

Appendix D

Historic Resources

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

This page is left intentionally blank.

APPENDIX D:

Historic Resources

The following attachments are included in this appendix to support the historic resources analysis:

- Attachment 1: MHT Consultation Package, MHT Determination October 13, 2023.
- Attachment 2: Tribal Consultation Package, November 14, 2023.
- Attachment 3: Delaware Nation Response, December 13, 2023.
- Attachment 4: Viewshed Analysis Report, revised December 13, 2023.
- Attachment 5: Follow up MHT coordination on revised Viewshed Analysis Report, December 14, 2023.

Attachment 1:

MHT Consultation Package

MHT Determination October 13, 2023



PROJECT REVIEW FORM

Request for Comments from the Maryland Historical Trust/
MDSHPO on State and Federal Undertakings

MHT USE ONLY	
Date Received: 9/11/23	Log Number: F EJC 22303755

Project Name **BWI Marshall - Airport Traffic Control Tower Replacement and Associated Improv** County **Anne Arundel**

Primary Contact:

Contact Name **Kevin Clarke** Company/Agency **Maryland Aviation Administration**
Mailing Address **P.O. Box 8766**
City **BWI Airport** State **Maryland** Zip **21240-0766**
Email **kclarke@bwairport.com** Phone Number **+1 (410) 859-7787** Ext.

Project Location:

Address **7050 Friendship Road** City/Vicinity **BWI Airport**
Coordinates (if known): Latitude **39.180375** Longitude **-76.667302** Waterway **Sawmill Creek**

Project Description:

List federal and state sources of funding, permits, or other assistance (e.g. Bond Bill Loan of 2013, Chapter #; HUD/CDBG; MDE/COE permit; etc.).	Agency Type	Agency/Program/Permit Name	Project/Permit/Tracking Number (if applicable)
	<input type="checkbox"/> State	Maryland Department of Transportation	
	<input type="checkbox"/> Federal	Federal Aviation Administration	

This project includes (check all applicable): New Construction Demolition Remodeling/Rehabilitation
 State or Federal Rehabilitation Tax Credits Excavation/Ground Disturbance Shoreline/Waterways/Wetlands

Other\Additional Description: **construction of new ATCT and associated improvements, including obstruction removal**

Known Historic Properties:

This project involves properties (check all applicable): Listed in the National Register Subject to an easement held by MHT
 Included in the Maryland Inventory of Historic Properties Designated historic by a local government
 Previously subject to archeological investigations

Property\District\Report Name

Attachments:

All attachments are required. Incomplete submittals may result in delays or be returned without comment.

Aerial photograph or USGS Quad Map section with location and boundaries of project clearly marked.
 Project Description, Scope of Work, Site Plan, and/or Construction Drawings.
 Photographs (print or digital) showing the project site including images of all buildings and structures.
 Description of past and present land uses in project area (wooded, mined, developed, agricultural uses, etc).

MHT Determination:

There are **NO HISTORIC PROPERTIES** in the area of potential effect The project will have **NO ADVERSE EFFECT WITH CONDITIONS**
 The project will have **NO EFFECT** on historic properties The project will have **ADVERSE EFFECTS** on historic properties
 The project will have **NO ADVERSE EFFECT** on historic properties **MHT REQUESTS ADDITIONAL INFORMATION**

MHT Reviewer: **Beth Cole** Date: **10/13/2023**

Submit printed copy of form and all attachments by mail to: Beth Cole, MHT, 100 Community Place, Crownsville, MD 21032

Archeo: IA BC 9/18/2023

Attachment to
Project Review Form
for
BWI Marshall Airport Traffic Control Tower
Replacement and Obstruction Removal
Anne Arundel County, Maryland

Prepared for
Maryland Department of Transportation
Maryland Aviation Administration
P.O. Box 8766
BWI Airport, Maryland 21240-0766

by
Rob Wanner
EAC/ARCHAEOLOGY, INC.
4303 North Charles Street
September 7, 2023

PROJECT DESCRIPTION AND CURRENT LAND USE

The Maryland Aviation Administration (MAA) is proposing to construct a new Airport Traffic Control Tower (ATCT) at Baltimore/Washington International Thurgood Marshall Airport (BWI Marshall Airport) and associated improvements including removal of vegetative obstructions (**Figure 1**). National Environmental Policy Act (NEPA) approval is needed as MAA is requesting FAA approval of the Proposed Action as depicted on the Airport Layout Plan (ALP) and a determination that the Proposed Action would be eligible for Federal funding.

PROPOSED ACTION

The Proposed Action consists of the following projects as shown on **Figures 2 and 3**:

- Construct a new ATCT, 236-feet above ground level (AGL) (including ASDE¹ and antenna) to replace the existing ATCT²; 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 New Hotel on top of the Passenger C-D Connector; and
- Remove Part 77³ Obstructions⁴.

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 existing and new ATCT and Future Taxiway F; and
- Construct duct bank from Concourse D to new Airfield Lighting Vault (ALV) to supply power to new ATCT.

¹ Airport Surface Detection System (ASDE) consisting of an enclosed rotating radar array.

² Demolition of the existing ATCT is not part of the Proposed Action. Plans for the existing ATCT have not been determined at this time.

³ CFR Title 14 Part 77- Safe, Efficient Use, and Preservation of the Navigable Airspace (Part 77).

⁴ The Proposed Action includes Part 77 obstructions located adjacent to line-of-sight (LOS) obstructions associated with the new ATCT (see Connected Actions). Some Part 77 obstructions are also LOS obstructions between the existing ATCT and Future Taxiway F.

The proposed new ATCT, the new hotel, and FAA staffing offices would be situated within the existing terminal building, which is less than 50 years old and would be constructed as part of the Passenger C-D Connector Program. The existing ATCT will remain in place and be repurposed prior to operation of the new ATCT. Part 77 and LOS obstructing vegetation west of Runway 15R-33L would be removed. Tree obstructions east of Taxilane W would be hand felled to avoid impacts to wetland and stream areas, and obstructions west of Taxilane W would be clear cut and the area maintained as turf (see **Figure 3**).

Depending on timing of construction, construction staging would occur in one of two possible areas: within the Gold Lot south of the terminal area off Dorsey Road; or within Elkridge Landing Lots north of the Airport off Elkridge Landing Road. Both of these areas are currently or have been utilized for construction staging in the past.

PAST LAND USES IN PROJECT AREA

Small antebellum farmsteads used to dot the landscape of the BWI Marshall Airport property, with dwellings usually constructed in log or frame, sometimes with stone foundations. One such farmstead, visible in a 1943 aerial photograph, was located just to the south of the obstruction removal area (**Figure 4**). A road also passed through both obstruction removal areas. The farmstead was identified in the BWI Marshall Historic Preservation Plan, but research was not conducted to associate the residence with a particular family (Wanner and Harris 2021: Figure 2.12, no. 164).

By September 1946, the Baltimore Aviation Commission had purchased 1,000 acres of land. Much of the remainder of the property had to be acquired through condemnation suits over the opposition of a number of local land owners. The roadway and the farmstead located in the vicinity of the obstruction removal areas were demolished. In May 1947, construction began and in June 1950, President Harry S. Truman formally opened Friendship International Airport for business. The area of the proposed work has been part of the airport ever since.

HISTORIC RESOURCES IN VICINITY OF DIRECT APE

The Direct Area of Potential Effects (APE) includes the construction areas where ground disturbance may occur, as well as the staging areas which are located within exiting paved lots and would not result in ground disturbance (**Figure 5**). The areas of proposed obstruction removal are located within an area previously subjected to archaeological survey in 2016 as Area 5 (Wanner 2017) (**Figure 5**). 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.

In addition, Site 18AN1591 is located approximately 290 feet north of the obstruction removal area (**Figure 4**). Site 18AN1591 is a very small Woodland-period site consisting of a concentration of prehistoric artifacts. The site was identified during the 2016 Phase I survey of Airport improvements (Wanner 2017). Four sherds of very fragmentary prehistoric pottery and one quartzite flake were recovered from historic fills within three shovel test pits. The site also contains a historic burnt feature. The site was found to lack integrity and due to its inability to yield additional information was determined not eligible for the National Register.

HISTORIC RESOURCES WITHIN INDIRECT APE

The Indirect APE encompasses the viewshed around the new ATCT determined from the viewshed analysis and is expanded to include all Direct APE areas and the main Airport campus. The establishment of the Indirect APE was based on a viewshed analysis undertaken by EAC/Archaeology, Inc. (EAC/A) using ArcGIS 10.8 (**Figure 6**). The viewshed analysis was focused on the visual impact that the new tower would have on the surrounding area. The analysis is included as an additional attachment to this project review form. The results indicate that the tower would not be visible from historic properties within the vicinity, including the Linthicum Heights Historic District (AA-990), listed on the National Register of Historic Places (NRHP), and the Hamilton House (AA-87). This is largely due to the presence of pine trees around the periphery of the airport, which screen airport structures from surrounding properties even during the winter months (**Figure 7**). Although the ATCT would not be visible from most of the Benson-Hammond House (AA-118) property, which is listed on the National Register of Historic Places, a small portion of the property falls outside of the pine tree buffer, and thus may be visually impacted during winter months. However, all other airport structures between the property and the terminal, including the existing ATCT, would also be visible, and thus it would not present a significant change to the existing viewshed.

REFERENCES

Wanner, Robert

2017 *Phase I Archaeological Identification of BWI Marshall Airport, Anne Arundel County, Maryland*. Prepared for the Maryland Department of Transportation, Maryland Aviation Administration, BWI Airport, Maryland.

Wanner, Robert and Tery Harris

2021 *Historic Preservation Plan, Baltimore/Washington International Thurgood Marshall Airport, Anne Arundel County, Maryland*. Prepared for the Maryland Department of Transportation, Maryland Aviation Administration, BWI Airport, Maryland.

Wanner, Robert

2023 *Viewshed Analysis for Proposed New Airport Traffic Control Tower, Baltimore/Washington International Thurgood Marshall Airport, Anne Arundel County, Maryland*. Prepared for the Maryland Aviation Administration, BWI Airport, Maryland.

PHOTOGRAPHIC PLATES



Photographic Plate 1: Proposed new ATCT location, facing southwest from between Concourses E and D



Photographic Plate 2: Proposed new ATCT location, facing northeast from between Concourses C and D



Photographic Plate 3: Proposed new ATCT location, facing northeast from between Concourses C and D

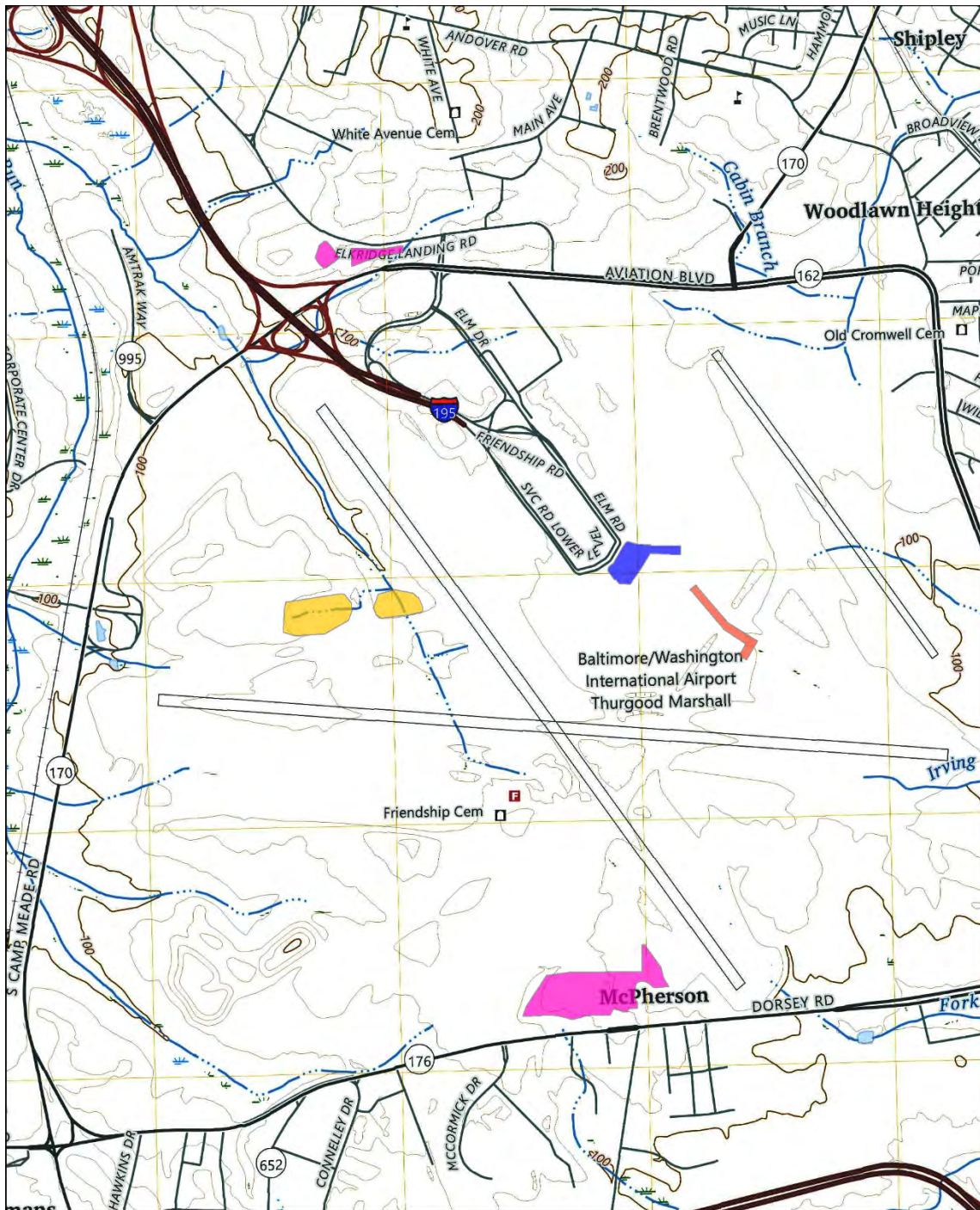


**Photographic Plate 4: Proposed obstruction removal area facing east from western edge of airfield
(existing ATCT visible in background)**



Photographic Plate 5: Proposed obstruction removal area facing northeast from southwest corner of airfield

FIGURES



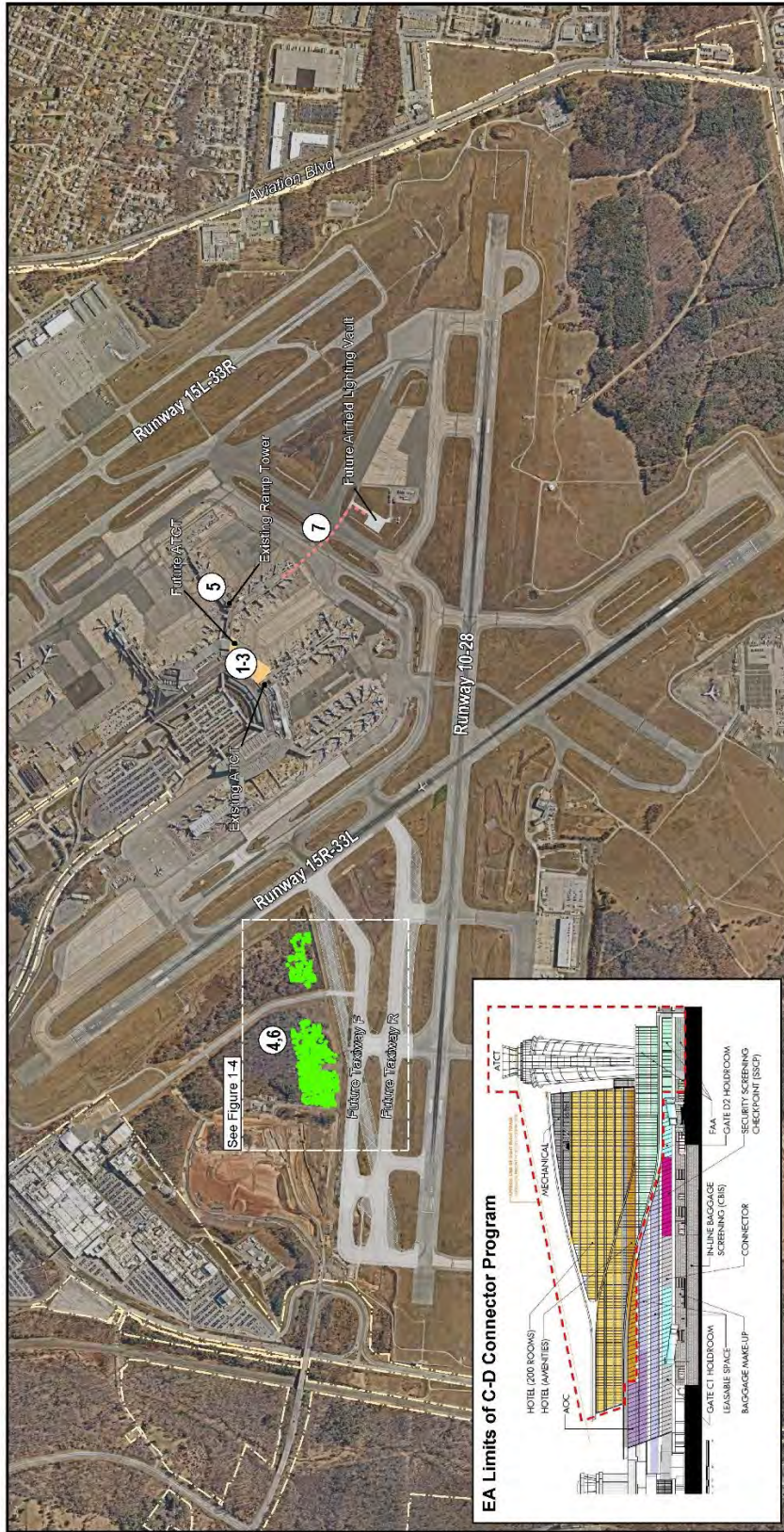
BWI Marshall Airport
 Airport Traffic Control Tower
 Project Limits on USGS 2023
 Relay, Maryland Topographic Quad

- New ATCT and Associated Improvements
- Obstruction Removal
- Connection to Airfield Lighting Vault
- Staging Area

0 500 1,000 2,000 Feet

Figure 1

New Airport Traffic Control Tower and Associated Improvements Environmental Assessment



LEGEND

- EA Limits of C-D Connector Program
- C-D Connector Program
- Future Taxiway Alignment
- Future Taxiway Pavement Demolition
- Proposed Utility Connection
- MDOT MAA Property

Proposed Action Projects

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

Connected Action Projects

- 5 Supplemental ATCT Upgrades
- 6 ATCT LOS Obstruction Removal
- 7 Connection to Airfield Lighting Vault

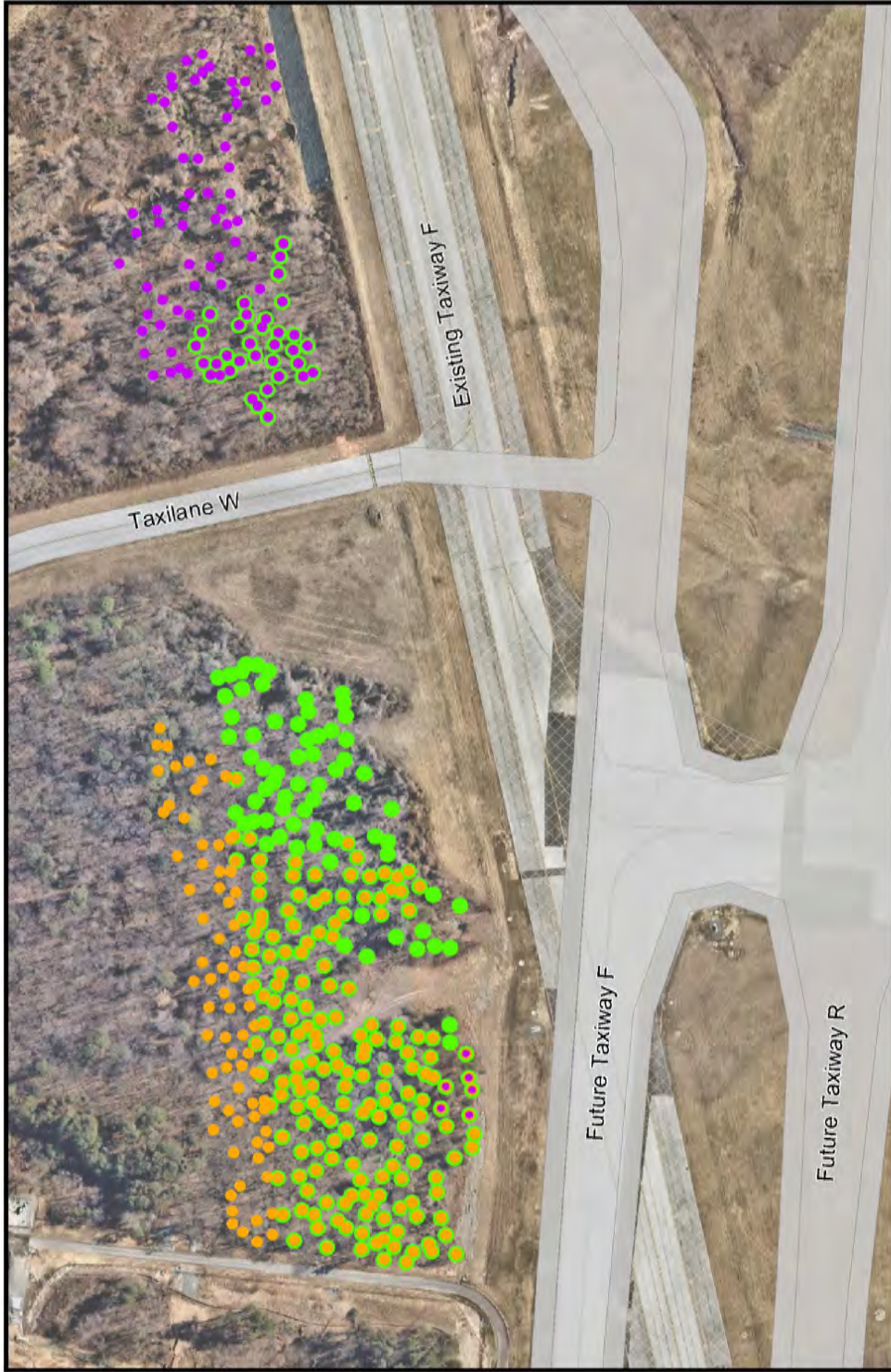
Proposed Action Figure 1-3

Scale: 0 267.5 535 1,150 feet

Source: MDOT MAA, Mapmap, C-D Connector Project Definition Document (2019)

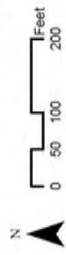
Figure 2

New Airport Traffic Control Tower and Associated Improvements Environmental Assessment



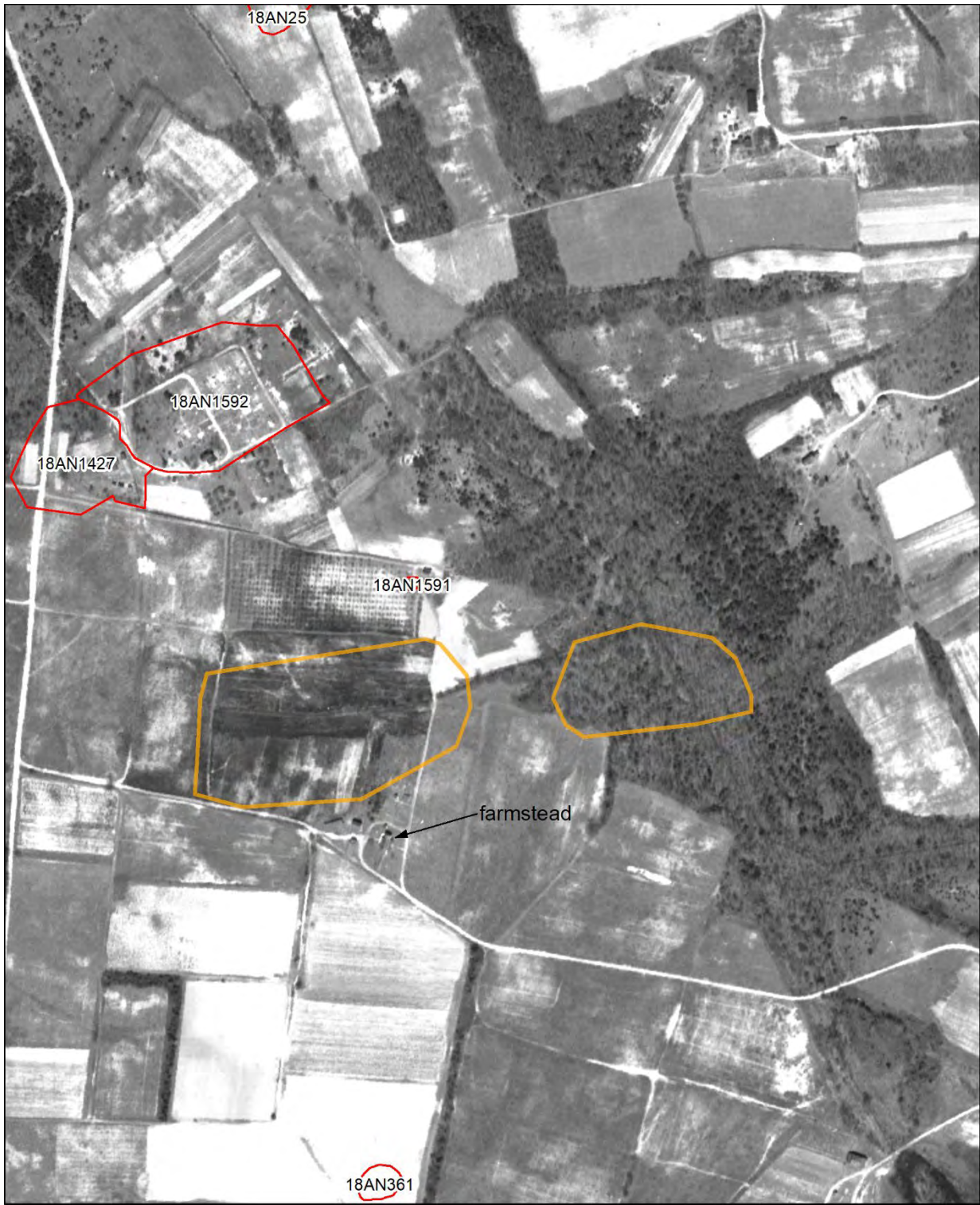
Proposed Action - Obstruction Removal
Figure 1-4

- LEGEND**
- Future Taxiway F and R Alignment
 - Future Taxiway Pavement Demolition
 - MDOT MAA Property
- Vegetative Obstruction Removal**
- Existing ATCT LOS Obstructions
 - Future ATCT LOS Obstructions
 - Part 77 Obstructions



Sources: MDOT MAA, Nearmap, C-D Connector Project Definition Document (2016)

Figure 3



BWI Marshall Airport
Obstruction Removal Area
on USDA 1943 aerial photograph

- Archaeological site
- Obstruction Removal

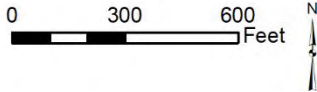
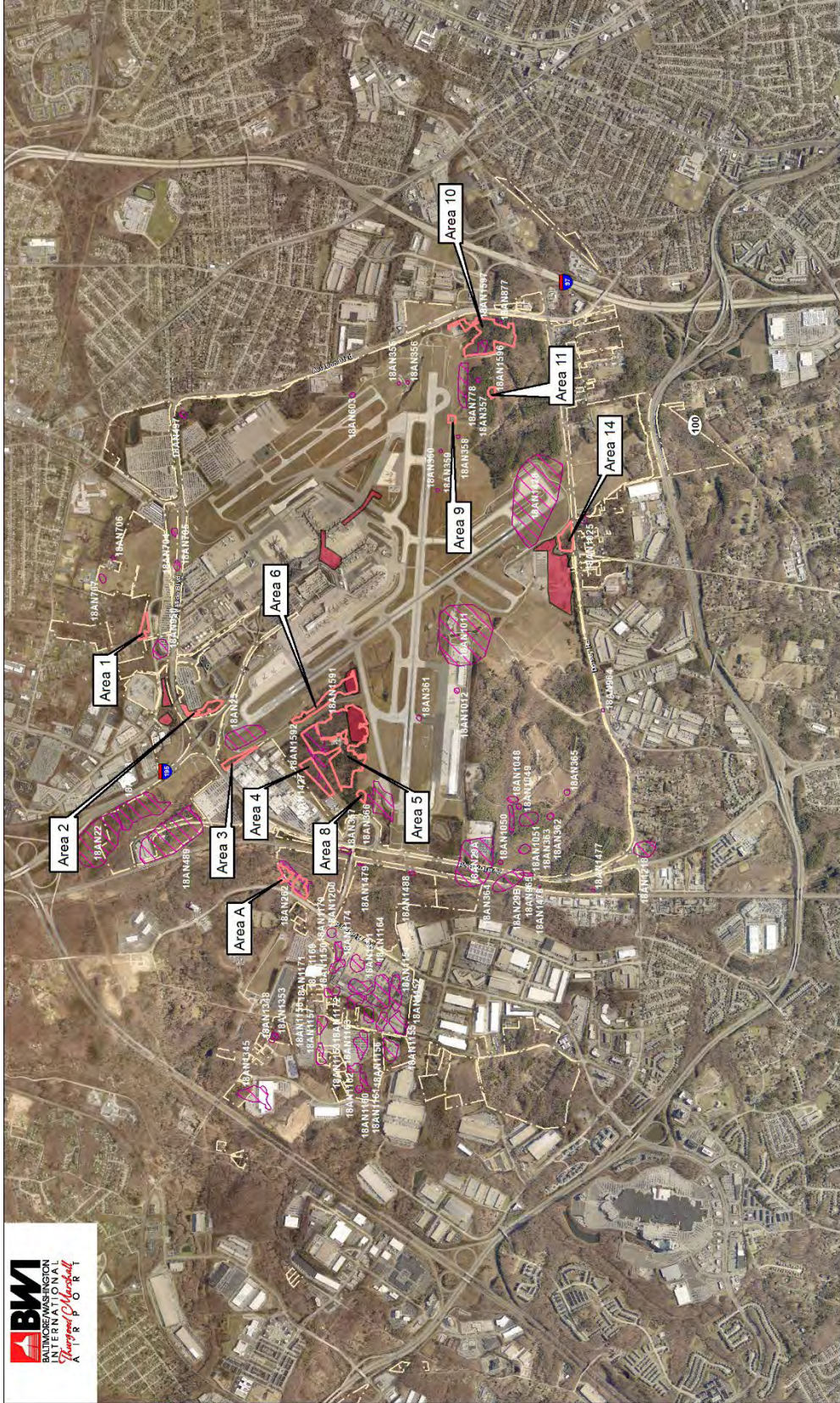
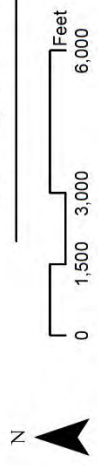


Figure 4



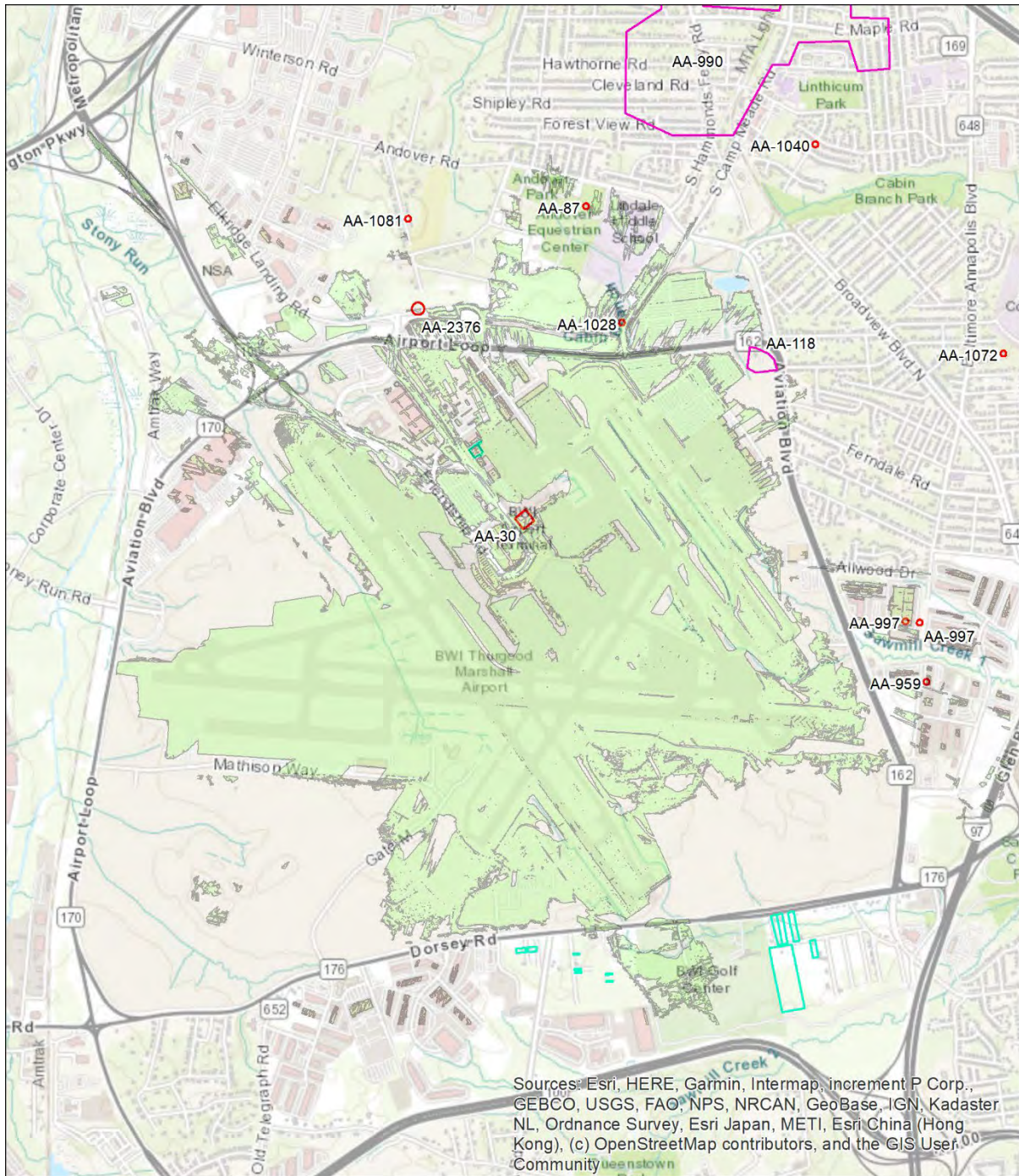
Direct APE and Previous Archaeological Surveys and Sites in Vicinity

- LEGEND**
-  Archaeological Survey Area (2017)
 -  Direct APE
 -  Airport Property
 -  Archaeological Site



Source: 2020 Anne Arundel County aerial imagery

Figure 5



BWI Marshall Airport
 New Airport Traffic
 Control Tower and
 Associated Improvements
 Indirect APE

- Indirect APE
- Historic property (MIHP)
- National Register listed property
- 50-year-old building

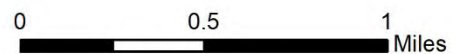


Figure 4



BWI Marshall Airport
 New Airport Traffic
 Control Tower
 No Vegetation Viewshed and
 Northern Historic Properties

Historic property (MIHP) National Register listed property

0 300 600
 Feet

Figure 5

**VIEWSHED ANALYSIS FOR PROPOSED NEW
AIRPORT TRAFFIC CONTROL TOWER,
BALTIMORE/WASHINGTON INTERNATIONAL
THURGOOD MARSHALL AIRPORT,
ANNE ARUNDEL COUNTY, MARYLAND**

Prepared for
HNTB
2900 South Quincy St.
Ste. 600
Arlington, VA 22206

Prepared by
Rob Wanner

Elizabeth A. Comer
Principal Investigator

EAC/Archaeology, Inc.
4303 N. Charles Street
Baltimore, MD 21218

July 28, 2023

ABSTRACT

HNTB contracted with EAC/Archaeology, Inc., (EAC/A) to conduct a viewshed analysis for the proposed construction of a new Airport Traffic Control Tower (ATCT) at Baltimore/Washington International Thurgood Marshall Airport (BWI Marshall) in Anne Arundel County. The analysis, conducted in ArcGIS 10.8, indicates that the tower will not be visible from historic properties within the vicinity, including the Linthicum Heights Historic District (AA-990), listed on the National Register of Historic Places (NRHP), and the Hamilton House (AA-87). This is largely due to the presence of pine trees around the periphery of the airport, which screen airport structures from surrounding properties even during the winter months. Although the ATCT will not be visible from most of the Benson-Hammond House (AA-118) property, a small portion of the property falls outside of the pine tree buffer, and thus may be visually impacted during winter months. However, all other airport structures between the property and the terminal, including the existing ATCT, would also be visible, and thus it would not likely present a significant change. Therefore, the construction of the new ATCT will not have a significant visual impact on any historic properties in the vicinity.

TABLE OF CONTENTS

1	Introduction.....	1
2	Research Design and Methodology	3
3	Results of Analysis	5
4	Summary and Recommendations	14
5	References Cited	15

LIST OF FIGURES

Figure 1: Project location on 2023 USGS topographic map of Relay, Maryland	2
Figure 2: Original viewshed generated from proposed tower over distance of 1.5 miles, using current DEM with vegetation and buildings.....	4
Figure 3: Final viewshed generating using digital surface with current conditions	6
Figure 4: Final viewshed generating using digital surface without vegetation	7
Figure 5: Effects on AA-990, AA-118, and AA87, showing photograph locations.....	9
Figure 6: Photograph of view from AA-118, facing southwest.....	10
Figure 7: Photograph of view from AA-87, facing southwest.....	10
Figure 8: Photograph from AA-990, facing south from intersection between S. Hammonds Ferry Road and Shipley Court	11
Figure 9: Effects on properties with 50-year-old buildings south of Dorsey Road	12
Figure 10: Photograph of view from Arundel Avenue, facing north.....	13

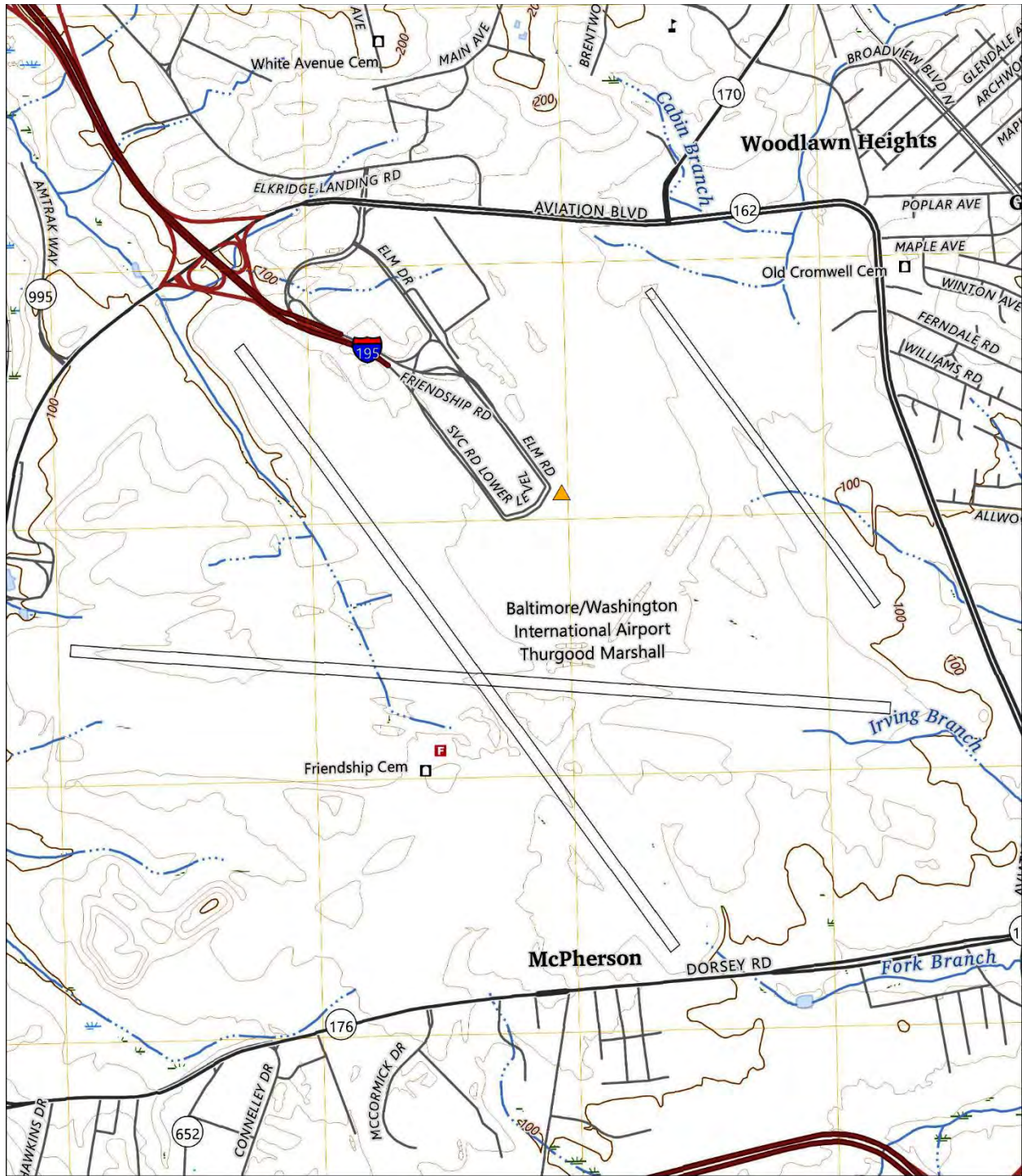
1 INTRODUCTION

The Maryland Aviation Administration (MAA) is proposing to build a modernized Airport Traffic Control Tower (ATCT) at Baltimore/Washington International Thurgood Marshall Airport (BWI Marshall Airport) (**Figure 1**). An Environmental Assessment will be prepared to evaluate alternatives for expansion and to consider potential effects of the expansion. One of the considerations is the effect of the new tower, which is taller than the current ATCT, on historic resources in the vicinity. Historic resources are protected under Section 106 of the National Historic Preservation Act of 1966 (NHPA). Section 106 of the NHPA outlines a historic preservation review process and requires Federal agencies to consider the effects of their projects on historic resources. Both direct and indirect effects to historic resources must be considered. While the new tower would be built within a previously disturbed footprint on airport property, and would thus not result in any effects on archaeological resources, the new tower could indirectly affect the views to and from historic properties – properties listed on or eligible for the National Register of Historic Places (NRHP) – in the area.

Therefore, EAC/Archaeology, Inc. (EAC/A) prepared a viewshed study for the proposed construction of a new ATCT at BWI Marshall Airport. The primary purpose of the study was to identify an Indirect Area of Potential Effect (APE), specifically with regard to visual effects, for the new tower and historic resources within that Indirect APE which may be visually affected by the project. In general, the APE is defined in the regulations implementing the Section 106 review process as "the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking" [36 CFR Part 800.16(d)]. This report documents the methodology and the results of this viewshed study.

Section 1 of this report includes an introduction and brief overview of the project report. **Section 2** contains a description of the research design and methodology. **Section 3** provides a summary of the results and interpretation. **Section 4** summarizes the results and offers recommendations for the project design to address county concerns. **Section 5** comprises a list of references cited in the report.

Robert Wanner was responsible for all research and analysis, along with associated maps and imagery. Spatial analysis was conducted on computers at EAC/A's archaeological laboratory at 2113 Saint Paul Street, Baltimore, Maryland. All photographs included in this report were taken by Robert Wanner on July 26, 2023.



BWI Marshall Airport
Proposed Airport Traffic
Control Tower Location
on 2023 USGS Topographic
Map of Relay, MD

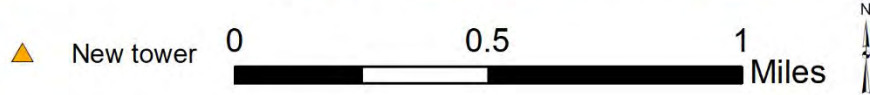


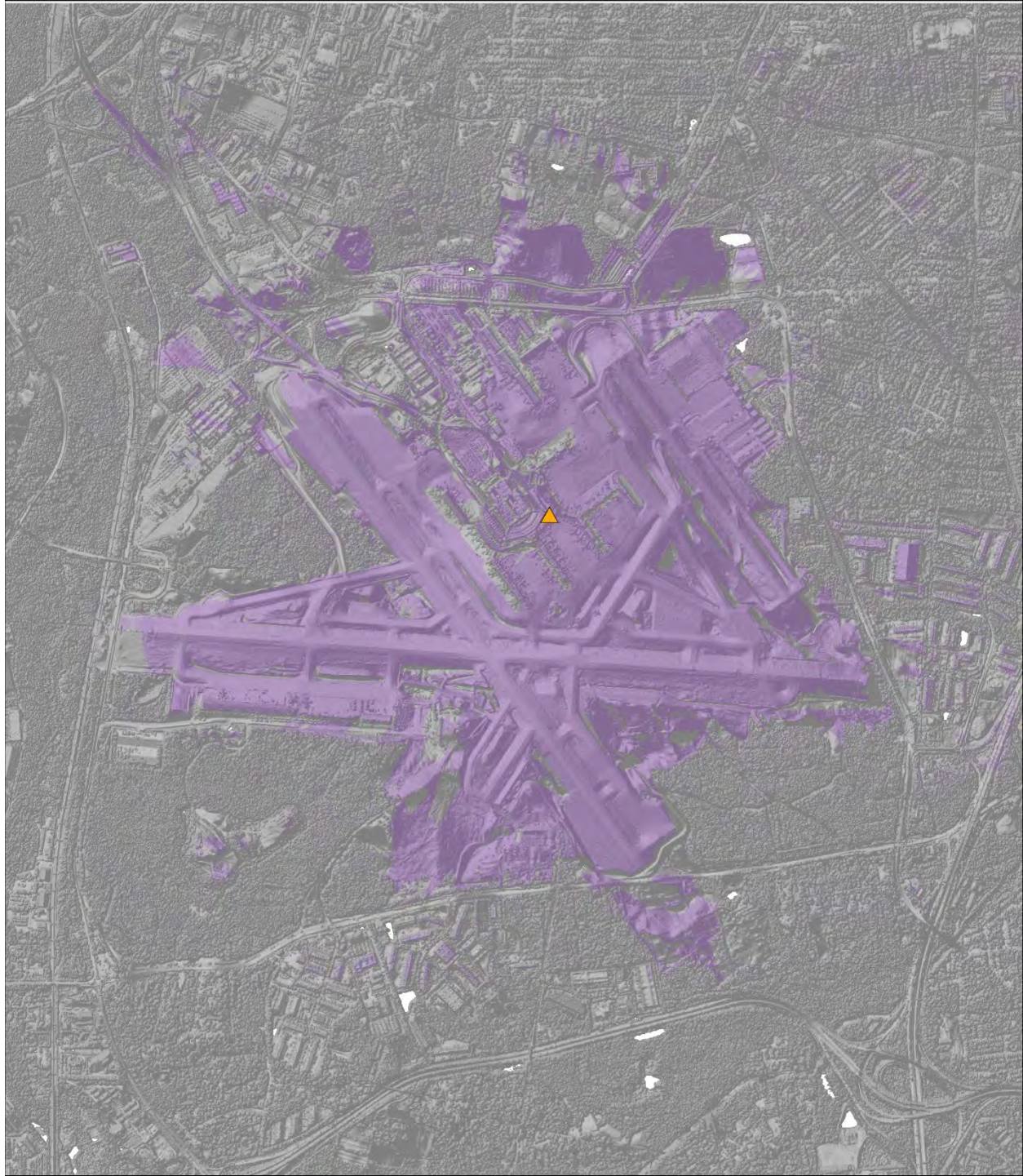
Figure 1: Project location on 2023 USGS topographic map of Relay, Maryland

2 RESEARCH DESIGN AND METHODOLOGY

EAC/A prepared two viewsheds using ArcGIS 10.8. A viewshed is developed using cells in a digital elevation model (raster data) and observer points (vector data). A straight line is interpolated between the observer point and every other cell within the elevation model. If the height of cells along this line exceeds the height at the source, the line of sight is interrupted, and raster data beyond this threshold is eliminated from the viewshed. In this case, the observer point was emplaced in the proposed location of the new ATCT at 387 feet above mean sea level, which is the proposed height of the tower. A total of 5.5 feet was added to the surface to simulate the eye level of an average person.

EAC/A used two surfaces in this analysis, both based upon a two-foot resolution Digital Elevation Model (DEM) derived from Light Detection and Ranging (LiDAR) data. LiDAR is a remote sensing method that uses light in the form of a pulsed laser to measure distances to the earth. These light pulses—combined with other data recorded by the airborne system— generate precise, three-dimensional information about the shape of the earth and its surface characteristics. The sheer density and resolution of point data acquired usually guarantees that some of the points represent the surface of the ground below tree cover. Maryland makes all of the point cloud data and processed DEMs available for free at the Maryland state mapping and GIS portal, Maryland iMap. The point cloud was downloaded for the relevant area of BWI Marshall Airport, then used to generate a digital elevation model (DEM) with current structures and vegetation intact (**Figure 1**); and a “no vegetation” DEM to simulate the surface with vegetation removed. While this does not represent real conditions, it is often used to replicate the terrain in the winter months when surface vegetation is dead and the trees are bare of leaves. While vegetation could be removed at some point in the future, especially on private property, this analysis provides information on how these real conditions affect the viewshed so that appropriate planning can be implemented. All structures were left intact for the no vegetation DEM since any changes to structures on airport property would prompt additional consideration for effects on cultural resources. Both models were generated at a two-foot resolution with Blue Marble’s Global Mapper 18.2 Lidar Module.

The analysis was conducted with the Visibility tool in ArcGIS 10.8, allowing for a buffer of 1.5 miles around the tower. This is the maximum distance that a person might reasonably be able to see and interpret the ATCT. A raster image of areas from which the tower would be discernible was created, which was subsequently converted into a shapefile. This allowed for easier editing and measuring. Smaller, isolated residual visible areas which were less than 2,200 square feet in size were removed from the viewshed. Patches of visibility below this threshold were observed to correspond frequently with the roofs of houses or the tops of trees, and were thus considered secondary in importance to larger, contiguous areas of visible terrain. The process was completed for both the current and the no vegetation DEMs, generating both a current viewshed (simulating the visible surface with current structural and summer leaf conditions) and a no vegetation viewshed (simulating the visible surface with leaves off the trees and shrubs).



BWI Marshall Airport
New Airport Traffic
Original Viewshed over
Current DEM

- ▲ New tower
- Visible Area

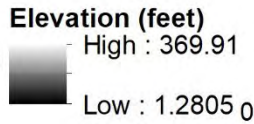


Figure 2: Original viewshed generated from proposed tower over distance of 1.5 miles, using current DEM with vegetation and buildings

3 RESULTS OF ANALYSIS

The current viewshed encompasses approximately 2.7 square miles in area, including most of the main airport campus surrounded by Aviation Boulevard and Dorsey Road. Notable gaps in visibility exist in the northwest, southwest and southeast areas of the airport campus due to thick vegetation which also serves to block the views beyond Aviation Boulevard. The tower would also be visible within a significant portion of the developed area to the north of Aviation Boulevard, in the vicinity of the long-term and employee parking lots for the airport and the BWI Business District; beyond Aviation Boulevard on the east side of the airport in the vicinity of Ferndale; and to the south of Dorsey Road within the Thomas A. Dixon, Jr. Aircraft Observation Area.

Five historic properties mapped with MEDUSA (Maryland's online cultural resources GIS) were identified which intersect this current viewshed for the new ATCT (**Figure 3**): AA-30 (Hanger No. 1, BWI), AA-959 (W. T. Shipley Farm), AA-997 (W. Downs House and Cemetery), AA-1028 (Buren Smith House), and AA-2376 (Unidentified Farmstead). Without exception, all of these documented resources have been demolished. Because they no longer exist in their original locations, the ATCT will have no effect on previously-identified historic properties if the current configuration of vegetation and structures is maintained. In addition, a spatial database of properties either owned by the airport or within the airport noise zone (ANZ) which contain buildings older than 50 years, assembled for the BWI Marshall Historic Preservation Plan, was consulted. Of these properties, only one falls within the current viewshed for the ATCT: the Airline Cargo Building, from which the current ATCT is visible. As such, the new ATCT will not result in any new effects to this building.

The no vegetation viewshed covers a great deal more area than that covered by the current viewshed (4.4 square miles) showing the important effects of vegetative screening on airport properties associated with noise reduction (**Figure 4**). This includes significant areas beyond the main airport campus to the north, south, and east. This viewshed includes nearly all of the Benson-Hammond House (AA-118) property at the northeast corner of the airport property, and a small portion of the Linthicum Heights Historic District (AA-990), both listed on the NRHP. Another property which falls within this viewshed, AA-87 (Hamilton House), was determined eligible for the National Register under criterion C. One ineligible historic property also fall within this bare earth viewshed, AA-1081 (White Avenue Cemetery). Additionally, two other unevaluated properties, AA-1040 (William Abner Shipley House) and AA-1072 (Harmony Grove), also fall within the bare earth viewshed. Several other properties with buildings over 50 years old also fall within the viewshed on either side of the Thomas A. Dixon, Jr. Aircraft Observation Area.

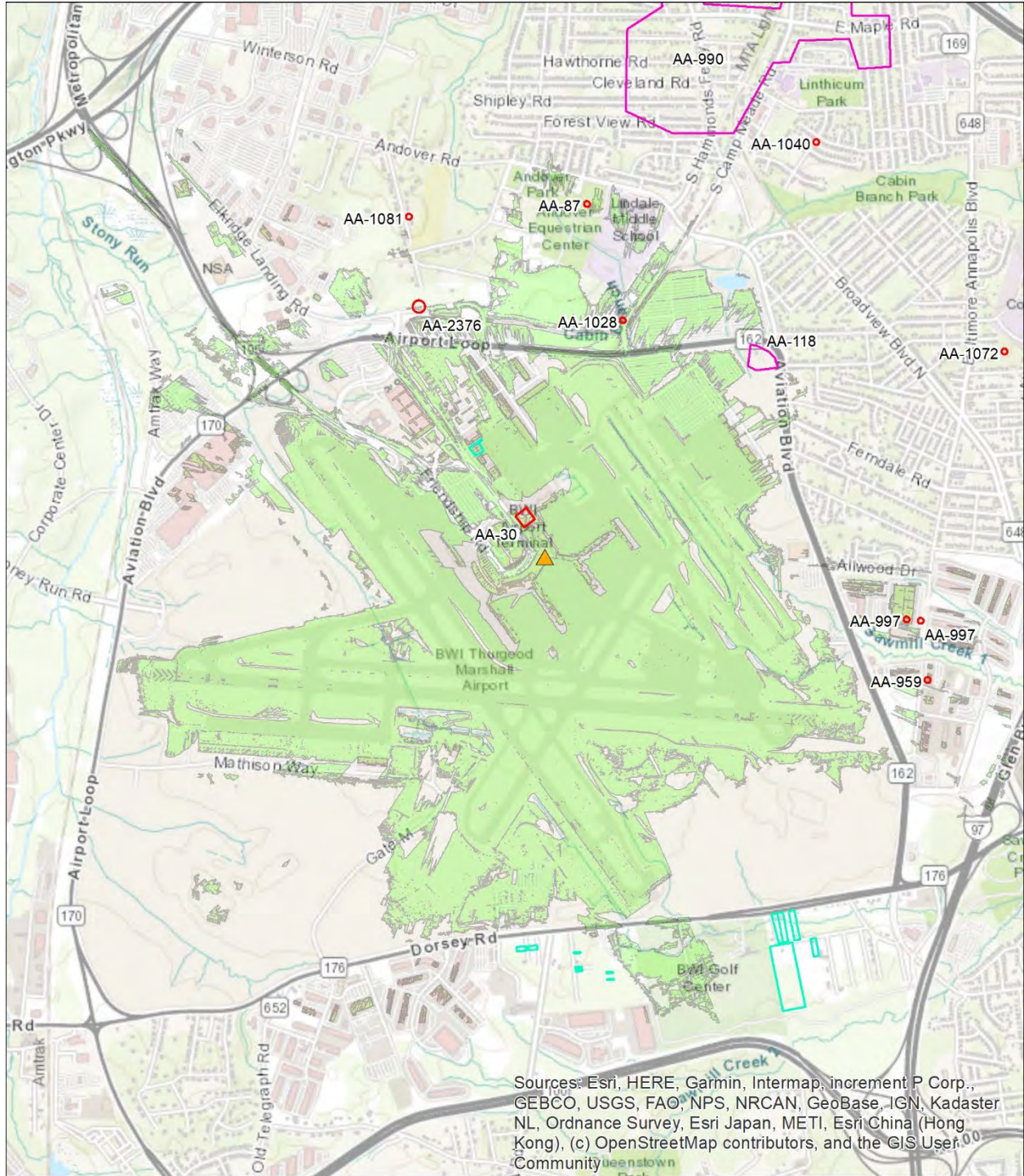
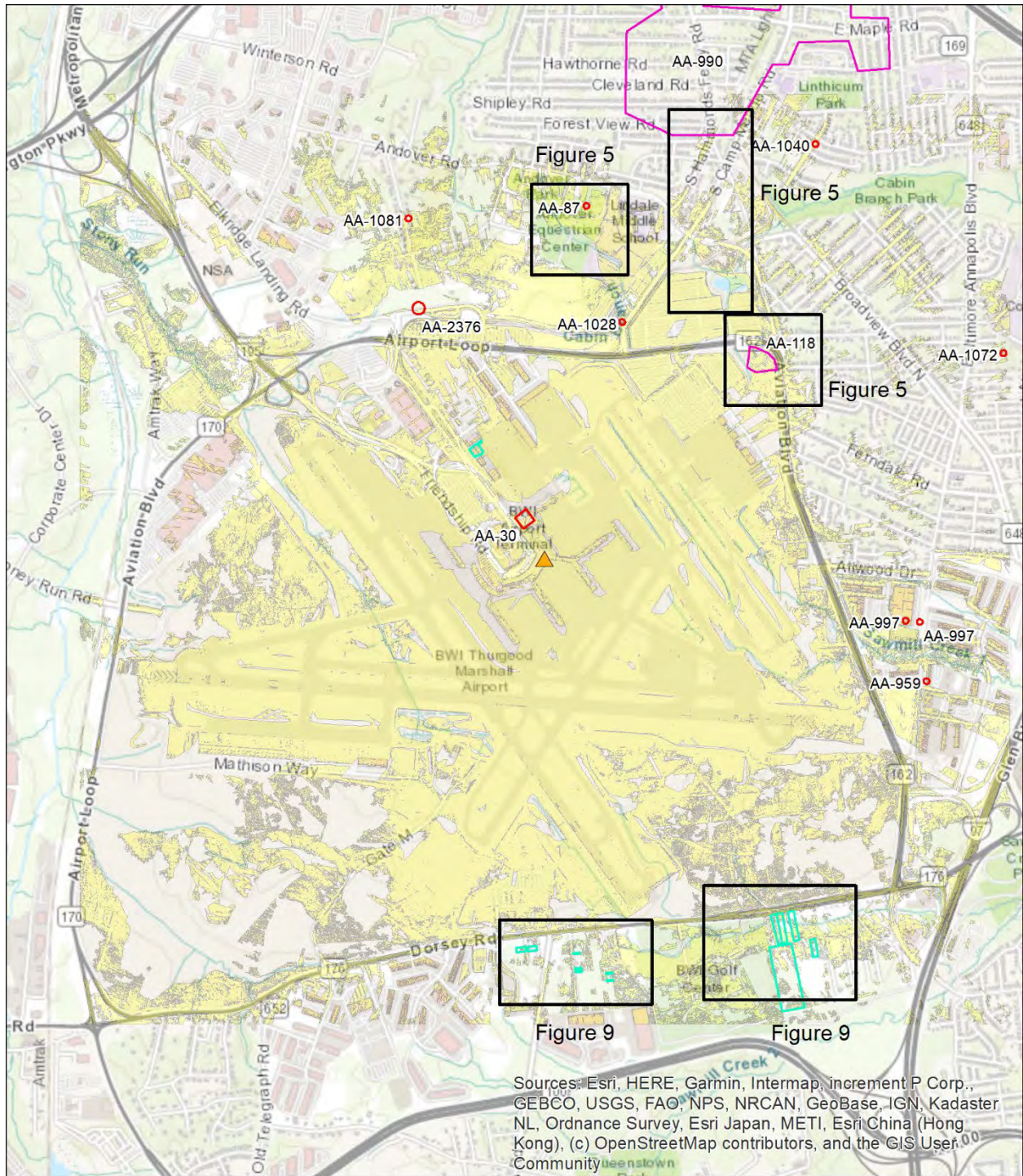


Figure 3: Final viewshed generating using digital surface with current conditions



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

BWI Marshall Airport New Airport Traffic Control Tower No Vegetation Viewshed	 New tower	 50-year-old building
	 Historic property (MIHP)	 No vegetation viewshed
	 National Register listed property	
		

Figure 4: Final viewshed generating using digital surface without vegetation

Besides illustrating the importance of the vegetative buffers on the airport property emplaced to reduce noise, a viewshed generated with vegetation removed is often used to simulate conditions in winter months, when the trees, shrubs, and vines are bare of leaves. While this is usually a concern for historic properties eligible for or listed on the NRHP, the presence of pine trees around the edges of the airport mitigate this effect on the three relevant properties to the north of the airport. Pine trees are very easy to distinguish as the only green trees in aerial photographs taken in 2022, provided by Anne Arundel County, due to the fact that the photos were taken during the winter months (**Figure 5**).

In the case of the Benson-Hammond House property (AA-118), pine trees around the edge of the property will block the view even during the winter months (**Figure 5, top right**). A photograph from the northeast edge of the property facing southwest demonstrates the visual effects of the thick vegetation including pine trees wrapping around the property (**Figure 6**). We note here that during winter months, the tower 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 of these airport structures may already be visible the impact on this area of the property will be minimal. The area containing the primary structures will still be protected visually.

In the case of the Hamilton House (AA-87), a thick vegetation buffer to the south, which also includes pine trees, will also prevent visual effects during the winter months (**Figure 5, bottom right**). A photograph taken from the south of the property shows the visual effects of approximately 400 feet of forest between the property and the airport, preventing any view of the parking lots, air cargo buildings, or the terminal which are located between the property and the proposed location for the new tower (**Figure 7**).

A small portion of the Linthicum Heights Historic District (AA-990), which is listed in the NRHP, falls within the no vegetation viewshed (**Figure 5, left**). This is mainly focused on a small portion of Hammonds Ferry Road between Forest View Road and Shipley Court due to the elevation in this area and the curve of the road to the southwest. However, a photograph from this location again indicates that thick vegetation, which includes some visible pine trees, stands between this area and the airport campus (**Figure 8**). Coupled with modern houses constructed to the south, it would appear that the tower would not be visible from this location even during the winter months.



BWI Marshall Airport
New Airport Traffic
Control Tower
No Vegetation Viewshed and
Northern Historic Properties

Historic property (MIHP) National Register listed property

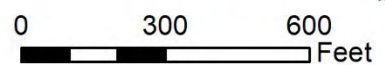


Figure 5: Effects on AA-990, AA-118, and AA87, showing photograph locations



Figure 6: Photograph of view from AA-118, facing southwest



Figure 7: Photograph of view from AA-87, facing southwest




Figure 8: Photograph from AA-990, facing south from intersection between S. Hammonds Ferry Road and Shipley Court

A similar situation is true of several properties to the south of Dorsey Road on either side of the Thomas A. Dixon, Jr. Aircraft Observation Area which contain structures older than 50 years (**Figure 9**). A pine buffer exists along the northern edge of Dorsey Road, except at access points and north of the observation area, which reduces noise as well as visual effects. The buffer is complimented by deciduous trees, and grows much thicker to the east of the observation area. A photograph shows the effects of the buffer from Arundel Avenue, just to the west of the Thomas A. Dixon, Jr. Aircraft Observation Area (**Figure 10**). Although mainly deciduous trees are visible, as the photo was taken during summer months, pines are visible in the background.



BWI Marshall Airport
New Airport Traffic
Control Tower
No Vegetation Viewshed and
Southern Periphery

 Property with 50-year-old building

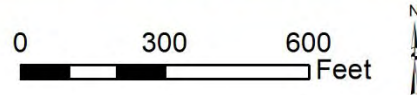


Figure 9: Effects on properties with 50-year-old buildings south of Dorsey Road



Figure 10: Photograph of view from Arundel Avenue, facing north

4 SUMMARY

The viewshed analysis has shown that any effects on historic properties will be minimal. While the no vegetation viewshed includes portions of the Benson-Hammond House (AA-118) property, the Linthicum Heights Historic District (AA-990), which both listed on the NRHP, and the Hamilton House (AA-87), which has been determined eligible for the National Register under criterion C, ground truthing has shown that thick vegetation buffers which include pine trees will continue to visually screen airport structures from these properties even during the winter months. A small portion of the Benson-Hammond House boundary falls just outside of the pine tree buffer, and thus there is potential there for visual effects during the winter. However, all of the existing airport structures, including the current tower, are currently visible from the same location, and thus the new ATCT would not present a significant change in the view from there.

While the construction of the new ATCT does not appear to have any adverse visual effects on historic properties listed on or eligible for the NRHP, it is important to emphasize that this is primarily the result of the current tree buffers. If there are any changes to these buffers, the effects of this work on the viewshed for nearby historic properties should be considered.

5 REFERENCES CITED

United States Geological Survey (USGS)

2022 *Relay, Maryland Quad*. Topographic Map. 1:24,000. United States Geological Survey, Washington.

Attachment 2:

Tribal Consultation Package

November 14, 2023



U. S. Department
Of Transportation

**Federal Aviation
Administration**

WASHINGTON AIRPORTS DISTRICT OFFICE
13873 Park Center Road, Suite 490-S
Herndon, Virginia 20171
Telephone: 703/487-3980 Fax: 703/487-3982

November 14, 2023

Ms. Katelyn Lucas
Historic Preservation Office
Delaware Nation, Oklahoma
PO Box 825
Anadarko, OK 73005

SUBJECT: Tribal Coordination – Environmental Assessment for New Airport Traffic Control Tower (ATCT) and Associated Improvements at BWI Marshall Airport, Anne Arundel County

Dear Ms. Lucas,

The Federal Aviation Administration (FAA) and the Maryland Aviation Administration (MAA) are in the process of preparing an Environmental Assessment (EA) to obtain National Environmental Policy Act (NEPA) approval for a New Airport Traffic Control Tower (ATCT) and Associated Improvements at BWI Marshall Airport. The proposed projects are entirely within Airport project in Anne Arundel County, Maryland.

In order to fulfill our responsibilities under the National Historic Preservation Act, I am contacting you as part of the environmental review process. With this letter, the FAA is seeking input on concerns that uniquely or significantly affect your tribe related to planned and proposed airport improvements. Early identification of tribal concerns will allow the FAA and the airport owner and operator to consider ways to avoid and minimize potential impacts to tribal resources and practices as project planning and alternatives are developed and refined. The FAA is also extending an offer of Consultation on this project, if you would prefer that to providing informal comments.

Project Information / Consultation with Maryland Historical Trust

Figure 1 identifies the locations of the Proposed Action projects. A Project Review Form was submitted to the Maryland Historical Trust (MHT) on September 11, 2023. MHT responded on October 13, 2023 with a concurrence of **no adverse effect**. The Proposed Action project descriptions and Direct and Indirect Area of Potential Effects (APE) are identified in detail within the attached Project Review Form.

As explained in the attached Project Review Form, the Direct APE area of proposed obstruction removal is located within an area previously subjected to archaeological survey in 2016 (see Figure 5 of Project Review Form). 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 Indirect APE encompasses the viewshed around the new ATCT. The analysis is included as an additional attachment to this project review form. The results indicate that the tower would not be

visible from historic properties within the vicinity. Also note that the existing ATCT will not be demolished.

Confidentiality

The FAA understands that you may have concerns regarding the confidentiality of information on areas or resources of religious, traditional, and cultural importance to the tribe. We would be pleased to discuss these concerns and develop procedures to ensure the confidentiality of such information is maintained.

FAA Contact Information

If you wish to provide comments related to this proposed project or engage in Government-to-Government Consultation, please contact me at:

Genevieve Walker
Environmental Protection Specialist
Washington ADO
13783 Park Center Road, Suite 490S
Herndon, VA 20171
(703) 487-3979

Sincerely,

Genevieve Walker

Genevieve Walker
Environmental Protection Specialist

Enclosures:

- MHT Project Review Form, submitted 9/11/23
- MHT Response, 10/13/23
- Viewshed Analysis Report

cc: Mr. Kevin Clarke, MAA



U. S. Department
Of Transportation

**Federal Aviation
Administration**

WASHINGTON AIRPORTS DISTRICT OFFICE
13873 Park Center Road, Suite 490-S
Herndon, Virginia 20171
Telephone: 703/487-3980 Fax: 703/487-3982

November 14, 2023

Ms. Susan Bachor
Preservation Representative (East Coast)
Delaware Tribe of Indians
126 University Circle
Stroud Hall, Room 437
East Stroudsburg, PA 18301

SUBJECT: Tribal Coordination – Environmental Assessment for New Airport Traffic Control Tower (ATCT) and Associated Improvements at BWI Marshall Airport, Anne Arundel County

Dear Ms. Bachor,

The Federal Aviation Administration (FAA) and the Maryland Aviation Administration (MAA) are in the process of preparing an Environmental Assessment (EA) to obtain National Environmental Policy Act (NEPA) approval for a New Airport Traffic Control Tower (ATCT) and Associated Improvements at BWI Marshall Airport. The proposed projects are entirely within Airport project in Anne Arundel County, Maryland.

In order to fulfill our responsibilities under the National Historic Preservation Act, I am contacting you as part of the environmental review process. With this letter, the FAA is seeking input on concerns that uniquely or significantly affect your tribe related to planned and proposed airport improvements. Early identification of tribal concerns will allow the FAA and the airport owner and operator to consider ways to avoid and minimize potential impacts to tribal resources and practices as project planning and alternatives are developed and refined. The FAA is also extending an offer of Consultation on this project, if you would prefer that to providing informal comments.

Project Information / Consultation with Maryland Historical Trust

Figure 1 identifies the locations of the Proposed Action projects. A Project Review Form was submitted to the Maryland Historical Trust (MHT) on September 11, 2023. MHT responded on October 13, 2023, with a concurrence of **no adverse effect**. The Proposed Action project descriptions and Direct and Indirect Area of Potential Effects (APE) are identified in detail within the attached Project Review Form.

As explained in the attached Project Review Form, the Direct APE area of proposed obstruction removal is located within an area previously subjected to archaeological survey in 2016 (see Figure 5 of Project Review Form). 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 Indirect APE encompasses the viewshed around the new ATCT. The analysis is included as an additional attachment to this project review form. The results indicate that the tower would not be

visible from historic properties within the vicinity. Also note that the existing ATCT will not be demolished.

Confidentiality

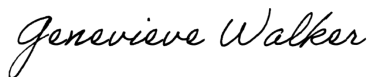
The FAA understands that you may have concerns regarding the confidentiality of information on areas or resources of religious, traditional, and cultural importance to the tribe. We would be pleased to discuss these concerns and develop procedures to ensure the confidentiality of such information is maintained.

FAA Contact Information

If you wish to provide comments related to this proposed project or wish to engage in Government-to-Government Consultation, please contact me at:

Genevieve Walker
Environmental Protection Specialist
Washington ADO
13783 Park Center Road, Suite 490S
Herndon, VA 20171
Genevieve.J.Walker@faa.gov
(703) 487-3979

Sincerely,



Genevieve Walker
Environmental Protection Specialist

Enclosures:

- MHT Project Review Form, submitted 9/11/23
- MHT Response, 10/13/23
- Viewshed Analysis Report

cc: Mr. Kevin Clarke, MAA

MHT Project Review Form, submitted 9/11/23

MHT Response 10/13/23



PROJECT REVIEW FORM

Request for Comments from the Maryland Historical Trust/
MDSHPO on State and Federal Undertakings

MHT USE ONLY	
Date Received: 9/11/23	Log Number: F FAA EJC 22303755

Project Name **BWI Marshall - Airport Traffic Control Tower Replacement and Associated Improv** County **Anne Arundel**

Primary Contact:

Contact Name **Kevin Clarke** Company/Agency **Maryland Aviation Administration**
 Mailing Address **P.O. Box 8766**
 City **BWI Airport** State **Maryland** Zip **21240-0766**
 Email **kclarke@bwiairport.com** Phone Number **+1 (410) 859-7787** Ext.

Project Location:

Address **7050 Friendship Road** City/Vicinity **BWI Airport**
 Coordinates (if known): Latitude **39.180375** Longitude **-76.667302** Waterway **Sawmill Creek**

Project Description:

List federal and state sources of funding, permits, or other assistance (e.g. Bond Bill Loan of 2013, Chapter #; HUD/CDBG; MDE/COE permit; etc.).	Agency Type	Agency/Program/Permit Name	Project/Permit/Tracking Number (if applicable)
	<input type="checkbox"/> State	Maryland Department of Transportation	
	<input type="checkbox"/> Federal	Federal Aviation Administration	

This project includes (check all applicable): New Construction Demolition Remodeling/Rehabilitation
 State or Federal Rehabilitation Tax Credits Excavation/Ground Disturbance Shoreline/Waterways/Wetlands

Other\Additional Description: **construction of new ATCT and associated improvements, including obstruction removal**

Known Historic Properties:

This project involves properties (check all applicable): Listed in the National Register Subject to an easement held by MHT
 Included in the Maryland Inventory of Historic Properties Designated historic by a local government
 Previously subject to archeological investigations

Property\District\Report Name

Attachments:

All attachments are required. Incomplete submittals may result in delays or be returned without comment.

Aerial photograph or USGS Quad Map section with location and boundaries of project clearly marked.
 Project Description, Scope of Work, Site Plan, and/or Construction Drawings.
 Photographs (print or digital) showing the project site including images of all buildings and structures.
 Description of past and present land uses in project area (wooded, mined, developed, agricultural uses, etc).

MHT Determination:

There are **NO HISTORIC PROPERTIES** in the area of potential effect The project will have **NO ADVERSE EFFECT WITH CONDITIONS**
 The project will have **NO EFFECT** on historic properties The project will have **ADVERSE EFFECTS** on historic properties
 The project will have **NO ADVERSE EFFECT** on historic properties **MHT REQUESTS ADDITIONAL INFORMATION**

MHT Reviewer: **Beth Cole** Date: **10/13/2023**

Submit printed copy of form and all attachments by mail to: Beth Cole, MHT, 100 Community Place, Crownsville, MD 21032

Archeo: IA BC 9/18/2023

Attachment to
Project Review Form
for
BWI Marshall Airport Traffic Control Tower
Replacement and Obstruction Removal
Anne Arundel County, Maryland

Prepared for
Maryland Department of Transportation
Maryland Aviation Administration
P.O. Box 8766
BWI Airport, Maryland 21240-0766

by
Rob Wanner
EAC/ARCHAEOLOGY, INC.
4303 North Charles Street
September 7, 2023

PROJECT DESCRIPTION AND CURRENT LAND USE

The Maryland Aviation Administration (MAA) is proposing to construct a new Airport Traffic Control Tower (ATCT) at Baltimore/Washington International Thurgood Marshall Airport (BWI Marshall Airport) and associated improvements including removal of vegetative obstructions (**Figure 1**). National Environmental Policy Act (NEPA) approval is needed as MAA is requesting FAA approval of the Proposed Action as depicted on the Airport Layout Plan (ALP) and a determination that the Proposed Action would be eligible for Federal funding.

PROPOSED ACTION

The Proposed Action consists of the following projects as shown on **Figures 2 and 3**:

- Construct a new ATCT, 236-feet above ground level (AGL) (including ASDE¹ and antenna) to replace the existing ATCT²; 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 New Hotel on top of the Passenger C-D Connector; and
- Remove Part 77³ Obstructions⁴.

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 existing and new ATCT and Future Taxiway F; and
- Construct duct bank from Concourse D to new Airfield Lighting Vault (ALV) to supply power to new ATCT.

¹ Airport Surface Detection System (ASDE) consisting of an enclosed rotating radar array.

² Demolition of the existing ATCT is not part of the Proposed Action. Plans for the existing ATCT have not been determined at this time.

³ CFR Title 14 Part 77- Safe, Efficient Use, and Preservation of the Navigable Airspace (Part 77).

⁴ The Proposed Action includes Part 77 obstructions located adjacent to line-of-sight (LOS) obstructions associated with the new ATCT (see Connected Actions). Some Part 77 obstructions are also LOS obstructions between the existing ATCT and Future Taxiway F.

The proposed new ATCT, the new hotel, and FAA staffing offices would be situated within the existing terminal building, which is less than 50 years old and would be constructed as part of the Passenger C-D Connector Program. The existing ATCT will remain in place and be repurposed prior to operation of the new ATCT. Part 77 and LOS obstructing vegetation west of Runway 15R-33L would be removed. Tree obstructions east of Taxilane W would be hand felled to avoid impacts to wetland and stream areas, and obstructions west of Taxilane W would be clear cut and the area maintained as turf (see **Figure 3**).

Depending on timing of construction, construction staging would occur in one of two possible areas: within the Gold Lot south of the terminal area off Dorsey Road; or within Elkridge Landing Lots north of the Airport off Elkridge Landing Road. Both of these areas are currently or have been utilized for construction staging in the past.

PAST LAND USES IN PROJECT AREA

Small antebellum farmsteads used to dot the landscape of the BWI Marshall Airport property, with dwellings usually constructed in log or frame, sometimes with stone foundations. One such farmstead, visible in a 1943 aerial photograph, was located just to the south of the obstruction removal area (**Figure 4**). A road also passed through both obstruction removal areas. The farmstead was identified in the BWI Marshall Historic Preservation Plan, but research was not conducted to associate the residence with a particular family (Wanner and Harris 2021: Figure 2.12, no. 164).

By September 1946, the Baltimore Aviation Commission had purchased 1,000 acres of land. Much of the remainder of the property had to be acquired through condemnation suits over the opposition of a number of local land owners. The roadway and the farmstead located in the vicinity of the obstruction removal areas were demolished. In May 1947, construction began and in June 1950, President Harry S. Truman formally opened Friendship International Airport for business. The area of the proposed work has been part of the airport ever since.

HISTORIC RESOURCES IN VICINITY OF DIRECT APE

The Direct Area of Potential Effects (APE) includes the construction areas where ground disturbance may occur, as well as the staging areas which are located within exiting paved lots and would not result in ground disturbance (**Figure 5**). The areas of proposed obstruction removal are located within an area previously subjected to archaeological survey in 2016 as Area 5 (Wanner 2017) (**Figure 5**). 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.

In addition, Site 18AN1591 is located approximately 290 feet north of the obstruction removal area (**Figure 4**). Site 18AN1591 is a very small Woodland-period site consisting of a concentration of prehistoric artifacts. The site was identified during the 2016 Phase I survey of Airport improvements (Wanner 2017). Four sherds of very fragmentary prehistoric pottery and one quartzite flake were recovered from historic fills within three shovel test pits. The site also contains a historic burnt feature. The site was found to lack integrity and due to its inability to yield additional information was determined not eligible for the National Register.

HISTORIC RESOURCES WITHIN INDIRECT APE

The Indirect APE encompasses the viewshed around the new ATCT determined from the viewshed analysis and is expanded to include all Direct APE areas and the main Airport campus. The establishment of the Indirect APE was based on a viewshed analysis undertaken by EAC/Archaeology, Inc. (EAC/A) using ArcGIS 10.8 (**Figure 6**). The viewshed analysis was focused on the visual impact that the new tower would have on the surrounding area. The analysis is included as an additional attachment to this project review form. The results indicate that the tower would not be visible from historic properties within the vicinity, including the Linthicum Heights Historic District (AA-990), listed on the National Register of Historic Places (NRHP), and the Hamilton House (AA-87). This is largely due to the presence of pine trees around the periphery of the airport, which screen airport structures from surrounding properties even during the winter months (**Figure 7**). Although the ATCT would not be visible from most of the Benson-Hammond House (AA-118) property, which is listed on the National Register of Historic Places, a small portion of the property falls outside of the pine tree buffer, and thus may be visually impacted during winter months. However, all other airport structures between the property and the terminal, including the existing ATCT, would also be visible, and thus it would not present a significant change to the existing viewshed.

REFERENCES

Wanner, Robert

2017 *Phase I Archaeological Identification of BWI Marshall Airport, Anne Arundel County, Maryland*. Prepared for the Maryland Department of Transportation, Maryland Aviation Administration, BWI Airport, Maryland.

Wanner, Robert and Tery Harris

2021 *Historic Preservation Plan, Baltimore/Washington International Thurgood Marshall Airport, Anne Arundel County, Maryland*. Prepared for the Maryland Department of Transportation, Maryland Aviation Administration, BWI Airport, Maryland.

Wanner, Robert

2023 *Viewshed Analysis for Proposed New Airport Traffic Control Tower, Baltimore/Washington International Thurgood Marshall Airport, Anne Arundel County, Maryland*. Prepared for the Maryland Aviation Administration, BWI Airport, Maryland.

PHOTOGRAPHIC PLATES



Photographic Plate 1: Proposed new ATCT location, facing southwest from between Concourses E and D



Photographic Plate 2: Proposed new ATCT location, facing northeast from between Concourses C and D



Photographic Plate 3: Proposed new ATCT location, facing northeast from between Concourses C and D

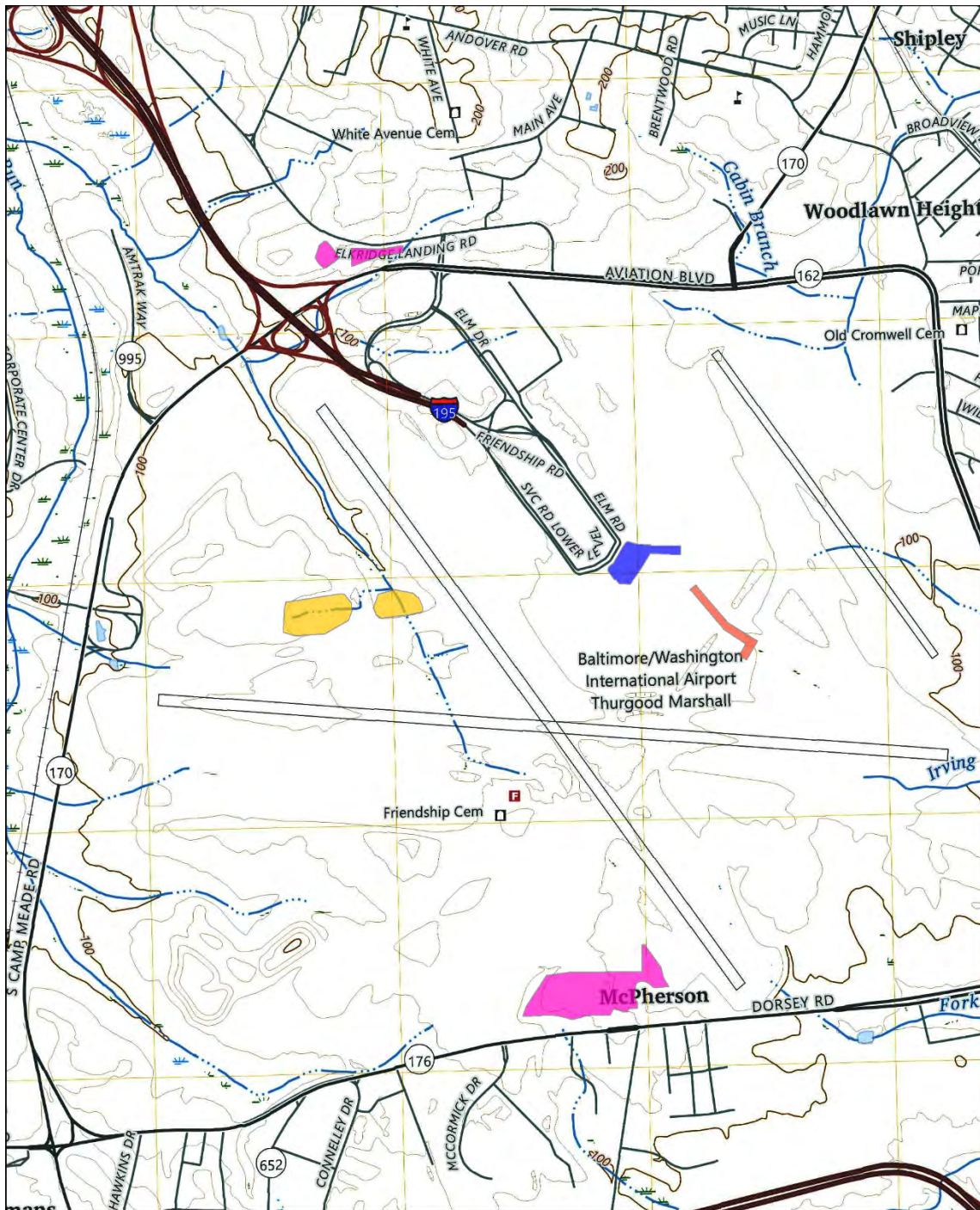


**Photographic Plate 4: Proposed obstruction removal area facing east from western edge of airfield
(existing ATCT visible in background)**



Photographic Plate 5: Proposed obstruction removal area facing northeast from southwest corner of airfield

FIGURES



BWI Marshall Airport
 Airport Traffic Control Tower
 Project Limits on USGS 2023
 Relay, Maryland Topographic Quad

- New ATCT and Associated Improvements
- Obstruction Removal
- Connection to Airfield Lighting Vault
- Staging Area

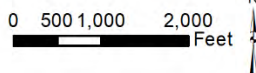


Figure 1

New Airport Traffic Control Tower and Associated Improvements Environmental Assessment

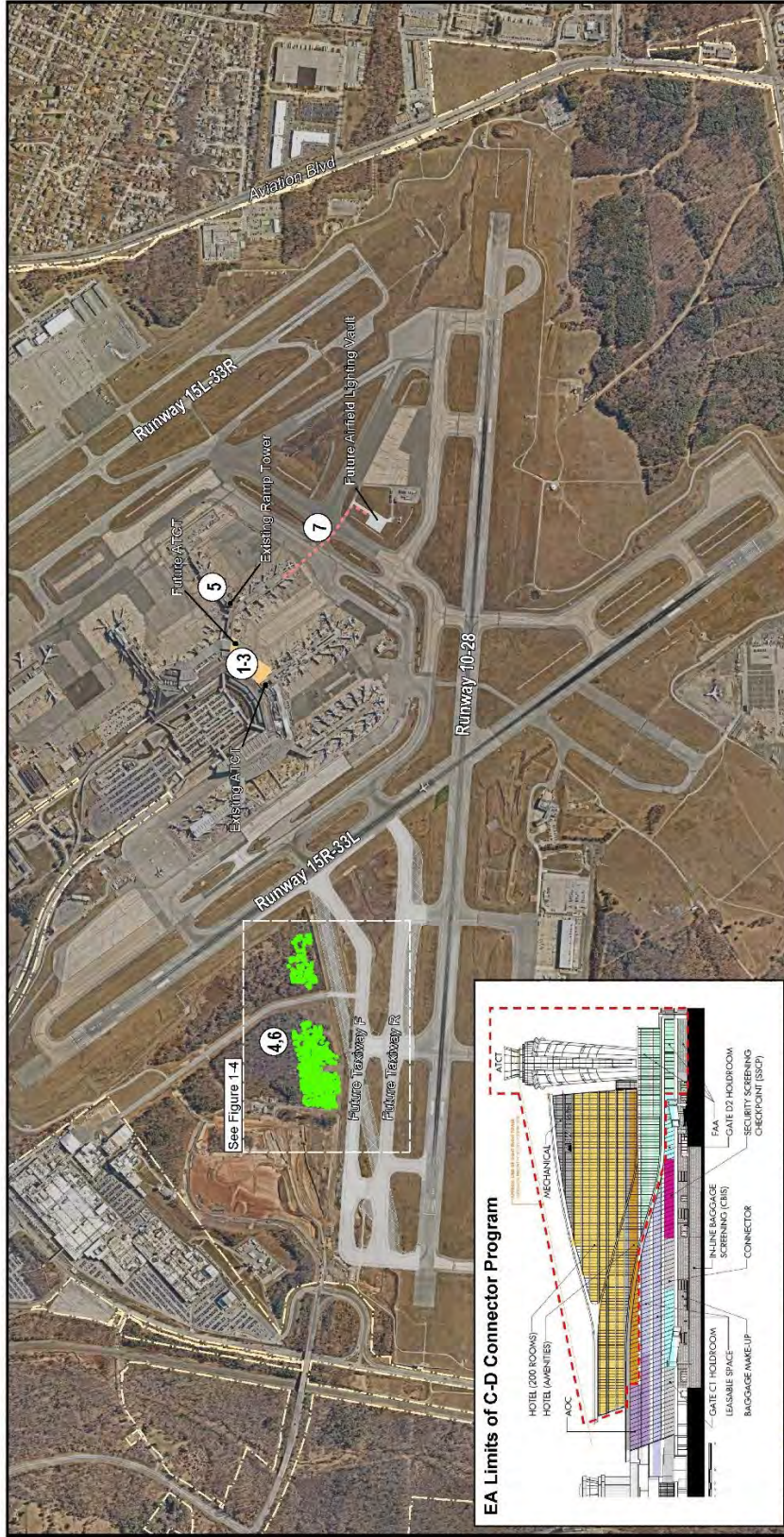


Figure 2

LEGEND

- EA Limits of C-D Connector Program
- C-D Connector Program
- Future Taxiway Alignment
- Future Taxiway Pavement Demolition
- Proposed Utility Connection
- MDOT MAA Property
- Vegetative Obstruction Removal* (Projects #4 and 6)

*See **Figure 1-4: Proposed Action - Obstruction Removal** for a detailed view of the Part 77 and ATCT LOS obstructions.

Proposed Action Projects

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

Connected Action Projects

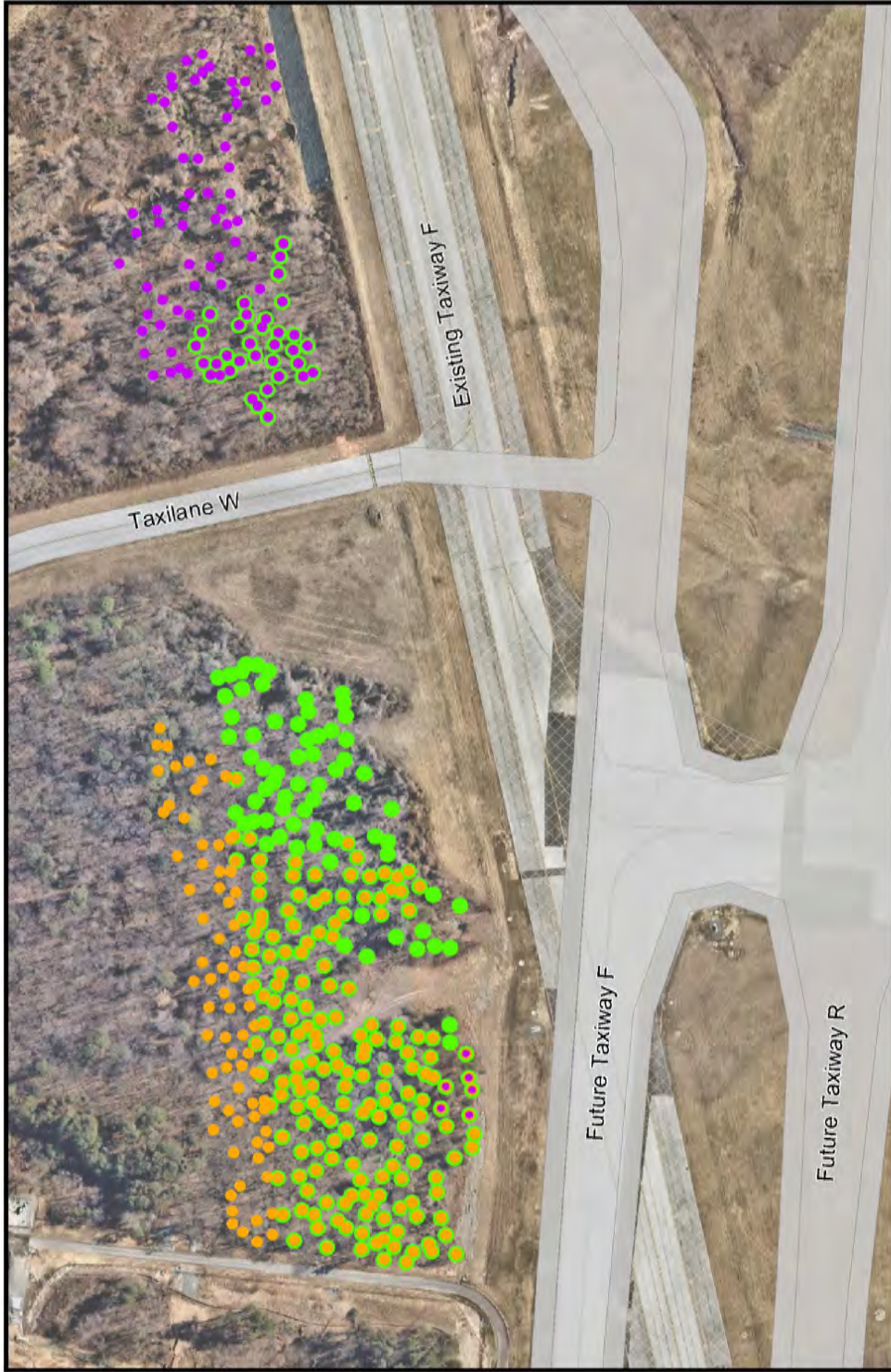
- 5 Supplemental ATCT Upgrades
- 6 ATCT LOS Obstruction Removal
- 7 Connection to Airfield Lighting Vault

Proposed Action Figure 1-3

0 267.5 575 1,150 Feet

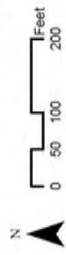
Source: MDOT MAA, Mapmap, C-D Connector Project Definition Document (2019)

New Airport Traffic Control Tower and Associated Improvements Environmental Assessment



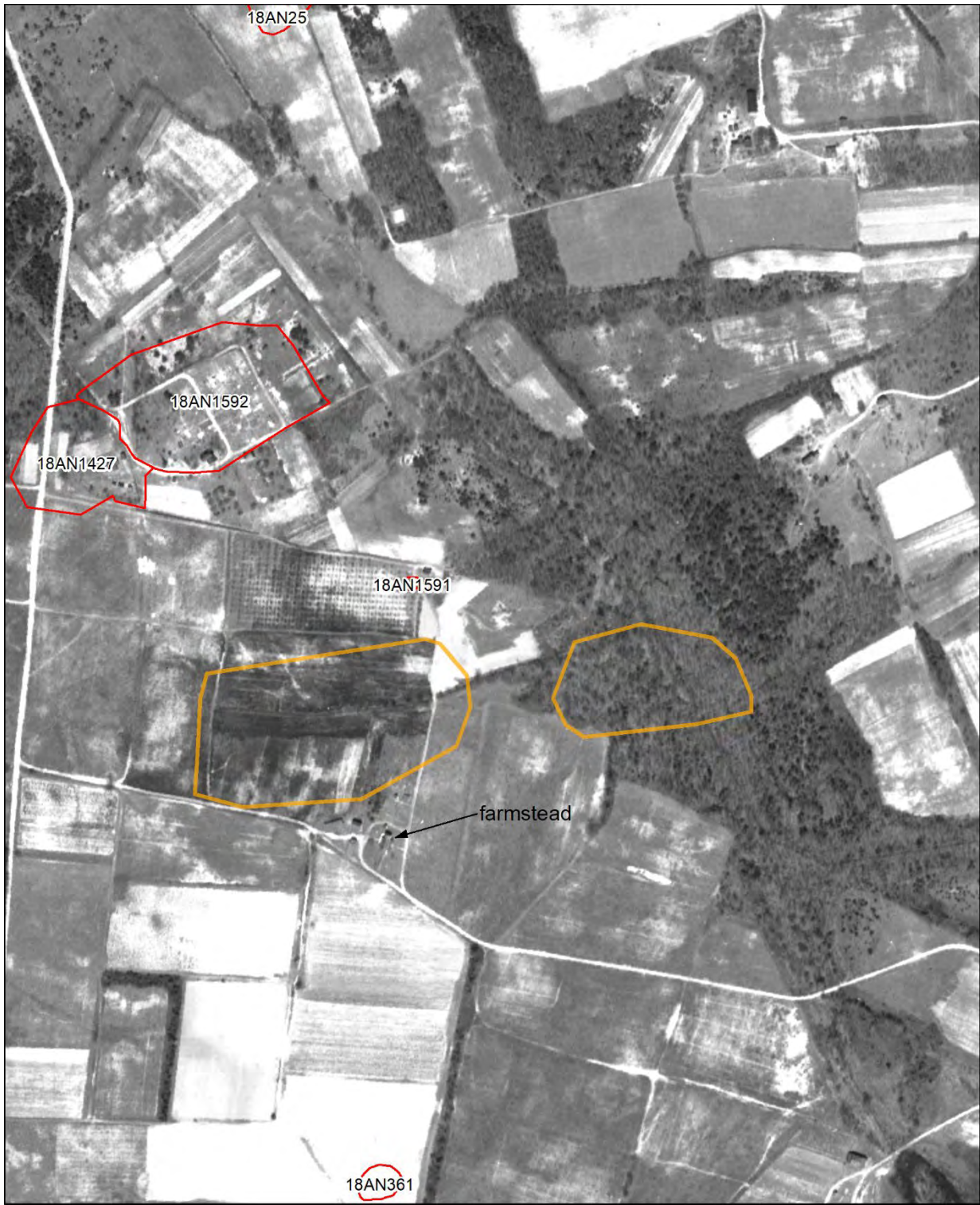
Proposed Action - Obstruction Removal
Figure 1-4

- LEGEND**
- Future Taxiway F and R Alignment
 - Future Taxiway Pavement Demolition
 - MDOT MAA Property
- Vegetative Obstruction Removal**
- Existing ATCT LOS Obstructions
 - Future ATCT LOS Obstructions
 - Part 77 Obstructions



Sources: MDOT MAA, Nearmap, C-D Connector Project Definition Document (2016)

Figure 3



BWI Marshall Airport
Obstruction Removal Area
on USDA 1943 aerial photograph

- Archaeological site
- Obstruction Removal

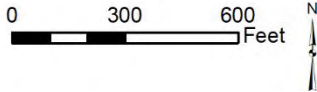
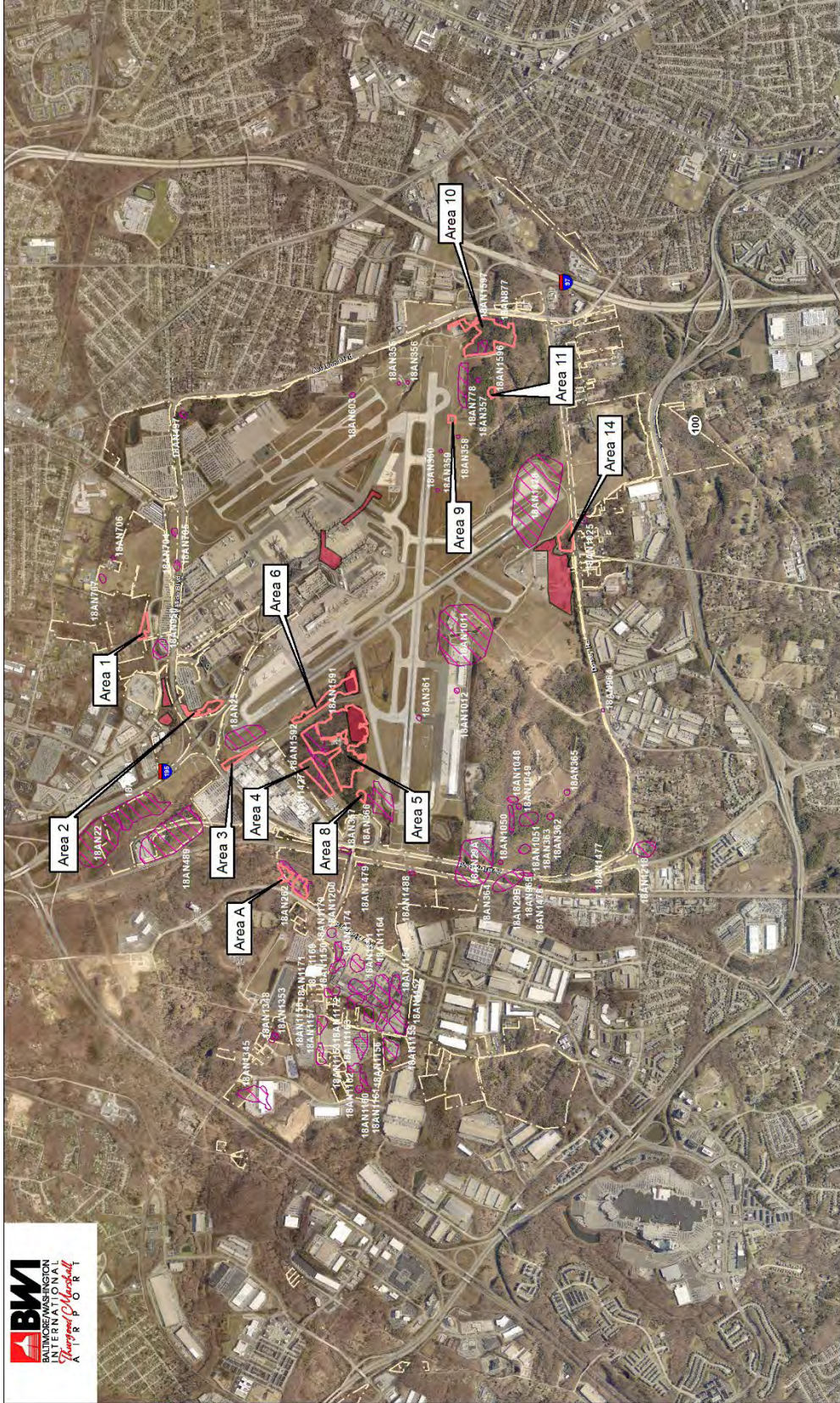
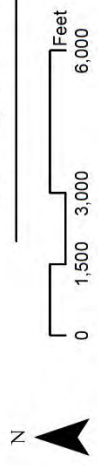


Figure 4



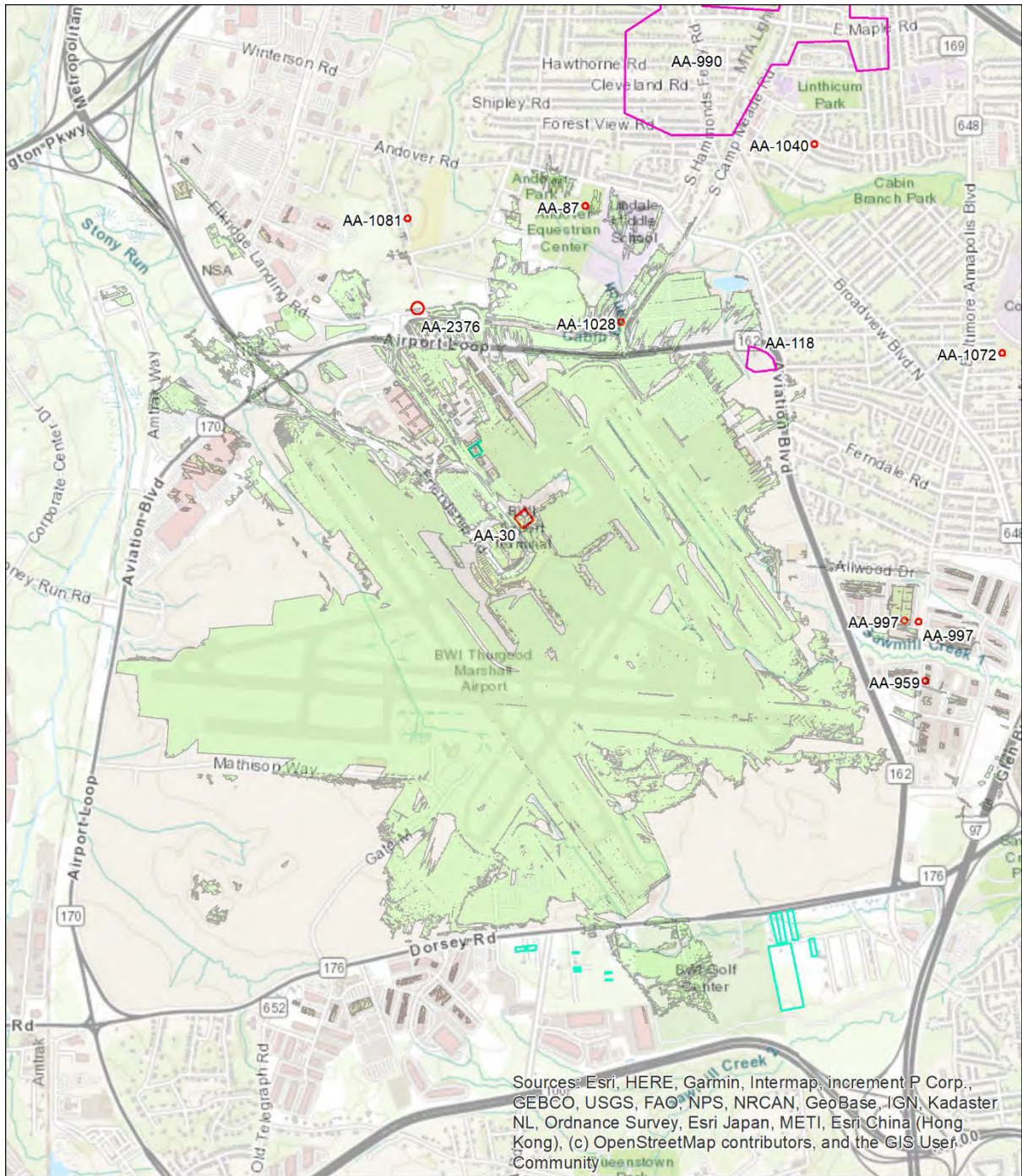
Direct APE and Previous Archaeological Surveys and Sites in Vicinity

- LEGEND**
- Archaeological Survey Area (2017)
 - Airport Property
 - Direct APE
 - Archaeological Site



Source: 2020 Anne Arundel County aerial imagery

Figure 5



BWI Marshall Airport
 New Airport Traffic
 Control Tower and
 Associated Improvements
 Indirect APE

- Indirect APE
- Historic property (MIHP)
- National Register listed property
- 50-year-old building

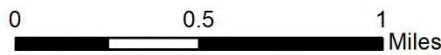


Figure 4



BWI Marshall Airport
 New Airport Traffic
 Control Tower
 No Vegetation Viewshed and
 Northern Historic Properties

Historic property (MIHP) National Register listed property

0 300 600
 Feet

Figure 5

Viewshed Analysis Report for ATCT

**VIEWSHED ANALYSIS FOR PROPOSED NEW
AIRPORT TRAFFIC CONTROL TOWER,
BALTIMORE/WASHINGTON INTERNATIONAL
THURGOOD MARSHALL AIRPORT,
ANNE ARUNDEL COUNTY, MARYLAND**

Prepared for
HNTB
2900 South Quincy St.
Ste. 600
Arlington, VA 22206

Prepared by
Rob Wanner

Elizabeth A. Comer
Principal Investigator

EAC/Archaeology, Inc.
4303 N. Charles Street
Baltimore, MD 21218

July 28, 2023

ABSTRACT

HNTB contracted with EAC/Archaeology, Inc., (EAC/A) to conduct a viewshed analysis for the proposed construction of a new Airport Traffic Control Tower (ATCT) at Baltimore/Washington International Thurgood Marshall Airport (BWI Marshall) in Anne Arundel County. The analysis, conducted in ArcGIS 10.8, indicates that the tower will not be visible from historic properties within the vicinity, including the Linthicum Heights Historic District (AA-990), listed on the National Register of Historic Places (NRHP), and the Hamilton House (AA-87). This is largely due to the presence of pine trees around the periphery of the airport, which screen airport structures from surrounding properties even during the winter months. Although the ATCT will not be visible from most of the Benson-Hammond House (AA-118) property, a small portion of the property falls outside of the pine tree buffer, and thus may be visually impacted during winter months. However, all other airport structures between the property and the terminal, including the existing ATCT, would also be visible, and thus it would not likely present a significant change. Therefore, the construction of the new ATCT will not have a significant visual impact on any historic properties in the vicinity.

TABLE OF CONTENTS

1	Introduction.....	1
2	Research Design and Methodology	3
3	Results of Analysis	5
4	Summary and Recommendations	14
5	References Cited	15

LIST OF FIGURES

Figure 1:	Project location on 2023 USGS topographic map of Relay, Maryland	2
Figure 2:	Original viewshed generated from proposed tower over distance of 1.5 miles, using current DEM with vegetation and buildings.....	4
Figure 3:	Final viewshed generating using digital surface with current conditions	6
Figure 4:	Final viewshed generating using digital surface without vegetation	7
Figure 5:	Effects on AA-990, AA-118, and AA87, showing photograph locations.....	9
Figure 6:	Photograph of view from AA-118, facing southwest.....	10
Figure 7:	Photograph of view from AA-87, facing southwest.....	10
Figure 8:	Photograph from AA-990, facing south from intersection between S. Hammonds Ferry Road and Shipley Court.....	11
Figure 9:	Effects on properties with 50-year-old buildings south of Dorsey Road	12
Figure 10:	Photograph of view from Arundel Avenue, facing north.....	13

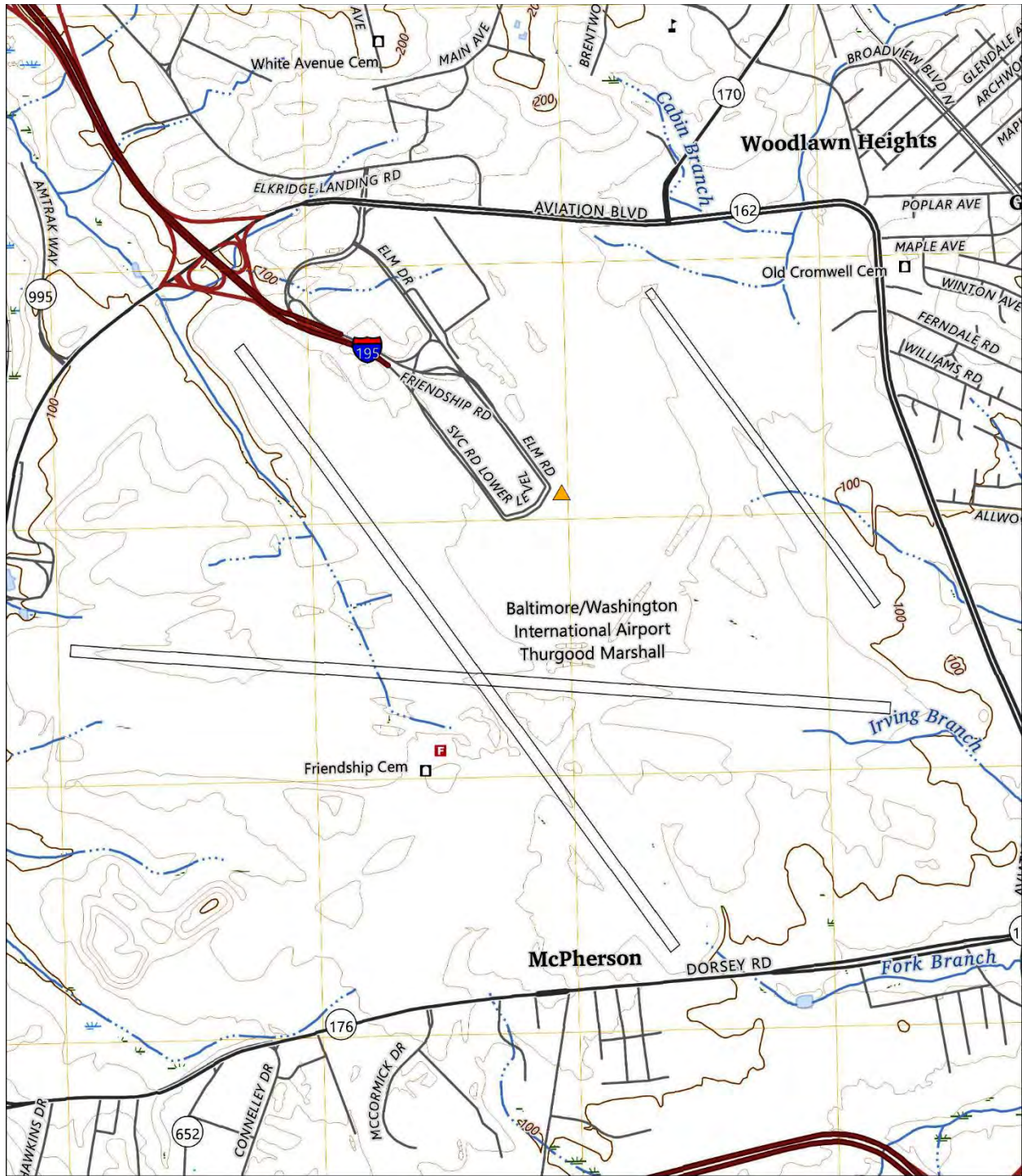
1 INTRODUCTION

The Maryland Aviation Administration (MAA) is proposing to build a modernized Airport Traffic Control Tower (ATCT) at Baltimore/Washington International Thurgood Marshall Airport (BWI Marshall Airport) (**Figure 1**). An Environmental Assessment will be prepared to evaluate alternatives for expansion and to consider potential effects of the expansion. One of the considerations is the effect of the new tower, which is taller than the current ATCT, on historic resources in the vicinity. Historic resources are protected under Section 106 of the National Historic Preservation Act of 1966 (NHPA). Section 106 of the NHPA outlines a historic preservation review process and requires Federal agencies to consider the effects of their projects on historic resources. Both direct and indirect effects to historic resources must be considered. While the new tower would be built within a previously disturbed footprint on airport property, and would thus not result in any effects on archaeological resources, the new tower could indirectly affect the views to and from historic properties – properties listed on or eligible for the National Register of Historic Places (NRHP) – in the area.

Therefore, EAC/Archaeology, Inc. (EAC/A) prepared a viewshed study for the proposed construction of a new ATCT at BWI Marshall Airport. The primary purpose of the study was to identify an Indirect Area of Potential Effect (APE), specifically with regard to visual effects, for the new tower and historic resources within that Indirect APE which may be visually affected by the project. In general, the APE is defined in the regulations implementing the Section 106 review process as "the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking" [36 CFR Part 800.16(d)]. This report documents the methodology and the results of this viewshed study.

Section 1 of this report includes an introduction and brief overview of the project report. **Section 2** contains a description of the research design and methodology. **Section 3** provides a summary of the results and interpretation. **Section 4** summarizes the results and offers recommendations for the project design to address county concerns. **Section 5** comprises a list of references cited in the report.

Robert Wanner was responsible for all research and analysis, along with associated maps and imagery. Spatial analysis was conducted on computers at EAC/A's archaeological laboratory at 2113 Saint Paul Street, Baltimore, Maryland. All photographs included in this report were taken by Robert Wanner on July 26, 2023.



BWI Marshall Airport
Proposed Airport Traffic
Control Tower Location
on 2023 USGS Topographic
Map of Relay, MD

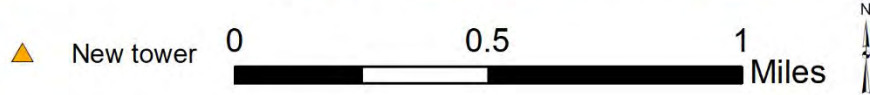


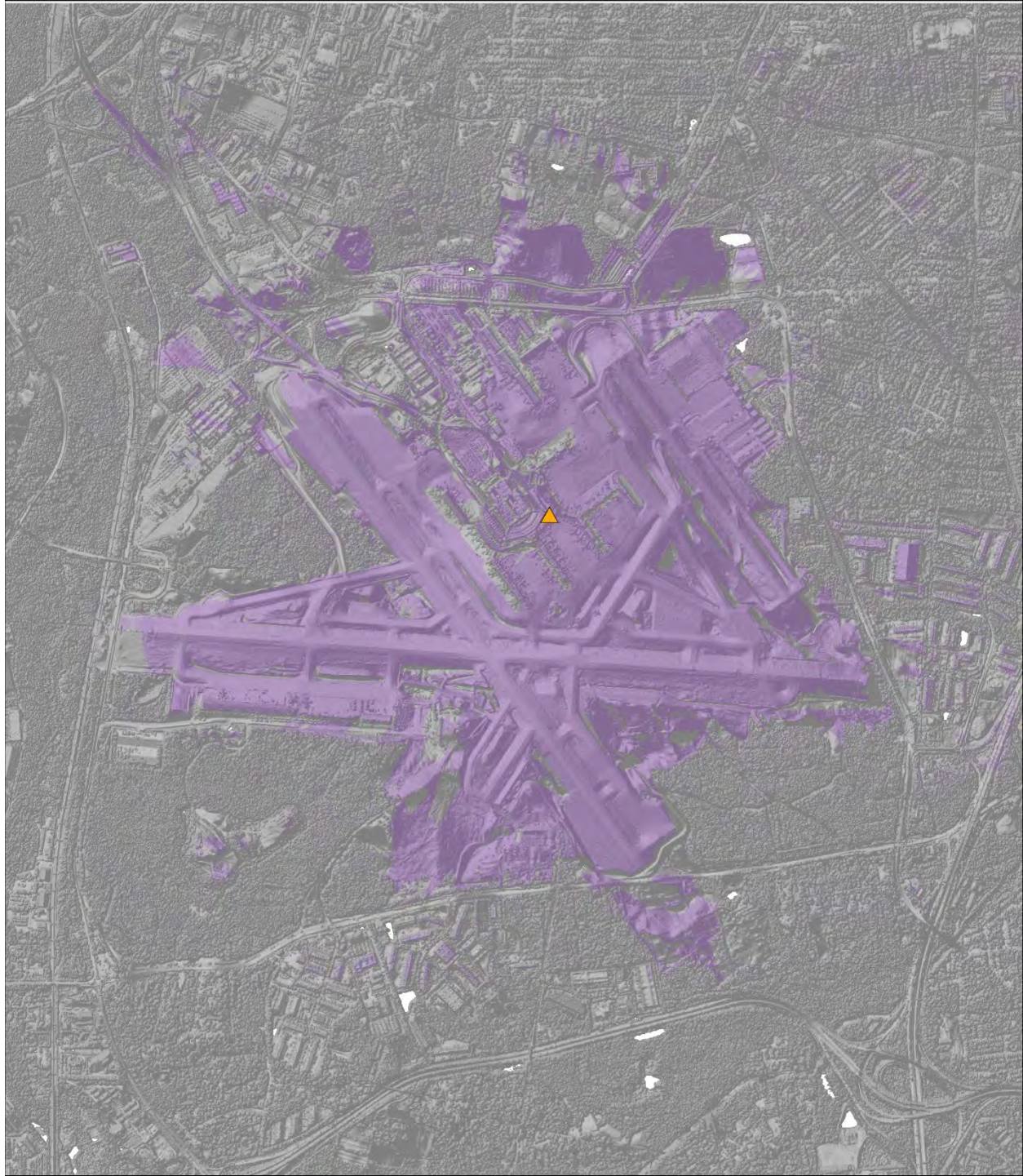
Figure 1: Project location on 2023 USGS topographic map of Relay, Maryland

2 RESEARCH DESIGN AND METHODOLOGY

EAC/A prepared two viewsheds using ArcGIS 10.8. A viewshed is developed using cells in a digital elevation model (raster data) and observer points (vector data). A straight line is interpolated between the observer point and every other cell within the elevation model. If the height of cells along this line exceeds the height at the source, the line of sight is interrupted, and raster data beyond this threshold is eliminated from the viewshed. In this case, the observer point was emplaced in the proposed location of the new ATCT at 387 feet above mean sea level, which is the proposed height of the tower. A total of 5.5 feet was added to the surface to simulate the eye level of an average person.

EAC/A used two surfaces in this analysis, both based upon a two-foot resolution Digital Elevation Model (DEM) derived from Light Detection and Ranging (LiDAR) data. LiDAR is a remote sensing method that uses light in the form of a pulsed laser to measure distances to the earth. These light pulses—combined with other data recorded by the airborne system— generate precise, three-dimensional information about the shape of the earth and its surface characteristics. The sheer density and resolution of point data acquired usually guarantees that some of the points represent the surface of the ground below tree cover. Maryland makes all of the point cloud data and processed DEMs available for free at the Maryland state mapping and GIS portal, Maryland iMap. The point cloud was downloaded for the relevant area of BWI Marshall Airport, then used to generate a digital elevation model (DEM) with current structures and vegetation intact (**Figure 1**); and a “no vegetation” DEM to simulate the surface with vegetation removed. While this does not represent real conditions, it is often used to replicate the terrain in the winter months when surface vegetation is dead and the trees are bare of leaves. While vegetation could be removed at some point in the future, especially on private property, this analysis provides information on how these real conditions affect the viewshed so that appropriate planning can be implemented. All structures were left intact for the no vegetation DEM since any changes to structures on airport property would prompt additional consideration for effects on cultural resources. Both models were generated at a two-foot resolution with Blue Marble’s Global Mapper 18.2 Lidar Module.

The analysis was conducted with the Visibility tool in ArcGIS 10.8, allowing for a buffer of 1.5 miles around the tower. This is the maximum distance that a person might reasonably be able to see and interpret the ATCT. A raster image of areas from which the tower would be discernible was created, which was subsequently converted into a shapefile. This allowed for easier editing and measuring. Smaller, isolated residual visible areas which were less than 2,200 square feet in size were removed from the viewshed. Patches of visibility below this threshold were observed to correspond frequently with the roofs of houses or the tops of trees, and were thus considered secondary in importance to larger, contiguous areas of visible terrain. The process was completed for both the current and the no vegetation DEMs, generating both a current viewshed (simulating the visible surface with current structural and summer leaf conditions) and a no vegetation viewshed (simulating the visible surface with leaves off the trees and shrubs).



BWI Marshall Airport
New Airport Traffic
Original Viewshed over
Current DEM

- ▲ New tower
- Visible Area

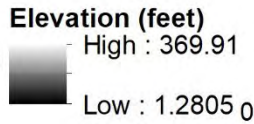


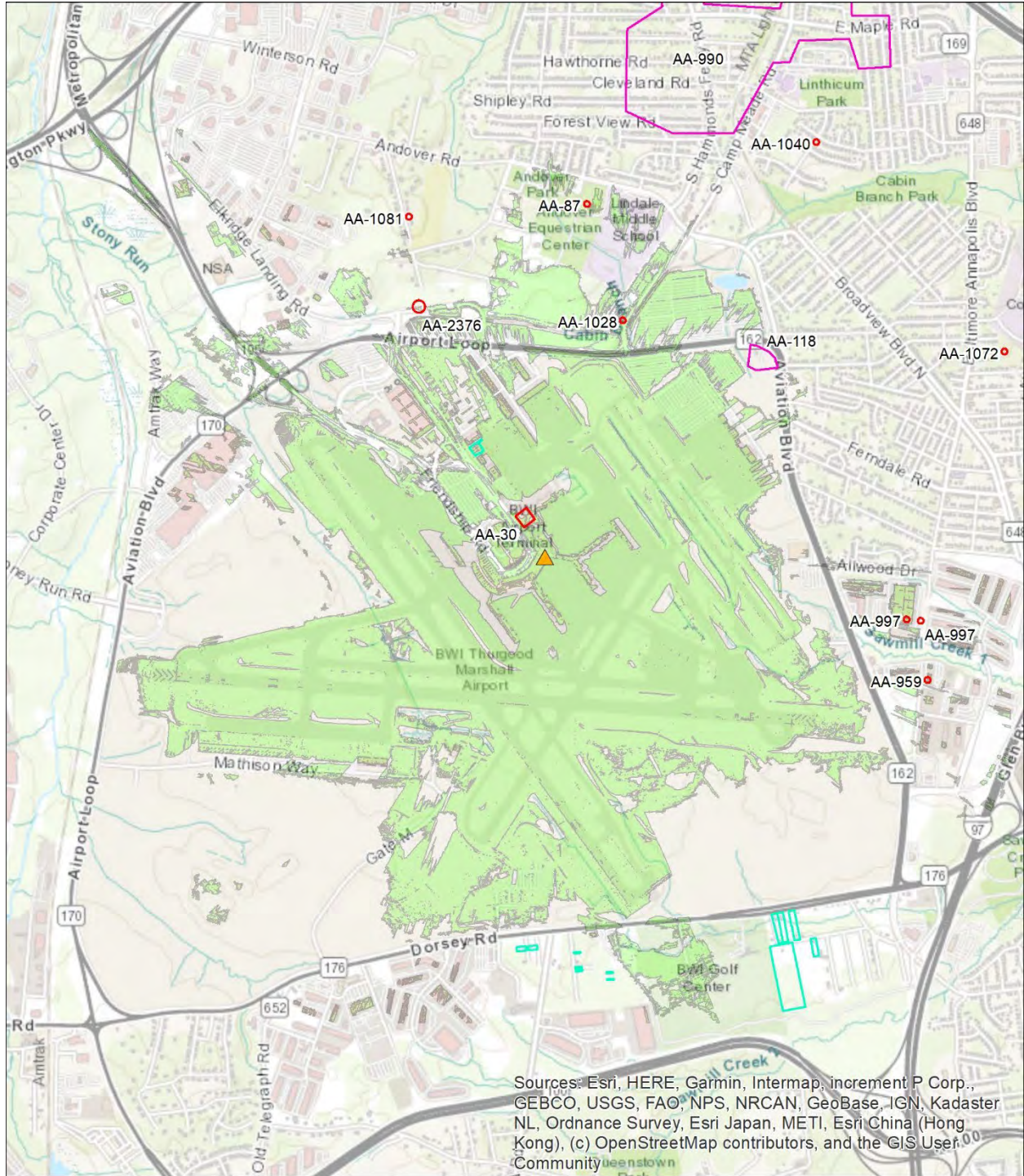
Figure 2: Original viewshed generated from proposed tower over distance of 1.5 miles, using current DEM with vegetation and buildings

3 RESULTS OF ANALYSIS

The current viewshed encompasses approximately 2.7 square miles in area, including most of the main airport campus surrounded by Aviation Boulevard and Dorsey Road. Notable gaps in visibility exist in the northwest, southwest and southeast areas of the airport campus due to thick vegetation which also serves to block the views beyond Aviation Boulevard. The tower would also be visible within a significant portion of the developed area to the north of Aviation Boulevard, in the vicinity of the long-term and employee parking lots for the airport and the BWI Business District; beyond Aviation Boulevard on the east side of the airport in the vicinity of Ferndale; and to the south of Dorsey Road within the Thomas A. Dixon, Jr. Aircraft Observation Area.

Five historic properties mapped with MEDUSA (Maryland's online cultural resources GIS) were identified which intersect this current viewshed for the new ATCT (**Figure 3**): AA-30 (Hanger No. 1, BWI), AA-959 (W. T. Shipley Farm), AA-997 (W. Downs House and Cemetery), AA-1028 (Buren Smith House), and AA-2376 (Unidentified Farmstead). Without exception, all of these documented resources have been demolished. Because they no longer exist in their original locations, the ATCT will have no effect on previously-identified historic properties if the current configuration of vegetation and structures is maintained. In addition, a spatial database of properties either owned by the airport or within the airport noise zone (ANZ) which contain buildings older than 50 years, assembled for the BWI Marshall Historic Preservation Plan, was consulted. Of these properties, only one falls within the current viewshed for the ATCT: the Airline Cargo Building, from which the current ATCT is visible. As such, the new ATCT will not result in any new effects to this building.

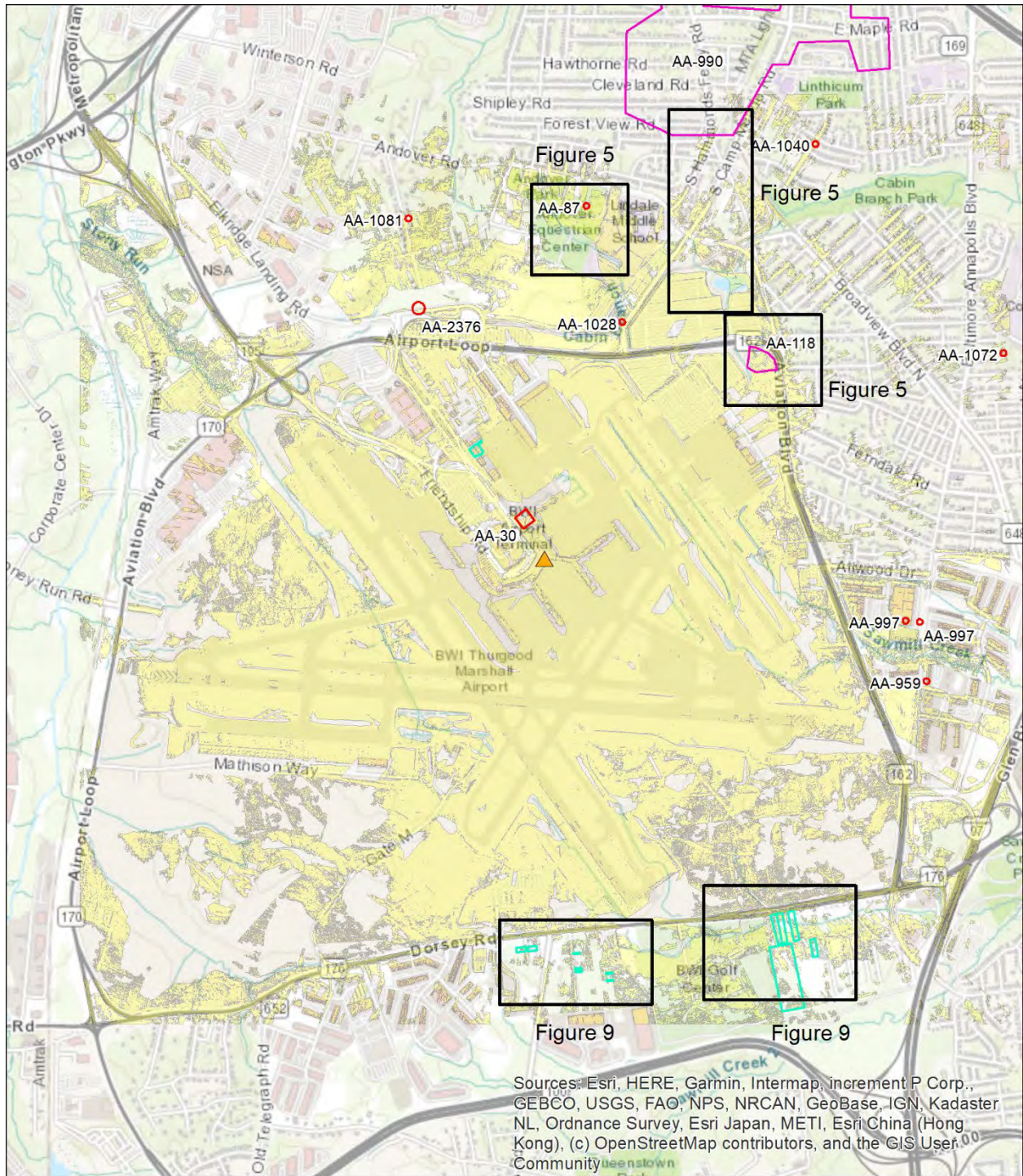
The no vegetation viewshed covers a great deal more area than that covered by the current viewshed (4.4 square miles) showing the important effects of vegetative screening on airport properties associated with noise reduction (**Figure 4**). This includes significant areas beyond the main airport campus to the north, south, and east. This viewshed includes nearly all of the Benson-Hammond House (AA-118) property at the northeast corner of the airport property, and a small portion of the Linthicum Heights Historic District (AA-990), both listed on the NRHP. Another property which falls within this viewshed, AA-87 (Hamilton House), was determined eligible for the National Register under criterion C. One ineligible historic property also fall within this bare earth viewshed, AA-1081 (White Avenue Cemetery). Additionally, two other unevaluated properties, AA-1040 (William Abner Shipley House) and AA-1072 (Harmony Grove), also fall within the bare earth viewshed. Several other properties with buildings over 50 years old also fall within the viewshed on either side of the Thomas A. Dixon, Jr. Aircraft Observation Area.



BWI Marshall Airport	▲ New tower	□ 50-year-old building
New Airport Traffic Control Tower	□ Historic property (MIHP)	■ Current viewshed
Current Viewshed	□ National Register listed property	




0 0.5 1
Miles

Figure 3: Final viewshed generating using digital surface with current conditions



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

BWI Marshall Airport
 New Airport Traffic
 Control Tower
 No Vegetation Viewshed

-  New tower
-  Historic property (MIHP)
-  National Register listed property



-  50-year-old building
-  No vegetation viewshed



Figure 4: Final viewshed generating using digital surface without vegetation

Besides illustrating the importance of the vegetative buffers on the airport property emplaced to reduce noise, a viewshed generated with vegetation removed is often used to simulate conditions in winter months, when the trees, shrubs, and vines are bare of leaves. While this is usually a concern for historic properties eligible for or listed on the NRHP, the presence of pine trees around the edges of the airport mitigate this effect on the three relevant properties to the north of the airport. Pine trees are very easy to distinguish as the only green trees in aerial photographs taken in 2022, provided by Anne Arundel County, due to the fact that the photos were taken during the winter months (**Figure 5**).

In the case of the Benson-Hammond House property (AA-118), pine trees around the edge of the property will block the view even during the winter months (**Figure 5, top right**). A photograph from the northeast edge of the property facing southwest demonstrates the visual effects of the thick vegetation including pine trees wrapping around the property (**Figure 6**). We note here that during winter months, the tower 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 of these airport structures may already be visible the impact on this area of the property will be minimal. The area containing the primary structures will still be protected visually.

In the case of the Hamilton House (AA-87), a thick vegetation buffer to the south, which also includes pine trees, will also prevent visual effects during the winter months (**Figure 5, bottom right**). A photograph taken from the south of the property shows the visual effects of approximately 400 feet of forest between the property and the airport, preventing any view of the parking lots, air cargo buildings, or the terminal which are located between the property and the proposed location for the new tower (**Figure 7**).

A small portion of the Linthicum Heights Historic District (AA-990), which is listed in the NRHP, falls within the no vegetation viewshed (**Figure 5, left**). This is mainly focused on a small portion of Hammonds Ferry Road between Forest View Road and Shipley Court due to the elevation in this area and the curve of the road to the southwest. However, a photograph from this location again indicates that thick vegetation, which includes some visible pine trees, stands between this area and the airport campus (**Figure 8**). Coupled with modern houses constructed to the south, it would appear that the tower would not be visible from this location even during the winter months.



BWI Marshall Airport
 New Airport Traffic
 Control Tower
 No Vegetation Viewshed and
 Northern Historic Properties

Historic property (MIHP)
 National Register listed property

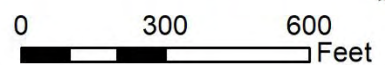


Figure 5: Effects on AA-990, AA-118, and AA87, showing photograph locations



Figure 6: Photograph of view from AA-118, facing southwest



Figure 7: Photograph of view from AA-87, facing southwest




Figure 8: Photograph from AA-990, facing south from intersection between S. Hammonds Ferry Road and Shipley Court

A similar situation is true of several properties to the south of Dorsey Road on either side of the Thomas A. Dixon, Jr. Aircraft Observation Area which contain structures older than 50 years (**Figure 9**). A pine buffer exists along the northern edge of Dorsey Road, except at access points and north of the observation area, which reduces noise as well as visual effects. The buffer is complimented by deciduous trees, and grows much thicker to the east of the observation area. A photograph shows the effects of the buffer from Arundel Avenue, just to the west of the Thomas A. Dixon, Jr. Aircraft Observation Area (**Figure 10**). Although mainly deciduous trees are visible, as the photo was taken during summer months, pines are visible in the background.



BWI Marshall Airport
New Airport Traffic
Control Tower
No Vegetation Viewshed and
Southern Periphery

 Property with 50-year-old building

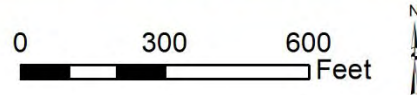


Figure 9: Effects on properties with 50-year-old buildings south of Dorsey Road



Figure 10: Photograph of view from Arundel Avenue, facing north

4 SUMMARY

The viewshed analysis has shown that any effects on historic properties will be minimal. While the no vegetation viewshed includes portions of the Benson-Hammond House (AA-118) property, the Linthicum Heights Historic District (AA-990), which both listed on the NRHP, and the Hamilton House (AA-87), which has been determined eligible for the National Register under criterion C, ground truthing has shown that thick vegetation buffers which include pine trees will continue to visually screen airport structures from these properties even during the winter months. A small portion of the Benson-Hammond House boundary falls just outside of the pine tree buffer, and thus there is potential there for visual effects during the winter. However, all of the existing airport structures, including the current tower, are currently visible from the same location, and thus the new ATCT would not present a significant change in the view from there.

While the construction of the new ATCT does not appear to have any adverse visual effects on historic properties listed on or eligible for the NRHP, it is important to emphasize that this is primarily the result of the current tree buffers. If there are any changes to these buffers, the effects of this work on the viewshed for nearby historic properties should be considered.

5 REFERENCES CITED

United States Geological Survey (USGS)

2022 *Relay, Maryland Quad*. Topographic Map. 1:24,000. United States Geological Survey, Washington.

Attachment 3:

Delaware Nation Response

December 13, 2023

From: Katelyn Lucas <kucas@delawarenation-nsn.gov>
Sent: Wednesday, December 13, 2023 12:33 PM
To: Walker, Genevieve J (FAA) <Genevieve.J.Walker@faa.gov>
Subject: RE: Request review and offer of Consultation for a proposed new Air Traffic Control tower at BWI (Maryland).

Hello Genevieve,

Since the project APE was subject to previous survey which found that "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," we wont have concerns about this. THank you!

Sincerely,

Katelyn Lucas
Delaware Nation Tribal Historic Preservation Officer
PhD Candidate
405-544-8115
kucas@delawarenation-nsn.gov

CONFIDENTIALITY NOTE:

This e-mail (including attachments) may be privileged and is confidential information covered by the Electronic Communications Privacy Act 18 U.S.C. 2510-2521 and any other applicable law, and is

intended only for the use of the individual or entity named herein. If the reader of this message is not the intended recipient, or the employee or agent responsible to deliver it to the intended recipient, you are hereby notified that any retention, dissemination, distribution or copying of this communication is strictly prohibited. Although this e-mail and any attachments are believed to be free of any virus or other defect that might affect any computer system in to which it is received and opened, it is the responsibility of the recipient to ensure that it is virus free and no responsibility is accepted by Delaware Nation or the author hereof in any way from its use. If you have received this communication in error, please immediately notify us by return e-mail. Thank you.

From: Walker, Genevieve J (FAA) <Genevieve.J.Walker@faa.gov>

Sent: Tuesday, November 14, 2023 12:45 PM

To: Katelyn Lucas

Subject: Request review and offer of Consultation for a proposed new Air Traffic Control tower at BWI (Maryland).

Good afternoon Ms. Lucas! I hope you are well. Attached is a cover letter describing the proposed project and additional background information. Please let me know if you need more information or if you have any concerns about the project. Also, if you would like to have formal Government-to-Government Consultation, please let me know!

Have a lovely day/week and thank you for your time!

Genevieve

Genevieve Walker (she/her)
Environmental Protection Specialist
Washington ADO
13783 Park Center Road, Suite 490S
Herndon, VA 20171
(703) 487-3979

!_____
---o--()--o---

CONFIDENTIALITY NOTE:

This e-mail (including attachments) may be privileged and is confidential information covered by the Electronic Communications Privacy Act 18 U.S.C. 2510-2521 and any other applicable law, and is intended only for the use of the individual or entity named herein. If the reader of this message is not the intended recipient, or the employee or agent responsible to deliver it to the intended recipient, you are hereby notified that any retention, dissemination, distribution or copying of this communication is strictly prohibited. Although this e-mail and any attachments are believed to be free of any virus or other defect that might affect any computer system in to which it is received and opened, it is the responsibility of the recipient to ensure that it is virus

free and no responsibility is accepted by Delaware Nation or the author hereof in any way from its use. If you have received this communication in error, please immediately notify us by return e-mail. Thank you.

Attachment 4:

Viewshed Analysis Report

revised December 13, 2023

**VIEWSHED ANALYSIS FOR PROPOSED NEW
AIRPORT TRAFFIC CONTROL TOWER,
BALTIMORE/WASHINGTON INTERNATIONAL
THURGOOD MARSHALL AIRPORT,
ANNE ARUNDEL COUNTY, MARYLAND**

Prepared for
HNTB
2900 South Quincy St.
Ste. 600
Arlington, VA 22206

Prepared by
Rob Wanner

Elizabeth A. Comer
Principal Investigator

EAC/Archaeology, Inc.
4303 N. Charles Street
Baltimore, MD 21218

December 13, 2023

ABSTRACT

HNTB contracted with EAC/Archaeology, Inc., (EAC/A) to conduct a viewshed analysis for the proposed construction of a new Airport Traffic Control Tower (ATCT) at Baltimore/Washington International Thurgood Marshall Airport (BWI Marshall) in Anne Arundel County. The analysis, conducted in ArcGIS 10.8, indicates that the tower will not be visible from historic properties within the vicinity, including the Linthicum Heights Historic District (AA-990), listed on the National Register of Historic Places (NRHP), and the Hamilton House (AA-87). This is largely due to the presence of pine trees around the periphery of the airport, which screen airport structures from surrounding properties even during the winter months. Although the ATCT will not be visible from most of the Benson-Hammond House (AA-118) property, a small portion of the property falls outside of the pine tree buffer, and thus may be visually impacted during winter months. However, all other airport structures between the property and the terminal, including the existing ATCT, would also be visible, and thus it would not likely present a significant change. Therefore, the construction of the new ATCT will not have a significant visual impact on any historic properties in the vicinity.

TABLE OF CONTENTS

1	Introduction.....	1
2	Research Design and Methodology	3
3	Results of Analysis	5
4	Summary and Recommendations	14
5	References Cited	15

LIST OF FIGURES

Figure 1: Project location on 2023 USGS topographic map of Relay, Maryland	2
Figure 2: Original viewshed generated from proposed tower over distance of 1.5 miles, using current DEM with vegetation and buildings	4
Figure 3: Final viewshed generating using digital surface with current conditions	6
Figure 4: Final viewshed generating using digital surface without vegetation	7
Figure 5: Effects on AA-990, AA-118, and AA87, showing photograph locations.....	9
Figure 6: Photograph of view from AA-118, facing southwest.....	10
Figure 7: Photograph of view from AA-87, facing southwest.....	10
Figure 8: Photograph from AA-990, facing south from intersection between S. Hammonds Ferry Road and Shipley Court	11
Figure 9: Effects on properties with 50-year-old buildings south of Dorsey Road	12
Figure 10: Photograph of view from Arundel Avenue, facing north.....	13

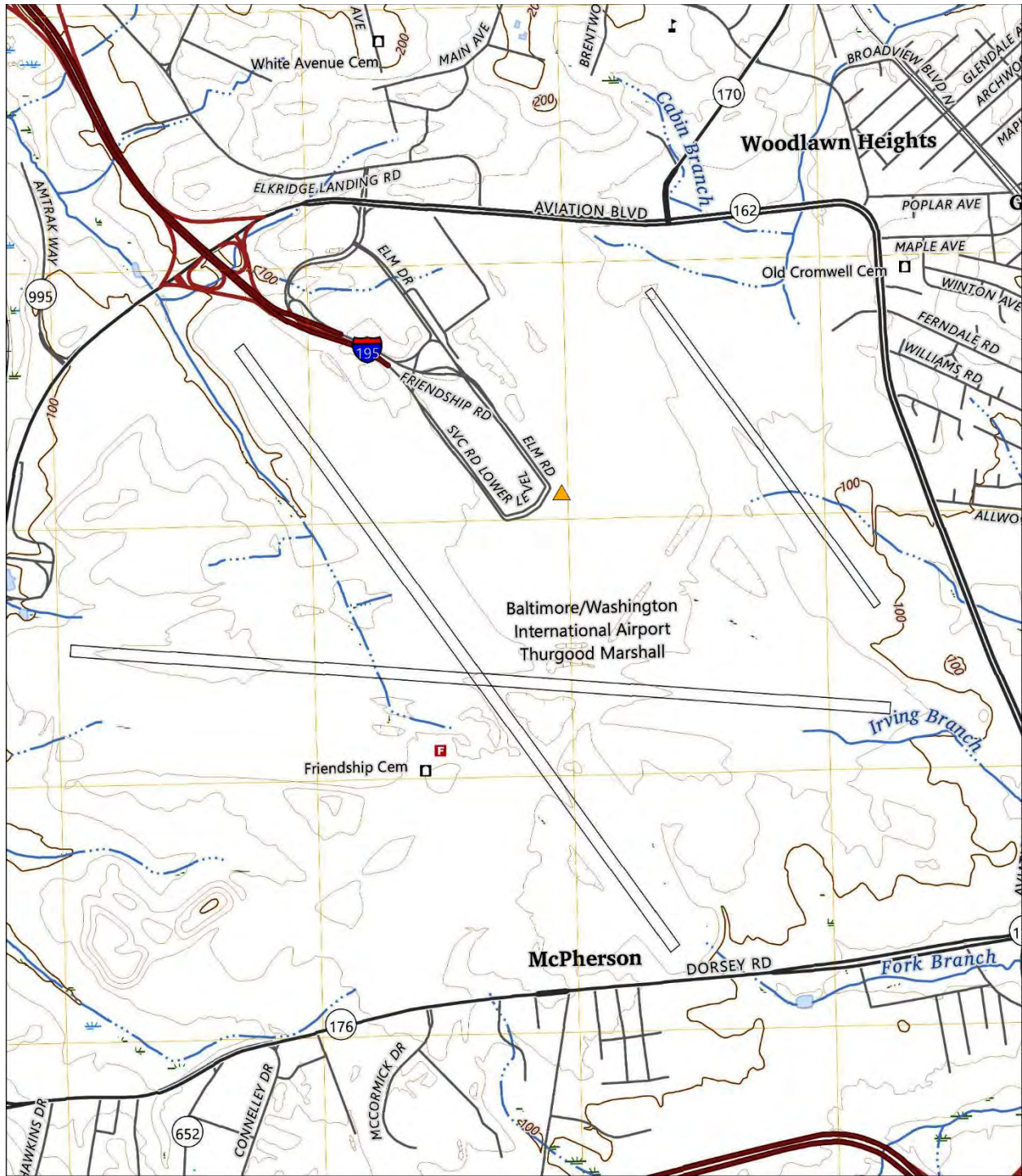
1 INTRODUCTION

The Maryland Aviation Administration (MAA) is proposing to build a modernized Airport Traffic Control Tower (ATCT) at Baltimore/Washington International Thurgood Marshall Airport (BWI Marshall Airport) (**Figure 1**). An Environmental Assessment will be prepared to evaluate alternatives for expansion and to consider potential effects of the expansion. One of the considerations is the effect of the new tower, which is taller than the current ATCT, on historic resources in the vicinity. Historic resources are protected under Section 106 of the National Historic Preservation Act of 1966 (NHPA). Section 106 of the NHPA outlines a historic preservation review process and requires Federal agencies to consider the effects of their projects on historic resources. Both direct and indirect effects to historic resources must be considered. While the new tower would be built within a previously disturbed footprint on airport property, and would thus not result in any effects on archaeological resources, the new tower could indirectly affect the views to and from historic properties – properties listed on or eligible for the National Register of Historic Places (NRHP) – in the area.

Therefore, EAC/Archaeology, Inc. (EAC/A) prepared a viewshed study for the proposed construction of a new ATCT at BWI Marshall Airport. The primary purpose of the study was to identify an Indirect Area of Potential Effect (APE), specifically with regard to visual effects, for the new tower and historic resources within that Indirect APE which may be visually affected by the project. In general, the APE is defined in the regulations implementing the Section 106 review process as "the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking" [36 CFR Part 800.16(d)]. This report documents the methodology and the results of this viewshed study.

Section 1 of this report includes an introduction and brief overview of the project report. **Section 2** contains a description of the research design and methodology. **Section 3** provides a summary of the results and interpretation. **Section 4** summarizes the results and offers recommendations for the project design to address county concerns. **Section 5** comprises a list of references cited in the report.

Robert Wanner was responsible for all research and analysis, along with associated maps and imagery. Spatial analysis was conducted on computers at EAC/A's archaeological laboratory at 2113 Saint Paul Street, Baltimore, Maryland. All photographs included in this report were taken by Robert Wanner on July 26, 2023.



BWI Marshall Airport
Proposed Airport Traffic
Control Tower Location
on 2023 USGS Topographic
Map of Relay, MD

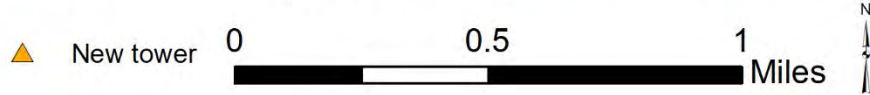


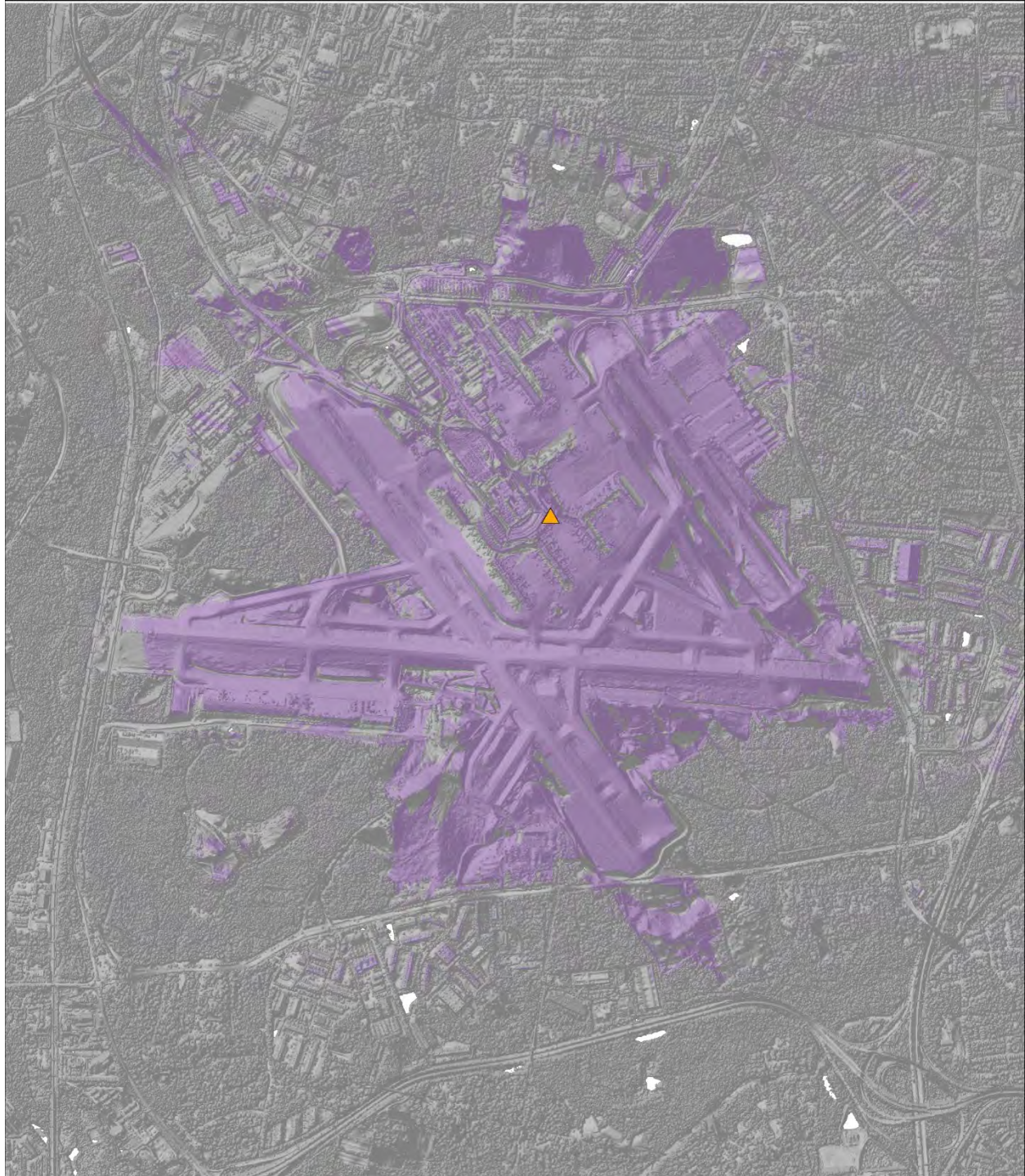
Figure 1: Project location on 2023 USGS topographic map of Relay, Maryland

2 RESEARCH DESIGN AND METHODOLOGY

EAC/A prepared two viewsheds using ArcGIS 10.8. A viewshed is developed using cells in a digital elevation model (raster data) and observer points (vector data). A straight line is interpolated between the observer point and every other cell within the elevation model. If the height of cells along this line exceeds the height at the source, the line of sight is interrupted, and raster data beyond this threshold is eliminated from the viewshed. In this case, the observer point was emplaced in the proposed location of the new ATCT at 387 feet above mean sea level, which is the proposed height of the tower. A total of 5.5 feet was added to the surface to simulate the eye level of an average person.

EAC/A used two surfaces in this analysis, both based upon a two-foot resolution Digital Elevation Model (DEM) derived from Light Detection and Ranging (LiDAR) data. LiDAR is a remote sensing method that uses light in the form of a pulsed laser to measure distances to the earth. These light pulses—combined with other data recorded by the airborne system— generate precise, three-dimensional information about the shape of the earth and its surface characteristics. The sheer density and resolution of point data acquired usually guarantees that some of the points represent the surface of the ground below tree cover. Maryland makes all of the point cloud data and processed DEMs available for free at the Maryland state mapping and GIS portal, Maryland iMap. The point cloud was downloaded for the relevant area of BWI Marshall Airport, then used to generate a digital elevation model (DEM) with current structures and vegetation intact (**Figure 1**); and a “no vegetation” DEM to simulate the surface with vegetation removed. While this does not represent real conditions, it is often used to replicate the terrain in the winter months when surface vegetation is dead and the trees are bare of leaves. While vegetation could be removed at some point in the future, especially on private property, this analysis provides information on how these real conditions affect the viewshed so that appropriate planning can be implemented. All structures were left intact for the no vegetation DEM since any changes to structures on airport property would prompt additional consideration for effects on cultural resources. Both models were generated at a two-foot resolution with Blue Marble’s Global Mapper 18.2 Lidar Module.

The analysis was conducted with the Visibility tool in ArcGIS 10.8, allowing for a buffer of 1.5 miles around the tower. This is the maximum distance that a person might reasonably be able to see and interpret the ATCT. A raster image of areas from which the tower would be discernible was created, which was subsequently converted into a shapefile. This allowed for easier editing and measuring. Smaller, isolated residual visible areas which were less than 2,200 square feet in size were removed from the viewshed. Patches of visibility below this threshold were observed to correspond frequently with the roofs of houses or the tops of trees, and were thus considered secondary in importance to larger, contiguous areas of visible terrain. The process was completed for both the current and the no vegetation DEMs, generating both a current viewshed (simulating the visible surface with current structural and summer leaf conditions) and a no vegetation viewshed (simulating the visible surface with leaves off the trees and shrubs).



BWI Marshall Airport
New Airport Traffic
Original Viewshed over
Current DEM

- ▲ New tower
- Visible Area



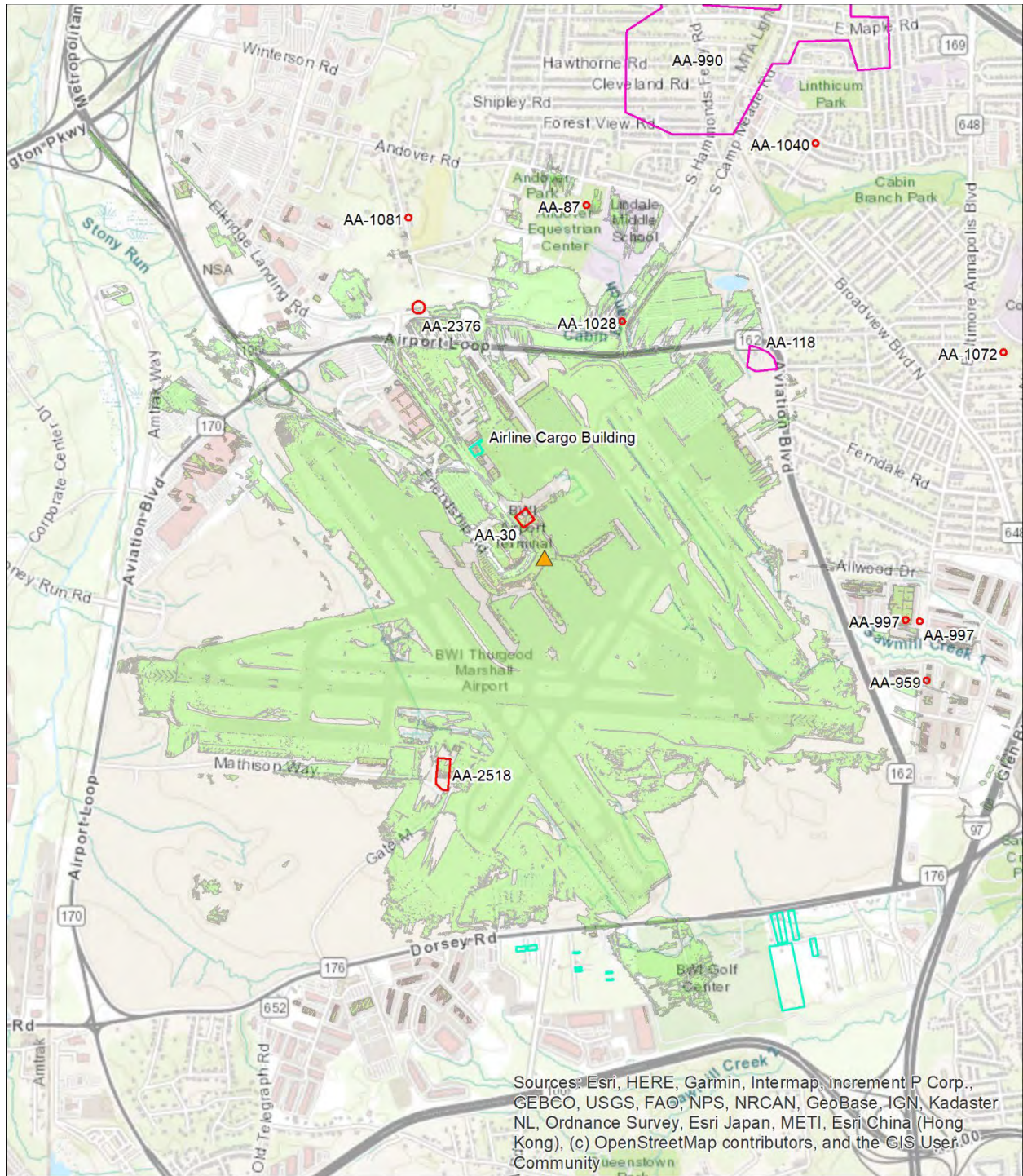
Figure 2: Original viewshed generated from proposed tower over distance of 1.5 miles, using current DEM with vegetation and buildings

3 RESULTS OF ANALYSIS

The current viewshed encompasses approximately 2.7 square miles in area, including most of the main airport campus surrounded by Aviation Boulevard and Dorsey Road. Notable gaps in visibility exist in the northwest, southwest and southeast areas of the airport campus due to thick vegetation which also serves to block the views beyond Aviation Boulevard. The tower would also be visible within a significant portion of the developed area to the north of Aviation Boulevard, in the vicinity of the long-term and employee parking lots for the airport and the BWI Business District; beyond Aviation Boulevard on the east side of the airport in the vicinity of Ferndale; and to the south of Dorsey Road within the Thomas A. Dixon, Jr. Aircraft Observation Area.

Six properties mapped with MEDUSA (Maryland's online cultural resources GIS) were identified which intersect this current viewshed for the new ATCT (**Figure 3**): 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). With only one exception, these documented resources have been demolished. 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. As such, the ATCT will have no effect on any properties eligible for or potentially eligible for the NRHP if the current configuration of vegetation and structures is maintained. In addition, a spatial database of properties either owned by the airport or within the airport noise zone (ANZ) which contain buildings older than 50 years, assembled for the BWI Marshall Historic Preservation Plan, was consulted. Of these properties, only one falls within the current viewshed for the ATCT: the Airline Cargo Building, from which the current ATCT is visible. As such, the new ATCT will not result in any new effects to this building.

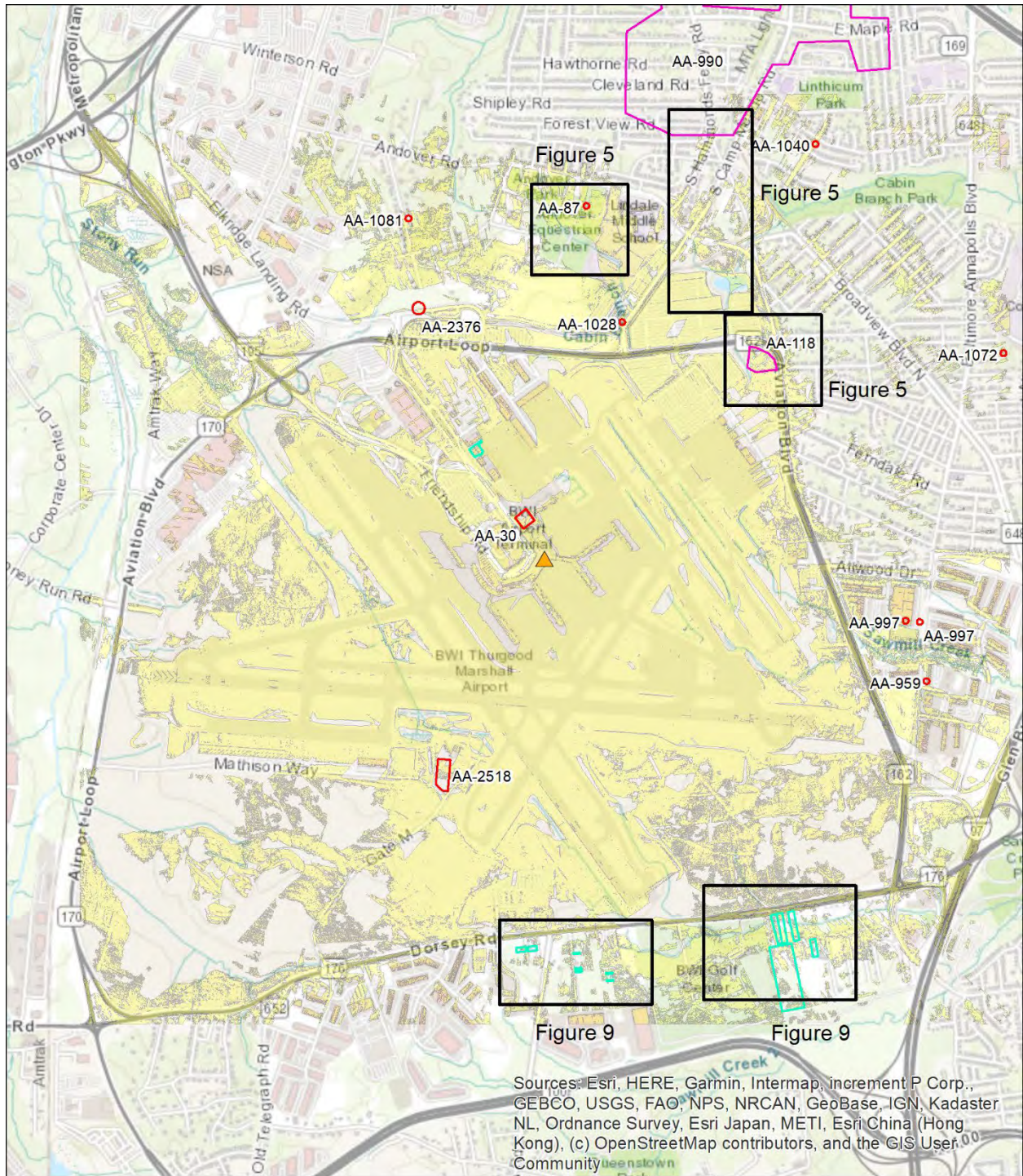
The no vegetation viewshed covers a great deal more area than that covered by the current viewshed (4.4 square miles) showing the important effects of vegetative screening on airport properties associated with noise reduction (**Figure 4**). This includes significant areas beyond the main airport campus to the north, south, and east. This viewshed includes nearly all of the Benson-Hammond House (AA-118) property at the northeast corner of the airport property, and a small portion of the Linthicum Heights Historic District (AA-990), both listed on the NRHP. Another property which falls within this viewshed, AA-87 (Hamilton House), was determined eligible for the National Register under criterion C. One ineligible historic property also fall within this bare earth viewshed, AA-1081 (White Avenue Cemetery). Additionally, two other unevaluated properties, AA-1040 (William Abner Shipley House) and AA-1072 (Harmony Grove), also fall within the bare earth viewshed. Several other properties with buildings over 50 years old also fall within the viewshed on either side of the Thomas A. Dixon, Jr. Aircraft Observation Area.



BWI Marshall Airport	▲ New tower	□ 50-year-old building
New Airport Traffic	▭ Historic property (MIHP)	■ Current viewshed
Control Tower	▭ National Register listed property	
Current Viewshed		




0 0.5 1
Miles



Figure 3: Final viewshed generating using digital surface with current conditions



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

BWI Marshall Airport
 New Airport Traffic
 Control Tower
 No Vegetation Viewshed

-  New tower
-  Historic property (MIHP)
-  National Register listed property

-  50-year-old building
-  No vegetation viewshed

0 0.5 1 Miles

Figure 4: Final viewshed generating using digital surface without vegetation

Besides illustrating the importance of the vegetative buffers on the airport property emplaced to reduce noise, a viewshed generated with vegetation removed is often used to simulate conditions in winter months, when the trees, shrubs, and vines are bare of leaves. While this is usually a concern for historic properties eligible for or listed on the NRHP, the presence of pine trees around the edges of the airport mitigate this effect on the three relevant properties to the north of the airport. Pine trees are very easy to distinguish as the only green trees in aerial photographs taken in 2022, provided by Anne Arundel County, due to the fact that the photos were taken during the winter months (**Figure 5**).

In the case of the Benson-Hammond House property (AA-118), pine trees around the edge of the property will block the view even during the winter months (**Figure 5, top right**). A photograph from the northeast edge of the property facing southwest demonstrates the visual effects of the thick vegetation including pine trees wrapping around the property (**Figure 6**). We note here that during winter months, the tower 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 of these airport structures may already be visible the impact on this area of the property will be minimal. The area containing the primary structures will still be protected visually.

In the case of the Hamilton House (AA-87), a thick vegetation buffer to the south, which also includes pine trees, will also prevent visual effects during the winter months (**Figure 5, bottom right**). A photograph taken from the south of the property shows the visual effects of approximately 400 feet of forest between the property and the airport, preventing any view of the parking lots, air cargo buildings, or the terminal which are located between the property and the proposed location for the new tower (**Figure 7**).

A small portion of the Linthicum Heights Historic District (AA-990), which is listed in the NRHP, falls within the no vegetation viewshed (**Figure 5, left**). This is mainly focused on a small portion of Hammonds Ferry Road between Forest View Road and Shipley Court due to the elevation in this area and the curve of the road to the southwest. However, a photograph from this location again indicates that thick vegetation, which includes some visible pine trees, stands between this area and the airport campus (**Figure 8**). Coupled with modern houses constructed to the south, it would appear that the tower would not be visible from this location even during the winter months.



BWI Marshall Airport
New Airport Traffic
Control Tower
No Vegetation Viewshed and
Northern Historic Properties

Historic property (MIHP) National Register listed property

0 300 600
Feet



Figure 5: Effects on AA-990, AA-118, and AA87, showing photograph locations



Figure 6: Photograph of view from AA-118, facing southwest



Figure 7: Photograph of view from AA-87, facing southwest




Figure 8: Photograph from AA-990, facing south from intersection between S. Hammonds Ferry Road and Shipley Court

A similar situation is true of several properties to the south of Dorsey Road on either side of the Thomas A. Dixon, Jr. Aircraft Observation Area which contain structures older than 50 years (**Figure 9**). A pine buffer exists along the northern edge of Dorsey Road, except at access points and north of the observation area, which reduces noise as well as visual effects. The buffer is complimented by deciduous trees, and grows much thicker to the east of the observation area. A photograph shows the effects of the buffer from Arundel Avenue, just to the west of the Thomas A. Dixon, Jr. Aircraft Observation Area (**Figure 10**). Although mainly deciduous trees are visible, as the photo was taken during summer months, pines are visible in the background.



BWI Marshall Airport
New Airport Traffic
Control Tower
No Vegetation Viewshed and
Southern Periphery

 Property with 50-year-old building

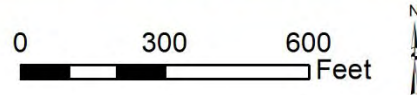


Figure 9: Effects on properties with 50-year-old buildings south of Dorsey Road



Figure 10: Photograph of view from Arundel Avenue, facing north

4 SUMMARY

The viewshed analysis has shown that any effects on historic properties will be minimal. While the no vegetation viewshed includes portions of the Benson-Hammond House (AA-118) property, the Linthicum Heights Historic District (AA-990), which both listed on the NRHP, and the Hamilton House (AA-87), which has been determined eligible for the National Register under criterion C, ground truthing has shown that thick vegetation buffers which include pine trees will continue to visually screen airport structures from these properties even during the winter months. A small portion of the Benson-Hammond House boundary falls just outside of the pine tree buffer, and thus there is potential there for visual effects during the winter. However, all of the existing airport structures, including the current tower, are currently visible from the same location, and thus the new ATCT would not present a significant change in the view from there.

While the construction of the new ATCT does not appear to have any adverse visual effects on historic properties listed on or eligible for the NRHP, it is important to emphasize that this is primarily the result of the current tree buffers. If there are any changes to these buffers, the effects of this work on the viewshed for nearby historic properties should be considered.

5 REFERENCES CITED

United States Geological Survey (USGS)

2022 *Relay, Maryland Quad*. Topographic Map. 1:24,000. United States Geological Survey, Washington.

Attachment 5:

Follow up MHT coordination on revised Viewshed Analysis Report

December 14, 2023

From: Beth Cole - MHT <beth.cole@maryland.gov>
Sent: Thursday, December 14, 2023 7:57 AM
To: Walker, Genevieve J (FAA) <Genevieve.J.Walker@faa.gov>
Subject: Re: FW: BWI ATCT - clarification

Genevieve - thanks for the clarifications. I am fine with our original comments and I don't think we need to revisit. Thanks for checking and have a great day,

Beth

To check on the status of a submittal, please use our online search:
<https://apps.mht.maryland.gov/compliancelog/ComplianceLogSearch.aspx>

Beth Cole

Administrator, Project Review and Compliance
Maryland Historical Trust
Maryland Department of Planning

100 Community Place

Crownsville, MD 21032

beth.cole@maryland.gov / 410-697-9541

[MHT.Maryland.gov](https://www.mht.maryland.gov)

On Thu, Dec 14, 2023 at 6:31 AM Walker, Genevieve J (FAA) <Genevieve.J.Walker@faa.gov> wrote:

Hey Beth- Hopefully this finds you in a jolly mood! I am definitely feeling the Christmas spirit these days. I think after the Pandemic Christmas's I am ready to cut loose!!

I don't think these edits change much, but wanted to make sure you had the updated Viewshed reports (the sub was slow to update the document). I am attaching your original approval of the project so you don't have to look it up! I am also attaching the full email chain so you can follow what happened here. Kim's email below mine explains the changes well.

Let me know if you have any concerns about these clarifications! Sorry they were identified after your review was complete!

Have a lovely holiday and I hope you get to take some time off!!

Genevieve Walker (she/her)
Environmental Protection Specialist
Washington ADO
13783 Park Center Road, Suite 490S
Herndon, VA 20171
(703) 487-3979

!_!
---o--()--o---

From: Kim Hughes <KHUGHES@HNTB.com>
Sent: Wednesday, December 13, 2023 2:12 PM
To: Walker, Genevieve J (FAA) <Genevieve.J.Walker@faa.gov>
Cc: Ryan Lombardi <rlombardi@HNTB.com>; Caroline Pinegar <cpinegar@hntb.com>
Subject: FW: BWI ATCT - clarification

Hi Genevieve,

We're writing to update you on two minor edits just made to the Viewshed Analysis and Indirect APE figure for the BWI ATCT EA. As you'll see in this email chain, these were things we noted as we were QC'ing our figures in the Draft Affected Environment chapter and therefore reached out to EAC/A to ensure consistency between our figures and theirs.

To summarize changes made, the file with '-edits' in the title provides the track change version of the edits so that you can easily see the changes:

- Added Airline Cargo Building label to the aqua outline in Figure 3 of the Viewshed Report. EAC/A's analysis noted that the building falls within the proposed ATCT's viewshed as well as the viewshed of the existing ATCT, so now it is labeled which makes better sense with the narrative/text.
- Added AA-2518 Friendship Cemetery to the figure and the narrative updated. As you can see from EAC/A's Principal Investigator (Rob Warner) they deliberately left it off because by "our definition it is not a historic property since it has been determined not eligible for (nor listed on) the National Register." However, he added some additional language and included the cemetery in their figure so that no one else wonders if it's an oversight (as we did).

Since these edits do not impact the analysis, EAC/A does not feel that these edits need to be run back through MHT, but we did want to make you aware of them and let you decide if think MHT needs to be advised of these edits.

Please let us know if you think that MHT needs to be advised or if we can use the updated version of the report in the Draft EA.

Thanks!

Kim Hughes, PE, ENV SP
Mobile # 571.213.7730

From: Robert Wanner <rwanner@eacarchaeology.com>

Sent: Wednesday, December 13, 2023 9:33 AM

To: Caroline Pinegar <cpinegar@hntb.com>

Cc: Elizabeth Comer <elizabeth.anderson.comer@gmail.com>; Kim Hughes <KHUGHES@HNTB.com>; Ryan Lombardi <rlombardi@HNTB.com>

Subject: Re: BWI ATCT - clarification

Dear Caroline,

I am very sorry that I am only getting to this now - we had several projects pop up and I have been in and out of the office. In the attached document I have addressed both of the concerns. I did deliberately leave out Friendship Cemetery because by our definition (in the first paragraph) it is not a "historic property" since it has been determined not eligible for (nor listed on) the National Register. However, I've changed some of the language and added the cemetery to the images so that no one gets the impression that this is an oversight. I'm sending an additional pdf showing where edits were made on the first page. Please let me know if you have any other questions or concerns and I promise I will get back to you quickly!

Best,

Rob

On Thu, Dec 7, 2023 at 3:26 PM Caroline Pinegar <cpinegar@hntb.com> wrote:

Hi Rob and Elizabeth,

Hope all is well with you! We're just making final edits to the AE and EC chapters of the BWI ATCT EA and have two questions that I hope will take minimal time/effort. It very possibly has an easy explanation. I certainly don't want to make more work for you and know that this already got signed off on by MHT as no adverse effect. We just want to make sure our EA figures are consistent with EAC's reports.

1. The Viewshed Analysis says that "Of these properties, only one falls within the current viewshed for the ATCT: the Airline Cargo Building, from which the current ATCT is visible. As such, the new ATCT will not result in any new effects to this building." *Should the Airline Cargo Building be shown on Figure 3 of the Viewshed Report? I'm wondering if it could be the circled building (highlighted aqua) and just didn't get labeled?*

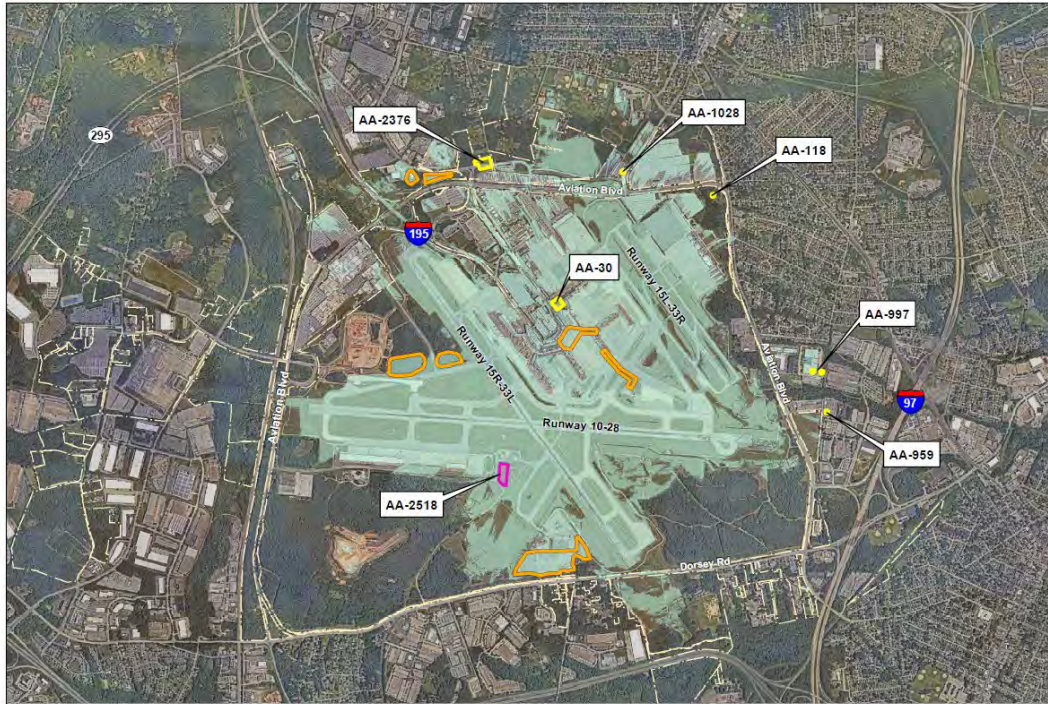


Figure 3: Final viewshed generating using digital surface with current conditions

2. Also trying to figure out why we're not showing AA-2518 (Friendship Cemetery) within the Indirect APE since, according to the HPP Update it is a recorded historic architectural resource on airport property (but not eligible). This came up because when we asked Kent to use the HPP files to make the APE figure for the EA, this resource was on it...but should we remove it from ours?



New Airport Traffic Control Tower and Associated Improvements Environmental Assessment



LEGEND

- Airport Property Boundary
- Direct Area of Potential Effects
- Indirect Area of Potential Effects
- Maryland Inventory of Historic Properties (MIHP)
- Architectural Resource

Area of Potential Effects
Figure 3-5

Source: MDOT MAA, Nearmap, MIHP and EACIA analysis, 2023

Thank you and don't hesitate to reach out if it makes more sense!

Caroline E. Pinegar, AICP, ENV SP

Senior Project Manager
Aviation Planning + Environmental
Cell (703) 402-7345

HNTB CORPORATION

www.hntb.com

100+ YEARS OF INFRASTRUCTURE SOLUTIONS



This e-mail and any files transmitted with it are confidential and are intended solely for the use of the individual or entity to whom they are addressed. If you are NOT the intended recipient and receive this communication, please delete this message and any attachments. Thank you.

--

Rob Wanner, Ph.D.
Archaeologist / GIS Technician

EAC/Archaeology, Inc.
2113 St. Paul Street
Baltimore, MD 21218
Mobile: (765) 404-3939
rvanner@eacarchaeology.com

This e-mail and any files transmitted with it are confidential and are intended solely for the use of the individual or entity to whom they are addressed. If you are NOT the intended recipient and receive this communication, please delete this message and any attachments. Thank you.