ENV Report 11 - ***Application of UNET Model to Vessel Drawdown in Backwaters of Navigation Channels*** by Stephen T. Maynord

ABSTRACT

Results of the one-dimensional unsteady flow model UNET were compared to measured water level and velocity changes in backwater connected to a navigation channel. These changes resulted from passage of shallow-draft navigation in the navigation channel. Measurements used in the comparison were from a 1:30-scale physical model generic backwater and from an actual backwater of the Illinois Waterway. The UNET model covered only the backwater with the vessel-induced time-history of drawdown being the input boundary condition at the downstream end of the UNET model backwater. Based on comparisons, the UNET model can predict the magnitude and shape of the initial wave that travels up the backwater but subsequent reflections compare less favorably with the observed data. Water level predictions were generally better than velocity predictions, particularly in the Illinois Waterway backwater.