

PRELIMINARY MARINE ARCHAEOLOGICAL SENSITIVITY ASSESSMENT

**CAPE WIND ENERGY PROJECT
NANTUCKET SOUND**

January 2004

Prepared by:

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MEMORANDUM

**Cape Wind Energy Project Alternatives:
Horseshoe Shoal;
Combination New Bedford/Buzzards Bay and Reduced Horseshoe Shoal;
Monomoy and Handkerchief Shoals;
Tuckernuck Shoal and;
South of Tuckernuck Island, Massachusetts**

**Preliminary Marine Archaeological Sensitivity Assessment
PAL Project No. 1485.02**

Submitted by:

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INTRODUCTION

This memorandum presents the results of a preliminary marine archaeological sensitivity assessment of five alternatives for an offshore wind energy generation facility proposed in Nantucket Sound, Buzzards Bay and in the Atlantic Ocean south of Nantucket. The proposed Cape Wind Energy Project will generate electrical energy for the regional electric grid by constructing a facility of interconnected wind turbine generators (WTG) and an electric service platform (ESP). Energy generated by the WTG array will be transmitted to shore via a buried submarine electrical transmission cable system. The proposed project is subject to both state and federal review and permitting. As part of the permitting process, six alternatives are being evaluated for the project, five of which are located offshore. These five offshore alternatives include:

- a 29.73-square mile (sq mi) site in Nantucket Sound centered on Horseshoe Shoal;
- a combination alternative consisting of a 4.26-sq mi site in Buzzard's Bay south of New Bedford and a 25.36-sq mi reduced area in Nantucket Sound at the Horseshoe Shoal alternative;
- a 19.52-sq mi site in Nantucket Sound near Monomoy and Handkerchief Shoal;
- a 28.97-sq mi site in Nantucket Sound near Tuckernuck Shoal and;
- a 29.32-sq mi site in the Atlantic Ocean south of Tuckernuck Island.

The goal of this investigation is to provide a preliminary assessment of the archaeological sensitivity of each of the five proposed alternative offshore arrays.

RESEARCH METHODS

This investigation's goal was met through a review of existing data sets and background research that included:

- the National and State Registers of Historic Places;
- cultural resource management reports and site files at the Massachusetts Historical Commission (MHC) and Massachusetts Board of Underwater Archaeological Resources (MBUAR);
- NOAA's Automated Wreck and Obstruction Information System (AWOIS)*;
- Northern Maritime Research's Northern Shipwreck Database (Version 2002);
- archaeological reports prepared by avocational and professional archaeologists and;
- environmental studies providing information on the geomorphological history of the region and the effects of the Holocene marine transgression.

*(*NOTE: PAL's review of NOAA's on-line AWOIS database revealed a significant programming error that rendered data derived from the system's database suspect, and, therefore, unusable for this investigation. Steven Verry, Director of the AWOIS, was contacted by PAL and informed of the problem and NOAA is now addressing the problem.)*

RESULTS

The results of this preliminary review of the above-referenced sources were synthesized, and preliminary alternative-specific sensitivity assessments and predictive models concerning the potential for the presence of Native American and EuroAmerican archaeological resources within each of the four new alternatives' APEs were prepared and are summarized below in both narrative and tabular formats. A list of vessel casualties for each alternative generated from Northern Maritime Research's Northern Shipwreck Database is attached.

Horseshoe Shoal Alternative

The Horseshoe Shoal Alternative is centered on the eastern edge of the crescent-shaped Horseshoe Shoal and extends to the west side of Halfmoon Shoal in the open waters of Nantucket Sound. The alternative's location is nearly equidistant from Hyannis and Yarmouth to the north, the island of Martha's Vineyard to the southwest, and the island of Nantucket to the southeast. The east-west-oriented Main Channel lies immediately adjacent to the alternative's southern limit. The area is bisected by the modern and historic-period north-south shipping route between Hyannis and Nantucket. The charted bathymetry within the alternative is highly variable with numerous abrupt changes in water depths, which range from a maximum of 61 feet (ft) in a bathymetric low adjacent the Shoal to a minimum of six ft on the Shoal itself.

No wrecks or obstructions are currently charted in the alternative area. Eighteen vessel casualties ranging in date from 1819 to 1963 are reported in the Northern Shipwreck Database. Only one of them was recorded as having "made port" (Northern Maritime Research 2002). A review of the MHC's

Bibliography of Archaeological Survey and Mitigation Reports (2002) indicates that no marine archaeological investigations have been conducted within the alternative. However, marine geophysical (i.e., remote sensing) and geotechnical (vibratory coring and deep boring) surveys of Nantucket Sound were completed by the U.S. Geological Survey (USGS) in 1986 (O'Hara and Oldale 1987), and the alternative by Ocean Surveys, Inc. (OSI) in 2001, to characterize the area's geomorphology. The USGS vibratory coring program identified a buried geological deposit within the alternative that consisted of a distinct layer of organic materials (i.e., peat, wood, and charcoal) with a radio-carbon date of 6470+/-200 BP (O'Hara and Oldale 1987). A similar deposit with the appearance of intact, stratified buried paleosols was encountered during OSI's 2001 geotechnical survey of the alternative (OSI 2001). No submerged historic properties or archaeological sites are recorded in the area in the National or State Registers, or the MBUAR or MHC site files.

The archaeological sensitivity of the Horseshoe Shoal Alternative is anticipated to be "High" for Euro-American submerged cultural resources, because of the area's documented vessel losses, navigational hazards (i.e., submerged shoals), and proximity to modern and historic-period shipping routes between some of the region's most active and oldest ports. ***The archaeological sensitivity for ancient Native American submerged cultural resources is anticipated to be "High,"*** because of the potential presence of archaeologically sensitive intact buried paleosols within the alternative, the area's variable bathymetry, and its somewhat protected location from the open waters of the Atlantic Ocean.

Combination New Bedford/Buzzard's Bay and Reduced Horseshoe Shoal Array Alternative

The New Bedford/Buzzard's Bay portion of the Combination Alternative is located due south of the City of New Bedford, Massachusetts, in relatively protected waters in the northwest corner of Buzzard's Bay. The charted bathymetry in this portion of the Combination Alternative is generally homogenous with gradual changes in water depths recorded between a maximum of 46 ft and a minimum of 22 ft. Exceptions are the ledges and rock outcrops that occupy a small percentage of the alternative where water depths of 15 ft to just one foot are charted. Ledges and rocks within the alternative include Bents, Great, Negro, and North ledges, and Church, Decatur, Hursell, and Phinney rocks. The maintained Entrance Channel into New Bedford Harbor is charted immediately adjacent to the northeastern corner of the alternative area.

One wreck and one identified obstruction are currently charted within the search area. Ten vessel casualties ranging in date from 1908 to 1963 are listed in Northern Shipwreck Database within the search area. As many as nine of the casualties were total losses, although several have undocumented identities, dates, and dispositions. MHC and MBUAR site files document the presence of two shipwrecks and a "grounding site" within the alternative search area. The two wreck sites consist of the 62-ton fishing vessel, *Margaret Kehoe*, that sank near Church Rock in 1963, and the U.S.S. *Yankee* (ex-*El Norte* [1892]), a 6,225-ton, 391-foot, naval steam-cruiser that ran aground and sank near Great Ledge on September 23, 1908, three miles east of Round Hill Point at 70° 52' 40"/41° 32' 30" (David Trubey [MBUAR Deputy Director], personal communication, January 29, 2004). Archaeological investigation to delimit either wreck site and evaluate their potential National Register-eligibility has not yet been undertaken. The H.M.S. *Nimrod* Grounding Site (DAR-HA-2) is located in 20 ft of water on Great Ledge at the southwest corner of the alternative search area. The archaeological site consists of a deposit of nineteenth century artifacts (i.e., weapons) that were jettisoned from *Nimrod* on June 14, 1814, to lighten and refloat the vessel after it ran aground on the ledge. The effort was apparently successful; no shipwreck is present at the site. The extent and potential National Register eligibility of the site have not yet been defined and evaluated; however, several cannon were recovered from the site under MBUAR permit by the Kendall Whaling Museum, with additional cannon and other cultural materials presumed to

still be present (Trubey, personal communication, January 29, 2004). A review of the MHC's *Bibliography of Archaeological Survey and Mitigation Reports* (2002) and MBUAR files indicates that four marine archaeological investigations have been conducted in the vicinity of the area by Cembrola (1989), Riess (1998), and Cox (2000, 2001), with no potentially significant submerged historic properties identified other than those described above. No other submerged historic properties or archaeological sites are recorded in the area in the National or State Registers, or the MBUAR or MHC site files.

The archaeological sensitivity of the relatively small New Bedford/Buzzard's Bay portion of Combination Alternative is anticipated to be "High" for Euro-American submerged cultural resources, because of the area's documented vessel losses, documented shipwrecks and archaeological site, navigational hazards (i.e., submerged ledges and rocks), and proximity to the Entrance Channel into New Bedford Harbor, one of New England's most active and historic ports. ***The archaeological sensitivity for ancient Native American submerged cultural resources is anticipated to be "Moderate,"*** because of the area's proximity to the archaeologically sensitive Acushnet River area and somewhat variable bathymetry and protected location from the open waters of the Atlantic Ocean.

The Reduced Horseshoe Shoal Array portion of the Combination Alternative is encompassed by the above-described Horseshoe Shoal alternative, and, except for a minor reduction in its northern limit, occupies the same area as the Horseshoe Shoal Alternative. Therefore, ***the Reduced Horseshoe Shoal Array portion of the Combination Alternative is also anticipated to have "High" archaeological sensitivity for both Euro-American and ancient Native American submerged cultural resources.***

Monomoy and Handkerchief Shoals Alternative

The Monomoy and Handkerchief Shoals Alternative is located in somewhat protected waters of Nantucket Sound between Horseshoe Shoal (to the west) and Monomoy Island and Handkerchief Shoal (to the east). An historic and modern period shipping route between Hyannis and Nantucket harbors is located immediately west of the area. The mouth of the Bass River, and active ports in Harwich and Chatham are located north of the alternative. Charted bathymetry within the alternative is somewhat variable with several areas of shoaling and rapid changes in water depths present. Charted water depths within the area range from a maximum depth of 52 ft to a minimum depth of 19 ft. There are no wrecks currently charted within the search area, although five wrecks ranging in date from 1853 to 1899 are listed in the area in the Northern Shipwreck Database. The MHC's *Bibliography of Archaeological Survey and Mitigation Reports* (2002) records that only one previous marine archaeological investigation has been conducted in the area. The project was performed by Riess et al. (1997) and consisted of a marine archaeological reconnaissance survey of a planned dredging area in Hyannis Harbor. No submerged historic properties were identified by the Riess et al. survey. No submerged historic properties or archaeological sites are recorded in the alternative area in the National or State Registers, or the MBUAR or MHC site files.

The archaeological sensitivity of the Monomoy and Handkerchief Shoals Alternative is anticipated to be "Moderate" for Euro-American submerged cultural resources, because of the area's documented vessel losses, and proximity to the shipping route between Hyannis and Nantucket Harbors. ***The archaeological sensitivity for ancient Native American submerged cultural resources is anticipated to be "Moderate,"*** because of the alternative's proximity to previously identified potentially archaeologically sensitive areas within the nearby Horseshoe Shoal alternative, areas of variable bathymetry, and protected location from the open waters of the Atlantic Ocean.

Tuckernuck Shoal Alternative

The Tuckernuck Shoal Alternative is located immediately adjacent to the southern edge of the Main Channel and is occupied by all or large portions of Cross Rip, Edwards, Long, Norton, and Tuckernuck shoals. Bathymetry in the alternative is highly variable, with charted water depths ranging from a maximum of 74 ft to a minimum of just three ft. There are two unidentified wrecks currently charted within the search area. The Northern Shipwreck Database reports 102 vessel casualties ranging in date from 1799 to 1937 for the search area, of which only 17 were reported to have been refloated and/or removed. A review of the MHC's *Bibliography of Archaeological Survey and Mitigation Reports* (2002) indicates that no previous marine archaeological investigations have been conducted in the alternative. No submerged historic properties or archaeological sites are recorded in the area in the National or State Registers, or the MBUAR or MHC site files.

The archaeological sensitivity of the Tuckernuck Shoal Alternative is anticipated to be "High" for Euro-American submerged cultural resources, because of the area's navigation hazards (i.e., the five shoals listed above), proximity to the Main Channel, charted shipwrecks (2), and large number of documented shipwrecks (85). *The archaeological sensitivity for ancient Native American submerged cultural resources is also anticipated to be "High,"* because of the alternative's variable bathymetry, proximity to the Main and Muskeget channels (potential former river beds), and somewhat protected location from the open waters of the Atlantic Ocean.

South of Tuckernuck Island Alternative

The Tuckernuck Island Alternative is located in the open waters of the Atlantic Ocean southwest of Nantucket and Tuckernuck islands. Generally speaking, the charted bathymetry in the alternative area is relatively homogenous and featureless, with only gradual changes in water depths charted between the area's maximum depth of 95 ft and minimum depth of 42 ft. An exception to this general condition exists along the alternative's northwestern edge, where the boundary of the alternative extends a short distance over the fan-shaped, deltaic shoal at the mouth of the Muskeget Channel and charted water depths rise abruptly from approximately 40 ft to just seven ft. There are no wrecks currently charted within the search area. Four vessel casualties ranging in date from 1817 to 1969 are reported in the Northern Shipwreck Database, but only the most recently wrecked vessel was a not re-floated. A review of the MHC's *Bibliography of Archaeological Survey and Mitigation Reports* (2002) indicates that no marine archaeological investigations have been conducted in the area, although papers published by Little (1992) and Little and Andrews (1984) suggest that the southwestern shore of Nantucket, located northeast of the alternative, may have been a locus for an ancient and/or historic-period Native American drift whaling industry. No submerged historic properties or archaeological sites are recorded in the area in the National or State Registers, or the MBUAR or MHC site files.

The archaeological sensitivity of the South of Tuckernuck Island Alternative is anticipated to be "Low" for Euro-American submerged cultural resources, because of its distance away from charted navigation channels, ports-of-call, and hazards to navigation, as well as the absence of charted shipwrecks and obstructions, and the relatively small number of documented shipwrecks (1) that are reported for the area. *The archaeological sensitivity for ancient Native American submerged cultural resources is also anticipated to be "Low,"* because of the area's homogenous bathymetry and largely unprotected location from the open waters of the Atlantic Ocean, which together suggest a low probability for the presence of contextually intact, archaeologically sensitive, buried paleosols or undisturbed archaeological sites within the alternative.

ANTICIPATED ARCHAEOLOGICAL SENSITIVITY OF OFFSHORE ALTERNATIVES

Area	Anticipated Euro-American Archaeological Sensitivity	Anticipated Native American Archaeological Sensitivity
Horseshoe Shoal Alternative	High	High
Combination New Bedford/Buzzard's Bay and Reduced Horseshoe Shoal Array Alternative		
(New Bedford/Buzzard's Bay Portion)	High	Moderate
(Reduced Horseshoe Shoal Portion)	High	High
Monomoy and Handkerchief Shoals Alternative	Moderate	Moderate
Tuckernuck Shoal Alternative	High	High
South of Tuckernuck Island Alternative	Low	Low

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NORTHERN SHIPWRECKS DATABASE - REPORTED VESSEL CASUALTIES WITHIN ALTERNATIVES

Alternative	Wreck	Date	Comments
Horseshoe Shoal	Unknown	1819	Wood vessel. Partial loss. Made port.
Horseshoe Shoal	<i>Platina</i>	1841	Gale. Stranded. Wrecked
Horseshoe Shoal	<i>Palow</i>	1844	
Horseshoe Shoal	<i>Pelon</i>	1844	Stranded. Abandoned. Adrift. Stranded
Horseshoe Shoal	<i>Susan</i>	1852	
Horseshoe Shoal	<i>Panope</i>	1888	Ice. Foundered
Horseshoe Shoal	<i>Jennie French Potter</i>	1909	Stranded
Horseshoe Shoal	<i>Mary Farrow</i>	1911	Foundered
Horseshoe Shoal	<i>John Paul</i>	1914	Foundered
Horseshoe Shoal	<i>Mary F. Cushman</i>	1918	Stranded
Horseshoe Shoal	<i>Unknown</i>	20 th century	
Horseshoe Shoal	<i>Seneca</i>	Unknown	Sank?
Horseshoe Shoal	Unknown	Unknown	
Horseshoe Shoal	Unknown	Unknown	
Horseshoe Shoal	Unknown	Unknown	
Horseshoe Shoal	Unknown	Unknown	
Horseshoe Shoal	Unknown	Unknown	
Horseshoe Shoal	Unknown	Unknown	
Horseshoe Shoal	Unknown	Unknown	
New Bedford/Buzzards Bay	<i>Yankee</i>	9/23/1908	Sank?
New Bedford/Buzzards Bay	<i>Uncle John</i>	11/12/1947	Foundered
New Bedford/Buzzards Bay	<i>Uncle John</i>	4/ /1948	
New Bedford/Buzzards Bay	<i>Dynafuel</i>	11/15/1963	Collided with <i>Fernview</i>
New Bedford/Buzzards Bay	<i>Heckler</i>	Unknown	Sank?
New Bedford/Buzzards Bay	<i>Marauder</i>	Unknown	Sank?
New Bedford/Buzzards Bay	Unknown	Unknown	
New Bedford/Buzzards Bay	Unknown	Unknown	
New Bedford/Buzzards Bay	Unknown	Unknown	
New Bedford/Buzzards Bay	Unknown	Unknown	
Tuckernuck Shoal	<i>Orb</i>	10/2/1841	Stranded. Sank
Tuckernuck Shoal	<i>Ontario</i>	11/21/1842	Stranded and refloated
Tuckernuck Shoal	<i>Cambridge</i>	10/07/1844	Gale. Dismasted. Slipped cables.
Tuckernuck Shoal	<i>Addison</i>	11/27/1844	Collided with schooner <i>Caroline</i> . Sank
Tuckernuck Shoal	<i>Sophonria</i>	1845	
Tuckernuck Shoal	<i>Meridian</i>	10/17/1845	Stranded. Sank
Tuckernuck Shoal	<i>Banner</i>	12/16/1845	Dismasted at anchor. Lost deck load.
Tuckernuck Shoal	<i>Charlotte</i>	8/19/1848	Gale. Upset. Stranded fm anchor
Tuckernuck Shoal	<i>Colchis</i>	4/5/1849	Stranded and boarded. Taken in.
Tuckernuck Shoal	<i>Isaac Carver</i>	6/11/1851	Stranded and refloated
Tuckernuck Shoal	<i>Mary George</i>	12/1/1851	Stranded fm anchor. Bilged. Abandoned.
Tuckernuck Shoal	<i>Souther</i>	5/30/1852	Stranded and refloated. Taken in.
Tuckernuck Shoal	<i>Rough & Ready</i>	3/17/1853	Stranded fm ancor, refloated
Tuckernuck Shoal	<i>Rebecca Fogg</i>	11/24/1853	Stranded. Wrecked.
Tuckernuck Shoal	<i>Madison</i>	11/24/1853	Leaking at anchor. Sank
Tuckernuck Shoal	<i>John Tunis</i>	11/24/1853	
Tuckernuck Shoal	<i>Persia</i>	10/19/1856	Stranded and refloated.
Tuckernuck Shoal	<i>Splendid</i>	10/28/1856	Stranded. Wrecked.
Tuckernuck Shoal	<i>Conanchet</i>	1/23/1857	Ice-jammed. Leaking. Abandoned
Tuckernuck Shoal	<i>Shooting Star</i>	3/23/1859	Stranded fm tow. Anchored. Bilged
Tuckernuck Shoal	<i>L.B. Myers</i>	8/27/1863	Stranded. Sank
Tuckernuck Shoal	<i>General Peavey</i>	1/15/1864	Stranded, leaking, and towed in.
Tuckernuck Shoal	<i>Triumph</i>	3.1864	Sank. Raised?
Tuckernuck Shoal	<i>Sea Lark</i>	6/3/1864	Stranded and refloated.
Tuckernuck Shoal	<i>Champion</i>	9/8/1865	Gale. Foundered. Abandoned. Stranded.
Tuckernuck Shoal	<i>Mary Louise</i>	1876	
Tuckernuck Shoal	<i>William Capes</i>	1876	
Tuckernuck Shoal	<i>Union</i>	1878	
Tuckernuck Shoal	<i>Emma G. Edwards</i>	4/1/1879	Storm

Locational data omitted from publicly distributed copies.

NORTHERN SHIPWRECKS DATABASE - REPORTED VESSEL CASUALTIES WITHIN ALTERNATIVES

Alternative	Wreck	Date	Comments
Tuckernuck Shoal	<i>Sparkling Wave</i>	5/15/1879	Wrecked in storm
Tuckernuck Shoal	<i>Van Guilder</i>	3/29/1885	Sank. Raised?
Tuckernuck Shoal	<i>French Van Guilder</i>	1885	
Tuckernuck Shoal	<i>E.W. Merchant</i>	7/9/1887	
Tuckernuck Shoal	<i>Rebecca Bartlett</i>	5/20/1889	
Tuckernuck Shoal	<i>Artemus Tirrel</i>	9/23/1889	
Tuckernuck Shoal	<i>William Gillum</i>	8/4/1890	
Tuckernuck Shoal	<i>Grampus</i>	9/24/1890	
Tuckernuck Shoal	<i>J.H. Carey</i>	11/26/1890	
Tuckernuck Shoal	<i>Jessie [Jesse] W. Starr</i>	1891	
Tuckernuck Shoal	<i>Francis S. Orne</i>	6/15/1891	
Tuckernuck Shoal	<i>Edith L. Gandy</i>	10/22/1891	
Tuckernuck Shoal	<i>Abbie H. Hodgman</i>	11/1891	
Tuckernuck Shoal	<i>Eben Fisher</i>	9/12/1892	
Tuckernuck Shoal	<i>Harry Stewart</i>	4/26/1892	
Tuckernuck Shoal	<i>Dora M. French</i>	10/1/1893	
Tuckernuck Shoal	<i>Harry Friend</i>	10/21/1893	
Tuckernuck Shoal	<i>Annie W. Akers</i>	11/7/1893	Stranded and wrecked
Tuckernuck Shoal	<i>Ellen Morrison</i>	10/16/1894	
Tuckernuck Shoal	<i>Grace C. Hadley</i>	5/25/1895	
Tuckernuck Shoal	<i>Morning Star</i>	8/27/1895	
Tuckernuck Shoal	<i>Carlotta</i>	12/10/1895	Stranded in fog. Partial loss.
Tuckernuck Shoal	<i>Clifton</i>	1/6/1896	
Tuckernuck Shoal	<i>Cora [Coree] E. Smith</i>	7/12/1897	
Tuckernuck Shoal	<i>L.J. Whitmore</i>	10/21/1897	
Tuckernuck Shoal	<i>Thomas Brundage [Bonndage]</i>	5/8/1899	
Tuckernuck Shoal	<i>Clarence H. Venner</i>	8/14/1899	
Tuckernuck Shoal	<i>Francesa R. Rand</i>	1900	
Tuckernuck Shoal	<i>Damietta & Joanna</i>	4/16/1901	
Tuckernuck Shoal	<i>John T. Cullinan</i>	8/17/1901	
Tuckernuck Shoal	<i>Sweepstakes</i>	3/11/1902	
Tuckernuck Shoal	<i>Annie Laura</i>	6/8/1902	Gale and fog. Stranded and wrecked
Tuckernuck Shoal	<i>Acacia</i>	2/9/1904	Stranded. Partial loss
Tuckernuck Shoal	<i>E. Merriam</i>	7/18/1906	Stranded. Partial loss
Tuckernuck Shoal	<i>Emma R. Smith</i>	11/10/1907	Stranded
Tuckernuck Shoal	<i>Silver Heels</i>	1/5/1911	Stranded
Tuckernuck Shoal	<i>John Paul</i>	7/12/1914	Foundered
Tuckernuck Shoal	<i>Alice M. Lawrence</i>	12/5/1914	
Tuckernuck Shoal	<i>Unique</i>	7/17/1917	
Tuckernuck Shoal	<i>Intrepid III</i>	1938	
Tuckernuck Shoal	<i>Laura Annie Barnes</i>	1/17/1939	Stranded. Total loss.
Tuckernuck Shoal	<i>Katherine Ann</i>	7/27/1997	Sank.
Tuckernuck Shoal	Unknown	19XX	
Tuckernuck Shoal	Unknown	19XX	
Tuckernuck Shoal	<i>Seneca</i>	Unknown	Sank?
Monomoy/Handkerchief Shoals	<i>Willow</i>	1853	
Monomoy/Handkerchief Shoals	<i>J.E. Rowley</i>	1855	
Monomoy/Handkerchief Shoals	<i>Thacher Taylor</i>	1856	
Monomoy/Handkerchief Shoals	<i>Sarah M. Saunders</i>	5/20/1874	Sank.
Monomoy/Handkerchief Shoals	<i>Florence Pearl</i>	5/25/1899	
South of Tuckernuck Island	<i>Ganges</i>	10/1817	Stranded and refloated.
South of Tuckernuck Island	<i>G.M. Cochrane</i>	11/4/1906	Stranded in storm. Sold. Refloated
South of Tuckernuck Island	<i>Patty Sue</i>	10/1/1969	Sank.

Locational data omitted from publicly distributed copies.



Technical Memorandum

Cape Wind Terrestrial Alternative Massachusetts Military Reservation

Bourne and Sandwich, Massachusetts
Archaeological Sensitivity Assessment

PAL NO. 1485.02

Revised March 9, 2004

Prepared by:

PAL

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The United States Army Corps of Engineers (USACE) is evaluating alternative sites for the proposed Cape Wind Energy Project on Cape Cod, Massachusetts. PAL is providing cultural resource services for the proposed project. The following memorandum includes a preliminary archaeological sensitivity assessment for the proposed Massachusetts Military Reservation (MMR) Alternative, located in the northwestern portion of the government facility.

Previously Identified Archaeological Resources

Currently, there are 23 known prehistoric archaeological sites located within and/or immediately adjacent to the proposed Cape Wind MMR Alternative project area. These sites are clustered in various sections of the proposed project area and were identified during intensive archaeological surveys of location-specific project areas within MMR (Davin and Gallagher 1987; Fragola, 1996a; Fragola, 1996b; Fragola and Garman, 1997; Herbster and Davin 1992; Macomber 1991).

Thirteen of the previously identified sites (19-BN-631, -632, -633, -635, -638, -639, -640, -641, -642, -651, -783, -784, and -850) were located adjacent to freshwater kettle ponds or swamps, including Raccoon Swamp, Spruce Swamp, Round Swamp, Deep bottom Pond, Little Halfway Pond, Donnelly Pond and Opening Pond. These sites consist of low density deposits of lithic chipping debris representing short-term activity areas, probably used for stone tool manufacture and/or maintenance.

The ten remaining sites (19-BN-634, -636, -637, -650, -653, -654, -655, -656, -847, -848) were identified in upland sections of MMR as isolated find spots, represented by one or more lithic flakes and/or tool fragments. These sites were clustered around Discovery Hill, the Wheelock Road/Fredrickson Road intersection, and Pew Road.

Diagnostic artifacts recovered from some of the sites indicate that the MMR area was occupied from at least the Middle Archaic Period (8000-5000 B.P.) to the Late Woodland Period (1000-450 B.P.). Soil types in the find spot/site areas ranged from sandy to very cobbly, although all soils

were generally well-drained. The majority of the sites were located on level terraces above wetland areas.

No previously identified historic archaeological sites are located within the proposed project area. Two farms were located within the bounds of MMR during the nineteenth century to the early twentieth century. The majority of the land forming MMR came from the Coonamasset Sheep Ranch, which was reportedly the largest ranch east of the Mississippi River.

None of the previously identified archaeological sites has been determined to represent significant archaeological resources. The sites are all comprised of low-density cultural deposits and/or solitary artifact finds that are unlikely to provide additional information about prehistoric period land use patterns. Many of the sites are located in areas that have since been re-classified as either low sensitivity or disturbed (see discussion below).

Archaeological Sensitivity Assessment

The archaeological sensitivity assessment of the proposed Cape Wind MMR Alternative project area is drawn from the results of cultural resource projects completed within the MMR/Camp Edwards/Otis Air Force Base facilities. These projects were completed primarily by PAL and include base-wide sensitivity assessments and intensive (locational) archaeological surveys completed within specific project impact areas. PAL also completed the cultural resources section of the 1999 MMR Master Plan. The environmental data and land use patterns information gathered from these previous studies was used to produce prehistoric and historic archaeological sensitivity maps for the entire MMR facility. The PAL sensitivity maps were updated in 2003 by Dr. Susan Goodfellow, Massachusetts Army National Guard Regional Cultural Resource Manager. Dr. Goodfellow combined PAL's prehistoric and historic archaeological sensitivity maps to produce one map showing areas of high, moderate and low archaeological sensitivity. Dr. Goodfellow added a fourth ranking, designated as "disturbed". Mapped areas of disturbance represent portions of MMR that have undergone significant ground surface impacts and do not have the potential to contain intact archaeological deposits. This revised sensitivity map is attached as Figure 1 with the proposed Cape Wind MMR Alternative project area outlined.

Areas assessed as having a moderate to high potential to contain prehistoric resources include those with good to excellent physical integrity, proximity to freshwater resources, sandy well-drained soils, and/or proximity to known prehistoric sites. Areas with low potential to contain prehistoric resources are characterized by poor physical integrity, freshwater resources located more than 300 meters away, cobbly soil conditions, and no previously identified archaeological sites in the vicinity. Disturbed areas are unlikely to contain intact prehistoric archaeological deposits.

The proposed Cape Wind MMR Alternative project area exhibits low potential to contain historic period resources due to its peripheral location relative to settlement areas as well as twentieth century impacts related to use of the area as a military installation. As with prehistoric sensitivity, disturbed areas are unlikely to contain intact historic archaeological deposits.

Recommendations

The proposed Cape Wind MMR Alternative project area includes areas of high, moderate and low archaeological sensitivity as well as areas of modern period disturbance. Systematic archaeological investigations within small portions of the proposed project area have identified prehistoric archaeological sites. Based on these studies, it is likely that additional prehistoric period archaeological deposits are located within the proposed project area. If present, these deposits would likely consist of the same spatially limited, low-density sites and artifact find spots that have been previously identified.

Archaeological investigations in the form of an intensive (locational) survey would be recommend for any project impact areas located in moderate or high sensitivity areas as depicted on Figure 1. The goal of an intensive survey would be to locate and identify any archaeological resources within project impact areas.

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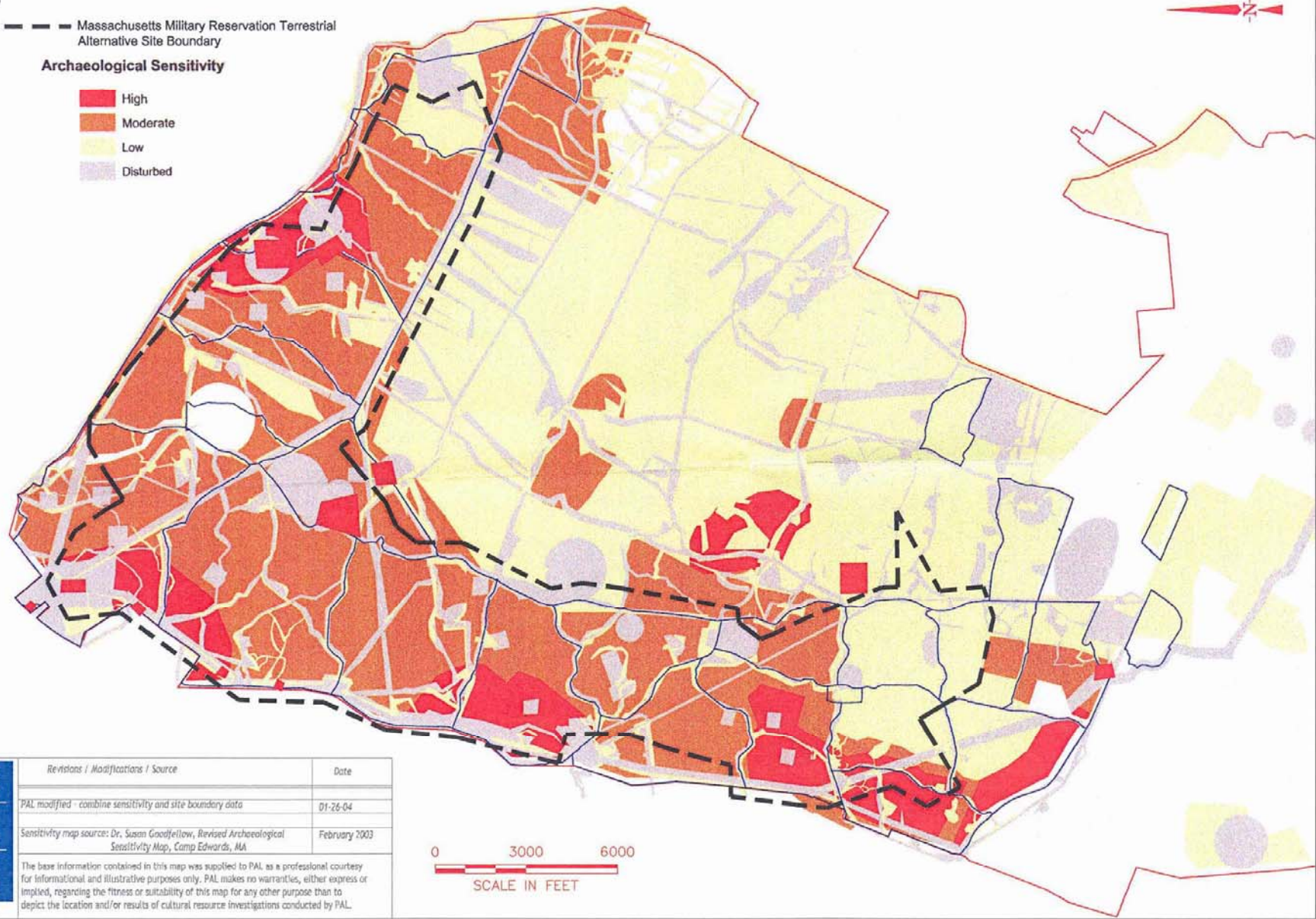
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KEY:

--- Massachusetts Military Reservation Terrestrial Alternative Site Boundary

Archaeological Sensitivity

- High
- Moderate
- Low
- Disturbed



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Revisions / Modifications / Source	Date
PAL modified - combine sensitivity and site boundary data	01-26-04
Sensitivity map source: Dr. Susan Goodfellow, Revised Archaeological Sensitivity Map, Camp Edwards, MA	February 2003

The base information contained in this map was supplied to PAL as a professional courtesy for informational and illustrative purposes only. PAL makes no warranties, either express or implied, regarding the fitness or suitability of this map for any other purpose than to depict the location and/or results of cultural resource investigations conducted by PAL.



Massachusetts Military Reservation
Terrestrial Alternative Site Boundary