REVIEW PLAN

GREAT LAKES AND MISSISSIPPI RIVER INTERBASIN STUDY (GLMRIS)

FOCUS AREA I: CHICAGO AREA WATERWAY SYSTEM

FEASIBILITY STUDY

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US Army Corps of Engineers ®

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1. PURPOSE AND REQUIREMENTS

a. Purpose. This Review Plan defines the scope and level of peer review for the Great Lakes and Mississippi River Interbasin Study (GLMRIS) Focus Area I: Chicago Area Waterway System. A second review plan will be developed for Focus Area II: Other Aquatic Pathways.

b. References

(1) Engineering Circular (EC) 1165-2-209, Civil Works Review Policy, 31 Jan 2010
(2) EC 1105-2-412, Assuring Quality of Planning Models, 31 Mar 2011
(3) Engineering Regulation (ER) 1110-1-12, Quality Management, 30 Sep 2006
(4) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007
(5) Great Lakes and Mississippi River Basin Interbasin Feasibility Study (GLMRIS) Project Management Plan, Nov 2010
http://www.glmris.anl.gov/documents/docs/Project_Management_Plan.pdf
(6) Draft HQUSACE Policy Guidance Memorandum, Great Lakes and Mississippi River Interbasin Study (GLMRIS), Feb 2012

c. Requirements. This review plan was developed in accordance with EC 1165-2-209, which establishes an accountable, comprehensive, life-cycle review strategy for Civil Works products by providing a seamless process for review of all Civil Works projects from initial planning through design, construction, and operation, maintenance, repair, replacement and rehabilitation (OMRR&R). The EC outlines four general levels of review: District Quality Control/Quality Assurance (DQC), Agency Technical Review (ATR), Independent External Peer Review (IEPR), and Policy and Legal Compliance Review. In addition to these levels of review, decision documents are subject to cost engineering review and certification (per EC 1165-2-209) and planning model certification/approval (per EC 1105-2-412).

2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

The RMO is responsible for managing the overall peer review effort described in this Review Plan. The RMO for decision documents is typically either a Planning Center of Expertise (PCX) or the Risk Management Center (RMC), depending on the primary purpose of the decision document. The RMO for the peer review effort described in this Review Plan is the Ecosystem Planning Center of Expertise (ECO-PCX) based out of the Mississippi Valley Division of USACE. Given the multipurpose nature of the project, the Flood Risk Management (FRM) and Inland Navigiation (INV) Centers of Expertise will be coordinated with on this Review Plan.

The RMO will coordinate with the Cost Engineering Directory of Expertise (DX) to conduct ATR of cost estimates, construction schedules and contingencies.

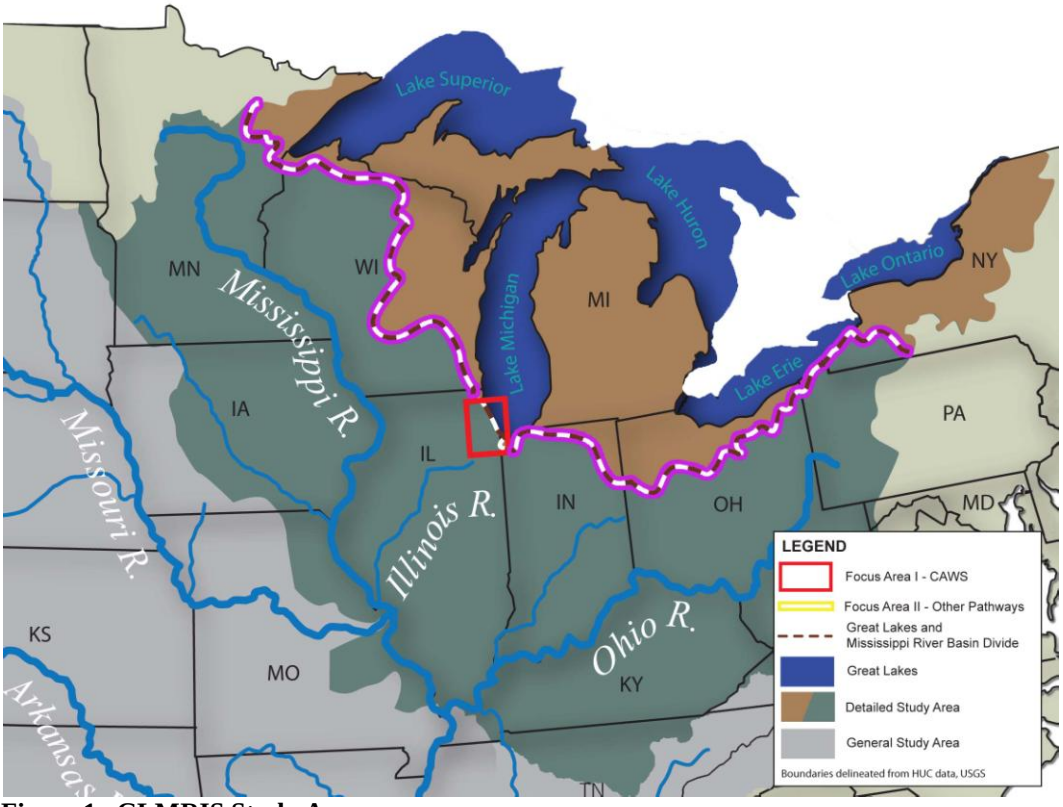

Figure 1. GLMRIS Study Area

3. STUDY INFORMATION

a. Decision Document. The purpose of the Review Plan is to assign the appropriate level and independence of review, establish the procedures, and assign responsibilities for conducting the District Quality Control Review (DQC), Agency Technical Review (ATR) and Independent External Peer Review (IEPR) of the Feasibility Report and the EIS at the appropriate stages of development. This review plan was developed in accordance with EC 1165-2-209, which establishes the procedures for ensuring the quality and credibility of U.S. Army Corps of Engineers (USACE) decision documents through independent review. The EC outlines three levels of review: District Quality Control, Agency Technical Review, and Independent External Peer Review. In addition to these three levels of review, decision documents are subject to policy and legal compliance review and, if applicable, safety assurance review and model certification/approval.

b. Project/Study Description

Project Description

The Chicago Sanitary and Ship Canal (CSSC) is a man-made waterway that connects the Chicago River and the Des Plaines River to the Illinois River, which creates a waterway connection between the Lake Michigan Basin and the Mississippi River Basin. The CSSC connects the Great Lakes (GL) and their 121 tributaries to the Mississippi River (MR) and its 852 tributaries, thereby providing a potential pathway for aquatic nuisance species (ANS) to spread across over 30 states and two Canadian provinces. A temporary electric Demonstration Dispersal Barrier has been operating in the CSSC since 2002 and a second more permanent electric barrier, with a design life of 20 years, was fully implemented in 2011. However, neither of these barriers protect against the full range of ANS

that can use the CSSC to transit between the two basins. The electric dispersal barriers in the CSSC were designed to stop the movement of fish – Asian carp in particular - but will not be effective for many other species and will not stop ANS that do not swim such as plants, larvae, eggs, or seeds.

The ecologic and economic impacts of ANS are significant. The Great Lakes Regional Collaboration identified ANS as an "invasional meltdown that may be more severe than chemical pollution". A feasibility study is necessary to examine the full range of options and technologies available to prevent the spread of all ANS at all life stages between the GL and MR basins through the CSSC and other aquatic pathways. Up to thirty state/agency/international stakeholders will participate in development of goals, objectives, scope, & alternatives that impact entire MR & GL Basins in scope & scale. Projects may be implemented by Federal, State, local & international agencies. Projects implemented by the Corps of Engineers will require Congressional authorization. The impacts of ANS are far-reaching, affecting native flora & fauna, invertebrates, fisheries, habitat, navigation industry, and water intake structure.

Study Authority

Section 3061(d) of the Water Resources Development Act (WRDA) of 2007, Public Law 110-114 authorized the GLMRIS.

> *"(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."*

Congress provided additional study authorization in Section 1538 of the Moving Ahead for Progress in the 21st Century Act, or MAP-21 Act, Public Law 112-141.

> *"**SEC. 1538. ASIAN CARP.***
>
> *(a) DEFINITIONS.—In this section:*
>
> *(1) HYDROLOGICAL SEPARATION.—The term ''hydrological separation'' means a physical separation on the Chicago Area Waterway System that—*
>
> *(A) would disconnect the Mississippi River watershed from the Lake Michigan watershed; and*
>
> *(B) shall be designed to be adequate in scope to prevent the transfer of all aquatic species between each of those bodies of water.*
>
> *(2) SECRETARY.—The term ''Secretary'' means the Secretary of the Army, acting through the Chief of Engineers.*
>
> *(b) EXPEDITED STUDY AND REPORT.—*
>
> *(1) IN GENERAL.—The Secretary shall—*
>
> *(A) expedite completion of the report for the study authorized by section 3061(d) of the Water Resources Development Act of 2007 (Public Law 110–114; 121 Stat. 1121); and*
>
> *(B) if the Secretary determines a project is justified in the completed report, proceed directly to project preconstruction engineering and design.*
>
> *(2) FOCUS.—In expediting the completion of the study and report under paragraph (1), the Secretary shall focus on—*
>
> *(A) the prevention of the spread of aquatic nuisance species between the Great Lakes and Mississippi River Basins, such as through the permanent hydrological separation of the Great Lakes and Mississippi River Basins; and*
>
> *(B) the watersheds of the following rivers and tributaries associated with the Chicago Area Waterway System:*

(i) The Illinois River, at and in the vicinity of Chicago, Illinois.
(ii) The Chicago River, Calumet River, North Shore Channel, Chicago Sanitary and Ship Canal, and Cal-Sag Channel in the State of Illinois.
(iii) The Grand Calumet River and Little Calumet River in the States of Illinois and Indiana.

(3) EFFICIENT USE OF FUNDS.—The Secretary shall ensure the efficient use of funds to maximize the timely completion of the study and report under paragraph (1).
(4) DEADLINE.—The Secretary shall complete the report under paragraph (1) by not later than 18 months after the date of enactment of this Act.
(5) INTERIM REPORT.—Not later than 90 days after the date of enactment of this Act, the Secretary shall submit to the Committees on Appropriations of the House of representatives and Senate, the Committee on Environment and Public Works of the Senate, and the Committee on Transportation and Infrastructure of the House of Representatives a report describing—

(A) interim milestones that will be met prior to final completion of the study and report under paragraph (1); and
(B) funding necessary for completion of the study and report under paragraph (1), including funding necessary for completion of each interim milestone identified under subparagraph (A).”

USACE developed, and the Assistant Secretary of the Army (Civil Works) approved, Implementation Guidance for the GLMRIS for both study authorities. Implementation Guidance for Section 3061 of WRDA 2007 was issued by Headquarters USACE (HQUSACE) in March 2009. Implementation Guidance for Section 1538 of MAP-21 was issued in August 2012 by HQUSACE. The MAP-21 and WRDA 2007 Implementation Guidance are posted on the project website located at http://www.glmris.anl.gov.

Study Description
The United States Army Corps of Engineers (USACE), in consultation with other federal agencies, Native American tribes, state agencies, local governments and non-governmental organizations, is conducting the Great Lakes and Mississippi River Interbasin Study (GLMRIS). In accordance with the study authorization, USACE will evaluate a range of options and technologies (collectively known as "ANS controls") to prevent the spread of aquatic nuisance species between the Great Lakes and Mississippi River by aquatic pathways. In this context, the term "prevent" includes the reduction of risk to the maximum extent possible, because it may not be technologically feasible to achieve an absolute solution. As part of this study, USACE will conduct a detailed analysis of various ANS controls, including hydrologic separation.

USACE will conduct a comprehensive analysis of ANS controls and will analyze the effects each ANS control or combination of ANS controls may have on current uses of: i) the Chicago Area Waterway System (CAWS), a continuous aquatic pathway between the Great Lakes and Mississippi River basins; and ii) other aquatic pathways between these basins. Following the Economic and Environmental Principles and Guidelines for Water and Related Land Resource Implementation Studies, Water Resource Council, March 10, 1983, USACE will:

- Inventory current and forecast future conditions within the study area;
- Identify aquatic pathways that may exist between the Great Lakes and Mississippi River basins;
- Inventory current and future potential aquatic nuisance species;

- Analyze possible ANS controls to prevent ANS transfer, to include hydrologic separation of the basins;
- Analyze the impacts each ANS control may have on significant natural resources and existing and forecasted uses of the lakes and waterways within the study area; and
- Provide conceptual designs of each of the measures identified to prevent ANS transfer between the basins. If necessary, the designs will include mitigation measures for impacted waterway uses and significant natural resources.

c. Factors Affecting the Scope and Level of Review.

To determine the scope and level of review necessary for this project, the PDT considered the following factors:

- The GLMRIS study will be challenging due to a combination of technical, legal, and institutional constraints. The study topic is itself technically challenging, as it considers a diverse array of aquatic nuisance species, a large and complex geographic area and a broad range of impacts to the economy and environment. The report delivery deadline imposed by Section 1538(b)(5) of Public Law 112-141, Moving Ahead for Progress in the 21st Century Act (MAP-21), challenges USACE to compress complex, multidisciplinary, planning, research, modeling, and design processes into a very aggressive timeframe. USACE will comply with all applicable laws and policies, including but not limited to the National Environmental Policy Act (NEPA), US Supreme Court consent decrees, International Great Lakes treaties, Executive Orders, as well as laws governing threatened and endangered species, drinking water, and stormwater control. In compliance with NEPA, this study will involve the preparation of an Environmental Impact Statement (EIS) that incorporates public, outside party and other federal agency input. Real estate restrictions such as ownership, historical and cultural property designations, and hazardous, toxic and radioactive waste liabilities will impose another layer of complexity to the study process.
- The GLMRIS study is likely to involve significant public dispute as to the size, nature, and effects of the project. Extensive public debate about how to control the transfer of aquatic nuisance species between the Great Lakes and Mississippi River basins has already been expressed through agency and academic reports, litigation, and Congressional action. The GLMRIS Report is likely to generate additional debate about the optimal measures for preventing ANS transfer between the Mississippi River and Great Lakes Basins, and the resultant impacts these measures will have on waterway uses such as flood risk management, commercial and recreational navigation, recreation, water supply, hydropower, etc.
- The GLMRIS study is also likely to involve significant public dispute as to the economic and environmental costs and benefits of the project. The GLMRIS study considers an array of ANS control measures that will each require significant economic investment if implemented, and may have a lasting impact on regional commerce. The ANS control measures under consideration, if implemented, may introduce changes to ecosystems, threatened and endangered species, commercial and recreational fisheries, and introduce potentially harmful consequences requiring mitigation.
- Due to the urgency of project implementation, the array of ANS control measures described in the GLMRIS Report will not be based on novel methods, involve the use of innovative materials or techniques, present complex challenges for interpretation, or contain precedent-setting methods or models. However, the GLMRIS Report is likely to present conclusions that would require changes to prevailing flood management, water treatment, and navigation practices.

- The project does not involve significant threats to human life or safety assurance. Potential impacts to flood risk, environmental quality, and water supply will be minimized and mitigated for as as integral features of the project designs.
- No Governor from any affected state has requested a peer review by independent experts.
- The GLMRIS Report will not include detailed design or a construction schedule.

Together these factors represent a high level of risk associated with the project overall. Risk related to the complexity of the issues to be evaluated will be managed by the inclusion of Subject Matter Experts (SMEs) as part of the PDT. Risk will also be minimized by incorporating frequent participation of significant stakeholders throughout study process.

d. In-Kind Contributions. There is no non-Federal sponsor for GLMRIS.

4. DISTRICT QUALITY CONTROL (DQC)

All decision documents (including supporting data, analyses, environmental compliance documents, etc.) shall undergo DQC. DQC is an internal review process of basic science and engineering work products focused on fulfilling the project quality requirements defined in the Project Management Plan (PMP). The home district shall manage DQC. Documentation of DQC activities is required and should be in accordance with the Quality Manual of the District and the home MSC.

a. Documentation of DQC. DQC is the review of basic science and engineering work products focused on fulfilling the project quality requirements defined in the Project Management Plan (PMP). The PDT and technical supervisors shall obtain technical adequacy and quality through periodic internal reviews and documented through certification of Quality Control (QC) checklists. Section specific checklists for technical products can be found at \\155.79.111.155\Intra-ED-D\TSD_LEAD-Engineer.htm on the Chicago District's intranet site. The results of the DQC review will be provided to the ATR team prior to the completion of their review.

b. Required DQC Expertise

The following disciplines are included in the checklists provided in the Quality Control Plan:

- Lead Engineer
- Specification Technician
- CADD Technician
- Civil Engineer
- Cost Engineer
- Geotechnical Engineer
- Environmental Engineer
- Hydraulic Engineer
- Coastal Engineer
- Structural Engineer
- Mechanical Engineer
- Electrical Engineer
- Economic Plan Formulation and Analysis
- Environmental Plan Formulation and Analysis

c. Products to Undergo DQC. All Corps feasibility-level decision documents requiring authorization by the U.S. Congress will be subject to Quality Control. This includes both District Quality Control (DQC), and Agency Technical Review (ATR), as set forth in Engineering Circular (EC) 1105-2-410.

5. AGENCY TECHNICAL REVIEW (ATR)

a. Products to Undergo ATR. GLMRIS will undergo a formal ATR at the Feasibility Scoping Meeting (FSM) Document, Alternative Formulation Briefing (AFB), and Final Feasibility Report milestones. Also the "GLMRIS Report will undergo a formal ATR review before it is released to the public. The PDT will continue to work with the ATR Team Lead to ensure the appropriate disciplines are accounted for during each of these reviews. Tentative review dates are identified below for these products.

- Risk Assessment – October-November 2012
- Baseline and Future Without Project Conditions Document – January-February 2013
- GLMRIS Report – September-December 2013
- Alternative Formulation Briefing (AFB) – March 2015
- Final Feasibility Report – November 2015

Additionally, GLMRIS has produced several interim products that all underwent ATR before being released to the public and published on the GLMRIS project Web site. Each product listed below had its own ATR team that was developed specifically for that product. GLMRIS initially intended to release three additional interim products: a Recreational Angling Baseline Report, a Charter Fisheries Baseline Report and a Baseline Risk Assessment and Screened ANS Controls Report. Due to the expedited study timeline, these products will be incorporated into the GLMRIS Report.

- ANS White Paper – July 2011
- NEPA Scoping Summary Report – August 2011
- Commercial Non-Cargo Baseline Report – September 2011
- Commercial Cargo Baseline Report – December 2011
- Final ANS Controls Paper – April 2012
- Commercial Fisheries Baseline Report – April 2012
- Subsistence Fisheries Baseline Report – July 2012
- Pro-Tournament Fisheries Baseline Report – July 2012

b. Required ATR Team Expertise.

Discipline	Office/Agency
Planning ATR Lead/Formulation	CESWT-PE-P
Plan Formulation	CESAJ-PD-PW
Environmental Analysis/ NEPA Compliance	CESAJ-PD - ES
Environmental Analysis/ Fisheries	CESAJ-PD - ES
Environmental Analysis/ Aquatic Env/Hab, Plants	CESAJ-PD-R
Risk Assessment	CEIWR-GW
ANS SME Lead (Plants, Aquatic Env/Hab)	CESAJ-OD-A
ANS (bryozoans, annelids, crustaceans, mollusks and protozoans)	CEERD-EP-R
Economist/Nav	CEMVN-PDE-D
Economist/ FRM	CEMVN-PDE-FR
Engineering ATR Lead/ Design	CESAJ-EN-QC
Engineering/Hydraulic Design	CESAJ-EN-WH

Engineering/Hydrologic Modeling	CESAJ-EN-WM
Environmental Engineering	CESAJ-PD-EQ
Engineering/ Mech, Elect	CESAJ-EN-DM
Civil Engineering	TBD
Geotechnical Engineering	TBD
Structural Engineering	TBD
Real Estate Specialist	TBD

***Discipline not required for the FSM milestone.**

c. Documentation of ATR. DrChecks review software will be used to document all ATR comments, responses and associated resolutions accomplished throughout the review process. Comments should be limited to those that are required to ensure adequacy of the product. The four key parts of a quality review comment will normally include:

(1) The review concern – identify the product's information deficiency or incorrect application of policy, guidance, or procedures;
(2) The basis for the concern – cite the appropriate law, policy, guidance, or procedure that has not be properly followed;
(3) The significance of the concern – indicate the importance of the concern with regard to its potential impact on the plan selection, recommended plan components, efficiency (cost), effectiveness (function/outputs), implementation responsibilities, safety, Federal interest, or public acceptability; and
(4) The probable specific action needed to resolve the concern – identify the action(s) that the reporting officers must take to resolve the concern.

In some situations, especially addressing incomplete or unclear information, comments may seek clarification in order to then assess whether further specific concerns may exist.

The ATR documentation in DrChecks will include the text of each ATR concern, the PDT response, a brief summary of the pertinent points in any discussion, including any vertical team coordination (the vertical team includes the district, RMO, MSC, and HQUSACE), and the agreed upon resolution. If an ATR concern cannot be satisfactorily resolved between the ATR team and the PDT, it will be elevated to the vertical team for further resolution in accordance with the policy issue resolution process described in either ER 1110-1-12 or ER 1105-2-100, Appendix H, as appropriate. Unresolved concerns can be closed in DrChecks with a notation that the concern has been elevated to the vertical team for resolution.

At the conclusion of each ATR effort, the ATR team will prepare a Review Report summarizing the review. Review Reports will be considered an integral part of the ATR documentation and shall:

- Identify the document(s) reviewed and the purpose of the review;
- Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;
- Include the charge to the reviewers;
- Describe the nature of their review and their findings and conclusions;
- Identify and summarize each unresolved issue (if any); and
- Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

ATR may be certified when all ATR concerns are either resolved or referred to the vertical team for resolution and the ATR documentation is complete. The ATR Lead will prepare a Statement of Technical Review certifying that the issues raised by the ATR team have been resolved (or elevated to the vertical team). A Statement of Technical Review should be completed, based on work reviewed to date, for the AFB, draft report, and final report. A sample Statement of Technical Review is included in Attachment 2.

6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)

IEPR may be required for decision documents under certain circumstances. IEPR is the most independent level of review, and is applied in cases that meet certain criteria where the risk and magnitude of the proposed project are such that a critical examination by a qualified team outside of USACE is warranted. A risk-informed decision, as described in EC 1165-2-209, is made as to whether IEPR is appropriate. IEPR panels will consist of independent, recognized experts from outside of the USACE in the appropriate disciplines, representing a balance of areas of expertise suitable for the review being conducted. There are two types of IEPR:

- Type I IEPR. Type I IEPR reviews are managed outside the USACE and are conducted on project studies. Type I IEPR panels assess the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, economic analysis, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, models used in the evaluation of environmental impacts of proposed projects, and biological opinions of the project study. Type I IEPR will cover the entire decision document or action and will address all underlying engineering, economics, and environmental work, not just one aspect of the study. For decision documents where a Type II IEPR (Safety Assurance Review) is anticipated during project implementation, safety assurance shall also be addressed during the Type I IEPR per EC 1165-2-209.

- Type II IEPR. Type II IEPR, or Safety Assurance Review (SAR), are managed outside the USACE and are conducted on design and construction activities for hurricane, storm, and flood risk management projects or other projects where existing and potential hazards pose a significant threat to human life. Type II IEPR panels will conduct reviews of the design and construction activities prior to initiation of physical construction and, until construction activities are completed, periodically thereafter on a regular schedule. The reviews shall consider the adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health safety and welfare.

a. Decision on IEPR

A Type I Independent External Peer Review (IEPR) will be performed as part of the feasibility study process. A Type II IEPR will be conducted during PED phase. The timing of the IEPR will be considered in the development of the PMP and the QCP for the study. The PDT will work with the vertical Corps Team and the ECO-PCX, as well as the Executive Steering Group to set the time frame for the IEPR after the completion of the PMP. The District will work with the ECO-PCX and HQUSACE to determine the appropriate mechanisms to provide opportunities for public stakeholder and scientific groups input into the composition of the IEPR team. Recommendations received from this process will be coordinated with the ECO-PCX.

The IEPR will be conducted by an Outside Eligible Organization (OEO) and will include a multi-disciplinary team of engineers and scientists. The scope of the review will address all of the underlying planning, engineering, including safety assurance, economics, and environmental analyses performed, not just one aspect of the project. The review will be conducted to identify, explain, and

comment upon assumptions that underlie public safety, economic, engineering, environmental, and other analyses, as well as to evaluate the soundness of the models and analytic methods. The panel should be able to evaluate whether the interpretations of analyses and conclusions are reasonable.

b. Products to Undergo Type I IEPR.
The OEO will prepare a Review Report containing the panel's economic, engineering and environmental analysis of the project study, including the panel's assessment of the adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses. The PDT and the vertical team will develop written response for all reviewer recommendations contained in the Review Report. The Review Report, including recommendations and responses shall be made available to the public via posting in the District web site, as well as inclusion in the Feasibility Study.

c. Required Type I IEPR Panel Expertise.

IEPR Panel Members/Disciplines	Expertise Required
Economics	The Economics Panel Member(s) should be capable of reviewing the Economics of a variety of topics such as: Navigation; Flood Risk Management; Commercial Fisheries; Recreational Navigation and Fishing; and Regional and National Economic Impacts.
Environmental	The Environmental Panel Member(s) should be capable of reviewing a variety of material such as: NEPA Compliance; various fish species and their habitats; various plant species and their habitats; other aquatic organisms and their habitats.
Engineering	The Engineering Panel Member(s) should be capable of reviewing a variety of technical material such as: Hydraulics; Hydrology; Geotechnical; Civil.
Planning	The Planning Panel Member(s) should be capable of reviewing pertinent USACE and other legal requirements associated with the study and study area.
Fisheries	The fisheries economist should be competent in the areas of dockside valuation of commercially harvested fish and a general knowledge of recreational fishery, charter fishing, and professional fishery. A review with an understanding of economic survey methodology, contingent valuation, and travel cost methodology is preferred.
Invasive Species	The Invasive Species Panel Member(s) should be capable of rewiewing Invasive Species in an aquatic context, and have knowledge to support the appropriateness of the ANS list as well as the ANS facts used to generate Risk Analysis results.
TBD	**Other disciplines to be determined as the study progresses.**

d. Documentation of Type I IEPR. The IEPR panel will be selected and managed by an Outside Eligible Organization (OEO) per EC 1165-2-209, Appendix D. Panel comments will be compiled by the OEO and should address the adequacy and acceptability of the economic, engineering and environmental methods, models, and analyses used. IEPR comments should generally include the same four key parts as described for ATR comments in Section 4.d above. The OEO will prepare a final Review Report that will accompany the publication of the final decision document and shall:

- Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;
- Include the charge to the reviewers;
- Describe the nature of their review and their findings and conclusions; and
- Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

The final Review Report will be submitted by the OEO no later than 60 days following the close of the public comment period for the draft decision document. USACE shall consider all recommendations contained in the Review Report and prepare a written response for all recommendations adopted or not adopted. The final decision document will summarize the Review Report and USACE response. The Review Report and USACE response will be made available to the public, including through electronic means on the internet.

7. POLICY AND LEGAL COMPLIANCE REVIEW

All decision documents will be reviewed throughout the study process for their compliance with law and policy. Guidance for policy and legal compliance reviews is addressed in Appendix H, ER 1105-2-100. These reviews culminate in determinations that the recommendations in the reports and the supporting analyses and coordination comply with law and policy, and warrant approval or further recommendation to higher authority by the home MSC Commander. DQC and ATR augment and complement the policy review processes by addressing compliance with pertinent published Army policies, particularly policies on analytical methods and the presentation of findings in decision documents.

8. COST ENGINEERING DIRECTORY OF EXPERTISE (DX) REVIEW AND CERTIFICATION

All decision documents shall be coordinated with the Cost Engineering DX, located in the Walla Walla District. The DX will assist in determining the expertise needed on the ATR team and Type I IEPR team (if required) and in the development of the review charge(s). The DX will also provide the Cost Engineering DX certification. The RMO is responsible for coordination with the Cost Engineering DX.

9. MODEL CERTIFICATION AND APPROVAL

EC 1105-2-412 mandates the use of certified or approved models for all planning activities to ensure the models are technically and theoretically sound, compliant with USACE policy, computationally accurate, and based on reasonable assumptions. Planning models, for the purposes of the EC, are defined as any models and analytical tools that planners use to define water resources management problems and opportunities, to formulate potential alternatives to address the problems and take advantage of the opportunities, to evaluate potential effects of alternatives and to support decision making. The use of a certified/approved planning model does not constitute technical review of the planning product. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR (if required).

EC 1105-2-412 does not cover engineering models used in planning. The responsible use of well-known and proven USACE developed and commercial engineering software will continue and the professional practice of documenting the application of the software and modeling results will be followed. As part of the USACE Scientific and Engineering Technology (SET) Initiative, many engineering models have been identified as preferred or acceptable for use on Corps studies and these models should be used whenever appropriate. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR (if required).

a. Planning Models. The following planning models are anticipated to be used in the development of the decision document:

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Certification / Approval Status
HEC-FDA 1.2.4 (Flood Damage Analysis)	The Hydrologic Engineering Center's Flood Damage Reduction Analysis (HEC-FDA) program provides the capability for integrated hydrologic engineering and economic analysis for formulating and evaluating flood risk management plans using risk-based analysis methods. The program will be used to evaluate and compare the future without- and with-project plans along the Chicago Area Waterway System (CAWS) to aid in the selection of a recommended plan to manage flood risk.	Certified
NaSS	Navigation Model used to model the commercial shipping traffic along the nations inland waterways. The program will be used to evaluate and compare the future without and with project conditions in the overall study area.	USACE National Certification Pending (PCX IN)
REMI	Regional Economic Model … takes a plethora of variables and can be used to model economic impacts to user defined areas of study. The program will be used to evaluate and compare the future without and with project conditions in the overall study area.	USACE Corporate Certification Pending (FRM PCX)
Risk Assessment (RA) Model	The RA model for the CAWS will assess the risk potential of established aquatic nuisance species (ANS) as well as any potential ANS identified in the future, assess the risk potential of individual aquatic pathways, assess a risk management measure's potential to reduce the probability of unintentional introduction of ANS into a new waterway, and assess a risk management measures potential to reduce the consequence of unintentional introduction of ANS into a new waterway. This process developed for use by GLMRIS builds on the risk assessment processes developed by the USDA's Animal Plant Health Inspection Service (APHIS) and the Generic Nonindigenous Aquatic Organisms Risk Analysis Process developed by the Risk Assessment and Management Committee of the Aquatic Nuisance Species Task Force of October, 1996. This method conforms to the standards of good practice described in the literature.	USACE Approval Pending (ECO PCX)
DYNUS-T	Dynamic Urban Systems for Transportation traffic model for Focus Area I. The program will be used to evaluate and compare the future without and with project conditions in Focus Area I.	USACE Corporate Certification Pending (FRM PCX)

Model Certification plans will be developed as the study progresses.

b. Engineering Models. The following engineering models are anticipated to be used in the development of the decision document:

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study
HEC-RAS 4.1 (River Analysis System)	The Hydrologic Engineering Center's River Analysis System (HEC-RAS) program provides the capability to perform one-dimensional steady and unsteady flow river hydraulics calculations. The program will be used for unsteady flow analysis to evaluate the future without- and with-project conditions throughout the overall study area.
InfoWorks	The sewer model, which consists of sewer networks for the City of Chicago and several suburban communities, will be used to determine basement or street flooding impacts under different scenarios as called for during plan formulation.
DUFLOW	Water Quality model for the CAWS. The program will be used to evaluate and compare the future without and with project conditions in the CAWS.
EFDC	Water quality model for the nearshore Lake Michigan. The numerical model will perform unsteady analysis of water quality attributes to evaluate the future without- and with-project conditions.
NONROAD	USEPA model for the estimation of air pollution emissions from marine vessels, locomotive equipment, and other non-road vehicles. The model will be used in the General Conformity analysis to determine whether proposed alternatives will produce emissions of criteria air pollutants above de minimis threshold levels.
MOVES (Motor Vehicle Emission Simulator)	USEPA model for the estimation of air pollution emissions from cars, trucks, and other motor vehicles. The model will be used in the General Conformity analysis to determine whether proposed alternatives will produce emissions of criteria air pollutants above *de minimis* threshold levels.

10. REVIEW SCHEDULES AND COSTS

There are several key milestones scheduled for this study that require a review of documentation by the Agency Technical Review Team as indicated below. A detailed study schedule, study cost estimate, and review costs estimates will be developed as part of the PMP. The Review Plan will be updated to include detailed study costs, review costs and schedules after the approval of the PMP:

Initial Study Milestones:
Approved Review Plan (RP) – 01 June 2009
PMP Approved (PMP) – 9 November 2010
QCP approved - Approval dates will vary with product
Technologies Charrette – November 2012
Alternative Formulation Briefing – June 2015
Draft Report Submittal – March 2016

a. ATR Schedule and Cost.

Schedule

For the Draft and Final Feasibility Reports, ATR will be initiated approximately eight weeks prior to the submittal date. ATR comments shall be due within two weeks of initiating the ATR efforts. Responses to comments shall generally be due within two weeks of final comment submittal. Final

back check, documentation, and, if applicable, certification of the ATR shall be due within one week of the resolution of all comments. The feasibility milestone schedule is included in the Great Lakes and Mississippi River Interbasin Feasibility Study PMP.

Cost

Cost estimates for conducting ATR and IEPR are included in the detailed scopes of work and in the cost estimate summary table located in the PMP. The PMP can be accessed on line at the following web address: http://www.glmris.anl.gov/documents/docs/Project_Management_Plan.pdf
Quality management activities of Section Chiefs are rolled into the cost estimate for each task. Quality management activities of Branch and Division Chiefs are included as a separate line item called Supervision and Administration cost estimate. Up to and including Fiscal Year 2012, the ATR team has expended $50,000 in labor costs. An additional $115,000 is budgeted for ATR team labor in FY 2013 for reviews of the Baseline and Future Without Project Conditions Document and GLMRIS Report .

b. Type I IEPR Schedule and Cost.

Schedule

For the Final Feasibility Report, IEPR will require approximately 6 months to complete. The schedule for the IEPR is being developed.

Cost

Quality management activities of Section Chiefs are rolled into the cost estimate for each task. Quality management activities of Branch and Division Chiefs are included as a separate line item called Supervision and Administration cost estimate.

c. Model Certification/Approval Schedule and Cost.

Schedule

All model certifications are scheduled to be completed by the end of June 2013.

Cost

Costs for conducting model certification are included in the detailed scopes of work and in the cost estimate summary table located in the PMP.

11. PUBLIC PARTICIPATION

In addition to the public access provided to the Peer Review Plan on the District and the ECO-PCX web site, the PDT may solicit input through a number of different communications avenues including the Great Lakes Information Network (GLIN), and other avenues. Additionally, the District will solicit input from the members of the Executive Steering Committee, and other stakeholder groups. In order to satisfy requirements of the National Environmental Policy Act (NEPA), an environmental compliance document will be developed as part of the feasibility study process and released for public review. Comments related to the review process received through these activities will be reviewed, and incorporated into the RP where appropriate. GLMRIS public review comments, project background information, interim products, newsletters and press releases will continue to be made available on the GLMRIS website as they are released: www.glmris.anl.gov.

Due to the highly visible nature of GLMRIS, it is anticipated that there will be multiple opportunities for significant and relevant public comment on the content of the study as well as from interested stakeholder and scientific groups. The District will include documentation on public meetings as part of the NEPA process. Significant and relevant comments on the study process will be provided to the ATR and IEPR teams as part of the review package.

12. REVIEW PLAN APPROVAL AND UPDATES

The Great Lakes and Ohio River Division Commander is responsible for approving this Review Plan. The Commander's approval reflects vertical team input (involving district, MSC, RMO, and HQUSACE members) as to the appropriate scope and level of review for the decision document. Like the PMP, the Review Plan is a living document and may change as the study progresses. The home district is responsible for keeping the Review Plan up to date. Minor changes to the review plan since the last MSC Commander approval are documented in Attachment 3. Significant changes to the Review Plan (such as changes to the scope and/or level of review) should be re-approved by the MSC Commander following the process used for initially approving the plan. The latest version of the Review Plan, along with the Commanders' approval memorandum, should be posted on the Home District's webpage. The latest Review Plan should also be provided to the RMO and home MSC.

13. REVIEW PLAN POINTS OF CONTACT

Public questions and/or comments on this review plan can be directed to the following points of contact:

- Susanne Davis, Chief Planning Branch, 312-846-5580
- Dave Wethington, Project Manager, 313-846-5522
- David Bucaro, Economic Section Chief, 312-846-5583
- Eugene Fleming, Environmental Section Chief, 312-846-5585
- Nicole Roach, Associate Project Manager, 312-846-5517
- Hank Jarboe, Lakes and River Division, Planning and Policy - 513-684-6050
- Jodi Creswell, Mississippi River Division, ECO-PCX – 309-794-5448
- Michael Scuderi, LRD Account Manager, ECO PCX - 206-764-7205

ATTACHMENT 1: TEAM ROSTERS
Draft Study Team Structure

Study Team Component	Agency or NGO
Senior Executive Review Group	**U.S. Army Corps of Engineers, Chicago District (USACE-LRC)**
	U.S. Army Corps of Engineers, Buffalo District (USACE-LRB)
	U.S. Army Corps of Engineers, Detroit District (USACE-LRE)
	U.S. Army Corps of Engineers, Rock Island District (USACE-MVR)
	U.S. Army Corps of Engineers, St. Paul District (USACE-MVP)
	U.S. Army Corps of Engineers, Lakes and Rivers Division (USACE-LRD)
	U.S. Army Corps of Engineers, Mississippi Valley Division (USACE-MVD)
Executive Steering Committee	
	U.S. Army Corps of Engineers, Chicago District
	U.S. Army Corps of Engineers, Rock Island District
	U.S. Army Corps of Engineers, St. Paul District
	U.S. Army Corps of Engineers, Buffalo District
	U.S. Army Corps of Engineers, Detroit District
	U.S. Coast Guard (USCG)
	U.S. Environmental Protection Agency (USEPA)
	U.S. Fish and Wildlife Service (USFWS)
	U.S. Geological Survey (USGS)
	National Oceanic and Atmosphere Administration (NOAA)
	Great Lakes Fisheries Commission (GLFC)
	Great Lakes Commission (GLC)
	International Joint Commission (IJC)
	State DNRs of WI, IN, IL, MN, OH, PA, NY, MI
	Metropolitan Water Reclamation District of Greater Chicago (MWRDGC)
	City of Chicago, Department of Environment

Study Project Delivery Team

Discipline	Office/Agency
Project Manager	**CELRC-PM-PM**
Quality Manager	**CELRC-PM-PL**
Technologies Team	**CELRC-PM-PL**
Natural Resources Team	**CELRC-PM-PL-E**
Navigation and Economic Analysis Team	**CELRC-PM-PL-F**
Hydrology and Hyraulics Team	**CELRC-TS-D-HH**
Environmental Quality Team	**CELRC-TS-D-HH**
Communications Team	**CELRC-PA**

Each team has multiple members, responsible for their own location and discipline.
Individual Quality Control Plan (QCP) documents will be attached to this review plan.

Major Subordinate Command Planning and Policy Team

Discipline	Office
Great Lakes and Ohio River Division	
Chief, Planning & Policy	**CELRD-PDS-P**
Chicago District Liaison	**CELRD-GL-E-EW-Q**
Planning & Policy (Ecosystem)	**CELRD-PDS-P**
Planning & Policy (Navigation)	**CELRH-NC**
Planning & Policy (Econ)	**CELRD-PDS-P**

Planning Centers of Expertise Team

Discipline	Office
ECO-PCX	**CEMVD-PD-N**
Walla Walla Cost Engineering CX	**CENWW-EC-X**
FRM-PCX	**CESPD-PDS-P**

ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECSION DOCUMENTS

COMPLETION OF AGENCY TECHNICAL REVIEW

The Agency Technical Review (ATR) has been completed for the *<type of product>* for Great Lakes and Mississippi River Interbasin Study (GLMRIS). The ATR was conducted as defined in the project's Review Plan to comply with the requirements of EC 1165-2-209. During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing US Army Corps of Engineers policy. The ATR also assessed the District Quality Control (DQC) documentation and made the determination that the DQC activities employed appear to be appropriate and effective. All comments resulting from the ATR have been resolved and the comments have been closed in DrChecks[sm].

ATR Team Leader CESAJ-PD-PW	Date
Project Manager CELRC-PM	Date
Review Management Office Representative CENWS-PM-ER	Date

CERTIFICATION OF AGENCY TECHNICAL REVIEW

Significant concerns and the explanation of the resolution are as follows: *Describe the major technical concerns and their resolution.*

As noted above, all concerns resulting from the ATR of the project have been fully resolved.

Chief, Design Branch CELRC-TS-D	Date
Chief, Planning Division CELRC-PM-PL	Date

ATTACHMENT 3: REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page / Paragraph Number

ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS

Term	Definition	Term	Definition
AFB	Alternative Formulation Briefing	NED	National Economic Development
ASA(CW)	Assistant Secretary of the Army for Civil Works	NER	National Ecosystem Restoration
ATR	Agency Technical Review	NEPA	National Environmental Policy Act
CSDR	Coastal Storm Damage Reduction	O&M	Operation and maintenance
DPR	Detailed Project Report	OMB	Office and Management and Budget
DQC	District Quality Control/Quality Assurance	OMRR&R	Operation, Maintenance, Repair, Replacement and Rehabilitation
DX	Directory of Expertise	OEO	Outside Eligible Organization
EA	Environmental Assessment	OSE	Other Social Effects
EC	Engineer Circular	PCX	Planning Center of Expertise
EIS	Environmental Impact Statement	PDT	Project Delivery Team
EO	Executive Order	PAC	Post Authorization Change
ER	Ecosystem Restoration	PMP	Project Management Plan
FDR	Flood Damage Reduction	PL	Public Law
FEMA	Federal Emergency Management Agency	QMP	Quality Management Plan
FRM	Flood Risk Management	QA	Quality Assurance
FSM	Feasibility Scoping Meeting	QC	Quality Control
GLMRIS	Great Lakes and Mississippi River Interbasin Study	RED	Regional Economic Development
GRR	General Reevaluation Report	RMC	Risk Management Center
HQUSACE	Headquarters, U.S. Army Corps of Engineers	RMO	Review Management Organization
IEPR	Independent External Peer Review	RTS	Regional Technical Specialist
ITR	Independent Technical Review	SAR	Safety Assurance Review
LRR	Limited Reevaluation Report	USACE	U.S. Army Corps of Engineers
MSC	Major Subordinate Command	WRDA	Water Resources Development Act