

Nemadji River (Wisconsin)

Watershed location and features:

- tributary to St. Louis Bay at Superior, Wisconsin
- watershed includes portions of Carlton, Pine and Douglas Counties in the states of Wisconsin and Minnesota
- total watershed area is 433 square miles
- major sub-tributaries included in this study are Skunk Creek and Deer Creek

Watershed characteristics:

- 69% forested, 18% cropland, 11% wetlands and lakes
- approximately one-third of the basin consists of glacial till and Red Clay

Soil erosion and sedimentation issues:

- the Red Clay is prone to mass wasting and bank slumping
- 33,000 tons of sediment are dredged annually by the USACE
- 98% of the dredged sediment comes from erosion of the valley walls
- 98% of the eroded sediment is transported to the mouth of the river

Contamination issues:

- turbidity

Other issues:

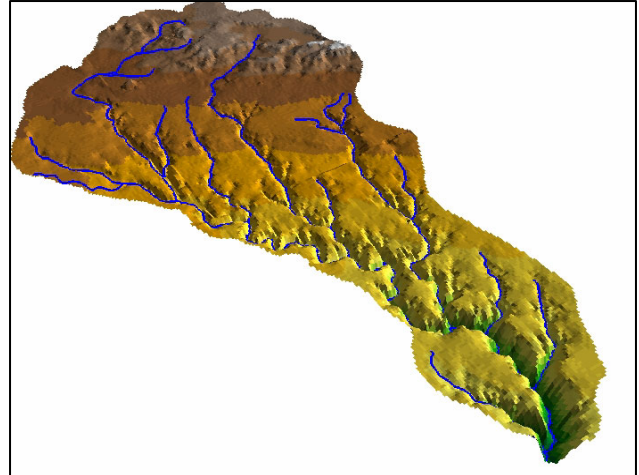
- dredging in mouth of river may have an impact on fishing and other recreational uses

Partners on tributary modeling:

- Carlton County
- NRCS, USGS
- Baird and Associates, and Wade-Trim Inc.
- Dr. Mark Ridell

Modeling approach:

- Hydraulic modeling of the entire watershed and branches of Skunk and Deer Creeks
- Harvesting forested lands was modeled to determine the effects on sedimentation



- Nemadji Sediment Transport Modeling (NSTM) system was created using ArcView GIS, MIKE11 (hydrologic model and hydrodynamic model) and a customized sediment transport model

Status:

- modeling is complete
- a workshop was held in Duluth, Minnesota, in September 2000 to train potential users
- the model and database were transferred to the Carlton County Soil and Water Conservation District in Duluth, Minnesota

Applications:

- assess impacts of forest harvesting and different land use scenarios
- model flood predictions for storm events
- assess plans to reduce sediment load to the lake