov), accessed 11/2/23.

⁵¹ Future project years incorporate all Proposed Action project construction years plus five years following implementation.

3.14.1 On-Airport Projects

MAA is responsible for the planning, design and construction of various projects on BWI Marshall Airport property intended to improve the functionality of the Airport as well as maintain its economic vitality. The BWI Marshall Airport ALP (November 2022) identifies proposed Phase 1, 2 and 3 projects to address long-term needs at the Airport. Additional sources of information for on-airport projects include Maryland's FY 2023-2028 Consolidated Transportation Program and on-going BWI Marshall Airport planning updates. **Table 3.10** contains a list of recently completed, current and future projects that occur between 2020 and 2034, to qualitatively assess potential cumulative impacts for this project.

Table 3.10. BWI Marshall Airport On-Airport Cumulative Projects

Time	Project Name
Past (2020-2022)	Midfield Cargo Area Improvements
	Concourse A Improvements (Phase II)
	SWA Operations and University Relocation
	Taxiway T2 Connector (between Taxiways T-P)
	Hourly Garage Stormwater Pumps
	Long Term Lot A Culvert Replacement
	Taxiway T Reconstruction – Phase 1
	Midfield Vehicle Service Road Between Cargo G and Gate N
	Hourly Garage 6th Level Pedestrian Ramps
	RTR Relocation and Primary Windcone Installation
	Taxiway F Relocation – Phase 1, Segments 1 and 2
Current/ On-going (2023)	Electric Bus Charging Infrastructure
	Long Term Lot B Pavement Rehabilitation
	Airline Maintenance Facility
	Concourse A/B Connector and Baggage Handling System
	BGE Feeders and Substation Upgrades
	Taxiway F Relocation – Phase 2
	Airfield Lighting Vault Relocation
	Taxilanes N & N1 Reconstruction
	North Fuel Farm (Fuel Storage Tank Additions)
	Concourse D/E Roof Repairs
	MDTA Police Relocation to Building #113, Terminal Substation and Salt Dome Relocation
	Glycol Dump Relocation
	BWI AOA Fence Hardening
	Pedestrian Walkway Joint Repairs
Terminal Restroom Expansions (P168)	

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Time	Project Name
Near-Term Future (starting by 2025)	Existing ALV Demolition and Infill Pavement
	Glycol Dump Relocation to Glycol Storage Tank Site
	Taxiway T Reconstruction – Phases 2 & 3
	Lower-Level Roadway Lighting Improvements
	BC Alleyway Reconstruction & C Apron Reconstruction
	Concourse DX/DY Apron Pavement Rehab
	Electrical Airport Roadway Signage Improvements
	Group V Aircraft and GSE Parking Lot Conversion
	Taxiway F Relocation –Phase 3
	Concourse A-B Roof Replacement
	Passenger Boarding Bridge Replacements
Mid-Term Future ¹ (2026-2030)	Second FBO (P7)
	ARFF Expansion Bays (P10)
	Runway Deicing Storage and Access Road (P13)
	Hourly Garage Expansion (P37)
	Airport Maintenance Complex (P30)
	Glycol Storage/Truck Staging Relocation (P40)
	Snow Dump Maintenance (P41)
	Fire Training Facility (P45)
	Vehicle Service Station (P46)
	Concourse DY 2-Gate Expansion (P48)
	Midfield Fuel Farm Improvements (P62)
	Relocated ASDEX RU-16 (P67)
	Taxicab Support Building (P148)
	Taxiway R Relocation
	Relocate Taxiway H Connector
	28 Deicing Pad Expansion
	15R Deicing Pad Expansion
	Building 113 Demolition
	Taxiway U3 - Phase 1
	International Terminal Area Taxiway Fillets/Shoulders
	Relocate Taxiways K & L
	Isolation/RON Apron Reconstruction
	New Sky Bridge C
Terminal Roadway Widening and Access Improvements	
Taxiway V Relocation	
Upper Level Roadway Widening at Concourse C	
VSR Connector	

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Time	Project Name
Long-Term Future ² (2031-2034+)	Terminal A Expansion (P3A)
	Concourse E (2-Gate Expansion) (P4)
	CUP Expansion (P8)
	Northrop-Grumman Hangar (P9)
	Airline Maintenance Facility (P12)
	Limo/Bus/Sharing Ride/Staging (P22)
	Gas Station (P23)
	Terminal Response Fire Station (P24)
	Taxicab Staging (P26)
	Relocated Substations (P29)
	MDTA Police Station (P34)
	Daily Garage Expansion (P35)
	Triturator (P38)
	Pump Station (P39)
	Light Rail Station (P42)
	Fueling Station (P49)
	GRV Dump (15R) (P68)
	MAGLEV Shelters (P158/159)
	Concourse D Throat Expansion (P160)
	Concourse DY Widening (P161)
	Concourse D Wedge (P162)
Terminal B/C Expansion (P169)	
Concourse C Expansion (P170)	
Terminal E/F (P171)	

Notes: Construction years may vary as airport planning is ongoing. Project list does not include interior building projects (i.e., renovations, upgrades, etc.) or equipment upgrades and replacements.

¹ Mid-term future projects include remaining ALP Phase 1 projects not already constructed, under construction or planned for in the near-term. Many of these projects were environmentally reviewed under the 2020 Updated BWI Marshall Airport EA & Section 4(f) Determination, approved November 2020.

² Long-term future projects include ALP Phase 2 projects not already constructed, under construction or planned for in the near or mid-term.

³ Project identifiers (***) align with November 2022 ALP project numbers.

Sources: MAA staff, ALP Phase 1 and 2 projects (November 2022), 2020 Updated BWI Marshall Airport EA projects.

3.14.2 Off-Airport Projects

In considering cumulative impacts, off-airport projects that are planned for implementation in proximity to BWI Marshall Airport were also evaluated. Projects discussed in this section are limited to those within two miles of the Airport, centered around the main terminal area. The projects listed are reasonably foreseeable based on state and local planning documentation. **Figure 3-11** illustrates the cumulative impact study area and the locations of the off-airport projects summarized below.

To identify major transportation and development projects for the assessment of cumulative impacts, a variety of information sources were reviewed. Maryland's FY 2024-2029 Consolidated Transportation Program (including the MDOT CTP FY2023-2028 interactive project map), the Anne Arundel County 2040 BWI/Linthicum Small Area Plan (2021), the Anne Arundel County Plan2040 (2021), Walk & Roll Anne Arundel! (Anne Arundel County Pedestrian and Bicycle Master Plan 2023 Plan Update), Baltimore Metropolitan Council (BMC) 2024-2027 Transportation Improvement Plan (TIP), and Baltimore Metropolitan Council Resilience 2050: *Adapting to the Challenges of Tomorrow* (2023) were reviewed to identify projects that were included for capital improvement funding.

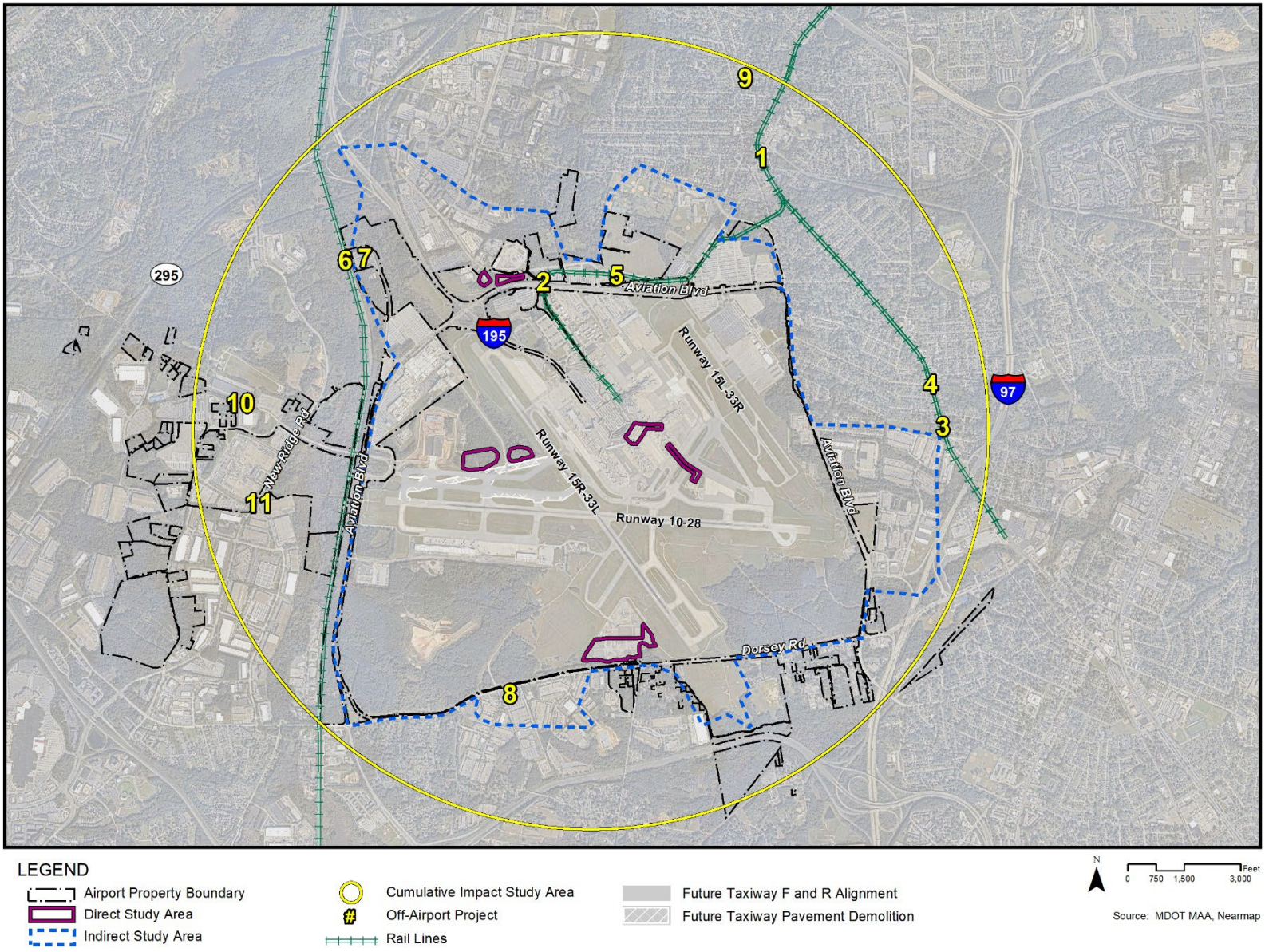
Maryland's FY 2024-2029 Consolidated Transportation Program⁵²

Maryland Transit Administration (MTA)

1. LTR Group 1S Rehabilitation (2022-2027)
 - Consists of repairs and replacements of trackwork throughout the Light Rail system, including switch ties, grade crossings, interlocking, and restraining rail curves. These repairs and replacements throughout the Light Rail system are required to reduce system failures and improvement of reliability.
2. LTR Group 2S Rehabilitation (2022-2027)
 - See Project #1 description.
3. LTR Group 3S Rehabilitation (2022-2027)
 - See Project #1 description.
4. LTR Group 5S Rehabilitation (2022-2027)
 - See Project #1 description.
5. LTR Group B1 and B2 Rehabilitation (2022-2027)
 - See Project #1 description.
6. MARC – BWI 4th Track (Design: 2023-2025, assume construction complete by 2030)
 - Consists of various station improvements such as high-level platforms and canopies, assessable entrances, and station amenities at multiple MARC locations, both new and existing. This project is needed to maintain MARC assets in state of good repair and to better customer service.
7. MARC – BWI Rail Station Upgrades and Repairs (2018-2023)
 - Structural Improvements to the BWI Rail Station parking garages and improvements to the existing bus loop, storm water facility, and station including passenger-friendly amenities. These repairs and upgrades are required to preserve the BWI Rail Station.

⁵² MDOT, Draft FY 24 – FY 29 CTP and Final FY 23 – FY 28 CTP Interactive Map, [Capital Programming - MDOT \(maryland.gov\)](https://www.mdot.gov/capital-programming)

Figure 3-11. Off-Airport Projects



Maryland State Highway Administration (SHA)

8. Statewide CHART Dynamic Messaging Sign (DMS) Deployment- Phase 5 and 6 – Under construction
9. W Maple Road – Hammonds Ferry Road to MD 648E (2021)
 - This project resurfaced W. Maple Road from Hammonds Ferry Road to MD 648E.

Baltimore Metropolitan Council 2024-2027 TIP⁵³

10. Hanover Road Corridor Improvement:
 - This project is to provide design and right-of-way acquisition of a section of Hanover Road on a new alignment between Ridge Road and New Ridge Road in Hanover. This project is scheduled to be complete by 2030.

Walk and Roll Anne Arundel!⁵⁴

11. BWI Trail to Arundel Mills Trail Connector:
 - This project will connect the BWI Trail to the Arundel Mills Trail. A shared-use path is recommended to provide access on Stoney Run Road, New Ridge Road, Ridge Road, and Arundel Mills Boulevard. This connection will not only provide important access between existing trails, but it will also help people reach essential destinations, such as Arundel Mills Mall, a major shopping and jobs center. No specific timeline is provided by the County but this project is listed as a “high priority” project for the County.

Baltimore Metropolitan Council Resilience 2050: Adapting to the Challenges of Tomorrow (2023)⁵⁵

The BMC Resilience 2050 Plan maps out major capital expansion and system preservation projects, both roadway and transit, planned for the 2028-2039 and 2040-2050 timeframe. There are no projects identified within the cumulative impact study area planned in the 2028-2039 horizon.

Anne Arundel County Plan2040 (2021)⁵⁶

Plan2040 identifies policy areas and planning goals for the County. While specific projects are not included, the Plan identifies BWI Marshall Airport and the areas directly west and south as “*Critical Economic Policy Area*: Existing or planned regional-scale destinations, employment centers, or areas supporting the County’s major economic drivers where development, redevelopment and revitalization are encouraged. These areas are primarily industrial, commercial, and mixed land uses within the Priority Funding Area, and have flexible land use policies to facilitate business growth and job creation.”

Additionally, the areas to the east and north of the Airport are identified as “*Neighborhood Preservation Policy Area*: Existing residential communities and natural areas (may include local commercial and industrial uses) that are not intended for substantial growth or land use change but may have specific areas targeted for revitalization. Development is limited to infill, the addition of accessory dwelling units, and redevelopment that must be compatible with the existing neighborhood character. Public infrastructure exists but may need capacity improvements.”

⁵³ Baltimore Metropolitan Council, 2024-2027 TIP, Projects by Anne Arundel County, [Baltimore Metropolitan Council \(baltometro.org\)](https://www.baltimoremetro.org/)

⁵⁴ Anne Arundel County, Walk & Roll Anne Arundel!, January 2023, [walk-and-roll.pdf \(aacounty.org\)](https://www.aacounty.org/walk-and-roll.pdf), pg. 38.

⁵⁵ Baltimore Metropolitan Council Resilience 2050: Adapting to the Challenges of Tomorrow, Chapter 7, Major Capital Projects, [Resilience 2050 Chapter 7 \(baltometro.org\)](https://www.baltimoremetro.org/resilience-2050-chapter-7)

⁵⁶ Anne Arundel County Plan2040, Adopted May 3, 2021, [Plan2040 Volume I Anne Arundel County General Development Plan | Anne Arundel County Government \(aacounty.org\)](https://www.aacounty.org/plan2040-volume-1).

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Plan2040 also includes a Healthy Economy (HE) Goal for BWI Marshall Airport and the surrounding area:
“HE4: Protect the future growth potential of BWI Airport. Promote development and redevelopment in the vicinity of BWI Airport that is compatible with the airport and will not restrict its future growth potential.”

Chapter 4: ENVIRONMENTAL CONSEQUENCES

The potential for environmental effects resulting from implementation of the Proposed Action and No Action Alternative are presented in this chapter. The alternatives are discussed in *Chapter 2, Alternatives*, of this EA. Potential impacts are discussed in relation to their respective Study Areas by environmental resource category, as defined in *Chapter 3, Affected Environment*. Potential cumulative impacts resulting from the incremental effects of the alternatives when added to the effects of past, present, and reasonably foreseeable future actions are also analyzed in this chapter. Where necessary, potential mitigation measures are discussed that would reduce or eliminate anticipated environmental impacts for each of the alternatives.

In accordance with guidance provided in FAA Orders 5050.4B, National Environmental Policy Act Implementing Instructions for Airport Actions, and 1050.1F, *Environmental Impacts: Policies and Procedures*, environmental resources not present within the Study Area would not be affected by the alternatives, and therefore are not discussed within this chapter. These include Section 6(f), Farmlands, Noise, and Wild and Scenic Rivers (Water Resources).

4.1 Air Quality

This section presents the findings of an air quality analysis that was conducted to evaluate the proposed improvements at BWI Marshall Airport. The detailed air quality analysis is found in *Appendix B, Air Quality and Climate*.

4.1.1 Methodology

Emissions inventories were prepared to evaluate pollutant or pollutant precursor emissions associated with construction of the Proposed Action for years 2025 and 2027-2029.⁵⁷ Using the projected construction schedule, emissions were estimated from construction activity levels derived from the Airport Construction Emissions Inventory Tool (ACEIT) and emission factors obtained from OFFROAD2017 (non-road equipment) and EPA's Motor Vehicle Emissions Simulator (MOVES, Version 3). The emissions inventories were compared to NAAQS general conformity thresholds.⁵⁸ For more detailed information regarding the methodology used for the air quality conformity analysis, refer to *Appendix B*.

The Proposed Action Alternative would not increase flights, passenger loads, operational procedures, or vehicular traffic⁵⁹. Without the proposed improvements, operations would continue to grow as there are no constraints to continued growth, i.e., the airfield, general aviation, terminal, landside, and support facilities can accommodate additional operations to an extent without improvements. There would be no

⁵⁷ The removal of LOS obstructions between the existing and new ATCT and future Taxiway F, as well as the Part 77 obstructions would occur in 2025. Construction of the Proposed Action projects (new ATCT, FAA office space, new hotel, and utility relocations) would occur from 2027 through 2029. There are no construction emissions associated with the supplemental ATCT upgrades as they are all internal to the existing ramp tower and construction worker trips to and from the worksite were considered coincidental to other construction efforts.

⁵⁸ 40 CFR § 93 – Determining Conformity of Federal Actions to State or Federal Implementation Plans, Section 153, Applicability.

⁵⁹ It is expected (through market research) that the majority of hotel patrons will be arriving on aircraft or using the airport for travel (e.g., staying at the hotel for an early morning flight) and any hotel event vehicular traffic would be insignificant in comparison to typical airport traffic. Hotel employees are expected to be accommodated in Airport employee parking areas and would therefore not increase congestion (i.e., emissions) in the terminal loop roadway.

difference in operational emissions between the No Action and Proposed Action Alternatives and therefore, an operational emissions analysis was not prepared.

4.1.2 Thresholds of Significance

As stated in Exhibit 4-1 of FAA Order 1050.1F, an action would cause significant air quality impacts if “*the action would cause pollutant concentrations to exceed one or more of the NAAQS, as established by the USEPA under the Clean Air Act, for any of the time periods analyzed, or to increase the frequency or severity of any such existing violations.*”

4.1.3 Impact Analysis

4.1.3.1 Proposed Action Alternative

Construction emissions represent the only air pollutant emissions associated with the Proposed Action Alternative. **Table 4.1** presents the construction emission inventories for the years of proposed construction (2025-2029). The level of construction related emissions of CO, nitrogen oxides (NO_x), volatile organic compounds (VOC), SO₂, PM_{2.5}, and PM₁₀ would vary by pollutant and year and are estimated based on a preliminary construction schedule. Construction-related air emissions would be short-term in nature and associated with air pollutants emitted by construction equipment and construction worker vehicles. As shown in **Table 4.1**, construction emissions would not exceed *de minimis* levels in any construction year. Note that even if all construction was completed within a single calendar year, emissions would still fall below *de minimis* levels. See *Appendix B* for details.

As a result, the General Conformity regulations do not require a conformity determination and it can be presumed that the emissions would not cause or contribute to a violation of or exceed the NAAQS for O₃ (precursors NO_x and VOC) or SO₂ and therefore would not result in a significant impact. An emissions dispersion analysis is not necessary to demonstrate emissions would meet the NAAQS for all criteria pollutants.

Table 4.1. Construction Emissions for the Proposed Action Alternative (tons per year)

Year	CO	NO _x	VOC	SO ₂	PM _{2.5}	PM ₁₀
2025	5	4	1	<0.1	0.2	0.2
2027	75	7	5	<0.1	0.3	0.1
2028	81	8	5	<0.1	0.3	0.2
2029	41	4	3	<0.1	0.2	0.1
Total	201	24	13	0.1	1	0.6
<i>De Minimis Levels</i>	--	100	50	100	--	--
<i>Exceed De Minimis?</i>	--	No	No	No	--	--

Notes: Although Pb is a criteria pollutant, it was not evaluated because the project would have no impacts on lead emissions. No construction is expected in 2026. Totals may not sum due to rounding.

Sources: HNTB analysis, October 2023. (See *Appendix B, Air Quality and Climate*).

4.1.3.2 No Action Alternative

Under the No Action Alternative, the proposed improvements would not be constructed. However, the existing LOS vegetation obstructions and Part 77 obstructions would still be removed. **Table 4.2** summarizes the limited construction emissions associated with the No Action Alternative.

Table 4.2. Construction Emissions for the No Action Alternative (tons per year)

Year	CO	NO _x	VOC	SO ₂	PM _{2.5}	PM ₁₀
2025	5	4	1	<0.1	0.2	0.2
<i>De Minimis Levels</i>	--	100	50	100	--	--
<i>Exceed De Minimis?</i>	--	No	No	No	--	--

Note: Although Pb is a criteria pollutant, it was not evaluated because the project would have no impacts on lead emissions.

Sources: HNTB analysis, October 2023. (See *Appendix B, Air Quality and Climate*).

4.1.4 Mitigation

There are no mitigation measures required for the project because the project-related emissions would not exceed the CAA/General Conformity *de minimis* levels for O₃ or SO₂.

4.1.5 Permitting

As stated in *Chapter 3, Affected Environment*, certain stationary source air emissions from BWI Marshall Airport are regulated under the airport's current Title V permit.⁶⁰ Any additional stationary source air emission sources that are created as a result of the Proposed Action Alternative projects would be subject to requirements under this permit.

4.2 Biological Resources

This resource category includes consideration of impacts to threatened and endangered species, and other biological resources including migratory birds within the DSA.

4.2.1 Methodology

MAA consulted with MDNR WHS and ERP, and USFWS (see *Appendix C*) to document the presence of any state- or federally-listed threatened or endangered species as well as the presence of any critical habitats designated for those species. No federally designated critical habitat occurs in the DSA. However, both the NLEB (endangered) and monarch butterfly (candidate species) were identified as potentially occurring within the DSA (*Appendix C, Attachment 1*). On October 10, 2023, USFWS issued a concurrence letter (*Appendix C, Attachment 2*) indicating that the Proposed Action "...may affect but is not likely to adversely affect" the NLEB; therefore, no additional consultation with USFWS regarding the NLEB is required.⁶¹ As a candidate species for listing, no critical habitat has been designated for monarch butterfly and there are generally no Section 7 requirements for the species at this time. It was noted during field investigations for forest habitats that the majority of the DSA is not conducive habitat for the monarch butterfly's host plant, milkweed species (*Asclepias* spp.), thus impacts to the monarch butterfly are not expected.

Impacts associated with vegetative obstruction removals were quantified in acres and individual tree obstructions.

4.2.2 Thresholds of Significance

Per the FAA Order 1050.1F Desk Reference, "a significant impact to biological resources would occur when: The USFWS or the National Marine Fisheries Service determines that the action would be likely to

⁶⁰ The current Title V permit expired on January 31, 2024. MAA applied for a new Title V permit and is administratively covered by the old permit until the new permit is issued by MDE.

⁶¹ The current NLEB determination key is valid through April 1, 2024, and will need to be resubmitted if the obstruction removal has not taken place prior to that date.

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.

4.2.3 Impact Analysis

4.2.3.1 Proposed Action Alternative

Under the Proposed Action Alternative, Part 77 and existing and proposed ATCT LOS vegetative obstructions would be removed. **Table 4.3** summarizes the impacts to forest resources associated with the Proposed Action Alternative by forest stand. Vegetation west of Taxilane W (existing and proposed ATCT LOS obstructions) is proposed to be cleared and grubbed within the DSA, with the exception of the forested wetland area (WL4) where individual obstructions are proposed to be individually hand felled and left in place. Obstructions east of Taxilane W (Part 77 obstructions) are all proposed to be individually hand felled and left in place. In areas where trees would be individually hand felled, the following actions will be taken to protect sensitive areas:

1. Access paths will be explicitly designed in order to minimize wetland and buffer impacts to the maximum extent practicable,
2. Tree obstructions will be cut by hand with chainsaws and the trees left where they land to decompose, as the use of heavy machinery would significantly increase impacts to vegetation and soils; and
3. Tree stumps will be left in place in order to avoid soil disturbances caused by grubbing.

Table 4.3. Proposed Action Alternative Impacts to Vegetation

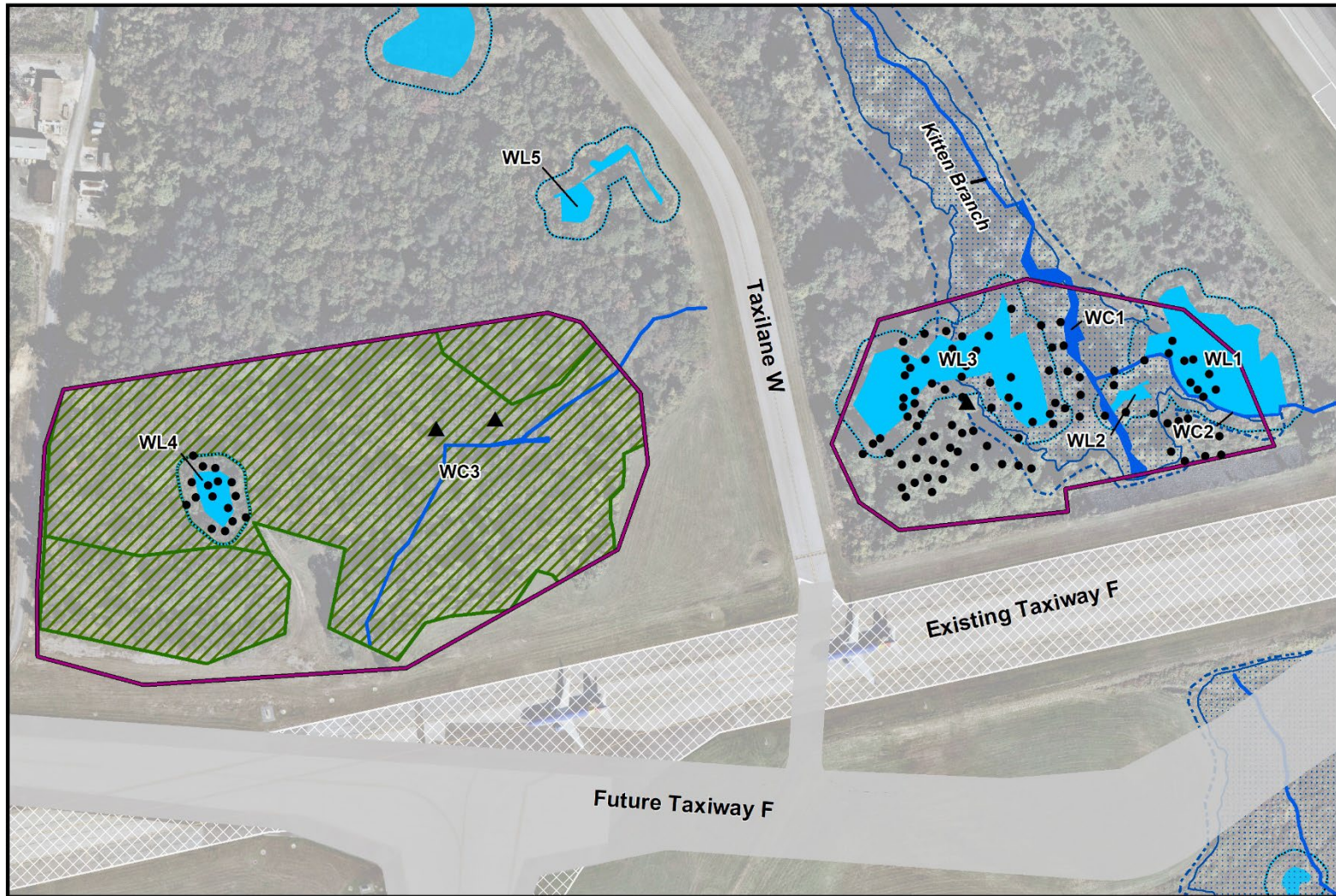
Project	West of Taxilane W		East of Taxilane W	Specimen Trees Removed
	Forest Clearing (Acres)	Forest Clearing (sq. ft.)	Individual Tree Clearing	
Existing and Proposed ATCT LOS Obstructions	7.7	337,100	16	2
Part 77 Obstructions	—	—	94	1
TOTAL	7.7	337,100	110	3

Source: CRI analysis, 2023.

As illustrated in **Figure 4-1**, the Proposed Action Alternative would result in approximately 7.7 acres (337,100 sq. ft.) of tree clearing, and 110 individual tree obstructions cut down. Impacts to wetlands, wetland buffers, streams, and floodplains are discussed in *Section 4.13, Water Resources*.

The Proposed Action Alternative would not cause long-term or permanent loss of state or federally-listed plant or wildlife species. The removal of larger tracts of trees west of Taxilane W would reduce wildlife attractants (habitat) on the Airport. For individual tree removals east of Taxilane W, trees will be left in place to return organic matter to the system.

Figure 4-1. Vegetation and Water Resource Impacts - Proposed Action Alternative



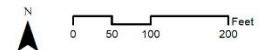
LEGEND

- Direct Study Area
- Hand Felled Vegetative Obstructions
- Clear and Grub Vegetative Obstructions
- Specimen Tree

Water Resources

- Wetlands with 25' Buffers
- Stream
- 100-Year Floodplain
- 100-Year Floodplain with 2' Added to Base Flood Elevation

- Future Taxiway Alignment
- Future Taxiway Pavement Demolition



Source: MDOT MAA, Nearmap, FEMA, Anne Arundel County

4.2.3.2 No Action Alternative

Under the No Action Alternative, Part 77 and existing ATCT LOS vegetative obstructions would be removed. **Table 4.4** summarizes the impacts to forest resources associated with the No Action Alternative. The same removal methods described under the Proposed Action Alternative would be utilized under the No Action Alternative. As illustrated in **Figure 4-2**, the No Action Alternative would result in approximately 5.4 acres (236,700 sq. ft.) of tree clearing, and 110 individual tree obstructions cut down.

Table 4.4. No Action Alternative Impacts to Vegetation

Project	West of Taxilane W		East of Taxilane W	Specimen Trees Removed
	Forest Clearing (Acres)	Forest Clearing (sq. ft.)	Individual Tree Clearing	
Existing ATCT LOS Obstructions	5.4	236,700	16	2
Part 77 Obstructions	—	—	94	1
TOTAL	5.4	236,700	110	3

Source: CRI analysis, 2023.

4.2.4 Mitigation

MAA calculated forest mitigation requirements by completing MDNR Forest Conservation Worksheets for individual projects. The Maryland FCA applies to any project over 40,000 square feet (regardless of whether forest resources are present). Mitigation requirements were calculated for the C-D Connector Program projects (including proposed ATCT and hotel) as well as the tree clearing projects and are presented in **Table 4.5**. See *Appendix C* for the Forest Conservation mitigation calculations. Per the FCA, mitigation is not required for Part 77 obstruction removal.

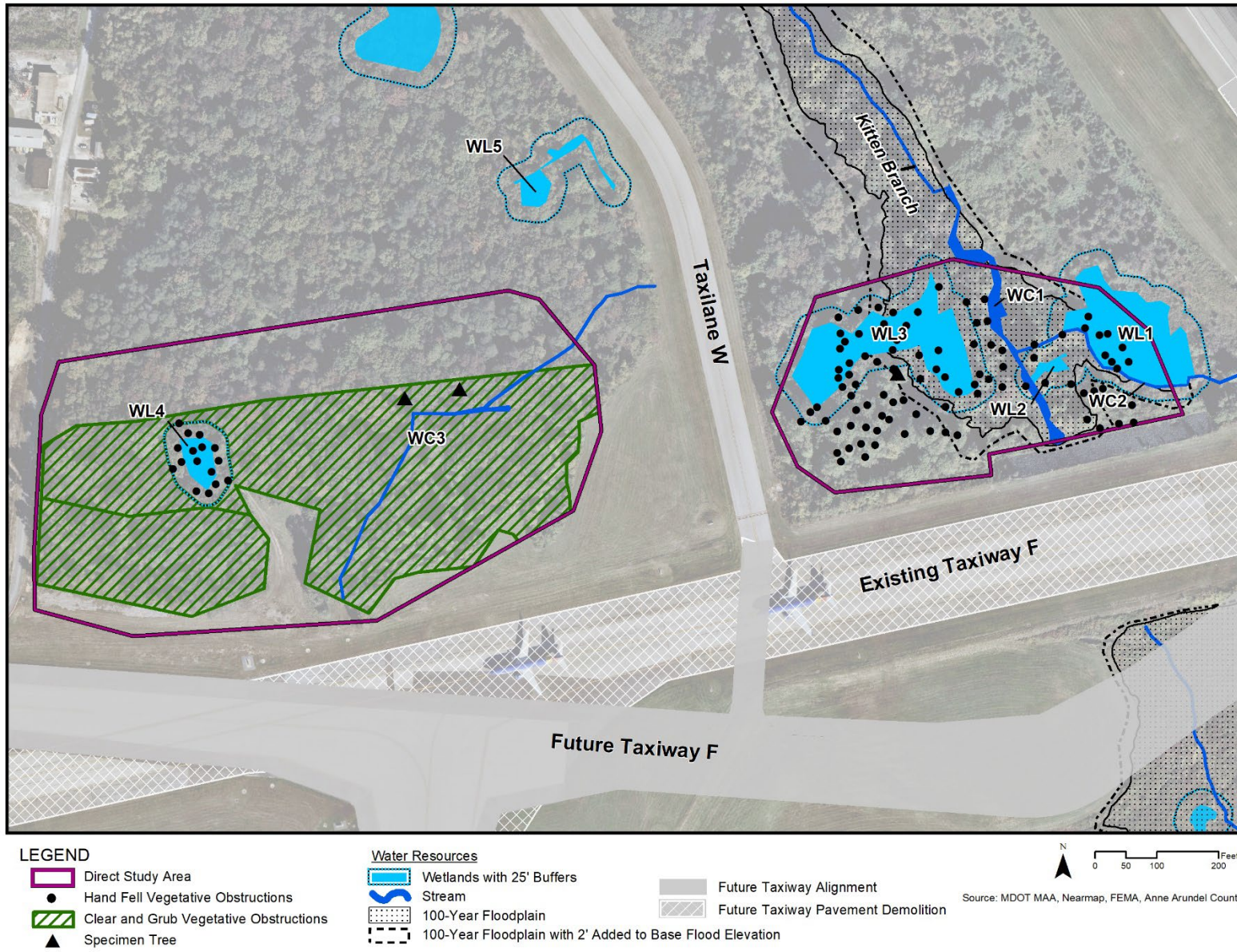
Table 4.5. Forest Mitigation Requirements

Project	LOD (acres)	Forest Clearing	Mitigation Requirements
<i>Proposed Action Alternative</i>			
C-D Connector/ATCT/Hotel ¹	2.5	0	0.4 acres (16,335 sq. ft.)
Existing & Proposed ATCT LOS Obstruction Removal	9.1	7.7	4.3 acres (186,437 sq. ft.)
Total	—	7.7	4.7 acres (202,772 sq. ft.)
<i>No Action Alternative</i>			
Existing ATCT LOS Obstruction Removal	9.1	5.4	2.9 acres (126,934 sq. ft.)

Note: ¹ C-D Connector/ATCT/Hotel project may be eligible for an FCA/FCP exemption under COMAR 08.19.01.04 section 16: "An activity on a previously developed area covered by impervious surface and located in the priority funding area."

Sources: Forest Conservation mitigation worksheets (*Appendix C*).

Figure 4-2. Vegetation and Water Resource Impacts - No Action Alternative



MAA will look to meet forest mitigation requirements onsite within the Stony Run Forest Conservation Easement area. If the required mitigation cannot be met onsite, mitigation credits will be purchased from an approved forest mitigation bank within the project watershed. The purchase of mitigation credits is a MDNR-approved method of mitigation for impacts to forests. Forest conservation worksheets (see Appendix C) were prepared to calculate the required mitigation for the ATCT LOS obstruction removal west of Taxilane W, as well as the C-D Connector Program projects. Based on the forest conservation worksheets, a total of approximately 4.7 acres (202,772 sq. ft.) and 2.9 acres (126,934 sq. ft.) of forest credits would be needed from a DNR-approved mitigation bank located within the project watershed for the Proposed Action and No Action Alternatives, respectively. At the time this EA was prepared, four forest mitigation banks in Anne Arundel County had available mitigation credits that far exceeded the amount needed for this Proposed Action. Specific mitigation credit details would be coordinated with DNR during the FCP approval process. Proof of credit purchase would be provided to DNR once the transaction is complete and prior to clearing the forest. With implementation of forest mitigation, impacts to forests under the Proposed Action and No Action Alternatives would be less than significant.

4.2.5 Permitting

FCPs will be submitted to MDNR Forest Service based on final design in order for MDNR to grant approval. As summarized in Table 4.5, the Proposed Action Alternative would include FCPs for the ATCT and Hotel as part of the larger C-D Connector and ATCT Program, and for existing and proposed ATCT LOS obstruction removal. The No Action Alternative would include an FCP for existing ATCT LOS obstruction removal.

4.3 Climate

There is presently a broad scientific consensus that GHGs associated with human activities are contributing to changes in the earth's atmosphere. These GHGs, brought about principally by the combustion of fossil fuels, decomposition of waste materials, changes in land uses, and deforestation, are linked to an increase in the earth's average temperature by means of a phenomenon called the "greenhouse effect." Review of GHGs will consider requirements of the CAA and *EO 13693, Planning for Federal Sustainability in the Next Decade*.

4.3.1 Methodology

GHG emission inventories were prepared for construction which is projected to occur in 2025 and between 2027 and 2029.⁶² Using the projected construction schedule, GHG emissions were estimated from construction activity levels derived from ACEIT and GHG emission factors obtained from OFFROAD2017 and EPA's MOVES (Version 3). For more detailed information regarding the methodology used for the climate analysis, refer to *Appendix B*.

The Proposed Action Alternative would not increase flights, passenger loads, operational procedures, or vehicular traffic. Without the proposed improvements, operations would continue to grow as there are no constraints to continued growth, i.e., the airfield, general aviation, terminal, landside, and support facilities can accommodate additional operations without improvements. There would be no difference in

⁶² The removal of LOS obstructions between the existing and proposed ATCT and future Taxiway F, as well as the Part 77 obstructions would occur in 2025. Construction of the Proposed Action projects (proposed ATCT, FAA office space, hotel, and utility relocations) would occur from 2027 through 2029. There are no construction emissions associated with the supplemental ATCT upgrades as they are all internal to the existing ramp tower and construction worker trips to and from the worksite were considered coincidental to other construction efforts.

operational GHG emissions between the No Action and Proposed Action Alternatives and therefore, an operational GHG emissions analysis was not prepared.

The GHGs inventoried were CO₂, CH₄, and N₂O. As is customary for GHG emissions inventories, the results are reported in units of MT of CO₂e, by source, on an annual basis. The GHG emission results were converted to CO₂e values using the Global Warming Potential (GWP) values of 1 for CO₂, 28 for CH₄, and 265 for N₂O, based on a 100-year period.⁶³ GWP values are relative measures of how much heat a GHG traps in the atmosphere when compared to carbon dioxide (e.g., CH₄ is 28 times as potent a GHG than CO₂).

On January 9, 2023, CEQ issued interim *National Environmental Policy Act Guidance on Consideration of Greenhouse Gas Emissions and Climate Change*. The guidance updates CEQ's 2016 guidance and explains how agencies should use best practices in their climate change analyses, including quantifying a project's reasonably foreseeable direct and indirect gross and net GHG emissions and monetizing the social cost of those emissions. In compliance with this guidance, the social cost of GHG (SC-GHG) emissions was calculated.

4.3.2 Thresholds of Significance

There are no airport-related federal standards for emissions of GHGs and no FAA-established significance threshold for Climate.

4.3.3 Impact Analysis

4.3.3.1 Proposed Action Alternative

Table 4.6 presents the construction CO₂e emissions for the project construction years. Emissions of CO₂e would increase due to construction activities during the years 2025 and 2027-2029. However, this would only be for the short term and, post-construction, the projects would not increase CO₂e emissions over those with the No Action Alternative.

Table 4.6. Construction Operations CO₂e Emissions for the Proposed Action Alternative

Year	CO ₂ e (MT per year)
2025	1,236
2027	8,557
2028	9,231
2029	4,722
Total	23,746

Note: MT = metric ton; CO₂e = carbon dioxide equivalent

Sources : HNTB analysis, October 2023 (See *Appendix B, Air Quality and Climate*).

Because the Proposed Action Alternative represents such a small amount of U.S. GHG emissions, and given the related uncertainties involving the assessment of such emissions regionally and globally, the incremental contribution of the Proposed Action Alternative to U.S. and global GHG emissions cannot be adequately assessed given the current state of the science and assessment methodology. However,

⁶³ IPCC, 2014: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, pg. 87.

since the Proposed Action Alternative would contribute GHGs only temporarily during construction, no significant permanent increase in GHGs would occur.

Table 4.7 summarizes the SC-GHG for the Proposed Action Alternative. SC-GHG is the monetary value of the net harm to society associated with adding GHG to the atmosphere in a given year. See *Appendix B* for additional details on the calculation of SC-GHG.

Table 4.7. SC-GHG for the Proposed Action Alternative

Year	MT CO ₂ e	5% Average	3% Average	2.5% Average	3% 95 th Percentile
2025	1,236	\$21,056	\$69,301	\$102,687	\$209,005
2027	8,557	\$154,166	\$505,023	\$736,084	\$1,506,190
2028	9,231	\$166,332	\$554,110	\$803,386	\$1,661,843
2029	4,722	\$89,800	\$288,142	\$415,658	\$864,216

Source: Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide, Interim Estimates under EO 13990, Interagency Working Group, February 2021.

4.3.3.2 No Action Alternative

Under the No Action Alternative, the proposed improvements would not be constructed. However, the existing LOS vegetation obstructions and Part 77 obstructions would still be removed. **Table 4.8** summarizes the limited GHG emissions associated with the No Action Alternative.

Table 4.8. Construction Operations CO₂e Emissions for the No Action Alternative

Year	CO ₂ e (MT per year)
2025	1,236

Note: MT = metric ton; CO₂e = carbon dioxide equivalent

Sources : HNTB analysis, October 2023 (See *Appendix B, Air Quality and Climate*)

Table 4.9 summarizes the SC-GHG for the No Action Alternative. SC-GHG is the monetary value of the net harm to society associated with adding GHG to the atmosphere in a given year. See *Appendix B* for additional details on the calculation of SC-GHG.

Table 4.9. SC-GHG for the No Action Alternative

Year	MT CO ₂ e	5% Average	3% Average	2.5% Average	3% 95 th Percentile
2025	1,236	\$21,056	\$69,301	\$102,687	\$209,005

Source: Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide, Interim Estimates under EO 13990, Interagency Working Group, February 2021.

4.3.4 Mitigation

As there are no FAA-established significance thresholds for GHG emissions, no mitigation measures are proposed. Estimated SC-GHG do not take into account actions that may be taken on the federal, state or local level to reduce GHG emissions, such as use of alternative fuel vehicles, recycling and reuse of materials, or use of sustainable building materials. Therefore, these estimates are provided for disclosure and context, and estimated costs may not actually result from the Proposed Action and No Action Alternatives.

4.4 Coastal Resources

Anne Arundel County and the DSA and ISA are within Maryland's coastal zone. As such, MAA is required to comply with the regulations set forth and administered by MDE and MDNR.

4.4.1 Methodology

A federal coastal zone consistency determination is prepared by MDE to determine whether the Proposed Action and No Action Alternatives are consistent with Maryland's CZMP.

4.4.2 Thresholds of Significance

There is no established threshold of significance for coastal resources. However, FAA Order 1050.1F provides factors to consider in determining whether the threshold of significance for coastal resource impacts would be exceeded, including:

- Inconsistency with state coastal zone management plan;
- Impacts a coastal barrier resource system unit or coral reef ecosystem;
- Causes risk to human safety or property; or
- Causes adverse impacts to the coastal environment that cannot be satisfactorily mitigated.

4.4.3 Impact Analysis

4.4.3.1 Proposed Action Alternative

MAA submitted a request to the MDE Federal Consistency Coordinator on February 16, 2024, seeking a Coastal Zone Consistency determination for the Proposed Action Alternative projects, pursuant to Section 307 of the CZMA. See *Appendix F, Coastal Resources* for the Coastal Zone Consistency Package.

4.4.3.2 No Action Alternative

The No Action Alternative includes the removal of existing LOS obstructions and Part 77 obstruction, which are within the Maryland Coastal Zone. These two projects are included within the Proposed Action Alternative, and therefore included as part of the Coastal Zone Consistency Package (see *Appendix F*) provided to MDE on February 16, 2024.

4.4.4 Mitigation

Mitigation measures are typically provided as part of MDE's Coastal Zone Consistency Determination. Mitigation measures for coastal zone consistency are required for potential impacts to forests, wetlands, and floodplains. Impact analyses and discussion of mitigation for these resources are detailed in *Sections 4.2 and 4.13* respectively.

4.5 Department of Transportation Act: Section 4(f) Resources

This section analyzes the potential for the alternatives to impact DOT Section 4(f) resources within the DSA and ISA, as identified in *Chapter 3, Section 3.6, Section 4(f) Resources*.

4.5.1 Methodology

The potential for the alternatives to result in a physical use, constructive use, visual impact, or temporary occupancy of DOT Section 4(f) resources was assessed. A physical use would result from a permanent or temporary taking of a DOT Section 4(f) resource, such as through purchase of land or alteration of property. A constructive use would result from an action that does not physically take a property but impairs the attributes of a property that qualify it for protection under DOT Section 4(f), such as impacts related to noise, air pollution or access restrictions.

4.5.2 Thresholds of Significance

FAA Order 1050.1F provides the FAA's significance threshold for Section 4(f) properties as the following: "A significant impact would occur when: *The action involves more than a minimal physical use of a Section 4(f) resource or constitutes a 'constructive use' based on an FAA determination that the aviation project would substantially impair the Section 4(f) resource. Resources that are protected by Section 4(f) are publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, and publicly or privately owned land from an historic site of national, state, or local significance. Substantial impairment occurs when the activities or attributes of the resource that contribute to its significance or enjoyment are substantially diminished.*"⁶⁴

4.5.3 Impact Analysis

4.5.3.1 Proposed Action Alternative

There are no DOT Section 4(f) resources within the DSA. DOT Section 4(f) resources in the ISA are shown on Figure 3-4, and include two parks, two recreation areas and one historic site. Friendship Park – Thomas A. Dixon Observation Area, located south of the Runway 33L end, and Andover Park/Equestrian Center, located north of the Airport at the corner of Andover Road and Main Avenue, are both within the viewshed of the new ATCT. Lindale Middle School is considered a DOT Section 4(f) resource for this analysis because of the sports fields considered public recreation areas. The school is adjacent to Andover Park, and also within the viewshed of the new ATCT. Some sections of the BWI Trail are also within the ISA. The proposed ATCT and hotel would be visible from multiple areas of the BWI Trail. The parks, Lindale Middle School, and parts of the BWI Trail currently have a view of the existing ATCT, therefore the change in view would not be significant. Both construction staging areas would also likely be visible from parts of the BWI Trail, however the staging areas would not impact access to the trail or disrupt the recreational purpose of the trail. Given the ambient aircraft noise and other nearby land uses (vehicular roadways, etc.), construction-related noise is not anticipated to be noticeable for a prolonged duration or to interfere with trail activities. Further, any visual or noise-related impacts related to the construction staging areas from the BWI Trail would be temporary and would not result in an "occupancy" of the trail.

The Benson-Hammond House is a historic site and thus also considered a DOT Section 4(f) resource. Refer to *Section 4.7.3, Historical, Architectural, Archaeological and Cultural Resources, Impact Analysis*, for discussion of potential impacts to the historic site. A viewshed analysis was conducted for the Benson-Hammond House which found the Proposed Action Alternative would have no effect on the historic property (see *Appendix D, Attachment 4* for Viewshed Analysis Report). MHT concurred with this determination of no effect on October 13, 2023 (See *Appendix D, Attachment 1* for MHT concurrence).

⁶⁴ FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, July 2015, http://www.faa.gov/documentLibrary/media/Order/FAA_Order_1050_1F.pdf, p. 4-6.

Potential visual impacts to all the DOT Section 4(f) resources within the ISA would be minimal and consistent with the Airport environment associated with these resources.

There are no mitigation measures required for the project related to DOT Section 4(f) resources.

4.5.3.2 No Action Alternative

The No Action Alternative would have no physical or visual impacts to Section 4(f) resources. The existing LOS obstruction and Part 77 obstruction removal included under the No Action Alternative would not be visible from any of the Section 4(f) resources identified in the ISA. The nearest resource, the BWI Trail at the intersection of Aviation Blvd and Stoney Run Rd, is 2,000 feet west of the proposed vegetation removal and would be blocked from view by existing topography as well as the airline maintenance facility currently under construction.

4.6 Hazardous Materials, Pollution Prevention and Solid Waste

This section identifies the potential for the alternatives to generate or disturb hazardous wastes or solid wastes and how the alternatives would prevent and minimize potential impacts related to the use of hazardous materials.

4.6.1 Methodology

An EDR® report was run for the BWI Marshall area to gather information on the presence of hazardous materials within the DSA. Additionally, MAA provided information on known hazardous materials associated with the DSA.

4.6.2 Thresholds of Significance

The FAA has not established significance thresholds for hazardous materials, solid waste or pollution prevention. Instead, the FAA has identified factors to consider when evaluating impacts. These factors include assessing whether a project has 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 NPL);
- 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; or
- Adversely affect human health and the environment.

4.6.3 Impact Analysis

4.6.3.1 Proposed Action Alternative

As discussed in 3.7, *Hazardous Materials, Pollution Prevention, and Solid Waste*, there are sites at BWI Marshall Airport that are known, or have the potential, to involve hazardous materials, hazardous waste, environmental contamination and/or other regulated substances. However, the EDR report included no hazardous materials within the DSA. The presence of ACBM within the existing concourse is the only known occurrence of hazardous materials that could be impacted by the Proposed Action Alternative.

During demolition activities of existing concourse structures to allow construction of the proposed ATCT, hotel and FAA offices, proper handling and disposal would be required for any ACBM encountered in accordance with state and federal requirements.

The use of hazardous materials during construction would be limited mostly to fuels, solvents and their waste products. The solid wastes associated with construction of the Proposed Action Alternative would likely be confined to building demolition debris such as concrete, asphalt, wood, etc. These materials may be transported and disposed of in nearby landfills, repurposed or recycled to the extent feasible. Over the long-term, the proposed hotel would result in an increase in the generation of solid waste, but the increase would not be significant and would not exceed available capacity of nearby landfills and recycling facilities. Similar to the existing ATCT, the proposed ATCT would require an FAA generator and fuel tank. The existing ATCT generator and fuel tank would remain in place.

No significant environmental impacts related to hazardous materials and solid waste would be expected with the Proposed Action Alternative and no mitigation would be required.

4.6.3.2 No Action Alternative

Under the No Action Alternative, only vegetative obstructions would be removed. There would be no development in the area of existing ACBM and therefore no potential for impacts to hazardous materials or solid waste.

4.6.4 Mitigation and Pollution Prevention

The design and use of the Proposed Action and No Action Alternatives projects would adhere to federal and state regulations as well as best practices pertaining to the use of hazardous materials, petroleum storage and waste disposal. This includes precautionary measures aimed at preventing and minimizing impacts to surface and ground waters, soil, and air.

4.7 Historical, Architectural, Archaeological and Cultural Resources

Potential impacts to historic and archaeological resources within the Direct and Indirect APEs were identified and evaluated as part of the EA. This section also documents the FAA's consultation with the SHPO (MHT) pursuant to NHPA Section 106 and its implementing regulations at 36 CFR Part 800. The applicable background information and consultation with the MHT is contained in *Appendix D*. Tribal consultation was conducted with Indian tribes that may be affected by the Proposed Action. *Appendix D* also contains the tribal coordination.

4.7.1 Methodology

The Direct and Indirect APE methodology is discussed in *Chapter 3, Section 3.8.1, Area of Potential Effect*. Both APEs were defined by the FAA in consultation with the MHT per 36 CFR § 800.4(a)(1). Historic resources were identified in the vicinity of the Direct and Indirect APEs. Previous archaeological survey has been conducted within the areas of proposed ground disturbance (e.g., areas of proposed obstruction removal) in the Direct APE. Thus, the survey results were documented, and any effects were considered. The March 2021 BWI Marshall Historic Preservation Plan Update (HPP Update) was used to identify historic resources, including any buildings over 50 years in age within the Indirect APE. Potential effects to cultural resources also include indirect effects. Changes in the use, operation, or character of a resource, or a transfer of ownership might be either direct or indirect effects. Changes to the visual context of a resource is considered an indirect effect. In general, visual context is relevant only to above-

ground historic resources. Any resources with potential for direct or indirect effects are documented in *Chapter 3, Section 3.8.2, Identification of Resources*. On September 11, 2023, the FAA initiated consultation with MHT requesting concurrence with the APEs and its finding. The SHPO responded with its concurrence of the APEs and a finding of No Adverse Effect on October 13, 2023. Following this concurrence, minor revisions were made to the Indirect APE graphic, including the addition of Friendship Cemetery (AA-2518) to the Indirect APE. FAA presented this change to MHT on December 14, 2023, and MHT confirmed that the original finding remains valid. Refer to *Appendix D* for documentation.

4.7.2 Thresholds of Significance

The FAA has not established a significance threshold for Historical, Architectural, Archaeological, and Cultural Resources. Exhibit 4-1 of FAA Order 1050.1F provides a factor to consider when evaluating potential impacts. The factor states, “*The action would result in a finding of Adverse Effect through the Section 106 process. However, an adverse effect finding does not automatically trigger preparation of an EIS (i.e., a significant impact).*”

In the context of significant archaeological sites within BWI Marshall Airport, an adverse effect is defined as an action that “*Directly destroys or damages all or a portion of a significant resource; results in the neglect of a resource, which in turn results in the erosion or deterioration of all or portions of the site; results in increased public access or visibility of a site which may lead to looting, vandalism, or other disturbance to the site; and/or results in the transfer, lease, or sale of a historic property area to a private interest.*”⁶⁵ There are no archaeological sites identified within the Direct APE.

For architectural resources, an adverse effect occurs when “*the action diminishes the integrity of the property’s location, design, setting, materials, workmanship, feeling, or association.*”⁶⁶ There is one NRHP-listed architectural resources within the Indirect APE, the Benson-Hammond House.

4.7.3 Impact Analysis

4.7.3.1 Proposed Action Alternative

Historic/Architectural Resources

There are no historical resources within the Direct APE. There is one historical resource identified within the Indirect APE: the NRHP-listed Benson-Hammond House. There are six properties mapped with MEDUSA within the Indirect APE. Five of the properties have been demolished, one property determined not eligible for the NRHP. There is one building older than 50 years old owned by MAA within the Indirect APE: the Airline Cargo Building, which has a view of the existing ATCT. Thus, there is no need to evaluate the impacts to these resources. Impacts were considered only for the Benson-Hammond House (AA-118). **Figure 3-5** illustrates the location of the Benson-Hammond House (and the other properties) in relation to the proposed improvements.

Benson-Hammond House (AA-118): Pine trees around the edge of the Benson-Hammond House property will block the view even during the winter months. However, during winter months, the proposed ATCT might be partially visible from the very back of the Benson-Hammond House property, beyond the pine trees. However, currently, long term parking, a runway, the terminal, and the current tower may also be partially visible from the back of the property during the winter months. Given that all these airport

⁶⁵ EAC/Archaeology, Inc., Historic Preservation Plan Update, BWI Marshall Airport, Anne Arundel County, MD, March 2021, p. 5.20.

⁶⁶ EAC/Archaeology, Inc., Historic Preservation Plan Update, BWI Marshall Airport, Anne Arundel County, MD, March 2021, pp. 5.20-21.

structures may already be visible, the impact on this area of the property would be minimal. The area containing the primary structures would still be protected visually. Thus, the viewshed analysis has shown that any effects on historic properties would be minimal and the proposed ATCT would not present a significant change in the view from the Benson-Hammond House (*Appendix D, Attachment 4* for Viewshed Analysis Report). Therefore, the viewshed of the historic property would not be affected and the Proposed Action Alternative would have no effect on the historic property. MHT concurred with this determination of no effect on October 13, 2023 (See *Appendix D*).

Archaeological Resources

There are no archaeological sites identified within the Direct APE. The Indirect APE is not relevant to this resource category as there would be no indirect impacts to archaeological resources from the Proposed Action Alternative.

Cultural Resources

Tribal consultation was conducted with Indian tribes that may be affected by the Proposed Action, including Delaware Nation and Delaware Tribe. *Appendix D* contains the November 14, 2023 coordination letters (*Attachment 2*) that were sent as well as the response received from the Delaware Nation Historic Preservation Officer on December 13, 2023 (*Attachment 3*) stating that they have no concerns regarding the Proposed Action.

Summary of Effect per Section 106 (Conclusion)

In summary, no architectural or archaeological resources would be adversely impacted by the Proposed Action Alternative and therefore would have no significant impact.

4.7.3.2 No Action Alternative

Under the No Action Alternative, only vegetative obstructions would be removed in the LOS from the existing ATCT. The No Action Alternative would not be visible from any historic resources identified in the Direct or Indirect APE. There would be no impacts to historical, archaeological, or cultural resources attributable to the No Action Alternative.

4.7.4 Mitigation

No architectural or archaeological resources would be adversely affected by the Proposed Action Alternative; no mitigation would be necessary.

If unmarked burial sites are encountered, then staff would stop work and follow the procedures established in the BWI Marshall Airport HPP Update and required by MHT regulations. Additionally, FAA will follow the following post-review discovery procedures:

Post-Review Discoveries:

A. Cultural Resources

The FAA shall follow the procedures in 36 CFR 800.13 for post-review discoveries if potential historic properties are discovered or if unanticipated effects on known historic properties are found after the agency has completed Section 106 consultation for the undertaking.

1. If a post review discovery is made during implementation of an undertaking conducted under this EA, all activities within a 100- foot-radius of the discovery will cease, and the Airport Sponsor shall take

steps to protect the discovery, and promptly report the discovery to the FAA, MHT/Tribal Historic Preservation Office (THPO), and Tribes that have expressed an interest in this area.

2. If the FAA has approved the undertaking and construction has commenced, determine actions that the agency official can take to resolve adverse effects, and notify the MHT/THPO, any Indian Tribe that might attach religious and cultural significance to the affected property, and the Advisory Council on Historic Preservation (the Council) within 48 hours of the discovery. The notification shall describe the agency official's assessment of National Register eligibility of the property and proposed actions to resolve the adverse effects. The MHT/THPO, the Indian tribe and the Council shall respond within 48 hours of the notification. The agency official shall take into account their recommendations regarding National Register eligibility and proposed actions, and then carry out appropriate actions. The agency official shall provide the MHT/THPO, the Indian Tribe and the Council a report of the actions when they are completed.

B. Human Remains

1. If human remains and associated cultural items, as defined by the Native American Graves Protection and Repatriation Act (NAGPRA), are encountered, the airport Sponsor will immediately notify the FAA and follow the regulations at 43 CFR § 10. A NAGPRA plan of action will be implemented.
2. If human remains, funerary objects, sacred ceremonial objects or objects of national or tribal patrimony are discovered on state, county, municipal, or private lands, either through archaeological excavation or during construction, and no Burial Agreement is in place the Airport Sponsor shall require the person in charge to immediately cease activities within a 100-foot radius of the discovery, take steps to protect the discovery, and immediately notify the FAA, MHT/THPO, and Tribes that have expressed an interest in the area.

4.8 Land Use

State and local land use plans, comprehensive plans, and zoning laws provide context for land use compatibility. Section 1506.2(b) of CEQ Regulations requires that NEPA documents discuss any inconsistency with approved state and/or local plan(s) and law(s) (whether or not Federally-sanctioned). Advisory Circular (AC) 150/5200-33C, Hazardous Wildlife Attractants on or Near Airports, is also relevant to the evaluation of land use impacts.

4.8.1 Methodology

The Proposed Action and No Action Alternatives were reviewed to determine their consistency with existing and future land use plans and zoning. The potential for the alternatives to create habitat or increase wildlife attractants was considered. Additionally, potential impacts in other resource categories were analyzed as they relate to land use, such as impacts related to aircraft noise and socioeconomic impacts.

4.8.2 Thresholds of Significance

There is no established threshold of significance for land use. While the proposed projects should be consistent with land use plans, FAA Order 1050.1F, Exhibit 4-1, states that the determination of significance is "*normally dependent on the significance of other impact categories.*" Furthermore, an inconsistency with state and/or local plans by itself would not automatically result in a significant impact.

4.8.3 Impact Analysis

4.8.3.1 Proposed Action Alternative

The Proposed Action Alternative projects are located within existing Airport property and the projects are consistent with the Airport's November 2022 ALP, as well as local land use plans.

Noise

The Proposed Action Alternative would have no impact on aircraft noise, as the proposed improvements have no effect on aircraft operations at the Airport. Operation of heavy construction equipment would be confined to airport property and would therefore not result in construction noise impacts to surrounding land uses.

Socioeconomic

The Proposed Action Alternative would not disrupt communities, require relocation of residences or businesses, or result in negative impacts to traffic on and around the Airport, as discussed in *Section 4.11, Socioeconomics, Environmental Justice, and Children's Health and Safety Risks*.

Natural Resources

The Proposed Action Alternative would impact natural resource areas on the Airport, as discussed in *Section 4.2, Biological Resources*. Vegetation removal is proposed for ATCT LOS obstructions and Part 77 vegetation obstructions which penetrate the transitional surfaces of Runway 15R and Runway 10. The vegetation removal would not result in any change of land use. Additionally, best management practices (BMPs) would be implemented as part of an Erosion and Sediment Control Plan to minimize construction impacts to natural resources.

Wildlife Hazards

Due to proximity to an airfield, the proposed improvements are subject to wildlife hazard restrictions. The proposed improvements would not be located near or create a wildlife hazard as defined in FAA AC 150/5200-33C, "Wildlife Hazards On and Near Airports."

Under the Proposed Action Alternative, ATCT LOS and Part 77 vegetation obstructions would be removed. Wetlands and floodplains are present in areas of proposed vegetation removal. To avoid creating wildlife hazards near the runways, individual tree obstructions would be hand felled in the area east of Taxilane W and removal would not expose open areas of water or the floodplains around Kitten Branch. In the area west of Taxilane W, vegetation will be cleared and grubbed, with the exception of individual tree obstructions hand felled in the PFO wetland (WL4) and buffer area, converting the PFO wetland to a PSS wetland. However, vegetation would be allowed to regenerate within WL4 and its buffer and therefore the tree removal would not result in the exposure of open waters. See *Section 4.13, Water Resources* for discussion of wetland and floodplain impacts and mitigation. Additionally, the proposed ATCT and hotel would consider designs that avoid encouraging nesting or perching of birds.

No significant impacts related to land use are expected with the Proposed Action Alternative and no mitigation would be required.

4.8.3.2 No Action Alternative

Under the No Action Alternative, construction would be limited to removal of Part 77 and existing ATCT LOS vegetation obstructions, which would be consistent with Airport land use. However, not constructing

the proposed ATCT, hotel and FAA offices would not be consistent with the future plans for Airport development.

Wildlife Hazards

The No Action Alternative vegetation obstruction removal is within wetland and floodplain areas. As described with the Proposed Action Alternative, tree removal would be done in a manner that avoids exposing areas of water or floodplains.

No significant impacts related to land use are expected with the No Action Alternative and no mitigation would be required.

4.9 Natural Resources and Energy Supply

This section identifies the potential for the alternatives to impact local supplies of natural resources and energy, and the methods used to minimize temporary and long-term use of natural resources and energy.

4.9.1 Methodology

When analyzing the potential impacts to natural resources and energy supply the following was considered: impacts to utilities servicing the area; capacity of water resources to support projects; fuel consumption; impacts to consumable materials, especially scarce or unusual materials; and state or local regulations.

4.9.2 Thresholds of Significance

There is no established threshold of significance for natural resource and energy supply impacts. However, FAA Order 1050.1F identifies a factor to consider when evaluating potential impacts: *“situations in which the proposed action or alternative(s) would have the potential to cause demand to exceed available or future supplies of these resources.”*

4.9.3 Impact Analysis

4.9.3.1 Proposed Action Alternative

The Proposed Action Alternative would require additional energy use to provide water, heating, air conditioning, lighting, electricity, and telecommunications to the proposed ATCT, hotel and FAA offices. However, the anticipated increase in additional resources and energy consumption required would not amount to a significant percentage of the total Airport use.

The proposed improvements would not create a substantial increase in demand for local resources and utilities or strain the capacity/supply of these resources/ utilities to the meet the additional demand. The Proposed Action Alternative would not involve the use of any unusual or scarce resources nor cause a demand for the use of any unusual or scarce resources that are in short supply.

No significant impacts related to the use of natural resources or energy supply are expected with the Proposed Action Alternative and no mitigation would be required.

4.9.3.2 No Action Alternative

Under the No Action Alternative, construction would be limited to removal of Part 77 obstructions and existing ATCT LOS vegetation obstructions. These projects would require the use of fuel for tree clearing

equipment, however there would be no significant impacts to the use of natural resources or energy supply.

4.10 Socioeconomics, Environmental Justice and Children's Environmental Health and Safety Risks

This section analyzes the potential for the alternatives to result in impacts to socioeconomic, environmental justice or children's health and safety.

4.10.1 Methodology

The potential for the alternatives to result in the relocation of residences or businesses, division of established communities, disruption of orderly planned development, or changes in employment was evaluated. Additionally, any actions resulting from the alternatives that could result in high or adverse human health or environmental impacts that would disproportionately impact minority or low-income populations were also evaluated.

4.10.2 Thresholds of Significance

The FAA has not established a threshold of significance for socioeconomics, environmental justice, and children's environmental health and safety risks. Exhibit 4-1 of FAA Order 1050.1F identifies factors to consider when evaluating impacts. For Socioeconomics, factors to consider include if 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 when sufficient replacement housing is unavailable; 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."* For Environmental Justice, factors to consider include if the *"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 impact 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."* For Children's Environmental Health and Safety Risks, the factor includes when *"The action would have the potential to lead to a disproportionate health or safety risk to children."*

4.10.3 Impact Analysis

4.10.3.1 Proposed Action Alternative

Socioeconomics

The Proposed Action Alternative would occur entirely on MAA property and therefore would not disrupt or divide an established community, nor would it displace any residences or people within the DSA or ISA. Land use, including residential uses, within the ISA would not be impacted. There is an increased opportunity for local business with the development of an on-airport hotel. There are currently no on-airport hotels and the four hotels nearest the Airport were built prior to 2007. According to a Hotel Market Analysis in 2012, an on-Airport hotel could be supported by the market in the 5-to-10-year timeframe while still maintaining an area-wide occupancy level of 75% to 80% or above, thus not resulting in a significant loss of sales for existing hotels and conference/ banquet facilities. This was based on market research and considered existing and projected origin/destination and enplaned passengers at BWI

Marshall Airport at the time.⁶⁷ Since then, passenger growth has increased and no new hotels that are Airport-based have entered the market. Beyond that, since the proposed hotel would be the only property in the competitive supply with direct connectivity to the Main Terminal, the hotel is likely to attract a particular market segment of meeting space customers with Airport- or aviation-related business.

It is anticipated that the proposed hotel would feature a variety of full-service food and beverage venues for travelers and visitors, which would support an increase in overall local jobs and economic activity. Other positive direct effects would be temporary construction employment and expenditure in the local community, an increase in tax revenue generated by the hotel, and an increase in Airport revenue through lease of the hotel. These impacts are expected to be beneficial, and the economic activity generated by the temporary construction activity can be absorbed within the existing community infrastructure. Thus, no permanent adverse economic impacts, which are associated with disruption of an established community and relocation of people or business, would occur. No significant impacts to socioeconomics are anticipated and no mitigation would be required.

Environmental Justice

Tables 3.5 through 3.8 in *Section 3.11.1, Affected Environment, Socioeconomics*, profile the population of the demography within the census tracts intersected by the ISA. While there are minority and low-income populations within these census tracts, only a small residential area is present with the ISA, north of the Airport within CT 7512. The Proposed Action Alternative would not result in impacts beyond any temporary construction noise impacts in the immediate vicinity of the DSA. Therefore, the environmental justice communities in CT 7509 would not experience construction noise impacts as they are not in the vicinity of the DSA (see Figure 3-8). The Proposed Action Alternative would not require the acquisition or displacement of residents or businesses, or division of communities, and therefore would have no direct effect on minority and low-income populations. The Proposed Action Alternative would have no disproportionate or adverse impacts on any minority or low-income communities and no mitigation would be required.

Children's Environmental Health and Safety Risks

There are no residential land uses, daycare facilities, preschools, or schools within the DSA. As shown on Figure 3-8, there is one daycare facility and one school located within the ISA, Celebree School of Glen Burnie directly east of the Airport and Lindale Middle School directly north of the Airport. The Proposed Action Alternative would have no impact on these facilities and does not have the potential to lead to a disproportionate health or safety risk to children. All proposed construction areas would be within Airport property and contractors would be responsible for securing construction sites.

4.10.3.2 No Action Alternative

Under the No Action Alternative, construction would be limited to removal of Part 77 and existing ATCT LOS vegetation obstructions. There would be no potential for impacts related to socioeconomics, environmental justice or children's health and safety.

⁶⁷ Leigh-Fisher Management Consultants, Hotel Market Analysis: Baltimore/Washington International Thurgood Marshall Airport, January 17, 2012,

4.11 Visual Effects

Visual effects consist of two categories: light emissions effects, and visual resource and visual character impacts. The potential impact of light emissions and visual impacts from the proposed improvements are assessed as they relate to light sensitive areas and visual resources near the Airport.

4.11.1 Methodology

The potential light emissions and visual impacts of the Proposed Action Alternative were determined by evaluating the existing land uses in the vicinity of the DSA and ISA to determine current airport light sources (i.e., parking lots, roadways, etc.), and assess future light sources from the Proposed Action Alternative. A viewshed analysis, provided in *Appendix D*, was conducted as part of the analysis of cultural resources and is focused on the visual impact that the proposed ATCT would have on the surrounding area.⁶⁸

4.11.2 Thresholds of Significance

There is no established threshold of significance for visual effects. However, FAA Order 1050.1F provides factors to consider in determining whether the threshold of significance for visual effects would be exceeded.

Light Emissions: An action may be considered significant if light emissions would create significant annoyance or inference with normal activities; or if light emissions affect the visual character of an area (i.e., importance, uniqueness, aesthetic value).

Visual Resources and Visual Character: An action may be considered significant if it would affect the nature of the visual character of an area; contrast with visual resources or character in the study area; or block or obstruct the views of visual resources.

4.11.3 Impact Analysis

Potential impacts of light emissions and impacts on visual resources and visual character were identified and evaluated.

4.11.3.1 Proposed Action Alternative

Light Emissions

The Proposed Action Alternative would require new lighting, however light emissions in the area are expected to remain similar to current conditions. New sources of stationary lighting would include exterior and interior lighting for the proposed ATCT, the FAA staffing offices and the hotel. While these projects would require additional lighting, they remain on Airport property and are consistent with current Airport light emissions and uses.

New light sources and construction lighting would be designed to direct light sources downward to prevent unnecessary light spillage at nighttime, would comply with FAA, Airport and local standards, and would be consistent with the existing environment. Therefore, there would be no light emission impacts associated with the Proposed Action Alternative.

⁶⁸ The viewshed analysis focused on the visual impacts of the proposed ATCT as it is the tallest structure proposed within the Proposed Action Alternative. It is likely that the proposed hotel would also result in visual impacts to surrounding areas.

Visual Resources and Visual Character

The Proposed Action Alternative would not affect the visual character of the Airport campus. Approximately 110 individual trees and 7.7 acres would be removed on airport property as part of the Part 77 obstruction removal and ATCT LOS vegetation obstruction removal, however this would not impact the views to the general public and the nature of the visual character of the area will not be significantly affected. The proposed ATCT, FAA staffing offices and the hotel would all be located in the terminal area. The proposed ATCT and hotel would change the visual character of the terminal area as the structures would become the focal point for those approaching the Airport on the landside roadways and from airside views towards the terminal. However, the architecture and aesthetics of these facilities would be consistent with the Airport environment and would not negatively impact the visual character of the Airport.

A viewshed analysis was conducted as discussed in *Section 4.7, Historical, Architectural, Archaeological and Cultural Resources*, and confirmed there would not be any significant visual impact to cultural resources due to the proposed ATCT. Also, the proposed ATCT (and likely the proposed hotel) would be visible from some parts of the BWI Trail, a Section 4(f) resource. However, no significant impact related to visual effects from the BWI Trail are expected. Refer to *Section 4.5, DOT Act Section 4(f) Resources* for additional discussion of the visual effect from the BWI Trail.

No significant impacts related to visual resources or visual character are expected with the Proposed Action Alternative.

4.11.3.2 No Action Alternative

Under the No Action Alternative, construction would be limited to removal of Part 77 and existing ATCT LOS vegetation obstructions (110 individual trees and 5.4 acres). This would not impact the views to the general public and the nature of the visual character of the area will not be significantly affected. Therefore, there is no potential for impacts to light emissions or visual resources and character.

4.11.4 Mitigation

Although there is no expected impact from lighting for the Proposed Action and No Action Alternatives, the projects would be designed to comply with FAA and airport lighting standards to ensure there will be no negative impacts to runway operations or aircraft safety. The FAA promotes the following measures to mitigate any potential lighting impacts: shielding lighting fixtures with visors; angling fixtures toward the base of the mounting poles; directional lighting; or using minimal pole heights or reduced wattage bulbs.

4.12 Water Resources

This section assesses potential impacts from the Proposed Action Alternative and the No Action Alternative on wetlands, floodplains, surface waters, and groundwater.

4.12.1 Methodology

4.12.1.1 Wetlands

Impacts are determined by calculating the square footage of nontidal wetlands and their buffers, square footage, and linear footage for streams.

4.12.1.2 Floodplains

Impacts to the floodplain at airports are associated with development within the floodplain as defined by a FFRMS approach (see *Chapter 3, Section 3.13.2*) and within areas prone to flooding. Using CEQ's FFRMS FVA to identify the flood elevation, the Proposed Action Alternative and the No Action Alternative were reviewed regarding their proximity to the 100-year floodplain BFE plus two additional feet, and the likelihood for construction to adversely impact floodplain values.

4.12.1.3 Surface Waters

Impacts to surface waters are largely due to stormwater runoff associated with impervious surfaces and the capacity of the storm drain system. The Alternatives were reviewed regarding their potential to increase impervious surfaces, alter drainage areas, and impact stormwater runoff. Environmental site design (ESD) calculations are made to determine the extent of treatment required by project. Concepts for stormwater quality and quantity management are discussed.

4.12.1.4 Groundwater

Impacts to groundwater at airports are largely associated with fuel spills/leaks and the potential vertical migration or exfiltration of aircraft deicing fluids. Therefore, the Alternatives were reviewed regarding their relative potential to increase the likelihood of fuel spills/leaks and the potential to impact known hazardous material sites, or potential exposure to PFAS from AFFF during construction.

4.12.2 Thresholds of Significance

4.12.2.1 Wetlands and Streams (Waters of the U.S.)

Per FAA Order 1050.1F, a significant impact would occur to wetlands "when the action would:

- *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;*
- *Substantially alter the hydrology needed to sustain the affected wetland system's values and functions or those of a wetland to which it is connected;*
- *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);*
- *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;*
- *Promote development of secondary activities or services that would cause the circumstances listed above to occur; or be inconsistent with applicable state wetland strategies.*

4.12.2.2 Floodplains

In accordance with the FAA Order 1050.1F, "Floodplain impacts would be significant if: *The action would cause notable adverse impacts on natural and beneficial floodplain values.*"⁶⁹

⁶⁹ FAA Order 1050.1F Desk Reference (July 2015), p. 4-11.

4.12.2.3 Surface Waters

FAA Order 1050.1F defines the threshold of significance for surface waters. A significant impact exists if an action would “*exceed water quality standards established by Federal, state, local, and tribal regulatory agencies; or contaminate public drinking water supply such that public health may be adversely affected.*”

4.12.2.4 Groundwater

FAA Order 1050.1F defines the threshold of significance for groundwater. A significant impact exists if an action would “*exceed groundwater quality standards established by Federal, state, local, and tribal regulatory agencies; or contaminate an aquifer used for public water supply such that public health may be adversely affected.*”

4.12.3 Impact Analysis

4.12.3.1 Proposed Action Alternative

Wetlands and Floodplains

Table 4.10 summarizes the impacts to wetlands, wetland buffers, streams, and floodplains associated with the Proposed Action Alternative. Figure 4-1 depicts the impacts to water resources as a result of the Proposed Action Alternative projects.

West of Taxilane W: MAA proposes to clear and grub all vegetation within the DSA, with the exception of felling individual tree obstructions within the forested wetland area (WL4).

- **WL4:** Hand felling of individual tree obstructions within WL4 will result in 0.08 acres (3,485 square feet) of PFO to PSS conversion impacts, and 0.18 acres (7,841 square feet) of conversion impacts to the 25-foot wetland buffer of WL4. Wetland WL4 and its buffer would be allowed to regenerate naturally following felling of individual trees, with the remaining area west of Taxilane W maintained as a field.
- **WL5:** No impacts to WL5 as it is outside the DSA and no trees would be cleared within the wetland.
- **WC3:** The removal of vegetation west of Taxilane W would not impact Stream WC3 as there would be no dredging or filling of the stream.

East of Taxilane W: MAA proposes to walk in and fell individual trees identified as Part 77 obstructions using chainsaws, leaving the trees where they land to decompose, and land use would remain as forest. During a pre-application meeting with MDE and USACE for future Section 401 of the CWA permitting needs on December 14, 2023, MDE requested that the basal areas⁷⁰ within PFO wetland WL3 be calculated to determine if the wetland will remain forested after the trees are felled.

- **WL3:** Three basal areas were calculated within PFO Wetland WL3 using a 10x prism and resulted in an average basal area of 77 square feet in WL3, exceeding the minimum basal area of 60 square feet required to be considered a stocked forest. Therefore, the proposed tree removal within WL3 would not result in a conversion impact.

⁷⁰ The basal area is defined by the cross-sectional area of trees measured at breast height and is a common way to describe tree stand density.

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- **WL1 and WL2:** Due to the minimal number of obstructions proposed to be hand felled within PSS Wetlands WL1 and WL2 and their associated buffers, MDE determined there would be no impact to these wetlands.
- **WC1 and WC2:** Hand felling of individual trees would not impact Streams WC1 or WC2 as there would be no dredging or filling of the stream.

Additionally, the proposed Part 77 obstruction removal east of Taxilane W would result in 51 individual trees obstructions being removed within the floodplain area around Kitten Branch. However, the impact would not be considered significant as the trees would be hand felled and land would remain as forest. Coordination with MDE’s State National Flood Insurance Program (NFIP) Coordinator in November 2023 determined that tree removal within a floodplain is not a significant impact. Further, felling discrete individual trees allowing the root system to remain in place would have no impact on the natural and beneficial floodplain values in the limited length of Kitten Branch.

Therefore, the Proposed Action Alternative would not result in a significant impact to wetlands, streams, or floodplains.

Table 4.10. Proposed Action Alternative and No Action Alternative Impacts to Water Resources

Resource		Impacts/Encroachments		
		Acres	Sq. Ft.	Linear Feet
Wetlands	PSS	0	0	--
	PFO ¹	0.08	3,485	--
Streams		--	--	0
Floodplain		0	0	--

Note: ¹ Impacts to PFO wetland WL4 result in a conversion from PFO to PSS. Conversion impacts to the 25-foot buffer of WL4 total 0.18 acres (7,841 sq. ft.).

Sources: CRI analysis 2023.

Surface Waters

The Proposed Action Alternative would not increase impervious surfaces at the Airport, however construction activities could impact stormwater runoff. Stormwater management will be implemented in accordance with MDE’s *Stormwater Management Guidelines for State and Federal Projects* to control stormwater runoff. Stormwater management will ensure all water quality standards established by federal, state, local, and tribal regulatory agencies are met, and that no public drinking water supply will be adversely affected. Therefore, the Proposed Action Alternative would not result in a significant impact to surface water quality.

No existing stormwater management facilities would be impacted by the Proposed Action Alternative. See *Section 4.13.4* for additional discussion of stormwater management requirements.

Groundwater

Stormwater runoff from the Proposed Action Alternative would be contained in the storm drain system and treated for water quality in stormwater management facilities. The Proposed Action Alternative would not impact groundwater such that groundwater quality standards set forth by federal, state, or local agencies would be exceeded or would have the potential to contaminate an aquifer used for public water supply. Therefore, the Proposed Action Alternative would not result in a significant impact to groundwater.

4.12.3.2 No Action Alternative

Wetlands and Floodplains

Figure 4-2 depicts the impacts to water resources as a result of the No Action Alternative projects. The vegetation removal area west of Taxilane W is reduced under the No Action Alternative as compared to the Proposed Action Alternative as the future ATCT LOS obstructions would not be removed. Obstruction removal techniques would be identical to those described under the Proposed Action Alternative and would result in identical impacts to wetlands, wetland buffers, streams and floodplains. Table 4.10 summarizes the impacts to water resources associated with the No Action Alternative.

Surface Waters

The No Action Alternative would not increase impervious surfaces at the Airport. Therefore, the No Action Alternative would not result in a significant impact to surface water quality.

Groundwater

The No Action Alternative would not impact groundwater such that groundwater quality standards set forth by federal, state, or local agencies would be exceeded or would have the potential to contaminate an aquifer used for public water supply. Therefore, the No Action Alternative would not result in a significant impact to groundwater.

4.12.4 Mitigation

4.12.4.1 Wetlands and Streams (Waters of the U.S.)

Under the Proposed Action Alternative and No Action Alternatives, wetland impacts are anticipated to be less than 5,000 square feet, conversion impacts to the 25-foot wetland buffer do not require a permit, and no stream impacts are proposed. Therefore, the project qualifies for a Letter of Authorization and no mitigation is required (see *Appendix E, Attachment 4* for MDE Pre-Application Summary report).⁷¹

4.12.4.2 Floodplains

The Proposed Action Alternative and No Action Alternative would result in 51 individual trees obstructions being removed within the floodplain area around Kitten Branch. However, the impact would not be considered significant as the trees would be hand felled and land would remain as forest with the root systems in place. Thus, there would be no impact to the natural and beneficial value of the floodplains and no mitigation necessary.

4.12.4.3 Surface Waters

Stormwater treatment requirements would be determined in accordance with MDE's *Stormwater Management Guidelines for State and Federal Projects*. While the Proposed Action Alternative would not increase impervious surfaces, stormwater treatment would be required to meet MDE stormwater management requirements for providing water quality control. Due to the lack of available space for ESD or structural BMPs in the terminal and apron area, water quality credits would likely need to be used to meet treatment requirements for the proposed ATCT, hotel and FAA office projects. Discussion of stormwater treatment requirements is addressed in more detail in *Appendix E, Attachment 2*.

⁷¹ MDE Nontidal Wetlands and Waterways Pre-Application Summary, 12/14/2023, prepared by Cheryl Kerr (MDE).

At the time of design for each project, stormwater design will adhere to MDE guidelines and regulations. A Stormwater Management Concept Report will be provided during project design.

The proposed improvements would not be located near or create a wildlife hazard as defined in FAA AC 150/5200-33, "Wildlife Hazards On and Near Airports." The AC warns against the creation of any open water within 10,000 feet of aircraft movement areas or within five miles of approach or departure surfaces. The vegetation area west of Taxilane W would be cleared and grubbed, with the exception of felling individual tree obstructions within the forested wetland area (WL4), converting the PFO wetland WL4 to a PSS wetland. However, the wetland area will be allowed to regenerate following tree removal which would prevent the exposure of open water. Additionally, stream WC3 is within the area proposed to be clear cut. WC3 is an ephemeral/intermittent stream and therefore tree removal would not result in the exposure of a continuously flowing water body.

An Erosion and Sediment Control Plan would be developed in accordance with MDE guidelines and implemented during construction activities to minimize erosion and sedimentation and its impacts on surface waters.

4.12.5 Permitting

MAA must receive authorization from MDE for temporary and permanent impacts to state regulated wetlands and other WOTUS and for temporary and permanent alterations to 25-foot wetland buffers and 100-year floodplains. A pre-application meeting and field review of impact areas occurred on December 14, 2023, with MDE and USACE. Meeting minutes and the MDE Pre-Application Summary are provided in *Appendix E, Attachments 3 and 4*, respectively. As noted in *Section 4.13.4*, the impacts resulting from the Proposed Action and No Action Alternatives would not require mitigation and would qualify for a Letter of Authorization from MDE. Additionally, a General Permit for Stormwater Associated with Construction Activities would be obtained prior to construction activities.

4.13 Cumulative Impacts

CEQ implementing NEPA regulations require an assessment of other past, present, and reasonably foreseeable project impacts occurring at the same place and time or further removed in place or time that have reasonably close causal relationships to the Proposed Action. This impact evaluation was determined by combining the estimated impacts of the Proposed Action Alternative with other past, present, and reasonably foreseeable future actions (as summarized in *Chapter 3, Affected Environment, Section 3.14*). Note that these projects may or may not occur and even when a timeframe is provided there is no certainty that a project will actually be accomplished.

The on-airport projects, as described in *Section 3.14.1*, are proposed to address the long-term needs at the Airport. The projects listed in Table 3.10 represent those identified on the ALP and through on-going Airport planning updates. As with the Proposed Action Alternative, MAA would be responsible for satisfying NEPA requirements for future Airport projects and obtaining all necessary approvals and permits to minimize impacts.

The majority of off-airport projects, as described in *Section 3.14.2*, are related to transportation improvements (roadways, MARC stations). These projects would likely result in temporary construction related impacts (noise, air, transportation). The government agency responsible for the development of each cumulative project would be responsible for obtaining all necessary approvals and permits to minimize impacts. Off-airport transportation and development projects would generally benefit the surrounding communities, and local/regional economy.

The environmental resource categories included for this analysis are those categories identified to be potentially impacted under the Proposed Action Alternative as discussed within this chapter. Other than temporary impacts associated with construction, the only impacts associated with implementation of the Proposed Action Alternative are minor impacts to vegetation and wetlands. Therefore, past, present, and reasonably foreseeable future projects that could also impact vegetation and wetlands are also considered for analysis of cumulative impacts. As it relates to temporary construction impacts, cumulative impacts are generally associated with construction impacts from other projects that may occur within the Proposed Action Alternative construction period (2025-2029).

4.13.1 Biological Resources

The Proposed Action Alternative would impact biological resources, specifically the forested area north of Runway 10 and west of Runway 15R, for removal of ATCT LOS obstructions and to meet Part 77 requirements. The impacts associated with ATCT LOS obstructions would be mitigated and thus the potential for cumulative impacts are reduced. MAA proposes to meet forest mitigation requirements onsite within the Stony Run Forest Conservation Easement area. Per the FCA, mitigation is not required for Part 77 obstruction removal.

None of the cumulative projects listed would be expected to have significant impacts on biological resources. However, per state regulation, any projects near BWI Marshall Airport that impact forested areas will be mitigated accordingly, thereby reducing the potential for cumulative impact for this resource.

4.13.2 Water Resources

The Proposed Action Alternative would not increase impervious surfaces. Temporary increases in stormwater runoff, erosion and sedimentation could be generated during construction activities for the Proposed Action Alternative. The Proposed Action would not impact surface waters such that water quality standards set by MDE would be exceeded. Stormwater management requirements for each project would be met in accordance with MDE's Stormwater Management Guidelines for State and Federal Projects. At the time of design for each project, stormwater design will adhere to the MDE guidelines and regulations.

The Proposed Action Alternative would result in only minor impacts to WOTUS, including jurisdictional wetlands, and floodplain areas, with no mitigation required. Any cumulative projects resulting in impacts to WOTUS, including jurisdictional wetlands, and floodplains would require authorization from MDE and must comply with MDE mitigation requirements.

The potential for water supply and permanent water quality and ground water quality impacts varies by project. Impacts could primarily result from the runoff of stormwater from newly constructed roadways and associated impervious surfaces. Commercial construction near BWI Marshall Airport would be required to utilize onsite water retention and water quality control measures to prevent degradation of water quality in groundwater and receiving bodies. Increases to impervious area with future projects such as the Airport Maintenance Complex project within and west of the Gold Lot and the Fire Training Facility south of Runway 28 end would adhere to all MDE stormwater management requirements set forth by the Maryland Stormwater Management Act of 2007 (Amended 2009).

4.13.3 Construction Impacts

Overall, the construction of the Proposed Action is expected to create minor and temporary impacts at project sites and in the surrounding area. These impacts would be short-term in nature, lasting for the

duration of construction activities. The majority of heavy construction equipment traffic would be confined to airport property and would therefore not impact traffic on the roads surrounding the airport. Construction of the Proposed Action would result in temporary impacts to air quality and potentially localized water quality when runoff occurs.

As shown in *Section 4.1, Air Quality*, although construction-related emissions associated with the Proposed Action would be well below *de minimis* thresholds and temporary in duration, these emissions could be further reduced by employing the BMPs and by incorporating the provisions of *FAA Advisory Circular 150/5370 – 10E, Standards for Specifying Construction of Airports*. As illustrated on the ALP, projects are proposed at the Airport over planning “phases.” However, even when a timeframe is provided there is no certainty that the project will actually be implemented. Given the uncertainty of project development and available funding, it is unlikely for there to be cumulative impacts related to construction emissions at the Airport.

If uncontrolled, construction activities have the potential to cause erosion and sedimentation that can impact water quality. Short-term construction impacts would be minimized by strict adherence to erosion and sediment control plans. It is expected that runoff from construction sites would be minimized by BMPs that would limit sediment transport. Implementation of cumulative projects during the same construction period could result in localized, temporary impacts to water quality. These impacts would result from land clearing and temporary construction activities and primarily consist of potential increases in sediment runoff and transport, siltation, and changes in storage volumes, flow velocities and pollutant levels in receiving water bodies. All off-airport construction activities should adhere to the design standards and guidelines contained in state and local specifications. These standards would help minimize any cumulative water quality impacts.

All construction impacts associated with construction of the Proposed Action would be temporary and below significance thresholds. Temporary pollution controls employed by MAA could include restricting open burning; wetting of active equipment work areas; covering of all trucks hauling loose materials; stabilizing materials, mulch, sandbags, slope drains, sediment checks, artificial covering, and berms. As with the cumulative projects which may be constructed during the same time frame (2025-2029), permit requirements would be adhered to and would minimize or mitigate any potential temporary impacts due to construction. All applicable local, state, and federal environmental construction controls should be incorporated into the specifications and construction plans necessary for the individual cumulative projects.

4.13.4 Summary of Potential Cumulative Impacts

Using BMPs and mitigation measures, the potential impacts of the Proposed Action would be in accordance with all federal, state, and local laws and regulations and therefore not result in a significant impact. The government agency responsible for the development of each cumulative project would be responsible for obtaining all necessary approvals and permits to minimize impacts. Based on the types of cumulative projects planned for the area surrounding BWI Marshall Airport, MAA has concluded that the implementation of the Proposed Action along with the cumulative projects would not result in a significant cumulative impact.

Chapter 5: PUBLIC AND AGENCY INVOLVEMENT

Public and agency involvement is important in the environmental review process to ensure that information is provided to the general public and public agencies with jurisdiction or special knowledge. The sections that follow provide a summary of public and agency involvement completed for development of this EA. **Appendix G, Public and Agency Involvement**, includes materials related to agency coordination and the public involvement process.

5.1 Scoping

FAA Order 1050.1F defines scoping as “*an early and open process for determining the scope of issues to be addressed...and identifying the significant issues related to a proposed action.*” Scoping is not required for an EA, however, scoping can enhance EA preparation and content especially when special purpose laws apply. Scoping is also used to eliminate from detailed study the issues that are not significant or have been evaluated by prior environmental review process.

The scoping process began with the preparation of a Scoping Information Package that included discussion of the project background, proposed action, preliminary purpose and need, preliminary alternatives, environmental analysis, and preliminary schedule. The package was emailed to regulatory agencies and relevant parties between June 28th and July 5th, 2023. The Scoping Information Package, email correspondence and list of agencies/contacts are included in *Appendix G*.

5.2 Scoping Comments

Agencies and officials were asked to review the scoping materials and provide any scoping comments by mail or email for consideration in development of the Draft EA by July 31, 2023. Scoping comments received have been considered and incorporated into the EA as appropriate, are included in *Appendix G*, and briefly summarized in **Table 5.1**.

Table 5.1. Scoping Comments Received

Agency	Comment
MHT	Requests MHT review of review of project, per Section 106. MAA will need to consider visual effects of the tower on historic properties in the APE.
MDE Federal Consistency Coordinator	Acknowledged scoping materials and had no comments.
MDE Air and Radiation Administration (ARA)	Requests EA include General Conformity analysis, inclusion of EJ impacts, assessment of potential construction impacts, and consideration of potential change to PM _{2.5} NAAQS.
MDNR WHS	WHS has no official records for state or federally listed species in project area, and no specific concerns for impacts at this time.
USDA Wildlife Service	MAA should consider structure designs to avoid encouraging nesting/perching of birds (noting that the existing tower has had historical issues). MAA should ensure vegetation removal does not result in open areas of water or exposed floodplains around Kitten Branch.

5.3 Section 106 and Tribal Consultation

On September 11, 2023, the FAA initiated Section 106 consultation with the SHPO requesting concurrence with the Direct and Indirect APE. FAA provided an MHT Project Review Form with associated project background and included the 2023 ATCT Viewshed Report. The SHPO responded with its concurrence of the APEs and a finding of No Adverse Effect on October 13, 2023.

In order to fulfill requirements with CFR 36 Part 800, the FAA initiated government-to-government consultation as described in Federal Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments*, and FAA's Order 1210.20, *American Indian and Alaska Native Tribal Consultation Policy and Procedures*, to ensure that Federally recognized tribes are given the opportunity to provide meaningful and timely input regarding proposed FAA actions that uniquely or significantly affect tribes. The FAA initiated consultation with the Delaware Tribe and Delaware Nation on November 14, 2023. Delaware Nation responded on December 13, 2023 stating that they have no concerns regarding the Proposed Action. All Section 106 consultation materials are included in *Appendix D*.

5.4 Other Agency Correspondence

A pre-application meeting and site visit was held on December 14, 2023 with MDE to discuss the potential wetland impacts and appropriate permitting and mitigation requirements. Meeting minutes are included in *Appendix E*.

Coordination with MDE's State NFIP Coordinator in November 2023 determined that tree removal within a floodplain is not a significant impact.

Additional agency correspondence not related to agency scoping but pertinent to the development of the EA is included within the relevant resource category appendix.

5.5 Notice of Draft EA Availability for Review

The Draft EA is available for review and comment by the public and agencies for 30 days from March 14th through April 15th, 2024. A Notice of Availability (NOA) for the Draft EA was published in the legal section of *The Baltimore Sun*, *The Capital Gazette*, and the *Howard County Times* newspapers on Thursday, March 14th, 2024, and again in *The Baltimore Sun* on Sunday, March 17th. The Draft EA is available electronically for public review on the MAA website at <https://marylandaviation.com/environmental/environmental-planning/>.

Hard copies are available at the following locations during the public review period during normal business hours:

- Anne Arundel County Library
Linthicum Branch
400 Shipley Road
Linthicum, MD 21090
- Anne Arundel County Library
Glen Burnie Regional Library
1010 Eastway
Glen Burnie, MD 21060

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- Howard County Library System
Elkridge Branch
6540 Washington Blvd
Elkridge, MD 21075
- Howard County Library System
East Columbia Branch
6600 Cradlerock Way
Columbia MD 21045
- Howard County Library System
Central Branch
10375 Little Patuxent Pkwy
Columbia, MD 21044
- Howard County Library System
Administrative Branch
9411 Frederick Road
Ellicott City MD 21042
- Federal Aviation Administration
Washington Airports District Office
13873 Park Center Road, Suite 490S
Herndon, Virginia 20171
- Maryland Aviation Administration
Office of Planning & Environmental Services
991 Corporate Boulevard
Linthicum, MD 21090

The Draft EA was submitted to the Maryland Department of Planning (MDP) State Clearinghouse for distribution to relevant agencies.

Comments on the Draft EA can be submitted during the comment period to the mailing address listed below or electronically to kclarke@bwiairport.com. Written comments will be accepted until 5:00 PM EST, or midnight if submitted electronically, on April 15th, 2024.

Kevin Clarke
Director of Planning & Environmental Services
PO Box 8766
BWI Airport, MD 21240-0766

5.6 Public Workshop

Advertisement of public workshops for the Draft EA, to be held at the MAC Building on April 3rd, 2024, was included in the NOA. Notice of the workshops was also submitted to the MDP Clearinghouse, and the MAA's *eNews Express*. Representatives from MAA, FAA and the Project Team will be available to discuss the project and answer questions.

5.7 Comments Received on the Draft EA

Appendix G will include comments received during the Draft EA comment period.

Chapter 6: LIST OF PREPARERS

6.1 List of Preparers

This chapter identifies the individuals assisting in the preparation and review of this EA. **Table 6.1** provides the title, years' experience and project responsibilities of those individuals from the FAA, MAA, and the consultant team responsible for preparation of the document, respectively.

Table 6.1. List of Preparers

Personnel	Title	Years of Experience	Project Responsibilities
FAA			
Genevieve Walker	Environmental Protection Specialist, Washington Airports District Office	39	Document Review
MAA			
Kevin Clarke	Director, Office of Planning and Environmental Services	28	Document Review
Shawn Ames	Deputy Director, Office of Planning and Environmental Services	27	Document Review
Dan Hinder	Environmental Manager, Office of Planning and Environmental Services	12	Document Review
HNTB			
Kim Hughes, PE, ENV SP	Aviation Environmental Services, Associate Vice President	37	Project Manager; Quality Control
Ryan Lombardi, PE	Aviation Environmental Planner	12	EA Development
Caroline Pinegar, AICP, ENV SP	Aviation Environmental Project Manager	17	EA Development
Kent Miller	Senior GIS Analyst	22	GIS; Graphics
EAC/Archaeology			
Elizabeth Comer	Principal Investigator	40	Viewshed Analysis and Section 106 Materials
Robert Wanner, PhD	Archaeologist/GIS	23	Viewshed Analysis and Section 106 Materials
Coastal Resources Inc. (CRI)			
Sean Sipple, PWS, PWD	Natural Resources Team Director	22	Quality Control, Field Investigations
Emma Beck	Environmental Scientist	9	Wetland Delineation, Forest Stand Delineation, Wetland and Forest Impact Analysis