

VI. SUMMARY AND CONCLUSIONS

The objective of this site-specific analysis was to determine potential impacts from proposed construction measures using a habitat-based approach and, to the extent possible, quantify these impacts to assist in overall plan formulation for the Navigation Study. The analysis area was confined to the immediate vicinity of the existing lock and dam. Both large-scale (new lock construction) and small-scale (primarily non-structural or limited construction) measures were included in the discussion. Small-scale measures were not evaluated with SHEP. The lower seven sites on the system were studied in detail, while the remaining sites were examined in a qualitative fashion. Prior to any implementation, more detailed site-specific assessments will be completed. This should account for any site-specific changes that may occur between now and project implementation and will increase the detail of the assessment to thoroughly address potential site-specific impacts. As described within the mussel section of this report, dive surveys should be conducted at various locations to determine the extent of mussel beds and presence of any listed species. Surveys for species listed as federally endangered or threatened within other zones of impact may also be required.

Results of the SHEP analyses, by site, are provided in a general fashion in the body of the report, and detailed results are included as appendices. Site-specific variation due to physiography, engineering measures proposed, and the nature of existing resources make it impossible to draw any overall conclusions. However, some general site-specific conclusions are discussed within Section IV - Results and Discussion.

Bottomland hardwood forest exhibited the greatest losses in terms of habitat unit changes (considering only large-scale measures). In many cases, they would be cleared for use as staging areas and would be replaced after construction. In some cases, bottomland forest would be converted to either a lock facility or aquatic habitat. Bottomland hardwoods are considered a scarce and valuable resource on the UMR-IWW System, and impacts to them should be avoided or minimized to the extent possible.

Large gains in main channel border habitat units were often realized from the conversion of bottomland forest. Because acreage gains were often the driver for habitat unit gains, those gains should not be counted as benefits. This is not to imply that these habitats have no value; in fact, projected increases in depth and velocity in these areas could improve overall channel border conditions. It is important to emphasize, however, that main channel border is abundant on the system, and no trade-off in habitat value is being proposed where terrestrial habitat is lost and aquatic habitat gained.

In main channel border areas downstream of the lock, there was often a loss in habitat units. This occurred when the area landward of the proposed new lockwalls experienced decreased velocity and where, over time, siltation and sedimentation would likely occur. These conditions lowered the value of existing main channel border habitats, which in turn was reflected as habitat unit losses, particularly at the Mississippi sites. One notable main channel border impact was at L/D 22 where a proposed dike field upstream of the lock

caused a very large habitat unit loss. This was based on the assumption that the entire area would become terrestrial over time.

Implementation of small-scale measures by themselves would reduce potential impacts, primarily in three ways. First, bottomland hardwood impacts would be lessened by reduced staging area needs, and generally requiring less terrestrial excavation for lock construction. Secondly, dredging for channel improvements is, in some cases, not as extensive as for large-scale measures. Potential changes would, however, be similar to large-scale measures for guidewall extensions, i.e., reduced velocity landward of the wall, and for channel excavation, where velocity and depth would both likely increase. Finally, potential changes in tailwaters due to Location 4 lock construction would also be eliminated.

Both side channel and non-forested wetland habitat were of limited occurrence in the analysis areas, with one or both occurring only at L/D 20, 25, and La Grange. Habitat unit losses were relatively limited at L/D 25 and La Grange due to small acreages being impacted. An entire side channel is eliminated with the wicket gate option at L/D 20. These habitats are scarce on the system, and their loss should be avoided or minimized where possible. With the implementation of small-scale measures, wicket gate impacts at L/D 20 would not occur.

Habitat replacement costs were estimated for all sites (see Section IV) as a means of clearly separating or comparing the costs of one lock location to another. No trend emerged, and thus each lock and dam must be individually evaluated. One exception is the Location 1 at L/D 25, which clearly stands out in terms of its potential adverse habitat impacts. As mentioned above, costs for replacing bottomland hardwood habitats are the highest in total based on the number of total acres; but on a cost-per-acre basis, side channel and non-forested wetland habitats are the most expensive to replace. Again, the costs are the best available estimates at this time; the exact nature of mitigation and replacement costs will not be known until a recommended plan is selected and detailed site-specific planning is in turn conducted.