

River Restoration Class Curriculum – Final Working Outline

Goal of Class: To raise awareness of the degraded condition of the Upper Mississippi River (UMR) within the local area, the UMR System as a whole and the importance of the issue of UMR degradation.

Class Objectives:

1. To inform the students of the specifics of river degradation and its overall status
2. To connect the degraded conditions to human-caused impacts
3. To describe the currently prescribed restoration efforts, their effectiveness and their limitations
4. To outline the obstacles to implementing the restoration efforts
5. Promote thought and discussion regarding the issue of river restoration: whether it is an important problem, what is its place within the current overall environmental condition, what are the influences affecting our ability as a country to address the issue and what is the long-term outlook.

Class Structure:**1. Background – Geology, Nature and History of the River**

- a. Review the river's natural story (Lecture 1):
 - i. Geological
 - ii. Flora & Fauna
 - iii. Ecosystem Services
- b. Review the human chapter of the river's story (Lecture 1):
 - i. Native Americans
 - ii. Early European Settlement (1500s through 1700s)
 - iii. Agricultural and Industrial Age American Development (1800s through 1920s)
 - iv. Current Development (1930s to present)
- c. Discuss the environmentalism movement (Lecture 2):
 - i. Awakening of Environmental Problems in the 1960s
 - ii. Enactment of National Environmental Policy Act – 1969
 - iii. Enactment of Federal Water Pollution Control Act Amendment (Clean Water Act of 1972)
 - iv. Enactment of Upper Mississippi River Management Act of 1986, which included the Environmental Management Program (EMP) for the UMR

2. Environmental Problems of the River and their Possible Solutions

- a. Explain the adjustment from a navigation only view of the river system management to the recognition of the environmental value of the river and its history (Lecture 3):
 - i. History of US Corps of Engineers (USACE) and its Mission
 - ii. Impact of Environmentalism upon USACE
 - iii. Adjustment of the USACE Mission - EMP

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- b. Discuss the environmental problems within the river (Lecture 4):
 - i. Conversion of floodplains and wetlands
 - ii. Pollution and sedimentation
 - iii. Channelization – 9-foot navigation channel
 - iv. Impoundment (dams) and confinement (levees)
 - v. Non-native Species
 - vi. Urban Sprawl
- c. Describe the specific restoration methods used to remediate the environmental problems (Lecture 5):
 - i. Sedimentation and Pollution Control
 - ii. Island Building and Protection (lakepippin-johnson06.pdf)
 - iii. Backwater and Side Channel Protection
 - iv. Habitat Rehabilitation
 - 1. Forests
 - 2. Wetlands
 - 3. Marshes
 - 4. Lakes
 - v. Floodplain Reclamation and Reconnection
 - vi. Fish Passages
- 3. What Keeps Us from Fixing the River and Discussion
 - a. Discuss the obstacles to river restoration
 - i. Geographic Extent
 - ii. Degree of Degradation
 - iii. Intergovernmental Cooperation
 - iv. Multiple-use emphasis and priorities
 - v. Special Interest's Influences
 - vi. Lack of Scientific Knowledge
 - vii. Inadequate Funding
 - viii. Public Apathy and Lack of Knowledge
 - b. Open discussion on the topic