MAYFLOWER WIND

Appendix Y4. Radar and Navigational Aid Screening Study

Document Revision A

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MAYFLOWER WIND OFFSHORE WIND PROJECT

RADAR AND NAVIGATIONAL AID SCREENING STUDY

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INTRODUCTION

The Mayflower Wind Offshore Wind Project (Mayflower Wind) consists of approximately 127,388 acres of ocean (study area) off the coast of Nantucket in Massachusetts.[1] This report provides the results of a radar and navigational aid screening study conducted by Westslope Consulting, LLC (Westslope) for the study area using blade-tip heights of 808 feet above ground level (AGL) and 1,067 feet AGL, which represent the minimum and maximum turbine heights included in the Project Design Envelope for the Mayflower Wind Construction and Operations Plan.

This study includes the following:

- An initial analysis using the Department of Defense (DoD) Preliminary Screening Tool (PST);
- Research into other radar sites and Very High Frequency (VHF) Omnidirectional Range (VOR) navigational aid sites near the study area;
- An Air Route Surveillance Radar (ARSR) and Airport Surveillance Radar (ASR) line-of-sight (LOS) analysis;
- An Early Warning Radar (EWR) screening analysis;
- A Terminal Doppler Weather Radar (TDWR) screening analysis;
- A VOR screening analysis;
- A Next Generation Radar (NEXRAD) weather radar screening analysis; and
- A coastal High Frequency (HF) radar LOS analysis.

ANALYSIS

DoD Preliminary Screening Tool

Westslope conducted an initial analysis for Long Range Radar (LRR) and NEXRAD using the DoD PST on the Federal Aviation Administration (FAA) Obstruction Evaluation/Airport Airspace Analysis website.[2] This analysis provides a cursory indication of whether wind turbines may be within line-of-sight of one or more radar sites, and likely to affect radar performance.

The PST LRR analysis accounts for ARSR sites and a few select ASR sites used for air defense by the DoD at the North American Aerospace Defense Command and for homeland security by the Customs and Border Protection Air and Marine Operations Center.[3] Further, the PST NEXRAD analysis accounts for DoD, FAA, and National Oceanic and Atmospheric Administration (NOAA) Weather Surveillance Radar model-88 Doppler (WSR-88D) sites.[4] The PST does not account for all DoD, Department of Homeland

[1] OCS-A_0521.shp.
[2] See http://oeaaa.faa.gov.
[3] For LRR, the PST uses a buffered line-of-sight analysis at a blade-tip height of 750 feet AGL.
[4] For NEXRAD, the PST uses a blade-tip height of 160 meters AGL (525 feet AGL).

Security (DHS), or FAA ground-based radar sites, including Relocatable Over-the-Horizon Radar sites, tethered aerostat radar sites, or FAA TDWR sites.

The PST is helpful for identifying potential impacts to LRR and NEXRAD; however, the results are preliminary, as suggested by the title of the PST, and do not provide an official decision as to whether impacts are acceptable to operations.

Please note that the PST NEXRAD analysis does not reflect the wind farm impact zone scheme updated in 2018 by the NOAA WSR-88D Radar Operations Center (ROC). The updated scheme expands the red area, or "No Build Zone," from three to four kilometers (km) and to areas where wind turbines penetrate the third elevation angle scanned by a WSR-88D.

Based on the study area, Westslope created a single point and a four-point polygon for PST analysis purposes.

The PST analysis results for LRR show that the single point falls within a yellow area. A yellow area indicates that impacts are likely to air defense and homeland security radar. Further, the PST analysis results for the polygon show that the study area falls within yellow and green areas. A green area indicates no anticipated impacts to air defense and homeland security radar. See Figure 1, where the black rotor represents the single point, the black line represents the polygon, and the red line represents the study area.

Westslope identified the closest three radar sites in the PST LRR results as the Falmouth Airport Surveillance Radar model-8 (ASR-8), Nantucket Airport Surveillance Radar model-9 (ASR-9), and the Providence ASR-9. In addition to the DoD and DHS using these radar sites for air defense and homeland security, the FAA uses these radar sites for air traffic control at multiple facilities, including the Boston Terminal Radar Approach Control (TRACON), Nantucket Air Traffic Control Tower, and the Providence TRACON.

For NEXRAD, the PST analysis results for the single point and the polygon show that the study area falls within a green area. A green area, or "No Impact Zone," indicates that impacts are not likely to WSR-88D operations. Please note that blue and grey areas also represent green areas in the PST NEXRAD analysis results. See Figure 2. Westslope identified the two radar sites in the PST NEXRAD analysis as the Boston WSR-88D and the Brookhaven WSR-88D.

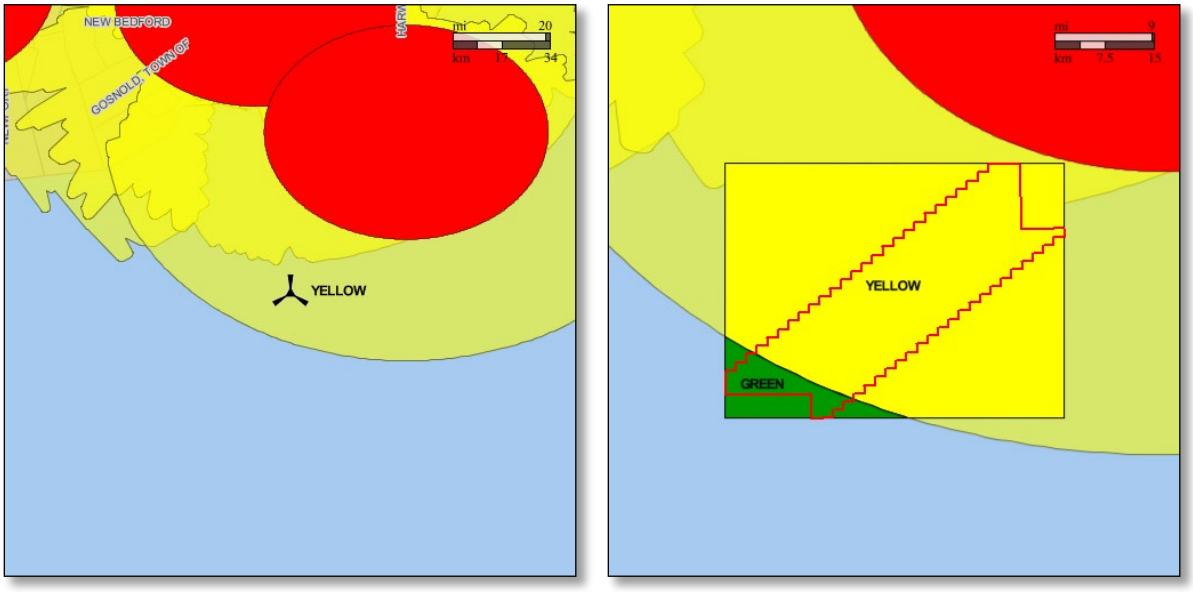

Figure 1 Long Range Radar Results for the Single Point (left) and for the Polygon (right)

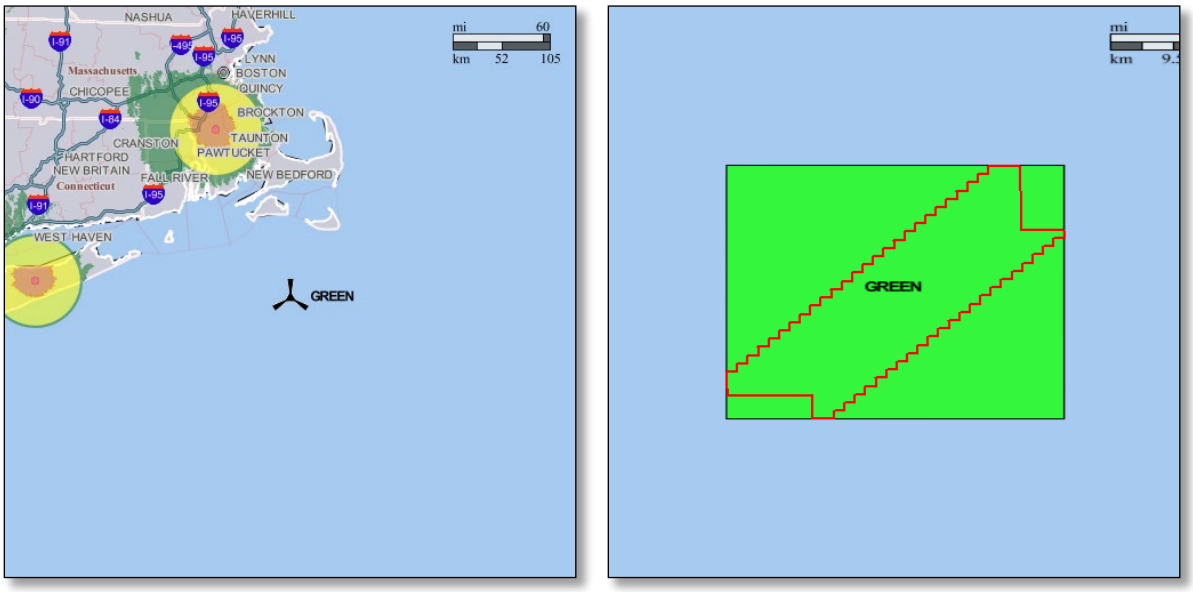

Figure 2 NEXRAD Results for the Single Point (left) and for the Polygon (right)

Other Air Route Surveillance Radar (ARSR) and Airport Surveillance Radar (ASR) Sites

Research conducted by Westslope identified the following three additional ARSR and ASR sites near the study area:

- Boston ASR-9;
- North Truro Air Route Surveillance Radar model-4 (ARSR-4); and
- Riverhead ARSR-4.

The FAA uses the Boston ASR-9, North Truro ARSR-4, and the Riverhead ARSR-4 for air traffic control at multiple facilities, including the Boston TRACON, Boston Air Route Traffic Control Center (ARTCC), and the New York ARTCC.

Co-Located Secondary Surveillance Radar

Research conducted by Westslope identified the following secondary surveillance radar systems co-located with the ARSR and ASR systems:

- An Air Traffic Control Beacon Interrogator model-5 is co-located with the Falmouth ASR-8;
- An Air Traffic Control Beacon Interrogator model-6 is co-located with the North Truro ARSR-4 and the Riverhead ARSR-4; and
- A Mode S is co-located with the Boston ASR-9, Nantucket ASR-9, and the Providence ASR-9.

In general, secondary surveillance radar systems are less susceptible to interference from wind turbines than primary surveillance radar systems, such as the ARSR and ASR systems.

Early Warning Radar (EWR) Sites

Research conducted by Westslope identified one EWR site near the study area: the Cape Cod Air Force Station (AFS) EWR.

The DoD uses the Cape Cod AFS EWR for ballistic missile defense and space surveillance.

Terminal Doppler Weather Radar (TDWR) Sites

Research conducted by Westslope identified one TDWR site near the study area: the Boston TDWR.

The FAA uses this TDWR site for air traffic control at the Boston TRACON.

Very High Frequency Omnidirectional Range (VOR) Sites

Research conducted by Westslope identified the following two navigational aids near the study area:

- Martha's Vineyard VOR and co-located Distance Measuring Equipment (VOR/DME); and
- Nantucket VOR/DME.

Correspondence with the FAA indicates that the Martha's Vineyard VOR/DME and Nantucket VOR/DME are conventional VORs. In general, conventional VORs are more susceptible than Doppler VORs to interference from wind turbines.

High Frequency (HF) Radar Sites

Research conducted by Westslope identified the following five HF radar sites near the study area:

- Amagansett HF radar;
- Block Island HF radar;
- Martha's Vineyard HF radar;
- Nantucket HF radar; and
- Nauset HF radar.

Various federal agencies in partnership with NOAA's Integrated Ocean Observing System (IOOS) use the ocean surface current and wave data provided by these HF radar sites in support of multiple missions.

Air Route Surveillance Radar (ARSR) and Airport Surveillance Radar (ASR) LOS Analysis

Westslope conducted an ARSR and ASR LOS analysis using the United States Geological Survey (USGS) 10-meter National Elevation Dataset (NED). This analysis shows whether wind turbines at blade-tip heights of 808 feet AGL or 1,067 feet AGL will be within line-of-sight of one or more ARSR or ASR sites.

Westslope conducted the LOS analysis for the following six ARSR and ASR sites:

- Boston ASR-9;
- Falmouth ASR-8;
- Nantucket ASR-9;
- North Truro ARSR-4;
- Providence ASR-9; and
- Riverhead ARSR-4.

The study area is beyond the instrumented range of the Boston ASR-9 and the Providence ASR-9. As such, no additional analysis was considered necessary for these radar sites.

Falmouth ASR-8

The LOS analysis results show that wind turbines in the northern corner of the study area will be within line-of-sight of and will interfere with the Falmouth ASR-8 at a blade-tip height of 808 feet AGL. At a blade-tip height of 1,067 feet AGL, wind turbines in the northern one-third of the study area will be within line-of-sight of and will interfere with this radar site. See Figure 3. The radar effects will include unwanted radar returns (clutter) resulting in a partial loss of primary target detection and a number of false primary targets over and in the immediate vicinity of wind turbines within line-of-sight in the study area. Other possible radar effects include a partial loss of weather detection and false weather indications over and in the immediate vicinity of wind turbines within line-of-sight in the study area.

Nantucket ASR-9

The LOS analysis results show that wind turbines in the entire study area will be within line-of-sight of and will interfere with the Nantucket ASR-9 at blade-tip heights of 808 feet AGL and 1,067 feet AGL. See Figure 4. The radar effects will include clutter resulting in a partial loss of primary target detection and a number of false primary targets over and in the immediate vicinity of wind turbines in the study area. Other radar effects include a partial loss of weather detection and false weather indications over and in the immediate vicinity of wind turbines in the study area.

North Truro ARSR-4

The LOS analysis results show that wind turbines in the study area will not be within line-of-sight of and will not interfere with the North Truro ARSR-4 at blade-tip heights of 808 feet AGL or 1,067 feet AGL. As a result, Westslope does not expect any radar effects at or below these blade-tip heights.

Riverhead ARSR-4

The LOS analysis results show that wind turbines in the study area will not be within line-of-sight of and will not interfere with the Riverhead ARSR-4 at blade-tip heights of 808 feet AGL or 1,067 feet AGL. As a result, Westslope does not expect any radar effects at or below these blade-tip heights.

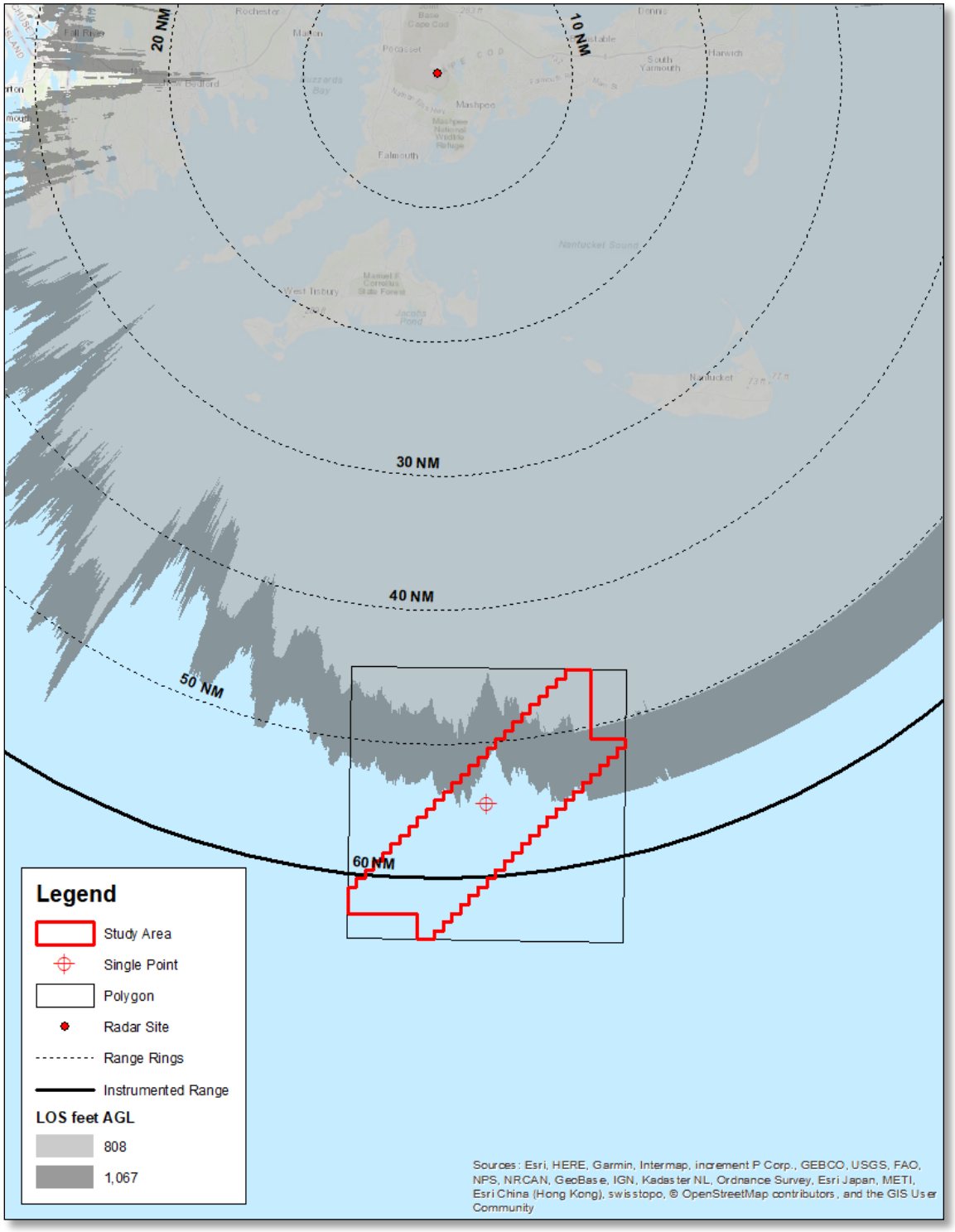

Figure 3 LOS Analysis Results for the Falmouth ASR-8 using 10-meter NED

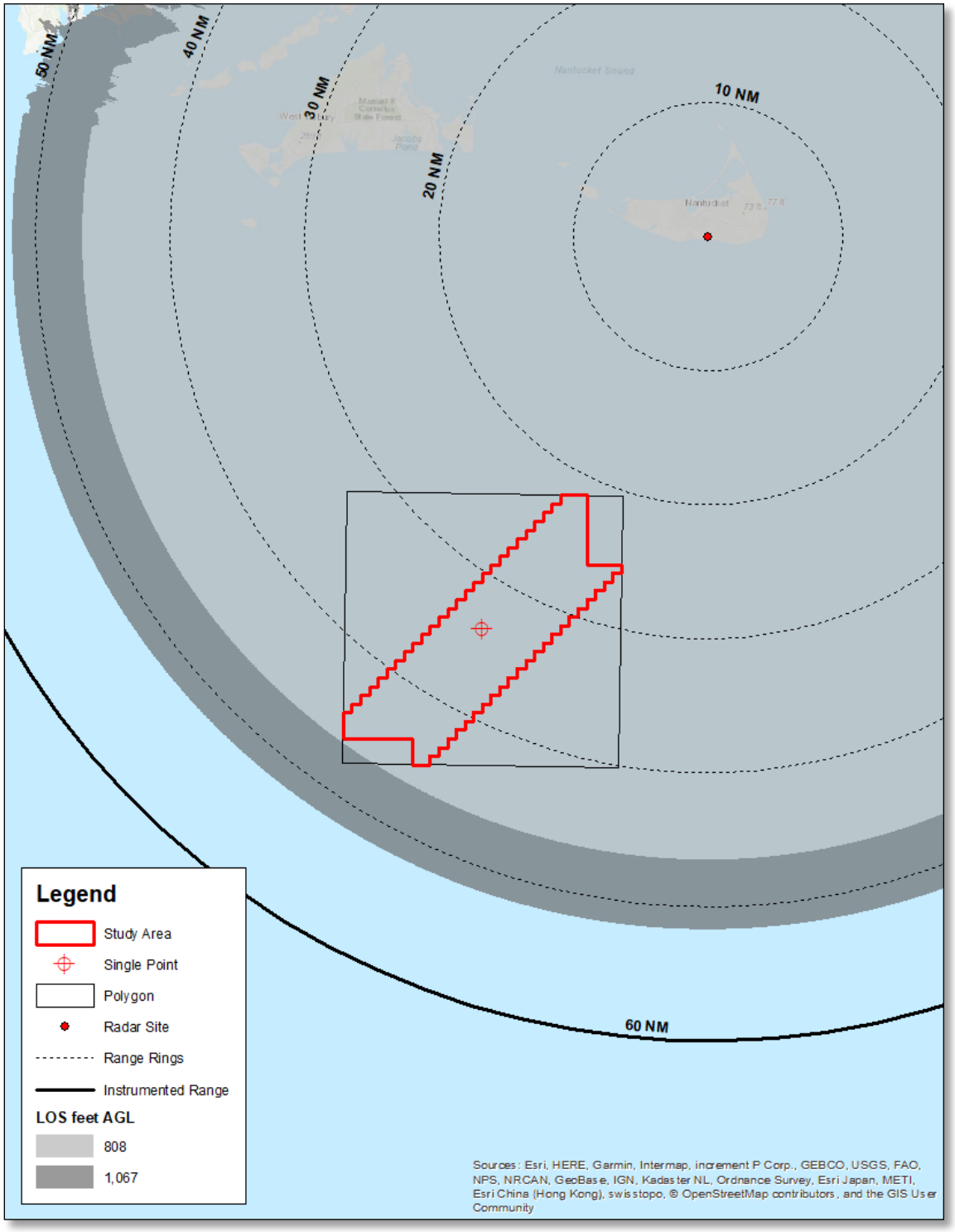

Figure 4 LOS Analysis Results for the Nantucket ASR-9 using 10-meter NED

Early Warning Radar (EWR) Screening Analysis

Westslope conducted an EWR screening analysis using USGS 10-meter NED. This analysis shows whether wind turbines at blade-tip heights of 808 feet AGL or 1,067 feet AGL will be within line-of-sight of one or more EWR sites.

Westslope conducted the EWR screening analysis for the Cape Cod AFS EWR.

Cape Cod AFS EWR

The EWR screening analysis results show that wind turbines in the northern corner of the study area will be within line-of-sight of the Cape Cod AFS EWR at a blade-tip height of 808 feet AGL. At a blade-tip height of 1,067 feet AGL, wind turbines in the northern one-half of the study area will be within line-of-sight of this radar site. See Figure 5.

Research conducted by Westslope suggests that wind turbines in the study area within line-of-sight of the Cape Cod AFS EWR could have a significant impact on this early warning radar. [1] In May 2020, Mayflower Wind submitted a Project Notification Form (PNF) to the DoD Siting Clearinghouse for early consultation.

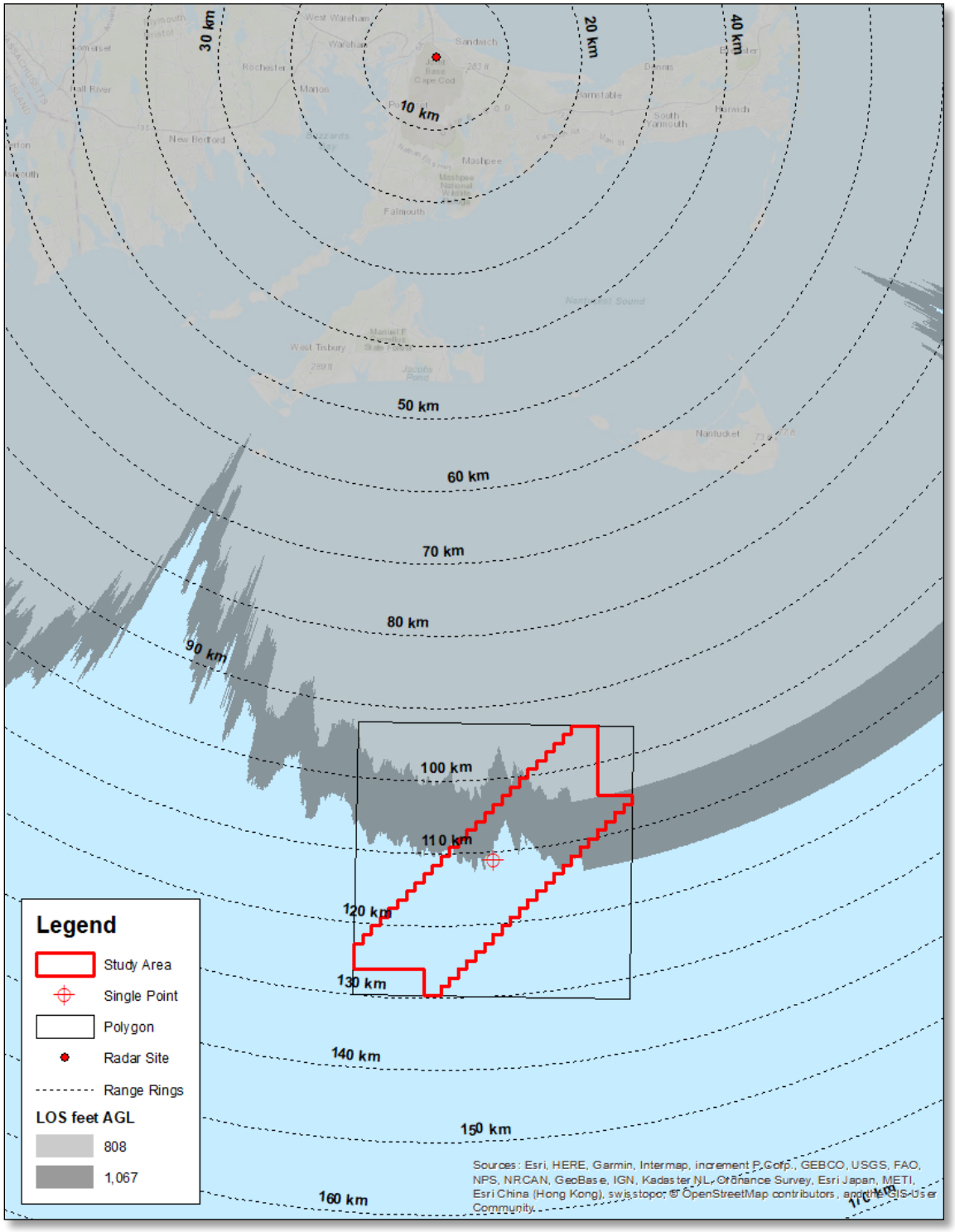

Figure 5 LOS Analysis Results for the Cape Cod AFS EWR using 10-meter NED

Terminal Doppler Weather Radar (TDWR) Screening Analysis

Westslope conducted a TDWR screening analysis using USGS 10-meter NED. This analysis shows whether wind turbines at blade-tip heights of 808 feet AGL or 1,067 feet AGL will be within line-of-sight of one or more TDWR sites and determines the number of elevation angles potentially affected.

The study area is beyond the instrumented range of the Boston TDWR. As such, no additional analysis was considered necessary for this radar site.

Very High Frequency Omnidirectional Range (VOR) Screening Analysis

Westslope conducted a VOR screening analysis using USGS 10-meter NED. This analysis shows whether wind turbines in the study area (1) are less than or equal to 8 nautical miles (NM) from a VOR site; (2) will subtend elevation angles greater than 0.60 degrees from the base elevation of a conventional VOR at blade-tip heights of 808 feet AGL or 1,067 feet AGL, or 0.75 degrees for a Doppler VOR; and (3) will fall within line-of-sight of a VOR site. This screening analysis provides a cursory indication of whether wind turbines in the study area may affect VOR performance and is similar to the FAA's analysis approach for VOR sites. The same criteria will also protect for DMEs.

Westslope conducted a VOR screening analysis for the following two navigational aid sites:

- Martha's Vineyard VOR/DME; and
- Nantucket VOR/DME.

The study area is greater than 8 NM from the Martha's Vineyard VOR/DME and the Nantucket VOR/DME. As such, no additional analysis was considered necessary for these navigational aid sites.

Next Generation Radar (NEXRAD) Weather Radar Screening Analysis

The PST NEXRAD analysis does not reflect the wind farm impact zone scheme updated in 2018 by the NOAA WSR-88D ROC. The updated scheme expands the red area, or "No Build Zone," from three to four kilometers and to areas where wind turbines penetrate the third elevation angle scanned by a WSR-88D.

Westslope conducted a NEXRAD weather radar screening analysis using USGS 10-meter NED. This analysis shows whether wind turbines at blade-tip heights of 808 feet AGL or 1,067 feet AGL will be within line-of-sight of one or more WSR-88D sites and incorporates the updated wind farm impact zone scheme.

Westslope conducted the NEXRAD weather radar screening analysis for the following two radar sites:

- Boston WSR-88D; and
- Brookhaven WSR-88D.

Boston WSR-88D

Westslope's NEXRAD weather radar screening analysis shows that wind turbines in the study area will not be within line-of-sight of and will not interfere with the Boston WSR-88D at blade-tip heights of 808 feet AGL or 1,067 feet AGL. The results also show that wind turbines in the study area at blade-tip heights of 808 feet AGL and 1,067 feet AGL will fall within a NOAA green area for this radar site. A green area, or "No Impact Zone," indicates that impacts are not likely to WSR-88D operations. See Figures 6 and 7.

Brookhaven WSR-88D

Westslope's NEXRAD weather radar screening analysis shows that wind turbines in the study area will not be within line-of-sight of and will not interfere with the Brookhaven WSR-88D at blade-tip heights of 808 feet AGL or 1,067 feet AGL. The results also show that wind turbines in the study area at blade-tip heights of 808 feet AGL and 1,067 feet AGL will fall within a NOAA green area for this radar site. See Figures 8 and 9.

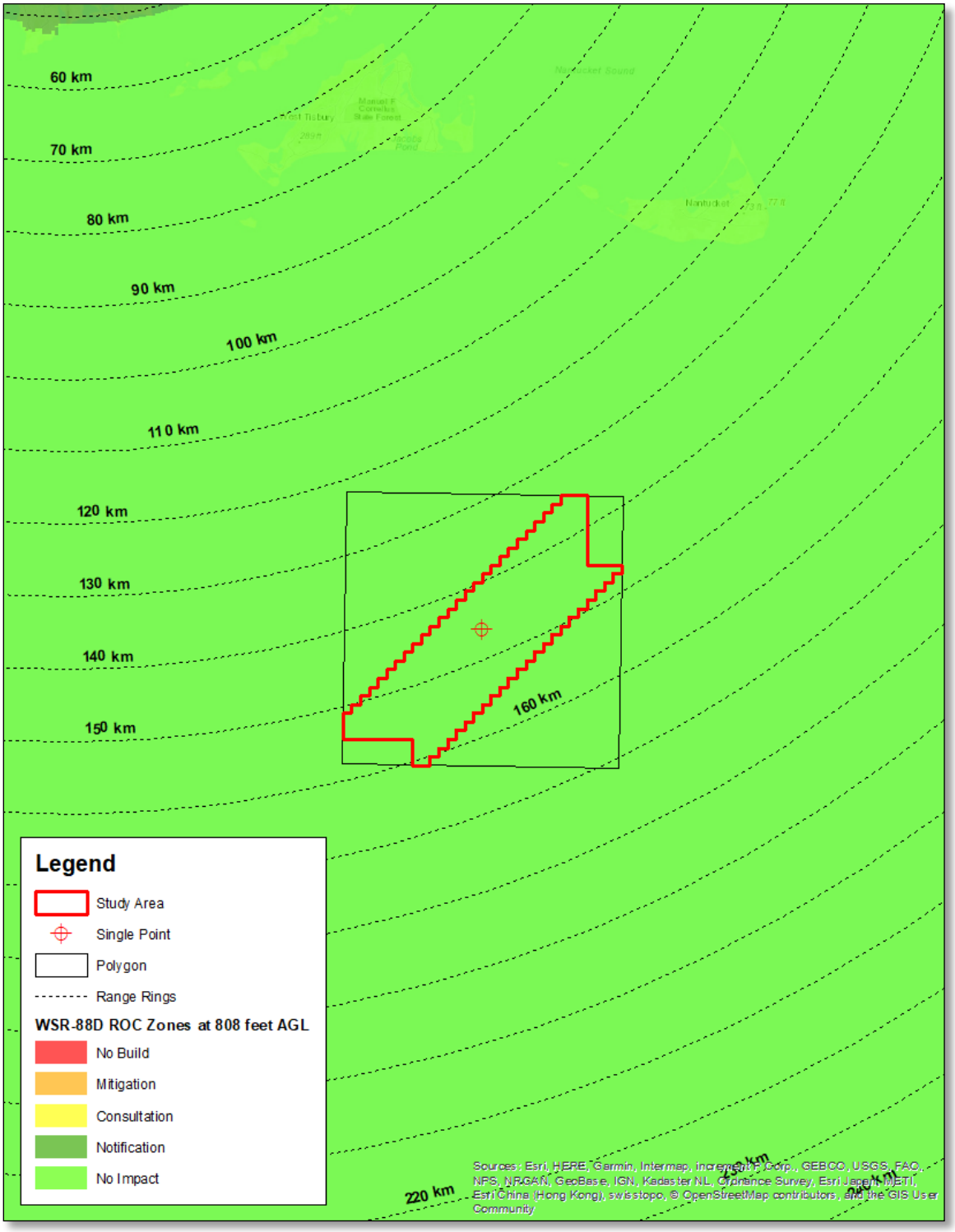

Figure 6 WSR-88D ROC Zone Results at 808 feet AGL for the Boston WSR-88D using 10-meter NED

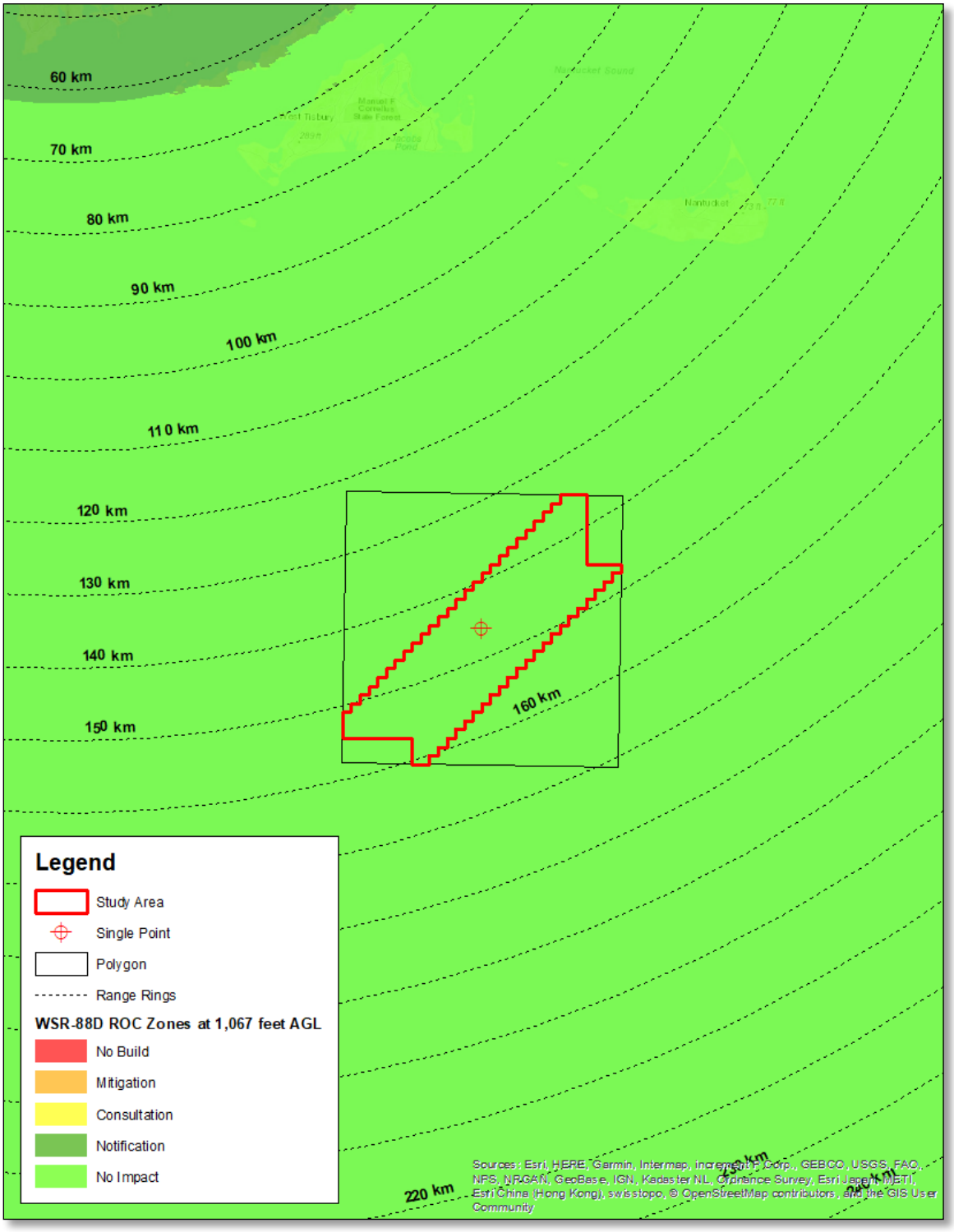

Figure 7 WSR-88D ROC Zone Results at 1,067 feet AGL for the Boston WSR-88D using 10-meter NED

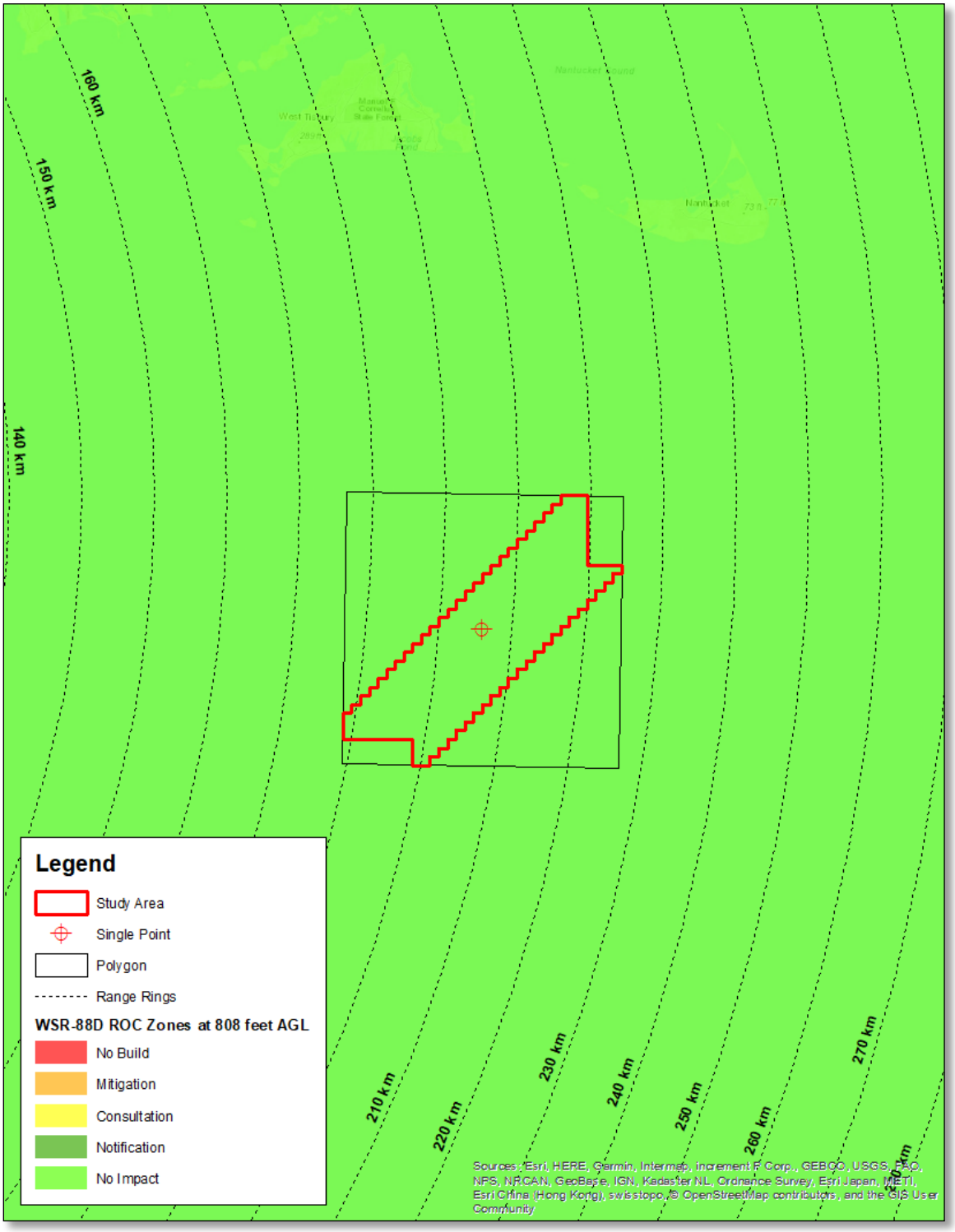

Figure 8 WSR-88D ROC Zone Results at 808 feet AGL for the Brookhaven WSR-88D using 10-meter NED

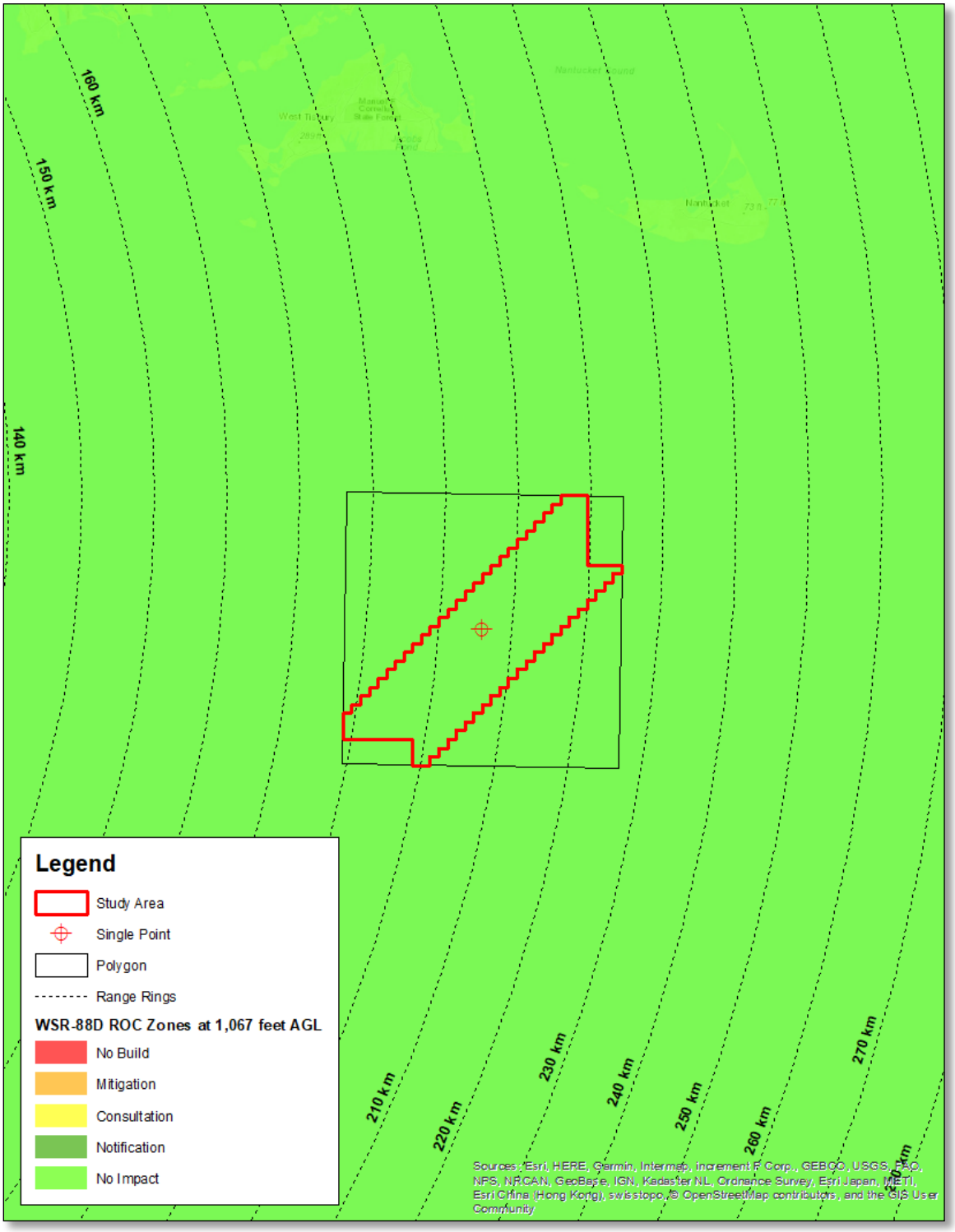

Figure 9 WSR-88D ROC Zone Results at 1,067 feet AGL for the Brookhaven WSR-88D using 10-meter NED

High Frequency (HF) Radar LOS Analysis

Westslope conducted an HF radar LOS analysis using USGS 10-meter NED. This analysis shows whether wind turbines at blade-tip heights of 808 feet AGL or 1,067 feet AGL will be within line-of-sight of one or more HF radar sites.

Westslope conducted the LOS analysis for the following five HF radar sites:

- Amagansett HF radar;
- Block Island HF radar;
- Martha's Vineyard HF radar;
- Nantucket HF radar; and
- Nauset HF radar.

Amagansett HF Radar

The LOS analysis results show that wind turbines in the study area will not be within line-of-sight of the Amagansett HF radar at blade-tip heights of 808 feet AGL or 1,067 feet AGL. See Figure 10. Although wind turbines in the study area will not be within line-of-sight of this radar site, radar effects are still possible beyond line-of-sight due to the propagation of HF electromagnetic waves over the ocean surface.

Block Island HF Radar

The LOS analysis results show that wind turbines in the study area will not be within line-of-sight of the Block Island HF radar at a blade-tip height of 808 feet AGL. At a blade-tip height of 1,067 feet AGL, wind turbines in the western one-third of the study area will be within line-of-sight of this radar site. See Figure 11. The radar effects will include clutter in the vicinity of wind turbines in the study area within line-of-sight and possibly in the vicinity of wind turbines in the study area beyond line-of-sight due to the propagation of HF electromagnetic waves over the ocean surface. As a result, impacts to Block Island HF radar operations are possible.

Martha's Vineyard HF Radar

The LOS analysis results show that wind turbines in the northern three-fourths of the study area will be within line-of-sight of the Martha's Vineyard HF radar at a blade-tip height of 808 feet AGL. At a blade-tip height of 1,067 feet AGL, wind turbines in the majority of the study area will be within line-of-sight of this radar site. See Figure 12. The radar effects will include clutter in the vicinity of wind turbines in the study area within line-of-sight and possibly in the vicinity of wind turbines in the study area beyond line-of-sight due to the propagation of HF electromagnetic waves over the ocean surface. As a result, impacts to Martha's Vineyard HF radar operations are possible.

Nantucket HF Radar

The LOS analysis results show that wind turbines in the northeastern two-thirds of the study area will be within line-of-sight of the Nantucket HF radar at a blade-tip height of 808 feet AGL. At a blade-tip height of 1,067 feet AGL, wind turbines in the majority of the study area will be within line-of-sight of this radar site. See Figure 13. The radar effects will include clutter in the vicinity of wind turbines in the study area within line-of-sight and possibly in the vicinity of wind turbines in the study area beyond line-of-sight due to the propagation of HF electromagnetic waves over the ocean surface. As a result, impacts to Nantucket HF radar operations are possible.

Nauset HF Radar

The LOS analysis results show that wind turbines in the study area will not be within line-of-sight of the Nauset HF radar at blade-tip heights of 808 feet AGL or 1,067 feet AGL. See Figure 14. Although wind turbines in the study area will not be within line-of-sight of this radar site, radar effects are still possible beyond line-of-sight due to the propagation of HF electromagnetic waves over the ocean surface.

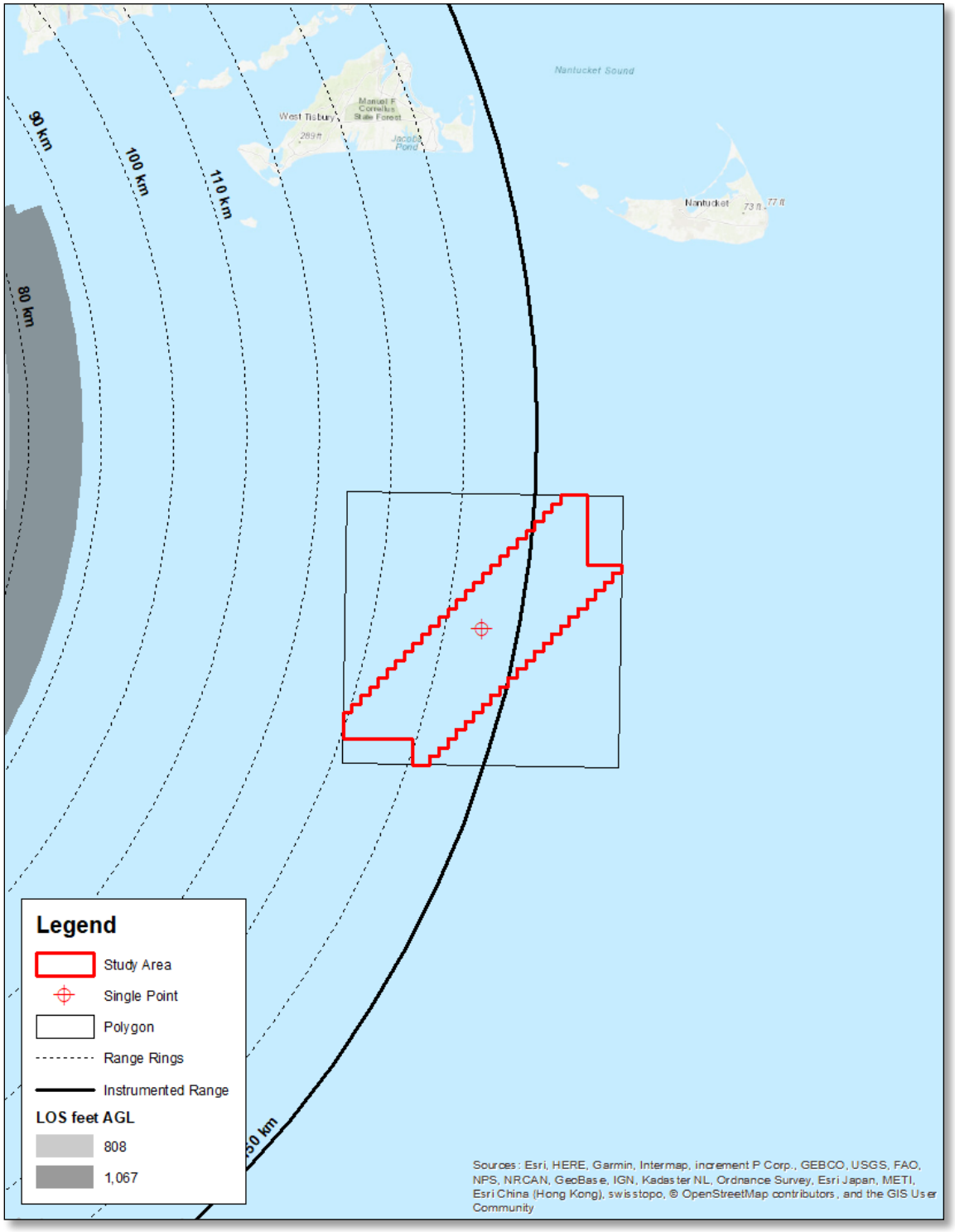

Figure 10 LOS Analysis Results for the Amagansett HF Radar using 10-meter NED

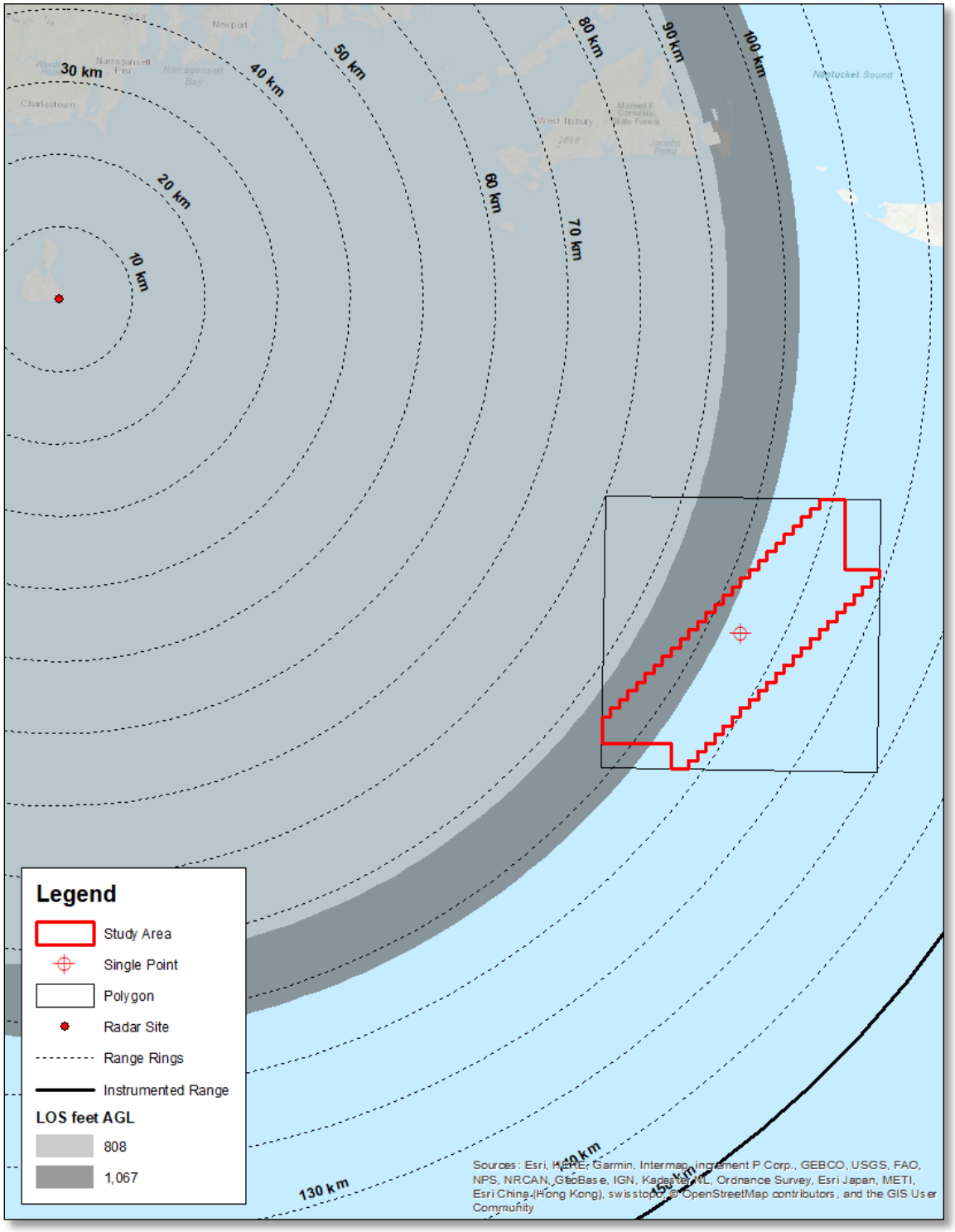

Figure 11 LOS Analysis Results for the Block Island HF Radar using 10-meter NED

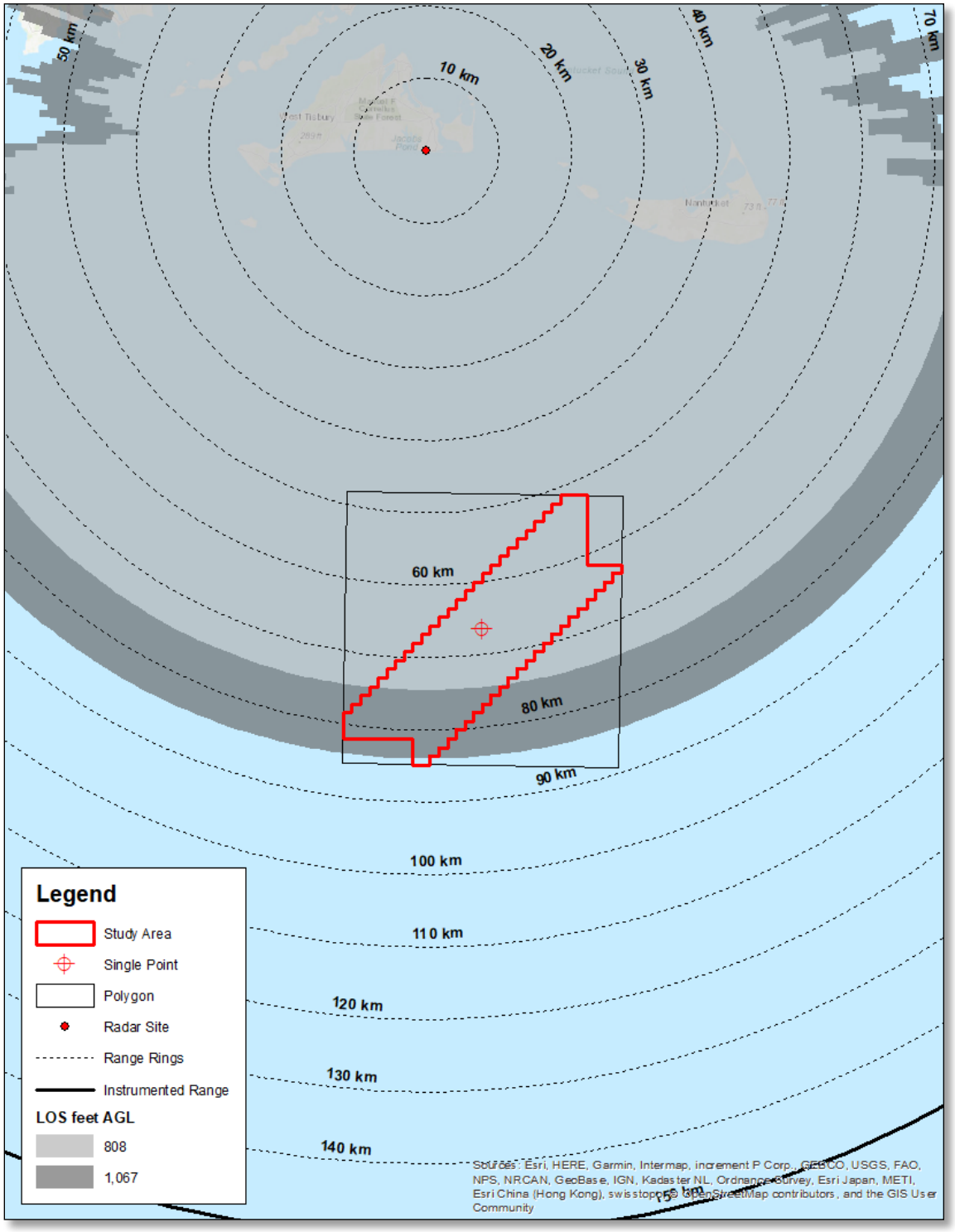

Figure 12 LOS Analysis Results for the Martha's Vineyard HF Radar using 10-meter NED

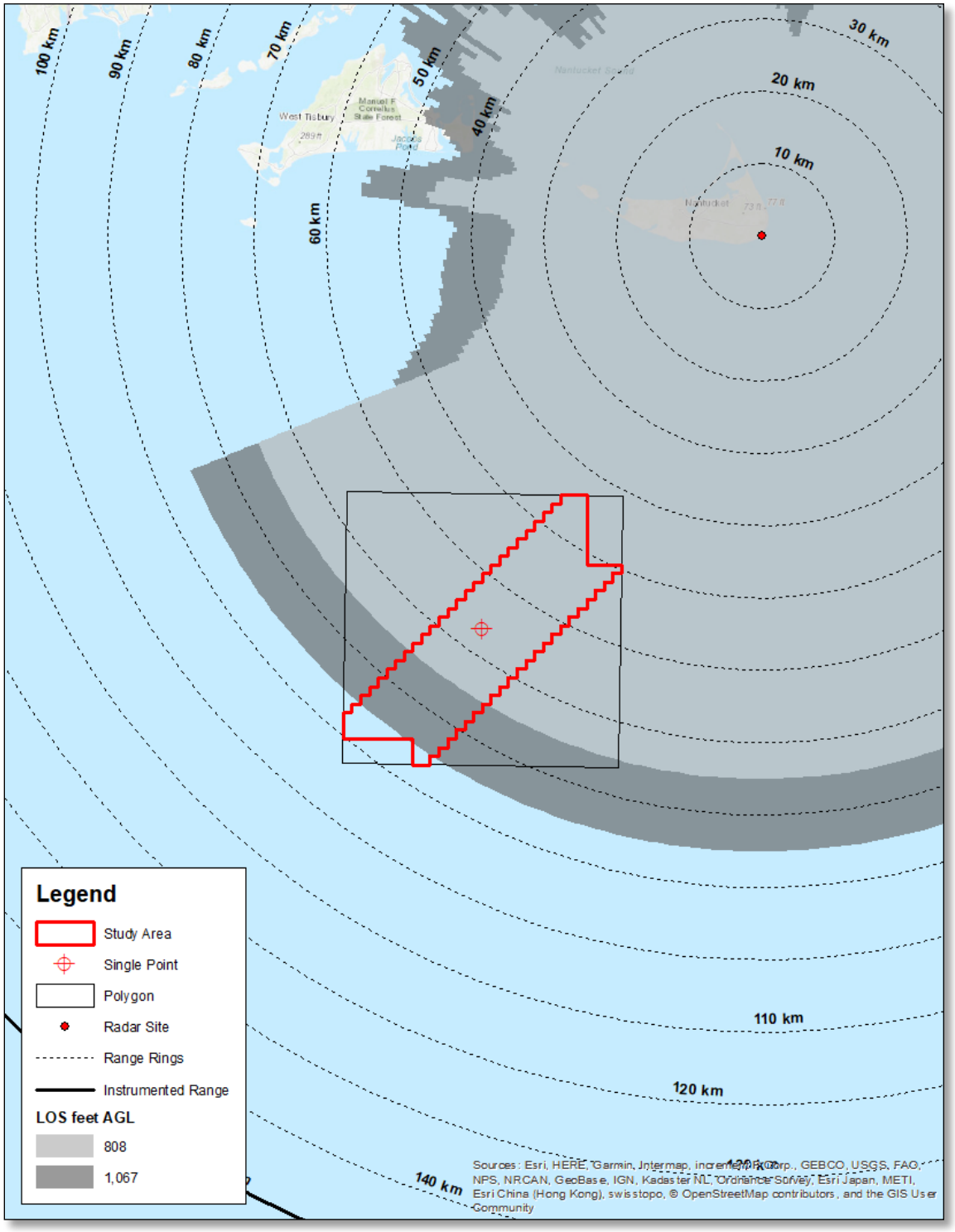

Figure 13 LOS Analysis Results for the Nantucket HF Radar using 10-meter NED

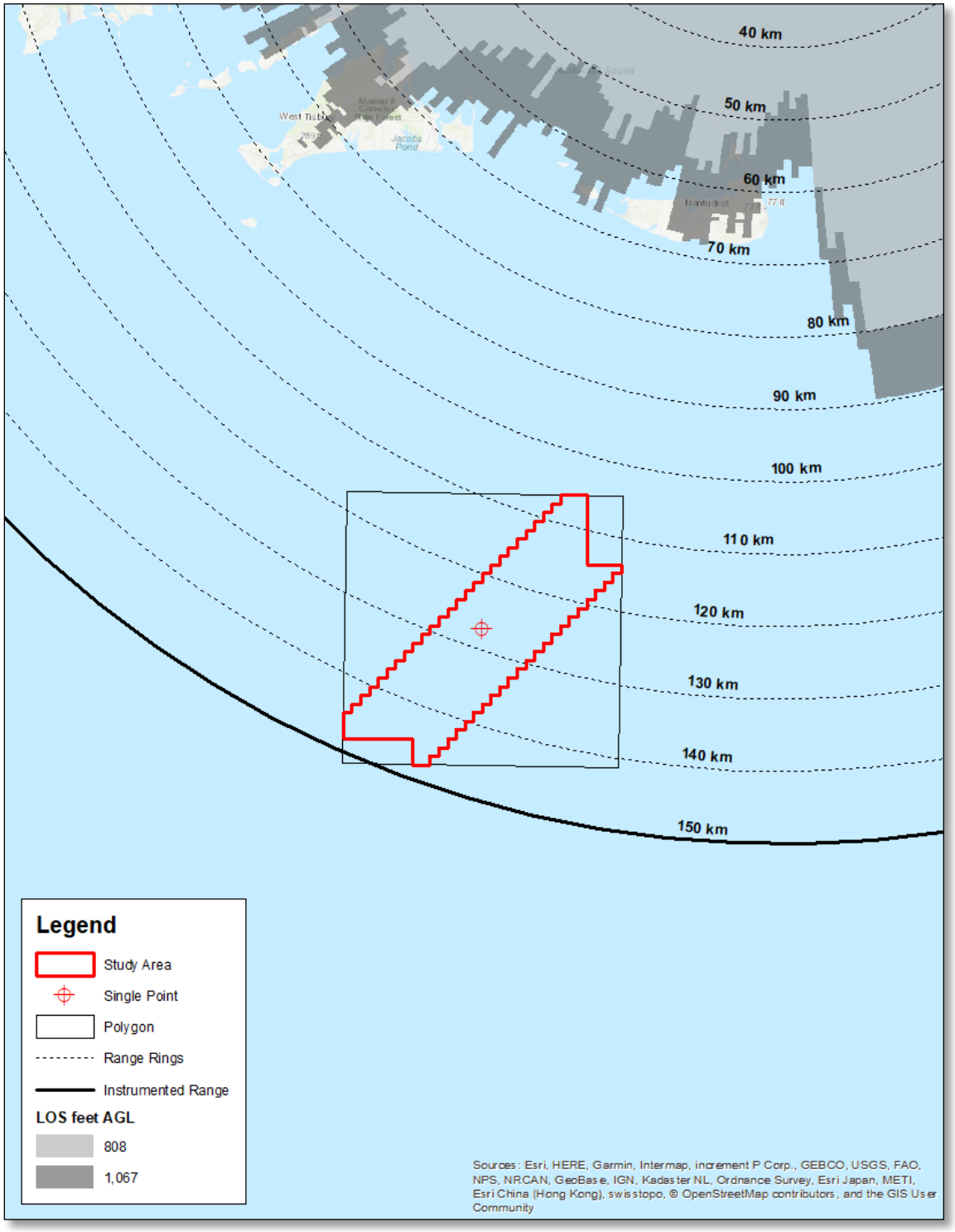

Figure 14 LOS Analysis Results for the Nauset HF Radar using 10-meter NED

CONCLUSIONS

The DoD PST analysis results for the study area indicate the following:

- Impacts to air defense and homeland security radar are likely; and
- Impacts to WSR-88D weather radar are not likely.

Westslope identified the closest three radar sites in the PST analysis results for Long Range Radar as the Falmouth ASR-8, Nantucket ASR-9, and the Providence ASR-9. Further, Westslope identified the two radar sites in the PST analysis results for NEXRAD as the Boston WSR-88D and the Brookhaven WSR-88D.

Research conducted by Westslope identified three additional ARSR and ASR sites near the study area: the Boston ASR-9, North Truro ARSR-4, and the Riverhead ARSR-4.

Westslope conducted an ARSR and ASR LOS analysis for the following six radar sites:

- Boston ASR-9;
- Falmouth ASR-8;
- Nantucket ASR-9;
- North Truro ARSR-4;
- Providence ASR-9; and
- Riverhead ARSR-4.

The study area is beyond the instrumented range of the Boston ASR-9 and the Providence ASR-9. As such, no additional analysis was considered necessary for these radar sites.

The ARSR and ASR LOS analyses conducted by Westslope show the following:

- For the Falmouth ASR-8, wind turbines in the northern corner of the study area will be within line-of-sight of and will interfere with this radar site at a blade-tip height of 808 feet AGL. At a blade-tip height of 1,067 feet AGL, wind turbines in the northern one-third of the study area will be within line-of-sight of and will interfere with this radar site.
- For the Nantucket ASR-9, wind turbines in the entire study area will be within line-of-sight of and will interfere with this radar site at blade-tip heights of 808 feet AGL and 1,067 feet AGL.
- For the North Truro ARSR-4 and Riverhead ARSR-4, wind turbines in the study area will not be within line-of-sight of and will not interfere with these radar sites at blade-tip heights of 808 feet AGL or 1,067 feet AGL.

For the Falmouth ASR-8 and the Nantucket ASR-9, without mitigation, the radar effects due to clutter will include a partial loss of primary target detection and a number of false primary targets over and in the immediate vicinity of wind turbines within line-of-sight in the study area. Other radar effects include a partial loss of weather detection and false weather indications over and in the immediate vicinity of

wind turbines within line-of-sight in the study area. Please note that radar effects do not always translate into operational impacts. Because wind turbines will be within line-of-sight of these radar sites, Westslope expects that the DoD and FAA will have concerns with wind turbines within line-of-sight in the study area at blade-tip heights of 808 feet AGL and 1,067 feet AGL based on electromagnetic interference to air navigation facilities. The FAA's aeronautical study process and the DoD Siting Clearinghouse process will provide an official decision as to whether impacts are acceptable to operations. Although possible, Westslope does not expect that the DHS will have concerns with wind turbines within line-of-sight in the study area at blade-tip heights of 808 feet AGL or 1,067 feet AGL based on impacts to these radar sites.

Westslope does not expect that wind turbines in the study area will affect the secondary surveillance radar co-located with the Falmouth ASR-8 or the Nantucket ASR-9.

Westslope's EWR screening analysis for the Cape Cod AFS EWR shows that wind turbines in the northern corner of the study area will be within line-of-sight of and could have a significant impact on this early warning radar at a blade-tip height of 808 feet AGL. At a blade-tip height of 1,067 feet AGL, wind turbines in the northern one-half of the study area will be within line-of-sight of and could have a significant impact on this early warning radar.

For the Cape Cod AFS EWR, because wind turbines will be visible to this radar site, it is possible that the DoD will have concerns with wind turbines within line-of-sight in the study area based on electromagnetic interference to a ballistic missile defense and space surveillance facility. In May 2020, Mayflower Wind submitted a PNF to the DoD Siting Clearinghouse for early consultation.

Westslope's TDWR screening analysis shows that the study area is beyond the instrumented range of the Boston TDWR. As such, no additional analysis was considered necessary for this radar site.

Westslope's VOR screening analysis for the Martha's Vineyard VOR/DME and the Nantucket VOR/DME shows that the study area is greater than 8 NM from these navigational aids. Although possible, Westslope does not expect that the FAA will have concerns with wind turbines in the study area at blade-tip heights of 808 feet AGL or 1,067 feet AGL based on impacts to these navigational aids.

Westslope's NEXRAD weather radar screening analysis for the Boston WSR-88D and the Brookhaven WSR-88D shows that wind turbines in the study area will not be within line-of-sight of and will not interfere with these radar sites at blade-tip heights of 808 feet AGL or 1,067 feet AGL. The results also show that wind turbines in the study area at blade-tip heights of 808 feet AGL and 1,067 feet AGL will fall within a NOAA green No Impact Zone for these radar sites.

Westslope conducted an HF radar LOS analysis for the following five radar sites:

- Amagansett HF radar;
- Block Island HF radar;
- Martha's Vineyard HF radar;
- Nantucket HF radar; and
- Nauset HF radar.

The HF radar LOS analyses conducted by Westslope show the following:

- For the Block Island HF radar, wind turbines in the study area will not be within line-of-sight of this radar site at a blade-tip height of 808 feet AGL. At a blade-tip height of 1,067 feet AGL, wind turbines in the western one-third of the study area will be within line-of-sight of this radar site.
- For the Martha's Vineyard HF radar, wind turbines in the northern three-fourths of the study area will be within line-of-sight of this radar site at a blade-tip height of 808 feet AGL. At a blade-tip height of 1,067 feet AGL, wind turbines in the majority of the study area will be within line-of-sight of this radar site.
- For the Nantucket HF radar, wind turbines in the northeastern two-thirds of the study area will be within line-of-sight of this radar site at a blade-tip height of 808 feet AGL. At a blade-tip height of 1,067 feet AGL, wind turbines in the majority of the study area will be within line-of-sight of this radar site.
- For the Amagansett HF radar and the Nauset HF radar, wind turbines in the study area will not be within line-of-sight of these radar sites at blade-tip heights of 808 feet AGL or 1,067 feet AGL. Although wind turbines in the study area will not be within line-of-sight of these radar sites, radar effects are still possible beyond line-of-sight due to the propagation of HF electromagnetic waves over the ocean surface.

For the Block Island HF radar, Martha's Vineyard HF radar, and the Nantucket HF radar, without mitigation, the radar effects will include clutter in the vicinity of wind turbines in the study area within line-of-sight and possibly in the vicinity of wind turbines in the study area beyond line-of-sight due to the propagation of HF electromagnetic waves over the ocean surface. Because wind turbines will be within line-of-sight of these radar sites, Westslope expects that multiple federal agencies including NOAA and the United States Coast Guard may have concerns with wind turbines in the study area within line-of-sight at blade-tip heights of 808 feet AGL and 1,067 feet AGL based on potential interference to these HF radar sites.

Westslope recommends that the study area be submitted to the National Telecommunications Information Administration (NTIA) for a detailed review. The NTIA is essentially a clearinghouse for other federal agencies, including the National Oceanic and Atmospheric Administration. Additionally, Westslope recommends consultation with NOAA's IOOS Program Office.

If you have any questions regarding this analysis, please contact Geoff Blackman at (405) 816-2604 or via email at gnblackman@westslopeconsulting.com.

REFERENCES

[1] DoD, Missile Defense Agency, "*Wind Turbine Analysis for Cape Cod Air Force Station Early Warning Radar and Beale Air Force Base Upgraded Early Warning Radar*," Spring 2007.