GLMRIS

Great Lakes and Mississippi River Interbasin Study

Aquatic Nuisance Species

Ecosystems

Navigation

Recreation

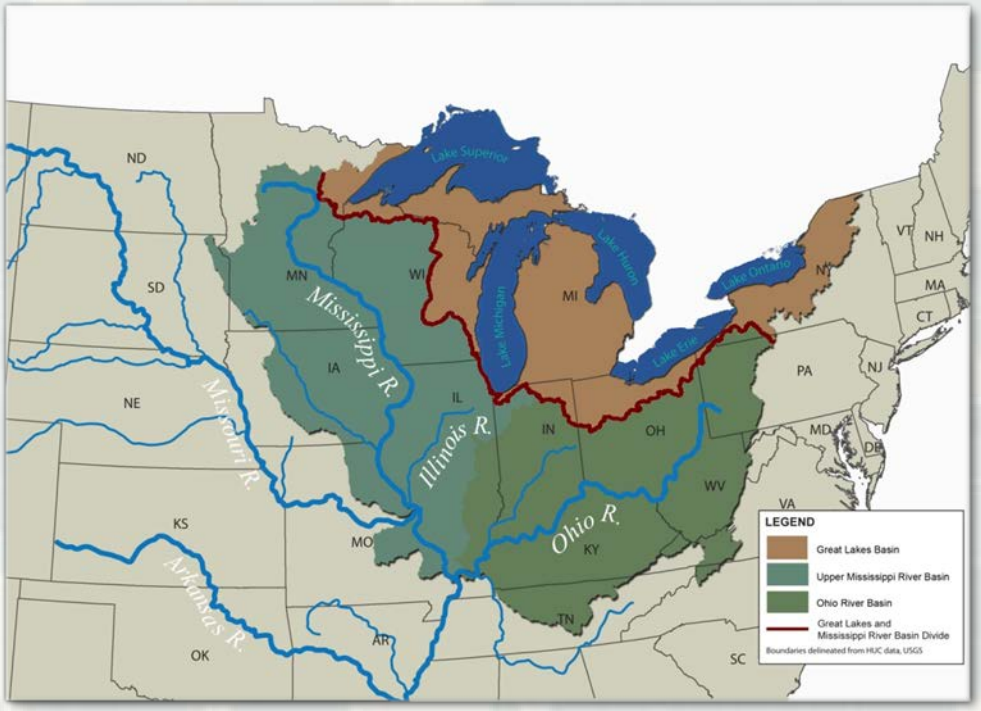
Flood Risk Management

Water Use

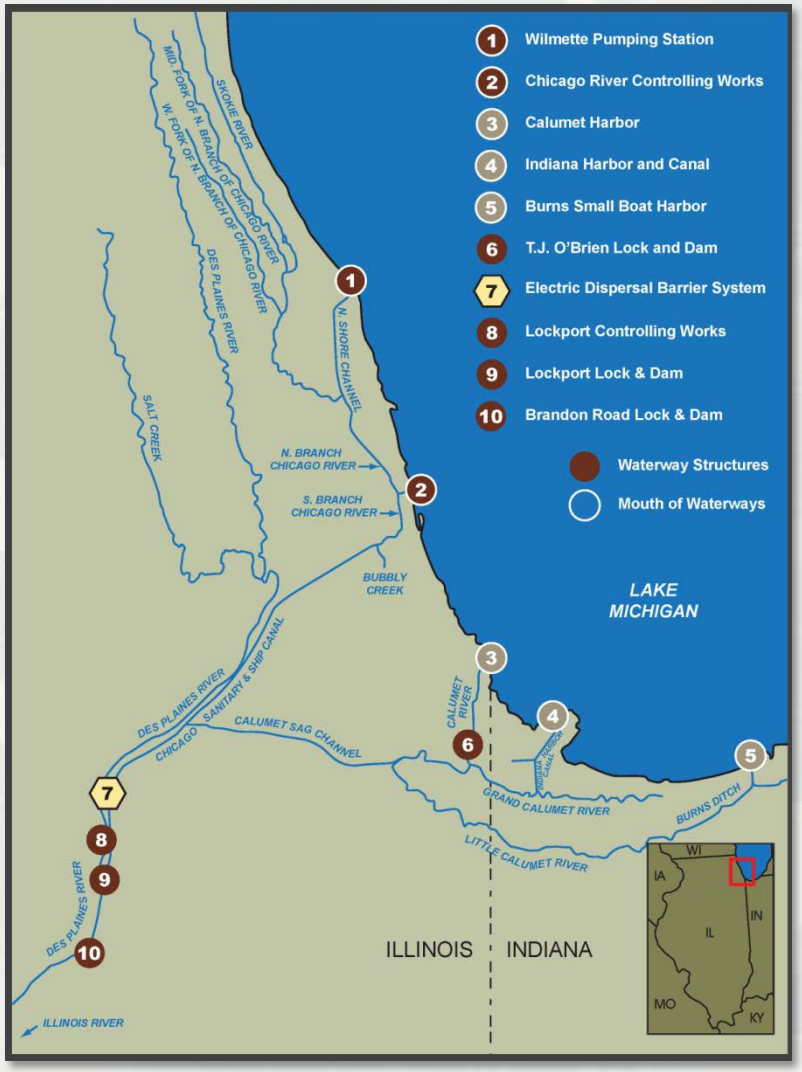
Scope of Study

- 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



BUILDING STRONG®

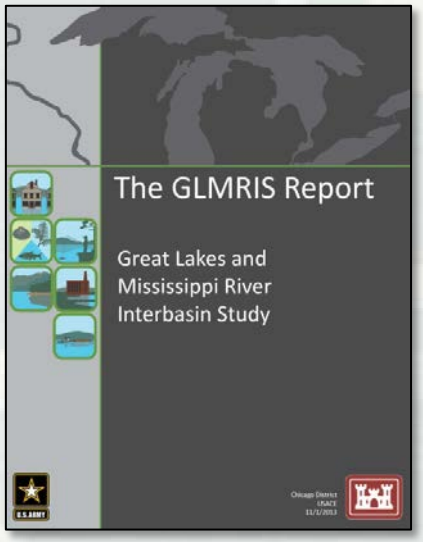


About the CAWS

- 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

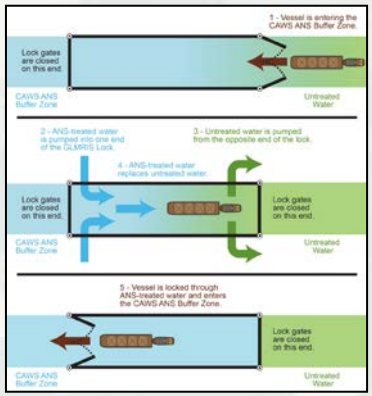
- GLMRIS Report presents information on a range of alternatives
  - Conceptual design of alternatives
  - General mitigation requirements of alternatives
  - Range of cost estimates corresponding to design detail
- Alternative comparison tool to support decision-making
  - Evaluation criteria are presented 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



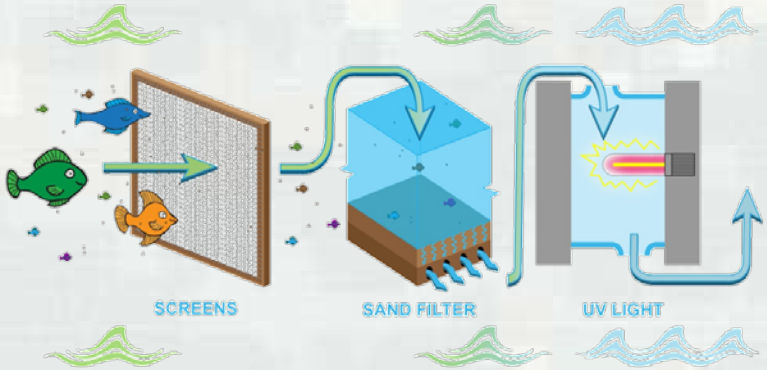
ANS Control Technologies

- Address modes of ANS movement
  - Swimming
  - Floating
  - Hitchhiking

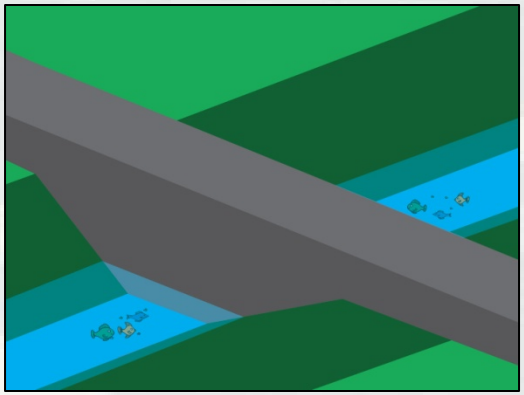
GLMRIS Lock



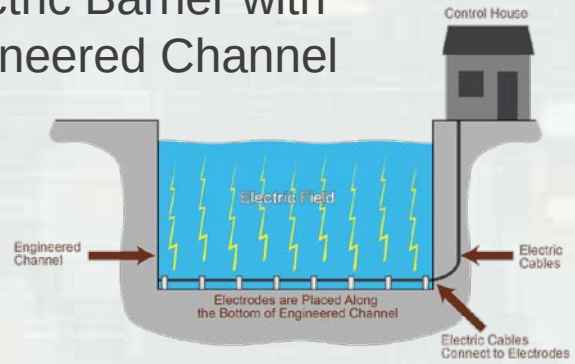
ANS Treatment Plant



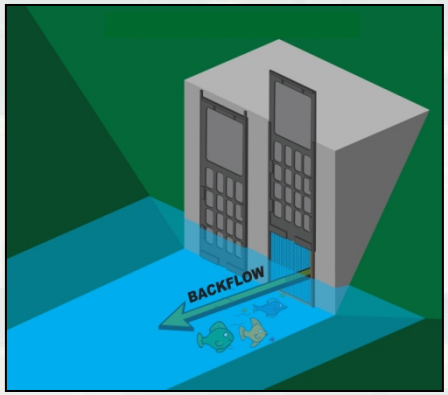
Physical Barrier



Electric Barrier with Engineered Channel



Screened Flow Gates



Baseline Alternative – Sustained Activities

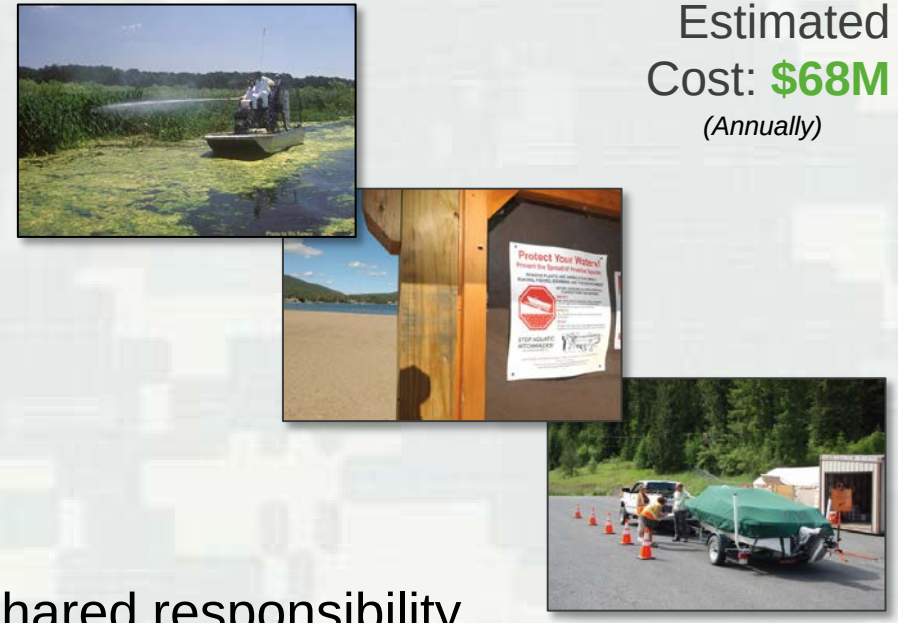
- No new federal action as a result of GLMRIS
- Continuing current efforts supported by federal and state agencies
  - Ruffe, snakehead, sea lamprey, etc
- Asian carp activities include
  - USACE operation of the electric barriers
  - Local, State and Federal activities
    - GLRI Program support for 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**

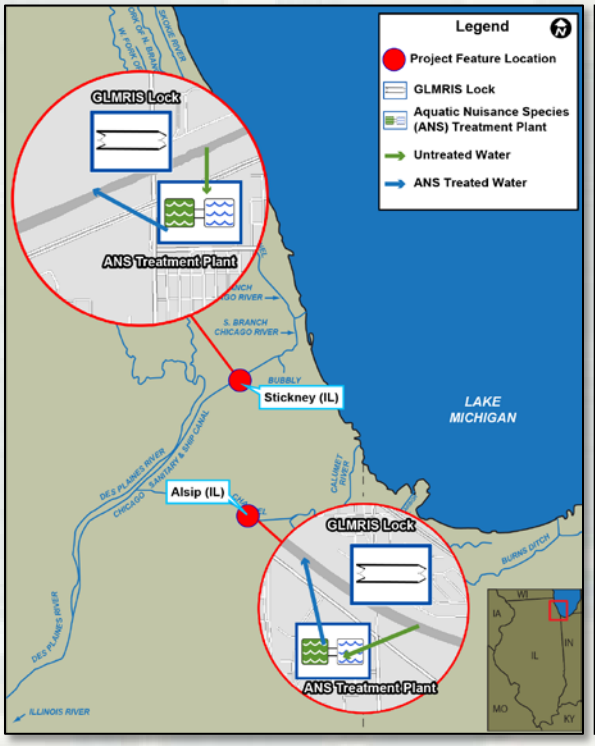
Estimated Cost: **$68M**
(Annually)



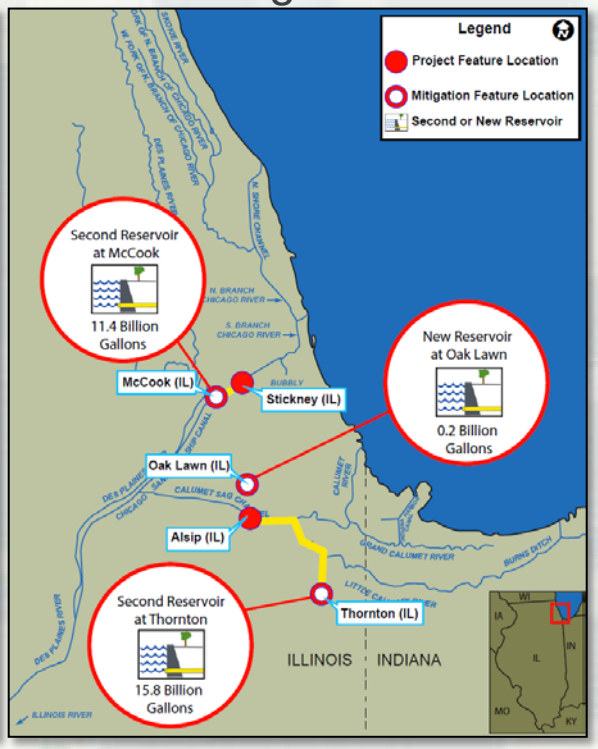
Flow Bypass Alternative

- 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



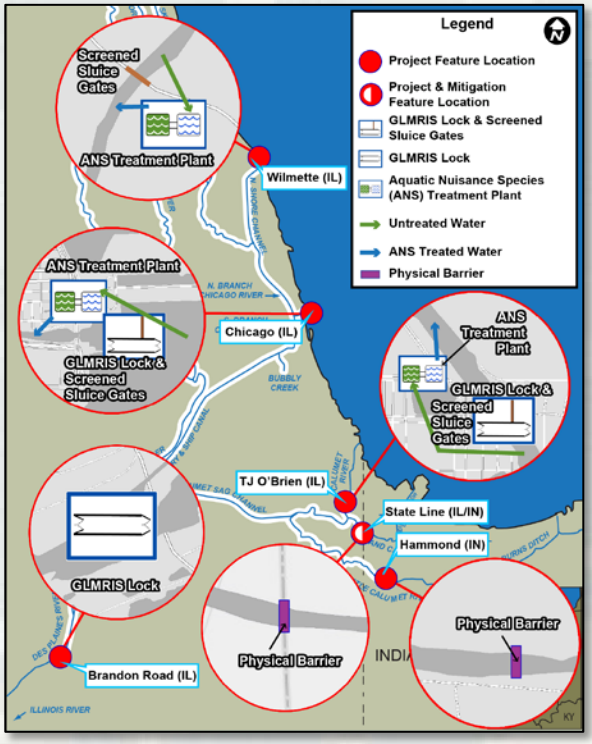
Estimated Time to Completion: **25 yr**

Estimated Cost: **$15.5B**

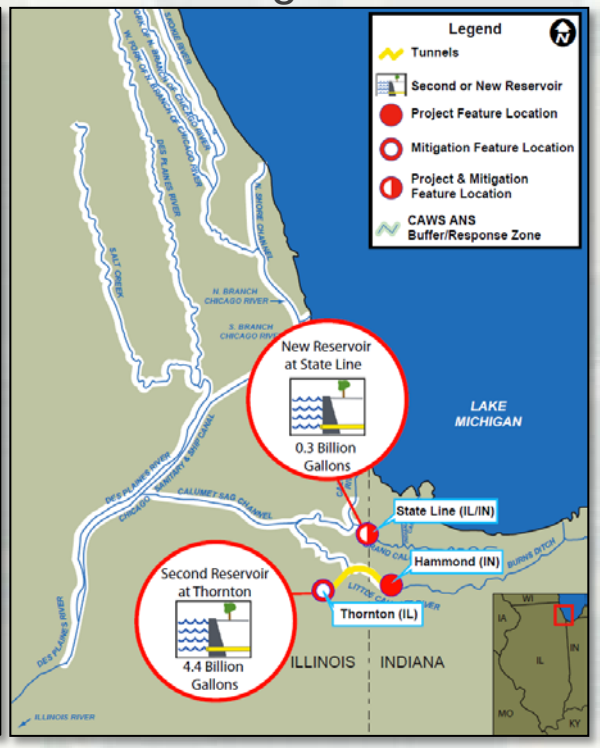
CAWS Buffer Zone Alternative

- 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



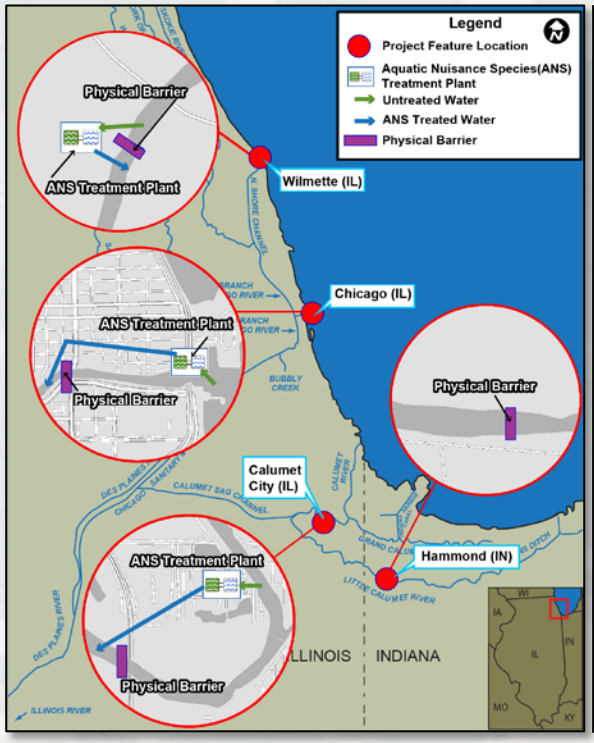
Estimated Time to Completion: **10 yr**

Estimated Cost: **$7.8B**

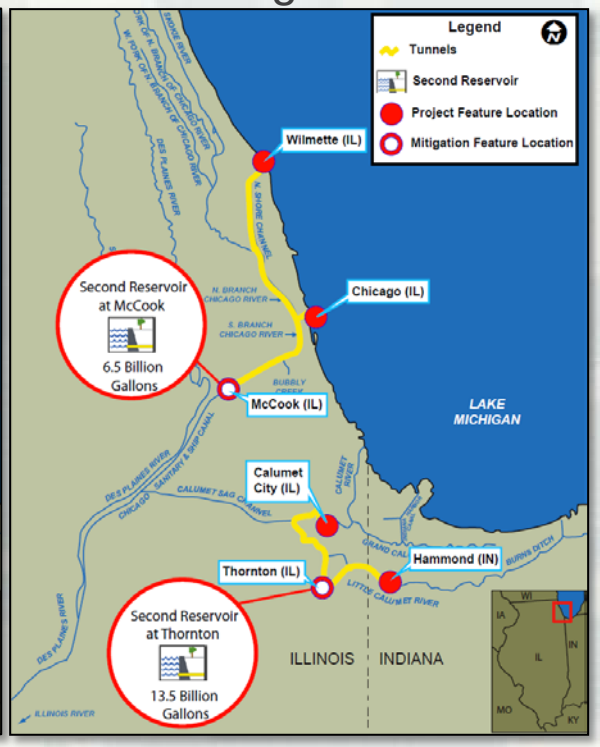
Lakefront Hydrologic Separation

- 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



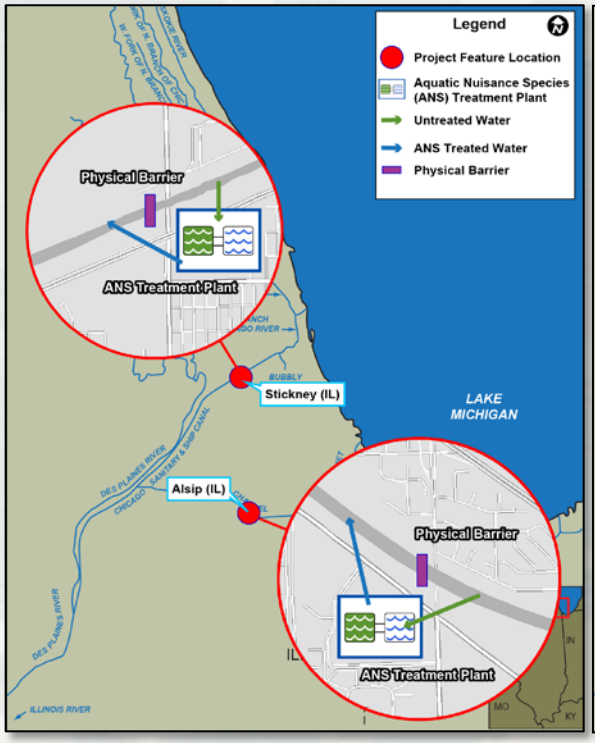
Estimated Time to Completion: **25 yr**

Estimated Cost: **$18.4B**

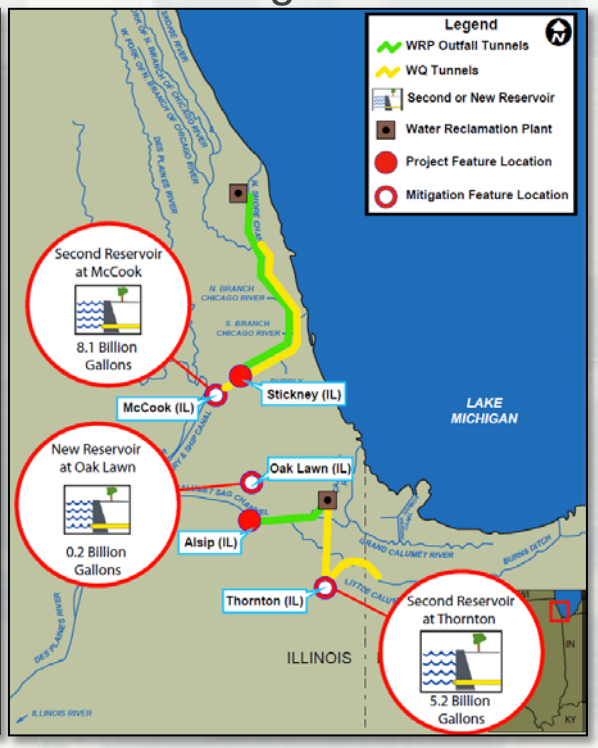
Mid-System Hydrologic Separation

- 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



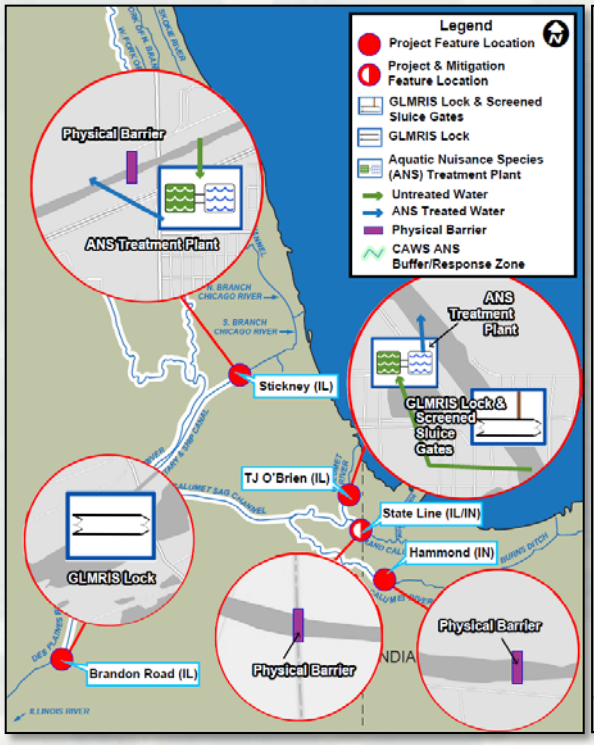
Estimated Time to Completion: **25 yr**

Estimated Cost: **$15.5B**

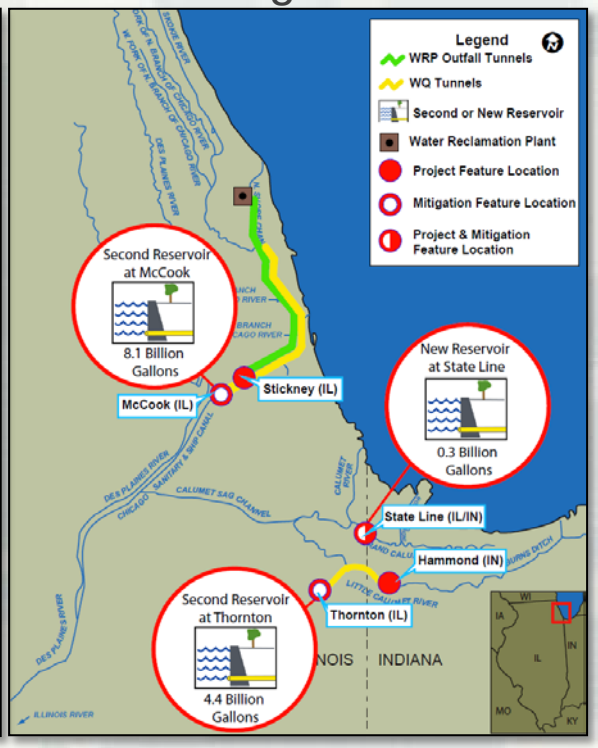
Hybrid – Cal-Sag Open

- 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



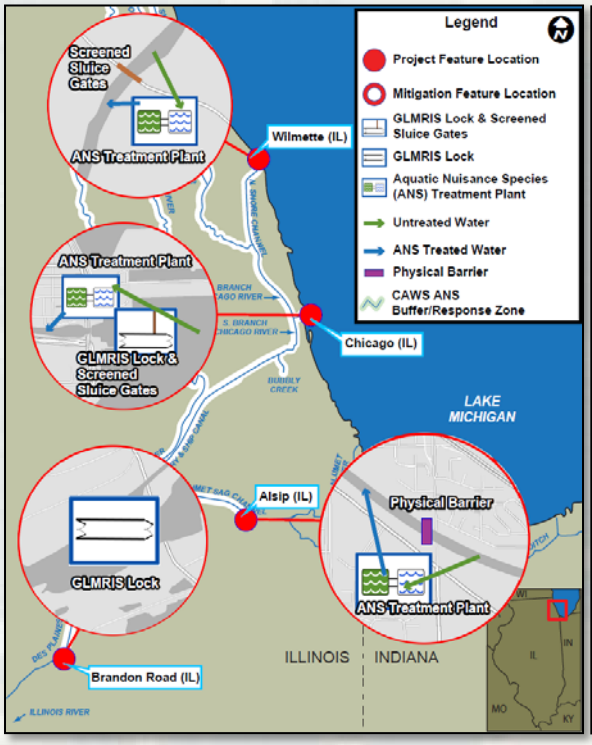
Estimated Time to Completion: **25 yr**

Estimated Cost: **$15.1B**

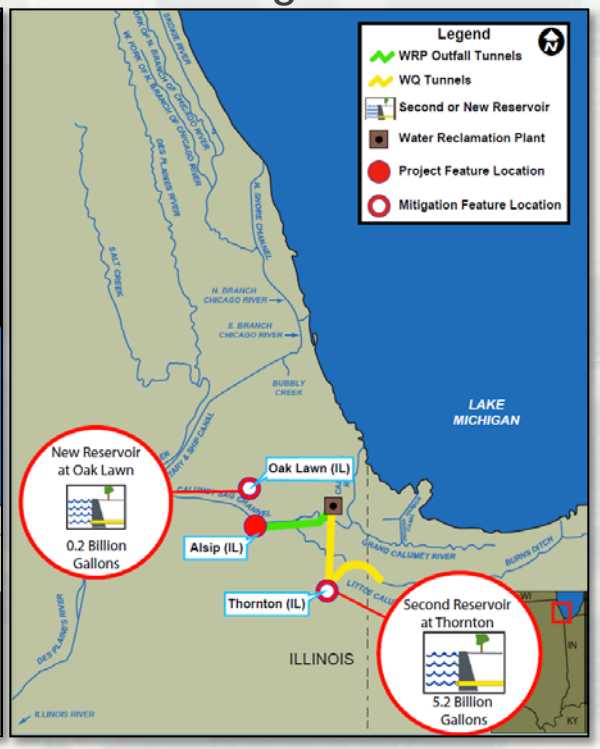
Hybrid – CSSC Open

- 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.

Overview



Mitigation



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
- 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://glmris.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

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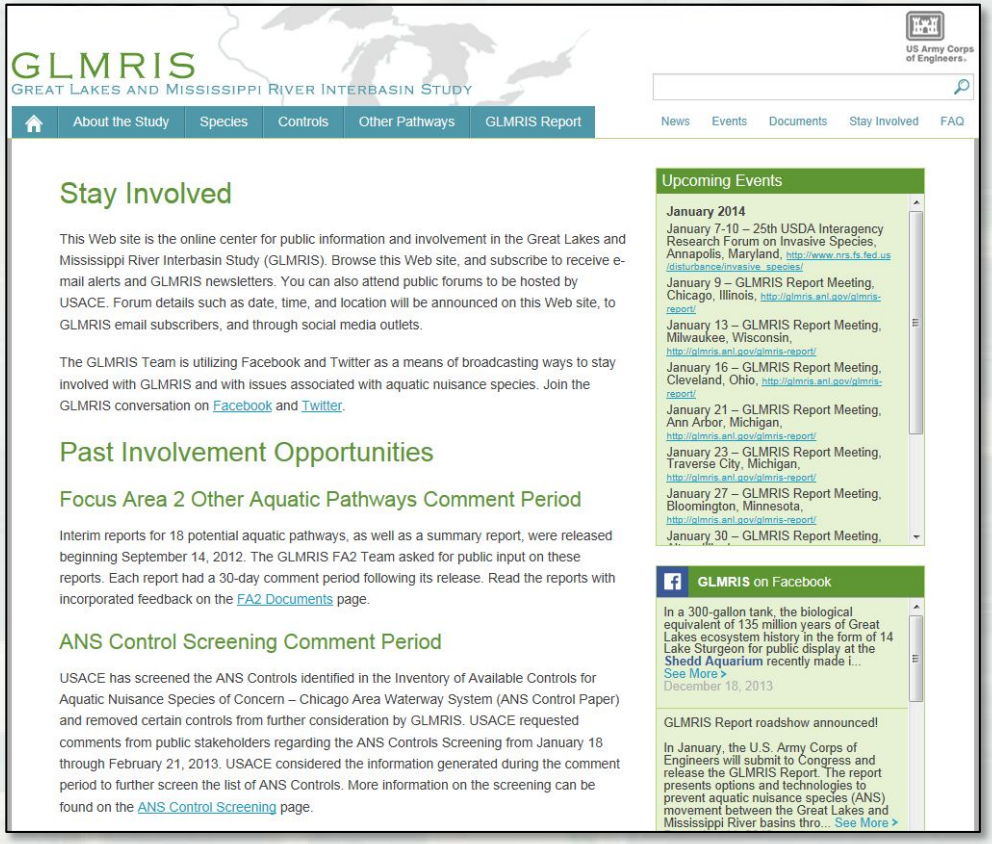

Questions & Comments