



DEPARTMENT OF THE ARMY  
U.S. ARMY ENGINEER DIVISION, GREAT LAKES AND OHIO RIVER  
CORPS OF ENGINEERS  
550 MAIN STREET  
CINCINNATI, OH 45202-3222

CELRD-PD-G

26 July 2013

MEMORANDUM FOR Commander, U.S. Army Engineer District, Chicago (Susanne Davis/CELRC-PM-PL), 111 N. Canal, Suite 600, Chicago, IL, 60606-7206

SUBJECT: Decision Document Review Plan for Cedar Lake Aquatic Ecosystem Restoration, Cedar Lake, Indiana

1. The attached Review Plan (RP) for Cedar Lake was presented to the Great Lakes and Ohio River Division for approval in accordance with EC 1165-2-214 "Civil Works Review" dated 15 December 2012.
2. Cedar Lake is a 781-acre, glacially-formed lake located in the Town of Cedar Lake, in Lake County, Indiana. Extremely high phosphorus and nutrient loading over the years has enriched the sediments to a point where water turbidity is high, submergent macrophytes growth is non-existent and the fishery has become insignificant. The Cedar Lake Enhancement Association (CLEA) initiated this study and the non-Federal sponsor is the Town of Cedar Lake. A number of measures are to be considered during the feasibility study including sediment removal, nutrient inactivation, dilution and flushing, creation of in-lake structures, littoral zone restoration, shoreline restoration, fish community management, and institutional controls.
3. The RP defines the scope and level of peer review for the activities to be performed for the subject project. The USACE LRD Review Management Organization (RMO) has reviewed the attached RP and concurs that it describes the scope of review for work phases and addresses all appropriate levels of review consistent with the requirements described in EC 1165-2-214.
4. I concur with the recommendations of the RMO and approve the enclosed RP for the Cedar Lake project.
5. The District is requested to post the RP to its website. Prior to posting, the names of all individuals identified in the RP and the dollar values of all project costs should be removed.
6. If you have any questions please contact Dr. Hank Jarboe, CELRD-PDP, at (513) 684-6050, or Ms. Pauline Thorndike, CELRD-PDG, at (513) 684-6212.

Encl  
Review Plan

  
MARGARET W. BURCHAM  
Brigadier General, USA  
Commanding

# DECISION DOCUMENT REVIEW PLAN

Cedar Lake Aquatic Ecosystem Restoration  
Cedar Lake, Indiana  
Feasibility Report and Integrated Environmental Assessment

Chicago District, USACE

MSC Approval Date: [Pending](#)  
Last Revision Date: 29 May 2013



US Army Corps  
of Engineers ®

**DECISION DOCUMENT REVIEW PLAN**

Cedar Lake Aquatic Ecosystem Restoration, Cedar Lake, Indiana  
Feasibility Report and Integrated Environmental Assessment

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## 1. PURPOSE AND REQUIREMENTS

a. **Purpose.** This Review Plan defines the scope and level of peer review for the Cedar Lake Aquatic Ecosystem Restoration, Cedar Lake, Indiana, Feasibility Study and Integrated Environmental Assessment.

### b. References

- (1) Engineering Circular (EC) 1165-2-214, Civil Works Review Policy, 15 Dec 2012
- (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) Project Management Plan for Cedar Lake Aquatic Ecosystem Restoration, 10 March 2011
- (6) Cedar Lake Feasibility Study Quality Control Plan, 9 Jul 2009

c. **Requirements.** This review plan was developed in accordance with EC 1165-2-214, 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 1165-2-214) 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 Restoration Planning Center of Expertise (ECO-PCX). The ECO-PCX point of contact is Jodi Creswell, Mississippi Valley Division.

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

## 3. STUDY INFORMATION

a. **Decision Document.** As part of the Cedar Lake Aquatic Ecosystem Restoration Feasibility Study, the Chicago District is preparing a Feasibility Report and Integrated Environmental Assessment for review and approval by HQUSACE. This decision document will provide recommendations to restore the natural ecosystem of Cedar Lake. Congressional authorization for implementation has been provided through Section 3065 of WRDA 2007.

b. **Study/Project Description.** Under the authority provided by Section 3065, WRDA 2007, USACE will evaluate alternatives for Cedar Lake that will potentially benefit the environment by restoring,

improving, or protecting aquatic habitat for plants, fish, and other wildlife species. Cedar Lake is a 781-acre, glacially-formed lake located in the Town of Cedar Lake, in Lake County, Indiana. The lake was once a pristine glacial lake; today the ecosystems and habitats of the Cedar Lake subwatershed are almost completely removed, with only highly degraded and fragmented patches left. Cedar Lake itself has suffered the effects of cultural eutrophication. Extremely high phosphorus and nutrient loading over the years has enriched the sediments to a point where water turbidity is high, submergent macrophytes growth is non-existent and the fishery has become insignificant. The Cedar Lake Enhancement Association (CLEA) initiated this study and the non-Federal sponsor is the Town of Cedar Lake. A number of measures are to be considered during the feasibility study including sediment removal, nutrient inactivation, dilution and flushing, creation of in-lake structures, littoral zone restoration, shoreline restoration, fish community management, and institutional controls. The estimated cost for the feasibility study report, plans & specifications and construction is roughly \$27,000,000.

- c. **Factors Affecting the Scope and Level of Review.** The scope and level of review for this study will be impacted by institutional and social factors rather than technical ones. Major recommendations from the study include sediment removal through dredging, nutrient inactivation using alum, aquatic vegetation restoration, and a fisheries renovation. While these measures do not pose great technical challenges, institutional and social challenges do exist with the sediment removal and nutrient inactivation measures. Institutionally, as an agency, USACE has expertise in dredging, but little experience with treating lakes with alum. In addition, there are competing perceptions among the local stakeholders to the effectiveness of these measures. It is anticipated that these factors will play out during the public review process of the feasibility study and integrated environmental assessment.

**Challenges:** The measures involved in restoring the ecosystem of Cedar Lake is not expected to generate significant technical, institutional, or social challenges. The Chicago District has in-house expertise in ecosystem restoration and experience constructing measures such as those that will be used for this project.

**Project Risks:** A detailed Risk Management Analysis for this study is included as Attachment 5. There is high risk is that sufficient funding for implementation may not be available within the projected construction schedule. The project has significant Congressional interest and future federal funding is likely, however receiving timely non-federal sponsor funding is less likely. During project design, the implementation schedule will be updated according to funds available. Phased implementation may be employed to account for funding challenges. There is a moderate risk that ecosystem restoration outputs may not be achieved to the extent desired. These challenges will be avoided by including a sufficient establishment period in contracts. An adaptive management plan will be developed and implemented as a method to mitigate plant mortality, invasive species establishment, and other unforeseen ecological challenges.

**Life Safety:** The project will neither be justified by life safety or will involve significant threat to human life/safety assurance. There is no reason to believe that any measures involved in the project are associated with a significant threat to human life.

**Governor Request for Peer Review:** The Governor **has not** requested peer review by independent experts.

**Public Dispute:** The project/study is not anticipated to be controversial nor result in significant public dispute as to the size, nature, or effects of the project or to the economic or environmental costs or benefits of the project. Several stakeholders and the public has been engaged throughout the development of the feasibility study through study updates at periodic town council meetings. To date the public has supported the project.

**Project Design/Construction:** The anticipated project design will take advantage of prevailing practices and methodologies. It is not expected to be based on novel methods or involve the use of innovative techniques, or present complex challenges for interpretation. It also not anticipated that the project will require unique construction sequencing or redundancy.

- d. **In-Kind Contributions.** Products and analyses provided by non-Federal sponsors as in-kind services are subject to DQC, ATR, and IEPR. No specific in-kind contributions have been utilized that would require specific review.

#### 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 regional quality management system (QMS).

- a. **Documentation of DQC.** In accordance with the approved project Quality Control Plan (QCP), the Feasibility Report and Integrated Environmental Assessment will undergo appropriate PDT and Chief's review as well as Planning and Policy Compliance and Legal Certifications. The PDT review involves a comprehensive review of each product by the PDT prior to routing for Chief's Review. Chief's review will involve a review of all major products: Feasibility Scoping Meeting (FSM), Alternative Formulation Briefing (AFB), Draft Feasibility Report and Final Feasibility Report by all functional chiefs of sections, branches and divisions with a PDT member involved in the development of the product. Edits will be incorporated into the document and rerouted for final approval requiring sign-off from the functional chiefs. This review, in conjunction with the PDT review is completed to ensure consistency of the document prior to ATR. DrChecks is not utilized to document the PDT or Chief's review.

#### 5. 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. The ATR will 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. 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.** This feasibility study was initiated under Section 206 of the Continuing Authorities Program. The early stages of study development were done under the CAP authority; therefore a Feasibility Scoping Meeting (FSM) was not conducted. The study team did conduct an In-Progress Review (IPR) with MSC and HQUSACE in March 2008 after specific authorization was provided in WRDA 2007. Once implementation guidance was provided, the feasibility was well past the FSM milestone. The products to undergo ATR review are the Alternative Formualtion Briefing (AFB) Documentation, Draft Feasibility Report and Final Feasibility Report including supporting documentation and technical appendices for each document.
- b. **Required ATR Team Expertise.** Due to the limited scale and lack of technical complexity of the study recommendations, a limited ATR team is required.

Prior to specific Congressional authorization, an extensive technical review was conducted on the hydrodynamic, sediment transport and water quality model analysis conducted using the Environmental Fluid Dynamics Code (EFDC) model by Sandia National Laboratories. This three-member team included experts from ERDC in hydrodynamics and sediment transport modeling, USEPA in water quality modeling, and USACE-LRC in lacustrine limnology. This team conducted a three-part review covering model development, analysis of measures, and alternative analysis over an 18-month period. The comments and responses for each of the three reviews were documented and incorporated in the analysis conducted during the Feasibility Study. No additional hydrologic or hydraulic analyses were conducted after their review; therefore, additional reviewers with this expertise will not be required for the ATR team.

It is suggested that the ATR team be comprised of members having the following expertise:

ATR Team Members/Disciplines	Expertise Required
ATR Lead	The ATR lead should be a senior professional with extensive experience in preparing Civil Works decision documents 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 / Plan Formulation	Team member will be an expert in the formulation of ecosystem restoration feasibility studies. Experience should include formulation and analysis of measures to restore eutrophic lakes, cost-effectiveness and incremental cost analysis evaluations of alternatives, and the development of USACE decision documents.
Lacustrine Ecology	Team member will be an expert in the field of lacustrine ecology and have a thorough understanding of nutrient eutrophication, its effect on biota, and restoration methods used in glacial lakes. Expertise should include a strong background in limnology, ecosystem restoration and the estimation of ecological outputs.
NEPA Compliance	Team member will be an expert in the field of NEPA compliance and have a thorough understanding of pertinent USACE regulations and the development of NEPA compliance documents for ecosystem restoration.

Cost Engineering	Team member will be an expert in the estimation of construction costs for ecosystem restoration measures. At a minimum, experience should include estimating lake dredging operations including sediment removal, dewatering, disposal and effluent treatment. A member from the Cost Engineering Directory of Expertise should be selected.
Real Estate	Team member will be experienced with lands, easements, rights-of-way, relocation, and disposal real estate processes.

**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 been 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 1165-2-214, 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 1165-2-214.
  - **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.** Based on the assessment of risk factors and other triggering mechanisms set forth in EC1165-2-214, a Type I IEPR would not be required because:
- there are no anticipated significant environmental, cultural, social or economic impacts associated with the project;
  - there is no anticipated significant inter-agency interest associated with the project;
  - there is no anticipated risk to human health or safety associated with the project;

- there is no anticipated controversial aspects associated with the project;
- there are no novel or non-standard procedures, methods or models being used to develop and implement the project;
- there has been no request by any state Governor to execute IEPR associated with the project;
- the feasibility study is not expected to contain influential scientific information of any significance;
- the estimated total project cost currently stands at \$27M, which is considerably less than the \$45M trigger to require an IEPR.

Since none of the triggers listed above have been met to require a Type I IEPR, the District submitted a formal waiver request for a Type I IEPR to HQUSACE, Deputy for Civil Works. The Type I IEPR exclusion waiver was granted by HQUSACE on 20 May 2013, which is included as Attachment 8.

The Cedar Lake Aquatic Ecosystem Restoration project does not include any features that pose a significant threat to human life, therefore a Type II IEPR, or Safety Assurance Review (SAR) will not be conducted during the design phase of this project.

**b. Products to Undergo Type I IEPR.** N/A

**c. Required Type I IEPR Panel Expertise.** N/A

**d. Documentation of Type I IEPR.** N/A

## **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 Cost-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 Cost-DX will also provide cost certification. The RMO is responsible for coordination with the Cost-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: The model Certification/Approval Plan for the Cedar Lake HSI is included as attachment 7.

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Certification / Approval Status
IWR Planning Suite	The Institute for Water Resources developed the IWR-Planning Suite to assist with the formulation and comparison of alternative plans. IWR-Planning Suite assisted plan formulation by combining solutions and calculating the additive effects of each combination, or "plan." The program assisted with plan comparison by conducting cost effectiveness and incremental cost analyses, identifying the plans which are the best financial investments and displaying the effects of each on a range of decision variables.	Certified
Cedar Lake Habitat Suitability Index	The level of habitat suitability in the Cedar Lake aquatic ecosystem was calculated by developing a habitat suitability index (HSI). The HSI is an algebraic function that uses various indicators of the quality of habitat function and structure. There is not an established HSI for lacustrine habitats; therefore, one was developed specifically for Cedar lake.	Approved for single use (18 Dec 2012)

- 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	Approval Status
EFDC-SNL	The USEPA sponsored Environmental Fluid Dynamics Code (EFDC) hydrodynamic, sediment transport, and water quality model was updated by Sandia National Laboratories (SNL). The newly incorporated SEDZLJ sediment transport algorithm,	Not Applicable

	<p>which allows direct incorporation of site-specific erosion data from the Sediment Erosion with Depth flume (SEDflume), facilitates accurate prediction of sediment behavior. The model was developed and calibrated based on field data collected in 2005 and calibration results suggest the model is able to sufficiently reproduce water quality trends. The program was used to evaluate without- and with-project conditions over a typical 9-month period corresponding to ice-off conditions on Cedar Lake.</p>	
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## 10. REVIEW SCHEDULES AND COSTS

- a. **ATR Schedule and Cost.** Following is an estimate of ATR schedule and costs for the Cedar Lake Aquatic Ecosystem Restoration Feasibility Study:

Activity	Date	Cost
ATR Review of AFB Document	Aug 2009 – Dec 2009	\$20k
Incorporate ATR Comments on AFB Document	Jan 2010 – Sep 2010	\$5k
Closeout AFB ATR comments and ATR signoff	Apr 2011	\$5k
ATR Review of Draft FR/EA	Sep 2013 – Oct 2013	\$10k
Incorporate ATR Comments on Draft FR/EA	Nov 2013	\$2k
Closeout Draft FR/EA ATR comments and ATR signoff	Dec 2013	\$1k
ATR Review of Final FR/EA	Apr 2014	\$5k
Incorporate ATR Comments on Final FR/EA	May 2014	\$1k
Closeout Final FR/EA ATR comments and ATR signoff	May 2014	\$1k
		\$50k

- b. **Type I IEPR Schedule and Cost.** N/A.

- c. **Model Certification/Approval Schedule and Cost.** Review of the Cedar Lake Habitat Suitability Index (HSI) was done in conjunction with ATR review of the AFB document. Further review of documentation was conducted by the Planning Center of Expertise for Ecosystem Restoration (ECO-PCX). Endorsement of the Cedar Lake HSI Model was obtained in November 2012 and was approved by HQUSACE 18 December 2012 and is included as Attachment 7. Changes to the review plan in regards to model certification were documented in Attachment 3. Total cost of model certification review by ECO-PCX was \$3,000 (does not include review during ATR, which is outlined above).

## 11. PUBLIC PARTICIPATION

Throughout the feasibility phase, continual coordination with local stakeholders and interested agencies was paramount. Several public meetings were held throughout the process to brief the non-Federal sponsor and interested stakeholders on the progress of the study. These meetings were held to ensure the stakeholders were aware progress and direction, as well as to acquire local input.

Public review of the Draft Feasibility Report and Integrated Environmental Assessment will be done after ATR of the draft report and clearance from the vertical team in issuing the report for public review. The

public and agency review will be done as part of the NEPA compliance process. Comments received will be comprised, addressed, and placed in the Coordination Appendix to the final report. Significant comments that result in major revisions to plan formulation and the recommended plan will be included in the Final Feasibility Report and Integrated Environmental Assessment provided to the ATR team for review. Upon approval, the final decision document including supplemental documentation will be made available to the public through the District website.

## **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:

Chicago District (CELRC):

[REDACTED]

Great Lakes and Ohio River Division (CELRD):

[REDACTED]

Planning Center of Expertise for Ecosystem Restoration (ECO-PCX):

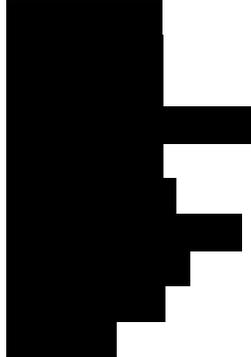
[REDACTED]

**ATTACHMENT 1: TEAM ROSTERS**

Cedar Lake Project Development (PDT) Team:

*USACE Chicago District*

- Project Manager
- Lead Planner
- Fish Ecologist/Planner
- Fisheries Biologist
- Archaeologist/Cultural Resources
- Environmental Engineering
- Geotechnical Engineering
- Cost Engineering
- Civil Design
- Office of Counsel



*USACE Detroit District*

- Real Estate



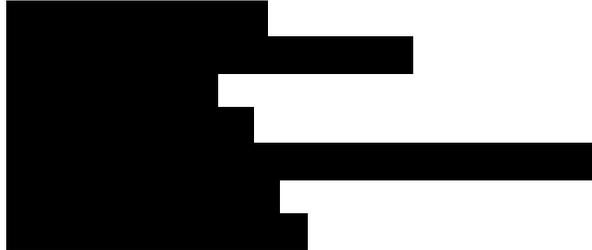
*Non-Federal Sponsor (Town of Cedar Lake)*

- Town Administrator
- Engineering Representative



Agency Technical Review (ATR) Team:

- ATR Team Lead
- Plan Formulation
- Plan Formulation/Planning
- Lacustrine Ecology and Model Review
- NEPA Compliance
- Cost Engineering
- Real Estate



Vertical Team:

*USACE Chicago District:*

- Chief, Planning Branch
- Deputy for Project Management



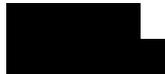
*USACE Great Lakes and Ohio River Division:*

- District Liaison
- Planning and Policy
- Chief, Planning and Policy



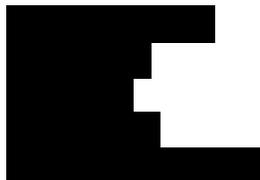
*USACE Headquarters:*

- LRD-RIT Manager
- Chief, Office of Water Project Review



Planning Center of Expertise for Ecosystem Restoration (ECO-PCX):

- ECO-PCX Director
- Deputy Director
- Deputy Director
- National Program Manager
- LRD Account Manager



**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 Feasibility Report and Integrated Environmental Assessment for Cedar Lake Aquatic Ecosystem Restoration, Cedar Lake, Indiana. The ATR was conducted as defined in the project’s Peer Review Plan to comply with the requirements of EC 1165-2-214. 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 U.S. 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<sup>sm</sup>.

*SIGNATURE*

\_\_\_\_\_  
[Redacted]  
ATR Team Leader  
CENWS-PM-ER

\_\_\_\_\_  
Date

*SIGNATURE*

\_\_\_\_\_  
[Redacted]  
Project Manager  
CELRC-PM-PM

\_\_\_\_\_  
Date

*SIGNATURE*

\_\_\_\_\_  
[Redacted]  
Ecosystem Restoration PCX Representative  
CEMVD-PD-N

\_\_\_\_\_  
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.

*SIGNATURE*

\_\_\_\_\_  
[Redacted]  
Chief, Planning Branch  
CELRC-PM-PL

\_\_\_\_\_  
Date

**ATTACHMENT 3: REVIEW PLAN REVISIONS**

<b>Revision Date</b>	<b>Description of Change</b>	<b>Page / Paragraph Number</b>
<u>27 Nov 2013</u>	<u>Approval for Single-Use of the Cedar Lake HSI</u>	<u>Pg 9 / Section 10.c</u>
<u>29 May 2013</u>	<u>Type I IEPR Waiver Approval</u>	<u>Pg 10 / Section 6.a</u>

**ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS**

<b>Term</b>	<b>Definition</b>	<b>Term</b>	<b>Definition</b>
AFB	Alternative Formulation Briefing	NEPA	National Environmental Policy Act
ASA(CW)	Assistant Secretary of the Army for Civil Works	O&M	Operation and maintenance
ATR	Agency Technical Review	OMB	Office and Management and Budget
DPR	Detailed Project Report	OMRR&R	Operation, Maintenance, Repair, Replacement and Rehabilitation
DQC	District Quality Control/Quality Assurance	OEO	Outside Eligible Organization
DX	Directory of Expertise	OSE	Other Social Effects
EA	Environmental Assessment	PCX	Planning Center of Expertise
EC	Engineer Circular	PDT	Project Delivery Team
ECO-PCX	Ecosystem Restoration Planning Center of Expertise	PMP	Project Management Plan
EFDC	Environmental Fluid Dynamics Code	PL	Public Law
EIS	Environmental Impact Statement	QMP	Quality Management Plan
EO	Executive Order	QA	Quality Assurance
ER	Ecosystem Restoration	QC	Quality Control
FEMA	Federal Emergency Management Agency	RED	Regional Economic Development
FSM	Feasibility Scoping Meeting	RMC	Risk Management Center
Home District/MS	The District or MSC responsible for the preparation of the decision document	RMO	Review Management Organization
HQUSACE	Headquarters, U.S. Army Corps of Engineers	RTS	Regional Technical Specialist
HSI	Habitat Suitability Index	SET	Scientific and Engineering Technology
IEPR	Independent External Peer Review	SAR	Safety Assurance Review
IPR	In-Progress Review	SNL	Sandia National Laboratories
MSC	Major Subordinate Command	TSI	Trophic State Index
NED	National Economic Development	USACE	U.S. Army Corps of Engineers
NER	National Ecosystem Restoration	WRDA	Water Resources Development Act

**ATTACHMENT 5: RISK MANAGEMENT ANALYSIS**

<b>Risk Factor</b>	<b>Event</b>	<b>Probability of Occurrence</b>	<b>Severity of Risk</b>	<b>Overall Project Risk</b>	<b>Risk Response/Control (Ac)-Accept (Av)-Avoid (M)-Mitigate</b>
<b>HEALTH &amp; SAFETY</b>	Minor injury needing first aid	Seldom	Negligible	Low	(Av) Follow Health & Safety Plan
	Minor injury/accident	Seldom	Marginal	Low	(Av) Follow Health & Safety Plan
	Major accident with permanent partial/temporary total disability >3 months	Unlikely	Critical	Low	(Av) Follow Health & Safety Plan
	Major accident causing death or permanent total disability	Unlikely	Catastrophic	Low	(Av) Follow Health & Safety Plan
<b>COST SHORTAGE/OV ERRUN</b>	Insignificant cost increase	Likely	Negligible	Low	(Ac) Update 2101 form monthly
	5-10% cost increase	Seldom	Marginal	Low	(M) Update 2101, reallocate resources
	10-20% cost increase	Unlikely	Critical	Low	(M) Update 2101, reallocate resources
	>20% cost increase	Unlikely	Catastrophic	Low	(Av) Revise Scope of Work
<b>SCHEDULE DELAYS</b>	Insignificant schedule slippage	Likely	Negligible	Low	(Ac) Adjust Milestone date
	5-10% schedule slippage	Seldom	Marginal	Low	(M) Adjust Milestone date; Increase progress reporting frequency
	10-20% schedule slippage	Unlikely	Critical	Low	(M) Adjust Milestone date; Increase progress reporting frequency
	>20% schedule slippage	Unlikely	Catastrophic	Low	(M) Adjust project completion date
<b>SCOPE OF WORK</b>	Scope change barely noticeable	Seldom	Negligible	Low	(M) Update PMP; Follow Communications Plan
	Minor areas of scope are affected	Seldom	Marginal	Low	(M) Update PMP; Follow Communications Plan
	Scope change unacceptable to customer	Unlikely	Critical	Low	(Av) Review SOW w/Stakeholders
	Project end item is effectively useless	Unlikely	Catastrophic	Low	(Av) Review goals & objectives
<b>QUALITY ISSUES</b>	Quality degradation barely noticeable	Seldom	Negligible	Low	(Av) ATR; Follow QCP/QAP and Review Plan (RP)
	Quality reduction requires customer approval	Unlikely	Marginal	Low	(Av) ATR; Follow QCP/QAP and RP
	Quality reduction unacceptable to customer	Unlikely	Critical	Low	(Av) ATR; Follow QCP/QAP and RP
	Project end item is effectively useless	Unlikely	Catastrophic	Low	(Av) ATR; Follow QCP/QAP and RP
<b>PROJECT SPECIFIC</b>	Timely funding unavailable for project implementation	Likely	Critical	High	(Av) Understand budgetary needs and communicate capabilities; (M) Adjust implementation schedule to match non-federal sponsor funding capability as necessary
	Desired ecosystem restoration outputs will not be achieved	Unlikely	Critical	Moderate	(Av) Sufficient establishment period included in contracts; (M) Adaptive management plan will be developed to mitigate for negative effects from plant mortality, invasive species, and other unforeseen ecological challenges in achieving restoration objectives.
	Scientific scrutiny and criticism of Feasibility Study and project recommendations	Unlikely	Marginal	Low	(As) Scientific scrutiny is part of regional context, scientific critics exist and are unavoidable; (Av) Utilize peer review processes proactively and throughout project process; (Av) Engage critics through proactive information sharing and utilize strategic communication plan; (M) Listen to critics and weight input.

## ATTACHMENT 6: PROJECT SCHEDULE

Major Milestone	Date
Preliminary Restoration Plan Approved	January 2003
Initiate CAP Section 206 Feasibility Study	April 2004
NEPA Scoping	July 2007
WRDA2007 Study Authorization Change	November 2007
In-Progress Review	March 2008
Alternative Formulation Briefing	February 2012
Draft Report Submitted to HQ/LRD	December 2013*
ASA-CW LPP Waiver Approved	February 2014*
NEPA Public Review	March 2014*
Final Report Submitted to LRD	May 2014*
Division Engineer's Transmittal to HQ	July 2014*
Civil Works Review Board (if needed)	September 2014*
ASA-CW Approval	November 2014*
PED Agreement Executed	December 2014*

\* Estimated dates are included for milestones not yet completed

## ATTACHMENT 7: MODEL APPROVAL REVIEW PLAN – CEDAR LAKE HSI

### Single Use Model Approval Review Plan Cedar Lake Habitat Suitability Index (HSI)

#### 1. PURPOSE

The purpose of this document is to describe the work required to obtain single use model approval for the Cedar Lake Habitat Suitability Index (HSI). The work will result in completion of a model approval review report prepared in accordance with EC 1105-2-412, Appendix A (Protocols for Certification/Approval of Planning Models). This report will be prepared by the Planning Center of Expertise (PCX) for Ecosystem Restoration and will make a recommendation to Headquarters whether or not the study specific HSI should be approved.

#### 2. REFERENCES AND GUIDANCE

Guidance on the review process is contained in EC 1105-2-412 Assuring Quality of Planning Models, 31 March 2011. (<http://cw-environment.usace.army.mil/tools.cfm?CoP=Restore>).

Carlson, R., 1977. Trophic State Index for Lakes. *Limnology and Oceanography*, 22, 361-369.

#### 3. BACKGROUND

Model Description. In order to restore the aquatic ecosystem of Cedar Lake, both ecosystem function and structure must be addressed. The level of habitat suitability, which takes into account the function and structure of the ecosystem, was calculated by developing a habitat suitability index (HSI). The HSI is an algebraic function that uses various indicators of the quality of habitat function and structure. Many species-specific HSIs were developed by the USFWS; however, there are limitations to using a species-specific index when the goal is to restore overall ecological function since outputs are focused on one species and the system as a whole may be overlooked. Unfortunately there is not an established HSI for lacustrine habitats; therefore, one was developed for Cedar Lake specifically and takes into account both habitat function and habitat structure

Ecosystem function describes the foundational processes of natural systems including nutrient cycles and energy fluxes. The natural ecosystem function has been severely degraded through nutrient eutrophication. To quantify the degree at which eutrophication occurs, the Carlson trophic state index (TSI) was used for Cedar Lake (Carlson 1977). This established TSI quantifies the concept that changes in nutrient levels (measured by total phosphorus) causes changes in algal biomass (measured by chlorophyll a) which in turn causes changes in lake clarity (measured by Secchi disk transparency).

Ecosystem structure describes the composition of the habitat that is necessary for species to survive throughout their life cycle. There are several methods to measuring habitat structure within an ecosystem. The most common is to use a surrogate, such as species diversity to give an indication to the habitat structure present. There are several indices available for riparian, wetland and stream ecosystems; however there are few for lacustrine systems. For Cedar Lake, habitat structure was measured using aquatic macrophyte and fish species diversity indices. The species richness, number of total species present, is measured and compared to the total number of species possible. The total number of species possible is determined by comparing to a similar-type reference ecosystem with pristine conditions. Since there are few pristine ecosystems left in this area, historic

documentation is used when available to establish species composition during pre-settlement conditions. Based on research, there are a total of 38 native macrophyte species and 32 native fish species that could have survived in Cedar Lake during pre-settlement conditions. For each of the restoration measures, the species richness after implementation is determined by professional judgment of biologists familiar with the study area. The tolerance of each species is taken into account when predicting rebound of various species. It is assumed that when the ecosystem function is restored, ecosystem structure will also improve through natural recolonization. This phenomenon is more likely for aquatic macrophyte plant species than fish because more pathways for recolonization are present through existing seed banks, wind transport, and avian means. There is normally a time delay in natural recolonization, which should be taken into account.

Under the definitions developed under EC 1105-2-412 the Cedar Lake HSI is a Regional/local model developed by the district office to address a particular local project/problem, and could have broader regional applicability.

#### 4. INFORMATION TO BE PROVIDED BY PROPONENT

The Chicago District is the proponent for the Cedar Lake HSI model. Development of the project specific HSI is documented in the Cedar Lake Ecosystem Restoration Feasibility Report. As discussed in the background section above, the Cedar Lake HSI is an algebraic function composed of terms that provide various indicators of the quality of habitat function and structure in a lacustrine system. No lacustrine HSI exists, therefore the District needed to develop a project specific index to measure the output of various ecosystem restoration measures.

#### 5. TYPE OF REVIEW

The model should undergo a "Limited" level of review, as defined in EC 1105-2-412, Appendix A, Table 4, for "non-complex models that have a minor impact on project decision-making. Certification review should concentrate on compliance with technical quality criteria. Certification team could be limited to internal reviewers". The review will be conducted by a single qualified individual from within USACE, assigned by the ECO-PCX.

This model was developed specifically for application within Cedar Lake. Given this limitation, model review will be conducted in conjunction with ATR to confirm that the model is being appropriately applied to this study.

#### 6. DESCRIPTION OF TASKS

The reviewer shall:

- a) Review all documentation provided, as per the scope of the review outlined above
- b) Locate and review any additional relevant material
- c) Provide a summary report of review findings
- d) Prepare a memo to USACE HQ recommending whether or not the model should be approved for single use.

#### 7. CERTIFICATION REVIEW TEAM COMPOSITION

The review will be conducted by Dr. William James. Mr. James is a GS-14 Research Aquatic Biologist with the Engineering Research and Development Center (ERDC), Environmental Laboratory with nearly 30 years of USACE experience. He has research in nutrient dynamics and cycling, sedimentation and resuspension dynamics, aquatic macrophyte ecology and control, eutrophication and water quality

management, ecosystem restoration and large river biogeochemistry. He also has extensive experience in both developing and applying environmental benefits models for USACE studies.

8. SCHEDULE OF DELIVERABLES

Schedule is TBD.

9. COST ESTIMATE

\$3,000



**DEPARTMENT OF THE ARMY**  
MISSISSIPPI VALLEY DIVISION, CORPS OF ENGINEERS  
P.O. BOX 80  
VICKSBURG, MISSISSIPPI 39181-0080

REPLY TO  
ATTENTION OF:

CEMVD-PD-N

27 November 2012

MEMORANDUM FOR CECW-LRD (Prettyman)

SUBJECT: Recommendation of Approval for Single-Use of the Cedar Lake Habitat Suitability Index in the Cedar Lake Aquatic Ecosystem Restoration Feasibility Study, Cedar Lake, Indiana

1. References:
  - a. Engineering Circular 1105-2-412: Assuring Quality of Planning Models, dated 31 March 2011.
  - b. Model Approval Plan, Cedar Lake Habitat Suitability Index, Cedar Lake Aquatic Ecosystem Restoration Feasibility Study, Cedar Lake, Indiana, dated 02 May 2012 (Encl 1)
  - c. Model Documentation, Cedar Lake Habitat Suitability Index, Cedar Lake Aquatic Ecosystem Restoration Feasibility Study, Cedar Lake, Indiana, dated 02 May 2012 (Encl 2)
  - d. Cedar Lake Habitat Suitability Index Model Benefit Calculator (Encl 3)
  - e. Carlson, R. 1977. Trophic State Index for Lakes. *Limnology and Oceanography* 22:361-369 (within Encl 2).
2. The National Ecosystem Planning Center of Expertise (ECO-PCX) recommends approval for single-use of the Cedar Lake Habitat Suitability Index (HSI) in the Cedar Lake Aquatic Ecosystem Restoration Feasibility Study. Please log this recommendation in with the Office of Water Project Review for consideration by the Model Certification Team.
3. The Chicago District prepared a Model Approval Plan (Encl 1) and model documentation (Encl 2) to seek Approval for Single-Use of the model. The District intends to use the Cedar Lake HSI to determine aquatic habitat benefits for the evaluation and comparison of restoration alternatives in the Cedar Lake Aquatic Ecosystem Restoration Feasibility Study.
4. The Cedar Lake HSI was developed by the Chicago District and is an algebraic function which uses indicators of the quality of habitat structure and function. Habitat structure is presented as aquatic macrophyte and fish species diversity indices. Species richness, which is the number of total species present, is measured and compared to the total number of species possible. The total number of species possible is determined by comparison with a similar-type reference ecosystem with pristine conditions or through historic documentation of species occurrence.

Habitat function describes the processes of natural systems including nutrient cycling and energy fluxes. The Cedar Lake HSI uses the Carlson trophic state index (TSI) to quantify the concept that a change in nutrient levels (i.e., total phosphorus) causes a change in algal biomass (i.e., chlorophyll-a) which causes a change in lake clarity.

The maximum score for fish and aquatic macrophyte species richness is 32 species and 38 species, respectively. The range of the Carlson TSI is defined to encompass the best and worst case scenarios. For Cedar Lake, the lowest TSI score that could possibly be achieved is 30, which marks the lowest

end of eutrophication. This value reasonably symbolizes the state prior to human development. The highest TSI score assumed to be possible is 80, which marks a highly degraded hypereutrophic system. Therefore, the total range of TSI scores is 50 points. Both the average and maximum TSI values for the baseline and restoration measures were normalized to this scale. Since the lower the TSI value, the better the health of the ecological function of the lake, the normalized values were subtracted from one.

The HSI for Cedar Lake is shown in the equation below:

$$HSI = \text{SQRT} [(Functional\ HSI) \times (Structural\ HSI)]$$

$$HSI = \sqrt{\left[ 1 - \frac{(AvgTSI - 30) + (MaxTSI - 30)}{2 \times (80 - 30)} \right] \times \left[ \frac{\left( \frac{SR_{Macrophytes}}{Total_{Macrophytes}} \right) + \left( \frac{SR_{Fishes}}{Total_{Fishes}} \right)}{2} \right]}$$

where HSI is the habitat suitability index, AvgTSI is the average trophic state index of the lake during ice-off conditions, MaxTSI is the maximum trophic state index of the lake during the year,  $SR_{Macrophytes}$  is the number of macrophyte species present,  $Total_{Macrophytes}$  is the total number of macrophyte species possible,  $SR_{Fishes}$  is the number of fish species present, and  $Total_{Fishes}$  is the total number of fish species possible.

Total HUs for the baseline and with project conditions were computed over 50-years. The future without project condition was assumed to be stable based upon recently adopted stormwater management ordinances, planned sewer system upgrades, and projected land use changes.

5. The ECO-PCX reviewed the model in accordance with reference 1.a and the model approval plan (Encl 1). The review of the technical quality and usability of the model was conducted by Dr. William James of the ERDC Environmental Lab (Biography in Encl 1). Review of the system quality of the model was conducted by the ECO-PCX. Documentation of ATR comments and responses is included in Enclosure 2.
6. The Cedar Lake HSI has sufficient technical quality. The TSI is a well-established and accepted peer-reviewed limnological index. The TSI quantifies aquatic habitat structure and function through its reflection of chlorophyll concentration, light attenuation characteristics, algal productivity, and nutrient enrichment. Species richness is a fundamental measurement of community and regional diversity, and it underlies many ecological models and conservation strategies. The aggregation of the indices represents an ecological model of community structure and function. The Cedar Lake HSI complies with USACE policies in that it does not include non-ecosystem or non-wetland parameters. A limitation of using species richness in the model is that it does not account for the distribution of individuals for each species (evenness) or for the importance of rare species.
7. The spreadsheet used to calculate final HUs (Encl 3) for each restoration measure was checked for computational correctness by the ECO-PCX. HSI values and corresponding HUs were calculated correctly. HUs were calculated for each year between years 0 - 50. An overall average of the target

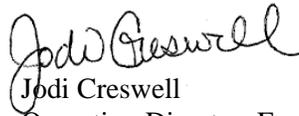
CEMVD-PD-N

SUBJECT: Recommendation of Approval for Single-Use of the Cedar Lake Habitat Suitability Index in the Cedar Lake Aquatic Ecosystem Restoration Feasibility Study, Cedar Lake, Indiana

years was used to determine AAHU values for each alternative. Although this method varies slightly (<0.5%) from the annualization method used by the IWR Planning Suite Annualizer, the difference is the same across all alternatives and does not influence the selection of the final alternative.

8. The model has acceptable usability in that the scoring of variables, development of an overall score, and output interpretation is straightforward. The data required for input is readily available for interdisciplinary teams. The model is transparent and allows for verification of calculations and outputs.
9. In summary, the ECO-PCX finds the Cedar Lake HSI has sufficient technical quality, meets usability criteria, and complies with USACE policy. It is the recommendation of the ECO-PCX that the Cedar Lake HSI be approved for single use in the Cedar Lake Aquatic Ecosystem Restoration Feasibility Study. Please notify the ECO-PCX of the findings of the Model Certification Panel.

3 Encls



Jodi Creswell  
Operating Director, Ecosystem Restoration  
Planning Center of Expertise

Enclosures at <ftp://ftp.usace.army.mil/usace/mvd/ECO-PCX/Model%20Certification/LRC%20Cedar%20Lake%20Restoration%20HSI/>

CF (w/out enclosures):

- CECW-PC (Coleman, Matusiak, Trulick)
- CECW-CP (Kitch, Hughes)
- CECW-PB (Carlson)
- CECW-LRD (Warren)
- CELRD-PDS-P (Zimmerman, Jarboe)
- CELRC-PM-PL (Davis)
- CELRC- PM-PL-F (Bucaro)
- CELRC-PM-PL-E (Fleming, Veraldi, Barkowski)
- CENWS-PM-ER (Scuderi)
- CEMVD-PD-N (Wilbanks, Smith, Creswell)
- CEMVP-PD-P (Richards)

ATTACHMENT 8: TYPE 1 IEPR WAIVER APPROVAL



DEPARTMENT OF THE ARMY  
U.S. ARMY CORPS OF ENGINEERS  
441 G STREET NW  
WASHINGTON, D.C. 20314-1000

CECW-LRD

MAY 20 2013

MEMORANDUM FOR Commander, U.S. Army Corps of Engineers, Great Lakes and Ohio River Division (ATTN: CELRD-PD-G)

SUBJECT: Cedar Lake Aquatic Ecosystem Restoration, Cedar Lake, Indiana – Independent External Peer Review (IEPR) Exclusion Request

1. HQUSACE has reviewed the IEPR exclusion request for the Cedar Lake study. Based on applicable laws and policy, this project study is not subject to Type I IEPR as it does not meet any of the mandatory requirements. The project has a cost estimate of less than \$45 million; does not represent a threat to health and life safety; is not controversial; and has not had a request for IEPR from the governor of an affected state or the head of a federal or state agency.
2. Approval of the exclusion request was based upon the following information. Section 3065 of WRDA 2007 authorizes the Secretary to plan, design, and construct an aquatic ecosystem restoration project at Cedar Lake, Indiana. Cedar Lake is a 781-acre glacially-formed lake located in the Town of Cedar Lake, in Lake County, Indiana. The lake was once a pristine glacial lake; today the ecosystems and habitats of the Cedar Lake sub-watershed are almost completely removed, with only highly degraded and fragmented patches left. A number of measures will be considered during the feasibility study including sediment removal, nutrient inactivation, dilution and flushing, creation of in-lake structures, littoral zone restoration, shoreline restoration, fish community management, and institutional controls. The formulation of this project is not based upon novel methods and does not present complex challenges for interpretation or conclusions that are likely to change prevailing practices. Precedent-setting methods or models will not be used in the evaluation. The total project cost is estimated to be \$27 million and an Environmental Impact Statement is not required.
3. Questions or concerns should be directed to Ms. Yvonne Prettyman, Deputy Chief, Great Lakes and Ohio River Division Regional Integration Team, at (202) 761-4670.

A handwritten signature in black ink, appearing to read "S. L. Stockton".

STEVEN L. STOCKTON, P.E.  
Director of Civil Works