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MEMORANDUM

DATE: February 2, 2024

TO: National Marine Fisheries Service

FROM: Mississippi Sound Coalition

SUBJECT: Additional Information re U.S. Army Corps of Engineers Essential Fish Habitat Assessment, Bonnet Carre Spillway Operations

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This memorandum is a supplement to the Mississippi Sound Coalition's December 19, 2023 memorandum regarding the U.S. Army Corps of Engineers' Bonnet Carre Spillway Essential Fish Habitat Assessment.

As noted in the December 19 memorandum the Corps' EFH Assessment contains numerous statements without citation to data or literature. The document lists certain peer reviewed literature at the end, but specific statements made within the document are not referenced to the citation list. This memorandum provides further information demonstrating that statements regarding effects of spillway operation on oyster reef EFH are contrary to the peer reviewed literature.

Section 3.9.3.1 of the EFH Assessment states that "[o]yster reefs that experience salinity induced mortality still act as EFH by providing structured hard substrate habitat benefits to federally managed fisheries and their prey. Therefore, it is expected the range of BCS discharges are unlikely to have long term impacts to oyster reefs as EFH for federally managed species."

Pace, et al studied the loss of oyster shell mass after a 2016 mass mortality event and found that by April 2019 deterioration of shell surface was ubiquitous, and many valves had disappeared.[1] This clearly indicates that after mass mortality events like that caused by the Bonnet Carre Spillway in 2019, the habitat function of oyster reefs degrades quickly. This results in an almost immediate loss of EFH value and absent recruitment, progressive loss over time.

[1] Sara M. Pace, Leanne M. Poussard, Eric N. Powell, Kathryn A. Ashton-Alcox, Kelsey M. Kuykendall, Laura K. Solinger, Kathleen M. Hemeon, Thomas M. Soniat "Dying, Decaying, and Dissolving into Irrelevance: First Direct in-the-Field Estimate of *Crassostrea virginica* Shell Loss—a Case History from Mississippi Sound," Journal of Shellfish Research, 39(2), 245-256, (26 August 2020).

The Coalition's December 19 memorandum cited Morgan and Rakocinski (2022) which found that Bonnet Carre Spillway operations completely decimated spawning stocks of oysters in the Western Mississippi Sound, and early oyster recruitment was effectively eliminated. Gledhill, et al also state that their 2020 study "clearly demonstrates the decimation of oyster reefs caused by the extended freshwater release flowing east from the [Bonnet Carre Spillway.]" This study further states that "[h]istorically, oyster populations in Mississippi have been able to recover from naturally occurring environmental stressors but have been less resilient to anthropogenic stressors" and "oyster populations in Mississippi could remain unsustainable for harvesting unless future freshwater intrusions are incorporated into management planning."[2]

If we can clarify or provide further information on any of these subjects, please let me know. The members of the Mississippi Sound Coalition and the citizens they represent are relying on the National Marine Fisheries Service to assure the information used in the consultation process is accurate and reliable.

[2] Gledhill, J.H., A.F. Barnett, M. Slattery, K.L. Willett, G.L. Easson, S.S. Otts, D.J. Gotchfeld. 2020. Mass Mortality of the Eastern Oyster in the Western Mississippi Sound Following Unprecedented Mississippi River Flooding in 2019. Journal of Shellfish Research. 39:2, 235-244.