

REVIEW PLAN ADDENDUM

**Aquatic Nuisance Controls Report
Wabash-Maumee Basin Connection
Fort Wayne, Indiana**

Interim Report

Louisville District

MSC Approval Date: 24 September 2012

Last Revision Date: none



**US Army Corps
of Engineers®**

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1. PURPOSE

Purpose. This Review Plan describes the scope of review for the Aquatic Nuisance Species (ANS) Controls Report, Wabash-Maumee Basin Connection, Fort Wayne, Indiana, which is an Interim Report under the Great Lakes and Mississippi River Interbasin Study (GLMRIS). When approved this review plan will be a supplement to the GLMRIS Project Management Plan. The purpose of the review plan is to prescribe project specific District Quality Control/Quality Assurance (DQC) procedures as well as the level and procedures for Agency Technical Review, and potentially Independent External Peer Review (IEPR), to produce the most scientifically sound, sustainable water resource solutions to prevent the interbasin transfer of Aquatic Nuisance Species between the Wabash and Maumee River Basins

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) Draft Project Management Plan, GLMRIS, USACE LRC, August 2010
- (6) LRL District Quality Management Plan(s)

2. 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).

3. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

The Review Management Organization (RMO) is responsible for managing the overall peer review effort described in this Review Plan. The RMO for this interim report will be the MSC. This Review Plan Addendum will be approved by the Great Lakes and Ohio River Division (LRD) of the U.S. Army Corps of Engineers (USACE).

The RMO will coordinate with the Cost Engineering Directory of Expertise (DX) to ensure the appropriate expertise is included on the review teams to assess the adequacy of cost estimates, construction schedules and contingencies as appropriate

4. STUDY INFORMATION

a. Interim Report. The name of this project is the Aquatic Nuisance Species Controls Report, Wabash-Maumee Basin Connection, Fort Wayne, Indiana. The project is located southwest of Fort Wayne, Indiana. This location was determined to pose the greatest risk for the inter-basin transfer of ANS of the 31 locations identified along the approximate 1,500-mile divide between the Great Lakes and

Mississippi River basins in the GLMRIS Other Pathways Preliminary Risk Characterization, the first interim report produced under the GLMRIS.

The purpose of this interim report is to present the results of a USACE investigation to determine a range of the most viable options and technologies to prevent the spread of ANS between the Mississippi River Basin and the Great Lakes Basin through the Eagle Marsh, which lies on the basin divide between the Wabash and Maumee Rivers near Fort Wayne, Indiana. This interim report provides hydrologic, hydraulic, geomorphologic, biologic, cultural, engineering, and construction details of various possible control measures intended to prevent the transfer of ANS between the two basins at this location. The Aquatic Nuisance Species Controls Report, Wabash-Maumee Basin Connection, Fort Wayne, Indiana will not recommend a federal action. It will present the results of the identification and evaluation of the most viable alternative to prevent ANS transfer through this location, which are based on the risks identified in a detailed hydrological and biological risk assessment of the location. The set of most viable options will include two things, an estimate of the life-cycle costs of implementation, and an estimate of the level of prevention provided, based on a qualitative assessment of the level effectiveness, acceptability, efficiency and completeness of the option.

The Aquatic Nuisance Species Controls Report, Wabash-Maumee Basin Connection, Fort Wayne, Indiana will form the basis for further evaluation by the USACE, other federal agency, or a state or local agency that can assume responsibility. If a viable local sponsor is identified or the USACE is granted implementation authority, the USACE could use the ANS Controls Report to develop a recommended alternative and complete a feasibility report, including appropriate National Environmental Policy Act (NEPA) documentation. The LRD Commander will approve the Aquatic Nuisance Species Controls Report, Wabash-Maumee Basin Connection, Fort Wayne, Indiana report.

b. Factors Affecting the Scope and Level of Review. This is an interim report developed to the point where a range of potentially viable alternatives have been identified, but no specific recommendation has been or will be made in the near future. The USACE committed during the NEPA scoping process for GLMRIS to post the report documenting the evaluation of ANS control technologies applicable to the Wabash-Maumee River connection through Eagle Marsh as a GLMRIS interim report to maintain transparency and assure stakeholders and the public have ample opportunity for input as the GLMRIS proceeds.

c. In-Kind Contributions. This effort is 100% federally funded with no non-Federal sponsor; thus, no in-kind services or products have been provided.

5. DISTRICT QUALITY CONTROL (DQC)

This interim report has been prepared following the standard quality control requirements of the Louisville District. 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 Louisville District shall manage and is responsible for implementation and documentation of DQC. Documentation of DQC activities is required in accordance with the Quality Manual of the District and the Regional Management Business Processes of the Great Lakes and Ohio River Division.

a. Documentation of DQC. The initial version of the main body of the report and all appendices were placed on the K:drive of the Louisville District server. All members of the PDT, LRL senior technical editors, and senior P3MD leadership were able to post comments and edits via the Track Changes

feature of Word®. These comments and edits were evaluated and accepted or rejected for inclusion in the final draft. The final draft of the interim report was submitted to LRD on 15 July 2011 for review and comment. LRD comments were tabulated and resolved during an In-Progress Review (IPR) on 6 September 2011. The comment-response matrix is available for ATR use.

b. Products to Undergo DQC. The main body of the report and all appendices will undergo DQC.

6. AGENCY TECHNICAL REVIEW (ATR)

ATR is mandatory for all decision documents (including supporting data, analyses, environmental compliance documents, etc.). The objective of ATR is to ensure consistency with established criteria, guidance, procedures, and policy to support public release of the. The ATR will review the Aquatic Nuisance Species Controls Report, Wabash-Maumee Basin Connection, Fort Wayne, Indiana to assess whether the analyses presented are technically correct and comply with published USACE guidance, and that the document explains the analyses and results in a reasonably clear manner for the public and decision makers. The ATR team members will provide written comments documenting observed inconsistencies or areas of non-conformance to this objective during their review, and each ATR comment will be resolved to the mutual satisfaction of the ATR commentor and the PDT. ATR is managed within USACE by the designated RMO and is conducted by a qualified team from outside the home district that is not involved in the day-to-day production of the project/product. ATR teams will be comprised of senior USACE personnel and may be supplemented by outside experts as appropriate. The ATR team lead will be from outside the home MSC.

a. Products to Undergo ATR. The main body of the ANS Controls Report, all appendices, and supporting models will undergo ATR.

b. Required ATR Team Expertise. The ATR team should be familiar with the standard Corps planning policy and process as well as the biologics of ANS in the Great lakes and Mississippi River basins.

ATR Team Members/Disciplines	Expertise Required
ATR Lead	The ATR lead should be a senior professional with extensive experience in preparing ecosystem restoration plans and conducting ATR. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process. The ATR lead may also serve as a reviewer for a specific discipline (such as planning, economics, environmental resources, etc).
Planning	The Planning reviewer should be a senior water resources planner with experience in structural and non-structural alternative and ANS.
Environmental Resources	The Environmental Resources reviewer should be a environmental resources planner with experience in aquatic ecology, especially the impacts of ANS.
Hydrology & Hydraulic Engineering	The hydraulic engineering reviewer should be an expert in H&H and have a thorough understanding of open channel dynamics, enclosed channel systems, detention/retention basins, levees and

	floodwalls, non-structural solutions and computer modeling techniques that will be used.
Civil Engineering	The civil engineer reviewer should be a registered PE with experience in design, construction and operation and maintenance of levees, dams and their associated water control structures. The civil engineer should also have experience with ecosystem restoration and flood mitigation plans.
Cost Engineering	The cost engineer reviewer should be a Certified Cost Consultant or Certified Cost Engineer. The cost engineer reviewer should also have experience in design, construction and operation and maintenance of levees, dams and their associated water control structures. The civil engineer should also have experience with ecosystem restoration and flood mitigation plans.

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 focused 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 technical 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 been properly followed or the technical data or information that is the basis for the concern;
- (3) The significance of the concern – indicate the importance of the concern with regard to its potential impact on the efficiency (cost), effectiveness (function/outputs), implementation responsibilities, safety, Federal interest, or public acceptability of the identified viable options; and
- (4) The probable specific action needed to resolve the concern – identify the action(s) that the reporting officers may take to resolve the concern.

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

The ATR documentation 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 with a notation that the concern has been elevated to the vertical team for resolution.

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

- 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. The ATR certification record is included as Attachment 2.

7. INDEPENDENT EXTERNAL PEER REVIEW (IEPR). The subject document is informational in nature and will not result in any recommendation for a Federal project. As such, LRD Planning has advised that an IEPR will not be required for this effort. The input of independent experts is incorporated into strategic components of product development. The USFWS and USGS play significant roles in the review and determination of ANS of concern to Eagle Marsh and the assessment of the likelihood of interbasin spread of those ANS through Eagle Marsh, and the ATR Team includes subject matter experts from the Great Lakes Fishery Commission, the USGS, and the IDNR.

8. POLICY AND LEGAL COMPLIANCE REVIEW

All decision documents will be reviewed throughout the study process for their compliance with law and policy. Although the Aquatic Nuisance Species (ANS) Controls Report, Wabash-Maumee Basin Connection, Fort Wayne, Indiana is not a decision document, it will undergo legal and policy review at the District to support a recommendation from LRL Commander to LRD Commander for public release of the final ATR Certified document. 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.

9. 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. While not a decision document, the high level of public interest in the identified ANS control measures that could prevent inter-basin transfer of ANS through the Eagle Marsh warrants an independent technical review of the estimated life-cycle costs of the most viable options identified and conducted as a part of the ATR. The DX will assist in determining the expertise needed on the ATR team. The DX will also provide the Cost Engineering DX certification upon completion of the review and resolution of the comments. The RMO is responsible for coordination with the Cost Engineering DX. At this time, we do not intend to develop cost and design beyond the concept level (20-25%). Overall project contingencies of 25% are expected. Since physical implementation of an alternative is not anticipated at this time, implementation schedules and cost risk analysis should be given only minimal consideration.

10. 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. No planning models were used in the development of the ANS Controls Report.

b. Engineering Models. The following engineering models were used in the development of the ANS Controls Report:

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	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 St. Marys Overflow to aid in establishing elevations of select protection alternatives in order to incorporate Risk and Uncertainty.	Certified
HEC-DSSVue 2.0.1.16	The Hydrologic Engineering Center’s Data Storage System, or HEC-DSS, is a database system designed to efficiently store and retrieve scientific data that is typically sequential. Such data types include, but are not limited to, time series data, curve data, spatial-oriented gridded data, and textual data. HEC-DSSVue is a complementary software facilitating access, view, and manipulation of data stored in HEC-DSS database files using a variety of utilities and functions. HEC-DSSVue functions were used to perform partial duration and annual series analysis of gage data on the St. Marys River to further understand the frequency of storm events occurring on the St. Marys River watershed.	Allowed for Use
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	HH&C CoP Preferred Model

	calculations. The program will be used for unsteady flow analysis to evaluate the without- and with-project conditions along the St. Marys Overflow channel and contributing flow sources, including the St Marys River and Graham McCulloch Ditch.	
Geostudio 2007 Version 7.17, SeepW Analysis	Geostudio 2007's SeepW Analysis is a finite element software product for analyzing groundwater seepage and excess pore-water pressure dissipation problems within porous materials such as soil and rock. SeepW can be applied to the analysis and design of geotechnical, civil, hydro-geological, and mining engineering projects. The program will be used to evaluate water flow through the permeable berm alternative.	Certified

11. REVIEW SCHEDULES AND COSTS

The Eagle Marsh Controls Report was ATR certified on 16 May 2012. A copy of the ATR certification is included in this document as Attachment 2. No further IPR's with LRD are scheduled. A Feasibility Scoping Meeting (FSM) was held on 7 February 2011. An Alternative Formulation Briefing (AFB) will not be held. The Eagle Marsh Controls Report will contain the information to be presented in an AFB should authority and funding be provided to move forward with recommendation of an alternative.

12. PUBLIC PARTICIPATION

Federal, state and local government agencies and non-governmental organizations stakeholders have been involved in preparation of the ANS Controls Report from its inception. An initial meeting with stakeholders was held on 2-3 November 2010 and a follow-up meeting 16-17 March 2011, both in Fort Wayne. Another follow-on meeting was held in Indianapolis on 22 August 2011. These meetings were used to explain USACE policy and procedures that would be used in the preparation of the ANS Controls Report and to solicit input on the identification of viable options and the level of public and stakeholder acceptance of the various options considered. These meetings also serve as a forum to incorporate stakeholder concerns and possible solutions into the report.

The Aquatic Nuisance Species (ANS) Controls Report, Wabash-Maumee Basin Connection, Fort Wayne, Indiana will be released to the public when finalized. Stakeholder and public involvement may include but will not be limited to the following additional measures.

- Pre-meeting with partner agencies (Indiana Department of Natural Resources, Natural Resources Conservation Service, U.S. Geologic Survey, Council on Environmental Quality (CEQ), Allen County, Little River Wetlands Project) in Fort Wayne, Indiana prior to public release.
- Draft final interim report provided to CEQ approximately 1 week prior to release (internal discussion only).
- Rollout package with separate Congressional and stakeholder notification
- Posting to Chicago District web site
- Media news release
- Follow up phone call briefings with stakeholders approximate 2 weeks after release
- Public open house or webinar for stakeholders after release

13. 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 Louisville 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.

14. REVIEW PLAN POINTS OF CONTACT

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

- Louisville District point of contact:
- LRD point of contact:
- RMO point of contact:

ATTACHMENT 1: TEAM ROSTERS

1. The primary LRL Project Delivery Team members who are familiar with the technical aspects of the study are listed below:

PDT MEMBER	USACE OFFICE SYMBOL	FUNCTION	PHONE NUMBER	EMAIL ADDRESS
	CELRL-PM-PF	Project Manager		
	CELRL-PM-P	Technical editor		
	CELRL-PM-P	Editor		
	CELRL-PM-PE	Environmental lead		
	CELRL-PM-PE	Biological resources		
	CELRL-PM-PE	Biological resources		
	CELRL-PM-PE	Cultural resources		
	CELRL-ED-TC	Engineering lead		
	CELRL-ED-TH	H&H		
	CELRL-ED-TG	Geotechnical		
	CELRL-ED-DA	Geographer (GIS)		
	CELRL-ED-MC	Cost Engineer lead		
	CELRL-ED-MC	Cost Engineer		
	CELRL-ED-MM	Value Engineering		
	CELRL-ED-TC	Technical drawings		
	CELRL-RE-C	Real Estate lead		
	CELRL-RE	Real Estate appraiser		
	CELRL-PA	Public Affairs		
	CELRL-OC	Lead Counsel		
	CELRL-OC	Counsel		

2. The ATR Team members are listed below:

ATR MEMBER	AGENCY	FUNCTION	EXPERTISE	PHONE NUMBER	EMAIL ADDRESS
	USACE	ATR Team Leader	Ecology		
	USACE	H&H SME	H&H		
	USACE	Planning SME	Planning policy		
	USACE	Cost SME	Cost engineering		
	USACE	Engineering SME	Civil engineering		
	USGS	ANS SME	Biology		
	USGS	ANS SME	Biology		
	GLFC	ANS SME	Biology		
	InDNR	ANS SME	Biology		
	InDNR	H&H SME	H&H		

3. The RMO for this effort is the MSC.

ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECISION DOCUMENTS

COMPLETION OF AGENCY TECHNICAL REVIEW

The Agency Technical Review (ATR) has been completed for the interim report for Aquatic Nuisance Species (ANS) Controls Report, Wabash-Maumee Basin Connection, Fort Wayne, Indiana. 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 DrCheckssm "cpf "qj gt "tqkgy "Fqewo gpu.

Date

ATR Team Leader
ERDC-EL-MS

Date

Project Manager
CELRL-PM-PF

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.

Date

Acting Deputy, Civil Works
CELRL-PM

ATTACHMENT 3: REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page / Paragraph Number