



Assessment of Potential Impacts of Sacrificial Zinc Anodes to Adjacent Oyster Reefs

ERDC Dredging Operations Technical Support Program (DOTS)

U.S. ARMY CORPS OF ENGINEERS

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Response Summary:

Pier support rehabilitation is required for piers in the Elizabeth River. Due to galvanic decay, the inclusion of sacrificial zinc anodes was proposed as a protective measure for the piers. Information on the effects of zinc on oysters suspended from the pier in cages or floats and in nearby oysters beds was required before the project could proceed. The Norfolk District requested the ERDC determine the potential risk of the oysters to zinc released from the anodes. Water quality modeling, including modeling using the DREDGE Module of the ADDAMS toolbox was conducted to determine the projected exposure of zinc to the oysters. Estimated oyster zinc exposure was then compared to effects data from the literature to determine if effects would be expected.

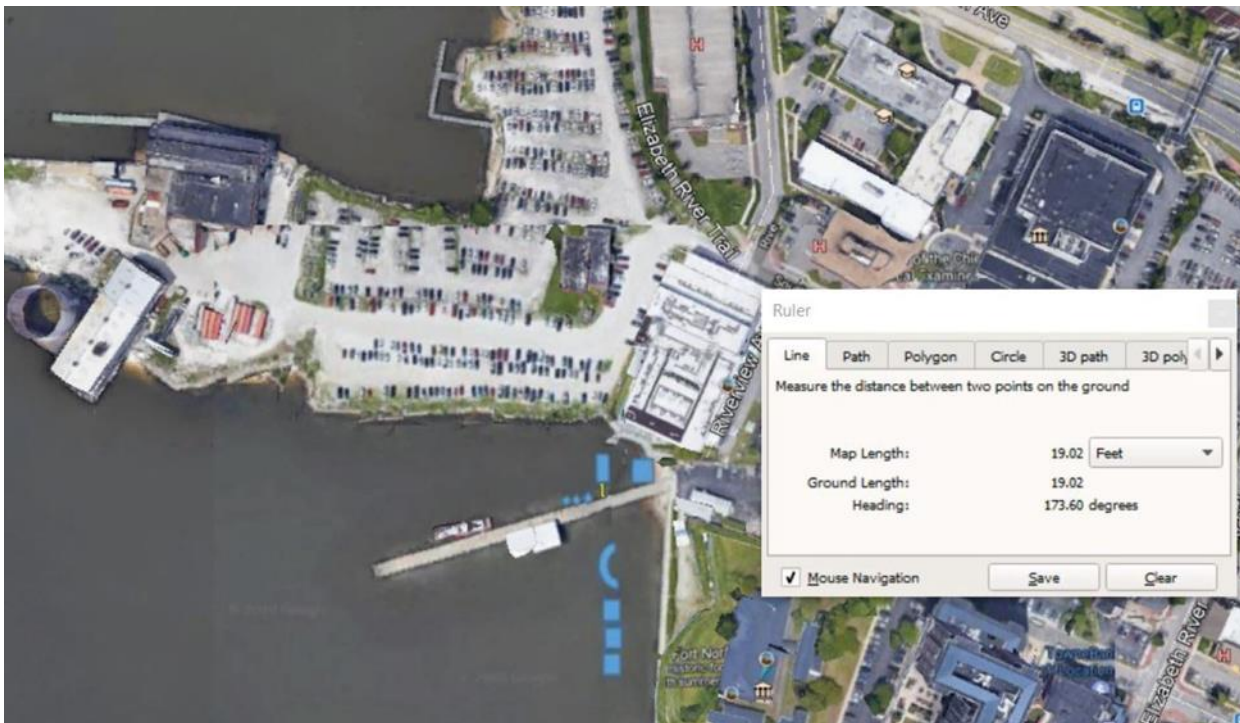


Figure 1. Approximate location of oyster cages suspended from the pier (small blue dots) and floats (blue rectangles immediately adjacent to the pier).

The assumptions used during modeling were highly conservative with the goal of estimating the highest potential exposure concentration of zinc to the oysters. This level of assumed conservatism coupled with the predicted potential concentrations being below published effect levels indicates that the sacrificial zinc anodes should not have an adverse impact on the adjacent oysters.



Providing environmental and engineering technical support to the U.S. Army Corps of Engineers Operations and Maintenance navigation and dredging missions

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Period of Performance:

April 13th – September 9th, 2020.

Benefits of the Response to the USACE Dredging/Navigation Program:

Data provided to the Norfolk district provides the basis for making a determination of the feasibility of using zinc sacrificial anodes for pier protection.

Deliverable:

A report outlining the findings of response was provided to the Norfolk District.



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