ENV Report 49 – *Comparison of Tow-Induced Sediment Resuspension Field Data to NAVSED Model* by Stephen T. Maynord, Timothy L. Fagerburg.

ABSTRACT

The Navigation Sedimentation (NAVSED) model for tow-induced sediment resuspension was evaluated using field data collected at Pool 13 on the Mississippi River and LaGrange Pool on the Illinois Waterway. Sediment concentration, velocity, and water level variation were measured in the near-bank zone where depths were about 0.9 m. Shoreline resuspension at Pool 13 results predominantly from wave action. At LaGrange Pool, the smaller channel size results in return velocity causing a significant contribution to sediment resuspension and the small distance from the sailing line to the shoreline results in the propeller jet resuspension reaching the shoreline. The waves from the tow tend to be smaller at LaGrange due to the lower tow speeds in the smaller channel. Comparisons of observed sediment concentration at Pool 13 were limited to four events that produced significant resuspension at the shoreline gages. Comparisons of observed sediment concentration at LaGrange Pool were conducted for 10 events that produced maximum change in sediment concentration at the shoreline gages ranging from 30 to 230 mg/L. The total sediment resuspended during an event was conservatively estimated by NAVSED. In only a few cases, peak, short-lived, maximum concentrations were underestimated by NAVSED. This report concludes that theNAVSED estimates of tow-induced sediment resuspension are adequate for the Upper Mississippi River – Illinois Waterway (UMR – IWW) System Navigation study.