

Great Lakes & Mississippi River Interbasin Study GLMRIS

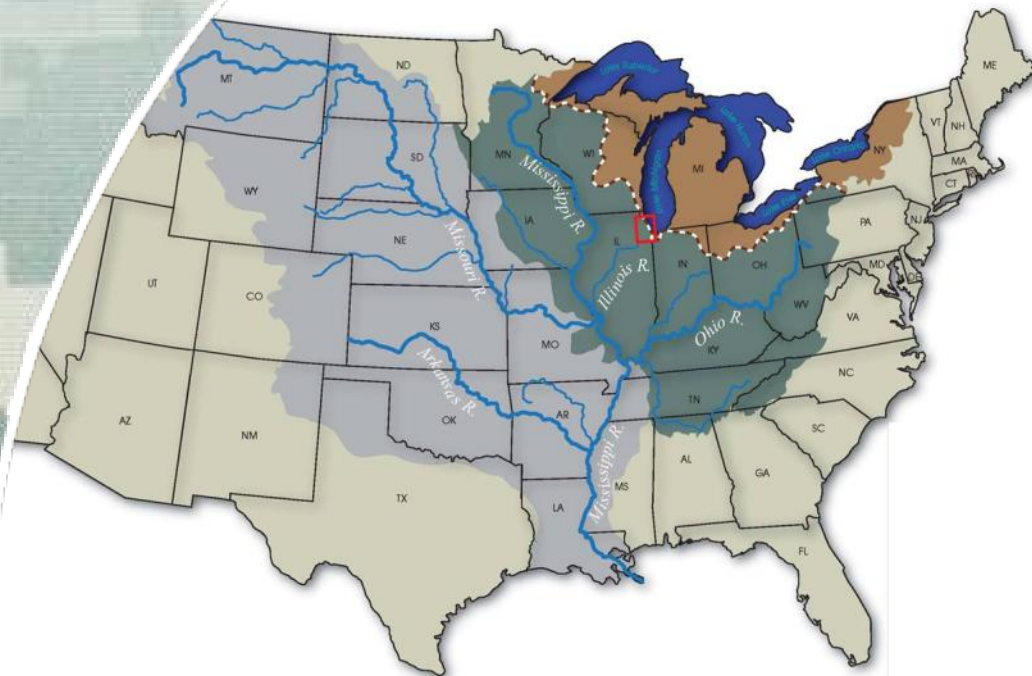
Dave Wethington, P.E.
Project Manager

May 23, 2013

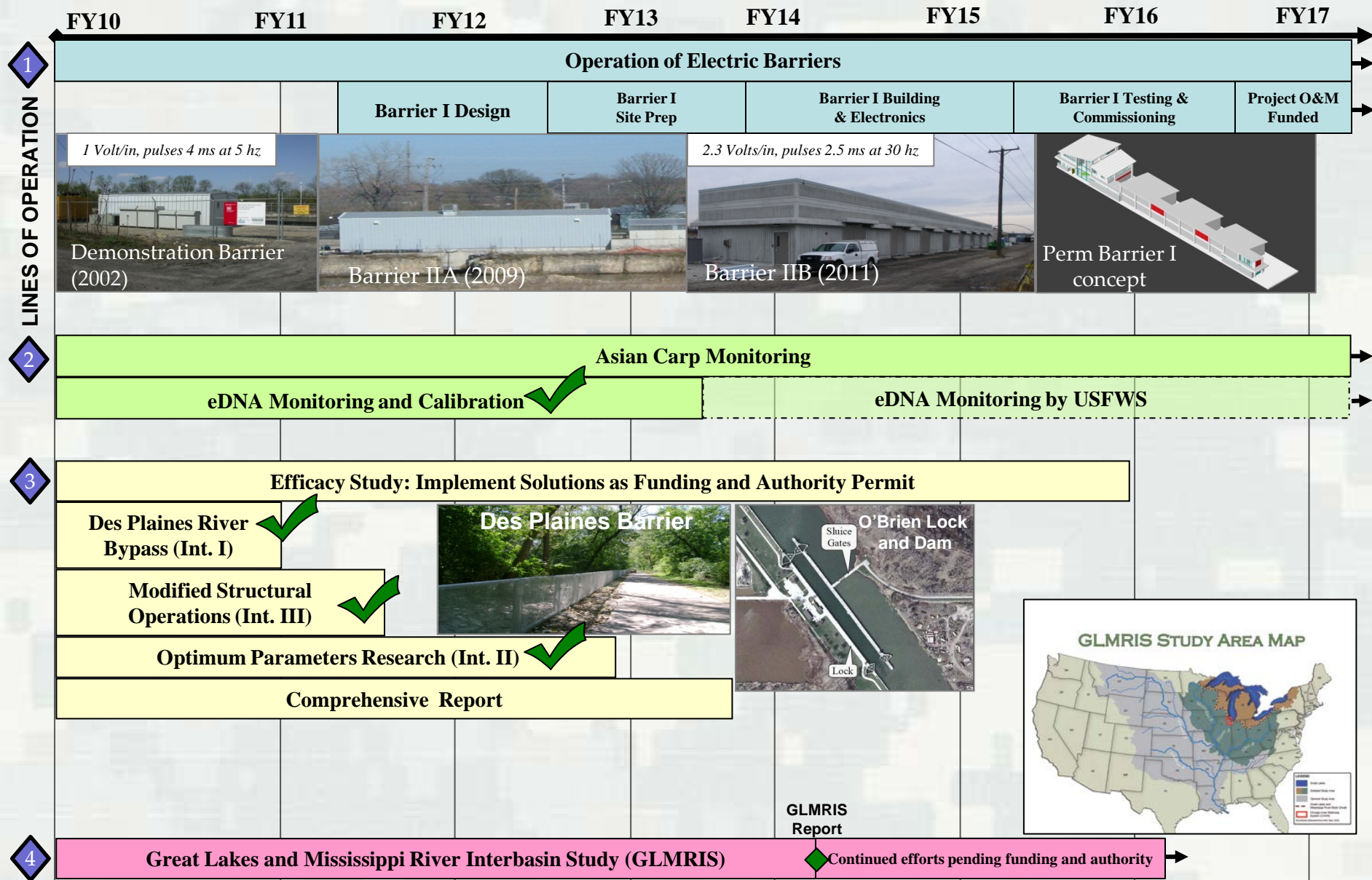


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USACE Aquatic Invasive Species (AIS) Strategy



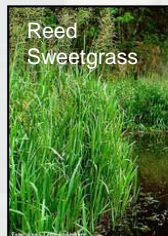
GLMRIS - Study Summary

■ Authority

*(d) FEASIBILITY STUDY.-The Secretary, in consultation with appropriate Federal, State, local, and nongovernmental entities, shall conduct, at Federal expense, a feasibility study of the range of **options and technologies available to prevent the spread of aquatic nuisance species** between the Great Lakes and Mississippi River Basins **through the Chicago Sanitary and Ship Canal and other aquatic pathways.***

■ Purpose

- Identify aquatic pathways that may exist between the Great Lakes and Mississippi River basins
 - Focus Area I – Chicago Area Waterways
 - Focus Area II – Other Pathways
- Inventory current and future potential aquatic nuisance species (ANS)



- Analyze possible ANS controls available to prevent ANS transfer between basins, via aquatic pathways

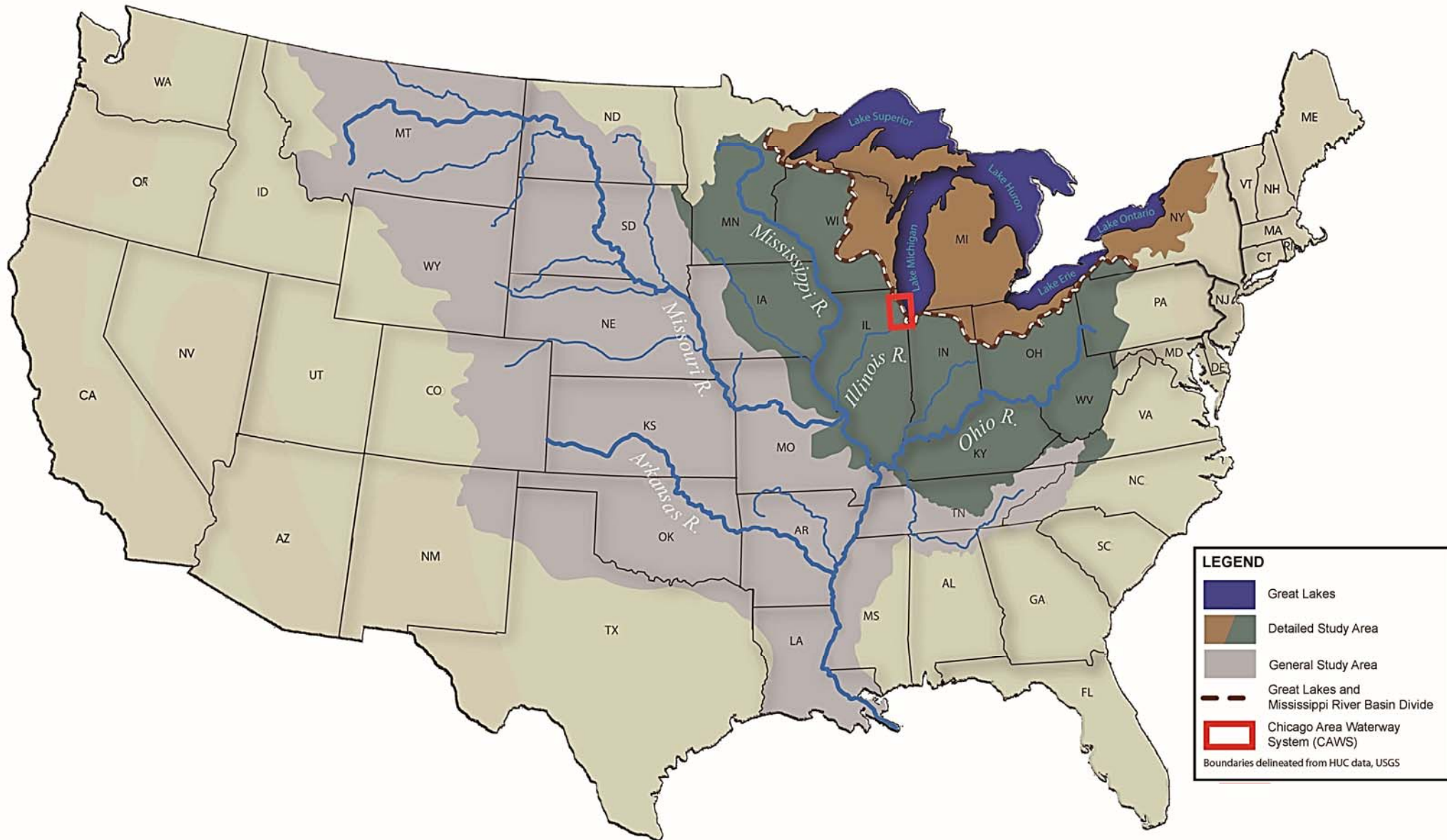


GLMRIS - Feasibility Study Scope

	Includes	Does not Include
Pathways	Aquatic Connections	Terrestrial Airborne
	Swimmers (<i>fish</i>) Floaters (<i>algae, plants, etc</i>) Hitchhikers (<i>parasites</i>)	Human Release
Locations	Interface between Great Lakes Basin and Mississippi River Basin	Atlantic slope; St. Lawrence Seaway
	Portions of 31 U.S. states	Canada
Elements	Analysis of options/technologies to prevent interbasin transfer of all ANS	Detailed biological research on aquatic nuisance species of concern
	Evaluation of hydrologic separation	Airborne or terrestrial separation elements
	Regional economic modeling	Location-specific economics
	Risk-based decision-making	Benefit-Cost Analysis Quantitative environmental models



GLMRIS STUDY AREA MAP



CHICAGO AREA WATERWAY SYSTEM



CAWS

Focus Area I

- Complex, multi-use waterway
 - Navigation
 - Cargo
 - Commercial – Passenger and Governmental (Fire, Police, etc)
 - Recreational
 - Water Supply & Conveyance
 - Municipal wastewater
 - Industrial users
 - Recreation
 - Flood Risk Management
 - Stormwater
 - Combined sewer overflow
- Primary connection between Great Lakes & Mississippi River basins

Collaboration

- Federal, State, Regional Agencies
- Native American Tribes
- Non-governmental organizations



Other Aquatic Pathways

Focus Area II

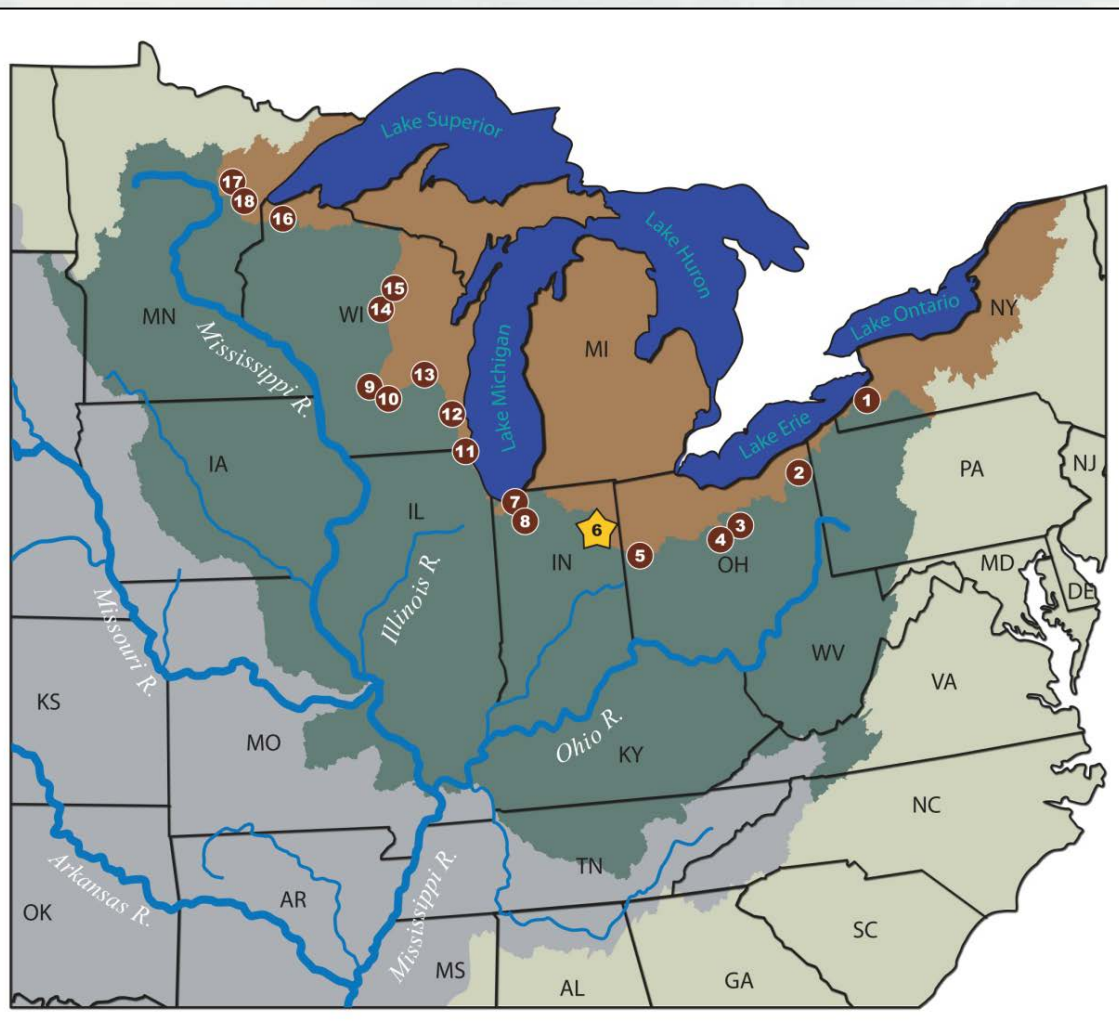
Preliminary Pathway Characterization

Objectives

- Inventory of potential aquatic pathways
- Assess likelihood of ANS transfer

Results

- 18 Aquatic Pathway Assessment Reports released for public cmnt
- Highest Probability:
Eagle Marsh, Ft Wayne, IN
 - Intermittent aquatic pathway; Asian carp reported w/in 25 mi
 - Interim measure implemented by InDNR
 - USACE & local stakeholders developing long-term mitigation alternatives



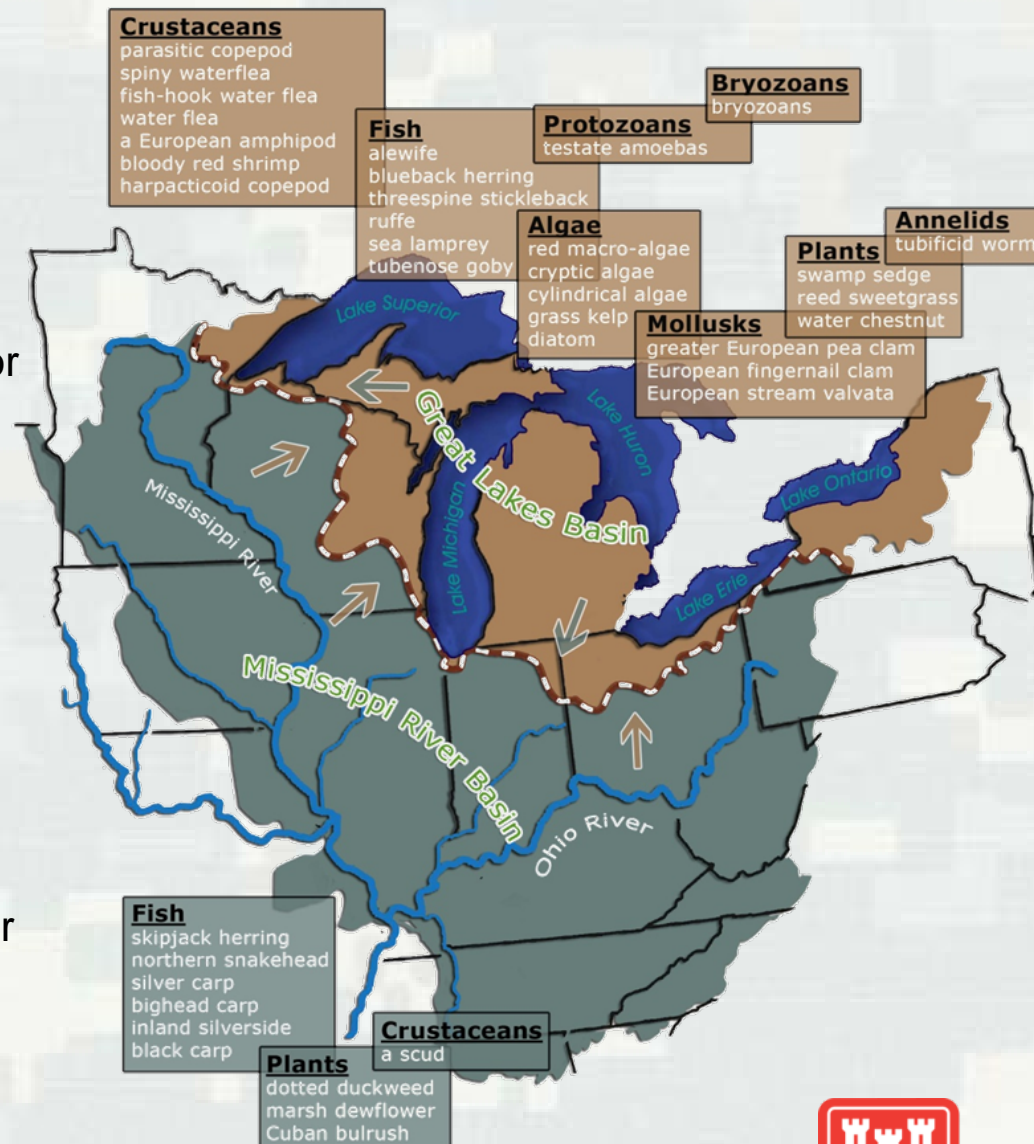
GLMRIS

Identify ANS of Concern

- ANS White Paper
 - ▶ Identifies 39 ANS of Concern for the initial focus of GLMRIS
- GLMRIS Risk Assessment
 - ▶ $R_e = P_e \times C_e$

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 • Pathway
 • Arrival
 • Transit
 • Colonization
 • Establishment


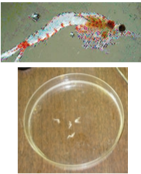

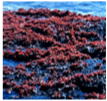
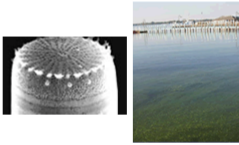




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 • Environmental
 • Economic
 • Social/Political
 - ▶ Evaluate 39 ANS of Concern for CAWS
 - Establish H, M, L risk rankings for each species, per pathway



ANS established in the Mississippi River Basin
with potential to transfer into the Great Lakes Basin






Great Lakes

Organism Type	Species	Current Location	Dispersal Mechanisms	Picture
Crustacean	Fishhook Water Flea (<i>Cercopagis pengoi</i>)	At the CAWS	Passive drift; Hull fouling; Ballast water	
	Bloody Red Shrimp (<i>Hemimysis anomala</i>)	At the CAWS	Passive drift; Hull fouling; Ballast water	
	Grass Kelp (<i>Enteromorpha flexuosa</i>)	Muskegon Lake	Passive drift; Temporary vessel attachment	
Algae	Red Algae (<i>Bangia atropurpurea</i>)	Uncertain, documented near Chicago	Passive drift; Temporary vessel attachment	
	Diatom (<i>Stephanodiscus binderanus</i>)	At the CAWS	Passive drift; Temporary vessel attachment	
Plant	Reed Sweetgrass (<i>Glyceria maxima</i>)	Milwaukee County, WI	Passive drift; Temporary vessel attachment	
Fish	Threespine Stickleback (<i>Gasterosteus aculeatus</i>)	Found in CAWS	Active swimming; Ballast water	
	Ruffe (<i>Gymnocephalus cernuus</i>)	Green Bay, WI	Active swimming; Ballast water	
	Tubenose Goby (<i>Proterorhinus semilunaris</i>)	Duluth-Superior Harbor	Active swimming; Ballast water	

GLMRIS

Risk Assessment - Results

Mississippi River

Organism Type	Species	Current Location	Dispersal Mechanisms	Picture
Fish	Silver Carp (<i>Hypophthalmichthys molitrix</i>)	At the CAWS	Active swimming	
	Bighead Carp (<i>Hypophthalmichthys nobilis</i>)	At the CAWS		
Crustacean	Scud (<i>Apocorophium lacustre</i>)	At the CAWS	Passive drift; Benthic movement; Hull fouling; Ballast water	

- 12 ANS of Concern
 - Rated either H, M risk
- Four categories to control
 - Fish
 - Plants
 - Algae
 - Crustaceans

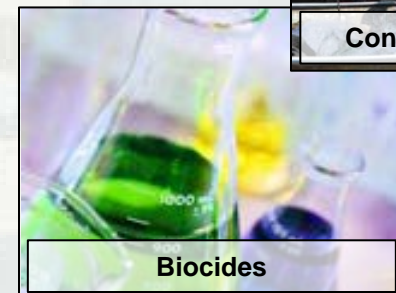
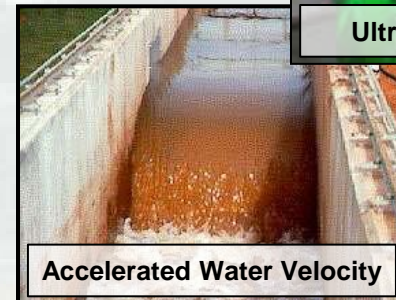
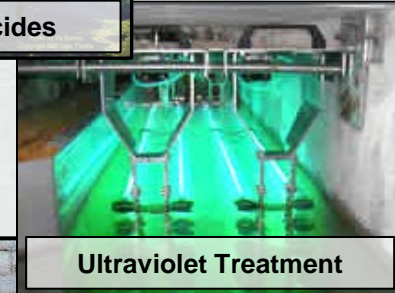
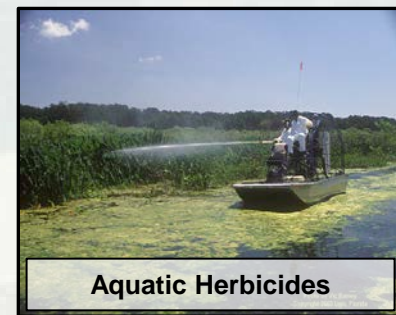


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Identify ANS Control Technologies

- Control Technologies – Measures
 - ▶ 27 available ANS Control categories
 - Over 90 individual types
 - ▶ Applicability
 - Specifically within CAWS
 - ▷ Multiple types of habitats
 - Aquatic pathways throughout study area
 - ▷ Assumes same list of ANS, or species responsiveness to ANS Control(s)
- Screening of Controls
 - ▶ Stakeholder engagement & public comment
 - ▶ Applicability to H, M risk ANS of concern



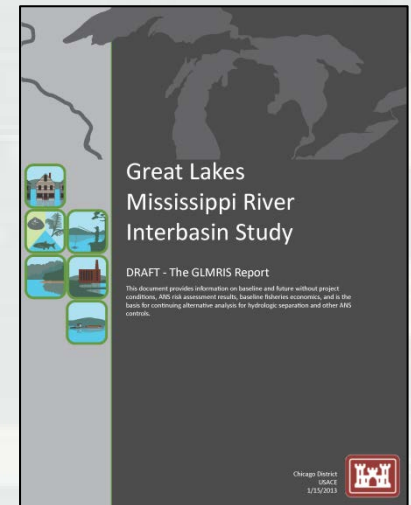
GLMRIS Report – Authority & Scope

- Section 1538 - *Moving Ahead for Progress in the 21st Century* (MAP-21)
 - ▶ Intervening legislation enacted in July 2012
 - ▶ Modifies scope and duration of products in GLMRIS
- Scope
 - ▶ Expedite completion of the report authorized by WRDA 2007
 - ▶ Focus efforts on:
 - Prevention of transfer of ANS using methods such as hydrologic separation;
 - Region encompassing the watersheds/tributaries of the CAWS (Focus Area I)
 - ▶ Allows the Secretary of the Army to move to Preconstruction Engineering & Design (PED) if a project is determined to be justified
- Products and Timeline
 - ✔ Interim Report – October 2012
 - Interim milestones and funding necessary to complete the GLMRIS Report
 - ▶ GLMRIS Report – December 2013



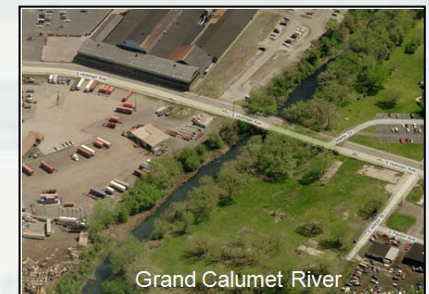
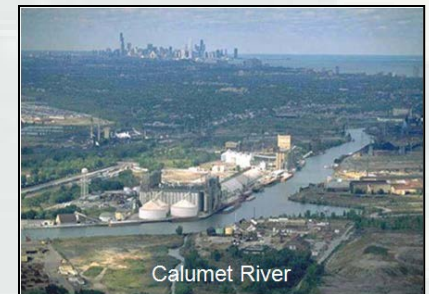
GLMRIS Report – Plan Formulation

- GLMRIS Report will present information on a range of alternatives
- Alternative comparison tool to support decision-making
 - ▶ Evaluation criteria will be presented in GLMRIS Report
 - ▶ GLMRIS Report will **NOT** include ranking or rating of plans
- Contents
 - ▶ Conceptual design of alternatives
 - ▶ General mitigation requirements of alternatives
 - ▶ Range of cost estimates commensurate with design detail
 - ▶ Evaluation criteria
- Remaining analyses would need to be addressed after Dec 2013 but prior to PED
 - ▶ Detailed design analyses
 - ▶ Completion of the environmental compliance analysis
 - ▶ Required internal reviews
 - ▶ Public state/agency reviews



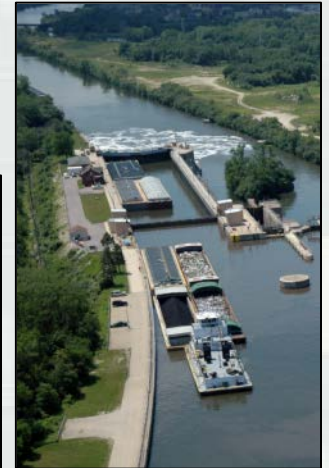
GLMRIS Report – Alternatives

- Hydrologic Separation Alternatives
 - ▶ Lakefront – Hydrologic, Water Quality & Navigation modeling underway
 - ▶ Mid-System – Hydrologic, Water Quality & Navigation modeling underway
- Technology Alternatives
 - ▶ Utilizes refined list of ANS Controls from screening process
 - ▶ Combines control technologies to develop preliminary alternatives
 - ▶ Develop conceptual designs or treatment trains & delivery platforms
- Hybrids
 - ▶ Combine/mix physical barriers and technologies to optimize effects
- Non-Structural Measures
 - ▶ Best-management practices to address ANS of Concern
- No New Federal Action



GLMRIS Report – Evaluation Criteria

- Risk Reduction
- Environmental Impacts
- Economic Impacts
- Regulatory Requirements
- Cost
- Duration for Implementation
- Expected Technical Efficacy



GLMRIS Report – Path Forward

Production

- Continue analyses to support evaluation of alternatives
 - ▶ Hydrologic & Hydraulic – CAWS and regional sewer network
 - ▶ Water Quality – CAWS & Lake Michigan
 - ▶ Economic – Flood Risk Management, Navigation, Regional Impacts
- Complete conceptual designs of alternatives
 - ▶ Includes costs and cost analyses
- Complete draft GLMRIS Report Aug 2013

Review

- Submit draft GLMRIS Report for USACE technical review Aug-Sep
 - ▶ Incorporation of technical review comments
- Submit draft GLMRIS Report to HQ's & ASA(CW) for policy compliance review Oct 2013
 - ▶ Incorporation of policy compliance review comments
- Coordinate GLMRIS Report for submission to Congress Oct-Dec
- Submittal to Congress Dec 2013



GLMRIS - Stay in Touch!

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The screenshot shows the GLMRIS website with a dark header. The header includes the GLMRIS logo, the text 'GREAT LAKES AND MISSISSIPPI RIVER INTERBASIN STUDY', and the US Army Corps of Engineers logo. Navigation tabs for 'HOME', 'ABOUT THE STUDY', 'STAY INVOLVED', and 'DOCUMENTS' are visible. A secondary navigation bar contains links for 'NEWS', 'FAQS', 'ABOUT US', and 'E-MAIL SERVICES'. The main content area is titled 'Stay Involved' and contains a 'Stay Involved' sidebar with links to 'View Scoping Comments', 'Completed NEPA Public Scoping Meetings and Transcripts', and 'What is NEPA Scoping?'. Below this is a 'Subscribe' form with fields for 'E-mail Address' and 'Zip Code', and a 'Subscribe' button. The main text area explains that the website is the online center for public information and involvement, and provides instructions on how to stay involved. It also mentions that the GLMRIS Team is utilizing Facebook and Twitter for broadcasting information. A 'Print version' link is provided. On the right, there is a 'Join the conversation' section with a Twitter logo and a link to 'Join the conversation'. Below this, there are two social media widgets: one for Facebook showing a post about the GLMRIS website with 148 likes, and another for Twitter showing a tweet about the GLMRIS website. At the bottom, there is a 'Stay Connected' section with links to 'Twitter' and 'Facebook'. A 'Facebook social plugin' is also visible, showing a post about 'Aquatic Nuisance Species (ANS)' with a link to 'glmris.anl.gov'.

