



OFFICE OF WETLANDS, OCEANS AND WATERSHEDS

WASHINGTON, D.C. 20460

March 6, 2025

Mr. Louis A. Chiarella
Assistant Regional Administrator for Habitat and Ecosystem Services
NOAA National Marine Fisheries Service, Greater Atlantic Regional Fisheries Office
55 Greater Republic Drive
Gloucester, MA 01930

Dear Mr. Chiarella:

This letter responds to the Essential Fish Habitat conservation recommendations that the National Oceanic and Atmospheric Administration National Marine Fisheries Service provided to the U.S. Environmental Protection Agency via letter dated February 20, 2025, regarding a tentative *Marine Protection, Research and Sanctuaries Act* research permit for Woods Hole Oceanographic Institution's Locking Ocean Carbon in the Northeast Shelf and Slope (LOC-NESS) Wilkinson Basin Study. The EPA provides this written response to each EFH conservation recommendation after discussion with NOAA Fisheries regarding its recommendations in accordance with 50 CFR 600.920(k).

Pursuant to Section 305(b)(4)(A) of the *Magnuson-Stevens Fishery Conservation and Management Act*, NOAA Fisheries recommended that the EPA consider the following two conservation recommendations to avoid, minimize or offset significant impacts to EFH from the LOC-NESS Wilkinson Basin Study:

NOAA Fisheries Conservation Recommendation 1:

"In addition to planned laboratory tests on *Calanus finnmarchius*, we recommend that controlled laboratory and/or mesocosm studies should be developed and implemented to evaluate the potential effects of high alkalinity deployments on sensitive planktonic egg and larval life stages. This recommendation need not be performed in advance of the proposed in-situ deployment planned for mid-July to mid-September of 2025. However, these laboratory or mesocosm analyses should be implemented prior to the commercial-scale application of NaOH for ocean alkalinity enhancement."

- a. "Laboratory or mesocosm studies should investigate representative egg and larval samples from the following families of fish:
 - i. Sebastinae (Ex. Sebastes)
 - ii. Gadidae (Ex. Cod, Pollock, Haddock, Fourbeard Rockling, White, Silver or Red Hake)
 - iii. Clupeidae (Ex. Herring)
 - iv. Pleuronectidae (Winter flounder, Plaice, Yellowtail flounder)"

- b. “Depending on the spatial geography targeted for mCDR applications, additional analyses of the following taxa representative of the species that are most commonly found throughout the Gulf of Maine may be warranted. These taxa serve important ecological functions and support economically and culturally significant fisheries:
 - i. Pectinidae (Ex. Sea scallop)
 - ii. Homaridae (Ex. Lobster)”

NOAA Fisheries Conservation Recommendation 2:

“Should laboratory or mesocosm monitoring for effects to biological communities identify any indications of adverse effects to EFH or federally-managed species, an assessment of methods and protocols should be reevaluated to determine if additional measures to avoid and minimize adverse effects can be implemented for further carbon dioxide removal tests and potential commercial scale applications.”

The EPA’s Consideration of and Response to the Conservation Recommendations:

The EPA agrees that laboratory or mesocosm research could provide further information on potential impacts of short-term exposure to elevated alkalinity and pH on early life stages of fish species. The EPA understands that NOAA Fisheries recommends that these “analyses should be implemented prior to the commercial-scale application of NaOH [sodium hydroxide] for ocean alkalinity enhancement” and that “methods and protocols should be reevaluated ... to avoid and minimize adverse effects for further carbon dioxide removal test and potential commercial scale applications.” The EPA does not disagree that the results of such research would be valuable for an assessment of possible impacts of a large-scale project in the Gulf of Maine, if one were proposed in the future.

However, the EPA assessed the study proposed by the applicant rather than the range of possibilities for potential future projects. The proposed LOC-NESS Wilkinson Basin Study is a small-scale research study and not a commercial-scale activity. The EPA is not currently seeking consultation with NOAA Fisheries on any proposed MPRSA permits for commercial-scale ocean alkalinity enhancement activities involving sodium hydroxide or any other alkalinity source, and the EPA does not have a basis to assess a hypothetical future ocean alkalinity enhancement proposal. Should the EPA be presented with such a future proposal, the EPA would rely on relevant scientific literature from laboratory and mesocosm studies, such as those proposed by NOAA Fisheries, to assess a variety of potential impacts in accordance with statutory and regulatory criteria.

Therefore, the EPA understands that Conservation Recommendations 1 and 2 aim to mitigate the impacts of potential future ocean alkalinity enhancement projects and would not be measures that could be implemented by the EPA “to avoid, minimize, mitigate, or otherwise offset adverse effects on EFH” resulting from the proposed issuance of an MPRSA research permit for the LOC-NESS Wilkinson Basin Study. The EPA will remain mindful of these recommendations in the event that a potential future project proponent may seek permit authorization to conduct similar types of activities at a larger scale.

In addition to the EPA’s response to the two Conservation Recommendations, the EPA notes that NOAA Fisheries may have mistakenly relied on outdated information from the EPA’s previous EFH

Assessment dated June 10, 2024¹, when preparing its February 20, 2025 letter. The EPA clarifies several technical matters that may have been misunderstood or misquoted below.

As described in the EPA's EFH Assessment dated January 16, 2024, and in the supporting record in the public docket², the proposed research study is a discrete one-time release event (there are not multiple release phases); the transport vessel is expected to be a supply vessel (not a tug-and-barge vessel); and the applicant's monitoring plans do not explicitly include wind speed measurements or water-column sediment traps. Each of these represents a change from the EPA's earlier EFH assessment based on changes proposed by the permit applicant.

The changes proposed by the permit applicant included reducing the amount of sodium hydroxide solution that would be released to 16,500 gallons (a 75 percent reduction) and updating the release methods to increase the dilution and mixing rate of the sodium hydroxide solution in ocean surface waters. Therefore, the EPA clarified in its revised EFH Assessment dated January 16, 2025, that the proposed release of sodium hydroxide solution during the LOC-NESS Wilkinson Basin Study would occur within the top 10 meters of the surface waters across an area of approximately 0.19 square miles during a release lasting approximately four hours. Within the release path, the surface seawater pH is expected to be below 9 within 12 seconds of release and below pH 8.5 within 75 seconds. Seawater pH within the alkalinity patch is anticipated to be near baseline conditions within 24 hours. Potential exposure of organisms to elevated seawater pH above 9 or high alkalinity conditions would be short-term and highly localized to the seawater within the immediate alkalinity release path.

NOAA Fisheries' letter from February 20, 2025, also purports to quote several statements that do not appear in the EPA's EFH Assessment dated January 16, 2025. For example, the EPA's revised EFH Assessment does not state that "EPA is not aware of any publication regarding the impacts of short-term increases of pH or alkalinity (less than 1 hour)...on marine animals at any life stage" nor did the revised Assessment state that "while fish gills are a potential exposure route for impacts from elevated seawater pH, it is expected that the mobility of the adult and juvenile stages of these organisms would minimize time spent interacting with the elevated pH waters." Instead, the current EFH Assessment dated January 16, 2025, provides the EPA's analysis of several recently published scientific studies on short-term exposure of phytoplankton and early life stages of zooplankton and fish to elevated alkalinity.

¹ <https://www.regulations.gov/document/EPA-HQ-OW-2024-0189-0044>

² <https://www.regulations.gov/docket/EPA-HQ-OW-2024-0189>

Based on the EPA's consideration of the two Conservation Recommendations provided by NOAA Fisheries, the EPA determines that the Recommendations relate to the evaluation of potential future projects and the Recommendations would not "avoid, minimize, mitigate, or otherwise offset adverse effects on EFH" specifically for the LOC-NESS Wilkinson Basin Study. The EPA welcomes the opportunity to discuss the specific technical corrections that the EPA has identified in NOAA Fisheries' summary of the project description and the EPA's EFH assessment.

Sincerely,

Stacey Jensen
Director, Oceans Wetlands and Communities Division
EPA Office of Water

cc: Christopher Boelke, Douglas Christel, Kaitlyn Shaw, Betsy Valente, Sena McCrory, Kaycie Lanpher