



CELRB Wilkeson Point Slip 3 Mixing Zone Analysis Using SETTLE and CDFATE Models for a Weir Discharge

ERDC Dredging Operations Technical Support Program (DOTS)

U.S. ARMY CORPS OF ENGINEERS

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Response Summary:

Performed a follow-up analysis of the mixing zone requirements for discharge over a weir instead of seepage through a rock breakwater. The analysis was performed for circulation velocities under three wind conditions (low, medium and high speeds) within the Buffalo Harbor as protected with a breakwater. Dredge production rates, retention times and effluent TSS concentrations were computed using SETTLE model for several settling characteristics. Mixing zone requirements were computed using the CDFATE model. Provided followup guidance on selection of monitoring stations.

Period of Performance:

Start date: 8 February 2023

Completion Date: 13 February 2023

Followup Date: 3 May 2023

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

The modeling and analysis provided the technical documentation to demonstrate water column compliance with CWA requirements to support the request for a 401 water quality certification.

Deliverable:

The technical response to the Buffalo District included SETTLE and CDFATE model input and output files, documentation of the model inputs and a summary of the required mixing zone lengths for the range of possible conditions.



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

Paul R. Schroeder, PhD, PE
Environmental Laboratory • Paul.R.Schroeder@usace.army.mil

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