

GLMRIS

GREAT LAKES AND MISSISSIPPI RIVER INTERBASIN STUDY



AQUATIC NUISANCE
SPECIES



ECOSYSTEMS



NAVIGATION



RECREATION



FLOOD RISK
MANAGEMENT

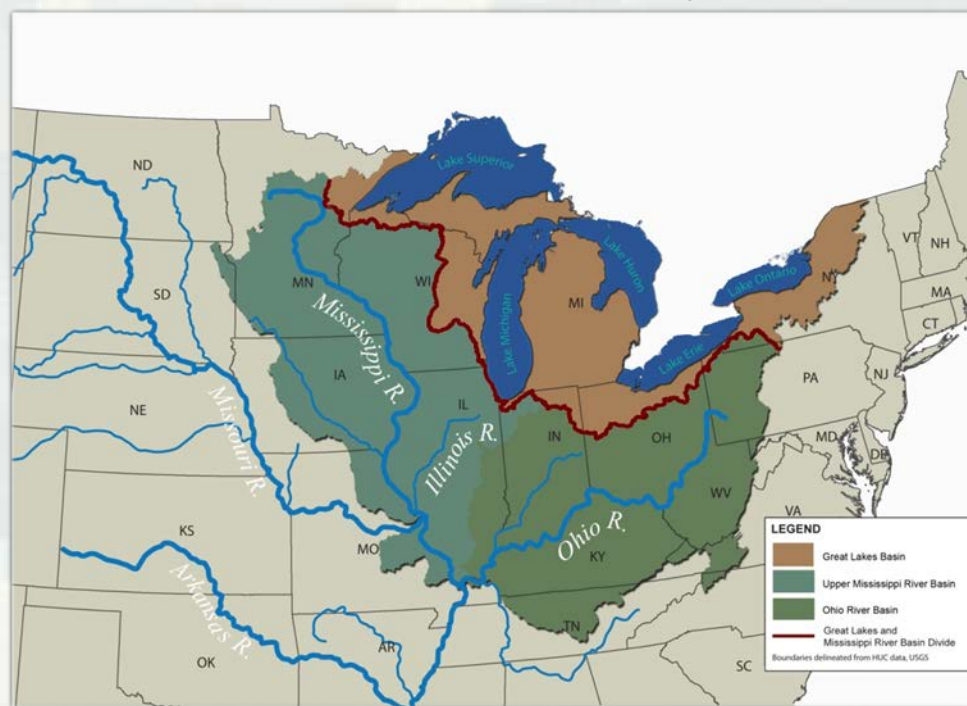


WATER USE

Scope of Study

- Interbasin transfer of ANS via aquatic pathways
- Range of options and technologies
- Study Goals
 - ▶ Prevent ANS transfer
 - ▶ Mitigate adverse impacts to waterway uses
- Stakeholder engagement
- July 2012 Legislation
 - ▶ Expedited completion of report to 18-mo timeline
 - ▶ Focused efforts on CAWS
 - ▶ Evaluate hydrologic separation

GLMRIS – Detailed Study Area





About the CAWS

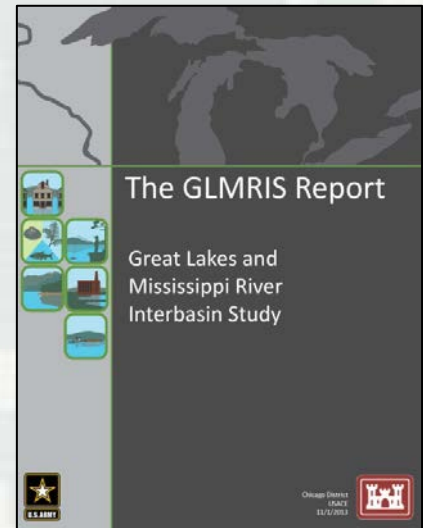
- Complex, multi-use waterway
 - ▶ Navigation
 - Cargo
 - Commercial – passenger and governmental (Fire, Police, etc)
 - Recreational
 - ▶ Water Supply & Conveyance
 - Municipal wastewater
 - Industrial users
 - ▶ Flood Risk Management
 - Stormwater
 - Combined sewer overflow (CSO)
 - ▶ Recreation
- Primary connection between basins





Contents of the GLMRIS Report

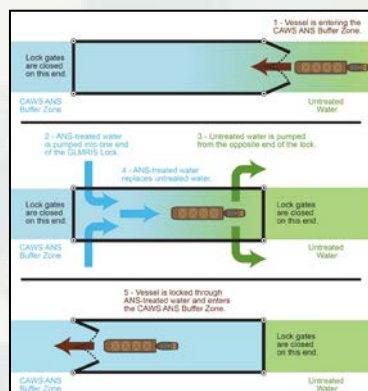
- GLMRIS Report presents information on a range of alternatives
 - ▶ Conceptual design of alternatives
 - ▶ General mitigation requirements of alternatives
 - ▶ Range of cost estimates corresponding to design detail
- Alternative comparison tool to support decision-making
 - ▶ Evaluation criteria are presented in GLMRIS Report
 - ▶ GLMRIS Report does not include ranking or rating of plans
- Additional analyses required prior to implementation
- Plan formulation
 - ▶ Identify connections
 - ▶ Evaluate species
 - ▶ Assess available controls
 - ▶ GLMRIS Report describes eight alternatives



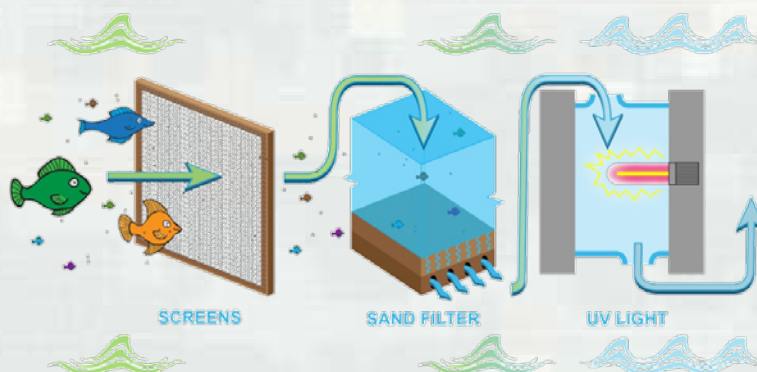


ANS Control Technologies

GLMRIS Lock



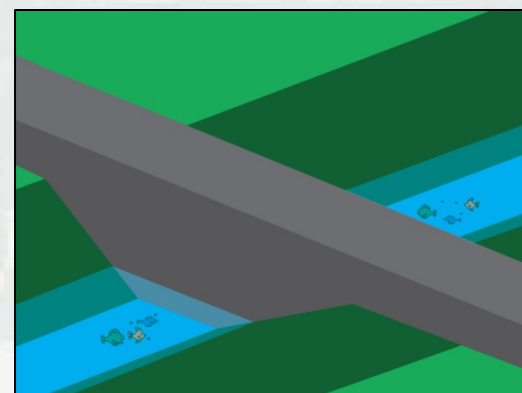
ANS Treatment Plant



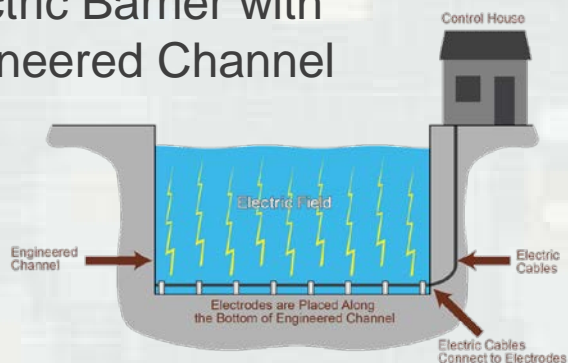
- Address modes of ANS movement

- Swimming
- Floating
- Hitchhiking

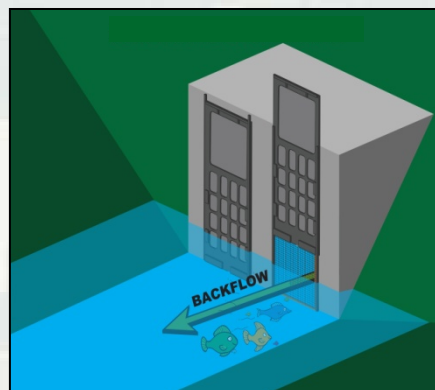
Physical Barrier



Electric Barrier with Engineered Channel



Screened Flow Gates





Baseline Alternative – Sustained Activities

- No new federal action as a result of GLMRIS
- Continuing current efforts supported by federal and state agencies
 - ▶ Ruffe, snakehead, sea lamprey, etc
- Asian carp activities include
 - ▶ USACE operation of the electric barriers
 - ▶ Local, State and Federal activities
 - GLRI Program support for ANS-related activities;
 - Interagency Monitoring & Response: telemetry, electrofishing/netting, eDNA and response actions;
 - Population control (fish harvesting); and,
 - Research & implementation of Asian carp controls;





Nonstructural Control Technologies Alternative

- ANS Controls that do not require construction of structures and may be implemented quickly
- Examples
 - ▶ Active management
 - Monitoring
 - Chemical controls
 - ▶ Education and outreach
 - Public awareness campaigns
 - Self-imposed cleaning of watercraft
 - ▶ Laws and regulations
 - Inspection and enforcement
 - Bilge and ballast water management
- Successful implementation is a shared responsibility
- Nonstructural controls are effective best management practices to complement other Alternative Plans

Estimated Time to Completion: **0 yr**

Estimated Cost: **\$68M**
(Annually)



Flow Bypass Alternative

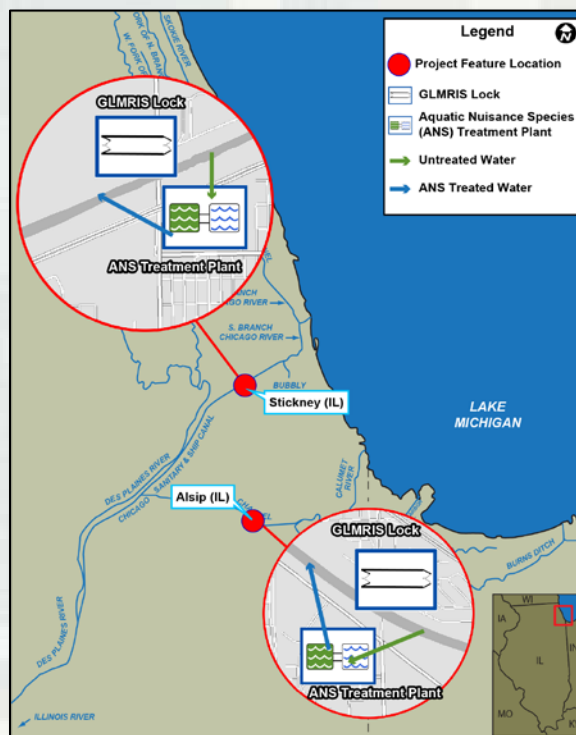
Overview

- ▶ Single, two-way control points
- ▶ Volume of waterways diverted through an ANS treatment facility
- ▶ GLMRIS Lock feature
- ▶ Maintains existing CAWS flow regime

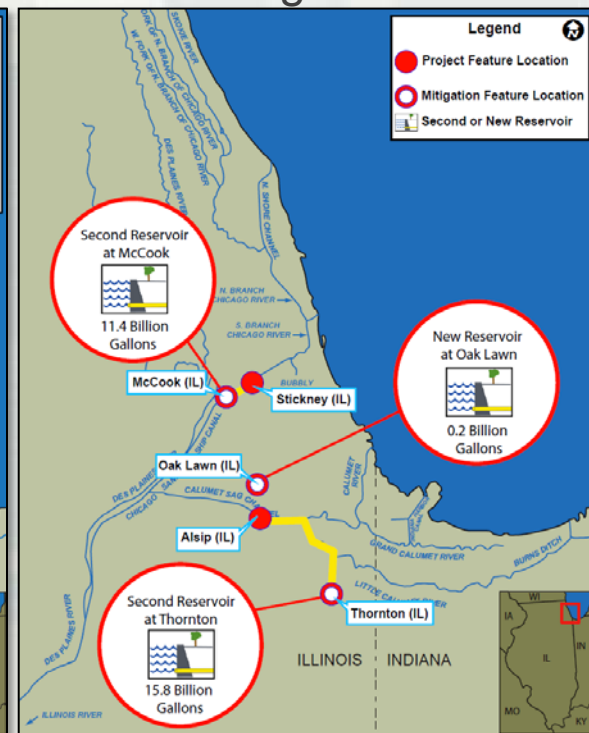
Mitigation

- ▶ Flood risk (Significant)
 - Reservoirs
 - Conveyance tunnels and infrastructure

Overview



Mitigation



Estimated Time to Completion: **25 yr**

Estimated Cost: **\$15.5B**



CAWS Buffer Zone Alternative

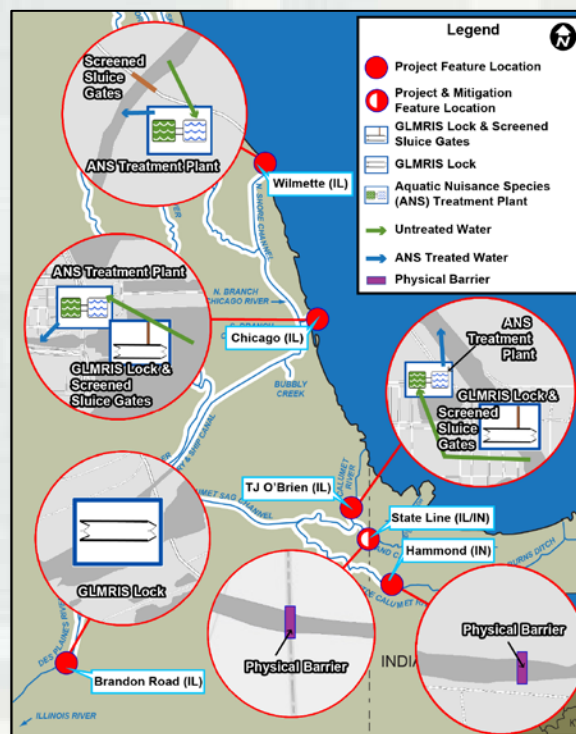
Overview

- ▶ Multiple one-way control points for ANS
- ▶ Operate CAWS as ANS-controlled zone
 - Facilitates monitoring and response
- ▶ Preserves majority of CAWS flow regime
- ▶ Adaptive Management: Opportunity for phased implementation

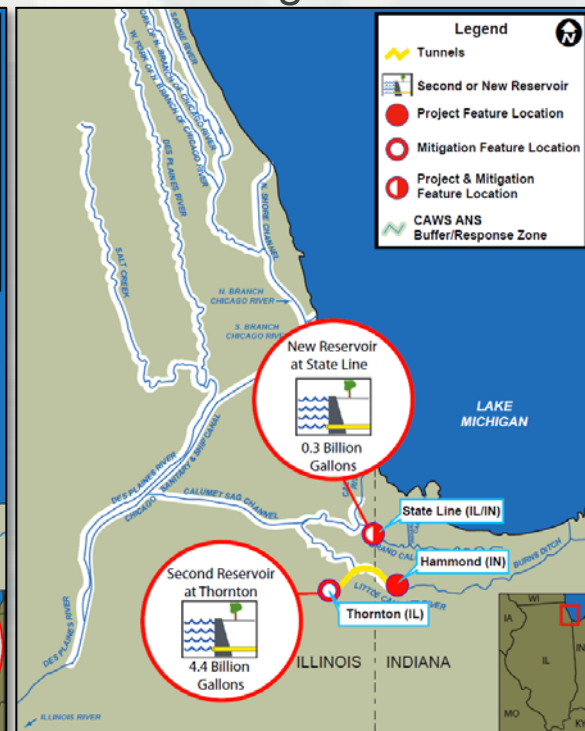
Mitigation

- ▶ Flood risk
 - Reservoirs
 - Conveyance tunnels and infrastructure

Overview



Mitigation



Estimated Time to Completion: **10 yr**

Estimated Cost: **\$7.8B**



Lakefront Hydrologic Separation

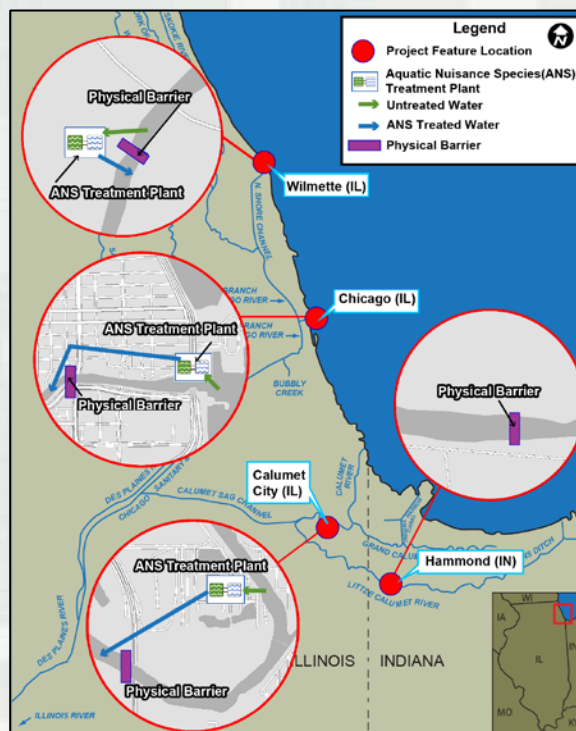
Overview

- ▶ Four barrier locations
- ▶ Risk reduction is not achieved until all barriers are complete
- ▶ Mitigation measures control completion schedule of barriers

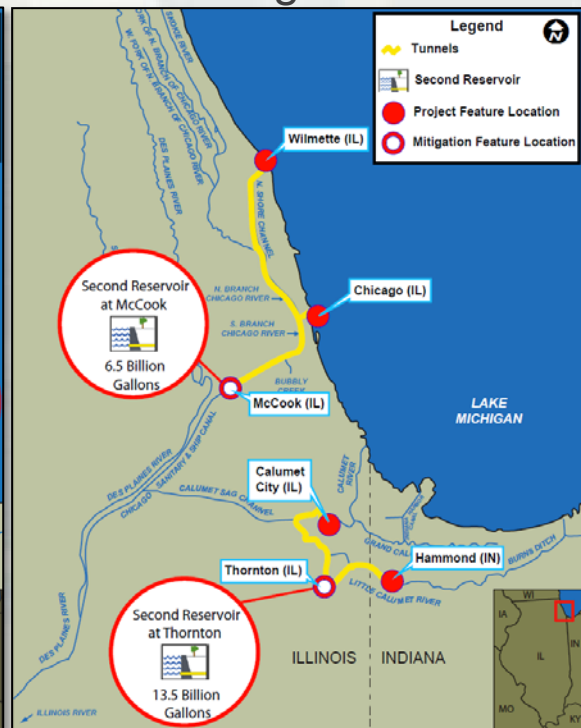
Mitigation

- ▶ Flood risk
(Significant)
 - Tunnels & Reservoirs
- ▶ Water quality
 - ANS treatment for water flow/quality
- ▶ Navigation
 - Recreational boat storage

Overview



Mitigation



Estimated Time to Completion: **25 yr**

Estimated Cost: **\$18.4B**



Mid-System Hydrologic Separation

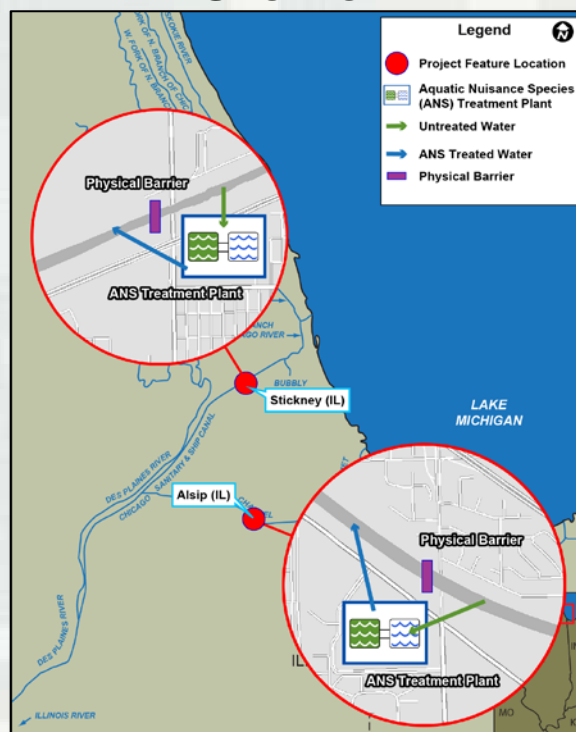
Overview

- ▶ Two barrier locations
- ▶ Risk reduction is not achieved until all barriers are complete
- ▶ Mitigation measures control completion schedule of barriers

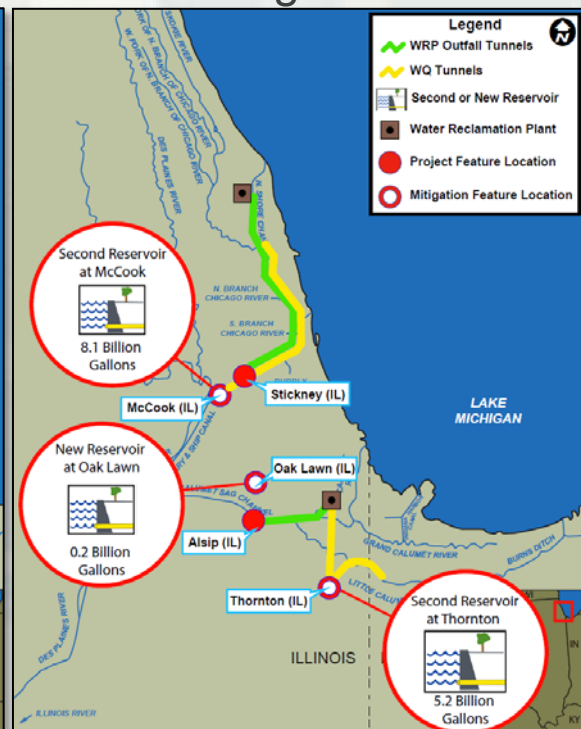
Mitigation

- ▶ Water quality (Significant)
 - CSO capture
 - Re-route water reclamation plant (WRP) effluent
 - Sediment remediation

Overview



Mitigation



Estimated Time to Completion: **25 yr**

Estimated Cost: **\$15.5B**



Hybrid – Cal-Sag Open

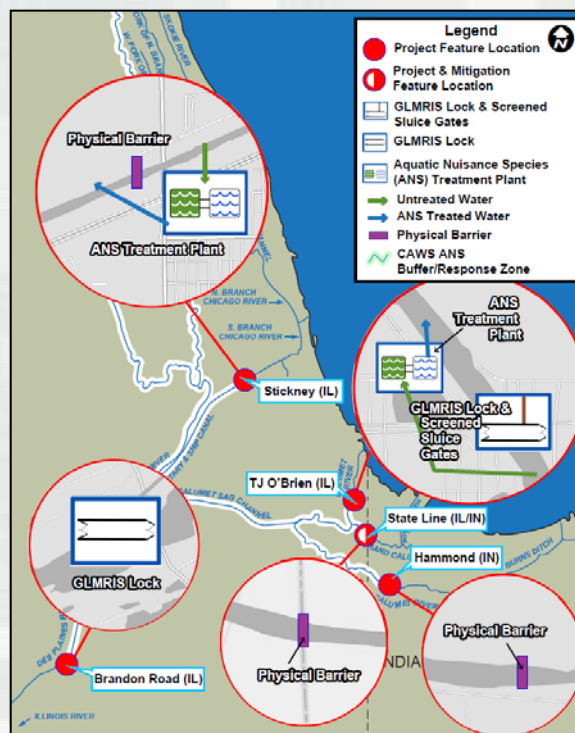
Overview

- Combines technology and barrier features
- Minimize impacts to uses/users
- Adaptive Management: Opportunity for phased implementation

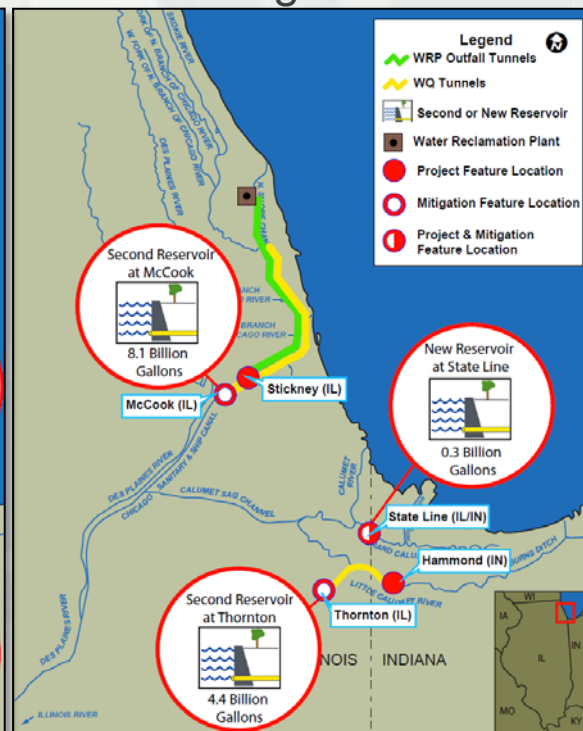
Mitigation

- Water quality (*Significant*)
 - CSO capture
 - Re-route WRP effluent
 - Sediment remediation
- Flood risk mitigation
 - Reservoirs
 - Conveyance tunnels, infra.

Overview



Mitigation



Estimated Time to Completion: **25 yr**

Estimated Cost: **\$15.1B**



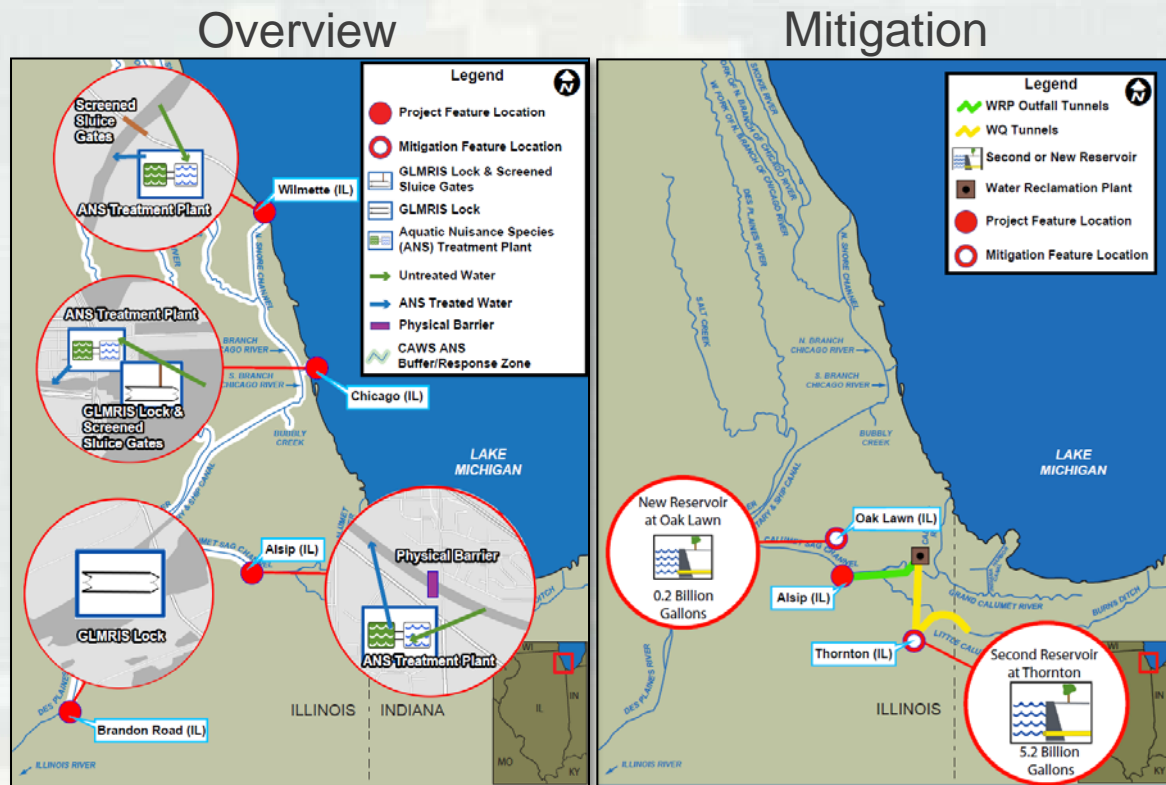
Hybrid – CSSC Open

Overview

- ▶ Combines technology and barrier features
- ▶ Minimize impacts to uses/users
- ▶ Adaptive Management: Opportunity for phased implementation

Mitigation

- ▶ Water quality (*Significant*)
 - CSO capture
 - Re-route WRP effluent
 - Sediment remediation
- ▶ Flood risk mitigation
 - Reservoirs
 - Conveyance tunnels, infra.



Estimated Time to Completion: **25 yr**

Estimated Cost: **\$8.3B**





Evaluation Criteria

- Effectiveness at Preventing Interbasin Transfer
 - Environmental Impacts
 - ▶ Direct
 - ▶ Indirect
 - CAWS
 - Lake Michigan
 - ▶ Mitigation Costs
 - Economic Impacts
 - ▶ Flood Risk
 - ▶ Navigation
 - ▶ Mitigation Costs
 - Complexity of Regulatory Compliance
- 
- A 3D white figure holding a large red pen, checking off a list of 10 items. The first 9 items are checked with a red checkmark, and the 10th item is unchecked.
- Costs
 - ▶ Alternative
 - ▶ Annual O&M
 - Duration for Implementation
 - Unmitigated Impacts





Additional Considerations

- Mitigation - Significant factor in required investments and timing of alternative implementation
 - ▶ Flood risk management
 - ▶ Water quality
- Residual risks
 - ▶ Means of ANS transfer outside of the aquatic pathway
 - ▶ Duration for implementation vs. ANS transfer risk
 - ▶ Effectiveness of controls
- Adaptive management
 - ▶ Does the ANS control measure work as intended?
 - ▶ How simple is it to change, reverse, or adapt the measure to function more effectively?
- ANS control is a shared responsibility
 - ▶ Implementation of any plan to further control ANS transfer would likely require significant investment of resources in order to achieve a joint solution.
 - ▶ Continued engagement by stakeholders is essential to reach a decision toward a collaborative path forward



Next Steps

■ Public Rollout

- ▶ Communicate contents of the GLMRIS Report to broad regional, national audience
- ▶ Final report, supporting info on website
<http://glmr.is.anl.gov>
- ▶ Comment period through: **March 3, 2014**
- ▶ Submit comments on GLMRIS Alternatives at public meetings; online via **new** GLMRIS website; via mail/delivery
- ▶ 'On demand' engagement by request

■ Stakeholder engagement

- ▶ Feedback from public, local stakeholders, regulatory agencies, and waterway owner/operators
- ▶ Provide information to decision-makers on alternatives for future action

Public Meeting Locations



Stay in Touch!

On the Web...

glmris.anl.gov



Facebook

facebook.com/glmris



Twitter

Follow [@GLMRIS](https://twitter.com/GLMRIS)



e-mail

glmris@usace.army.mil

GLMRIS
GREAT LAKES AND MISSISSIPPI RIVER INTERBASIN STUDY

Navigation: Home | About the Study | Species | Controls | Other Pathways | GLMRIS Report | News | Events | Documents | Stay Involved | FAQ

Stay Involved

This Web site is the online center for public information and involvement in the Great Lakes and Mississippi River Interbasin Study (GLMRIS). Browse this Web site, and subscribe to receive e-mail alerts and GLMRIS newsletters. You can also attend public forums to be hosted by USACE. Forum details such as date, time, and location will be announced on this Web site, to GLMRIS email subscribers, and through social media outlets.

The GLMRIS Team is utilizing Facebook and Twitter as a means of broadcasting ways to stay involved with GLMRIS and with issues associated with aquatic nuisance species. Join the GLMRIS conversation on [Facebook](#) and [Twitter](#).

Past Involvement Opportunities

Focus Area 2 Other Aquatic Pathways Comment Period

Interim reports for 18 potential aquatic pathways, as well as a summary report, were released beginning September 14, 2012. The GLMRIS FA2 Team asked for public input on these reports. Each report had a 30-day comment period following its release. Read the reports with incorporated feedback on the [FA2 Documents](#) page.

ANS Control Screening Comment Period

USACE has screened the ANS Controls identified in the Inventory of Available Controls for Aquatic Nuisance Species of Concern – Chicago Area Waterway System (ANS Control Paper) and removed certain controls from further consideration by GLMRIS. USACE requested comments from public stakeholders regarding the ANS Controls Screening from January 18 through February 21, 2013. USACE considered the information generated during the comment period to further screen the list of ANS Controls. More information on the screening can be found on the [ANS Control Screening](#) page.

Upcoming Events

January 2014

- January 7-10 – 25th USDA Interagency Research Forum on Invasive Species, Annapolis, Maryland, http://www.nrs.fs.fed.us/distance/invasive_species/
- January 9 – GLMRIS Report Meeting, Chicago, Illinois, <http://glmris.anl.gov/glmris-report/>
- January 13 – GLMRIS Report Meeting, Milwaukee, Wisconsin, <http://glmris.anl.gov/glmris-report/>
- January 16 – GLMRIS Report Meeting, Cleveland, Ohio, <http://glmris.anl.gov/glmris-report/>
- January 21 – GLMRIS Report Meeting, Ann Arbor, Michigan, <http://glmris.anl.gov/glmris-report/>
- January 23 – GLMRIS Report Meeting, Traverse City, Michigan, <http://glmris.anl.gov/glmris-report/>
- January 27 – GLMRIS Report Meeting, Bloomington, Minnesota, <http://glmris.anl.gov/glmris-report/>
- January 30 – GLMRIS Report Meeting, ...

GLMRIS on Facebook

In a 300-gallon tank, the biological equivalent of 135 million years of Great Lakes ecosystem history in the form of 14 Lake Sturgeon for public display at the Shedd Aquarium recently made i... [See More >](#)
December 18, 2013

GLMRIS Report roadshow announced!

In January, the U.S. Army Corps of Engineers will submit to Congress and release the GLMRIS Report. The report presents options and technologies to prevent aquatic nuisance species (ANS) movement between the Great Lakes and Mississippi River basins thro... [See More >](#)





Questions & Comments

