

Appendix B: Agency Correspondence



Department of Energy

Golden Field Office
1617 Cole Boulevard
Golden, Colorado 80401-3393

February 2, 2011

Ms. Mary A. Colligan
Assistant Regional Administrator for Protected Resources
National Marine Fisheries Service, Northeast Region
55 Great Republic Drive
Gloucester, MA 01930

Dear Ms. Colligan:

Subject: ESA Consultation Initiation - University of Maine Deepwater Offshore Wind Test Site, Gulf of Maine

In response to a 2010 Congressional Directive, the U.S. Department of Energy (DOE) has awarded Federal funding to the University of Maine and is proposing to authorize expenditure of that funding by the University to perform research on and development of floating offshore wind turbine platforms. The University would use that funding to design, fabricate, deploy, test, and retrieve one or two approximately 1:3 commercial scale wind turbines on floating platforms within the University's Deepwater Offshore Wind Test Site (test site) in the Gulf of Maine, located approximately 2 to 3 miles south of Monhegan Island (see attached map). The turbines would measure approximately 100 feet from waterline to the hub, the rotor diameter would measure approximately 70 feet, and the total turbine height would be approximately 135 feet. The floating offshore wind turbines would be temporarily moored and operated at the project site during some or all of July through November 2012 and possibly again during the same period in 2013.

The focus of the University's demonstration and testing would be to validate numerical models that predict how the turbine platforms would perform under various conditions of combined wind and wave loading. The wind turbine platforms would carry sensors and telemetry systems that would provide data to evaluate motion and structural performance. Environmental monitoring would occur during the deployments, including monitoring of bats and birds, marine life, and noise at the project site.

On September 20, 2010, DOE sent scoping letters to potentially interested local, state, and federal agencies, including the National Marine Fisheries Service (NMFS) to announce preparation of an environmental assessment (EA) as required by the National Environmental Policy Act. In response to the scoping announcement, NMFS sent DOE scoping comments in a letter dated October 1, 2010.



As noted in the October 1, 2010 letter, NMFS has federal statutory responsibility for protection, mitigation, and enhancement of marine and anadromous fish resources and marine mammals that may be affected by the proposed project. Those authorities include protection of threatened and endangered species under the Endangered Species Act (ESA), marine and anadromous fish and their habitat under the Magnuson-Stevens Fishery Conservation Act, diadromous species under the Fish and Wildlife Coordination Act, and marine mammals under the Marine Mammal Protection Act. DOE asks NMFS to provide any information relevant to these federal obligations that relates to the referenced project.

In the October 1, 2010 letter, NMFS states that the following species listed under the ESA may occur in the project area: Gulf of Maine Distinct Population Segment Atlantic salmon; Atlantic sturgeon; North Atlantic right, humpback, and fin whales; and leatherback and loggerhead sea turtles. DOE requests that NMFS confirm that this list of species protected under the ESA and that may occur in the project area is current and correct.

Additionally, DOE requests that NMFS confirm the list of 15 federally-managed fish species and respective life stages for which Essential Fish Habitat occurs in waters off of Monhegan Island, as presented in Table 1.

Table 1 – Marine Species and Life Stages for which Essential Fish Habitat Occurs in Waters off of Monhegan Island

Species	Eggs	Larvae	Juveniles	Adults
Atlantic cod (<i>Gadus morhua</i>)	X	X	X	X
haddock (<i>Melanogrammus aeglefinus</i>)				X
whiting (<i>Merluccius bilinearis</i>)			X	X
red hake (<i>Urophycis chuss</i>)	X	X	X	X
white hake (<i>Urophycis tenuis</i>)	X	X	X	X
redfish (<i>Sebastes fasciatus</i>)	n/a	X	X	X
witch flounder (<i>Glyptocephalus cynoglossus</i>)			X	X
winter flounder (<i>Pleuronectes americanus</i>)	X	X	X	X
windowpane flounder (<i>Scophthalmus aquosus</i>)			X	
American plaice (<i>Hippoglossoides platessoides</i>)			X	X
Atlantic halibut (<i>Hippoglossus hippoglossus</i>)	X	X	X	X
Atlantic sea herring (<i>Clupea harengus</i>)				X
monkfish (<i>Lophius americanus</i>)			X	
spiny dogfish (<i>Squalus acanthias</i>)	n/a	n/a		X
bluefin tuna (<i>Thunnus thynnus</i>)				X

Source: NOAA 2010. Guide to Essential Fish Habitat Designations in the Northeastern United States. [Online] URL: <http://www.nero.noaa.gov/hcd/index2a.htm>. (Accessed December 2010).

As recommended by NMFS in its October 1, 2010 letter, DOE will coordinate with the NMFS Office of Protected Resources' Permits, Conservation and Education Division regarding the Marine Mammal Protection Act.

We anticipate releasing a draft of the EA for public review and comment within the next two months and will send you a notice of its availability. The DOE looks forward to working collaboratively with NMFS regarding trust resources as they relate to this project. If you have any questions, please contact me at 720-356-1322 or via my email at Laura.Margason@go.doe.gov.

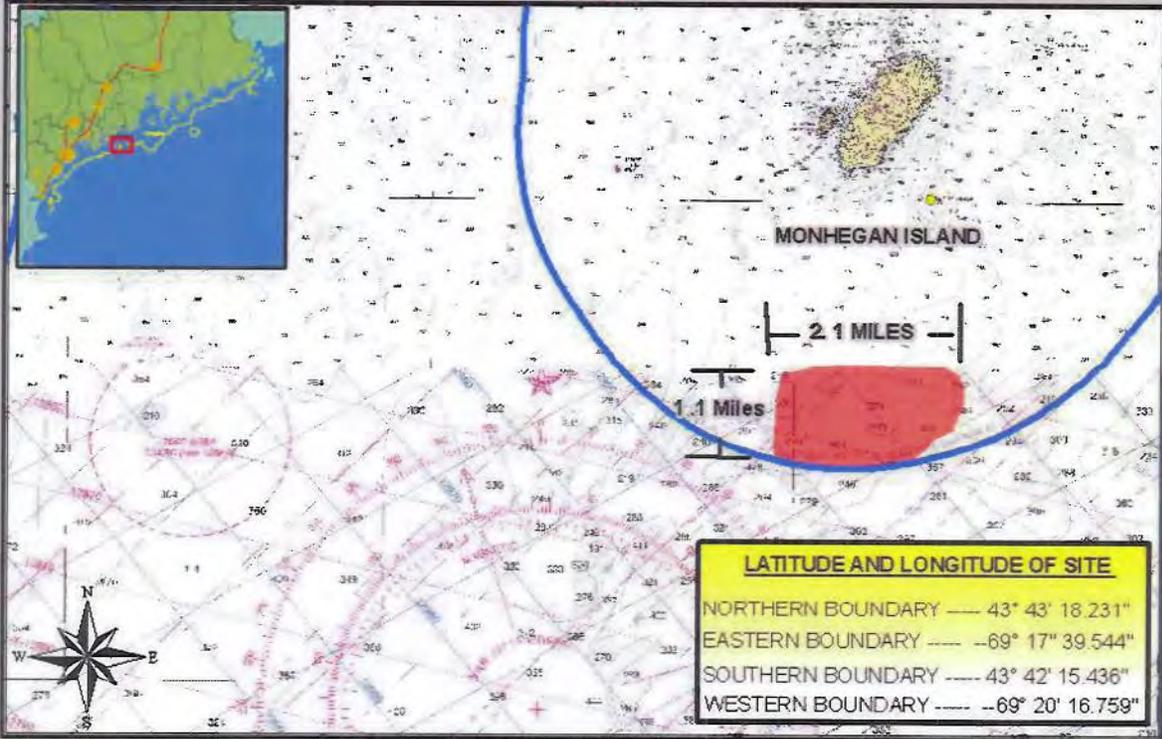
Sincerely,

A handwritten signature in blue ink that reads "Laura Margason". The signature is written in a cursive style with a large, looping flourish at the end.

Laura Margason
NEPA Document Manager

Attachment (map)

MAP C



— State Marine Boundary
■ Demonstration Site

**MONHEGAN ISLAND OCEAN
ENERGY DEMONSTRATION SITE**



Map by Matthew Weiss
Maine State Planning Office
Sources: ME SPO, ME DMR,
ME DES, ME TRM, ME DCR,
NOAA, US FWS, BING





Department of Energy

Golden Field Office
1617 Cole Boulevard
Golden, Colorado 80401-3393

February 2, 2011

Ms. Laury Zicari
Field Supervisor
U.S. Fish & Wildlife Service
Maine Field Office
17 Godfrey Drive, Suite #2
Orono, ME 04473

Dear Ms. Zicarti:

Subject: University of Maine Deepwater Offshore Wind Test Site, Gulf of Maine

In response to a 2010 Congressional Directive, the U.S. Department of Energy (DOE) has awarded Federal funding to the University of Maine and is proposing to authorize expenditure of that funding by the University to perform research on and development of floating offshore wind turbine platforms. The University would use that funding to design, fabricate, deploy, test, and retrieve one or two approximately 1:3 commercial scale wind turbines on floating platforms within the University's Deepwater Offshore Wind Test Site (test site) in the Gulf of Maine, located approximately 2 to 3 miles south of Monhegan Island (see attached map). The turbines would measure approximately 100 feet from waterline to the hub, the rotor diameter would measure approximately 70 feet, and the total turbine height would be approximately 135 feet. The floating offshore wind turbines would be temporarily moored and operated at the project site during some or all of July through November 2012 and possibly again during the same period in 2013.

The focus of the University's demonstration and testing would be to validate numerical models that predict how the turbine platforms would perform under various conditions of combined wind and wave loading. The wind turbine platforms would carry sensors and telemetry systems that would provide data to evaluate motion and structural performance. Environmental monitoring would occur during all deployments, including monitoring of bats and birds, marine life, and noise at the project site.

To initiate our required obligations under Section 7 of the Endangered Species Act for this project, DOE is requesting a list of any threatened, endangered, or proposed species or designated or proposed critical habitat that may occur within or near the test site. As necessary, we will contact your office to further discuss impacts of the



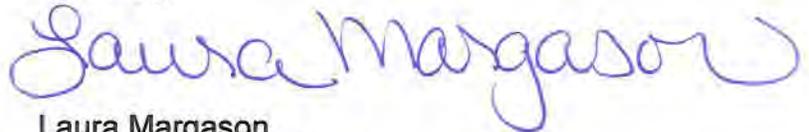
University's proposed project on protected species and to complete our consultation obligations.

DOE also will be contacting the National Marine Fisheries Service to discuss our consultation obligations for marine species protected under the Endangered Species Act and to discuss other trust resources managed by that agency.

An environmental assessment is being prepared for the proposed project by DOE's Golden Field Office to meet the requirements of the National Environmental Policy Act. We anticipate releasing a draft of that environmental assessment for public review and comment within the next two months and will send you a notice of its availability.

If you have any questions, please contact me at 720-356-1322 or via my email at Laura.Margason@go.doe.gov.

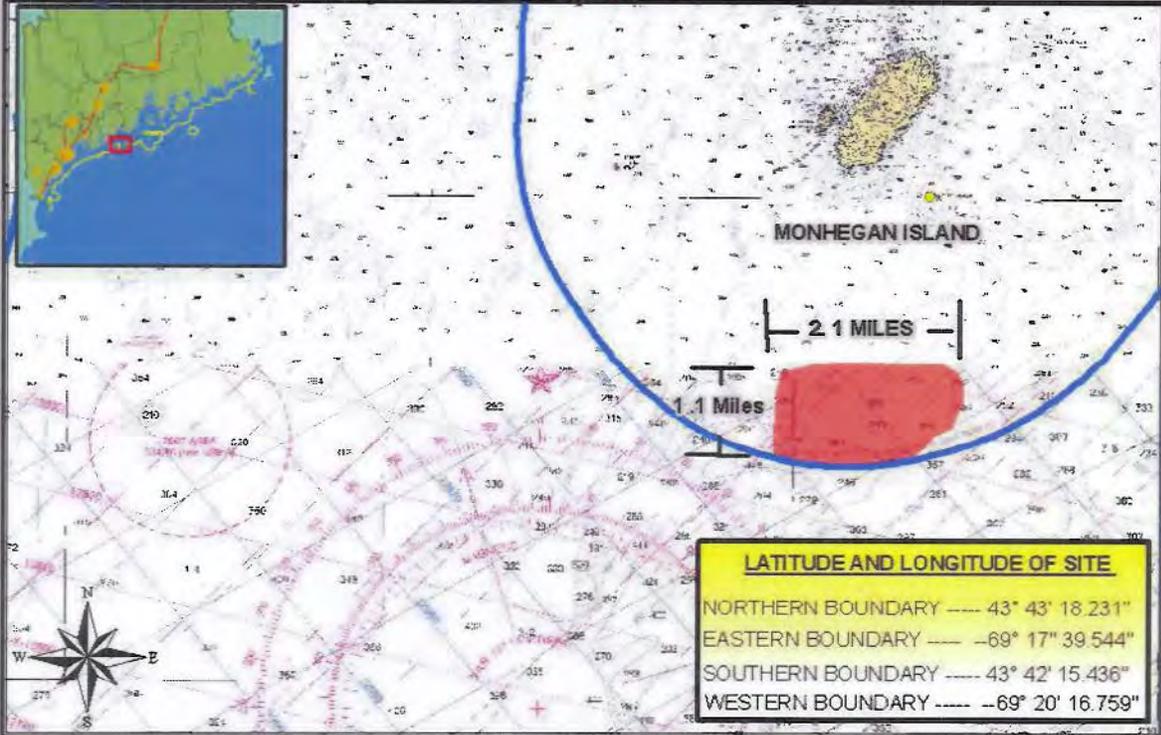
Sincerely,



Laura Margason
NEPA Document Manager

Attachment (map)

MAP C



— State Marine Boundary
■ Demonstration Site

MONHEGAN ISLAND OCEAN ENERGY DEMONSTRATION SITE

0 0.1 0.5 1.2 1.8 2.4 Miles

Map by Nantux NEDS
8224 028 P Box 100 OCEX
504 EX 2, BE SPO, BE DNR,
BE DEPAR FOR REGS,
NOVA, USFWS, BMS



Department of Energy

Golden Field Office
1617 Cole Boulevard
Golden, Colorado 80401-3393

February 3, 2010

Earle G. Shettleworth, Jr., Director,
Maine Historic Preservation Commission
55 Capitol Street, 65 State House Station
Augusta, ME, 04333-0065

Dear Mr. Shettleworth:

Subject: University of Maine Deepwater Offshore Wind Test Site, Gulf of Maine

In response to a 2010 Congressional Directive, the U.S. Department of Energy (DOE) has awarded Federal funding to the University of Maine and is proposing to authorize expenditure of that funding by the University to perform research on and development of floating offshore wind turbine platforms. The University would use that funding to design, fabricate, deploy, test, and retrieve one or two approximately 1:3 commercial scale wind turbines on floating platforms within the University's Deepwater Offshore Wind Test Site (test site) in the Gulf of Maine, located approximately 2 to 3 miles south of Monhegan Island (see attached map). The turbines would measure approximately 100 feet from waterline to the hub, the rotor diameter would measure approximately 70 feet, and the total turbine height would be approximately 135 feet. The floating offshore wind turbines would be temporarily moored and operated at the test site during some or all of July through November 2012 and possibly again during the same period in 2013.

Section 106 of the National Historic Preservation Act requires that every federal agency "take into account" how each of its undertakings could affect historic properties. This letter summarizes DOE's actions to comply with Section 106 and requests concurrence from your agency with our conclusion that the University's project would not adversely affect historic properties.

As part of DOE's actions to comply with Section 106, on October 28, 2010, we sent letters to six separate Indian Tribes or Tribal Organizations that may have historic ties to the Gulf of Maine. In those letters, DOE requested information on properties of traditional religious and cultural significance in the vicinity of the project and any concerns the Tribes may have about how the project may affect those properties. At this time, DOE has not received responses to those letters.



DOE proposes that the Area of Potential Effect (APE) for the proposed project should include two components, the direct disturbance from the project footprint, and the area of potential visual and acoustic impacts from the above-water structures. The APE for the project footprint would depend on the final design selected for the floating offshore turbine platforms and number and design of the mooring anchors. It is estimated that the radius of maximum area of the seabed around which the anchors would be placed would be 1,000 feet. Therefore, DOE proposes that the APE for direct disturbance would consist of the area of the seabed under the center point of each turbine having a radius of 1,000 feet. The APE from potential indirect visual and noise impacts is an area with a radius of 5 miles, which is being proposed so as to include all of Monhegan Island¹.

All areas with water depths greater than about 200 feet within the test site have no potential for pre-Columbian cultural resources, as these areas were not subaerially exposed and not available for occupation by pre-Columbian inhabitants, even during the brief sea-level lowstand that occurred since the last glaciation of the region approximately 12,000 years ago (Kelley 2010²). The only region in the test site that may have been subaerially exposed at the maximum of the sea-level lowstand is located in the northeastern portion of the test site. This region has been excluded from turbine deployment on the basis of extensive rock outcrops with limited sediment accumulations (Kelley 2010).

To identify potential cultural resources, including shipwrecks, in the APE from the project footprint, multibeam bathymetry, seismic reflection, and side scan sonar survey data acquired by the University of Maine were analyzed. While this type of geophysical data cannot be used to identify individual artifacts or pre-Columbian archaeological sites, it is possible to identify geomorphic settings that have a high potential for preservation of cultural resources based on terrestrial settlement/preservation models (Kelley 2010). This process was approved by the Maine SHPO during discussions with the University in 2010. To ensure that no adverse effects on historic resources occur from the project, at the request of the Maine SHPO, the University will examine all areas of planned bottom and sub-bottom disturbance in more detail using a marine magnetometer survey to identify the presence of potential shipwrecks. Using these results, the University will avoid any areas of detected shipwrecks, thereby eliminating the potential for direct adverse effects to cultural resources. The Maine SHPO has

¹ There are three properties on Monhegan Island that are registered with the National Register of Historic Places: the Monhegan Island Lighthouse and Quarters, the Influence Building, and the Rockwell Kent Cottage and Studio (National Register of Historic Places 2010).

² Kelley, A. 2010. Cultural Resource Management Assessment for the UMaine Deepwater Offshore Wind Test Site: Pre-Columbian Cultural Resource Evaluation. Prepared for DeepCwind Consortium November 19, 2010. Department of Earth Sciences, Climate Change Institute, and Department of Anthropology, University of Maine.

stated that this survey could be done post state-permitting, and that the University should discuss the results with SHPO (Alice Kelley, University of Maine, personal communication with A. Spiess, Maine SHPO, November 1, 2010).

Given the small footprint and temporary nature of the proposed project; the depths at the site, which preclude the presence of archaeological resources; and the planned pre-construction magnetometer survey to confirm that no shipwrecks occur at the installation sites, DOE concludes that the installation and operation of the project would not directly adversely affect cultural or historic resources.

DOE also considered the potential indirect visual and noise impacts of the project on listed and eligible historic properties on Monhegan Island. The two 1:3 scale wind turbines would be visible from Monhegan Island during clear days and nights, but would not be visible from the mainland. From the nearest point on the southern shore of Monhegan island, the top of the turbines would be less than one degree above the horizon. Due to the temporary nature of the turbine deployments (a maximum of two five-month deployments), the distance of the turbines from shore, and the small scale of the turbines, the project would create a very small visual intrusion when viewed from the listed historic properties or anywhere else on the island.

A study of the propagation of noise generated during operation of the wind turbines determined that under the worst case scenario conditions the received sound level at the nearest potential point on Monhegan Island would be 30 dBA under the most conservative model (Aker et al. 2010³). For reference, a whisper has a sound intensity of 30 dBA. The most conservative noise standards for wind turbine applications generally limits the average sound pressure level at the point of interest to 40 dBA; therefore, even under the worst-case calculation, the maximum estimated received noise level on Monhegan Island is far less than that level. When winds are not blowing directly onshore, noise levels on the island would be substantially reduced. Based on this information and the temporary nature of the project, DOE concludes that there would be no indirect adverse effects from noise or visual intrusion on any eligible and listed historic properties on Monhegan Island.

An environmental assessment (EA) is being prepared for the proposed project by the Department's Golden Field Office to meet the requirements of the National Environmental Policy Act. We anticipate releasing a draft of that environmental

³ Aker P., A. M. Jones, and A. E. Copping. 2010. Offshore wind turbines estimated noise from offshore wind turbine, Monhegan Island, Maine. Environmental effects of offshore wind energy development. Pacific Northwest National Laboratory. November 2010.

assessment for public review and comment within the next two months and will send you a notice of its availability.

In summary, DOE concludes that the temporary deployment of two 1:3 scale wind turbine test platforms in the Gulf of Maine would not adversely affect historic properties, and we request your input and/or concurrence with this conclusion. If you have any questions or require additional information, please contact me at 720-356-1322 or via my email at Laura.Margason@go.doe.gov.

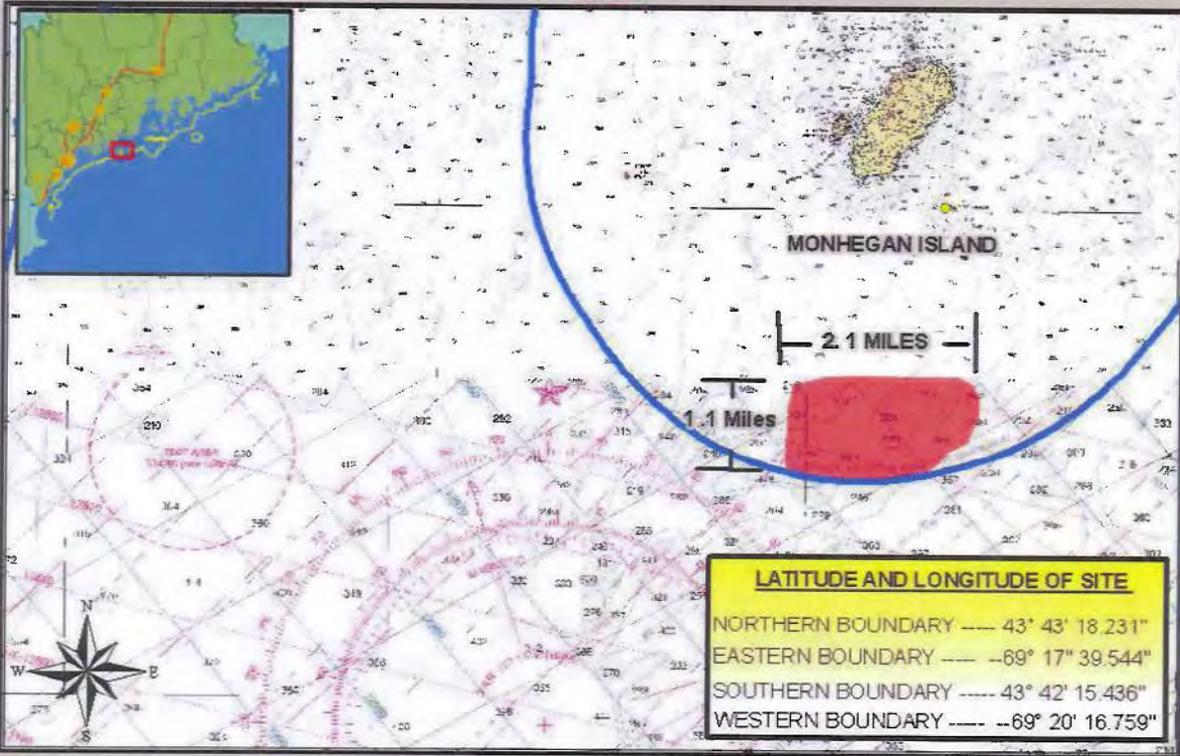
Sincerely,



Laura Margason
NEPA Document Manager

Attachment (map)

MAP C



LATITUDE AND LONGITUDE OF SITE	
NORTHERN BOUNDARY	---- 43° 43' 18.231"
EASTERN BOUNDARY	---- -69° 17' 39.544"
SOUTHERN BOUNDARY	---- 43° 42' 15.436"
WESTERN BOUNDARY	---- -69° 20' 16.759"

 State Marine Boundary
 Demonstration Site

MONHEGAN ISLAND OCEAN ENERGY DEMONSTRATION SITE

0 0.3 0.6 1.2 1.8 2.4 Miles
Map by Matthew Alton
Maine State Planning Office
Six Day, 115 SPO, 115 DNR,
115 DEP, 115 PWR, 115 O.S.,
NOAA, US FWS, BMS



-----Original Message-----

From: Spiess, Arthur [<mailto:Arthur.Spiess@maine.gov>]
Sent: Wednesday, February 09, 2011 11:22 AM
To: Margason, Laura [<mailto:laura.margason@go.doe.gov>]
Subject: U Maine Deepwater offshore wind test site, archaeology

Hello Ms. Margason:

In reading over your letter of February 3rd to the SHPO, I note that one step in the review of archaeological information for shipwrecks has been skipped. At the end of the paragraph about shipwrecks (pp 2-3) you indicate that the last step in the shipwreck review will be a discussion of the magnetometer survey results between Dr. Alice Kelley and myself. In the next paragraph you jump to the conclusion that no shipwrecks will be found.

The process needs some sort of formal "sign-off" from the SHPO, and in addition a contingency (delaying or moving deployment of an anchor, for example) if a potentially significant shipwreck is detected by the magnetometer survey.

As it stands, your conclusion of "no adverse effect" on historic resources is not supported by the process as it has been outlined.

Additionally, we have not received a copy of the Kelley 2010 (Nov 19, 2010) assessment for Pre-Columbian cultural resource evaluation for our review. We should have a copy of that report for our files. (Undoubtedly it is accurate, since Alice and I worked through the relevant issues by telephone several times. But we have not received the document.)

Sincerely, Arthur Spiess

Dr. Arthur Spiess

Senior Archaeologist, MHPC

State House Station 65

Augusta, ME 04333

207-287-2132



MAINE HISTORIC PRESERVATION COMMISSION
 55 CAPITOL STREET
 65 STATE HOUSE STATION
 AUGUSTA, MAINE
 04333

PAUL R. LEPAGE
 GOVERNOR

EARLE G. SHETTLEWORTH, JR.
 DIRECTOR

February 15, 2011

Ms. Laura Margason
 NEPA Document Manager
 U.S. Department of Energy
 Golden Field Office
 1617 Cole Boulevard
 Golden, CO 80401-3393

Project: MHPC# 1904-10 – University of Maine Deepwater Offshore Wind Test Site
 Town: Lincoln County, Gulf of Maine, ME

Dear Ms. Margason:

In response to your recent request, I have reviewed the information received February 4, 2011 to continue consultation on the above referenced undertaking pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended.

Regarding our concerns about historic archaeological resources, please find a copy of the email which was sent to you on February 9, 2011 from Dr. Arthur Spiess of our office.

Regarding architectural resources, as you may know, three properties (Monhegan Lighthouse and Quarters, The Influence, and the Rockwell Kent Cottage and Studio) on Monhegan Island and one property on Manana Island (Manana Island Fog Signal Station) are presently listed in the National Register of Historic Places. However, in the opinion of the Maine Historic Preservation Commission, Monhegan Island in its entirety merits listing in the Register under Criteria A, C, D and possibly B in the areas of Architecture, Archaeology, Art, Community Planning and Development, Exploration/Settlement, Maritime History, and Transportation. This is a new opinion of eligibility.

Monhegan Island's history stretches back at least as early as the first quarter of the 17th century when it was visited by such explorers as George Weymouth, Samuel de Champlain, and John Smith. Its early use as a fishing station established the industry that would dominate the economy until the late 19th century when the local tourism trade developed. By then, Monhegan's landscape was already attracting major American artists who came to visit and in some cases establish residence on the island. The characteristics of Monhegan Island that attracted artists and tourists also fostered the development of a summer colony whose architecture both contrasted with and drew inspiration from the vernacular forms of the island's 18th and 19th century buildings. These early structures include the highest concentration of historic fish houses in Maine, the oldest of which can be traced to the 1780s. In addition to its fishery, Monhegan's importance in maritime history is underscored by the fact that a light station was established on the island by the federal government in 1824. A companion fog signal station was erected on nearby Manana Island in 1855. In the area of archaeology, there are seven known prehistoric sites, and four known historic sites on the island.

Monhegan Island possesses most if not all of the seven aspects of integrity that are necessary for listing a property in the National Register. Of the seven aspects, integrity of location, setting, feeling, and association are particularly significant for this place. Consequently, we believe that the proposed

MHPC# 1904-10
February 15, 2011

Deepwater Offshore Wind Test Site has the potential to adversely affect Monhegan Island. Based on the information that was provided in your letter of February 3, 2010 [11] we cannot, at this time, concur with your finding that the proposed undertaking will “not adversely affect historic properties....” In order to continue consultation, we request that the Department of Energy provide documentation pursuant to 36 CFR 800.11(e) to show how it applied the criteria of adverse effect on the historic properties noted above, particularly in relation to the examples of adverse effects described in 36 CFR 800.5(2)(iv) and (v). Visual simulations of existing and proposed conditions from various locations on the island and the principal approaches to it should be included in this documentation.

In addition to the information requested above, we also require the following items for review:

1. Explain how this particular site was chosen, alternatives to this site that were considered, and why this is the preferred location for this particular undertaking.
2. Clearly identify the five mile APE that is described in your February 3, 2011 letter on a USGS topographical map. Please include the demonstration site on the map and confirm that there are no other islands other than Monhegan Island Plantation (includes Manana) that lie within the APE for this undertaking.
3. Submit drawings, cut sheets and/or photographs which indicate what the “1:3 commercial scale wind turbines on floating platforms” will look like.
4. Identify any other federal involvement (funding, permitting or licensing) with this project that may require coordination for the Section 106 process.
5. Identify Maine state permits which may be necessary for this undertaking.
6. Submit copies or summaries of comments by the public or other agencies concerning historic properties that have been received to date.

We look forward to continuing consultation with you on this project. Please contact Robin Stancampiano of my staff if we can be of further assistance in this matter.

Sincerely,



Kirk F. Mohney
Deputy State Historic Preservation Officer

enc.



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
55 Great Republic Drive
Gloucester, MA 01930-2276

FEB 22 2011

Laura Margason
Department of Energy
Golden Field Office
1617 Cole Boulevard
Golden, Colorado 80401-3393

RE: University of Maine Deepwater Offshore Wind Test Site

Dear Ms. Margason:

This letter responds to the U.S. Department of Energy's (DOE) request for an updated list of federally managed fish species for which Essential Fish Habitat (EFH) has been designated under the Magnuson-Stevens Fishery Conservation Act (MSA) in the vicinity of the University of Maine's proposed deepwater offshore wind test site off Monhegan Island in Maine. The DOE also requests an updated list of threatened or endangered species listed under the Endangered Species Act (ESA) as well as any marine mammals listed under the Marine Mammal Protection Act (MMPA) that could occur near Monhegan Island. NOAA's National Marine Fisheries Service (NMFS) previously provided DOE with this information in a letter dated October 1, 2010.

The list of EFH, ESA, and MMPA species identified in our October 1, 2010 letter to DOE as potentially occurring in the vicinity of Monhegan Island remains accurate. We can also confirm that your list of EFH species contained in Table 1 of your letter is accurate. However, upon further review, we have identified several highly migratory species of fish listed under the MSA that could potentially occur off the waters of Monhegan Island. These highly migratory species include: white shark (*Carcharodon carcharias*); bluefin tuna (*Thunnus thynnus*); basking shark (*Cetorhinus maximus*); common thresher shark (*Alopias vulpinus*); and porbeagle shark (*Lamna nasus*). Please update your list of species for the University of Maine's offshore wind test site project to include these highly migratory species.

Sincerely,

Mary A. Colligan
Assistant Regional Administrator
For Protected Resources

Cc: Murphy, F/NER3





Department of Energy

Golden Field Office
1617 Cole Boulevard
Golden, Colorado 80401-3393

February 23, 2011

Dr. Arthur Spiess, Senior Archaeologist
Maine Historic Preservation Commission
State House Station 65
Augusta, ME 04333

Subject: University of Maine Deepwater Offshore Wind Test Site, Gulf of Maine

Dr. Speiss:

This letter is in response to your email of February 9, 2011, and clarifies the process that the University of Maine will follow to avoid impacting shipwrecks as part of the subject project.

In my letter to the Maine Historic Preservation Commission (MHPC) of February 3, I stated that the University will conduct a marine magnetometer survey to identify the presence of potential shipwrecks, and will avoid locating their test platforms in any areas where potential shipwrecks are detected. In addition to the process described in the letter, the University will share the results of that survey with the MHCP, inform you of the locations they have selected for deployment of the two test beds, and obtain the concurrence of the MHCP prior to deployment.

In addition, as you requested, Melissa Maynard of the University of Maine is sending to you a copy of the *Cultural Resource Management Assessment for the UMaine Deepwater Offshore Wind Test Site: Pre-Columbian Cultural Resource Evaluation* (Kelley 2010). That report includes an analysis of the results of the side scan sonar survey.

DOE will respond separately to the letter from the Maine Historic Preservation Commission dated February 15, 2011 requesting additional information about the potential for adverse impacts to historic properties on Monhegan Island.

Please contact me at 720-356-1322 or via my email at Laura.Margason@go.doe.gov if you have any additional questions or require additional information.

Sincerely,

A handwritten signature in cursive script that reads "Laura Margason".

Laura Margason
NEPA Document Manager





Department of Energy

Golden Field Office
1617 Cole Boulevard
Golden, Colorado 80401-3393

March 23, 2011

Mr. Kirk Mohney
Deputy State Historic Preservation Officer
Maine Historic Preservation Commission
55 Capitol Street, 65 State House Station
Augusta, ME, 04333-0065

Subject: MHCP #1904-10-U—University of Maine Deepwater Offshore Wind Test Site, Lincoln County, Gulf of Maine

Dear Mr. Mohney:

As you requested in a letter of February 15, 2011, the U.S. Department of Energy (DOE) is providing additional information for your use in evaluating the potential effects of the subject project on historic properties. We have reviewed this information, and the information you provided in your February 15 letter, and DOE has again concluded that the temporary deployment of one-third scale test platforms more than two miles off of the shore of Monhegan Island would not adversely affect historic properties on that island or elsewhere.

The following information is attached for your review.

1. A summary of the process that has been followed by the State of Maine to select ocean energy test areas, including the Monhegan Island test site to be used by the subject project. It is the understanding that the Maine State Planning Office and Department of Conservation have recently provided additional information about the site selection process to your office in response to your request.
2. A map of the five-mile-radius Area of Potential Effects.
3. A diagram showing the preliminary design of the one-third scale floating platforms/wind turbine configurations to be deployed by the University of Maine.
4. A list of the Federal and State of Maine permits and approvals that must be obtained before the University can deploy and test the floating platforms in the Gulf of Maine.
5. The visual simulation report prepared for this project.
6. Visual simulations of a one-third scale platform and wind turbine from the mainland and five closest locations on Monhegan Island. Also included is one

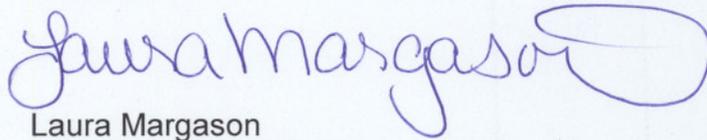


simulation of the view of a test platform at night from the southern end of Monhegan Island.

You also requested copies or summaries of any comments made by the public or other agencies concerning historic properties. DOE did not receive any comments concerning historic properties during the scoping process for the Environmental Assessment we are preparing for this project.

If you have any questions or require additional information, please contact me at 720-356-1322 or via my email at Laura.Margason@go.doe.gov.

Sincerely,

A handwritten signature in blue ink that reads "Laura Margason". The signature is fluid and cursive, with a large loop at the end of the word "Margason".

Laura Margason
NEPA Document Manager

Attachments



PAUL R. LEPAGE
GOVERNOR

MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

EARLE G. SHETTLEWORTH, JR.
DIRECTOR

April 29, 2011

Ms. Laura Margason
NEPA Document Manager
U.S. Department of Energy
Golden Field Office
1617 Cole Boulevard
Golden, CO 80401-3393

Project: MHPC# 1904-10 – Univ. of Maine deepwater offshore wind test site: Monhegan
Town: Monhegan Island Plantation, Lincoln County-Gulf of Maine, ME

Dear Ms. Margason:

In response to your recent request, I have reviewed the information received February 28, March 3, 9, 22, and 28, 2011 to continue consultation on the above referenced project in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA).

Based on the information submitted, I concur with your finding that the proposed undertaking will have **no adverse effect** on historic properties, as defined by Section 106 of the National Historic Preservation Act.

However, our concurrence is conditional upon the following understanding: This deployment of one-third scale test platforms more than two miles off of the shore of Monhegan Island will be a temporary installation only. The University of Maine's process for avoiding shipwrecks as described in your February 23, 2011 letter is acceptable to our office.

Please contact Robin Stancampiano of my staff if we can be of further assistance in this matter.

Sincerely,

Kirk F. Mohney
Deputy State Historic Preservation Officer

cc. Todd Burrowes, Maine State Planning Office
Matthew Nixon, Maine State Planning Office
Dan Prichard, Maine Department of Conservation
Patrick N. Graham, James W. Sewall Company
Andy Qua, Kleinschmidt Associates
Jake Ward, University of Maine



Department of Energy

Golden Field Office
1617 Cole Boulevard
Golden, Colorado 80401-3393

May 4, 2011

Ms. Mary A. Colligan
Assistant Regional Administrator for Protected Resources
National Marine Fisheries Service, Northeast Region
55 Great Republic Drive
Gloucester, MA 01930

Subject: Section 7 Endangered Species, Magnuson-Stevens Fishery Conservation Act and Marine Mammal Protection Act Consultation for the University of Maine Deepwater Offshore Wind Test Site, Gulf of Maine

Dear Ms. Colligan:

We are requesting concurrence from the National Marine Fisheries Service that the proposed University of Maine Deepwater Offshore Wind Test Site (test site) in the Gulf of Maine *may affect, but is not likely to adversely affect* species of ESA-listed fish, mammals, and turtles. These include two fish species: Atlantic salmon and Atlantic sturgeon; six species of whales: North Atlantic right, fin, humpback, sei, blue, and sperm whales; and three species of sea turtles: Atlantic ridley, loggerhead, and leatherback.

Essential Fish Habitat (EFH) has been designated in the test site for 15 federally-managed fish and their various life stages under the Magnuson-Stevens Fishery Conservation Act (MSA). In addition, NMFS identified four additional highly migratory fish listed under the MSA that might occur in the test site. We are requesting a concurrence that the Offshore Wind Test Site *is not likely to adversely affect* EFH for these species (Table 1).

In addition to the six species of whales listed under the ESA, a number of other marine mammals are likely to occur in the test site or the region surrounding the test site (Table 2). Marine mammals are protected under the Marine Mammal Protection Act (MMPA) of 1972 which restricts the taking, possession, transportation, selling, offering for sale, and importing of marine mammals. We are requesting a concurrence with the DOE finding that incidental take of marine mammals is unlikely to occur.

Background

In response to a 2010 Congressional Directive, the U.S. Department of Energy (DOE) has awarded federal funding to the University of Maine and is proposing to authorize expenditure of that funding to perform research on and development of floating offshore wind turbine platforms. The University is proposing to use DOE and cost-share funding to design, fabricate, deploy, test, and retrieve one to two approximately one-third scale commercial wind turbines on floating platforms within the University's Deepwater Offshore Wind Test Site in the Gulf of Maine, located approximately 2 to 3 miles south of Monhegan Island (Figure 1).

The focus of the University's tests is to validate numerical models that predict how the turbine platforms would perform under various conditions of combined wind and wave loading. The



wind turbine platforms would carry sensors and telemetry systems that would provide data to evaluate motion and structural performance. The University also has committed to a program of monitoring for bats and birds, marine life, and noise at the test site during deployment to gather additional information on potential impacts.

The floating offshore wind turbines would measure approximately 100 feet from waterline to the hub, the rotor diameter would measure 88.6 feet, and the total turbine height would be approximately 144 feet with a rotor swept-area of 6165 square feet. The wind turbine platforms would be fabricated at a shipyard, or similar existing coastal facility, and towed to and temporarily moored at the test site from July 2012 through November 2012 and during July 2013 through November 2013. Retrieval of the platforms would occur following the deployment periods in 2012 and 2013. There would be no utilities or services connected to the turbines while deployed at the test site. The floating platforms would be moored in place using 1.2 to 2 inch diameter cables attached to seabed anchors. It is anticipated that the mooring system would be arranged in a triangular pattern. Vessel traffic for deployment and maintenance would be small and insignificant. It is estimated that one day would be required for the placement of each of six anchors and 1-2 days for towing and placement of each tower and the same for retrieval. These operations would require three to four vessels (e.g., tugs, crane barge, and personnel transportation). Post deployment, during operation and testing, the towers would be periodically accessed for scheduled and unscheduled inspections, maintenance, and repair.

During scoping for the DOE Environmental Assessment (EA), your office provided information (letter dated October 1, 2010) on threatened, endangered, or proposed species and Essential Fish Habitat. DOE then initiated informal ESA consultation (letter dated February 2, 2011) by requesting confirmation that the previously provided information was up to date and accurate. Your office (letter dated February 22, 2011) confirmed that information remained accurate. However, NMFS identified four highly migratory fish species that could potentially occur in the test area that should be added to the MSA species list. These included the white shark, basking shark, common thresher shark, and porbeagle shark.

Threatened and Endangered Species

Fish - Two ESA-listed fish species, both anadromous, could potentially occur in the test site area. The Atlantic salmon is listed as federally endangered and the Atlantic sturgeon is proposed as threatened. The proposed project area is not located within any currently designated critical habitat for any ESA-listed fish species. Both Atlantic salmon and Atlantic sturgeon have been tagged in the region with acoustic tags since 2005. In July 2010 the University of Maine deployed Buoy E02 at the offshore wind test site. Two acoustic receivers were mounted on Buoy E02 and would contribute to observations of both species by the existing network of acoustic tag receivers already deployed as part of the Gulf of Maine Ocean Observing System.

Atlantic salmon are a highly mobile, pelagic species (NOAA 2010b) and would likely avoid the immediate test site during the short deployment periods. Because salmon are migratory pelagic species, it is unlikely that they would be attracted to any new temporary underwater structures (e.g., tower platform, mooring cables, seabed anchors). Atlantic salmon smolts migrate to Labrador and Greenland in the spring each year, generally between late April and early June, where they mature and return after two to three years to spawn in their natal streams. Atlantic salmon could be expected to pass through the test site, but their exposure to the project would be short term given their migratory behavior and because the project is temporary.

The Atlantic sturgeon in Maine typically has been found near estuaries (Dunton et al. 2010). The sturgeon also is highly mobile and would likely avoid the test site during the short deployment period. Because the Atlantic sturgeon is typically found in bays and estuaries, it is unlikely to be attracted to any new temporary underwater structure 12 miles from the coast.

Due to the small size of the research project relative to the surrounding waters, the temporary nature of the deployment, and the potential low exposure of either species to the project site, DOE concludes that any change in habitat or exposure to human activity represents a discountable and insignificant effect to Atlantic salmon and Atlantic sturgeon and the project may affect, but is not likely to adversely affect these two species or their habitat.

Marine Mammals - Six ESA-listed whales that have the potential to occur in the project area are North Atlantic right, fin, humpback, sei, blue, and sperm whales. While large species of whales have been observed in the vicinity of the Monhegan Island test site, the area does not appear to be commonly used (UMaine 2011). In fact, the State of Maine selected the Monhegan Island site, in part, because it was determined that testing of wind turbines at this site would have minimal effects on whales. The likelihood of exposure of ESA-listed whales to the proposed project is very small, given that ESA-listed whales are uncommon in the project area, the small size of the project relative to surrounding open ocean area to the south of Monhegan Island, and the fact that the platforms would be temporarily deployed for five months or less in each of two consecutive years. The test site is not located within any marine mammal critical habitat.

The potential impacts on whales are underwater entanglement, collisions, and noise. However, the heavy mooring lines (1.2 or 2 inch cable) and the taut tension on the lines would prevent formation of loops and render the potential for entanglement negligible (Wursig and Gailey 2002). Collisions are unlikely as the floating platforms are expected to be perceived by approaching whales. In addition, the platforms would be deployed temporarily. The vessel traffic associated with the project for installation and maintenance would be small and negligible for this temporary project. However, if any whale species or other marine mammal is encountered during any project operation, the University of Maine would implement NMFS marine mammal avoidance procedures. Masking of whale acoustical communication mechanisms by project generated noise is a possible impact. Potential noise impacts could occur from three sources: operation of vessels during deployment and maintenance, transmission of turbine noise to the ocean, and vibrations transmitted through the tower and platforms. Noise from vessels would be short-term and temporary and would not represent a significant increase over existing levels. Transmission of turbine noise from the air through the sea surface is expected to be minimal due to the reflective nature of the sea surface (Jones et al. 2010). Underwater acoustical emissions from vibrations of the turbine and platform are expected to be low frequency and low amplitude (Jones et al. 2010). Because the platforms are floating, the turbines lack a rigid underwater structure (such as seabed mounted turbines) from which to efficiently transmit vibrations. An underwater acoustic monitoring program would be implemented to characterize the noise produced.

Due to the low exposure of ESA-listed whales to the project, the mooring cables would not pose an entanglement risk, whales are expected to be able to detect and avoid the turbine platforms, and NMFS marine mammal avoidance procedures would be implemented in the event that a marine mammal is encountered by a construction or maintenance vessel, DOE concludes that the proposed project may affect, but is not likely to adversely affect ESA-listed whales.

Turtles - There are three ESA-listed sea turtles with the potential to occur in the project vicinity: Atlantic Ridley, loggerhead, and leatherback sea turtles. The leatherback is the most frequently sighted sea turtle. The presence of sea turtles in the area is limited to the summer months. The proposed project is not located within any critical habitat for sea turtles. Sea turtle sightings in the Gulf of Maine are exceedingly rare. As discussed for other species, ESA-listed sea turtles would not become entangled in the project mooring lines because the mass/buoyancy of the platforms and mass of the anchors is expected to create substantial tension in the 1.2 to 2 inch diameter mooring lines.

Due to the small size of the research project relative to the surrounding waters, the temporary nature of the deployment and the potential low exposure of sea turtles to the project site, DOE concludes the test site represents a discountable and insignificant effect to any of the three species of sea turtles and the project may affect, but is not likely to adversely affect these three species.

Magnuson-Stevens Fisheries Conservation Act

Essential Fish Habitat - Under the *Magnuson-Stevens Fishery Conservation Act* of 1998 (MSA) the waters off Monhegan Island have been designated as essential fish habitat (EFH) for 15 federally managed fish species (Table 1). However, your office (letter dated February 22, 2010) stated that five additional species of highly migratory fish listed under the MSA could potentially occur in the waters off of Monhegan Island and should be added to the list of species. One, the bluefin tuna, was already on the list. The other four include the white shark, basking shark, common thresher shark, and porbeagle shark.

EFH for the species listed in Table 1 varies by species and life stage, and includes the water column and different substrate types (i.e., soft or hard bottom). The impacts to benthic habitats would be minimal and would occur during placement of anchors prior to tower deployment. Although a specific anchor type has not been selected, the skirted mat anchor has the largest footprint (256 feet²). Assuming three anchors per tower, the total maximum disturbed area would be 1536 square feet or 0.04 acres. Benthic organisms are expected to rapidly recolonize the small disturbances. Mobile fish species that feed on or near the bottom or shelter on the bottom would likely move away during anchor emplacement which is a very short time period (one day per anchor). Because the anchors would have very limited surface area above the seafloor (some types would be completely buried) and with generally slow currents at depths of 300+ feet, scour and alteration of depositional patterns near the anchors would be very limited.

The primary change in the marine habitat would be the addition of habitat structure by the anchors, mooring lines, and below-water portion of the turbine platforms. This additional habitat structure may create several effects including artificial reef and fish aggregation device (FAD) effects. The underwater structure may provide habitat for biofouling organisms and structure-oriented fish. Fish also are known to aggregate around floating objects. However, either the reef effect or FAD effect is expected to be small because the two towers and mooring lines have a relatively small surface area below water. In addition, the tower deployment would be temporary and short-term. Therefore, DOE concludes that project effects on EFH are expected to be negligible and would not adversely affect.

Marine Mammal Protection Act

The Marine Mammal Protection Act (MMPA) of 1972 restricts the taking, possession, transportation, selling, offering for sale, and importing of marine mammals. The MMPA is

implemented through CFR 50 Part 216. Subpart I (Section 216.101) specifically addresses small takes of marine mammals incidental to specified activities.

Analysis of sightings of whale species collected through the Right Whale Consortium indicate that although large whales have been observed in the vicinity of the Monhegan Island test site, this area does not appear to be commonly used compared to other areas within the Gulf of Maine. Within the western Gulf of Maine, specific regions such as Jeffreys Ledge and Mt. Desert Rock are areas where whales are commonly sighted (UMaine 2011).

Smaller whales such as minke whales, pilot whales, harbor porpoise, and white-sided dolphin are common marine mammals in the Gulf of Maine. Additionally, harbor seal, gray seal, and harp seal occur in the Gulf of Maine. Harbor seal is the most common seal, with approximately 30,000 individuals spending all, or part, of the year in the Gulf of Maine (GoMOOS 2010a). Other marine mammal species that have been occasionally sighted in the region are offshore bottlenose dolphin, killer whales, white-beaked dolphin, and beluga whales (UMaine 2011).

During 2010, UMaine researchers conducted two marine mammal surveys along dedicated transects that traversed the test site. On-water time for each survey was approximately four hours. Eight harbor porpoise and no large whales were observed during the two marine mammal surveys. UMaine researchers also recorded opportunistic sightings of marine mammals during other survey efforts, by researchers that had training in marine mammal visual identification. Ten marine mammals (2 harbor porpoise and 8 white-sided dolphins) were observed during an eight-hour benthic invertebrate survey on July 7, 2010, and the one large whale, a fin whale, was observed during a 30-hour geophysical survey on June 17 and 18, 2010 (UMaine 2011).

As previously discussed for ESA-listed whale species, the project is expected to have minimal direct impacts (collisions and entanglement) or indirect impacts through alteration of habitat by introduction of structures (anchors, mooring lines, and floating platforms). The UMaine would implement NMFS marine mammal avoidance procedures if marine mammals are encountered during deployment or routine maintenance operations. These operations are short-term and are unlikely to result in the taking of any marine mammals. Collisions with mooring cables and the floating platforms are extremely unlikely because of the low probability of a marine mammal encountering one and most marine mammals have well-developed sensory abilities (echolocation or vision) that allow them to avoid structures. Entanglement in mooring cables is unlikely because of the cable thickness and tension would prevent looping (Wursig and Gailey 2002).

The introduction of structures (mooring cables, anchors, and floating platforms) may attract structure-oriented fish species which may in turn attract predatory marine mammals. However, because of the temporary deployment this effect is likely to be minimal. The floating turbines platforms may be used for resting by seals (haul out). While not a negative impact, the platforms would be designed to prevent seal haul out (minimize horizontal surfaces or raise the deck) more to protect the equipment and as a safety precaution for workers that would periodically access the platforms for scheduled and unscheduled maintenance.

As part of the applicant committed mitigation measures, the University of Maine would develop a post-construction fish and wildlife monitoring plan in order to evaluate how fish and marine mammals interact with the floating platforms.

Based on the minimal potential for interaction with marine mammals and any negative impact from those interactions, DOE finds that incidental take of marine mammals is unlikely to occur

during the deployment, operation, and retrieval of the wind turbines at the University of Maine's Deepwater Offshore Wind Test Site.

DOE anticipates publically posting the draft Environmental Assessment being prepared under the National Environmental Policy Act for this project in the next week or two. Additional background information and analysis can be found in this document, electronically available on the DOE Golden Field Office's Public Reading Room web site:

http://www.eere.energy.gov/golden/NEPA_DEA.aspx

If you have any questions, please contact me at 720-356-1322 or via my email at Laura.Margason@go.doe.gov.

Sincerely,

A handwritten signature in blue ink that reads "Laura Margason" with a large, stylized flourish at the end.

Laura Margason
NEPA Document Manager

References

- Dunton, K.; Jordaan, A.; McKown, K.; Conover, D.; and Frisk, M. 2010. "Abundance and distribution of Atlantic sturgeon (*Acipenser oxyrinchus*) within the northwest Atlantic Ocean, determined from five fishery-independent surveys." *Fishery Bulletin*. 108 (4).
- Jones, M.; Ramuhalli, P.; and Watkins, M. 2010. *Characterization of acoustic noise propagation from offshore wind turbines – white paper*. Pacific Northwest National Laboratory, Richland, WA. Unpublished.
- GoMOOS (Gulf of Maine Ocean Observing System) 2010a. "About the Gulf of Maine." Available online at: <http://www.gomoos.org/aboutgulfme/> (accessed October 2010).
- NOAA (National Oceanic and Atmospheric Administration) 2010b. "NOAA Fisheries, Office of Protected Resources – Atlantic salmon (*Salmo salar*)." Available online at: <http://www.nmfs.noaa.gov/pr/species/fish/atlanticsalmon.htm> (accessed June 2009).
- NOAA (National Oceanic and Atmospheric Administration) 2010d. "Guide to Essential Fish Habitat Designations in the Northeastern United States." Available online at: <http://www.nero.noaa.gov/hcd/index2a.htm> (accessed December 2010).
- UMaine (University of Maine) 2011. *Draft Report on Existing Marine Resources and Draft Fish and Wildlife Monitoring Plan*. University of Maine Deepwater Offshore Wind Test Site. Unpublished. March 2011.
- Wursig, B. and Gailey, G.A. 2002. "Marine mammals and aquaculture: conflicts and potential resolutions." In Stickney, R.R. and J.P. McVay (Eds.) *Responsible Marine Aquaculture*. CAP International Press, New York, pp. 45-59.

Table 1. Marine Species and Life Stages for which Essential Fish Habitat Occurs in Waters off of Monhegan Island

Species	Eggs	Larvae	Juveniles	Adults
Atlantic cod (<i>Gadus morhua</i>)	X	X	X	X
Haddock (<i>Melanogrammus aeglefinus</i>)				X
Whiting (<i>Merluccius bilinearis</i>)			X	X
Red hake (<i>Urophycis chuss</i>)	X	X	X	X
White hake (<i>Urophycis tenuis</i>)	X	X	X	X
Redfish (<i>Sebastes fasciatus</i>)	N/A	X	X	X
Witch flounder (<i>Glyptocephalus cynoglossus</i>)			X	X
Winter flounder (<i>Pleuronectes americanus</i>)	X	X	X	X
Windowpane flounder (<i>Scopthalmus aquosus</i>)			X	
American plaice (<i>Hippoglossoides platessoides</i>)			X	X
Atlantic halibut (<i>Hippoglossus hippoglossus</i>)	X	X	X	X
Atlantic sea herring (<i>Clupea harengus</i>)				X
Monkfish (<i>Lophius americanus</i>)			X	
Spiny dogfish (<i>Squalus acanthias</i>)	N/A	N/A		X
Bluefin tuna (<i>Thunnus thynnus</i>)				X
White shark (<i>Carcharodon carcharias</i>) ¹	N/A	N/A	N/A	X
Basking shark (<i>Cetorhinus maximus</i>) ¹	N/A	N/A	N/A	X
Common thresher shark (<i>Alopias vulpinus</i>) ¹	N/A	N/A	N/A	X
Porbeagle shark (<i>Lamna nasus</i>) ¹	N/A	N/A	N/A	X

Source: NOAA 2010d; N/A = not available.

¹Added based on NMFS letter to DOE dated February 22, 2011(M. Colligan to L. Margason)

Table 2. Marine Mammal Species Known to Occur in the Gulf of Maine

Species	Federal Listing Status	ESA Management Plans
Baleen Whales		
North Atlantic right whale (<i>Eubalaena glacialis</i>)	Endangered	NMFS 2005; NMFS 2006a
Fin whale (<i>Balaenoptera physalus</i>)	Endangered	NMFS 2006b
Humpback whale (<i>Megaptera novaeangliae</i>)	Endangered	NMFS 1991
Minke whale (<i>Balaenoptera acutorostrata</i>)	NA	NA
Sei whale (<i>Balaenoptera borealis</i>)	Endangered	No
Blue whale (<i>Balaenoptera musculus</i>)	Endangered	NMFS 1998
Toothed Whales		
Harbor porpoise (<i>Phocoena phocoena</i>)	NA	NA
Atlantic white-sided dolphin (<i>Lagenorhynchus acutus</i>)	NA	NA
Pilot whale (<i>Globicephala</i> sp.)	NA	NA
Common dolphin (<i>Delphinus delphis</i>)	NA	NA
Killer whale (<i>Orcinus orca</i>)	NA	NA
Risso's dolphin (<i>Grampus griseus</i>)	NA	NA
White-beaked dolphin (<i>Lagenorhynchus albirostris</i>)	NA	NA
Bottlenose dolphin (<i>Tursiops truncatus</i>)	NA	NA
Sperm whale (<i>Physeter macrocephalus</i>)	Endangered	NMFS 2006c
Beluga whale (<i>Delphinapterus leucas</i>)	NA	NA
False killer whale (<i>Pseudorca crassidens</i>)	NA	NA
Seals		
Harbor seal (<i>Phoca vitulina</i>)	NA	NA
Gray seal (<i>Halichoerus grypus</i>)	NA	NA
Harp seal (<i>Phoca groenlandica</i>)	NA	NA

Note: The species are grouped by order and are organized from the most to least common based on number of sightings in the Right Whale Consortium database. The survey effort in the Gulf of Maine is strongly biased towards areas and seasons when right whales are likely to be found.

Source: UMaine 2011; NA = not applicable.

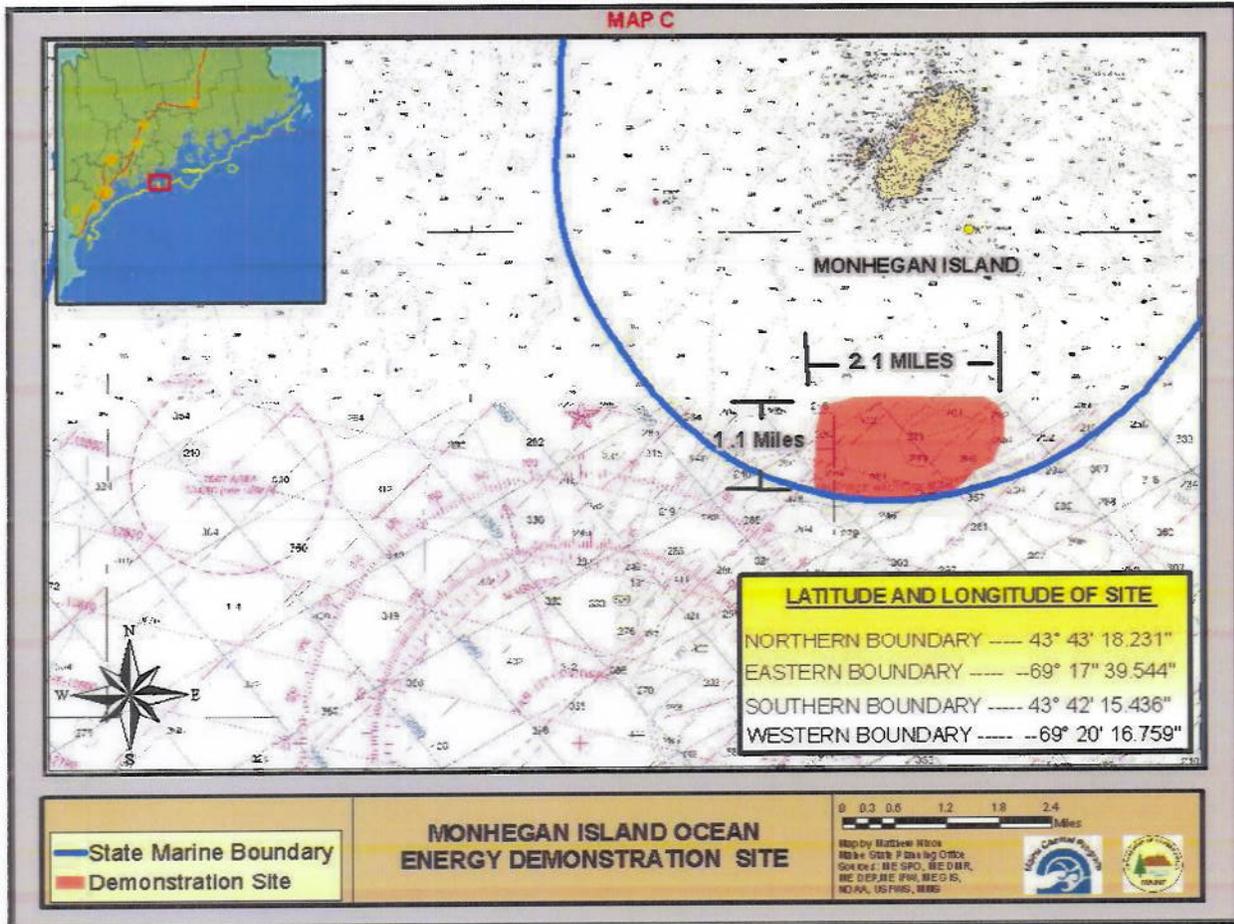


Figure 1. Location of the University of Maine Deepwater Offshore Wind Test Site.



Department of Energy

Golden Field Office
1617 Cole Boulevard
Golden, Colorado 80401-3393

May 4, 2011

Ms. Laury Zicari
Field Supervisor
U.S. Fish & Wildlife Service
Maine Field Office
17 Godfrey Drive, Suite #2
Orono, ME 04473

**Subject: Section 7 Endangered Species Consultation
University of Maine Deepwater Offshore Wind Test Site, Gulf of Maine**

Dear Ms. Zicari:

We are requesting concurrence from the U.S. Fish and Wildlife Service that the proposed University of Maine Deepwater Offshore Wind Test Site in the Gulf of Maine *may affect, but is not likely to adversely affect* either the ESA-listed roseate tern or piping plover.

In response to a 2010 Congressional Directive, the U.S. Department of Energy (DOE) has awarded federal funding to the University of Maine and is proposing to authorize expenditure of that funding to perform research on and development of floating offshore wind turbine platforms. The University would use DOE and cost-share funding to design, fabricate, deploy, test, and retrieve one to two approximately one-third scale commercial wind turbines on floating platforms within the University's Deepwater Offshore Wind Test Site (test site) in the Gulf of Maine, located approximately 2 to 3 miles south of Monhegan Island (see attached map).

The focus of the University's tests is to validate numerical models that predict how the turbine platforms would perform under various conditions of combined wind and wave loading. The wind turbine platforms would carry sensors and telemetry systems that would provide data to evaluate motion and structural performance. The University also has committed to a program of monitoring for bats and birds, marine life, and noise at the project site during deployment to gather additional information on potential impacts.

The floating offshore wind turbines would measure approximately 100 feet from waterline to the hub, the rotor diameter would measure 88.6 feet, and the total turbine height would be approximately 144 feet with a rotor swept-area of 6165 square feet. The wind turbine platforms would be fabricated at a shipyard, or similar existing coastal facility, and towed to and temporarily moored at the test site from July 2012 through November 2012 and during July 2013 through November 2013. Retrieval of the platforms would occur following the deployment periods in 2012 and 2013. There would be no utilities or services connected to the turbines while deployed at the test site.

In a letter dated February 2, 2011, DOE requested from your agency a list of threatened, endangered, proposed specie, and/or designated or proposed critical habitat under your jurisdiction that "may be present" within the project area. It was determined that two species may be present: roseate tern and piping plover. The test site does not contain critical habitat for either species. DOE is also consulting with the National Marine Fisheries Service regarding



marine species protected under the Endangered Species Act and other trust resources managed by that agency.

Roseate terns usually forage over shallow bays, tidal inlets and channels. The roseate tern does not breed on Monhegan Island but does use the island for rest and feeding and is regularly observed (Welch 2010). The piping plover breeds and forages on coastal beaches from Newfoundland to North Carolina and winters along the southern Atlantic coast and southward. Because the test site is approximately 12 miles from the coastal beaches and 2 to 3 miles from Monhegan Island, the primary threat to either the roseate tern or piping plover would be interaction with turbine blades during migration. Marine radar surveys conducted by the New Jersey Audubon Society indicated that 93 and 95% of the detected targets during the day and night, respectively, were at heights of 246 feet or greater, above the maximum height of the turbines (NJAS 2010). It is unknown how flight patterns and altitude of roseate terns and piping plovers would relate to these observed data.

As the vast majority of avian species have been detected flying above the turbine-swept area, and the proposed project would be small scale and have a short operational duration, the likelihood of these two species interacting with the turbine rotors is minor and affects to the species would be negligible. For these reasons, DOE concludes that the project *may affect, but is not likely to adversely* affect the ESA-listed roseate tern or piping plover.

DOE anticipates publically posting the draft Environmental Assessment being prepared under the National Environmental Policy Act for this project in the next week or two. Additional background information and analysis can be found in this document, electronically available on the DOE Golden Field Office's Public Reading Room web site:

http://www.eere.energy.gov/golden/NEPA_DEA.aspx

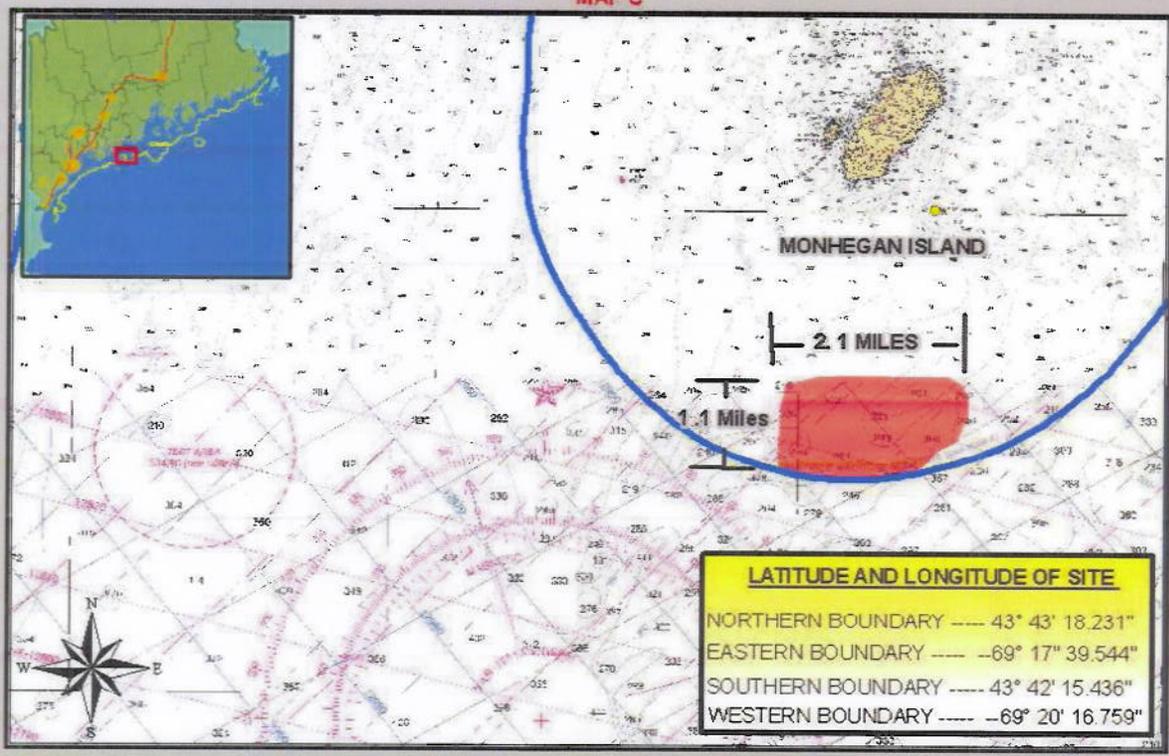
If you have any questions, please contact me at 720-356-1322 or via my email at Laura.Margason@go.doe.gov.

Sincerely,



Laura Margason
NEPA Document Manager

MAP C



— State Marine Boundary
■ Demonstration Site

MONHEGAN ISLAND OCEAN ENERGY DEMONSTRATION SITE

0 0.3 0.6 1.2 1.8 2.4 Miles

Map by Matthew Wood
Maine State Planning Office
Sources: BE SPO, BE DRR,
ME DEP, NE PA, BE G S,
NO AA, US FWS, BIRD



References

Mizrahi, D. Personal communication between D. Mizrahi (New Jersey Audubon Society) and P. Jumars (UMaine) regarding radar monitoring being conducted at Monhegan Island. December 8, 2010.

NJAS (New Jersey Audubon Society) 2010. Preliminary results from radar monitoring of aerial vertebrate movement patterns on Monhegan Island, Maine and its near-shore waters. November 3, 2010.

Welch, L. 2010. Personal communication between L. Welch, USFWS, and R. Holberton (UMaine) regarding the roseate terns, November 2010.



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Maine Field Office – Ecological Services
17 Godfrey Drive, Suite #2
Orono, Maine 04473
(207) 866-3344 Fax: (207) 866-3351

In Reply Refer To: 53411-2011-I-0200

August 18, 2011

Laura Margason
Department of Energy
Golden Field Office
1617 Cole Boulevard
Golden, CO 80401-3393

Dear Ms. Margason:

The Department of Energy (DOE) is proposing to authorize federal funding for the University of Maine Deepwater Offshore Wind Test Site located approximately two miles south of Monhegan Island, Maine. On May 4, 2011 the U. S. Fish and Wildlife Service received a letter from the DOE requesting informal consultation pursuant to section 7 of the Endangered Species Act (ESA), as amended (16 U.S.C. 1531-1543) and seeking concurrence on a determination that this project may affect, but is not likely to adversely affect the federally-listed roseate tern and piping plover.

Project description: In response to a 2010 Congressional Directive, the DOE has awarded funding to the University of Maine and is proposing to authorize expending that funding to perform research on and development of floating offshore wind turbine platforms. The University proposes to design, fabricate, deploy, test and retrieve one or two approximately one-third scale test wind turbines on floating platforms. The tests will occur within the University's Deepwater Offshore Wind Test Site (test site) in the Gulf of Maine located approximately 2 to 3 miles south of Monhegan Island. The floating offshore wind turbines would measure approximately 100 feet from waterline to the hub, the rotor diameter would measure 88.6 feet, and the total turbine height would be approximately 144 feet with a rotor swept area of 6165 square feet. The wind turbine platforms would be fabricated at a shipyard, or similar coastal facility, and towed to and temporarily moored at the test site from July 2012 through November 2012 and during July 2013 through November 2013. Retrieval of the platforms would occur following the deployment periods in 2012 and 2013. There would be no utilities or services connected to the turbines while deployed at the test site. Research boats will access the test site on numerous occasions during the deployment periods.

Federally listed species

Atlantic salmon (federally endangered) – The NOAA Fisheries has jurisdiction for Atlantic salmon in marine waters and will provide comment. Whales, sea turtles, and Atlantic and shortnosed sturgeon are also the jurisdiction of the NOAA Fisheries in the marine environment.

Piping plovers (federally threatened) - The closest breeding habitat for piping plovers is located at Reid State Park, approximately 25 miles to the west of the test site. Piping plovers are believed to migrate within a short distance of the coast. We believe that it would be rare for piping plovers to migrate through the Monhegan test site, but there is much we do not understand about their post-nesting migrations and movements. (For example, do piping plovers nesting in Nova Scotia take a “short cut” to migrate across the Gulf of Maine and where might they make landfall?) Radar and other data provided by the University of Maine do not distinguish the species or size of birds migrating through the area, nor were there visual counts and species identification concerning bird use of the test site. Previously, we had recommended to the University of Maine that pre-deployment survey work should include observations of birds (species, numbers, behavior, etc.) to help us understand bird use of the test area.

Given the relatively brief deployment of a small test turbine (144 feet peak rotor height), the distance from nesting areas, propensity of plovers to migrate along the coastline, and shorebirds typically migrate at greater altitudes, we conclude that effects to piping plovers are likely to be insignificant and discountable. We concur with the DOE determination that this project is not likely to adversely affect piping plovers.

Roseate terns (federally endangered) - The closest nesting islands for roseate terns are Eastern Egg Rock (8.5 mi.), Thrumcap (12.3 mi. distant), and Metinic (13.7 mi.) islands. Exposure to risk from offshore wind projects is most likely during foraging around nesting islands, travel between pre-migration staging areas for roseate terns, and migration (Burger et al. 2011. *Risk evaluation for federally listed (roseate tern, piping plover) or candidate (red knot) bird species in offshore waters: a first step for managing the potential impacts of wind facility development on the Atlantic Outer Continental Shelf*. Renewable Energy 36(2011):338-351). Roseate terns can forage up to 30 km from nesting areas. We do not know where roseate terns from the Maine nesting islands forage. Roseate terns generally forage in shallow waters close to shore, but sometimes forage further offshore. The test site is within the foraging range of the three nesting islands enumerated above. Post nesting staging and migration of roseate terns occur well offshore. (Roseate terns from New York and other Northeast nesting islands stage in Maine before migration and roseates nesting in Nova Scotia could traverse the Gulf prior to long-distance migration.) Non-breeding roseate terns have been observed on Monhegan Island. Thus, the test site could also receive use by roseate terns in August and September after the nesting season.

Given the brief deployment and small scale of the project, we conclude that effects to roseate terns are likely to be insignificant and discountable. We concur with the DOE determination that this project is not likely to adversely affect roseate terns.

Summary

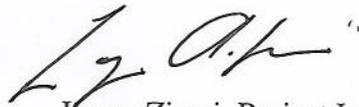
We conclude that the effects of the test wind turbines to piping plovers and roseate are likely to be insignificant and discountable. However, there is substantial uncertainty about piping plover and roseate tern use of the test site and there could be unforeseen affects on these species. We recommend that the University of Maine conduct a monitoring program to document movements of piping plovers, roseate terns, and other shorebirds, seabirds, and bats in the test site when the turbines are deployed as an integral part of their part of their research program. We recommend to DOE that you require the University to develop an experimental design for documenting bird activity (species identification, numbers and behavior) in the test site during times when the test turbine(s) is deployed. We also recommend the University develop a brief Avian and Bat Protection Plan to explain post-construction bird and bat studies, monitoring for mortality, and adaptive measures that will be taken if these studies indicate there are potential adverse effect to federally listed species and migratory birds and bats. We will be making similar recommendations to the Army Corps of Engineers.

No further action is required under Section 7 of the ESA, unless: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered; (2) this action is subsequently modified in a manner that was not considered in this review; or (3) a new species is listed or critical habitat determined that may be affected by the identified action.

The Service will provide comments on the Bald and Golden Eagle Protection Act, Migratory Bird Treaty Act, and the Fish and Wildlife Coordination Act to the Army Corps of Engineers.

If you have any questions, please call Mark McCollough, endangered species biologist, at (207) 827-5938 ext.12.

Sincerely,



Laury Zicari, Project Leader
Maine Field Office

Cc: Jay Clement, Army Corps of Engineers, Manchester, ME



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
55 Great Republic Drive
Gloucester, MA 01930-2276

AUG 16 2011

Laura Margason
Department of Energy
NEPA Document Manager
Golden Field Office
1617 Cole Boulevard
Golden, Colorado 80401 -3393

Re: DeepCWind offshore wind demonstration project, Monhegan Island, Maine

Dear Ms. Margason,

This is in response to your letter dated May 4, 2011, requesting consultation pursuant to Section 7 of the Endangered Species Act (ESA) of 1973, as amended regarding an application filed by University of Maine (UMaine) for their project DeepCWind. Your letter also requested coordination pursuant to the Magnuson-Stevens Fishery Conservation and Management Act and the Marine Mammal Protection Act. The proposed project would be located approximately 3 km offshore of Monhegan Island, Maine, and would involve the deployment of a submerged deepwater Tension Leg Test Platform (TLTP), meteorological tower, wind turbine and supporting mooring system gear. Under the State of Maine General Permit authority for offshore wind energy demonstration projects (§ 480-HH), a specific geographic area located on state-owned submerged lands within the coastal area has been identified for construction and operation of an offshore wind energy demonstration project (Title 12, section 1868). This includes the Maine Offshore Wind Energy Research Center specifically for experimental testing of offshore wind platforms and mooring systems to be deployed by UMaine. Additional information on the proposed action was received by NMFS on June 20, 2011 and June 23, 2011.

Funding for these demonstration projects is largely provided by the Department of Energy (DOE) and as such, the federal actions considered in this consultation are the awarding of funds by the DOE and the issuance of a permit by the US Army Corps of Engineers (ACOE) pursuant to Section 10 of the Rivers and Harbors Act. As the lead Federal agency for purposes of coordination with NMFS, the DOE has made the preliminary determination that the proposed project may affect, but is not likely to adversely affect any species listed as threatened or endangered by NOAA's National Marine Fisheries Service (NMFS) and has requested that NMFS concur with this determination. In addition, the DOE has made the preliminary determination that the proposed project would not adversely affect essential fish habitat (EFH) that has been designated within the project area.



Proposed Project

UMaine is proposing to place a structure on the ocean bottom in the state of Maine waters offshore of Monhegan Island, Maine for the deployment of a single temporary 1/3 scale model offshore wind turbine demonstration unit. The structure will consist of a semi-submersible deepwater floating platform (TLTP) which is held under water by multiple cables (tendons) that connect the floating body of the platform to a counterweight located on the sea floor. A limited number of cables and pipes will run between the anchors to maintain the relative position of the anchors. It is anticipated the interconnection pipe will have a diameter of 24 inches, the center of the pipe will be 5 feet off the bottom, and there will therefore be 4 feet of clearance between the pipe and the sea bed, assuming no settlement of the anchors. There are also interconnection cables between the anchors that will be located at the same 5-foot height. These cables will be approximately 2 inches in diameter, and it is expected that the cables will maintain their 5-foot distance off the ocean floor.

The deepwater platform will be submerged 60 feet below Mean Sea Level (MSL). A meteorological tower with a wind turbine and monitoring equipment will be mounted on the platform and will stand approximately 135 feet above MSL and will be equipped with white warning and navigational lights. The meteorological tower containing the wind turbine and data collection unit will be constructed onshore and will be towed to the proposed deployment site. On arrival at the site, the structure will be connected to the existing anchors in place and moored to the ocean floor via multiple tendons. In addition, periodic visits to the turbine would be completed by boat to visually inspect the structure, replace batteries, perform general maintenance of instruments, and address other issues as they arise. The frequency of visits will vary depending on purpose and weather conditions. Deployment operations are expected to occur in June to place anchors and early July for the platform. Operations and maintenance procedures are currently in development for incorporation into permit applications for MDEP and USACE. These include weekly site visits to monitor operations and assess any maintenance needs throughout the deployment period. In addition, UMaine is proposing to couple the operational monitoring site visits with environmental monitoring to collect observational data of fish and wildlife, including marine mammals. The structure is for demonstrating the viability of deepwater offshore windpower and will contain data collection equipment only; a limited amount of energy is proposed to be generated from the wind turbine to monitor loads and will be transferred to an onboard battery system to power the electrical devices onboard. The structure's response to wave, current, and wind loading will be monitored remotely via on-board sensor, data acquisition, and communications systems.

The demonstration unit will remain in place between July and October annually over a five year period beginning in 2012 and will gather both engineering and environmental data. At the end of its annual deployment, the structure will be removed by disconnecting the deepwater platform from the counterweight and towing it back to the shore. The counterweight on the seafloor will remain in place for the entirety of the five year lease and after such time will be brought to the surface and towed to shore. Tug boats will tow the structures from shore out to the site and back; other smaller vessels will be used for routine maintenance, operations and monitoring activities associated with the project.

Endangered Species Act Consultation

NMFS Listed Species in the Action Area

The proposed project is located approximately 3 km southeast of Monhegan Island, Maine at 43°43.18 N, 69°20.16W (see Figure 2 for project map). The action area is defined as “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action” (50CFR§402.02). For this project, the action area is limited to the project footprint and the transit route used by vessels delivering and servicing the platform. This area is expected to encompass all of the effects of the proposed project.

Federally listed shortnose sturgeon (*Acipenser brevirostrum*), Atlantic salmon (*Salmo salar*), and several species of listed whales and sea turtles may occur in the project area during the time proposed for deployment of the offshore wind turbine. Marine mammals such as seals and porpoises may also be seasonally present in the project area during the time proposed for deployment of the offshore wind turbine. There is no critical habitat designated in the action area.

Information on the distribution and movements from a variety of acoustically tagged listed fish (e.g., shortnose sturgeon, Atlantic salmon and Atlantic sturgeon), are available since 2005 from acoustic receivers which have been deployed throughout the Gulf of Maine as part of the Gulf of Maine Ocean Observing System/NERACOOS system (GOMOOS). Hundreds of juvenile Atlantic salmon smolts are tagged annually from the Penobscot River and the Bay of Fundy, Canada. Since 2006, approximately 20-30 adult shortnose sturgeon captured annually in the Penobscot River have been fitted with acoustic tags. Since 2005, the acoustic receivers, with a detection range of approximately 0.6 mile, have made over 9,000 detections of acoustic tags. These 9,000 detections were from 37 different individual acoustic tags. Twenty of the tags detected were implanted in salmon smolts: three from the Bay of Fundy and 17 from smolts tagged in the Gulf of Maine (UMaine 2011). Since 2005, five individual tags were detected in the vicinity of Buoy E01, four of which belonged to salmon smolts (the fifth belonging to a striped bass). Most detections occurred at buoy F01 located in Penobscot Bay, the watershed of most smolt tagging (UMaine 2011). Until late July 2010, GOMOOS buoys D01 and E01 were the closest acoustic receivers to the offshore wind test site near Monhegan Island (Figure 1). However, during late July 2010, buoy E02 was deployed by UMaine in the proximity of the offshore wind test site near Monhegan Island; prior to placement, two acoustic receivers were mounted on buoy E02. Subsequently, no tagged shortnose sturgeon have been detected at GOMOOS buoys deployed in the immediate project area.

In Maine, populations of shortnose sturgeon are known to occur in the Penobscot River and the Kennebec/Sheepscot/Androscoggin river complex. Recent telemetry tracking data indicates that individual shortnose sturgeon are also at least occasionally present in the Saco River as well as several smaller coastal rivers. Limited information on coastal migrations is available; however, the best available information suggests that when in coastal waters, shortnose sturgeon are likely to occur close to the shore. No acoustically tagged shortnose sturgeon have been detected at GOMOOS buoys in the proximity of the action area. Based on this data,

combined with what is known generally about shortnose sturgeon behavior, NMFS has determined it is not reasonable to expect shortnose sturgeon to be present in the action area.

Three species of listed sea turtle species occur in New England waters during the warmer months, generally when water temperatures are greater than 15°C. The sea turtles in these waters are typically small juveniles with the most abundant being the federally endangered leatherback (*Dermochelys coriacea*), federally threatened loggerhead (*Caretta caretta*) and federally endangered Kemp's ridley (*Lepidochelys kempi*) sea turtles; however, Kemp's ridleys are rare in waters north of Massachusetts and only leatherback or loggerhead sea turtles are likely to occur in coastal Maine waters. Sea turtles make northward migrations from southern overwintering areas in the spring and may be found in waters off the coast of Maine beginning in late June or July. Sea turtles begin to move southward to warmer waters in the Fall, with sea turtles likely to have left Maine waters by late October.

Depths at the deployment site are approximately 300 feet. While this depth does not preclude sea turtles from occurring at the site, sea turtles are unlikely to be foraging at these depths and are likely to be using the deployment area for resting during periods of migration and any use of the deployment area by sea turtles is likely to be transient. Sea turtles may also occur seasonally along the vessel transit route while migrating, resting or foraging.

Listed whales also occur in the waters off the coast of Maine. In the action area, North Atlantic right whales (*Eubalaena glacialis*) as well as occasional humpback whales (*Megaptera novaeangliae*) and fin whales (*Balaenoptera physalus*) could be present. During 2010, UMaine researchers conducted two marine mammal surveys along dedicated transects that traversed the proposed test site. On-water time for each survey was approximately four hours. Eight harbor porpoise and no large whales were observed during the two marine mammal surveys. UMaine researchers also recorded opportunistic sightings of marine mammals during other survey efforts, by researchers that had training in marine mammal visual identification. Ten marine mammals (2 harbor porpoise and 8 white-sided dolphins) were observed during an eight-hour benthic invertebrate survey on July 7, 2010, and the one large whale, a fin whale, was observed during a 30-hour geophysical survey on June 17 and 18, 2010 (UMaine 2011). Based on the known distribution of large whales in the Gulf of Maine, use of the action area by large whales is likely to be limited to occasional migrating individuals.

Effects of the Action

Potential effects to listed species from the deployment of the test platform mooring gear could result from extraneous noise, entanglement, entrapment, effects on benthic habitat or changes to the composition of the marine community in the area where the platform is moored, or interaction of marine mammals with the platform or its anchoring system and from interactions with project vessels. As noted above, based on information from acoustic receivers, the location of the proposed project area overlaps with a migratory corridor used by juvenile and adult Atlantic salmon during their oceanic period.

Since it is extremely unlikely that the placement of the TLTP and associated mooring structure will reduce the amount of forage available to migrating Atlantic salmon or otherwise affect migrating Atlantic salmon, NMFS has determined any effects to listed Atlantic salmon will be discountable.

Entanglement or Interactions with the Platform and its Anchoring System

As explained above, the test unit will consist of a submerged platform to which a 100 foot tall meteorological tower with wind turbine will be attached. The submerged platform will be attached to three large counterweights which will keep the test unit in place, the multiple vertical tendons or tension legs will be comprised of synthetic material. NMFS has considered the potential for whales and/or sea turtles to interact with the test unit and to become entangled in it and has determined that this is extremely unlikely to occur for the reasons outlined below.

In order for an entanglement to occur, an animal must first encounter the gear. Since there will only be one test unit deployed in an open ocean environment in an area where listed species are not known to concentrate, the likelihood of a whale or sea turtle encountering the gear is extremely low. The proposed deployment of the TLTP and accompanying mooring system should reduce the risk of entanglement because of the: 1) tensile loads maintained in the tendons; 2) the large diameter and composition of the tendon lines (composite lines approximately 6 inches in diameter and chains 3-5 cm in diameter) and; 3) the mooring and tendon array is comprised of a limited number of vertical lines. The alternative catenary mooring system proposed to be used to anchor other test platforms could potentially increase the risk of entanglement or entrapment as compared to the TLTP because the anchor lines would have a more horizontal orientation in the water column due to a 3:1 scope and depth of water and additional lines and anchors maybe needed to keep the platform in place. However, similar to the TLTP mooring system, these anchor lines would be under high tensile loads and may be composed of steel cables and chains which should greatly reduce the risk of any entanglement of marine mammals. Based on the analysis herein, it is extremely unlikely that a whale or sea turtle will interact with the test unit and become entangled. As such, the effect of the deployment of the test unit on these species is discountable.

Underwater Sound Generated from Unit or Support Structure

Underwater sound generated from the deployment of the TLTP and supporting mooring system gear could potentially affect marine mammals in the area. According to information provided in the DEA, only a small amount of sound is expected to result from transfer of above-water sound through the sea surface. Sound levels underwater resulting from turbine noise transferred through the sea surface are expected to be substantially lower than the sound source levels, due to the reflective nature of the sea surface (Jones et al. 2010). Acoustic emissions underwater, due to vibrations of the turbine and platform structure are expected to be low frequency and low amplitude, and are strongly dependent on turbine and platform configuration and dynamic loads (Jones et al. 2010). In order to determine the noise levels generated during turbine operation, UMaine plans to characterize the underwater noise produced following deployment by conducting stationary and mobile underwater noise monitoring. Since the DEA was issued, UMaine has conducted analysis of background noise level measurements collected

in 2010 using a calibrated hydrophone. Monitoring, which occurred on a calm day, resulted in measurements of < 65 dB for most frequencies, with noticeable increases at the low end of the frequency range (<200 Hz) and a broad peak at 900 Hz (Figure 3). Ambient noise pressure spectral densities can range from about 20 to 80 dB (re 1 $\mu\text{Pa}^2/\text{Hz}$) for breaking waves and associated spray and bubbles (100 to 25,000 hertz) and 35 to 80 dB (re 1 $\mu\text{Pa}^2/\text{Hz}$) for usual marine traffic (10 to 1,000 hertz; Richardson et al. 1995). UMaine plans to collect hydrophone recordings during the deployment both at the installation and at a series of points of increasing distance away from the site in order to assess underwater noise levels generated by the turbine.

As no site-specific underwater noise modeling has been completed, NMFS has considered information available from other wind turbine projects. Preliminary results from noise studies conducted in the United Kingdom suggest that in general, the level of noise created during the operation of offshore windfarms is very low and does not cause avoidance of the area by marine species (Nedwell, unpub. data, reported in MMS 2008). Even in the area directly surrounding the wind turbines, noise was not generally found above the level of background noise, resulting in no effects to the normal activity of marine animals (Nedwell, unpub. data, reported in MMS 2008).

Acoustic modeling of underwater operational sound at the proposed Cape Wind facility to be located off the coast of Massachusetts was performed for the design wind condition. Baseline underwater sound levels under the design wind condition are 107.2 dB re 1 μPa ; significantly louder than the ambient noise levels at the UMaine project site (i.e., <65 dB). The predicted sound level from operation of a fixed monopole wind turbine generator is 109.1 dB at 65.6 ft (20 m) from the monopole and this total sound level falls off to 107.5 dB at 164 ft (50 m) and declines to the baseline level by 361 ft (110 m)).

Assuming that the noise from the UMaine turbine is equivalent to the turbines to be deployed at the Cape Wind site, underwater noise levels (109.1 dB) will be well below potentially harassing noise levels for whales (i.e., 120 dB re 1 μPa for a continuous noise source) and below the threshold where sea turtles are likely to perceive the noise (i.e., 110-126 dB re 1 μPa ; Ridgway 1969; Streeter, in press) even at a distance of only 65 feet from the turbine, the operational noise of the WTGs will not result in injury or disturbance of sea turtles. While sea turtles may be able to hear the noise associated with the operation of the WTGs the noise will not affect the distribution, abundance or behavior of sea turtles in the action area. As noted above, UMaine will conduct noise recordings during deployment to verify that underwater noise levels do not rise to a level of concern.

Effects to Marine and Benthic Resources

The three large counterweights will be in contact with the seafloor for up to five years. The area where this gear is in contact with the bottom will not be available for sea turtles that feed on benthic organisms. This will result in the loss of an extremely small area (i.e., approximately .04 acres) of substrate available as potential foraging area. The impact of this loss is further minimized by the depths at the action area (>300 ft) which are deeper than the waters typically preferred by foraging sea turtles in the northeast. Additionally, as deployment

of the test unit will be seasonal (i.e., up to 5 months annually), and the placement of the mooring system will be temporary (i.e., up to five years), any effects to the sea bottom and benthic resources will be temporary. Leatherback sea turtles forage on jellyfish, while loggerheads feed on crustaceans and mollusks. Right whales feed on copepods, humpback whales feed on fish such as sand lance and herring, and fin whales feed on krill and other small schooling fish. The fish community structure in the immediate project vicinity could potentially be impacted from the placement of a TLTP, meteorological tower and wind turbine. However, the distribution of fish is not likely to be affected by the placement of the test unit or the counterweight and other mobile benthic prey species such as crustaceans, crabs and shrimp are likely to move away from the immediate area where the test unit will be placed. Furthermore, the applicant has developed a monitoring plan to provide annual data for analysis to validate these assumptions. As such, annual reporting requirements will include both environmental and biological information to evaluate the changes to benthic and marine resources from the placement of the test platform and wind turbine unit. Based on this information, an adaptive management plan will be implemented to minimize any impacts to benthic or marine resources identified throughout the project term. Therefore, NMFS has determined there is not likely to be a reduction in the amount of forage available to sea turtles or whales in the action area. As there will be no reduction in sea turtle forage items and an extremely small reduction in the amount of available benthic habitat, any effects to foraging sea turtles or whales will be insignificant and discountable.

Risk of Vessel Strike

Collision with vessels remains a source of anthropogenic mortality for both sea turtles and whales. The deployment of the test unit as well as periodic maintenance and inspection will require the use of vessels; these vessels will represent an increase in vessel traffic in the action area. This increase in vessel traffic will result in some increased risk of vessel strike of listed species. However, due to the limited information available regarding the incidence of ship strike and the factors contributing to ship strike events, it is difficult to determine how a particular number of vessel transits or a percentage increase in vessel traffic will translate into a number of likely ship strike events or percentage increase in collision risk. In spite of being one of the primary known sources of direct anthropogenic mortality to whales, and to a lesser degree, sea turtles, ship strikes remain relatively rare, stochastic events, and an increase in vessel traffic in the action area would not necessarily translate into an increase in ship strike events. To compensate for the lack of site specific data, a marine mammal monitoring plan will be in place for the term of the project to observe marine mammal activity in the project area. The risk of collision is greatest when vessels are moving at high speeds. As identified in the DEA, it is anticipated that towing the unit to and from the site will take approximately 12 hours and require up to four vessels. Average speed for anchor towing operations is anticipated to be approximately 2 knots (2.3mph) and 4 knots for platform towing operations. Once installation is completed, vessel speed returning to the mainland (and to the project for removal) will likely be typical commercial boat speed of approximately 12 knots. Other visits to the test unit are likely to be with a single vessel. Vessel speed traveling to and from the site for monitoring is anticipated to approximately 20 knots. Lower speeds, ranging from 0 to 5 knots, will be necessary within the deployment site in order to observe the equipment and accurate collection

fish and wildlife observation data. UMaine will implement NMFS marine mammal avoidance procedures in the event that a marine mammal is observed during any transit made by a construction or maintenance vessel. Additionally, project vessels will be required to abide by the NMFS Northeast Regional Viewing Guidelines, as updated through the life of the project. The presence of a lookout on the vessel who can advise the vessel operator to slow the vessel or maneuver safely when listed species are spotted will further reduce the potential for interaction with vessels.

Large whales, particularly right whales, are vulnerable to injury and mortality from ship strikes. Although the threat of vessel collision exists anywhere listed species and vessel activity overlap, ship strike is more likely to occur in areas where high vessel traffic coincides with high species density. In addition, ship strikes are more likely to occur and more likely to result in serious injury or mortality when vessels are traveling at speeds greater than ten knots. Vessels transiting at more than 10 knots will be limited to monitoring vessels. Given the maneuverability of these vessels, the use of dedicated watches to look out for whales and sea turtles, and the small number of trips that will be taken, the risk of interaction is extremely low. The vessel traffic associated with the proposed action will represent an extremely small increase in vessel traffic that would be experienced absent the proposed action. Given this and the measures that will be taken to minimize the potential for vessel strikes, NMFS has determined that the increased risk of vessel collision posed by project vessel operation in the action area is insignificant.

ESA Conclusions

Based on the analysis that all effects of the proposed project on listed species will be insignificant and discountable, NMFS concurs with the determination that the pilot deployment of one test unit annually for a five month period from July through October 15 (2012-2017), is not likely to adversely affect any listed species under NMFS jurisdiction. Therefore, no further consultation pursuant to section 7 of the ESA is required. Reinitiation of consultation is required and shall be requested by the Federal agency or by NMFS, where discretionary Federal involvement or control over the action has been retained or is authorized by law and:

- (a) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered in the consultation;
- (b) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the consultation; or
- (c) If a new species is listed or critical habitat designated that may be affected by the identified action.

Technical Assistance for the Proposed Species

Once a species is proposed for listing, the conference provisions of the ESA may apply. As stated at 50 CFR 402.10, "Federal agencies are required to confer with NMFS on any action which is likely to jeopardize the continued existence of any proposed species or result in the destruction or adverse modification of proposed critical habitat. The conference is designed to assist the Federal agency and any applicant in identifying and resolving potential conflicts at an early stage in the planning process."

Atlantic Sturgeon

Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) are known to occur in the Gulf of Maine and could be present in the action area. On October 6, 2010, NMFS published two rules proposing to list four distinct population segments (DPS) of Atlantic sturgeon as endangered (i.e., New York Bight, Chesapeake Bay, Carolina, and South Atlantic) and one DPS as threatened (Gulf of Maine DPS) under the ESA (75 FR 61872; 75 FR 61904). Atlantic sturgeon are well distributed along the Atlantic coast and sturgeon from any of the 5 DPSs could be present in the action area.

If present in the action area, Atlantic sturgeon would be exposed to effects of the proposed action. Effects to Atlantic sturgeon would likely be limited to effects to potential forage items. Atlantic sturgeon are not likely to become entangled in the mooring gear or otherwise be affected by the operation of the test unit. However, since any effects to the benthic environment will be minor and temporary and there is not likely to be any change in species composition or substrate type in the action area, NMFS has determined any effects to Atlantic sturgeon resulting from the temporary deployment of mooring gear are insignificant and discountable. As all effects of the proposed action are likely to be insignificant and discountable and the proposed action is not likely to result in the injury or mortality of any Atlantic sturgeon, the action is not likely to appreciably reduce the survival and recovery of any DPS of Atlantic sturgeon and therefore it is not reasonable to anticipate that this action would be likely to jeopardize the continued existence of any DPS of Atlantic sturgeon. As such, no conference is necessary for Atlantic sturgeon. Should project plans change, NMFS recommends that DOE discuss the potential need for conference with NMFS.

Loggerhead Sea Turtles

On March 16, 2010, NMFS published a proposed rule to list two distinct population segments (DPS) of loggerhead sea turtles as threatened and seven distinct population segments of loggerhead sea turtles as endangered, including the Northwest Atlantic DPS. This rule, when finalized, would replace the existing listing for loggerhead sea turtles. Currently, the species is listed as threatened range-wide. In the analysis above, NMFS has considered effects to the current global listing of loggerhead sea turtles. Sea turtles in the action area are likely to be from the Northwest Atlantic DPS. As explained above, all effects to loggerhead sea turtles will be insignificant and discountable and the proposed action is not likely to result in the injury or mortality of any loggerhead sea turtles; as this determination was based on the potential effects to individuals, the change in status for these sea turtles (i.e., from threatened to endangered) would not change these determinations. As all effects of the proposed action are likely to be insignificant and discountable and the proposed action is not likely to result in the injury or mortality of any loggerhead sea turtles, the action is not likely to appreciably reduce the survival and recovery of any DPS of loggerhead sea turtles, including the Northwest Atlantic DPS and therefore it is not reasonable to anticipate that this action would be likely to jeopardize the continued existence of any DPS of loggerhead sea turtles. As such, no conference is necessary for loggerhead sea turtles. Should project plans change, NMFS recommends that the DOE discuss the potential need for conference with NMFS.

Should you have any questions regarding the conclusions reached above as they relate to the need for conference or the need for future consultation should these listings be finalized, please contact David Bean of my staff at the number noted below.

Essential Fish Habitat

As noted within the DEA, the proposed project area has been designated as EFH for a range of federally managed species including, but not limited to Atlantic cod, haddock, and American plaice. Complex substrates consisting of rock and sand/gravel are present within the proposed project area and serve as important habitats for benthic fish and shellfish resources.

Due to the limited benthic footprint of the proposed project, the placement of the mooring system will result in minimal impacts to EFH. However, there is a potential for impacts resulting from anchorline scour during construction and operation of the test facility. NMFS recommends the proposed monitoring plan to include an assessment of benthic impacts resulting from anchor placement and configuration (i.e., anchor line scour), as well as assess recovery of EFH once the mooring system is removed.

NMFS concurs with the DOE's determination that adverse impacts to EFH will be minimal. However, NMFS maintains that an assessment of benthic impacts and recovery should be included within the monitoring plan. Please also note that a distinct and further EFH consultation must be reinitiated pursuant to 50 CFR 600.920(l) if new information becomes available or the project is revised in such a manner that affects the basis for the above EFH determination.

Marine Mammal Protection Act

Based on the information provided, NMFS does not anticipate any impacts to marine mammals caused from entanglement or vessel strike. However, the applicant will need to monitor noise levels to determine if there may be a potential for marine mammal harassment. If it is determined the project or alterations to the project technology could impact marine mammals the applicant needs to apply for an incidental take authorization pursuant to section 101 (a)(5)(A) and (D) of the Marine Mammal Protection Act. Questions related to the MMPA and any associated permitting, should be directed to Michelle Magliocca at 301-427-8401 x 8426. Should you have any ESA related questions about this correspondence please contact David Bean at (207) 866-4172 or by e-mail (David.Bean@Noaa.gov). For questions in regards to effects to EFH contact Chris Boelke at (978) 281-9131 or by email (Chris.Boelke@Noaa.gov).

Sincerely,


Patricia A. Kurkul
Regional Administrator

EC: Bean, F/NER3
Magliocca, F/PR1
Boelke, F/NER4

File Code: Sec 7 DeepCWind offshore demonstration wind turbine
PCTS: I/NER/2011/02439

Figure 1. Map of Gulf of Maine Acoustic Receivers Located on Ocean Observing System Buoys

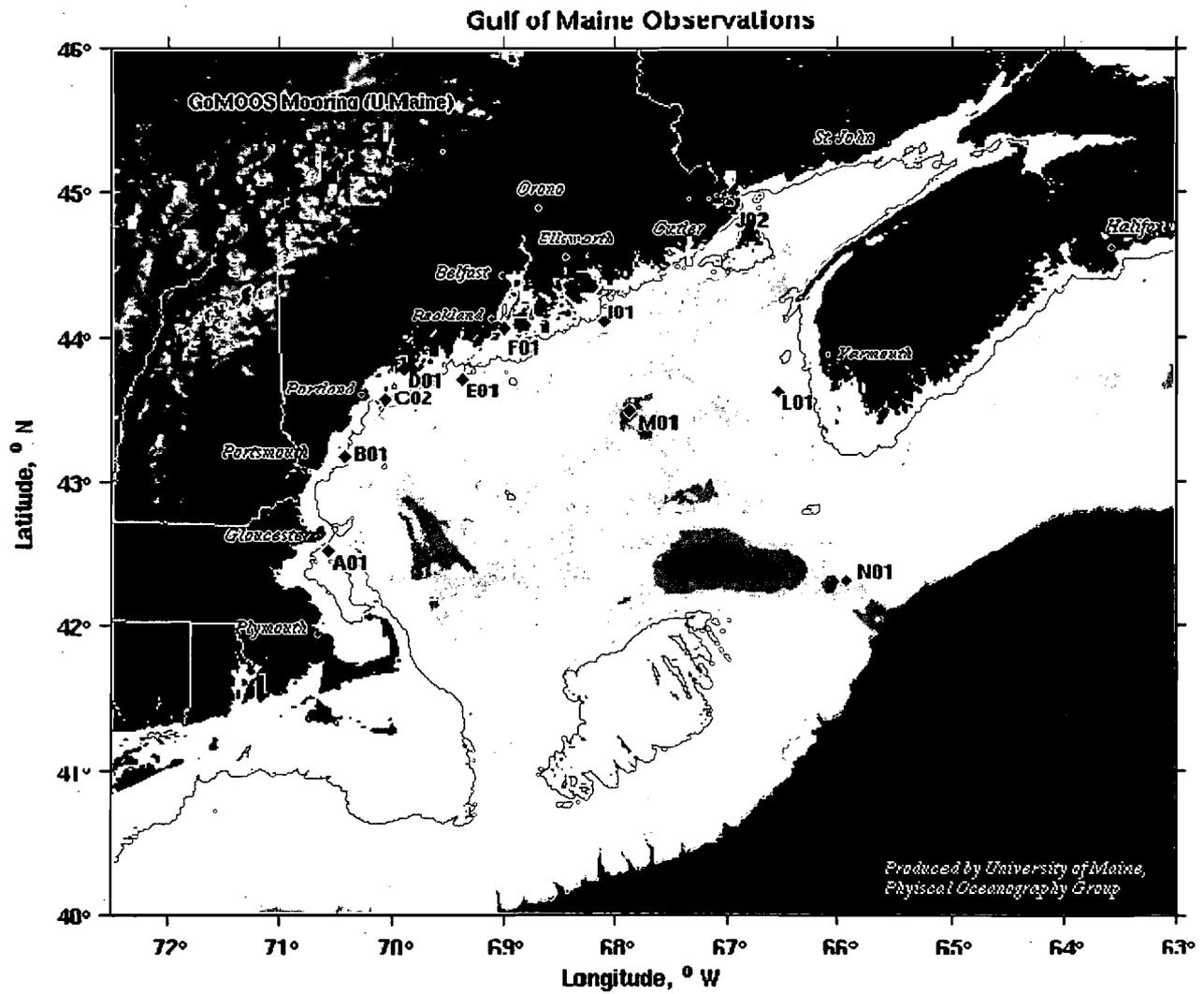


Figure 2. Map of Project Area

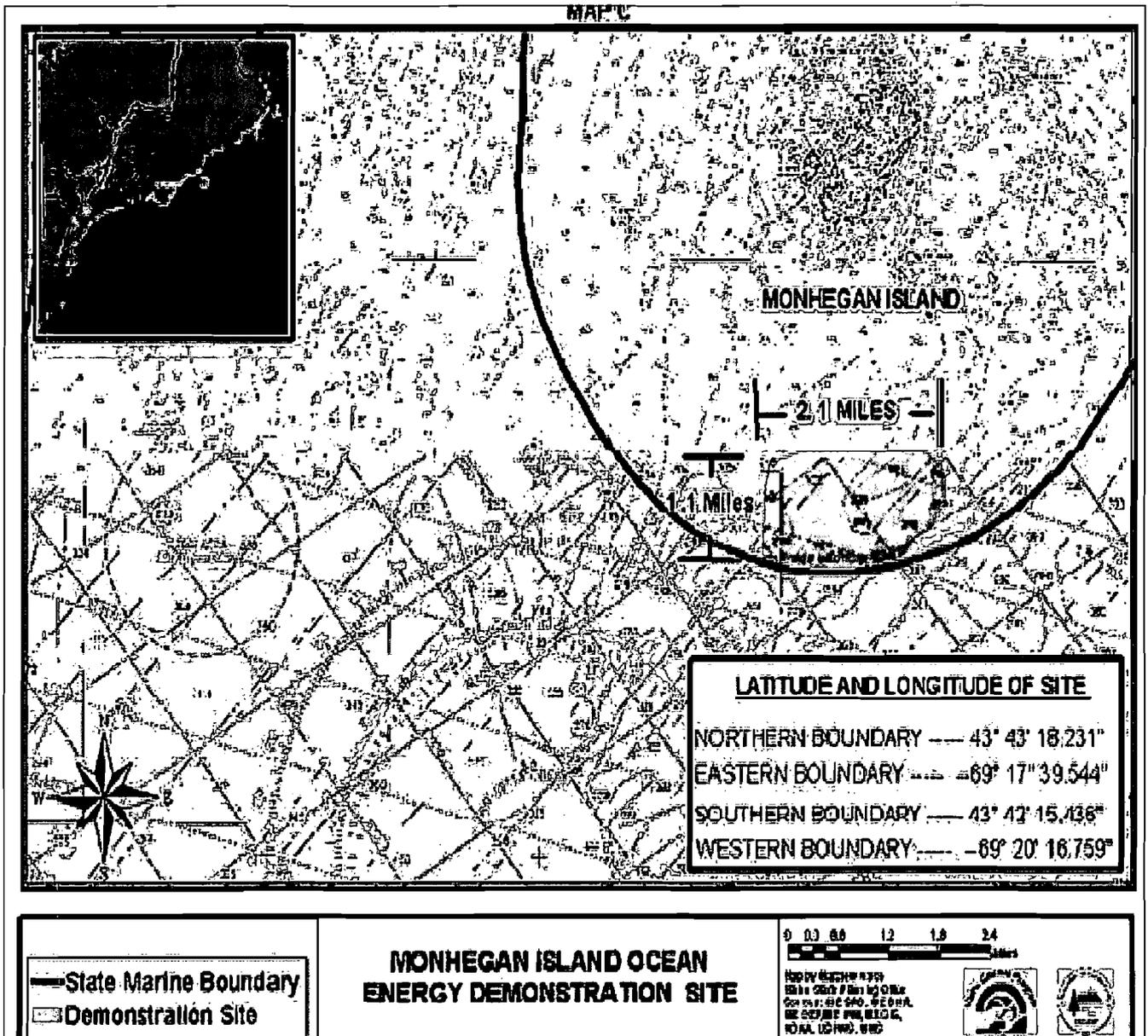


Figure 3. Ambient sound levels measured in project area

