

QUALITY CONTROL PLAN*

For

**WILLAMETTE RIVER FLOODPLAIN RESTORATION, OREGON
FEASIBILITY STUDY
(Ecosystem Restoration)**

***Including:**

**Independent Technical Review (ITR) Plan
External Peer Review (EPR) Plan
Planning Model Certification (PMC) Plan**

Revised, January 16, 2008

1. INTRODUCTION

The purpose of this document is to provide an updated Quality Control Plan (QCP) for the Willamette River Floodplain Restoration Study. Key elements of the QCP include: (a) Independent Technical Review (ITR); (b) External Peer Review (EPR); and, (c) Planning Model Certification plans, as well as quality control policies and procedures. The updated QCP has been prepared in accordance with the following references:

- Engineer Regulation (ER) 1105-2-100, Planning Guidance Notebook
- Engineer Circular (EC) 1105-2-408, Peer Review of Decision Documents
- Engineer Circular (EC) 1105-2-407, Planning Models Improvement Program: Model Certification
- ER 5-1-11, U. S. Army Corps of Engineers Business Processes
- USACE Northwestern Division memorandum dated 20 April 2007, *Peer Review Process*
- USACE Portland District, Project Management Business Practice, Policies and Procedures Manual, 1 April 2002

A Project Management Plan (PMP) was prepared for the study and approved in February 2004. The PMP, including this QCP, covers feasibility studies of the Coast and Middle forks of the Willamette Basin only. Chapter 11 of the approved PMP is a Quality Control Plan (QCP) for the Study. When approved, this Draft Independent Technical Review and Peer Review Plan will be incorporated into an updated PMP, replacing the current QCP. The PMP may be viewed at:

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The expected primary product to be produced as a result of this study process is an integrated Feasibility Report / Environmental Impact Statement (FR/EIS) that will be sent forward as a decision document with recommendations for potential ecosystem restoration projects for Federal authorization. The FR/EIS will be prepared in accordance with Engineer Regulation (ER) 1105-2-100. The QC / ITR Plan will cover the final draft Feasibility Report and all supporting technical appendices.

At the present time, Portland District does not believe that the scope, technical complexity, cost of expected project recommendations and degree of controversy associated with the Willamette Floodplain Restoration Study warrant a formal External Peer Review. While this study will be challenging and the potential benefits to ESA listed species will have national significance, neither the study processes and procedures or the expected ecosystem restoration projects are expected to be unique, controversial or precedent setting. The project Independent Technical Review will be handled within the Corps with the potential for limited support from outside technical experts in specific disciplines related to floodplain restoration.

2. STUDY BACKGROUND

a. Purpose And Authority

The PMP describes the study purpose, authority and scope in detail. The following is a summary of that document.

The U. S. Army Corps of Engineers, Portland District, is conducting the Willamette River Floodplain Restoration Study. This General Investigations Study is being conducted under several basic authorities:

- Section 202 of the Water Resources Development Act of 2002 (P.L. 106-541, 11 December 2000);
- The Senate Committee on Public Works resolution for the Willamette River Basin Comprehensive Study, adopted November 15, 1961; and,
- House Committee on Public Works resolution for the Willamette Basin Review Study, adopted September 8, 1988,

The study purpose is to evaluate opportunities to restore natural floodplain function in the Willamette River Basin, Oregon. Although floodplain restoration may be expected to provide multiple benefits and values, including flood damage reduction and water quality improvement, the formulation and evaluation of alternatives is focusing on ecosystem restoration opportunities as the primary project output.

b. Non-Federal Sponsor and Key Stakeholders

The Non-Federal sponsor for the Study is a non-profit entity, Willamette Restoration Initiative (WRI), operating through its financing body, the Mid-Willamette Valley Council of Governments (MWVCOG). A Feasibility Cost Sharing Agreement (FCSA) was signed by Portland District and MWVCOG in February 2004. WRI is a diverse stakeholder council originally established by the Governor of Oregon "...to provide an ongoing, permanent structure to the residents of the Willamette Basin to mount a concerted, collaborative effort to restore watershed health." WRI has been designated by the Northwest Power Planning Council (NPPC) as the lead planning entity for the Willamette Subbasin under the Council's Fish and Wildlife Program.

The State of Oregon, represented principally by Oregon Department of Fish and Wildlife and several other state agencies, has played an active role in the feasibility study.

The PMP was prepared with input from WRI and a group of diverse stakeholders representing other Federal, state and local agencies and entities with interest in those subbasins. Other key stakeholders in the process include the Oregon Chapter of The Nature Conservancy and local watershed councils.

c. Study Phases

The Willamette River Floodplain Restoration Study authority encompasses the entire Willamette River Basin, Oregon. The Willamette is a major tributary of the Columbia River and the tenth largest river in the United States based on average annual flow. The Basin comprises an area of approximately 11,741 square miles, or about 12 percent of the land area of the state. All or portions of four of Oregon's five Congressional Districts lie within the Basin: District 1 (Wu), District 3 (Blumenauer), District 4 (DeFazio), and District 5 (Hooley).

As described in the PMP, the Feasibility Study is being conducted in Phases. The first phase of the study, a broad framework level analysis of the entire Willamette watershed was completed by the Non-Federal sponsor in December 2004. The Phase I Study, Called the Willamette Subbasin Summary Plan, documented baseline conditions and evaluated and defined strategies for fish and wildlife habitat restoration in the entire Willamette basin. It was prepared in accordance with the Northwest Power Planning Council (NPPC) Subbasin Planning Process. In accordance with the PMP, the Phase I Report underwent independent technical review by the NPPC Independent Scientific Review Panel (ISRP). The Willamette Subbasin Summary was adopted by NPPC in March 2005.

The Project Delivery Team (PDT) shown on Table 1 is currently working to complete the Feasibility Report that constitutes Phase IA of the Project. Phase IA is a more detailed evaluation of floodplain restoration opportunities on two specific tributaries of the Willamette River, the Middle and the Coast forks. Phase IA is intended to follow more traditional approach to a Corps GI feasibility study than Phase I; the objective will be to identify and seek authorization for floodplain restoration projects on those reaches.

d. Study Area Description

The Phase IA project Study Area is described in detail in Appendix I of the PMP. The Middle and Coast Fork rivers were selected as the study area for the Phase IA study for several reasons. First, Corps dams and bank protection projects, among other activities, have significantly altered hydrologic and hydraulic conditions in those subbasins. Opportunity exists below the dams to modify hydraulics to restore natural floodplain functions. Second, the high percentage of public land ownership in these reaches compared to other major tributaries and the mainstem Willamette increases the likelihood that a comprehensive, integrated restoration plan can be implemented. Last, there is a high degree of interest in undertaking such a comprehensive analysis amongst key stakeholders in those subbasins.

Table 1
Feasibility Phase Project Delivery team

<u>Discipline</u>	<u>Name</u>	<u>Office/Agency</u>
Project Manager	Chris Budai	CENWP-PM-FP
Program Manager (GI)	Beth McDowell	CENWP-PM-PD
Program Analyst	Karen Trojano	CENWP-PM-PD
Plan Formulation	Chris Budai	CENWP-PM-FP
Environmental Coordinator	Steve Helm	CENWP-PM-E
Fish Biologist	Chuck Willis	CENWP-PM-E
Cultural Resources	TBD	CENWP-PM-E
Environmental Eng/HTRW	TBD	CENWP-
Civil Design	Chris Ferguson	CENWP-EC-DC
Survey/ CADD Mapping/GIS	Gregg Bertrand	CENWP-EC-TG
Geotechnical	TBD	CENWP-
Hydraulics & Hydrology	Mike Ott	CENWP-EC-HY
Hydraulics & Hydrology	Chris Nygaard	CENWP-EC-HY
Economic Evaluation	Tim Kuhn	CENWP-PM-FE
Cost Engineering	Rick Russell	CENWP-EC-RC
Real Estate	TBD	CENWS-RE
Public Affairs Office	Amy Echols	CENWP-PA
Sponsor PM	David Primozich	WRI
Policy Review	Mathew Rea	CENWD-PDD
EcoPCX	David Vigh	CEMVD-RB-T

Phase IA is using a watershed approach to identify potential floodplain restoration sites within the Middle and Coast Fork reaches and conduct a screening level analysis to determine a select number of priority sites. The Study will include a more detailed analysis and evaluation of priority project sites leading to plan selection. The study will also develop tools needed to more clearly understand the complex and dynamic interaction of flows between reservoir operations, the river channel and its floodplain, and the resulting changes in aquatic, riparian and terrestrial habitat. The tools, processes and related information developed for the pilot reach are expected to be exported to other reaches or subbasins.

The Middle Fork Willamette River originates in the Cascade Mountains and flows northwesterly for 84 miles to its confluence with the Coast Fork Willamette River just south of Eugene. The Basin, including major tributaries Fall Creek, Little Fall Creek, Salmon Creek, Salt Creek, Lost Creek, and Hills Creek, and the North Fork drain approximately 1,360 square miles. The Cities of Lowell and Oakridge are within the watershed. The construction of the Lookout Point- Dexter Project, Hills Creek Dam and Fall Creek Dam in 1954, 1961, and 1965 respectively has eliminated a significant amount of quality habitat and more than 80 % of anadromous fish spawning areas.

Draining a 665 square mile area of the Calapooya Mountains, the Coast Fork subbasin is largely mountainous with a narrow 40 square mile floodplain in the lower reaches. From the headwaters the Coast Fork flows 40 miles to its junction with the Middle Fork Willamette just south of Eugene. Major tributaries to the Coast Fork include Mosby Creek and the Row River. The cities of Creswell and Cottage Grove are in the watershed.

Flood control operations at the dams have altered the natural hydrograph of the Middle and Coast forks, decreasing the magnitude and frequency of extreme high flow events in the lower river, and maintaining a more consistent flow rate throughout the wet and dry seasons. The presence of dams on both rivers has blocked the downstream transport of sediment and large woody debris, limiting aquatic habitat diversity and increasing channel incision and bank hardening. Another limiting factor to habitat diversity is the approximately 5 miles of levees and revetments that have been constructed along the Coast Fork and the one-mile stretch on the lower Row River.

e. Alternatives under Consideration.

A Technical Memorandum describing the plan formulation and evaluation framework for Phase IA is attached for reference. The Memorandum includes a description of alternatives sites and restoration methods to be considered in the study. The framework is provided to facilitate assessment of appropriate levels of review.

Estimated total project costs for alternatives under consideration in Phase IA have not been developed. The Section 905(b) Analysis prepared during the Reconnaissance Phase of the study, certified in April 1999, presented preliminary cost estimates for a range of potential alternatives. Those costs ranged from a low of \$730,000 to a high of \$2,600,000 for a single restoration site. Phase IA is currently evaluating 5 potential restoration sites within the study area for a potential range of \$3,600,000 to \$13,000,000. Anticipated total estimated project costs should fall well below the \$45,000,000 threshold for external peer review even with cost-indexing to 2014, the forecast potential construction midpoint,

4. PROJECT SIGNIFICANCE

There is strong local interest in, and support for, U.S. Army Corps of Engineers participation in development of an integrated, comprehensive and long-range plan for restoring natural functions of the Willamette River floodplain for multiple objectives, including flood damage reduction, restoration of aquatic and riparian habitat, recovery of proposed and listed threatened and endangered species, improvement of water quality, and improvement of recreational access and aesthetic quality. Regional interest and financial support for flood damage reduction and ecosystem restoration measures are high. Many Federal and State agencies, local organizations and private industry groups are working independently to accomplish similar objectives.

National significance related to Willamette River floodplain restoration is focused on the

potential restoration of critical habitat for several aquatic species listed as threatened or endangered under the Federal Endangered Species Act, including Spring Chinook salmon, winter steelhead, bull trout and Oregon chub. Restoration of lost or degraded habitat along the Willamette River and tributaries is considered critical for recovery of those listed species. In addition, floodplain restoration would benefit a host of other important aquatic, riparian and related upland habitat communities and fish and wildlife species. The PDT is developing an integrated model for estimating ecological outputs (benefits) for the proposed alternatives of the Willamette River Floodplain Restoration Study.

Early on in scoping the study, the PDT and stakeholders determined that alternatives to be formulated through this study would be based principally on ecosystem restoration objectives. While flood damage reduction, water quality improvements and recreation may be important outputs of floodplain restoration projects, they will not be used as the basis for plan formulation. Those outputs will be considered incidental to the primary objective of floodplain restoration. The PDT will qualitatively describe those outputs and will attempt to quantify them where feasible. However, the incidental outputs will be relatively small and difficult to quantify.

Despite the large number of ongoing efforts to address watershed health issues in the Basin, there remains an over-arching need for development of an integrated, comprehensive plan for restoration of the floodplain of the Willamette River and its tributaries. An integrated plan would pull together the related pieces of these efforts, allow for balanced, efficient and cost-effective implementation of restoration projects and encourage further private and public partnerships in the region leading to prudent and beneficial uses of the floodplains and related land and water resources.

Within that context, the Phase IA Feasibility Study, in addition to being a decision document for moving forward to implement potential federally authorized projects within the Middle and Coast fork subbasins, is also intended to constitute a pilot study—actions, tools, partnerships, processes and conclusions developed in this phase can be applied to other reaches and tributary subbasins. Other reaches will be evaluated in Phase II of the Willamette Floodplain Restoration Study. Phase II has not been scoped and is not currently scheduled. The focus of this QCP is on the Phase IA Feasibility Report.

Near the end of the Feasibility study Phase, a draft Project Cooperation Agreement will be prepared detailing the responsibilities for the local sponsor and federal Government for implementation of floodplain restoration projects recommended for authorization as a result of the study. WRI and MWVCOG do not have the capability and authority to assume operation and maintenance responsibility for project implemented as a result of this feasibility study. Consequently those entities most likely will not be the local sponsor for the project implementation phase. An important objective of the study will be to develop an implementation strategy identifying a sponsor or sponsors willing and able to fulfill the responsibilities.

Given the significant Ecosystem Restoration component to this study, coordination with the appropriate PCX for Ecosystem Restoration is recommended. It is further recommended that the ITR be handled within the Corps, as the scope and technical complexity do not warrant an External Peer Review (EPR). It is anticipated that while this study will be challenging and beneficial, it will not be novel, controversial or precedent setting; nor have significant national importance.

5. PROPOSED PLANNING MODELS

As previously described, the primary expected output of alternatives developed and evaluated in this feasibility study will be ecosystem restoration benefits. The PDT is currently working on a framework for combining several existing habitat models to produce quantitative estimates of ecological outputs as a single floodplain restoration “index” that captures the ecological outputs (benefits) of the proposed alternatives. The combined model is being developed based on previous recommendations of expert panels regarding the types of indicators that should be used to represent natural floodplain functions. Indicators include species, plant communities, and hydrogeomorphic functions. Indicator attributes to be considered include the actual physical or biological features or processes that can be measured either in the field or via GIS analysis, including features such as channel length, area of cottonwood community, temperature, pieces of large woody debris, etc.

The proposed model will integrate an existing Ecosystem Diagnosis and Treatment (EDT) model which provides an indicator of the existing and potential future conditions for spring chinook salmon populations and their habitat, with other existing Habitat Evaluation Procedure (HEP) models that estimate ecological outputs for other aquatic and terrestrial species.

The resulting outputs of the combined model will be used as the basis of a cost effectiveness and incremental cost analysis (CE/ICA) for all ecosystem restoration and mitigation plans. This analysis compares the potential costs of each proposed alternative to the potential ecological benefits. This analysis is facilitated by developing a single numeric value for the ecological benefits for each alternative. Thus, the general framework of the model, as shown above, results in a single “score” for each alternative. Such a single numeric value is most certainly an oversimplification of a highly complex ecosystem. However, if the model is completely transparent so that both users and decision-makers can view the relationships and equations used in each part of the model; the inputs and outputs of the model; and understand how each score is derived, it will be a highly useful tool for comparing the relative benefits of potential restoration alternatives. It is not intended to be a rigorous prediction of fish and wildlife production or geomorphic rates of change.

Monitoring and evaluation of baseline versus post-implementation conditions can provide a valuable evaluation of the accuracy of the model in predicting benefits to specific

species or ecosystems over time and within other reaches or subbasins of the Willamette River and will be considered for implementation as part of this project.

The PDT is also developing a HEC-RAS model to describe baseline hydrologic conditions on the floodplain within the study area and to assist in evaluating the hydraulic effects of alternative ecosystem restoration measures considered in the alternatives. The outputs of the HEC-RAS model will provide important information about habitat effects and attributes that will be incorporated into the ecological models described above.

6. QUALITY CONTROL PLAN

Quality control is the process employed to ensure the performance of a task meets the agreed upon requirements of the customer and appropriate laws, policies, and technical criteria, on schedule and within budget. This QC / ITR Plan describes processes and procedures that will be undertaken to assure that quality products are produced for the Willamette River Floodplain Restoration Study. It defines the responsibilities and roles of each member on the study and technical review teams in ensuring quality control for those products. Quality control procedures will follow the Portland District PMP Quality Management Plan.

a. Key elements of the Quality Control Plan

The key elements of the quality control plan are:

- Internal reviews of draft documents;
- Independent Technical Review (ITR); and,
- External Peer Review (EPR)
- Planning Model Certification

(1) Internal Review

Draft products and deliverables shall be reviewed, as they are developed to ensure they meet project and customer objectives, comply with regulatory and engineering guidance, and meet customer expectations of quality. Informal reviews, consisting of presentations and discussions of interim documents, shall be documented with meeting minutes. Formal reviews, consisting of review comments, review conferences, and backchecking, shall be documented and filed in the project intranet folder.

Within the Corps, internal review will consist of appropriate senior staff members from the organization completing the task reviewing all technical work before it is submitted forward to the ITR. The Corps will review all work performed by the local sponsor as part of the study and submitted for credit as in-kind work. WRI, MWVCOG and other sponsor entities may review all work products completed by the Corps PDT or its contractors.

(2) Independent Technical Review

Independent Technical Review will be conducted under the provisions of EC 1105-2-408, by specialists from organizations outside of the district responsible for the Phase IA Feasibility Report. Independent Technical Review will be conducted for all decision documents and will be independent of the technical production of the project. The ITR Team will review the Phase IA Report, a combined Feasibility Report and Environmental Impact Statement and related appendices (environmental, economics, engineering, and hydraulics and hydrology)

The Willamette Floodplain Restoration Study Feasibility Report/EIS will have a Corps ITR team assigned by the CENWD Regional Planning Board working in collaboration with the Planning Center of Expertise (PCX) for Ecosystem Restoration Projects. The ITR team will consist of representatives of the key technical disciplines from Corps offices other than Portland District and other technical experts nominated by the non-Federal sponsor. A Technical Review Team Leader will be designated. The ITR team leader will work with the Project Management team to ensure that the study and related products are adequately reviewed.

The major disciplines required for the independent project Independent Technical Review Team (ITR) are identified on Table 2. The ITR Team will be selected on the basis of having the proper knowledge, skills, and experience necessary to perform the task and their lack of affiliation with the development of the FR/EA and associated appendices.

Funding of reviewers may include travel to Portland District for the review conference. All ITRs will be completed through DRCHECKS where comments and comment resolution are captured.

**TABLE 2
INDEPENDENT TECHNICAL REVIEW TEAM**

<u>Discipline</u>	<u>Description</u>	<u>Reviewer</u>
Review Team Leader	Plan Formulation experience on ecosystem restoration projects, particularly involving restoration of natural floodplain function on large regulated western rivers in a maritime climate	TBD
Plan Formulation	Plan Formulation experience on ecosystem restoration projects particularly involving restoration of natural floodplain function on large	TBD

	regulated western rivers in a maritime climate	
Environmental	Fisheries biologist and/or riparian ecologist with experience on ecosystem restoration projects associated with ESA-listed salmonids species	TBD
Cultural Resources	Archaeologist	TBD
Geotechnical	Geologist or geotechnical engineer with experience on restoration of gravel bedded rivers	TBD
Economic Evaluation	Economist with experience on ecosystem restoration projects	TBD
Cost Engineering	Cost engineer/estimator with flood control or ecosystem restoration experience (grading, levees, revegetation, wood or boulder in-stream habitat structures)	TBD
Real Estate	Agricultural, parks, and gravel mining property experience (knowledge of Oregon's land use laws and related policy ramifications will be helpful)	TBD
Geomorphology	Geologist or hydraulic engineer with wood in-stream habitat structures, gravel-bedded rivers, and ecosystem restoration project experience	TBD
Civil Design	Civil engineer with experience in designing grading plans, levees (and levee and bank-protection removal or modification), and habitat structures,	TBD
Hydraulics and Hydrology	Hydrologist or hydraulic engineer with HEC-RAS unsteady state, floodplain mapping, and reservoir release experience	TBD

The purpose of an independent technical review is to assure the integrity and accuracy of the technical products produced. In particular, the ITR team will ensure that the feasibility study products and deliverables are safe, functional, constructible, economical,

and reasonable; engineering assumptions, concepts and analyses are valid and comply with accepted USACE and industry standards; economic analyses and cost estimates are reasonable and accurate; that the customer's needs will be met; and that the study products and deliverables comply with U.S. laws, regulations, and existing public policy.

- Definition of the “without project condition”;
- Selection of alternative project sites for detailed evaluation and completion of concept designs and preliminary cost estimates; and,
- Completion of the draft feasibility report and EIS.

Technical review will use appropriate analytical methods for each technical area or discipline. Independent technical review will ensure that:

- Planning assumptions are justified and technically valid
- Technical analyses have been conducted in accordance with established professional practices and standards and any deviations are clearly identified and justified;
- Planning and design concepts, features, analytical methods, analyses and details are appropriate to the scope of the feasibility study, fully coordinated and correct;
- Unresolved problems, issues and planning limitations are properly defined and scoped; and,
- Study conclusions and recommendations are reasonable and supportable.

(3) External Peer Review

Regional technical experts and stakeholders that have been involved in the Willamette Floodplain Restoration Study will be involved in normal public and agency draft review processes. At the present time, Portland District believes that the scope and technical complexity of the feasibility study and expected outcomes do not warrant a formal External Peer Review (EPR) process. While this study will be challenging and the potential benefits to several ESA listed species will have national significance, they are not expected to be novel, controversial or precedent setting. This recommendation will be revisited at key milestones in the study process and, if determined warranted, an EPR plan will be developed. The draft QP was coordinated through CENWD-PDD. NWD concurs with the recommendation that this project be submitted for ITR only.

(4) Planning Model Certification

EC 1105-2-407 (31 May 2005), “Planning Models Improvement Program: Model Certification” establishes the process and requirements for certification of all models used in Corps of Engineers planning studies. Planning models 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 problems and take

advantage of the opportunities, to evaluate potential effects of alternatives, and to support decision-making. It includes all models used for planning, regardless of their scope or source. Planning models must be reviewed and certified by the appropriate Planning Center of Expertise (PCX) in accordance with the criteria and procedures specified in the EC.

The intent of model certification is to provide corporate approval that models used in the planning process are sound and functional. The goal of certification is to establish that Corps planning products are theoretically sound, compliant with corps policy, computationally accurate, and are based on reasonable assumptions. The use of a certified model does not constitute technical review of the planning product; Independent Technical Review of the selection and application of the model and input data is still the responsibility of the users.

The planning models expected to be used to evaluate baseline conditions and the possible effects of alternative ecosystem restoration measures to be considered in the Willamette Floodplain Restoration Study are summarized in Paragraph 5 above. In May 2007, The PDT submitted initial documentation of the combined Floodplain Restoration Index Model to the PCX for Ecosystem Restoration at CEMVD-PD. At the time this updated QCP was being prepared, all the PCXs were working collaboratively to develop a Program Management Plan (PgMP) to provide further corps-wide guidance for how model certification would be conducted. This section of the QCP will be revised upon completion of the Model Certification PgMP or upon further guidance from the Ecosystem Restoration PCX.

(5) Public Review Opportunities

The public has and will continue to be provided many opportunities for review, and will be encouraged to continue to provide input to the review process through scoping meetings and review periods programmed into the feasibility schedule. The PDT has held three public meetings over the past year. An extensive public involvement plan is being developed in concert with watershed councils and other stakeholders for FY 07 and 08 featuring four more sets of public meetings and several “design charette” style workshops focusing on development of alternatives for target priority floodplain restoration reaches in the study area.

Public review of the draft Feasibility Report and EIS will be conducted in accordance with Corps’ policies and procedures as described in ER 1105-2-100.

Public input from workshops and scoping meetings will be available to the ITR members to ensure that public comments were considered during development of the without-project conditions report, and will be considered during development of the plan formulation documents, and the draft FR/EIS. In addition, the draft FR/EIS will be independently reviewed prior to the conclusion of the public comment period, and, therefore, these comments will not be available to the ITR members. In the event that the

final FR/EIS is significantly revised from the draft, another ITR will be scheduled and public comment on the draft will be available to the reviewers.

b. Quality Control Responsibilities

The project organizational structure, including the Executive Committee, Project Management Team, Product Development Team, Independent technical Review and other related study elements are described in Section 8. The Quality Control responsibilities of each are described in the following paragraphs.

(1) Corps' Project Manager

The Corps Project manager shall be responsible for coordinating the review effort with the members of the PDT and with the ITR team leader, including:

- Ensure that the schedule contains adequate time to perform reviews of completed products.
- Ensure that the ITR team leader is notified of significant PDT team meetings and review conferences so that he/she can assemble the review team for progress reviews.
- Manage responses to review memoranda and resolve technical issues with the ITR review team leader, consult with CENWD staff as appropriate, and forward all unresolved technical issues to the appropriate functional chief and executive team for resolution.

(2) Corps' Project Delivery Team

Product quality is the responsibility of every member of the USACE PDT (Table 1). Technical quality of project products and deliverables shall be achieved through a process that includes development of realistic comprehensive work plans, well defined functional and technical criteria, close coordination among the PDT members, and conformance to accepted USACE and industry standards.

All draft project products and deliverables shall be reviewed by highly qualified staff from their respective technical areas of expertise prior to submittal of the final product. For Engineering products and deliverables, computations will be checked and initialed prior to submittal of the final product.

(3) Independent Technical Review Team Leader

The ITR team leader will work with the Project Management team to ensure that the study and related products are adequately reviewed. The ITR team leader will coordinate the technical review amongst ITR team members. As previously noted, technical review may include periodic technical review team meetings conducted at key milestones in the study process.

d. Quality Control Process

(1) Technical Coordination

Generally, product development shall be performed in accordance with established criteria, guidance, and policy. Meetings with the appropriate ITR team members during the planning process will be held at key decision points. The PDT meetings also will be held to discuss and resolve technical and/or policy issues that may arise during the course of product development. Technical issues and concerns raised during the technical review process will be documented, as will the resolution of these issues and concerns.

(2) Product Quality Control

The Corps Project manager will provide completed draft documents to the ITR team leader who will distribute them to the ITR team for review. During the review, ITR team meetings will be scheduled as required to ensure that all components have been coordinated, there is consistency throughout the document, and there is consensus on proposed revisions. Any issues on which a review team position cannot be reached will be documented and considered by the Project Management Team. If necessary, the Project Management Team will make recommendations to the Executive Committee for resolution of any outstanding issues. The ITR Team Leader will record the significant team comments in a written review memorandum that will be provided to the Corp's Project Manager for appropriate action. The ITR Team Leader and Corps Project Manager will take comments that cannot be resolved between reviewers and study team to the Project Management Team to develop a coordinated resolution; the assistance of the Executive Committee, Northwestern division and/or Corps Headquarters will be requested as needed.

(3) Review and Acceptance of Work

Members of the Corps PDT, under the direction of the Corps Project Manager, will monitor and review all work performed by the sponsor. Review and acceptance of work products will be documented in quarterly study progress reports submitted to the Project Management Team and Executive Committee. The Corps Project manager will bring any disagreements about the acceptability of completed work to the Project Management Team for resolution. Unresolved issues will be brought to the attention of the Executive Committee. All cost estimates will be coordinated with CENWW cost estimating center of expertise.

(4) Consultant Products

Both Corps and MWVCOG intend to use consultants to complete identified study tasks and activities. Consultants are considered an extension of Corps and non-federal sponsor staffs. Any reports, designs, etc., prepared by consultants will be reviewed by the appropriate functional PDT member from both the contracting organization and the

Corps. All consultant products will be scoped to explicitly include an internal technical review performed by the consultant. The ITR Team will review consultant product information incorporated into the draft and final feasibility report/EIS and appendices.

(5) Policy Review

Policy review of the FR/EIS will be conducted primarily at Division and Headquarters levels. Questions or problems regarding policy concerns will be elevated through Northwestern Division District Support Team to Corps' headquarters NWD Regional Integration Team (CECW-A) for resolution as the issues develop. Legal and Real Estate policy issues will be elevated to the chief Counsel and Director of real estate, respectively.

Internal Technical Review and External Peer Review processes are for technical review only and will not be used to address policy issues.

e. Technical Review Documentation

All significant review comments will be provided to the Corps' Project manager in written format. The Corps' Project Manager will assure that all significant comments are resolved and their final disposition is in writing.

The Feasibility Report submitted to higher authority shall be accompanied by technical review documentation. This document shall be a separate item not to be included as part of the feasibility report. A page indicating the names of the PDT and technical review team members will be included.

f. BCOE Certification

The purpose of Biddability, Constructibility, Operability, and Environmental Reviews (BCOE) is to ensure efficient construction that is environmentally sound, to minimize cost and time growth, to avoid unnecessary changes and claims, as well as to ensure safe efficient operations by the user. BCOE Certification is not required for any of the Feasibility Phase products and deliverables.

7. REVIEW SCHEDULE

Under the currently approved schedule, the Feasibility Report is scheduled for completion by September 2009. However, due to delays in obtaining FY 06 and 07 Federal funding, the study schedule will need to be revised. A Feasibility Scoping Meeting (FSM) involving CENWP, CENWD, HQUSACE, the non-Federal sponsor and other key stakeholders is currently scheduled for early in FY 2008. The Scope and Schedule for the remainder of the Feasibility Phase will be revised based on the FSM. The revised schedule will be incorporated into the QCP and PMP at that time. Under the

tentative revised schedule, the preliminary draft report ITR would occur in the spring of 2009 and public review of the draft would be in early 2010.

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