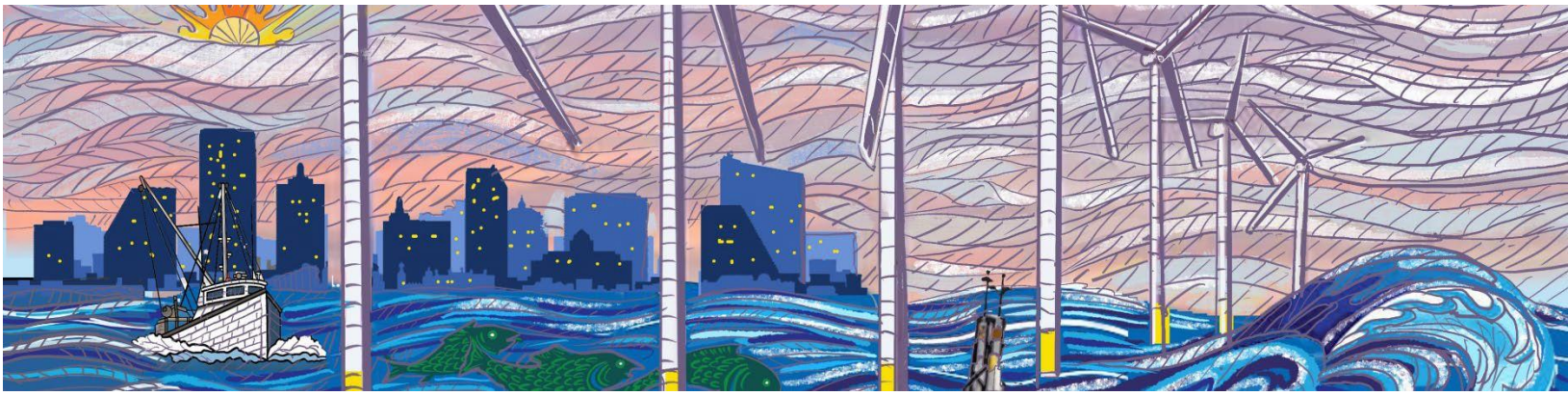

Appendix II-T2

Navigational and Radar Screening Study

May 2024

ATLANTIC SHORES OFFSHORE WIND PROJECT

RADAR AND NAVIGATIONAL AID SCREENING STUDY

AUGUST 31, 2020

AMENDED: DECEMBER 17, 2021

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INTRODUCTION

The Atlantic Shores Offshore Wind, LLC Project is located in the southern portion of Renewable Energy Lease Area OCS-A 0499 (Lease Area) off the coast of New Jersey and consists of 200 proposed wind turbine generators (WTGs) divided among two Project areas and an Overlap Area, collectively referred to as the wind turbine area (WTA).[1] Within the WTA, Project 1 includes a minimum of 105 proposed WTGs, Project 2 includes a minimum of 64 proposed WTGs, and the Overlap Area includes up to 31 proposed WTGs which could be used for either Project. This report provides the results of a radar and navigational aid screening study conducted by Westslope Consulting, LLC (Westslope) for the 200 proposed WTGs within the WTA and the Lease Area using blade-tip heights of 880 feet above ground level (AGL), 890 feet AGL, and 1,048 feet AGL.

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 Omnidirectional Range (VOR) navigational aid sites near the Lease Area;
- An Air Route Surveillance Radar (ARSR) and Airport Surveillance Radar (ASR) line-of-sight (LOS) 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 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

[1] WTG Positions.csv, Project1_Area_South_20210923.shp, Project2_Area_South_20210923.shp, 31_Turbines_Project_1_and_2_Overlap_Area_20210923.shp, Wind Turbine Area.shp, and ASOW_LeaseArea.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.

Doppler (WSR-88D) sites.[4] The PST does not account for all DoD, Department of Homeland 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 account for blade-tip heights greater than 525 feet AGL, does not account for WSR-88D sites authorized to scan at elevation angles below 0.5 degrees, and 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 Lease 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 multiple yellow areas. 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 proposed WTGs fall within yellow and red areas. A red area indicates that impacts are highly likely to air defense and homeland security radar, as indicated by a 20 nautical mile (NM) area around all LRR radar sites. See Figure 1, where the black rotor represents the single point, the thin black line represents the polygon, the black dots represent the proposed WTGs, the blue line represents the Project 1 WTA, the purple line represents the Project 2 WTA, the orange line represents the Overlap Area, and the thick black line represents the Lease Area.

Westslope identified the four radar sites in the PST LRR results as the Atlantic City Airport Surveillance Radar model-9 (ASR-9), Dover Air Force Base (AFB) Digital Airport Surveillance Radar (DASR), Gibbsboro Air Route Surveillance Radar model-4 (ARSR-4), and the McGuire AFB DASR. In addition to the DoD and DHS using these radar sites for air defense and homeland security, the DoD uses the Dover AFB DASR for air traffic control at the Dover AFB Radar Approach Control facility (RAPCON) and uses the McGuire AFB DASR for air traffic control at the McGuire AFB RAPCON. The FAA uses the Atlantic City ASR-9 and the Gibbsboro ARSR-4 for air traffic control at multiple facilities, including the Atlantic City Terminal Radar Approach Control (TRACON) and the New York Air Route Traffic Control Center.

For NEXRAD, the PST analysis results for the single point and the polygon show that the proposed WTGs fall 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

[4] For NEXRAD, the PST uses a blade-tip height of 160 meters AGL (525 feet AGL).

analysis results. See Figure 2. Westslope identified the two radar sites in the PST NEXRAD analysis as the Dover AFB WSR-88D and the Philadelphia WSR-88D.

Research conducted by Westslope shows that the lowest elevation angle scanned by the Dover AFB WSR-88D and the Philadelphia WSR-88D is 0.5 degrees.

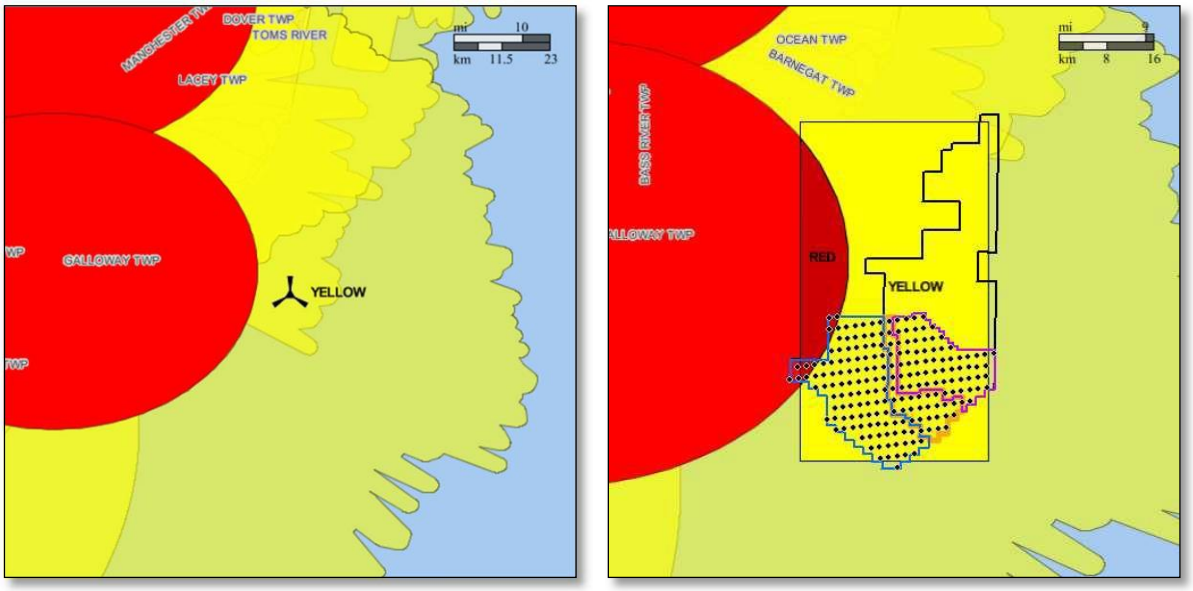

Figure 1 Long Range Radar Results for the Single Point (left) and for the Polygon (right)

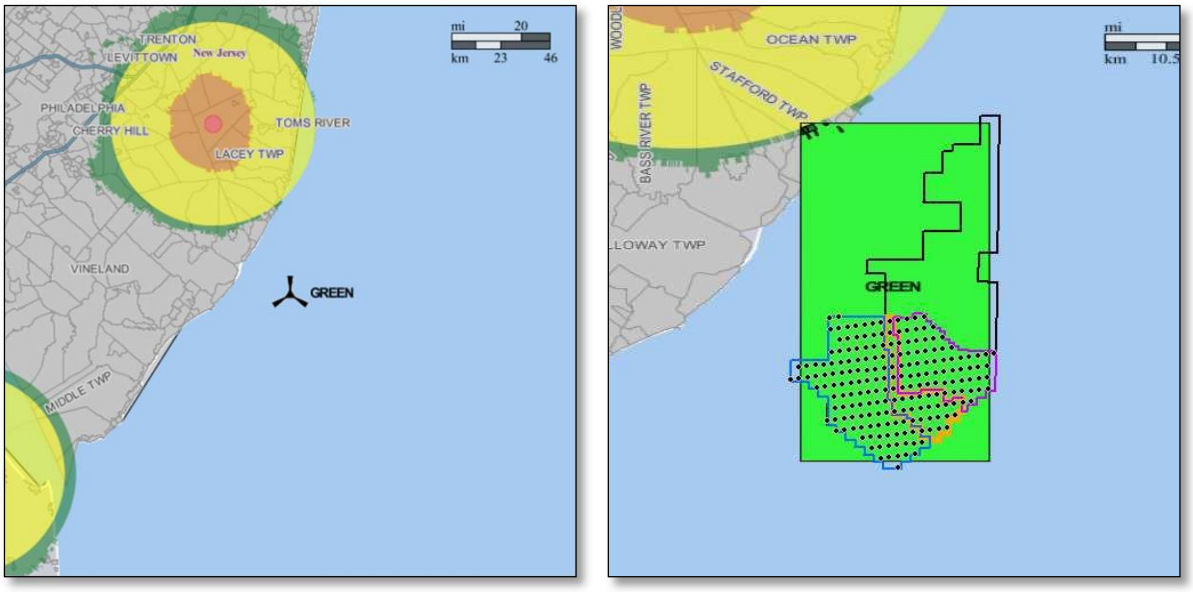

Figure 2 NEXRAD Results for the Single Point (left) and for the Polygon (right)

Other ARSR and ASR Sites

Research conducted by Westslope identified the following four additional ASR sites near the Lease Area:

- Newark ASR-9;
- New York ASR-9;
- Philadelphia ASR-9; and
- Naval Air Station (NAS) Willow Grove Airport Surveillance Radar model-11 (ASR-11).

The FAA uses these radar sites for air traffic control at multiple facilities, including the New York TRACON and the Philadelphia TRACON.

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 Atlantic City ASR-9;
- An Air Traffic Control Beacon Interrogator model-6 is co-located with the Gibbsboro ARSR-4;
- A Mode S is co-located with the Newark ASR-9, New York ASR-9, and the Philadelphia ASR-9; and
- A Monopulse Secondary Surveillance Radar is co-located with the Dover AFB DASR, McGuire AFB DASR, and the NAS Willow Grove ASR-11.

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.

TDWR Sites

Research conducted by Westslope identified the following three TDWR sites near the Lease Area:

- Floyd Bennett Field TDWR;
- Pennsauken TDWR; and
- Woodbridge TDWR.

The FAA uses these radar sites for air traffic control at multiple facilities, including the New York TRACON and the Philadelphia TRACON.

VOR Sites

Research conducted by Westslope identified the following four navigational aid sites near the Lease Area:

- Atlantic City VOR and co-located Tactical Air Navigation system (VORTAC);
- Coyle VORTAC;
- Lakehurst Tactical Air Navigation system (TACAN); and
- Sea Isle VORTAC.

Correspondence with the FAA indicates that the Atlantic City VORTAC and the Coyle VORTAC are conventional VORs and the Sea Isle VORTAC is a Doppler VOR as of November 15, 2021. In general, conventional VORs are more susceptible than Doppler VORs to interference from wind turbines.

HF Radar Sites

Research conducted by Westslope identified the following 15 HF radar sites near the Lease Area:

- Assateague Island HF radar;
- Bradley Beach HF radar;
- Brant Beach HF radar;
- Brigantine Long Range HF radar;
- Brigantine Medium Range HF radar;
- Cape May Point HF radar;
- Hempstead HF radar;
- Loveladies HF radar;
- Moriches HF radar;
- North Wildwood HF radar;
- Sandy Hook HF radar;
- Sea Bright HF radar;
- Seaside Park HF radar;
- Strathmere HF radar; and
- Wildwood HF radar.

The Assateague Island HF radar is operated by Old Dominion University and the remaining 14 HF radars are operated by Rutgers University.

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.

ARSR and 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 880 feet AGL, 890 feet AGL, or 1,048 feet AGL will be within line-of-sight of one or more ARSR and ASR sites.

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

- Atlantic City ASR-9;
- Dover AFB DASR;
- Gibbsboro ARSR-4;
- McGuire AFB DASR;
- Newark ASR-9;
- New York ASR-9;
- Philadelphia ASR-9; and
- NAS Willow Grove ASR-11.

The Lease Area is beyond the instrumented range of the Newark ASR-9 and the NAS Willow Grove ASR-11. As such, no additional analysis was considered necessary for these radar sites.

Atlantic City ASR-9

The LOS analysis results show that all 105 proposed WTGs in the Project 1 WTA, all 64 proposed WTGs in the Project 2 WTA, and all 31 proposed WTGs in the Overlap Area will be within line-of-sight of and will interfere with the Atlantic City ASR-9 at blade-tip heights of 880 feet AGL, 890 feet AGL, and 1,048 feet AGL. 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 the proposed WTGs. Other radar effects include a partial loss of weather detection and false weather indications over and in the immediate vicinity of the proposed WTGs.

Westslope also conducted a LOS analysis using the 10-meter NED and a Digital Surface Model (DSM) created using Light Detection and Ranging (LiDAR) data for parts of the central and southeastern New Jersey area. The DSM captures topographical features, such as buildings, which are not generally accounted for in the bare earth NED data.

The LOS analysis results using the 10-meter NED and the DSM data yield similar results as above showing that all 105 proposed WTGs in the Project 1 WTA, all 64 proposed WTGs in the Project 2 WTA, and all 31 proposed WTGs in the Overlap Area will be within line-of-sight of and will interfere with this radar site at blade-tip heights of 880 feet AGL, 890 feet AGL, and 1,048 feet AGL. See Figure 4.

Dover AFB DASR

The LOS analysis results show that the 105 proposed WTGs in the Project 1 WTA, the 64 proposed WTGs in the Project 2 WTA, and the 31 proposed WTGs in the Overlap Area will not be within line-of-sight of and will not interfere with the Dover AFB DASR at blade-tip heights of 880 feet AGL, 890 feet AGL, or 1,048 feet AGL. As a result, Westslope does not expect any radar effects at or below these blade-tip heights.

Gibbsboro ARSR-4

The LOS analysis results show that 80 of the 105 proposed WTGs in the Project 1 WTA, 37 of the 64 proposed WTGs in the Project 2 WTA, and 21 of the 31 proposed WTGs in the Overlap Area will be within line-of-sight of and will interfere with the Gibbsboro ARSR-4 at a blade-tip height of 880 feet AGL. At a blade-tip height of 890 feet AGL, 82 of the 105 proposed WTGs in the Project 1 WTA, 41 of the 64 proposed WTGs in the Project 2 WTA, and 21 of the 31 proposed WTGs in the Overlap Area will be within line-of-sight of and will interfere with this radar site. At a blade-tip height of 1,048 feet AGL, 101 of the 105 proposed WTGs in the Project 1 WTA, 59 of the 64 proposed WTGs in the Project 2 WTA, and all 31 proposed WTGs in the Overlap Area will be within line-of-sight of and will interfere with this radar site. See Figure 5. 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 the proposed WTGs within line-of-sight.

Westslope also conducted a LOS analysis using the 10-meter NED and the DSM data, which shows that 77 of the 105 proposed WTGs in the Project 1 WTA, 34 of the 64 proposed WTGs in the Project 2 WTA, and 19 of the 31 proposed WTGs in the Overlap Area will be within line-of-sight of and will interfere with this radar site at a blade-tip height of 880 feet AGL. At a blade-tip height of 890 feet AGL, 79 of the 105 proposed WTGs in the Project 1 WTA, 37 of the 64 proposed WTGs in the Project 2 WTA, and 19 of the 31 proposed WTGs in the Overlap Area will be within line-of-sight of and will interfere with this radar site. At a blade-tip height of 1,048 feet AGL, 98 of the 105 proposed WTGs in the Project 1 WTA, 55 of the 64 proposed WTGs in the Project 2 WTA, and 30 of the 31 proposed WTGs in the Overlap Area will be within line-of-sight of and will interfere with this radar site. See Figure 6.

McGuire AFB DASR

The LOS analysis results show that the 105 proposed WTGs in the Project 1 WTA, the 64 proposed WTGs in the Project 2 WTA, and the 31 proposed WTGs in the Overlap Area will not be within line-of-sight of and will not interfere with the McGuire AFB DASR at blade-tip heights of 880 feet AGL or 890 feet AGL. At a blade-tip height of 1,048 feet AGL, three of the 105 proposed WTGs in the Project 1 WTA, none of the 64 proposed WTGs in the Project 2 WTA, and none of the 31 proposed WTGs in the Overlap Area will be within line-of-sight of and will interfere with this radar site. See Figure 7. 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 the proposed WTGs within line-of-sight. Other radar effects include a partial loss of weather detection and false weather indications over and in the immediate vicinity of the proposed WTGs within line-of-sight.

Westslope also conducted a LOS analysis using the 10-meter NED and the DSM data, which shows that the 105 proposed WTGs in the Project 1 WTA, the 64 proposed WTGs in the Project 2 WTA, and the 31 proposed WTGs in the Overlap Area will not be within line-of-sight of and will not interfere with this radar site at blade-tip heights of 880 feet AGL or 890 feet AGL. At a blade-tip height of 1,048 feet AGL, two of the 105 proposed WTGs in the Project 1 WTA, none of the 64 proposed WTGs in the Project 2 WTA, and none of the 31 proposed WTGs in the Overlap Area will be within line-of-sight of and will interfere with this radar site. See Figure 8.

New York ASR-9

The LOS analysis results show that the 105 proposed WTGs in the Project 1 WTA, the 64 proposed WTGs in the Project 2 WTA, and the 31 proposed WTGs in the Overlap Area are beyond the instrumented range of the New York ASR-9 and will not be within line-of-sight of or interfere with this radar site at blade-tip heights of 880 feet AGL, 890 feet AGL, or 1,048 feet AGL. As a result, Westslope does not expect any radar effects at or below these blade-tip heights.

Philadelphia ASR-9

The LOS analysis results show that the 105 proposed WTGs in the Project 1 WTA, the 64 proposed WTGs in the Project 2 WTA, and the 31 proposed WTGs in the Overlap Area will not be within line-of-sight of and will not interfere with the Philadelphia ASR-9 at blade-tip heights of 880 feet AGL, 890 feet AGL, or 1,048 feet AGL. As a result, Westslope does not expect any radar effects at or below these blade-tip heights.

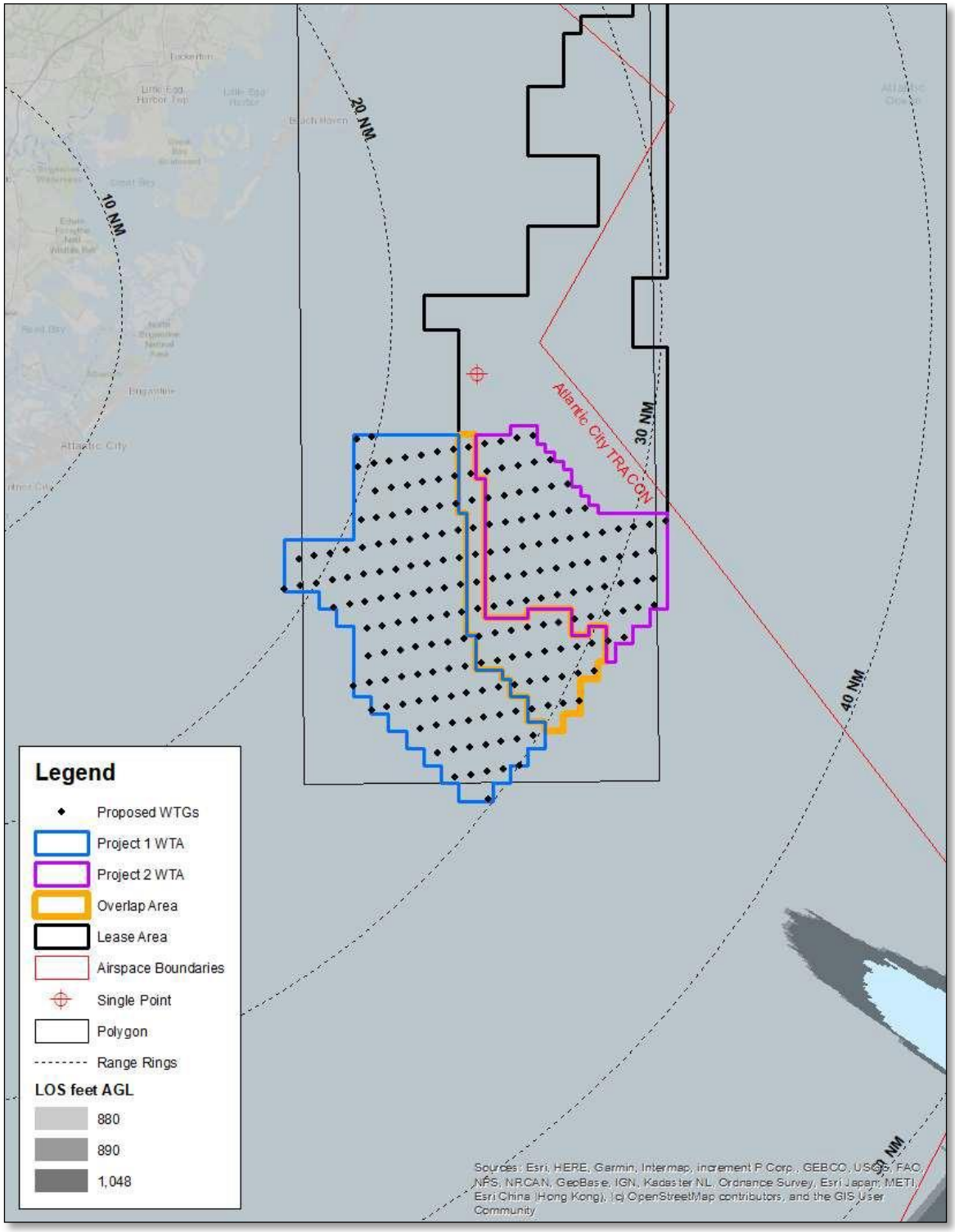

Figure 3 LOS Analysis Results for the Atlantic City ASR-9 using 10-meter NED

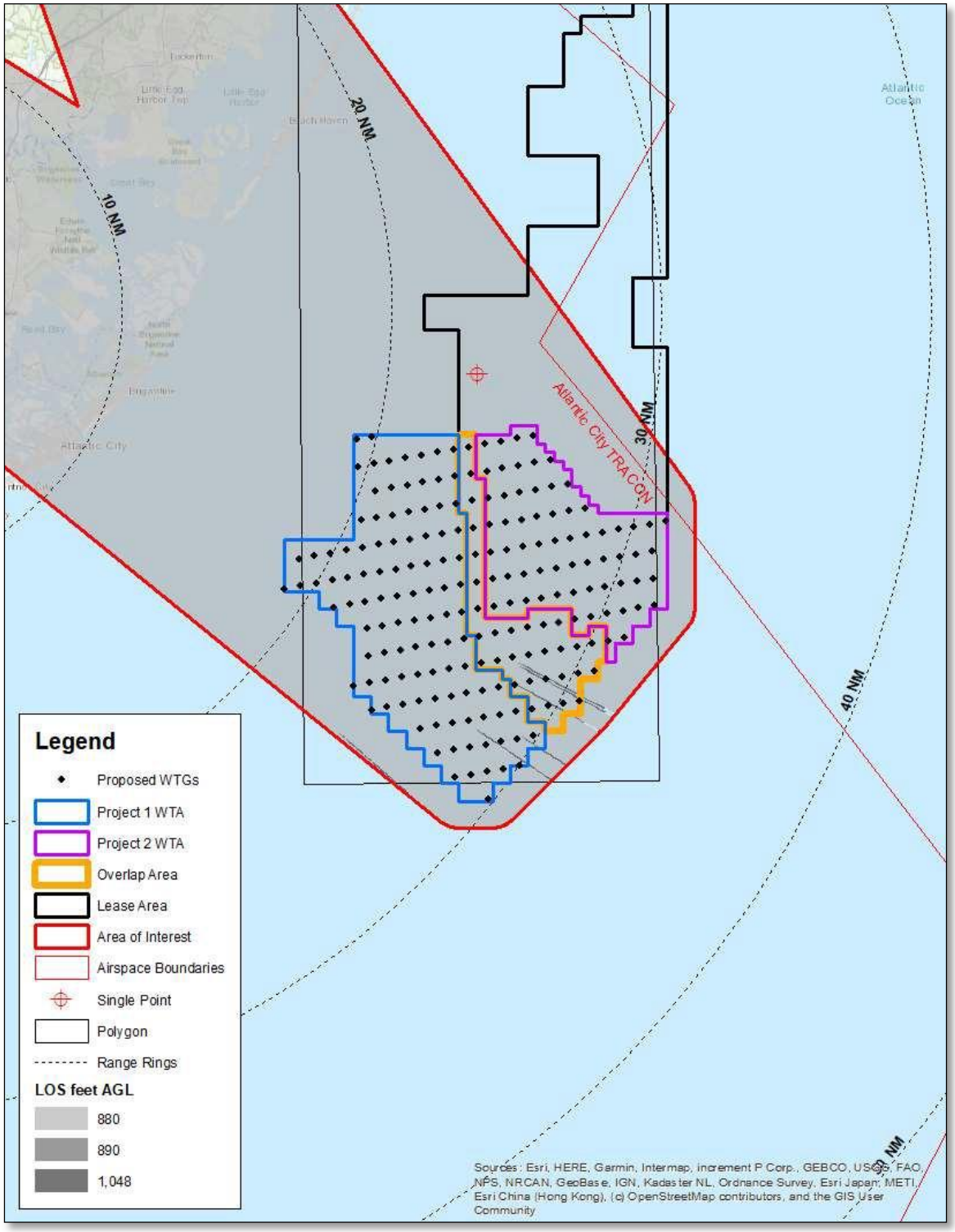

Figure 4 LOS Analysis Results for the Atlantic City ASR-9 using 10-meter NED and the DSM

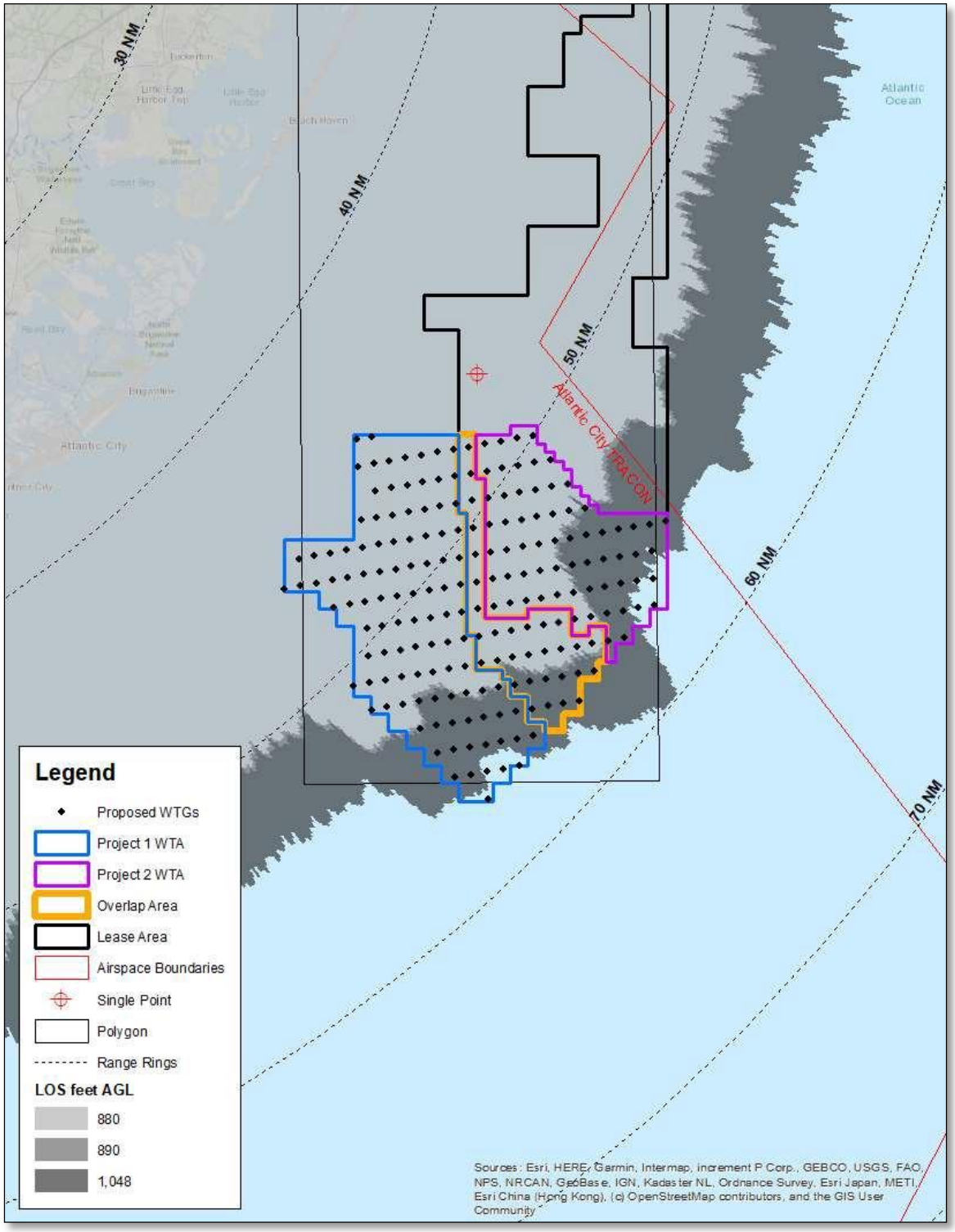

Figure 5 LOS Analysis Results for the Gibbsboro ARSR-4 using 10-meter NED

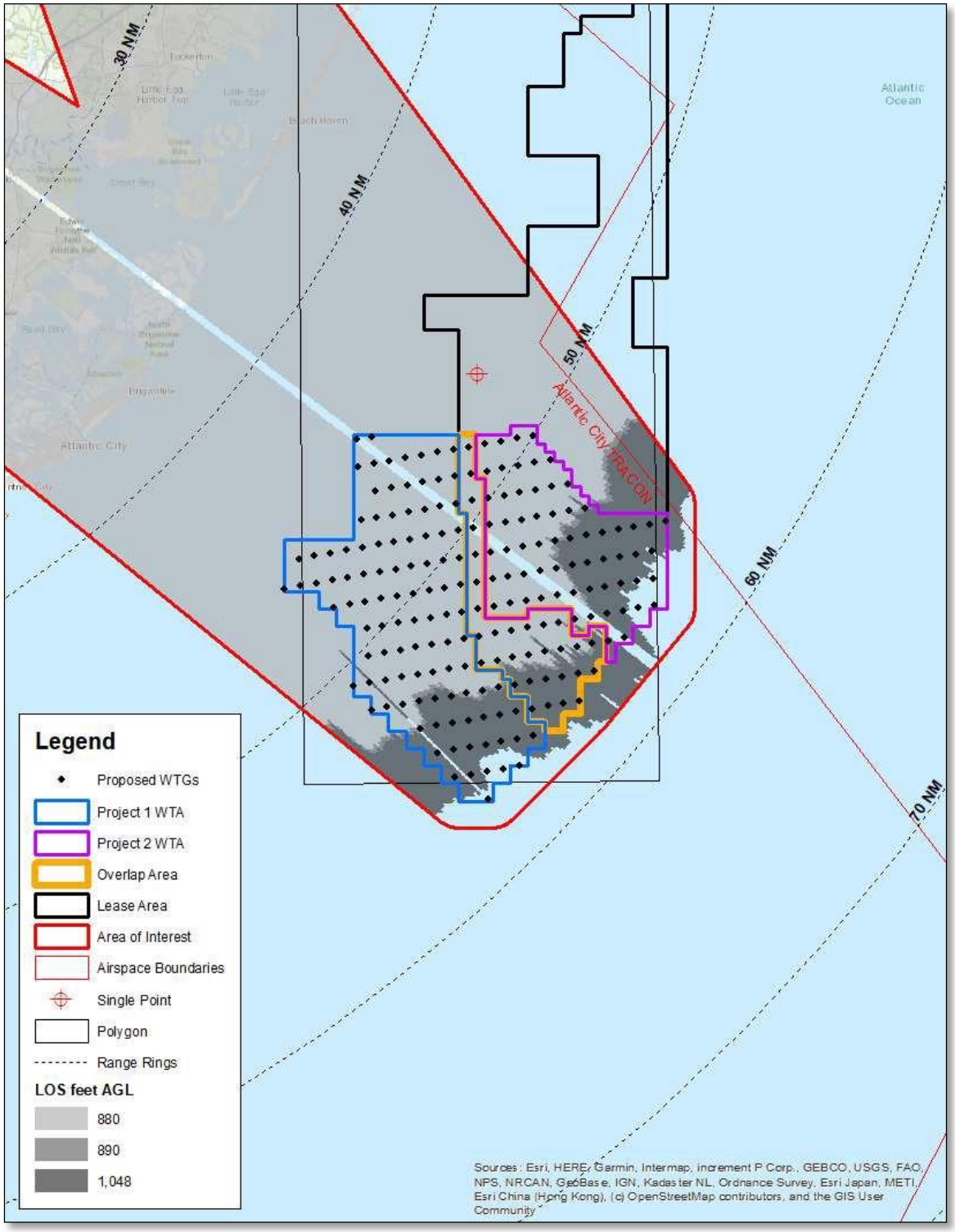

Figure 6 LOS Analysis Results for the Gibbsboro ARSR-4 using 10-meter NED and the DSM

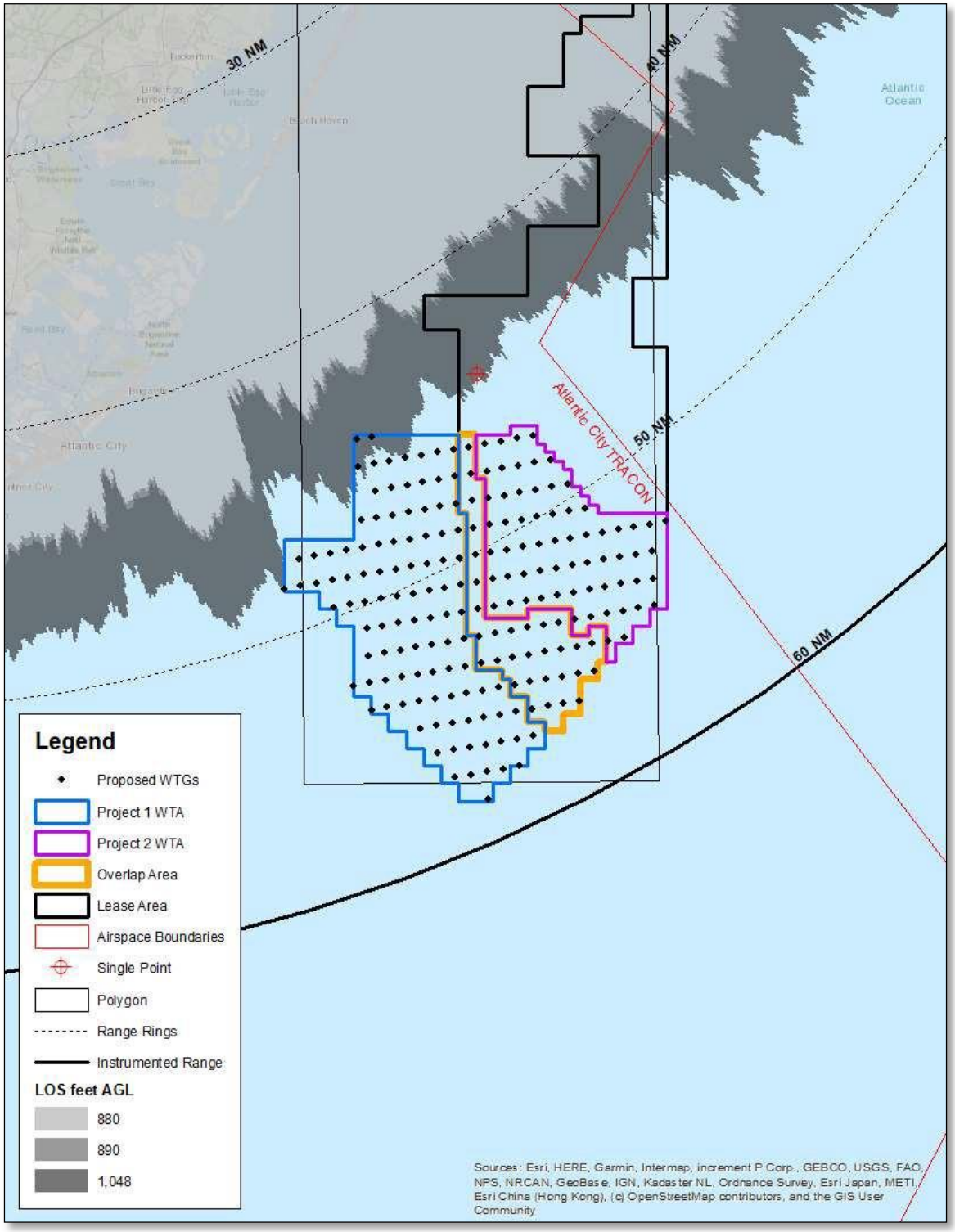

Figure 7 LOS Analysis Results for the McGuire AFB DASR using 10-meter NED

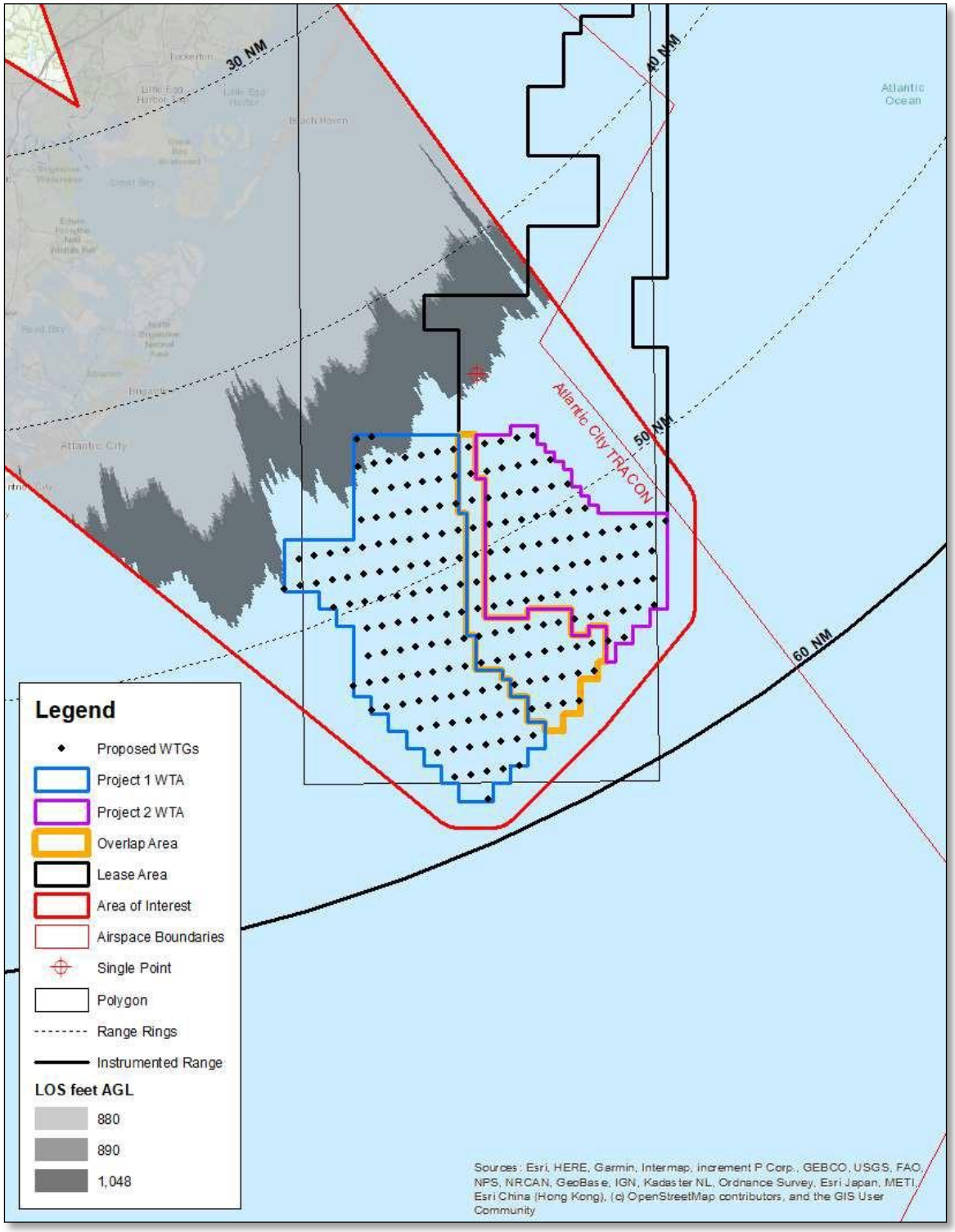

Figure 8 LOS Analysis Results for the McGuire AFB DASR using 10-meter NED and the DSM

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 880 feet AGL, 890 feet AGL, or 1,048 feet AGL will be within line-of-sight of one or more TDWR sites and determines the number of elevation angles penetrated and potentially affected.

Westslope conducted the TDWR screening analysis for the following three radar sites:

- Floyd Bennett Field TDWR;
- Pennsauken TDWR; and
- Woodbridge TDWR.

The Lease Area is beyond the instrumented range of the Floyd Bennett Field TDWR, Pennsauken TDWR, and the Woodbridge TDWR. As such, no additional analysis was considered necessary for these radar sites.

VOR Screening Analysis

Westslope conducted a VOR screening analysis using USGS 10-meter NED. This analysis shows whether wind turbines will fall within 8 NM and will be within line-of-sight of a VOR site at blade-tip heights of 880 feet AGL, 890 feet AGL, or 1,048 feet AGL. This screening analysis provides a cursory indication of whether wind turbines may affect VOR performance and is similar to the FAA's analysis approach for VOR sites. The same criteria will also protect for TACANs.

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

- Atlantic City VORTAC;
- Coyle VORTAC;
- Lakehurst TACAN; and
- Sea Isle VORTAC.

The Lease Area is greater than 8 NM from the Atlantic City VORTAC, Coyle VORTAC, Lakehurst TACAN, and the Sea Isle VORTAC. As such, no additional analysis was considered necessary for these navigational aid sites.

NEXRAD Weather Radar Screening Analysis

The PST NEXRAD analysis does not account for blade-tip heights greater than 525 feet AGL, does not account for WSR-88D sites authorized to scan at elevation angles below 0.5 degrees, and 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 880 feet AGL, 890 feet AGL, or 1,048 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:

- Dover AFB WSR-88D; and
- Philadelphia WSR-88D.

Research conducted by Westslope shows that the lowest elevation angle scanned by the Dover AFB WSR-88D and the Philadelphia WSR-88D is 0.5 degrees.

Dover AFB WSR-88D

Westslope's NEXRAD weather radar screening analysis shows that the 105 proposed WTGs in the Project 1 WTA, the 64 proposed WTGs in the Project 2 WTA, and the 31 proposed WTGs in the Overlap Area will not be within line-of-sight of and will not interfere with the Dover AFB WSR-88D at blade-tip heights of 880 feet AGL, 890 feet AGL, or 1,048 feet AGL. The results also show that the 105 proposed WTGs in the Project 1 WTA, the 64 proposed WTGs in the Project 2 WTA, and the 31 proposed WTGs in the Overlap Area at blade-tip heights of 880 feet AGL, 890 feet AGL, and 1,048 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 9, 10, and 11.

Philadelphia WSR-88D

Westslope's NEXRAD weather radar screening analysis shows that 27 of the 105 proposed WTGs in the Project 1 WTA, 10 of the 64 proposed WTGs in the Project 2 WTA, and three of the 31 proposed WTGs in the Overlap Area will be within line-of-sight of the Philadelphia WSR-88D at a blade-tip height of 880 feet AGL. At a blade-tip height of 890 feet AGL, 30 of the 105 proposed WTGs in the Project 1 WTA, 12 of the 64 proposed WTGs in the Project 2 WTA, and three of the 31 proposed WTGs in the Overlap Area will be within line-of-sight of this radar site. At a blade-tip height of 1,048 feet AGL, 64 of the 105 proposed WTGs in the Project 1 WTA, 42 of the 64 proposed WTGs in the Project 2 WTA, and seven of the 31 proposed WTGs in the Overlap Area will be within line-of-sight of this radar site. See Figure 12.

The results also show that the 105 proposed WTGs in the Project 1 WTA, the 64 proposed WTGs in the Project 2 WTA, and the 31 proposed WTGs in the Overlap Area at blade-tip heights of 880 feet AGL, 890 feet AGL, and 1,048 feet AGL will fall within a NOAA green No Impact Zone for this radar site. See Figures 13, 14, and 15. At blade-tip heights of 880 feet AGL, 890 feet AGL, and 1,048 feet AGL, a partial loss of weather detection and false weather indications (Doppler contamination) over and in the immediate vicinity of the proposed WTGs within line-of-sight are possible due to clutter; however, impacts to Philadelphia WSR-88D operations are not likely.

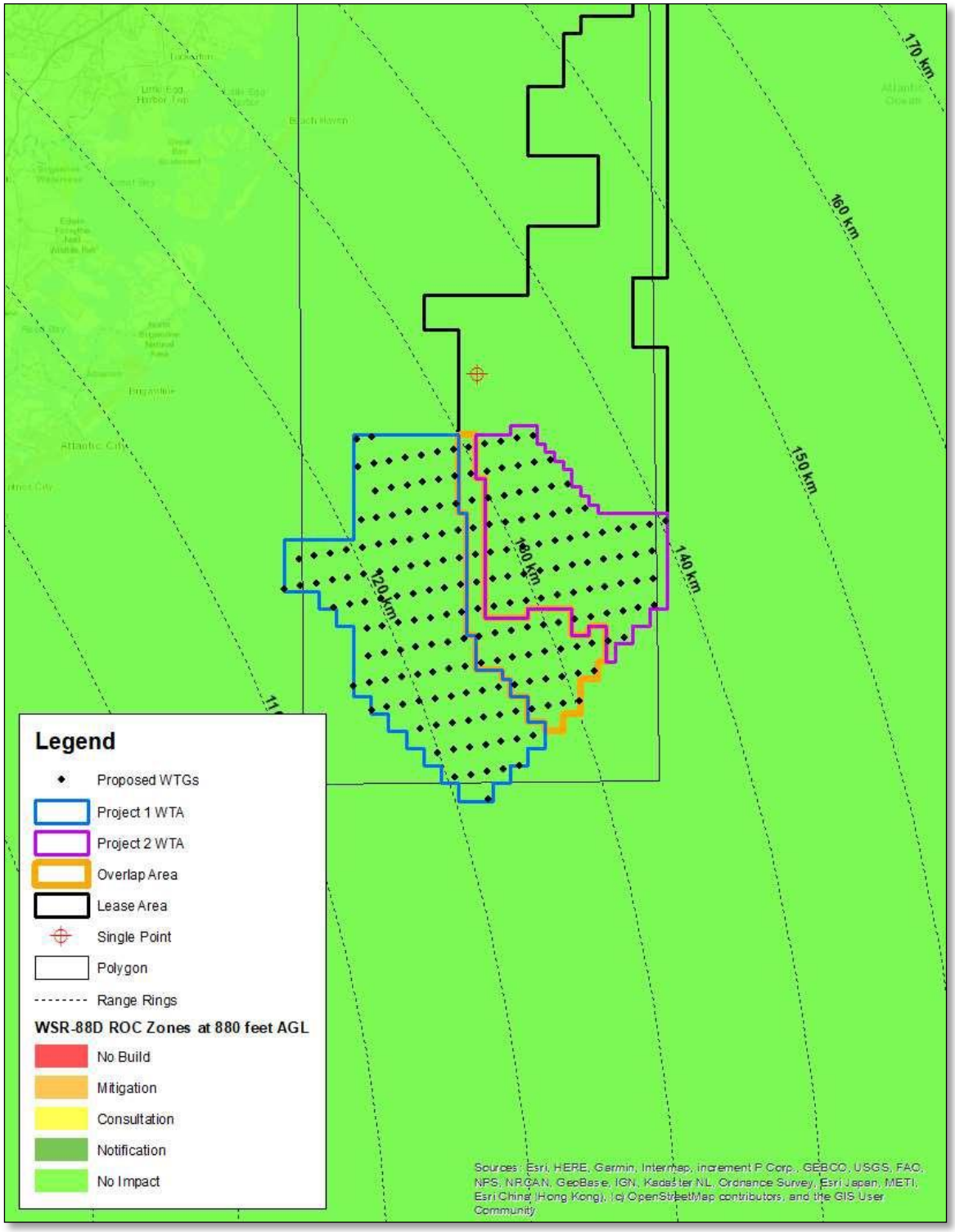

Figure 9 WSR-88D ROC Zone Results at 880 feet AGL for the Dover AFB WSR-88D using 10-meter NED

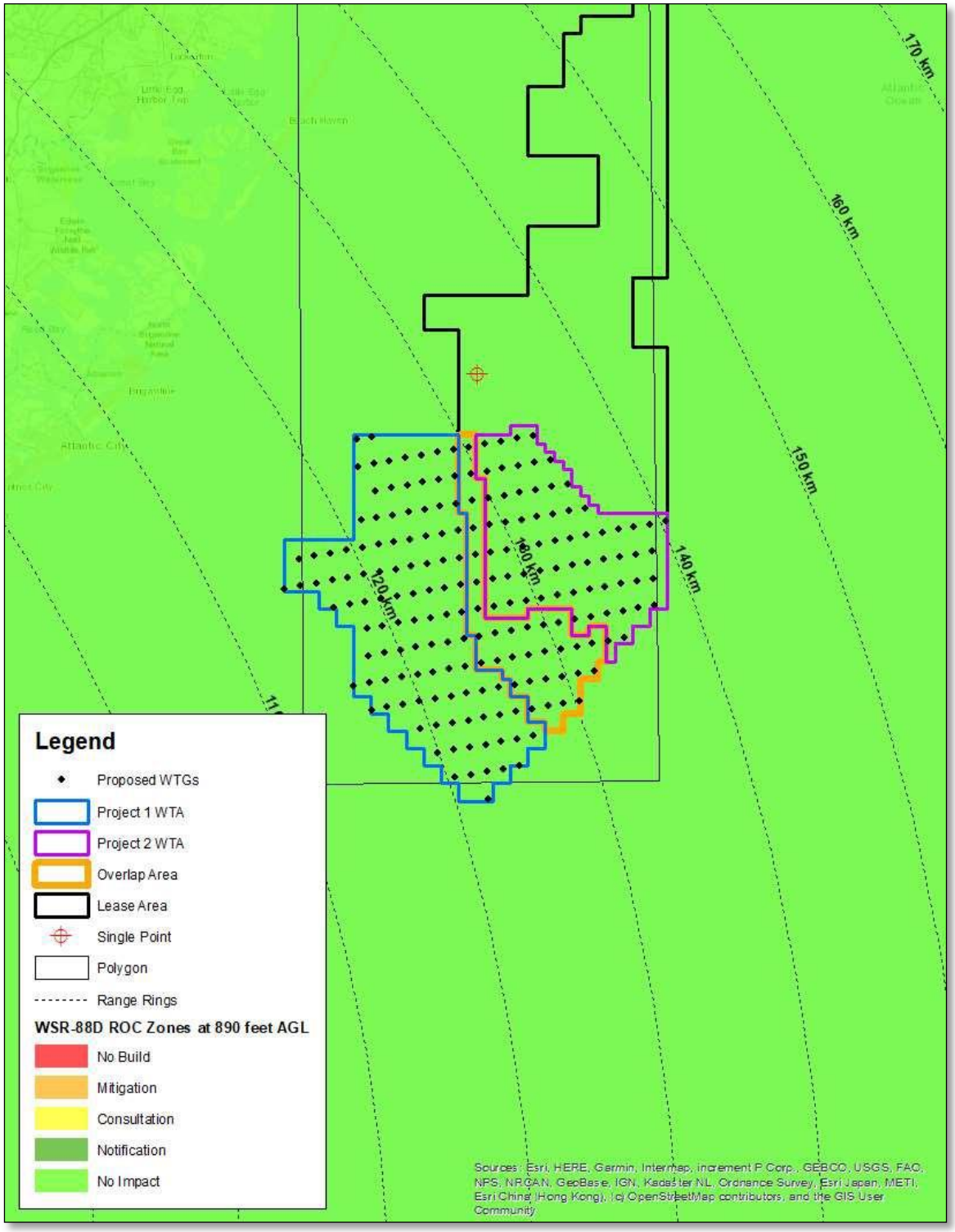

Figure 10 WSR-88D ROC Zone Results at 890 feet AGL for the Dover AFB WSR-88D using 10-meter NED

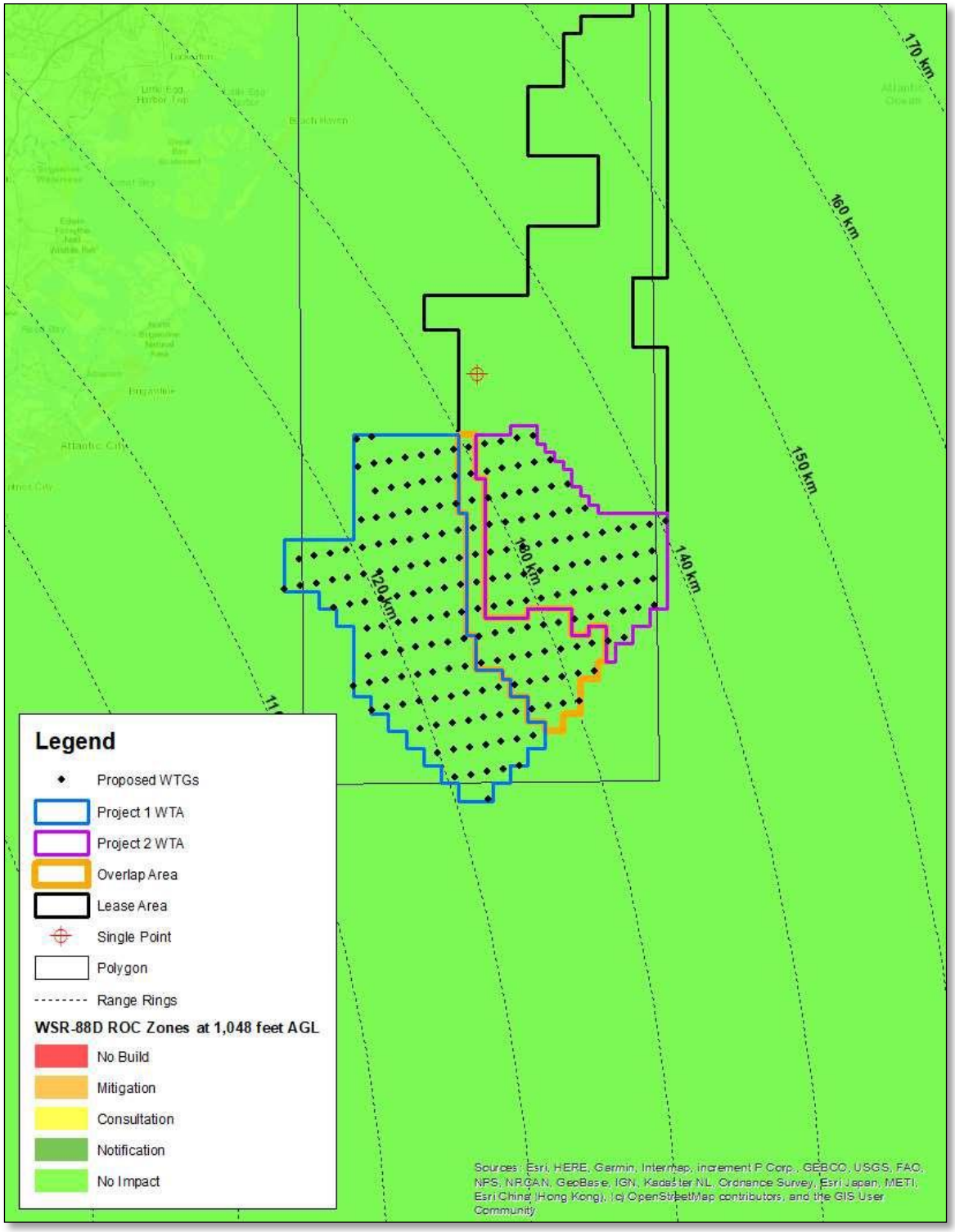

Figure 11 WSR-88D ROC Zone Results at 1,048 feet AGL for the Dover AFB WSR-88D using 10-meter NED

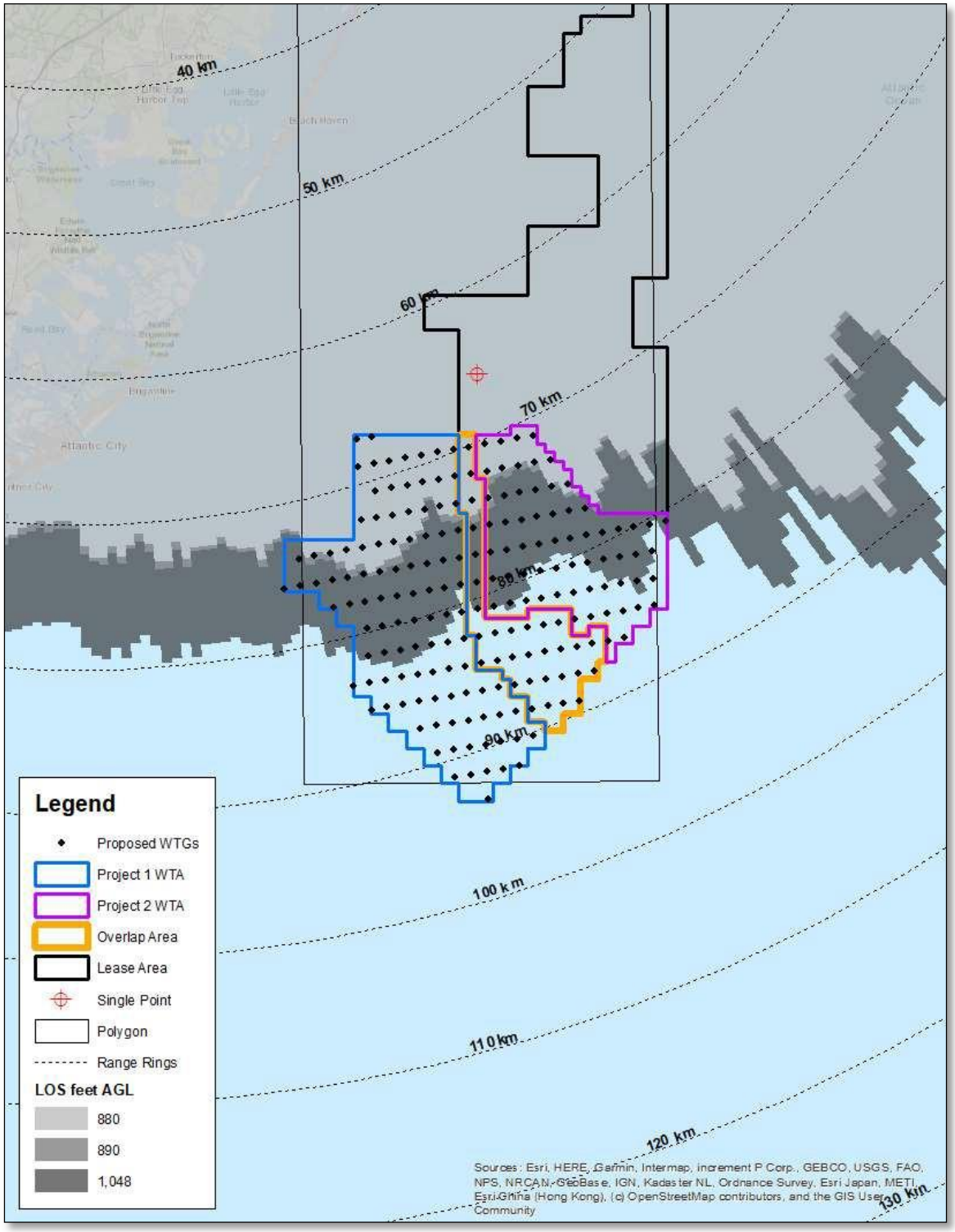

Figure 12 LOS Analysis Results for the Philadelphia WSR-88D using 10-meter NED

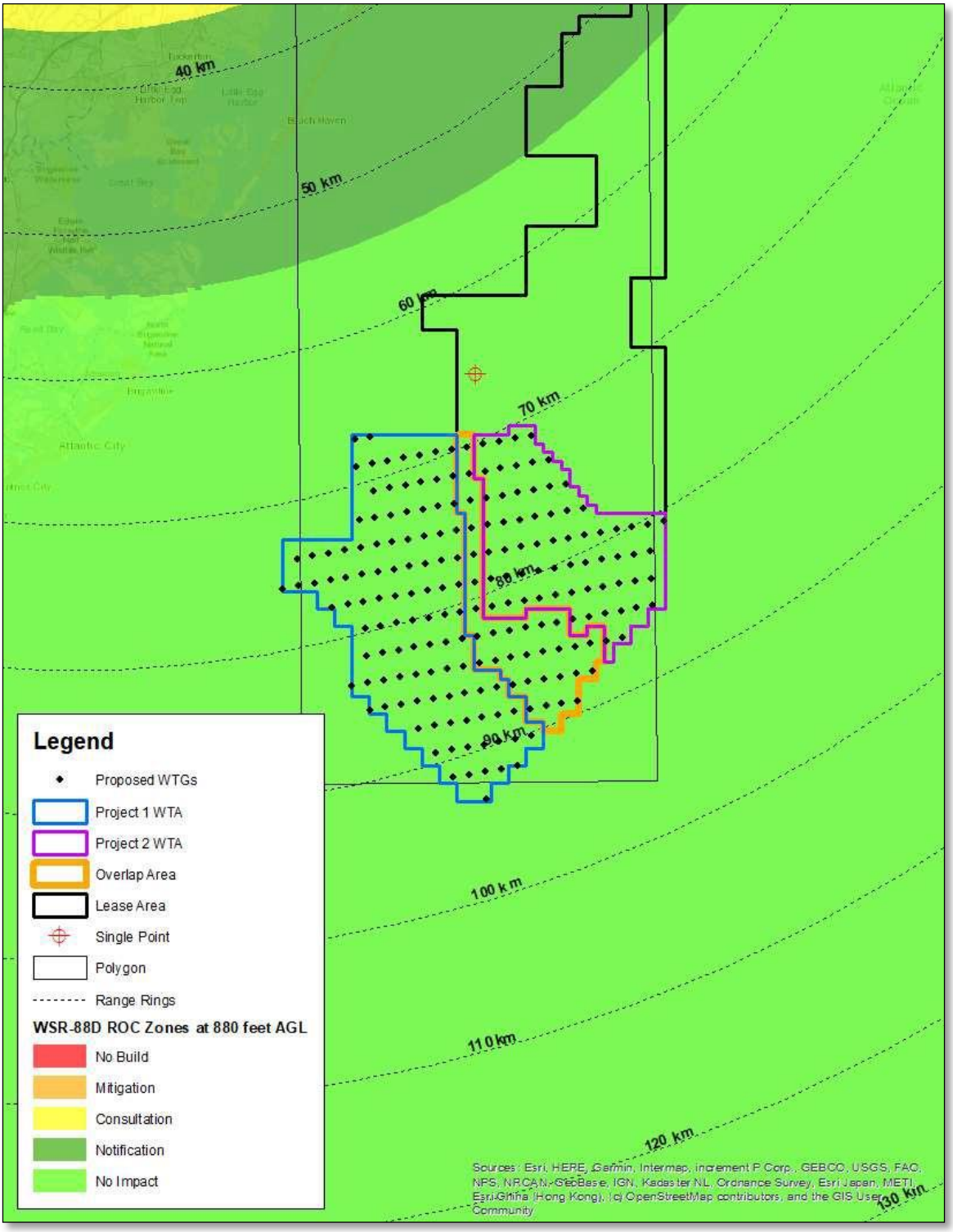

Figure 13 WSR-88D ROC Zone Results at 880 feet AGL for the Philadelphia WSR-88D using 10-meter NED

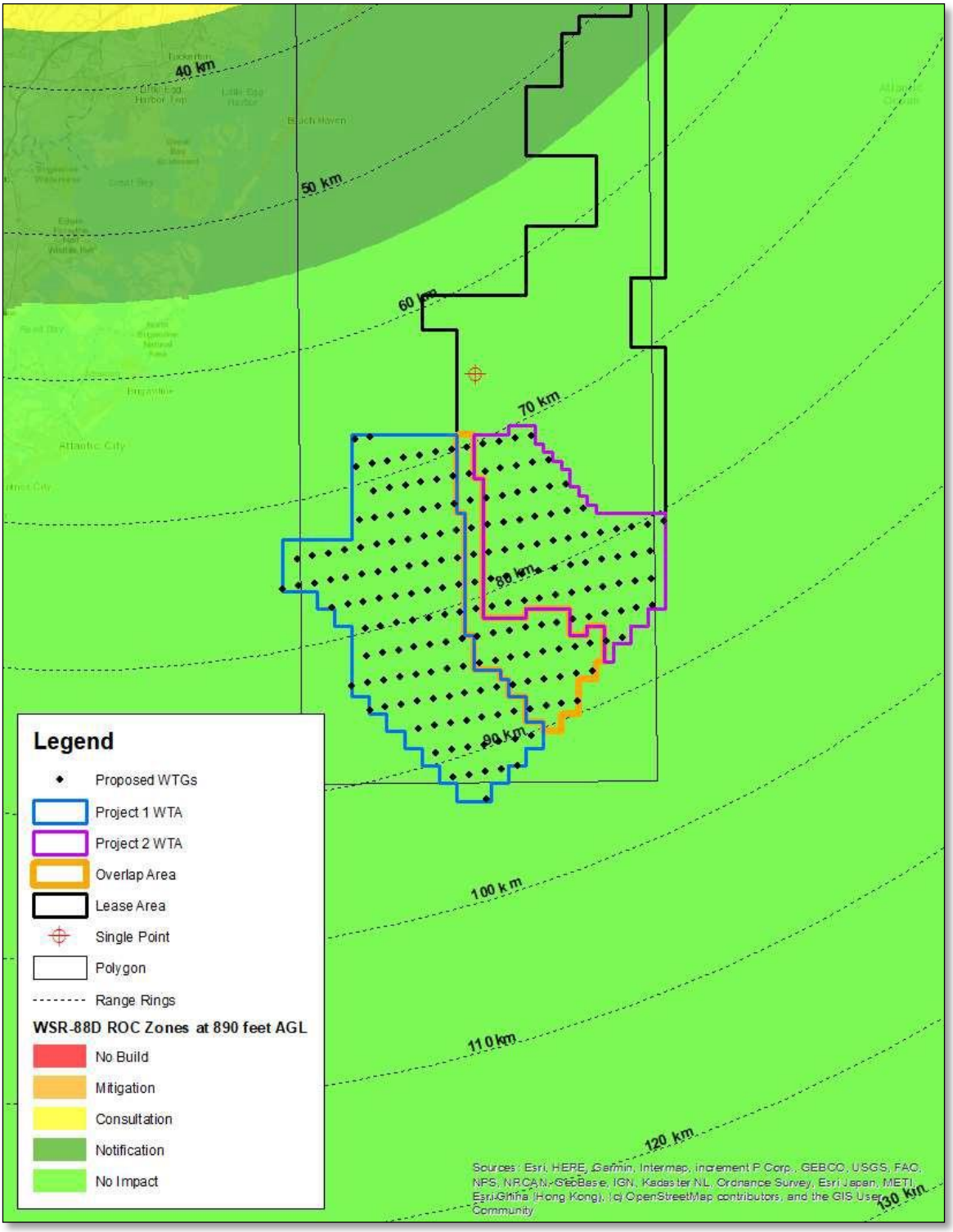

Figure 14 WSR-88D ROC Zone Results at 890 feet AGL for the Philadelphia WSR-88D using 10-meter NED

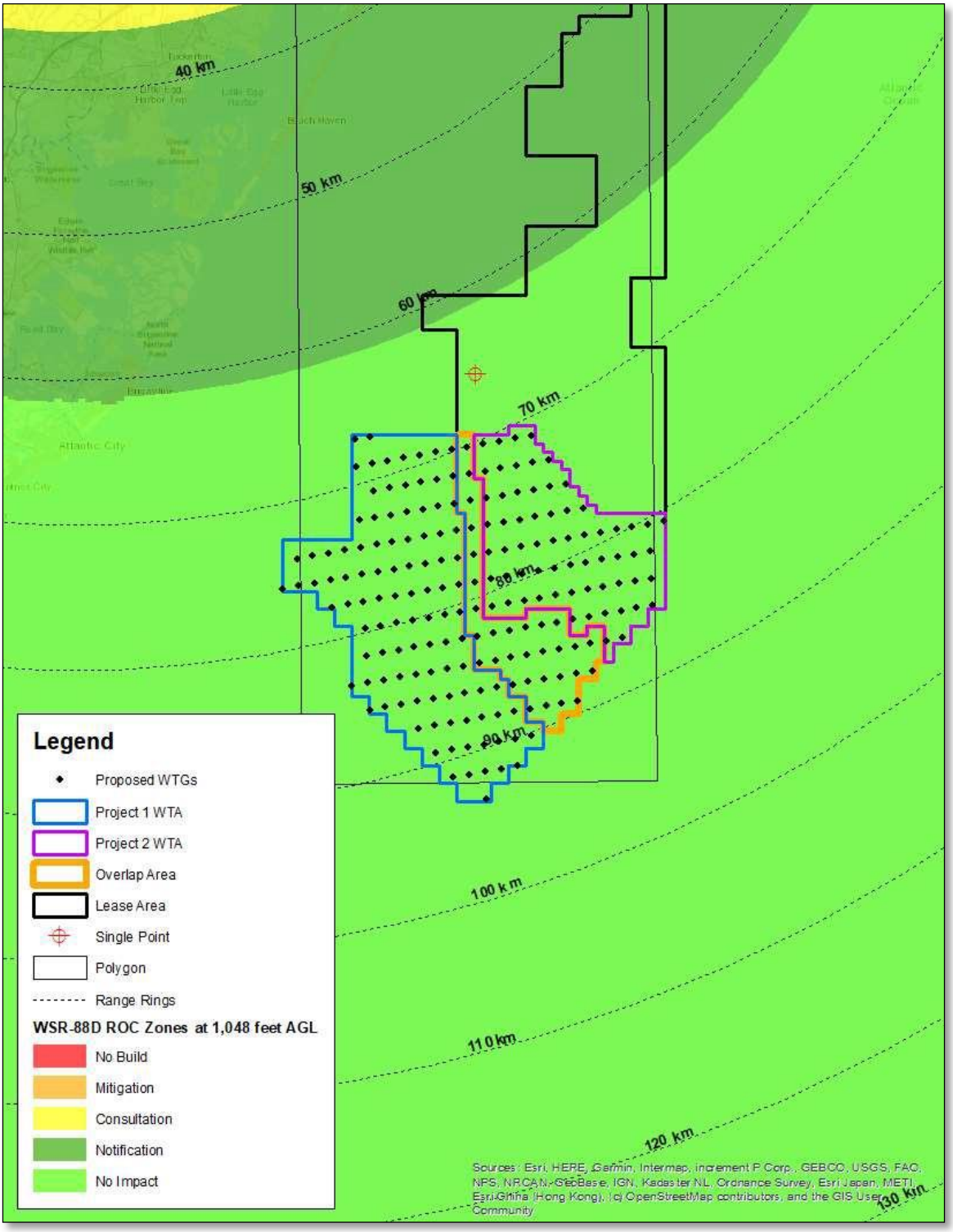

Figure 15 WSR-88D ROC Zone Results at 1,048 feet AGL for the Philadelphia WSR-88D using 10-meter NED

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 880 feet AGL, 890 feet AGL, or 1,048 feet AGL will be within line-of-sight of one or more HF radar sites.

Westslope conducted the LOS analysis for the following 15 HF radar sites:

- Assateague Island HF radar;
- Bradley Beach HF radar;
- Brant Beach HF radar;
- Brigantine Long Range HF radar;
- Brigantine Medium Range HF radar;
- Cape May Point HF radar;
- Hempstead HF radar;
- Loveladies HF radar;
- Moriches HF radar;
- North Wildwood HF radar;
- Sandy Hook HF radar;
- Sea Bright HF radar;
- Seaside Park HF radar;
- Strathmere HF radar; and
- Wildwood HF radar.

Assateague Island HF Radar

The LOS analysis results show that the 105 proposed WTGs in the Project 1 WTA, the 64 proposed WTGs in the Project 2 WTA, and the 31 proposed WTGs in the Overlap Area will not be within line-of-sight of the Assateague Island HF radar at blade-tip heights of 880 feet AGL, 890 feet AGL, or 1,048 feet AGL. See Figure 16. Although the proposed WTGs 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.

Bradley Beach HF Radar

The LOS analysis results show that the 105 proposed WTGs in the Project 1 WTA, the 64 proposed WTGs in the Project 2 WTA, and the 31 proposed WTGs in the Overlap Area are beyond the instrumented range of the Bradley Beach HF radar and will not be within line-of-sight of this radar site at blade-tip heights of 880 feet AGL, 890 feet AGL, or 1,048 feet AGL. See Figure 17. As a result, Westslope does not expect any radar effects at or below these blade-tip heights.

Brant Beach HF Radar

The LOS analysis results show that all 105 proposed WTGs in the Project 1 WTA, all 64 proposed WTGs in the Project 2 WTA, and all 31 proposed WTGs in the Overlap Area will be within line-of-sight of the Brant Beach HF radar at blade-tip heights of 880 feet AGL, 890 feet AGL, and 1,048 feet AGL. See Figure 18. The radar effects will include clutter in the vicinity of the proposed WTGs. As a result, impacts to Brant Beach HF radar operations are possible.

Brigantine Long Range HF Radar

The LOS analysis results show that all 105 proposed WTGs in the Project 1 WTA, all 64 proposed WTGs in the Project 2 WTA, and all 31 proposed WTGs in the Overlap Area will be within line-of-sight of the Brigantine Long Range HF radar at blade-tip heights of 880 feet AGL, 890 feet AGL, and 1,048 feet AGL. See Figure 19. The radar effects will include clutter in the vicinity of the proposed WTGs. As a result, impacts to Brigantine Long Range HF radar operations are possible.

Brigantine Medium Range HF Radar

The LOS analysis results show that all 105 proposed WTGs in the Project 1 WTA, all 64 proposed WTGs in the Project 2 WTA, and all 31 proposed WTGs in the Overlap Area will be within line-of-sight of the Brigantine Medium Range HF radar at blade-tip heights of 880 feet AGL, 890 feet AGL, and 1,048 feet AGL. See Figure 20. The radar effects will include clutter in the vicinity of the proposed WTGs. As a result, impacts to Brigantine Medium Range HF radar operations are possible.

Cape May Point HF Radar

The LOS analysis results show that 29 of the 105 proposed WTGs in the Project 1 WTA, none of the 64 proposed WTGs in the Project 2 WTA, and none of the 31 proposed WTGs in the Overlap Area will be within line-of-sight of the Cape May Point HF radar at a blade-tip height of 880 feet AGL. At a blade-tip height of 890 feet AGL, 32 of the 105 proposed WTGs in the Project 1 WTA, none of the 64 proposed WTGs in the Project 2 WTA, and none of the 31 proposed WTGs in the Overlap Area will be within line-of-sight this radar site. At a blade-tip height of 1,048 feet AGL, 90 of the 105 proposed WTGs in the Project 1 WTA, none of the 64 proposed WTGs in the Project 2 WTA, and five of the 31 proposed WTGs in the Overlap Area will be within line-of-sight of this radar site. See Figure 21. The radar effects will include clutter in the vicinity of the proposed WTGs within line-of-sight and possibly in the vicinity of the proposed WTGs beyond line-of-sight due to the propagation of HF electromagnetic waves over the ocean surface. As a result, impacts to Cape May Point HF radar operations are possible.

Hempstead HF Radar

The LOS analysis results show that the 105 proposed WTGs in the Project 1 WTA, the 64 proposed WTGs in the Project 2 WTA, and the 31 proposed WTGs in the Overlap Area will not be within line-of-sight of the Hempstead HF radar at blade-tip heights of 880 feet AGL, 890 feet AGL, or 1,048 feet AGL. See Figure 22. Although the proposed WTGs 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.

Loveladies HF Radar

The LOS analysis results show that all 105 proposed WTGs in the Project 1 WTA, all 64 proposed WTGs in the Project 2 WTA, and all 31 proposed WTGs in the Overlap Area will be within line-of-sight of the Loveladies HF radar at blade-tip heights of 880 feet AGL, 890 feet AGL, and 1,048 feet AGL. See Figure 23. The radar effects will include clutter in the vicinity of the proposed WTGs. As a result, impacts to Loveladies HF radar operations are possible.

Moriches HF Radar

The LOS analysis results show that the 105 proposed WTGs in the Project 1 WTA, the 64 proposed WTGs in the Project 2 WTA, and the 31 proposed WTGs in the Overlap Area will not be within line-of-sight of the Moriches HF radar at blade-tip heights of 880 feet AGL, 890 feet AGL, or 1,048 feet AGL. See Figure 24. Although the proposed WTGs 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.

North Wildwood HF Radar

The LOS analysis results show that all 105 proposed WTGs in the Project 1 WTA, 46 of the 64 proposed WTGs in the Project 2 WTA, and all 31 proposed WTGs in the Overlap Area will be within line-of-sight of the North Wildwood HF radar at blade-tip heights of 880 feet AGL and 890 feet AGL. At a blade-tip height of 1,048 feet AGL, all 105 proposed WTGs in the Project 1 WTA, all 64 proposed WTGs in the Project 2 WTA, and all 31 proposed WTGs in the Overlap Area will be within line-of-sight of this radar site. See Figure 25. The radar effects will include clutter in the vicinity of the proposed WTGs within line-of-sight and possibly in the vicinity of the proposed WTGs beyond line-of-sight due to the propagation of HF electromagnetic waves over the ocean surface. As a result, impacts to North Wildwood HF radar operations are possible.

Sandy Hook HF Radar

The LOS analysis results show that the 105 proposed WTGs in the Project 1 WTA, the 64 proposed WTGs in the Project 2 WTA, and the 31 proposed WTGs in the Overlap Area will not be within line-of-sight of the Sandy Hook HF radar at blade-tip heights of 880 feet AGL, 890 feet AGL, or 1,048 feet AGL. See Figure 26. Although the proposed WTGs 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.

Sea Bright HF Radar

The LOS analysis results show that the 105 proposed WTGs in the Project 1 WTA, the 64 proposed WTGs in the Project 2 WTA, and the 31 proposed WTGs in the Overlap Area are beyond the instrumented range of the Sea Bright HF radar and will not be within line-of-sight of this radar site at blade-tip heights of 880 feet AGL, 890 feet AGL, or 1,048 feet AGL. See Figure 27. As a result, Westslope does not expect any radar effects at or below these blade-tip heights.

Seaside Park HF Radar

The LOS analysis results show that 71 of the 105 proposed WTGs in the Project 1 WTA, all 64 proposed WTGs in the Project 2 WTA, and 27 of the 31 proposed WTGs in the Overlap Area will be within line-of-sight of the Seaside Park HF radar at a blade-tip height of 880 feet AGL. At a blade-tip height of 890 feet AGL, 75 of the 105 proposed WTGs in the Project 1 WTA, all 64 proposed WTGs in the Project 2 WTA, and 27 of the 31 proposed WTGs in the Overlap Area will be within line-of-sight of this radar site. At a blade-tip height of 1,048 feet AGL, 104 of the 105 proposed WTGs in the Project 1 WTA, all 64 proposed WTGs in the Project 2 WTA, and all 31 proposed WTGs in the Overlap Area will be within line-of-sight of this radar site. See Figure 28. The radar effects will include clutter in the vicinity of the proposed WTGs within line-of-sight and possibly in the vicinity of the proposed WTGs beyond line-of-sight due to the propagation of HF electromagnetic waves over the ocean surface. As a result, impacts to Seaside Park HF radar operations are possible.

Strathmere HF Radar

The LOS analysis results show that all 105 proposed WTGs in the Project 1 WTA, all 64 proposed WTGs in the Project 2 WTA, and all 31 proposed WTGs in the Overlap Area will be within line-of-sight of the Strathmere HF radar at blade-tip heights of 880 feet AGL, 890 feet AGL, and 1,048 feet AGL. See Figure 29. The radar effects will include clutter in the vicinity of the proposed WTGs. As a result, impacts to Strathmere HF radar operations are possible.

Wildwood HF Radar

The LOS analysis results show that 84 of the 105 proposed WTGs in the Project 1 WTA, none of the 64 proposed WTGs in the Project 2 WTA, and 10 of the 31 proposed WTGs in the Overlap Area will be within line-of-sight of the Wildwood HF radar at a blade-tip height of 880 feet AGL. At a blade-tip height of 890 feet AGL, 85 of the 105 proposed WTGs in the Project 1 WTA, none of the 64 proposed WTGs in the Project 2 WTA, and 10 of the 31 proposed WTGs in the Overlap Area will be within line-of-sight of this radar site. At a blade-tip height of 1,048 feet AGL, 104 of the 105 proposed WTGs in the Project 1 WTA, 22 of the 64 proposed WTGs in the Project 2 WTA, and all 31 proposed WTGs in the Overlap Area will be within line-of-sight of this radar site. See Figure 30. The radar effects will include clutter in the vicinity of the proposed WTGs within line-of-sight and possibly in the vicinity of the proposed WTGs beyond line-of-sight due to the propagation of HF electromagnetic waves over the ocean surface. As a result, impacts to Wildwood HF radar operations are possible.

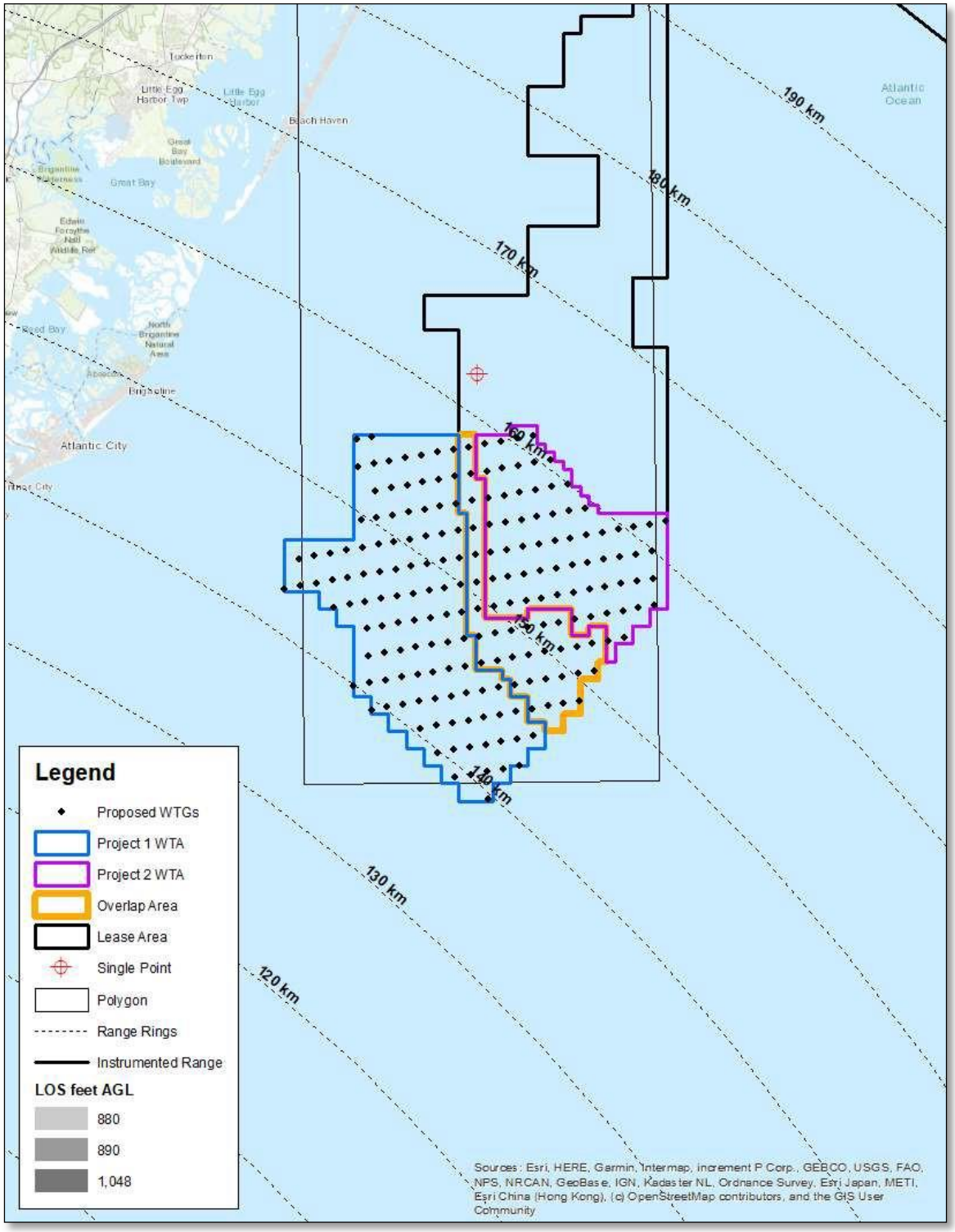

Figure 16 LOS Analysis Results for the Assateague Island HF Radar using 10-meter NED

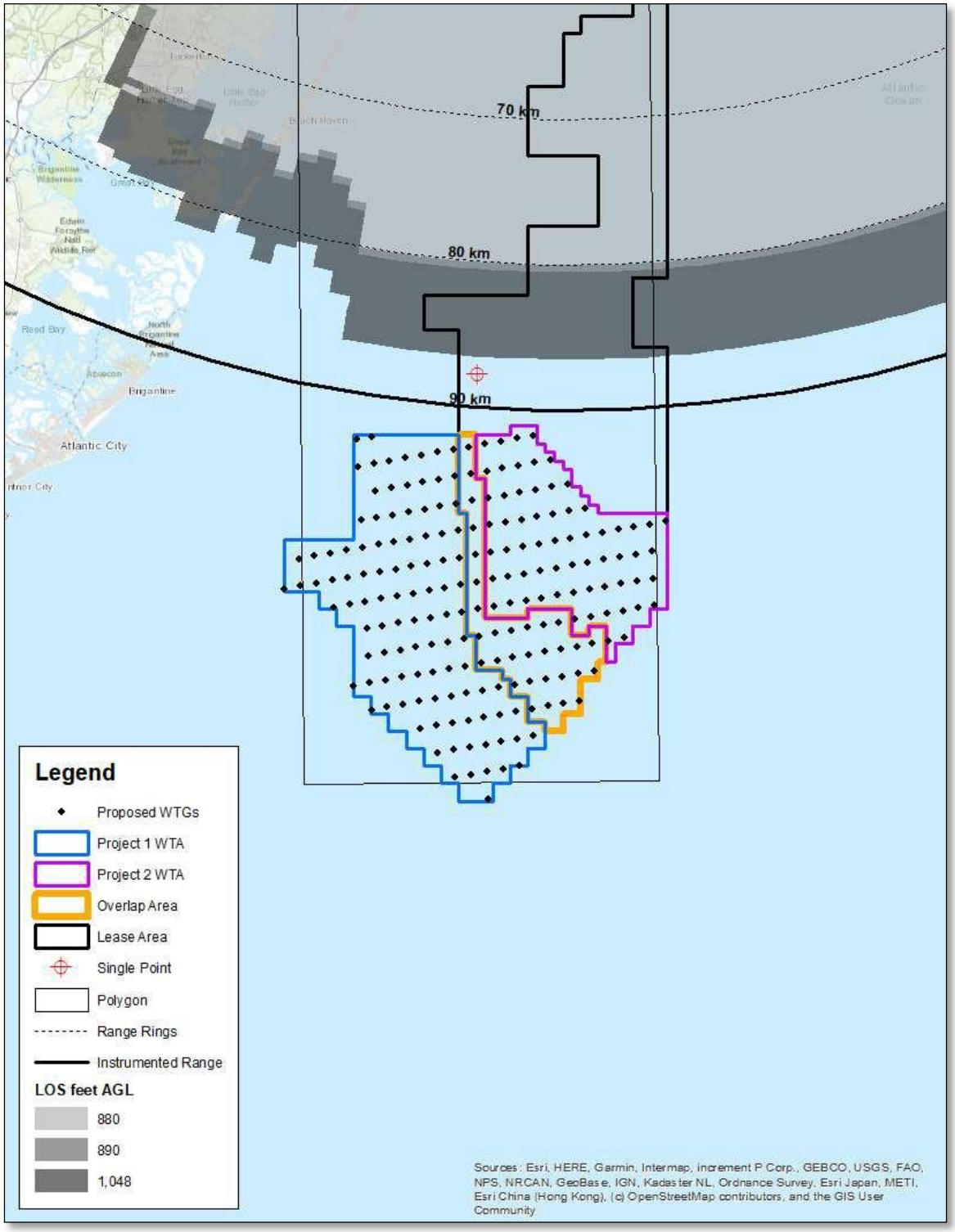

Figure 17 LOS Analysis Results for the Bradley Beach HF Radar using 10-meter NED

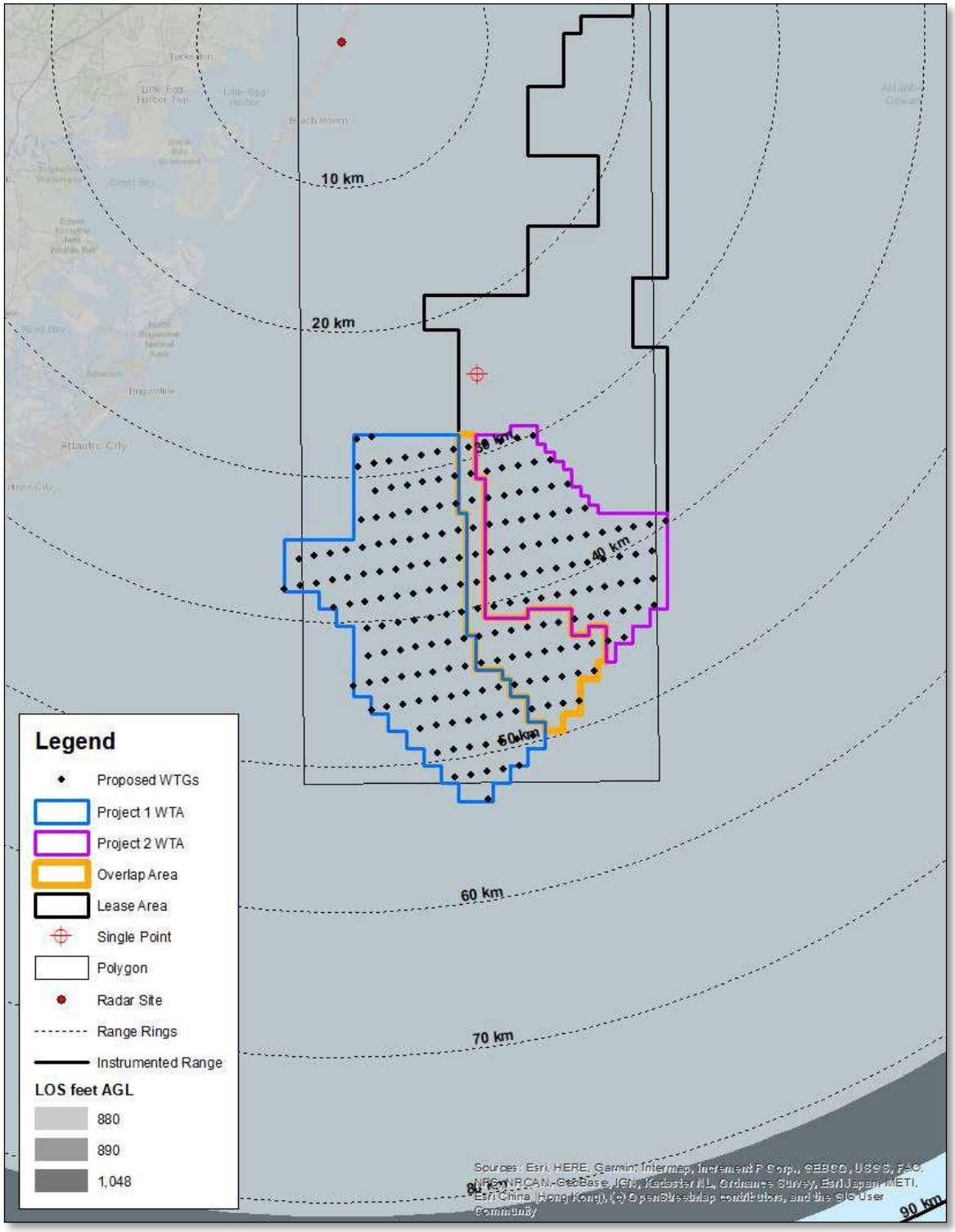

Figure 18 LOS Analysis Results for the Brant Beach HF Radar using 10-meter NED

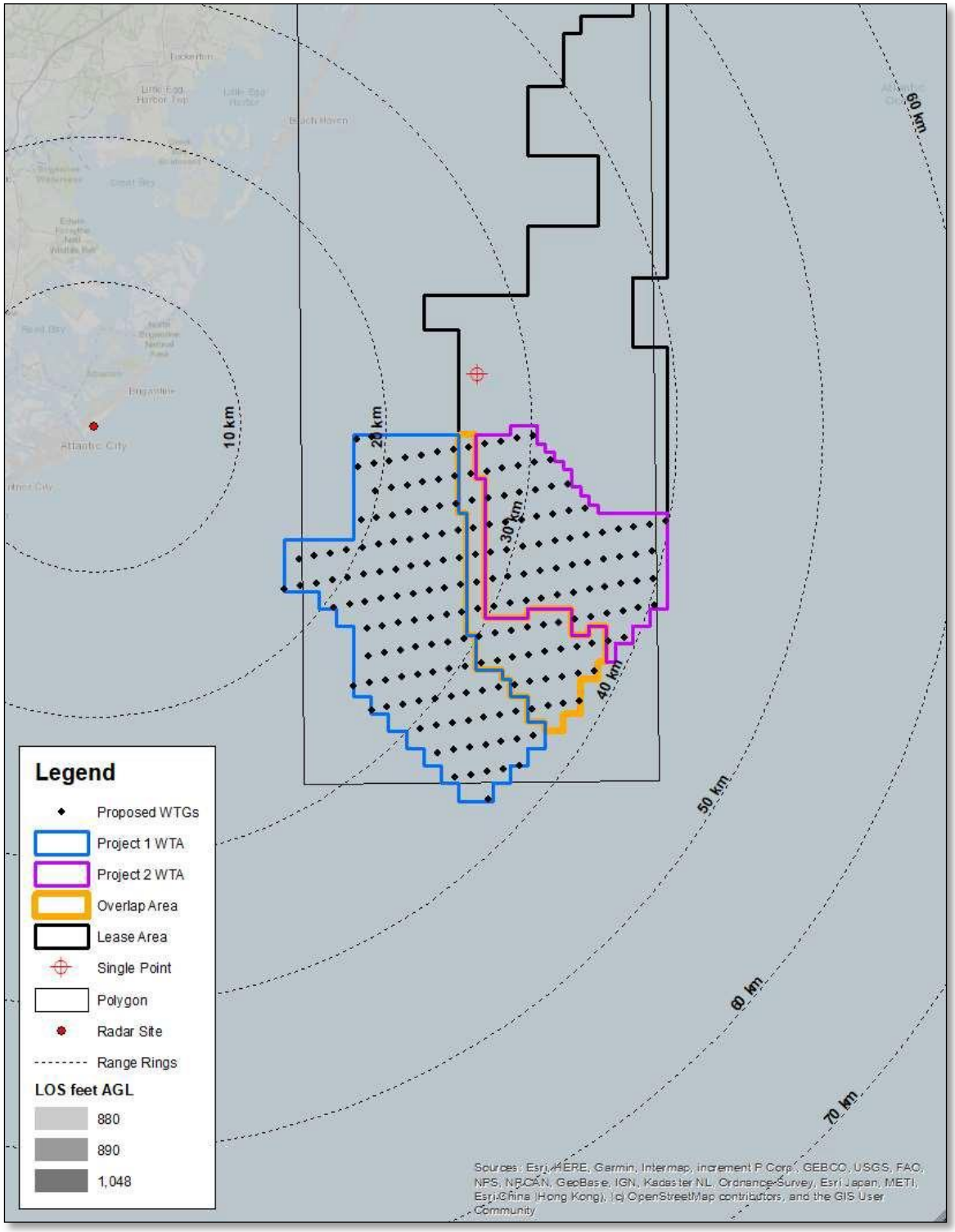

Figure 19 LOS Analysis Results for the Brigantine Long Range HF Radar using 10-meter NED

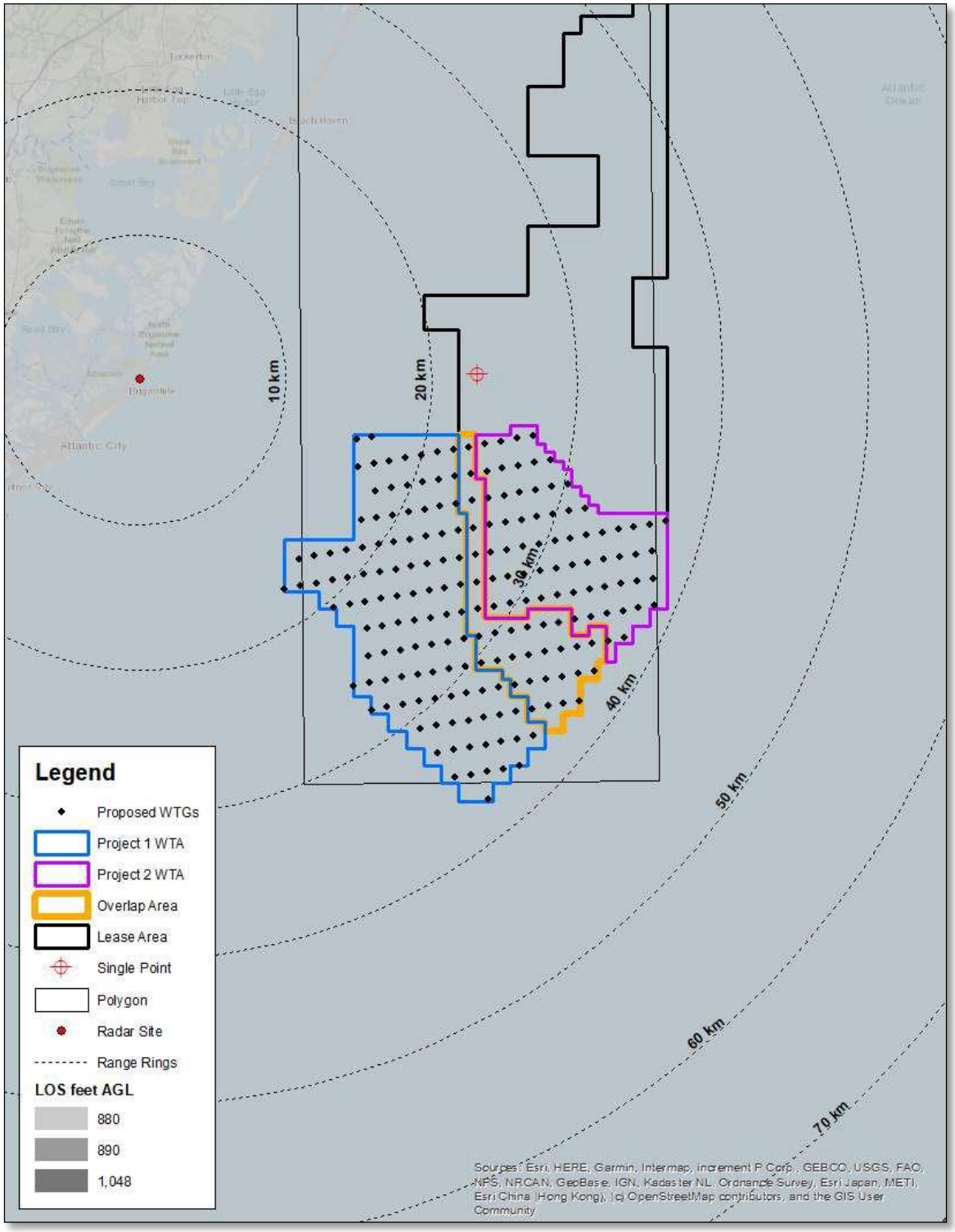

Figure 20 LOS Analysis Results for the Brigantine Medium Range HF Radar using 10-meter NED

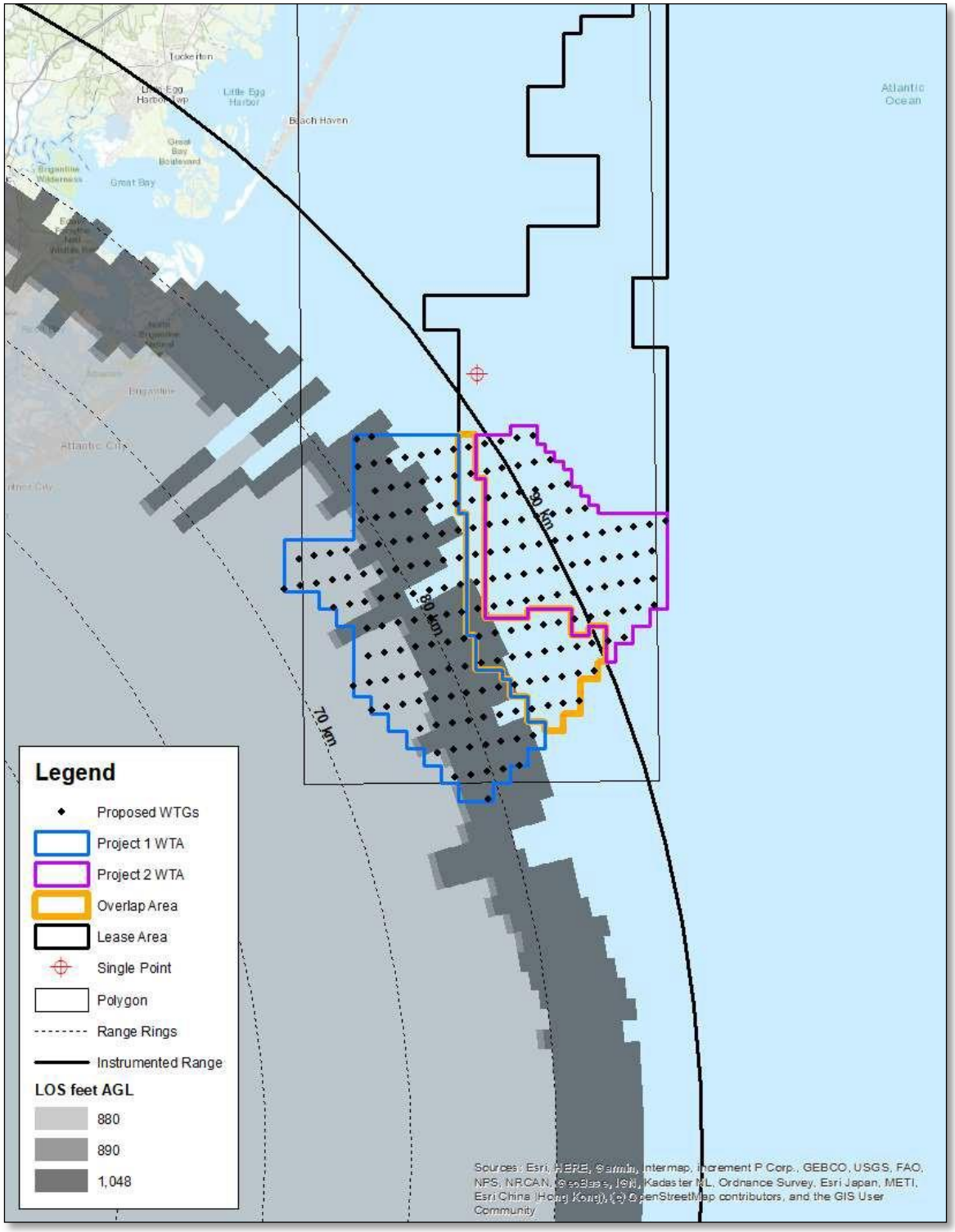

Figure 21 LOS Analysis Results for the Cape May Point HF Radar using 10-meter NED

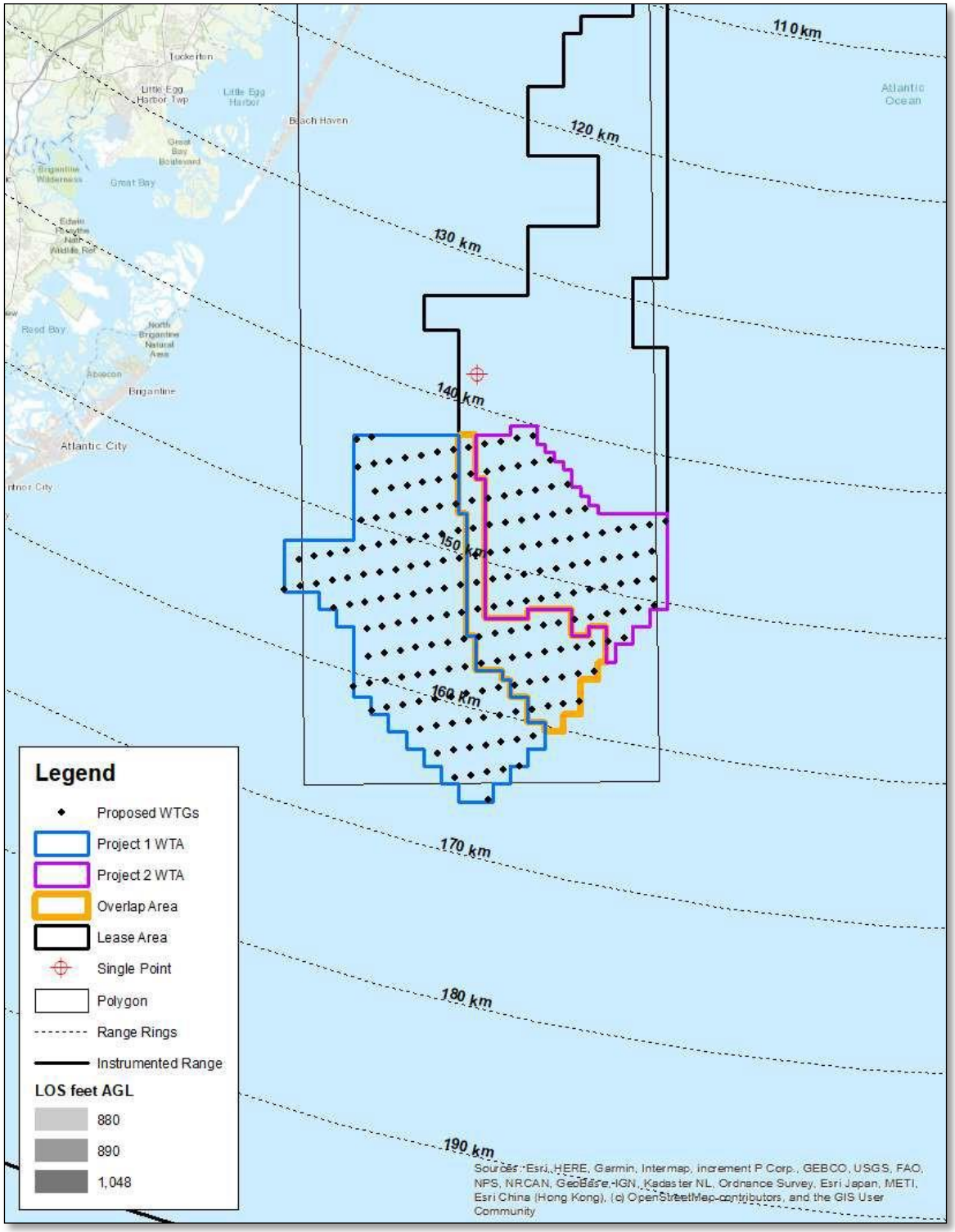

Figure 22 LOS Analysis Results for the Hempstead HF Radar using 10-meter NED

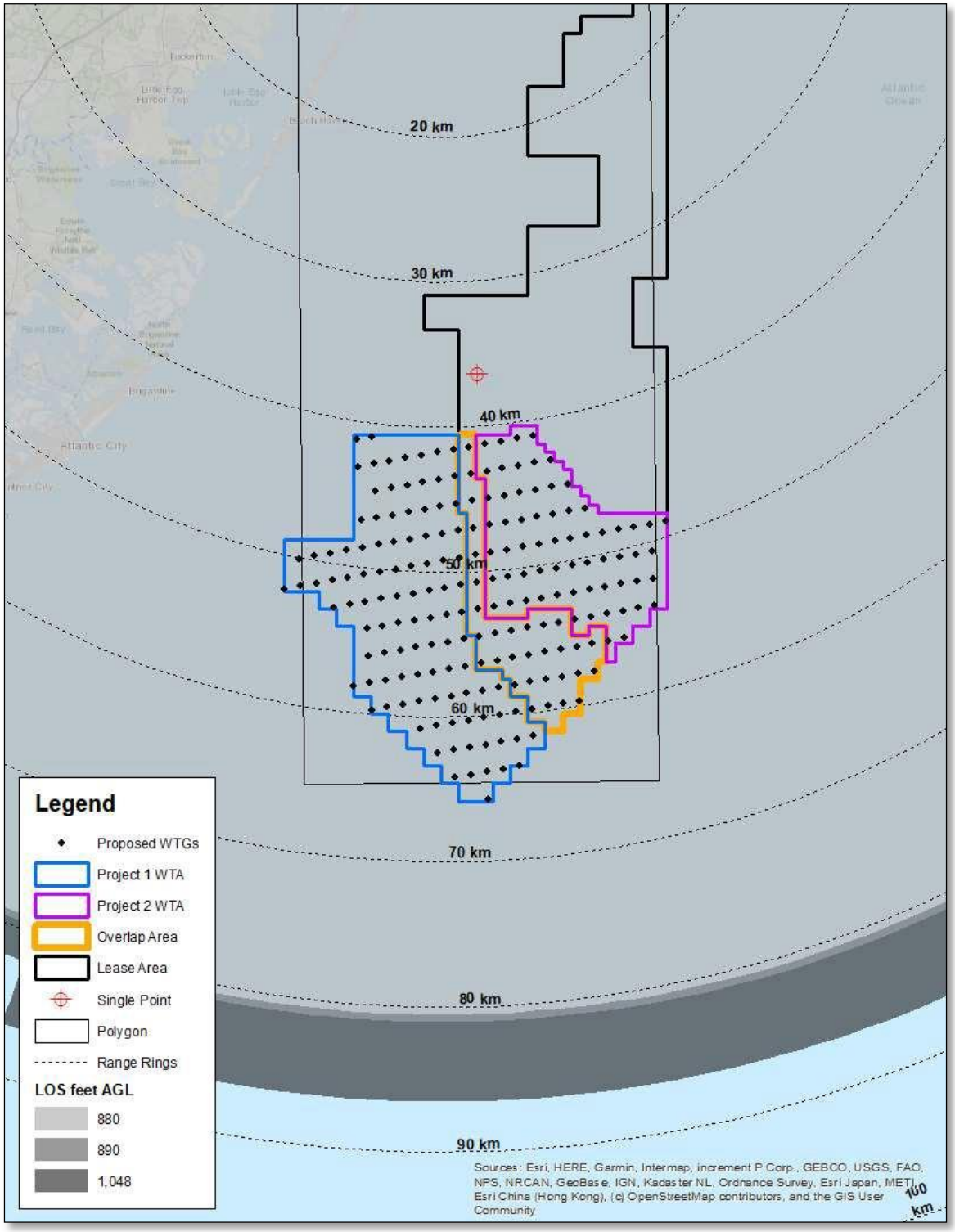

Figure 23 LOS Analysis Results for the Loveladies HF Radar using 10-meter NED

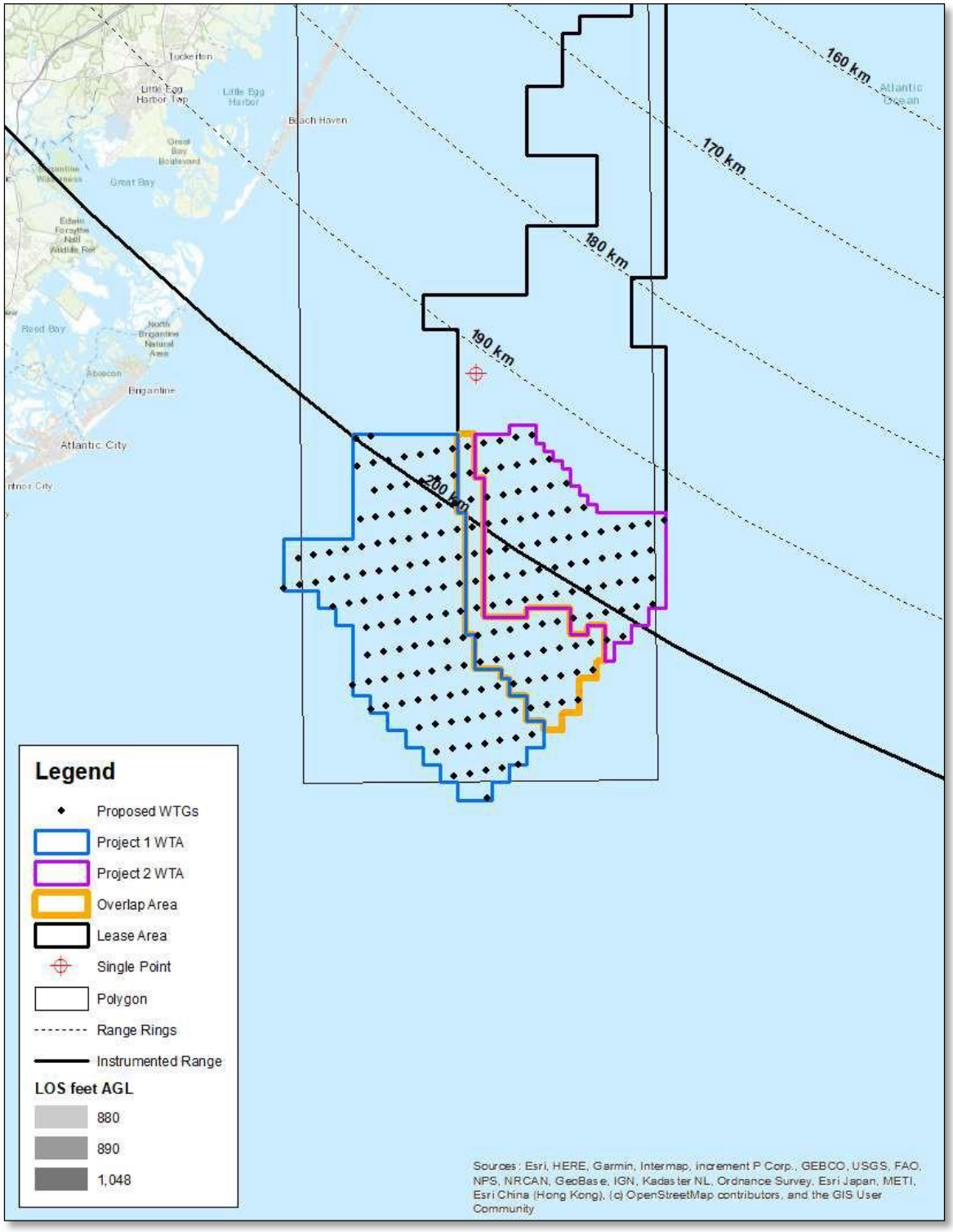

Figure 24 LOS Analysis Results for the Moriches HF Radar using 10-meter NED

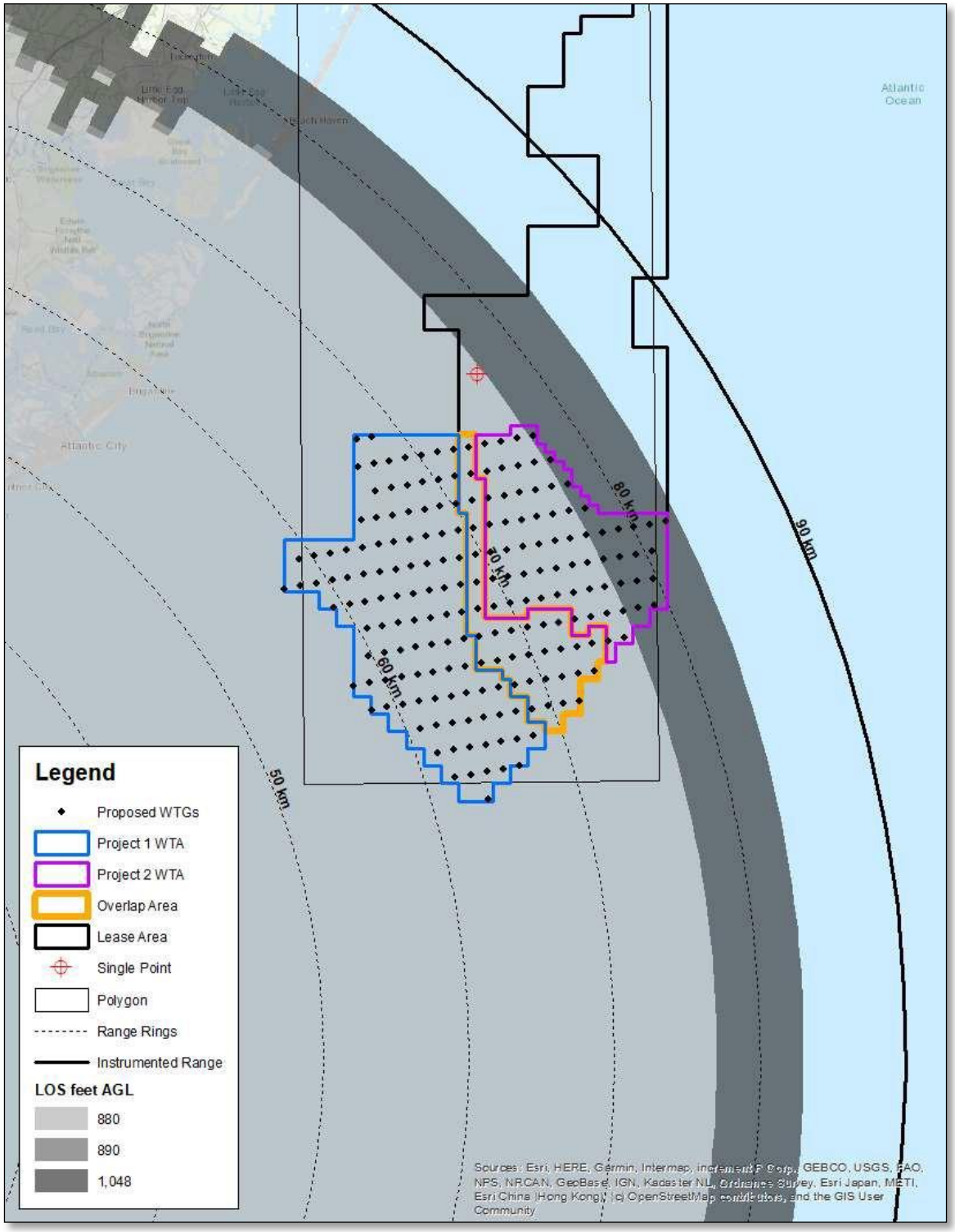

Figure 25 LOS Analysis Results for the North Wildwood HF Radar using 10-meter NED

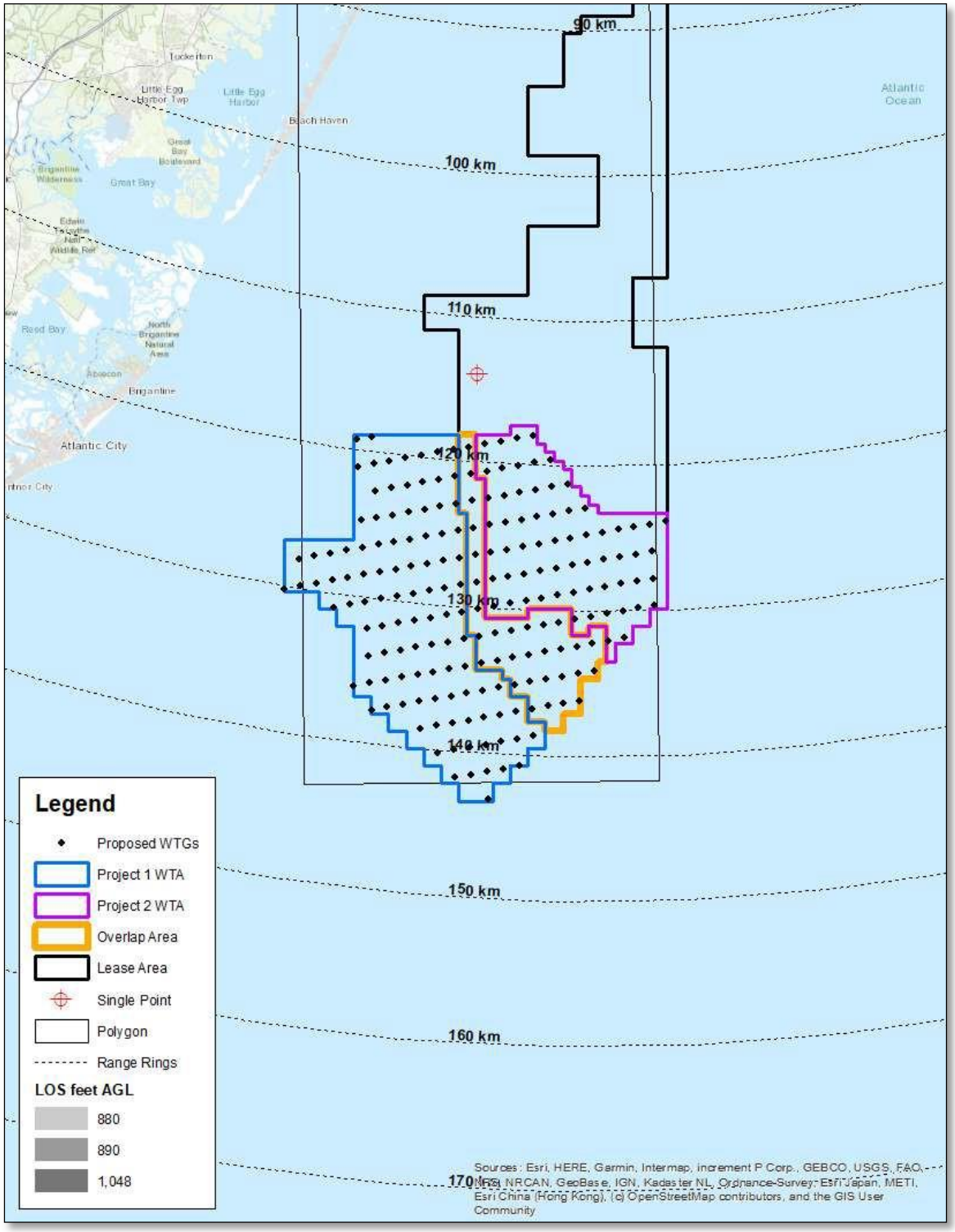

Figure 26 LOS Analysis Results for the Sandy Hook HF Radar using 10-meter NED

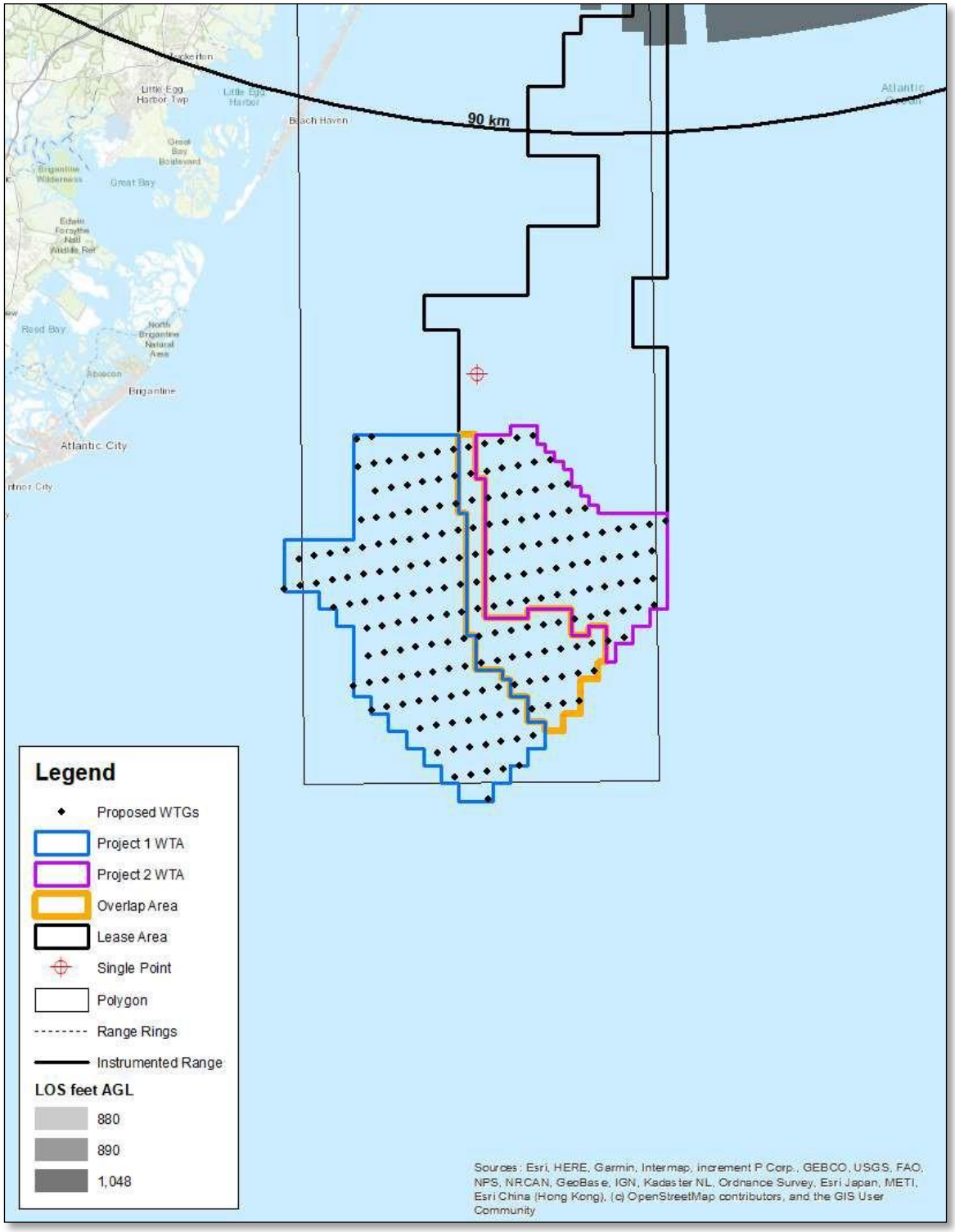

Figure 27 LOS Analysis Results for the Sea Bright HF Radar using 10-meter NED

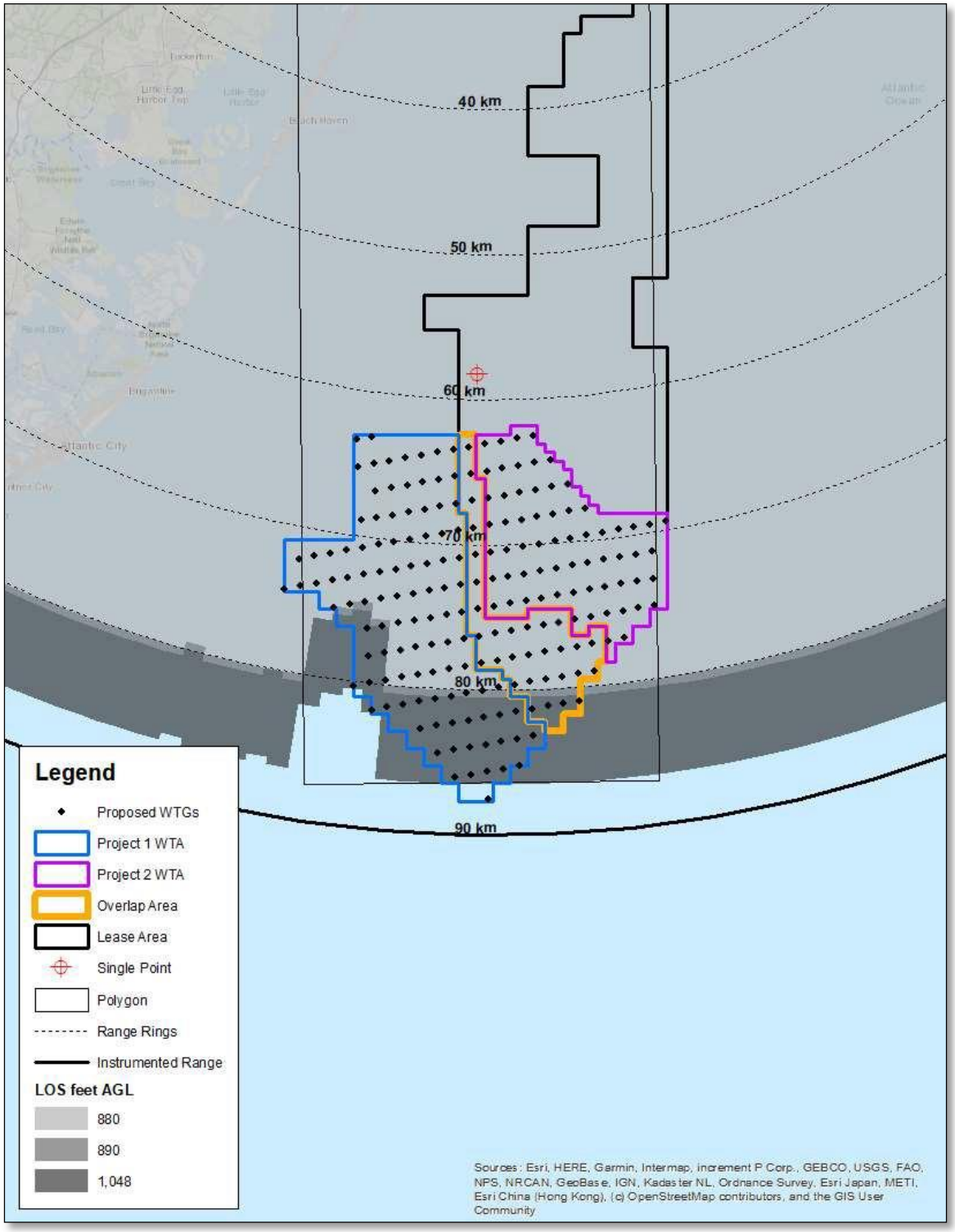

Figure 28 LOS Analysis Results for the Seaside Park HF Radar using 10-meter NED

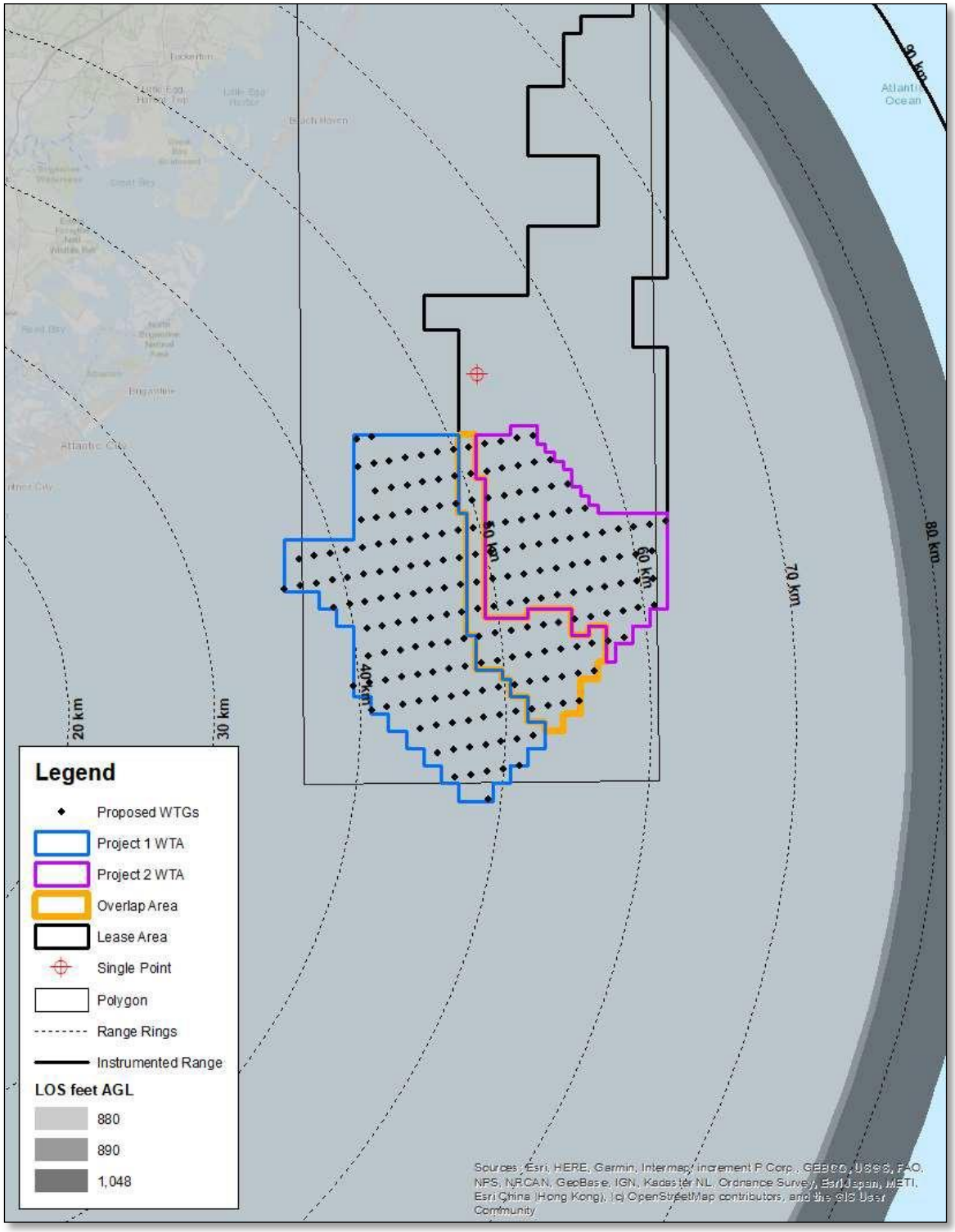

Figure 29 LOS Analysis Results for the Strathmere HF Radar using 10-meter NED

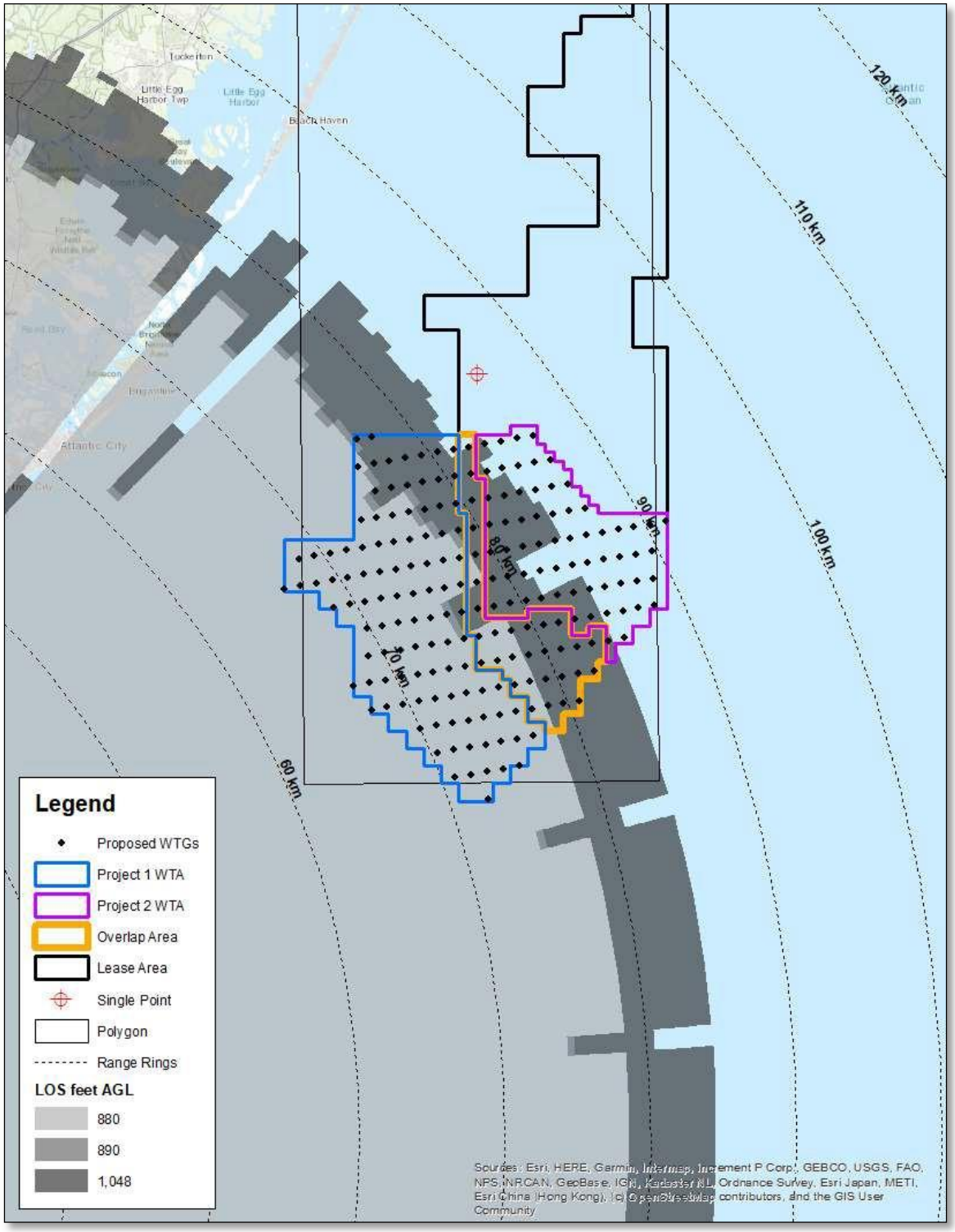

Figure 30 LOS Analysis Results for the Wildwood HF Radar using 10-meter NED

CONCLUSIONS

The DoD PST analysis results for the proposed WTGs indicate the following:

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

Westslope identified the four radar sites in the PST analysis results for Long Range Radar as the Atlantic City ASR-9, Dover AFB DASR, Gibbsboro ARSR-4, and the McGuire AFB DASR. Further, Westslope identified the two radar sites in the PST analysis results for NEXRAD as the Dover AFB WSR-88D and the Philadelphia WSR-88D.

Research conducted by Westslope identified four additional ARSR and ASR sites near the Lease Area: the Newark ASR-9, New York ASR-9, Philadelphia ASR-9, and the NAS Willow Grove ASR-11.

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

- Atlantic City ASR-9;
- Dover AFB DASR;
- Gibbsboro ARSR-4;
- McGuire AFB DASR;
- Newark ASR-9;
- New York ASR-9;
- Philadelphia ASR-9; and
- NAS Willow Grove ASR-11.

The Lease Area is beyond the instrumented range of the Newark ASR-9 and the NAS Willow Grove ASR-11. 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 Atlantic City ASR-9, all 105 proposed WTGs in the Project 1 WTA, all 64 proposed WTGs in the Project 2 WTA, and all 31 proposed WTGs in the Overlap Area will be within line-of-sight of and will interfere with this radar site at blade-tip heights of 880 feet AGL, 890 feet AGL, and 1,048 feet AGL. The LOS analysis results using the 10-meter NED and the DSM data yield similar results as above showing that all 105 proposed WTGs in the Project 1 WTA, all 64 proposed WTGs in the Project 2 WTA, and all 31 proposed WTGs in the Overlap Area will be within line-of-sight of and will interfere with this radar site at blade-tip heights of 880 feet AGL, 890 feet AGL, and 1,048 feet AGL.
- For the Gibbsboro ARSR-4, 80 of the 105 proposed WTGs in the Project 1 WTA, 37 of the 64 proposed WTGs in the Project 2 WTA, and 21 of the 31 proposed WTGs in the Overlap Area will be within line-of-sight of and will interfere with this radar site at a blade-tip height of 880 feet

AGL. At a blade-tip height of 890 feet AGL, 82 of the 105 proposed WTGs in the Project 1 WTA, 41 of the 64 proposed WTGs in the Project 2 WTA, and 21 of the 31 proposed WTGs in the Overlap Area will be within line-of-sight of and will interfere with this radar site. At a blade-tip height of 1,048 feet AGL, 101 of the 105 proposed WTGs in the Project 1 WTA, 59 of the 64 proposed WTGs in the Project 2 WTA, and all 31 proposed WTGs in the Overlap Area will be within line-of-sight of and will interfere with this radar site. The LOS analysis results using the 10-meter NED and the DSM show that 77 of the 105 proposed WTGs in the Project 1 WTA, 34 of the 64 proposed WTGs in the Project 2 WTA, and 19 of the 31 proposed WTGs in the Overlap Area will be within line-of-sight of and will interfere with this radar site at a blade-tip height of 880 feet AGL. At a blade-tip height of 890 feet AGL, 79 of the 105 proposed WTGs in the Project 1 WTA, 37 of the 64 proposed WTGs in the Project 2 WTA, and 19 of the 31 proposed WTGs in the Overlap Area will be within line-of-sight of and will interfere with this radar site. At a blade-tip height of 1,048 feet AGL, 98 of the 105 proposed WTGs in the Project 1 WTA, 55 of the 64 proposed WTGs in the Project 2 WTA, and 30 of the 31 proposed WTGs in the Overlap Area will be within line-of-sight of and will interfere with this radar site.

- For the McGuire AFB DASR, the 105 proposed WTGs in the Project 1 WTA, the 64 proposed WTGs in the Project 2 WTA, and the 31 proposed WTGs in the Overlap Area will not be within line-of-sight of and will not interfere with this radar site at blade-tip heights of 880 feet AGL or 890 feet AGL. At a blade-tip height of 1,048 feet AGL, three of the 105 proposed WTGs in the Project 1 WTA, none of the 64 proposed WTGs in the Project 2 WTA, and none of the 31 proposed WTGs in the Overlap Area will be within line-of-sight of and will interfere with this radar site. The LOS analysis results using the 10-meter NED and the DSM data show that the 105 proposed WTGs in the Project 1 WTA, the 64 proposed WTGs in the Project 2 WTA, and the 31 proposed WTGs in the Overlap Area will not be within line-of-sight of and will not interfere with this radar site at blade-tip heights of 880 feet AGL or 890 feet AGL. At a blade-tip height of 1,048 feet AGL, two of the 105 proposed WTGs in the Project 1 WTA, none of the 64 proposed WTGs in the Project 2 WTA, and none of the 31 proposed WTGs in the Overlap Area will be within line-of-sight of and will interfere with this radar site.
- For the Dover AFB DASR and the Philadelphia ASR-9, the 105 proposed WTGs in the Project 1 WTA, the 64 proposed WTGs in the Project 2 WTA, and the 31 proposed WTGs in the Overlap Area will not be within line-of-sight of and will not interfere with these radar sites at blade-tip heights of 880 feet AGL, 890 feet AGL, or 1,048 feet AGL.
- For the New York ASR-9, the 105 proposed WTGs in the Project 1 WTA, the 64 proposed WTGs in the Project 2 WTA, and the 31 proposed WTGs in the Overlap Area are beyond the instrumented range of this radar site and will not be within line-of-sight of or interfere with this radar site at blade-tip heights of 880 feet AGL, 890 feet AGL, or 1,048 feet AGL.

For the Atlantic City ASR-9 and the McGuire AFB DASR, 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 the proposed WTGs within line-of-sight. Other radar effects include a partial loss of weather detection and false weather indications over and in the immediate vicinity of the proposed WTGs within line-of-sight. Please note that radar effects do not always translate into operational impacts.

For the Gibbsboro ARSR-4, 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 the proposed WTGs within line-of-sight.

Because wind turbines will be within line-of-sight of the Atlantic City ASR-9, Gibbsboro ARSR-4, and the McGuire AFB DASR, Westslope expects that the DoD and FAA will have concerns with the proposed WTGs within line-of-sight at blade-tip heights of 880 feet AGL, 890 feet AGL, and 1,048 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 the proposed WTGs within line-of-sight at blade-tip heights of 880 feet AGL, 890 feet AGL, or 1,048 feet AGL based on impacts to these radar sites.

Mitigation options for the Atlantic City ASR-9, Gibbsboro ARSR-4, and the McGuire AFB DASR include, but are not limited to, the following:

- For the Atlantic ASR-9, this radar site uses adaptive processing techniques to self-optimize the radar settings to minimize primary false targets and maximize primary target detection. As such, it is unlikely that intervention will be required by FAA personnel to address primary radar performance. For the partial loss of weather detection and false weather indications, an update to the clear day map to minimize false weather may be required.
- For the Gibbsboro ARSR-4, optimization, referred to as Radar Adverse-impact Mitigation (RAM) by the DoD, will be required to the radar settings to minimize primary false targets and maximize primary target detection.
- For the McGuire AFB DASR, RAM may be required to minimize primary false targets and maximize primary target detection.
- The above three radar sites provide overlapping coverage over the WTA. Even though three of the 200 proposed WTGs at a blade-tip height of 1,048 feet AGL will be within line-of-sight of and will interfere with the McGuire AFB DASR, this radar site provides overlapping coverage over the WTA down to approximately 1,800 feet AGL.

Westslope does not expect that the 105 proposed WTGs in the Project 1 WTA, the 64 proposed WTGs in the Project 2 WTA, or the 31 proposed WTGs in the Overlap Area will affect the secondary surveillance radar co-located with the Atlantic City ASR-9, Gibbsboro ARSR-4, or the McGuire AFB DASR.

Westslope conducted a TDWR screening analysis for the following three radar sites:

- Floyd Bennett Field TDWR;
- Pennsauken TDWR; and
- Woodbridge TDWR.

Westslope's TDWR screening analysis shows that the Lease Area is beyond the instrumented range of the Floyd Bennett Field TDWR, Pennsauken TDWR, and the Woodbridge TDWR. As such, no additional analysis was considered necessary for these radar sites.

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

- Atlantic City VORTAC;
- Coyle VORTAC;
- Lakehurst TACAN; and
- Sea Isle VORTAC.

Westslope's VOR screening analysis for the Atlantic City VORTAC, Coyle VORTAC, Lakehurst TACAN, and the Sea Isle VORTAC shows that the Lease Area is greater than 8 NM from these navigational aid sites. Although possible, Westslope does not expect that the FAA will have concerns with the proposed WTGs at blade-tip heights of 880 feet AGL, 890 feet AGL, or 1,048 feet AGL based on impacts to these navigational aid sites.

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

- Dover AFB WSR-88D; and
- Philadelphia WSR-88D.

Westslope's NEXRAD weather radar screening analysis for the Dover AFB WSR-88D shows that the 105 proposed WTGs in the Project 1 WTA, the 64 proposed WTGs in the Project 2 WTA, and the 31 proposed WTGs in the Overlap Area will not be within line-of-sight of and will not interfere with this radar site at blade-tip heights of 880 feet AGL, 890 feet AGL, or 1,048 feet AGL. The results also show that the 105 proposed WTGs in the Project 1 WTA, the 64 proposed WTGs in the Project 2 WTA, and the 31 proposed WTGs in the Overlap Area at blade-tip heights of 880 feet AGL, 890 feet AGL, and 1,048 feet AGL will fall within a NOAA green No Impact Zone for this radar site.

Westslope's NEXRAD weather radar screening analysis for the Philadelphia WSR-88D shows that 27 of the 105 proposed WTGs in the Project 1 WTA, 10 of the 64 proposed WTGs in the Project 2 WTA, and three of the 31 proposed WTGs in the Overlap Area will be within line-of-sight of this radar site at a blade-tip height of 880 feet AGL. At a blade-tip height of 890 feet AGL, 30 of the 105 proposed WTGs in the Project 1 WTA, 12 of the 64 proposed WTGs in the Project 2 WTA, and three of the 31 proposed WTGs in the Overlap Area will be within line-of-sight of this radar site. At a blade-tip height of 1,048

feet AGL, 64 of the 105 proposed WTGs in the Project 1 WTA, 42 of the 64 proposed WTGs in the Project 2 WTA, and seven of the 31 proposed WTGs in the Overlap Area will be within line-of-sight of this radar site. The results also show that the 105 proposed WTGs in the Project 1 WTA, the 64 proposed WTGs in the Project 2 WTA, and the 31 proposed WTGs in the Overlap Area at blade-tip heights of 880 feet AGL, 890 feet AGL, and 1,048 feet AGL will fall within a NOAA green No Impact Zone for this radar site. At blade-tip heights of 880 feet AGL, 890 feet AGL, and 1,048 feet AGL, Doppler contamination over and in the immediate vicinity of the proposed WTGs within line-of-sight is possible due to clutter; however, impacts to Philadelphia WSR-88D operations are not likely.

Westslope conducted an HF radar LOS analysis for the following 15 radar sites:

- Assateague Island HF radar;
- Bradley Beach HF radar;
- Brant Beach HF radar;
- Brigantine Long Range HF radar;
- Brigantine Medium Range HF radar;
- Cape May Point HF radar;
- Hempstead HF radar;
- Loveladies HF radar;
- Moriches HF radar;
- North Wildwood HF radar;
- Sandy Hook HF radar;
- Sea Bright HF radar;
- Seaside Park HF radar;
- Strathmere HF radar; and
- Wildwood HF radar.

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

- For the Brant Beach HF radar, Brigantine Long Range HF radar, Brigantine Medium Range HF radar, Loveladies HF radar, and the Strathmere HF radar, all 105 proposed WTGs in the Project 1 WTA, all 64 proposed WTGs in the Project 2 WTA, and all 31 proposed WTGs in the Overlap Area will be within line-of-sight of these radar sites at blade-tip heights of 880 feet AGL, 890 feet AGL, and 1,048 feet AGL.
- For the Cape May Point HF radar, 29 of the 105 proposed WTGs in the Project 1 WTA, none of the 64 proposed WTGs in the Project 2 WTA, and none of the 31 proposed WTGs in the Overlap Area will be within line-of-sight of this radar site at a blade-tip height of 880 feet AGL. At a blade-tip height of 890 feet AGL, 32 of the 105 proposed WTGs in the Project 1 WTA, none of the 64 proposed WTGs in the Project 2 WTA, and none of the 31 proposed WTGs in the Overlap Area will be within line-of-sight this radar site. At a blade-tip height of 1,048 feet AGL, 90 of the

105 proposed WTGs in the Project 1 WTA, none of the 64 proposed WTGs in the Project 2 WTA, and five of the 31 proposed WTGs in the Overlap Area will be within line-of-sight of this radar site.

- For the North Wildwood HF radar, all 105 proposed WTGs in the Project 1 WTA, 46 of the 64 proposed WTGs in the Project 2 WTA, and all 31 proposed WTGs in the Overlap Area will be within line-of-sight of this radar site at blade-tip heights of 880 feet AGL and 890 feet AGL. At a blade-tip height of 1,048 feet AGL, all 105 proposed WTGs in the Project 1 WTA, all 64 proposed WTGs in the Project 2 WTA, and all 31 proposed WTGs in the Overlap Area will be within line-of-sight of this radar site.
- For the Seaside Park HF radar, 71 of the 105 proposed WTGs in the Project 1 WTA, all 64 proposed WTGs in the Project 2 WTA, and 27 of the 31 proposed WTGs in the Overlap Area will be within line-of-sight of this radar site at a blade-tip height of 880 feet AGL. At a blade-tip height of 890 feet AGL, 75 of the 105 proposed WTGs in the Project 1 WTA, all 64 proposed WTGs in the Project 2 WTA, and 27 of the 31 proposed WTGs in the Overlap Area will be within line-of-sight of this radar site. At a blade-tip height of 1,048 feet AGL, 104 of the 105 proposed WTGs in the Project 1 WTA, all 64 proposed WTGs in the Project 2 WTA, and all 31 proposed WTGs in the Overlap Area will be within line-of-sight of this radar site.
- For the Wildwood HF radar, 84 of the 105 proposed WTGs in the Project 1 WTA, none of the 64 proposed WTGs in the Project 2 WTA, and 10 of the 31 proposed WTGs in the Overlap Area will be within line-of-sight of this radar site at a blade-tip height of 880 feet AGL. At a blade-tip height of 890 feet AGL, 85 of the 105 proposed WTGs in the Project 1 WTA, none of the 64 proposed WTGs in the Project 2 WTA, and 10 of the 31 proposed WTGs in the Overlap Area will be within line-of-sight of this radar site. At a blade-tip height of 1,048 feet AGL, 104 of the 105 proposed WTGs in the Project 1 WTA, 22 of the 64 proposed WTGs in the Project 2 WTA, and all 31 proposed WTGs in the Overlap Area will be within line-of-sight of this radar site.
- For the Assateague Island HF radar, Hempstead HF radar, Moriches HF radar, and the Sandy Hook HF radar, the 105 proposed WTGs in the Project 1 WTA, the 64 proposed WTGs in the Project 2 WTA, and the 31 proposed WTGs in the Overlap Area will not be within line-of-sight of these radar sites at blade-tip heights of 880 feet AGL, 890 feet AGL, or 1,048 feet AGL. Although the proposed WTGs 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 Bradley Beach HF radar and the Sea Bright HF radar, the 105 proposed WTGs in the Project 1 WTA, the 64 proposed WTGs in the Project 2 WTA, and the 31 proposed WTGs in the Overlap Area are beyond the instrumented range of these radar sites and will not be within line-of-sight of these radar sites at blade-tip heights of 880 feet AGL, 890 feet AGL, or 1,048 feet AGL. As a result, Westslope does not expect any radar effects at or below these blade-tip heights.

For the Brant Beach HF radar, Brigantine Long Range HF radar, Brigantine Medium Range HF radar, Cape May Point HF radar, Loveladies HF radar, North Wildwood HF radar, Seaside Park HF radar, Strathmere HF radar, and the Wildwood HF radar, without mitigation, the radar effects will include clutter in the vicinity of the proposed WTGs within line-of-sight and possibly in the vicinity of the proposed WTGs 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 in partnership with NOAA's IOOS may have concerns with the proposed WTGs within line-of-sight at blade-tip heights of 880 feet AGL, 890 feet AGL, and 1,048 feet AGL based on potential interference to these HF radar sites.

Mitigation options for HF radar include, but are not limited, to the following:

- Implementation of a software package to address interference from wind turbines in real-time, which is being researched by CODAR Ocean Sensors, Ltd. under funding from the Bureau of Ocean Energy Management; and
- Installation of other wave and current sensors in the WTA.

Westslope recommends that the proposed WTGs be submitted to the DoD Siting Clearinghouse for an informal review and 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.