ENV Report 55 – ***Commercial navigation Traffic Induced Shoreline Dewatering on the Upper Mississippi River: Implications for Larval Fish Stranding*** by Stephen T. Maynord andThomas M. Keevin.

ABSTRACT

Commercial vessel passage may strand young fishes during drawdown and subsequent dewatering of the littoral zone. In order to determine the potential magnitude of impact, the area of shoreline dewatered by the movement of commercial navigation traffic was calculated for a typical year for pools 4, 8, 13 and 26 of the Upper Mississippi River for March through August, the period when larval fish would be expected . During May and June — the peak larval fish density and species diversity months — the width of the dewatering zone ranges from less than 0.03 m (Pool 26, May) to 0.28 m (Pool 8, June) for 50 percent of tow passages and from less than 0.05 m (Pool 26, May) to 0.53 m (Pool 8, June) for 90 percent of tow passages. With the exception of Pool 8, the average width of dewatered shoreline during May and June is less than 0.20 m for 50 percent of tow passages and less than 0.39 m for 90 percent of tow passages. The average width of the area exposed, or dewatered, decreased in a downstream direction as the channel becomes larger. The number of times the shoreline zone is dewatered depends on traffic levels that tend to increase in a downstream direction. Larval fish mortality could occur if larvae remained in the narrow dewatering zone for multiple drawdown events. However, littoral species display behavioral responses to drawdown that would minimize repeated strandings.