



Appendix H

Selected Regulatory Permits and Approvals and Correspondence



H-1 FAA Determination



Federal Aviation Administration
 Air Traffic Airspace Branch, ASW-520
 2601 Meacham Blvd.
 Fort Worth, TX 76137-0520

Aeronautical Study No.
 2009-WTE-332-OE
 Prior Study No.
 2006-ANE-1078-OE

Issued Date: 05/17/2010

Len Fagan
 Cape Wind Associates, LLC.
 75 Arlington Street, Suite 704
 Boston, MA 02116

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure: Wind Turbine 4A-HSS
 Location: Cotuit, MA
 Latitude: 41-30-55.77N NAD 83
 Longitude: 70-23-48.35W
 Heights: 440 feet above ground level (AGL)
 440 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure would have no substantial adverse effect on the safe and efficient utilization of the navigable airspace by aircraft or on the operation of air navigation facilities. Therefore, pursuant to the authority delegated to me, it is hereby determined that the structure would not be a hazard to air navigation provided the following condition(s) is(are) met:

As a condition to this Determination, the structure is marked and/or lighted in accordance with FAA Advisory circular 70/7460-1 K Change 2, Obstruction Marking and Lighting, a med-dual system - Chapters 4,8(M-Dual),&12.

It is required that FAA Form 7460-2, Notice of Actual Construction or Alteration, be completed and returned to this office any time the project is abandoned or:

- At least 10 days prior to start of construction (7460-2, Part I)
- Within 5 days after the construction reaches its greatest height (7460-2, Part II)

See attachment for additional condition(s) or information.

This determination expires on 05/17/2012 unless:

- (a) extended, revised or terminated by the issuing office.
- (b) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE POSTMARKED OR DELIVERED TO THIS OFFICE AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE.

This determination is subject to review if an interested party files a petition that is received by the FAA on or before June 16, 2010. In the event a petition for review is filed, it must contain a full statement of the basis upon which it is made and be submitted in triplicate to the Manager, Airspace and Rules Division - Room 423, Federal Aviation Administration, 800 Independence Ave., Washington, D.C. 20591.

This determination becomes final on June 26, 2010 unless a petition is timely filed. In which case, this determination will not become final pending disposition of the petition. Interested parties will be notified of the grant of any review. For any questions regarding your petition, please contact Office of Airspace and Rules via telephone -- 202-267-8783 - or facsimile 202-267-9328.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

This aeronautical study considered and analyzed the impact on existing and proposed arrival, departure, and en route procedures for aircraft operating under both visual flight rules and instrument flight rules; the impact on all existing and planned public-use airports, military airports and aeronautical facilities; and the cumulative impact resulting from the studied structure when combined with the impact of other existing or proposed structures. The study disclosed that the described structure would have no substantial adverse effect on air navigation.

An account of the study findings, aeronautical objections received by the FAA during the study (if any), and the basis for the FAA's decision in this matter can be found on the following page(s).

If we can be of further assistance, please contact Donna O'Neill, at (816)329-2525. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2009-WTE-332-OE.

Signature Control No: 107807735-126050584
Sheri Edgett-Baron
Acting Manager, Obstruction Evaluation Service

(DNH -WT)

Attachment(s)

Additional Information
Map(s)

Additional information for ASN 2009-WTE-332-OE

The proposed construction consists of 130 wind turbines that would be located in Nantucket Sound, Massachusetts, within the area bounded by the following latitude/longitude coordinates:

North Boundary Line 41-32-36.55N

East Boundary Line 70-14-24.92W

South Boundary Line 41-27-37.39N

West Boundary Line 70-23-48.35W

Each wind turbine was studied separately under Aeronautical Study Numbers 2009-WTE-332-OE through 2009-WTE-461-OE. In order to facilitate the public comment process, all 130 of the proposed structures were included in the public notice and circularized under 2009-WTE-332-OE. However, separate determinations will be issued for each structure. All comments received from this circularization were considered in completing each of the determinations for the studies.

None of the turbines exceed any standards contained in Title 14 Code of Federal Regulations (14 CFR) Part 77, Subpart C, Obstruction Standards. None of the turbines would require a change to any instrument flight procedure. However, each of the 130 wind turbines were identified as having an adverse effect on the use of air navigation facilities or navigable airspace and were studied in accordance with 14 CFR, Part 77, Subpart D, Aeronautical Studies of Effect of Proposed Construction on Navigable Airspace.

The proposal was circularized (public notice) on February 13, 2009 to all known aviation interests and to non-aeronautical interests that may be affected by the proposal. That notice advised that to be eligible for consideration comments must be received on or before March 22, 2009. Subsequent to the distribution of the public notice, the FAA released the radar analysis report for the Cape Wind project that was used as the basis for the summary provided in the public notice. The FAA received many requests for an extension of the comment period to allow additional time for interested persons to carefully read the radar study prior to submitting their comments. In response to those requests, on March 19, 2010, the FAA extended the comment period until April 30, 2010.

Fourteen (14) letters of objection (in addition to supporting information and documents) were received as a result of the circularization. Most of the responders had similar concerns in two major areas: radar impact and the effect on visual flight rules (VFR) flight operations. There were also concerns expressed regarding the availability of wind turbines that meet the height filed, and environmental noise impacts. The concerns expressed are summarized below.

Comment: Responder stated that any route adjustments that pilots would make to circumnavigate the proposed wind turbine farm would result in contributing significantly to environment noise impacts on the mainland as well as Martha's Vineyard and Nantucket islands.

FAA Response: Noise concerns are outside the scope of 14 CFR part 77 and are not addressed in an aeronautical study.

Comment: Responder objected to the FAA's continued study of this project when, to his knowledge, there are no wind turbines currently being manufactured that meet the "Description of the Action" stated in the Minerals Management Service (MMS) Cape Wind Draft Environmental Impact Statement (DEIS).

FAA Response: An FAA aeronautical (airspace) study completed in accordance with 14 CFR Part 77 is a separate action to evaluate any impact on the navigable airspace, and not subject to requirements or statements in the MMS Cape Wind DEIS. Our analysis and subsequent determination(s) are based on the information provided in the notice of construction filed with the FAA. An FAA determination is valid for the height and location specified in a determination. Any changes in the height of the proposed structure require a new filing and aeronautical study.

Comment: Many responders objected to this proposed wind turbine project based on adverse effect to the safety and efficiency of aircraft operating in accordance with VFR stating a considerable number of operations that would be affected; compression of flight as aircraft moved from the lower altitude strata (500 -1000 ft. AGL/AMSL) to a higher altitude to avoid the turbines; and, issues with circumnavigation during the frequent periods of marginal VFR weather experienced in this area.

FAA Response: The FAA does not agree. In order for a proposed structure to have an adverse effect, it must first exceed a 14 CFR part 77 obstruction standards and/or be found to have a physical or electromagnetic radiation effect of the operations of air navigation facilities. The proposed wind turbines do not exceed any 14 CFR part 77 obstruction standards. The proposals would have a physical or electromagnetic radiation effect on the current operation of the Falmouth Air Route Surveillance (ASR-8) radar facility (FMH ASR) and this issue is addressed in the next comment/response. The effect on VFR aircraft operations are addressed later in this document.

Comment: Most responders objected to the proposed wind turbine project due to the adverse effect on the operation of air navigation facilities (specifically radar facilities) in the area. Some of the responders provided their own external analysis of radar impacts. This information was reviewed by the FAA's Technical Operations Division, which is responsible for the installation, maintenance, and operation of FAA air navigation facilities.

FAA Response:

There are three FAA radar sites that provide detection of aircraft for air traffic control within the Nantucket Sound area. These radar facilities are North Truro Cape (QEA), Nantucket (ACK), and Otis Air Force Base (FMH). QEA is Air Route Surveillance Radar (ARSR-4) digital/long range search radar with secondary radar. ACK is an ASR-9 (digital/terminal search radar) with digital secondary radar, and FHM is an ASR-8 (analog/terminal search radar) with analog secondary radar.

The FAA completed an extensive analysis of potential impacts to radar facilities that serve the subject area. Analysis indicated that the wind turbines may cause "unwanted search radar targets" to be displayed (i.e. clutter) on air traffic controller displays at the Cape TRACON and the intensity of the unwanted targets may inhibit search radar detection of real aircraft flying in the airspace above the wind turbines, especially in the case of the FMH ASR-8.

The wind turbines will only affect the search radar service (primary). There will be no noticeable effect on beacon (i.e. transponder) radar service as the proposed wind farm is not likely to affect detection of aircraft with an operational transponder. Although unlikely, detection of transponder equipped aircraft flying within 2 nautical miles (NM) behind the wind farm (as viewed from the radar site) and at an altitude of 600', or lower, may be reduced due to line-of-sight shielding. At 11 NM, it is highly unlikely that there will be any false targets due to reflections. Beam distortion caused by the wind turbines is also not likely.

Line-of-sight shielding is not an issue for primary surveillance radar (search) as the wind turbines will be a minimum of 9 nm from the nearest radar, and separated at a distance of 0.25 nm. Only targets below 800' and within 3 NM of the wind farm may potentially be affected by shadowing. However, at maximum range for either of the primary radars, the other radar will provide better coverage for areas impacted by the wind turbines.

Depending on wind patterns and due to raised thresholds that are a product of the dynamic geocensor map function, the probability of detection for the ACK ASR-9 system over the wind farm will decrease as a result of wind turbine clutter. This could result in a decrease in the beacon reinforcement rate over the wind farm, or result in primary target loss of aircraft without transponders. There could also be a minimal amount of clutter displayed. All ASR-9 sites have been upgraded with a 9PAC-II. Included in this upgrade is the dynamic geocensor which is very adept at suppressing clutter. Therefore, the adverse effect on the ACK ASR-9 system is not considered to be significant.

The radar system most vulnerable to the effects of the proposed wind turbine project is the FMH ASR-8. The analog ASR-8 has limited capabilities to resolve the effects of clutter caused by multiple wind turbines within a confined area. Although changes made within the ASR-8 can reduce clutter, these changes also adversely impact detection of aircraft.

The search radar located at FMH (ASR-8) will also be impacted by the cumulative effect of the wind turbines associated with this project. The cumulative effect of rotational blades is expected to reduce search radar detection for aircraft at all altitudes above the wind farm area. The unwanted clutter will be excessive for the ASR-8 over the wind farm and the ability to track non-transponder equipped aircraft over the wind farm will be impeded. In its current configuration, the FMH ASR-8 has no effective means of mitigating clutter created by wind farms.

Action will be necessary by the FAA to re-optimize one or more search radar system(s) to reduce the effects of unwanted targets caused by the wind turbines. Re-optimization to reduce the unwanted targets may result in radar service performance losses in the subject area, such that, the probability of search detection of real targets may be diminished. Additionally, in the case of the older search radar located at Falmouth (FMH ASR-8) it will be necessary to add additional equipment to reduce the unwanted effects if re-optimization does not mitigate the effects of the turbines or replace the existing radar system with a newer system, specifically an ASR-11.

Without action by the FAA to modify or enhance the two radar systems adversely affected by the proposed wind turbines, a hazard that affects search radar target detection will exist in the airspace above the wind turbine area.

Study disclosed that re-optimization is possible by adding a TDX-2000 modification on the FMH ASR-8 radar, which will resolve any unwanted target issues. In the unlikely event that the TDX-2000 modification is deemed unsatisfactory, an ASR-11 radar system would be required. The proponent has agreed to pay for the TDX-2000 modification to the FMH ASR-8 radar. The proponent also agreed to provide financial assurance by escrow or other financial means in the amount of \$15,000,000 for a period of 24 months after 7460-2's are filed (based on substantiated, solid supporting evidence of an ASR-11 requirement) for the acquisition, siting, and installation of an ASR-11 system. With this agreement and the re-optimization/modification of the radar systems at ACK and FMH, the FAA believes that there will not be a significant adverse effect to radar service in Nantucket Sound.

Aeronautical study disclosed that the proposed structure would have no effect on any existing or proposed arrival, departure, or en route instrument flight rule (IFR) operations or procedures.

Study for possible visual flight rules (VFR) effect disclosed that the proposed structure would have no effect on any existing or proposed arrival or departure VFR operations or procedures. It would not conflict with airspace required to conduct normal VFR traffic pattern operations at the Cape Cod Coast Guard Air Station (FMH), Barnstable Municipal Airport-Boardman/Polando Field (HYA), Nantucket Memorial Airport (ACK), Martha's Vineyard (MVY), or any other known public use or military airports. FAA Order 7400.2G, Procedures for Handling Airspace Matters (the Order) provides criteria for evaluating the effect on VFR operations in Paragraph 6-3-8. Subparagraph (c) states that the area considered for en route VFR flight begins and ends outside the airport traffic pattern airspace area or Class B, C, and D airspace areas. The location of all wind turbines in this project would lie outside all traffic pattern airspace and outside Class B, C, and D airspace. Therefore, they meet the criteria for and are appropriately considered to be in the area of en route operations.

While it is recognized that some aircraft operating under visual flight rules (VFR) may have to alter their altitude or route of flight FAA Order 7400.2G, Paragraph 6-3-8(c)(1) states that a structure would have an adverse effect upon VFR en route air navigation if its height is greater than 500 ft. above the surface at its site and within 2 statute miles of any regularly used VFR route. The Cape Wind project is within 2 statute miles of a regularly used VFR route. However, the requested height for these structures is not greater than 500 ft. above the surface at their site. The requested height is 440 ft. AGL/AMSL. Therefore, according to the FAA Order 7400.2G, the wind turbines at their proposed location and height do not meet the criteria to have an adverse effect on VFR en route operations. At 440 ft. AGL/AMSL, the proposed structure(s) cannot be considered to have a substantial adverse effect on VFR en route flight operations.

The proposed structures would be appropriately marked and/or lighted to make them conspicuous to airmen should circumnavigation be necessary.

The cumulative impact of the proposed structure, when combined with other proposed and existing structures, is not considered to be significant. Study did not disclose any adverse effect on existing or proposed public-use or military airports or navigational facilities, nor would the proposal affect the capacity of any known existing or planned public-use or military airport.

Therefore, it is determined that the proposed construction would not have a substantial adverse effect on the safe and efficient utilization of the navigable airspace by aircraft or on any air navigation facility and would not be a hazard to air navigation provided the conditions set forth within this determination are met.

Additional Conditions

1) In addition to the 10 day prior notice specified earlier in this determination, the proponent for this project shall also notify this office at least 90 days prior to the start of construction to ensure aeronautical charts are updated to reflect this area as now being under construction. It is imperative that the proponent ensures that this information has been received and acted upon. This requires the proponent to speak directly with the current FAA Obstruction Evaluation Service (OES) specialist responsible for the Cape Wind project or his/her supervisor. This information can be obtained from our website at <http://oeaaa.faa.gov>

DO NOT LEAVE A VOICE OR ELECTRONIC MESSAGE. PERSONAL CONTACT IS REQUIRED.

2) No construction may begin on any of the wind turbines within this project (structures studied and determined under ASN 2009-WTE-332-OE through 2009-WTE-461-OE) until the following actions have been completed:

a) The proponent has signed a reimbursable agreement with the FAA to cover the cost and installation of a TDX-2000 modification to the FMH ASR-8 radar.

b) Extensive study supports the TDX-2000 as a viable solution to the projected radar interference issue. However, to ensure acceptable radar coverage in the area, the proponent shall established financial assurance by escrow or other financial instrument in the amount of \$15,000,000 for a period of 24 months after 7460-2's are filed (based on substantiated, solid supporting evidence of an ASR-11 requirement) for the acquisition, siting, and installation of an ASR-11 system in the event the TDX-2000 modification to the current FMH ASR-8 does not fully mitigate the radar interference/clutter issues.

3) The proponent shall work directly with the FAA during the construction period to ensure adequate temporary obstruction marking and lighting is in place to protect aviation until such time as all wind turbines are built and the final obstruction marking and lighting scheme is completed and operational.

4) Obstruction lighting systems on all wind turbines for which obstruction lighting is recommended shall be synchronized (specifically the red lights) to flash at the same time.

NOTE: THE SEPARATE DETERMINATIONS FOR ALL CASES ASSOCIATED WITH THE CAPE WIND PROJECT MAY BE IMMEDIATELY OBTAINED, AS THEY ARE COMPLETED, FROM OUR WEBSITE AT:

<http://oeaaa.faa.gov>

SEARCH USING THE INDIVIDUAL AERONAUTICAL STUDY NUMBER (2009-WTE-332 through 461-OE).



H-2 FAA CW Affirmation of
Determination



U.S. Department
of Transportation
**Federal Aviation
Administration**

System Operations Services
800 Independence Avenue, SW.
Washington, DC 20591

AUG 5 2010

Mr. Craig Olmsted
Vice President
Cape Wind Associates LLC
75 Arlington Street, Suite 704
Boston, MA 02116

Dear Mr. Olmsted:

Determination of No Hazard to Air Navigation
Aeronautical Study Number: 2009-WTE-332-OE through 2009-WTE-461-OE
Obstruction Evaluation Case Number: 10-AW-OE-10
Wind Turbines – Nantucket Sound, Massachusetts

We have completed our examination of the petition for discretionary review of the subject aeronautical studies that concern several proposed wind turbines located in Nantucket Sound, Massachusetts. The enclosed copy of the affirmation of the Determination of No Hazard to Air Navigation is self-explanatory.

The determination is now final and will expire on FEB 4 2012.

If you have any questions regarding this matter, please contact Mrs. Ellen Crum at (202) 267 8783

Sincerely,

Edith V. Parish
Manager, Airspace & Rules Group
Air Traffic Organization

Enclosure

DEPARTMENT OF TRANSPORTATION

FEDERAL AVIATION ADMINISTRATION

Obstruction Evaluation Case Number 10-AWA-OE-10

Aeronautical Study Number's 2009-WTE-332-OE through 2009-WTE-461-OE

Wind Turbines – Nantucket Sound, Massachusetts

NOTICE OF DENIAL OF REQUEST FOR DISCRETIONARY REVIEW
OF DETERMINATION OF NO HAZARD TO AIR NAVIGATION

On May 17, 2010, the Federal Aviation Administration's Obstruction Evaluation Services (OES) Team issued Determinations of No Hazard to Air Navigation under Aeronautical Study numbers 2009-WTE-332-OE through 2009-WTE-461-OE, in response to a proposal for a wind turbine farm (turbines). The wind farm, comprised of 130 turbines, would be located offshore in Nantucket Sound, south of Hyannis, Massachusetts (MA), at a height of 440 feet (ft.) above ground level (AGL), 440 ft. above mean sea level (MSL). The proposed turbines do not exceed obstruction standards as contained in Title 14 Code of Federal Regulations (14 CFR) part 77, but were found to adversely impact air navigation facilities (radar).

The FAA received four valid petitions for discretionary review of the subject determinations. The petitioners include the town of Barnstable, MA, (owner and operator of Barnstable Municipal Airport), Save the Sound Alliance, a local government official,

and a regional airline (hereinafter referred to as the petitioner(s)). The petitioners do not agree with the FAA's issued determinations, and submitted many documents in support of their position. For the purpose of determining whether or not to grant discretionary review, we looked specifically at two issues raised by all four petitioners: (1) the impact of the wind turbines to aircraft operating under visual flight rules (VFR), and (2) the impact of the turbines to the air traffic radar system.

The petitioners allege the determinations are in error because the FAA did not properly consider the impact of the proposed turbines to aircraft operating under VFR. We do not agree. The regulations pertaining to obstructions in the National Airspace System (NAS) are contained in 14 CFR Part 77, Objects Affecting the Navigable Airspace. In accordance with section 77.23 (a)(1), Standards for determining obstructions, an object is considered to be an obstruction if it is greater than 500 ft. AGL at the site. Since these turbines do not exceed 500 ft. AGL, based on height alone, they do not exceed obstruction standards, thus cannot be considered as a hazard to air navigation.

In spite of the above, we would like to respond to the petitioners concerns about the impact to VFR operations. The guidelines and procedures for the conduct of aeronautical studies are contained in FAA Order (FAAO) 7400.2, Procedures for Handling Airspace Matters. Paragraph 6-3-8, Evaluating Effect on VFR operations, discusses standards for consideration in determining a structure's impact on VFR operations. If built, the turbines would be located outside the protected airspace for adjacent airport traffic

patterns and over open water at a proposed altitude of 440 ft. AGL. Per this paragraph, a proposed structure would have an adverse effect upon VFR navigation if it is greater than 500 ft. AGL, and is within 2 miles of any regularly used VFR route (VFR routes are considered in this paragraph to be rivers, roads, coastlines, railroads, or similar landmarks). Since these proposed turbines would not exceed 500 ft. AGL, and are not located along a VFR route, they do not meet the criteria for an obstruction and are not considered to have an adverse effect to VFR operations. We agree with the OES Team conclusion that these proposed structures do not have an adverse impact to VFR operations in the NAS.

The petitioners also allege the proposed structures, when built, would impair the operation of existing radar facilities, and do not believe the FAA's proposed mitigation is sufficient. We do not agree. During the course of the aeronautical study, the FAA conducted extensive research about the impact of these turbines to three radar systems and concluded these turbines would have an adverse impact. The determinations detail the effects to the radar systems and offer several actions to mitigate the impact. During this examination, we looked at the available data, the aeronautical studies, and the petitions, and concluded the proposed mitigation for the anticipated impacts to the radar systems is sound and reasonable. We support the findings contained in the issued determinations.

In conclusion, we find the OES Team followed all the current procedures in making the subject determinations. The petition fails to provide any new facts or information that would change the basis on which the determinations were made. So, your request for discretionary review is denied, and the above referenced Determination of No Hazard to Air Navigation is final, and will expire on FEB 4 2012

Issued in Washington, DC on



Elizabeth L. Ray

Director of Systems Operations Airspace and Aeronautical Information Management
Air Traffic Organization

H-3 EPA Draft Air Permit



Outer Continental Shelf Air Permit

issued to

Cape Wind Associates, LLC

for the

**Cape Wind Energy Project
Offshore Renewable Wind Energy Project**

Horseshoe Shoal in Nantucket Sound

**EPA Permit Number
OCS-R1-01**

Pursuant to the provisions of Section 328 of the Clean Air Act (CAA) and the Code of Federal Regulations (C.F.R.) Title 40, Part 55, the United States Environmental Protection Agency-New England (EPA) is proposing to issue an Outer Continental Shelf (OCS) air quality permit to Cape Wind Associates, LLC (Cape Wind). Cape Wind proposes to construct and operate 130 wind turbine generators (WTGs) and other supporting equipment (The Project) in a grid pattern on or near the Horseshoe Shoal in Nantucket Sound off the coast of Massachusetts.

The design, construction and operation of the Project shall be subject to the attached permit conditions and permit limitations. This permit shall be effective 30 days after the date of signature unless (1) review is requested on the permit under 40 C.F.R. § 124.19, in which case the permit shall be effective when provided by 40 C.F.R. § 124.19(f), or (2) no comments requesting a change in the draft permit are received, in which case the permit shall be effective immediately upon signature. The permit shall remain in effect until it is surrendered to EPA. This permit becomes invalid if Cape Wind does not commence construction within 18 months after the permit's effective date. EPA may extend the 18-month period upon a satisfactory showing that an extension is justified. This permit does not relieve the Cape Wind from the obligation to comply with applicable state and federal air pollution control rules and regulations.


H. Curtis Spalding
Regional Administrator


Date of signature 1/7/2011

Acronyms and Abbreviations

Cape Wind	Cape Wind Associates, LLC
C.F.R.	Code of Federal Regulations
CI	Compression Ignition
CO	Carbon Monoxide
EPA	Environmental Protection Agency
ESA	Endangered Species Act
g/hp-hr	Grams per horsepower-hour
g/kw-hr	Grams per kilowatt-hour
kW	Kilowatt
NMHC	Non-methane hydrocarbons
NOx	Nitrogen Oxides
OCS	Outer Continental Shelf
PM	Particulate matter
The Project	Wind turbines and supporting equipment
WTG	Wind Turbine Generator

Environmental Protection Agency - New England

Outer Continental Shelf Air Permit

Cape Wind Energy Associates, LLC Cape Wind Energy Project

Permit Terms and Conditions

I. Background for informational purposes

On December 17, 2008, Cape Wind filed an OCS air permit application with EPA. Cape Wind proposes to install and operate 130 WTGs and other supporting equipment (The Project) in a grid pattern on or near the Horseshoe Shoal in Nantucket Sound. This air permit approves Cape Wind's application and regulates the pollutants emitted from the preconstruction, construction and operation activities of the proposed wind energy facility.

For air permitting purposes, the Project is divided into three sections that closely track the life cycle or phases of the Cape Wind project. Phase 1 includes site preparation and construction of the Project; Phase 2 includes operations, maintenance and repair of the Project; and Phase 3 includes decommissioning and removal of the project. This permit includes emissions and operational requirements applicable to Phases 1 and 2. All permit requirements apply during both Phase 1 and Phase 2 except where specifically provided otherwise. EPA is not including the requirements for Phase 3 at this time.

This permit organization is different from most air permits. Typically, state and federal air regulations define emissions that result from the construction and decommissioning of a new source as "secondary emissions" that are not regulated under the air permit. However, the definition of "OCS source" in section 328 of the Clean Air Act and 40 Part C.F.R. Part 55 is broader in scope than EPA's regulations for land-based stationary sources. The OCS source definition requires EPA to include emissions from certain on-site construction equipment in the air permit. The OCS regulations also require EPA to include pollutants emitted from vessels that service Cape Wind in the "potential emissions" of Cape Wind.

II. Definitions

The following definitions shall be used for the purposes of this permit only. Terms not otherwise defined in this permit have the meaning assigned to them in the referenced Clean Air Act provisions and EPA regulations (including the Massachusetts regulations incorporated by reference into 40 C.F.R. Part 55).

The owner/operator includes Cape Wind Associates, LLC; its successor(s) in operating the permitted project; its contractors; and any agents or parties acting on its

behalf that conduct activities regulated by this permit, including but not limited to vessel, barge, and equipment operators.

Vessel has its normal meaning under the Clean Air Act, and specifically includes both (1) self-propelled vessels and (2) barges or other non-self-propelled vessels that must be towed by another vessel. It includes vessels with or without jacking systems.

Jack-up Unit means a vessel (whether self-propelled or not) that includes legs and a lifting system that enables the vessel to lower its legs into the seabed and elevate its hull to provide a stable work deck. Such a vessel is considered a Jack-up Unit at all times, including when it is not attached to the seabed.

Non-stationary Engine means any engine, including but not limited to a vessel propulsion engine, that (1) is not engaged or participating in an OCS Activity, and (2) is on a vessel that (a) is not itself an OCS Source, but (b) is physically attached to an OCS Source. While a vessel is physically attached to an OCS Source, all of its operating engines (including propulsion engines) that are *not* participating in the OCS Source's OCS Activities are considered Non-stationary Engines.

Non-stationary Engine Emissions means all emissions from Non-stationary Engines during a given period of time.

OCS Attachment means the moment when at least three legs from a Jack-up Unit have attached to the seafloor.

OCS Detachment means the moment when a Jack-up Unit has retracted enough of its legs so that fewer than three legs remain attached to the seafloor.

OCS Activity means activity relating to the construction, operation or maintenance or any other pollutant-emitting activity conducted by a vessel, or equipment on a vessel, from the time of the vessel's OCS Attachment to the time of the vessel's OCS Detachment.

OCS Source means any equipment, activity, or facility, including vessels, that emits or has the potential to emit any air pollutant and is or will be used to conduct an OCS Activity as part of the permitted project. A vessel or equipment on a vessel becomes an OCS Source each time the vessel completes an OCS Attachment, and ceases to be an OCS Source each time the vessel completes an OCS Detachment.

OCS Source Emissions means the emissions from any OCS Source during an OCS Source Period.

OCS Source Period means each period of time from when a vessel completes an OCS Attachment to when the vessel completes an OCS Detachment.

OCS Stationary Engine means (1) any engine on an OCS Source that operates during

an OCS Source Period, and (2) any engine that (a) is on a vessel that (i) is not itself an OCS Source but (ii) is physically attached to an OCS Source, and (b) is engaged or participating in the OCS Source's OCS Activity during an OCS Source Period.

OCS Vessel Transit Emissions means all emissions from a given vessel in transit within the Project Area.

Phase 1 Start Date means the date of the first occasion on which any vessel or barge associated with the project performs an OCS Attachment.

Phase 1 End Date means the last day of the calendar month that is 36 months after the Phase 1 start date, unless extended by EPA as described in Section XI.A.

Phase 1 means all project activities (including but not limited to site preparation, preconstruction and construction) from the Phase 1 Start Date to the Phase 1 End Date.

Phase 2 Start Date means the first day of the calendar month following the Phase 1 End Date.

Phase 2 means all project activities (including but not limited to the normal operation and maintenance of the wind farm, and repair activities requiring OCS Attachments) from the Phase 2 Start Date and thereafter.

Project Area means the area within 25 miles of the WTGs as shown in Figure 1-1 of the December 17, 2008 application.

Total OCS Emissions means the sum of OCS Source Emissions, OCS Vessel Transit Emissions, and Non-stationary Engine Emissions for all OCS Sources and vessels in the Project Area.

Transit means, for a vessel, both (1) actual movement within the Project Area, and (2) periods when the vessel is idling within the Project Area and is neither an OCS Source nor physically attached to an OCS Source.

Vessel Engine means any engine (including but not limited to propulsion engines) on a vessel that is (1) within the Project Area, (2) not an OCS Source, and (3) not physically attached to an OCS Source.

III. Emission Standards - Phase 1 and Phase 2

The emissions standards of Section III apply to each OCS Stationary Engine, during each OCS Source Period.

A. The owner/operator shall ensure that any OCS Stationary Engine with a maximum power output at or below 560 kilowatts (kW) on any OCS Source has been certified by

the manufacturer(s) to meet or surpass the following emission standards required for 40 C.F.R. Part 89, Tier 3 engines:

Nitrogen oxides (NO _x) + non-methane hydrocarbons (NMHC):	4.0 grams/kilowatt-hour (g/kW-hr)
Particulate Matter (PM):	0.2 g/kW-hr
Carbon monoxide (CO):	3.5 g/kw-hr

B. The owner/operator shall ensure that any OCS Stationary Engine with a maximum power output greater than 560 kW on any OCS Source has been certified by the manufacturer(s) to meet or surpass the following emission standards required for 40 C.F.R. Part 89, Tier 2 engines:

NO _x + NMHC:	6.4 g/KW-hr
PM:	0.2 g/kW-hr
CO:	3.5 g/KW-hr

C. The owner/operator shall ensure that any OCS Stationary Engine has been certified by the manufacturer to meet or surpass the following exhaust opacity standards:

1. 20 percent during the acceleration mode,
2. 15 percent during the lugging mode, and
3. 50 percent during the peaks in either the acceleration or lugging modes.

D. The owner/operator shall ensure that the emissions from any OCS Stationary Engine do not exceed the following smoke and opacity standards:

1. Smoke that has a shade, density, or appearance equal to or greater than No. 1 of the Ringelmann Scale shall not be emitted for more than a total of six minutes during any hour.
2. During the six minute period referred to in Section III.D.1, smoke with a shade, density, or appearance equal to or greater than No. 2 of the Ringelmann Scale shall not be emitted at any time.
3. Visible emissions (not including uncombined water or smoke) in excess of 20% opacity shall not be emitted for more than a total of two minutes during any hour.
4. During the two minute period referred to in Section III.D.3, visible emissions (not including uncombined water or smoke) with an opacity exceeding 40% shall not be emitted at any time.

E. The owner/operator shall ensure that any naturally-aspirated OCS Stationary Engine has been certified by the manufacturer not to discharge crankcase emissions into the ambient atmosphere, unless such crankcase emissions are permanently routed into the exhaust and included in all exhaust emission measurements. This provision does not

apply to engines using turbochargers, pumps, blowers, or superchargers for air induction.

F. If the owner/operator uses any compression ignition (CI) OCS Stationary Engine(s) with an actual model year of 2011 or later, the owner/operator shall meet all of the requirements applicable to owners and operators of stationary CI engines specified in the then-applicable subpart of 40 C.F.R. Part 60 that apply to the actual model year of the engine(s) used. This provision does not require that the owner/operator use CI engines of a model year later than 2011, but only that, if the owner/operator does in fact use such engine(s), the owner/operator shall comply with the then-applicable owner/operator provisions of 40 C.F.R. Part 60 applicable to such engine(s).

IV. Operational Conditions

- A. For each OCS Stationary Engine, the owner/operator shall use only ultra-low sulfur fuel oil with a sulfur content that does not exceed 0.0015% by weight.
- B. From the Phase 1 Start Date to the Phase 1 End Date, the Total OCS Emissions of NO_x shall not exceed 226 tons.
- C. From the Phase 2 Start Date and continuing thereafter, Total OCS Emissions of NO_x shall not exceed 49 tons per year in any rolling 12-month period.
- D. For each OCS Stationary Engine, the owner/operator shall:
 - 1. Ensure that the engine is installed and configured according to the manufacturer's specifications.
 - 2. Operate and maintain the engine and control device(s) according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer.
 - 3. Only change those settings that are permitted by the manufacturer.
 - 4. Install and operate a non-resettable clock.
 - 5. Comply with those General Requirements of 40 C.F.R. Part 60 that are specifically listed in Table 8 to subpart IIII of Part 60.
 - 6. Comply with the requirements of 40 C.F.R. Parts 60, 89, 94 and/or 1068 that apply to owners or operators of engines regulated under those parts.
- E. The owner/operator shall not operate any vessel propulsion engine on any OCS Source from the OCS Source's OCS Attachment until its OCS Detachment.

V. Monitoring Requirements

- A. The owner/operator shall monitor the hours of operation (to the nearest tenth of an hour) of each OCS Stationary Engine on any OCS Source during each OCS Source Period.
- B. The owner/operator shall monitor the hours of operation (to the nearest tenth of an hour) of each OCS Vessel while the vessel is in transit within the Project Area.
- C. The owner/operator shall monitor the hours of operation (to the nearest tenth of an hour) of each Non-stationary Engine.
- D. The owner/operator shall monitor the sulfur content of all fuel used in any OCS stationary engine by obtaining fuel certifications from the fuel supplier.

VI. Testing Requirements

Upon request by EPA, the owner/operator shall conduct a 40 C.F.R. Part 60, Appendix A: Method 9 opacity test on any engine that is or may be subject to Section III.D.1.

VII. Phase 1 Offset Requirements

- A. The owner/operator shall obtain a minimum of 285 tons of discrete NO_x emission reductions to offset the NO_x emissions from Phase 1.
- B. The owner/operator shall obtain only emission reduction credits that are certified under the Massachusetts trading bank codified under 310 CMR 7.00 Appendix B, "Emissions Banking, Trading and Averaging," and which comply with all applicable provisions of 310 CMR 7.00 Appendices A and B, including but not limited to the geographic requirements of Appendix A(6)(b) and the seasonal requirements of Appendix A(6)(j).
- C. No later than 30 days before the Phase 1 Start Date, the owner/operator shall submit a report to EPA documenting that it has obtained 285 tons of discrete NO_x emissions reduction credits as described in Section VII.A-B above, and that these reductions have actually occurred as of 30 days before the Phase 1 Start Date.
- D. The owner/operator shall not conduct any OCS Activities until it obtains the required emissions reduction credits as described in Section VII.A-C above.

VIII. Record Keeping Requirements

- A. The owner/operator will maintain records of the following:
 - 1. Make and model of each OCS Stationary Engine used for OCS Activities

during Phase 1 and Phase 2 of the project.

2. Initial date each OCS Stationary Engine was used on the project.
 3. Manufacturing date of each OCS Stationary Engine used on the project.
 4. Manufacturer's information that shows all OCS Stationary Engines comply with all 40 C.F.R. Part 60 emission standards.
 5. Emission rate of each pollutant regulated under 40 C.F.R. Part 60, Subpart IIII for each OCS Stationary Engine, in grams per kilowatt-hour.
 6. Maximum rated power output for each engine (including OCS Stationary Engines, Non-stationary Engines, and Vessel Engines) in kW.
 7. Phase 1 Start Date, Phase 1 End Date, and Phase 2 Start Date.
 8. Fuel records that show the sulfur content of all fuel used by the OCS Stationary Engines (i.e., certifications provided by fuel supplier).
 9. All notifications submitted to comply with 40 C.F.R. Part 60, Subpart IIII and all documentation supporting any notification.
 10. All maintenance conducted on each OCS Stationary Engine (including but not limited to oil changes, compression checks, tune ups, timing changes, etc.).
 11. Documentation showing that each OCS Stationary Engine is certified to meet the 40 C.F.R. Part 89, Tier 2 or Tier 3 emission standards, whichever is applicable.
 12. Hours of operation of each engine (including OCS Stationary Engines, Non-stationary Engines, and Vessel Engines) within the Project Area.
 13. For any Non-stationary or Vessel Engine that does not match the power specifications of any engine in Attachment 1 or 2 (as provided by Section VIII.B footnotes 1 and 2 of this permit), the engine's maximum nameplate power output and maximum emission rate as provided by the engine manufacturer.
- B.** The owner/operator shall calculate and record the OCS Source Emissions, OCS Vessel Transit Emissions, Non-stationary Engine Emissions and Total OCS Emissions of NO_x (monthly and 12-month rolling average) as follows:

$$\text{OCS Source Emissions of NO}_x = H * P * \text{NER} / \text{GT}$$

H = Hours of operation (from Section V.A)

P = Maximum engine power (from Section VIII.A.6)

NER = NMHC + NO_x emission rate from Section III.A or B as appropriate
GT = 907,185 grams per short ton

Non-stationary Engine Emissions of NO_x = H * P * NER / GT
H = Hours of operation (from Section V.C)
P = Maximum engine power (from Footnote 1.)
NER = NMHC + NO_x emission rate (from Footnote 1.)
GT = 907,185 grams per short ton

OCS Vessel Transit Emissions of NO_x = Ht * P * LF * NER / GT
Ht = Hours of operation in transit in the Project Area (from Section V.B)
P = Maximum power of Vessel Engine (from Footnote 2.)
LF = assumed engine load factor (from Footnote 2.)
NER = NMHC + NO_x emission rate for Vessel Engine in transit (from Footnote 2.)
GT = 907,185 grams per short ton

Total OCS Emissions of NO_x = sum of OCS Emissions for all OCS Sources + sum of OCS Vessel Transit Emissions for all vessels in transit in the Project Area + sum of Non-stationary Engine Emissions for all Non-stationary Engines.

Footnote 1. The owner/operator shall obtain the power output and emission rates for the Non-stationary Engines from Attachment 1 to this permit (the June 4, 2010 letter from the ESS Group, Inc. to David Conroy entitled "Outer Continental Shelf Air Regulation Permit Application: Cape Wind Energy Project"), Appendices, Tables entitled "Cape Wind Energy Project: Preconstruction Emissions Inside 25 miles." If the owner/operator uses a Non-stationary Engine that does not match the power specifications of any engine in Attachment 1, then for that engine the owner/operator shall use (1) the maximum nameplate power output, (2) a load factor of 1.0, and (3) the maximum emission rates provided by the engine manufacturer.

Footnote 2. The owner/operator shall obtain the power output, engine load factors, and emission rates for the Vessel Engines from Attachment 2 to this permit (the September 23, 2009 letter from the ESS Group, Inc. to David Conroy entitled "Revised Emissions Estimates: Outer Continental Shelf Air Regulation Permit Application: Cape Wind Energy Project: Preconstruction Emissions Inside 25 Miles"). If the owner/operator uses a Vessel Engine that does not match the power specifications of any engine in Attachment 2, then for that engine the owner/operator shall use (1) the maximum nameplate power output, (2) a load factor of 1.0, and (3) the maximum emission rates provided by the engine manufacturer.

- C. The owner/operator shall record the date and time of each OCS Attachment and each OCS Detachment for each vessel and each OCS Stationary Engine.
- D. The owner/operator shall maintain all of the above records for five years and shall, upon request by EPA, supply any of the above records.

IX. Reporting and Notification Requirements

A. For equipment installed with OCS Stationary Engines greater than 2,237 kW, the owner/operator shall, no later than 30 days before the Phase 1 Start Date, submit an initial notification including the following information:

1. Name and address of the owner or operator;
2. The address of the affected source;
3. Engine information including make, model, engine family, serial number, model year, maximum engine power, and engine displacement; and
4. Emission control equipment.

B. The owner/operator shall submit all notifications and reports required by this permit to the address listed in Section XVI below.

C. The owner/operator shall submit to EPA New England semi-annual reports postmarked by January 30th and July 30th of each year. Each semi-annual report shall contain a spreadsheet of all records required under Section VIII, and records of (1) all emission limit or other permit condition violations, (2) all equipment failures or malfunctions, and (3) all corrective actions.

D. The owner/operator shall notify EPA at least 24 months before initiating any decommissioning activities, and seek an applicability determination or revised permit for decommissioning activities at that time, based on then-applicable emissions estimates and regulatory requirements.

X. General Requirements

A. The owner/operator shall display a copy of this permit on each Jack-up Unit, in a reasonably accessible location as near to the subject equipment as is practical.

B. After the occurrence of any violation of any emission limitation or condition contained herein, the owner/operator must notify EPA New England, Office of Environmental Stewardship, attention Compliance and Enforcement Chief, by FAX at (617) 918-1810 within two business days, and subsequently in writing to the address listed in Section XVI below within seven calendar days.

XI. Special Conditions

A. Phase 1 Extension: The owner/operator may request an extension of the Phase 1 End Date. The owner/operator must submit any such request no later than 18 months after the Phase 1 Start Date, and in that request, demonstrate the following:

1. The owner/operator has complied with all Phase 1 permit requirements;
2. For good cause, the owner/operator requires limited additional operation under the permit conditions applicable to Phase 1, rather than Phase 2;
3. The owner/operator can continue to comply with all Phase 1 permit requirements (including the obligation to possess adequate emissions offsets) during the additional period under Phase 1;
4. All requirements applicable to the project outside of this permit will continue to be satisfied during the extension.

EPA will review the owner/operator's request and any other relevant information to determine whether the request satisfies the requirements of Section XI.A.1-4; is reasonable in light of the information in the request and all other relevant circumstances; and is consistent with the CAA, its implementing regulations, and the requirements of this permit (including but not limited to monitoring, recordkeeping and reporting requirements). If EPA determines that the owner/operator's request satisfies the preceding requirements, then EPA will, by letter, extend the Phase 1 End Date. All Phase 1 permit requirements, including Section IV.B, will continue to apply until the extended Phase 1 End Date.

B. Endangered Species Act: If at any time during the life of the Project, either the United States Fish and Wildlife Service or the National Marine Fisheries Service, or a successor agency, request that Endangered Species Act (ESA) consultation be re-initiated, withdraws an Incidental Take Statement, or determines that the requirements of the ESA are not being satisfied, the owner/operator shall notify EPA within five (5) calendar days of its receipt of

such request, withdrawal; or determination.

C. Prevention & Abatement of Air Pollution Episodes & Emergencies

1. No later than 180 days before the Phase 1 Start Date, the owner/operator shall submit to EPA a Standby Emission Reduction Plan (ERP) that the owner/operator would implement to reduce air contaminants if the Massachusetts Department of Environmental Protection declares an Air Pollution Episode under 310 C.M.R. 8.00 during Phase 1. The plan shall identify the sources of air contaminants, the approximate amount of reduction of contaminants, and a brief description of the manner in which the reduction will be achieved. If EPA determines that the ERP is inadequate, EPA will disapprove the plan, give the reasons for disapproval, and require resubmittal of an amended plan in a reasonable period of time as determined by EPA.
2. If an Air Pollution Episode is declared during Phase 1, the owner/operator shall implement the standby ERP.
3. If, pursuant to 310 C.M.R. 8.05, the Massachusetts Department of Environmental Protection declares an Air Pollution Episode Alert, Air Pollution Episode Warning, or Air Pollution Episode Emergency for particulate matter and/or sulfur dioxide, then the owner/operator shall stop all construction activities that generate air pollutants until the Department terminates the Alert, Warning, or Emergency.
4. If, pursuant to 310 C.M.R. 8.15, the Massachusetts Department of Environmental Protection declares an Air Pollution Incident Emergency and issues orders to construction projects and/or vessels in southeastern Massachusetts, then the owner/operator shall comply with such order.

XII. Right of Entry

A. The owner/operator shall allow all authorized representatives of EPA, upon presentation of credentials, to enter upon or through the facility where records required under this permit are kept. The owner/operator shall allow such authorized representatives, at reasonable times:

1. To access and copy any records that must be kept under this permit;
2. To inspect any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit; and
3. To monitor substances or parameters for the purpose of assuring compliance with this permit.

B. The owner/operator shall provide transportation for EPA inspectors by appointment, when requested by EPA, from a coastal port location to, and from, any vessel engaged in OCS activities, and shall, no later than 30 days after any such transportation, provide EPA with an invoice reflecting the reasonable transportation cost involved in transporting the EPA inspector(s).

XIII. Transfer of Ownership

In the event of any changes in control or ownership of the project, this permit shall be binding on all subsequent owners and operators. The owner/operator shall notify the succeeding owner and operator of the existence of this permit and its conditions no later than the effective date of the change of control or ownership. Notification shall be by letter with a simultaneous copy forwarded to the EPA.

XIV. Severability

The provisions of this permit are severable, and if any provision of the permit is held invalid, the remainder of this permit will not be affected thereby.

XV. Other Applicable Regulations

The owner/operator shall construct and operate the Cape Wind facility in compliance with all other applicable provisions of federal regulations and state regulations that are applicable under 40 C.F.R. Part 55.

XVI. Agency Addresses

All correspondence required by this permit shall be forwarded to:
Air Compliance Clerk
U.S. EPA New England
5 Post Office Square, Suite 100
Boston, MA 02109-3912

XVII. Attachments

Attachment 1: June 4, 2010 letter from the ESS Group, Inc. to David Conroy entitled "Outer Continental Shelf Air Regulation Permit Application: Cape Wind Energy Project."

Attachment 2: September 23, 2009 letter from the ESS Group, Inc. to David Conroy entitled "Revised Emissions Estimates: Outer Continental Shelf Air Regulation Permit Application: Cape Wind Energy Project: Preconstruction Emissions Inside 25 Miles."

H-4 MA CZM Consistency
Certificate CW MMS Action



THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS
OFFICE OF COASTAL ZONE MANAGEMENT
251 Causeway Street, Suite 800, Boston, MA 02114-2136
(617) 626-1200 FAX: (617) 626-1240

January 23, 2009

Terry L. Orr
ESS Group, Inc.
888 Worcester Street, Suite 240
Wellesley, MA 02482

Re: CZM Federal Consistency Review of Cape Wind Energy Project – Minerals
Management Service Action; Nantucket.

Dear Mr. Orr:

The Massachusetts Office of Coastal Zone Management (CZM) has completed its review of the proposed project to build, operate, and eventually decommission an electric generation facility consisting of 130 wind turbine generators arranged in a grid pattern in the Horseshoe Shoals region of Nantucket Sound off the coast of Massachusetts. The project is designed to generate a maximum electric output of 454 megawatts and an average output of 182.6 megawatts of renewable wind-generated energy that will be transmitted and distributed to the New England regional power grid, including Cape Cod and the islands of Nantucket and Martha's Vineyard.

To inform our federal consistency review, CZM reviewed the Environmental Notification Form (ENF), Notice of Project Change (NPC), Draft Environmental Impact Report (DEIR), and Final Environmental Impact Report (FEIR) developed pursuant to the Massachusetts Environmental Policy Act; two Draft Environmental Impact Statements (DEIS) and a Final Environmental Impact Statement developed pursuant to the National Environmental Policy Act; and, pursuant to the Coastal Zone Management Act, your federal consistency certification, applicable state permits/licenses, and lease/easement/right-of-way application to the Minerals Management Service under the Outer Continental Shelf Lands Act. Over the course of the state and federal review process, CZM has received all of the data and information necessary to make a consistency determination.

Based on our review, all aspects of the project, including those project elements located in federal waters, and the project's effects on resources and uses in the Massachusetts coastal zone, we concur with your certification that the activity as proposed is consistent with the CZM enforceable program policies.

If the above-referenced project is modified in any manner, including any changes resulting from permit, license or certification revisions, including those ensuing from an appeal, or the project is noted to be having effects on coastal resources or uses that are different than originally proposed, it is incumbent upon the proponent to notify CZM and submit an explanation of the nature of the



change pursuant to 15 CFR 930. CZM will use this information to determine if further federal consistency review is required.

Thank you for your cooperation with CZM.

Sincerely,



Deerin Babb-Brott
Director

czm #5059

Cc:

Craig Olmsted, Cape Wind Associates LLC

Rachel Pachter, ESS Group Inc.

James F. Bennett, Minerals Management Service, US Department of the Interior

Dr. Rodney E. Cluck, Minerals Management Service, US Department of the Interior

Karen Kirk Adams, US Army Corps of Engineers

Robert Varney, US Environmental Protection Agency

Tim Timmermann, US Environmental Protection Agency

Michael Bartlett, US Fish & Wildlife Service

Vern Lang, US Fish & Wildlife Service

Ken Kimmell, MA Executive Office of Energy and Environmental Affairs

Laurie Burt, MA Department of Environmental Protection

Phil Weinberg, MA Department of Environmental Protection

Ben Lynch, MA Department of Environmental Protection

Elizabeth Kouloheras, MA Department of Environmental Protection

Mary Griffin, MA Department of Fish and Game

Rich Lehan, MA Department of Fish and Game

Paul Diodati, MA Division of Marine Fisheries

Jollette Westbrook, Energy Facilities Siting Board

Town of Yarmouth Conservation Commission

Town of Barnstable Conservation Commission

Cape Cod Commission

H-5 MA CZM Consistency
Certificate CW USACE Action



THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS
OFFICE OF COASTAL ZONE MANAGEMENT
251 Causeway Street, Suite 800, Boston, MA 02114-2136
(617) 626-1200 FAX: (617) 626-1240

January 23, 2009

Terry L. Orr
ESS Group, Inc.
888 Worcester Street, Suite 240
Wellesley, MA 02482

Re: CZM Federal Consistency Review of Cape Wind Energy Project – Army Corps of Engineers Action; Nantucket.

Dear Mr. Orr:

The Massachusetts Office of Coastal Zone Management (CZM) has completed its review of the proposed project to build, operate, and eventually decommission an electric generation facility consisting of 130 wind turbine generators arranged in a grid pattern in the Horseshoe Shoals region of Nantucket Sound off the coast of Massachusetts. The project is designed to generate a maximum electric output of 454 megawatts and an average output of 182.6 megawatts of renewable wind-generated energy that will be transmitted and distributed to the New England regional power grid, including Cape Cod and the islands of Nantucket and Martha's Vineyard.

To inform our federal consistency review, CZM reviewed the Environmental Notification Form (ENF), Notice of Project Change (NPC), Draft Environmental Impact Report (DEIR), and Final Environmental Impact Report (FEIR) developed pursuant to the Massachusetts Environmental Policy Act; two Draft Environmental Impact Statements (DEIS) and a Final Environmental Impact Statement developed pursuant to the National Environmental Policy Act; and, pursuant to the Coastal Zone Management Act, your federal consistency certification, applicable state permits/licenses, and application for US Army Corps of Engineers authorization under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. Over the course of the state and federal review process, CZM has received all of the data and information necessary to make a consistency determination.

Based on our review, all aspects of the project, including those project elements located in federal waters, and the project's effects on resources and uses in the Massachusetts coastal zone, we concur with your certification that the activity as proposed is consistent with the CZM enforceable program policies.

If the above-referenced project is modified in any manner, including any changes resulting from permit, license or certification revisions, including those ensuing from an appeal, or the project is noted to be having effects on coastal resources or uses that are different than originally proposed, it is incumbent upon the proponent to notify CZM and submit an explanation of the nature of the



change pursuant to 15 CFR 930. CZM will use this information to determine if further federal consistency review is required.

Thank you for your cooperation with CZM.

Sincerely,



Deerin Babb-Brott
Director

czm #5059

Cc:

Craig Olmsted, Cape Wind Associates LLC

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Paul Diodati, MA Division of Marine Fisheries

Jollette Westbrook, Energy Facilities Siting Board

Town of Yarmouth Conservation Commission

Town of Barnstable Conservation Commission

Cape Cod Commission

H-6 MA DEP Water Quality
Certificate



COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
ONE WINTER STREET, BOSTON, MA 02108 617-292-5500

DEVAL L. PATRICK
Governor

TIMOTHY P. MURRAY
Lieutenant Governor

IAN A. BOWLES
Secretary

LAURIE BURT
Commissioner

August 15, 2008

Cape Wind Associates, LLC
Attn: Rachel Pachter
75 Arlington Street, Suite 704
Boston, MA 02116

Re: **401 WATER QUALITY CERTIFICATION**
Application for BRP WW 07, Major project dredging

At: Lewis Bay and Nantucket Sound, in the municipalities of Barnstable and
Yarmouth

DEP Transmittal No: W133663
ACOE Application No: NAE-2004-338
DEP Wetlands File No: 3-4697 (Barnstable) and 83-1816 (Yarmouth)

Dear Ms. Pachter:

The Massachusetts Department of Environmental Protection (the "Department" or "MassDEP") has reviewed the application of Cape Wind Associates, LLC (the "permittee") for a 401 Water Quality Certification, as referenced above, for construction of a submarine transmission cable system as described below. In accordance with the provisions of Section 401 of the Federal Clean Water Act as amended (33 U.S.C. §1251 *et seq.*), M.G.L. c.21, §§ 26-53, and 314 CMR 9.00, it has been determined there is reasonable assurance the project will be conducted in a manner which will not violate applicable water quality standards (314 CMR 4.00) and other applicable requirements of state law.

The cable system will pass through Nantucket Sound and Lewis Bay, which are designated as Class SA in the Massachusetts Surface Water Quality Standards (314 CMR 4.00). Class SA waters are intended "as excellent habitat for fish, other aquatic life and wildlife and for primary and secondary contact recreation." Anti-degradation provisions of these Standards require that "existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected."

This information is available in alternate format. Call Donald M. Gomes, ADA Coordinator at 617-556-1057. TDD# 1-866-539-7622 or 1-617-574-6868.

MassDEP on the World Wide Web: <http://www.mass.gov/dep>



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Proposed Project

The project entails the installation of two 12.5 mile-long submarine transmission cable circuits, of which approximately 7.6 miles of each circuit are in state waters in Lewis Bay and Nantucket Sound, within the municipalities of Barnstable and Yarmouth. The portion of the transmission cable route through state waters also lies within the Cape and Islands Ocean Sanctuary. The transmission cables will connect land-based facilities to an Electric Service Platform (ESP) located amidst a proposed 130 turbine wind farm located outside of state jurisdiction on Horseshoe Shoals in Nantucket Sound. The entire project, including the wind farm and associated structures, such as the ESP and transmission cables, is currently undergoing review by the United States Minerals Management Service (MMS), which was granted lead federal authority for the project pursuant to the 2005 Energy Policy Act. The portion of the project within state jurisdiction, limited to the transmission cables, has completed reviews under the Massachusetts Environmental Policy Act ("MEPA"- Final Certificate issued on March 29, 2007) and by the Massachusetts Energy Facilities Siting Board ("EFSB"- approval decisions issued on May 11, 2005 and May 2, 2008). However, the MMS review has not been completed, and this Certification may not be valid for an alternative route approved by MMS. This Certification does not authorize any future activities associated with the decommissioning of the project or any additional dredging or jet plowing necessary to maintain cover over the transmission cables beyond the 5 year term of this Certification.

Cable route and construction methodology

The proposed pipeline route proceeds west through Lewis Bay from its landfall at New Hampshire Avenue in Yarmouth, then turns south to exit Lewis Bay between Egg Island and Dunbar Point in Barnstable. Once in Nantucket Sound, the circuits follow a generally southerly route to the 3-mile state jurisdictional limit and on to the ESP on Horseshoe Shoals. The submarine portion of each cable circuit will be installed, using a jet plow, in an 8 foot deep trench measuring 4 to 6 feet across at the top and 2 feet wide at the bottom of the trench. A jet plow is used to embed the cable in a trench created by fluidizing the sediment with a directed jet of water. Approximately six feet of material will cover the conduits once they are buried in this manner. As described in the application, a shallow depression is expected over the cable route due to dispersion of some sediment due to the jet plowing operation, however natural transport of sediments by storms and ocean currents is expected to restore benthic conditions. Addition of hard material to cover and protect the transmission cable is not expected to be necessary and is not authorized herein.

Jet plowing of the transmission cable circuits within Lewis Bay is expected to take 1-2 days for each of the two circuits, and will pass in close proximity (approximately 70 feet) to eelgrass resource areas at Egg Island. The proponent will re-survey the extent of the eelgrass beds prior to the start of construction to confirm the boundary of the resource area. In addition, the proponent will install a silt curtain between the jet plow and the eelgrass bed prior to jet plowing activities in Lewis Bay to protect the resource from any turbidity or suspended sediments associated with the plowing. Post-construction monitoring of the eelgrass will be conducted to determine whether construction activities had any impact, and mitigation in the form of replanting of eelgrass will be required if impacts are found. The proponent will also perform

another survey of shellfish resources in Lewis Bay prior to construction and provide mitigation for impacts to shellfish.

The submarine transmission cable will be brought onto land using Horizontal Directional Drilling (HDD) to install the final 200 feet of cable within the HDD conduit. The use of HDD will minimize impacts to near shore and intertidal resources. The transition from jet plowing to HDD will take place at an excavated pit within a cofferdam, where the cables will be pulled through conduits installed by HDD. Approximately 840 cubic yards (cy) of material will be mechanically dredged from the area of the cofferdam pit to an elevation of approximately -10 feet MLLW. The dredged material will be temporarily stored and then used to backfill the dredged area; additional clean sandy material will be used if necessary to achieve pre-construction contours.

Sediment analysis

Physical and chemical analyses of the sediments along and adjacent to the proposed route indicated that the material generally consisted of fine to medium-grained sand, with silt and clay also found within Lewis Bay. A due diligence report was prepared in accordance with 314 CMR 9.07(2)(a), which concluded that known releases were unlikely to impact sediments. Pursuant to 314 CMR 9.07(2), no chemical testing is required if the sediment to be dredged contains less than 10% by weight of particles passing through a No. 200 sieve. Gradation analysis revealed that of the 10 locations along the proposed route that were sampled, samples at four locations exceeded this 10% limit. The applicant provided chemical analysis of sediment samples collected along and adjacent to the cable route to determine if any of the chemical constituents listed at 314 CMR 9.07(2)(b)(6) were present in reportable concentrations. Low levels of arsenic, chromium, copper, lead, and zinc were found in some samples; however, in each case the samples fell in the low effects range according to accepted values in accordance with 314 CMR 9.07(3).

Four samples were also collected from the cofferdam area. Gradation analysis of the samples revealed that in each case, less than 10% by weight passed through the No. 200 sieve, and therefore no chemical analysis of sediments in this area was necessary. Nevertheless, the applicant provided chemical analysis of sediment samples collected in this area to determine if any of the chemical constituents listed at 314 CMR 9.07(2)(b)(6) were present in reportable concentrations. The results revealed the presence of low levels of arsenic, chromium, copper, lead, mercury, and zinc. In each case the samples were below reporting limits or fell in the low effects range according to the accepted values.

The proponent will be required to monitor turbidity during jet plowing and dredging. In the event that turbidity limits are exceeded, additional sediment and water quality monitoring may be required to determine whether contaminants associated with the sediments may have been released into the water column.

Beneficial Reuse of sediments: The 840 cy of dredged material from the cofferdam area will be stored during construction and used to restore the area to preconstruction grades.

Time of Year restrictions: The Division of Marine Fisheries (DMF) recommended that no in-water silt producing work occur between January 15 and May 30 to protect spawning of winter flounder. DMF recommended a time of year (TOY) restriction from June 15 to September 15 to protect spawning by bay scallops and quahogs that could be waived provided a turbidity monitoring program is performed by the applicant during plowing activities in Lewis Bay that ensures that a turbidity level of 30 NTUs above background is not exceeded.

This Certification protects winter flounder spawning by prohibiting or conditioning all in-water silt producing work between January 15 and May 30. During the month of May, limited activities related to the installation of the cofferdam, dredging of the HDD pit, and HDD operations, but no jet plowing, are allowed to take place within silt curtains and/or cofferdams, which will limit the area of impact by preventing the spread of suspended sediment. Turbidity monitoring is required during these activities to confirm that water quality impacts do not occur outside of the silt curtain/cofferdam. Jet plowing activities are conditionally permitted from June 1 to January 14 with turbidity monitoring to be carried out by the applicant in accordance with the requirements in this Certificate and consistent with DMF's recommendation. The Department notes that the required turbidity monitoring program must be implemented whether or not the activity occurs during the TOY restriction.

This Certification requires the proponent to conduct a pre-construction survey of shellfish resources in Lewis Bay and provide mitigation for direct impacts on shellfish. Additional measures will be implemented to protect the Egg Island eelgrass beds, including a) a silt curtain will be placed between the jet plow and eelgrass bed; b) turbidity monitoring on the eelgrass side of the silt curtain; and c) post-construction monitoring of the eelgrass bed to determine whether the jet plowing resulted in indirect impacts to eelgrass. Finally, the proponent will conduct a multi-year post-construction benthic habitat monitoring plan and provide mitigation if the results of the monitoring indicate that the jet plowing had a long-term impact.

Ocean Sanctuaries Act

Pursuant to the Ocean Sanctuaries Act, M.G.L. 132A §§13-16 and 18 and its regulations at 302 CMR 5.00, the Department of Conservation and Recreation (DCR) has regulatory jurisdiction over the Commonwealth's Ocean Sanctuaries. In a letter dated July 18, 2008, DCR recommended that this Certificate include conditions that: a) ensure that no dumping or discharge of waste occurs from construction vessels; b) that no discharge of material results in a significant degradation of water quality; and c) that the project's impacts plant or animal life be appropriately mitigated. In addition, DCR noted that the applicant should submit details on the financial instrument that will secure the proponent's obligations through decommissioning of the facility. Since this Certificate does not authorize decommissioning activities, the Department believes that the c. 91 license is a more appropriate forum to address decommissioning. DCR's recommendations have been incorporated into this Certificate and Department finds that the project complies with the Ocean Sanctuaries Act.

Public Comment

The applicant published the required public notice in the Boston Globe on November 8, 2007. One comment letter, from the Alliance to Protect Nantucket Sound and sixteen individuals was received. The applicant provided a response to comments to the Department on January 17, 2008. The Department believes that the construction mitigation and monitoring measures required herein address the water quality impact concerns raised during the comment period. In addition, in accordance with 314 CMR 9.05(4), the Department conducted a site visit of the landfall site attended by representatives of the applicant and Alliance to Protect Nantucket Sound.

Section 61 Findings

Pursuant to the Massachusetts Environmental Policy Act ("MEPA"), M.G.L. c.30, §§61 to 62H inclusive, this project was reviewed as EOE # 12643. On March 29, 2007, the Secretary of Energy and Environmental Affairs issued a Certificate on the Final Environmental Impact Report ("FEIR") for the project finding that the FEIR adequately and properly complied with MEPA and its implementing regulations.

MassDEP has reviewed the MEPA documents and the documents submitted in connection with the application for a Water Quality Certification. Based on information currently in the record, MassDEP grants a 401 Water Quality Certification for this project subject to the following conditions to maintain water quality, to minimize impact on waters and wetlands, and to ensure compliance with appropriate state law. The Department further certifies in accordance with 314 CMR 9.00 that there is reasonable assurance the project or activity will be conducted in a manner which will not violate applicable water quality standards (314 CMR 4.00) and other applicable requirements of state law. Finally, the Department has determined that upon satisfying the conditions and mitigation requirements of this approval, the project provides a level of water quality necessary to protect existing uses and accordingly finds that the project as implemented satisfies the Surface Water Quality Standards at 314 CMR 4.00. Please see the Department's detailed Section 61 Findings for this project attached hereto as Attachment A.

Conditions

1. All work shall conform to the plans submitted with the "Request for 401 Water Quality Certification- Cape Wind Energy Project" prepared by ESS Group, Inc., dated October 31, 2007. See Table 1 below:

TABLE 1

Title	Figure No.	Scale
Locus Map	1	1"=6000'+/-
Proposed Submarine Cable Route	2	1"=2500'+/-
Typical Cross Section of Submarine Cable Trench Using Jet Plow Embedment	3	Not to scale
Horizontal Directional Drilling & Landfall Details	4	Not to scale
Turbidity Curtain Detail	5	Not to scale

Proposed No-Wake Zone, Egg Island, Lewis Bay	6	1"=600'
Marine Geologic Location Plan (Through 2005)	7 (1 of 2)	1"=8000'
Vibracore Locations, Lewis Bay	7 (2 of 2)	1"=30'
Distances to Navigation Channels	8	1"=1000' +/-

2. All work shall further comply with:

(a) the information and methodologies contained in the 401 Water Quality Certification application for this project, dated October 31, 2007, prepared by ESS Group, Inc., as amended by subsequent submittals referenced in this Certification and on file with MassDEP; and

(b) the terms and condition of this Certification including the following Attachments and documents incorporated herein by reference:

- A. Section 61 Findings appended as Attachment A;
- B. Turbidity Monitoring Plan for Massachusetts Coastal Waters, revised August 1, 2008 appended as Attachment B;
- C. Landfall Preparation Marine Construction Plan, revised May 21, 2008, appended as Attachment C;
- D. Eelgrass Monitoring and Mitigation Measures, appended as Attachment D;
- E. Seafloor Habitat/Benthic Community Monitoring plan, dated April 23, 2008, appended as Attachment E.

3. To the extent that the following conditions modify or differ from the plans, specifications or other proposals referenced in Conditions 1 and 2, the conditions of this Certification shall control.

4. Any change to the plans identified in Condition 1 resulting in changes in construction methodologies approved in this Water Quality Certification shall require the permittee to notify MassDEP of the proposed change and receive written approval prior to undertaking any work not authorized by this permit. A new or amended Water Quality Certificate may be required if the route of the transmission cable circuits changes due to requirements of any state, local, or federal permit or authorization.

5. The permittee shall designate an Environmental Inspector for this project whose responsibilities shall include ensuring the project complies with the requirements of this Certification and that all necessary reports are made on a timely basis. Prior to the start of construction, the permittee shall provide to MassDEP the name, phone number and qualifications of the Environmental Inspector assigned to the project.

6. A copy of this Certification and referenced plans and documents shall be provided to the contractor prior to the start of construction.
 7. A copy of this Certification and referenced plans and documents shall be kept available on the major construction vessels during all phases of construction.
 8. Staff of MassDEP shall have the right to enter and inspect the area and activities subject to this Certification at reasonable hours to evaluate compliance with the conditions stated in this Certification, and may require the submittal of any data deemed necessary by MassDEP for that evaluation.
 9. MassDEP shall be notified, to the attention of Alex Strycky (617-292-5616), one week prior to the start of any dredging work so that Department staff may inspect the work for compliance with the terms and conditions of this Certification.
 10. Construction work in accord with this Certification may begin following the 21-day appeal period described on pages 8 and 9 and receipt of all required approvals.
 11. Except for any monitoring, mitigation, or other activities specifically authorized for a different timeframe, all work authorized herein shall be completed within five (5) years of the date of issuance of this Certification. In the event the permittee does not complete construction within the work windows established or modified in accordance with the conditions herein, it shall submit a written notification to the Department that provides the following information, as appropriate:
 - a. An explanation of the reasons for non-completion of the work.
 - b. A description of the construction status of the cable circuits.
 - c. A description and schedule of the construction work to be performed within the waters of the Commonwealth within the work windows established or modified in accordance with the conditions herein.
 12. All vessels used in the project shall be maintained in sea-worthy condition. Construction and construction-support vessels shall, at a minimum, implement best management practices to control discharge of drainage and trash. Discharges of sanitary waste, grey water, and other discharges are prohibited unless otherwise authorized a NPDES permit, NPDES general permit, or other NPDES authorization applicable to this project.
 13. Sediment dredged from the cofferdam pit shall be stored on a barge in the vicinity of the landfall site and re-used to restore the pit to pre-construction benthic conditions. The permittee shall not use imported backfill, except for any additional backfill necessary to restore the cofferdam area to preconstruction contours. Any imported material to be used in the cofferdam area shall be clean and free of contaminants and contain no more than 10% fine material.
 14. Prior to commencement of construction, the permittee shall file with the Department a copy of an Oil Spill Response Plan (OSRP) for its review. All construction activity shall comply
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with the terms and conditions of the OSRP on file with MassDEP. A copy of the OSRP shall be kept on each affected construction vessel at all times during construction.

15. Prior to commencement of construction, the permittee shall file with the Department a copy of any marine mammal monitoring plan required and approved by the relevant federal agencies. A copy of the approved plan shall be kept on each affected construction vessel at all times during construction and all work shall be conducted in accordance with the requirements therein.
 16. Water quality monitoring during dredging and jet plowing activities shall be performed in accordance with the "Turbidity Monitoring Plan for Massachusetts Coastal Waters," appended hereto as Attachment B. In the event of an exceedance of the turbidity limits specified therein, the permittee shall cease jet plowing operations, notify the Department, and take the corrective measures identified in the plan and other measures specified by the Department, which may include additional water quality sampling to determine if contaminants associated with bottom sediments have been released into the water column or other measures deemed necessary by the Department to protect water quality.
 17. Mid-line buoys shall be used on anchor cables in order to minimize disturbance due to anchor sweep.
 18. Prior to dredging the cofferdam pit and installing the cofferdam, a weighted silt curtain shall be installed around the area so as to completely enclose the area during cofferdam installation and dredging activities. The silt curtain and cofferdam shall remain in place until all Horizontal Directional Drilling (HDD) activities are completed and jet plowing commences. The area shall again be surrounded by a silt curtain and/or cofferdam during backfilling activities. Water quality monitoring during dredging and backfilling of the cofferdam pit shall take place in accordance with the Turbidity Monitoring Plan (Attachment B).
 19. Horizontal Directional Drilling (HDD) operations shall be conducted in accordance with the procedures described in Attachment C, Landfall Preparation Marine Construction Plan (LPMCP) so as to minimize any potential for water quality impacts. As specified in the LPMCP, the permittee shall monitor the levels of bentonite drilling fluid so as to minimize its discharge in the event of a release, and promptly take necessary actions to minimize water quality impacts and clean up any bentonite released outside of the cofferdam/silt curtain area. A copy of the LPMCP shall be kept at the work site at all times during HDD operations.
 20. The permittee shall monitor, on an on-going basis, the depth of burial of the transmission cable conduits and maintain adequate cover over the conduits to the maximum extent practicable. In the event that the cable needs to be re-buried, the applicant shall identify necessary response measures and provide the Department with an analysis for its review and approval. At a minimum, activities related to maintenance of cover over cable circuits shall be subject to the requirements of this Certificate and may require either that a request for an Amendment or a new application be filed. Long-term maintenance of cable circuit burial depth shall be
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described in any environmental management system/adaptive management documents prepared for maintenance and operations of the project and provided to the Department.

21. The permittee shall implement the construction mitigation measures described in Attachment D, "Eelgrass Monitoring and Mitigation Measures," during jet plowing and dredging activities in Lewis Bay in order to prevent impacts to eelgrass resources. The applicant shall also conduct post-construction monitoring and mitigation of eelgrass beds in accordance with specific monitoring and success criteria to be finalized by the Department in consultation with the permittee and appropriate regulatory agencies, and provide any mitigation necessary for detrimental impacts to eelgrass, in accordance with the eelgrass monitoring and mitigation measures specified in Attachment D.
 22. At least six months prior to the start of dredging activities, the applicant shall submit a Shellfish Survey and Mitigation Plan to the Department for its review and approval. The purpose of the plan shall be to survey shellfish conditions in the footprint of dredging activities in Lewis Bay prior to the start of dredging activities in order to determine existing shellfish resources and any necessary mitigation for shellfish impacts. At a minimum, reseeded shellfish shall be at a ratio of 3:1 to compensate for shellfish directly impacted by construction activities. The Plan shall be prepared in consultation with the Division of Marine Fisheries and shellfish constables of Yarmouth and Barnstable and describe survey methods and proposed mitigation.
 23. In order to avoid or minimize impacts to water quality and aquatic resources, no dredging shall occur from January 15 to April 30 of any year. Dredging or backfilling within an enclosed cofferdam and/or silt curtain, and Horizontal Directional Drilling, may occur in Lewis Bay from May 1 to January 14. Jet plowing may occur from June 1 to January 14 only with turbidity monitoring as required in condition 16. These work windows were selected upon consultation with the Division of Marine Fisheries and are necessary to avoid impacts to spawning of winter flounder and shellfish (quahogs and bay scallops). The permittee, or its contractor, shall complete the activity within the permitted timeframe except as provided herein. In the event the permittee seeks to conduct construction activities, except for monitoring and mitigation activities, outside of these work windows, the permittee, or its contractor, shall submit a written request to the Department as soon as feasible and at least one (1) month prior to the close of the specified work window. Any affected Conservation Commission shall concurrently be provided a copy of the written request. The request shall include the following:
 - a. location, extent, and type of activity(ies);
 - b. the date on which the activity(ies) is expected to start and end;
 - c. a comparative summary of the projected daily average production rate and the actual daily average production rate;
 - d. an explanation of why the activity will fail to conclude within the permitted timeframe;
 - e. an account of any supplemental efforts/alternatives to keep the activity on schedule;
 - f. an evaluation by a qualified professional of the impact of continued work outside the permitted timeframe on the species of concern;
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- g. a description of any efforts that will be made to minimize the impacts of said activity on the species of concern; and
- h. an explanation of the basis for any requested change other than an extension.

The Department, the permittee, and other appropriate agencies will evaluate the significance of the potential impacts. The Department may request, and the permittee shall provide, any supplemental information necessary to make this assessment. After consultation with the appropriate agencies, any extension of the work windows may be granted at the sole discretion of the Department, which may require development of a monitoring plan for implementation, if necessary, and determination of the requirements for mitigation. The frequency and severity of exceedances of the work windows shall be used to determine the extent of mitigation that will be required, if any.

- 24. Within six months from the date of completion of the construction of the cables, the permittee shall submit a bathymetric survey of the entire route within Commonwealth waters to MassDEP, depicting post-installation conditions, with special reference to locations where the location of the constructed conduits differs from the proposed route. The permittee also shall provide an evaluation of the extent to which the pre-construction bottom contours were restored.
- 25. Post-construction benthic habitat monitoring shall be carried out in accordance with the Seafloor Habitat/Benthic Community Monitoring plan dated April 23, 2008 ("Benthic Monitoring Plan"), attached hereto as Attachment E. Any changes to the Benthic Monitoring Plan shall be reviewed and approved by the Department. It shall be the responsibility of the Permittee to schedule the agency review meetings necessary to: review monitoring results; determine the need for additional monitoring; and/or identify mitigation. In the event the Department determines, in accordance with the Seafloor Habitat/Benthic Community Monitoring plan, that additional compensatory mitigation is due from the permittee as a result of construction related impacts to the benthic habitat, the Department shall consult with other state and federal agencies and specify additional measures to be implemented by the permittee.
- 26. All notices and submissions required herein shall be sent, as appropriate, to the attention of Alex Strycky, DEP Wetlands and Waterways Program, One Winter Street, Boston, MA 02108; by email at Alexander.Strycky@state.ma.us; by fax at (617) 292-5696; or by telephone at (617) 292-5616.

This certification does not relieve the applicant of the obligation to comply with other applicable state or federal statutes or regulations. Any changes made to the project as described in the previously submitted Notices of Intent, 401 Water Quality Certification application, or supplemental documents will require further notification to the Department. Certain persons shall have a right to request an adjudicatory hearing concerning certifications by the Department when an application is required:

- a. the applicant or property owner;
 - b. any person aggrieved by the decision who has submitted written comments during the public comment period;
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- c. any ten (10) persons of the Commonwealth pursuant to M.G.L. c.30A where a group member has submitted written comments during the public comment period; or
- d. any governmental body or private organization with a mandate to protect the environment that has submitted written comments during the public comment period.

Any person aggrieved, any ten (10) persons of the commonwealth, or a governmental body or private organization with a mandate to protect the environment may appeal without having submitted written comments during the public comment period only when the claim is based on new substantive issues arising from material changes to the scope or impact of the activity and not apparent at the time of public notice. To request an adjudicatory hearing pursuant to M.G.L. c.30A, § 10, a Notice of Claim must be made in writing, provided that the request is made by certified mail or hand delivery to the Department, with the appropriate filing fee specified within 310 CMR 4.10 along with a DEP Fee Transmittal Form within twenty-one (21) days from the date of issuance of this Certificate, and addressed to:

Docket Clerk
Office of Administrative Appeals
Department of Environmental Protection
One Winter Street, 3rd Floor
Boston, MA 02108.

A copy of the request shall at the same time be sent by certified mail or hand delivery to the issuing office of the Wetlands and Waterways Program at:

Department of Environmental Protection
One Winter Street, 5th Floor
Boston, MA 02108.

A Notice of Claim for Adjudicatory Hearing shall comply with the Department's Rules for Adjudicatory Proceedings, 310 CMR 1.01(6), and shall contain the following information pursuant to 310 CMR 9.10(3):

- a. the 401 Certification Transmittal Number and DEP Wetlands Protection Act File Number;
 - b. the complete name of the applicant and address of the project;
 - c. the complete name, address, and fax and telephone numbers of the party filing the request, and, if represented by counsel or other representative, the name, fax and telephone numbers, and address of the attorney;
 - d. if claiming to be a party aggrieved, the specific facts that demonstrate that the party satisfies the definition of "aggrieved person" found at 314 CMR 9.02;
 - e. a clear and concise statement that an adjudicatory hearing is being requested;
 - f. a clear and concise statement of (1) the facts which are grounds for the proceedings, (2) the objections to this Certificate, including specifically the manner in which it is alleged to be inconsistent with the Department's Water Quality Regulations, 314 CMR 9.00, and (3) the relief sought through the adjudicatory hearing, including specifically the changes desired in the final written Certification; and
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- g. a statement that a copy of the request has been sent by certified mail or hand delivery to the applicant, the owner (if different from the applicant), the conservation commission of the city or town where the activity will occur, the Department of Environmental Management (when the certificate concerns projects in Areas of Critical Environmental Concern), the public or private water supplier where the project is located (when the certificate concerns projects in Outstanding Resource Waters), and any other entity with responsibility for the resource where the project is located.

The hearing request along with a DEP Fee Transmittal Form and a valid check or money order payable to the Commonwealth of Massachusetts in the amount of one hundred dollars (\$100) must be mailed to:

Commonwealth of Massachusetts
Department of Environmental Protection
Commonwealth Master Lockbox
P.O. Box 4062
Boston, MA 02211

The request will be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver. The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority. The Department may waive the adjudicatory-hearing filing fee pursuant to 310 CMR 4.06(2) for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file an affidavit setting forth the facts believed to support the claim of undue financial hardship together with the hearing request as provided above.

No activity may begin prior to the expiration of the appeal period or until a final decision is issued by the Department if an appeal is filed.

Failure to comply with this certification is grounds for enforcement, including civil and criminal penalties, under MGL c.21 §42, 314 CMR 9.00, MGL c. 21A §16, 310 CMR 5.00, or other possible actions/penalties as authorized by the General Laws of the Commonwealth.

If you have questions on this decision, please contact Alex Strycky 617-292-5616.

Sincerely,

A handwritten signature in black ink, appearing to read "G. Haas" with a flourish at the end. To the right of the signature, the word "for" is written in a smaller, cursive script.

Glenn Haas
Director
Division of Watershed Management

cc: Rodney Cluck, U.S. Minerals Management Service, 381 Elden St., Herndon, VA 20170
Karen Adams, Regulatory/Enforcement Division, U.S. Army Corps of Engineers,

696 Virginia Road, Concord, MA 01742-2751
Dave Johnston, Liz Kouloheras, DEP SERO
Gary Moran, DEP
Ed Coletta, DEP
Bob Boeri, CZM, 251 Causeway Street, Suite 800, Boston, MA 02114-2119
Todd Callaghan, CZM, 251 Causeway Street, Suite 800, Boston, MA 02114-2119
Tay Evans, Division of Marine Fisheries, 30 Emerson Ave, Gloucester, MA 01930
Chris Boelke, NMFS, 1 Blackburn Drive, Gloucester, MA 01930
Phil Colarusso, EPA, 1 Congress Street, Boston, MA 02114-2023
Marilyn McCrory, DCR, 251 Causeway Street, Boston, MA 02114-2119
Barnstable Conservation Commission, 200 Main Street, Hyannis, MA 02601
Yarmouth Conservation Commission 1146 Route 28, South Yarmouth, MA 02664-4492
Alliance to Protect Nantucket Sound, 4 Barnstable Road, Hyannis, MA 02601
T.J. Roskelly, Anderson & Krieger LLP, One Canal Park, Suite 200,
Cambridge MA 02141
Terry Orr, ESS Group, 888 Worcester Street, Suite 240, Wellesley, MA 02482

ATTACHMENT A

Section 61 Findings

General Finding

These Findings for the Cape Wind Energy Project, including construction and maintenance of two transmission cable circuits within the Commonwealth and municipalities of Barnstable and Yarmouth in, over and under Submerged Lands of Lewis Bay and Nantucket Sound (the "Cape Wind project" or the "Project"), have been prepared in accordance with the provisions of M.G.L. c.30, § 61 and 301 CMR 11.00. On March 29, 2007, the Secretary of Environmental Affairs issued a certificate, EOEA No. 12643, stating that the Final Environmental Impact Report ("FEIR") prepared for the Project complied with the MEPA statute and regulations.

A description of the potential impacts and the associated mitigation measures associated with the Cape Wind Energy Project as currently proposed is provided in Table A. These Findings and the mitigation measures described in Table A are based principally on the Proposed Section 61 Findings provided by Cape Wind in the FEIR.

As the Project is currently described, it will require the following MassDEP permits: this water quality certification, a waterways license pursuant to 310 C.M.R. 9.00, and possibly a Superseding Order of Conditions pursuant to 310CMR 10.00.

Based on its review of the MEPA documents, the permit application, public comments and MassDEP's regulations, MassDEP finds the terms and conditions to be incorporated into the permits required for the Project and the mitigation commitments set forth in the attached Table A will constitute all feasible measures to avoid damage to the environment and will minimize and mitigate such damage to the maximum extent practicable for those impacts subject to MassDEP's authority. The proponent will also provide: \$780,000 to the Department of Fish and Game for the restoration of Bird Island; \$4.22 million in annual payments for natural resource preservation, marine habitat restoration, and coastal recreation enhancement project on Cape Cod, Nantucket, and Martha's Vineyard, with funds to be managed by the Coastal Zone Management office; and, as required by the Energy Policy Act of 2005, the project will provide 27 percent of the revenues received by the federal government, expected to amount to approximately \$5.6 million. Implementation of the mitigation measures will occur in accordance with the terms and conditions set forth in the permits.

CapeWind Associates
 Water Quality Certificate, Transmittal # W133663

Attachment A- Section 61 Findings, p.2

<p>Wetlands Protection</p>	<p>Order of Conditions from the City of Barnstable Conservation Commission following submission of Notice of Intent.</p>	<p>Temporary Impact to Land Under Ocean and Land Containing Shellfish. Potential indirect impacts to submerged aquatic vegetation.</p>	<ul style="list-style-type: none"> • Cape Wind will not anchor vessels or perform cable installation work in the area near Egg Island where eelgrass beds are located. • A dive survey will be conducted to confirm the limits of the eelgrass bed near Egg Island (verifying the limits of SAV previously surveyed in July 2003), and divers will also be used to confirm correct placement of work vessel anchors. • Pre and post-construction monitoring of the eelgrass bed will be performed and if it is determined that eelgrass has been lost as a result of project activities, replanting will occur. The post-construction monitoring plan will be developed to document potential indirect impacts from cable embedment and subsequent habitat recovery. Habitat recovery would be considered successful if it is found that SAV has migrated back to the site of disturbance. Should the habitat not recover naturally, the disturbance will be mitigated by replanting. • Cape Wind has committed to aerially photograph the entrance to Lewis Bay in the month of July immediately prior to jet-plowing, under conditions conducive to documenting the extent of eelgrass beds, to use the photographs in finalizing the exact location of jet-plowing, and to provide such photographs to DEP. • As requested in the Certificate, Cape Wind will denote the edge of the eelgrass bed at the water surface with buoys near Egg Island and install a silt curtain between the eel grass and the work area during jet plowing operations. In addition, Cape Wind will implement a No Wake Zone for its construction vessels at a distance of 200 feet (61 meters) from the edge of the eelgrass bed. • An eelgrass survey will be performed, in the same timeframe as the pre-construction surveys, for the two consecutive years following construction to document the change in density. • The scope of work to perform the dive survey at the eelgrass bed within Lewis Bay will be coordinated with the appropriate state and federal agencies. • Development of a Before Action Control Impact (BACI) Plan for eelgrass located near Lewis Bay. • Impacts to marine aquatic resources from jet plowing are expected to be localized, short-term, and minimal. The direct impacts from jet plow disturbance will be limited to the area within and in the immediate vicinity of the jet plow cable embedment. • The Proponent will coordinate with the Barnstable Conservation Commission, the MADEP, and NHESP as appropriate to prevent impacts to state-listed species during construction/decommissioning and operation of the Project. • The Proponent will work with the Barnstable Town Shellfish Constable to appropriately avoid and minimize impacts to designated shellfish areas from installation of the submarine cable. • The Proponent will work with the Barnstable Town Shellfish Constable to mitigate for any short-term impacts to shellfish productivity, if necessary. • Following construction, the Proponent will conduct a bathymetric survey of limited portions of the same representative reaches used to document pre-construction conditions within the Project Area to assess post-construction seabed elevation and surface conditions. Sediment profile images will be taken at a representative sub-set of the sample stations used to document pre-construction conditions in order to assess post-construction seabed physical conditions and benthic habitat quality. • To avoid or minimize impacts to the commercial fishing industry, the submarine cable system will be buried to a minimum of 6 feet below the seabed to avoid the potential for conflicts with fishing vessels and gear operation. • Proponent is committed to no-work within the Lewis Bay area between January 1 and May 1 of any given year to protect sensitive fish species. • The use of mid-line buoys on anchor lines in order to minimize the impacts from anchor line sweep. • Potential conflict with commercial fishing activity and gear would be minimized by notifying registered fishermen of the location and timeframe of Project construction activities well in advance of mobilization with updates throughout the construction period including a daily broadcast on marine channel 16 as to the construction activities for that and upcoming days. • The Proponent plans to work cooperatively with commercial/recreational fishing agencies and interests to ensure that the construction and operation of the Project would minimize potential impacts to commercial and recreational fishing interests.
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CapeWind Associates
 Water Quality Certificate, Transmittal # W133663

Attachment A- Section 61 Findings, p.3

<p>Order of Conditions from the City of Yarmouth Conservation Commission following submission of Notice of Intent.</p>	<p>Temporary impacts to Land Under Ocean and Land Containing Shellfish.</p>	<ul style="list-style-type: none"> • Impacts to the marine aquatic resources will be minimized through the use of hydraulic jet plow technology in offshore areas and through the use of HDD methodology under the intertidal zone and shoreline. • The Proponent will work with the Yarmouth Town Shellfish Constable to appropriately avoid or minimize impacts to designated shellfish areas from installation of the submarine cable. • The Proponent will work with the Shellfish Constable of Yarmouth to mitigate for any short-term impacts to shellfish productivity. The Proponent will provide the Town of Yarmouth with funds to mitigate for the direct area of impact within the Town's designated recreational shellfish bed in accordance with the Town's mitigation policies. Based upon preliminary discussions with the Yarmouth Shellfish Constable, the Proponent is planning to provide mitigation to shellfish beds (i.e. "seeding") at a 2:1 ratio. • Potential conflict with commercial fishing activity and gear would be minimized by notifying registered fishermen of the location and timeframe of Project construction activities well in advance of mobilization with updates throughout the construction period including a daily broadcast on VHS marine channel 16 as to the construction activities for that and upcoming days. • The Proponent plans to work cooperatively with commercial/recreational fishing agencies and interests to ensure that the construction and operation of the Project would minimize potential impacts to commercial and recreational fishing interests. • The proposed submarine cable route avoids privately licensed shellfish areas or grants in Lewis Bay. • The Proponent will coordinate with the Yarmouth Conservation Commissions, the MADEP, and NHESP as appropriate to prevent impacts to state-listed species during construction/decommissioning and operation the Project. • The use of hydraulic jet plowing within Nantucket Sound and Lewis Bay and HDD at the landfill will minimize sediment disturbance and avoid direct impacts to shoreline and coastal wetland resource areas at the submarine cable landfill. Staging areas and the transitional cable vault will be located in the upland. • Following construction, the Proponent will conduct a bathymetric survey of limited portions of the same representative reaches used to document pre-construction conditions within the Project Area to assess post-construction seabed elevation and surface conditions. Sediment profile images will be taken at a representative sub-set of the sample stations used to document pre-construction conditions in order to assess post-construction seabed physical conditions and benthic habitat quality. • Proponent is committed to no-work within the Lewis Bay area between January 1 and May 1 of any given year to protect sensitive fish species. • To avoid or minimize impacts to the commercial fishing industry, the submarine cable system will be buried to a minimum of 6 feet below the seabed to avoid the potential for conflicts with fishing vessels and gear operation. • Restoration of the dredged cofferdam area using originally dredged material supplemented with imported clean sandy backfill material if necessary to restore preconstruction contours.
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CapeWind Associates
 Water Quality Certificate, Transmittal # W133663

Attachment A- Section 61 Findings, p.4

		<p>Potential minor impacts to paved Riverfront Area and Buffer Zones; Potential impacts to state-listed species</p>	<ul style="list-style-type: none"> • The Proponent will coordinate with the Yarmouth Conservation Commission, the MADEP, and NHESP as appropriate to prevent impacts to state-listed species during construction/decommissioning and operation of the Project. • A pre-construction survey was performed to document the occurrence of state-listed rare species along the NSTAR Electric ROW route. Should a state-listed species be located within the proposed transmission line route, a Conservation Permit under MESA will be obtained and efforts will be made to eliminate, minimize, or mitigate for any potential impacts. • Site- and species-specific habitat requirements will be incorporated into the construction methods for the proposed route in order to avoid impacts to the state-listed plant and animal species and habitat. • Post-construction monitoring will document habitat disturbance and recovery. • In the event that a state-listed rare species is identified within the footprint of the upland transmission cable route, post-construction monitoring of these species will be conducted according to a Conservation Plan developed to document habitat disturbance and recovery. These monitoring efforts may be repeated periodically on an on-going basis to determine that recovery has occurred. • Direct wetland impacts will be minimized through the use of hydraulic jet plowing, HDD and installation of the upland transmission line within existing paved roadways or disturbed electric ROWs. • To minimize the potential for erosion during construction, mitigation measures such as hay bales and silt fences will be placed as appropriate around disturbed areas and any stockpiled soils. Prior to commencing construction activities, erosion control devices will be installed between the work areas and down-slope waterbodies and wetlands to reduce the risk of soil erosion and siltation. • A Stormwater Pollution Prevention Plan will be developed which will incorporate applicable BMPs for erosion control and storm water management during construction. • A Dewatering Plan, if necessary, will be prepared to address the procedures for handling of any water encountered during excavation. • Measures will be taken to restore vegetation and contours to pre-existing conditions. Trenches within paved roadways will be backfilled and repaved, and trenches within the maintained electric ROW will be restored to pre-construction contours and revegetated using a suitable upland seed mixture. • The transmission line will not contain any fluids, petroleum, oils, or lubricants. As such, there is no threat to groundwater or surface water from the installation, presence, or future maintenance of the transmission line and/or associated infrastructure. • Water quality will be protected during the construction phase of the Project through the installation and maintenance of erosion and sedimentation control barriers. These mitigation measures will be fully described in an Erosion and Sedimentation Control and Storm Water Management Plan.
<p>Water Quality</p>	<p>401 Water Quality Certification</p>	<p>Potential impacts to water quality from dredging in Lewis Bay.</p>	<ul style="list-style-type: none"> • OSRP, SWPPP, and O&M Plans would be implemented during Project construction/decommissioning and operation to prevent potential impacts to water quality from spills and erosion/sedimentation • Prepare a "Landfill Preparation Marine Construction Plan" that will describe the construction methods, monitoring protocols, and mitigation measures to be used in conjunction with preparation of the landfill area for installation of the submarine cables. The plan will describe the operations required to install and remove the temporary cofferdam, dredge sediment within the temporary cofferdam to achieve required project depths, and install cable conduits from land to the temporary cofferdam using HDD methods. • Installation of transmission cables by jet plow embedment would result in temporary and localized impacts to water quality through sediment suspension, transport, and deposition. • The transition of the interconnecting 115 kV submarine transmission lines from water to land will be accomplished through the use of HDD methodology in order to minimize disturbance within the intertidal zone and nearshore area. A temporary cofferdam will be used during construction to minimize sediment resuspension at the interface between the HDD conduit and submarine cable system.

<p>Waterways</p>	<p>Chapter 91</p>	<p>Potential impacts to flowed tidelands.</p>	<ul style="list-style-type: none"> • To minimize the release of the bentonite drilling fluid into Lewis Bay during HDD, freshwater will be used as a drilling fluid to the extent practicable prior to the drill bit or the reamer emerging in the pre-excavated pit. This will be accomplished by pumping the bentonite slurry out of the bore hole, and replacing it with freshwater as the drill bit nears the pre-excavated pit. Prior to drill exit and while the potential for bentonite release exists, diver teams will install a water-filled temporary dam around the exit point to act as an underwater "silt fence". This dam will contain any bentonite fluid that may escape when it sinks to the bottom of the pre-excavated pit to allow easy clean-up using high-capacity vacuum systems. • The use of mid-line buoys on anchor lines in order to minimize the impacts from anchor line sweep. • The Proponent will work with the Shellfish Constable of Yarmouth to mitigate for any short-term impacts to shellfish productivity. The Proponent will provide the Town of Yarmouth with funds to mitigate for the direct area of impact within the Town's designated recreational shellfish bed in accordance with the Town's mitigation policies. • Proponent is committed to no-work within the Lewis Bay area between January 1 and May 1 of any given year to protect sensitive fish species. • Restoration of the dredged cofferdam area using originally dredged material supplemented with imported clean sandy backfill material if necessary to restore pre-construction contours. • A Turbidity Monitoring Program will be implemented in accordance with the Water Quality Certificate. • In accordance with the Water Quality Certificate, a post-construction benthic habitat monitoring program will be implemented and mitigation provided in the event that habitat is found to have not recovered after two years. • The installation of the submarine cable system will be accomplished using low-impact jet plow embedment process. The HDD operation transitioning the transmission line from submarine to upland will be conducted from the upland area and is not expected to significantly impact marine navigation. The HDD operation from the upland landfall will have no navigational impacts associated with the installation of the conduits and landside operations. All work within the waterway will be temporary, localized and short term. Once the submarine cable system is installed, there are no anticipated impacts to commercial or recreational navigation activities since the submarine cable system will be buried approximately six feet below the seafloor. Channel widths and depths along the submarine cable system route are sufficient to allow the cable-laying vessel to operate and maneuver. • A temporary cofferdam will be used during construction to minimize sediment resuspension at the interface between the HDD conduit and submarine cable system. • Cable burial depth will be inspected periodically during Project operation to ensure adequate coverage is maintained so as not to interfere with fishing gear/activity or with the safe operation of the cable. • Cape Wind will implement procedures outlined by the USCG to deconflict the areas around ongoing construction activities. • Cape Wind has committed to providing the USCG; other local, state, and federal agencies; and commercial salvors with a plan showing the designations of each WTG. • Cape Wind has committed to have its work vessels that are working in the area assist vessels in distress within the Wind Park upon receiving a request for assistance from the vessel or the USCG. • Cape Wind will work with the USCG to develop information that could be provided to mariners to educate them regarding the potential effects of the WTGs on marine radar. • The location of the Project will be published in the Notice to Mariners and noted on all applicable NOAA marine charts. • The submarine cable system will be buried 6 feet below the present sea bottom. • A Host Community Agreement (the Agreement) that Cape Wind entered into with the Town of Yarmouth, dated July 25, 2003. Among other things, the Agreement provides that Cape Wind would take a number of steps to mitigate impacts of its proposed transmission line on the Town, including: making physical improvements to Berry Avenue, New Hampshire Avenue, and the Englewood Beach area; and, if feasible, locating its operations center in the Town. Following its commercial operation, Cape Wind has agreed to make payments of \$250,000 annually to cover any real and personal
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Attachment A- Section 61 Findings, p.6

			<p>property taxes (which are estimated in the DEIR at \$217, 168), increased by inflation, and will also contribute \$100,000 annually, increased by inflation, to a charitable fund for benevolent purposes in the Town. The Agreement further provides that the Town agrees to act reasonably and in good faith with respect to any street opening permits, grants of location, or other similar authorizations requested by Cape Wind. Accordingly, Cape Wind will pay a total of \$350,000 annually or \$7,000,000 over twenty years of operation, (excluding the effects of inflation) to the Town of Yarmouth according to the Agreement.</p> <ul style="list-style-type: none">• Massachusetts Chapter 91 program fees will compensate the Commonwealth for the use of tideland areas affected by the 115 kV submarine cable system• The Proponent will work with the Town Shellfish Constable to mitigate for any short-term impacts to shellfish productivity, if necessary.• Following construction, the Proponent will conduct a bathymetric survey of limited portions of the same representative reaches used to document pre-construction conditions within the Project Area to assess post-construction seabed elevation and surface conditions. Sediment profile images will be taken at a representative sub-set of the sample stations used to document pre-construction conditions in order to assess post-construction seabed physical conditions and benthic habitat quality.• To avoid or minimize impacts to the commercial fishing industry, the submarine cable system will be buried to a minimum of 6 feet below the seabed to avoid the potential for conflicts with fishing vessels and gear operation.• Proponent is committed to no-work within the Lewis Bay area between January 1 and May 1 of any given year to protect sensitive fish species.• Notification of registered lobster fishermen well in advance of mobilization as to the location and timeframe of Project construction activities, as well as a daily broadcast to all mariners on VHS marine channel 16 as to the construction activities for that and upcoming days.• Potential conflict with commercial fishing activity and gear would be minimized by notifying registered fishermen of the location and timeframe of Project construction activities well in advance of mobilization with updates throughout the construction period including a daily broadcast on marine channel 16 as to the construction activities for that and upcoming days.
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Turbidity Monitoring Plan for Massachusetts Coastal Waters

CAPE WIND ENERGY PROJECT NANTUCKET SOUND

PREPARED FOR

Cape Wind Associates, LLC
75 Arlington Street
Boston, Massachusetts 02116

PREPARED BY

ESS Group, Inc.
888 Worcester Street, Suite 240
Wellesley, Massachusetts 02482

Project No. E159-504.7

Revised August 1, 2008



TURBIDITY MONITORING PLAN FOR MASSACHUSETTS COASTAL WATERS

**Cape Wind Energy Project
Nantucket Sound**

Prepared For:

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Boston, Massachusetts 02116

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ESS Project No. E159-504.7

August 1, 2008 *A.L.*
Revised March 27, 2008



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FIGURES



1.0 INTRODUCTION

This document presents the Turbidity Monitoring Plan (the "Plan") for the Cape Wind Energy Project and the associated installation of a 115 kV submarine cable system inside Lewis Bay out to the 3-mile state jurisdictional limit. The installation of the cable system will include the jet-plowing of the submarine cables and the construction of a Horizontal Directional Drilling (HDD) cofferdam at the landfall transition. The Plan is to be implemented during both of these cable system installation activities.

Final monitoring requirements will be established in conjunction with the Massachusetts Department of Environmental Protection (MassDEP) prior to construction as part of the Water Quality Certificate.

2.0 GENERAL MONITORING PROCEDURES

The goal of the Turbidity Monitoring Plan is to characterize the effect of sediment disturbance on the overlying water column during installation of the submarine cable system in Lewis Bay and out to the 3-mile state jurisdictional limit. Monitoring will focus on defining the extent of the turbidity plume and on recording turbidity associated with sediment disturbance from the cable installation activities. This will be accomplished during daylight hours, using real-time instrumentation from a small boat as follows:

1. Periodic turbidity profiling measurements using *in situ* turbidity probe monitoring equipment; and
2. Concurrent time and positional information using a differential global positioning system (DGPS).

The turbidity probe will be used to define the vertical and areal extent of the anticipated turbidity plume in real-time. These measurements will be conducted within the anticipated turbidity plume and at background stations up-current of the cable installation operations. All data will include time and positional information from the monitoring vessel's Differential Global Positioning System (DGPS).

3.0 TURBIDITY MONITORING

Turbidity is measured in nephelometric turbidity units (NTU) using a turbidity probe. The turbidity probe instrument will be lowered through the water column for each sampling location. Measurements at each sampling location will be taken at two to three depths depending upon water depth (near bottom, at surface, and mid-level if water depths exceed 15 feet). The measurements at each sampling location will be averaged to determine the NTU value. Turbidity monitoring will be conducted along a single transect positioned down-current and perpendicular to the axis of the expected plume of the cable burial operations. The transect will be located approximately 150 – 175 feet down-current from the jet plow operation. However, no sampling will be conducted at a survey distance from the cable vessel deemed unsafe by the Project contractor. One transect will also be conducted approximately 200 to 500 feet up-current of the cable installation activities to detail ambient or background conditions. All data collection operations will be documented using a DGPS positioning system. Monitoring events will be concentrated around high slack, peak ebb, low slack and peak flood tidal conditions, and will occur at least twice per tidal cycle (12.4 hours) during cable burial activities, during a running tide (i.e. ebb or flood) and during slack tide as conditions allow.

Based on consultation with MassDEP, if monitoring results demonstrate acceptable performance, monitoring frequency outside of Lewis Bay may be decreased as the Project progresses. Therefore, assuming acceptable performance standards are met for the cable installation activities, ESS proposes to conduct turbidity monitoring for a total of three (3) days during each week of the 115 kV submarine cable system installation in Massachusetts waters. Assuming that it will take approximately 9 days to jet plow the first cable circuit from the cofferdam to the 3 mile limit, it is estimated that up to 5 days of monitoring may be necessary per cable.

Additionally, turbidity monitoring will be conducted for the dredging of the cofferdam once the sheet piles and turbidity curtain are in place. The monitoring will take place 150-175 feet from the edge of the sheet piles (see Figure 1). It is expected that the cofferdam dredging will be completed in two (2) ten-hour days, both of which will be monitored.

Jet-plow cable installation will begin at the cofferdam inside Lewis Bay (defined as that portion of the cable route landward of coordinates Lat 41° 37' 49" Long 70° 16' 15" as shown on Figure 2). Monitoring will occur for each day that jet plowing occurs inside Lewis Bay, where the finer sediments of the 115 kV submarine cable route are expected to be disturbed. It is estimated that this will involve monitoring for approximately three (3) days of the cable-laying for each cable, at which time the installation inside Lewis Bay is expected to be complete. As the jet plow operations pass Egg Island, monitoring will also be conducted on the eastern side of the temporary silt curtain placed to protect the eelgrass bed.

As the jet-plowing operations for the first cable move out of Lewis Bay towards the 3-mile state jurisdictional limit and away from the finer sediments, up to two (2) additional days of monitoring may take place. Jet plow operators and monitors will base their field determination of this transition from Lewis Bay on passing south of Kalmus Beach and reaching GPS coordinates Lat 41° 37' 49" Long 70° 16' 15". At this time, monitoring frequency is expected to decrease, if not cease, assuming performance standards continue to meet the turbidity thresholds of the Plan. This frequency of turbidity monitoring will be conducted and reported on during the installation of the first of the two cable circuits; the results of the first circuit monitoring will influence the installation of the second cable circuit, and it is anticipated that the second cable circuit will not require monitoring outside of Lewis Bay.

According to the Massachusetts Surface Water Quality Standards (310 CMR 4.00), Class SA waters shall be free from color and turbidity in concentrations or combinations that are aesthetically objectionable or would impair any use assigned to this class. Although NTU standards for saltwater classifications have not been established for Massachusetts waters, existing literature review finds that water quality standards for turbidity (NTU) have been established for other states. Specifically, North Carolina enforces a 25 NTU turbidity standard for all saltwater classifications to protect aquatic life. Additional investigation revealed that for the Boston Harbor Navigation Improvement Project, a maximum of 40 NTU was measured twenty-five feet from the dredge bucket. Therefore, in order to satisfy the surface water quality standards, a threshold of 30 NTU above ambient conditions at the 150-175 foot down-current transect is proposed as offering adequate protection of the environment and facilitating installation operations. Once an ambient NTU is measured as part of the background monitoring for Lewis Bay and Nantucket Sound, the turbidity instrumentation will allow real-time detailing of plume characteristics sufficient for both scientific and management needs. If depth-averaged turbidity levels at the 150-175

down-current transect approach 30 NTU above up-current background levels (i.e. reach or exceed 25 NTU above up-current background levels), preparations will be made to institute appropriate mitigation measures. If average turbidity levels over the vertical exceed up-current background turbidity levels by 30 NTU at the 150-175 foot transect, the Proponent and contractor will evaluate and implement reasonable mitigation measures such as adjusting the fluid pressure or the rate of advancement of the jet-plow to minimize *in-situ* sediment disturbance. If required, additional mitigation measures will be implemented. Nothing in this Plan, however, shall preclude adjustments to installation protocols if such adjustments are necessary to achieve proper cable burial in a single installation pass.

4.0 REPORTING

Once the installation of the 115 kV submarine cable system commences, monitoring reports will be prepared and filed that include the stations traversed, a catalog of data collected, and other field notes/data used to guide the field monitoring. Following completion of the installation activities inside the 3-mile state jurisdictional limit, a final report will be submitted to MassDEP that will include the procedures, field data, findings, and limitations of the monitoring performed during all phases of the Plan. All results from the sampling locations will be provided to MassDEP.

Figures

DATE: Mar 27, 2008 - 3:16PM
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NEW HAMPSHIRE AVE
LANDFALL



LEWIS BAY

TEMPORARY
COFFERDAM

HDD CONDUITS

SILT
CURTAIN

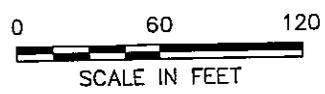
REC. SHELLFISH LIMIT

● PROPOSED
MONITORING
STATION
NOTE:
DEPENDENT
UPON DIRECTION
OF CURRENT
←

● PROPOSED
MONITORING
STATION
NOTE:
DEPENDENT
UPON DIRECTION
OF CURRENT
→



Cape Wind Associates, LLC
Cape Wind Project



Proposed Cofferdam
Turbidity Monitoring

Figure 1

Cape Wind Associates
Water Quality Certificate, Transmittal #W133663
Attachment C

Landfall Preparation Marine Construction Plan

CAPE WIND PROJECT LEWIS BAY

PREPARED FOR Cape Wind Associates LLC
75 Arlington Street, Suite 704
Boston, Massachusetts 02116

PREPARED BY ESS Group, Inc.
888 Worcester Street, Suite 240
Wellesley, Massachusetts 02482

Project No. E159-504.7

Revised May 21, 2008



**CAPE WIND PROJECT
LANDFALL PREPARATION
MARINE CONSTRUCTION PLAN**

Lewis Bay

Prepared For:

Cape Wind Associates
75 Arlington Street, Suite 704 Site Address
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Wellesley, Massachusetts 02482

ESS Project No. E159-504.7

Revised May 21, 2008



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FIGURES

- Figure 2-1 Landfall Transition: Preliminary Design Plan (3 sheets)
- Figure 3-1 Location of Landfall Preparation Marine Construction Activities



1.0 INTRODUCTION

As part of the 401 Water Quality Certification application being submitted to MADEP, Cape Wind has included this "Landfall Preparation Marine Construction Plan" that describes the construction methods, monitoring protocols, and mitigation measures anticipated to be used in conjunction with preparation of the landfall area for installation of the submarine cables. The plan describes the operations required to install and remove the temporary cofferdam, dredge sediment within the temporary cofferdam to achieve required project depths, and to install cable conduits from land to the temporary cofferdam using horizontal directional drilling (HDD) methods.

The plan does not include descriptions of the operations necessary to install the submarine cables in this area.

2.0 CONSTRUCTION METHODS

The transition of the interconnecting 115 kV submarine transmission lines from water to land will be accomplished through the use of HDD methodology in order to minimize disturbance within the intertidal zone and nearshore area. HDD will be staged at the upland landfall area and involve the drilling of the boreholes from land toward the offshore exit point. Conduits will then be installed the length of the boreholes and the transmission line would be pulled through the conduits from the seaward end toward the land. A transition manhole/transmission line splicing vault will be installed using conventional excavation equipment (backhoe) at the upland transition point where the submarine and land transmission lines would be connected, Figure 2-1.

There will be four 18-inch (0.46 m) High Density Polyethylene (HDPE) conduit pipes (one for each three-conductor 115 kV cable and fiber optic cable set) installed to reach from the onshore transition vaults to beyond the mean low water level. The offshore end will terminate in a pre-excavated pit behind a cofferdam where the jet plow cable burial machine will start. The four conduits will have an approximately 10 foot (3 meters) separation within the cofferdam area. The four boreholes will be approximately 200 feet (61 meters) long (borehole diameters will be slightly larger than the conduit diameter to allow the conduit to be inserted in the borehole), Figure 2-1.

2.1 Pre-Construction Activities

Prior to beginning construction at the landfall, the contractor will perform certain pre-construction activities to prepare the area for construction. These pre-construction activities will include:

- Submittal of Marine Support Plan to Cape Wind (Refer to Section 3.2).
- Making required pre-construction notifications (Refer to Section 3.3).
- Installation of erosion and sedimentation controls as required.
- Mobilization of required upland and marine-based construction equipment to the work area.

2.2 Temporary Cofferdam

To facilitate the HDD operation, a temporary cofferdam will be constructed at the end of the boreholes. The cofferdam will help to facilitate threading of the submarine cable system through the 18-inch (45.7 cm) diameter HDPE pipes placed in the horizontal directional drilled boreholes. This temporary cofferdam will be installed prior to the beginning of the HDD borehole construction, and will remain in place until jet plow embedment installation of the submarine cable system is complete. Installation and removal operations will include a barge mounted crane, tender vessels, and possibly divers.

The cofferdam will be approximately 65 feet (19.8 meters) wide and 45 feet (13.7 meters) long and will be open at the seaward end to allow for manipulation of the HDD conduits. The area enclosed by the cofferdam will be approximately 2,925 square feet (271.7 square meters). The cofferdam will be constructed using steel sheet piles driven from a barge-mounted crane. The top of the sheet piles will be cut off approximately 5 feet (1.52 meters) above mean high water. During the removal of the material from the cofferdam, a turbidity curtain will be placed along the open end of the cofferdam. The placement of the curtain and the location of the top of the cofferdam, would serve to contain any turbidity associated with the dredging and subsequent jet plow embedment operations and to provide a visual reference to its location for mariners. While the cofferdams will be located outside of areas normally subject to vessel traffic, the location of the cofferdam will be appropriately marked to warn vessels of the temporary cofferdam's presence.

The temporary cofferdam will be installed by driving the sections sheet pile into the sediment using the barge-mounted crane. The sheet piles will be driven with either a vibratory or impact hammer. This decision will be left to the contractor. The temporary cofferdam will be removed by using the barge mounted crane to lift the pile sections out of the sediment. A vibratory hammer may be used to assist removal of the sheet pile sections. Divers may be used to cut the sections around the borehole conduits to assist removal.

It is anticipated that installation and removal of the cofferdam will take approximately one week each.

2.3 Dredging

The area inside the cofferdam will be excavated to expose the seaward end of the borehole. The dredging operation will include a barge mounted clamshell bucket or goose-neck excavator, tender vessels, and a scow for temporary storage of the dredged material.

Sediment inside the cofferdam will be excavated to expose the area where the HDD boreholes will end at an elevation of approximately -10 feet (-3 meters) MLLW, with a 1 foot (0.3 meter) allowable overdredge. A 20 foot (6.1 meters) long level area will be created at the closed end of the cofferdam at this elevation. From that point, the bottom of the excavated area will be sloped at 3H:1V until it meets the existing seafloor bottom contour. Approximately 840 cubic yards (642.2 cubic meters) of sediment will be excavated from the cofferdam.

The cofferdam excavation will be backfilled, rather than allowed to in-fill over time. The dredged material will be temporarily placed on a barge for storage¹, and then the dredged area of the cofferdam will be backfilled with the dredged material by the barge-mounted excavator. The use of a bottom dumping scow for backfilling is not anticipated. If necessary, the dredged material backfill will be supplemented with imported clean sandy backfill material to restore the seafloor to preconstruction contours. No removal of sediment outside of the cofferdam will be required.

It is anticipated that dredging inside the cofferdam will take approximately one week.

2.4 Horizontal Directional Drilling

The HDD and HDPE conduit installation process involves drilling a pilot hole by a directionally guided boring rig, followed by reaming to achieve the desired borehole dimension. The HDD operation will include an upland based HDD drilling rig system, drilling fluid recirculation systems, residuals management systems, and associated support equipment. HDD drilling material handling equipment will be located on New Hampshire Avenue. Drilling will take place from the upland to Lewis Bay. Excavated soils from the upland pit will be temporarily stored near the HDD drill rig during construction, and will then be reused onsite or removed and disposed of as required.

The HDD construction process will involve the use of bentonite drilling fluids in a water slurry in order to transport drill cuttings to the surface for recycling, aid in stabilization of the in situ sediment drilling formations, and to provide lubrication for the HDD drill string and down-hole assemblies. This drilling fluid is composed of a carrier fluid and solids. The selected carrier fluid for this drilled crossing will consist of water (approximately 95%) and inorganic bentonite clay (approximately 5%). To minimize the release of the bentonite drilling fluid into Lewis Bay, freshwater will be used as a drilling fluid to the extent practicable prior to the drill bit emerging in the pre-excavated pit. This will be accomplished by pumping the bentonite slurry out of the hole, and replacing it with freshwater as the drill bit nears the pre-excavated pit.

A drill rig will be set up onshore behind a bentonite pit where a 40-foot (12.1 meter) length of drill pipe will be set in place to begin the horizontal drilling. A bentonite and water slurry will then fill the pit in which the bentonite forms a hard shell lining of the tunnel wall during the drilling process. After each 40 feet (12.1 meter) of drill pipe installation, an additional length of drill pipe is added. When the drill bit emerges in the pre-excavated pit, the bit is replaced with a series of reamers to widen the borehole followed by a pulling head on the end of pipe and then the drill pipe is used to pull back the conduit into the bored hole from the offshore end. Freshwater will be utilized to the maximum extent practicable as the reaming process nears the pre-excavated pit as described below.

After the borehole has been constructed, 18-inch (45.7 cm) diameter HDPE pipe will be installed in each borehole to serve as protection for the submarine cable system. Pulling wires will be placed inside the 18-inch (45.7 cm) diameter HDPE pipe to facilitate the pulling of the submarine cable

¹ Most of the water would be contained within the barge. Any water that does exit the barge would do so at a relatively slow rate. The sediments would settle to the bottom of the barge, limiting any sediment in the water. If excessive sedimentation is observed while the barge is anchored, the barge would be surrounded by a turbidity curtain. The contractor will be required to limit the volume of dredged material in each barge so as to limit any spillage from the barge.

system. The conduits will be sealed at both ends until the submarine cable system is ready to be pulled through the conduit. After submarine cable system installation, the conduits will then be permanently sealed with a clay/bentonite medium to complete the installation process.

Upon completion of the installation of the conduit pipes and submarine cable system, the HDD equipment will be removed and New Hampshire Avenue will be restored to its pre-construction grades and conditions.

It is anticipated that the installation of the borehole and conduit by HDD techniques will take approximately two to four weeks.

3.0 PROTECTION OF NAVIGATION

Unrestricted navigational access to Lewis Bay will be allowed during Landfall Preparation operations. Marine traffic will only be restricted in the immediate vicinity of ongoing marine construction operations for protection of public safety. Cape Wind and its contractor will work closely with the US Coast Guard (USCG) to deconflict the waterway around the construction operations. The USCG routinely deconflicts waterways and channels around marine construction activities, and it is anticipated that such procedures will be implemented as necessary in Lewis Bay during Landfall Preparation operations.

3.1 Location of Work Area

The location of the work area is shown in Figure 3-1. The area, which is in the easterly end of Lewis Bay, is located approximately 5,500 feet (0.9 nautical miles) from the Federal Navigation Channel. Approximately 800 feet south of the work area, there is a privately marked channel.

3.2 Marine Support Plan Requirements

Cape Wind will require that its Contractor submit a Marine Support Plan (MSP) to Cape Wind prior to the start of any work. The MSP will describe the vessels, schedules, work routes, and communication practices associated with the Landfall Preparation work associated with the Cape Wind Project. The MSP will be required to include the number and location of vessels to be used during construction, ability of the vessels to relocate during construction, and the expected duration of use of the vessels.

3.3 Pre-construction Notifications

Prior to the commencement of Landfall Preparation activities, the Contractor will be required to request that the USCG issue a Notice to Mariners. This Notice to Mariners will be expected to include information such as a description of the work, the location of the work, proper channels for communications, and contact names for the working vessels. Independent of the Notice to Mariners, Cape Wind will contact the following parties one week prior to construction to provide information regarding the impending construction activities:

- USCG Sector Southeastern New England
- USACE New England District
- Massachusetts Department of Environmental Protection

- Yarmouth Conservation Commission
- Yarmouth and Barnstable Harbormasters
- Woods Hole, Martha's Vineyard & Nantucket Steamship Authority
- Hy-Line Ferries
- Local harbor pilots associations
- Local shellfish, lobster, and fishing companies

3.4 Communications

Communications between vessels involved in Landfall Preparation and local marine interests will be maintained throughout the duration of work in the area.

During construction, the Contractor will be responsible for communicating with parties that may be affected by any of the scheduled construction activities.

Work vessels will be required to monitor appropriate VHF radio channels (typically Channels 9, 13, and 16) during all construction operations.

3.5 Project Status Updates

Since Landfall Preparation construction activities in the area are only anticipated to last for two to six weeks, project status updates to the parties described in Section 3.3 will be limited to continued publication of the work in the Local Notice to Mariners. If the nature or duration of the Landfall Preparation operations must change significantly as a result of conditions encountered, Cape Wind will notify the parties listed in Section 3.3.

4.0 MONITORING DURING CONSTRUCTION

Cape Wind and the contractor will implement a visual monitoring program during dredging and HDD operations.

4.1 Horizontal Directional Drilling

The HDD operation will be designed to include a drilling fluid fracture or overburden breakout monitoring program to minimize the potential of drilling fluid breakout into waters of Lewis Bay. It is expected that the HDD conduit systems will be drilled through sediment overburden at the landfall location. However, it is anticipated that drilling depths in the overburden will be sufficiently deep to avoid pressure-induced breakout of drilling fluids through the seafloor bottom based primarily on estimates of overburden thickness and porosity. Nevertheless, a visual and operational monitoring program will be implemented during the HDD operation to detect a fluid loss. This monitoring includes:

- continual visual monitoring of surface waters in the adjacent Lewis Bay by drilling operation monitoring personnel while active HDD operations are underway to observe potential drilling fluid breakout points;
- continual drilling fluid volume monitoring by technicians throughout the drilling and reaming operations for each HDD conduit system;
- development and implementation of a fluid loss response plan and protocol by the drill operator in the event that a fluid loss occurs. These response plans shall include, at a minimum, halting HDD operations immediately once a release or frac-out is observed; contacting DEP as soon as possible once a release or frac-out occurs and reporting the time, duration and dimensions of the affected area; drill stem adjustments, injection of loss circulation additives such as Benseal that can be mixed in with drilling fluids at the mud tanks, and other mitigation measures as appropriate; and
- use of appropriate bentonite drilling fluids that will gel or coagulate upon contact with sea water.

4.2 Dredging

Since the dredging will take place within the temporary cofferdam area, suspended sediments resulting from dredging are anticipated to be largely confined within the cofferdam. To further minimize the sediment dispersal and turbidity, a turbidity curtain will be placed at the open end of the cofferdam pit during dredging and backfilling of the pit. During dredging operations, suspended sediment conditions in the area of the dredging will be visually monitored on a daily basis.

5.0 MITIGATION MEASURES

The following is a summary of the proposed mitigation for potential impacts to Water Quality as a result of Landfall Preparation operations:

- The Project has been planned, sited, and designed to avoid and/or minimize impacts to water quality within the Project area.
- Cape Wind will work with the Yarmouth Shellfish Constable to mitigate for any short-term impacts to shellfish productivity.
- Cape Wind will provide the Town of Yarmouth with funds to mitigate for the direct area of impact within the Town's designated recreational shellfish bed in accordance with the Town's mitigation policies.
- The transition of the interconnecting 115kV submarine transmission lines from water to land will be accomplished through the use of HDD methodology in order to minimize disturbance within the intertidal zone and nearshore area.
- To minimize the release of bentonite drilling fluid into Lewis Bay during HDD, freshwater will be used as a drilling fluid to the extent practicable prior to the drill bit or the reamer emerging in the pre-excavation pit.

More detailed description of the mitigation measures proposed for the HDD and dredging operations are provided in the following sections.

5.1 Horizontal Directional Drilling

In the unlikely event of an unexpected drilling fluid release, the bentonite fluid density and composition will cause it to remain as a cohesive mass on the seafloor in a localized slurry pile similar to the consistency of gelatin. This cohesive mass can be quickly cleaned up and removed by divers and appropriate diver-operated vacuum equipment.

As described above, a bentonite and freshwater slurry will be used as the drilling fluid as the drilling and reaming operations approach the exit point in the pre-excavated pit. The drilling fluid will consist of water (approximately 95%) and an inorganic, bentonite clay (approximately 5%). The bentonite clay is a naturally occurring hydrated aluminosilicate composed of sodium, calcium, magnesium, and iron. It is likely that some residual volume of bentonite slurry will be released into the pre-excavated pit. The depth of the pit and the temporary cofferdam perimeter are expected to contain any bentonite slurry that may be released. Prior to drill exit and while the potential for bentonite release exists, diver teams will install a water-filled temporary dam around the exit point to act as an underwater "silt fence". This dam will contain the bentonite fluid as it escapes and sinks to the bottom of the pre-excavated pit to allow easy clean-up using high-capacity vacuum systems.

5.2 Dredging

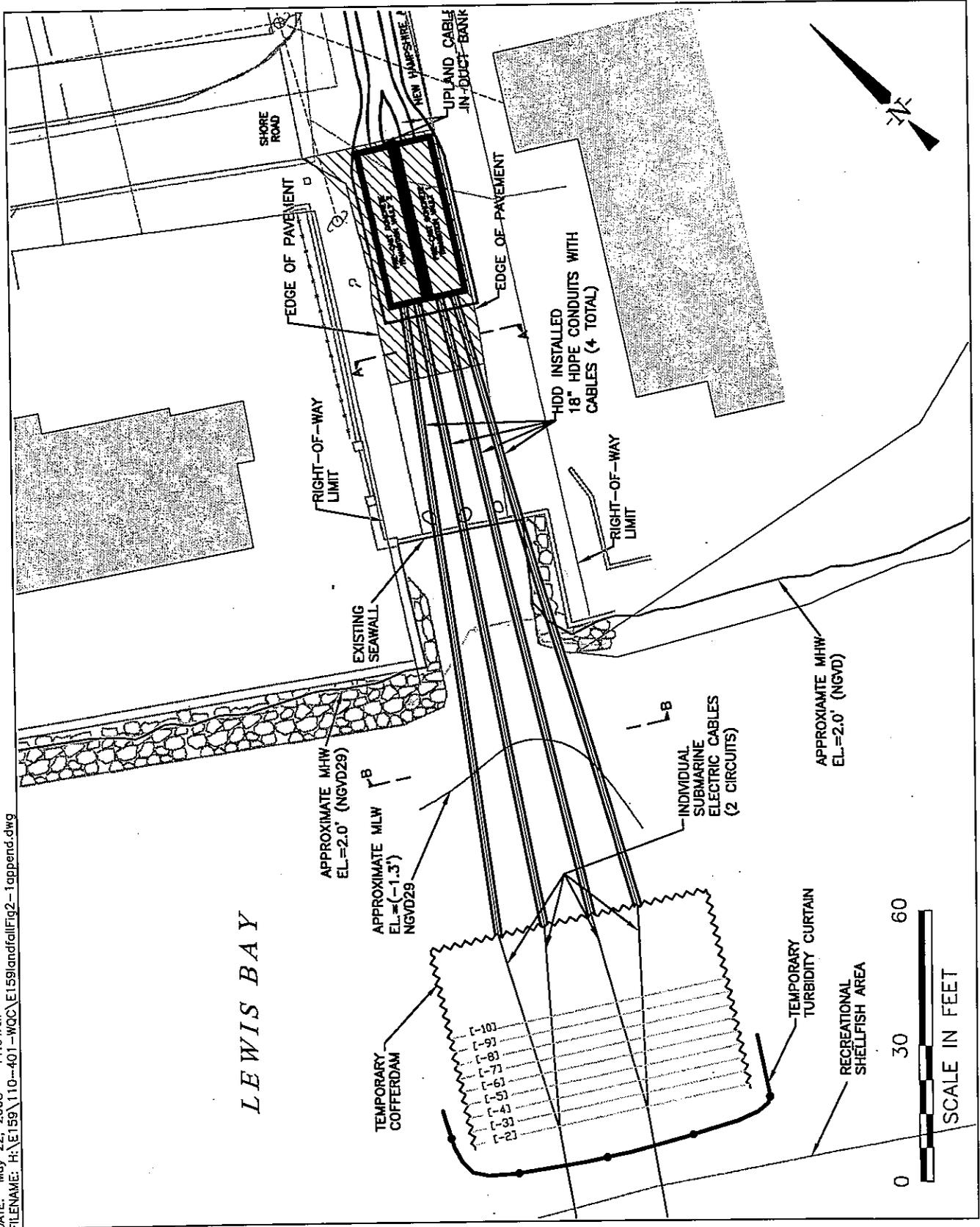
Turbidity curtains will be used around the dredging operation when suitable conditions (i.e., currents and sea state) exist for their use. To provide for proper containment the dredged material, a storage barge will be used to hold the dredged material until it used to backfill the cofferdam location. The use of a deck barge for temporary storage of the dredge material will not be allowed.

5.3 Shellfish Reseeding

The designated recreational shellfish bed disturbed by project activities in Lewis Bay near the landfall will be re-seeded as discussed with the shellfish constable for the Town of Yarmouth. Cape Wind will provide the Town of Yarmouth with funds to mitigate for the direct area of impact within the Town's designated recreational shellfish bed in accordance with the Town's mitigation policies.

Figures

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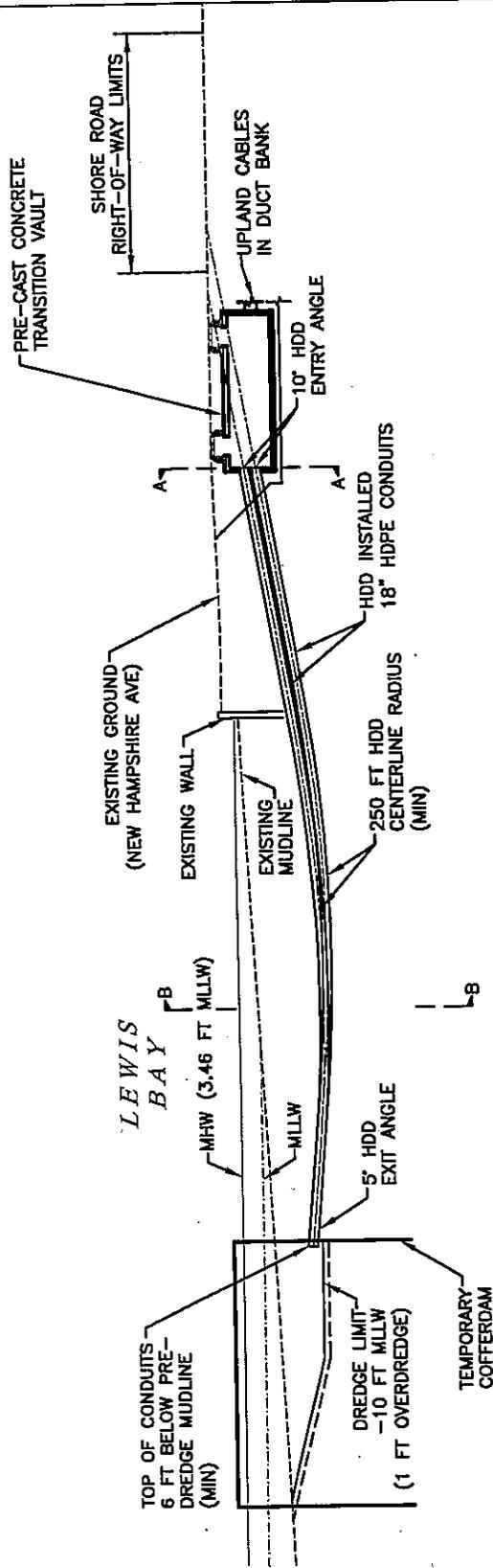


Cape Wind Associates, LLC
 Cape Wind Project

Landfall Transition: Preliminary Design Plan

Figure 2-1
 Sheet 1 of 3

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- NOTES:
1. UPLAND ELEVATIONS IN PLAN ARE REFERENCED TO NGVD29.
 2. THERE IS NO ACCEPTED NGVD29 CONNECTION TO MLLW IN THE PROJECT AREA. RELATIONSHIP BETWEEN MLLW AND NGVD29 APPROXIMATED TO GENERATE PROFILE.
 3. EXISTING GROUND ELEVATIONS IN PROFILE ARE ESTIMATED ONLY.
 4. ACTUAL RELATIONSHIP MUST BE ESTABLISHED THROUGH SURVEY PRIOR TO FURTHER DESIGN EFFORTS.

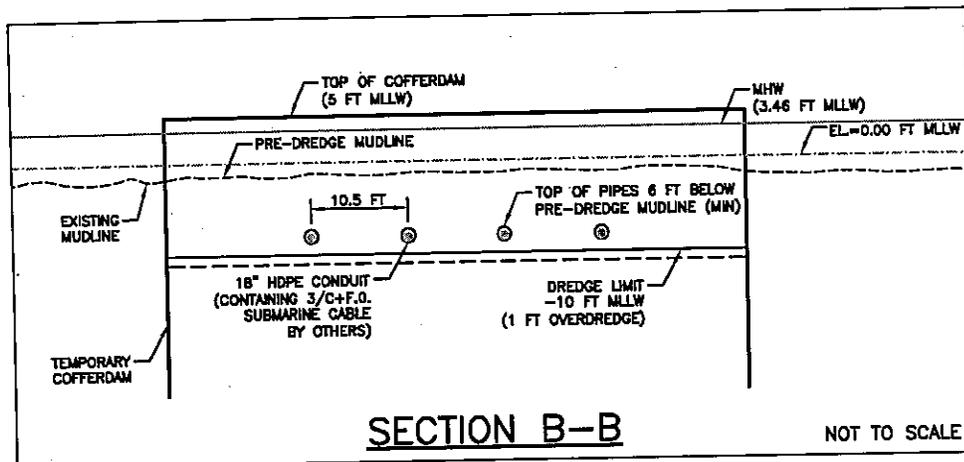
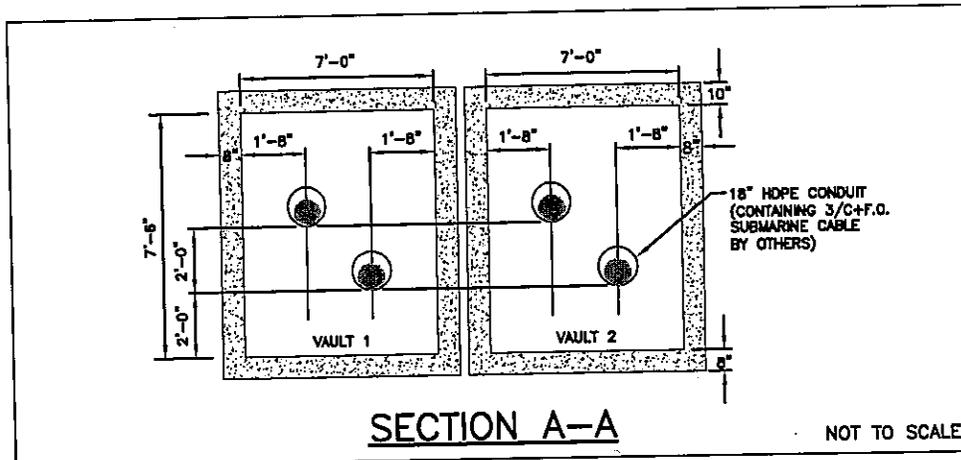


Cape Wind Associates, LLC
 Cape Wind Project

Landfall Transition: Preliminary Design Plan

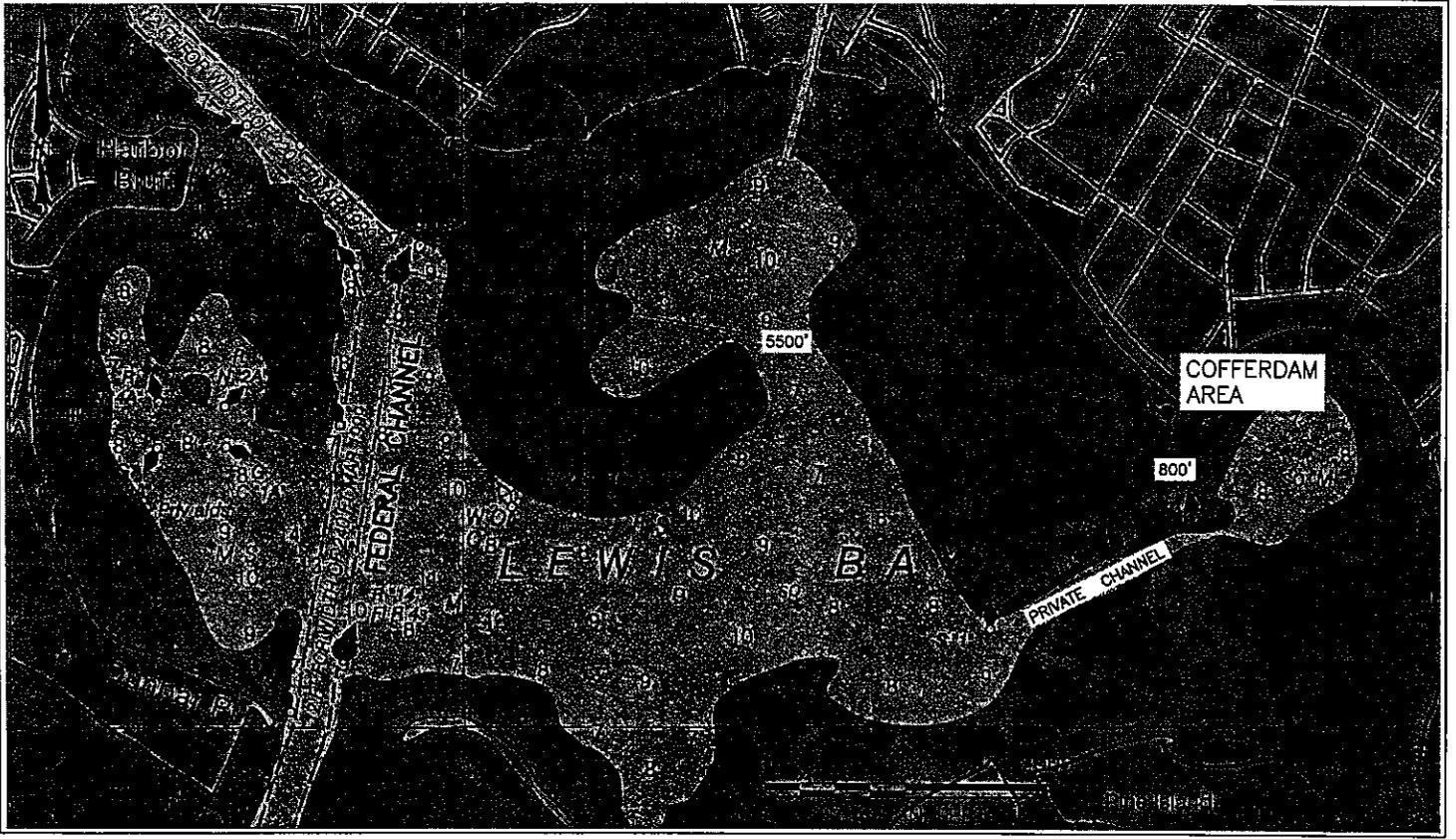
Figure
 2-1
 Sheet 2 of 3

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IMAGE: H:\E159\003\CapeWind_SmellTZ.jpg
IMAGE: H:\Charts\No83-mo-lal-1\13229-3.tif



Engineers
Scientists
Consultants

Cape Wind Associates, LLC
Cape Wind Project

Source: NOAA Chart #13229
Scale: 1"=1000'

Location of Work Area
Marine Construction Activities

Figure
3-1

Eelgrass Monitoring and Mitigation Measures

A. Construction Mitigation Measures

- Cape Wind will not anchor vessels or perform cable installation work in the Egg Island eelgrass.
- A turbidity curtain will be placed between the Egg Island eelgrass bed and the jet plow route during plowing activities so as to completely separate the eelgrass bed from plowing activities in order to minimize potential sediment deposition on the eelgrass. In accordance with the Turbidity Monitoring Plan (Attachment B to the Water Quality Certification), turbidity will be monitored on the eelgrass side of the silt curtain, in addition to monitoring along the route of the cables, during jet plowing in Lewis Bay.
- During installation of the submarine transmission cable within Lewis Bay, divers will be used to confirm correct placement of work vessel anchors in order to monitor and avoid any impacts to the Egg Island eelgrass bed.
- Cape Wind will demarcate the edge of the eelgrass bed at the water surface with buoys near Egg Island. In addition, Cape Wind will implement a No Wake Zone for its construction vessels at a distance of 200 feet (61 meters) from the edge of the eelgrass bed. The proposed extent of the No Wake Zone for Cape Wind construction vessels is shown in Figure 6 of the Water Quality Certification application.

B. Pre-construction eelgrass surveys

- A dive survey will be conducted to confirm the limits of the eelgrass bed near Egg Island (the "target site") no more than 60 days prior to the commencement of cable installation. Should aerial photography identify other eelgrass beds in the vicinity of the route of the transmission cable circuits, diver surveys may be required in those instances as well. The survey shall document the edge of the eelgrass bed closest to the work area in two ways: a) the last point at which vegetation is seen along the edge of the bed, and b) the edge of the continuous meadow. The edge of the bed defined in these ways will be marked using a buoy system (which will be visible from the surface). These buoys will be surveyed via Differential Global Positioning System (DGPS). No jet plowing is authorized within the eelgrass bed as delineated by the buoys. Additionally, transects through the eelgrass bed will be performed in order to determine the extent and
-

health of the bed. The scope of work to perform the dive survey at the eelgrass bed within Lewis Bay will be coordinated with the appropriate state and federal agencies. At least six months prior to jet plow activities, Cape Wind shall provide to DEP, for its review and approval, a detailed description of the sampling design of the pre-construction survey as part of an Eelgrass Monitoring and Mitigation Plan.

C. Post-construction eelgrass monitoring

- The same protocol approved by DEP as part of the Eelgrass Monitoring and Mitigation Plan for use during pre-construction surveys shall be implemented following construction to assess any impacts to the eelgrass bed as revealed by change in shoot mass density and/or percent cover. Initial post-construction monitoring of the target site shall take place two weeks and four weeks after the jet plow passes the Egg Island eelgrass bed.
- Additional eelgrass surveys one year and two following construction may be required by DEP, or proposed by the applicant, based on the results of the surveys conducted after the initial post-construction surveys.
- In addition to the surveys proposed at the target site, a control site located outside of the potential area of impact shall be monitored to determine the rates of natural variability within the Lewis Bay eelgrass bed over the monitoring period in the event that monitoring is required beyond the initial post-construction surveys. The control site will be selected from an undisturbed area as close to the project site as practicable. The control site will also be selected to have habitat characteristics (depth, light, salinity, water flow, etc.) as similar as possible to those measured within the target site. The area offshore of Point Gammon has been proposed as a control site. Shoot mass density and/or percent cover shall be surveyed at the target site. The specific site to be used as the control site, and the rationale and alternative sites considered, shall be part of the Eelgrass Monitoring and Mitigation Plan to be approved by the Department.

D. Comparison of Pre-and Post-Construction Surveys

- In order to assess the effects of the proposed construction activities, the initial post-construction surveys documenting the edge of the eelgrass bed, shoot mass density and/or percent cover at the target site will be compared with the pre-construction survey. For any additional monitoring required, target and control
-

sites will be compared based on a variety of variables which may include eelgrass bed area, eelgrass density, and/or shoot morphometrics. Specific monitoring and success criteria will be finalized during consultation with the appropriate regulatory agencies. This comparison between sites will assist in differentiating between impacts that may have been caused by construction activities versus the natural changes that may have occurred within the Lewis Bay eelgrass population due to annual variability that may be associated with fluctuations in habitat conditions. A detailed description of the Before Action Control Impact (BACI) analysis to be performed shall be prepared in cooperation with federal and state permitting agencies and presented to the Department for its review and approval as part of the Eelgrass Monitoring and Mitigation Plan. The description of the analysis shall include the criteria that are to be used to determine the health of the eelgrass bed and whether there has been a post-construction impact to the eelgrass resource.

E. Eelgrass mitigation

- If the surveys conducted at 2 and 4 weeks post-construction demonstrate that the proposed construction activities have been found to have caused detrimental impacts to the Lewis Bay eelgrass bed and the natural recovery is not progressing at an acceptable rate, DEP may require that additional surveying and/or compensatory mitigation be completed by Cape Wind. This mitigation will involve replanting the impacted area with a 3:1 ratio of impact to restoration so as to restore the original area of eelgrass. Specific details regarding compensatory mitigation, including criteria for determining whether the mitigation has been successful and what additional mitigation measures may be appropriate in the event that the replanting is not successful, will be developed in cooperation with appropriate federal and state regulatory agencies and included in the Eelgrass Monitoring and Mitigation Plan to be submitted to the Department for its review and approval.
-

Cape Wind Associates
Water Quality Certificate
Transmittal #W133663
Attachment E

Seafloor Habitat/Benthic Community Monitoring

CAPE WIND ENERGY PROJECT

SUBMITTED TO

Massachusetts Department of Environmental
Protection
One Winter Street
Boston, Massachusetts 02108

SUBMITTED BY

Cape Wind Associates, LLC
75 Arlington Street, Suite 704
Boston, Massachusetts 02116

PREPARED BY

ESS Group, Inc.
401 Wampanoag Trail, Suite 400
East Providence, Rhode Island 02915

Project No. E159-504-7

April 23, 2008



www.essgroup.com



**SEAFLOOR HABITAT/BENTHIC COMMUNITY MONITORING
Cape Wind Energy Project**

Submitted to:

Massachusetts Department of Environmental Protection
One Winter Street
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April 23, 2008



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1.0 INTRODUCTION

This plan describes the level of pre-construction, baseline, and benthic monitoring activities that have been performed or will be performed and outlines the proposed post-construction benthic monitoring program that will be implemented along the jet-plow embedment route of the submarine interconnecting transmission cable system associated with the Cape Wind Energy Project. This plan discusses the sequence of monitoring activities in support of the plan, the proposed sampling locations and level of effort, and the benthic community target endpoints. Standardized marine benthic sampling protocols are available for review under separate cover.

The Cape Wind Energy project has been designed to minimize impacts on resources found in the area through the use of a variety of techniques including jet plow cable embedment, use of mid-line anchor buoys and jack-up barges during construction, and the use of monopile foundations for the wind turbines themselves. However, it is recognized that construction and operational activities will result in minor loss, reduction, or temporary exclusion of some local resources, including seafloor habitat and the associated benthic communities. To evaluate these effects, Cape Wind Associates, LLC (Cape Wind) will undertake a seafloor habitat and benthic community monitoring program to measure impacts and the recovery of the benthic community to levels comparable to control areas established outside of the area of potential impact.

It should be noted that this proposed plan is for the area within Massachusetts's 3-mile jurisdictional limit (3-mile limit) and may need to be modified following the completion of the National Environmental Policy Act review presently being conducted, in order to be consistent with any monitoring or adaptive management program required, by the Minerals Management Service.

Table 1 provides a summary of completed and proposed monitoring components for the seafloor habitat and benthic community monitoring program.

Table 1. Seafloor Habitat and Benthic Community Monitoring Program

Component	Baseline Conditions	Frequency
<i>Pre-construction Monitoring (2001–2005 and pre-construction)</i>		
Benthic Community	Monitoring of benthic community composition throughout Horseshoe Shoal and along interconnecting route to Lewis Bay completed as part of the permitting process – data collection from 2001–2005	Completed 2001–2005
Seafloor Habitat	Video monitoring of selected transects prior to construction (post permit approval) to document seafloor habitat conditions such as substrate composition, submerged aquatic vegetation (SAV), etc. within the areas of proposed cable embedment and at locations outside of the area of potential habitat impact.	Pre-construction
Benthic Community	Video monitoring of selected transects prior to construction (post permit approval) to document the relative frequency of large epibenthic organisms such as lobster, crabs, scallops, etc. within and outside of the area of potential habitat impact.	Pre-construction

Component	Baseline Conditions	Frequency
Post-construction Monitoring (Year 1 and Year 2 Post-construction)		
Benthic Community	Monitoring of benthic community composition along the centerline of selected segments of the cable installation and at locations outside of the area of potential habitat impact but with comparable seafloor habitat as mapped by the pre-construction video monitoring program.	Years 1 and 2 post-construction (Year 3 post-construction potentially)

2.0 BACKGROUND

The Cape Wind submarine and interconnecting cable system will traverse 7.6 linear miles within the 3-mile limit. The submarine cable will be embedded using jet plow techniques through soft-sediment. Although the cables will be buried below the surface of the substrate, the substrate will be temporarily disturbed.

Most of the project will impact soft-bottom substrates and ubiquitous benthic communities. The geophysical surveys previously conducted have identified predominantly sandy substrates within the project area. Benthic samples will be collected from homogenous areas within and outside of the areas of impact to evaluate these substrates.

3.0 MONITORING ACTIVITIES

The seafloor habitats and benthic community monitoring program consists of two basic activities:

1. Video survey of habitat/substrate conditions; and
2. Benthic community analysis.

Video survey will be performed in order to document resources along three pre-selected sections of the cable embedment route up to 0.5 miles each. The video recordings made along the cable embedment route will be used to select a control area within 5 miles of the project area. The control area will be selected to have similar habitat features (e.g. sediment type and depth) to those observed along the cable embedment route and outside of the influence of any known sources of disturbance or unnatural alteration of water chemistry or sediments. The control area and the stations along the cable route will then be sampled for benthic invertebrates following the construction activities.

A conceptualized representation of the proposed benthic community sampling locations within the 3-mile limit is provided in Figure 1. The final locations will be selected following the pre-construction video monitoring effort so that locations within the control and impact areas can be chosen based on similarity of habitat types (e.g. sediment type, depth, anticipated current patterns, etc.).

3.1 Resource Characterization

Various types of resources have been, and will be, characterized so that post-construction effects can be monitored. These resources include the following.

- Shellfish: The primary species of concern are sea scallops and, to a lesser extent, ocean quahogs.

- Sea scallops – Although scallops are not prevalent in the project area, they were present within the Yarmouth shellfish bed in very limited numbers. Video survey data will be obtained from inside the 3-mile limit for selected transects along the construction corridor and from along a control corridor.
- Ocean quahogs – Cape Wind has already agreed to perform mitigation for quahogs within known quahog habitat. No monitoring specific to quahogs is proposed, although additional quahog data may become available through the video survey or the benthic grab sampling programs.
- Benthos: Assessment of benthic community composition and diversity will be the primary measures for determining recovery. Benthic organism abundance will be assessed, but not relied upon, as the sole means for determining recovery since this can be greatly influenced by inter-annual and inter-seasonal factors.

4.0 PRE-CONSTRUCTION MONITORING

The seafloor habitat and benthic community monitoring program is proposed to document the existing conditions in the project area and provide a framework for assessing the actual impacts and recovery of the benthic habitat following construction. Sampling conducted during 2001, 2003, and 2005, along with the additional video monitoring that will occur prior to construction (post-permit approval), will serve as the basis for comparison with the post-construction conditions. The pre-construction monitoring period will be selected to coincide and support pre-construction data obtained during the surveys of 2001, 2003, and 2005 for subsequent comparison to post-construction data proposed for the same period (summer).

4.1 Video Survey

Video surveillance is proposed for three pre-selected cable embedment segments within the 3-mile limit, each up to 0.5-mile in length with the intent being to collect all video data in a single day. A video camera with global positioning system (GPS) linkage will be towed along each of the routes, tracking the centerline. Video surveillance is preferable to static image cameras since the intent of this survey is to document the similarities or differences between large general areas along the cable embedment route and the control area rather than examine specific attributes of a single location such as sediment grain size (which has been demonstrated to be relatively uniform across the project area) or the depth of the redox layer (which is not relevant in this mobile substrate environment).

Depending on water clarity, the video camera will be towed from 2 to 8 feet above the substrate. The field of view of the substrate will depend on the height of the sled but is generally about 1 to 1.5 times the height above the bottom. Height above the substrate will be determined to aid in the semi-quantitative analysis of the video. The remotely operated vehicle (ROV) will be towed at 0.5 to 1 knot to provide good resolution of the substrate. A marine biologist will be on board during the survey to make recommendations on speed and elevation to ensure that the quality of the video will be sufficient for the desired analysis.

Once collected, videos of the selected segments of the route will be reviewed by a marine biologist. The three pre-selected segments will be targeted to include the dominant bottom type identified during geophysical surveys of the project area.

Observations will be made for presence/characterization of epibenthic invertebrates (lobsters, crabs); shellfish (especially scallops); lobster burrows; fish habitat; substrate texture; other organisms identified to lowest possible taxonomic level; and other features. It should be noted that based on the baseline data collected to date, very little evidence exists that would indicate use of the project area by lobsters or scallops; however, the video survey is expected to confirm this. A semi-quantitative index of abundance or frequency for immobile species (shellfish) or features (burrows, substrate texture) will be developed from videotape review.

The following observations will be made:

- Presence and general characterization of the substrate (three-dimensional features and regularity).
- Presence and general characterization of epibenthic invertebrates (especially lobster and crabs).
- Presence and general characteristics of shellfish (especially scallops).
- Evidence of lobster burrows, if visible.
- Presence and general characterization of fish and habitat.
- Organisms that have been identified to the lowest practicable taxonomic level.
- Location of features.

Footage from similarly sized segments of the control corridor will be obtained and reviewed to confirm that these areas are similar to the benthic stations selected along the cable route. It is in the best interest of Cape Wind to ensure that the control corridor selected is as similar as possible to the cable embedment route (or construction corridor) in order to eliminate potential variables that may result in dissimilar benthic communities between the control and impact locations.

4.2 Benthic Community Analysis

Cape Wind has already performed a comprehensive assessment of the benthic community baseline condition within the project area. Additional pre-construction sampling of the benthic community is not proposed since it is the intent of this monitoring program to compare post-construction-impacted areas to post-construction areas that were not impacted (control or reference sites) within the same period of time. This will allow for a better understanding of the rate of benthic community recovery and be less susceptible to inter-annual and seasonal variability.

Recovery of communities within the dominant substrate or habitat type to pre-construction function and values will be determined based on the comparison of the post-construction monitoring results from impacted areas to post-construction monitoring results from reference, or control, areas of

similar habitat type. Comparison of post-construction monitoring results to pre-construction monitoring results may also be performed, but this comparison will not be relied upon as the sole determinant of recovery.

The primary function of the dominant benthic habitat in the project area is to support benthic diversity and abundance, provide potential for shellfish habitat, and fish support. The benthic community composition is generally a good indication of these functions. Species composition, diversity, and abundance can all be assessed using numerical classification methods that calculate similarity values among and between sites. Information on the ecological role of individual taxon (e.g., successional stage) can be incorporated into the review.

5.0 POST-CONSTRUCTION MONITORING

Post-construction monitoring of the seafloor habitat and benthic community is proposed to document the continued existing conditions (i.e., control corridor stations) in the dominant substrates identified within the project area (principally sand) and assess the actual impacts and recovery of the benthic habitats following construction. Sampling conducted during 2001, 2003, and 2005, along with the additional video monitoring that will occur pre-construction, will serve as a basis for comparison with the post-construction conditions.

The subsequent post-construction monitoring activities will be conducted during the summer one year and two years post cable installation (with a possible extension through three years post-installation). If evaluation of field data indicates that recovery is occurring as expected then subsequent annual monitoring activities (Year 3) would not be necessary.

The benthic samples will be taken during the summer (July 1–September 30) following the date of jet-plow activity at pre-determined survey locations. A minimum of six months shall elapse between jet plow activity and the proposed benthic sampling before the program commences. An effort will be made to complete sampling activities within a one-week period, or, if not possible, on subsequent days with similar weather and oceanic conditions to ensure consistency.

A total of up to five sampling locations are proposed to be collected from locations on the centerline of the cable route. An attempt will be made to locate samples within the dominant substrate type present. An additional five samples will be obtained from the control corridor with similar sediment and depth characteristics that are adjacent to the cable route at a maximum distance of 5 miles in order to provide control data.

The proposed sampling size (five) was derived from iterative solutions of the minimum sample size equation for a one-sample/paired-sample t-test over a range of effect sizes (Zar, 1996¹). An estimate of the standard deviation in taxonomic richness for the study area was obtained from data collected as part of the Benthic Macroinvertebrate Community Assessment in Summer 2001. Data from later assessments in 2003 and 2005 were not included in the estimate of standard deviation because they were either collected during a different season (i.e. spring or fall) or at geographic locations outside of the proposed

¹ Citation: Zar, J.H. 1996. Biostatistical Analysis, 3rd ed. Prentice Hall. 662 pages.

project area. Therefore, to avoid introducing seasonal and geographic variability (which are not expected to be important factors in the proposed monitoring plan), only the geographically relevant data from the 2001 assessment were used.

The estimated standard deviation was used to derive a curve of sample size against effect size (i.e. detectable difference). As one moves along the curve from left to right, the improvement in detectable difference per sample collected decreases asymptotically (Figure 2). The proposed sample size of five was chosen partly because the marginal improvement per additional sample decreases to less than one at this point. Furthermore, a sample size of five allows a resolution of detectable difference in richness that is better than 1.5 standard deviations. This is anticipated to be sufficient for the detection of meaningful differences in taxonomic richness between the construction corridor and the control corridor.

The post-construction monitoring program will replicate the sampling methodology and protocols used to conduct the pre-construction monitoring that was completed between 2001 and 2005.

5.1 Benthic Community Analysis

The benthic infauna will be identified to the lowest practical taxonomic category as had been done previously for the pre-construction monitoring completed during 2001 through 2005; benthic community parameters such as species density by sample, the dominant infaunal species, evenness of distribution, and community assemblage patterns will be developed. Species composition, diversity, and abundance can all be assessed using numerical classification methods that calculate similarity values among all stations and collections. Information on the ecological role of individual taxon (e.g., successional stage, mobility, etc.) can be incorporated into the review.

5.1.1 Framework for Evaluating Benthic Community Recovery

A framework for determining the success of benthic community recovery is outlined in Table 2. This general approach will be implemented as a part of the evaluation process, although the details may change as required.

Table 2. Framework for Evaluating Benthic Community Recovery

Dominant Substrate	Method	Criteria
Sand	<ol style="list-style-type: none"> 1. Similarity of community composition 2. Taxa richness 	<ul style="list-style-type: none"> ▪ Post-construction, centerline stations in construction corridor should exhibit same level of similarity to reference stations in control corridor ▪ Post-construction, no significant differences in species richness between construction corridor and control corridor

The decision for continued monitoring during Year 3 post-construction will be based on discussions between Cape Wind and an agency review group. The decisions will be based upon the data gathered during the monitoring activities and results of the various statistical analyses that will be conducted. The monitoring plan is scheduled to last up to three years post-

construction, with a minimum of one year. Each year the data will be reviewed and a determination made as to whether or not "recovery" has been reached. Table 3 describes the approach, or tools, that will likely be used to evaluate to what degree a system may have recovered and to determine the need for further monitoring or additional mitigation.

Table 3. Benthic Habitat Recovery Evaluation Approach/Tools

Analytical Tool	Recovered	Not Recovered
Clustering (similarity analysis) and ANOSIM (or comparable analysis) - Benthic community structure (species composition)	Post-construction – the benthic community of the construction corridor clusters with control corridor; no significant differences (ANOSIM or comparable analysis). Recovered if there is >75% assurance of similarity.	Post-construction – the benthic community of the construction corridor does not cluster with that of the control corridor; differences are significant (ANOSIM or comparable analysis). Not recovered if there is <75% assurance of similarity.
<i>t</i> test* - Species richness - Abundance of filter feeders	No significant difference between the construction corridor and control corridor (an increase in species richness within the construction corridor is acceptable). The benthic community of the construction corridor exhibits same pattern as control corridor.	Measures of interest are significantly different between the construction corridor and control corridor.

*A *t* test is assumed to be appropriate based on the distribution of the 2001 benthic assessment data. However, a nonparametric alternative test may be deemed more suitable if the data collected during the benthic monitoring program do not appear to be normally distributed.

5.1.2 Habitat Restoration Success – Decision Making Process

The steps to be employed to determine if successful restoration is achieved are outlined below.

1. First Year Post-construction Monitoring.
 - i) Cape Wind will complete the required surveys in accordance with the agreed-upon criteria.
 - ii) Cape Wind will prepare a monitoring report that summarizes the monitoring results in accordance with the agreed-upon criteria and will make a recommendation regarding the need for additional monitoring.
 - iii) Cape Wind will organize a meeting with the applicable agencies to discuss the results presented in the monitoring report. If the benthic community diversity in the construction corridor is not deemed to be recovered to a level comparable to the control corridor, additional monitoring will be performed during Year 2.
2. Second Year Post-construction Monitoring (if needed).

- i) Cape Wind will complete the required surveys in accordance with the agreed-upon criteria.
 - ii) Cape Wind will prepare a monitoring report that summarizes the monitoring results in accordance with the agreed-upon criteria and will make a recommendation regarding the need for additional monitoring.
 - iii) Cape Wind will organize a meeting with the applicable agencies to discuss the results presented in the monitoring report. If the benthic community diversity in the construction corridor is not deemed to be recovered to a level comparable to the control corridor, additional monitoring will be performed during Year 3.
3. Third Year Post-construction Monitoring (if needed).
- i) Cape Wind will complete the required surveys in accordance with the agreed-upon criteria.
 - ii) Cape Wind will prepare a monitoring report that summarizes the monitoring results in accordance with the agreed-upon criteria and will make a recommendation regarding the need for additional monitoring or mitigation.
 - iii) Cape Wind will organize a meeting with the applicable agencies to discuss the results presented in the monitoring report. If the benthic community diversity in the construction corridor is not deemed to be recovered to a level comparable to the control corridor, Cape Wind may request the opportunity to perform an additional year of monitoring if the data show a trend toward recovery that would be achieved within an additional year's time. If the data do not exhibit such a trend, then the construction corridor will be deemed not recovered and the plan for mitigation will be discussed.
 - iv) Mitigation, if necessary, will be determined by the responsible agency/ies and will be comparable in scope and scale to the nature of the impact.

5.1.3 Post-construction Benthic Monitoring Protocols

The following guidelines are to be used for marine benthic macroinvertebrate sampling conducted using a gravity dredge (VanVeen, Ekman, Shipek, or other similar device) deployed from a boat. The laboratory analysis procedures outlined below are specific with respect to critical techniques and quality assurance and quality control procedures.

The following materials may be required for this procedure.

Field Equipment

- Gravity Dredge (VanVeen, Ekman, Shipek, or other similar dredge)
- Forceps (may be useful but not necessary)

- 10% Buffered Formalin Solution to then be diluted to 10% strength with sample in sample jar
- One sample jar per site (liter size or larger)
- Labels and markers for sample jars (or write-in-the-rain paper and a pencil)
- 9-inch by 13-inch (or larger) pan (may be useful but not essential)
- Wash bottle or similar device (may be useful but not essential)
- Large scoop w/ handle (ideal) or rubber gloves

Laboratory Equipment

- Ethyl Alcohol
- Rose Bengal
- Sieve with screen size less than 0.5 millimeters
- Two funnels
- Waste formalin container
- Bucket with spout
- Several small plastic containers (sorting pans)
- Small (<200 milliliters) sample jars
- Collection and Processing Log
- Forceps – fine-gauge
- NHCl
- Dissecting microscope
- Fiber-optic lamp
- Marine invertebrate identification keys

Macroinvertebrate Collection

The details provided below assume that the work will be conducted from the research vessel.

Summary of Requirements

- All samples to be taken with a gravity dredge.
- Samples must be taken from all sediment coring locations. Each sample is to be placed into a separate jar and labeled with all pertinent information (site ID, date, collector name, etc.).
- Sample coordinates and water depth will be recorded for each sample taken at each site.

- If samples are silty in nature, top 2 inches of material (with benthic organisms) will be placed directly into a 500-micron (μm) sieve for on-board sieving prior to being placed into the sample jars, otherwise the top 2 inches of material are to be preserved in their entirety within one or more appropriately labeled jars.
- All samples must be preserved on the day of collection with a solution representing 10% formaldehyde (see below for details) and mixed well.

Specific Requirements

1. Sample bottom material with gravity dredge. As with most dredges, open jaws on dredge and lock in ready position. Ensure that metal flaps are open on top of sampler to minimize disturbance of benthic community by shockwave generated by lowering dredge. Lower dredge to the bottom such that the dredge is directly below the boat and vertically aligned. It is best to do this with minimal disturbance of the bottom. Drop the messenger to trigger jaws (if Ekman type dredge) or consult dredge manual. Once jaws have been released, give a quick, but slight, tug to completely set jaws around mud sample. A slack tide, minimal currents, or good timing may be required to effectively get samples.
2. Record location of sample on site map (in relation to core location) as accurately as possible (GPS coordinates if possible). Record water depth and type of substrate material retrieved whenever possible.
3. If samples are silty in nature, top 2 inches of material (with benthic organisms) will be placed directly into a 500- μm bucket sieve for on-board sieving prior to being placed into the sample jars, otherwise the top 2 inches of material are to be preserved in their entirety within one or more appropriately labeled jars.
4. When sieving on board, place entire sample (benthic organisms and muck) directly into a 500- μm bucket sieve. Sieve is to be cleared of all fine materials (silt and mud) by lowering it into water over the side of the boat without overtopping its rim. The sieve bucket is then raised to allow water and fines to flow out the bottom (twisting the bucket back and forth enhances this process).
5. Ideally, jars should contain no more than one-half of their volume of actual sample material. If additional storage is required, additional jars should be created and labeled.
6. Preserve sample by adding enough Formalin solution to bring the sample to 10% Formalin solution and 90% sample and seawater. Make sure that the Formalin solution is mixed well within the sample but do not shake vigorously. If you are not able to properly preserve sample with Formalin in the field, you can preserve the samples on ice for up to 24 hours, at which time they must be preserved with Formalin.
7. Return preserved samples to ESS Group, Inc. (ESS) for laboratory analysis.

The following is the protocol for laboratory analysis.

Summary of Requirements

- Invertebrates will be stained with a concentrated Rose Bengal Stain and Ethyl Alcohol solution.
- Samples will be sub-sampled and sorted manually using a dissecting microscope.
- Sorted samples will be preserved with 70% ethanol in small appropriately labeled jars.
- Microscope identification will be performed for all processed samples.
- Organisms will be identified to lowest practical taxon using 45X magnification and available taxonomic keys.

Specific Requirements:

1. In order to facilitate the sorting procedure, 2 milliliters of Rose Bengal stain and Ethyl Alcohol solution will be added to each sample.
2. Each sample is to then be sub-sampled and sorted under a dissecting microscope. Sub-sampling is conducted by pre-dividing the material in a sieve into quarters and eighths then removing organisms from a single eighth. If over 100 organisms are found, sorting for the sample is considered complete. If fewer than 100 organisms are found, additional eighths are to be sorted until over 100 organisms are retrieved.
3. Sorting under the microscope will enable organisms to be sorted into the following broad taxonomic groups: arthropods, annelids, mollusks, and "others" for quicker identification.
4. After processing a sample, the sorter will log the sample into the Processing Log Sheet for each sample site.
5. Types (to the lowest practical taxonomic level) and counts for all organisms within each sample will be determined through the use of a dissecting microscope (up to 45X magnification), a fiber optic lamp, standard dissecting tools, and appropriate taxonomic keys.

Quality Assurance/Quality Control

The quality assurance/quality control protocol for the benthic monitoring program will be comparable to procedures outlined for other similar assessment programs. ESS will randomly perform a quality check on a minimum of 10% of the samples analyzed. This quality check will cover both the sorting and the identification phases of the analysis.

For the sorting phase, if more than 10% error (calculated by dividing the number found in the quality check by the total number of individuals) is found between the sorter and the quality assurance check, four additional samples will be reprocessed. If the error in those samples is more than 10%, then all samples sorted by that individual will be reprocessed.

For identification, a second ESS staff member trained in macroinvertebrate identification will randomly check a minimum of 10% of the samples analyzed. The purpose of this check will be

to validate the identifications made on the individuals comprising the sample. In addition, ESS will confirm the identifications made with other regional experts as necessary.

A record of the results of each of the various quality assurance checks described above will be kept in a laboratory analysis log.

6.0 PROPOSED AVOIDANCE, MINIMIZATION, AND MITIGATION

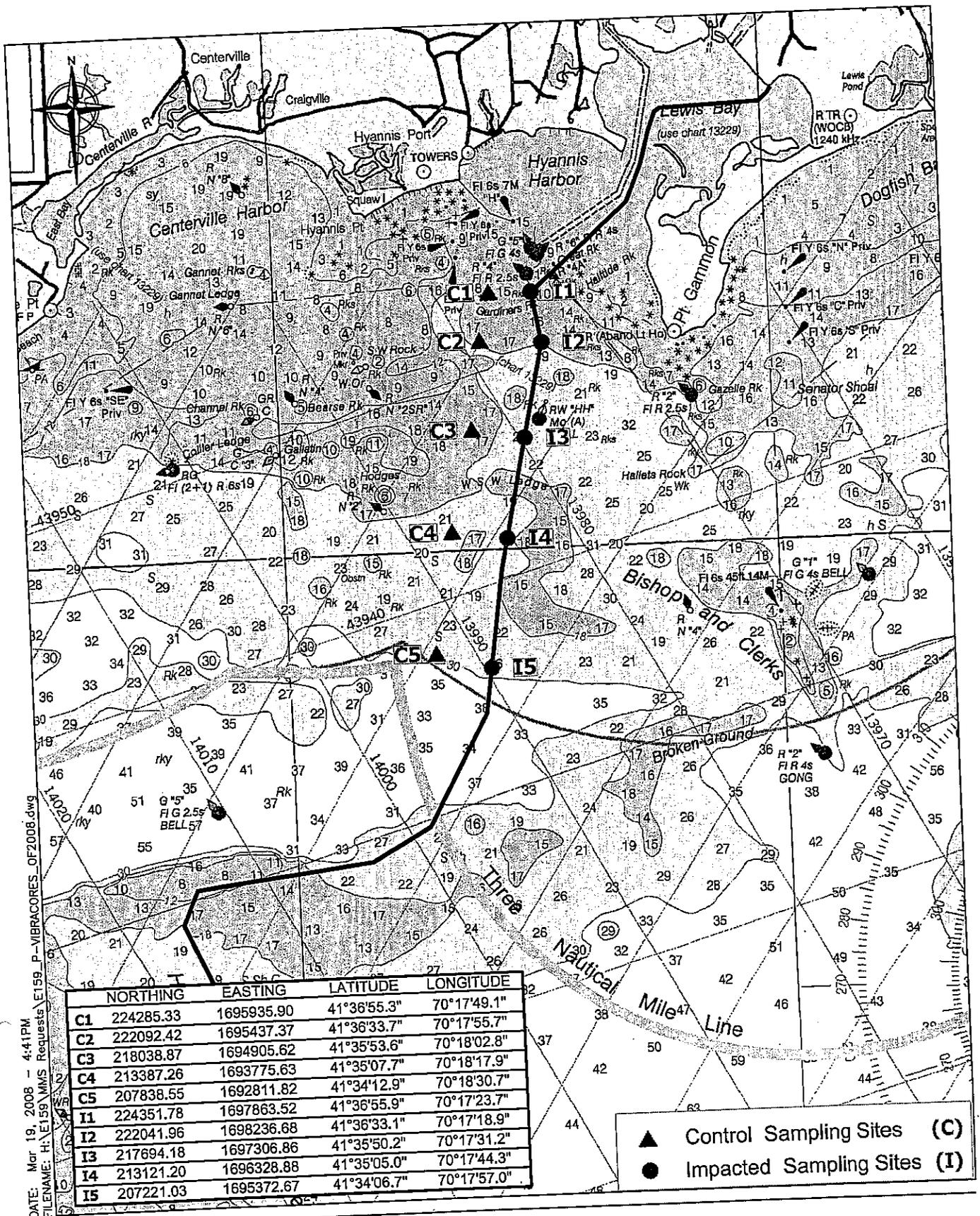
The following is a comprehensive summary of the proposed avoidance, minimization, and mitigation for potential impacts to benthic species and shellfish that has already been committed to by Cape Wind.

- Utilizing state-of-the-art hydraulic jet plow for cable installation in order to minimize seabed disturbance and sediment dispersion during cable embedment.
- Utilizing monopile foundations for wind turbine generator towers which minimize the seabed footprint and sediment disturbance while also minimizing opportunities for benthic organism colonization or fish habitat creation.
- Post-construction monitoring to document habitat disturbance and recovery.
- The use of mid-line buoys on anchor lines in order to minimize the impacts from anchor line sweep.
- The duration and sequencing of construction has been designed to minimize the period of disturbance.
- Impacts to benthos and benthic habitat in Lewis Bay within 200 feet (61 meters) of shore would be minimized by using horizontal directional drilling methodology to transition the submarine cable system to the shore.
- Cape Wind will work with the Yarmouth Shellfish Constable to appropriately avoid or minimize impacts to designated shellfish areas from installation of the submarine cable. Cape Wind would provide the Town of Yarmouth with funds to mitigate for the direct area of impact within the Town's designated recreational shellfish bed in accordance with the Town's mitigation policies.
- Notification of registered lobster fishermen well in advance of mobilization as to the location and timeframe of Project construction activities, as well as a daily broadcast to all mariners on VHS marine channel 16 as to the construction activities for that and upcoming days.



Figures





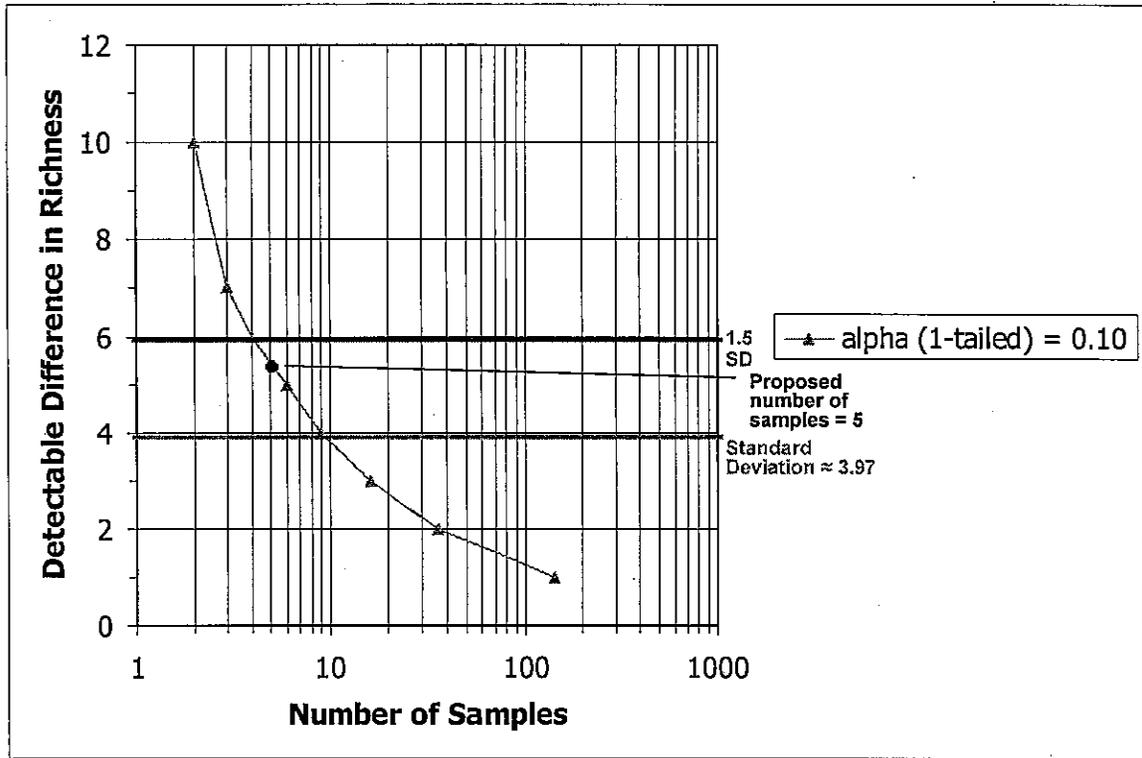
Engineers
 Scientists
 Consultants

Cape Wind Associates, LLC
 Cape Wind Project

SCALE: 1"=6000'

Schematic Representation of Post Construction
 Benthic Community Sampling Program
 within Massachusetts Waters

Figure
 1



*Assumes t-test with power (1-β) of 0.80



CAPE WIND ENERGY PROJECT
Nantucket Sound

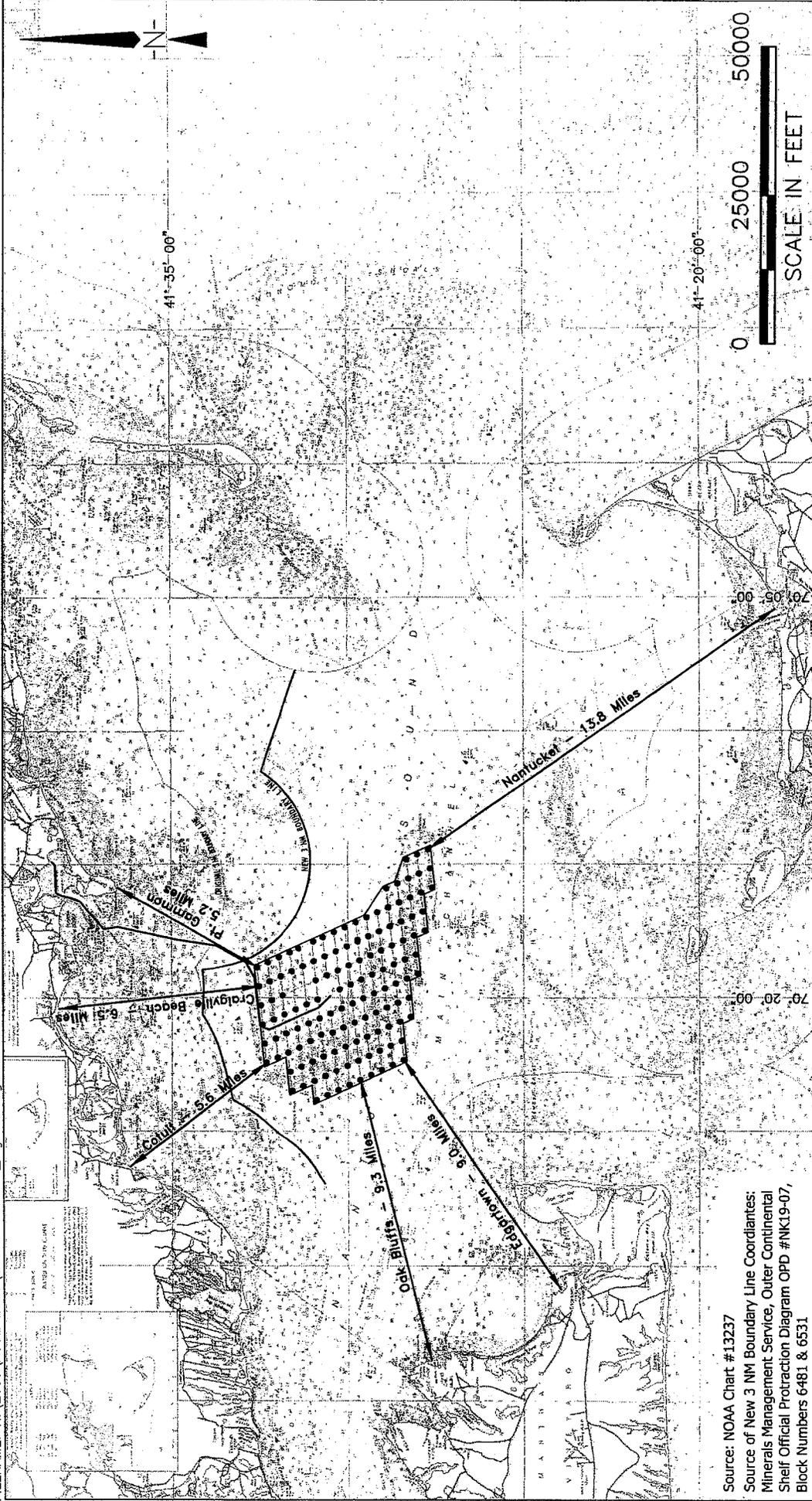
Source: 2001 Benthic Assessment Data

Sampling Effort Needed to Detect Differences in
Benthic Invertebrate Taxonomic Richness in
Nantucket Sound*

Figure
2

USACE Permits

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Source: NOAA Chart #13237
 Source of New 3 NM Boundary Line Coordinates:
 Minerals Management Service, Outer Continental
 Shelf Official Protraction Diagram OPD #NK19-07,
 Block Numbers 6481 & 6531

Purpose: Wind Energy Generation and
 Submarine/ Overland
 Transmission Cable Project

Proposed Turbine Array
 Nantucket Sound & Approaches - New 3 Mile Boundary
 Cape Wind Project

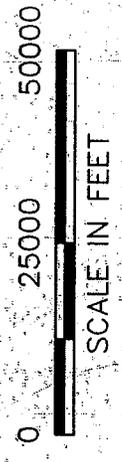


At: Yarmouth, Barnstable County, Massachusetts
 In: Nantucket Sound
 Applicant: Cape Wind Associates, LLC

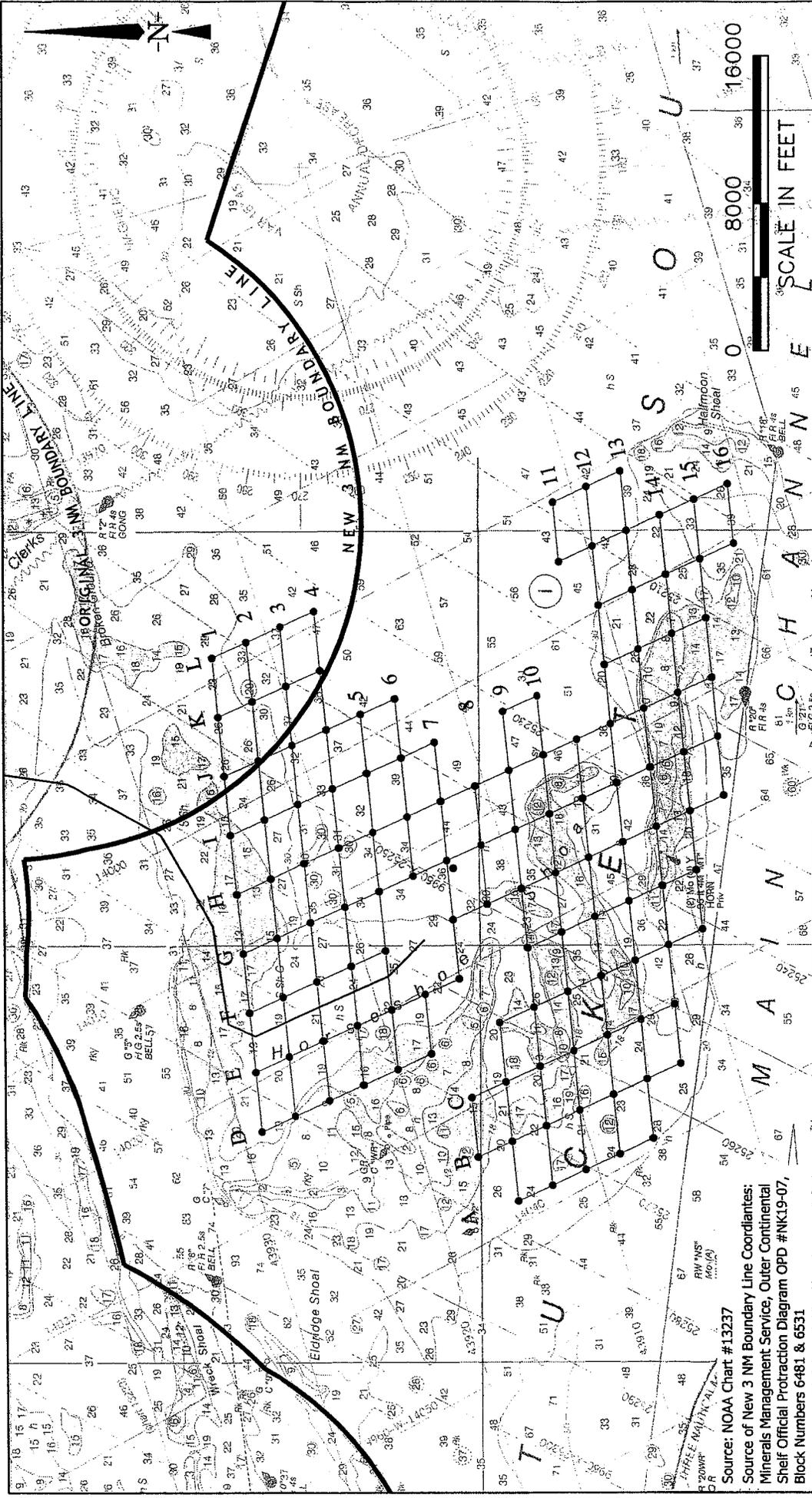
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Source: NOAA Chart #13237
 Source of New 3 NM Boundary Line Coordinates:
 Minerals Management Service, Outer Continental
 Shelf Official Protraction Diagram OPD #NK19-07,
 Block Numbers 6481 & 6531

Purpose: Wind Energy Generation and
 Submarine/ Overland
 Transmission Cable Project

Preliminary Turbine Array
 Nantucket Sound & Approaches - New 3 Mile Boundary
 Cape Wind Project

SHEET NO.
 2 of 18

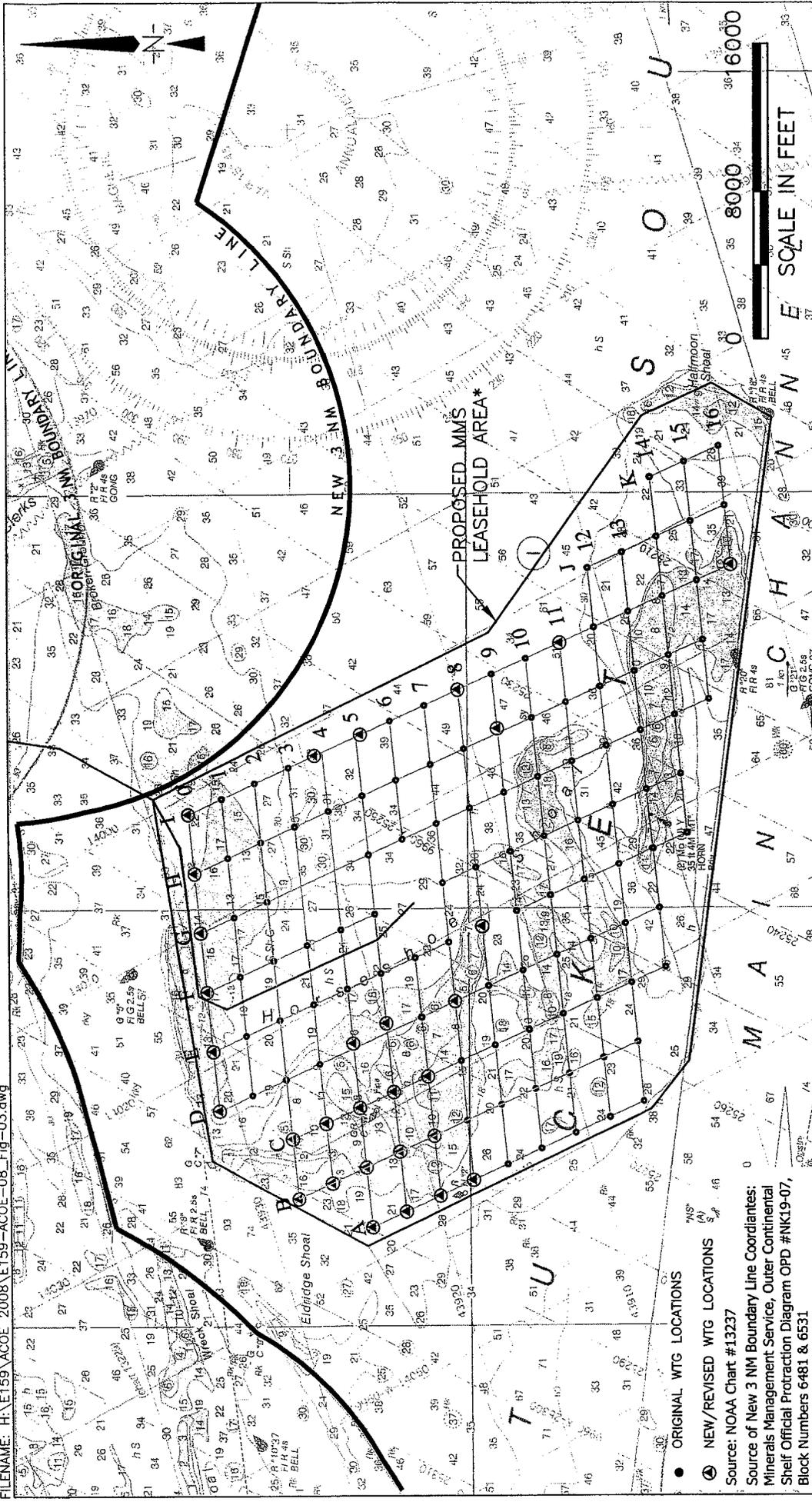
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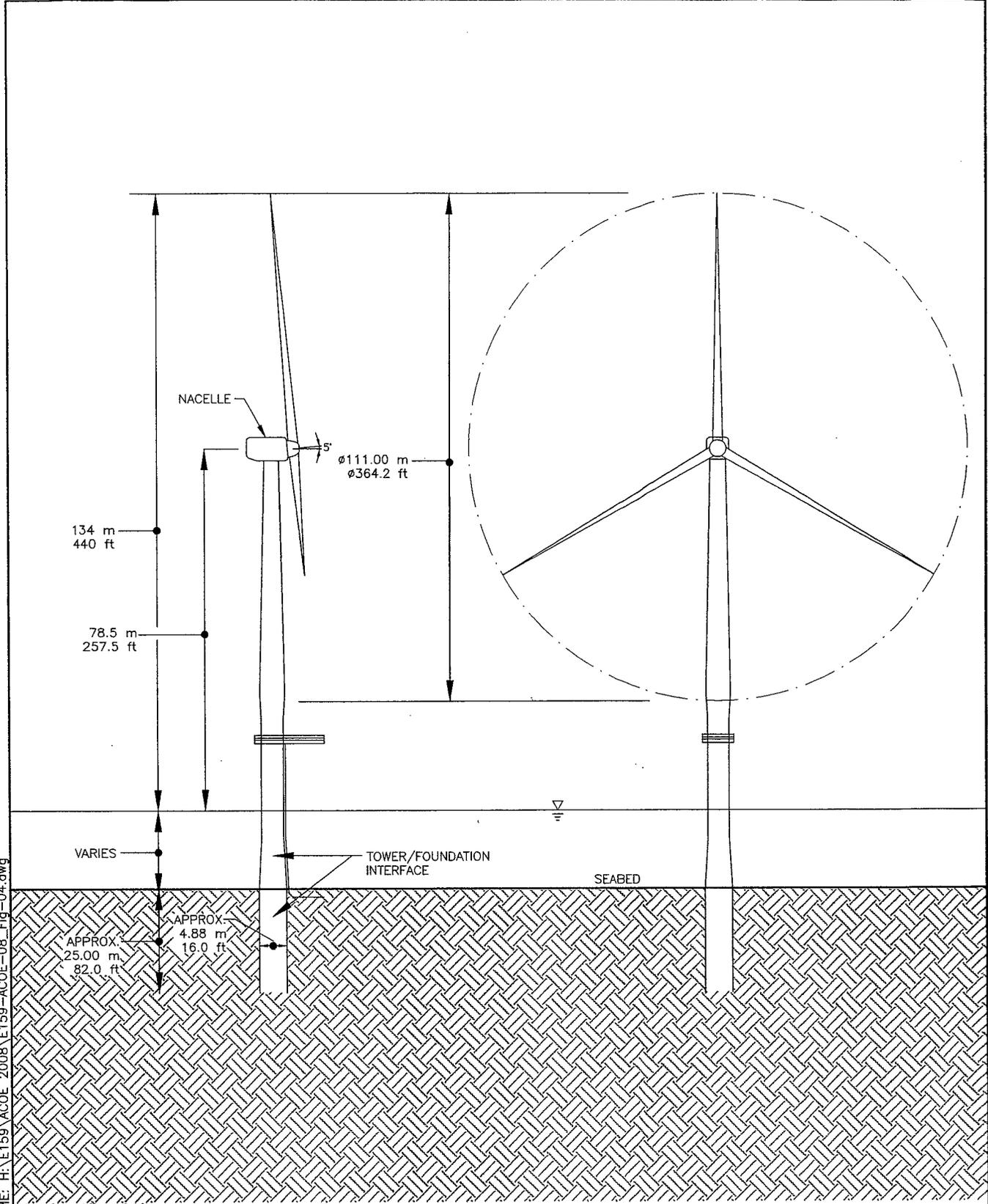
At: Yarmouth, Barnstable County, Massachusetts
 In: Nantucket Sound
 Applicant: Cape Wind Associates, LLC



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<p>Purpose: Wind Energy Generation and Submarine/ Overland Transmission Cable Project</p>	<p>Revised Turbine Array and Approaches - New 3 Mile Boundary</p> <p>Cape Wind Project</p>	<p>SHEET NO. 3 of 18</p> <p>DATE: February 15, 2007</p> <p>PROJECT NO. E159-504</p>
<p>At: Yarmouth, Barnstable County, Massachusetts In: Nantucket Sound Applicant: Cape Wind Associates, LLC</p>		

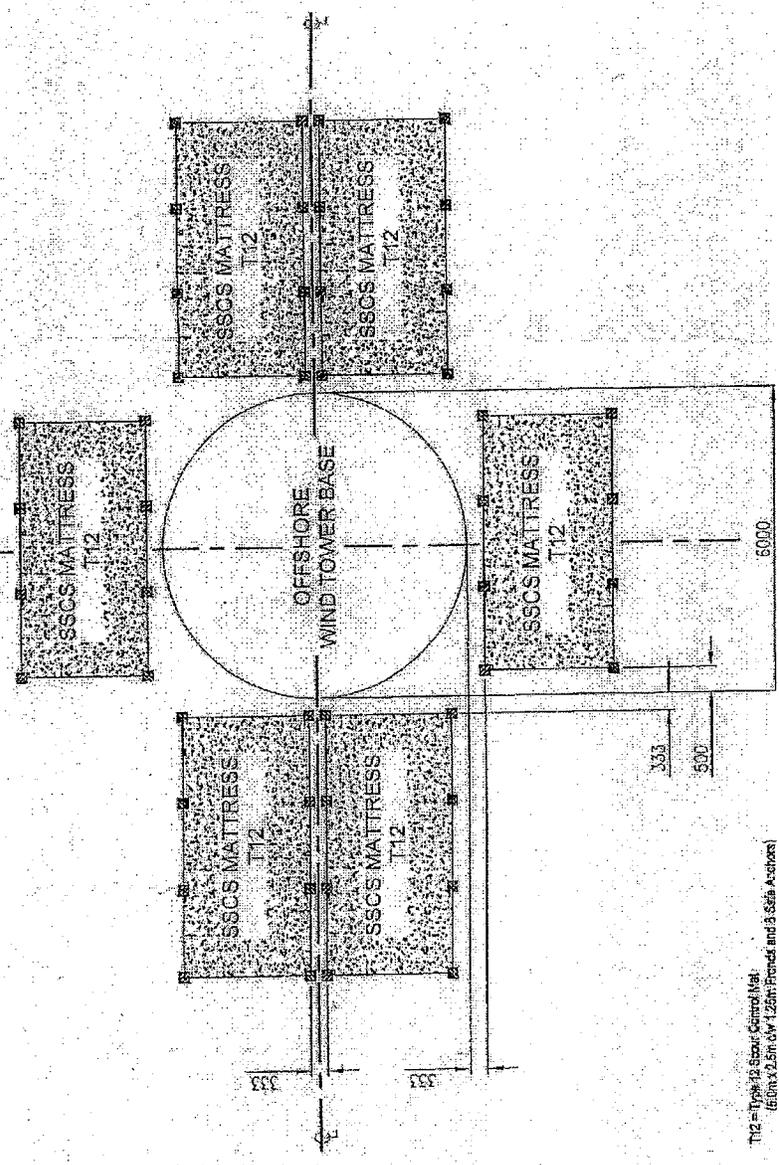
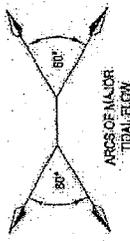


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Scale: 1"=100'

Purpose: Wind Energy Generation and Submarine/ Overland Transmission Cable Project	Proposed Wind Turbine Generator Profile Detail Cape Wind Project	SHEET NO. 4 of 18
		DATE: 02/15/07
	At: Yarmouth, Barnstable County, Massachusetts In: Nantucket Sound Applicant: Cape Wind Associates, LLC	PROJECT NO. E159-504





T12 = Type 12 Scour Control Mat (5.0m x 2.5m) w/ 1.25m Fronts and 3 Side Anchors

NOTES - OFFSHORE WIND ENERGY TOWER.
 1. MATS for SCOUR PROTECTION as indicated on this DRAWING to be by SEABED SCOUR CONTROL SYSTEMS, LTD.

SAMPLE REQUIREMENT per Wind Tower:
 9 No. SSCS Type 12 SCOUR CONTROL MATS 5.0m x 2.5m, BUOYANT FRONT HEIGHT 1.25m, w/ 3 in No. 6 Safe Anchors. Weight in Air: 100kg; Weight Submerged: 45kg; FRONT Tensile Strength > 681N and up to 1131N. Mat Layout to face into MAXIMUM tidal flow conditions.

It is IMPORTANT that these Scour Control Mats be installed as a.s.a.p. Tower Installation.
 2. MATS to be positioned and anchored by two (2) competent DIVERS. Mats are crane deployed by 2 in wire rope slings (Slings can be supplied by SSCS). Detailed installation instructions are supplied with the Mats.

3. NOMINAL MINIMUM CLEAR DISTANCE between Tower Base and Scour Control Mats to be > 8' (> 2.28m). Normal/Standard: 12' to 16' (3.66 to 3.90m).

4. INSTALLATION SEQUENCE as required by Dive Team. During installation the SAFE NETS must NOT BE REMOVED UNTIL ALL ADJACENT MATS HAVE BEEN FULLY INSTALLED to prevent Diver or RCV entrapment.

5. MATS should NOT be installed at Entry Attachment Points intended for Cables. Such Scour Control Mats can be installed immediately AFTER any subsequent connections to the Tower Base have been completed and BEFORE Winter Storms, and Mats should be contained out to the perimeter of any cable trenching.

6. Additional Stability Post Installation - Front induced Sedimentation: EACH Type 12 Mat, 5m x 2.5m, the submerged sediment bank should be in the range:

• 100 tonnes to 124 tonnes submerged weight over each mat; this held down is additional to the retention provided by the eight (8) Side Anchors and also includes entry heaving extension of sediment bank down to seabed in a smooth draw up to 2.2m away from mat edge.

Purpose: Wind Energy Generation and Submarine / Overland Transmission Cable Project
 Source: Seabed Scour Control Systems, LTD
 Not to scale

**Scour Control Measures
 CAPE WIND ENERGY PROJECT**

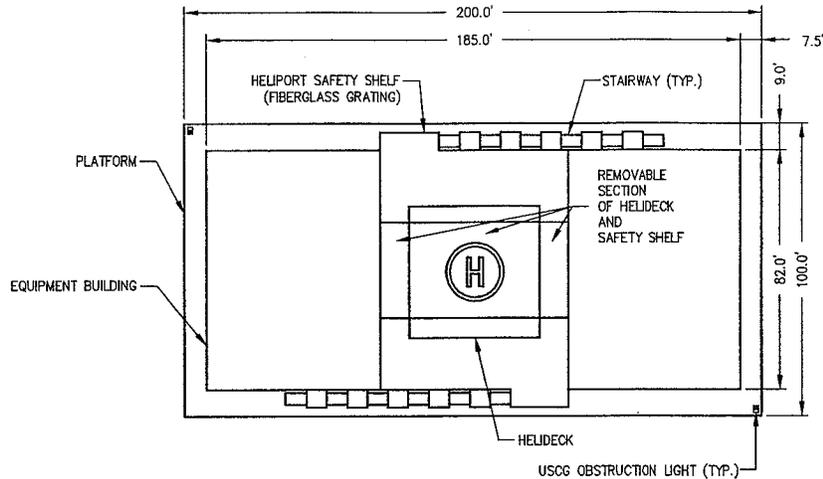
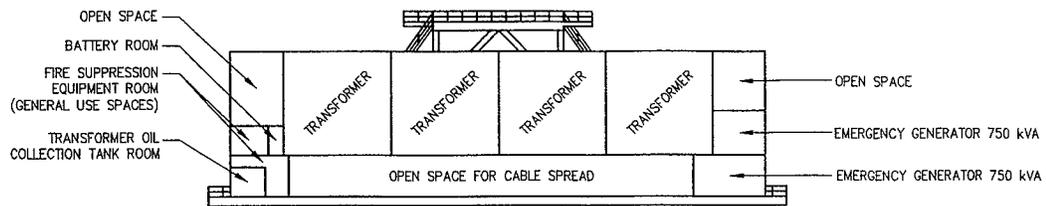
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 5 of 18**

At: Yarmouth, Barnstable County, Massachusetts
 In: Nantucket Sound
 Applicant: Cape Wind Associates, LLC

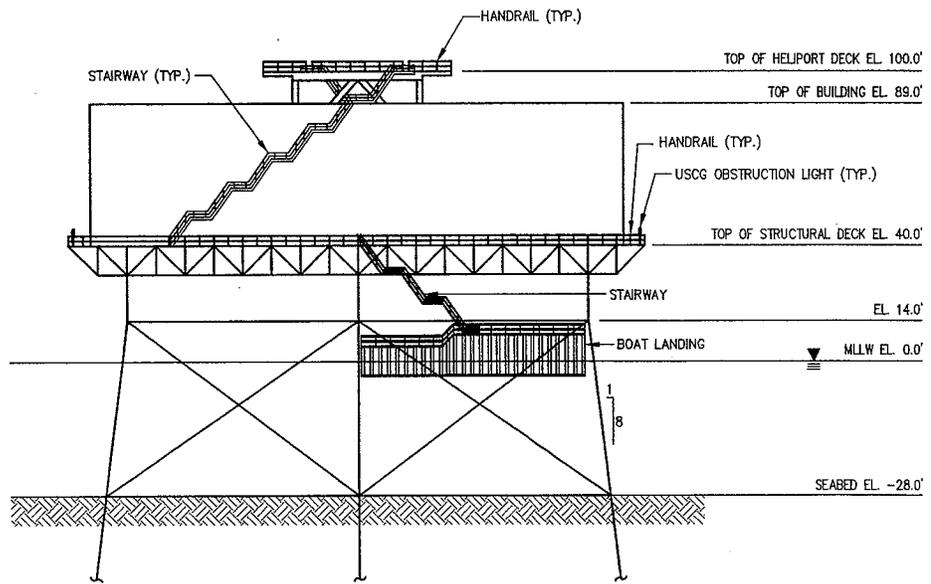
Date: 2/15/2007

PROJECT NO.
 E159-504





PLAN



ELEVATION

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Purpose: Wind Energy Generation and
 Submarine/ Overland
 Transmission Cable Project

**Proposed Electric Service Platform
 Elevation and Plan View**

**SHEET NO.
 6 of 18**

Cape Wind Project

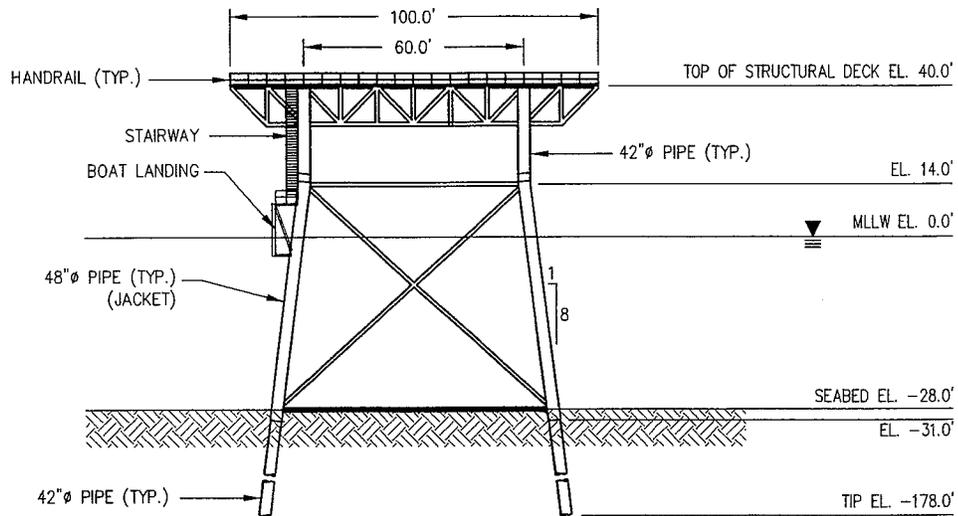
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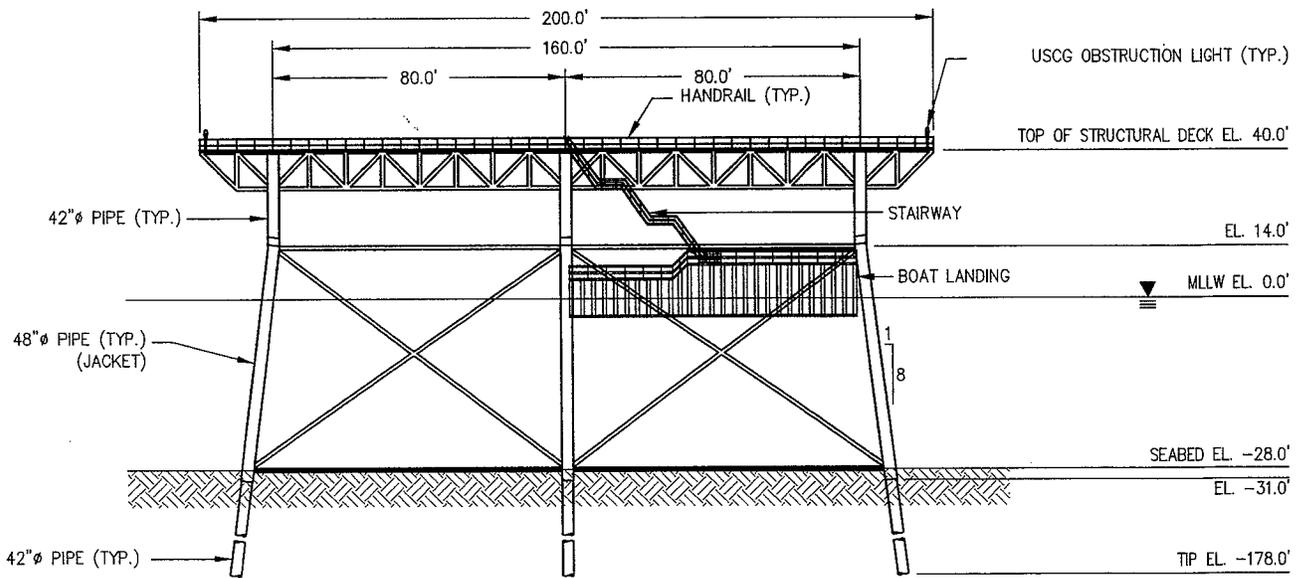
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 In: Nantucket Sound
 Applicant: Cape Wind Associates, LLC

**PROJECT NO.
 E159-504**





SIDE ELEVATION



FRONT ELEVATION

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Purpose: Wind Energy Generation and
 Submarine/ Overland
 Transmission Cable Project

**Proposed Electric Service Platform
 Foundation and Structural Detail**

Cape Wind Project

At: Yarmouth, Barnstable County, Massachusetts
 In: Nantucket Sound
 Applicant: Cape Wind Associates, LLC

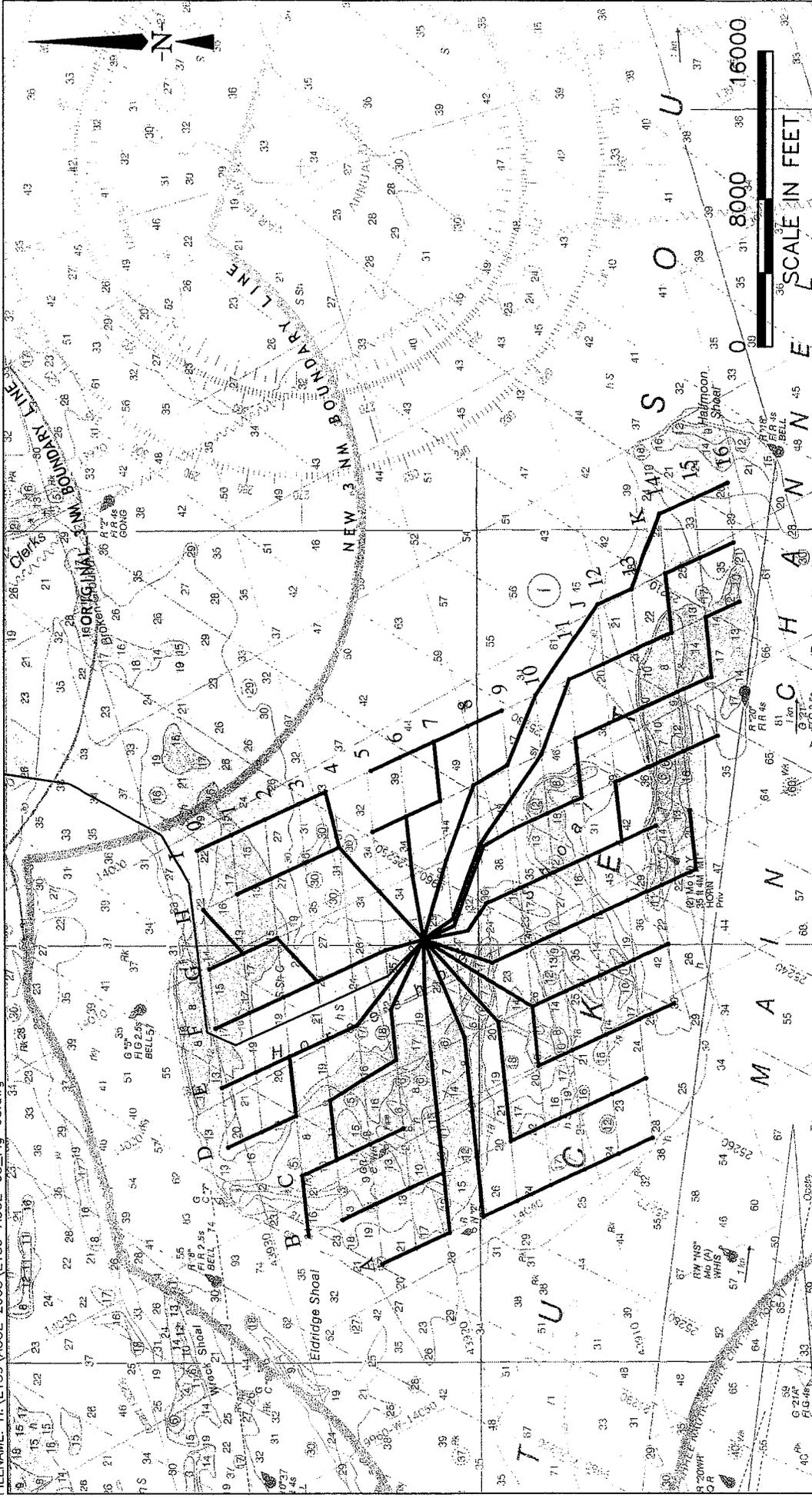
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**PROJECT NO.
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Purpose: Wind Energy Generation and
 Submarine/ Overland
 Transmission Cable Project

**Revised Inner-Array Layout
 Nantucket Sound & Approaches - New 3 Mile Boundary**

Cape Wind Project

At: Yarmouth, Barnstable County, Massachusetts
 In: Nantucket Sound
 Applicant: Cape Wind Associates, LLC



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DATE:
 February 15, 2007

PROJECT NO.
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NSTAR Barnstable
Switching Station

New Hampshire Avenue
Landfall Location

Purpose: Wind Energy Generation and
Submarine / Overland Transmission Cable
Project
Source: USGS Topographic Quad
Scale: Approx. $\text{---} = 1000'$

**Landfall and Cable Route
Yarmouth, Massachusetts
CAPE WIND PROJECT**

**Sheet
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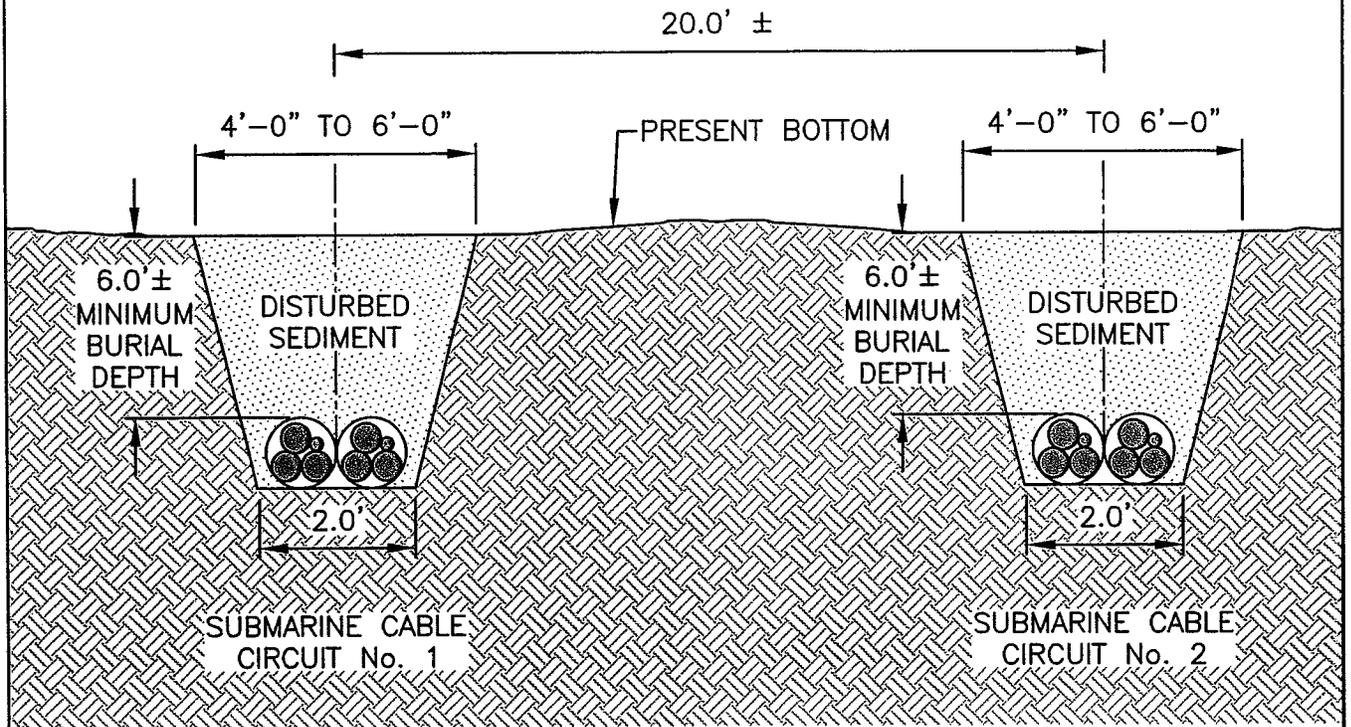


At: Yarmouth and Barnstable, Barnstable County, Massachusetts
In: Nantucket Sound
Applicant: Cape Wind Associates, LLC

Date: 2/15/07

PROJECT NO.
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Purpose: Wind Energy Generation and
 Submarine/ Overland
 Transmission Cable Project

**Typical Cross Section of Submarine
 Cable Trench Using Jet Plow Embedment**

Cape Wind Project

At: Yarmouth, Barnstable County, Massachusetts
 In: Nantucket Sound
 Applicant: Cape Wind Associates, LLC

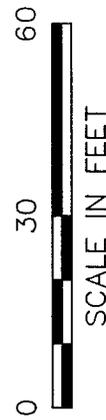
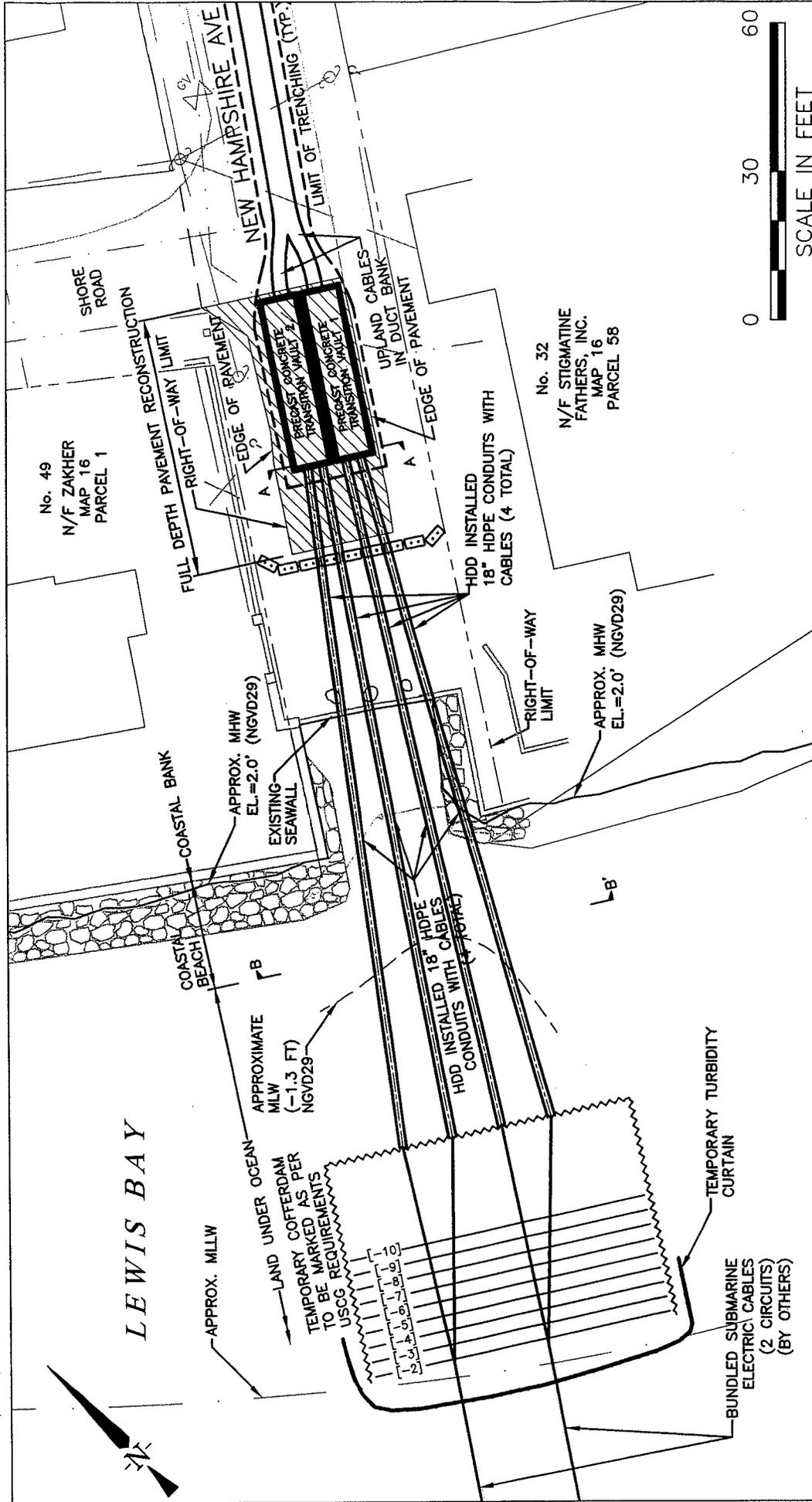
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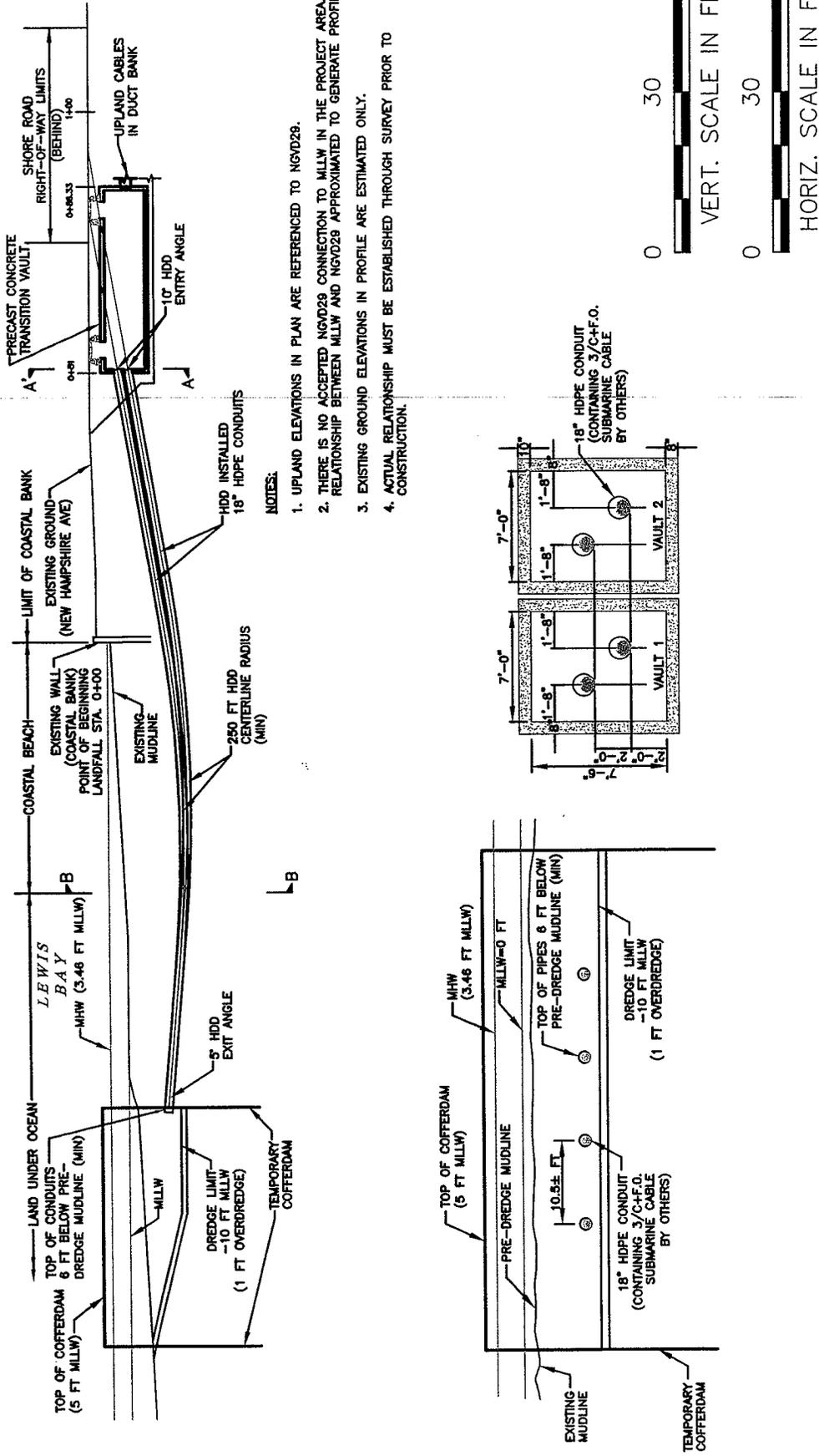
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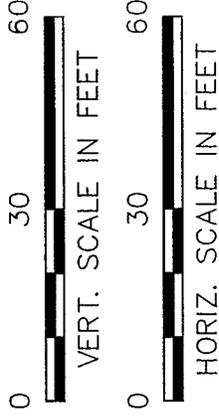
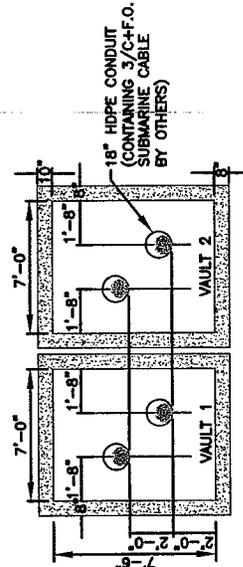
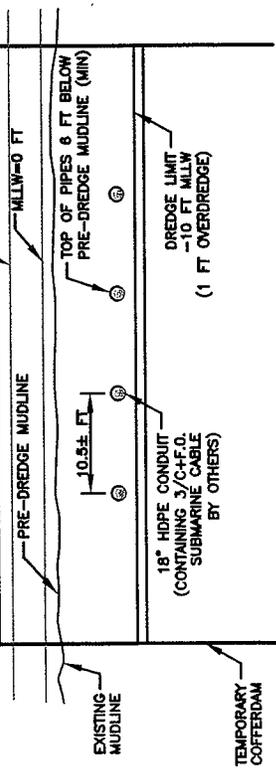
<p>Purpose: Wind Energy Generation and Submarine/ Overland Transmission Cable Project</p>	<p>Plan View of Landfall Transition Location Cape Wind Project</p>	<p>SHEET NO. 12 of 18</p>
<p>At: Yarmouth, Barnstable County, Massachusetts In: Nantucket Sound Applicant: Cape Wind Associates, LLC</p>	<p>DATE: February 15, 2007</p>	<p>PROJECT NO. E159-504</p>



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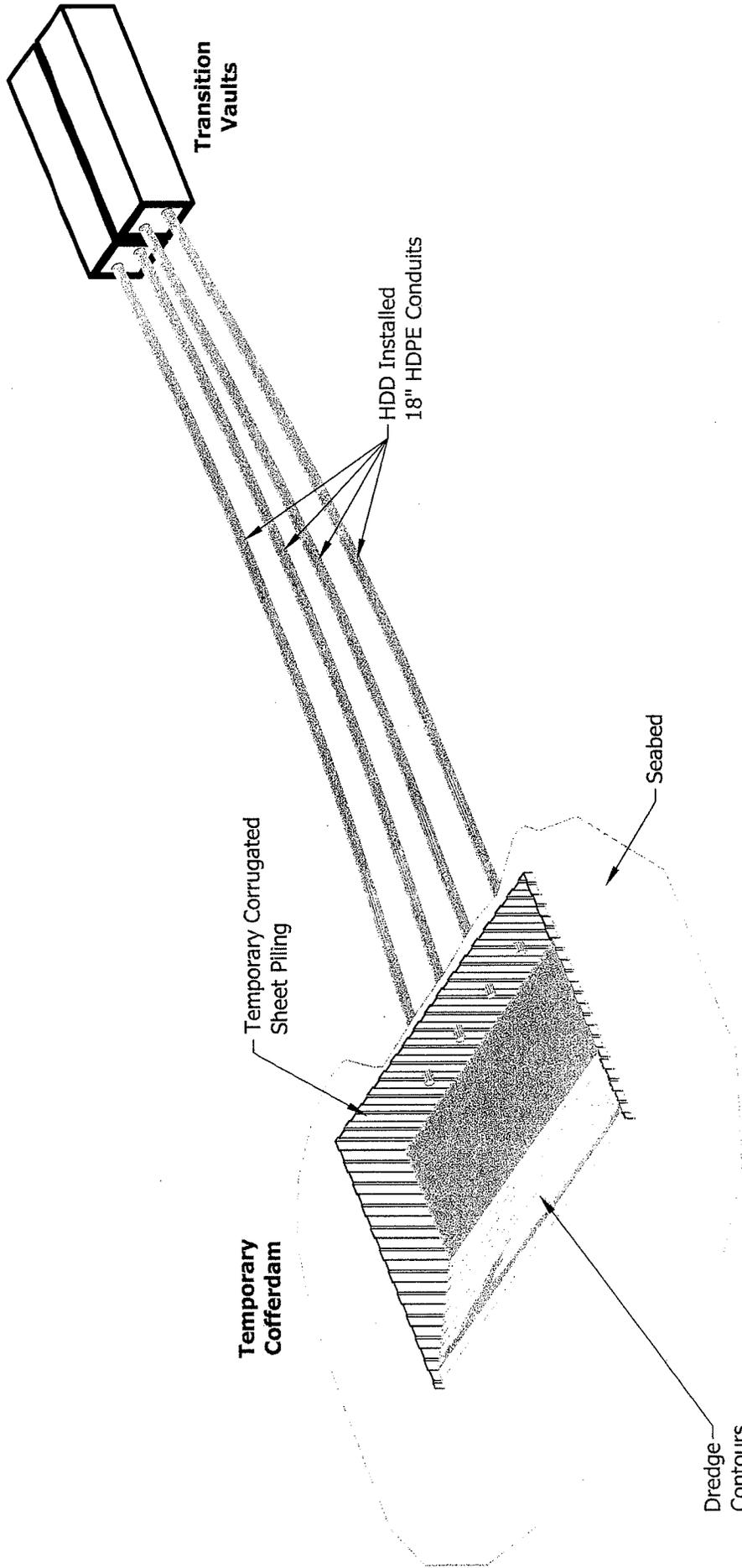
- NOTES:**
1. UPLAND ELEVATIONS IN PLAN ARE REFERENCED TO NGVD29.
 2. THERE IS NO ACCEPTED NGVD29 CONNECTION TO MLLW IN THE PROJECT AREA. RELATIONSHIP BETWEEN MLLW AND NGVD29 APPROXIMATED TO GENERATE PROFILE.
 3. EXISTING GROUND ELEVATIONS IN PROFILE ARE ESTIMATED ONLY.
 4. ACTUAL RELATIONSHIP MUST BE ESTABLISHED THROUGH SURVEY PRIOR TO CONSTRUCTION.



<p>Purpose: Wind Energy Generation and Submarine/ Overland Transmission Cable Project</p>	<p>Cross Section of Landfall Transition Location Cape Wind Project</p>	<p>SHEET NO. 13 of 18</p>
<p>At: Yarmouth, Barnstable County, Massachusetts In: Nantucket Sound Applicant: Cape Wind Associates, LLC</p>	<p>DATE: February 15, 2007</p>	<p>PROJECT NO. E159-504</p>



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Scale: (Not to Scale)

Purpose: Wind Energy Generation and
 Submarine/ Overland
 Transmission Cable Project



3D View of
 Landfall Transition Location
 Cape Wind Project

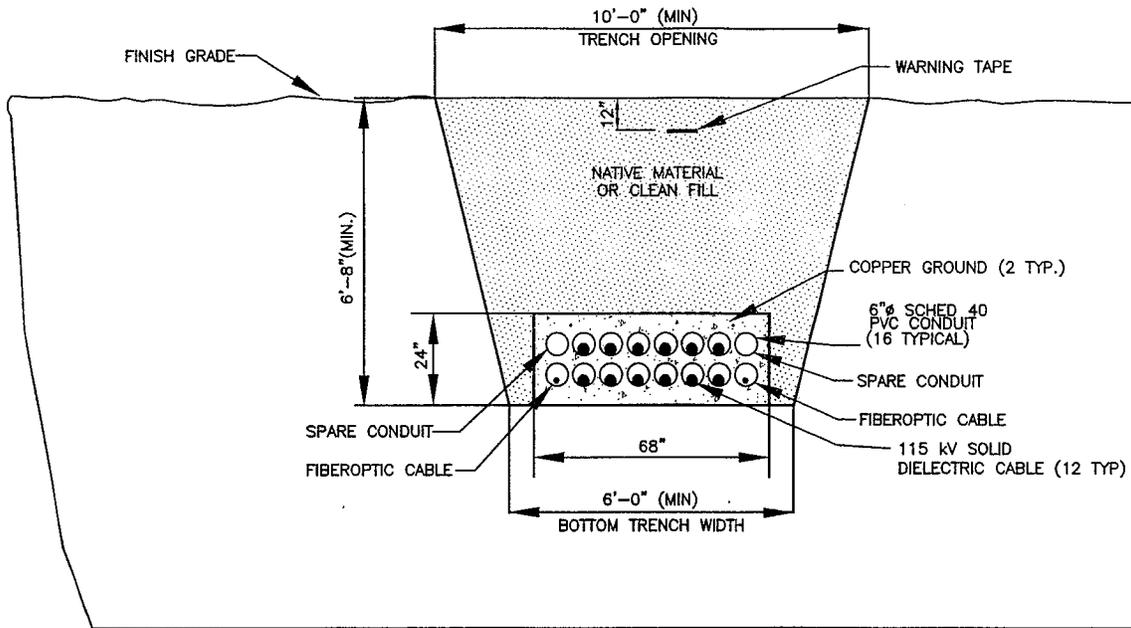
At: Yarmouth, Barnstable County, Massachusetts
 In: Nantucket Sound
 Applicant: Cape Wind Associates, LLC

SHEET NO.
 14 of 18

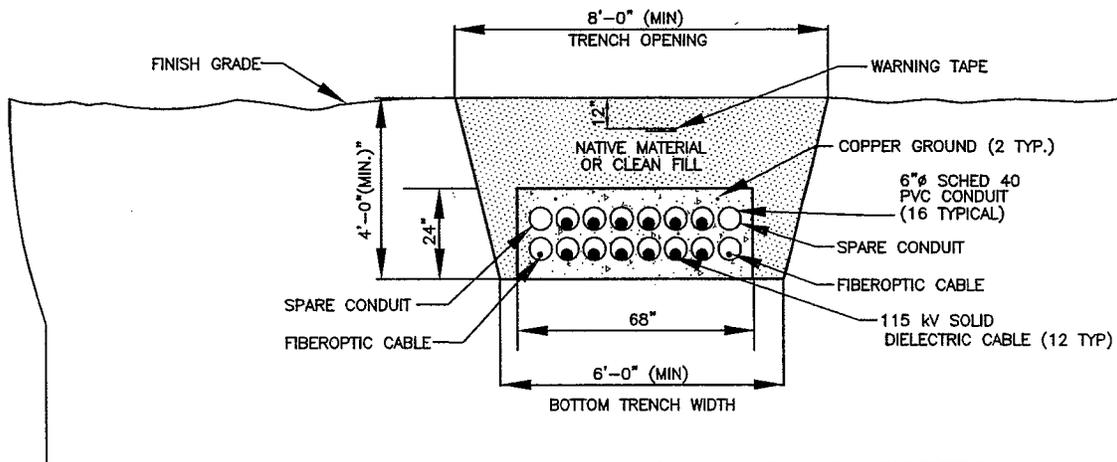
DATE:
 February 15, 2007

PROJECT NO.
 E159-504





**UPLAND CABLE TRENCH CROSS-SECTION (IN ROADWAYS)
CONCRETE ENCASED DUCTBANK**



**UPLAND CABLE TRENCH CROSS SECTION (IN R.O.W.)
CONCRETE ENCASED DUCTBANK**

NOTE:
NATIVE MATERIAL TO BE USED ONLY IF DETERMINED TO HAVE APPROPRIATE THERMAL RESISTIVITY AND TO BE ACCEPTABLE IN ACCORDANCE WITH THE SOIL MANAGEMENT PLAN.

Scale: (Not to Scale)

Purpose: Wind Energy Generation and
Submarine/ Overland
Transmission Cable Project

**Typical "8-over-8"
Ductbank Cross Section**

**SHEET NO.
15 of 18**

Cape Wind Project

**DATE:
02/15/07**

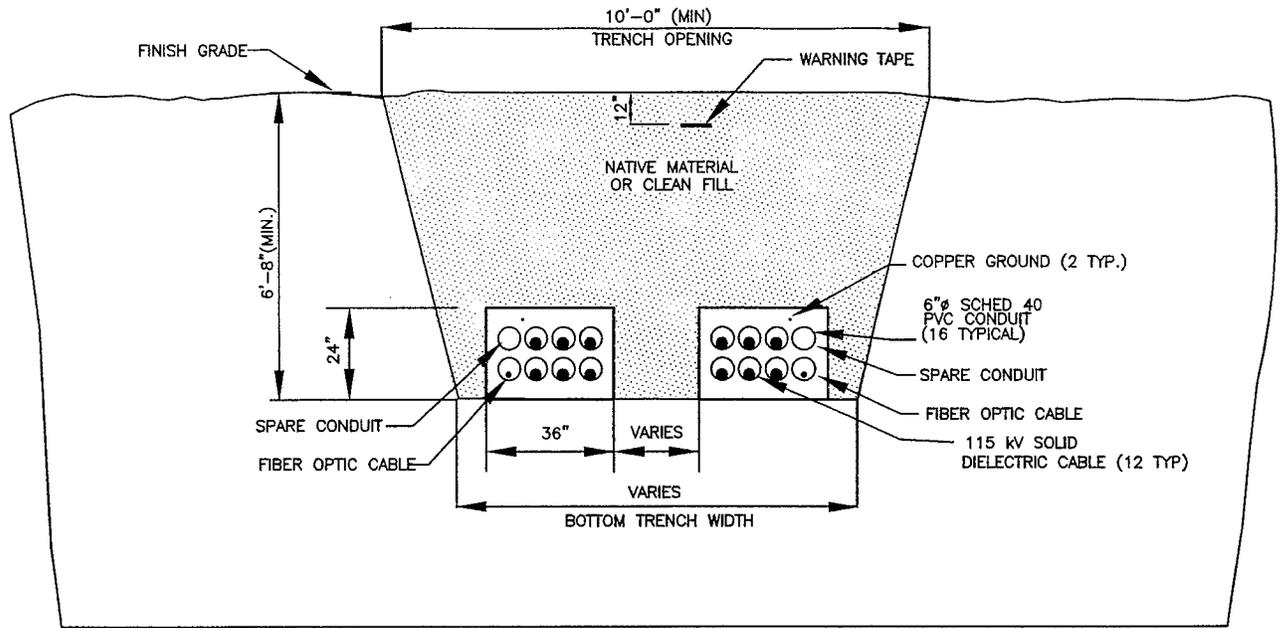


At: Yarmouth, Barnstable County, Massachusetts
In: Nantucket Sound
Applicant: Cape Wind Associates, LLC

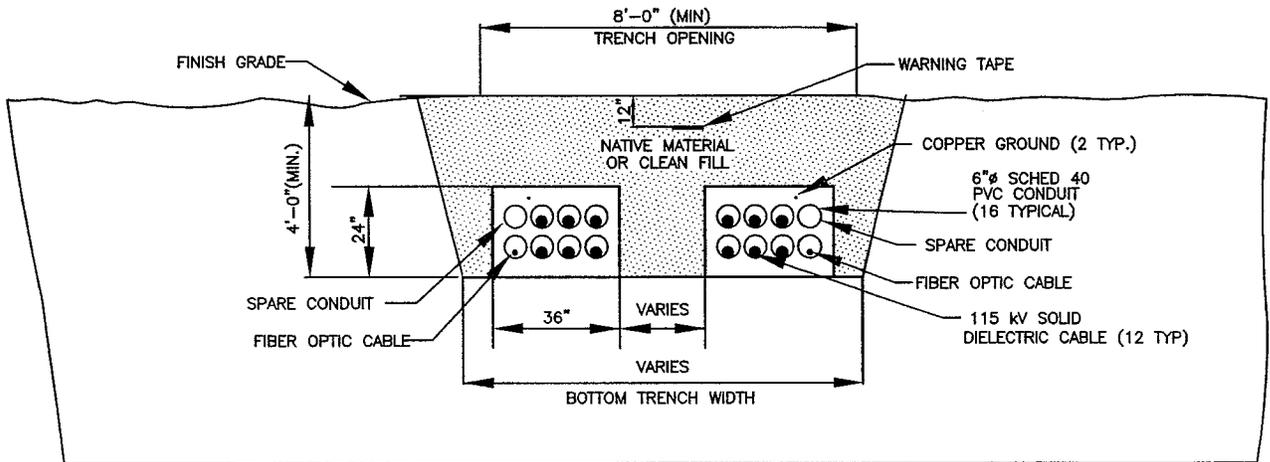
**PROJECT NO.
E159-504**

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**UPLAND CABLE TRENCH 4-OVER-4 CROSS-SECTION (IN ROADWAYS)
CONCRETE ENCASED DUCTBANK**



**UPLAND CABLE TRENCH 4-OVER-4 CROSS SECTION (IN R.O.W.)
CONCRETE ENCASED DUCTBANK**

NOTE:

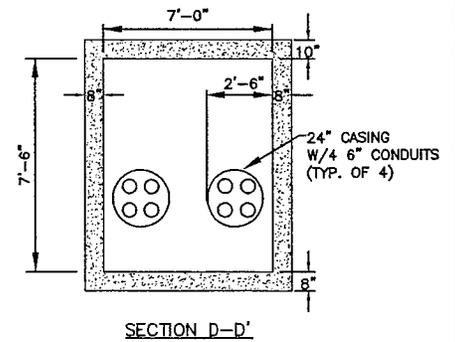
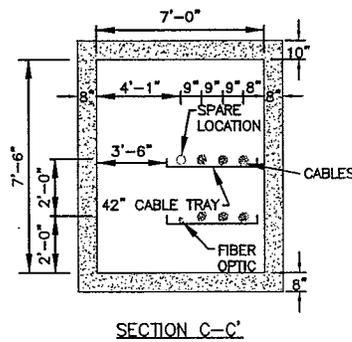
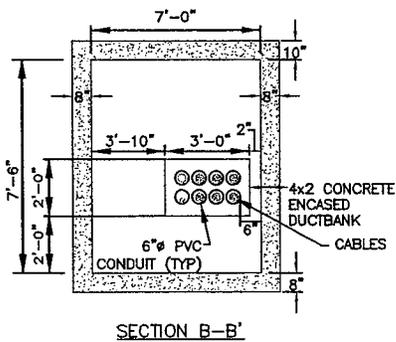
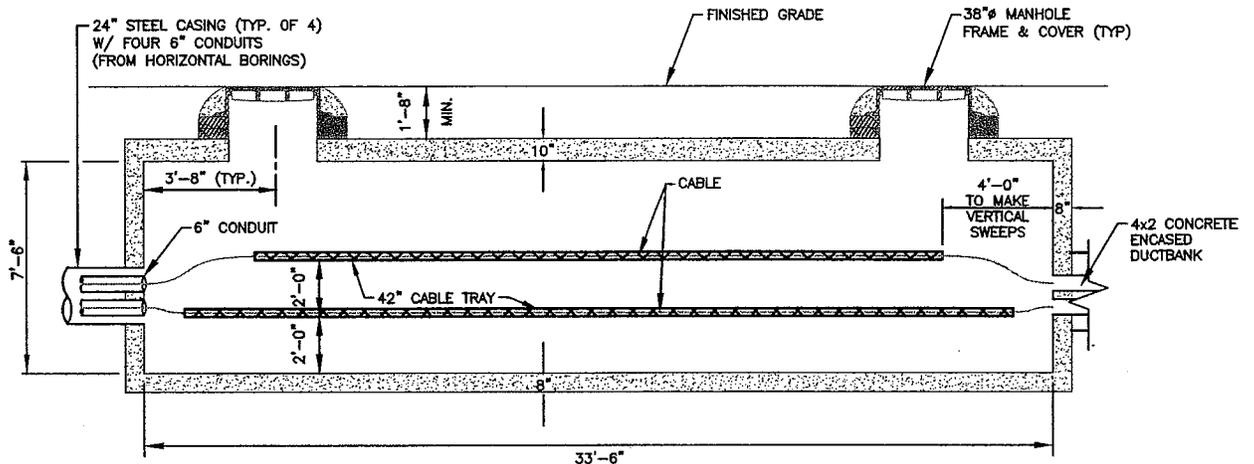
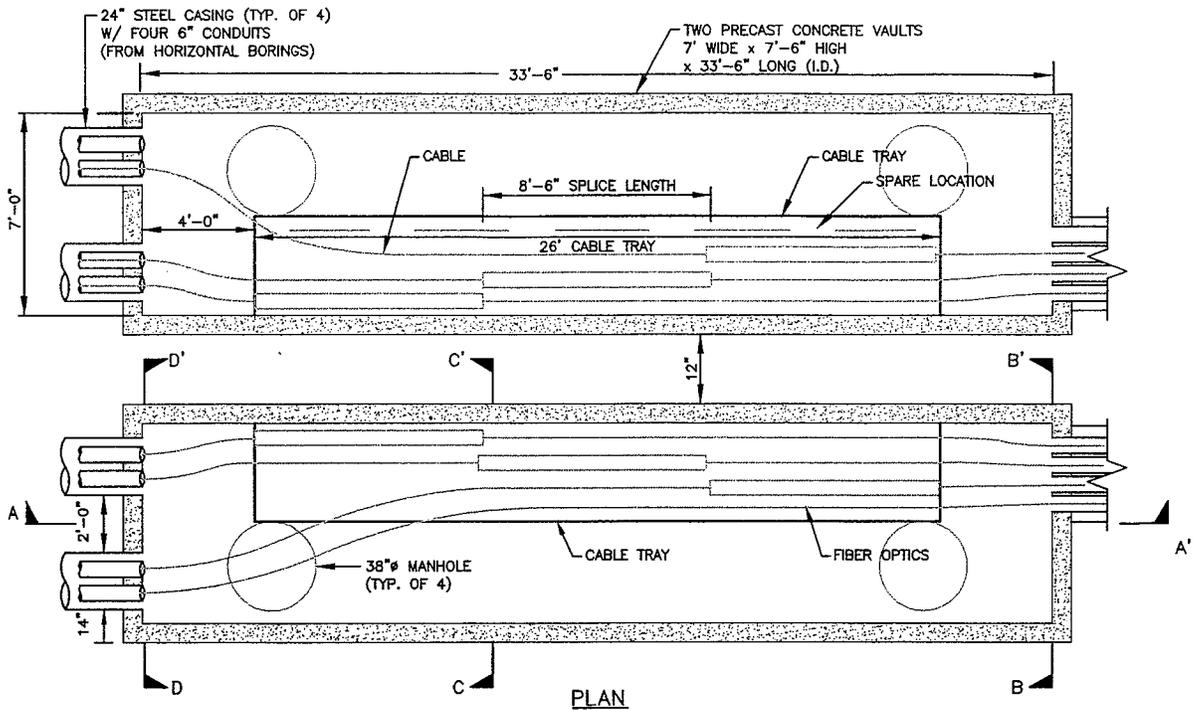
NATIVE MATERIAL TO BE USED ONLY IF DETERMINED TO HAVE APPROPRIATE THERMAL RESISTIVITY AND TO BE ACCEPTABLE IN ACCORDANCE WITH THE SOIL MANAGEMENT PLAN.

Scale: (Not to Scale)

Purpose: Wind Energy Generation and Submarine/ Overland Transmission Cable Project	Typical "4-over-4" Ductbank Cross Section Cape Wind Project	SHEET NO. 16 of 18
		DATE: 02/15/07
	At: Yarmouth, Barnstable County, Massachusetts In: Nantucket Sound Applicant: Cape Wind Associates, LLC	PROJECT NO. E159-504

DATE: Jan 11, 2008 - 12:03PM
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Scale: (Not to Scale)

Purpose: Wind Energy Generation and
Submarine/ Overland
Transmission Cable Project

115 kV Upland Transition Vault

**SHEET NO.
17 of 18**

Cape Wind Project

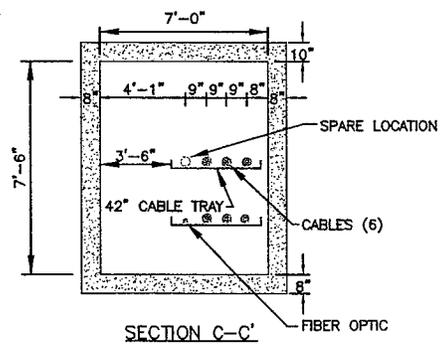
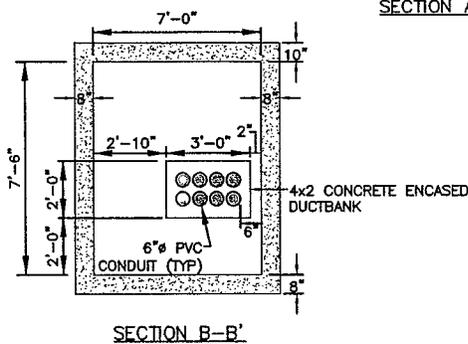
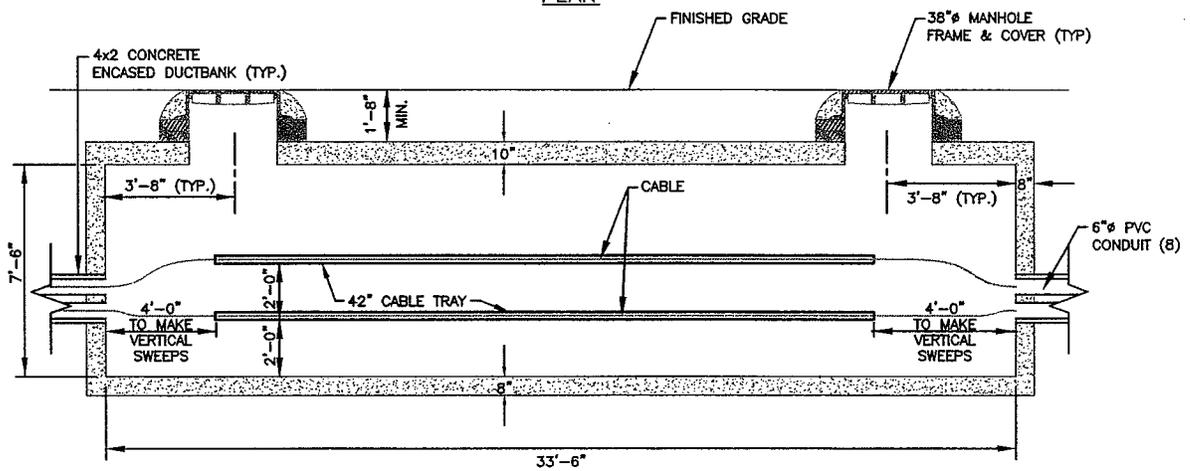
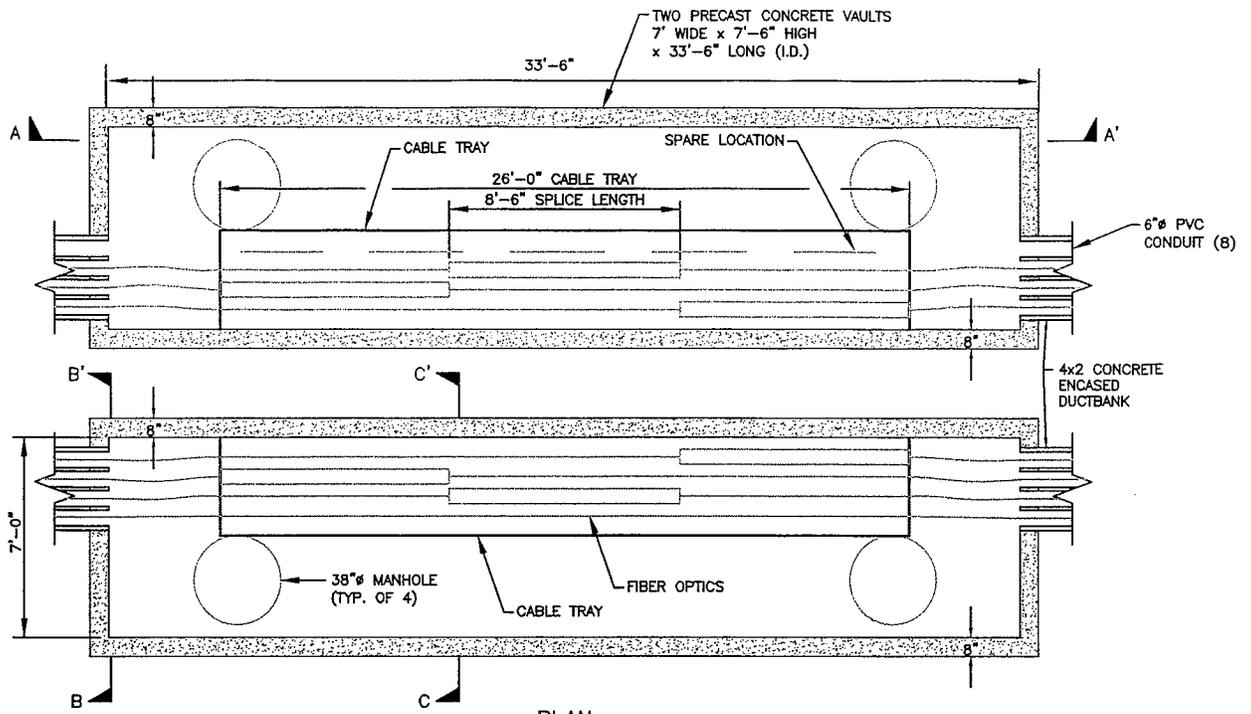
**DATE:
02/15/07**

At: Yarmouth, Barnstable County, Massachusetts
In: Nantucket Sound
Applicant: Cape Wind Associates, LLC

**PROJECT NO.
E159-504**



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Scale: (Not to Scale)

Purpose: Wind Energy Generation and
Submarine/ Overland
Transmission Cable Project

115 kV Upland Splice Vault

**SHEET NO.
18 of 18**

Cape Wind Project

**DATE:
02/15/07**



At: Yarmouth, Barnstable County, Massachusetts
In: Nantucket Sound
Applicant: Cape Wind Associates, LLC

**PROJECT NO.
E159-504**



DATE: Jan 11, 2008 12:04PM
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DEPARTMENT OF THE ARMY PERMIT

Permittee Cape Wind Associates, LLC, 75 Arlington, Street, Suite 704, Boston, MA 02116

Permit No. NAE-2004-388

Issuing Office New England District

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description:

The permittee is authorized to construct and maintain an offshore wind energy generating facility consisting of 130 wind turbine generators (WTGs) with a maximum blade height of 440 feet arranged in a grid pattern on Horseshoe Shoal in Nantucket Sound between Cape Cod, Martha's Vineyard and Nantucket. Scour mats or rock armouring will be installed at the base of the turbine monopole (14.75-19.75 foot diameter) foundations, if needed. A 33 kilovolt solid dielectric submarine transmission cable system will be installed by jetplow to transmit electricity from the WTGs to the electric service platform installed within the turbine array. The electric service platform will be a pile supported structure with maximum dimensions of 100 feet by 200 feet. Two 115 kilovolt, alternating current, submarine cable circuits will be installed by jetplow to transmit the electricity to the grid, making landfall at New Hampshire Avenue, Yarmouth, MA.

(continued on page 4)

Project Location:

Nantucket Sound and Lewis Bay between Hyannis/Yarmouth, Martha's Vineyard and Nantucket off the coast of Massachusetts.

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on December 31, 2020. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.
2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.
3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

1. The permittee shall ensure that a copy of this permit are at the work site (and the project office) authorized by this permit whenever work is being performed, and that all personnel with operation control of the site ensure that all appropriate personnel performing work are fully aware of its terms and conditions. The entire permit shall be made a part of any and all contracts and sub-contracts for work that affects areas of Corps jurisdiction at the site of the work authorized by this permit. This shall be achieved by including the entire permit in the specifications for work. The term "entire permit" means this permit (including its drawings, plans, appendices and other attachments) and also includes permit modifications.

(special conditions continued on Page 4)

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

Section 404 of the Clean Water Act (33 U.S.C. 1344).

Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. **Reliance on Applicant's Data:** The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. **Reevaluation of Permit Decision.** This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. **Extensions.** General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

(PERMITTEE) (DATE)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.



(DISTRICT ENGINEER) 5 January 2011
(DATE)

Philip T. Feir
Colonel, Corps of Engineers

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

(TRANSFEREE) (DATE)

(description continued from page 1)

The landfall transition of the 115 kilovolt submarine transmission lines from water to land at Yarmouth will be through the use of horizontal directional drilling (HDD) to avoid disturbance of the shoreline. A temporary cofferdam will be installed at the seaward end of the HDD borehole. The steel sheetpile cofferdam will enclose an area of approximately 2925 square feet with dimensions of 65 feet wide and 45 feet long. It will be open at one end to allow the installation of the conduits. A temporary turbidity curtain may be used to confine sediments within the work area, if needed. Approximately 840 cubic yards of sediment will be temporarily removed, stored on a barge, and backfilled after the installation is completed. Clean sand will be used to supplement the backfill material as needed to restore the seafloor to preconstruction grade.

The work is described on the enclosed plans entitled "Purpose: Wind Energy Generation and Submarine/Overland Transmission Cable Project," on 18 sheets, and dated "February 15, 2007."

(special conditions continued from Page 2)

If the permit is issued after the construction specifications, but before receipt of bids or quotes, the entire permit shall be included as an addendum to the specifications. If the permit is issued after receipt of bids or quotes, the entire permit shall be included in the contract or sub-contract. Although the permittee may assign various aspects of the work to different contractors or sub-contractors, all contractors and sub-contractors shall be obligated by contract to comply with all environmental protection provisions contained within the entire permit, and no contract or sub-contract shall require or allow unauthorized work in areas of Corps jurisdiction.

2. The permittee shall complete and return the enclosed Compliance Certification Form within one month following the completion of the authorized work.

3. The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

4. Except where stated otherwise, reports, drawings, correspondence and any other submittals required by this permit shall be marked with the words "Permit No. NAE-2004-388" and shall be addressed to "Policy, Analysis and Technical Support Branch, Regulatory Division, U.S. Army Corps of Engineers, 696 Virginia Road, Concord, MA 01742-2751." Documents which are not marked and addressed in this manner may not reach their intended destination and do not comply with the requirements of this permit.

5. A copy of this permit will be provided, prior to the start of any authorized work, to the Director, Defense Mapping Agency, Hydrographic Center, Washington, DC 20390 Attention, Code NS12, and to the National Ocean Service, Office of Coast Survey, N/CS261, 1315 East West Highway, Silver Spring, Maryland 20910-3282.

6. An eelgrass monitoring and mitigation plan will be submitted to, and approved in writing by, the Corps of Engineers prior to the start of the installation of submarine cable between the electric service platform and Yarmouth. This plan will include pre- and post-construction monitoring to determine if any eelgrass has been lost due to the cable installation. A planting plan and schedule to compensate for any disturbed eelgrass will be included.

(special conditions continued on page 5)

7. The permittee shall survey and locate, horizontally and vertically, the National Grid cable authorized by permit number NAE-2004-1533 at all locations where the permittee's installation activities may occur within 500 feet of the National Grid cable. This data will be made available to the Corps and National Grid. Final design plans and installation procedures for work within 150 feet of the National Grid cable shall meet the technical requirements of National Grid and be submitted to the Corps and National Grid for written approval prior to the start of work and will be submitted at least 30 days prior to the scheduled work.

8. The permittee shall submit as-built, full-sized drawings of the authorized work to the Corps of Engineers. The as-built drawing shall include at least one plan view showing horizontal alignment and a profile view showing the vertical alignment of all cables. Plans will include a bar (graphic) scale, the dates of the survey and drawings, and horizontal state plane coordinates and vertical elevation. Show the cable's horizontal state plane coordinates in U.S. survey feet based on NAD 83. Show the vertical elevation as MLLW with a reference to NAVD 88 and document how this information was derived using the latest National Tidal Datum Epoch for that area, typically 1983-2001. Plans will be stamped by a professional engineer or land surveyor registered in the Commonwealth of Massachusetts. Any changes in the location or type of structures requires notification to the Corps and may require a new survey.

9. The permittee shall submit the as-built drawings to the Corps and the National Oceanic and Atmospheric Administration (NOAA) within 60 days of construction completion. The Corps may note the location on future survey drawings and NOAA may use the information for charting purposes. The NOAA address is: "Nautical Data Branch, N/CS26, Station 7349, 1315 East-West Highway, Silver Spring, MD 20910-3282."

10. The permittee will ensure all cables, including the portions within state waters, remain buried in the same manner as required for the inner array cable by the Lease of the Bureau of Offshore Energy Management, Regulation and Enforcement.

RECORD OF DECISION

I. Applicant: Cape Wind Associates, LLC (CWA)

Application Number: NAE-2004-388

This Record of Decision (ROD) incorporates by reference the Corps of Engineers *Cape Wind Energy Project, Draft Environmental Impact Statement, November 2004*, the Minerals Management Service¹ (MMS) *Cape Wind Energy Project, Final Environmental Impact Statement, January 2009* (FEIS), the Mineral Management Service (MMS) *Cape Wind Energy Project, Environmental Assessment and Finding of No New Significant Impact, April 28, 2010*, and the MMS *Record of Decision, Cape Wind Energy Project, Horseshoe Shoal, Nantucket Sound, April 28, 2010*,. The Corps of Engineers has been a cooperating agency with MMS for purposes of complying with the National Environmental Policy Act (NEPA).

II. This permit action is being taken under authority delegated to the District Engineer from the Secretary of the Army and the Chief of Engineers by 33 CFR 325.8, pursuant to:

Section 404 of the Clean Water Act
 Section 10 of the Rivers and Harbors Act of 1899

Under Section 404 of the Clean Water Act, the Corps of Engineers has jurisdiction to regulate the discharge of dredged or fill material in waters of the United States. The seaward limit of waters of the United States for purposes of Section 404 is the territorial seas, which extend three nautical miles from the baseline defining the territorial sea. 33 C.F.R. § 328.4(a). The baseline is generally the line on the shore reached by the ordinary low tides. 33 C.F.R. § 329.12(a)(1). Here, the only activity subject to Section 404 regulation is the discharge of dredged and fill material associated with the transition of the 115 kV submarine transmission cables from water to land at Lewis Bay in Harwich, MA.

Under Section 10 of the Rivers and Harbors Act of 1899, the Corps of Engineers has jurisdiction to regulate structures and work in and affecting navigable waters of the United States. 33 U.S.C. § 403; 33 C.F.R. § Part 322. As with Section 404, the reach of navigable waters of the United States subject to Section 10 jurisdiction extends to the territorial seas. 33 C.F.R. § 329.12. In addition, the Outer Continental Shelf Lands Act (OCSLA), 43 U.S.C. § 1333(e), extended Corps Section 10 authority to the outer continental shelf (OCS) for the regulation of structures attached to the seabed. Here, the Corps's Section 10 authority extends over all structures and work associated with the project in the territorial seas, and over all structures (including transmission cables) on the outer continental shelf.

III. Description, Location and Purpose of Work:

The project includes work and structures in navigable waters, including the discharge of dredged or fill material, for a proposed wind energy facility consisting of 130 wind turbine generators

¹ On June 18, 2010, the Secretary of the Interior issued Order No. 3302, which changed the name of MMS to the Bureau of Ocean Energy Management, Regulation, and Enforcement ("BOEMRE"). In this document, the Corps refers to the agency by its old name, MMS, to avoid confusion and to be consistent with the NEPA documents for this project that were created before the name change occurred.

located on Horseshoe Shoal in Nantucket Sound between Cape Cod, Martha's Vineyard and Nantucket. The work is described on the plans attached to the Corps January 22, 2008 Public Notice entitled "Purpose: Wind Energy Generation and Submarine/Overland Transmission Cable Project," on 18 sheets dated February 15, 2007. The wind turbine generators (WTG) consist of the 3 rotor blades, transmission system, generator, yaw system, and the control and electrical systems. This is mounted on top of a steel tower supported by a monopole foundation. These will be arranged in a grid pattern 1/3 to 1/2 mile apart. A detailed description of the project can be found in Section 2 of the MMS FEIS.

The electricity produced by each turbine will be transmitted via a 33 kilovolt submarine transmission cable system to the Electric Service Platform centrally located within the turbine array. The electricity will then be transmitted to the mainland via two 115 kilovolt alternating current submarine cable circuits, making landfall at New Hampshire Avenue, Yarmouth, MA.

Several changes to the project proposal have occurred since the original permit application of 2001. The configuration and location of the turbines has changed slightly. In 2004, the state territorial boundary expanded further seaward in this area of Nantucket Sound. Ten of the original turbine locations were within these newly designated state waters, and the project was revised to move these turbines into federal waters. The proposed locations for twenty other turbines have changed to avoid archeologically sensitive areas, potential impacts to commercial fishing, and to reduce the potential for impacts to commercial navigation. See Sheet 3 of the February 15, 2007 plans for the current locations of the turbines. Rock armoring is now proposed as an alternative to the scour mats at the base of the turbine monopole foundations, if needed. The lighting plan has been developed consistent with Federal Aviation Administration (FAA) guidance. While the original application did not include any activities subject to Section 404 review, the applicant has changed the construction method for landfall transition to include backfilling the area within the temporary cofferdam, which would result in the discharge of dredged or fill material requiring a 404 permit. The landfall transition of the 115 kilovolt submarine transmission lines from water to land at Yarmouth will be through the use of horizontal directional drilling (HDD) to avoid disturbance of the shoreline. A temporary cofferdam will be installed at the seaward end of the HDD borehole. The steel sheetpile cofferdam will enclose an area of approximately 2925 square feet with dimensions of 65 feet wide and 45 feet long. It will be open at one end to allow the installation of the conduits. A temporary turbidity curtain may be used to confine sediments within the work area, if needed. Approximately 840 cubic yards of sediment will be temporarily removed, stored on a barge, and backfilled after the installation is completed. Clean sand will be used to supplement the backfill material as needed to restore the seafloor to preconstruction grade. See Sheets 12-14 of the February 15, 2007 plans.

IV. Description of General Environmental Setting: The proposed project would be located on Horseshoe Shoal in Nantucket Sound south of Cape Cod, Massachusetts and landward of the islands of Nantucket and Martha's Vineyard. A detailed description of the affected environment can be found in Section 4 of the FEIS. The offshore location where the wind turbines would be constructed is a dynamic environment subject to naturally high suspended sediment concentrations in near-bottom waters due to strong tidal currents and wind and storm generated waves, particularly in shoal areas. Water depths in the area of Horseshoe Shoal are as shallow as

0.5 ft. mean lower low water (MLLW) to 60 ft. The composition of the seafloor in the project area from Horseshoe Shoal to landfall at Lewis Bay is mainly sand with localized areas of glacial erratic (pebble to boulder sized rock fragments carried by glacial ice), and a concentrated outcrop of possible till (an unstratified glacial deposit that can include clay, silt, sand, cobbles, and boulders). Several areas within the project area have been identified as areas of potential submerged aquatic vegetation, including an eelgrass bed near Egg Island in Lewis Bay. Nantucket Sound is located within the Atlantic flyway, and it attracts many species of waterbirds year-round. In addition to waterbirds, large numbers of terrestrial birds migrate over Horseshoe Shoal in the fall and spring. The project area may be a location where bat species traverse during spring and fall migration. Horseshoe Shoal also provides habitat for numerous shellfish and finfish species, some of which are harvested by commercial and recreational fishermen. Certain species of marine mammals (seal, dolphin, and whale species) and sea turtles can also be found in or around the project area.

The Sound is an essential feature in drawing tourists to the region, and recreation and tourism are the economic base for the region. The coastal areas of the Cape and Islands provide opportunities for swimming, boating, windsurfing, jetskiing, hiking and sightseeing. Local businesses include numerous marinas, boat yards, yacht clubs, waterfront restaurants and the associated accommodations. Charter fishing, whale watching tours, birding, kayaking, scuba diving, canoeing and bicycle tours are available. The transmission line will make land fall at Lewis Bay in Yarmouth. The coastline in this area is a highly developed residential area with some coastal structures, including properties listed or eligible for listing on the National Register of Historic Places, including Traditional Cultural Properties of the Mashpee Wampanoag Tribe and the Wampanoag Tribe of Gay Head (Aquinnah). Nantucket Sound itself has been identified as a Traditional Cultural Property of the Tribes eligible for listing on the National Register. A list of 95 shipwrecks reported lost in the general vicinity of the project area from 1744 to 1990 has been compiled. The Hyannis-Nantucket ferry traverses the area in and out of Hyannis Harbor, and there are three airports located in the vicinity of the proposed action. There are two main shipping channels used by larger vessels in Nantucket Sound, the Main Channel (south of Horseshoe Shoal) and the North Channel (north of Horseshoe Shoal).

V. Functions and Values Assessment of Resources Impacted: Nantucket Sound is used by fish, shellfish, marine mammals, birds and invertebrates, as set forth in detail in Section 4 of the FEIS. The wind turbine generators would be installed on Horseshoe Shoal; a highly dynamic, sandy area. Water depths on the shoal are from 0.5 to 60 ft MLLW with typical tidal heights of 1 to 4 ft. Red and green macro-algae and some patchy eelgrass were found in the Horseshoe Shoal area. There are hard and soft-bottom benthic habitats, shellfish, meiofauna and plankton in the area. The hard bottom area is primarily along the western border of the WTG array. These areas may be used by macroalgae, sponges, barnacles, mollusks, tunicates, crabs, sea stars, gastropods, and fish such as tautogs. The soft bottom area is primarily unstable sand which is generally used by motile organisms that can avoid the shifting sand or by organisms that can burrow below. The submarine transmission cable will cross a recreational shellfish area. The Town of Yarmouth seeds the area annually, and as a result, quahogs are the most prevalent shellfish. The cable will be installed close to, but not in, eelgrass in Lewis Bay near Egg Island. Eelgrass is submerged aquatic vegetation/ vegetated shallows, a special aquatic site considered to be an area "possessing special ecological characteristics of productivity, habitat, wildlife

protection, or other important and easily disrupted ecological values” by 40 CFR Part 230 (404(b)(1) Guidelines). Eelgrass can provide food and shelter to juvenile fish and invertebrates. The project area is designated Essential Fish Habitat in accordance with the Magnuson-Stevens Fishery Conservation and Management Act for 17 fish and three invertebrates: Atlantic cod, scup, black sea bass, winter flounder, windowpane, summer flounder, yellowtail flounder, Atlantic butterfish, Atlantic mackerel, blue shark, shortfin mako shark, bluefin tuna, king mackerel, Spanish mackerel, cobia, little skate, winter skate, long-finned squid, short-finned squid, and surf clam. This habitat is necessary to these fish for spawning, breeding, feeding, or growth to maturity. Nantucket Sound is a regionally significant area for waterbirds and attracts many species during migration for resting and feeding. Marine birds which may be found in the area include loons, grebes, Wilson’s storm-petrels, northern gannets, commorants, common eiders, long-tailed ducks, red-breasted mergansers, goldeneyes, gulls, terns and auks. Marine mammals which may use the open waters of Nantucket Sound include harbor seals, grey seals, hooded seals, Atlantic white-sided dolphin, striped dolphin, short-beaked common dolphin, harbor porpoise, long-finned pilot whale, minke whale, Atlantic spotted dolphin, Risso’s dolphin, dwarf sperm whale and pygmy sperm whale. Although there is no designated critical habitat for any endangered species within Nantucket Sound, consultation under the Endangered Species Act (ESA) has been completed for the following species which could be present in the Sound or adjacent coastal areas: North Atlantic right whale, humpback whale, fin whale, loggerhead sea turtle leatherback sea turtle, Kemp’s ridley sea turtle, green sea turtle, Northeastern beach tiger beetle, piping plover and roseate tern.

VI. Relationship to Existing Uses: Construction and operation of the facility will affect certain existing uses of the offshore areas in Nantucket Sound. The interaction between the project and existing uses are discussed in more detail at Section 5.3.3.7 of the FEIS. During construction of the facility, vessels, including commercial and recreational fishing vessels, would be precluded from using the immediate vicinity of construction activities. Also, fixed fishing gear would need to be placed outside areas where cable jetting operations would be occurring. A few wind turbine locations would be under construction at any one time, along with the cable jetting operation. After construction of the facility, vessels transiting the area would need to avoid the turbines and electrical service platform (ESP). Most commercial vessels transiting the area are restricted by their draft to the navigation channels outside the locations of the turbines and ESP, so it is smaller draft vessels that would be most affected. The space between turbines (0.39 miles by 0.63 miles) is far wider than the widths of existing channels in the area that are routinely used by commercial vessels. The turbines and ESP would present space use conflicts for commercial and recreational fishing activities and recreational boating, but fishing will not be prohibited within the project area. Fishing vessels would be able to trawl within the turbine array, but would need to avoid the turbines and ESP as they steer their courses. The transmission cable system will be buried at sufficient depths so there would not be an effect to trawling or anchoring in the area. Moderate impacts to marine radar are expected and vessel operators will need to take this into account when transiting the area. Recreational vessels—including sailboat events like the annual Figawi Race—will also be impacted, and will need to use more caution when navigating the turbine array. Construction of the transmission cable facility could affect future pipeline or cable installation projects, and would require coordination before new infrastructure is constructed, but should not prevent additional projects in the future. Those

people who value the unbroken ocean horizon—both from shore and on the water--will have a changed view across the Sound when the turbines are visible.

VII. Alternatives Analysis

The analysis of alternatives is an important requirement of both NEPA and USEPA's 404(b) Guidelines, 40 C.F.R. Part 230. However, there is an important distinction between the alternatives analysis under each legal framework. NEPA is a procedural statute, and the alternatives analysis under NEPA is a procedural requirement that does not mandate a substantive result. Unlike NEPA, however, the alternatives analysis of Section 404 does serve a substantive role in several ways, most notably in the identification of the least environmentally damaging practicable alternative (LEDPA), 40 C.F.R. § 230.10(a). Here, the Corps regulates the entire proposed project under Section 10 of the Rivers and Harbors Act of 1899, but only a small piece of the project under Section 404 of the Clean Water Act. As such, the NEPA analysis—and its consideration of alternatives—must address the entire project, but the 404(b) alternatives analysis is much more narrow because the only 404 fill associated with the project occurs in a single location where the submarine transmission cable comes ashore. As such, the 404(b) and LEDPA analysis focuses only on alternatives to the fill associated with the installation of the transmission cable, not the entire project. This is consistent with the 404(b) Guidelines, which contemplate situations where “NEPA documents may address a broader range of alternatives than required to be considered under” the 404(b) alternatives analysis. 40 C.F.R. § 230.10(a)(4).

1. **Project Purpose:** The project purpose is to develop and operate an alternative energy facility that utilizes the unique wind resources in waters offshore of New England employing a technology that is currently available, technically feasible, and economically viable, that can interconnect with and deliver electricity to the New England Power Pool, and make a substantial contribution to enhancing the region's electrical reliability and achieving the renewable energy requirements under the Massachusetts and regional renewable portfolio standards.

2. **NEPA Alternatives Analysis:**

The EIS examined several offshore sites in the New England region, configuration alternatives at the proposed Horseshoe Shoal site consisting of a smaller project alternative, a condensed configuration, and phased development, and the no-action alternative. Physical site screening was based upon water depth, extreme storm wave height, distance to the transmission grid, and wind resource availability. Sites screened out due to physical constraints were offshore areas near Portland, ME, Cape Ann, MA, Boston, MA, Nauset, MA, Nantucket Shoals, MA, Phelps Bank, MA, and Block Island, RI. Seven alternatives--the proposed action, no action, a smaller project, condensed configuration, phased development, and alternative sites at Monomoy Shoals and south of Tuckernuck Island—were subjected to detailed analysis in the FEIS, including an analysis of direct, indirect, and cumulative environmental effects.

A. **“No Action” Alternative**

The no action alternative would preclude the opportunity to develop a new renewable energy source and would not make a significant contribution to meeting the project power demand in the region. The impacts, both positive and negative, associated with the construction/decommission and operation would not occur. Burning of fossil fuels would be the only technology likely to

provide New England with the electric generation output at the level of the proposed project. The impacts would vary depending upon whether the fossil fuel is coal, oil or natural gas but all would have air quality impacts and emit CO₂. The “no action” alternative would not meet the purpose and need.

B. Geographic Alternatives

Among the geographic alternatives evaluated, two were evaluated in detail in the Final EIS. The South of Tuckernuck Island alternative would have the same impacts as the proposed project in 22 of the 28 categories evaluated. It would be expected to have less visual impact but more impact to avifauna, subtidal offshore resources, non-ESA marine mammals, fish and Essential Fish Habitat. The Monomoy Shoals alternative would have the same impacts as the proposed project in 20 of the 28 categories. It would be expected to have less impact to visual and cultural resources but more impact to avifauna, subtidal offshore resources, non-ESA marine mammals, fish and essential fish habitat and threatened and endangered species.

C. Minimization Alternatives

Alternatives evaluated to minimize impacts were configuration alternatives at the proposed Horseshoe Shoal site--a smaller project alternative, a condensed configuration, and phased development. The smaller project alternative reduced the impacts to water and air quality, noise, avifauna, subtidal offshore resources, non-ESA marine mammals, fish and Essential Fish Habitat, threatened and endangered species, visual and cultural resources and competing uses. The potential difference in impacts between the smaller project and the proposed project are not significant and not proportional to the reduction in the electric generation capacity. With only half of the generation capacity of the proposed project, the smaller project would not meet the project purpose of making a substantial contribution to enhancing the region’s electrical reliability and achieving the state and regional renewable energy requirements. The phased development alternative had some potential for providing an opportunity to make changes in Phase 2 based upon what is learned in Phase 1, however this is uncertain and cannot be quantifiably articulated. A phased approach would result in increased impacts during construction/decommission activities and similar impacts during operation. The foot print of the condensed array would be approximately 16 square miles, 9 square miles less than the proposed project. However, the power production would be measurably reduced. The condensed array alternative would have less impact during construction to water quality, noise, avifauna, subtidal offshore resources, non-ESA marine mammals, fish and Essential Fish Habitat and threatened and endangered species. There would be greater impact to avifauna and threatened and endangered species during operation. Impacts in the other categories would be similar to the proposed project.

D. Environmentally Preferable Alternative

The Council on Environmental Quality (CEQ) NEPA regulations require federal agencies to identify the alternative considered to be environmentally preferable. 40 C.F.R. § 1505.2(b). CEQ has advised that the environmentally preferred alternative is the alternative that causes the least damage to the biological and physical environment, and that best protects, preserves, and enhances historic, cultural, and natural resources. CEQ, Forty Most Asked Questions Concerning CEQ’s National Environmental Policy Act Regulations, Question 6a, 46 Fed. Reg. 18026 (Mar. 23, 1981). In this instance, the smaller project alternative is the environmentally

preferred alternative, as it is the alternative with the least impacts to resources in the affected environment, and, unlike the “no action” alternative, will result in electrical generation without emissions and associated environmental consequences that would likely result from facilities that would otherwise produce the electricity created by the action alternatives.

3. 404(b) Alternatives Analysis—Transmission cable alternatives

The 404(b) analysis focuses on the portion of the project where the transmission cables come to shore, as this is the only portion of the project where there will be a discharge of dredged or fill material into waters of the United States. The purpose of the transmission cables is to transport the power from the project’s electric service platform to the grid to serve the New England Power Pool. Because the electric service platform is located in Nantucket Sound, the transmission cable must be located in water of the United States to transmit the power to the grid, and is therefore a water-dependent activity.

The transition of the transmission cables from water to land will occur using horizontal directional drilling (HDD) from land to an offshore connection point. Conduits will be placed in the boreholes and the transmission cables will be pulled through the conduits. The offshore end of the HDD will terminate at a pre-excavated pit, which will be within a temporary 65 ft wide by 45 ft long cofferdam enclosing approximately 2925 sq ft. The boreholes will end at an elevation of approximately -10 ft mean lower low water. After construction is completed, the dredged area within the cofferdam will be backfilled with the dredged material, or, if necessary, supplemented with imported clean sandy material. This construction technique is considered the least damaging practicable methodology for the transition of a transmission cable from sea to land, as it will reduce turbidity associated with the dredging and reduces the potential for release of drilling fluids into Lewis Bay when the HDD reaches the connection point. Four alternatives were considered for the interconnection of the two 115 kV electric transmission circuits to the existing grid:

- Connect to NSTAR’s 115kV Barnstable Switching Station,
- Connect to NSTAR’s 115kV Harwich Substation,
- Connect to NSTAR’s 115kV Pine Street Substation in New Bedford,
- Connect to a new 115kV substation on Martha’s Vineyard, then proceed to the mainland.

A reasonable range of alternatives for the transmission lines were identified, the costs, technology and logistics of each considered, and the environmental impacts compared. The Barnstable Switching Station, the Harwich Substation, and the New Bedford Substation each would meet the project purpose and are practicable alternatives. The Martha’s Vineyard route is not a practicable alternative due to the excessive cost with no corresponding environmental benefit over the other alternatives--it is a longer route with greater environmental impacts, and will result in the same amount of 404 fill occurring where the cable would reach shore. The environmental impacts for any of the other alternatives is mostly temporary and substantially of the same type, just differing in length. Shallow bedrock could be an impediment to cable burial in portions of the New Bedford and Harwich routes, and construction techniques for embedding the cable in such conditions would result in greater environmental impacts than in a sandy bottom environment. The New Bedford route is the longer of the remaining three and presents some additional logistical issues due to the Corps of Engineers New Bedford and Fairhaven

navigation channel and hurricane barrier. Impacts due to necessary upgrading of the existing stations would be greater for the Harwich and New Bedford alternatives than at Barnstable. The Harwich route is longer than the Barnstable route. The jetplowing technique is generally recognized as the means of minimizing submarine cable installation impacts. Jet plow operation is not subject to 404 regulation. Moreover, to the extent jet plow operations were subject to 404 regulation, it would be considered the Least Environmentally Damaging Practicable Alternative, as other means of installing transmission cable create greater environmental impacts. Recent modeling indicated that sediment deposition quickly tapers off to below 0.2 inches (5 mm) at between 50 and 100 feet (15-30 m) on either side of the cable trench, and almost all sediment will be deposited within 100 feet of the trench. For any of the routes, it will be necessary to minimize nearshore impacts through the use of HDD technology and avoidance of eelgrass beds.

As the shortest route least likely to encounter a hard bottom environment, the Barnstable Switching Station is the Least Environmentally Damaging Practicable Alternative.

4. Mitigation: Mitigation and monitoring identified in the FEIS and MMS ROD is required through the MMS lease and the conditions of the Massachusetts Environmental Policy Act (MEPA) certificate. These include:

Geology- Preconstruction surveys and monitoring will be done to establish baseline conditions. Installation of scour protection around the wind turbine generators foundations will be accomplished as needed. Post construction monitoring will be done to assess scouring and cable exposure.

Air Quality- Cape Wind is required to purchase Emission Reduction Credits, use ultra low sulfur diesel fuel and limit idling for vessels using the Quonset Point staging set.

Water Quality- The preventive and emergency maintenance requirements of the Operation & Maintenance Plan, the Oil Spill Response Plan (OSRP) and the Stormwater Pollution Prevention Plan will help ensure water quality impacts are avoided.

Electrical and Magnetic Fields- Magnetic flux density will be reduced through the use of three-conductor cables and enclosing the inter-array and offshore transmission high-voltage conductors in a shielded cable.

Coastal and Intertidal Vegetation- Pre- and post construction monitoring of eelgrass beds will be used to determine if, and where, replanting is needed. Vessels will not be anchored in eelgrass. A dive survey will determine the limits of eelgrass in the Egg Island vicinity, which will be avoided. Current aerial photographs will be used to direct the jet-plowing route so as to avoid transient eelgrass beds.

Birds and Bats- An Avian and Bat Monitoring Plan (ABMP) will provide for pre- and post-construction monitoring. The OSRP mentioned above will also address response activities that could occur in Endangered Species habitat. Installation and testing of anti-perching mechanisms are required. Roseate tern or piping plover mortality attributable to the project will be reported within 24 hours. The results of ABMP monitoring efforts will be reported. Lighting, in compliance with Federal Aviation Administration (FAA) and United States Coast Guard (USCG) needs, will be adjusted to minimize potential bird collisions.

Visual Resources- Offshore structures will be painted off-white and no daytime white lighting will be used to minimize visibility. Night time lighting will be in accordance with requirements of FAA and USCG.

Cultural Resources— In addition to the above requirements to minimize visibility, additional preconstruction submarine surveys will be conducted to further archaeological resource assessment. At least one core will be extracted from each WTG location and analyzed for indicators of preserved landscapes, paleosols or cultural habitation. Buffer zones will be established around sites of potential shipwrecks or cultural resources. Predictive modeling and settlement pattern analysis will be used to avoid likely archaeological resources. Certain work will be monitored by a qualified archaeologist and tribal monitor. The *Procedures Guiding the Unanticipated Discovery of Cultural Resources and Human Remains* will be followed.

Airport Facilities and Air Traffic- Lighting of the offshore structures will be in accordance with the lighting plan developed in accordance with the FAA and USCG requirements. Light locations, color, intensity and flashing rate have been developed to minimize impacts will addressing hazards. The helipad lighting will be remotely activated. Construction structures and equipment will be lit at night. Equipment and vessel lights will be down shielded when possible.

Marine Activities and Port Facilities – Monthly status reports on construction activities will be submitted to MMS and USCG. Private Aids to Navigation will be installed and properly marked. Traffic management measures will be adopted with the USCG and a control center established to maintain USCG-required monitoring. Mariners will be educated on navigation safety issues related to the facility. Safety lines, mooring attachments and access ladders will be placed on each WTG as approved by the USCG.

Communications- Certain radio frequencies are not to be used during construction. Watercraft will be advised to respect a two wavelength distance from the construction cranes at the lowest frequency of interest.

Mitigation specifically required for compliance with the Section 404(b)(1) Guidelines is accomplished through the following special condition to the Corps permit:

- An eelgrass monitoring and mitigation plan will be submitted and approved in writing by the Corps of Engineers prior to the start of the submarine cable installation. This plan will include pre- and post-construction monitoring to determine if any eelgrass has been lost due to the cable installation. A planting plan and schedule to compensate for the disturbed eelgrass will be included.

VIII. Impacts to Public Interest Factors:

The decision as to whether to issue a permit is based upon an evaluation of the probably impacts of the proposal and its intended use on the public interest. Evaluation of the probable impact which the project may have on the public interest requires a careful weighing of all the relevant factors. The benefits which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. The decision whether to authorize a proposal, and if so, the conditions under which it will be allowed to occur, is determined by this general balancing process. The decision should reflect the national concern for both protection and utilization of important resources.

Water Quality – Disturbance of sediment during construction activities such as jet plowing and backfilling is expected to result in temporary, localized impacts. The project area is a dynamic environment where high levels of suspended sediment regularly occur at the seafloor, so disturbances and impacts to water quality associated with construction will be consistent with the

background environment. MMS has determined, and the Corps agrees, that the probability of an oil spill that could have greater effect on water quality, is very small.

Benthic Flora & Fauna – Minor impacts to soft bottom benthic communities are expected. The majority of the area where construction will occur is sandy bottom habitat subject to regular disturbance by storms, waves, and tidal currents. The species and benthic communities in such areas typically recover quickly from the same types of disturbances that will be caused by construction activities.

Land Use Classification – No effect. The OCS areas of Nantucket Sound where the project is located are not designated as a National Marine Sanctuary or other such classification, but are subject to the general uses of the Outer Continental Shelf Lands Act, including leases for alternative energy projects pursuant to the 2005 Energy Policy Act.

Water Supply and Conservation -- No effect.

Wetlands -- No impacts to wetlands are expected. The onshore portions of the project (transmission line) will not cross any freshwater wetlands and should be sufficiently distant from any wetlands to avoid impacts. No work is proposed in coastal saltmarsh, and by using horizontal directional drilling for cable installation at landfall, impacts to coastal wetland resources will be avoided.

Historical- Adverse impacts are expected for 34 properties eligible for listing on the National Register of Historic Places, including two Historic Landmarks and six Traditional Cultural Properties of the Mashpee Wampanoag Tribe and the Wampanoag Tribe of Gay Head (Aquinnah). The impacts to 33 of these properties, those located on land, are indirect adverse visual effects from the introduction of the wind turbines to the viewshed. Impacts to these properties will be mitigated by the color of paint for the turbines and the lighting scheme. Only one eligible property—Nantucket Sound itself, identified as a Traditional Cultural Property of the Tribes—will be affected by direct physical impacts from the construction of the facility. The impacts to the majority of historical resources identified come in the form of the introduction of the turbines to the visual landscape at a great distance, on the occasions where weather conditions permit them to be observed. None of the properties eligible for listing on the National Register will be so diminished by the impacts of the project as to disqualify them from such listing. For historic and cultural resources on the seabed of Nantucket Sound, identified shipwrecks will be avoided, and surveys will be conducted prior to construction to determine if additional cultural resources must be avoided.

Flooding– no effect

Drainage– no effect

Energy Needs – The project is planned to have a direct influence on the regional energy market. The project will provide additional electricity to the region without using natural gas as an energy source, helping to provide balance to a region heavily dependent on natural gas to provide its increasing demand for energy. The project is viewed as a major and necessary step in

advancing renewable energy development nationally, as well as addressing regional and Massachusetts renewable portfolio standards.

Economics – Purchasing of materials and supplies locally and the estimated 391 temporary construction jobs will benefit the local economy. Minor economic effect is expected during operation, with operation and maintenance expenses and associated employment opportunities. In addition, the applicant has agreed to pay \$350,000 annually for 20 years to the Town of Yarmouth for the onshore cable connection. It is not expected that the project will affect tourism and its associated economic benefits to the region as the project will be far from land and, for most tourists on the Cape and the Islands, at most times will not be visible.

Circulation Patterns – No effect on overall circulation patterns is expected due to the distance between structures. Some localized scouring at the turbine piles is expected and scour protection and monitoring is likely to be necessary. Sediment will be resuspended during jet plowing and backfilling activities but the effect is expected to be temporary and less than occurs during natural events in the dynamic Nantucket Sound environment or from existing trawling activities.

Air Quality – Construction equipment would create NO_x emissions in Rhode Island waters in excess of “de minimis” levels of the Rhode Island State Implementation Plan, but emissions in Massachusetts waters will not exceed the de minimis levels. To ensure conformity with Rhode Island’s SIP, MMS is requiring the applicant to purchase Emission Reduction Credits for any year in which projected NO_x emissions within Rhode Island exceed 100 tons, which would result in no net increase in NO_x emissions from the project. Emissions on the OCS are subject to EPA air permit requirements pursuant to 40 C.F.R. Part 55, and EPA is currently reviewing the applicant’s application. After construction is complete, other than the emissions associated with the operation of two maintenance vessels, there will be no emissions associated with the facility. The facility would then be generating electricity from emission-free generators, which in the absence of the project would likely be produced for the New England region by conventional fossil fueled facilities, thus producing some regional air quality benefits.

Aesthetics – Simulations show the structures will be visible from sensitive locations around Nantucket Sound on Cape Cod, Nantucket, and Martha’s Vineyard. While the aesthetics of the proposal are subjective, and opinions both favoring and opposed to the visual impact of the facility have been expressed, the change in the viewshed has been one of the most commonly cited public concerns associated with this project. The infrastructure will be miles offshore, and at locations where it can be seen from the shore it will appear small and close to the horizon. The closer a viewer is to the facility; the more highly conspicuous it will appear, so boaters on the water will see more of a change in the aesthetics of the Horseshoe Shoal.

Shore Erosion/Accretion – Horizontal Directional Drilling (HDD) will be employed to avoid impacts to the intertidal and near shore area. The offshore project area is a highly dynamic area of sand waves; no changes in that environment are expected.

Noise -- Construction of the facility would create noise as the monopiles are driven into the seabed. This will not generally be audible (i.e. above existing baseline noise) from land locations. Pile driving will be audible for individuals near construction activities, depending

upon the distance and whether the individual is upwind or downwind of the construction. During operation, the turbines will create noise that would not be perceptible from land, and for boaters near the turbines, the sound levels produced by the operating turbines are expected to be lower than existing baseline sound levels. Underwater at the turbines, there would be a slight increase in noise levels above the baseline, but this declines to the baseline level at a distance of 361 ft. from the turbines. Noise impacts are expected to be minor (at locations on the water during construction) to negligible (from land, and during operation).

Wildlife -- Moderate impacts to birds are expected during construction activities and operation of the facility due primarily to collision. There could also be minor habitat modification and disturbance. Impacts to marine mammals, sea turtles, cetaceans and finfish are expected to be minor mostly due to construction vessel activity, habitat disturbance and noise. Moderate impacts to migratory bats are possible, with minor impacts to non-migratory bats.

Mineral Needs -- MMS has reserved the right to authorize mineral and other extractive uses by others within the project area that will not interfere with this project's activities. There is currently a moratorium on oil and gas leasing in this area of the Atlantic, so the project would not impact oil and gas leasing unless this moratorium is lifted. While future sand mining and oil and gas extraction would be more difficult with the project in place, it would still be possible.

Food and Fiber Production – No direct impacts. There is some potential for survey and construction activities to have a minor temporary effect on the benthos, plankton, and fish eggs, but no appreciable alteration in the food chain is expected. Commercial and recreational fishing will be permitted within the turbine array, and the transmission lines will be buried low enough so there will be no expected interference with trawling activities. Fishing vessels will need to exercise more caution within the turbine array to avoid the structures, but it is expected that there will be sufficient space between the turbines to allow trawlers to operate and fish these waters.

Navigation – Minor to moderate impacts, including possible impacts to marine radar, are expected within the wind turbine array. Pursuant to Section 414(a) of the Coast Guard and Maritime Transportation Act of 2006, the USCG developed terms and conditions for operation of the facility to ensure navigational safety. As part of its analysis, the USCG assessed the potential impacts to marine radar from the facility. The Corps concurs with USCG's analysis, and agrees that the USCG mitigation measures incorporated into the MMS approval appropriately address impacts to navigation.

Floodplain Values – No effect.

Recreation -- Moderate impacts to recreational boating and within the project area as users will need to exercise more caution to avoid the turbines and ESP. Minor impacts to fishing are expected, as fishing will not be prohibited in the turbine array, and some benefits can be expected for recreational fishing as some fish species are expected to be attracted to the turbine and ESP piles as plant and invertebrate communities develop on the structures. Indirect effects to shoreline activities such as beachgoing, birdwatching and sightseeing are possible from the introduction of the turbines and ESP to the visual landscape, but this is not expected to prevent these activities from continuing.

General Environmental Concerns – As this was the first major offshore wind project proposed in the United States, concerns have been expressed that the impacts cannot be known with any certainty. Regulatory agencies have relied upon extensive data available from similar projects in Europe, experiences with offshore oil and gas projects in the United States, and site-specific research conducted for this project. The record reflects a thorough consideration of all environmental concerns, and the analysis of the FEIS reveals no expected major environmental impacts.

Safety -- Boaters will need to be more careful within the turbine array. The USCG has issued “Terms and Conditions” to provide for safer conditions.

Property Ownership -- No effect. Cape Wind is obtaining leases from MMS to install the structures and cable system on federal lands on the OCS. An annual payment to the town of Yarmouth will help to compensate for the use of the municipal infrastructure.

Finfish/plankton – Impacts are expected to be short term, localized, and minor during construction due to sediment disturbances. Time of year restrictions will be required by MMS to avoid impacts to winter flounder eggs during spawning in Lewis Bay. During operation of the facility, the turbines and ESP may provide attractive habitat for fish as plant and invertebrate communities develop on the structures.

Aviation – Concerns have been expressed about the impacts of the project on aviation and aviation radar systems. After reviewing the issue extensively, the Federal Aviation Administration (FAA), the federal agency responsible for aviation safety, issued a “no hazard” finding that with modifications to existing radar systems, the project will not constitute a hazard to aviation.

Needs and Welfare of the People – After 9 years of local, state and federal review, the need for a major renewable energy source has been the focus of project advocates nationwide, while the visual impact and navigational space use conflicts for those closest to the project have been the focus of opponents. The benefits are regional while the impacts are local. Thus, the perceived needs and welfare of the people vary depending upon their location. When viewed in this context, however, the production of renewable energy will provide a benefit to all, even those impacted by the project, and as set forth in the FEIS, the local impacts are relatively minor. Mariners will need to exercise more caution, but they will still be able to transit and fish in the Horseshoe Shoal area. The viewshed will be changed, but from land the structures will appear as small intrusions on the visual horizon.

IX. Findings:

1. State Water Quality Certification: Massachusetts Department of Environmental Protection issued the Water Quality Certification August 15, 2008.

2. State Coastal Zone Management Concurrence: Massachusetts Office of Coastal Zone Management has concurred that the project is consistent with the CZM enforceable program policies.

3. Minerals Management Service lease: In a Record of Decision dated April 28, 2010, MMS documented the decision to offer a lease to Cape Wind Associates, LLC (CWA). On October 6, 2010, MMS and CWA signed a lease agreement for the project.

4. Historic and Cultural Resources: National Historic Preservation Act (NHPA) Section 106 and government-to-government (tribal) consultation began with the Corps in 2002 and was our responsibility until 2005. The consultation was completed by MMS when that agency became the lead federal agency pursuant to the Energy Policy Act of 2005. Once MMS was the lead agency, it led the consultation process on behalf of the Corps pursuant to 36 C.F.R. § 800.2(a)(2). MMS hosted consultation meetings including the Corps, other federal agencies, the Massachusetts State Historic Preservation Officer (SHPO), the Tribal Historic Preservation Officers (THPO) and several other interested parties. The Advisory Council on Historic Preservation (ACHP) was represented at some of these meetings. The numerous meetings and efforts of MMS during this consultation process are documented in the MMS ROD.

In December 2008, MMS issued a finding, and the Corps concurred, that the project would result in an adverse effect on 29 historic properties, including one property culturally important to the Mashpee Wampanoag tribe and two National Historic Landmarks. This finding was revised in January 2010 to add Nantucket Sound--considered a Wampanoag traditional cultural property (TCP)--and four individual onshore Wampanoag TCPs. Based on the visual impact assessment, effects to the following National Register listed or eligible historic places are expected: Cotuit Historic District, Wianno Historic District, Hyannis Port Historic District, Edgartown Village Historic District, Nobska Point Light Station, Col. Charles Codman Estate, Wianno Club, Monomoy Point Lighthouse, West Chop Light Station, East Chop Light, Dr. Harrison A. Tucker Cottage, Edgartown Harbor Lighthouse, Cape Poge Light, Nantucket (Great Point) Light, Falmouth Heights Historic District, Ocean Grove Historic District, West Chop Historic District, Maravista Historic District, Menauhant Historic District, Church Street Historic District, Park Avenue Historic District, Champlain Road Historic District, Cottage City Historic District, Vineyard Highlands Historic District, Hithe Cote, Nantucket Cliffs Historic District, Kennedy Compound, and Stage Harbor Light.

The impacts to these 28 identified above-ground historic properties constitute an indirect, adverse visual effect because it will change the character of the properties' setting that contributes to their historic significance and the project will introduce visual elements that are out of character with the historic setting of the properties. However, due to the distance and open viewshed, the integrity of the properties would not be so diminished as to disqualify any of them from eligibility for the National Register.

The project also constitutes an indirect, adverse visual effect for five onshore TCPs of the Wampanoag Tribe of Gay Head (Aquinnah) and the Mashpee Wampanoag Tribe because it will change the character of the properties' physical features from a location where the southeastern horizon is unimpeded, to one in which the horizon is partially obstructed. The project will also

introduce visual elements that are out of character with the ceremonial use of the property. The project also constitutes a direct, physical effect on the seabed of Nantucket Sound, a TCP of the Wampanoag Tribe of Gay Head (Aquinnah) and the Mashpee Wampanoag Tribe because the undertaking will introduce elements that are out of character with the property and alter its setting and will change the character of the property's physical features that contribute to its historic and cultural significance to the Tribes. The undertaking also constitutes physical destruction, damage, and alteration of part of the seabed of Nantucket Sound which, according to the Tribes, cannot be mitigated nor reversed once done. After extensive efforts to address the adverse effects of the project with Tribes, ultimately, on March 1, 2010, the Secretary of the Interior notified the ACHP that the agency would terminate consultation as further efforts to agree on a Memorandum of Agreement (MOA) would not be productive. After this, on April 2, 2010, the ACHP provided comments to the Secretary, and the Section 106 process was concluded.

Impacts to historic and archaeological resources associated with the project will be mitigated. The mitigation measures of painting the turbines off white and no daytime white lighting will minimize the visual impact. Archaeological investigations indicated three locations of moderate probability of being historic shipwrecks on Horseshoe Shoal. MMS is requiring that these be avoided by all bottom-disturbing activities. Corps permit conditions will also require that work stop and the Corps be notified of any unexpected finds. MMS is also requiring additional surveys of the entire Wind Turbine Generator Array Field out to 1000 feet beyond the Area of Potential Effect and the transmission cable corridor at a minimum of 300m wide to identify and avoid additional archaeological resources. In addition to these surveys, MMS is requiring that one or more cores be extracted from the location of each Wind Turbine Generator for geotechnical analysis and examinations by an archaeologist, Tribal representatives, and a geoscientist. These surveys and core sampling may result in reconfiguration of the project to avoid impacts to historic and cultural resources. MMS continues to work with the Tribes to determine if the Tribes are amenable to additional mitigation measures, including financial support of up to \$200,000 per year from CWA (split between the tribes) for the 21 year project life and up to \$3.5 million from a fund administered by MA CZM to mitigate for cultural and/or historical tribal interests.

5. Protected Species: MMS, as the lead federal agency, has completed formal consultation with the United States Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) on behalf of the Corps as required by Section 7 of the Endangered Species Act (ESA).

USFWS provided a "no jeopardy" opinion in response to the Biological Assessment. This opinion addressed potential impacts to roseate tern, piping plover and the northeastern beach tiger beetle. USFWS concurred that the project was not likely to adversely affect the northeastern beach tiger beetle as it occurs on the periphery of the project area and the low probability of an oil spill attributable to Cape Wind. It has been determined that the project is likely to adversely affect the roseate tern and piping plover but not jeopardize their continued existence, nor adversely modify designated critical habitat of listed species. Injury and mortality due to collision with the wind turbines, their monopole support structures and the electric service platform is the primary expected impact. USFWS provided an Incidental Take Statement

estimating that 80-100 roseate terns over the 20 year life of the project are likely to be injured or killed. USFWS estimated that a maximum of 10 piping plovers will likely be taken over the 20 years. USFWS provided reasonable and prudent measures necessary to minimize the incidental take of these two species, and these measures have been adopted by MMS and incorporated as lease conditions. MMS continues to work with Cape Wind to implement the following measures:

- Pre- and post- construction monitoring to assess the effects and incidental take associated with the Cape Wind Project
- Oil Spill Response Plan
- Review of pre-and post-construction monitoring activities, perching deterrents and operational adjustments based on monitoring results
- Reporting requirements

In addition, USFWS provided discretionary conservation recommendations which neither MMS nor the Corps plan to adopt. MMS is already using existing authorities to implement some of the recommended conservation measures through research efforts to test technology aimed at improving detection of birds offshore and in flight, and some of the recommended conservation actions are being addressed through mitigation required by the state.

Threatened or endangered species within NMFS jurisdiction which may occur within the project area are right whale, humpback whale, fin whale, loggerhead sea turtle, leatherback sea turtle, Kemp's ridley sea turtle and green sea turtle. NMFS provided a Biological Opinion and Incidental Take Statement through formal consultation. NMFS concluded that the project is not likely to adversely affect right, humpback or fin whales. NMFS concluded that the project may adversely affect loggerhead, Kemp's ridley, leatherback and green sea turtles but is not expected to jeopardize their continued existence. The turtles could be exposed to noise levels during surveys and construction activities which may be high enough to disturb their normal activities and thus be considered harassment. NMFS has estimated that 3-7 turtles during each pile driving and 13-28 turtles during the geophysical survey could be exposed to noise levels sufficient to be harassing. NMFS provided the following reasonable and prudent measures to minimize and monitor the incidental take of these species:

- MMS must ensure that any endangered species monitors contracted by Cape Wind are approved by NMFS.
- During the conduct of pile driving activities related to turbine monopile and electric service platform installation, the 750 meter exclusion zone must be monitored by a NMFS-approved endangered species monitor for at least 60 minutes prior to pile driving.
- During the conduct of the high resolution geophysical survey, the 500 meter exclusion zone must be monitored by a NMFS-approved endangered species monitor for at least 60 minutes prior to the survey.
- Acoustic measurement of the first pile being driven must be conducted to confirm the sound levels modeled by MMS and reported in the Biological Assessment.

- Prior to decommissioning, MMS must provide to NMFS a complete plan for the decommissioning activities.

NMFS also provided discretionary conservation recommendations, which neither MMS nor the Corps will adopt. NMFS recommended additional aerial surveys for sea turtles in Nantucket Sound. MMS is currently working with NMFS and the U.S. Navy on Atlantic coast-wide aerial and vessel surveys for sea turtles and other species, and this will include areas of Nantucket Sound. NMFS also recommended minimizing pile driving to the extent practicable during the June-October timeframe when sea turtles are expected to be in the area. MMS and the Corps believe existing measures will provide adequate protection to sea turtles, and by minimizing pile driving during the summer months the result would be shifting work schedules into winter months, a less safe time to operate in North Atlantic waters.

Subsequent to the completion of the NMFS Biological Opinion, there were unexpected sightings of right whales to the south and west of Martha's Vineyard. MMS re-initiated Section 7 consultation with NMFS to determine if the existing mitigation measures designed to protect sea turtle and marine mammal species would serve to ensure that the project will not likely adversely affect endangered and threatened marine mammal species. In a Biological Opinion dated December 30, 2010, NMFS provided reasonable and prudent measures and terms and conditions that were the same as in the original Biological Opinion which have been incorporated into the requirements of the lease and will be further refined in the Construction and Operations Plan.

The applicant intends to seek a Marine Mammal Protection Act (MMPA) Incidental Harassment Authorization as there is a potential for the taking of non-ESA listed marine mammals. MMS requires that MMPA authorizations and the ESA Incidental Take Statement be in place prior to the start of construction. Moderate impacts to marine mammals are expected due to the pile-driving noise. Vessel activity during operations could cause minor impacts.

6. Essential Fish Habitat: MMS has completed consultation with NMFS on behalf of the Corps regarding the effects of this project on Essential Fish Habitat (EFH) designated under the Magnuson-Stevens Fishery Conservation and Management Act. Appendix H of the FEIS was provided to NMFS as the Final EFH Assessment. Negligible to minor impacts are expected to benthic/demersal habitat, the water column and submerged aquatic vegetation. In accordance with the consultation with NMFS, the following are required in the CWA lease:

- includes a time of year restriction to avoid in water silt producing work during the winter flounder spawning period in Lewis Bay,
- requires soft-start for monopole installation so that fish can leave and avoid noise,
- requires periodic inspection of the scour mats and cables to determine if deterioration is occurring, and if armoring with rock is appropriate,
- requires monitoring of the benthic community recovery and determine if additional studies are necessary,
- requires eelgrass monitoring and replanting as needed.

7. General Conformity Rule. The EPA regulations published as “General Conformity Rule” (58 FR 63214, November 30, 1993) to implement section 176(c) of the Clean Air Act for non-attainment areas and maintenance areas require that Federal actions, unless exempt, conform with the Federally approved state implementation plan. Activities associated with this project that result in emissions in state waters were subject to the relevant State Implementation Plans (SIP). Here, the emissions occurring in Massachusetts were below threshold levels to require a conformity determination, but the projected NOx emissions in Rhode Island for the first year of the construction phase exceed the 100 tons per year threshold. In the conformity determination dated December 2009, MMS determined that Cape Wind construction activities would meet Rhode Island conformity requirements with conditions that would be included in the lease. The lease requires that prior to commencing construction activities Cape Wind shall meet general conformity requirements through purchase of offsets that meet the requirements under RIDEM regulations or a combination of offsets and emission control measures. MMS has also committed to collecting data to calculate emissions to ensure that actual emissions do not exceed the offsets purchased. For emissions on the OCS, the applicant has applied for a permit from EPA for its construction activities, and this air permit application is currently under review. MMS acknowledged that if there are any requirements in the EPA air permit that would affect the assumptions in this analysis or if there are any changes in Cape Wind’s construction plan, their conformity determination may need to be revised.

8. Application of 404(b) (1) Guidelines: The final guidelines of the Environmental Protection Agency for the discharge of fill or dredged material (40 CFR 230) as published in the Federal Register, dated 24 December 1980, have been applied in evaluating this permit application. The project does comply with the Section 404(b)(1) Guidelines as there is no less environmentally damaging practicable alternative, and it does not violate water quality or effluent standards, does not jeopardize threatened or endangered species, and does not violate marine sanctuary requirements. The proposed discharge of dredged or fill material will not result in significant degradation of the aquatic ecosystem. Practicable and appropriate measures to minimize potential harm to the aquatic ecosystem are included. With the inclusion of the following special conditions the discharge of dredged or fill material has been found to comply with the guidelines:

An eelgrass monitoring and mitigation plan will be submitted and approved in writing by the Corps of Engineers prior to the start of the submarine cable installation. This plan will include pre- and post-construction monitoring to determine if any eelgrass has been lost due to the cable installation. A planting plan and schedule to compensate for the disturbed eelgrass will be included.

9. Adoption of EIS: The Corps of Engineers has determined that this project constitutes a major Federal action significantly affecting the human environment, and that an Environmental Impact Statement (EIS) is required. The Corps has served as a Cooperating Agency to the MMS in accordance with NEPA, and has provided appropriate input and review comments during the EIS process. The FEIS and associated NEPA documents prepared by MMS, with referenced materials, and comments received in response to them, are hereby adopted in accordance with 40 C.F.R. §1506.3. It is my conclusion that the FEIS and subsequent NEPA documents have

adequately addressed all the relevant environmental issues and considered all reasonable alternatives.

10. Public Involvement and Response to Public Comment: Both the Corps and MMS provided the public with extensive opportunity to learn about the project and to provide comment, both through public meetings and hearings, and through formal public comment periods. These opportunities for public involvement are described below. Through the NEPA process, MMS has appropriately addressed all comments received on the environmental and social impacts associated with the Cape Wind proposal in the FEIS and Environmental Assessment/Finding of No New Significant Impacts documents. In addition to the comments addressed in the FEIS, in response to the 2008 Corps Public Notice, the Corps received several comment letters that raised concerns specific to the Corps and its review process, and these comments are addressed in this section.

a. Public meetings and hearings: The Corps hosted public scoping meetings in Boston and West Yarmouth, MA on March 6 and March 7, 2002, respectively, within the 60 day scoping comment period. Public information meetings were held on November 21, 2002 and October 29, 2003 on Cape Cod and on April 18, 2002 on Martha's Vineyard. The Corps also participated in the Cape & Islands Offshore Wind Stakeholder Process sponsored by the Massachusetts Technology Collaborative between 2002 and 2005 (<http://www.masstech.org/offshore/index.htm>). After the Corps Draft EIS was released in November 2004, public comment hearings were held on December 6, 2004 in Oak Bluffs, December 7, 2004 in West Yarmouth, December 8, 2004 in Nantucket, and December 16 in Cambridge, MA. After release of its Draft EIS, MMS held public comment hearings in which the Corps participated on March 10, 2008 in West Yarmouth, March 11, 2008 in Nantucket, March 12, 2008 in Oak Bluffs, and March 13, 2008 in South Boston, MA.

b. Comment Periods: On January 30, 2002, the Corps published its notice of intent to prepare an EIS for the Cape Wind proposal in the Federal Register and sought scoping comments for the NEPA process. Upon completion of the Corps Draft EIS, a notice of its availability and request for comments was published in the Federal Register November 9, 2004 and by Public Notice dated November 9, 2004. Subsequently a new Corps Public Notice was issued January 22, 2008 describing the revised permit application to correspond with the project as proposed in the MMS Draft EIS. The Corps Public Notices were sent to all known interested parties and posted on the New England District webpage, and all comments received in response to these Notices are included in our administrative record of this action.

On May 30, 2006, MMS published a notice of intent to prepare a new EIS for the project in the Federal Register, and sought scoping comments for the NEPA process. MMS incorporated the comments received on the original Corps Draft EIS as scoping comments for the MMS Draft EIS. MMS published a notice of the availability of its DEIS in the Federal Register on January 18, 2008, and sought public comments on the proposal. In response to comments on the MMS Draft EIS, the Corps comment period was extended to March 30, 2008 and the MMS comment period was extended to April 21, 2008.

c. Concerns Raised to Corps:

The Corps and MMS received numerous comments, both for and against the project, during the NEPA review process, and MMS, as lead agency, responded to these comments in Appendix L to the FEIS. Here, we address comments addressed specifically to the Corps (and not to MMS) in response to the 2008 Corps Public Notice that raise issues pertinent to the Corps review of the Section 10/404 permit application. The responses to comments contained in the FEIS are also incorporated here by reference.

1) **Alliance to Protect Nantucket Sound, Hyannis, MA, dated Feb. 21, 2008 and Mar. 31, 2008²**

a. **Project is not economically viable, socio-economic impacts were not addressed and the economic analysis is incomplete-** Corps regulations state that “[w]hen private enterprise makes application for a permit, it will generally be assumed that appropriate economic evaluations have been completed, the proposal is economically viable, and is needed in the marketplace.” 33 C.F.R. § 320.4(q). The Corps does not have the expertise or resources to evaluate the economic viability of the wide variety of projects that it reviews through Section 10 and 404 permit applications, so the regulation’s presumption is based on a view that individuals and institutions do not typically pursue projects that are known economic “losers.” Here, this presumption of economic viability is a rational one based on huge investments of money, time, and effort involved in the planning and construction of this project. Investors and project proponents would not likely undertake such a project if it was not expected to generate a profit or was not needed in the marketplace. To the extent that concerns over the viability/profitability of the venture bear relevance to the Corps public interest review, it is from a concern that an unprofitable venture could go bankrupt, and the structures would remain in the waters of Nantucket Sound unmaintained and become a hazard to navigation. This concern, however, has been addressed by MMS in lease requirements for financial assurances that would ensure removal of the structures in the event of bankruptcy. While the NEPA review did not evaluate the commercial viability of the project, it did evaluate ten alternative locations, and concluded that the proposed site, Horseshoe Shoal, appears to have the greatest economic potential. A small scale project was also evaluated, and was found to have less economic potential with a higher cost of energy. Corps regulations further state that in appropriate cases a permit application review “may make an independent review of the need for the project from the perspective of the overall public interest,” as the “economic benefits of many projects are important to the local community and contribute to needed improvements in the local economic base, affecting such factors as employment, tax revenues, community cohesion, community services, and property values.” 33 C.F.R. § 320.4(q). Here, potential impacts to the tourism economy of Cape Cod, Martha’s Vineyard, and Nantucket caused by the presence of the facility on Horseshoe Shoals were a concern expressed throughout the project review. However, based on the visual impacts assessment, it is not expected that people will stop using the beaches or boating and fishing in and around Nantucket Sound, and impacts to tourism, recreation and fishing are expected to be minor. The applicant will provide annual payments of \$350,000 or \$7 million over 20 years to the Town of Yarmouth for the land portion of the transmission line. The

² The commenter also submitted a letter to the Corps signed by Glen G. Wattlely, dated March 23, 2009 after the FEIS was released, reiterating concerns expressed in the earlier comment letters and the treatment of these issues in the FEIS document, and asking the Corps to deny the permit application.

United States will receive payments for the lease in the amount of \$88,278 in annual rent prior to production, and a 2 to 7 percent operating fee during production, and the Commonwealth of Massachusetts will receive 27 percent of payments collected. Negligible to minor impacts are expected on the local infrastructure during construction and decommissioning. The impact on the energy industry would be moderate due to the project's substantial impact on meeting Massachusetts's Renewable Energy Portfolio Standards. The project is expected to have negligible to minor impacts on fisheries and benthos, mostly temporary, during construction and decommission.

b. Project will yield nominal air quality or climate change reduction benefits – If fossil fuel plants were to produce the energy anticipated to be produced by the Cape Wind facility, 0.88 million tons of CO₂ would be emitted per year. This project has the potential to reduce the increase in CO₂ by approximately 1 percent. Likewise, NO_x emissions associated with fossil fuel electricity generation would be displaced by energy from the facility, with an expected slight reduction of about 1 ton/day (in the 2002 Massachusetts inventory the total NO_x emissions from all sources on a summer day in the state was 771.8 tons/day). Concerns were expressed about the Cape Wind project “crowding out” other more desirable renewable energy projects in the Massachusetts Renewable Portfolio Standards program, but this is a policy choice for the Massachusetts legislature to address, not the Corps. The Independent System Operation New England (ISO-NE) and the U.S. Department of Energy have expressed concerns on the over-reliance on natural gas in the region and the need to diversify the energy sources without exacerbating air quality concerns.

c. The Applicant has overstated the needs for power – The regional need for power has been addressed by ISO-NE and by the Energy Facility Siting Board for the Commonwealth of Massachusetts. ISO-NE, the regional transmission manager, has projected that 2100MWs will be needed in the New England Power Pool by 2014. The Department of Energy has stressed, throughout the project review, the need to diversify the regional energy portfolio and strive to include renewable energy sources. Again, Corps regulations presume that permit applicants do not pursue economically irrational projects, and that projects seeking Corps permits are “needed in the market place.” 33 C.F.R. § 320.4(q). Here, this presumption is supported by the agencies and entities with expertise in the field stating the needs for power and renewable energy sources in the region.

d. Conservation interests weigh strongly against the project—A general concern was expressed about the project's impacts to Nantucket Sound and the “authentic” Cape Cod scenery and ecology. The various natural and socioeconomic resources potentially impacted by the project are discussed extensively in the FEIS. As to the overall general impact to the “authentic” Cape Cod experience, the presence of the wind turbines and ESP on Horseshoe Shoal are expected to generally have minor impacts on the various natural resources affected. The structures will be visible at various locations on land, but these will be small and close to the horizon to the naked eye, and it is not expected that this minor impact to the viewshed will have a significant impact to recreational and other uses on land.

e. Economic analysis is flawed and does not consider socioeconomic impacts-- The economic analysis was intended to address the economic viability of the technology and provide

for comparison of the alternatives. Minor impacts on housing, construction and manufacturing industries, service industries, waste disposal and military activity were discussed in the FEIS. A moderate positive impact to the energy industry is projected. Effects to commercial fisheries, recreation and other factors were evaluated separately, and were generally determined to be minor or negligible.

f. Comprehensive analysis of impact to aesthetic resources needed—Aesthetic impacts of the project were given extensive consideration in the review of this project. An extensive visual impact assessment is included in the FEIS. Visual simulations from some of the most sensitive locations were included to demonstrate the expected aesthetic effect from various locations surrounding the project area. The project introduces large manmade structures where there are currently none, and will be visible for several miles in clear weather conditions. This impact was assessed as moderate in the FEIS. Aesthetic perception is highly personal and subjective and a variety of comments have been received. Some people feel the structures will industrialize what they perceive as a pristine area, others find them graceful and interesting like a kinetic sculpture and others feel the surrounding area has already been over developed and this is an inevitable progression. This subject was given extensive consideration during the review process.

g. The project adversely impacts wetlands-- The project is not expected to impact wetlands. The onshore portions of the project (transmission line) will not cross any freshwater wetlands and should be sufficiently distant from any wetlands to avoid impacts. No work is proposed in coastal saltmarsh, and by using horizontal directional drilling for cable installation at landfall, impacts to coastal wetland resources will be avoided.

h. Historic properties will be adversely affected-- As part of the review of this project, MMS completed a National Historic Preservation Act Section 106 consultation and review on behalf of the Corps. There will be an adverse effect to properties eligible for listing on the National Register of Historic Places, including tribal Traditional Cultural Properties and National Landmarks. MMS, in a letter dated April 28, 2010 to the Advisory Council on Historic Preservation, listed these effects and the proposed mitigation measures. With the exception of physical impacts to Nantucket Sound—considered an eligible property as a tribal Traditional Cultural Property—the impacts to eligible properties are entirely from the indirect impact of the introduction of the turbines to the visual landscape at a great distance, on the occasions where weather conditions permit them to be observed. None of the properties eligible for listing on the National Register will be so diminished by the impacts of the project as to disqualify them from such listing. For historic and cultural resources on the seabed of Nantucket Sound, identified shipwrecks will be avoided, and surveys will be conducted prior to construction to determine if additional cultural resources must be avoided. The commenter suggested that the project cannot be constructed in its proposed location due to adverse effects on National Historic Landmarks, but courts have been clear that the Section 106 process does not require agencies to choose alternatives with less (or no) impacts to 106 resources, but only “to complete the Section 106 consultation process by identifying adverse impacts on historic resources and develop methods to mitigate the identified adverse impacts.” Advocates for Transportation Alternatives v. USACE, 453 F. Supp 2d 289, 312 (D. Mass. 2006). That is what occurred here.

i. Fisheries, marine-protected species, avian species, and terrestrial ecology will be seriously harmed and DEIS evaluation of impacts to fisheries, marine-protected species, and birds are insufficient - The FEIS presented extensive analysis of the impacts to the Horseshoe Shoals ecosystem, addressing effects on fisheries, avian species, marine mammals and turtles, including species protected by federal statutes like the Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA). The concerns on impacts to fish raised by the commenter—contamination from turbine oil, hydraulic fluid, cooling oil, boat fuel, and sacrificial anodes—were not found to likely have any impacts on fisheries. Indeed, the turbines may become attractive habitat for some species. As for marine mammals and turtles, the FEIS and consultation with NMFS indicates that the mitigation measures for the project are likely to result in negligible to minor impacts. For marine birds, the FEIS revealed the potential for moderate impacts to certain marine birds species from collision with the structures. These impacts will be monitored, and mitigation measures have been developed based on the recommendations of USFWS. As to the impacts on protected marine species, both USFWS and NMFS concluded that the project would not jeopardize the continued existence of any ESA listed species likely to be found in the project area. The applicant will be responsible for securing any necessary MMPA permits for the project. The FEIS discusses and analyzes the impacts of the transmission line after it reaches shore, but there are no wetland fill activities on shore subject to Corps jurisdiction. The impacts from on-shore activities—the installation of a transmission line in an existing right of way--to wildlife are expected to be minor to negligible. The FEIS addressed impacts to the species known to frequent the area and was based upon best available scientific information, including site specific field work conducted by the applicant and others such as Massachusetts Audubon Society. Discussion of the limitations and uncertainties of the data is disclosed and addressed in the FEIS.

The commenter states that the Corps would violate the Migratory Bird Treaty Act (MBTA) by issuance of a permit for this project. The MBTA is a federal criminal statute that prohibits the “take” of migratory birds without appropriate permits. Here, the Corps is not the entity taking the actions that may result in take of migratory birds, it is the applicant (and leaseholder) who will be constructing the wind turbines and ESP on Horseshoe Shoal. Thus, it would not be the Corps but Cape Wind who would be the proper entity to receive a permit pursuant to the MBTA. USFWS administers this statute and issues such permits, but there is currently no permitting regime governing “incidental takes” by which birds are killed unintentionally by structures or activities that are performed without the intent of killing or harming birds (as opposed to activities like hunting or depredation). USFWS has pursued criminal cases against individuals and entities that have “incidentally taken” migratory birds. But in the USFWS Interim Guidelines on Avoiding and Minimizing Wildlife Impacts from Wind Turbines, May 13, 2003 at 2, USFWS has stated that:

[w]hile it is not possible under the Act to absolve individuals, companies or agencies from liability if they follow these recommended guidelines, the Office of Law Enforcement and Department of Justice have used prosecutorial discretion in the past regarding individuals, companies or agencies who have made good faith efforts to avoid the take of migratory birds.

Presently, USFWS has no similar guidelines covering wind energy facilities in the off-shore environment.

On January 10, 2001, President Clinton issued Executive Order 13186, "Responsibilities of Federal Agencies to Protect Migratory Birds." 66 Fed. Reg. 3853 (Jan. 17, 2001). The Order creates a more comprehensive strategy for migratory bird conservation by the federal government. This Order requires federal agencies taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations to develop and implement a Memorandum of Understanding (MOU) with USFWS to promote conservation of migratory birds. On June 4, 2009, MMS entered into a MOU with USFWS pursuant to Executive Order 13186 to address the conservation of migratory birds as it implements its mission of developing energy and mineral resources on the OCS. The MOU contains a number of provisions encouraging MMS, within the confines of its statutory, regulatory, and budgetary constraints, "to integrate migratory bird conservation principles, as well as reasonable and feasible conservation measures and management practices into [its] approvals." MOU at Sec. F.1. These include, to varying degrees, avoiding, minimizing, and mitigating adverse impacts to migratory birds. MOU at Sec. F.2, F.5. Here, MMS, on behalf of the Corps and other federal agencies, has worked and continues to work with USFWS to address the impacts of the project on migratory birds. As part of the MMS-issued lease, and consistent with their underlying ROD, the applicant is required to submit a plan addressing any needed conservation measures, for MMS approval. The applicant continues to work with MMS and USFWS to develop an acceptable plan.

j. The project interferes with federal, state, and local land uses—The commenter criticizes the project's use of federal lands on the OCS without "competitive bidding" and suggests the project excludes other uses. However, in EPAct 2005, Congress expressly authorized MMS to make such OCS lands available for alternative energy production leases, and allowed the Cape Wind project to proceed without restarting the process for the applicant. With the passage of EPAct 2005, MMS became the lead agency for this process, and the decision on the proper mechanism for the terms and availability of leases is for MMS, not the Corps. The commenter further suggests that issues regarding the Cape Cod Commission's (CCC) review of the project should prevent the Corps from making a permit decision. Since the time of the comment letter, the issues regarding the interplay between the Massachusetts Energy Facility Siting Board (MEFSB) and the CCC have been resolved by the Massachusetts Supreme Court, which concluded that the MEFSB had properly granted an "all-in-one" permit that overruled the CCC's denial of Cape Wind's application for a Development of Regional Impact approval.

k. Negative effects to navigation, including physical obstruction/collision threat, radar interference, commercial fishing disruption, damage to structures by vessels and ice, interference from transmission cables, and oil spills - There will be some increase in vessel traffic on Horseshoe Shoal during construction activities. However, Horseshoe Shoal is a shallow area limiting the size boats traversing the area, and the project is more than 1100 feet from the Hyannis Harbor Main Channel, which should avoid interference with commercial navigation. Moderate impacts to navigation were noted in the FEIS. Pursuant to Section 414(a) of the Coast Guard and Maritime Transportation Act of 2006, the USCG conducted an extensive and detailed review of the impacts of the project on navigation, and developed terms and conditions for operation of the facility to ensure navigational safety, which are expected to

mitigate impacts to navigation and marine radar. These measures, required in the MMS lease, include installation of Private Aids to Navigation, traffic management, status reports to the Coast Guard, establishing a control center, communications with mariners, and providing safety equipment and plan. As part of its review, the U.S. Coast Guard considered various studies on the impacts of the project on marine radar systems, and ultimately concluded that the project would hinder the effectiveness of marine radar for detecting vessels inside the turbine array, but with reasonable care vessels would be able to navigate safely within and in the vicinity of the proposed wind farm, and that the impact of the proposed wind farm on navigation safety is "moderate." The commenter raised concern about the impact of the turbine array on helicopter search and rescue efforts, but the Coast Guard Sector Southeastern New England concluded that there would be negligible impacts to Coast Guard search and rescue efforts in the area of Horseshoe Shoal. The commenter raised concern about navigational impacts to commercial fishing vessels, but as discussed in the FEIS, fishing will not be prohibited in the turbine array, and with the Coast Guard's terms and conditions, the moderate impact to navigation safety will be reduced to an acceptable level. Concerns were also raised about the presence of ice floes in the turbine array, and the risk of ice on the turbine blades causing catastrophic blade failures or jettisoned ice chunks. Severe icing is rare in Nantucket Sound, but should ice floes develop, Coast Guard Sector Southeastern New England monitors conditions and warns mariners. Likewise, the Coast Guard's Terms and Conditions will require the applicant to provide a plan to mitigate the impacts of surface icing. As for ice on turbine rotors, the turbines will have sensors that will shut down the turbines if ice builds up on them making the likelihood of blade failure or jettisoned ice unlikely. The commenter raised concern about the impacts of the transmission cable system on anchoring or fishing gear, but as the Coast Guard concluded, the MMS lease requirement of six foot cable embedment will avoid impacts on navigation or fishing. The commenter expressed concern about potential oil spills associated with the project impacting navigation as vessels would maneuver around spills. As noted in the FEIS, the likelihood of a catastrophic oil spill associated with the proposal is low, and the contingencies associated with such an event are addressed in an Oil Spill Response Plan developed for this project, which both MMS and the Coast Guard have found to be adequate. Concerns were raised about the impacts of the project to air navigation, and the FAA's review of impacts to aviation radar systems. After reviewing the issue extensively, FAA, the federal agency responsible for aviation safety, issued a "no hazard" finding that with modifications to existing radar systems, the project will not constitute a hazard to aviation.

l. An Ocean Dumping Act permit and a NPDES permit are required for the project –

The installation of transmission lines on land will require a NPDES General Stormwater Construction Permit, and the applicant must acquire such a permit from USEPA before construction commences. A permit is not required pursuant to the Marine Protection, Research, and Sanctuaries Act (also known as the Ocean Dumping Act), as there is no proposed transportation of dredged material for disposal in ocean waters.

m. The risk of oil spills must be fully evaluated – The NEPA process evaluated the issue of potential releases of dielectric cooling oil, other lubricants, and fuels associated with the project. Two models, HYDROMAP and OILMAP, have been used to assess potential oiled areas and travel times. As the probability of a major oil spill is very small, effects were expected to be negligible. While the likelihood of such events are considered low, the FEIS analyzed the

worst case scenarios involving a complete release of all dielectric cooling oil from the ESP. The commenter raised concern over the possibility of oil tankers striking structures in the turbine array. However, as the facility is located in an area of shallow waters where larger vessels cannot transit—and such vessels use existing navigation channels distant from the facility—it is unlikely that the facility will cause oil spills from vessel collisions. As the Coast Guard concluded, with the mitigation measures that MMS will require, the moderate impacts of the facility on navigation will be reduced to an acceptable risk.

n. The project will cause water quality impacts to eelgrass and benthic resources -- Eelgrass at Egg Island has been addressed through the MEFSB requirement for a control impact plan and that the eelgrass location will be marked so that contractors can ensure avoidance during construction. The Corps will also include permit conditions to avoid eelgrass beds and address any impacts that do occur. The benthic habitat impacts are expected to be mostly temporary as these communities have adapted to survival in dynamic sediments. The Material Safety Data Sheet for the external coating for the wind turbine generators and electric service platform is included in Appendix E of the FEIR. There will be an epoxy coating applied at the waterline/splash zone. HDD will be employed to minimize water quality impacts as it involves less re-suspension of sediment than traditional cut and cover construction.

o. Risks to public safety will be severe – The commenter raises concerns over the safety of workers at the facility, the hazard of ice being thrown from turbine blades, and the safety of transmission lines. Workers' safety for a facility on the OCS is addressed in various statutory regimes administered by the Coast Guard and MMS, and if there are safety concerns associated with the construction and operation of the facility, these agencies are responsible for addressing them. As noted above, the turbines will have sensors that will shut them down if ice forms on the blades, making it unlikely that ice will be hurled to nearby vessels. As noted by the Coast Guard, the required six foot depth of the transmission cables makes it unlikely that trawling gear or anchors would strike the cables.

p. Food and fiber production will be affected - The FEIS evaluated the potential for survey and construction activities to have a minor temporary effect on the benthos and plankton but no appreciable alteration in the food chain is expected. It is important to recognize that the impacts raised by the commenter—turbidity from construction disturbance—are a normal event in the dynamic environment of Nantucket Sound. The sandy benthos is regularly disturbed, and quickly settles after such disturbances. The construction activities here will be smaller in duration and impact than the frequent natural events that cause such impacts. To the extent there is concern over the impacts of construction on breeding winter flounder, MMS has imposed time of year restrictions to avoid turbidity when winter flounder eggs and larvae could be impacted. As to the impacts on food production in the form of fishing (commercial and recreational), while trawlers may need to exercise more caution in their fishing activities, such activities will not be prohibited in the turbine array. For recreational anglers, there may be benefits from the presence of the turbines as they may serve as fish attractants.

q. Project interferes with property values – The commenter raises concerns over the decline in property values after construction of the project. It is important to recognize, however, that the Corps public interest factor regarding property ownership is not concerned with property

values, but issues relating to the rights of property owners. 33 C.F.R. 320.4(g). However, studies of property values in areas near wind energy facilities constructed in the United States have not shown a decline in property values. While the proposed facility, an offshore wind energy facility, is the first of its kind in the U.S., it is not clear that the presence of turbines and the ESP at such a distance on Nantucket Sound will have any impact on property values on land.

r. The project presents national security concerns – The commenter raises concerns about the impacts of the project on defense, air traffic, and navigation radar systems, as well as Coast Guard operations. The Department of Defense’s Missile Defense Agency reviewed the impacts of the project on the PAVE PAWS radar system at Cape Cod Air Force Station and the Upgraded Early Warning Radar at Beale Air Force Base, and determined that the impacts could be readily mitigated. The FAA has reviewed the project and determined that with modifications to aviation radar systems required as part of the MMS lease, the project will not constitute a hazard to aviation. The Coast Guard concluded that while there would be moderate impacts on the operation of marine radar in and near the turbine array, with the mitigation measures the impacts to navigation will be reduced to an acceptable risk. In addition to impacts on navigation and navigation radar, the Coast Guard also considered the impacts of the project on its own operations, and concluded that it would have negligible to no impacts on its missions, and in some instances, may facilitate the success of some operations.

s. The project interferes with recreation – The commenter expresses concern over the impact of the project on beachgoers, birdwatchers, and boaters. Introduction of these structures will result in a noticeable change in the seascape. The effect of the visual impact was considered moderate to recreational resources on shore, but it is not expected that the general public will no longer frequent these areas. The project will be distant from shore, and when visible will appear as small objects on the horizon. It is not expected that this will keep individuals from enjoying beaches or birdwatching. Recreational boaters will need to exercise caution when traversing Horseshoe Shoal to avoid the turbines and ESP, but as noted above, with the required mitigation measures the moderate impacts to navigation will be reduced to an acceptable risk. Moreover, recreational anglers may benefit from the presence of the structures as they may prove to be fish attractants, similar to oil rigs in the Gulf of Mexico have.

t. The project is inconsistent with the need for uniform and comprehensive ocean governance – The commenter’s perception of inadequate comprehensive ocean planning is beyond the scope of the decision before the Corps. Such a planning framework would require a congressional remedy. The Corps is not able to halt review of permit applications because such a planning framework does not exist, doing so could arguably represent a usurpation of the legislative/policymaking powers of Congress. Congress has directed MMS to make lands available on the OCS for alternative energy projects, and that is what is before the Corps. MMS has finalized the Renewable Energy Rule to implement the provisions of the Energy Policy Act of 2005. The Cape Wind project will be subject to 30 CFR Part 285 “Renewable Energy and Alternate Uses of Existing Facilities on the Outer Continental Shelf.” The intent of these regulations is to provide a comprehensive program to grant leases, easements, and rights-of-way for environmentally responsible renewable energy projects on the OCS. If Congress establishes a planning framework envisioned by the commenter that mandates a moratorium on consideration of such projects while plans are developed, that is for Congress to decide, not the

Corps.

u. The project harms the interests of Indian tribes – MMS conducted the NHPA Section 106 consultation for this project, extensively involving the Mashpee Wampanoag and the Wampanoag Tribe of Gay Head (Aquinnah) in the process. The 106 process has been completed, and impacts to the Tribes' traditional cultural properties have been acknowledged. Mitigation was offered as part of this process, but was not accepted by the Tribes.

v. The project does not satisfy the 404(b)(1) Guidelines – The commenter states that the Corps must deny the application under the 404(b)(1) Guidelines found at 40 C.F.R. Part 230. The Corps does not agree, and the various points raised are addressed below.

1. The project is not the least environmentally damaging practicable alternative (LEDPA) -- The commenter suggests that the Corps cannot issue a Section 404 permit for the project, as there are alternatives that would be less environmentally damaging, such as (unnamed) land-based sites. It is important to recognize, however, that the concept of the LEDPA applies only in the Section 404 permitting context, and here, most of the project is outside the waters of the United States subject to Section 404 permitting. Section 404 of the Clean Water Act only applies to discharges of fill and dredged material occurring in coastal waters to the limit of the territorial seas, which extend three nautical miles³ from the baseline defining the territorial sea. 33 C.F.R. § 328.4(a). Here, the entire turbine array is outside the territorial sea, and is therefore not subject to Section 404 permitting. The Corps also regulates all structures and work within the territorial seas pursuant to Section 10 of the Rivers and Harbors Act of 1899, and all structures (but not work) on the OCS pursuant to Section 10, and the NEPA analysis conducted for this project appropriately addresses the impacts associated with all these structures and works in both the territorial seas and on the OCS. However, the limited reach of Section 404 jurisdiction to territorial waters is important, as the concept of the LEDPA only arises in a 404 permit review, not Section 10.

It is also important to recognize that the only activity associated with this project that is subject to 404 permitting—the only activity resulting in the discharge of dredged or fill material—is the 2925 sq ft area of discharge of dredged and fill material associated with the transition of the 115 kV submarine transmission cables from water to land at Lewis Bay in Harwich, MA. Thus, the only activity of the project subject to a Section 404 permit is the fill that will be placed inside the cofferdam where the ocean cables reach the horizontal directional drilled conduit from land, and the 404(b) analysis is focused on this activity, not the entire project. Because of the limited scope of the 404 activities in relation to the entire project, it is not appropriate to apply the LEDPA concept to the entire project, but rather only to the small portion of the project subject to Section 404. The NEPA analysis appropriately examined the environmental impacts of all aspects of the project—the components in the territorial sea, the OCS, and uplands, and aspects of the project subject to 404 permitting, Section 10 permitting, MMS lease authority, and areas not subject to federal permitting but part of the overall project.

³ The FEIS describes the seaward limit of jurisdiction of the Clean Water Act as extending 3.5 miles, a conversion of nautical miles to statute miles.

The use of horizontal directional drilling and the fill associated represents the least environmentally damaging practicable alternative for bringing the transmission cables to landfall. The other practicable method of bringing the cable to land would be cut and cover trenching, which involves much more bottom disturbance, more material rehandling, more turbidity, and it is disruptive for a longer period of time. Resource agencies always recommend jet plow or HDD over cut and cover trenching.

The commenter suggests that a Section 404 permit should be required for all jet plow activity within territorial seas. Contrary to commenter's suggestion, the Corps does not consider jet plowing to be subject to 404 permitting as it does not represent a discharge of dredged or fill material.⁴ Jet plowing is a means of laying submarine cables with a jet plow device. The jet plow blade is lowered to the seabed, water pump systems are initiated, and a trench is created from the pressurized water jets. As the jet plow progresses, the cable is simultaneously laid and buried in the trench as the jetted material settles back into the trench behind the jet plow. Because the vast majority of jetted material falls back into the trench at the same time and same location where it had just been excavated, the Corps does not consider this to be a discharge of dredged or fill material. To the extent that some jetted material lands outside the trench, this is the same incidental effect that would occur with a traditional navigational dredging operation, and Corps regulations direct that such incidental movement of materials during dredging operation generally do not require a 404 authorization. As such, the Corps does not consider the jet plow installation method to be subject to 404 permitting. This approach of Section 404 not applying to jet plowing is a consistent Corps practice in the New England District, as evidenced by a permit issued pursuant to Section 10, not Section 404, in 2005 for a power cable from Barnstable to Nantucket installed with jet plowing techniques, permit NAE-2004-1533.

It is important to note, however, that even if the Corps considered jet plow operations to be subject to Section 404 permitting, the proposed transmission cable and its associated jet plow installation in the territorial seas would be considered the LEDPA. The route chosen to Barnstable is the most direct route of the alternatives considered, and would therefore result in the least impacts. Moreover, the use of jet plow in these waters is the least damaging means of installing a utility cable at the distances required. The other practicable alternative to jet plow installation is cut and cover trenching, which involves much more bottom disturbance, more material rehandling, more turbidity, and it is disruptive for a longer period of time. Thus, even if the Corps did subject the entire transmission cable installation to the 404(B) requirements, the jet plow methodology and the route chosen would be considered the LEDPA.

2. The project will cause or contribute to violations of applicable water quality standards – Contrary to the commenter's assertions on water quality standard violations, the Massachusetts Department of Environmental Protection (MA DEP) issued a Water Quality Certification pursuant to Section 401 of the Clean Water Act for the project on August 15, 2008. Under Section 401, applicants are required to receive certification that Clean Water Act discharges will be consistent with state water quality standards. In addition to finding that the discharges associated with the project (ie the cofferdam fill) complied with state water quality standards, the MA DEP also considered non-discharge activities such as the jet plow operation,

⁴ The FEIS incorrectly stated that the Corps would require a 404 permit for jet plowing activities. The DEIS correctly stated that the Corps would only require a 404 permit for the fill at the cofferdam.

and found these also to be consistent with state water quality standards.

3. The project will jeopardize the continued existence of endangered or threatened species or will result in the destruction or adverse modification of critical habitat – Contrary to the commenter’s assertions on impacts to endangered species and their habitat, the USFWS issued a biological opinion dated November 21, 2008, and NMFS issued biological opinions November 13, 2008 and December 20, 2010, the culmination of the agencies’ ESA Section 7 consultation, which concluded that the project would not jeopardize the continued existence of species listed pursuant to the ESA, nor would the project affect designated critical habitat.

4. The proposed discharge would significantly adversely affect aquatic ecosystems- The 404 discharge associated with this project—fill in the 2925 sq. ft. cofferdam—will result in minor to insignificant impacts. The use of horizontal directional drilling is the least damaging means of bringing a cable to landfall, and the impacts of the fill activities will be minimized by use of the cofferdam and time of year restrictions to avoid impacts to winter flounder eggs and larvae. A water-filled temporary dam around the exit point of the horizontal directional drill will act as an underwater “silt fence” to contain any escaping drilling fluid.

5. The project will significantly and adversely affect recreational, aesthetic, and economic values – As discussed in response to the commenter’s points on the public interest factors, the project will have some impacts on recreational uses on Horseshoe Shoal and the viewshed, these are not expected to be substantial. Likewise, the economic values of real estate and the tourism industry are not expected to be greatly impacted by the project.

6. The project does not include all appropriate and practicable measures to minimize potential harm to the aquatic ecosystem – The measures to minimize impacts associated with horizontal directional drilling and the fill associated with the cofferdam are adequate. The comments on this point do not provide additional measures that should be imposed, but only seek additional detail on the implementation of the mitigation measures and operations plan, such as who will be operating the equipment and their level of experience. At this point in the permitting process, the level of detail provided is appropriate, and the Corps will ensure that the mitigation is implemented properly as part of its permit oversight.

7. There is insufficient information to determine if the discharge will comply with the 404(B)(1) Guidelines – The Corps believes there is sufficient information to make its permit decision. The NEPA process has provided ample information for the Corps to review the impacts of the project, and the specific 404 discharge associated with the project is not a new or unusual activity. To the contrary, the cofferdam discharge is of the nature and type that the Corps has extensive history reviewing in the New England District, and at the scale involved here, the associated impacts are predictable and minor.

2) Elizabeth Durkee, Oak Bluffs Conservation Agent, dated February 7, 2008

Dispose sand to replenish Oak Bluffs beaches rather than disposal in ocean waters –

The only dredged material being placed in waters of the United States is the material dredged from within the cofferdam where the transmission line reaches the connection with the horizontal directional drill coming from shore. The material may be placed back into the area where it had been dredged in order to cover and protect the cable, and will not be disposed of in ocean disposal areas. The volume (roughly 840 cubic yards of material) would not provide much beach replenishment material, nor would it be cost effective to transport such a small amount of material to Oak Bluffs beaches when fill material would still be needed to cover the cable and backfill the area inside the cofferdam.

3) Paul Conlin, Pocasset, MA, dated March 16, 2008

Project should be located on land at Otis AFB – Massachusetts Military Reservation/Otis Air Force Base in Sandwich, MA was evaluated earlier in the review process for this project. The site did have some attributes for an energy generating facility as there is access to surplus transmission capacity and there are large undeveloped portions of this 22,000 acre site. However, it was found that there is an inadequate wind resource for a commercial wind power facility, that structures could interfere with military airspace, that existing unexploded ordinance may exist in the undeveloped areas large enough to accommodate a wind facility, and there are significant environmental resource issues known to exist at the site.

4) Charles Mansfield, West Falmouth, MA, dated March 22, 2008

Project should not be located in Nantucket Sound, economic and environmental impacts are uncertain, and political favors being provided to project by state politicians – The environmental and economic impacts are thoroughly documented in the FEIS and reflect the best available information. The interaction of the project proponents and state politicians is beyond the scope of the Corps review of this project.

5) Oceans Public Trust Initiative, Cindy Lowry, Portland, ME, dated March 28, 2008

Project violates public trust doctrine and negatively impacts the public interest factors - There are numerous legislative provisions in place for addressing the propriety of allocating use of the public resources in the waters of Nantucket Sound, including state laws such as Massachusetts Chapter 91, and federal laws including Section 10 of the Rivers and Harbors Act, Section 404 of the Clean Water Act, and the Outer Continental Shelf Lands Act as amended by the Energy Policy Act of 2005. These provisions do not prohibit, but do regulate, the use of public resources, and establish procedures by which such public resources can be used by individuals and entities. Congress and the Massachusetts Legislature have set up these frameworks to govern the use of such public trust resources, and agencies like the Corps and MMS are responsible for implementing them. The extensive reviews by state and federal agencies have been conducted to determine whether it is appropriate to allow the proposed use of, and impacts on, the public resources. The commenter raises concerns similar to those addressed in Comment 1 above, and the responses there are incorporated here by reference. The commenter stated that Nantucket Sound contains a Massachusetts state marine sanctuary, but the Massachusetts permitting agencies have issued their authorizations for the cable crossing within state waters. The commenter suggests that these areas “qualify” as a federal marine sanctuary,

but neither the state waters nor federal waters where the project is designated as a federal marine sanctuary under the Marine Protection, Research and Sanctuaries Act.

6) Barbara W. Nye, Centerville, MA, dated January 24, 2008

Project consists of too many windmills – The FEIS compared impacts of a smaller project alternative with the proposed project. While some impacts would be lessened others would remain approximately the same. The smaller project alternative and its reduced electric generating capacity would not meet the project purposes of making a substantial contribution to enhancing electric reliability and achieving the regional renewal energy requirements.

7) Clean Power Now Nantucket Chapter, Carl K. Borchert, Nantucket, MA, dated February 17, 2008

Benefits of project outweigh minor negative impacts, wind parks in Denmark are quiet and benign – The FEIS for the project examines the impacts of the project on various resources. Some were determined to be moderate, but most were found to be negligible to minor. The wind parks in Denmark provide some understanding to what can be expected with this project.

8) Charles J. Miller, Monument Beach, MA, dated March 21, 2008

Horseshoe Shoals is foggy in summer, will not be visible to most summer visitors, structures will enhance fishery – The visual impacts of the project have been thoroughly analyzed in the FEIS and accompanying studies. When the structures are visible from shore they will appear as small objects on the horizon, and as the commenter notes, weather conditions will often prevent them from being seen. The impacts of the project on fisheries are discussed in the FEIS. The main impacts will occur during construction, and after the structures are in place they may serve as attractive habitat for fish.

9) National Grid, Hanover, MA, dated March 21, 2008

The transmission lines for the project will cross a 46 kV National Grid cable northwest of Bishops and Clerks reef, installation of the new lines must be done with care to avoid impacting electrical service to Nantucket – The FEIS discusses the National Grid cable and how the two will be “bridged” to allow safe crossing. The Corps will address this through a permit condition that will require coordination with National Grid to ensure that its cable will not be adversely impacted.

10) Rear Admiral John Linnon, East Falmouth, MA, dated March 26, 2008

The project will adversely impact the effectiveness of marine radar systems, forwards copy of report from Dr. Eli Brookner – The Brookner report addresses the impacts of the project on marine radar systems. This report was reviewed by the U.S. Coast Guard in its evaluation of the impacts of the project on navigation and marine radar. The Coast Guard determined that the wind turbine array would impact marine navigation radar, but with the required mitigation measures these impacts would be within an acceptable level of risk.

11) J. Randolph Barrett, Oliver Wyman, Reston, VA, dated March 28, 2008

The project will adversely impact the effectiveness of aviation radar systems, forwards copy of report from Dr. Eli Brookner – The FAA is the federal agency with expertise and responsibility to address potential hazards to aviation. The Brookner report was considered and evaluated as part of their review. The FAA has determined that the structures could cause “clutter” on the existing air traffic control displays and are requiring the applicant to provide upgraded equipment to mitigate this problem. In light of these requirements, the FAA has issued a *Determination of No Hazard to Air Navigation* dated May 17, 2010 and a subsequent *Notice of Denial of Request for Discretionary Review of Determination of No Hazard to Air Navigation* dated August 4, 2010.

12) Hyannis Marina, Wayne Kurker, Hyannis, MA, dated March 26, 2008

The project will result in scouring at the base of structures on Horseshoe Shoal, Massachusetts CZM is politically motivated -- The issue of scour at the base of structures has been analyzed and addressed through the NEPA process. Scour mats are the intended means to prevent scour, and tests on these mats have shown success. Rock armoring may be used around the base of the structures if the scour mats are not adequate. With regard to the political motivations of Massachusetts state agencies, this is beyond the purview of the Corps permit review process. Massachusetts CZM has issued a finding of consistency with the state CZM policies, the motivations for such a finding is not a matter for Corps review. The commenter submitted identical comments to the Corps and MMS, and the Corps agrees with the MMS response to these comments.

13) James Liedell, Yarmouth Port, MA, dated February 16, 2008

Changes to project articulated in 2008 Corps Public Notice reduce impacts, DEIS shows little impact from project and environmental management system will benefit public interest – The changes to the project as articulated in the 2008 Public Notice should result in less visual impacts from lighting, but the new horizontal directional drill plan resulted in minor fill activities that were not part of the project before. The mitigation, monitoring, and coordination (pre-construction, construction, and post-construction) required for the project are extensive and the Corps agrees that these will benefit the public interest.

14) Ken Elkstrom, Cambridge, MA, dated March 24, 2008

Proponent overstates energy production from wind in Nantucket Sound, electromagnetic fields from project may inhibit winter chlorophyll blooms in Nantucket Sound – The commenter asserts that the applicant’s projections of power generation are overstated, but this is based on the commenter’s observations of wind conditions at South Beach on Martha’s Vineyard. It is not clear why the wind conditions at South Beach would be more accurate than the wind data captured at the instrument tower on Horseshoe Shoal. The federal agencies have relied heavily upon input from the Independent System Operation New England (ISO-NE) and the U.S. Department of Energy that this project will substantially contribute to

enhancing the region's electrical reliability and to achieving the renewable energy portfolio standards. MMS conducted an independent economic analysis to compare the alternatives, and this took into account wind resources and production capacity at various locations. However, as noted above, Corps regulations presume that an applicant will not pursue an economically unviable project. As to the impact of electromagnetic fields from the project on chlorophyll blooms, the FEIS concluded that impacts of electric and magnetic fields would be negligible. The electric field is contained within the grounded metallic shielding of the offshore cables. Peak magnetic flux densities will be directly above the cable, which will be buried six feet below the substrate. This decreases rapidly moving away from the cable. Mobile species will have minimal exposure. Scientific literature indicates there is no anticipated adverse effect from these magnetic fields, and the commenter provides no more than speculation as to whether there will be an impact on chlorophyll blooms. In fact, in the email string that generated the comment, the prompt for the concern about electromagnetic impacts appears to be an email discussing the effect of iron-poor waters on photosynthetic planktons, but this email says nothing about electromagnetic fields creating iron-poor waters.

15) U.S. Fish and Wildlife Service, Michael J. Bartlett, Concord, NH, dated February 20, 2008

Jet plow operation may need regulation under Section 404, a more recent study shows greater sedimentation impacts from jet plow operation. As discussed above, jet plow operation is not subject to 404 regulation. Moreover, to the extent jet plow operations were subject to 404 regulation, it would be considered the LEDPA, as other means of installing transmission cable create greater environmental impacts. As to the sedimentation impacts shown in the newer modeling study on jet plow activities in Nantucket Sound conditions, discussion with the study author revealed that while the results were worded differently in the two reports, the substance of the two reports was not different. Specifically, the author of the report indicated that the more recent model simulation indicated that sediment deposition quickly tapers off to below 0.2 inches (5 mm) at between 50 and 100 feet (15-30 m) on either side of the cable trench, and almost all sediment will be deposited within 100 feet of the trench.

11. General Evaluation:

In November 2001, Cape Wind Associates, LLC submitted a Department of the Army permit application to construct and operate a wind-power facility in federal waters on Horseshoe Shoal in Nantucket Sound, Massachusetts. In December 2001, the Corps determined that an environmental impact statement was required for the Cape Wind Energy Project. A Notice of Intent to prepare the environmental impact statement was published in the Federal Register on January 30, 2002. The Corps of Engineers Draft EIS was released in November 2004. Subsequent to the enactment of the Energy Policy Act of 2005, the Department of the Interior was given authority for issuing leases, easements, or rights-of-way for alternative energy project activities on the Outer Continental Shelf. MMS, an agency within the Department of the Interior, was responsible for implementing these new provisions.

MMS determined that the regulations and requirements under which it would review the proposed action are substantially different than those under which the Corps would have

reviewed the proposed action, and a new Draft EIS would need to be prepared. MMS considered public comments on the Corps Draft EIS as scoping comments in preparation of the MMS Draft EIS.

On January 18, 2008, the MMS Draft EIS was made available for review and comment for a total of 90 days. MMS received more than 42,000 comments through its website, emails, hard copy and comments provided at the four public and hard copy mailed comments. Comments were addressed in the Final EIS which was announced in the Federal Register dated January 21, 2009. MMS issued an Environmental Assessment/Finding of No New Significant Impact to evaluate post-FEIS Information and a Record of Decision on April 28, 2010.

As a cooperating agency for purposes of complying with the NEPA, the Corps provided input to the MMS for development of their EIS, and the Corps has relied upon MMS as the lead federal agency to address the federal requirements under Section 7 of the Endangered Species Act, Section 106 of the National Historic Preservation Act, Essential Fish Habitat consultation pursuant to the Magnuson-Stevens Fishery Conservation and Management Act, and the conformity provisions of the Clean Air Act. MMS, through their lease requirements and Construction and Operations Plan (COP), will ensure that the mitigation and monitoring identified through the NEPA process and the various consultations with federal and state agencies and Indian tribes will be accomplished. The MMS NEPA documents and public involvement process have provided an extensive and intensive evaluation of the alternatives and environmental impacts consistent with the Corps regulatory requirements.

The Corps Permit is conditioned to ensure mitigation of any impacts to eelgrass, a special aquatic site, in accordance with the 404(b)1 guidelines:

An eelgrass monitoring and mitigation plan will be submitted to, and approved in writing by, the Corps of Engineers prior to the start of the installation of submarine cable between the electric service platform and Yarmouth. This plan will include pre- and post-construction monitoring to determine if any eelgrass has been lost due to the cable installation. A planting plan and schedule to compensate for any disturbed eelgrass will be included.

In addition the Corps permit is conditioned to require coordination with National Grid to avoid impacts to electric service to Nantucket when the project transmission lines are being installed across the National Grid cable northwest of Bishops and Clerks reef:

The permittee shall survey and locate, horizontally and vertically, the National Grid cable authorized by permit number NAE-2004-1533 at all locations where the permittee's installation activities may occur within 500 feet of the National Grid cable. This data will be made available to the Corps and National Grid. Final design plans and installation procedures for work within 150 feet of the National Grid cable shall meet the technical requirements of National Grid and be submitted to the Corps and National Grid for written approval prior to the start of work and will be submitted at least 30 days prior to the scheduled work.

The permit is conditioned to require as-built drawings so that we will have that information on file should there be a Federal Navigation Project or some other project proposed in the vicinity. Additionally, these will be provided to NOAA so that the information can be included on the coastal charts.

The permittee shall submit as-built, full-sized drawings of the authorized work to the Corps of Engineers. The as-built drawing shall include at least one plan view showing horizontal alignment and a profile view showing the vertical alignment of all cables. Plans will include a bar (graphic) scale, the dates of the survey and drawings, and horizontal state plane coordinates and vertical elevation. Show the cable's horizontal state plane coordinates in U.S. survey feet based on NAD 83. Show the vertical elevation as MLLW with a reference to NAVD 88 and document how this information was derived using the latest National Tidal Datum Epoch for that area, typically 1983-2001. Plans will be stamped by a professional engineer or land surveyor registered in the Commonwealth of Massachusetts. Any changes in the location or type of structures requires notification to the Corps and may require a new survey.

The permittee shall submit the as-built drawings to the Corps and the National Oceanic and Atmospheric Administration (NOAA) within 60 days of construction completion. The Corps may note the location on future survey drawings and NOAA may use the information for charting purposes. The NOAA address is: "Nautical Data Branch, N/CS26, Station 7349, 1315 East-West Highway, Silver Spring, MD 20910-3282."

Although MMS has required biennial inspection of the inner array cables to ensure they remain buried, the Corps needs to also ensure that all the cables are inspected and properly maintained:

The permittee will ensure all cables, including the portions within state waters, remain buried in the same manner as required for the inner array cable by the Lease of the Bureau of Offshore Energy Management, Regulation and Enforcement.

12. Public Interest Review: I have considered all factors relevant to this proposal including cumulative effects. Potential factors included conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, consideration of property ownership and, in general, the needs and welfare of the people. After weighing favorable and unfavorable effects as discussed in this document, I find that this project is not contrary to the public interest and that a Department of the Army permit should be issued.



Philip T. Feir
Colonel, Corps of Engineers
District Engineer

5 January 2011
Date