PMC-EF2a
(2.04.02)

# U.S. DEPARTMENT OF ENERGY
# EERE PROJECT MANAGEMENT CENTER
# NEPA DETERMINATION

**RECIPIENT:** University of Maine System **STATE:** ME

**PROJECT TITLE:** Environmental Impact Protocols for Tidal Power

| Funding Opportunity Announcement Number | Procurement Instrument Number | NEPA Control Number | CID Number |
|---|---|---|---|
| | EE0000298 | GFO-10-347-001 | 0 |

**Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Order 451.1A), I have made the following determination:**

**CX, EA, EIS APPENDIX AND NUMBER:**

Description:

**A9** Information gathering (including, but not limited to, literature surveys, inventories, audits), data analysis (including computer modeling), document preparation (such as conceptual design or feasibility studies, analytical energy supply and demand studies), and dissemination (including, but not limited to, document mailings, publication, and distribution; and classroom training and informational programs), but not including site characterization or environmental monitoring.

**B3.1** Onsite and offsite site characterization and environmental monitoring, including siting, construction (or modification), operation, and dismantlement or closing (abandonment) of characterization and monitoring devices and siting, construction, and associated operation of a small-scale laboratory building or renovation of a room in an existing building for sample analysis. Activities covered include, but are not limited to, site characterization and environmental monitoring under CERCLA and RCRA. Specific activities include, but are not limited to:

**B3.3** Field and laboratory research, inventory, and information collection activities that are directly related to the conservation of fish or wildlife resources and that involve only negligible habitat destruction or population reduction

**B3.6** Siting, construction (or modification), operation, and decommissioning of facilities for indoor bench-scale research projects and conventional laboratory operations (for example, preparation of chemical standards and sample analysis); small-scale research and development projects; and small-scale pilot projects (generally less than two years) conducted to verify a concept before demonstration actions. Construction (or modification) will be within or contiguous to an already developed area (where active utilities and currently used roads are readily accessible).

Rational for determination:

The Maine Tidal Power Initiative would develop baseline resource and environmental data for the Cobscook Bay and Western Passage in Maine to evaluate the approach for future tidal power applications. A DOE determination was completed June 15, 2010 authorizing the majority of this project. At this time, the DOE is now re-evaluating net sampling for fish into 2011 (Task 2) in this NEPA determination.

Tasks 1 through 3 are comprised of activates including: Computer simulation, measurements of tidal flow and force, laboratory turbine testing, acoustic surveying, visual observations, rod, reel and release fishing, using local (human) population for species identification (mostly avian and mammal species).

In Task 4, the Maine Tidal Power Initiative would deploy a pre-commercial test turbine in the Cobscook Bay. The prototype turbine generation unit (46' wide x 14' high x 11' deep), will be mounted on a work barge anchored off Shackford Head near Eastport, the barge will be anchored using 4 mooring lines. The generation unit will be deployed approximately 14 feet below the water (top of the unit). Depths in Cobscook Bay off Shackford Head reach to almost 150 ft. The turbine will be deployed for 6 months. The turbine would have four cameras documenting how the local fauna react to the turbine, these video feeds would be monitored daily. This will allow for real time aquatic-take numbers to be compiled, if the take reaches an unacceptable amount the project will be stopped and the turbine would be removed from its temporary location.

The Army Corps of Engineers (ACOE) has reviewed the proposed project and issued a permit for the deployment of this pre-commercial test turbine. Army Corps of Engineers have concluded, "Based on our review of the information you provided (Regarding- Beta Pre-commercial Turbine Generator "45'x 14'x 11' in the Cobscook Bay), we have determined that your project will have only minimal individual and cumulative impacts on waters and wetlands of the United States. Your work is therefore authorized by the U.S. Army Corps of Engineers under the enclosed Federal Permit, the Maine Programmatic General Permit (PGP)."

The stipulations within that permit will be strictly adhered to; these requirements have been addressed in the award language for this project. The electricity generated during testing will be used to charge batteries for the off-shore U S Coast Guard (USCG) fleet. The generator will not be grid connected during deployment therefore the Federal Energy Regulatory Committee (FERC) was not part of this consultation process. However, FERC has issued a preliminary

permit for the conceptual engineering, study of environmental impacts and economic analysis portion of this project.

National Oceanic and Atmospheric Administration (NOAA), specifically the National Marine Fisheries Service (NMFS) have been consulted by USCOE regarding Section 7 consultation under the Endangered Species Act (ESA). The following statement can be found in the ACOE consultation request with NMFS, "The ACOE has made the preliminary determination that the proposed project, inclusive of the special conditions noted above, is not likely to adversely affect listed Atlantic salmon and has requested NMFS concurrence with this determination... Based on the determination that all effects, if adverse, will be insignificant or discountable, NMFS concurs with the ACOE's determination that the proposed project is not likely to adversely affect the GOM DPS of Atlantic salmon. This concludes consultation pursuant to Section 7 of the ESA for this project."

Additional consultation with NOAA was completed by DOE on May 17, 2010. During this informal consultation, a NOAA representative from the Maine Office stated, "Since the Section 7 between NMFS and Corps already considered the potential effects of net sampling on listed Atlantic salmon, no further action under the ESA is needed at this time concerning DOE's 2009 funding to the University of Maine." Stipulations of the ESA Section 7 consultation concluded by the Army Corps allowed for the net sampling to occur only until the end of September, 2010. Therefore, DOE reinitiated ESA Section 7 consultation with NOAA on July 6, 2010. On August 9, 2010, DOE completed another ESA Section 7 consultation to allow for the University of Maine to continue sampling through 2011, with concurrence from NOAA for net sampling for fish (Task 2).
Additionally, the University of Maine must comply with NOAA's request under the ESA Section 7 consultation that net catching cease and additional consultation be reinitiated if any of the following occur:
(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.
(d) if any Atlantic sturgeon are observed during the course of the proposed work please contact Lynn Lankshear as soon as possible at 978-282-8473 or Lunn.Lankshear@noaa.gov
It is with the information outlined above the DOE has determined that this project will not have any significant impacts to human health and/or environment. This project is hereby Categorically Excluded under A9 "Information Gathering", B3.1 "Environmental Monitoring", B3.3 "Research related to conservation of Fish and Wildlife" and B3.6 "Small Scale Research and Pilot Projects".

**NEPA PROVISION**

DOE has made a conditional NEPA determination for this award, and funding for certain tasks under this award is contingent upon the final NEPA determination.

Insert the following language in the award:

You are restricted from taking any action using federal funds, which would have an adverse affect on the environment or limit the choice of reasonable alternatives prior to DOE/NNSA providing either a NEPA clearance or a final NEPA decision regarding the project.

Prohibited actions include:
None
This restriction does not preclude you from:
Conducting net sampling past September 10, 2010 till project is complete.
If you move forward with activities that are not authorized for federal funding by the DOE Contracting Officer in advance of the final NEPA decision, you are doing so at risk of not receiving federal funding and such costs may not be recognized as allowable cost share.

Insert the following language in the award:

You are required to:
University of Maine must comply with NOAA's request under the ESA Section 7 consultation that net catching cease and additional consultation be reinitiated if any of the following occur:
(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.
(d) if any Atlantic sturgeon are observed during the course of the proposed work please contact Lynn Lankshear as soon as possible at 978-282-8473 or Lunn.Lankshear@noaa.gov

Note to Specialist :

This EF2A was written by Christopher Carusona II

**SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.**

NEPA Compliance Officer Signature: _____ Date: 8/23/10
NEPA Compliance Officer

**FIELD OFFICE MANAGER DETERMINATION**

☐ Field Office Manager review required

**NCO REQUESTS THE FIELD OFFICE MANAGER REVIEW FOR THE FOLLOWING REASON:**

☐ Proposed action fits within a categorical exclusion but involves a high profile or controversial issue that warrants Field Office Manager's attention.
☐ Proposed action falls within an EA or EIS category and therefore requires Field Office Manager's review and determination.

**BASED ON MY REVIEW I CONCUR WITH THE DETERMINATION OF THE NCO :**

Field Office Manager's Signature: _____ Date: _____
Field Office Manager

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 - 9 2010

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

RE: University of Maine Tidal Power Initiative

Dear Ms. Margason:

This responds to your letter received July 6, 2010 for consultation concerning the Department of Energy's (DOE) proposed issuance of funds to the University of Maine (UM) to conduct tidal power research in Cobscook Bay and Passamaquoddy Bay, Maine. DOE has made the preliminary determination that the proposed action is not likely to adversely affect any species or critical habitat under the jurisdiction of NOAA's National Marine Fisheries Service (NMFS) and has requested NMFS concurrence with that determination.

**NMFS Listed Species and Critical Habitat in the Action Area**

The Gulf of Maine Distinct Population Segment (GOM DPS) of Atlantic salmon (*Salmo salar*) is listed as endangered under the ESA. The GOM DPS includes all anadromous Atlantic salmon whose freshwater range occurs in the watersheds from the Androscoggin River northward along the Maine coast to the Dennys River. Included are all associated conservation hatchery populations used to supplement these natural populations; currently, such conservation hatchery populations are maintained at Green Lake National Fish Hatchery (GLNFH) and Craig Brook National Fish Hatchery (CBNFH). The project site in Cobscook Bay is located within the GOM DPS of Atlantic salmon. Passmaquoddy Bay is not within the geographic range of listed Atlantic salmon.

Critical habitat has been designated for listed Atlantic salmon pursuant to section 4(b)(2) of the ESA. The critical habitat designation for the GOM DPS includes 45 specific areas occupied by Atlantic salmon at the time of listing that include approximately 19,571 km of perennial River, stream, and estuary habitat and 799 square km of lake habitat within the range of the GOM DPS and in which are found those physical and biological features essential to the conservation of the species. The entire occupied range of the GOM DPS in which critical habitat is designated is within the State of Maine. The project sites in Cobscook Bay and Passamaquoddy Bay are not located within designated critical habitat for the Atlantic salmon GOM DPS. Therefore, effects of the proposed action on critical habitat will not be considered in this letter.

Listed shortnose sturgeon (*Acipenser brevirostrum*) occur in several rivers in Maine. However, the best available information indicates that no shortnose sturgeon occur in either Cobscook Bay

or Passmaquoddy Bay. As such, no shortnose sturgeon are likely to occur in the action area for this project and NMFS will not consider effects to shortnose sturgeon in this letter. Similarly, while several species of listed whales and sea turtles occur seasonally off the coast of Maine, no listed sea turtles or whales are likely to occur in the action area of the proposed project.

**Proposed Action**

According to your letter dated June 28, 2010, DOE proposes to fund UM to conduct a variety of assessments in Cobscook Bay and Passmaquoddy Bay in relationship with tidal power development. Several tidal energy projects have been proposed for Cobscook Bay and Passamaquoddy Bay; however, very little is known about the potential impacts of tidal energy projects on marine resources including fish. The overall project has four goals: 1) Assess tidal resource distribution and near-field impacts; 2) Assess fish and macrofauna distribution and validate impact assessment techniques; 3) Model, test and field assess tidal turbine technology; and 4) Train a skilled work force for upcoming renewable energy industries.

Of the four stated goals of the project, only Goal 2 has the potential to interact with listed Atlantic salmon in Cobscook Bay. Given the low numbers of Atlantic salmon in Cobscook Bay and small sampling effort, DOE has made the preliminary determination that the proposed project is not likely to adversely affect listed Atlantic salmon and has requested NMFS concurrence with this determination.

Goal 2 of the proposed assessment will involve sampling in the marine environment of each bay. UM proposes to use a Before-After-Control-Impact (BACI) study design to determine the vertical distribution of fish in each bay in the vicinity of proposed tidal energy projects as well as control sites. Hydroacoustic equipment (SIMRAD and DIDSON) will be the primary sampling technique to non-invasively determine fish abundance and distribution in the water column of the bays. Hydroacoustic equipment emits sound waves that reflect off suspended objects (in this case fish) and send back an acoustic target strength of the approximate size and distribution of the suspended objects. To aid in determining the species composition of hydroacoustic targets, UM proposes to conduct mid-water netting in conjunction with hydroacoustic sampling. Mid-water netting will allow UM to correlate acoustic targets with actual fish species as it is believed that relative species diversity found in net samples will be similar to acoustic targets.

Mid-water netting will be accomplished by deploying a net (3.05m x 3.05m x 11m) from a moored fishing vessel adjacent to a vessel equipped with hydroacoustic equipment. The net is designed similar to trawl gear; however, tidal currents will provide flow through the net rather than pulling it through the water. Netting will be performed for up to 30 minutes at two locations in each bay. Up to 3 net sets will be made at any tidal/diel stage (day-ebb, day-flood, night-ebb, night-flood). Sampling will be performed in May, June, August, and September from 2011-2013. All fish collected in samples will be identified, enumerated, weighed, and measured. Fish observed un-injured will be handled first to maximize the number returned to the ocean unharmed.

**Effects of the Action**

Several factors were considered in assessing the potential effects of this project on listed Atlantic salmon. These include the frequency of occurrence of listed species in the project area and the likelihood that listed species, if present in the action area, would be impacted by the proposed action.

Atlantic salmon post-smolts and adults occur in Cobscook Bay. Cobscook Bay serves as a migratory pathway for adult Atlantic salmon returning to their natal freshwater rivers to spawn and as post-smolts emigrating to North Atlantic Ocean to feed and grow. Post-smolts generally occur off the Maine coast during the months of May and June. Returning adult salmon can occur off the Maine coast from May through early November. Most Atlantic salmon occurring in Cobscook Bay are Dennys River-origin fish. Adult returns to the Dennys River are very small, averaging only 6 fish annually since 2000 (USASAC 2009). Based upon parr abundance data collected by the Maine Department of Marine Resources (MDMR) in 2000-2005 (USASAC 2009), the Dennys River is expected to produce approximately 3,200 to 6,500 parr annually (95% CI). Adjusted for overwintering survival (15-50%) and survival through the estuary (NMFS unpublished data), approximately 97-650 post-smolts (95% CI) are likely to emigrate through Cobscook Bay annually in the vicinity of the proposed tidal generation device.

Atlantic salmon smolts are known to migrate near the surface of waters (Moore et al. 1995, McCleave 1978, Fried et al. 1978, LaBar et al. 1978). Based upon data collected by NMFS in Penobscot Bay in 2005 using ultrasonic telemetry techniques, 98.2% of tagged smolt detections occurred in the upper 5m of the water column during the outmigration period (NMFS, unpublished data). No smolts were detected at depths greater than 37 m in Penobscot Bay during the 2005 study. Adult Atlantic salmon have been documented making vertical excursions of 5–15 m following fine-structure gradient layers in the quasi-mixed surface layer or in the thermocline (Skilbrei et al 2009).

Atlantic salmon emigrating in Cobscook Bay could potentially interact with UM's nets. Direct interactions with the nets could result in the capture of Atlantic salmon and injury or mortality of individuals. Indirect interactions could involve migration behavioral changes to avoid the nets. Nets will be fished mid-water, approximately 12 meters below the surface, therefore, post-smolts are likely to migrate safely and undisturbed above the nets in the upper 5 m of the water column. With the net occupying only a fraction of the migration corridor in Cobscook Bay, it is very unlikely that a smolt would have a direct interaction with the net. Given the low numbers of adults returning to Cobscook Bay, it is also very unlikely that an adult salmon would interact with the net. In the event an Atlantic salmon is captured in the net, UM proposes to discontinue netting immediately and will contact NMFS. As it is extremely unlikely that any Atlantic salmon will interact with the net and hydroacoustic sampling is not expected to have any effects on fish, all effects of the proposed project on Atlantic salmon will be discountable.

**Section 7 Conclusions**

Based on the determination that all effects, if adverse, will be insignificant or discountable, NMFS concurs with the DOE's determination that the proposed project is not likely to adversely affect the GOM DPS of Atlantic salmon. This concludes consultation pursuant to Section 7 of the ESA for this project. Re-initiation of consultation is required and shall be requested by DOE

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. Please contact Jeff Murphy (207) 866-7379 at our Maine Field Office for any questions regarding Atlantic salmon and this consultation.

**Technical Assitance for Candidate Species**

Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) are distributed along the entire East Coast of the United States and have been designated a Candidate Species by NMFS. The best available scientific information indicates that Atlantic sturgeon occur in several river systems in Maine and in Canada (e.g., the Penobscot, Kennebec, Androscoggin and Saint John) and may occur in the action area. In 2006, NMFS initiated a status review for this species to determine if listing as threatened or endangered under the ESA is warranted. The Status Review report is available at: http://www.nero.noaa.gov/prot_res/CandidateSpeciesProgram/AtlSturgeonStatusReviewReport.pdf. NMFS is currently considering the information presented in the 2007 Status Review Report to determine if any listing action pursuant to the ESA is warranted at this time. A listing determination, and, if listing is warranted, any accompanying proposed rule(s), is expected to be published by NMFS in 2010. As a candidate species, Atlantic sturgeon receives no substantive or procedural protection under the ESA; however, if the species is proposed for listing, the conference provisions of the ESA become applicable (see 50 CFR 402.10(e)). While at this time, NMFS is not offering any recommendations to minimize effects of the proposed action on Atlantic sturgeon, NMFS requests that if any Atlantic sturgeon are observed during the course of the proposed work, NMFS be contacted as soon as possible (Lynn Lankshear, (978)282-8473 or Lynn.Lankshear@noaa.gov).

Sincerely,

Patricia A. Kurkul
Regional Administrator

CC: G. Zydlewski, UM

EC: Mahaney – USFWS
Murphy, Crocker, Hawkes, – NMFS

File Code: Sec. 7 DOE ME
PCTS: I/NER/2010/03430