

Modeling Peak Discharge within the Marengo River Watershed – Lessons for Restoration in the Saint Louis River Watershed

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To more fully understand the hydrologic condition of the Marengo River Watershed, and to map specific locations most likely to have increased discharge and flow velocity (leading to more erosion and higher sediment loads) we modeled peak discharge for 35 different sub-watersheds delineated expressly for this purpose. This effort largely follows the approach used in the report; “Marengo River Watershed Test Case: Assessing the Hydrologic Condition of the Marengo River Watershed, Wisconsin” prepared by the Wisconsin Lake Superior Basin Partner Team. Just as the Marengo River Watershed Test Case modeled peak discharge for 5 Marengo River Sub-watersheds using the National Flood Frequency model, we modeled peak discharge more specifically for these same 5 sub-watersheds and again for a higher resolution set of 30 sub-watersheds. We also refined the inputs to the model using GIS overlay techniques and area weighted averages. Our initial results compared closely with the test case results with similar estimated discharge and rank order from lowest to highest discharge. The higher resolution set of 30 sub-watersheds was then used to execute the model, and to summarize the amount of open lands, allowing sub-watersheds with excessive discharge and relatively more open land to be identified. Future efforts will likely include adding additional sub-watersheds for tributaries along the lower main stem of the Marengo River, adding custom watersheds for culverts and developing a similar analysis for the Nemadji River. We believe this approach provides a useful technique for prioritizing sub-watersheds for erosion mitigation efforts.