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 01 July 2013

MEMORANDUM FOR Commander, Northwestern Division
ATTN: (Martin Hudson, CENWD-PDD)

SUBJECT: Lower Willamette River, Oregon, Environmental Dredging and Ecosystem Restoration Feasibility Study, Portland District, Ecosystem Planning Center of Expertise Recommendation for Review Plan Approval

1. References:

a. Engineering Circular (EC) 1165-2-214, Water Resources Policies and Authorities, CIVIL WORKS REVIEW, 15 December 2012
b. EC 1105-2-412, Assuring Quality of Planning Models, 31 March 2011
c. Engineering Regulation (ER) 1110-2-12, Quality Management, 30 Sep 2006

2. The enclosed Review Plan (RP) complies with all applicable policy and provides an adequate Agency Technical Review (ATR) of the plan formulation, engineering, and environmental analyses, and other aspects of plan development. The Ecosystem Restoration Planning Center of Expertise (ECO-PCX) has reviewed the RP.

3. The Study Team anticipates that a Modified Habitat Evaluation Procedure (HEP) will be used to evaluate alternatives. The HEP contains Habitat Suitability Indices for several species for capturing a range of benefits that could be provided by this Study. This model is currently in review by the ECO-PCX for *Approval for Use* in the Study.

4. The RP includes a risk informed decision for exclusion from Type I Independent External Peer Review (IEPR) for this study. The exclusion request has not been made yet. The ECO-PCX should be included on the coordination of this request. Final approval for exclusion must be obtained from the Director of Civil Works (DCW).

5. Upon approval by the MSC Commander, please provide the approved RP, the MSC Commander's approval memorandum, and the link to the District posting of the RP to Jodi Creswell. When substantive revisions are made to the RP, a revised RP should be provided to the ECO-PCX for review. Non-substantive changes do not require further PCX review.

6. Thank you for the opportunity to assist in the preparation of the Review Plan. We look forward to continuing to work with you on ATR and Model Review.

CEMVD-PD-N 01 July 2013

SUBJECT: Lower Willamette River, Oregon, Environmental Dredging and Ecosystem Restoration Feasibility Study, Portland District, Ecosystem Planning Center of Expertise Recommendation for Review Plan Approval

Enclosures (1)

Jodi Creswell
Operational Director,
National Ecosystem Planning Center of Expertise

CF:
CEMVD-PD-N (Wilbanks, Smith, Creswell)
CENWD-PDD (Weiss)
CENWP-PM (Saldana)
CESAW-TSD-PL (Barnes)
CEMVR-PD-F (Knollenberg)

REVIEW PLAN

FOR

LOWER WILLAMETTE RIVER, OREGON

Environmental Dredging and Ecosystem Restoration

FEASIBILITY STUDY

Portland District

December 14, 2012

Revised March 29, 2013

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REVIEW PLAN

LOWER WILLAMETTE RIVER, OREGON

Environmental Dredging and Ecosystem Restoration

FEASIBILITY STUDY

1. Purpose and Requirements

a. Purpose.

This Review Plan defines the scope and level of peer review for the Lower Willamette River Environmental Dredging, General Investigation, Feasibility Study.

b. References.

Engineering Circular (EC) 1165-2-214, Civil Works Review Policy, 15 December 2012

EC 1105-2-412, Assuring Quality of Planning Models, 31 Mar 2011

Engineering Regulation (ER) 1110-1-12, Quality Management, 30 Sep 2006

ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007

Lower Willamette River Ecosystem Restoration Feasibility Study, Project Management Plan, April 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 Feasibility Study is the Planning Center of Expertise (ECO-PCX).

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

3. Study Information

a. Decision Document.

Authorized name: Lower Willamette River Environmental Dredging, General Investigation, Oregon

Decision document to be prepared: This General Investigation Feasibility Report shall bring together previously conducted research, plan formulation processes, all analyses, including engineering, environmental and economics into a comprehensive document. This report shall contain the analysis of the ecosystem restoration sites under the Section 312(b) environmental dredging authority for the lower Willamette River in Portland, OR. The report shall be prepared to include a synthesis of the process used in the development of each alternative, a synopsis of each alternative and an explanation of the analyses used in the screening of the alternatives. All work shall conform to criteria provided in the U.S. Army Corps of Engineers, Engineering Regulation 1105-2-100.

Level of Approval of Document: Director of Civil Works; congressional authorization is not required for this GI Study, because it is under Section 312 (b) authorization.

NEPA Process: NEPA process with public involvement will be part of this project as we move to finalization. The Ecosystem Restoration sites will require an Environmental Assessment. It is not anticipated to require an Environmental Impact Statement.

b. Study/Project Description

1) Background Information/ Pertinent Studies/Project Authorization: The Lower Willamette River Environmental Dredging, Section 312(b), began as a new authority to WRDA in 1990, was amended by Section 205 of WRDA in 1996, and amended again by Section 224 of WRDA in 1999. Implementation Guidance for Section 312 dated 25 Apr 2001 of this amendment 224 of WRDA in 1999, specifically identifies the Willamette River, Oregon as a priority site The December 2000 Reconnaissance Study determined that there was a federal interest in developing a comprehensive plan for restoring the ecosystem in the Lower Willamette River by remediating contaminated sediments. The non-federal sponsor for the Section 905(b) Reconnaissance Study was the Port of Portland. Later the City joined as a co-sponsor. The same month the Section 905(b) Reconnaissance Study was published, the United States Environmental Protection Agency (USEPA) designated the Portland Harbor area and the Lower Willamette River as a CERCLA (Superfund) site. In EPA's Administrative Order on Consent (AOC) for a remedial investigation and feasibility study ("RI/FS") with the Port, City and other parties, EPA acknowledge

the opportunity for integrating a WRDA Environmental Dredging Project (EDP) with the CERCLA process. In 2002, the Corps, EPA and DEQ entered into an MOA for coordinating on Portland Harbor matters, including WRDA EDP. In 2002 a Congressional Resolution was passed that expanded the project to include ecosystem restoration authorities to provide a more holistic approach to the project and project area. After parties connected to the Harbor looked at various ways of integrating WRDA EDP into the RI/FS process, it was concluded that taking such actions would be premature. At this time, the Port of Portland withdrew their sponsorship, with the understanding that the Port would renew its sponsorship at a future time when it was more appropriate to seek to apply the WRDA EDP authority. Nonetheless, the Port remained involved in the project as a Portland Harbor stakeholder.

This LWR GI study held a Feasibility Scoping Meeting (FSM) on July 31, 2008. This FSM included only the 22 ecosystem restoration sites within the project area.

As the project progressed, so did discussions between the City of Portland, the Port of Portland, and the Corps regarding potential sites where a Section 312 project could be undertaken in Portland Harbor. Based on the identification of some sites with presumptive large orphan potentially responsible party shares of liability for cleanup and potential nexus to federal activities, it was deemed feasible to further study sites under this General Investigation (GI) study where use of the Section 312(b) authority could be used, consistent with CERCLA and EPA's AOC for the RI/FS. On this determination, Amendment 2 to the FCSA for this Lower Willamette River General Investigation (LWR GI) Feasibility Study (FS) was signed in 2010, adding the Port of Portland as a co-non-federal sponsor along with the City of Portland and the addition of three Section 312(b) sites that are designated Portland Harbor Superfund sites.

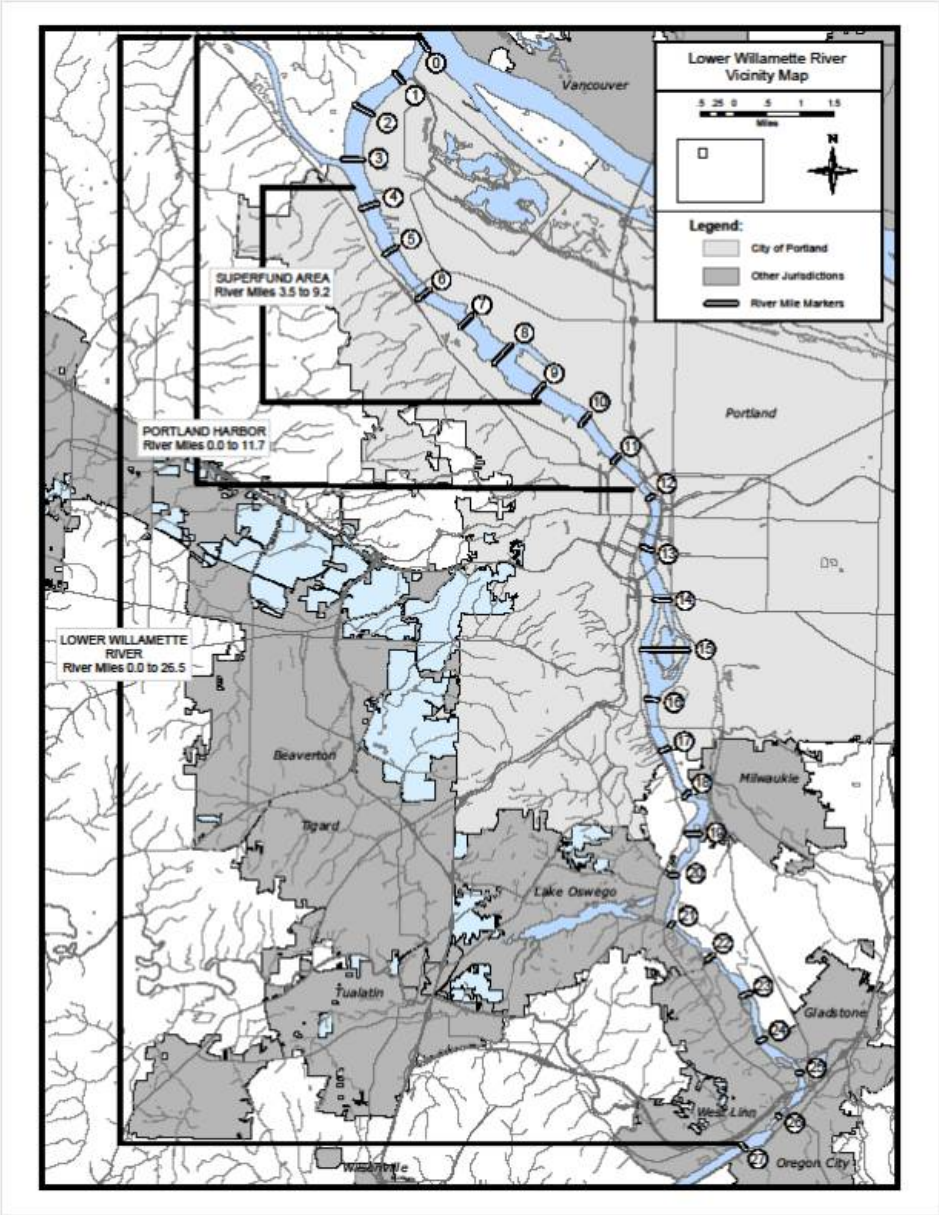
This addition created two separate components for this LWR GI study, twenty-two ecosystem restoration sites and three Section 312(b) sites. Due to the special nature of the Section 312(b) sites they were being evaluated separately from the ecosystem restoration sites.

2) Planning Process: This project was identified and placed under the new SMART planning process. During the Charette held in November of 2012 for this project. One of the Decision Management Plan items identified was that an issue paper be drafted and sent up to headquarters for a policy decision on the three Section 312(b) sites. This policy decision was to get headquarters approval to move forward on feasibility level work on the three sites that have been designated Superfund sites. The official response was received by headquarters on May 13, 2013 that basically stated that the Corps should not proceed on the three section 312(b) sites until the CERCLA process has been completed.

3) Description of Study Area: The Lower Willamette River, the focus of this study, is defined as the area downstream (north) of Willamette Falls at river mile (RM) 26.6 in Oregon City to its confluence with the Columbia River. More specifically, this report

emphasizes the portion of the river within and immediately adjacent to the City of Portland (RMs 0 to 20). See Map 1.

MAP 1



4) Project Purpose: The feasibility study will be used to examine and prioritize ecosystem restoration opportunities in the study area for the purpose of environmental enhancement and water quality improvement. The purpose of the study is to (1) identify and evaluate substantial ecosystem degradation problems in the Lower Willamette River Basin; (2) to formulate, evaluate, and screen potential solutions to these problems; and (3) to recommend solutions that are in the Federal interest and are supported by a local entity willing to provide the items of local

cooperation (i.e., a cost-sharing sponsor). The recommended plan will contribute to the identified restoration objectives of restoring fish and wildlife habitat and natural processes of the basin.

5) Types of measures/alternatives being considered: The ongoing Feasibility Report (FR)/ Environmental Assessment (EA) are developing ecosystem restoration projects with the Lower Willamette River Basin. The challenge the Corps faces in this study is to develop a systems based plan that effectively integrates the many water resources demands while incorporating the existing programs and ongoing efforts of the multiple levels of government agencies and stakeholders in the region. To meet this challenge, the Portland District recognized that a highly collaborative approach would be necessary to produce a quality product that would achieve broad acceptance and facilitate the actual implementation of the plan. The recommended plan will be formulated to contribute to the identified restoration objectives of restoring fish and wildlife habitat and natural processes of the basin.

6) Project non-Federal sponsors: City of Portland and the Port of Portland. Due to the removal of the Section 312(b) sites from this study the Port of Portland will be seeking withdrawal as a project sponsor.

7) Vertical Team Implementation Guidance: (note: it was determined at the November 2012 Charette that the project would continue as one project which includes both the ecosystem restoration sites and the Section 312(b) sites and not be split into two phases pending guidance from headquarters and the vertical team. Since guidance has been received from Headquarters, we will be moving forward with just the ecosystem restoration sites.

a) Ecosystem Restoration sites: A final array of alternatives was established for 23 ecosystem restoration sites but due to the City of Portland's recent input there is a locally preferred plan that will be included in the Limited ATR and DQC review and a determination if it should be elevated to the Tentatively Selected Plan and vetted with the vertical team via IPR.

b) Section 312(b) Plan Formulation: No longer required. However the three Section 312(b) sites that have been listed under CERCLA were being assessed separately from the ecosystem restoration sites. The Feasibility Scoping Meeting had occurred for this study (2008) but with the section 312(b) sites the study had been delayed due to their link with the projection of the issuance of the ROD moving into 2015. The decision was made to reset this study under the new SMART planning guidance issued by General Walsh.

8) Level of Review Factors: A risk informed decision was made that an ATR is necessary for all major deliverables for this project, in accordance with criteria presented in EC 1165-2-214, Section 15.

9) In-Kind Contributions: Products and analyses provided by non-Federal sponsors as in-kind services are subject to review by the Product Development Team, DQC, and ATR. The in-kind products and analyses to be provided by the

non-federal sponsor include: Conceptual drawing/preliminary design concepts for Restoration of the 3 - section 312(b) sites, coordination activities, project management, legal staff expenses, and data gap analysis. "General Guidance for Cost Share In-Kind Contribution Provisions Standard Operating Procedures" is being followed.

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.

a. Documentation of DQC.

DQC is the review of basic science and engineering work products focused on fulfilling the project quality requirements defined in the Project Management Plan (PMP). It is managed in the home district and may be conducted by staff in the home district as long as they are not doing the work involved in the study, including contracted work that is being reviewed. Basic quality control tools include a Quality Management Plan providing for seamless review, quality checks and reviews, supervisory reviews, Project Delivery Team (PDT) reviews, etc. Additionally, the PDT is responsible for a complete reading of the report to assure the overall integrity of the report, technical appendices and the recommendations before approval by the District Commander. DQC is documented through DrChecks so that there is a permanent record of comments and responses. The DQC documentation in DrChecks will include the text of each DQC concern, the PDT response, a brief summary of the pertinent points in any discussion, and the agreed upon resolution. The DQC comments, responses, and resolution of comments will be provided to the ATR team at each review.

b. Products to Undergo DQC.

At a minimum DQC will be completed on all decision documents including the draft Feasibility Report, EA and all associated appendices.

c. Required DQC Expertise.

At a minimum DQC expertise will include an Economist, Hydraulic Engineer, Geotechnical Engineer, Cost Engineer, Real Estate Specialist, and a Fish and Wildlife Biologist.

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. **Limited "Agency Technical Review:** Decision from the November 2012 Charette identified the ecosystem restoration sites portion of this feasibility study proceeds into a "Limited" ATR that would include an Economist, Environmental Specialist and a Planning Specialist. With the ATR lead serving in a dual role as discipline specialist. From the Charette, it was determined that a DQC be done in May 2013 along with a "Limited ATR" on the study information that had been gathered over the last 4 years since the Ecosystem Restoration sites portion of the study was at or beyond the new milestones under the SMART planning process. These milestones are the Focused Array of Alternative (Decision Point 1) and the Tentatively Selected Plan (Decision Point 2). After vertical team buy in on the TSP is obtained the Draft Report will be DQC'ed and subsequently a full ATR will be done on the Draft Report.

The City of Portland had narrowed the number of sites down to five from the 23 as a result of sites being already constructed, land ownership and contamination issues. These five sites are being referred to as the locally preferred plan (LLP) and/or the focused array of alternatives.

Table 1. Limited ATR Reviewers

Limited ATR Team Members/Disciplines	Expertise Required
ATR Lead and Environmental	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 will also serve as a reviewer for environmental experienced in NEPA implementation, CWA compliance, and endangered species compliance requirements, among others.
Plan Formulation	The Planning reviewer should be a senior water resources planner with experience in Ecosystem Restoration and CE/ICA
Economics	Senior professional. Review should be an experienced environmental professional with a background in NEPA implementation, CWA compliance, and endangered species compliance requirements, among others.

b. ATR: After the Tentatively selected plan has undergone vertical alignment the draft report will be finalized and undergo another DQC, incorporation of comments, followed by a full ATR. This ATR team is presented in Table 2.

Table 2. ATR Team for Draft Report Review

ATR Team Members/Disciplines	Expertise Required
ATR Lead and Environmental	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).
Plan Formulation	The Planning reviewer should be a senior water resources planner with experience in Ecosystem Restoration and CE/ICA
Hydraulic Engineering	The hydraulic engineering reviewer will be an expert in the field of hydraulics and have a thorough understanding of inland harbor and channel systems in an urban setting based on study objectives and proposed measures - understanding of computer modeling techniques
Geotechnical/Civil Engineering	Senior professionals with necessary skills in geotechnical and civil engineering associated with ecosystem restoration and channel systems
Structural Engineering	Senior professional with necessary skills on large scale culverts and channel placement structures
Cost Engineering	Senior professional, Pre-certified professional with experience preparing cost estimates for ecosystem restoration and HTRW projects

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

1) The review concern – identify the product's information deficiency or incorrect application of policy, guidance, or procedures;
2) The basis for the concern – cite the appropriate law, policy, guidance, or procedure that has not be properly followed;
3) The significance of the concern – indicate the importance of the concern with regard to its potential impact on the plan selection, recommended plan components, efficiency (cost), effectiveness (function/outputs),

implementation responsibilities, safety, Federal interest, or public acceptability; and

4) The probable specific action needed to resolve the concern – identify the action(s) that the reporting officers must take to resolve the concern.

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

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

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

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

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

6. In Progress Review (IPR) Vertical Team Alignment

An IPR shall occur after the June 2013 DQC and Limited ATR requiring endorsement of both the focused array of alternatives and the tentatively selected plan.

a. August 5, 2013 an IPR was held with the vertical team where concurrence on the Focused Array of Alternatives was achieved.

HQUSACE/Support Team	NWD	CENWP/PDT
Lee Ware	David Combs	Laura Hicks
Mark Matusiak	Martin Hudson	Gail Saldana
Andy Miller	Jim Fredericks	Mike Gross
Scott Murphy	Brad Bird	Amy Gibbons
Doug Gorecki	Rebecca Weiss	Kris Lightner
Mark Kramer		Darlene Siegal-Tetra Tech
Elliott Stefanik		David Munro – Tetra Tech

7. Headquarters Policy Decision Concerning Section 312(B)

Resulting from decisions made in the project SMART Planning Charette held on November 1-2, 2012 policy decision from Headquarters will be requested to address the use of Section 312(b) authority on designated EPA National Priority List (Superfund) sites. This issue paper has been officially answered by headquarters with the direction that we should not include the Section 312(b) sites in this feasibility study that are designated superfund sites until the CERCLA process is complete.

8. 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 the 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 USACE in the appropriate

disciplines, representing a balance of areas of expertise suitable for the review being conducted. These 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.

EC 1165-2-214 identifies thresholds that trigger IEPR: In cases where there is public safety concerns, a high level of complexity, novel or precedent-setting approaches; where the project is controversial, requested by the Governor, has significant interagency interest, has a total project cost greater than $45 million will trigger Type I IEPR to be conducted.

Risk assessment of this project indicates that a Type I IEPR may not be required. Referencing EC 1165-2-214 paragraph 11.d.1 this decision document with only the ecosystem restoration sites being addressed does not trigger a mandatory Type I IEPR. There is no threat to human life; total cost of the project is estimated to be $25 million, well below the $45 million threshold; the project does not appear to be controversial; a positive improvement to the environment and Endangered Species is anticipated, strong community support, and anticipated EA not EIS.

During the vertical alignment on this project the vertical team (involving district, MSC, PCX, RMC, and HQ members) will advise MSC Commander as to whether Type I IEPR is appropriate or whether sufficient rationale exists to support a request for a waiver from the Director of Civil Works.

b. Products to Undergo Type I IEPR if wavier is denied.

The IEPR Panel would receive the Draft Feasibility Report including the Environmental Assessment documents and all technical appendices. PDT will seek IEPR wavier in conjunction with getting TSP vertical team alignment.

c. Type I IEPR Panel Expertise.

If this review is determined to be required the disciplines and expertise required for the IEPR panel are presented in Table 3. The majority comments on and issues with similar multi-purpose studies focus on these areas of expertise as well as comments by the PDT and City of Portland staff. Although controversy beyond these disciplines is not expected, the composition of the IEPR panel will be flexible to best respond to stakeholders.

Table 3. Independent External Peer Review Panel

Discipline	Expertise Required
Plan Formulator & Economist	The Planning reviewer should be a senior water resources planner with experience in Ecosystem Restoration and CE/ICA
Hydrologic Engineer	The hydraulic engineering reviewer will be an expert in the field of hydraulics and have a thorough understanding of inland harbor and channel systems in an urban setting based on study objectives and proposed measures - understanding of computer modeling techniques
Environmental Specialist	Senior professional. Review should be an experienced environmental professional with a background in NEPA implementation, CWA compliance, and endangered species compliance requirements, among others.
Civil Engineer	Senior professionals with necessary skills in geotechnical and civil engineering associated with ecosystem restoration and channel systems
Cost Engineer	Senior professional, Pre-certified professional with experience preparing cost estimates for ecosystem restoration and HTRW projects
Structural Engineer	Senior professional with necessary skills on large scale culverts and channel placement structures

d. Documentation of Type I IEPR.

The IEPR panel will be selected and managed by an Outside Eligible Organization (OEO) per EC 1165-2-214, Appendix D. Panel comments will be compiled by the OEO and should address the adequacy and acceptability of the economic, engineering and environmental methods, models, and analyses used. IEPR comments should generally include the same key parts as described for ATR comments. The OEO will prepare a

final Review Report that will accompany the publication of the final decision document and shall:

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

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

e. Type II IEPR.

Type II IEPR is not required for this study because it is not a hurricane and storm risk management nor a flood risk management project and there is no significant threat to human life. According to EC 1165-2-214 Appendix E for description of Type II IEPR.

9. 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 analysis 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.

10. Cost Engineering Directory of Expertise (DX) Review and Certification

All decision documents shall be coordinated with the Cost Engineering DX, located in the Walla Walla District. The DX will assist in determining the expertise needed on the ATR team and Type 1 IEPR team (if required) and in the development of the review charge(s). The DX will also provide the Cost Engineering DX certification. The RMO is responsible for coordination with the Cost Engineering DX.

11. 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).

Planning Models. Table 4 describes planning models are anticipated to be used in the development of the decision document.

Table 4. Planning models

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Certification/ Approval Status
Modified Habitat Evaluation Procedure (HEP)	This model has been developed to assess the existing conditions and potential future benefits of proposed restoration measures in the Lower Willamette River, Columbia Slough, and Tryon Creek, located in Portland, OR. It is recommended that Habitat Suitability Indices (HSIs) for several species be utilized to capture the range of benefits that could be provided by habitat restoration projects. The recommended HEP model includes the following species or guild: (1) Western pond turtle (Clemmys marmorata); (2) beaver; (3) wood duck; (4) neotropical birds (yellow warbler and green-backed heron); (5) native amphibians (Northwestern salamander (Ambystoma gracile), long-toed salamander (Ambystoma macrodactylum), roughskin newt (Taricha granulosa), red-legged frog (Rana aurora), Oregon spotted frog (Rana pretiosa) and the Pacific treefrog (Hyla regilla) and (6) fish. As the life stage requirements for habitat differ between the mainstem Willamette River and the	In Review

<table>
<tr>
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<td>tributaries for fish, different fish models were selected for the tributaries and mainstem sites. For the mainstem, the fish model was based on the habitat requirements of juvenile Chinook (Oncorhynchus tshawytscha). For the tributaries, the fish model was based on the both the spawning and rearing habitats of coho (Oncorhynchus kisutch), Chinook, and steelhead (Oncorhynchus mykiss).
All HSIs proposed for use in this model have been documented and reviewed. The amphibian model was developed by a multi-agency team based on regional literature and expert opinions. The Western pond turtle model was developed based on regional literature and reviewed and modified based on expert reviews. The selected HSIs reflect the project objectives of restoring habitat for both fish and wildlife.
<table>
<tr><td>HSI Equation Mainstem</td><td>HSIAll = (HSIWPondTurtle + HSIBeaver + HSIWood Duck + HSINeotropical Birds + HSINative Amphibians + HSIJuvenile Chinook) / 6</td></tr>
<tr><td>HSI Equation Tributaries</td><td>HSIAll = (HSIWPondTurtle + HSIBeaver + HSIWood Duck + HSINeotropical Birds + HSINative Amphibians + HSISalmonids) / 6</td></tr>
</table>
The selected HSI reflects the project objectives to restore habitat for both fish and wildlife species. It is assumed that restoration efforts intended to enhance habitat for the salmon species and neotropical migratory birds will also enhance habitat for amphibians, reptiles and mammals.
Once calculated, the overall habitat suitability index will then be multiplied by the project area (acres) to yield habitat units for each species. Alternatives which have a HSI score less than 0.3 for any variable will be considered failing to meet the purposes of the restoration project. This threshold is based on minimum acceptable habitat suitability requirements diminishing exponentially below a score of 0.3. The HSI model is expected to be suitable for use in wetland, stream and riparian habitats in the Lower Willamette River</td>
<td></td>
</tr>
<tr>
<td>IWR Plan Version 1.0.11.0.</td>
<td>Used to determine and eliminate the irregular, non-continuously increasing cost changes that occur in the incremental cost per output calculations.</td>
<td>Certified</td>
</tr>
</table>

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

Table 5. Engineering Models

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Status
HEC-SSP 2.0	The U.S. Army Corps of Engineers Hydrologic Engineering Center's Statistical Software Package (HEC-SSP) will be used for this study. This software allows for the development of flood flow and stage frequencies from observed peak events and according to published guidance documents, including those provided in 1982 by the U.S. Interagency Advisory Committee on Water Data known as Bulletin 17B and titled "Guidelines for Determining Flood Flow Frequency". HEC-SSP will be used in this study to develop and support design criteria developed using seasonal water surface elevations to relate off channel refugia connection and habitat formation for Mainstem Willamette River and Columbia Slough restoration sites, and to provide downstream water surface elevation boundary conditions for HEC-RAS modeling performed for the Highway 43 culvert replacement site on Tryon Creek.	Certified
HEC-RAS 4.1.0	The U.S. Army Corps of Engineers Hydrologic Engineering Center's River Analysis System (HEC-RAS) one-dimensional hydraulic modeling software will be used for this study. Steady-state flow and stage analyses using HEC-RAS will be performed to assess and compare with-project and without project conditions at the Highway 43 culvert replacement sites on Tryon Creek for various hydrologic design events. The use of HEC-RAS will provide and support design criteria developed using model output velocities, shear stresses, and water surface elevations.	Certified
MCACES (MII)	The Micro-Computer Aided Cost Estimating System Second Generation (MII) is a software application used by the U.S. Army Corps of Engineers and engineering firms for the preparation of detailed construction cost estimates, working estimates, bid opening estimates, and construction modification estimates. Line item costs in these estimates are in part derived from the Cost Book database, which contains construction cost data for various cost tasks. MII will be used in this study to develop detailed construction cost estimates for the restoration sites.	Certified

12. Review Schedule and Costs

a. ATR Schedule and Costs.

ATRs will be conducted for all major GI phase documents and major engineering and scientific documents products (i.e, cultural resources overview, Hydraulics and Hydrology report, programmatic methodologies, and Environmental Assessments). The review schedule is included in the Project Management Plan (PMP) and will be updated as reviews are scheduled. Limited ATR identified in the Charette is estimated to cost

$20,000. Standard ATR of the Draft Feasibility Study is estimated to cost $40,000. See Table 6 for schedule.

Type I IEPR Schedule and Cost. If our request for a waiver is denied and a Type I IEPR is the estimated cost for this IEPR is $250,000 and is funded 100% by federal dollars. See Table 3 for expertise that would be required.

Table 6. Smart Planning Milestones

SMART Planning Milestones			
Milestone Code	P2 Recommended Activity Name	P2 Milestone Name	Date
FEA5260	Planning Charette	WRED- Planning Charette	1-2 Nov 2012
FEA5330	Issue Paper	Headquarters' Policy Decision – for Section 312(b)	13-May-2013
FEA5280	DQC	DQC – Ecosystem Restoration sites	17 Apr – 15 June2013
FEA5290	Limited ATR	Limited ATR – Ecosystem Restoration	17 Apr – 15 June 2013
FEA5560 (HQ)CW261	DP1 Focused Array of Alternatives	Focused Array of Alternatives	5 Aug 2013
FEA5570 (HQ)CW262	DP2 - Tentatively Selected Plan	TSP Milestone	30-Aug - 2013
	Draft Report		15-Oct-2013
FEA5360	ATR	ATR	22-Nov-2013
FEA5350 (HQ) CW263	DP3 Agency Decision	Draft Report	24-Jan-14
FEA5620 HQ(CW160)	DP4 - Final Report	Final Report	30-May-2014
	Civil Works Review Board	CWRB	30-Jul-2014
FEA5370 HQ(CW270)	DP5 – Chief's Report	Final Report	5-Nov-2013

13. 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.

The public will be invited to participate during the review period for the environmental documentation once the report has been developed. Cost-sharing partner agencies will participate in review and comment throughout the entire project as members of the PDT and formally during the DQC process. Weekly phone conferences with our cost-sharing partners will continue throughout this feasibility phase.

14. Review Plan Approval and Updates

The NWD 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.

15. Review Plan Points of Contact

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

Portland District (NWP) Project Manager – (503) 808-4781

Northwestern Division (NWD) –Senior Planner (503) 808-3728

ECO-PCX – Lead Planner (910) 251-4728

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 1165-2-21. During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing US Army Corps of Engineers policy. The ATR also assessed the District Quality Control (DQC) documentation and made the determination that the DQC activities employed appear to be appropriate and effective. All comments resulting from the ATR have been resolved and the comments have been closed in DrChecks[sm].

SIGNATURE

Name | Date

ATR Team Leader

Office Symbol/Company

SIGNATURE

Name | Date

Project Manager

Office Symbol

SIGNATURE

Name | Date

Architect Engineer Project Manager1

Company, location

SIGNATURE

Name | Date

Review Management Office Representative

Office Symbol

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 | Date

Chief, Engineering Division

Office Symbol

SIGNATURE

Name | Date

Chief, Planning Division

Office Symbol

[1] Only needed if some portion of the ATR was contracted

ATTACHMENT 3: Review Plan Revisions

Revision Date	Description of Change	Page / Paragraph Number