Comparison of Two Modeling Approaches for Simulating the Consolidation and Desiccation Behavior of Dredged Fill

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This paper presents a comparison of two modeling approaches that can be used to predict the consolidation and desiccation behavior of dredged material, using a case study of Poplar Island, Chesapeake Bay. As part of the Site Development Plan (SDP) for Poplar Island, it is necessary to accurately predict the behavior of hydraulically placed dredged material soon after placement, as well as several years following placement. The accuracy of the prediction is critical because the success of the intertidal wetland portion of the site is highly sensitive to final elevations. This paper will present the results of comparative analyses using the U.S. Army Corps of Engineers' computer model PSDDF, and the University of Colorado computer model CONDES. In the PSDDF analyses, the desiccation was modeled simultaneously with the consolidation, but the settlement results are computed separately for each process. In the CONDES analyses the settlements from each component cannot be separated in a single run. Thus, in order to facilitate the comparison, CONDES analyses were performed initially for consolidation only and subsequently for consolidation and desiccation simultaneously.