

Appendix 3-L

MMR Issues
Regarding Wind Farm



**DEPARTMENTS OF THE ARMY AND AIR FORCE
MASSACHUSETTS NATIONAL GUARD
ENVIRONMENTAL AND READINESS CENTER
BUILDING 1204, WEST INNER ROAD
CAMP EDWARDS, MASSACHUSETTS 02542-5003**

REPLY TO
ATTENTION OF:

JFHQMA-ERC-AO

10 March 2004

MEMORANDUM FOR Karen K. Adams, Corps of Engineers, New England District, 696 Virginia Road
Concord, MA 01742

SUBJECT: Issues and Concerns Regarding Wind Farm Proposal; MMR Alternative

1. The attached report, compiled by the Massachusetts National Guard Environmental & Readiness Center, represents the assessment of both the Massachusetts Army and Air National Guard regarding the issues and concerns raised when considering the Massachusetts Military Reservation (MMR) as a location to site a major wind generating facility. The report provides numerous facts, leading to the conclusion that the MMR is an inappropriate location for wind power generation. Wind power generation would represent a major alteration of the land as well as a major change in the purpose of the MMR.
2. The information contained in the attached report does not represent the information that should be obtained, separately, from the US Coast Guard, the US Air Force (PAVE-PAWS), the Impact Area Ground Water Study Office, and the Environmental Management Commission as well as other organizations located at the MMR that are not directly part of the Massachusetts National Guard.
3. Upon receipt of this report, the US Army Corps of Engineers may wish to distribute this information to interested parties. All follow-on inquiries received by the MMR, regarding its use for wind power generation, will be referred to the USACE.
4. The Adjutant General of the Massachusetts National Guard may elect to augment, add or delete any and all comments upon any formal request for comments under the Environmental Impact Statement Process.
5. POC is the undersigned at 508-968-5908.

2 Encl

1. Report of Issues
2. Proposed Site Location Map

DAVID W. CUNHA
LTC, FA
Administrative Officer

CF:

JFHQ-MA, The Adjutant General's Office
Commander, 102d Fighter Wing
Commander, Headquarters Camp Edwards
JFHQ-MA, Facilities Management Officer
JFHQ-MA, Environmental Office

**MASSACHUSETTS NATIONAL GUARD
ENVIRONMENTAL AND READINESS CENTER**

(Enclosure One)

**REPORT OF ISSUES AND CONCERNS REGARDING THE PROSPECT OF A WIND ENERGY
“FARM” AT THE MASSACHUSETTS MILITARY RESERVATION**

The US Army Corps of Engineers (USACE) has designated the Massachusetts Military Reservation (MMR) as the only land alternative to be examined as part of the Environmental Impact Statement (EIS) for development of a proposed Nantucket Sound wind energy facility being prepared by Cape Wind Associates, LLC (Cape Wind).

The Massachusetts National Guard has not taken, nor plans to take, a position regarding the original proposal by Cape Wind for construction of the wind energy facility in Nantucket Sound. The Massachusetts National Guard, however, wishes to state its legal, readiness, environmental, cultural and safety concerns and issues regarding the alternative of using the MMR for wind energy generation as shown in plans prepared by Cape Wind for 133 wind towers at the MMR and as shown on Plan MMR-1 dated December 2, 2003.

As a result of a meeting on 29 January 2004, the Environmental & Readiness Center compiled the following draft list of issues regarding construction of a wind energy facility at the MMR (not in any intended order of importance):

I. Legal Concerns (Report of LtCol. Timothy Mullen, MANG Judge Advocate General Office):

This office has reviewed the proposed landfall [terrestrial] alternative location for a proposed wind turbine array for the Cape Wind Energy Project, Nantucket Sound and Yarmouth, Massachusetts, to be sited in the upper 15,000 acres of the Massachusetts Military Reservation. Based upon that review, this office concludes the alternate location would violate License No. DACA51-3-79-394 granted to the Commonwealth of Massachusetts from the Department of the Army; Lease No. DACA51-5-77-127 granted by the Commonwealth of Massachusetts to the United States of America, represented by the Department of the Army; and probably violate Chapter 47 of the Acts of 2002, entitled "AN ACT RELATIVE TO THE ENVIRONMENTAL PROTECTION OF THE MASSACHUSETTS MILITARY RESERVATION."

Under the license, an alternative location for a proposed wind turbine array for the proposed Cape Wind Energy Project is not a use that would provide for the year-round training and support of the Massachusetts Army National Guard. Additionally, it is not a "military use" which is a condition of the lease applicable to the license. Accordingly, the Commonwealth of Massachusetts represented by the Military Division acting through The Adjutant General or his designated representative, should object to this proposed use of the upper 15,000 acres.

Likewise, the use is objectionable under the lease since it is clearly not a "military use." Further, in that it is a private commercial undertaking, it would not be a "Governmental use" contemplated under the lease. Finally, it would be inconsistent with the purposes of permanent protection of the drinking water supply and wildlife habitat set forth in the MOA between the Commonwealth and the United States Army and National Guard Bureau which is incorporated into the lease. The lessee - the United States Government represented by the Department of the Army, should object to this proposed use on its leased land.

Finally, under Chapter 47 of the Acts of 2002 it appears the wind farm would be a use different than that of public conservation land as well as an inconsistent purpose in the use of the land, i.e., it would not appear to be a natural resource purpose consistent with water supply and wildlife habitat protection. Under the law the Environmental Management Commission (EMC) would conduct this evaluation and make the appropriate determinations. Both the EMC and the state Division of Fisheries and Wildlife could object to the proposal.

II. Army Training Concerns

A. Overall Concerns (Comments from LTC Mary Mixson and LTC Bernard Luciani)
The proposal of over 130 wind turbines in the maneuver training area would eliminate Army ground and field maneuver training, for both day and night operations. Army field FM radio communications would be degraded. Eliminates any Army land navigation training. Ability to bivouac troops for training eliminated. In short, the proposal essentially eliminates the MMR as an Army training base for field and range requirements.

Regular use of the northern 15,000-acre training area is by Army and other military and public safety organizations for field navigation. That is, troops train to be able to knowledgeably move through a wooded area using learned skills to reach a specific destination at specific, predetermined times. These skills are critical in a battle situation and it is important to simulate a battle situation without unnecessary man-made landmarks. The presence of easily visible, multiple 400-foot high wind towers would seriously degrade the field-training environment. In the same way, a massive construction project will hamper military annual training at the MMR as well as reduce the land available for training in the future. Eliminating or decreasing these functions of the MMR would downgrade its status as "Major Training Area" and result in significant reduction of jobs and personnel.

B. Specific Impacts (Report from Jerrime S. Oliver, 1LT, FA, Camp Edwards Plans and Training Officer):

- A major portion of the training area would be compromised by the erection of these towers, which will severely limit the amount of land area available for maneuver capability of wheeled vehicles, tracked vehicles, and dismounted training. The total amount of land that is directly used by the towers is

approximately 210 acres, however, due to the pattern and spacing in the training area, they will invariably cause some areas to become off limits because their proximity to thoroughways.

- Units will have to modify their training to unrealistic conditions. This will be caused by the restrictions to stay clear of these towers and the training areas will no longer represent an environment similar to where the units could be deployed too. This would constitute such an emphasis and burden on units to develop their training plan to stay well clear of these towers that the actual training mission would become a secondary priority. The primary purpose of this land is for training units that are more likely to be deployed in the current world situation.
- The training areas would lose their capability to train soldiers effectively in the skills of land navigation and map reading for both vehicular and dismounted operations. This capability would be lost because soldiers would be able to determine locations not through map reading and land navigation skills but rather through memorization of the tower patterns in various locations of the training areas.
- The proposed tower pattern will have some effect on radio communication by its coverage of most of the training area. It could possibly disrupt and interfere with communications during range firing and other critical operations which would adversely affect safety. It could also delay medical or fire response to critical situations.
- The construction of these turbines would eliminate close air support training missions. The size and dimension of the towers makes almost the entire training area completely off limits to aircraft at low altitude due to safety considerations.
- The towers would also prohibit Air Cavalry, Air Assault, Air Medical Evacuation, Airborne Troop movements, and other special operations due to the previous stated safety concerns.
- The existent road network will have to be modified to accommodate the tower pattern further degrading training opportunities. Units will have to plan routes of march based upon the tower configuration instead of tactical and operational considerations resulting in unrealistic training.
- The towers will generate noise that will not only interfere with realistic training conditions, but also leave the confines of the post into the surrounding communities.

C. Concerns for Civilian Public Safety Users. In addition to military training, training for civilian public safety organizations would be impacted or eliminated. The MMR is used regularly for civilian public safety organizations at the federal state, county and municipal level. These organizations have similar training requirements and venues as those for military units. For the same reasons this proposed wind energy development would impact training for the military, it would correspondingly have a negative impact on the training capabilities of the MMR for civilian public safety organizations.

III. Aviation Concerns

A. Eliminates Army Aviation low level flight training (Report of CW4 Edward C. Ivers, Instructor Pilot/Aviation Safety Officer, MAARNG Army Aviation): The Massachusetts Army National Guard and other military helicopter commands regularly use the entire area of MMR for low level flying exercises directly in accordance with mission essential tasks. Low-level flying means tree top level. Not only is low level flying critical to the support of troops on the ground, but also it is a standard procedure for troops being brought in by helicopters to a battle location. The presence of a large massing of windmills could significantly degrade the ability of aviation units in meeting their mission essential task requirements.

The restricted area designated as R4101 is used by all Army aviation units assigned to the MMR as well as other New England states. The three areas designated as Alpha, Bravo, and Charlie on the Otis topographical map is where we conduct extensive aviation related training. This training consists of day and night operations, Night Vision Goggle, Tactical, low level flying, and simulated Air Assault missions. We also train in the use of Water Buckets to support the State in the suppression of forest fires. Some of the organizations that rely on our ability to perform these missions are Infantry, Special Forces and various Tactical Police forces as well as the Forest Service. The purpose of this training is to train and maintain proficiency of the aircrews and ground units and to be able to respond to any possible emergencies, both military and civil at any moments notice. The construction of any towers as outlined would essentially put an end to our ability to fly in such a hazardous environment and therefore diminish our readiness to unacceptable levels.

In addition, route changes for use of helicopters would mean greater noise impacts on surrounding areas. The selection of the MMR as the favored alternative also would negatively impact instrument approaches to Otis ANGB by increasing minimum descent altitudes and, depending on how much change in minimums, it could eliminate the instrument approaches entirely.

B. Aviation Concerns for Operation of F-15s (Report from the 102nd Fighter Wing, Massachusetts Air National Guard): The southern portion of the towers paralleling Rte 28 would be inside the “primary” final approach zone for the runway 14 TACAN approach. This could significantly impact F-15 operations in low ceiling conditions in a detrimental manner.

As per Air Force Joint Manual 11-226 (Terminal Instrument Procedures – TERPS manual) and FAA Handbook 8260.3, the Required Obstacle Clearance (ROC) for the current published approach could not be met if the towers were erected and the approach would have to be redesigned with a higher minimum descent altitude.

ROC above the highest obstacle in the “primary” zone is 250 feet. Add that to the average mean sea level where the towers would be (130 ft) and the height of the towers themselves (400 ft), and you have the required “new” Minimum Descent Altitude (MDA) for the approach – 780 ft msl. The current MDA is 580 ft, so there would be a 200-foot increase. Correspondingly the AGL weather ceiling required to fly the approach would be 700 feet (830 msl), up from the current 500 feet.

As a result, the missed approach point (map) would have to be moved out at least a half mile from .8nm from the end of the runway to 1.3nm or beyond so that the standard descent gradient could be complied with. This would also mean that required visibility for the approach would move out from the current mile and a half to at least 2nm. This would give an F-15 pilot less of a chance to see the runway before having to go missed approach and possibly divert to another airfield.

C. Aviation Concerns for small aircraft operated by Civil Air Patrol (Report from the 102nd Fighter Wing, MAANG): Light aircraft departing on Runway 32 could have problems clearing the towers on a “standard” climb straight ahead, requiring the minimum 152 feet per nautical mile climb-out rate. A missed approach on Runway 32 is not a factor, as the procedure requires a climbing turn to the southwest well away from the proposed tower locations.

D. Other Aviation Concerns:

- Strobes at the top of the towers would be very confusing for flight traffic patterns at Otis ANGB
- Strobes at the top of the towers would possibly reduce night vision as well
- Strobes at the top of the towers could make MMR a very visible target for terrorist threat
- Could impact ability for Space Shuttle to use Otis ANGB

IV. Natural Resources Concerns (Report of Dr. Michael Ciaranca, Natural Resource Manager, Massachusetts Army National Guard):

The MMR contains the largest tract of undeveloped land on Cape Cod. It contains important habitats for wildlife and plants. Some of these have been identified as endangered or threatened by the Commonwealth of Massachusetts. Heavy construction of multiple wind generating towers could have a significant impact on these species.

In regards to Camp Edwards as an alternate site for Cape Winds wind farm project, the following are the primary natural resource bullets that the proponent would need to address:

MAARNG not property owner
Sikes Act (Federal) 1964 as amended 1997
Clean Water Act (Federal)
Wetlands Protection Act (Federal)
MA Endangered Species Act
MA Natural Heritage and Endangered Species Program State Priority
Habitat
MA Wetlands Protection Act
DoD Army Regulation 200-1 thru 5
Cape Cod Commission
Town Government (Conservation Comms, etc..)

- Heavy construction involved
- State deems the MMR a priority location for rare habitat
- Would eliminate MAARNG ITAM program
- Violates Mass. Endangered Species Act. The MMR a globally threatened property because of pine barrens.
- Substantial site preparation for wind tower use will be required
- Environmental Performance Standards state that no new structures in the “Reserve” (northern 15,000 acres of the MMR)

V. Cultural Resources Concerns (Report of Dr. Susan Goodfellow, Regional Cultural Resource Manager, MAARNG):

A. Archaeological Issues: Comparison of the general locations of the proposed wind turbines, buried utility lines, and other project elements shown on the map provided by the USACE with the Revised Archaeological Sensitivity Map for Camp Edwards (MAARNG 2003) indicates that at least 80 percent of the proposed construction disturbance would occur in areas of Camp Edwards designated as having moderate or high archaeological sensitivity. Under the National Historic Preservation Act and Massachusetts General Laws, Chapter 9, Sections 26-27C as amended by Chapter 254 of the Acts of 1988 (950 CMR 71.00); all of the areas to be disturbed by the construction effort would need to be subjected to an intensive (locational) archaeological survey to identify any archaeological sites that might lie within the project’s area of potential effect. If survey was restricted to the actual construction footprint of the turbines and utilities, the survey would involve 200-300 acres, would require 6-10 months to complete, and would cost up to \$1000/acre for the field crew and EOD support. Because survey of the construction footprint limits the proponent’s options should archaeological sites be encountered, however, it’s more likely that the actual acreage surveyed would be double or triple that number.

Once identified, archaeological sites that would be impacted by the proposed project would need to be evaluated for eligibility to the National Register of Historic Places, a process that requires additional research and limited excavation of archaeological site deposits. Costs of site evaluation range widely depending on the size of the site, the

number of time periods represented, the depth of the deposit below the ground surface, etc; however, an average cost of \$4000 per site is not unreasonable. Again, the evaluation, reporting, and review schedule for the evaluation phase could require an additional 6-10 months.

Finally, should any archaeological sites be determined eligible for the National Register, the project proponent would need to mitigate the effects of the project on those sites. Mitigation measures can include avoidance (i.e., moving a turbine or utility line); burial (unlikely, given that all of the construction disturbance requires excavation), or data recovery excavations of the site. Data recovery involves excavation of a significant portion of the archaeological site, such that the information from that site is preserved even if the site is not. Data recovery costs per site are subject to the same parameters noted for evaluation above, with an average cost per site of at least \$10,000.

Regardless of the mitigation measure selected, mitigation of an adverse effect to a historic property (e.g., an eligible archaeological site), must be determined in consultation with the Massachusetts State Historic Preservation Officer, the federally recognized Wampanoag Tribe of Gay Head – Aquinnah, the National Guard Bureau, and the Army Environmental Center, and codified in a Memorandum of Agreement. Development and review of a MOA requires 4-6 months, and the selected mitigation measure must be completed and approved by all parties before construction is allowed to proceed. If data recovery is the selected option, add another 6-10 months to the process.

B. Historic Buildings and Landscape Concerns: Both the Range Control complex and the Ammunition Supply Point complex on Camp Edwards have been determined eligible for nomination to the National Register as Cold War era resources. PAVE PAWS is listed on the National Register. The proposed project has the potential to adversely impact some or all of these resources, either through construction disturbance, visual impacts, or impacts to character-defining features (e.g., if military use of these facilities is discontinued or altered significantly due to the completion of the proposed project). As noted above for impacts to eligible archaeological sites, adverse impacts to eligible or listed historic buildings and structures would need to be mitigated by the proponent, requiring an MOA and implementation of some type of mitigation measure (avoidance, documentation of the complexes by the Historic American Building Survey, etc.).

In 2003, the MAARNG Cultural Resources Program and US Army Construction Engineering Laboratory initiated a multiple year historic landscape survey of Camp Edwards under a DoD Legacy Grant. This survey, which focuses on the “built” environment at Camp Edwards (buildings, structures, roads, ranges, etc.), will likely be completed in 2005. Although most of the specific historic features being examined by the survey are not within the construction footprint for the proposed project, the military/historic landscape of Camp Edwards will be irrevocably altered by the

proposed project and would be considered to represent an adverse effect should the landscape be determined eligible to the National Register.

C. Native American Concerns: Under NEPA, the National Historic Preservation Act, Executive Orders 13175 and 13007, Executive Memorandum of April 29, 1994: Government-to-Government Relations with Native American Tribal Governments; Office of the Secretary of Defense, Annotated Policy Document for the American Indian and Alaska Native Policy (27 October 1999); and the American Indian Religious Freedom Act; the USACE and/or MAARNG are required to seek input from federally recognized Native American tribes who claim ancestral lands within the area of potential effect of the project. The Wampanoag Tribe of Gay Head – Aquinnah, located on Martha's Vineyard, claim all of the MMR as part of the ancestral lands of the Wampanoag Tribe and will need to be consulted with regards to the potential for the project to impact Native American archaeological sites, sacred sites, traditional cultural properties, and specific culturally significant resources.

VI. Security Concerns (Report from Jerrime S. Oliver, 1LT, FA, Camp Edwards Plans and Training Officer):

A. Civilian Access: It is anticipated that this project will require maintenance and damage control personnel to have access on a regular basis. Civilians are not usually permitted in the training areas during training of military personnel for safety considerations. Due to the size and number of towers in this project, it will lead to contractors directly interfering with training.

B. Terrorist Interest: The project could also result in an increase in interest by terrorists or sleeper cells, as a possible target of opportunity. The proposed locations of the towers make them difficult to protect.

VII. PAVE PAWS Concerns (refer to Cape Cod Air Force Station)

VIII. NOAA tower impact:(refer to NOAA)

IX. USCG Concerns (refer to USCG)

X. Investigation and Clean-up Impacts (refer to the Impact Area Ground Water Study Office)

XI. Long Range Development Concerns

A. Potential Mobilization Platform: Use of the MMR as a mobilization platform would no longer be a viable option, due to the significant impacts outlined in this report.

B. Would degrade plans for Regional Homeland Security Training Center: The Massachusetts National Guard is currently studying the feasibility of establishing a

regional homeland defense and homeland security training center at MMR. The study so far has determined that such a regional training center would be vitally dependent on the availability of the northern Training Area for field training. While urban training is expected to be the centerpiece of the center, military and civilian public safety organization also need to hone skills that would be necessary in defending and securing suburban and rural areas as well. The presence of the 133 wind turbines at MMR would limit or eliminate any training venues for these purposes.

XII. Other Concerns

A. Would require significant screening of sites for unexploded ordinance: Only a small portion of MMR has been surveyed and cleared of unexploded ordinance (UXO). Each of the 133 sites, including transmission and road corridors, would have to be surveyed and cleared of UXO. This is a time-consuming and expensive procedure.

B. Lubricants for turbines and oil for transformers are hazardous materials. Management of wind tower complex would require strict conformance to Environmental Performance Standards.

C. Traffic. Increased traffic of heavy vehicles on base and on surrounding highways. Traffic is a major concern on Cape Cod and the proposal would involve increasing this problem on the highways as well as the two bridges that serve Cape Cod.

D. Noise impacts. The MANG does not have information regarding any noise impact from the operation of 133 large wind towers. The noise impact on operations at the MMR and on surrounding private property would need to be assessed.

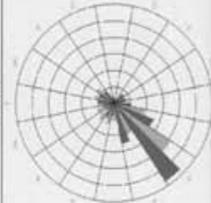
E. Visual impact of turbines to neighborhoods and cultural areas. Proposals for water towers near residential neighborhoods on Cape Cod typically generate neighborhood opposition. Water towers generally are less than 200 feet above ground level. Wind towers at twice that height should be expected to draw significant opposition by neighborhoods near the MMR. Furthermore, the need for nighttime lighting on these towers is likely to be a significant nuisance in residential neighborhoods. For example, numerous complaints have been made regarding the lighting on the water tower located near Route 130 in Sandwich that is owned by the Upper Cape Water Supply Cooperative. This tower is only approximately 200 feet above ground level. The addition of 133 lighted wind towers at 400 feet above ground level are likely to be a concern to area residents.

F. Impact on aquifer. The MMR is the largest source of drinking water on Cape Cod. In addition to being a major flora and fauna habitat, the presence of this major water source makes the MMR an important environmental resource, with which current military training is wholly compatible. The impact on these environmental resources will be an important consideration in any proposal to develop the area known as the northern 15,000 acres.

G. Numerous towers would have to be re-sited based upon IAGWSP activities. The MMR is currently undergoing a massive cleanup program. Conflicts between the cleanup program and any significant construction program of wind generating towers would need to be assessed.

- LEGEND**
- PROPOSED WTD LOCATION
 - REQUIRED FREE AND CLEAR AREA
 - ▲ WIND ROSE DATA LOCATION
 - MMR BOUNDARY LINE

MASSACHUSETTS MILITARY RESERVE
METD 1002



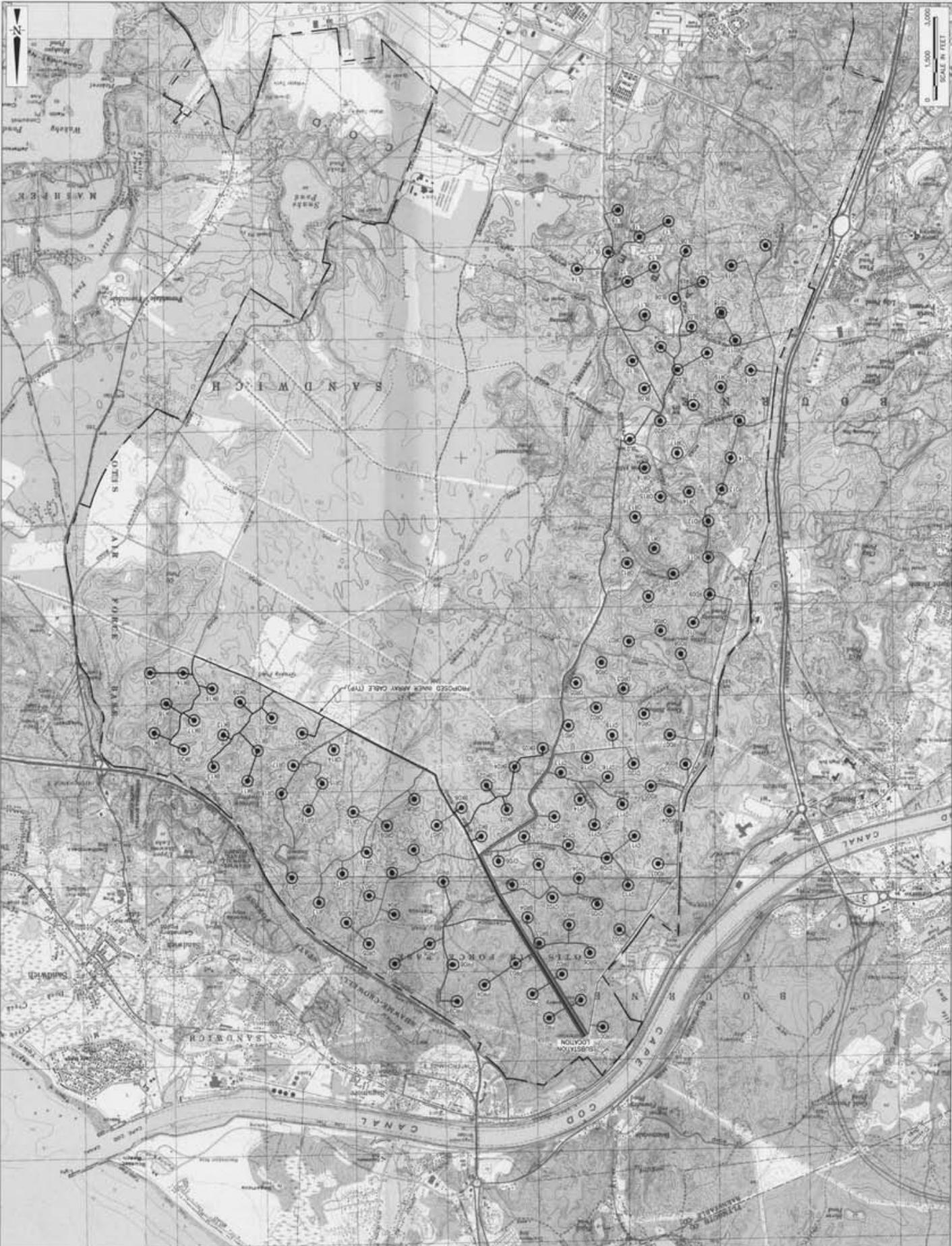
NOTES:
1. WIND ROSE DATA FROM <http://www.wind.com>

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PROJECT NO.	DATE	SCALE
ISSUED BY	DESIGNED BY	APPROVED BY

Cape Wind Associates, LLC
Cape Wind Project

Terrestrial Alternative
Massachusetts
Military Reserve
GE1.5 MW WTG Array





**DEPARTMENTS OF THE ARMY AND AIR FORCE
MASSACHUSETTS NATIONAL GUARD ENVIRONMENTAL AND READINESS CENTER
BUILDING 1204, SOUTH INNER ROAD
CAMP EDWARDS, MASSACHUSETTS 02542-5003**

REPLY TO
ATTENTION OF:

1 August 2004

Acting Director, Environmental and Readiness Center

Ms. Karen K. Adams
Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742

SUBJECT: Cape Wind Environmental Impact Statement; MMR Alternative

Dear Karen:

The Massachusetts National Guard Environmental & Readiness Center has reviewed the Section 3 of the EIS directed to by USACE to determine if the issues that were raised by the MANG were adequately represented. In the opinion of the Massachusetts National Guard Environmental & Readiness Center, they are not adequately represented. In general, there have been brief descriptions of the issues and, in many cases, these descriptions downplay the impact of the wind farm on MMR. In at least one instance, we believe the USACE report not only misstates the consequences but also it contradicts our position on the issue. In another instance, the USACE report states, "The MMR Alternative Site is located onshore in an upland location and has no navigational uses associated with it." This totally ignores the need for land navigation training in the Training Area by units of the Army National Guard, other military units and civilian public safety organizations. Finally, numerous issues that we presented to USACE - particularly with regard to impacts on training, have not been included.

The Massachusetts National Guard Environmental & Readiness Center respectfully requests the USACE to incorporate, as an appendix, the report that members of the Massachusetts National Guard assembled to assist the USACE. Furthermore, it is requested that the USACE incorporate complete and accurate representations, in the main body of the EIS, of the information contained in the Massachusetts National Guard Environmental & Readiness Center report and have adequate references to the appendix in which the Massachusetts National Guard Environmental & Readiness Center report is placed.

The Adjutant General of the Massachusetts National Guard may select to augment, add or delete any and all comments upon any formal request for comments under the Environmental Impact Statement. Copies of this document have been provided to Colonel Oliver J. Mason Jr., Chief of Staff, Joint Force Headquarters – Massachusetts and Lieutenant Colonel Richard Crivello, Facilities Management Officer, Joint Force Headquarters – Massachusetts.

David Cunha
Lieutenant Colonel
Director (Act) Environmental and Readiness Center,
Massachusetts National Guard