FEB 2 7 2013

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NORTHWESTERN DIVISION
PO BOX 2870
PORTLAND OR 97208-2870

CENWD-RBT

MEMORANDUM FOR Commander, Portland District (CENWP-PM-F/Bill Abadie)

SUBJECT: Review Plan (RP) Approval for Columbia River Treaty 2014/2024 Review Program Ecosystem Based Functions and Other Purposes/Uses Appendixes Review Plan

1. References:

a. RP for Columbia River Treaty 2014/2024 Review Program Ecosystem Based Functions and Other Purposes/Uses Appendixes Review Plan (Encl).

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

2. Reference 1.a. above has been prepared in accordance with reference 1.b. above.

3. The RP has been coordinated with the Business Technical Division and the Planning, Environmental Resources, Fish Policy and Support Division, Northwestern Division, U.S. Army Corps of Engineers. The Review Plan includes both Regional Quality Control and Agency Technical Review for work products.

4. I hereby approve this RP, which is subject to change as circumstances require, consistent with the study development process and the Project Management Business Process. Subsequent revisions to this RP or its execution will require written approval from this office.

5. For further information, please contact Mr. Steve Bredthauer at (503) 808-4053, or Ms. Rebecca Weiss at (503) 808-3728.

Encl

ANTHONY C. FUNKHOUSER, P.E.
BG, USA
Commanding

CF: PDS

DEPARTMENT OF THE ARMY
PORTLAND DISTRICT, CORPS OF ENGINEERS
333 SW FIRST AVENUE
PORTLAND, OREGON 97204

REPLY TO
ATTENTION OF

01 FEB 2013

CENWP-DE

MEMORANDUM FOR Commander, Northwestern Division (CENWD-DE)
(Stephen Bredthauer, Quality Manager, Business Technical, CENWD/RBT)

SUBJECT: Columbia River Treaty 2014/2024 Review Program Ecosystem Based Functions and Other Purposes/Uses Appendixes Review Plan submittal.

1. Enclosed for Major Subordinate Command (MSC) Commander approval is the Columbia River Treaty 2014/2024 Review Program Ecosystem Based Functions and Other Purposes/Uses Appendixes Review Plan. This Review Plan has been prepared according to EC 1165-2-214, Civil Works Review.

2. The District point of contact (POC) for questions or requests for additional information may be referred to Bill Abadie, Project Manager, at (503) 808-4732 or email at william.d.abadie@usace,army.mil. A secondary POC is Matt Rea, at (503) 808- 4750 or email at matt.t.rea@usace.army.mil.

KEVIN J. BRICE, P.E., PMP
Deputy District Engineer
for Project Management

Encl

CF:
CENWD-RBT (Bredthauer)

(Version 1.1, February 25, 2013)

REVIEW PLAN

Columbia River Treaty 2014/2024 Review Program

Ecosystem Based Functions and Other Purposes/Uses Appendixes

MSC Approval Date: February 27, 2013
Last Revision Date: none

US Army Corps
of Engineers ®

REVIEW PLAN

Columbia River Treaty 2014/2024 Review Program
Ecosystem-based Functions and Other Purposes/Uses Appendixes

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1. PURPOSE AND REQUIREMENTS

a. Purpose.

This Review Plan defines the scope and level of technical review for the Columbia River Treaty 2012/2024 Review Program (CRT), Ecosystem-based Functions (EbF) and Other Purposes/Uses (OPU) Analyses Appendixes. These two appendixes will be incorporated into the CRT Review Program's main report. The CRT Review Program main report will support a Treaty recommendation by the U.S. Entity (Administrator of the Bonneville Power Administration (BPA) as the chair, and the US Army Corps of Engineers (USACE) Northwestern Division (NWD) Engineer as member) to the U.S. Department of State (DOS).

b. References

(1) Engineering Circular (EC) 1165-2-214, Civil Works Review, 15 December 2012
(2) EC 1105-2-412, Assuring Quality of Planning Models, 31 Mar 2011
(3) Engineering Regulation (ER) 1110-1-12, Quality Management, 30 Sep 2006
(4) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007.

c. Requirements.

Since the 1960's, the Columbia River Treaty has laid the framework for cooperative development of water resource regulation in the Columbia River Basin, with the goals of providing flood control and hydropower benefits to both the United States and Canada. The Treaty contains provisions that may change these benefits as early as the year 2024. In addition, while the Treaty has no specified end date, either Canada or the U.S. may propose to modify or terminate the Treaty as of 2024, with a minimum of 10 years advance notice - hence the focus on 2014 and 2024. The goal of the Treaty Review is to meet the responsibility of the U.S. Entity to develop and provide information necessary to support a U.S decision regarding the future of the Treaty.

Technical documents are being prepared to develop and support a Treaty recommendation to the DOS. The CRT Review is a multi-agency effort. This review plan was developed to accommodate the intent of the review strategies set forth in USACE's EC 1165-2-214 and EC 1105-2-412, and the coordination challenges associated with the development of documents authored collaboratively by numerous agencies. EC 1165-2-214 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. EC 1105-2-412 outlines planning model certification/approval procedures.

2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

The RMO is responsible for managing the overall peer review effort described in this Review Plan. The RMO for decision documents is typically either a Planning Center of Expertise (PCX) or the Risk Management Center (RMC), depending on the primary purpose of the decision document. The RMO for the peer review effort described in this Review Plan is Northwestern Division (NWD).

The analyses contained in the EbF and OPU Analyses Appendixes and supporting reports will not include cost estimates, construction schedules, or contingencies; therefore, the RMO will not be responsible for coordinating with the Cost Engineering Directory of Expertise.

3. STUDY INFORMATION

a. Decision Document.

The CRT 2012/2024 Review is not a traditional USACE Civil Works planning study that culminates in a decision document. Furthermore, environmental compliance documentation (*e.g.*, National Environmental Policy Act, Endangered Species Act, and National Historic Preservation Act) is not required or appropriate at this time since this is a recommendation to the DOS. Depending on the outcome of Treaty negotiations, additional studies, decision documents, and environmental compliance documentation will most likely be necessary.

b. Study/Project Description.

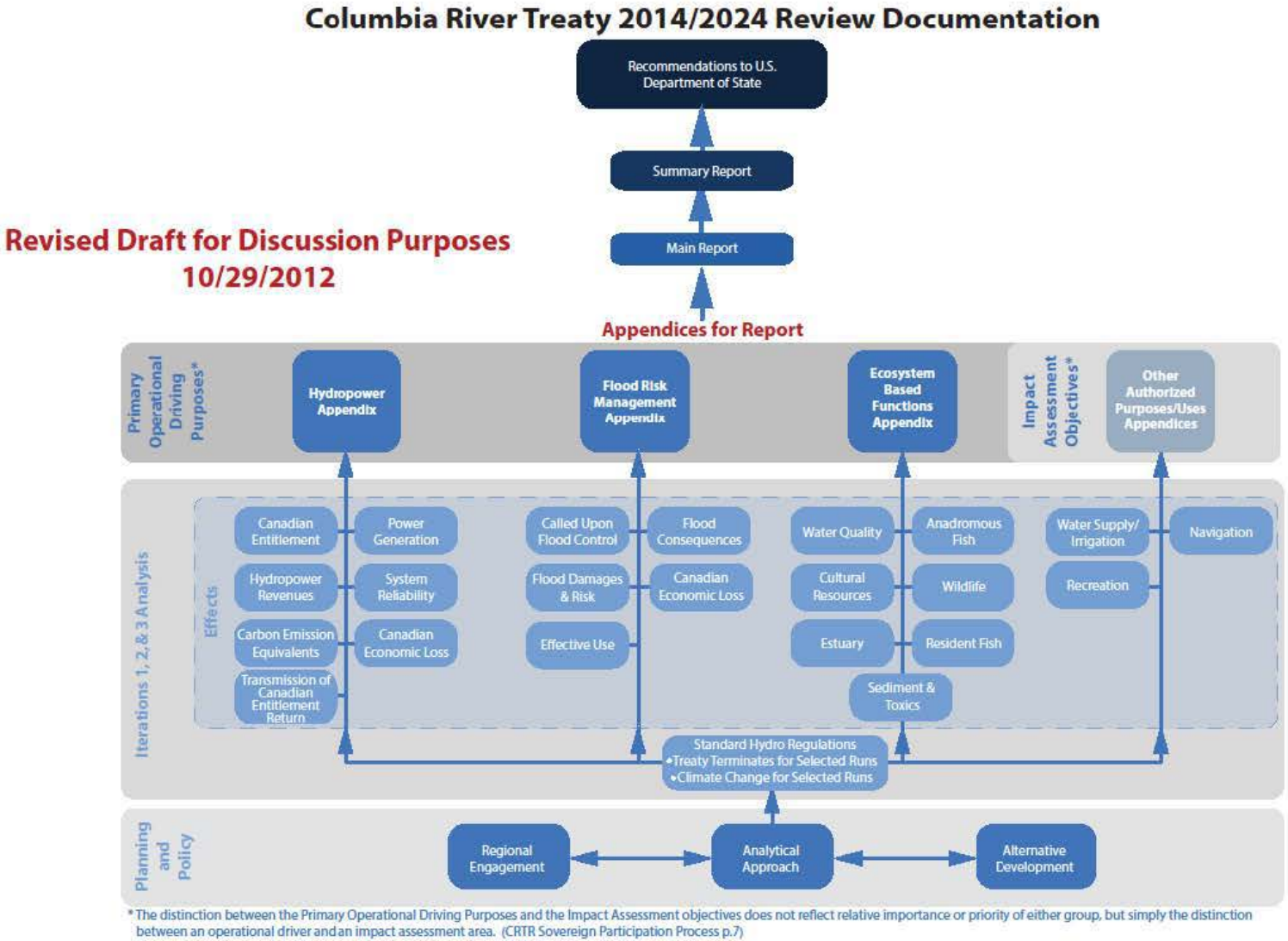
The CRT, executed in 1964, is an international agreement between Canada and the United States for the cooperative development and operation of the water resources of the Columbia River Basin for the benefit of flood control and power. The year 2024 is a significant date for the Treaty, since it marks the end of 60 years of pre-paid flood control space from Canada. In addition, either Canada or the United States can terminate most of the provisions of the Treaty any time on or after September 16, 2024, with a minimum 10 years' written advance notice (hence, the reference to 2014).

In consideration of potential changes to provisions within the existing Treaty, USACE and BPA, the agencies responsible for implementing the Treaty for the United States on behalf of the U.S. Entity, are conducting a multi-year effort to study post-2024 Treaty issues. The overall goal of the CRT Review is to meet the responsibility of the U.S. Entity to develop and provide information necessary to support a U.S. decision regarding the future of the Treaty. This information will enable the U.S. Entity to make an informed recommendation with the assistance of tribal, state, and other Federal agencies, to the DOS in the fall of 2013 as to whether it is in the best interest of the U.S. to continue, terminate, or seek renegotiation of the Treaty. The Treaty Review will include analysis of the two original purposes identified in the Treaty: flood control and hydropower. USACE is responsible for conducting studies related to flood risk. BPA is responsible for separate but coordinated studies related to hydropower.

Environmental considerations, including the obligations of U.S. agencies to protect species listed under the Endangered Species Act, significantly affect operations with the U.S. part of the system and will influence Treaty decisions. As a result, EbF will be considered and addressed as a third purpose in the Treaty Review. EbF studies are being conducted cooperatively between USACE, BPA, other Federal agencies, the states of Montana, Oregon, Washington and Idaho, and Tribes in the region. The purpose of the EbF reports is to evaluate the affects of Treaty alternatives and components on anadromous fish, resident fish, wildlife, the estuary, water quality, sediment, and cultural resources. BPA is responsible for conducting cultural resource evaluations and documentation; however, USACE is a team member.

In addition, impact analyses of Treaty alternative are being conducted on water supply, navigation, and recreation (*i.e.,* Other Purposes/Uses). USACE is responsible for conducting these analyses. A diagram illustrating how these various impact assessments culminate into appendixes and supporting documentation can be found in figure 1.

Figure 1:



*The distinction between the Primary Operational Driving Purposes and the Impact Assessment objectives does not reflect relative importance or priority of either group, but simply the distinction between an operational driver and an impact assessment area. (CRTR Sovereign Participation Process p.7)

c. Sovereign Participation Process.

With the regional tribes, states, and other Federal agencies, a path was created under the CRT Review known as the Sovereign Participation Process (SPP). This process provides a formal means for the team to consult directly with the regional sovereigns and stakeholders regarding the future of the Treaty. This process is a framework to collaborate and coordinate with the U.S. Entity. The SPP consists of several components: government-to-government and Federal coordination; the Sovereign Review Team (SRT); the Sovereign Technical Team (STT); and regional stakeholders.

The SRT is comprised of five tribal members designated to represent 15 tribes; state representatives from Oregon, Washington, Montana and Idaho; and 11 federal agency representatives including USACE and BPA Treaty co-coordinators. A subset of the SRT is the STT. This group is ultimately responsible for the completion of the technical work that will inform the SRT and the U.S. Entity. The STT has been developing study scopes, alternatives, alternative evaluation methodologies, alternative impact assessments, and documentation of results. The technical team will submit all of its work to the SRT for review and approval prior to the finalization of any work products. Additional information on the SPP and a list of SRT and STT members can be found at http://www.crt2014-2024review.gov/Default.aspx.

d. Geographic Scope.

The geographic scope includes the Columbia River and its tributaries, downstream from the flood control dams, within the United States and the associated floodplain areas potentially impacted by changes in flood storage operations in the treaty projects. The study area falls within the geographic area of responsibility of Portland (NWP), Seattle (NWS) and Walla Walla (NWW) Districts. All three Districts are represented on the PDTs. In addition, NWD is a member of the PDTs.

e. Factors Affecting the Scope and Level of Review.

- The review of the EbF and OPU Appendixes and supporting reports will follow the intent of EC 1165-2-214. The review of the EbF reports and the OPU reports will take place at various levels depending on the complexity, sensitivity, and importance of the individual discipline or technical product. Treaty Review documentation must satisfy U.S. Entity review as well as USACE review requirements, where appropriate. The various review team memberships will insure that products are reviewed from both a U.S. Entity and USACE perspective without leading to unnecessary delay in project completion or unnecessary redundancy. The USACE review of the EbF and OPU Appendixes will not necessarily follow all of the steps normally conducted for a traditional USACE planning study. The primary difference being that many of the documents are being compiled and finalized by others. It is anticipated that the outcome of Treaty negotiations will require an implementation study which will result in a more traditional decision document, and will follow the traditional USACE planning guidance and approach. The overall objective is to combine reviews as much as possible or to complete them in parallel while complying with appropriate review requirements.

- The various EbF and OPU reports, which will be compiled into the EbF and OPU Appendixes, will undergo a rigorous regional quality control review (RQC) from a variety of regional subject matter experts (SME) per EC 1165-2-214. RQC is the equivalent of DQC as described in EC 1165-2-214, but due to the geographic scope of the study and the regional nature of the PDT, it will be done at a regional level since PDT memberships are comprised of representatives from NWS, NWW, NWP, and NWD.

- Technical reports authored by non-USACE agencies, such as US Geological Survey (USGS) and National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS), will undergo respective authoring agencies' protocols for technical review. USACE will participate in the review of these documents. Information on USGS's Peer Review – fundamental Science Practices can be found at http://www.usgs.gov/usgs-manual/500/502-3.html.

- ATR by USACE personnel would be conducted concurrently with review by the STT on the EbF and OPU Appendixes, since these appendixes are being compiled and finalized by contract issued by BPA. This review plan would be amended to include the specifics on ATR to include reviewers and schedule.

- The EbF and OPU Appendixes will provide technical information in support of a Treaty recommendation to the DOS and will not be used for design or construction. The EbF and OPU Appendixes and supporting documentation are not typical USACE decision documents; therefore, IEPR is not warranted.

f. In-Kind Contributions.

Not applicable. This is not a cost-shared study. Work is being conducted collaboratively within the SPP; where studies are funded primarily by USACE and BPA. USACE appropriations are derived from the Operation and Maintenance, Surveillance of Northern Boundary Waters program.

4. REGIONAL QUALITY CONTROL (RQC)

EbF and OPU reports (including supporting data, analyses, etc.) will undergo RQC. RQC is the equivalent of DQC, but due to the geographic scope of the study and the regional nature of the PDT, it will be done at a regional level. Like DQC, RQC 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.

The review manager for RQC will be NWP for EbF and water supply related studies. The review manager for RQC will be NWS for navigation and recreation related studies. Each major work product will be reviewed by a RQC Review Team as described in this Review Plan. Appropriate RQC Review Team members will be identified in consultation with NWD. It is anticipated that membership will include regional subject matter experts within the boundaries of NWD. This review will be accomplished using DrChecks.

a. Products to Undergo RQC.

Estuary – Supporting report prepared by USGS under the direction of USACE will be included in the EbF Appendix. Analysis will evaluate potential changes in water column and sediment metrics associated with Treaty alternatives.

Anadromous Fish – Supporting report will be composed of numerous documents compiled by BPA contractor and included in the EbF Appendix.

(a) COMPASS – Prepared by NMFS under direction of USACE. Analysis of Treaty alternatives with the use of NMFS's Comprehensive Passage model (COMPASS).

(b) USGS Fish Habitat studies – Prepared by USGS under the direction of USACE. Studies would evaluate Treaty alternatives on fall Chinook salmon rearing habitat in the John Day Reservoir and the Hanford Reach.
(c) Below Grand Coulee Dam - Assess the effects of flow operations on system survival and productivity of upper Columbia River steelhead in the Methow River, spring Chinook salmon in the Methow River, summer Chinook salmon in the Okanogan River, and sockeye salmon in the Okanogan River. Work to be performed by USACE contractor.

Resident Fish – Report will be composed of numerous documents compiled by USACE contractor and included in EbF Appendix.
(a) Montana Resident Fish in reservoirs and rivers – Prepared by USACE contractor.
(b) USGS Fish Habitat studies – Prepared by USGS under direction of USACE. Studies would evaluate Treaty alternatives on white sturgeon spawning habitat in four known spawning areas (downstream from McNary, John Day, The Dalles, and Bonneville dams).
(c) Lake Roosevelt Flows at the Border and Grand Coulee Dam - Prepared by USACE contractor.
(d) Lake Pend Oreille, Albeni Falls Dam, and Pend Oreille River - Prepared by USACE contractor.

Wildlife – Report will be prepared and compiled by USACE contractor, and included in EbF Appendix. Studies would include analyses of Treaty alternatives and their effect on ecological integrity index, migratory and wintering waterfowl concentrations, island habitat, and sensitive wildlife species and areas.

Sediment – Documents to be compiled and incorporated into EbF appendix.
(a) Sediment Transport in the Upper Columbia River – Prepared by USGS under direction of USACE.
(b) Sediment Transport in the Estuary – to be included in Estuary appendix as noted above.

Water Quality – Report will be composed of numerous documents compiled by USACE, and included in the EbF Appendix.
(a) Water Temperature – Prepared by USACE using HEC-RAS for water quality. Will also utilize outputs from Lake Roosevelt provided by Bureau of Reclamation.
(b) Total Dissolved Gas – Prepared by USACE/ERDC using SYSTDG.

Water Supply – Report prepared by USACE contractor and incorporated into the OPU Appendix. Studies will assess potential effects of Treaty alternatives on water supply for in-stream, irrigation, and municipal and industrial uses.

Recreation - Report prepared by USACE contractor and incorporated into the OPU Appendix. Studies will assess potential effects of Treaty alternatives on recreation at U.S. reservoirs and river reaches.

Navigation - Report prepared by USACE contractor and incorporated into the OPU Appendix. Studies will assess potential effects of Treaty alternatives on navigation at U.S. reservoirs and river reaches.

Note: The following reports are not being prepared by or under the direction of USACE. USACE is not responsible for their technical review; however, they will be incorporated into the EbF Appendix which will be reviewed by USACE.

- Cultural Resource evaluations and associated documentation is being lead by BPA. USACE is a team member and will participate in its preparation and review.
- CSS, a Comparative Survival Study, documentation to assess Snake River and Upper Columbia juvenile salmon and steelhead reach arrival time is being prepared by the STT, primarily the Columbia River Intertribal Fish Commission, Oregon Department of Fish and Wildlife, and Washington Department of Fish and Wildlife.
- Adult Fall Back – Documentation to be prepared by NMFS based upon existing information.
- Sediment Transport effects in the Snake River Basin – Documentation to be prepared by Idaho Power and Idaho Department of Fish and Game.
- Sediment Transport effects in the Kootenai River – Documentation to be prepared by BPA.
- Water Temperature for Lake Roosevelt – Documentation to be prepared by Bureau of Reclamation utilizing CE-QUAL-W2.

b. Documentation of RQC.

DrChecks review software will be used to document RQC 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 comments 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 RQC documentation in DrChecks will include the text of each RQC concern, the PDT response, a brief summary of the pertinent points in any discussion, including any vertical team coordination and the agreed upon resolution. If an RQC concern cannot be satisfactorily resolved between the RQC team and the PDT, it will be elevated appropriately, whether that is vertically through USACE or through the STT/SRT. Unresolved concerns can be closed in DrChecks with a notation that the concern has been elevated for resolution.

At the conclusion of each RQC effort, the RQC team will prepare a Review Report summarizing the review. Review Reports will be considered an integral part of the RQC 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.

c. Required RQC Team Expertise.

RQC Team Members/Disciplines	Expertise Required
RQC Lead(s)	One or two RQC leads will be required to address EbF, Water Supply, Navigation, and Recreation. The RQC lead(s) should be a senior professional with extensive experience in Civil Works and conducting RQC. The lead should also have the necessary skills and experience to lead a virtual team through the RQC process. The RQC lead should have experience/knowledge of the CRT Review Program and Columbia River basin. The RQC leader may also serve as a reviewer for one of the specific disciplines below.
EbF –Estuary	The reviewer for the estuary shall be a senior professional with experience in fish, wildlife, sediment transport, and water quality issues in an estuarine environment. The reviewer should also have experience/knowledge of the Columbia River basin.
EbF – Anadromous Fish	The reviewer for anadromous fish shall be a senior professional fish biologist with experience in fish passage and anadromous fish issues. The reviewer should also have experience/knowledge of the Columbia River system and the Federal Columbia River Power System (FCRPS) Biological Opinion.
EbF – Resident Fish	The reviewer for resident fish shall be a senior professional fish biologist with experience in fish in a large river system with multiple reservoirs. The reviewer should also have experience/knowledge of the Columbia River basin.
EbF- Wildlife	The reviewer for wildlife shall be a senior professional biologist with a experience in water fowl, sensitive species, and related habitat. The reviewer should also have experience/knowledge of the Columbia River basin.
EbF – Sediment Transport	The reviewer for sediment transport shall be a senior professional with experience in sediment transport and water quality related issues. The reviewer should also have familiarity with the Columbia River system.
EbF – Water Quality	The reviewer(s) for water quality shall be a senior professional with experience in water temperature and TDG related to hydropower and flood risk projects. The reviewer should also have experience/knowledge of the FCRPS.
EbF – Cultural Resources	The reviewer for wildlife shall be a senior professional with experience in cultural resources and tribal issues. The reviewer should also have experience/knowledge of the Columbia River basin tribes.

RQC Team Members/Disciplines	Expertise Required
OPU – Water Supply	The reviewer for water supply shall be a senior professional with experience in water supply issues. The reviewer should also have experience/knowledge of the Columbia River.
OPU – Recreation	The reviewer for recreation shall be a senior professional with experience in navigation issues. The reviewer should also have experience/knowledge of the Columbia River system.
OPU – Navigation	The reviewer for navigation shall be a senior professional experience in navigation issues. The reviewer should also have experience/knowledge of the Columbia River system.

5. AGENCY TECHNICAL REVIEW (ATR)

The various reports as listed in 4a above will be complied into two overarching appendixes – the EbF Appendix and the OPU Appendix. These two appendixes will be compiled by a contractor under the direction of BPA. ATR by USACE personnel would be conducted concurrently and as part of the review by the STT. This review plan would be amended to include the specifics on ATR to include reviewers and schedule. The ATR lead would be outside NWD, but have familiarity with the Columbia River basin.

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.

a. Products to Undergo ATR.
EbF Appendix – comprised of reports/chapters on anadromous fish, resident fish, wildlife, estuary, water quality, sediment, and cultural resources.
OPU Appendix – comprised of reports on water supply, recreation, navigation.

b. Documentation of ATR.
ATR comments, responses and associated resolutions accomplished throughout the review process will be documented. 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 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 and the agreed upon resolution. If an ATR concern cannot be satisfactorily resolved between the ATR team and the PDT, it will be elevated appropriately, whether that is vertically through USACE or through the STT/SRT. Unresolved concerns will be noted that the concern has been elevated 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.

c. Required ATR Team Expertise.

ATR Team Members/Disciplines	Expertise Required
ATR Lead(s)	One or two ATR leads will be required to address EbF, Water Supply, Navigation, and Recreation. The ATR lead(s) should be a senior professional with extensive experience in Civil Works and conducting ATR. The ATR lead(s) should be familiar with the CRT Review Program and Columbia River basin. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process. The ATR leader may also serve as a reviewer for one of the specific disciplines below. The ATR leads(s) will be outside NWD.
EbF –Estuary	The reviewer for the estuary shall be a senior professional with experience in fish, wildlife, sediment transport, and water quality issues in an estuarine environment. The reviewer should also have familiarity with the Columbia River.
EbF – Anadromous Fish	The reviewer for anadromous fish shall be a senior professional fish biologist with a minimum of 10 years experience in fish passage and anadromous fish issues. The reviewer should also have The reviewer should also have familiarity with the Columbia River basin and the FCRPS Biological Opinion.

ATR Team Members/Disciplines	Expertise Required
EbF – Resident Fish	The reviewer for resident fish shall be a senior professional fish biologist with a minimum of 10 years experience in fish in a large river with multiple reservoirs. The reviewer should also have familiarity with the Columbia River basin.
EbF- Wildlife	The reviewer for wildlife shall be a senior professional biologist with a minimum of 10 years experience in water fowl, sensitive species, and related habitat. The reviewer should have familiarity with the Columbia River basin.
EbF – Sediment Transport	The reviewer for sediment transport shall be a senior professional with a minimum of 10 years experience with sediment transport and water quality related issues. The reviewer should also have familiarity with the Columbia River system.
EbF – Water Quality	The reviewer(s) for water quality shall be a senior professional with a minimum of 10 years experience in water temperature and TDG related to hydropower and flood risk projects. The reviewer should also have familiarity with the FCRPS.
EbF – Cultural Resources	The reviewer for wildlife shall be a senior professional with a minimum of 10 years experience in cultural resources and tribal issues. The reviewer should also have familiarity with the Columbia River basin tribes.
OPU – Water Supply	The reviewer for water supply shall be a senior professional with a minimum of 10 years experience in water supply issues. The reviewer should also have familiarity with the Columbia River.
OPU – Recreation	The reviewer for recreation shall be a senior professional with a minimum of 10 years experience in navigation issues. The reviewer should also have familiarity with the Columbia River system.
OPU – Navigation	The reviewer for navigation shall be a senior professional with a minimum of 10 years experience in navigation issues. The reviewer should also have familiarity with the Columbia River system.

6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)

IEPR may be required for decision documents under certain circumstances. IEPR is the most independent level of review, and is applied in cases that meet certain criteria where the risk and magnitude of the proposed project are such that a critical examination by a qualified team outside of USACE is warranted. A risk-informed decision, as described in EC 1165-2-214, is made as to whether IEPR is appropriate. IEPR panels will consist of independent, recognized experts from outside of the USACE in the appropriate disciplines, representing a balance of areas of expertise suitable for the review being conducted. There are two types of IEPR:

- Type I IEPR. Type I IEPR reviews are managed outside the USACE and are conducted on project studies. Type I IEPR panels assess the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, economic analysis,

environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, models used in the evaluation of environmental impacts of proposed projects, and biological opinions of the project study. Type I IEPR will cover the entire decision document or action and will address all underlying engineering, economics, and environmental work, not just one aspect of the study. For decision documents where a Type II IEPR (Safety Assurance Review) is anticipated during project implementation, safety assurance shall also be addressed during the Type I IEPR per EC 1165-2-214.

- Type II IEPR. Type II IEPR, or Safety Assurance Review (SAR), are managed outside the USACE and are conducted on design and construction activities for hurricane, storm, and flood risk management projects or other projects where existing and potential hazards pose a significant threat to human life. Type II IEPR panels will conduct reviews of the design and construction activities prior to initiation of physical construction and, until construction activities are completed, periodically thereafter on a regular schedule. The reviews shall consider the adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health safety and welfare.

a. Decision on IEPR.

IEPR will not be conducted on the EbF and OPU Appendixes or supporting documentation. The EbF and OPU Appendixes will be used by the DOS and the U.S. Entity in treaty negotiations with Canada. The documents are being compiled and finalized cooperatively within the SPP. It is anticipated that the outcome of treaty negotiations will then require an implementation study, which will result in a decision document and will follow the traditional USACE planning guidance and approach. The EbF and OPU Appendixes are not part of a decision document used to support a Chief of Engineers report, nor will they be used for design or construction.

b. Products to Undergo Type I IEPR.

None.

c. Required Type I IEPR Panel Expertise.

Not Applicable.

d. Documentation of Type I IEPR.

Not Applicable.

7. POLICY AND LEGAL COMPLIANCE REVIEW

USACE Office of Counsel both at NWP and at NWD are actively engaged in the Treaty Review. Office of Counsel will review documentation as part of RQC and ATR as appropriate; to ensure documentation adequately and correctly addresses applicable laws, regulations, and USACE policy.

8. COST ENGINEERING DIRECTORY OF EXPERTISE (DX) REVIEW AND CERTIFICATION

The treaty recommendations resulting from the CRT 2012/2024 Review will not include cost estimates, construction schedules, or contingencies; therefore, the RMO will not be responsible for coordinating with the Cost Engineering Directory of Expertise.

9. MODEL CERTIFICATION AND APPROVAL

EC 1105-2-412 mandates the use of certified or approved models for all planning activities to ensure the models are technically and theoretically sound, compliant with USACE policy, computationally accurate, and based on reasonable assumptions. Planning models, for the purposes of the EC, are defined as any models and analytical tools that planners use to define water resources management problems and opportunities, to formulate potential alternatives to address the problems and take advantage of the opportunities, to evaluate potential effects of alternatives and to support decision making. The use of a certified/approved planning model does not constitute technical review of the planning product. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR (if required).

EC 1105-2-412 does not cover engineering models used in planning. The responsible use of well-known and proven USACE developed and commercial engineering software will continue and the professional practice of documenting the application of the software and modeling results will be followed. As part of the USACE Scientific and Engineering Technology (SET) Initiative, many engineering models have been identified as preferred or acceptable for use on Corps studies and these models should be used whenever appropriate. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR (if required).

When available, certified models are being used such as with the use of HEC-RAS/Water Quality. However, most of the models being used in the analyses for the EbF Appendix are not certified per EC 1105-2-412. Certification is not warranted since the Treaty Review is not a traditional decision document, and will not include cost estimates, construction schedules, or contingencies. Some of the models used in the Treaty Review are currently being used by USACE for operation of the Columbia River (*e.g*., SYSTDG), whereas other models were developed by others outside USACE for the management of fish and wildlife resources (*e.g.,* HRMOD and LRMOD). Models are also being used that have been developed by other Federal agencies such as the USGS, and have gone through an academic peer review process (*e.g*., published in *North American Journal of Fisheries Management*).

10. DOCUMENTS TO BE REVIEWED AND REVIEW SCHEDULE

The following table lists the documents to be reviewed and the schedule.

Appendix	Compiled Topical Report	Technical Report	Description	Author	RQC	ATR	NOTES
Ecosystem-based Function Appendix			Overall appendix composed of the documents listed below.	BPA contractor cooperatively with USACE and STT	Fall 2013	Fall 2013	Concurrent review with STT review
	Estuary	Estuary	Evaluate potential changes in water column and sediment metrics associated with Treaty alternatives.	USGS under direction of USACE	Aug/Sept 2013		USGS Open File Report
	Anadromous Fish	COMPASS	Study to evaluate the potential effects of alternative dam and reservoir operations on salmon survival rates, expressed both within the hydropower system and through adult return.	NMFS under direction of USACE	Aug/Sept 2013		
		USGS Fish Habitat Models	Assess effects of Treaty alternatives on fall Chinook Salmon rearing habitat in the John Day Reservoir and Hanford Reach.	USGS under direction of USACE	Sept 2013		USGS Open File Report
		Below Grand Coulee Dam	Assess effects of flow operations changes on system survival and productivity of upper Columbia River steelhead (Methow), spring (Methow) and summer (Okanogan) Chinook salmon, and sockeye salmon (Okanogan.)	USACE contractor	Sept 2013		

Appendix	Supporting Technical Report	Technical Report	Description	Author	RQC	ATR	NOTES
Ecosystem-based Function Appendix (cont)	**Resident Fish**	MT Resident Fish in Reservoirs and Rivers	Assess the effects of Treaty alternatives on resident fish in MT rivers and reservoirs.	USACE contractor	Sept 2013		
		USGS Fish Habitat Models	Assess the effects of Treaty alternatives on white sturgeon spawning habitat in four known spawning areas (downstream from McNary, John Day, The Dalles, and Bonneville dams).	USGS under direction of USACE	Sept 2013		USGS Open File Report
		Lake Roosevelt Flows at Canadian Border and Grand Coulee Dam	Assesses effects of Treaty alternatives on resident fish from Canadian Border to Grand Coulee Dam.	USACE contractor	Sept 2013		
		Lake Pend Oreille, Albeni Falls Dam, and Pend Oreille River	Assesses effects of Treaty alternatives on resident fish in Lake Pend Oreille, Albeni Falls Dam, and Pend Oreille River.	USACE contractor	Sept 2013		
	Wildlife	Wildlife	Assess effects of Treaty alternatives to ecological integrity index, changes to migratory and wintering waterfowl concentrations, changes island habitat, and changes to sensitive wildlife species and areas.	USACE contractor	Sept 2013		

Appendix	Supporting Technical Report	Technical Report	Description	Author	RQC	ATR	NOTES
Ecosystem-based Function Appendix (cont)	**Sediment**	Upper Columbia River	Assess the effects of flow changes on sediment transport from the Canadian border into Lake Roosevelt.	USGS under direction of USACE	Apr/May 2013		USGS Open File Report
	Water Quality	Water Temperature	Use of HEC-RAS/Water Quality to assess changes in flow on water temperature. Will utilize water temperature data from BOR for Lake Roosevelt.	USACE	Aug/Sept 2013		USGS will also be participating in the technical review.
		Total Dissolved Gas	Use of SYSTDG to assess effects of Treaty alternatives on TDG.	USACE	Aug/Sept 2013		

The following reports are not being prepared by or under the direction of USACE. However, they will be included in the EbF Appendix. The USACE RQC and ATR teams will review these reports when they are compiled into the EbF Appendix.
Cultural Resources – prepared by contractor under direction of BPA.
CSS (Comparative Survival Study) for anadromous fish - prepared by STT, primarily Columbia River Intertribal Fish Commission, Oregon Department of Fish and Wildlife, and Washington Department of Fish and Wildlife.
Adult Fall Back – prepared by NMFS.
Snake River Basin resident fish effects – Idaho Power and Idaho Department of Fish and Game.
Kootenai River sediment effects – prepared by BPA.
Water Temperature for Lake Roosevelt – Prepared by Bureau of Reclamation.

Appendix	Supporting Technical Report	Technical Report	Description	Author	RQC	ATR	NOTES
Other Purposes/Uses Appendix		.	Overall appendix composed of the documents listed below	USACE	Fall 2013	Fall 2013	Review concurrent with STT review.
	Water Supply		Assess potential effects of Treaty alternatives on water supply for in-stream, irrigation, and municipal and industrial uses.	USACE contractor	Aug/Sept 2013		
	Recreation		Assess potential effects of Treaty alternatives on navigation at U.S. reservoirs and river reaches.	USACE contractor	Aug/Sept 2013		
	Navigation		Assess potential effects of Treaty alternatives on navigation at U.S. reservoirs and river reaches.	USACE contractor	Aug/Sept 2013		

11. REVIEW COSTS

To be determined.

12. PUBLIC PARTICIPATION

As part of the SPP as discussed in section 3c above, a stakeholder engagement strategy has been developed to help ensure the Treaty Review process is sensitive to stakeholder concerns, seeks to address those concerns, and works effectively to develop broad regional support for the recommendation. It is also the U.S. Entity's goal to ensure that stakeholders understand the rationale for the final Treaty recommendation to the DOS. Opportunities for stakeholder involvement include panel discussions with STT/SRT members, stakeholder listening sessions, team speakers at organizational or public meetings, topical fact sheets, and news media outreach. Additional information can be found at http://www.crt2014-2024review.gov/Default.aspx.

13. REVIEW PLAN APPROVAL AND UPDATES

NWD is responsible for approving this Review Plan. This Review Plan is a living document and may change as the study progresses. Minor changes to the review plan since the last Major Subordinate Command (MSC) Commander approval are to be 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 following the process used for initially approving the plan.

14. REVIEW PLAN POINTS OF CONTACT

Bill Abadie – USACE, Portland District, 503-808-4732, william.d.abadie@usace.army.mil
CJ Holt– USACE, Seattle District, 206-764-6073, cj.holt@usace.army.mil

ATTACHMENT 1: USACE PROJECT DELIVERY TEAM ROSTER

		Office	Role
CENWP			
	Matt Rea	PM	CRT Program Manager
	Bill Abadie	PM-F	EbF Project Manager
	Greg Smith	PM-E	EbF
	Rod Moritz	EC-HY	Estuary lead, navigation
	Jim Crain	EC-HY	Water temperature
	Jeff Walters	EC-HY	Water temperature
	Tina Lundell	EC-HR	Water quality
	Jacob Watts	EC-TG	Cartography
	Mike Ott	OD-NW	Navigation
	Jennifer Richman	OC	Counsel
CENWW			
	Margie McGill	PM-PD-PF	Project Manager
	Pete Poolman	PM-PD-PF	EbF technical lead
	Dean Holecek	PM-PD-EA	Fisheries
	Alice Roberts	PM-PD-PF	Cultural resources
CENWS			
	CJ Holt	PM-CP	Project Manager
	Leah Wickstrom	PM-CP	Support
	Beth Mccasland	PM-ER	EbF
	Greg Hoffman	OD-LI	EbF
	Kent Easthouse	EN-HH-WM	Water quality
	Karl Eriksen	EN-HH-HE	Sediment
	Lawr Salo	PM-ER	Cultural resources
	Margaret Chang	PM-PL	Support
	Jake Firle	PM-PL	Recreation
CENWD			
	Scott English	PDW-RC	Water quality tech lead
	Steve Juul	PDW-RC	Water quality
	Gail Celmer	PDD	Cultural resources
	Jack Camp	PDW-HP	Support
ERDC			
	Mike Schneider		Water Quality

STT and SRT rosters can be found at http://www.crt2014-2024review.gov/Files/STT_and_STT_Work_Group_Contact_List_061212.pdf and http://www.crt2014-2024review.gov/Files/Updated%20SRT%20Roster%20October%202012.pdf.

ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECSION 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 65-2-214. During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing US Army Corps of Engineers policy. The ATR also assessed the Regional Quality Control (RQC) documentation and made the determination that the DQC activities employed appear to be appropriate and effective.

SIGNATURE _____ Date _____

Name
ATR Team Leader
Office Symbol/Company

SIGNATURE _____ Date _____

Name
Project Manager
Office Symbol

SIGNATURE _____ Date _____

Name
Architect Engineer Project Manager[1]
Company, location

SIGNATURE _____ Date _____

Name
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 _____ Date _____

Name
Chief, Engineering Division
Office Symbol

SIGNATURE _____ Date _____

Name
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