

**Table 10.** Summary of Results For the Illinois Waterway.

| Pool           | Total Bank Length (m) | High Potential Length* (m) | % High Potential | Protected Length (m) | % Protected  | Medium Potential Length (m) | % Medium Potential | Protected Length (m) | % Protected |
|----------------|-----------------------|----------------------------|------------------|----------------------|--------------|-----------------------------|--------------------|----------------------|-------------|
| Alton          | 249,763               | 2,181                      | 0.9%             | 36                   | 1.7%         | 4,244                       | 1.7%               | 837                  | 19.7%       |
| LaGrange       | 240,935               | 23,443                     | 9.7%             | 3,680                | 15.7%        | 41,088                      | 17.1%              | 80                   | 0.2%        |
| Peoria         | 185,149               | 18,870                     | 10.2%            | 1,497                | 7.9%         | 4,809                       | 2.6%               | 0                    | 0.0%        |
| Starved Rock   | 37,480                | 3,327                      | 8.9%             | 1,365                | 41.0%        | 2,257                       | 6.0%               | 634                  | 28.1%       |
| Marseilles     | 85,376                | 15,879                     | 18.6%            | 5,676                | 35.8%        | 9,821                       | 11.5%              | 2,765                | 28.2%       |
| Dresden Island | 50,270                | 8,025                      | 16.0%            | 1,999                | 24.9%        | 6,568                       | 13.1%              | 2,416                | 36.8%       |
| <b>Sum</b>     | <b>848,972</b>        | <b>71,726</b>              | <b>8.5%</b>      | <b>14,253</b>        | <b>19.9%</b> | <b>68,786</b>               | <b>8.1%</b>        | <b>6,732</b>         | <b>9.8%</b> |

**Unprotected High Length: 57,473 (6.8%)      Unprotected Medium Length: 62,054 (7.3%)**

**\* Includes Fleeting Areas**

#### IV. CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations were derived from the present investigation:

##### A. Conclusions:

1. Because the 1995 field reconnaissance study on bank conditions for the Upper Mississippi River (UMR) and the Illinois Waterway (IWW) (COE, 1998) included only actively eroding sites, the parameters observed in the field were not suitable for developing a model to predict the occurrence vs. non-occurrence of bank erosion on a system wide basis.
2. A contingency analysis, which provides a measure of dependency between pairs of parameters, was found in this case to produce useful information in conducting risk assessment for bank erosion along the UMR and the IWW. An exponential categorical weighting scheme was introduced to rank each parameter into three risk ranges of low, medium, and high category values. The resulting model was applied system wide to screen the system based upon three important parameters (channel top-width, distance to sailing

line, and radius of curvature). Based on the field survey estimates of eroding bank and significance of commercial navigation, the model was used to delineate high- and medium-risk areas along the UMR and the IWW.

3. The potential for commercial navigation related bank erosion is greatest in the upper portions of the UMR and along the IWW where channel dimensions are narrowest and where the navigating tow is close to the bank, as well as in localized areas where fleeting and mooring activity are occurring. A significant percentage (48%) of the areas identified as having a high potential for commercial navigation related bank erosion on the UMR were identified as protected during the 1995 field survey.

## **B. Recommendations:**

1. It is recommended that a systematic and statistically based data-sampling scheme be developed for assessing bank conditions and applied in the field to entire pools. New data could be correlated with the 1995 field data.

2. It is recommended that the COE continue to update its system-wide bank erosion GIS database so that significant physical attributes relevant to bank-erosion processes can be included for further analyses as they become available. The priority attributes should be bank soil properties, bench width, subaqueous bench slope, scarp height, wind fetch, and vegetation coverage of the bank.

3. As more information becomes available following *Recommendations 1 and 2* above, the model should be re-calibrated and expanded using additional parameters beyond those used in the present investigation.