



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

SEP 10 2014


CELRD-PD-G

MEMORANDUM FOR Commander, US Army Corps of Engineers, District, Chicago
(Susanne Davis/CELRD-PM-PL), 231 South La Salle Street, Suite 1500, Chicago, IL
60604

SUBJECT: Approval Memorandum for the Chicago District, Ambler Flatwoods, LaPorte
County, Indiana, Project Decision Document Review Plan

1. The attached Review Plan (RP) for the Chicago District Ambler Flatwoods, LaPorte County, Indiana, project was presented to the Great Lakes and Ohio River Division on 26 June 2014 for approval in accordance with EC 1165-2-214, Water Resources Policies and Authorities, Civil Works Review, 15 December 2012.
2. 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 completed their policy and quality assurance review of the subject 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.
3. I concur with the recommendations of the RMO and approve this RP.
4. 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.
5. If you have any questions please contact Mr. Charlie Uhlarik, CELRD-PD-G at (513) 684-2035.

Encl


STEVEN J. ROEMHILDT, P.E.
Colonel, EN
Commanding

**Great Lakes Fisheries 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**

Ambler Flatwoods Section 506, LaPorte County IN

Chicago District

MSC Approval Date: September 10, 2014

Last Revision Date: August 26, 2014



**US Army Corps
of Engineers®**

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1. PURPOSE AND REQUIREMENTS

- a. **Purpose.** This Regional Review Plan model defines the scope and level of peer review for the *Ambler Flatwoods Section 506, LaPorte County, IN Great Lakes Fisheries 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 provides authority for restoration of the Great Lakes fishery and ecosystem. Section 506 called for the Secretary to develop a plan to support the management of Great Lakes fisheries not later than one year after the date of enactment of the legislation. That plan, coined the "Support Plan", provides the guidance for the planning, design, construction and evaluation of projects to restore fishery, ecosystem and beneficial uses of the Great Lakes in cooperation with other Federal, State and local agencies and the Great Lakes Fisheries Commission. 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 the 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 "Preliminary Restoration Plan" (PRP). 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. The studies are classified as either a Planning Design Analysis (PDA) or Detailed Project Report (DPR) based on estimated total Federal project costs. Projects that use the PDA format have an estimated Federal cost of \$1,500,000 or less, while projects that require a DPR have estimated Federal costs that exceed \$1,500,000. In cases where the total Federal cost of the project is expected to exceed \$10,000,000, the Support Plan recommends following the procedures for specifically authorized projects, 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. 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 the 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 to be highly controversial;
- The decision document is not likely to contain influential scientific information or to be a highly influential scientifically;
- 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 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 USACE Headquarters. 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 may be used to cover implementation products. Following the format of the regional model review plan, 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, and through 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 (EC 1165-2-214) and planning model certification/approval (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 GLFER decision documents is the home MSC. The MSC maintains authority and oversight but delegates the coordination and management of decision document ATR to the District. The home District will post the MSC-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 *Ambler Flatwoods Section 506, LaPorte County, IN* decision document 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.
- b. **Study/Project Description.** The Ambler Flatwoods project area is a designated state nature preserve comprised of several parcels of land totaling 353 acres. The area, owned by the Shirley Heinze Land Trust, is located in LaPorte County, Indiana, just east of Michigan City and south of the Michigan/Indiana border. The habitat within the project area includes the scarce and significant boreal flatwood ecosystem boasting rare and sensitive woodland species. White Creek flows through portions of the site on its way to Lake Michigan. The surrounding watershed is a mix of agricultural fields and remnant woodland parcels that totals about five square miles.

In early spring, vernal pools and rivulets arise and flow within depressions and woodland hollows, supporting an impressive assemblage of native reptile and amphibian species. The preserve is largely forested with a rich herbaceous understory. A significant portion of this flatwoods ecosystem harbors relict populations of several plant species that are typical of more northern latitudes. The parcels boast about 15 state listed plant species, including white pine, paper birch and three club mosses and an additional 40 plant species that are considered very rare in the Chicago Region.

In addition to northern flatwoods, plant communities include sedge meadow, oak savanna, open woodland and unique pockets of wooded wetland. Vegetation surveys of Ambler Flatwoods parcels have recorded about 434 species. Among these were 59 adventives, 17 state listed species and 12 rare boreal relict species. Some of the rare and sensitive species include Yellow Birch (*Betula alleghaniensis*), Paper Birch (*Betula papyrifera*), Swamp Star Sedge (*Carex seorsa*), Goldthread (*Coptis trifolia*), Round-leaved Dogwood (*Cornus rugosa*), Club-spur Orchid (*Habenaria clavellata*), Canada Mayflower (*Maianthemum canadense*), Dwarf Ginseng (*Panax trifolius*), Large-leaved Shinleaf (*Pyrola elliptica*) and Virginia Chain Fern (*Woodwardia virginica*). Some of the alien and invasive species include Yarrow (*Achillea millefolium*), Redtop (*Agrostis alba*), Garlic Mustard (*Alliaria petiolata*), Orange Day Lily (*Hemerocallis fulva*), Velvet Grass (*Holcus lanatus*), Japanese Honeysuckle (*Lonicera japonica*), Reed Canary Grass (*Phalaris arundinacea*), Common Buckthorn (*Rhamnus cathartica*), Multiflora Rose (*Rosa multiflora*) and Field Sorrel (*Rumex acetosella*).

The non-Federal sponsor has indicated that more than 25 species of reptiles and amphibians have been recorded so far from within the Ambler Flatwoods parcels. Reptile and amphibian inventories have recorded 8 species of frogs and toads, 1 salamander, 3 turtles and 6 species of snakes. Surveys have found the state-endangered Spotted Turtle (*Clemmys guttata*), as well as 3 species of special concern, including the Northern Leopard Frog (*Rana pipiens*), Western Ribbon Snake (*Thamnophis proximus*) and Blue-spotted Salamander (*Ambystoma laterale*). Monitoring yielded a total of 1,677 individual herpetofauna captured during these inventories.

Native plant communities are quite well established within the project area but, having been exposed to both adventive and native weedy species, are likely to be significantly further degraded should those invasives remain untreated. This study will address the issues of invasive species, native species richness, rare plant communities and beneficial use impairments within the area of concern. Estimated total project cost based upon FID-level analysis is approximately \$6.7 million.

- c. **Factors Affecting the Scope and Level of Review.** This study is an ecosystem restoration project that is straight forward in terms of being able to remedy impairments and to subsequently restore habitat damage the impairments have caused. There are currently no identified risks that would impair the success of this habitat restoration project. Significant adverse economic, environmental or social effects are not expected because the project study area is a small natural area near the shoreline of Lake Michigan. The environmental effects of this restoration project are predicted to improve the ecological integrity markedly for fish and wildlife, especially reptiles, amphibians and migratory waterfowl and other birds along the Lake Michigan portion of the Mississippi Flyway. This project would use Corps expertise to restore aquatic and riparian ecosystem habitat without any novel, controversial or interagency issues.
- d. **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 USAACE. 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/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).

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 QCPs. Responsible branch and section chiefs will certify that the appropriate quality procedures have been followed for specific products. The product specific QCP for the present Ambler Flatwoods project will be maintained at S:\LRC-Project\PRJ-506 Ambler

Flatwoods\PM-PM Project Management\QCP. District Quality Control will be maintained at S:\LRC-Project\PRJ-506 Ambler Flatwoods \PM-PM Project Management\DQC.

5. 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. Unless otherwise stated, the 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 model GLFER Regional Review Plan, the leader of the ATR team shall be from outside the home MSC.

a. Products to Undergo ATR. ATR will be performed throughout the study in accordance with the regional Quality Management System. The ATR shall be documented and discussed at the AFB milestone. Certification of the ATR will be provided prior to the signing the final report by the District Commander. Products to undergo ATR include AFB Documentation, which consists of a completed Feasibility Report, technical appendices and any models, programs or spreadsheets used for calculations of design, habitat benefits and costs.

b. Required ATR Team Expertise.

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 in conducting ATRs, as well as NEPA compliance experience and familiarity with all applicable environmental statutes. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process. The lead’s home District will be outside the MSC. 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.
Cost Engineering	Cost Review shall be certified by the Walla Walla MCX to provide TPC Certification.
Real Estate	Real Estate staff shall be technically expert in reviewing real estate plans and should be pre-approved on the national ATR roster with ecosystem restoration certification.

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 EC 1165-2-214 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 signing of the final report by the District Commander. A sample Statement of Technical Review is included in Attachment 2.

6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)

- 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 in the appropriate disciplines from outside of the USACE who represent 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.

- **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, economics analyses, 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 according to EC 1165-2-214.

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

- **Type II IEPR.** Type II IEPR, or Safety Assurance Review (SAR), is managed outside the USACE and is 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 documents prepared under the model GLFER Regional Review Plan, Type II IEPR is not required except where public safety issues are present.

- a. Decision on Type I IEPR.** The project covered under this Review Plan, based upon the information and analysis provided in paragraphs 1.b and 3.c, is excluded from Type I IEPR because it 1) does not meet the mandatory IEPR triggers and 2) 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. POLICY & 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.

8. COST ENGINEERING MANDATORY CENTER OF EXPERTISE (MCX) REVIEW AND CERTIFICATION

All documents shall be coordinated with the Cost Engineering MCX located in the Walla Walla District. For documents prepared under the GLFER Regional Review Plan model, Regional Cost Engineering personnel who are assigned by the MCX will conduct the cost estimate ATR. The Cost Engineering MCX will provide the Cost Engineering MCX certification.

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 are still the responsibility of the users and are subject to DQC, ATR and, if required, IEPR. 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, if required, IEPR.

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

- 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)	<p>The FQA is a standardized method whose purpose is to facilitate the assessment of the natural area quality of open land. The FQA permits comparisons in vegetation quality among sites, and the tracking of changes in site quality over time. Originally developed by Swink and Wilhelm (1979, 1994), the method can replace very subjective measures of quality, such as “high” or “low” with a still somewhat subjective, but more impartial, quantitative and uniform measure.</p> <p>The method is based upon calculating an “average coefficient of conservatism (C)” and a “floristic quality index (FQI)” for a site. Individual native plant species possess varying degrees of both tolerance to disturbance and of fidelity to specific habitat types. This trait permits each species of a discrete region to be assigned a fixed coefficient of conservatism ranging from 0 to 10. The higher the coefficient of conservatism, the more likely it is that a plant comes from an intact natural community. A C of 0 indicates the probability is almost 0, while a C of 10 indicates the plant is almost certain to be found only in an undegraded natural community. Introduced plants were not part of the pre-settlement flora, so no coefficient is assigned to them. A coefficient is assigned to each native species based upon the relative conservatism of that species with respect to all other native species in a defined geographic area, without regard to abundance, distribution, rarity, size, showiness or other factors that are unrelated to species conservatism. The essential tool of the FQA, then, becomes a checklist of all the known species from a region, each with its assigned coefficient of conservatism.</p> <p>The collective conservatism of all the native plants inhabiting a site determines its floristic quality. Again, non-native species are not considered in the calculation of mean C or FQI. Once a thorough site inventory of the vascular plants has been conducted, the method calculates a mean C value (\bar{C}) and a floristic quality index (FQI). The \bar{C} value for a given site is the arithmetic mean of the coefficients of conservatism of all native vascular plant species occurring on the entire site, without regard to dominance or frequency. The \bar{C} is calculated by summing the C values for all native species present in the survey and dividing that total by the total number of species present (N):</p> $\bar{C} = \frac{\sum C}{N}$	Certified

	<p>The FQI is a weighted species richness estimate that uses the square root of the total number of species (N) to limit the influence of area alone on species richness (Swink and Wilhelm 1979, 1994). This formula combines the conservatism of the species present with a measure of the species richness of the site. By multiplying \bar{C} by the square root of the number of species, the formula reduces the effect of the size of the site, since larger sites tend to have a larger total number of species present. If the sampling method involves transects and quadrats, a \bar{C} and FQI can be calculated for each transect and for each quadrat. The FQI is the \bar{C} times the square root of the total number of native species inventoried on the site:</p> $FQI = \bar{C} \sqrt{N}$ <p>Higher \bar{C} and FQI numbers for a site indicate higher floristic quality and biological integrity and a lower level of disturbance impacts.</p>	
Native Fish Species Richness	<p>This portion of the assessment uses fish species richness (R), which is the total number of native fish species, to ascertain if dam removal would be beneficial to migratory lacustrine and riverine fishes. 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. Since the need to utilize fish species is great, an effort is currently being initiated by the Chicago District to identify a unified approach to seek certification of a model based of regional fishes. The model is intended to follow the same process and theories as the Certified FQA, but will utilize fish species instead of plants.</p>	Not Approved/ATR Process to Validate.
IWR Planning Suite	<p>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.</p>	Certified

10. REVIEW SCHEDULES AND COSTS

a. ATR Schedule and Cost.

- Agency Tech Review – April 2015
- Evaluate ATR - April 2015
- ATR Backcheck - April 2015

The cost of this ATR is estimated to be about \$18K.

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 models 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.

11. 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 and provided as an attachment. All public and agency comments/information would be incorporated, if pertinent, into the Final Feasibility report, along with coordination letters as attachments, for final approval.

12. 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 and significant 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 Regional Review Plan Model 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.

13. REVIEW PLAN POINTS OF CONTACT

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

Plant Ecologist

Project Manager

ATTACHMENT 1: TEAM ROSTERS.

Include contact information for the PDT, DQC Team, ATR team, and MSC. The credential and years of experience for the ATR team should be included when it is available.

PDT

Discipline	Name	Phone	E-mail
Project Manager			
Lead Planner			
Restoration Ecologist/Botanist			
Fish Biologist			
Cultural & Arch. Resources			
Real Estate			
Civil Engineer			
Cost Engineer			
Environmental Engineer			
Geotechnical Engineer			

ATR Team

Discipline	Name	Phone	E-mail
Lead/Formulation/Compliance/NEPA			
MCX Cost Certification			
Cost Engineer			
Real Estate			

DQC Team

Discipline	Name	Phone	E-mail
Chief, Planning			
Chief, Project Management			
Chief, Design			
Chief, Env. Engineering			
Chief, Cost & Civil			
Chief, Geotechnical			
Chief, Real Estate			

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 <type of product> for <project name and location>. The ATR was conducted as defined in the project's Review Plan to comply with the requirements of EC 1165-2-214. During the ATR, compliance with established policy principles and procedures was verified using justified and valid assumptions. This included review of assumptions, methods, procedures, material used in analyses, alternatives evaluated, appropriateness of data used and level obtained and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing US Army Corps of Engineers policy. The ATR also assessed the District Quality Control (DQC) documentation and made the determination that the DQC activities employed appear to be appropriate and effective. All comments resulting from the ATR have been resolved and the comments have been closed in DrCheckssm.

SIGNATURE

Name

ATR Team Leader

Office Symbol/Company

Date

SIGNATURE

Name

Project Manager

Office Symbol

Date

SIGNATURE

Name

Architect Engineer Project Manager¹

Company, location

Date

SIGNATURE

Name

Review Management Office Representative

Office Symbol

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

Name

Chief, Engineering Division

Office Symbol

Date

SIGNATURE

Name

Chief, Planning Division

Office Symbol

Date

¹ Only needed if some portion of the ATR was contracted

ATTACHMENT 3: REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page / Paragraph Number

ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS

Term	Definition	Term	Definition
AFB	Alternative Formulation Briefing	NED	National Economic Development
ASA(CW)	Assistant Secretary of the Army for Civil Works	NER	National Ecosystem Restoration
ATR	Agency Technical Review	NEPA	National Environmental Policy Act
CAP	Continuing Authorities Program	O&M	Operation and maintenance
CSDR	Coastal Storm Damage Reduction	OMB	Office of 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
LRR	Limited Reevaluation Report	SAR	Safety Assurance Review
MSC	Major Subordinate Command	USACE	U.S. Army Corps of Engineers
		WRDA	Water Resources Development Act