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VINEYARD WIND

Draft Construction and Operations Plan

Volume III Appendices

Vineyard Wind Project

October 22, 2018

Submitted by

Vineyard Wind LLC
700 Pleasant Street, Suite 510
New Bedford, Massachusetts 02740

Submitted to

Bureau of Ocean Energy Management
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Sterling, Virginia 20166

Prepared by

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Public Archaeology Laboratory, Inc.
RPS
Saratoga Associates
Swanson Environmental Associates
Wood Thilsted Partners Ltd
WSP

October 22, 2018

Appendix III-H.b

Vineyard Wind Project Historic Properties Visual Impact Assessment

VINEYARD WIND HISTORIC PROPERTIES VISUAL IMPACT ASSESSMENT



VINEYARD WIND OFFSHORE WIND FARM PROJECT

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September 24, 2018



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1.0 INTRODUCTION

1.1 Purpose and Scope

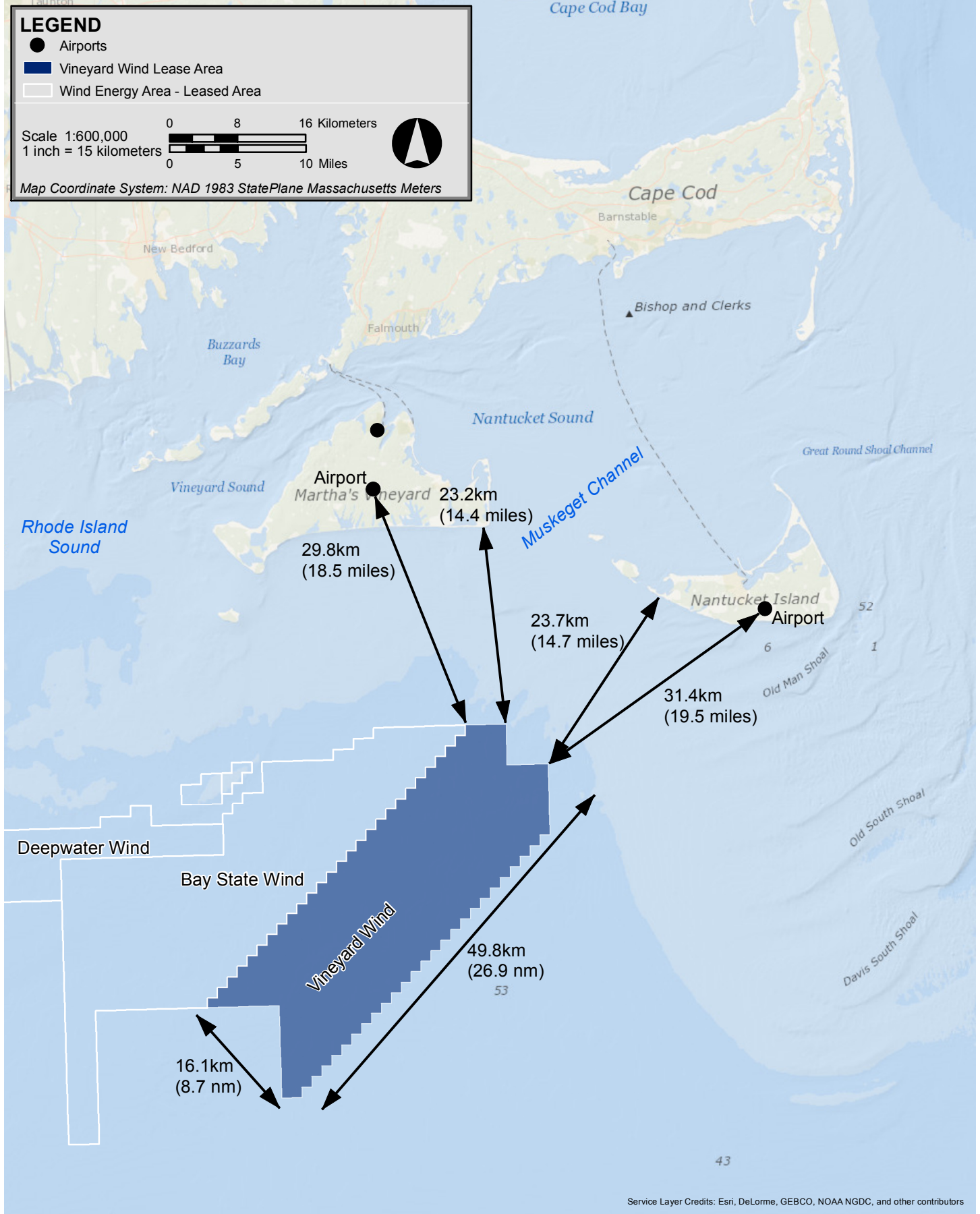
Vineyard Wind, LLC (“Vineyard Wind”) is proposing an ~800 megawatt (“MW”) wind energy project within BOEM Lease Area OCS-A 0501, consisting of offshore wind turbine generators (“WTGs”, each placed on a foundation support structure), electrical service platforms (“ESPs”), an onshore substation, offshore and onshore cabling, and onshore operations & maintenance facilities (these facilities will hereafter be referred to as the “Project”). The following Historic Properties Visual Impact Assessment for the Project is intended to assist the BOEM and the Massachusetts Historical Commission (“MHC”), in its role as the State Historic Preservation Office (“SHPO”), in their responsibilities in reviewing the Project under Section 106 of the National Historic Preservation Act and the National Environmental Policy Act. Further information regarding effects to archaeological properties within the proposed Area of Potential Effect (“APE”) will be addressed in separately filed reports.

The Lease Area is a 16 x 50 kilometers [“km”] (8.6 nautical [“nm”] x 26.9 nm) area oriented northeast to southwest and located just over 23 km (14 miles [“mi”]) south/southwest of Nantucket and Martha’s Vineyard. The Project will be located in the northern portion of the over 675 square kilometer (166,886 acre) Lease Area; this northern area is referred to as the Wind Development Area (“WDA”). Power generated from the Project will be transmitted to Cape Cod via submarine offshore cables. Upon arriving at the shoreline of Cape Cod, the offshore cables will transition to underground onshore cables to connect with an electrical substation. An onshore substation will be constructed in order to accommodate the additional electrical load; a substation location in the Town of Barnstable is under consideration. A new substation building (if needed) will not likely be larger than the existing station (See Figures 1-1 and 1-2).

Accordingly, the proposed APE has been developed to assist BOEM and MHC in identifying historic resources listed, or eligible for listing, in the National Register of Historic Places in order to assess potential visual effects of the Project. The proposed APE has been broken into direct (construction-related) and indirect (visual) effects.

1.2 Project Description

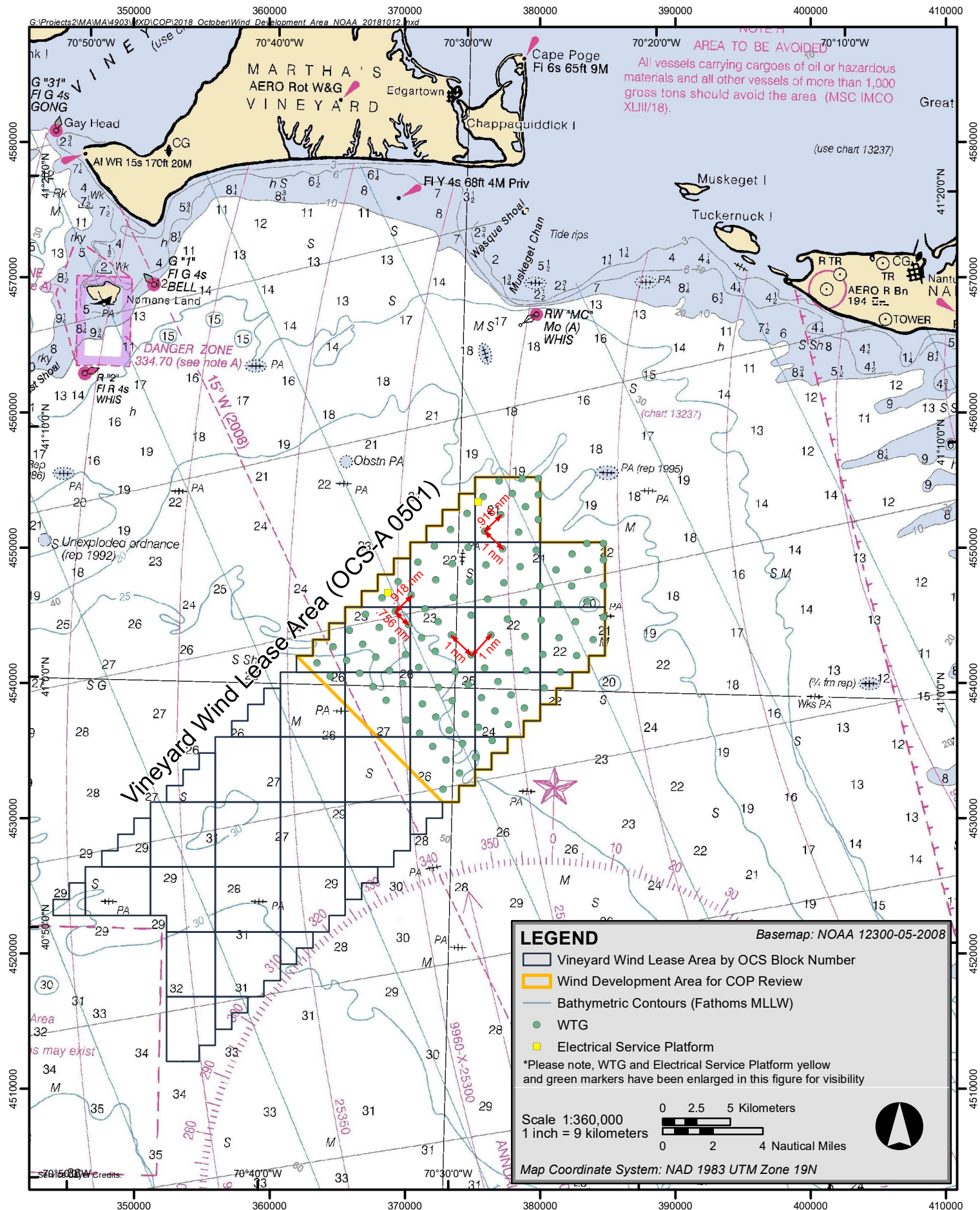
The Project includes the construction of up to 100 WTGs and two ESPs within the WDA. The Project is designed to provide up to 800 MW of electricity and has defined a range of turbine sizes that may be used: from eight to 10 MW. Up to 106 turbine locations are being permitted to allow for spare positions (in the event of environmental or engineering challenges). The WTGs will be laid out in a grid pattern along with several offshore substation platforms. The WTGs will be positioned approximately three-quarters to one nautical mile apart from each other.



Vineyard Wind Project



Figure 1-1
Vineyard Wind Lease Energy Areas - Nearest Onshore Area



Vineyard Wind Project



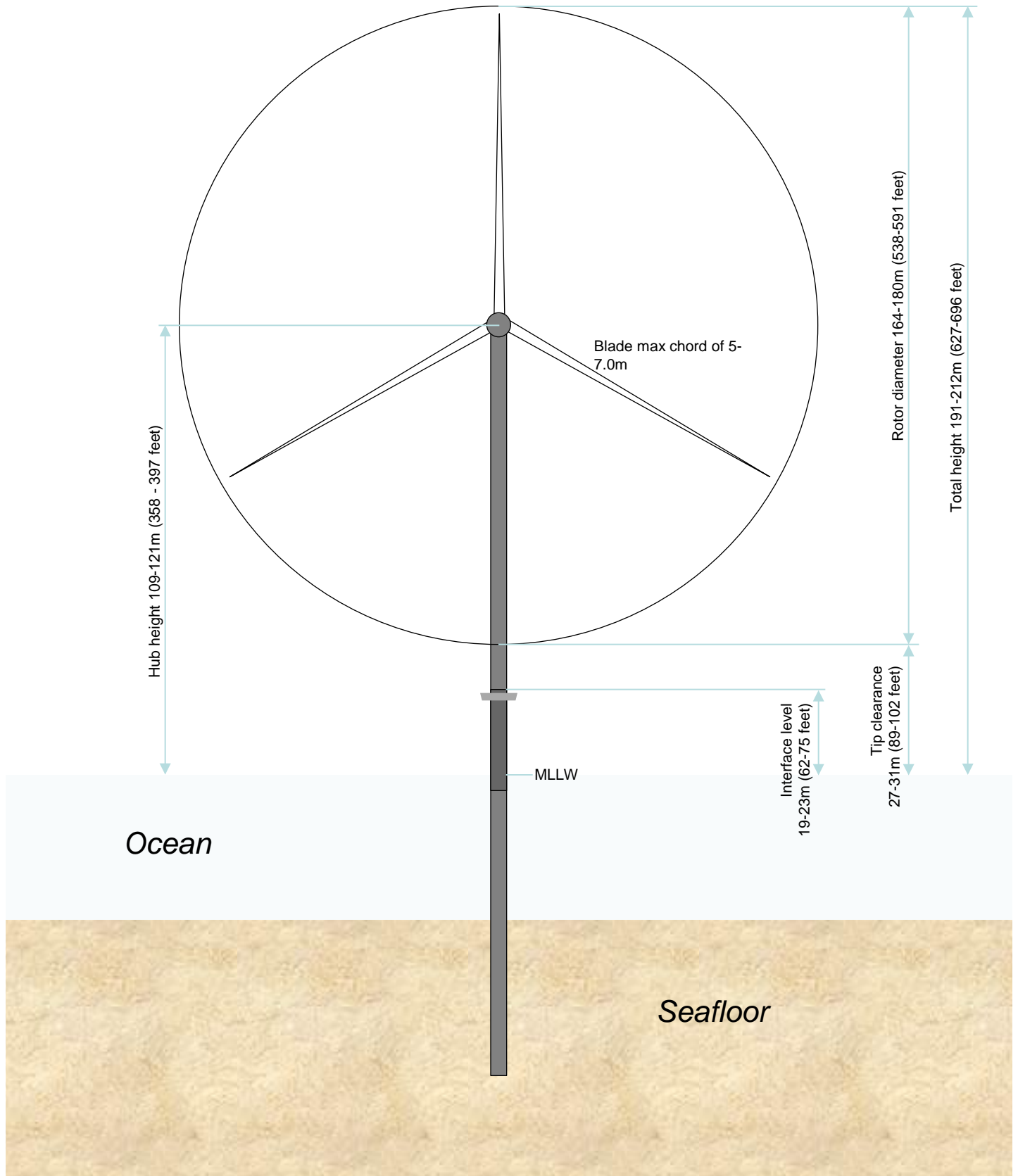
Figure 1-2
Wind Development Area for COP Review

The WTGs will be supported by foundations consisting of either steel monopiles embedded into the sea floor or “jacket” structures. The jacket foundations are cross-braced structures supported by piles (three or four piles). Either foundation type (monopile or jacket) is designed to support the WTG. The WTGs will connect to the existing mainland power grid via inter-array cables that connect six to 10 WTGs to the ESPs, then offshore cables from the ESPs will connect to the shore at the Landfall Site. All offshore and onshore cables will be buried and will not be visible. Proposed underground cables are expected to utilize existing paved roadway and utility corridors to connect to the proposed substation location in Barnstable.

The maximum height of the WTGs considered for this Project will measure approximately 212 meters (“m”) (696 feet [“ft”]) above sea level at the peak of the blade tip. As shown in Figure 1-3, the supporting foundation/transition piece and wind turbine tower extends a maximum of 121 m (397 ft) above the ocean surface to the “nacelle height”. The rotor supports the three blades and the nacelle, which houses the generator and related equipment, and is set at this height. The rotor diameter formed by the three blades will be a maximum of 180 m (591 ft). This corresponds to an approximate maximum blade length of 85 m (279 ft). The blades will taper down from the base to the tip. The WTG assembly and the blades are typically painted off white or light gray to blend into the horizon.

The one-two ESPs will have a maximum width of 45 m (148 ft) and a maximum length of 70 m (230 ft). Additionally, the ESPs will have a maximum height of 66.5 m (218 ft) above water. The WTGs will be joined to the ESPs via submarine inter-array cables, and the ESPs will be joined to one another via submarine inter-link cables.

In conducting the visual simulations, Vineyard Wind utilized the proposed layout with 106 of the eight MW WTGs. The eight MW layout represents the maximum impact scenario for potential visual effects because the nacelle is the most visible portion of the WTG, especially at night, and the nacelle heights for the various WTGs are all within 10 m (33 ft) of one another. A 10 m (33 ft) difference in WTG hub height is not perceivable at a distance of over 23 km (14 mi), which is the closest approximate distance from the Project to land; in the simulation, this height difference represents only a fraction of a single computer pixel. Thus, the greater potential impact will be due to the number of turbines and lights, rather than fewer, slightly taller WTGs. The specific dimensions of the WTGs used in the visual simulations are presented in Appendix III-H.a.



2.0 METHODOLOGY

The proposed APE was generated using windshield surveys (conducted in August 2017) to assess potential visibility as well as topographic, and aerial mapping in order to determine vegetation and obstructing topography and to perform mathematical calculations to determine the extreme potential visibility. The calculations were based on height of the tallest proposed WTGs, distance from historic resources, and the obstruction created due to the Earth's curvature. Additionally, historic maps, the State and National Registers of Historic Places, and the MHC's Inventory of Historic and Archaeological Assets of the Commonwealth (the "Inventory") were consulted to generate the list of historic resources within the proposed APE. Variable factors, such as weather, were not considered for determining the APE; nevertheless, weather conditions will substantially limit visibility and will be discussed later.

Included within the report are existing conditions photographs from select locations within Martha's Vineyard and Nantucket. Due to the small size of the other outlying islands (Nomans Land, Tuckernuck Island, Muskeget Island, Esther Island, and Cuttyhunk Island) within the proposed APE, it is assumed that those islands without obstructions to viewing the WDA will have all their recorded historic resources for those islands in the APE. Existing conditions photographs were not taken from the outlying islands as they are largely devoid of significant topographical changes and tree growth. Additionally, existing conditions photographs were not taken from select areas of shoreline in the Towns of Mashpee, Barnstable, and Yarmouth, due to the extreme distance from the WDA and unlikely visibility and dense development along the shoreline limiting visibility; however, these areas and the associated resources are included in the proposed APE.

3.0 DEFINING THE PROPOSED AREA OF POTENTIAL EFFECT

3.1 Direct Effects

As stated in the Introduction, direct effects are defined as construction-related impacts or areas of potential disturbance by the Project. These areas can be further defined as terrestrial and marine areas.

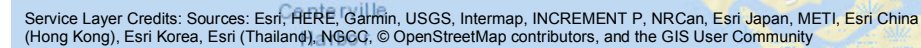
- ◆ Terrestrial areas include the proposed underground cable routes and substation location (one route will ultimately be chosen). In the case of the terrestrial cable routes, these are long narrow areas with no potential for visual impacts as the cables themselves will be underground, largely within existing paved roads and utility corridors. In total, the proposed APE for direct effects onshore is the cable routes and the proposed substation location.
- ◆ Marine areas include the portion of the WDA proposed for the WTGs, EPSs, inter-array and inter-link cables as well as the proposed offshore cable routes to the mainland. Therefore, the APE proposed for direct effects offshore is the WTG and ESP locations both in height and depth as well as the seafloor to be affected by the cable routes or foundations.
- ◆ It is anticipated that construction related impacts will have limited visual effects due to the location of the WTG and ESP foundations and cables either underground or undersea (see Figure 3-1 for historic properties along potential terrestrial cable routes).

Effects related to the visibility of built structures will be addressed in the indirect effects.

3.2 Indirect Effects

Indirect or visual effects include those areas where the Project may be visible. For terrestrial areas this includes the new substation. The proposed APE for indirect effects related to the proposed substation location is one-quarter mile including portions of the Towns of Barnstable and Yarmouth around the onshore substation site. For visibility related to the WDA, the same APE is proposed for both daytime and nighttime visibility.

As stated previously, the underground electrical cables are proposed to be placed largely within existing roadways and utility corridors, and will not be visible. Similarly, the cable routes from the WDA to the mainland Landfall Site are underwater and will not have a visual impact.

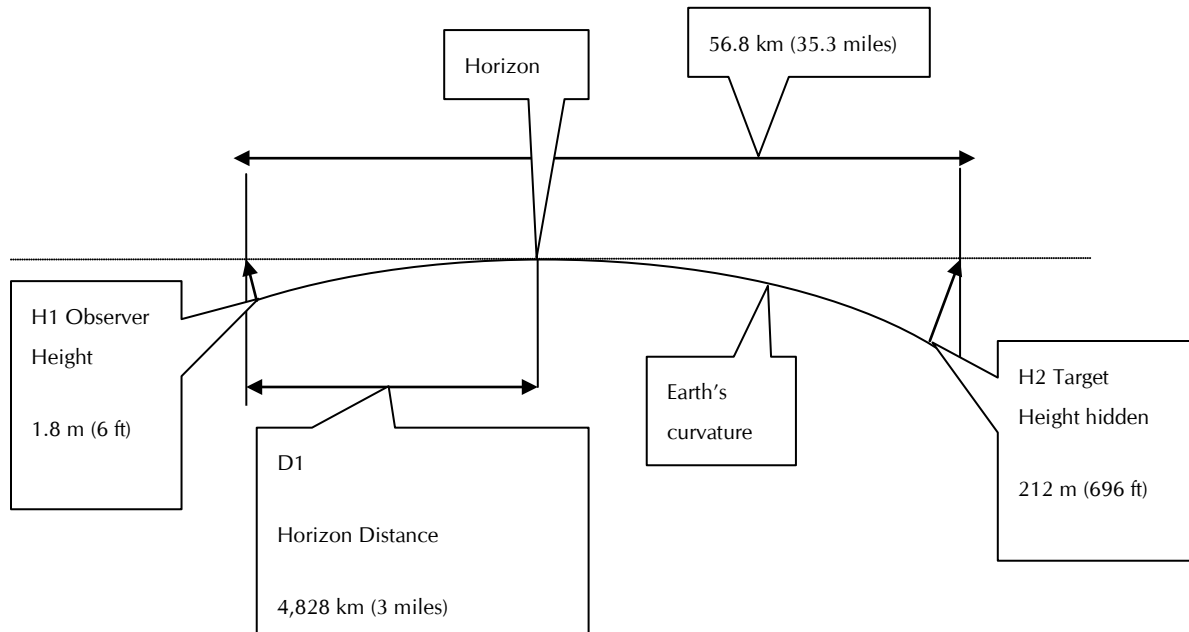


The initial proposed APE for indirect effects for the WTGs is 56.8 km (35.3 mi) with exclusions from the construction site at the northeastern half of the WDA. Some areas within the 56.8 km (35.3 mi) radius have been excluded from the proposed APE due to obstructions including topography and vegetation. Individual APEs for the islands of Martha's Vineyard and Nantucket have been developed as a result of field surveys for the potential to view the WDA. Other smaller islands with less variation in topography and vegetation have been conservatively included in their entirety, including Nomans Land, Muskeget Island, Esther Island, and Tuckernuck Island. It should be noted that the other island, Cuttyhunk Island, has the most existing vegetation and topographic changes and has also been included for its potential narrow viewshed of the WDA. Additionally, a portion of southern shoreline areas in the Towns of Mashpee, Barnstable and Yarmouth are also included. These areas in Mashpee, Barnstable and Yarmouth are at the very edge of the proposed APE and at the extreme distance for potential visibility, as described further.

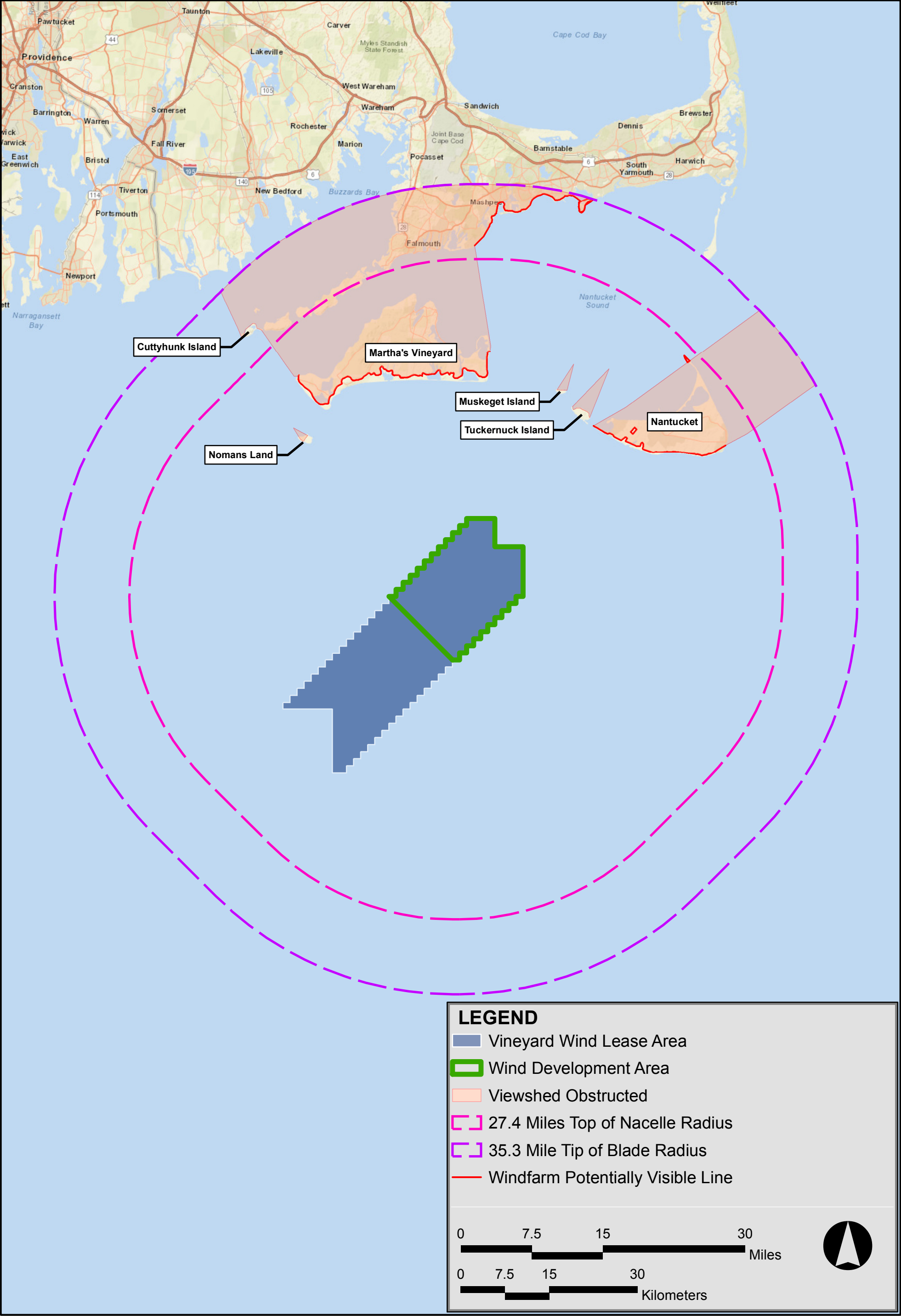
3.3 Calculating Potential Viewshed (Indirect Effects)

The 56.8 km (35.3 mi) proposed APE was conservatively determined as the distance at which no part of the Project would be visible due to the Earth's curvature and horizon line. This is based on the maximum height of the blade tip of approximately 212 m (696 ft) and a 1.8 m (6 ft) observer height (H1) at the shoreline. At 56.8 km (35.3 mi) a target height of 212 m (696 ft) (H2) would be below the horizon line. At 1.8 m (6 ft) in height, an observer (H1) at the shoreline would perceive the horizon at 4,828 km (3 mi) (D1). With the proposed height of 212 m (696 ft), a 56.8 km (35.3 mi) radius would ensure the entireties of the offshore structures would be below the horizon line. As stated earlier, environmental conditions such as wave height, fog, rain, haze, and other factors are not considered in this calculation, but would serve to further limit visibility.

It should also be noted that the more visually substantial elements of the WTG assemblies (i.e., the foundation, the support tower, and the nacelle) will extend to a maximum height of approximately 121 m (397 ft). Accordingly, these elements will be entirely below the horizon line at a distance of approximately 44,096 km (27.4 mi).



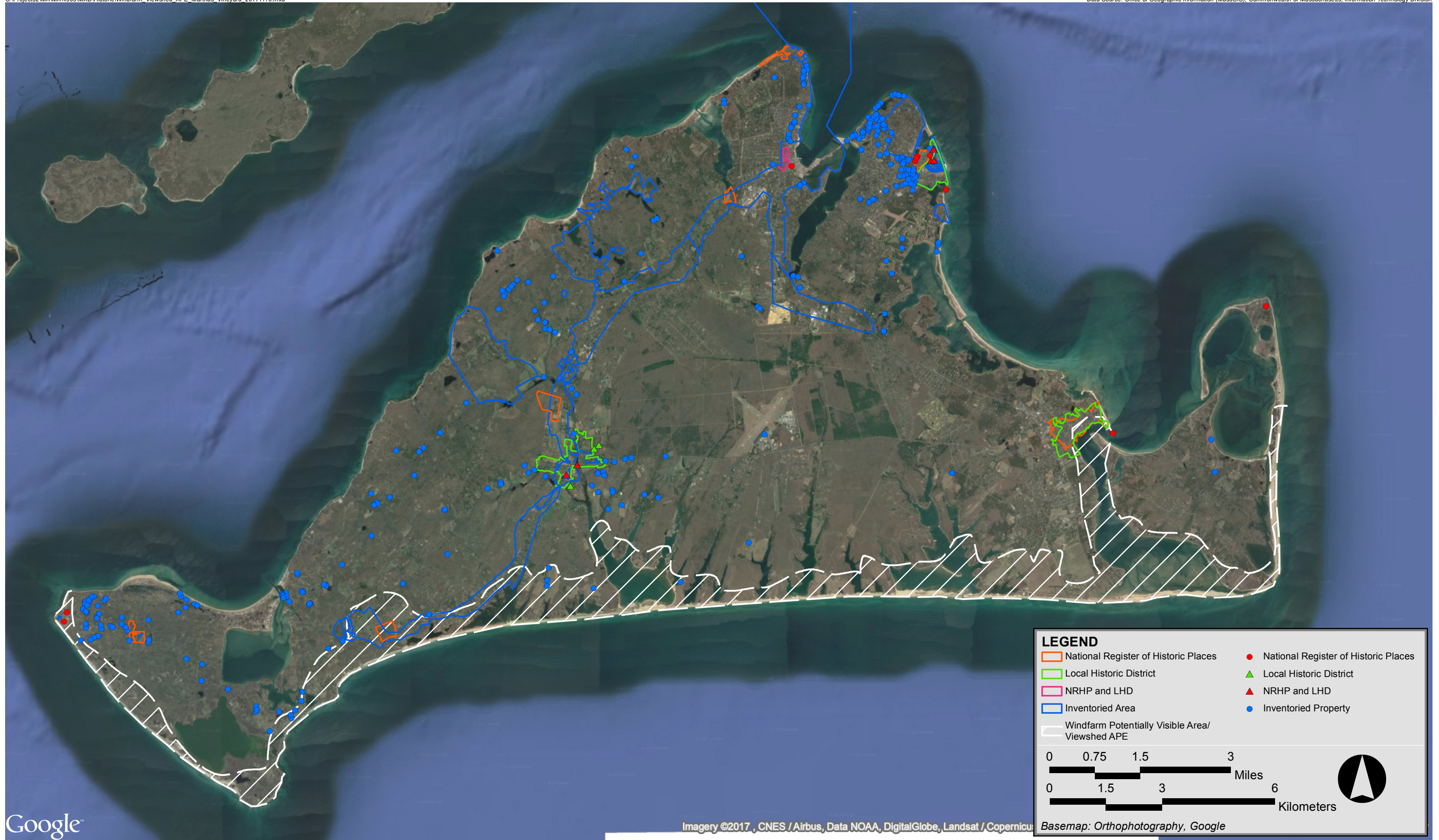
Within the 56.8 km (35.3 mi) radius from the WDA are numerous islands as well as Cape Cod; however, the first landmasses to be affected (Cuttyhunk Island, Martha's Vineyard, Nomans Land, Nantucket, Muskeget Island, and Tuckernuck Island) serve to provide a visual obstruction and buffer to areas within Buzzards Bay, Vineyard Sound, and Nantucket Sound. A narrow view corridor between Martha's Vineyard and Muskeget Island into Nantucket Sound allows for the potential visibility of the WDA from the Towns of Mashpee, Barnstable, and Yarmouth on Cape Cod at the end of the 56.8 km (35.3 mi) radius. Given the extreme distance and the numerous buildings and structures along the shorelines of Mashpee, Barnstable and Yarmouth, only those areas directly along the shoreline (highlighted on the attached maps) are considered within the proposed APE. Although simulations show that the WTGs will not be visible from these distances, they are nevertheless included to be conservative (see Figure 3-2).



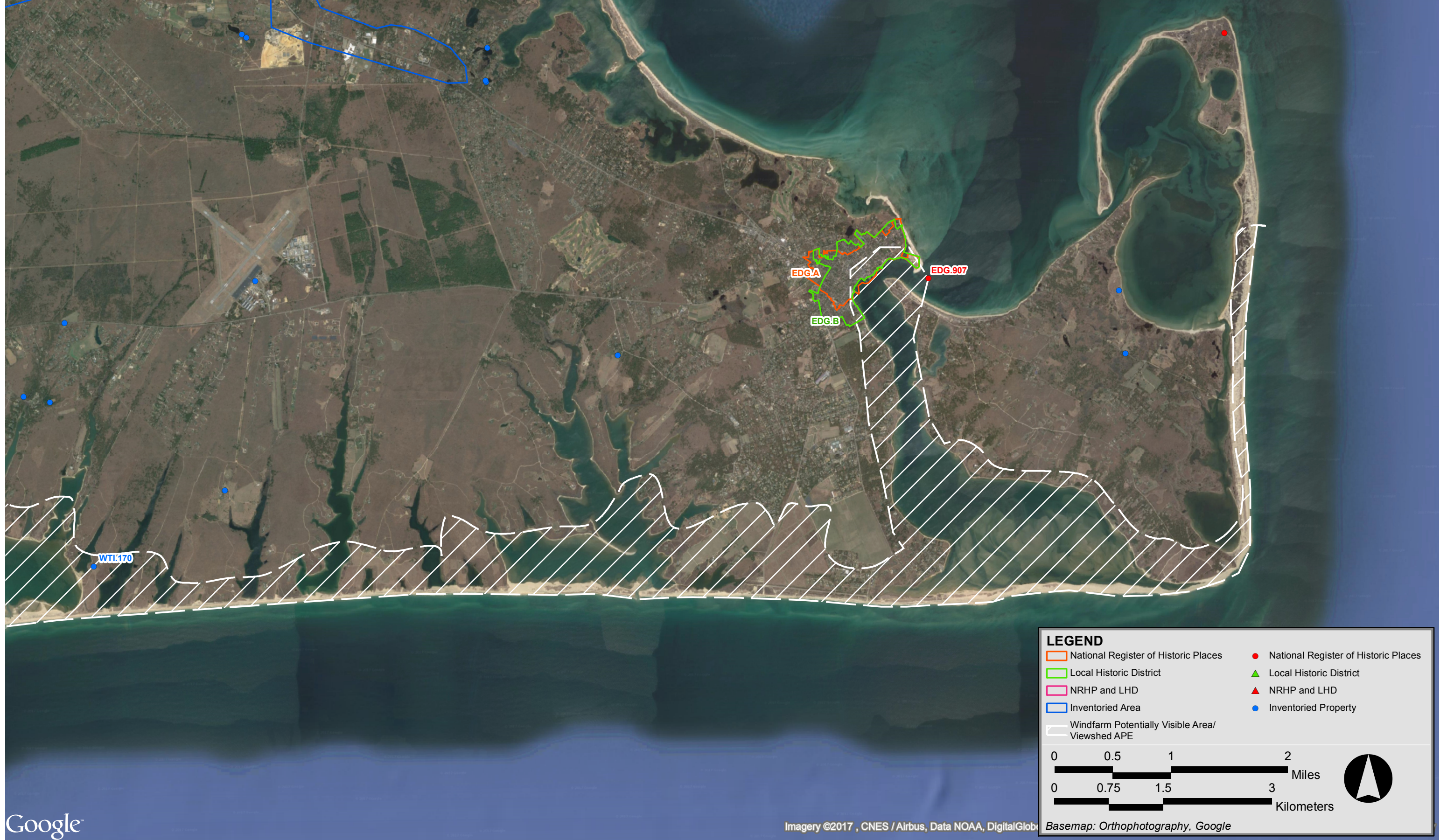
3.4 Martha's Vineyard APE (Indirect Effects)

The island of Martha's Vineyard lies north of the WDA by approximately 22.5 km (14 mi). Using a combination of aerial maps and field survey, the Martha's Vineyard APE was developed along the island's southern shoreline. This area of the island is less densely developed consisting of parks, beaches, and open space such as the Long Point Wildlife Refuge. The southern shoreline consists of low lying areas, whereas the southeastern end of the island has steep ridgelines and cliffs, which both simultaneously obstruct view of the WDA as well as permit it, depending upon the location and existing vegetation. In the low lying areas dunes varying in height from 1.5-3.6 m (5-12 ft) in height partially obstruct view of the WDA from inland areas. Additionally, vegetation close to shore largely consists of low shrubbery, but increases in height further inland changing to low tree growth to mid- to high tree growth 10.6-12.1 m (35-40 ft) in height. Once beyond the treeline, view of the WDA is obstructed. One exception is in Chilmark, along Middle Road, where the ridgeline and existing farmland (denuded of tree growth) permits views of the WDA from further inland. Another exception is Katama Bay, which separates Chappaquiddick Island from the rest of Martha's Vineyard, and serves as a northward visibility corridor between the two landmasses to Edgartown.

It is important to note that while much of the view toward the WDA is southerly, at the western end of the island in Aquinnah, a southeastern view is required and some locations are fully or partially obstructed by topography and vegetation allowing for only a narrow view corridor (see Figure 3-3a to 3-3c).







3.5 Martha's Vineyard Existing Conditions Photolocations

A total of 19 locations were selected for an existing conditions survey of Martha's Vineyard. These locations are in proximity to some historic or archaeological resources and were utilized to examine the potential effect to the viewshed from the proposed Project as well as assist in determining the proposed APE for visual effects. The 19 locations below provide a variety of locations from directly along the shoreline to upper terrain inland locations (see Figure 3-4).

LEGEND

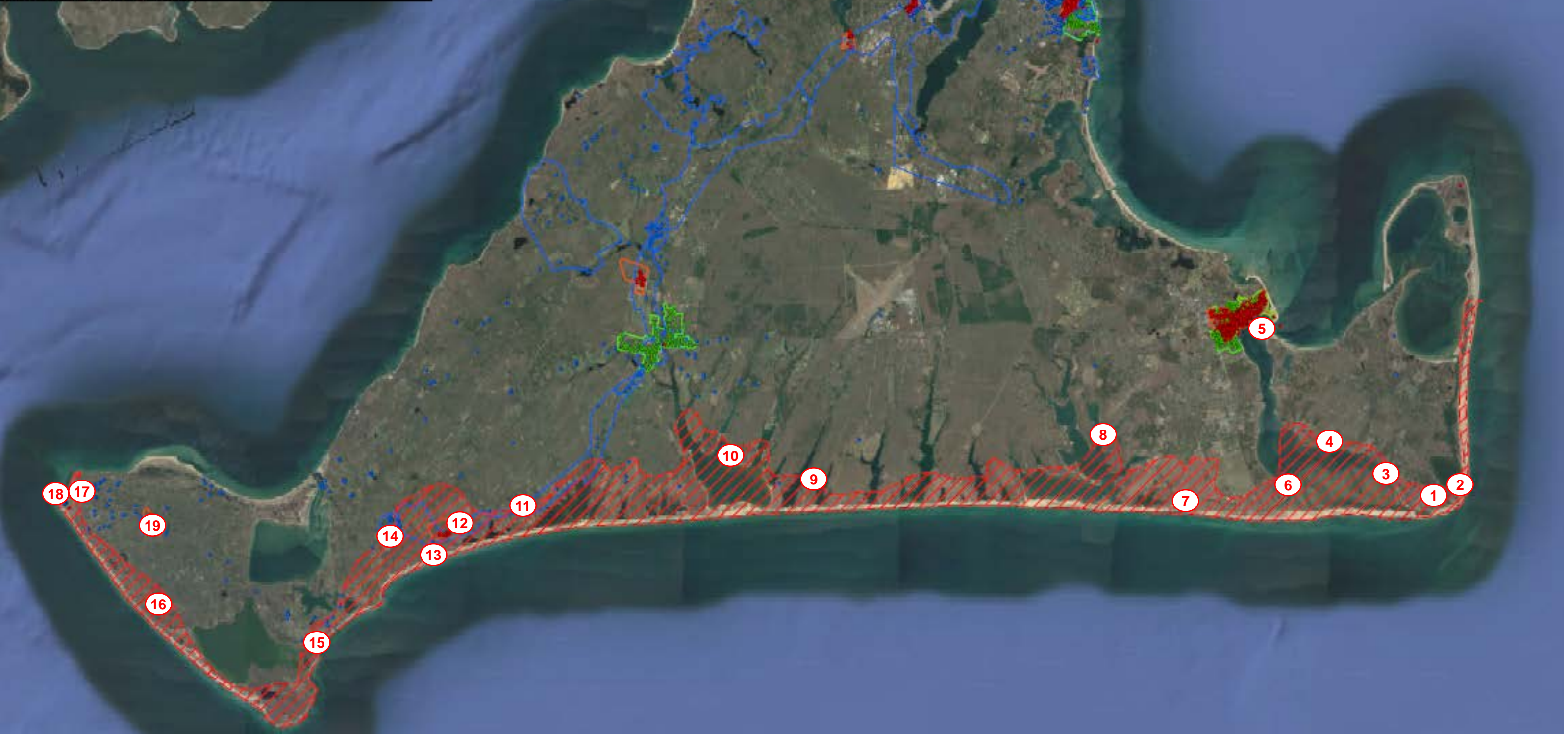
- Natl Register of Historic Places
- Local Historic District
- NRHP and LHD
- Inventoried Property

- Natl Register of Historic Places
- Local Historic District
- NRHP and LHD
- Inventoried Area
- Windfarm Potentially Visible Area/ Viewshed APE

Scale 1:42,000
1 inch = 3,500 feet

0 3,500 7,000 Feet

Basemap: Orthophotography, Google



Vineyard Wind Project



Figure 3-4
Martha's Vineyard / APE and Photolocation Map

Photolocation #1 / Wasque Reservation, Chappaquiddick

Located along Wasque Avenue, this area includes shoreline and open fields with low tree growth and a northern treeline with larger mature tree growth approximately 4.5-6 m (15-20 ft) in height. A lagoon is located north of a sandbar with dunes approximately 2.4-3 m (8-10-ft) in height. The topography slopes upward inland allowing for view to the WDA above the dunes. Existing vegetation eliminates the WDA view northward along Wasque Avenue toward Pocha Road, with views present along intersecting streets at their southern ends at Katama Bay.



View to the WDA at the end of Wasque Avenue.



View at shoreline of lagoon to the WDA over the dunes.

Photolocation #2 / Wasque Point, Chappaquiddick

Located within the Wasque Reservation, Wasque Point has a cliffside view (approximately 6 m [20 ft] high) over the beach below, largely to the east with a southern view through existing tree growth approximately 4.5-6 m (15-20 ft) in height. The view from the beach below to the south along the shoreline is unobstructed.



View toward the WDA along the eastern shoreline.

Photolocation #3 / Washqua Avenue, Chappaquiddick

Running from Wasque Avenue and terminating downhill at Katama Bay, this area contains a mix of one to two-story residential buildings dating from the 20th century as well as open lawns and mature tree growth with shrubbery at Katama Bay. At the high/inland end of the street, the elevation is roughly 12.1 m (40 ft) above sea level. A view to the WDA is possible at the end of the street looking over the dunes at Katama Bay. Existing tree height along Washqua Avenue is 6-7.6 m (20-25 ft).



View south across Katama Bay toward WDA, dunes block view of the horizon line.

Photolocation #4 / Jeremiah Way, Chappaquiddick

Running from Litchfield Road southward and terminating at Katama Bay, Jeremiah Way consists of a mix mid- to late 20th century single-family residences set on large lots with mature tree growth 4.5-9.1 m (15-30 ft) in height. Tree growth lowers in height toward Katama Bay. Views from the roadway toward the WDA were largely obscured by existing tree growth and buildings. The roadway also sits behind a small rise blocking view of the horizon line. Visibility from private property across Katama Bay toward the WDA is possible.



View south toward WDA (not visible) due to topographic changes and vegetation.

Photolocation #5 / Chappy Point, Gardner Beach, Chappaquiddick

Located in the vicinity of the Edgartown Historic District on Chappaquiddick Road at the ferry landing, Gardner Beach has low sporadic vegetation 1.5-2.4 m (5-8-ft) in height with a wide open view southward to Katama Bay. View toward the WDA is partially blocked by the shoreline in Edgartown in particular Katama Point.



View south across Katama Bay toward WDA.

Photolocation #6 / Katama Point Public Launch, Edgartown

The public launch overlooks a section of Katama Bay toward the dunes to the south. From this location, significant vegetation is not present and the dunes provide the only obstruction of the horizon line. Nearby residences dating from the mid to late 20th century may have views at the second stories over the dunes that could provide visibility of the WDA from this location. Access to private property was unavailable.



View south across Katama Bay toward WDA, dunes block view of the horizon line.

Photolocation #7 / South Beach / Katama Beach, Edgartown

South Beach / Katama Beach has significant dunes in this location 1.8-3 m (6-10 ft) in height. From an inland location behind the dunes, a view of the horizon line and WDA is only possible at gaps between dunes. Inland of this location is Katama Farm and Katama Airpark, both of which are devoid of significant vegetation, allowing for potential visibility of the WDA further inland until the treeline and nearby residences (dating from the mid-late 20th century) create an obstruction.



View toward WDA, gap in dunes permits view of WDA.

Photolocation #8 / Wilson's Landing, Edgartown

Located on Edgartown Great Pond, Wilson's Landing is a public boat launch. Existing mature tree growth in the area is 7.6-10 m (25-35 ft) in height. The landing has a southerly view across the pond toward the dunes and the inlet. View toward the WDA and horizon line is limited to the inlet at the shoreline. Once back from the shoreline, existing vegetation quickly obstructs the viewshed to the south.



View south toward WDA, inlet provides view of horizon line.

Photolocation #9 / Long Point Wildlife Refuge, West Tisbury

Located roughly midway along Martha's Vineyard's southern coast is the Long Point Wildlife Refuge. The Refuge has mature tree growth 9.1-12.1 m (30-40 ft) in height that lowers in height from Scrubby Neck Farm Road at the north down to shrubbery and grassed areas and dunes at the shoreline. Dunes at this location are 1.8-2.4 m (6-8 ft) in height. View of the WDA from inland areas is partially obstructed by the dunes, though gaps exist allowing for a view toward the WDA over the grasslands.



View south toward WDA, visible at right.

Photolocation #10 / Tississa Point, West Tisbury

Located within the Sepiessa Point Reservation, Tississa Point has a southerly view across Tisbury Great Pond through an inlet toward the WDA. The surrounding area consists of low vegetation near the shoreline with open fields and mature tree growth further northward approximately 9.1 m (30 ft) in height. Dune height on either side of the inlet varies in height providing areas of substantial obstruction of the WDA on either side of the inlet.



View south toward WDA, visible at inlet.

Photolocation #11 / 322 South Road, Chilmark

Throughout most of South Road in Chilmark, view of the ocean was obstructed by tree growth. In the vicinity of Able Hill Cemetery (MHC# CHL.803) and specifically through the property at 322 South Road, a view of the horizon line and toward the WDA exists via a gap in existing tree growth. Elsewhere, tree growth is 7.62-9.1 m (25-30 ft) in height. Some of the private, residences (largely dating from the mid to late 20th century) on the southern side of South Road have a clear view toward the WDA, due to the steep slope down to the shoreline and a lack of vegetation. Access to private property was not available during the field survey.



View south toward WDA.

Photolocation #12 / Allen Farm, 421 South Road, Chilmark

The Allen Farm (MHC# CHL.E) consists of an 18th century house and associated farm buildings. This area along South Road has large open fields and some historic farm complexes. Via the open fields to the south, view to the WDA and horizon line is possible through openings in the vegetation and over the cliffs at Lucy Vincent Beach (#13) below.



View south toward WDA, visible at right.

Photolocation #13 / Lucy Vincent Beach, Chilmark

Lucy Vincent Beach has a combination of beach shoreline and cliffs roughly 10.6 m (35 ft) in height. At the shoreline, southerly views toward the WDA are unobstructed. Inland of the beach, the topography rises quickly and the immediate area has some open fields allowing for overlooking views to the WDA. Where present, such as the road to the parking lot, existing tree growth is 7.6-10.6 m (25-35 ft) in height and, with the exception of the path to the beach, obstructs view of the horizon.



View south toward WDA from Lucy Vincent Beach.

Photolocation #14 / Chilmark General Store, 7 State Road, Chilmark

Located in the town center of Chilmark the area around the Chilmark General Store (MHC# CHL.E) is obstructed from viewing the WDA and ocean generally by dense vegetation. Mature tree growth in this area is 9.1-12.1 m (30-40 ft) in height.



View south toward WDA, no ocean view from this location.

Photolocation #15 / Squibnocket Beach, Aquinnah

Squibnocket Beach has unobstructed views toward the WDA. The area around the beach has varying topography including rolling hills and a high point of Squibnocket Ridge. The area surrounding the beach also has predominantly low vegetation and sporadic mature tree growth allowing for views from surrounding properties as well.



View south toward WDA.

Photolocation #16 / Zach's Cliffs / Moshup Trail, Aquinnah

This section of Moshup Trail has dense vegetation, but at the road, a partially obstructed oblique view to the southeast toward the WDA is possible. Most of the surrounding vegetation is 1.8-3 m (6-10 ft) in height. From the road, Zack's Bluffs largely obstruct the view toward the WDA, but from the bluffs themselves, views toward the WDA can be achieved.



View southeast toward WDA, at back right.

Photolocation #17 / Gay Head Lighthouse, Aquinnah

Located on a prominent rise the State and National Register listed Gay Head Lighthouse's (MHC# GAY.900) southerly view is too far east to view the WDA due to its location at the western end of Martha's Vineyard. A southeast view is required to look toward the WDA and this view is partially obstructed by existing topography and vegetation. Only the southwestern portion of the WDA would potentially be viewable, which is at the furthest distance from the lighthouse. The area surrounding the lighthouse is a mixture of open fields and low vegetation (shrubbery) with sporadic tree growth 1.8-3 m (6-10 ft) in height. A view from within or atop the lighthouse was not obtainable during the field survey.



View southeast toward WDA, at right.

Photolocation #18 / Gay Head Cliffs Overlook, Aquinnah

The Gay Head Cliffs Overlook is located just north of the Aquinnah Shops. From this vantage point, a better view toward the WDA can be achieved than from the Gay Head Lighthouse, due to the increased elevation and ability to see across Aquinnah to the WDA at the southeast; however, the landmass of Aquinnah creates an obstruction. Only a partial view toward the WDA is possible and, as with the lighthouse, only the southwestern portion of the WDA would be viewable, which is at the furthest distance from the overlook.



View southeast toward WDA, at right.

Photolocation #19 / Aquinnah Town Hall, 65 State Road, Aquinnah (MHC# GAY.A)

Located in an area of dense tree growth ranging from 4.5-12.1 m (15-40 ft) in height, the area in and around State and National Register listed Aquinnah Town Hall has no view toward the ocean or WDA due to obstructing dense vegetation and topography.



View southeast toward WDA, viewshed obstructed.

3.6 Nantucket APE (Indirect Effects)

The island of Nantucket lies northeast of the WDA by approximately 22.5 km (14 mi). The entire island of Nantucket along with adjacent outlying islands of Esther, Tuckernuck, and Muskeget were designated a National Historic Landmark District in 1966. Using a combination of aerial maps, topographic maps and field survey, the proposed Nantucket APE was developed along the island's southern and western shorelines. This area of the island is less densely developed consisting of parks, beaches, and open space. Noteworthy areas of development are the villages of Madaket, Surfside and Siasconset all of which are in part within the proposed APE. These villages are dominated by a mix of early to mid-20th century single-family residences one to two and a half stories in height. While much of the island consists of low lying areas, at the western end of the island is Trots Hills with heights exceeding 15.2 m (50 ft) above sea level. Sauls Hills at the eastern end of the island has heights exceeding 30.4 m (100 ft) above sea level. Vegetation close to shore largely consists of open fields, grasslands and low shrubbery, but increases in height further inland changing to low tree growth to mid- to high tree growth 10.6-13.7 m (35-45 ft) in height.

As much of the island is relatively flat, elevated points have the potential to have wide views across the island. Additionally, the relatively flat nature of the island means that even moderate vegetation or small hills or dunes can obstruct the viewshed easily. The proposed APE on Nantucket has been divided into three sections: the shoreline along the southern and western end of the island; a section of Barrett Farm Hill Road at the southern end of Trots Hills; and Great Point at the northern end of the island. The southern shoreline section represents those areas along the shore and inland where a view to the WDA to the southwest toward the WDA is possible. The section along Barrett Farm Hill Road is an elevated area with a gap in vegetation that allows for a narrow view corridor toward the WDA. At Great Point, in the vicinity of the Great Point Lighthouse, a view (partially obstructed), toward the WDA is possible between Esther Island (off of Smith Point) and Tuckernuck Island (See Figure 3-5).



3.7 Nantucket Existing Conditions Photolocations

A total of 14 locations were selected for an existing conditions survey of Nantucket. These locations are in proximity to some historic or archaeological resources and were utilized to examine the potential effect to the viewshed from the proposed Project as well as assist in determining the proposed APE for visual effects. The 14 locations below provide a variety of locations from directly along the shoreline to upper terrain inland locations (see Figure 3-6).



Vineyard Wind Project

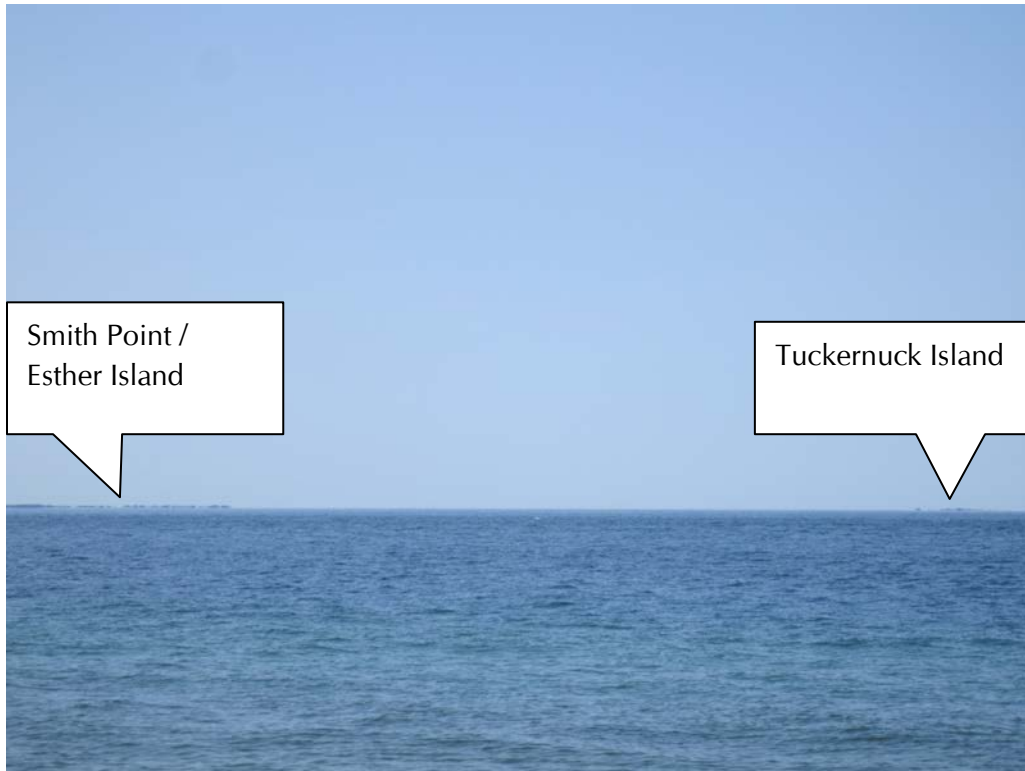


Figure 3-6

Nantucket / APE and Photolocation Map

Photolocation #1 / Great Point Lighthouse

Located at the northern end of the island is the Great Point Lighthouse, constructed in 1985 as a replacement for the original 19th-century lighthouse that was lost during a storm. Stones from the original lighthouse were salvaged and reused in the replacement built further inland. View toward the WDA is possible between Smith Point and Esther Island to the east and Tuckernuck Island to the west.



View southwest toward WDA, Smith Point / Esther Island is at left and Tuckernuck Island at right.

Photolocation #2 / Siasconset Golf Club

Located at 260 Milestone Road (a main thoroughfare on the island), the Siasconset Golf Club is located on a small rise and occupies an area largely devoid of significant tree growth. The golf course can be observed as far away as the Sankaty Head Lighthouse to the northeast on Baxter Road, as much of the area in between has been cleared. No view toward the WDA can be obtained from this location due to vegetation and topography.



View southwest toward WDA obstructed by vegetation and topography.

Photolocation #3 / 54 Low Beach Road

Low Beach Road is located at the southeastern corner of the island. The road starts at the intersection of Morey Lane and Ocean Avenue and terminates at Tom Nevers Pond. Few houses are on the ocean side of the road, which looks down to the ocean past low scrub brush, dunes and grassed areas. Buildings in the area largely consist of mid- to late 20th century single-family residences one to two and half stories in height. Due to the location, only an oblique view toward the WDA at the southwest is possible; however, most buildings are oriented south to southeast, to take in the full view of the water (if present).



View toward WDA from 54 Low Beach Road, largely obstructed, but WDA viewable at background left.

Photolocation #4 / Low Beach

Low Beach is located at the southeastern corner of the island. Only an oblique view toward the WDA at the southwest is possible. The beach has short dunes 1.2-1.8 m (4-6 ft) in height and a mild grade down to the water.



View southwest across Low Beach toward WDA.

Photolocation #5 / Tom Nevers Road

Tom Nevers Road is bordered by mid to late 20th century two and a half story homes set on large lots. The road is also bordered by large hedges and trees planted to ensure privacy among the residences. Only an oblique view toward the WDA at the southwest is possible from this location.



View southwest toward WDA is largely obstructed, but a water view and WDA are visible at background, right

Photolocation #6 / Tom Nevers Field

Tom Nevers Field is located at the end of Tom Nevers Road. The field is set back from the shoreline by dunes and a small bluff roughly 3-3.6 m (10-12 ft) in height. The immediate area is largely devoid of trees and has low scrub brush and grassed areas. View southwest toward the WDA is possible from this location.



View southwest toward WDA.

Photolocation #7 / Surfside Road

Surfside Road runs north to south at the southern end of the island in the village of Surfside. At its southern end, Surfside Road intersects with Western Avenue running east to west, which has early to mid-20th century residences along its south side with a clear view of the ocean toward the WDA. Approximately 152.4 m (500 ft) of dunes, grassed areas and scrub brush are between the residences and the beach. Residences on the northern side of Western Avenue have their water views partially obstructed by neighboring properties and their vegetation, but views toward the WDA are possible.



View to the southwest toward WDA from the intersection of Surfside Road and Western Avenue, WDA viewable at left.

Photolocation #8 / Miacomet Golf Club

Located at 12 West Miacomet Road, the Miacomet Golf Club has an open course with small knolls and sporadic mature tree growth approximately 7.6-9.1 m (25-30 ft) in height. Despite the lack of significant vegetation, a view of the ocean and WDA is obstructed due to the rolling topography.



View southwest toward WDA obstructed by topography.

Photolocation 9 / Bartlett's Farm

Located at 30 Bartlett Farm Road is Bartlett's Farm, a 19th century farm complex. As a farm, the fields provide a wide open view of the surrounding area. View toward the WDA and WDA is possible through the fields. On nearby properties, existing treelines and residential development obstruct the view of the WDA creating a narrow inland view corridor at this location.



View toward WDA, visible at background right.

Photolocation #10 / Heller's Way and Hummock Pond Road

Hellers Way runs roughly east to west between Hummock Pond Road and Walbang Avenue. At its southern end, Hummock Pond Road terminates at Cisco Beach with views toward the WDA. Cisco Beach has a small bluff approximately 3 m (10 ft) in height. Vegetation in the area consists of sporadic tree growth, approximately 7.6 m (25 ft) in height, along with shrubbery and grassed areas. Development in this area consists of two and half story 20th century single-family residences. The WDA view along the southern end of Hummock Pond Road diminishes quickly, with a narrow view corridor along Hummock Pond Road terminating after 243 Hummock Pond Road. At the intersection of Hummock Pond Road and Hellers Way no ocean view is possible.



View southwest toward WDA obstructed by vegetation.

Photolocation #11 / Barrett Farm Road

Barrett Farm Road originates at its northern end at Madaket Road. The road is elevated, originating just south of Trots Hills and has a view overlooking Trots Swamp. There are few buildings along the road and the area has dense vegetation with mature trees approximately 7.6-10 m (25-35 ft) in height. Due to the elevation and a gap in vegetation, view to the WDA is possible at the northern end of the road and again at the southern end of the road where a small rise permits view over the dunes at the shoreline.



View southwest toward WDA via gap in existing vegetation.

Photolocation #12 / Washington Street and Madaket Road

The village of Madaket largely consists of early to mid-20th century residences one to two and a half stories in height. The village is centered along Madaket Road with short intersecting streets running off of it. The area has sporadic mature tree growth 7.6-10.6 m (25-35 ft) in height along with shrubbery and grassed areas. From H Street northward, a view toward the WDA along Madaket Road is obstructed. Madaket Beach at the terminus of Madaket Road has a clear view toward the WDA.



View southwest toward WDA from the intersection of Madaket Road and Washington Avenue, WDA visible at background left and center.

Photolocation #13 / Massachusetts Avenue Boat Launch

Adjacent to Madaket is Smith Point with a dense cluster of early to mid-20th century single family residences, one to two and a half stories in height. This area also has a section of dense tree growth 10.6-12.1 m (35-40 ft) in height. The boat launch is located on Madaket Harbor and the view toward the WDA is obstructed by buildings, topography, and vegetation.



View southwest toward WDA is obstructed; no view of WDA is possible.

Photolocation #14 / Eel Point

At the north end of Madaket Harbor is Eel Point and the Eel Point Marsh. Eel Point has large dunes 3.6-4.5 m (12-15 ft) in height along with grassed areas and scrub brush. From an elevated vantage point atop a dune, view toward the WDA is obstructed as Smith Point and Esther Island obstruct the view in the direction of the WDA.

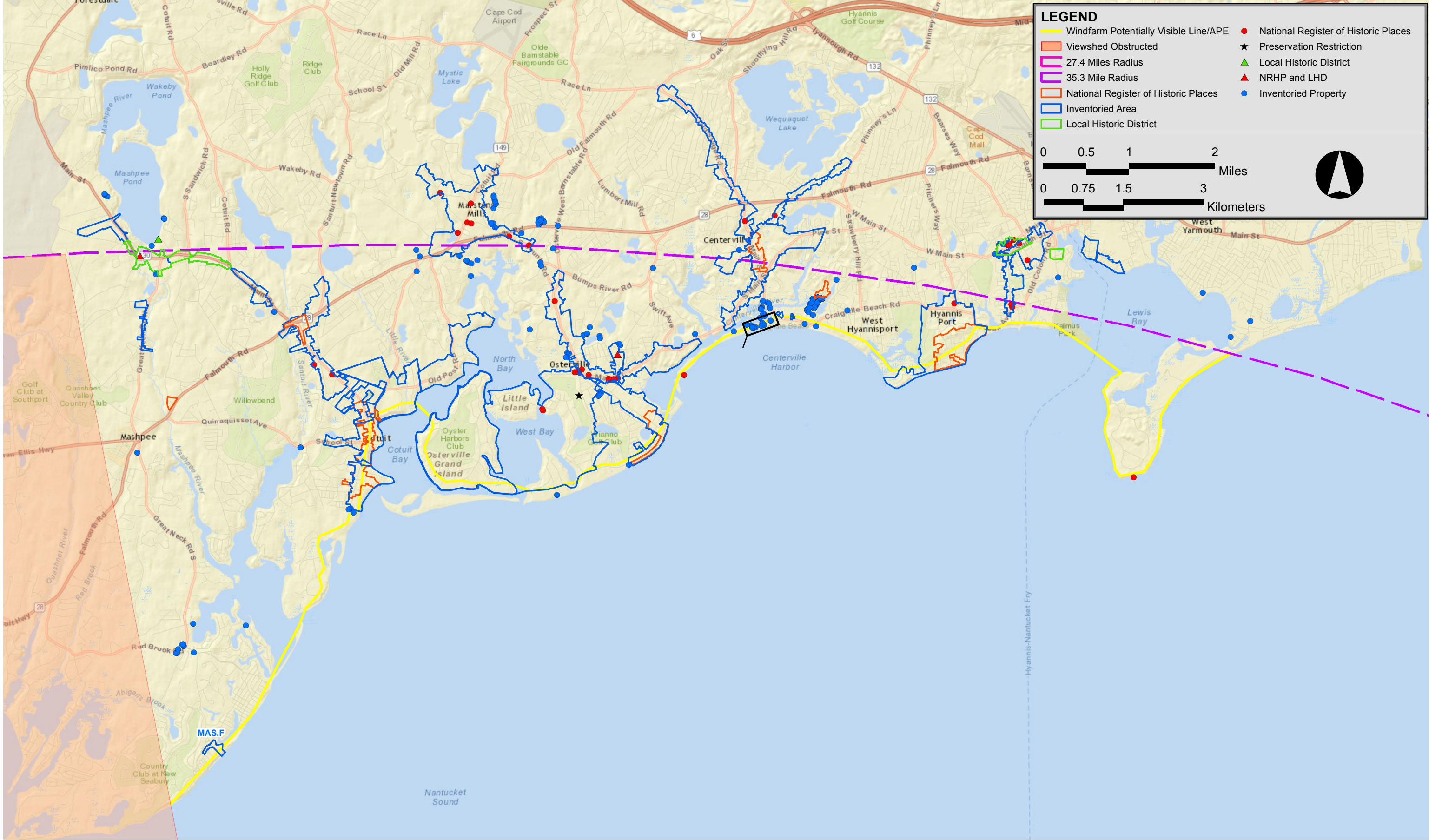


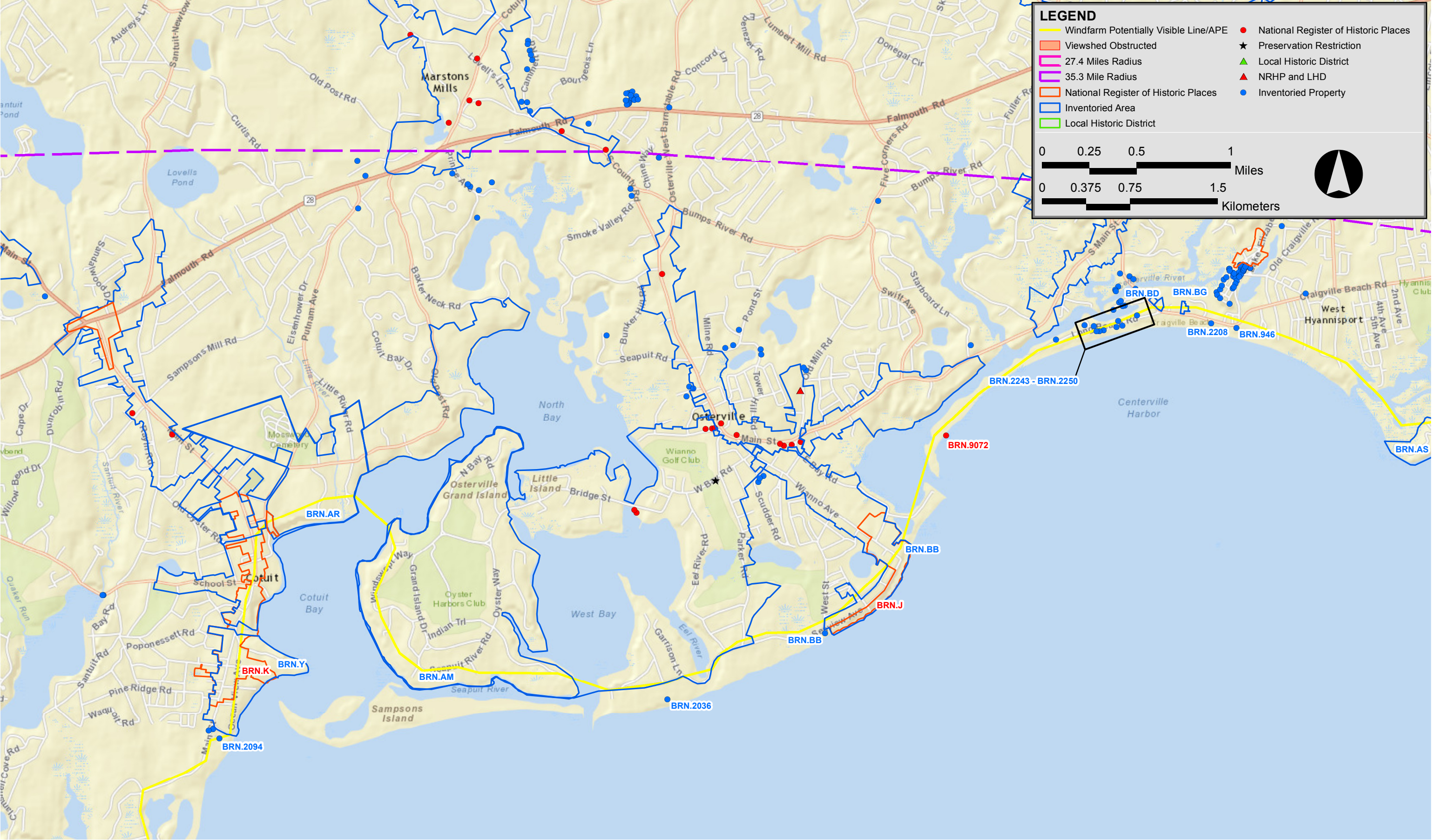
View southwest toward WDA obstructed.

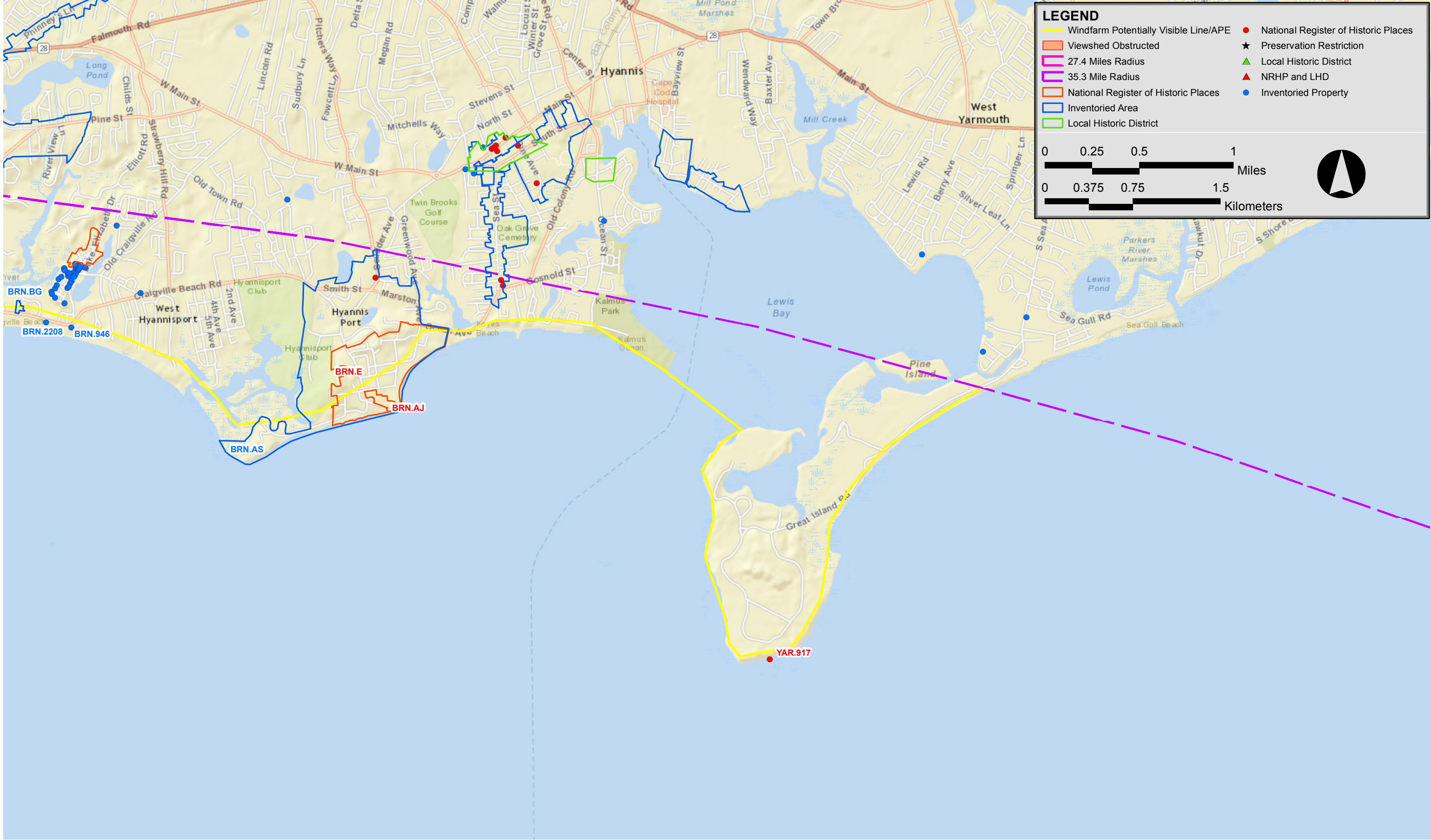
3.8 Cape Cod APE (Indirect Effects)

The proposed APE on Cape Cod is limited to the Towns of Mashpee, Barnstable and Yarmouth and can be divided into two sections, including those areas pertaining to the potential visibility of the proposed substation locations and the APE for potential visibility of the Project. Presently, three onshore substation locations are under consideration, only one of which one will ultimately be chosen. Each of the potential locations will be given a quarter of a mile radius for viewshed potential.

A conservative 56.8 km (35.3 mi) initial radius was established for potential visibility of the Project. Within the radius sections of the Towns of Mashpee, Barnstable, and Yarmouth have the potential to view the WDA. It should be noted that the shoreline in these areas is heavily developed with two to two and a half story residences largely dating from the late 19th and early 20th century including several listed in the State and National Registers (see Figures 3-7-1 to 3-7-3). Those residences along the shoreline, as well as mature tree growth 7.6-9.1 m (25-30 ft) in height, obstruct the view of the WDA from those properties behind them further inland. Due to the dense development and the extreme distance, roughly between 30-35-miles, from the WDA, only those buildings along the shoreline are considered within the proposed APE. Although Cape Cod is included within the proposed APE, visual simulations demonstrate that visibility of the WDA at this distance is not possible as the majority of the structures will be below the horizon line when viewed from sea-level. Only the blades which were simulated to have a maximum width of 5.1 m (17 ft) across would be potentially visible, and they are likely to be often obscured by meteorological and oceanographic conditions and indiscernible due to distance, as shown in the simulations.







4.0 MITIGATING FACTORS AFFECTING VISIBILITY

4.1 Earth's Curvature and WDA Orientation

As stated in the Calculating Potential Viewshed section, the distance from the WDA to shore results in the Earth's curvature creating a visual obstruction preventing visibility of the WDA in its entirety from some locations. Elsewhere, the Earth's curvature creates a partial obstruction. The WDA is oriented so that the closest portion to shore is still over 23 km (14 mi) away from Martha's Vineyard. At 23 km (14 miles), the lower section of the ESPs and WTG's will be below the horizon line when viewed at the shoreline (see Appendix III-H.a).

The amount of height hidden by the Earth's curvature increases exponentially with increasing distance from the WDA; due to the Earth's curvature and the WDA's distance from shore, at no point can any of the ESPs or WTGs be viewed at their full height from shore. Additionally, the orientation of the WDA is such that each row of WTGs is progressively further away from shoreline, with the final row approximately 48.2 km (30 mi) from Martha's Vineyard and Nantucket. The result of the orientation pattern is such that the visible WTGs will be viewed as becoming smaller until indiscernible.

Each WTG is located in a row with the WTGs closest to shore in an arrow-shape due to the shape of the WDA. With the exception of limited locations where there are extra positions or gaps, starting at row two, the layout of the WTGs forms a regular grid pattern. The regularity of the layout means that the WTGs closer to shore will create a visual obstruction preventing visibility of the WTGs to the rear.

4.2 Meteorological Conditions and Color

Using historical weather data recorded at the Vineyard Haven Martha's Vineyard Airport and the Nantucket Memorial Airport, an average visibility from these locations can be determined. The data examined was from an 11-year period (2006-2016) from the National Climatic Data Center. Recorded data included temperature, humidity, and windspeed as well as visibility for the benefit of pilots using the two airports. On average, 24% of the time in a given year, visibility from Martha's Vineyard is less than 16 km (10 mi). Roughly one out of every four days or one-quarter of the year, the WDA would not be visible from Martha's Vineyard. Additionally, on average 32% of the time in a given year, visibility from Nantucket is less than 16 km (10 mi).

On an annual average basis, visibility from Martha's Vineyard is 49.5 km (30.8 mi) and visibility from Nantucket is 37.3 km (23.2 mi). For Martha's Vineyard, the highest visibilities during the daytime occur in the fall, and the lowest visibility occurs in the summer. For Nantucket, the highest visibility during the daytime occurs in the fall, with the lowest visibility in the summer. In both cases, the lowest visibilities occur in the summer. Higher humidity and higher concentrations of photochemical smog likely cause the

reduced visibility in the summer. The reduced visibility during the summer is the result of higher temperature and humidity as varying weather conditions including haze, fog, various forms and intensities of precipitation, and even more obscure events such as smoke or dust storms. Several different conditions may occur at any time.

With the airports approximately 29.7 km (18.5 mi) at Martha's Vineyard and 31.3 km (19.5 mi) at Nantucket (airports are not at closest shorelines) from the WDA, on an annual average, it would only be partially visible from Martha's Vineyard and barely visible from Nantucket. While there will be periods of higher or lower than average visibility where the WDA will be not visible or have more visibility, the annual average gives a relevant assessment of potential visibility resulting from some, but not all, meteorological conditions. Different factors affect visibility, including air quality, sea spray and salts over the ocean's surface, the angle of the sun, and relative humidity. The presence of sea spray and salts affects visibility, but is not likely captured by the weather recording equipment at the airports and also could not be expected to accurately depict conditions 29.7–31.3 km (18.5–19.5 mi) away at the WDA. Therefore, the calculated visibility may be considered conservative since it does not account for these light-reducing factors or the distance from the WDA.

The proposed light gray color of the WTGs is also a factor in mitigating potential visibility. The matte finish is designed to absorb rather than reflect light rays. Further, the selection of the gray color is intended to blend in with the average color presented at the horizon line, taking into account observed weather conditions.

5.0 IMPACT ASSESSMENTS

5.1 Martha's Vineyard Viewshed Assessments

This section assesses the potential visibility of the offshore and onshore installations (as needed), using photographs, maps, photo-simulations and other graphics to evaluate potential project-related visual impacts. The assessments are based upon the potential visibility the Project may have in ideal weather conditions. Photo-simulations referenced in this document are included in Appendix III-H.a.

This section is organized by geographic location. Within each section for a specific geographic location, the first subsection provides an index of all historic properties reviewed in this report. The second subsection provides the viewshed assessments for properties that are listed or eligible for listing on the National Register. The third section provides the viewshed assessments for those properties that are considered ineligible for listing on the National Register.

5.1.1 *Martha's Vineyard Historic Property Assessment*

The following is a list of properties evaluated for significance and effects on Martha's Vineyard.

Table 5-1 Martha's Vineyard Historic Property Index

Property Name	MHC#	Address	Designation / Eligibility Recommendation	Photosimulation (Yes/No)
Gay Head Light	GAY.900	15 Aquinnah Circle, Aquinnah	NRIND (Moved in 2015 150-feet, still listed). Significant under Criteria A and C as a historic maritime structure and aid to navigation	Yes, Simulation 1
Gay Head – Aquinnah Shops Area	GAY.B	Aquinnah Circle, Aquinnah	INV Area / NR eligible. Significant under Criteria A as a collection of mid-20 th century roadside shops associated with the rise of the automobile era and increased tourism at Gay Head Cliffs. Buildings retain historic design integrity and character	Yes, Simulation 2
Edwin Vanderhoop Homestead	GAY.40	35 South Road, Aquinnah	NRIND. Significant under Criteria A and C as an example of Victorian Eclectic style and its association with the Vanderhoop family, a prominent local family	Yes, Simulation 3
71 Moshup Trail	GAY.31	71 Moshup Trail	INV / Not eligible	No
Elijah Smith House	CHL.39	9 Quista Lane, Chilmark	INV / NR eligible. Significant under Criteria A & C as an 18 th century Cape style farmhouse with connections to Revolutionary War raid. Building retains its historic design integrity and character	No

Table 5-1 Martha's Vineyard Historic Property Index (Continued)

Property Name	MHC#	Address	Designation / Eligibility Recommendation	Photosimulation (Yes/No)
Nathan Mayhew Gravestone	CHL.802	1 Quitsa Lane	INV / NR eligible with CHL.39 as a district. Significant under Criteria A & C as an 18th century grave marker. Headstone has death's head motif. Contributes to 18 th century setting of CHL.39	No
Elliot Mayhew House	CHL.12	1 Greenhouse Lane, Chilmark	INV / NR eligible. Significant under Criteria A & C as an example of Greek Revival architecture and associated with Mayhew family.	No
Chilmark Town Pound	CHL.902	State Road, Chilmark	INV / NR eligible. Significant under Criteria A & C as an example of a 19 th century town pound and associated with Mayhew family.	No
Hariph's Creek Bridge	CHL.900	State Road, Chilmark	INV / not eligible, demolished	N/A, resource demolished.
James Moshire House	CHL.54	19 State Road	INV / NR eligible. Significant under Criteria A & C as an example of Queen Anne architecture and development along State Road. First owner was a credited 19 th century stonemason and builder.	No
Benjamin Lambert House	CHL.55	51 State Road	INV / not eligible, demolished	N/A, resource demolished.
Captain Ephraim Poole Farm	CHL.B	14 Menemsha Crossroad, Chilmark	INV Area / NR eligible. Significant under Criteria A & C as a 19 th century farm complex with Greek Revival house, barns privy, corn crib and stone walls	No
Chilmark Town Center	CHL.D	Roughly bounded by Middle Road and South Road, Chilmark	INV Area / MHC determined eligible	No.
Martha's Vineyard American Revolution Battlefield	CHLE	Centered Along South Road in Chilmark	INV Area / NR eligible. Significant under Criteria A & C as a collection of historic properties dating from the 18 th century associated with the 1778 British raid, with later 19 th and 20 th century infill properties.	Yes, Simulation 6

Table 5-1 Martha's Vineyard Historic Property Index (Continued)

Property Name	MHC#	Address	Designation / Eligibility Recommendation	Photosimulation (Yes/No)
Vincent Mayhew House	CHL.A	451 South Road, Chilmark	NRDIS	Yes, Simulation 6
Captain Samuel Hancock House	CHL.35	141 Quansoo Road, Chilmark	INV / MHC determined eligible	No
Experience Mayhew House	CHL.36	11 Quenames, Chilmark	INV / NR eligible. Significant Criteria A & C as an 18 th century example of Cape style architecture, despite later alterations still retains character and historic association with Mayhew family.	No
Pricilla Hancock House	CHL.37	142 Quenames Road, Chilmark	INV / not eligible	No
Russell Hancock House	CHL.38	146 Quenames Road, Chilmark	INV / not eligible	No
Scrubby Neck Schoolhouse	WTI.170	330 Long Point Road	INV / not eligible	No
Edgartown Village Historic District	EDG.A	Roughly bound by Katama Bay Main Street, Peases Point Way, Planting Field Way	NR DIS	Yes, Simulation 9
Edgartown Village Historic District	EDG.B	Roughly bound by Katama Bay Main Street, Peases Point Way, Planting Field Way	SR / NR eligible. Significant under Criteria A & C as a collection of early 20 th century residences and pattern of development in Edgartown. Contributes to a potential boundary expansion of EDG.A	Yes, Simulation 9

***Designation Legend**

NHL	National Historic Landmark
NRIND	Individually listed on the National Register of Historic Places
NRDIS	National Register of Historic Places Historic District
NRDOE	Determined eligible for inclusion in the National Register of Historic Places
NHL	National Historic Landmark
SR	State Register of Historic Places
LHD	Local Historic District
LL	Local Landmark
INV	Individually included in the Inventory of Historic and Archaeological Assets of the Commonwealth
INV Area	Area included in the Inventory of Historic and Archaeological Assets of the Commonwealth

5.1.2 *Martha's Vineyard Historic Property Viewshed Assessments*

Gay Head Light (GAY.900) 15 Aquinnah Circle, Aquinnah.

Gay Head Light is listed on the National Register of Historic Places and is significant under Criteria A and C as a historic maritime structure and aid to navigation. Constructed in 1855-1856, the Gay Head Lighthouse was once one of the ten most important lights on the Atlantic Coast and originally contained one of the country's first Fresnel lenses. The brick and sandstone tower meets Criterion A for its association with the island's maritime history as an aid to navigation. The structure also meets Criterion C as an example of a 19th century maritime structure constructed of bricks utilizing the clay from the Gay Head Cliffs. Although the Gay Head Light was moved from its original location 150 feet east in 2015 and its setting and location are partially compromised, the structure retains integrity of design, material, workmanship, feeling and association.

Recommended Determination - No Adverse Effect. As a lighthouse, an ocean view is integral to its character and setting. The maritime setting of this resource, and its viewshed, would be altered through the introduction of new elements; however, existing powerlines and other modern elements are already within the foreground of the viewshed as opposed to the WDA, which will only be partially visible, far off on the horizon. Additionally, existing topography and vegetation partially screen the WDA from view. View from Gay Head Light toward the WDA is partially obstructed by topography and mature tree growth to the southeast. View of the WDA is possible to the south. View of Gay Head Light to the north and east will be unaffected. View of Gay Head Light to the south and the west (at an extreme angle) will be affected only in ideal weather conditions.

Gay Head Light is located at the western end of Martha's Vineyard 38.7 km (24 mi) from the WDA at its closest point. On average, 24% of the time in a given year due to weather conditions, visibility from Martha's Vineyard is less than 16 km (10 mi), as measured at Martha's Vineyard Airport 29.7 km (18.5 mi) from the WDA. This means that, at minimum, one out of every four days on average the WDA will not be visible. In addition to general weather conditions, other factors such as haze and seaspray may further reduce visibility. Gay Head Light is located 150-feet from its original location surrounded by a modern stone wall and fence. Eligibility Criterion A would not be affected by the WDA, but Criterion C as it relates to the setting of Gay Head Light would be affected; however, the structure has already been moved from its original location and its setting has already been partially compromised. With only partial visibility of the WDA possible from Gay Head Light and variable visibility of the WDA dependent upon weather conditions, no adverse effects to the setting of Gay Head Light are anticipated.

Edwin Vanderhoop Homestead (GAY.40) 35 South Road, Aquinnah

The Edwin Vanderhoop Homestead is individually listed on the National Register of Historic Places. The late 19th century Edwin Vanderhoop Homestead is a two-and-a-half story Victorian Eclectic style residence. The building's complex plan consists of a rectangular side-gable main block and several intersecting gable roof extensions. The house was constructed for Edwin Vanderhoop, son of William Adriann Vanderhoop, the first member of the family to settle in Gay Head. The Vanderhoops would become important figures in the development of Gay Head. The building is significant under Criteria A and C as an excellent example of a Victorian Eclectic style house and its association with the Vanderhoop family, a prominent local family. The Edwin Vanderhoop Homestead retains integrity of location, design, setting, material, workmanship, feeling and association.

Recommended Determination - No Adverse Effect. The Homestead is oriented to take advantage of the ocean view and the seaside setting is integral to its setting. The maritime setting of this resource, and its viewshed, would be altered through the introduction of new elements; however, existing topography and vegetation partially screen the WDA from view. View from the Homestead toward the WDA is partially obstructed by topography and mature tree growth to the southeast. View of the WDA is possible to the south. View of the Homestead to the north and east will be unaffected. View of the Homestead to the south and the west (at an extreme angle) will be affected in ideal weather conditions.

The Homestead is located at the western end of Martha's Vineyard approximately 38.7 km (24 mi) to from the WDA at its closest point. On average, 24% of the time in a given year due to weather conditions, visibility from Martha's Vineyard is less than 16 km (10 mi), as measured at Martha's Vineyard Airport 29.7 km (18.5 mi) from the WDA. This means that, at minimum, one out of every four days on average the WDA will not be visible. In addition to general weather conditions, other factors such as haze and seaspray may further reduce visibility. Eligibility Criterion A would not be affected by the WDA. Criterion C as it relates to the setting of the Homestead would be affected; however this affect would primarily be the southern view and a portion of the western view. View of the Homestead to the north and east would remain unaffected. With only partial visibility of the WDA possible from the Homestead and variable visibility of the WDA dependent upon weather conditions, no adverse effects to the setting of the Homestead are anticipated.

Gay Head – Aquinnah Shops Area (GAY.B) Aquinnah Circle, Aquinnah

The Aquinnah Shops Area is a cluster of eight commercial buildings overlooking the Atlantic Ocean. Constructed during the early-to-mid 20th century, the buildings form a U-shaped cluster along the north and south sides of a walkway extending to the Clay Cliffs of Aquinnah Scenic Overlook. The Aquinnah Shops Area is significant under Criterion A as a collection of mid-20th century roadside shops associated with the rise of the automobile era

and increased tourism at Gay Head Cliffs. Despite some alterations to the buildings, the Gay Head-Aquinnah Shops Area retains integrity of location, setting, material, workmanship, feeling and association.

Recommended Determination - No Adverse Effect. The Shops were built to take advantage of the ocean view and the seaside setting is integral to their setting. The maritime setting of this resource, and its viewshed, would be altered through the introduction of new elements; however, existing powerlines and other modern elements are already within the foreground of the viewshed as opposed to the WDA, which will be only be partially visible, far off on the horizon. Additionally, existing topography and vegetation partially screen the WDA from view.

The Shops were constructed as a means of capitalizing on tourism in Gay Head, in particular the Gay Head Cliffs, which are located to the north, west and south of the Shops. The Gay Head overlook, at which tourists view the Cliffs, is located to the north of the Shops and views to the north and east of the Cliffs are the primary viewsheds of the Gay Head Cliffs. A view to the south over the Shops to the WDA is possible from the overlook, but is not a significant viewshed as the Shops themselves conflict with the purpose of the overlook, which is to view natural scenic character of the Cliffs and no view of the Cliffs is possible from this angle. Eligibility Criterion A would not be affected by the WDA, but Criterion C as it relates to setting would be affected. The primary viewpoints of the Shops are west or north from Aquinnah Circle at which point, view of the WDA is not possible with a northern view and only partially visible at an extreme angle at the west. Although the setting will be affected, no adverse effects are anticipated as significant viewsheds will not be altered.

Elijah Smith House (CHL.39) 9 Quitsa Lane, Chilmark

The one-story Cape style residence was constructed in ca. 1770 by Elijah Smith. The side-gabled house has a three-bay wide symmetrical façade with a central door enhanced with a two light transom. Elijah Smith, a farmer and cordwainer worked as the tax collector during the time of Grey's Raid of the Revolutionary War. The property remained in the Smith family until the early 20th century. The Elijah Smith House is significant under Criterion A for its association with Gray's Raid of the Revolutionary War and Criterion C as an example of a 18th century Cape style farmhouse. The building retains integrity of location, design, setting, material, workmanship, feeling and association. The Elijah Smith House is considered eligible for listing on the National Register along with the Nathan Mayhew Gravestone (CHL.802).

Recommended Determination - No Adverse Effect. This property is oriented to the south as part of historically utilizing natural light. The setting of this resource, and its viewshed, would be altered through the introduction of new elements, however existing modern buildings are already within the viewshed. Additionally, existing buildings and structures as well as topography and vegetation partially screen the WDA from view.

A comparison of historic aerials from 1936 to the present demonstrates dramatic changes to the setting of this property and surrounding area including dramatic shoreline erosion. Historic aerials show that mature vegetation historically existed between the Elijah Smith House and the waterline obstructing view to the south toward the WDA. Additionally, in the late 20th century new homes were constructed along Quitsa Lane between it and the ocean further obstructing the viewshed to the WDA. A water view therefore is not historically associated with the setting of this property. Given the lack of historical association with a water view and partial obstruction of view to the WDA, no adverse effects are anticipated to the setting of this property and National Register eligibility Criteria A and C will not be affected.

Nathan Mayhew Gravestone (CHL.802) 1 Quitsa Lane, Chilmark

The slate headstone and footstone of Nathan Mayhew was laid following Mayhew's death in 1760. Son of Captain Jeramiah and Deborah Smith Mayhew, Nathan was buried on the property of his uncle Elijah Smith (Elijah Smith House / CHL.39). The gravestones are significant under Criterion A and Criterion C as 18th century grave markers and contribute to the 18th century setting of the Elijah Smith House as well as their association with the prominent Mayhew family. The markers retain integrity of location, design, setting, material, workmanship, feeling and association.

Recommended Determination - No Adverse Effect. Due to the location and orientation of the gravestones as well as existing vegetation and buildings, visibility of the WDA (if possible) will be limited due to intervening buildings and vegetation. The gravestones are located at the rear of the Elijah Smith House, with the building between them and the WDA to the south. The Elijah Smith House therefore provides an obstruction to the southern view as do other buildings along Quitsa Lane and mature vegetation. The WDA will have no adverse effect on the setting of the gravestones or National Register eligibility Criteria A and C.

Elliot Mayhew House (CHL.12) 1 Greenhouse Lane, Chilmark

The two-story Greek Revival residence was constructed ca. 1850 for E. Elliot Mayhew, a local store owner, postmaster, and property owner. Mayhew donated land for Chilmark's Methodist Church, South Town Pound and started the first Chilmark Library in his store. The side gable five-bay by two-bay wide house features a rectangular footprint with rear ell. The asymmetrical façade is dominated by a two-story square central portico, enhanced with a carved balustrade. The house is significant under Criteria A and C as a fine example of a Greek Revival style residence and its association with the locally prominent Mayhew family. The house retains integrity of location, design, setting, material, workmanship, feeling and association.

Recommended Determination -No Adverse Effect. While the WDA may be partially visible in leaf off conditions, its view is largely obstructed by intervening buildings and structures and vegetation. View of the Elliot Mayhew House from State Road and Greenhouse Lane will not be affected. A review of historic aerial photographs shows that historically farmland existed between the property and the waterline and would have provided a view toward the WDA. By the late 20th century this area had been developed with new residences and vegetation and mature trees and buildings now obstruct view toward the WDA. National Register Criterion A will not be affected. National Register Criterion C as it relates to setting may be affected, however the setting of this property at present is significantly different from its historic setting and a potential partial view of the WDA would not adversely affect its eligibility.

Chilmark Town Pound (CHL.902) State Road, Chilmark

Constructed in 1877 the Chilmark Town Pound was used to contain stray horses, cattle and sheep. The rectangular structure is composed of large and medium sized field stones and features an opening of two large cut granite pillars supporting a cut granite lintel. The pound is significant under Criterion A for its association with the town's agricultural economy, a prominent factor in the town into the 20th century. The pound is significant under Criterion C as an example of an intact 19th century town pound and the stone walls of the pound retain a high degree of integrity. The structure retains integrity of location, design, setting, material, workmanship, feeling and association.

Recommended Determination - No Effect. The view toward the WDA is obstructed by topography and vegetation, therefore, the WDA will have no effect on this National Register eligible resource.

James Moshure House (CHL.54) 19 State Road

The two-story Queen Anne house was constructed ca. 1890 for prominent 19th century stonemason James Moshure, known for the construction of the Captain Ephraim Poole Farm in Chilmark. The Moshure house was later owned by Ernest and Inez Mayhew, a lobsterman and fisherman. In the late 20th century, the house operated as a dormitory for the employees of Chilmark Chocolates. The building is significant under Criterion A for its association of the development along State Road and Chilmark. In addition, the house is significant under Criterion C as a fine example of a simple late 19th century Queen Anne style house, retaining the character defining feature of a one-story porch with foliate brackets. The building retains integrity of location, design, setting, material, workmanship, feeling and association.

Recommended Determination - No Effect. The view toward the WDA is obstructed by vegetation and therefore the WDA will have no effect on this National Register eligible resource.

Captain Ephraim Poole Farm (CHL.B) 14 Menemsha Crossroad, Chilmark

The 19th century farm complex includes several stone buildings, an uncommon building material in Chilmark. The one-and-a-half story stone Greek Revival Ephraim Pool House was constructed by local stonemason James Moshure. The complex represents one of the finest examples of stone work and stone buildings in Chilmark. The complex was constructed after a four year period for Captain Ephraim Poole, a whaling captain. The farm showcases the wealth obtained by whaling captains in Chilmark at the time of its construction. The Captain Ephraim Poole Farm is significant under Criterion A for its association with the Chilmark and Martha's Vineyard whaling industry. The complex is significant under Criterion C as an example of a 19th century farm complex with Greek Revival house, barn privy, corn crib and stone walls. The complex retains integrity of location, design, setting, material, workmanship, feeling and association.

Recommended Determination - No Effect. The view toward the WDA is obstructed by vegetation and therefore the WDA will have no effect on this National Register eligible resource.

Chilmark Town Center (CHL.D) Roughly bounded by Middle Road and South Road, Chilmark

The Chilmark Town Center encompasses the civic and religious center of the town including; the 1902 Town Hall, the ca. 1790 William Tilton House (Public Library), the ca. 1843 Methodist Church, ca. 1843 Chilmark Methodist Parsonage, and the ca. 1890 Hiram O. Poole House. Originally concentrated in the eastern part of town, the civic and institutional focus shifted to the west at the end of the 19th century as the settlement growth increased in the Squibnocket and Menemsha areas. The area is eligible under Criterion A for its association with the development and evolution of Chilmark. The area is also eligible under Criterion C as a fine collection of Greek Revival and Queen Anne architectural style civic and religious buildings. The area retains integrity of location, design, setting, material, workmanship, feeling and association. Chilmark Town Center has been determined to be eligible for listing on the National Register of Historic Places by the Massachusetts Historical Commission.

Recommended Determination - No Effect. The view toward the WDA is obstructed by vegetation; therefore the WDA will have no effect on the National Register eligible Chilmark Town Center.

Martha's Vineyard American Revolution Battlefield (CHL.E) Centered Along South Road in Chilmark

The Martha's Vineyard American Revolution Battlefield is significant under Criteria A and C as a collection of historic properties dating from the 18th century associated with the 1778 British raid, with later 19th and 20th century infill properties together forming a National

Register eligible district. The Martha's Vineyard American Revolution Battlefield incorporates the towns of Vineyard Haven, Tisbury and Chilmark. The boundary begins at the intersection of North, South, and Vineyard Haven Roads and encompasses much of the southwestern British route. The raid represents the most significant event of the Revolution on Martha's Vineyard. The British seized all of the island's arms and destroyed the majority of the vessels, therefore preventing island residents from serving as soldiers in the remainder of the war and greatly impacted the island's economy. The Battlefield is significant under Criterion A for its association with the 1778 British raid and Criterion C as a collection of 18th century residences with later 19th century and 20th century infill properties. Significant architectural styles represented include Cape, Georgian and Greek Revival. Also included in the eligible district is the Able Hill Cemetery established in 1717. Despite some intrusions of later development, the eligible district retains integrity of location, design, setting, material, workmanship, feeling and association.

Recommended Determination - No Adverse Effect. This eligible district is a three mile long area, connecting to other sections throughout Martha's Vineyard. From select locations within the area, the WDA is visible; however, the overall character of such a large area will not be adversely affected. The vast majority of the viewshed along South Road to the WDA is obstructed. Select locations where the WDA would be partially visible include Photo location #12 (Allen Farm, 421 South Road, Chilmark), Photo location #11 (322 South Road, Chilmark), and Vincent Mayhew House (CHL.A, 451 South Road, Chilmark). In each of these instances only a partial view of the WDA from State Road is possible through gaps in existing tree growth. Additionally, existing powerlines and other modern elements are already within the foreground of the viewshed as opposed to the WDA, which will be only be partially visible, far off on the horizon. Criterion A will not be affected by the proposed Project. Criterion C as it relates to setting will be affected, but the WDA will not adversely affect the character of this National Register eligible district due to the isolated instances (only in ideal weather conditions) where the WDA will be partially visible.

Vincent Mayhew House (CHL.A) 451 South Road, Chilmark

The Vincent Mayhew House contains a group of buildings from the early 20th century and one from the late 17th century collectively listed as a National Register district. The one-and-a-half story Colonial Cape house was constructed in ca. 1690 for Nathan Skiff and has a rectangular footprint with a rear ell. The side gable house is five-bays by three bays wide and features asymmetrical façade with an off centered door. Originally constructed as a half-house it was enlarged by Nathan Skiff in ca. 1700. The house was sold in 1731 to Simon Mayhew and remained in the Mayhew family into the 19th century when it was sold to Herman Vincent, remaining in the Vincent family into the 20th century. The house was purchased by a group of artists and writers in 1919 to form a summer retreat community. The house is significant under Criterion A as a reflection of Chilmark's agricultural history from the colonial period to the 20th century as well as its association as a vacation

destination of the 20th century. The property is also significant under Criterion C as an example of an early Chilmark farmstead. The property retains integrity of location, design, setting, material, workmanship, feeling and association.

Recommended Determination - No Adverse Effect. This property is oriented to the south as part of historically utilizing natural light. The setting of this resource, and its viewshed, would be altered through the introduction of new elements, however existing mature tree growth largely screens the WDA from view. Directly south from the property across from 2 Rogers Lane is a modern residence constructed approximately 1998, and mature tree growth is located to its south and west. To the east of 2 Rogers Lane is a large open field with views toward the WDA. From the southeast corner of the property of the Vincent Mayhew House, a partial view toward the WDA is possible to the southeast across the open field. A view southward from the house itself to the WDA is obstructed by vegetation. Photo-simulation 6 provides a view from across South Road (but not directly in front of the Vincent Mayhew House) and is useful for reference, but does not take into account the viewshed directly from the property. Views of the property to the north, west and east will not be affected, only a portion of the southeast view. Additionally, existing powerlines and other modern elements are already within the foreground of the viewshed as opposed to the WDA, which will be only be partially visible, far off on the horizon. Criterion A will not be affected and Criterion C as it relates to the WDA has the potential to impact the setting of this National Register listed resource, however the effects are minimized by obstructing vegetation and the extreme angle necessary to view the WDA; therefore, no adverse effects are anticipated.

Captain Samuel Hancock House (CHL.35) 141 Quansoo Road, Chilmark

Historical maps show a house at this location as early as the 1790s, under the ownership of James Hancock. The house continued in the Hancock-Mitchell family until the 1980s. The building is eligible under Criterion A for its association with local maritime history and Criterion C as a rare intact example of early timber frame architecture in Chilmark. The building retains integrity of location, design, setting, material, workmanship, feeling and association. The Massachusetts Historical Commission has determined this property eligible for listing on the National Register.

Recommended Determination - No Effect. Due to the vegetation which obstructs the view toward the WDA, the project will have no effect on this National Register eligible resource.

Experience Mayhew House (CHL.36) 11 Quenames Road, Chilmark

The Experience Mayhew House was constructed in the late 17th century by Experience Mayhew, son of John Mayhew the first European settler in Chilmark. The one-and-a-half story main block extends to a gable roof with a one-story north ell forming a modified L-shaped footprint. The house is significant under Criterion A for its association with the maritime community and one of the island's founding families. In addition, the house

meets Criterion C as an 18th century example of Cape style architecture. Despite later alterations, the house retains integrity of location, design, setting, material, workmanship, feeling and association.

Recommended Determination - No Effect. The view toward the WDA from this resource is obstructed by vegetation. Although fields are immediately around the property, a mature treeline exists to the south, which obstructs view, therefore, the WDA will have no effect on this National Register eligible resource.

Edgartown Village Historic District (EDG.A) Roughly bound by Katama Bay Main Street, Peases Point Way, Planting Field Way

The Edgartown Village Historic District is listed on the National Register of Historic Places. The District comprises the historic town center of Edgartown along Edgartown Harbor. The district is historically associated with the early settlement of Martha's Vineyard, the development of whaling as the Island's principal business during the 19th century and the establishment of summer tourism as a major element in the local economy at the end of the 19th and the beginning of the 20th century. The District contains homes of individuals who were regionally prominent in the whaling trade such as Captain Valentine Pease (whom Herman Melville sailed with) and Dr. Daniel Fisher who operated a whale oil and candle factory. The Edgartown Village Historic District meets Criteria A, B and C of the National Register of Historic Places, and possesses integrity of location, design, setting, materials, workmanship, feeling and association from its several periods of development. The District is significant in particular for its association with the Colonial era as well as the Romantic and Victorian architectural periods including some of Martha's Vineyard's finest architectural examples of 18th, 19th and early 20th century designs including buildings in Federal, Greek Revival, Italianate Queen Anne and Colonial Revival styles.

Recommended Determination - No Adverse Effect. The maritime setting of this resource, and its viewshed, will be altered through the introduction of new elements. Edgartown is an historic port community and the view to the ocean via Katama Bay is integral to its character and setting, however, existing buildings and structures as well as topography and vegetation largely screen the WDA from view. The dense compact nature of the District with its multi-story buildings effectively screens the WDA from the majority of the District. Areas along the perimeter of the District at Edgartown Harbor would be able to view a small portion of the WDA in ideal weather conditions, but the vast majority of the WDA is also screened by Katama Point to the south with its buildings and mature tree growth. View of the District to the north, east and west will not be affected by the project. Only at select locations at the northern end of the district and along Edgartown Harbor will it be possible to view the WDA and the District southward simultaneously. The presence of multistory buildings along the Harbor also screens view of the WDA unless at or in close proximity to the waterline facing south.

The center of the District on Edgartown Harbor is 27.9 km (17.34 mi) from the WDA at its closest point. On average, 24% of the time in a given year due to weather conditions, visibility from Martha's Vineyard is less than 16 km (10 mi) , as measured at Martha's Vineyard Airport 29.7 km (18.5 mi) from the WDA . This means that at least one out of every four days on average the WDA will not be visible. In addition to general weather conditions other factors such as haze and seaspray may further reduce visibility. With only partial visibility of the WDA possible from select locations within the District and variable visibility of the WDA dependent upon weather conditions, no adverse effects to the setting of the District are anticipated.

Edgartown Village Historic District (EDG.B) Roughly bound by Katama Bay Main Street, Peases Point Way, Planting Field Way

Edgartown Village District is listed on the State Register of Historic Places and considered eligible for listing on the National Register as a boundary increase to the Edgartown Village National Register Historic District (EDG.A). The eligible District is predominantly characterized by the development of early 20th century residences associated with the rise of Martha's Vineyard and Edgartown as a summer residence and tourist destination. The District is significant under Criteria A and C as a collection of early 20th century residences and pattern of development in Edgartown including examples of Colonial Revival, Cape and Ranch as well as some scattered 19th century buildings in Greek Revival and Queen Anne styles. Despite some intrusions in the form of modern buildings, the District retains integrity of location, design, setting, material, workmanship, feeling and association.

Recommended Determination - No Adverse Effect. The maritime setting of this resource, and its viewshed, would be altered through the introduction of new elements. Edgartown is an historic port community and the view to the ocean via Katama Bay is integral to its character and setting, however existing buildings and structures as well as topography and vegetation largely screen the WDA from view. The dense compact nature of the District with its multi-story buildings effectively screens the WDA from the majority of the District. Areas along the perimeter of the District at Edgartown Harbor would be able to view a small portion of the WDA in ideal, weather conditions, but the vast majority of the WDA is also screened by Katama Point to the south with its buildings and mature tree growth. View of the District to the north, east and west will not be affected by the project. Only at select locations at the northern end of the district and along Edgartown Harbor will it be possible to view the WDA and the District southward simultaneously. The presence of multistory buildings along the Harbor screens view of the WDA unless at or in close proximity to the waterline facing south.

The District on Edgartown Harbor is approximately 27.9 km (17.34 mi) from the WDA at its closest point. On average, 24% of the time in a given year due to weather conditions, visibility from Martha's Vineyard is less than 16 km (10 mi) taken at Martha's Vineyard Airport 29.7 km (18.5 mi) from the WDA at Martha's Vineyard. This means that at least one out of every four days on average the WDA will not be visible. In addition to general

weather conditions other factors such as haze and seaspray may further reduce visibility. With only partial visibility of the WDA possible from select locations within the District and variable visibility of the WDA dependent upon weather conditions, no adverse effects to the setting of the District are anticipated.

5.1.3 Martha's Vineyard National Register Ineligible Properties Viewshed Assessments

Table 5-2 provides the viewshed assessment for national register ineligible properties on Martha's Vineyard.

Table 5-2 Martha's Vineyard National Register Ineligible Properties Viewshed Assessments

Property Name	MHC#	Address	Designation / Eligibility Recommendation	Recommended Determination
71 Moshup Trail	GAY.31	71 Moshup Trail	INV / Not eligible	No significant properties affected. Due to location and orientation of this resource, as well as existing vegetation, visibility of the WDA (if possible) will be limited.
Hariph's Creek Bridge	CHL.900	State Road, Chilmark	INV / not eligible, demolished	N/A, resource demolished.
Benjamin Lambert House	CHL.55	51 State Road	INV / not eligible, demolished	N/A, resource demolished.
Pricilla Hancock House	CHL.37	142 Quenames Road, Chilmark	INV / not eligible	No significant properties affected, ocean viewshed obstructed by vegetation.
Russell Hancock House	CHL.38	146 Quenames Road, Chilmark	INV / not eligible	No significant properties affected. Due to location and orientation of this resource as well as existing vegetation, visibility of the WDA (if possible) will be limited.
Scrubby Neck Schoolhouse	WTI.170	330 Long Point Road	INV / not eligible	No significant properties affected. Due to location and orientation of this resource as well as existing vegetation and topography, visibility of the WDA will be limited.

***Designation Legend**

NHL	National Historic Landmark
NRIND	Individually listed on the National Register of Historic Places
NRDIS	National Register of Historic Places Historic District
NRDOE	Determined eligible for inclusion in the National Register of Historic Places
NHL	National Historic Landmark
SR	State Register of Historic Places
LHD	Local Historic District
LL	Local Landmark
INV	Individually included in the Inventory of Historic and Archaeological Assets of the Commonwealth
INV Area	Area included in the Inventory of Historic and Archaeological Assets of the Commonwealth

5.2 Nantucket Viewshed Assessments

5.2.1 *Nantucket, Tuckernuck and Muskeget Islands Historic Property Index*

The following is a list of properties evaluated for significance and effects on Nantucket, Tuckernuck and Muskeget Islands.

Table 5-3 Nantucket, Tuckernuck and Muskeget Islands Historic Property Index

Property Name	MHC#	Address	Designation / Eligibility Recommendation	Photosimulation (Yes/No)
Nantucket Historic District	NAN.D	Nantucket Island	NHL	Yes, Simulations 1-18
Nantucket Historic District	NAN.F	Tuckernuck Island	NHL	No
Nantucket Historic District	NAN.D	Muskeget Island	NHL	No

***Designation Legend**

NHL	National Historic Landmark
NRIND	Individually listed on the National Register of Historic Places
NRDIS	National Register of Historic Places Historic District
NRDOE	Determined eligible for inclusion in the National Register of Historic Places
NHL	National Historic Landmark
SR	State Register of Historic Places
LHD	Local Historic District
LL	Local Landmark
INV	Individually included in the Inventory of Historic and Archaeological Assets of the Commonwealth
INV Area	Area included in the Inventory of Historic and Archaeological Assets of the Commonwealth

5.2.2 *Nantucket, Tuckernuck and Muskeget Islands Historic Property Viewshed Assessments*

The Nantucket Historic District (NAN.D) comprises the entire islands of Nantucket, Tuckernuck and Muskeget and is a National Historic Landmark. The nomination notes for the Island of Nantucket (NAN.D) its early development in the 17th and 18th centuries including the development of the downtown area and village of Siasconset with their collection of 17th and 18th century architecture. However, significant historic development occurred during the early to mid-19th century as a result of fires and rebuilding in downtown as well as the rise of the whaling industry, which Nantucket became famous for. Nantucket retains a mixture of significant architectural styles from the 17th through the 20th centuries. The District is significant under Criterion A for its association with the development of Nantucket and the whaling industry, Criterion C for excellent architectural examples including Georgian, Federal, Greek Revival, Italianate, Shingle and Colonial Revival and Criterion D for the potential archaeological remains associated with Native

American pre and post contact use as well as historical archaeology. Despite modern construction and intrusions in the District, it retains integrity of location, design, setting, material, workmanship, feeling and association.

Recommended Determination - No Adverse Effect. National Register Eligibility Criteria A and D would not be affected by the proposed project. Criterion C as it relates to the setting of the District would be affected. The maritime setting of this resource, and its viewshed, would be altered through the introduction of new elements. However, existing buildings and structures as well as topography and vegetation screen the WDA from view from the majority of Nantucket away from the southern shoreline. The historic downtown area where the majority of the historic buildings are concentrated is not within the potential viewshed of the WDA due to distance and intervening topography, buildings and vegetation. Additionally, while the shoreline at the southern end of Siasconset is within the potential viewshed of the WDA, it is only at an extreme angle viewing southwest and does not include the village core with its historic buildings. The areas at the northern half of the island with the exception of the extreme end of Great Point are also not within the potential viewshed of the WDA.

For areas within the potential viewshed of the WDA, such as along the southern and southwest ends of the island, the setting will be altered, however distance and weather will minimize the effect to partial visibility only in ideal weather conditions. The WDA at its closest point to Nantucket at Esther Island (southwest corner of Nantucket) is 23.7 km (14.7 mi) away. On average 32% of the time in a given year, visibility from Nantucket is less than 16 km (10 mi). Therefore at least one out of every three days the WDA would not be visible. Additionally, on an annual average basis, visibility due to weather from Nantucket is 37.3 km (23.2 mi) as measured from the Nantucket Airport, which is 31.4 km (19.5 mi) away from the WDA. In addition to general weather conditions, other factors such as haze and seaspray may further reduce visibility. This suggests that on average even when visible at its closest point to the WDA (Esther Island) potentially only the first eight rows of the WDA would be visible, with the number of visible rows decreasing the further east or north the observer is located on Nantucket. For example: the WDA is 37.5 km (23.3 mi) from Low Beach in Siasconset reducing the number of potential visible rows of WTGs to the first row (if at all). The visible rows will also decrease due to closer rows obstructing the view of the rows to the rear. Additionally, while it is possible to view the WDA and the District in the same southern view at select inland locations on Nantucket, for the majority of the views of the District including to the north, east and west, the WDA will not be visible or only visible at an extreme angle far off at the horizon line. Simulation 13 provides an example of this circumstance.

Tuckernuck Island

Tuckernuck Island (NAN.F) is part of the Nantucket National Landmark District and contains a small collection of 19th and 20th century buildings. Due to the low topography on the island, the entirety is considered within the potential viewshed of the WDA. Like

Nantucket it is largely known for its 19th century architecture and benefited from the rise of the whaling industry. Tuckernuck's eligibility criteria are the same for the island of Nantucket as they are part of the same district, but its architectural timespan is shorter starting with examples dating to the early 19th century.

Recommended Determination - No Adverse Effect. National Register Eligibility Criterion A and D would not be affected by the proposed project. Criterion C as it relates to the setting of the District would be affected. Located just off the western shore of Nantucket, Tuckernuck Island is expected to have the same visibility as areas along Nantucket's southern shoreline. It is expected that the setting will be altered as a result of the WDA, however distance and weather will minimize the effect to partial visibility only in ideal weather conditions.

The WDA at its closest point to Tuckernuck Island is 22.1 km (13.7 mi) away, a similar distance as Nantucket, but slightly closer. On average 32% of the time in a given year, visibility from Nantucket is less than 16 km (10 mi). Using weather and visibility data from Nantucket as a baseline, at least one out of every three days the WDA would not be visible from Tuckernuck Island due to weather conditions. In addition to general weather conditions, other factors such as haze and seaspray may further reduce visibility. On an annual average basis, visibility from Nantucket is 37.3 km (23.2 mi) as measured from the Nantucket Airport, which is 31.4 km (19.5 mi) away from the WDA. Assuming the same visibility from Tuckernuck Island, this suggests that on average even when visible, only the first ten rows of the WDA would potentially be visible. The visible rows will also decrease due to closer rows obstructing the view of the rows to the rear.

Muskeget Island

Muskeget Island (NAN.D) is a separate island but also a part of the Nantucket National Landmark Historic District. The island is largely devoid of structures with only one building a ca. 1910 former Coast Guard boathouse, used as a summer residence. Muskeget's eligibility criteria are the same for the island of Nantucket as they are part of the same district, but its architectural timespan is shorter starting with only one surviving building, the former Coast Guard boathouse.

Recommended Determination - No Adverse Effect. National Register Eligibility Criterion A and D would not be affected by the proposed project. Criterion C as it relates to the setting of the District would be affected. Located off the western shore of Nantucket, Muskeget Island is expected to have the same visibility as areas along Nantucket's southern shoreline. It is expected that the setting will be altered as a result of the WDA, however distance and weather will minimize the effect to partial visibility only in ideal weather conditions.

The WDA at its closest point to Muskeget Island is 23.5 km (14.6 mi) away, a similar distance as Nantucket, but slightly closer. On average 32% of the time in a given year, visibility from Nantucket is less than 16 km (10 mi). Using weather and visibility data from

Nantucket as a baseline, at least one out of every three days the WDA would not be visible from Muskeget Island due to weather conditions. In addition to general weather conditions, other factors such as haze and seaspray may further reduce visibility. On an annual average basis, visibility from Nantucket is 37.3 km (23.2 mi) measured from the Nantucket Airport, which is 31.4 km (19.5 mi) away from the WDA. Assuming the same visibility from Muskeget Island, this suggests that on average even when visible, only the first eight rows of the WDA would potentially be visible. Visible rows will also decrease due to closer rows obstructing the view of the rows to the rear.

5.3 Nantucket Sound Viewshed Assessments

5.3.1 *Nantucket Sound Historic Property Index*

The following is a list of properties evaluated for significance and effects in Nantucket Sound.

Table 5-4 Nantucket Sound Historic Property Index

Property Name	MHC#	Address	Designation / Eligibility Recommendation	Photosimulation (Yes/No)
Nantucket Sound	Varies, shown on maps as YAR.917, BRN.9072 and EDG.907	NA	NRDOE	Yes, Simulations 18-20

***Designation Legend**

NHL	National Historic Landmark
NRIND	Individually listed on the National Register of Historic Places
NRDIS	National Register of Historic Places Historic District
NRDOE	Determined eligible for inclusion in the National Register of Historic Places
NHL	National Historic Landmark
SR	State Register of Historic Places
LHD	Local Historic District
LL	Local Landmark
INV	Individually included in the Inventory of Historic and Archaeological Assets of the Commonwealth
INV Area	Area included in the Inventory of Historic and Archaeological Assets of the Commonwealth

5.3.2 *Nantucket Sound Historic Property Viewshed Assessment*

Nantucket Sound (Varies, shown on maps as YAR.917, BRN.9072 and EDG.907)

Nantucket Sound has been determined eligible for listing on the National Register by the Keeper of the National Register. Roughly bound by Vineyard Sound, Cape Cod, Martha's Vineyard and Nantucket. The boundary for the National Register eligible property of Nantucket Sound as it relates to other waterways has not been fully defined. The Keeper in her review of eligibility criteria determined that

"Nantucket Sound is eligible for listing in the National Register as a traditional cultural property and as an historic and archeological property associated with and that has yielded and has the potential to yield important information about the Native American exploration and settlement of Cape Cod and the Islands. Although the exact boundary is not precisely defined, this determination answers the question for the area that prompted the request for this determination, the Sound itself. The Sound is eligible as an integral, contributing feature of a larger district, whose boundaries have not been precisely defined, under:

- ◆ *Criterion A for its associations with the ancient and historic period Native American exploration and settlement of Cape Cod and the Islands, and with the central events of the Wampanoags' stories of Maushop and Squant/Squannit;*
- ◆ *Criterion B for its association with Maushop and Squant/Squannit;*
- ◆ *Criterion C as a significant and distinguishable entity integral to Wampanoags' folklife traditions, practices, cosmology, religion, material culture, foodways, mentoring, and narratives; and,*
- ◆ *Criterion D for the important cultural, historical, and scientific information it has yielded and/or may be likely to yield through archeology, history, and ethnography about access to resources, patterns of settlement, mobility, and land use prior to and after 6,000 years ago as a result of the inundation of the Sound. It is also important for the significant information it provides and can provide about the cultural practices and traditions of the Native Americans of Cape Cod and the Islands in relationship with other peoples since ancient times."*

Recommended Determination - No Adverse Effect. Visual simulations from Nantucket and Cape Cod demonstrate the WDA will only be visible at the southern end of the Sound via a narrow view corridor between Nantucket and Martha's Vineyard. Views of Nantucket Sound to the north, east and west from within the Sound on onshore will not be affected. For the majority of Nantucket Sound, the WDA will not be visible. Additionally, there will be no visual effect for undersea cables. For the southern view, visibility of the WDA will be intermittent depending upon weather conditions and the WDA would only be visible slightly above the horizon line.

National Register Eligibility Criteria A, B and D would not be affected by potential visibility of the WDA. National Register Criterion C, typically for aspects of design related to the built environment for this Historic Property reference historic use and practices within Nantucket Sound, which will not be affected by the WDA. In particular the area of most importance between the islands of Martha's Vineyard, Nantucket and Cape Cod will have minimal to no visibility of the WDA as the islands themselves obstruct its view.

5.4 Cuttyhunk Island Viewshed Assessments

5.4.1 *Cuttyhunk Island Historic Property Index*

The following is a list of properties evaluated for significance and effects on Cuttyhunk Island.

Table 5-5 Cuttyhunk Island Historic Property Index

Property Name	MHC#	Address	Designation / Eligibility Recommendation	Photosimulation (Yes/No)
Cuttyhunk Cemetery	GOS.800	Cemetery Road, Cuttyhunk	INV / MHC determined eligible	No
U. S. Coast Guard Boathouse and Wharf	GOS.1	Cuttyhunk Island	INV / MHC determined eligible	No
Cuttyhunk Union Methodist Church	GOS.2	75 Tower Hill Road, Cuttyhunk Island	INV / MHC determined eligible	No

***Designation Legend**

NHL	National Historic Landmark
NRIND	Individually listed on the National Register of Historic Places
NRDIS	National Register of Historic Places Historic District
NRDOE	Determined eligible for inclusion in the National Register of Historic Places
NHL	National Historic Landmark
SR	State Register of Historic Places
LHD	Local Historic District
LL	Local Landmark
INV	Individually included in the Inventory of Historic and Archaeological Assets of the Commonwealth
INV Area	Area included in the Inventory of Historic and Archaeological Assets of the Commonwealth

5.4.2 *Cuttyhunk Island Historic Property Viewshed Assessments (see Figure 5-1)*

Cuttyhunk Cemetery (GOS.800) Cemetery Road

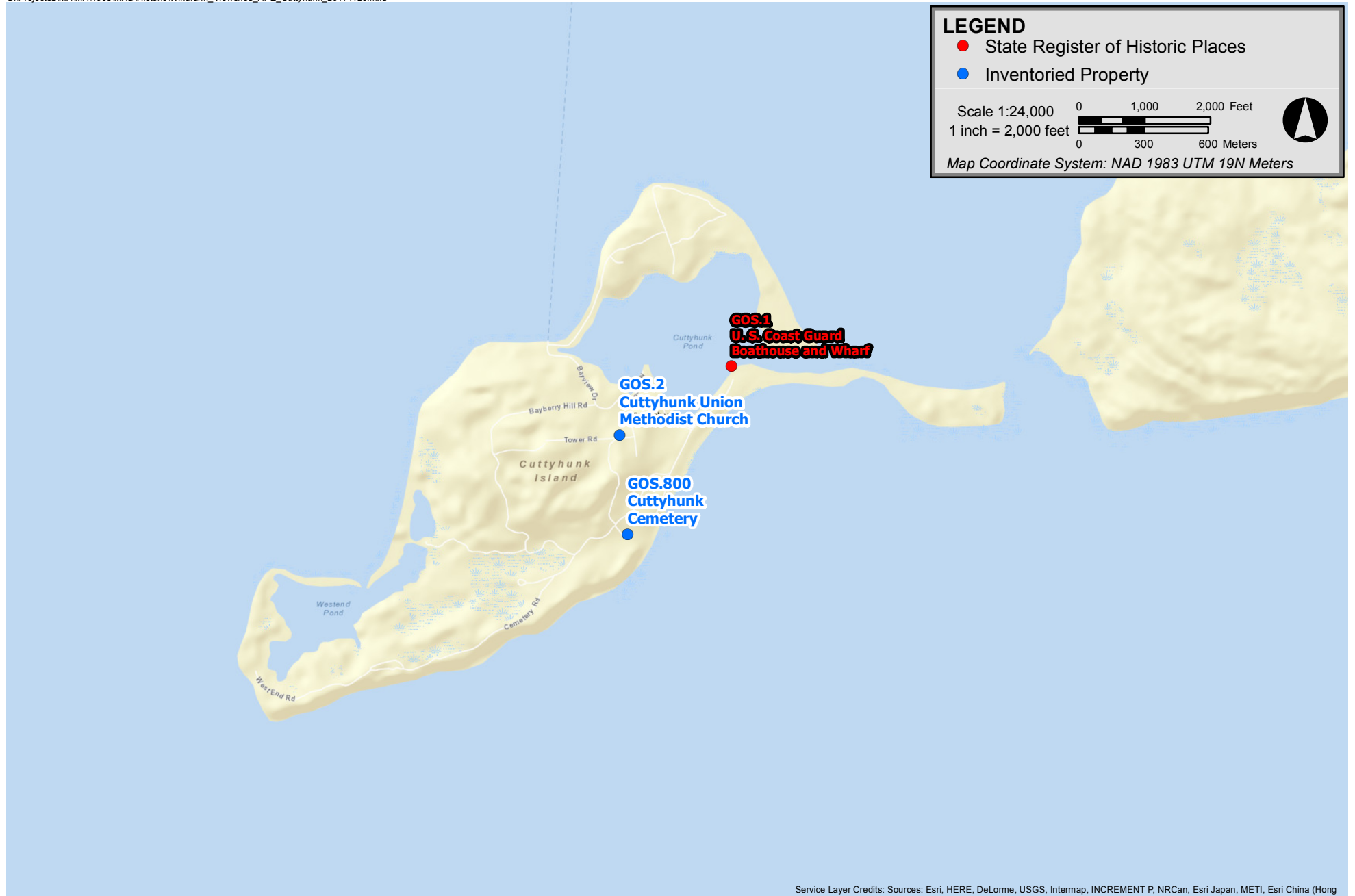
The Cuttyhunk Cemetery was determined eligible for listing on the National Register of Historic Places by the Massachusetts Historical Commission. The only cemetery on the island, the Cuttyhunk Cemetery has been in continued use since settlement of the island in 1693. The cemetery reflects the island's history of pilots, fishermen, lifesavers, lighthouse keepers, town politicians, war veterans, teachers, storekeepers and summer residents. Featuring a variety of types of markers designs, and epitaphs the cemetery reflects burial practices of over 200 years. The cemetery is significant under Criterion A and B for its connection to the island's residents and their contributions to the social history of the maritime community. The cemetery is significant under Criterion D for its potential archeological contributions. The cemetery retains integrity of location, design, setting, material, workmanship, feeling and association.

Recommended determination - No Effect. Due to location and orientation of this resource as well as existing vegetation and topography, visibility of the WDA will be extremely limited. Only a narrow view corridor to the WDA is possible between Nomans Island and Martha's Vineyard. Cuttyhunk Island is approximately 47.9 km (29.81 mi) from the WDA and beyond the range at which the ESPs and nacelles of the WTs would be visible. Based on simulations at a similar distance (Simulation 19, Popponesset Beach, Mashpee) conducted on Cape Cod, the WDA will not be discernible.

U. S. Coast Guard Boathouse and Wharf (GOS.1) Cuttyhunk Island

The U. S. Coast Guard Boathouse and Wharf was determined eligible for listing on the National Register by the Massachusetts Historical Commission. The U.S. Coast Guard Boathouse is a one-a-half story Colonial Revival style boat house featuring a simple wood cornice, soffit, and cornerboards. The front door is enhanced by a pediment entrance surround supported by paired pilaster and sidelights. In 1847 by the Massachusetts Humane Society equipped with supplies, lifeboats, and surfboats for sea rescue. By 1915, the U.S. Life-Saving Service and the Revenue Cutter Service joined together to form the U.S. Coast Guard. The present boathouse constructed in 1939 is the third on Cuttyhunk. The building is significant under Criterion A for its association with the Cuttyhunk Island's maritime history and Criterion C as an example of a Colonial Revival style boat house. The building retains integrity of location, design, setting, material, workmanship, feeling and association.

Recommended determination - No Effect. Due to location and orientation of this resource as well as existing vegetation and topography, visibility of the WDA will be extremely limited. Only a narrow view corridor to the WDA is possible between Nomans Island and Martha's Vineyard. Cuttyhunk Island is approximately 47.9 km (29.81 mi) from the WDA



and beyond the range at which the ESPs and nacelles of the WTGs would be visible. Based on simulations at a similar distance (Simulation 19, Popponesset Beach, Mashpee) conducted on Cape Cod, the WDA will not be discernible.

Cuttyhunk Union Methodist Church (GOS.2) 75 Tower Hill Road

The Cuttyhunk Union Methodist Church was determined eligible for listing on the National Register by the Massachusetts Historical Commission. Constructed in 1881, the Cuttyhunk Union Methodist Church is a one-story wood shingled clad structure with a cut stone granite foundation. A bell-tower capped by a bass weathervane extends from the east end of the church's gable roof. The church was dedicated in July 1881 by the Reverend John S. Bell, the first Methodist minister on the island. The Church became an Episcopal church in the 1960s, and at this time received permission from Cardinal Cushing to hold Roman Catholic services at the church. The Church has had a great impact on the town with the founding of a Recreation Center, a First Aid Supply Center, an Ecumenical Center and sponsorship of the Cuttyhunk Historical Center. The Church is significant under Criterion A and C for its association with the development of the town of Gosnold and as an example of a local vernacular church building. The Church retains integrity of location, design, setting, material, workmanship, feeling and association.

Recommended determination - No Effect. Due to location and orientation of this resource as well as existing vegetation and topography, visibility of the WDA will be extremely limited. Only a narrow view corridor to the WDA is possible between Nomans Island and Martha's Vineyard. Cuttyhunk Island is approximately 47.9 km (29.81 mi) from the WDA and beyond the range at which the ESPs and nacelles of the WTGs would be visible. Based on simulations at a similar distance (simulation 19 Popponesset Beach, Mashpee) conducted on Cape Cod, the WDA will not be discernible.

5.5 Mashpee Viewshed Assessments

5.5.1 Mashpee Historic Property Index

No National Register listed or eligible properties are within the potential viewshed of the WDA in Mashpee; therefore, Table 5-6 below (which provides a list of National Register ineligible properties in Mashpee) includes all historic properties in Mashpee reviewed in this assessment.

5.5.2 Mashpee Historic Property Viewshed Assessments

No National Register listed or eligible properties are within the potential Viewshed of the WDA. The one property within the potential Viewshed is recommended ineligible and discussed in 5.5.3.

5.5.3 *Mashpee National Register Ineligible Properties Viewshed Assessments*

Table 5-6 provides the viewshed assessment for national register ineligible properties in Mashpee.

Table 5-6 Mashpee National Register Ineligible Properties Viewshed Assessments

Property Name	MHC#	Address	Designation / Eligibility Recommendation	Recommended Determination
Popponesset Beach Area	MAS.F.900	Roughly bound by Shore Drive and Nantucket Sound, Mashpee	INV Area / Not eligible	No significant properties affected, visual simulations demonstrate the WDA will not be visible.

**Designation Legend*

NHL	National Historic Landmark
NRIND	Individually listed on the National Register of Historic Places
NRDIS	National Register of Historic Places Historic District
NRDOE	Determined eligible for inclusion in the National Register of Historic Places
NHL	National Historic Landmark
SR	State Register of Historic Places
LHD	Local Historic District
LL	Local Landmark
INV	Individually included in the Inventory of Historic and Archaeological Assets of the Commonwealth
INV Area	Area included in the Inventory of Historic and Archaeological Assets of the Commonwealth

5.6 Barnstable Viewshed Assessments

5.6.1 *Barnstable Historic Property Index*

The following is a list of properties evaluated for significance and effects in Barnstable.

Table 5-7 Barnstable Historic Property Index

Property Name	MHC#	Address	Designation / Eligibility Recommendation	Photosimulation Yes/No
William Gibbons Morse House	BRN.20 94	307 Ocean View Avenue	INV / NR eligible. Significant under Criteria A & C as an example of Colonial Revival architecture and development of summer residences in this area of Barnstable. Contributes to an expansion of BRN.K	No
Cotuit Highground	BRN.Y	Roughly bound by Ocean Avenue and Main Street Cotuit	INV Area / NR eligible. Significant under Criteria A & C as an example of late 19 th and early 20 th century architecture and development of summer residences in this area of Barnstable. Contributes to an expansion of BRN.K	No
Cotuit Historic District	BRN.K	Roughly bound by Main Street and Main Street Cotuit	NRDIS	No
Oyster Harbors	BRN.A Z	Osterville Rand Island	INV Area / NR eligible. Significant under Criteria A & C as a potential district consisting of early 20 th century residences in particular Shingle and Colonial Revival styles.	No
Osterville North and West Bays	BRN.A M	Roughly bound by Sea View Road, Osterville Rand Island and Cotuit Bay	INV Area / NR eligible as a much smaller area centered on Bridge Street. Significant under Criteria A & C as a collection of late 19 th and early 20 th century residences including two already listed. Exemplifies, Queen Anne, Shingle and Colonial Revival styles.	No
George Phelps House	BRN.20 36	821 Sea View Avenue	INV / NR eligible. Significant under Criteria A & C as an example of Victorian Eclectic style and development of summer residences.	No

Table 5-7 Barnstable Historic Property Index Continued

Richard Cross House	BRN.20 35	299 Sea View Avenue	INV / not eligible	No
Wianno Area	BRN.B B	Roughly bound by Wianno Avenue and Sea View Avenue	INV Area / NR eligible as a limited expansion of BRN.J. Significant as a collection of late 19th and early 20th century buildings including Shingle, Italianate and Queen Anne meeting Criteria A & C.	Yes, Simulation 20 in close proximity
Wianno Historic District	BRN.J	Roughly bound by Wianno Avenue and Sea View Avenue	NR DIS	Yes, Simulation 20 in close proximity
Willard P. Whittemore House	BRN.22 50	177 Long Beach Road	INV / not eligible	No
Harry Thayer House	BRN.22 49	169 Long Beach Road	INV / not eligible	No
Robert Orr House	BRN.22 48	157 Long Beach Road	INV / not eligible	No
Joseph Cardoze House	BRN.22 46	121 Long Beach Road	INV / not eligible	No
Herbert Brooks Crosby House	BRN.22 44	103 Long Beach Road	INV / not eligible	No
1060-1078 Craigville Beach Road	BRN.B D	1060-1078 Craigville Beach Road	INV / not eligible	No
1006 Craigville Beach Road	BRN.B G	1006 Craigville Beach Road	INV / not eligible	No
Christian Camp Meeting Association	BRN.22 08	915 Craigville Beach Road	INV / NR eligible. Significant under Criteria A & C as an example of mid-century Colonial Revival architecture and camp meeting association and rise of the automobile.	No

Table 5-7 Barnstable Historic Property Index Continued

William Covell Beach Marker	BRN.946	Craigville Beach Road	INV / not eligible	No
Hyannis Port Area	BRN.AS	Roughly Bound by Island Avenue, Squaw Island Road, Smith Street, Marston Avenue and Ocean Avenue	INV Area / NR eligible as small district along Scudder Ave and Craigville Beach Road. Significant under Criteria A & C as a collection of late 19 th century residences including Greek Revival, Colonial Revival and Victorian Eclectic and development of Hyannis Port.	No
Hyannis Port Historic District	BRN.E	Roughly bound by Squaw Island Road, Scudder Avenue, Hyannis Avenue and Ocean Avenue	NRDIS	No
Kennedy Compound	BRN.AJ	Roughly bound by Irving Avenue, Marchant Avenue and Nantucket Sound	NHL	No
William T. Beals House / Craigville General Store	BRN.2207	628 Craigville Beach Road	INV / not eligible	No
Phinney's Lane Area	BRN.AI	Centered along Phinney's Lane	INV Area / not eligible	No
Old Kings Highway Regional Historic District	BRN.O	Roughly bound by Rte 6 and Cape Cod Bay	SR / NR eligible. Significant under Criteria A & C as a collection of 18 th , 19 th , and early 20 th century residences including Federal, Greek Revival, Italianate, Queen Anne and Colonial Revival as well as the development of Cape Cod along its historic travel corridor.	No
Yarmouth Campground Historic District	BRN.AT	Roughly bound by Grace Avenue and Willow Street	NRDIS	No

***Designation Legend**

NHL	National Historic Landmark
NRIND	Individually listed on the National Register of Historic Places
NRDIS	National Register of Historic Places Historic District
NRDOE	Determined eligible for inclusion in the National Register of Historic Places
NHL	National Historic Landmark
SR	State Register of Historic Places
LHD	Local Historic District
LL	Local Landmark
INV	Individually included in the Inventory of Historic and Archaeological Assets of the Commonwealth
INV Area	Area included in the Inventory of Historic and Archaeological Assets of the Commonwealth

5.6.2 *Barnstable Historic Properties Viewshed Assessments*

Several National Register listed and eligible properties are within the potential viewshed of the WDA. Historic properties are summarized below. Through the use of visual simulations of the WDA and due to extreme distance, all Barnstable historic properties are considered too far distant to be affected by the WDA.

William Gibbons Morse House (BRN.2094) 307 Ocean View Avenue

The William Gibbons Morse House (BRN.2094) at 307 Ocean View Avenue is a significant example of a Shingle-style residence which harmonizes nicely with the surrounding seaside summer homes of Cotuit, many in the same style. The residence was designed by noted Shingle style architect William Ralph Emerson (1833-1917) and built by local builder Howard A. Dottridge. Although altered by replacement windows, the residence maintains the form and fenestration of a Shingle style residence constructed in the early part of the 20th century including the shingled exterior, porches, and hipped roof with cross gambrel roof. The building is eligible under Criterion A for its association with the early 20th century seaside summer development of Cotuit. The building is also eligible under Criterion C as a local example of a Shingle style residence designed by noted architect William Ralph Emerson. The property also contributes to the National Register eligible area that would comprise a southern expansion of the National Register listed Cotuit Historic District.

Recommended Determination - No Effect. Visual simulations demonstrate the WDA will not be visible and therefore would have no effect on the National Register eligible resource.

Cotuit Highground (BRN.Y) Roughly bound by Ocean Avenue and Main Street Cotuit

The Inventory area of Cotuit Highground is characterized by mid-late 19th century style cottages including Greek Revival, Gothic Revival and Victorian Eclectic, many of which have been expanded and altered in the late 19th and early 20th centuries as summer resort houses. The area extends along Main Street and Ocean View Avenue from Bluff Point Drive to the north and Sea Street to the south. The area is significant under Criteria A and C as an example of mid-late 19th and early 20th century development of summer residences in Cotuit. The area would also contribute to the southern and eastern expansion of the National Register listed Cotuit Historic District. The area possesses integrity of location, design, setting, materials, workmanship, feeling and association.

Recommended Determination - No Effect. Visual simulations demonstrate the WDA will not be visible and therefore will have no effect on the National Register eligible area.

Cotuit Historic District (BRN.K) Roughly bound by Main Street and Main Street Cotuit

The Cotuit Historic District was listed in the National Register for its significant collection of 19th and early 20th century buildings related to both maritime industries and summer resort activities. The District which extends along Main Street from Lowell Avenue to the north

and Sea Street to the south retains a moderate to high degree of architectural integrity and is locally significant for its association with the patterns of 19th and early 20th century development and architectural styles on Cape Cod. The Cotuit Historic District meets Criteria A, B, and C. The District possesses integrity of location, design, setting, materials, workmanship, feeling and association.

Recommended Determination - No Effect. Visual simulations demonstrate the WDA will not be visible and therefore will have no effect on the National Register listed District.

Oyster Harbors (BRN.AZ) Osterville Rand Island

The Inventory area of Oyster Harbors is characterized by early 20th century Shingle and Colonial Revival style residences situated around a golf course (Oyster Harbors Club) designed by Donald Ross in 1925. The Olmstead Brothers were engaged to design road and homesites. The area includes Osterville Grand Island with development following Bridge Street, Oyster Way, Seapuit River Road, Grand Island Drive, and North Bay Road. Oyster Harbors retains a moderate to high degree of architectural integrity and is locally significant for its association with the patterns of early 20th century development and architectural styles on Cape Cod including excellent examples of Shingle and Colonial Revival style residences. The area is significant under Criteria A and C as an example of an early 20th century development of summer residences in Osterville. The area possesses integrity of location, design, setting, materials, workmanship, feeling and association.

Recommended Determination - No Effect. Visual simulations demonstrate the WDA will not be visible and therefore will have no effect on the National Register eligible area.

Osterville North and West Bays (BRN.AM) roughly bound by Sea View Road, Osterville Rand Island and Cotuit Bay

The Inventory area of North and West Bays is a large area defined by and named for the two bodies of water in the area. The area is roughly bound by Sea View Road, Osterville Grand Island and Cotuit Bay. The area is characterized largely by single-family homes houses from the early to mid-19th century with several late 19th and early 20th century houses as well. Architectural styles represented in the area include Federal, Queen Anne, Shingle, and Colonial Revival styles. Osterville North and West Bays retains a moderate to high degree of architectural integrity and is locally significant for its association with the patterns of mid-19th through the early 20th century development in Osterville. The area is significant under Criteria A and C as an example of an 19th and early 20th century development of summer residences in Osterville. The area possesses integrity of location, design, setting, materials, workmanship, feeling and association.

Recommended Determination - No Effect. Visual simulations demonstrate the WDA will not be visible and therefore will have no effect on the National Register eligible area.

Christian Camp Meeting Association (BRN.2208) 915 Craigville Beach Road

The Christian Camp Meeting Association Beach and Bath House is significant under Criteria A and C for its associations with the Christian Camp Meeting Association, the rise of the automobile era tourism and as an example of mid-20th century Colonial Revival architecture. Although altered by later bathhouse additions, the building maintains the form and fenestration of a Colonial Revival style building constructed in the mid-20th century. The Christian Camp Meeting Association Beach and Bath House possesses integrity of location, design, setting, materials, workmanship, feeling and association.

Recommended Determination - No Effect. Visual simulations demonstrate the WDA will not be visible and therefore will have no effect on this National Register eligible resource.

George Phelps House (BRN.2036) 821 Sea View Avenue

The George Phelps House (BRN.2036) at 821 Sea View Avenue is a significant example of a Victorian Eclectic style cottage. Although altered by replacement windows, the residence maintains the form and fenestration of a Victorian Eclectic style residence constructed in the late 19th century, including the cross gabled hip roof with the dominant front facing gable along the north roof plane, the square tower at the northwest corner, and an unusual one-story entry gable with an oval entry porch. The building is eligible under Criterion A for its association with the late 19th century seaside summer development of Osterville. The building is also eligible under Criterion C as a local example of a Victorian Eclectic style residence.

Recommended Determination - No Effect. Visual simulations demonstrate the WDA will not be visible and therefore will have no effect on this National Register eligible resource.

Wianno Area (BRN.BB) roughly bound by Wianno Avenue and Sea View Avenue

The Wianno Area is characterized by late 19th and early 20th century buildings including Shingle, Italianate and Queen Anne residences. The Wianno Area contains the Wianno Historic District along Wianno Avenue and Sea View Avenue and extends to the north along Wianno Avenue to West Bay Road. The Wianno Area is significant under Criteria A and C as an example of mid-late 19th and early 20th century architecture and representative of the development of summer residences in Osterville. The area would also contribute to the northern expansion of the National Register Wianno Historic District. The area possesses integrity of location, design, setting, materials, workmanship, feeling and association.

Recommended Determination - No Effect. Visual simulations demonstrate the WDA will not be visible and therefore will have no effect on this National Register eligible resource.

Wianno Historic District (BRN.J) roughly bound by Wianno Avenue and Sea View Avenue

The Wianno Historic District was listed in the National Register as one of three well-preserved summer resort colonies developed in Barnstable in the late 19th century and also for its extraordinary collection of Colonial Revival and Shingle Style architecture. The Wianno Historic District includes 28 main buildings and 13 outbuildings located along Wianno Avenue and Sea View Avenue. The boundaries were selected to include the area of greatest late 19th and early 20th century summer resort development. Today, the district retains a moderate to high degree of architectural integrity and is locally significant for its association with the patterns of 19th and early 20th century development in Osterville. The Wianno Historic District meets Criteria A, B, and C and possesses integrity of location, design, setting, materials, workmanship, feeling and association.

Recommended Determination - No Effect. Visual simulations demonstrate the WDA will not be visible and therefore will have no effect on this National Register listed District.

Hyannis Port Area (BRN.AS) Roughly Bound by Island Avenue, Squaw Island Road, Smith Street, Marston Avenue and Ocean Avenue

The Hyannis Port Area (BRN.AS) is characterized by mid-late 19th and early 20th century wood frame buildings including Greek Revival, Victorian Eclectic and Colonial Revival. The area contains the Hyannis Port Historic District and extends to the west along Squaw Island Road and to the north along Scudder Avenue. The area is significant under Criteria A and C for its associations with the mid-late 19th and early 20th century development of summer residences in Hyannis and Hyannisport and for its collection of Greek Revival, Cape and Colonial Revival styles. The area possesses integrity of location, design, setting, materials, workmanship, feeling and association.

Recommended Determination - No Effect. Visual simulations demonstrate the WDA will not be visible and therefore will have no effect on this National Register eligible area.

Hyannis Port Historic District (BRN.E) roughly bound by Squaw Island Road, Scudder Avenue, Hyannis Avenue and Ocean Avenue

The Hyannis Port Historic District is significant for its 18th century settlement period and maritime connections and as a representative seaside summer resort planned development. The District is roughly bounded by Squaw Island Road, Scudder Avenue, Hyannis Avenue, and Ocean Avenue and is comprised of a densely developed area of wood frame buildings on small lots and features an irregular street grid. Most of the properties date from the late 19th and early 20th centuries and were constructed with Victorian or Colonial Revival influence. Most buildings are residential in use with a handful of shops, churches and

clubhouses. The Hyannis Port Historic District meets criteria A, B, and C of the National Register of Historic Places and possesses integrity of location, design, setting, materials, workmanship, feeling and association.

Recommended Determination - No Effect. Visual simulations demonstrate the WDA will not be visible and therefore will have no effect on this National Register listed area.

Kennedy Compound (BRN.AJ) roughly bound by Irving Avenue, Marchant Avenue and Nantucket Sound

The Kennedy Compound (BRN.AJ) is comprised of three wood framed residences on six acres of land bound by Irving Avenue to the north, Scudder Avenue to the west, Marchant Avenue to the southwest and Nantucket Sound to the south. The property was designated as a National Historic Landmark in 1972 and included in the Hyannis Port Historic District. The property contains the homes of Joseph P. Kennedy and his two sons, Robert F. and John F. Kennedy. During the late 1950s and early 1960s the property was used by John F. Kennedy as a base for his Presidential campaign and as a summer White House and Presidential retreat. The Kennedy Compound is significant under Criteria A, B, and C and for its association with the Kennedy family and as an excellent example of a collection of early twentieth century seaside architecture. The Kennedy Compound retains integrity of location, design, setting, material, workmanship, feeling and association.

Recommended Determination - No Effect. Visual simulations demonstrate the WDA will not be visible and therefore will have no effect on this National Register listed District.

Old Kings Highway Regional Historic District (BRO.O) roughly bound by Route 6 and Cape Cod Bay

The Old King's Highway Historic District encompasses what was historically the principal east-west thoroughfare from Sandwich to Orleans and includes Barnstable, Yarmouth, Brewster and Dennis. Within Barnstable, Old Kings Highway Regional Historic District encompasses Barnstable's entire length of what is now designated Massachusetts Route 6A and called Main Street, between the town lines of Sandwich and Yarmouth. The Old Kings Highway Regional Historic District retains a moderate to high degree of architectural integrity and is significant as a collection of 18th, 19th, and early 20th century residences including Federal, Greek Revival, Italianate, Queen Anne and Colonial Revival as well as for its associations with the development of Cape Cod along its historic travel corridor. Much of the 18th and 19th century fabric has been preserved by the establishment of the Old King's Highway Regional Historic District in 1973. The District retains integrity of location, design, setting, material, workmanship, feeling and association.

Recommended Determination - No Adverse Effect. Visual simulations demonstrate the WDA will not be visible. Underground cable route will not be visible and proposed substation upgrades will be minimally (if at all) visible due to distance and obstructing mature tree growth as well as Route 6.

Yarmouth Campground Historic District (BRN.AT) roughly bound by Grace Avenue and Willow Street

The Yarmouth Camp Ground Historic District is significant for its associations with the Methodist Camp Meeting movement. The District which is located in both Yarmouth and Barnstable conveys those associations through its well-preserved collection of late 19th through early 20th century wood frame buildings primarily Gothic Revival in style and 1-½ story with gable roofs as well as the intact setting in which they continue to exist. The District is listed in the National Register. The District retains integrity of location, design, setting, material, workmanship, feeling and association.

Recommended Determination - No Effect. Visual simulations demonstrate the WDA will not be visible and proposed underground cable route will also not be visible, therefore the WDA will have no effect on this National Register listed District.

5.6.3 Barnstable National Register Ineligible Properties Viewshed Assessments

Table 5-8 provides the viewshed assessment for properties ineligible for National Register listing in Barnstable.

Table 5-8 Barnstable National Register Ineligible Properties Viewshed Assessments

Property Name	MHC#	Address	Designation / Eligibility Recommendation	Recommended Determination
Willard P. Whittemore House	BRN.22 50	177 Long Beach Road	INV / not eligible	No significant properties affected. Visual simulations demonstrate the WDA will not be visible.
Harry Thayer House	BRN.22 49	169 Long Beach Road	INV / not eligible	No significant properties affected. Visual simulations demonstrate the WDA will not be visible.
Robert Orr House	BRN.22 48	157 Long Beach Road	INV / not eligible	No significant properties affected. Visual simulations demonstrate the WDA will not be visible.
Joseph Cardoze House	BRN.22 46	121 Long Beach Road	INV / not eligible	No significant properties affected. Visual simulations demonstrate the WDA will not be visible.
Herbert Brooks Crosby House	BRN.22 44	103 Long Beach Road	INV / not eligible	No significant properties affected. Visual simulations demonstrate the WDA will not be visible.

Table 5-8 Barnstable National Register Ineligible Properties Continued

1060-1078 Craigville Beach Road	BRN.B D	1060-1078 Craigville Beach Road	INV / not eligible	No significant properties affected. Visual simulations demonstrate the WDA will not be visible.
1006 Craigville Beach Road	BRN.B G	1006 Craigville Beach Road	INV / not eligible	No significant properties affected. Visual simulations demonstrate the WDA will not be visible.
Richard Cross House	BRN.20 35	299 Sea View Avenue	INV / not eligible	No significant properties affected. Visual simulations demonstrate the WDA will not be visible.
William Covell Beach Marker	BRN.94 6	Craigville Beach Road	INV / not eligible	No significant properties affected. Visual simulations demonstrate the WDA will not be visible. Underground cable route will also not be visible.
William T. Beals House / Craigville General Store	BRN.22 07	628 Craigville Beach Road	INV / not eligible	No significant properties affected. Underground cable route will not be visible.
Phinney's Lane Area	BRN.AI	Centered along Phinney's Lane	INV Area / not eligible	No significant properties affected. Underground cable route will not be visible.

***Designation Legend**

NHL	National Historic Landmark
NRIND	Individually listed on the National Register of Historic Places
NRDIS	National Register of Historic Places Historic District
NRDOE	Determined eligible for inclusion in the National Register of Historic Places
NHL	National Historic Landmark
SR	State Register of Historic Places
LHD	Local Historic District
LL	Local Landmark
INV	Individually included in the Inventory of Historic and Archaeological Assets of the Commonwealth
INV Area	Area included in the Inventory of Historic and Archaeological Assets of the Commonwealth

5.7 Yarmouth Viewshed Assessments

5.7.1 Yarmouth Historic Property Index

The following is a list of properties evaluated for significance and effects in Yarmouth.

Table 5-9 Yarmouth Historic Property Index

Property Name	MHC#	Address	Designation / Eligibility Recommendation	Simulation Yes/No
George Stevens House	YAR.289	6 New Hampshire Avenue	INV / not eligible	No
Schirmer-Pennock House	YAR.739	26 New Hampshire Avenue	INV / not eligible	No
Lewis Bay Yacht Club	YAR.669	179 Berry Avenue	INV / not eligible	No
Chimberly Fires Lodge	YAR.667	174 Berry Avenue	INV / not eligible	No
Louise Saxe House	YAR.670	180 Berry Avenue	INV / not eligible	No
Charles Allen House	YAR.666	168 Berry Avenue	INV / not eligible	No
151 Berry Avenue	YAR.290	151 Berry Avenue	INV / NR eligible. Significant under Criteria A and C as a surviving example of Gothic Revival architecture in a former camp meeting ground.	No
Philias House	YAR.291	133 Berry Avenue	INV / not eligible	No
105 Berry Avenue	YAR.287	105 Berry Avenue	INV / not eligible	No
Johnson House	YAR.292	92 Berry Avenue	INV / not eligible	No
Camiel House	YAR.690	257 South Sea Avenue	INV / not eligible	No
Ella Behr House	YAR.689	246 South Sea Avenue	INV / not eligible	No

Table 5-9 Yarmouth Historic Property Index (Continued)

Property Name	MHC#	Address	Designation / Eligibility Recommendation	Simulation Yes/No
Capt. Zadok Crowell House	YAR.274	185 South Sea Avenue	INV / NR eligible with YAR.275. Significant under Criteria A and C as a collection of Federal style residences associated with Yarmouth's maritime history.	No
Capt. Zadok Crowell House	YAR.275	185 South Sea Avenue	INV / NR eligible with YAR.274. Significant under Criteria A and C as a collection of Federal style residences associated with Yarmouth's maritime history.	No
Wolcott Gilmore House	YAR.712	48 Berry Avenue	INV / not eligible	No
Yarmouth Campground Historic District	YAR.B	Roughly bound by Grace Avenue and Willow Street	NRDIS	No
Old King's Highway Historic District	YAR.G	Roughly bound by Route 6 and Cape Cod Bay	SR / NR eligible. Significant under Criteria A and C as a collection of 18 th , 19 th , and early 20 th century residences including Federal, Greek Revival, Italianate, Queen Anne and Colonial Revival as well as the development of Cape Cod along its historic travel corridor.	No
Point Gammon Lighthouse	NA	Point Gammon, Great Island Road	None, identified during survey / not eligible	No

***Designation Legend**

NHL	National Historic Landmark
NRIND	Individually listed on the National Register of Historic Places
NRDIS	National Register of Historic Places Historic District
NRDOE	Determined eligible for inclusion in the National Register of Historic Places
NHL	National Historic Landmark
SR	State Register of Historic Places
LHD	Local Historic District
LL	Local Landmark
INV	Individually included in the Inventory of Historic and Archaeological Assets of the Commonwealth
INV Area	Area included in the Inventory of Historic and Archaeological Assets of the Commonwealth

5.7.2 *Yarmouth Historic Properties Viewshed Assessments*

Several National Register listed and eligible properties are within the potential viewshed of the WDA. Historic properties are summarized below. Through the use of visual simulations of the WDA and due to extreme distance, all Yarmouth historic properties are considered too far distant to be affected by the WDA. Additionally, no visual effect is anticipated from the proposed underground cable route.

151 Berry Avenue (YAR.290)

Constructed in ca. 1870 the two-story Gothic Revival residence was relocated from the Methodist Camp Ground in 1905. Originally containing over 300 structures, the camp currently contains less than 100 houses. The house is significant under Criterion C as a surviving example of Gothic Revival architecture of a former camp meeting ground. The building retains integrity of location, design, setting, material, workmanship, feeling and association.

Recommended Determination - No Effect. Visual simulations demonstrate the WDA will not be visible and proposed underground cable route will also not be visible; therefore, the WDA will have no effect on this National Register eligible resource.

Captain Zadok Crowell Houses (YAR.274 and YAR.275) 185 South Sea Avenue

Both buildings at this address are significant as a collection of Federal style buildings associated with Yarmouth's maritime history. Constructed in ca. 1830 the one-story shingle clad gable roof Georgian style residence (YAR.274) was constructed for Captain Zadok Crowell, a local deep water and coastal captain. The main entrance of the façade features a divided light transom and is flanked by simple Georgian pilasters and entablature. The building remains at its original location on the western side of South Sea Avenue with its associated barn remaining to the west.

Originally constructed as a barn on the property, the ca. 1832 Zadok Crowell House (YAR.275) was converted to a single family home with the addition of two chimneys, a brick foundation, double hung sash windows and a rear addition. The Crowell family was a large landowning family within what would become the town of Yarmouth. The main house remained in the Crowell family until the 1950s. Although the building has been modified to function as a residential house, the barn retains architectural integrity. The Captain Zadock Crowell houses are eligible under Criteria A and C as a potential National Register District as examples of the 19th century Federal style buildings associated with Yarmouth's maritime history.

Recommended Determination - No Effect. Visual simulations demonstrate the WDA will not be visible and proposed underground cable route will also not be visible; therefore, the WDA will have no effect on this National Register eligible resource.

Yarmouth Campground Historic District (YAR.B) roughly bound by Grace Avenue and Willow Street

The Yarmouth Camp Ground Historic District is significant for its associations with the Methodist Camp Meeting movement. Listed in the National Register, the District is located in both Yarmouth and Barnstable and conveys those associations through its well-preserved collection of late 19th through early 20th century wood frame buildings (primarily Gothic Revival in style and 1-½ story with gable roofs) as well as the intact setting in which they continue to exist. The District retains integrity of location, design, setting, material, workmanship, feeling and association.

Recommended Determination - No Effect. Visual simulations demonstrate the WDA will not be visible and proposed underground cable route will also not be visible; therefore, the WDA will have no effect on this National Register District.

Old King's Highway Historic District (YAR.G) roughly bound by Route 6 and Cape Cod Bay

The Old King's Highway Historic District encompasses what was historically the principal east-west thoroughfare from Sandwich to Orleans and includes Barnstable, Yarmouth, Brewster and Dennis. Within Barnstable, Old Kings Highway Regional Historic District encompasses Barnstable's entire length of what is now designated Massachusetts Route 6A and called Main Street, between the town lines of Sandwich and Yarmouth. The Old Kings Highway Regional Historic District retains a moderate to high degree of architectural integrity and is significant as a collection of 18th, 19th, and early 20th century residences including Federal, Greek Revival, Italianate, Queen Anne and Colonial Revival as well as for its associations with the development of Cape Cod along its historic travel corridor. Much of the 18th and 19th century fabric has been preserved by the establishment of the Old King's Highway Regional Historic District in 1973. The District retains integrity of location, design, setting, material, workmanship, feeling and association.

Recommended Determination - No Effect. Visual simulations demonstrate the WDA will not be visible and proposed underground cable route will also not be visible; therefore, the WDA will have no effect on this National Register District.

5.7.3 Yarmouth National Register Ineligible Properties Viewshed Assessments

Table 5-10 provides a viewshed assessment for properties ineligible for National Register listing in Yarmouth.

Table 5-10 Yarmouth National Register Ineligible Properties Viewshed Assessments

Property Name	MHC#	Address	Designation / Eligibility Recommendation	Recommended Determination
George Stevens House	YAR.289	6 New Hampshire Avenue	INV / not eligible	No significant properties affected. Visual simulations demonstrate the WDA will not be visible. Underground cable will also not be visible.
Schirmer-Pennock House	YAR.739	26 New Hampshire Avenue	INV / not eligible	No significant properties affected. Visual simulations demonstrate the WDA will not be visible. Underground cable will also not be visible.
Lewis Bay Yacht Club	YAR.669	179 Berry Avenue	INV / not eligible	No significant properties affected. Visual simulations demonstrate the WDA will not be visible. Underground cable will also not be visible.
Chimberly Fires Lodge	YAR.667	174 Berry Avenue	INV / not eligible	No significant properties affected. Visual simulations demonstrate the WDA will not be visible. Underground cable will also not be visible.
Louise Saxe House	YAR.670	180 Berry Avenue	INV / not eligible	No significant properties affected. Visual simulations demonstrate the WDA will not be visible. Underground cable will also not be visible.
Charles Allen House	YAR.666	168 Berry Avenue	INV / not eligible	No significant properties affected. Visual simulations demonstrate the WDA will not be visible. Underground cable will also not be visible.
Philius House	YAR.291	133 Berry Avenue	INV / not eligible	No significant properties affected. Visual simulations demonstrate the WDA will not be visible. Underground cable will also not be visible.
105 Berry Avenue	YAR.287	105 Berry Avenue	INV / not eligible	No significant properties affected. Visual simulations demonstrate the WDA will not be visible. Underground cable will also not be visible.

Table 5-10 Yarmouth National Register Ineligible Properties Continued

Johnson House	YAR.292	92 Berry Avenue	INV / not eligible	No significant properties affected. Visual simulations demonstrate the WDA will not be visible. Underground cable will also not be visible.
Camiel House	YAR.690	257 South Sea Avenue	INV / not eligible	No significant properties affected. Visual simulations demonstrate the WDA will not be visible. Underground cable will also not be visible.
Ella Behr House	YAR.689	246 South Sea Avenue	INV / not eligible	No significant properties affected. Visual simulations demonstrate the WDA will not be visible. Underground cable will also not be visible.
Wolcott Gilmore House	YAR.712	48 Berry Avenue	INV / not eligible	No significant properties affected. Visual simulations demonstrate the WDA will not be visible. Underground cable will also not be visible.
Point Gammon Lighthouse	NA	Point Gammon, Great Island Road	None, identified during survey / not eligible	No significant properties affected. Visual simulations demonstrate the WDA will not be visible. Underground cable will also not be visible.

***Designation Legend**

NHL National Historic Landmark
 NRIND Individually listed on the National Register of Historic Places
 NRDIS National Register of Historic Places Historic District
 NRDOE Determined eligible for inclusion in the National Register of Historic Places
 NHL National Historic Landmark
 SR State Register of Historic Places
 LHD Local Historic District
 LL Local Landmark
 INV Individually included in the Inventory of Historic and Archaeological Assets of the Commonwealth
 INV Area Area included in the Inventory of Historic and Archaeological Assets of the Commonwealth

6.0 CONCLUSIONS

6.1 Direct Effects

As described above, direct effects are defined as construction-related impacts or areas of potential disturbance by the Project. These areas include proposed cable routes and a new electrical substation in Barnstable. Since marine cables will be underwater and not visible and terrestrial cables will be underground and not visible, it is assumed that no adverse visual effects to historic properties will occur as a result of construction related activities. While the construction disturbance itself will be visible, it will be a temporary condition.

6.2 Indirect Effects

As also described above, indirect or visual effects include those areas where the Project may be visible. For terrestrial areas this includes the onshore substation. Based upon the location of the onshore substation site and nearby historic resources, only one property (BRN.O / Old King's Highway Regional Historic District) is within one-quarter mile of the Project site. The District is located across Route 6, a secondary highway, and through existing mature tree growth. No adverse visual effects are anticipated as a result of modifying the substation or constructing an adjacent station, if needed, as any proposed new building or structures will not likely be larger than the existing substation facility.

The initial proposed APE for indirect effects for the WTGs is 56.8 km (35.3 mi) (with exclusions) from the construction site at the northeastern half of the WDA. Some areas within the 56.8 km (35.3 mi) radius were excluded from the proposed APE due to obstructions, including topography and vegetation. Simulations demonstrate that properties on Cape Cod that have a view toward the WDA are at least 48.2 km (30 mi) away. At that range, the WTGs are cannot be seen as the majority of each WTG is below the horizon line, leaving only the blades, which measuring between 5.1 m (17 ft) across at the base to approximately 1.6 m (5.5 ft) at the tip, above the horizon line. Such a small feature viewed from such a great distance is not discernible.

Individual APEs for the islands of Martha's Vineyard and Nantucket were developed as a result of field survey for the potential to view the WDA. Martha's Vineyard has seven historic properties with visibility of the WDA in ideal weather conditions. Each property has its own narrative description with regards to potential visual impacts in Section 5. These properties have been determined to have no adverse visual impacts due to potential changes in their setting as a result of the Project.

Muskeget Island, Esther Island, and Tuckernuck Island, along with the island of Nantucket, are collectively designated as part of the same National Historic Landmark designation. These islands also have been determined to have no adverse visual impacts due to changes in their setting as a result of the Project due to the limited area within the National Historic Landmark District where the WDA will be visible as well as the limited visibility due to

weather conditions. Due to the narrow viewshed of the WDA from Cuttyhunk Island, and its 48.2 km (30 mi) distance to the WDA, the Project will likely have no effect on the properties on Cuttyhunk Island. No historic structures, buildings, or landscapes have been identified on Nomans Land, therefore no effects are anticipated.

One traditional cultural property (Nantucket Sound) was identified. Due to the varying visibility of the WDA only in ideal weather conditions and the distance and southern narrow view corridor between the islands of Nantucket and Martha's Vineyard, no adverse effects are anticipated.

For those properties with potential changes to their viewsheds, a variety of mitigating circumstances are present. For all properties, it is not typically viewshed of the property that is being affected, but rather the viewshed from the property, which in many cases is not as significant. In the case of Nantucket, the size of the district is a mitigating factor as only views from the southern and western ends of the island will be affected; therefore, the majority of the island and National Historic Landmark District remains unaffected. For the Edgartown Historic Districts (MHC# EDG.A and B), intervening tree growth and structures mitigate the view to the WDA, which is only achievable when viewing down Katama Bay through the existing harbor.

For properties with a largely unobstructed view of the ocean, such as those in Gay Head, including the Gay Head Light (MHC# GAY.900), the Edwin Vanderhoop Homestead (MHC# GAY.40,) and the Gay Head – Aquinnah Shops Area (MHC# GAYB), it is only a portion of the southerly viewshed from the properties that will be affected and only a portion of the WDA will be visible due to obstructing topography and vegetation.

Most importantly, distance and weather conditions render the WDA not visible during many times of the year. Therefore, while some properties may be affected by the Project, they will only be so during ideal weather conditions and on a temporary basis.