



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

21 June 13

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 Zion Beach-Ridge Plain, Section 506 Great Lakes Fishery and Ecosystem Restoration (GLFER)

1. The attached Review Plan (RP) for Zion Beach-Ridge Plain 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. The study area is part of the Lake Michigan coastline and proposed restoration projects would be located from Kenosha, WI south to Waukegan, IL. The proposed restoration footprint may consist of, but is not limited to, approximately 2,000-acres of publicly protected lands within the Lake Michigan coastal zone. Beach ridges and swales influenced by lacustrine and Aeolian processes provide diverse topographies for ecotypes of dry-mesic savannas, through inundated marshes and rare plains, with ages ranging from 2,000-3,000 years before present in the south to >3,500 years before present in the north. There are many manmade, unnatural structures that are littered through the watersheds which are disrupting natural hydrologic and hydraulic regimes. The goal of this proposed project is to restore and stabilize beach-ridge ecosystem communities through the naturalization of hydrology.
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 Zion Beach-Ridge Plain 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*  
MARGARET W. BURCHAM  
Brigadier General, USA  
Commanding

**Great Lakes Fishery and Ecosystem Restoration (GLFER) Program  
Section 506, Water Resources Development Act of 2000, as amended**

**DECISION DOCUMENT REVIEW PLAN  
USING THE REGIONAL REVIEW PLAN MODEL**

**Zion Beach-Ridge Plain Section 506**

**Chicago District, US Army Corps of Engineers**

**MSC Approval Date: 21 June 2013  
Last Revision Date:**



**US Army Corps  
of Engineers ®**

**DECISION DOCUMENT REVIEW PLAN  
USING THE REGIONAL REVIEW PLAN MODEL**

**Great Lakes Fishery and Ecosystem Restoration (GLFER) Program  
Section 506, Water Resources Development Act of 2000, as amended**

**TABLE OF CONTENTS**

<b>1. PURPOSE AND REQUIREMENTS .....</b>	<b>1</b>
<b>2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION .....</b>	<b>5</b>
<b>3. STUDY INFORMATION .....</b>	<b>5</b>
<b>4. DISTRICT QUALITY CONTROL (DQC).....</b>	<b>6</b>
<b>5. AGENCY TECHNICAL REVIEW (ATR) .....</b>	<b>6</b>
<b>6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR).....</b>	<b>8</b>
<b>7. MODEL CERTIFICATION AND APPROVAL .....</b>	<b>8</b>
<b>8. REVIEW SCHEDULES AND COSTS .....</b>	<b>10</b>
<b>9. PUBLIC PARTICIPATION .....</b>	<b>11</b>
<b>10. REVIEW PLAN APPROVAL AND UPDATES.....</b>	<b>11</b>
<b>11. REVIEW PLAN POINTS OF CONTACT.....</b>	<b>11</b>
<b>ATTACHMENT 1: TEAM ROSTERS.....</b>	<b>12</b>
<b>ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECISION DOCUMENTS.....</b>	<b>14</b>
<b>ATTACHMENT 3: REVIEW PLAN REVISIONS.....</b>	<b>15</b>
<b>ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS.....</b>	<b>16</b>

## 1. PURPOSE AND REQUIREMENTS

- a. **Purpose.** This Regional Review Plan Model defines the scope and level of peer review for the Zion Beach-Ridge Plain Project, located along the Lake Michigan Coastline from Kenosha, WI south to Waukegan, IL. This project is part of the Great Lakes Fishery and Ecosystem Restoration (GLFER) Program which was authorized by Section 506, Water Resources Development Act of 2000, as amended by Section 5011 of the Water Resources Development Act of 2007.

Section 506 of the WRDA of 2000, as amended by Section 5011 of WRDA 2007, provides programmatic authority for restoration of the Great Lakes Fishery and Ecosystem. Section 506 authorizes the Secretary of the Army to develop a plan for activities of the Corps of Engineers that support the management of the Great Lakes fisheries in cooperation with the signatories to the Joint Strategic Plan for Management of the Great Lakes Fisheries and other affected interests; to plan, design, and construct projects to support the restoration of the fishery, ecosystem, and beneficial uses of the Great Lakes. Costs for the planning, design, construction, and evaluation of restoration projects are cost-shared 65 percent Federal and 35 percent non-Federal. Non-Federal interests may contribute up to 100 percent of their share for projects in the form of services, materials, supplies, or other in-kind contributions. Non-Federal interests will receive credit for lands, easements, rights-of-way, relocations, and dredged material disposal areas needed for project construction and must be responsible for the operation, maintenance, repair, rehabilitation, and replacement of projects. Non-Federal interests may include private and non-profit entities.

The planning process of the GLFER program was closely modeled after planning and implementation program described for Section 206 of the WRDA 1996 in the Continuing Authorities Program. Generally projects for study are selected by an integrated panel of Federal and non-Federal Great Lakes ecosystem restoration experts. Projects selected for further study go through a Federally funded reconnaissance phase that results in a document called a "Federal Interest Determination" (FID). Projects are approved for feasibility level studies based on factors such as benefits to the Great Lakes fisheries and ecosystem, applicability to the GLFER program, implementation costs, and level of sponsorship. In cases where the total Federal cost of the project is expected to exceed \$10,000,000, the Support Plan recommends the procedures for specifically authorized projects be followed which require an individual review plan.

- b. **Applicability.** This review plan is based on the Regional Review Plan Model for GLFER project documents, which is applicable to projects that do not require Independent External Peer Review (IEPR), as defined in EC 1165-2-214 Civil Works Review Policy. A GLFER project generally does not require IEPR if it is determined during the course of the study that ALL of the following specific criteria are met:
- The project does not involve a significant threat to human life/safety assurance;
  - The total project cost is less than \$45 million;
  - There is no request by the Governor of an affected state for a peer review by independent experts;
  - The project does not require an Environmental Impact Statement (EIS),
  - The project is not likely to have significant economic, environmental, and/or social effects to the Nation;
  - The project/study is not likely to have significant interagency interest;

- The project/study is not likely highly controversial;
- The decision document is not likely to contain influential scientific information or be highly influential scientific;
- The information in the decision document or proposed project design is not likely to be based on novel methods, involve the use of innovative materials or techniques, present complex challenges for interpretation, contain precedent-setting methods or models, or present conclusions that are likely to change prevailing practices; and
- The project has not been deemed by the USACE Director of Civil Works or Chief of Engineers to be controversial nature.

If any of the above criteria are not met, the model GLFER Regional Review Plan Model is not applicable and a study specific review plan must be prepared by the home district, coordinated with the National Ecosystem Planning Center of Expertise (ECO-PCX) and approved by the home Major Subordinate Command (MSC) in accordance with EC 1165-2-214.

Applicability of the model GLFER Regional Review Plan Model for a specific project is determined by the home MSC. If the MSC determines that the model plan is applicable for a specific study, the MSC Commander may approve the plan (including exclusion from IEPR) without additional coordination with the ECO-PCX or Headquarters, USACE. The initial decision as to the applicability of the model plan should be made no later than the completion of the Preliminary Restoration Plan. In addition, the home district and MSC should assess at the Alternatives Formulation Briefing (AFB) whether the initial decision on the use of the model plan is still valid or if a project specific review plan should be developed based on new information. If a project specific review plan is required, it must be approved prior to execution of the Feasibility Cost Sharing Agreement (FCSA) for the study.

This Regional Review Plan Model may be used to cover implementation products. Following the format of the Regional Review Plan Model, the project review plan may be modified to incorporate information for the review of the design and implementation phases of the project.

### c. References

- (1) Engineering Circular (EC) 1165-2-214, Civil Works Review , 15 Dec 2012
- (2) EC 1105-2-412, Assuring Quality of Planning Models, 31 March 2010.
- (3) Engineering Regulation (ER) 1110-1-12, Quality Management, 30 Sep 2006
- (4) ER 1105-2-100, Planning Guidance Notebook, Appendix F, Continuing Authorities Program, Amendment #2, 31 Jan 2007
- (5) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007

- d. 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).

- (1) District Quality Control/Quality Assurance (DQC). All 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 Major Subordinate Command (MSC).
- (2) Agency Technical Review (ATR). ATR is mandatory for all 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 US Army Corps of Engineers (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 a designated Review Management Organization (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.

For documents prepared under the GLFER Regional Review Plan Model, the leader of the ATR team shall be from outside the home MSC.

- (3) Independent External Peer Review (IEPR). IEPR may be required for 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 is generally for decision documents and Type II is generally for implementation products.
  - (a) 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.

For decision documents prepared under the GLFER Regional Review Plan Model, Type I IEPR is not required.

(b) 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.

For decision documents prepared under the GLFER Regional Review Plan Model, Type II IEPR is not required except where public safety issues are present.

(4) Policy and Legal Compliance Review. All 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.

(5) Cost Engineering DX Review and Certification. All documents shall be coordinated with the Cost Engineering Directory of Expertise (DX), located in the Walla Walla District.

For documents prepared under the GLFER Regional Review Plan Model, Regional cost personnel that are pre-certified by the DX will conduct the cost estimate ATR. The DX will provide the Cost Engineering DX certification.

(6) Model Certification/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. The use of engineering models is also subject to DQC, ATR, and IEPR (if required).

For decision documents prepared under the GLFER Regional Review Plan Model, use of existing certified or approved planning models is encouraged. Where uncertified or unapproved model are used, approval of the model for use will be accomplished through

the ATR process. The ATR team will apply the principles of EC 1105-2-412 during the ATR to ensure the model is theoretically and computationally sound, consistent with USACE policies, and adequately documented. If specific uncertified models are identified for repetitive use within a specific district or region, the appropriate PCX, MSC(s), and home District(s) will identify a unified approach to seek certification of these models.

## **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 GLFER decision documents is the home MSC. The MSC will coordinate and approve the review plan and manage the ATR. The home District will post the approved review plan on its public website. A copy of the approved review plan (and any updates) will be provided to the National Ecosystem Planning Center of Expertise (ECO-PCX) to keep the PCX apprised of requirements and review schedules.

## **3. STUDY INFORMATION**

- a. Decision Document.** The decision document for the Zion Beach Ridge and Plain Project, with a study area located at the Lake Michigan coastline from Kenosha, WI, south to Waukegan, IL will be prepared in accordance with the Great Lakes Fisheries Support Plan April 2006. The approval level of decision documents (if policy compliant) is the home MSC. An Environmental Assessment (EA) will be prepared along with the decision document.

### **Study/Project Description.**

The study area is part of the Lake Michigan coastline and proposed restoration projects would be located from Kenosha, WI south to Waukegan, IL. The proposed restoration footprint may consist of, but is not limited to, approximately 2,000-acres of publicly protected lands within the Lake Michigan coastal zone. Beach ridges and swales influenced by lacustrine and Aeolian processes provide diverse topographies for ecotypes of dry-mesic savannas through inundated marshes, through rare panes, with ages ranging from 2,000-3,000 BP in the south to >3,500 BP in the north. There are many manmade, unnatural structures that are littered through the watersheds which are disrupting natural hydrologic and hydraulic regimes. The goal of this proposed project is to restore and stabilize beach-ridge ecosystem communities through the naturalization of hydrology.

- b. Factors Affecting the Scope and Level of Review.** This is a medium-risk ecosystem restoration project that focuses on creating in-stream fish habitat, restoring natural floodplain dynamics, and restoring native plant communities among a variety of habitats (floodplain forest, wetlands, oak savanna). There is no threat to human health and life associated with this project. Significant, adverse affects/effects for economic, environmental and social effects are not expected because the project will be limited to sustainable measures within the watershed in accordance with the local sponsors and public entities; therefore, significant social and economic effects are unlikely. The environmental affects/effects of this restoration project are predicted to improve the ecological integrity markedly for fish and wildlife, especially spring spawning fishes and migratory birds along the Lake Michigan portion of the Central Flyway. This project would utilize Corps expertise to restore aquatic ecosystem habitat without any novel, controversial or interagency issues.



- c. **In-Kind Contributions.** Products and analyses provided by non-Federal sponsors as in-kind services are subject to DQC and ATR, similar to any products developed by USACE. No in-kind products or services are expected from the non-Federal sponsor during the Feasibility Phase.

**4. DISTRICT QUALITY CONTROL (DQC)**

District Quality Control will be achieved through the Project Management Plan and product specific Quality Control Plans as the project progresses. The PMP and QCP are living documents and will be updated as the project proceeds through the feasibility, design and implementation phases. The QCP will be used as the baseline to track the schedule and budget. The product team will prepare the QCP at the onset of each new phase. The product lead will coordinate the approval of the QCP as expeditiously as possible after preparation and concurrence by the team. The appropriate product lead will coordinate review and approval of product specific QCP. Responsible branch and section chiefs will certify that the appropriate quality procedures have been followed for specific product. Product specific QCPs will be maintained at P:\PRJ-506 Zion Beach-Ridge Plain Restoration\PM-PM Project Management\QCP.

**5. AGENCY TECHNICAL REVIEW (ATR)**

- a. **Products to Undergo ATR.** ATR will be performed throughout the study in accordance with the District and Regional Quality Management System (QMS). The ATR shall be documented and discussed at the AFB milestone. Certification of the ATR will be provided prior to the District Commander signing the final report. Products to undergo ATR include: AFB Documentation which consists of a completed Feasibility Report, technical appendices and any models/programs/spreadsheets utilized for calculations of design, habitat benefits and costs.
- b. **Required ATR Team Expertise.** For this small, medium risk Ecosystem Project the ATR Lead will represent all disciplines except for Cost Engineering, H&H and Real Estate. The cost analysis will be reviewed by a certified cost ATR reviewer, and certified by NWW. Real Estate ATR will be conducted using the RE ATR process.

ATR Team Members/Disciplines	Expertise Required
ATR Lead	The ATR lead should be a senior professional with experience in preparing Section 206 or 506 (GLFER) 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 would also serve as a reviewer for Planning.
Planning	The Planning reviewer, who is the same for ATR Lead, should have experience in not only crafting ecological restoration feasibility studies, but also have field experience in restoring ecological systems.
Environmental Resources	Same as ATR Lead, with experience in how natural systems function and how a restoration project that seeks to naturalize hydraulics and restore associated native plant communities would provide, biology, NEPA, and ecosystem output evaluation.
Cost Engineering	Cost Review shall be certified by the Walla Walla PCX to provide TPC Certification.

Hydraulics and Hydrology	The hydraulic engineering reviewer will be a senior professional engineer with experience In urban storm sewer design and application of engineered measures for riverine ecosystem restoration.
Geotechnical Design	The geotechnical design reviewer will be a senior professional engineer with experience in bank stabilization and water control structures.
Real Estate	The Real Estate reviewer will be a qualified real estate specialist.

**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 1110-2-12 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 prior to the District Commander signing the final report. A sample Statement of Technical Review is included in Attachment 2.

**6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)**

- a. **Decision on IEPR.** Based on the information and analysis provided in paragraph 3(c) of this review plan, the project covered under this plan is excluded from IEPR because it does not meet the mandatory IEPR triggers and does not warrant IEPR based on a risk-informed analysis. If any of the criteria outlined in paragraph 1(b) are not met, the Regional Review Plan Model is not applicable and a study specific review plan must be prepared by the home district, coordinated with the National Ecosystem Planning Center of Expertise (ECO-PCX) and approved by the home Major Subordinate Command (MSC) in accordance with EC 1165-2-214.
- b. **Products to Undergo Type I IEPR.** Not applicable.
- c. **Required Type I IEPR Panel Expertise.** Not Applicable.
- d. **Documentation of Type I IEPR.** Not Applicable.

**7. MODEL CERTIFICATION AND APPROVAL**

- 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
Floristic Quality Index (FQA)	This assessment tool was designed to be used as an all inclusive method, not just as a way to identify high quality sites. The FQA was originally developed for the Chicago Region, but has since been developed for regions and states throughout North America. This method assesses the sensitivity of individual plant species that inhabit an area. Each native species is assigned a coefficient of conservatism ranging from "0 to 10". A "0" is assigned to species that are highly tolerant to disturbance and are considered general in their habitat distribution and a "10" is assigned to species with a very low tolerance to disturbance and displays a very specific	Approved

	relationship to a certain habitat type. This model is used in this study to assess the ecological value of the existing site (future-without-project) condition and any proposed management measures, based on the function of the plant community.	
Mean C	Species “conservatism” is used as its basis for assessment; conservatism being known as a level of tolerance each plant species exhibits to disturbance type, amplitude, and frequency, as well as fidelity to specific habitat types. As an area’s equilibrium is disturbed - the habitat’s capacity to absorb disturbance is weakened, the first plants lost will come from the high end of the conservatism spectrum. Therefore, what is being measured is the extent to which an area supports conservative native plants. As a result, each native species has been assigned a coefficient of conservatism (C), ranging from 0 to 10. Sites with mean C values that approach 3.2 are considered to be moderately disturbed. When site inventories yield mean C values greater than 3.4 or higher, one can be confident that there is sufficient native character present for the area to be at least regionally noteworthy - such landscapes are essentially irreplaceable in terms of their unique composition of remnant biodiversity. Sites with mean C and FQI values greater than 4.0 and 50, respectively, are rare and indicate highly significant natural areas of statewide importance.	Approved
Qualitative Habitat Evaluation Index (QHEI)	The QHEI was developed by the Ohio Environmental Protection Agency employed to assess the physical riverine habitat quality. The QHEI consists of eight sections with a maximum total of 100 points.	Under review for Regional Certification
Index of Biotic Integrity (IBI)	The Region 4 Illinois IBI employs fish assemblage as the indicator of biological form and function. This method makes use of a systematic process to set quantitative criteria that enables the measurement of riverine stream quality. This index employs ten parameters or “metrics” based on structural and functional components of the fish assemblage. Structural components include diversity, taxonomic guilds, and abundance.	Under review for Regional Certification
IWR Planning Suite	IWR Planning Suite assists with plan formulation by combining user-defined solutions to planning problems and calculating the effects of each combination, or “plan.” The program can assist with plan comparison by conducting cost effectiveness and incremental cost analyses, identifying the plans which are best financial investments and displaying the effects of each on a range of decision variables.	Certified

**b. Engineering Models.** The following engineering mode are anticipated to be used:

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Certification / Approval Status
HEC-RAS v. 4.1.0	HEC-RAS is a one-dimensional hydraulic model designed to perform computations for a full network of natural and constructed channels. The program will be used to develop flow characteristics of the ravines under design conditions. Selected parameters from the model output will be used to appropriately design selected measures for the design conditions.	Certified
EPA-SWMM v. 5.0	The EPA-SWMM system is a general purpose urban hydrologic and hydraulic rainfall-runoff model capable of modeling both single and continuous simulations. The runoff component of SWMM operates on a system of catchments that receive precipitation and generate runoff. The routing portion of SWMM transports this runoff through a series of pipes, junctions, storage areas, and channels. The SWMM model tracks the volume of runoff generated at each catchment and the flow rate and depth in each pipe and channel during a simulation period of multiple time steps. This model will be used as the hydrologic model for this study. Hydrographs generated by this model at storm sewer outfalls will be utilized as input into the HEC-RAS model.	Certified

**8. REVIEW SCHEDULES AND COSTS**

**a. ATR Schedule and Cost.**

Agency Tech Review of AFB document - 9/15/14 to 9/30/14  
 Evaluate ATR of AFB document - 10/01/14 to 10/03/14  
 ATR Backcheck of AFB document - 10/04/14 to 10/07/14

The cost of this ATR for the AFB document is estimated to be about \$10K.

**b. Type I IEPR Schedule and Cost.** Not applicable.

**c. Model Certification/Approval Schedule and Cost.** For documents prepared under the GLFER Regional Review Plan Model, use of existing certified or approved planning models is encouraged. Where uncertified or unapproved model are used, approval of the model for use will be accomplished through the ATR process. The ATR team will apply the principles of EC 1105-2-412 during the ATR to ensure the model is theoretically and computationally sound, consistent with USACE policies, and adequately documented. If specific uncertified models are identified for repetitive use within a specific district or region, the appropriate PCX, MSC(s), and home District(s) will identify a unified approach to seek certification of these models.

## **9. PUBLIC PARTICIPATION**

State and Federal resource agencies may be invited to participate in the study covered by this review plan as partner agencies or as technical members of the PDT, as appropriate. Agencies with regulatory review responsibilities will be contacted for coordination as required by applicable laws and procedures. The ATR team will be provided copies of public and agency comments. ATR is completed before public review. Preliminary coordination with Agencies has already commenced via scoping letters. Information gathered from the Scoping letters will be incorporated into the Draft AFB document as well as provide the Agency Coordination letters as attachment. All public and agency comments/information would be incorporated, if pertinent, into the Final Feasibility report, along with coordination letters as attachment, for final approval.

## **10. REVIEW PLAN APPROVAL AND UPDATES**

The home MSC Commander is responsible for approving this review plan and ensuring that use of the GLFER Regional Review Plan Model is appropriate for the specific project covered by the plan. 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. Significant changes may result in the MSC Commander determining that use of the Model Programmatic Review Plan is no longer appropriate. In these cases, a project specific review plan will be prepared and approved in accordance with EC 1165-2-214. The latest version of the review plan, along with the MSC Commanders' approval memorandum, will be posted on the home district's webpage.

## **11. REVIEW PLAN POINTS OF CONTACT**

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

Lead Planner/Fish Biologist

Project Manager

Great Lakes Program Manager

**ATTACHMENT 1: TEAM ROSTERS**

**PDT Members**

<b>Discipline</b>	<b>Name</b>	<b>Phone</b>	<b>E-mail</b>
Project Manager			
Lead Planner / Restoration Ecologist			
Botanist / Restoration Ecologist			
Aquatic Ecologist / Logistics			
Cultural & Arch. Resources			
Real Estate			
Geospatial Data Manager			
Cost Engineer			
Civil Engineer			
Environmental			
H&H Engineer			
Geo Technical Engineer			
Surveyor			
Illinois DNR			
Forest Preserve District Lake County			
Wisconsin DNR			
The Nature Conservancy			

**ATR Team Members**

<b>Discipline</b>	<b>Name</b>	<b>District</b>	<b>Phone</b>	<b>E-mail</b>
ATR Lead				
Eco-Formulation/Compliance				
Cost Certification				
Cost				
H&H				
Geotech				
Real Estate				

## MSC Team

<b>Name</b>	<b>Discipline</b>	<b>Phone</b>	<b>E-mail</b>
	LRDGL		
	LRDOR		
	LRDOR		
	Attorney		
	LRDOR		
	LRDOR		
	CELRD		



**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 Detailed Project Report for Zion Beach Ridge and Plain Section 506 Project, located at the Lake Michigan coastline from Kenosha, WI, south to Waukegan, IL. 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<sup>sm</sup>.

*SIGNATURE*  
\_\_\_\_\_  
*SIGNATURE*  
ATR Team Leader

\_\_\_\_\_  
Date

*SIGNATURE*  
\_\_\_\_\_  
Project Manager  
*CELRC-PM-PM*

\_\_\_\_\_  
Date

*SIGNATURE*  
\_\_\_\_\_  
Review Management Office Representative  
*CELRD-PDS-P*

\_\_\_\_\_  
Date

**CERTIFICATION OF AGENCY TECHNICAL REVIEW**

Significant concerns and the explanation of the resolution are as follows: There are no significant concerns.

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

*SIGNATURE*  
\_\_\_\_\_  
Chief, Design Branch  
*CELRC-TS-D*

\_\_\_\_\_  
Date

*SIGNATURE*  
\_\_\_\_\_  
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>

**ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS**

<b><u>Term</u></b>	<b><u>Definition</u></b>	<b><u>Term</u></b>	<b><u>Definition</u></b>
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
CAP	Continuing Authorities Program	O&M	Operation and maintenance
CSDR	Coastal Storm Damage Reduction	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
EIS	Environmental Impact Statement	PAC	Post Authorization Change
EO	Executive Order	PMP	Project Management Plan
ER	Ecosystem Restoration	PL	Public Law
FDR	Flood Damage Reduction	QMP	Quality Management Plan
FEMA	Federal Emergency Management Agency	QA	Quality Assurance
FRM	Flood Risk Management	QC	Quality Control
FSM	Feasibility Scoping Meeting	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