CARROLL ISLAND
MICROMODEL STUDY
River Miles 273.0-263.0

Sponsored by the
Avoid and Minimize Program

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The primary goal of this micromodel study is to reduce or eliminate the need for repetitive dredging adjacent to the upstream and downstream ends of Carroll Island, while maintaining or improving current environmental conditions.
Study Reach Characteristics

Multiple Round Point Structure

Chevron Structures

Flow Distribution

Notched Off-Bank Revetment

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Carroll Island Dredging Costs

- $6.4 Million between 1979 and 2001
- Upstream and Downstream dredging locations are equally expensive to maintain (Pre-1999 Chevron construction)
Study Reach Challenges

- Lock and Dam 24 as a controlling factor
- Important Environmental habitat in multiple side channels
- Existence of numerous buried pile dike structures
- Miles of Revetment
- Repetitive Dredging and artificial channel placement
Model Characteristics

- Horizontal scale of 1" : 800
- Vertical scale of 1" : 27
- Distortion of 29.6
- Volumetric flow rate is approximately 2.7 GPM
- Table slope is approximately 0.00625 in/in
Micromodel Setup

Model Insert
Standpipe
Storage Manifold

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Model Calibration

Dredging Location Beginning to Form

1993 Survey

Artificially Maintained Channel

Base Test

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Alternative Testing

- 18 Alternatives Tested
- Dike Structures and Chevron Structures were tested in different combinations
- Alternatives 15 and 16 accomplished the study goals, although Alternative 16 added the additional benefit of an additional Chevron Structure, and one less Raised Dike Structure
Model Study was initiated to alleviate repetitive dredging concerns.

Innovative structures already implemented in this reach, such as a Multiple Round Point Structure and a Chevron field.

Important Environmental reach, with many side channels.

Excellent Model Calibration

18 Design Alternatives tested

Design implementing 4 Chevrons and 3 Rock Dikes chosen as the best solution.
Questions?
Jasen Brown
US Army Corps of Engineers, St. Louis District
Applied River Engineering Center
314-263-8093
Jasen.L.Brown@mvs02.usace.army.mil