COLUMBIA BASIN
FISH AND WILDLIFE AUTHORITY

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Coordinating and promoting effective protection and restoration of fish, wildlife, and their habitat in the Columbia River Basin.

The Authority is comprised of the following tribes and fish and wildlife agencies:

Burns Paiute Tribe

Coeur d'Alene Tribe

Confederated Salish and Kootenai Tribes of the Flathead Reservation

Confederated Tribes of the Colville Reservation

Confederated Tribes of the Umatilla Indian Reservation

Confederated Tribes of the Warm Springs Reservation

Confederated Tribes and Bands of the Yakama Nation

Idaho Department of Fish and Game

Kootenai Tribe of Idaho

Montana Department of Fish, Wildlife and Parks

National Marine Fisheries Service

Nez Perce Tribe

Oregon Department of Fish and Wildlife

Shoshone-Bannock Tribes of Fort Hall

Shoshone-Paiute Tribes of Duck Valley

U.S. Fish & Wildlife Service

Washington Department of Fish and Wildlife

Coordinating Agencies

Columbia River Inter-Tribal Fish Commission

Upper Columbia United Tribes

DATE: February 23, 2007

TO: Dr. Tom Karier, NPCC
Doug Marker, NPCC
Steve Waste, NPCC

FROM: Brian Lipscomb, Executive Director

SUBJECT: How the Collaborative Systemwide Monitoring & Evaluation Project (CSMEP) serves M&E Guidance of the Northwest Power and Conservation Council

On December 7th, Tom Iverson and David Marmorek were asked to give an update to the Northwest Power and Conservation Council (NPCC) on the Collaborative Systemwide Monitoring & Evaluation Project (CSMEP) activities at the December 13th NPCC meeting. After their presentation (shortened from 15 to 5 minutes due to a compressed NPCC agenda), NPCC Chair Tom Karier asked for a memorandum describing how CSMEP serves the NPCC's M&E Guidance, and the NPCC's need for evaluating M&E proposals. This memorandum provides a response to this request. We would be happy to provide further responses to any specific questions.

Background: CSMEP is a coordinated effort to collaboratively improve the quality and consistency of fish monitoring data, and the methods used to evaluate these data, and to answer key questions relevant to major decisions in the Columbia Basin. CSMEP grew out of M&E needs described in the NPCC's Program, and those of federal, state, and tribal fish and wildlife agencies. There is a pressing need for coordinating basin-wide monitoring of fish populations. CSMEP's technical and outreach efforts help to coordinate the M&E activities of federal, state, and tribal fish & wildlife agencies for reporting on status and trends, diagnosing the causes of trends through life cycle monitoring, and evaluating the effectiveness of management actions. These efforts in turn help to support the Fish Monitoring Group of PNAMP, the Ad Hoc Supplementation Workgroup, and others.

Led by the Columbia Basin Fish and Wildlife Authority (CBFWA), participants in CSMEP include: federal (NOAA, USFWS, BPA, EPA), state (IDFG, WDFW, ODFW), tribal (CRITFC, Nez Perce, Colville, Yakama, Umatilla, Coeur d'Alene), and regional entities (StreamNet, PNAMP), as well as expert consultants in facilitation and monitoring design (ESSA, Paulsen Environmental Research, Eco Logical Research, WEST Inc.). CSMEP has attracted excellent technical staff from the above entities, with strong interaction and internal peer review. CSMEP work products (see Table 1.) are presented for review and potential implementation to various management groups to ensure their relevance and practicality (e.g. NPCC, PNAMP, the WA Governor's Forum on Monitoring, and CBFWA). CSMEP work products are also reviewed by various technical groups to assess their scientific merit (e.g. Federal Caucus RME Group, Oregon Plan, Technical Recovery Teams, Harvest Manager Technical Advisory Committee, BiOp Remand Groups, the Ad Hoc Supplementation Workgroup, EPA EMAP, and the Army Corps' Fall Chinook Monitoring Group).

CSMEP does not have the regulatory authority to force changes in how fish population M&E is conducted throughout the Basin. Rather, it is a bottom-up effort to build consensus at a technical level across multiple agencies, so as to influence programmatic decisions on M&E at a higher level. CSMEP has done this quite successfully through a rigorous participatory process. CSMEP's recommendations will be conveyed to CBFWA for potential adoption by fish and wildlife managers, reviewed by the ISAB/ISRP, and passed to PNAMP for endorsement and application throughout the Pacific Northwest.

Examples of completed work products include: a systematic inventory and evaluation of the strengths and weaknesses of current monitoring data for assessing status and trends (available on an internet accessible database); the development of standardized sampling designs for status and trend monitoring using the EMAP master sampling approach (facilitating data summarization and aggregation); novel multi-year evaluation methods that permit assessments of smolt to adult return rates on provincial or sub-basin scales; and provincial scale analyses of the aggregate benefits of hundreds of habitat restoration projects on parr to smolt, as well as smolt to adult salmon survival. Ongoing work products include: development of integrated designs to use PIT tagged fish multiple times to address status & trend, habitat, hydro, hatchery and harvest questions; and systematic evaluation of the costs and benefits of current M&E for each of these functions (as well as lower, similar, and higher cost alternatives).

CSMEP began in October 2003 following strong endorsement by the ISRP, CBFWA, NPCC, and BPA in the Mainstem/Systemwide Review (fall 2002). The FY 2007-09 proposal also received very strong endorsement by the ISRP, which noted:

> "The proposal clearly describes the rationale and significance of the project to the Fish and Wildlife Program, BiOp, subbasin planning, and other large-scale monitoring programs such as the Pacific Northwest Aquatic Monitoring Partnership (PNAMP)... This project has made much progress in a relatively short time. It probably represents the most significant collaborative multi-species fish population monitoring effort in the Columbia River Basin, if not the entire US." (ISRP 2006-4b, pp. 188)

The Mainstem Systemwide Review Team recommended CSMEP as a Core Project, noting that:

> "CSMEP is accomplishing the Columbia River fish elements of the PNAMP work plan. This project has demonstrated high production and good coordination. It is likely the best program to coordinate and standardize RME and its partnership with PNAMP will assist in "marketing" standardization and agency acceptance."

The NPCC decided to fund CSMEP "for only 2 years (FY 07-08); Council expects a report for NPCC and science review, delivered by the end of FY 08" (NPCC Basinwide Recommendations Nov. 15, 2006)."

How CSMEP supports the NPCC's M&E Guidance: The "*Draft Guidance for Developing Monitoring and Evaluation as a Program Element in the Fish and Wildlife Program*" (NPCC 2006-4, March 2006) is a rich 52-page document with many comments and suggestions regarding different types of monitoring. The document points out correctly that "monitoring and evaluation is at the heart of adaptive management" (p. 5), stresses the importance of design (pp. 3-5) and shows the sequence of steps in adaptive management (p. 6). Figure 1. below is an adaptation of this figure which shows the role of CSMEP and other entities in the adaptive management cycle. CSMEP plays a critical role in ensuring that the M&E designs will in fact permit reliable evaluations and adjustments to management actions.

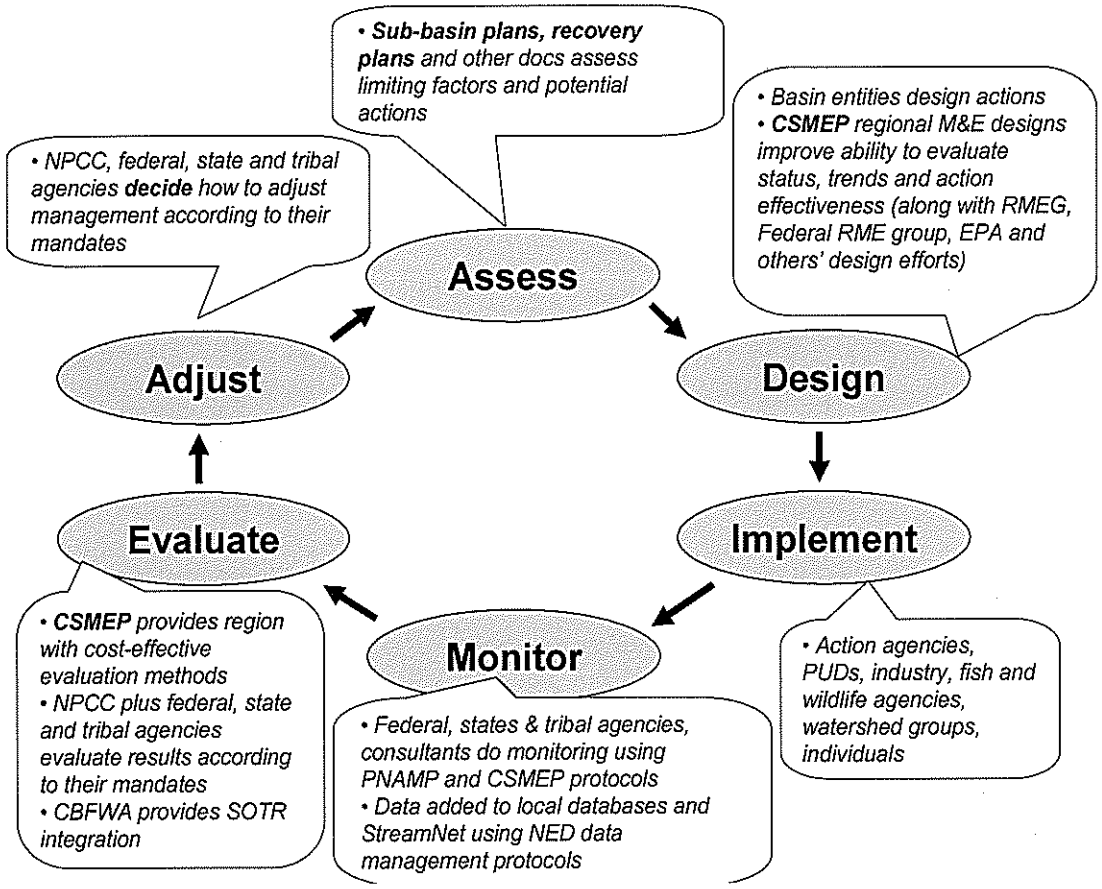

Figure 1. The adaptive management cycle, with example Basin entities included. The rigorous M&E designs being developed by CSMEP are essential for adaptive management. Modified from NPCC 2006-4.

Table 1. of NPCC 2006-4 (pp. 16-18) contains a summary of what the NPCC would like to know. We show below how CSMEP's work products are providing methods to answer these questions. These work products are described in detail in CSMEP annual reports and other documents available on the CSMEP web site (http://www.cbfwa.org/csmep/). In summary, CSMEP has made major strides in helping the NPCC to achieve many of its M&E objectives in the Basin, for status and trend monitoring as well as action effectiveness monitoring.

Table 1. How CSMEP is providing methods to answer the questions that the NPCC wants to know. Modified from NPCC 2006-4 (pp. 16-18).

Monitoring Component	What do we want to know?	Relevant CSMEP Work Products. See http://www.cbfwa.org/csmep/
Hydro System Survival & Uncertainty Research	Is juvenile and adult survival through the dams meeting passage objectives? What are the delayed effects of transportation and migration through	• Development of alternative M&E designs (across a range of costs) to assess smolt to adult return rates (SARs); mainstem survival rates, and transport to in-river ratios, on seasonal, annual, and multi-year time scales for population, sub-basin, ESU, and provincial scales. • Systematic evaluation of costs and benefits of these designs, including current smolt monitoring program.

Monitoring Component	What do we want to know?	Relevant CSMEP Work Products. See http://www.cbfwa.org/csmep/
	the hydro system?	• Integrated designs to use PIT tagged fish for hydro, habitat, hatchery, harvest, and status & trend needs. • Input to Corps design of fall Chinook studies, using the Data Quality Objectives process. • Interaction with Remand Compass group.
Tributary Habitat Trends	Are ecosystems improving or degrading relative to the conditions subbasin plans called for?	• Development of habitat monitoring protocols is being led by PNAMP entities (Steve Lanigan). • CSMEP is coordinating with EPA and PNAMP on use of the EMAP Master Sample approach for both habitat and fish monitoring.
Tributary Habitat Action Effectiveness	What types of projects are effective at addressing limiting factors?	• Development and evaluation of alternative action effectiveness designs for the Lemhi IMW (Intensively Monitored Watersheds) on a subbasin scale. • Development of a "Question Clarification Process" to assist managers of restoration programs in developing rigorous M&E plans to assess fish benefits, and to help NPCC in reviewing such plans. • Broad scale retrospective analyses of fish survival increases from habitat restoration projects using PIT-tags and other indices of fish survival, as well as an extensive BPA survey of habitat restoration projects. • Use of dam counts of smolts and spawners to obtain subbasin or provincial scale estimates of changes in smolt vs. spawner recruitment relationships.
Population Status and Trends	Are populations meeting objectives for abundance, productivity, spatial distribution and diversity?	• Systematic inventory and evaluation of the strengths and weaknesses of current monitoring data for assessing status and trends (internet accessible website). • Development and rigorous evaluation of the costs and benefits of alternative M&E designs for assessing population status and trends, viability and recovery, using different methods to estimate abundance, productivity, spatial distribution, and diversity. Comparison with status quo M&E. • Interaction with Interior and other Technical Recovery Teams to assess risks of decision errors. • Development of EMAP Master sample approaches for population status of salmonids and resident fish, for input into the Status Of The Resource (SOTR) and other summaries. • Integration of status and trend monitoring designs with action effectiveness monitoring for the 4 H's in Snake Basin Pilot. • Monitoring and performance measure cost estimation database. • Intensive interaction and coordination with other groups developing probabilistic designs (EPA EMAP, Oregon Plan, Wenatchee, USFWS RMEG, WA SFRB, PNAMP).
Hatchery Effectiveness	Does supplementation help rebuild populations?	• Development of alternative regional scale designs to assess the aggregate effects of hatcheries on fish

Monitoring Component	What do we want to know?	Relevant CSMEP Work Products. See http://www.cbfwa.org/csmep/
Hatchery Status and Trend Monitoring	What are hatchery numbers of salmon and steelhead relative to naturally spawning populations?	straying, and assessment of the relative reproductive success of supplemented vs. natural populations (in progress). • Interaction with an interagency hatchery supplementation workgroup. • Integrated design of PIT-tagging with status and trend, hydro, habitat and harvest monitoring designs as part of the Snake Basin Pilot.
Estuary Habitat Status and Trend	Is the Columbia estuary ecosystem improving or deteriorating relative to desired conditions?	• Not being addressed by CSMEP.
Harvest Trends	What is the harvest impact on Columbia populations?	• Assessment of the uncertainty in current estimates of harvest impact on listed stocks through commercial, tribal, and sport fisheries. • Development and evaluation of alternative methods to improve the precision of such estimates. • Integrated use of PIT-tags for harvest estimates, building on status quo and action effectiveness uses of such information.
Data Management	Establish an Internet-based system to disseminate the data needed to respond to these management questions.	• Input to StreamNet work plans. • Development of reliable sampling designs, monitoring protocols and evaluation methods for addressing these questions.
Basinwide and Province Evaluation	Are the individual actions in the various subbasins achieving the objectives at the basin and province levels?	• Development of status and trend designs using EMAP Master Sample approach. • Statistical comparison of bias and precision associated with alternative monitoring protocols (coordinated with PNAMP). • Contribution to Monitoring Information Pyramid • Broad scale retrospective analyses of fish survival increases from habitat restoration projects using PIT-tags and other indices of fish survival. • Use of dam counts of smolts and spawners to obtain subbasin or provincial scale estimates of changes in smolt vs. spawner recruitment relationships.
Reporting	Present status of populations relative to work funded by Program.	• Development of EMAP Master sample approaches for population status of salmonids and resident fish, for input into Status Of The Resource (SOTR) and other summaries.

Thank you for the opportunity to submit this information. If you have any questions or comments, please contact Tom Iverson, CBFWA at tom.iverson@cbfwa.org, or Ken MacDonald, CBFWA at ken.macdonald@cbfwa.org, or call 503/229-0191.

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