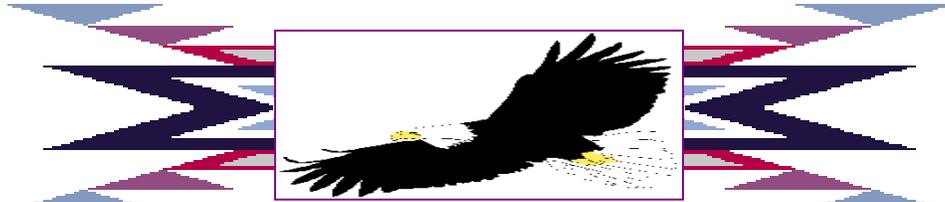


# UPPER COLUMBIA UNITED TRIBES

\*\*\* UCUT \*\*\*

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Colville \* Coeur d'Alene \* Kalispel \* Kootenai \* Spokane

May 27, 2004

Judi Danielson, Chair  
Northwest Power and Conservation Council  
851 S.W. Sixth Avenue, Suite 1100  
Portland, Oregon 97204-1348

RE: Recommended Measures for the Intermountain Province Plan

Dear Ms. Danielson:

Please accept these recommendations from the Upper Columbia United Tribes (UCUT) as components of subbasin plans for the Intermountain Province (IMP). Our support for the six IMP subbasin plans (Coeur d'Alene, Upper Columbia, Lake Rufus Woods, Pend Oreille, San Poil, and Spokane) is contingent upon the NPCC's adoption of the measures submitted with this letter.

This letter and attachments are intended to provide the Northwest Power and Conservation Council (NPCC) with the UCUT member Tribes' measures as required under sections 839b(h)(2) and 839b(h)(2)(A) of the Northwest Power Planning and Conservation Act (Act). In considering the enclosed measures for amendment into the Program, the NPCC should consider four important principles:

- 1) Consistency with the Northwest Power Act;
- 2) Consistency with past Program precedent and definition of measures;
- 3) Consistency with the deference required by the NPCC under applicable law to the recommendations of the Fish and Wildlife Managers and Tribes; and
- 4) Consistency with the legal rights of Indian Tribes and the federal government's unique trust relationship with the Tribes.

UCUT's member Tribes have participated in and support the full adoption of the IMP Plan as submitted to the NPCC for amendment into its Fish and Wildlife Program, with the enclosed measures as essential components of that plan. These measures: are supported by and consistent with the subbasin plans; have been developed in coordination with other fish and wildlife managers; and, are not in conflict with other fish and wildlife managers' efforts or strategies within the subbasin plans.

While UCUT supported the NPCC's retention of measures from previous Fish and Wildlife Programs pending the adoption of subbasin plans, we understand those previous measures sunset with the amendment of subbasin plans into the Program. Therefore, measures for the IMP Plan are intended to continue and supplement past program measures. Timely implementation of these measures will avoid pushing more species onto the endangered list and losing ground in recovery and mitigation for federal hydropower impacts.

Since subbasin planning incorporates goals broader than the Program's focused intent on addressing federal hydropower impacts, we are submitting measures for adoption as part of the IMP Plan. These measures specifically address BPA's obligations and responsibilities for fish and wildlife mitigation in the IMP, and full implementation is necessary to remain consistent with the Act and the NPCC Fish and Wildlife Program. It is UCUT's recommendation that the Council adopt these measures as submitted.

If the NPCC chooses not to accept these recommendations, section 839b(h)(7) of the Act requires the NPCC to fully explain, in writing, why it acted in opposition to the recommendations of the Tribes. We look forward to working with the NPCC members and staff, the Independent Scientific Review Panel and the Bonneville Power Administration to ensure the measures are understood and incorporated in the Fish and Wildlife Program. Please do not hesitate to contact UCUT Central Office or member Tribes to further discuss issues related to the IMP subbasin plan and our collective measures as submitted.

Thank you for your attention to this important matter.

Sincerely,

Warren Seyler,  
Chairman, UCUT

Enclosures

Judi Danielson, Chair, NWPCC  
May 27, 2004

Page 3.

cc: Jim Kempton  
Melinda Eden  
Gene Derfler  
Ed Bartlett  
John Hines  
Frank "Larry" Cassidy  
Tom Karier  
UCUT Member Tribes

## UCUT 2004 Fish and Wildlife Program Measures for Inclusion in the Intermountain Province Plan

### **Bonneville Power Administration**

1. Fund as a priority the measures described below to partially mitigate for salmon, steelhead and wildlife habitat losses incurred as a result of the construction and operation of Chief Joseph, Grand Coulee and Albeni Falls dams.
2. Develop a long-term funding agreement (or agreements) with the UCUT member tribes to implement specific measures at a reasonable pace. Such long-term funding agreement(s) - complete with fish and wildlife restoration metrics, limiting factors, and monitoring - will be refined once the subbasin plans and measures are approved.

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The following measures comprise the UCUT recommendations for the Intermountain Province (IMP) Plan:

### **Albeni Falls Dam Wildlife Mitigation (Coeur d'Alene, Kalispel, and Kootenai Tribes)**

1. To complete mitigation of Albeni Falls Dam construction and inundation losses to wildlife habitat, fund the implementing agency and Tribes (IDFG, KT, CDAT and KTOI), consistent with signed intergovernmental agreements, individual Memorandums of Agreement between each party and the Bonneville Power Administration, and the *Albeni Falls Wildlife Protection, Mitigation, and Enhancement Plan (IDFG 1987)* [Pend Oreille Subbasin Objectives (strategies) 1A1-8 (a), (b) and (c); Coeur d'Alene Subbasin Objectives (strategies) 1A1-8(a), (b), (c) and (d)].
2. Fund enhancement, operations and maintenance activities for projects crediting the Albeni Falls Dam losses consistent with the *Guidelines for Enhancement, Operation, and Maintenance Activities for Wildlife Mitigation Projects (CBFWA 1998)* [Pend Oreille Subbasin Objectives (strategies) 1A9 (a); Coeur d'Alene Subbasin Objectives (strategies) 1A9(a)].
3. Fund an operational loss assessment for Albeni Falls Dam and implement activities to mitigate designated losses [Pend Oreille Subbasin Objectives (strategies) 1B1-3 (a); Coeur d'Alene Subbasin Objectives (strategies) 1B1(a)].

## **Coeur d'Alene Tribe**

### *Wildlife Mitigation*

1. Where Resident Fish Substitution fails to meet obligations incurred due to anadromous and resident fish losses, substitute wildlife habitat acquisitions, wildlife habitat enhancements and wildlife population management activities in lieu of fish population and/or habitat enhancements (Coeur d'Alene Subbasin Aquatic Strategy 2B1.a, b, and c. and Spokane Subbasin Aquatic Strategy 2B1.a, b, and c.).

### *Coeur d'Alene Subbasin Resident Fish Substitution*

The Bonneville Power Administration will fund the Coeur d'Alene Tribe to implement watershed restoration efforts in the Coeur d'Alene subbasin as substitution for anadromous fish losses. These substitution efforts will be directed at recovering tributaries to Coeur d'Alene Lake using a watershed scale approach. This approach is justified since the production of resident salmonids is dependent on the integrity of watershed/ecosystem functions for all life history forms. Specific Measures are described below:

1. Enhance habitat on Alder, Benewah, Evans and Lake Creeks to achieve interim 25 percent, 50 percent, and final 75 percent habitat improvement targets by specified dates (Coeur d'Alene Subbasin Aquatic Objectives and Strategies 2A2.a, b, c, d, e, f, and g).
2. Provide interim harvest opportunities until such time as habitat measures can restore natural westslope cutthroat trout populations to productive self-sustaining levels (Coeur d'Alene Subbasin Aquatic Objectives and Strategies 2C1.a, b, c, 2C2.a, and b).
3. Purchase management rights to priority habitats within Alder, Benewah, Evans, Lake Creek and other watersheds of importance to resident salmonids through title acquisition, conservation easements, and/or long-term leases (Coeur d'Alene Subbasin Aquatic Objectives and Strategies 1B1.e, 2A1a, b, c, d, e, f, 2A2.a, b, c, 2B1.a, b, and c).
4. Use incentive programs for private landowners in focal watersheds to support native ecosystem/watershed function (Coeur d'Alene Subbasin Aquatic Objectives and Strategies 1B1.d, 2A1a, b, c, d, e, f, 2A2.a, b, c, and 2B1.c).
5. Protect and/or restore habitats acquired within the Coeur d'Alene Subbasin to the extent their condition is consistent with the 2000 Fish and Wildlife Program (Coeur d'Alene Subbasin Aquatic Objectives 2A1.a, b, c, d, e, f, 2A2.a, b, c, d, e, f, and 2B1.b)
6. Conduct research and monitoring to determine project effectiveness, identify critical uncertainties that currently constrain preservation and restoration planning, and refine objectives and/or targets as necessary

(Coeur d'Alene Subbasin Aquatic Objectives and Strategies 1A2.a, b, c, 1B1.a, b, c, 2A2.a, b, h, 2B1.a, b, c, 2C1.a, b, c).

7. The Tribe will conduct an educational/outreach program for private landowners, students and the general public within the Coeur d'Alene Reservation to facilitate a "holistic" watershed protection process.

#### *Spokane Subbasin Resident Fish Substitution*

Fund the Coeur d'Alene Tribe to implement watershed restoration efforts in the Hangman Watershed as substitution for anadromous fish losses. These substitution efforts will be directed at recovering the Hangman Watershed as a whole and not simply the restoration or enhancement of a single species since the production of resident salmonids depends heavily on the integrity of watershed/ecosystem functions. Watershed restoration efforts will involve the recovery of hydrologic functions disrupted by current land management practices, expansion of resident salmonid populations and restoration of wildlife habitats.

A priority of restoration of Hangman Creek is to connect isolated salmonid populations currently found in forested tributaries, and to provide for interim harvest opportunities until restoration is complete. In order to be successful, efforts must be directed at accomplishing the following.

Specific Measures are described below:

1. Assess the DNA composition of salmonid populations within the Hangman Watershed (Aquatic Strategy 2A1.a).
2. Determine distribution and abundance of resident salmonids in the Hangman Watershed (Aquatic Strategies 2A1.a,b, c, 2A2. a.).
3. Use species management (for example reduce competitors and set take limits) to increase distribution and abundance of desired resident salmonids in the Hangman Watershed (Aquatic Strategies 2A2. c, d, e, f, 2A3. f, and g.).
4. Address the habitat limiting factors for resident salmonids to increase the distribution and abundance of desired resident salmonids in the Hangman Watershed (Aquatic Strategies 2A3 a, b, c, d, e, h, 2B1 a, b, and c).
5. Purchase management rights to priority habitats in the Hangman Watershed through title acquisition, conservation easements, and/or long-term leases (Strategy 2A3 a, b, c, d, e, h 2B1.a).
6. Use incentive programs for private landowners in the Hangman Watershed to support native ecosystem/watershed function (Strategy 2A3 a, b, c, d, e, h, and 2B1.b).
7. Protect and/or restore habitats acquired within the Hangman Watershed to the extent their condition is consistent with the 2000 Fish and Wildlife Program (Strategy 2A3 a, b, c, d, e, h and 2B1.c).
8. Build "put and take" ponds and stock with rainbow trout to fulfill short-term needs for subsistence and recreational fishing opportunities (Strategy 2C1 a and b).

9. Conduct a Research, Monitoring, and Evaluation Program to assess restoration efforts.
10. Conduct research and monitoring to determine project effectiveness, identify critical uncertainties that currently constrain preservation and restoration planning, and refine objectives and/or targets as necessary (Spokane River Subbasin Aquatic Strategies 2A1-4.b, c, 2A2.a, and 2A3.a.).

## **Colville Confederated Tribes**

### *Terrestrial Measures*

1. As partial mitigation for the construction and inundation of Grand Coulee and Chief Joseph acquire enough land to mitigate wildlife habitat losses from the construction and inundation of Grand Coulee and Chief Joseph hydropower projects within the next 5 years on the Colville Reservation.
  - Upper Columbia:
    - Obj. 1A1-1A9 a,b;
  - San Poil:
    - Obj. 1A1-1A9 a,b,c,d;
  - Lake Rufus Woods:
    - Obj. 1A1-1A10 a,e,f;
2. Develop a detailed site-specific management plan to address habitat protection, restoration, and enhancement with monitoring measures for all habitat acquisitions in the current Tribal mitigation program for the life of those projects (boundary fencing projects, HEP and noxious weed surveys, etc.).
  - Upper Columbia:
    - Obj. 1A1-1A9 a,b,c;
  - San Poil:
    - Obj. 1A1-1A9 a,b,c,d;
  - Lake Rufus Woods:
    - Obj. 1A1-1A10 a,b,c,d,e,f;
3. Conduct a feasibility study to determine if sage grouse can be reintroduced and maintain a viable meta-population on the Colville Reservation.
  - Upper Columbia:
    - Obj. 1A7 a,b,c; 1B1 a; 1B2 a; 2B1 a,b,c,d,e,f,h,i
  - San Poil:
    - Obj. 1A7 a,b,c,d; 1B1 a; 1B2; 2A3 a,b,c,d; 2A4 a,b,c; 2B2 a,b,c,d,e,f;
  - Lake Rufus Woods:
    - Obj. 1A2 a,b,c,d,e,f; 1B1 a,b; 1B2; 2A3 a,b,c,d,e,f; 2A4 a,b; 2B a,b; 2B1 a;

4. Continue ongoing sharp-tailed grouse habitat restoration, protection, and augmentation of existing populations to meet objectives identified in the Rufus Woods, San Poil, and Upper Columbia subbasin plans.
  - Upper Columbia:
    - Obj. 1A5 a,b,c; 1A8 a,b,c; 1B1 a; 1B2 a; 2A2 a,b,c; 2B1 a,b,c,d,e,f,h,i
  - San Poil:
    - Obj. 1A5 a,b,c,d; 1A8 a,b,c,d; 1B1 a; 1B2; 2A2 a,b,c,d; 2A4 a,b,c; 2B2 a,b,c,d,e,f
  - Lake Rufus Woods:
    - Obj. 1A1 a,b,c,d,e,f; 1B1 a,b; 1B2; 2A2 a,b,c,d,e,f; 2A4 a,b; 2B a,b; 2B1 a;
  
5. Continue adequate funding for Tribal mitigation maintenance and operation activities for lands enrolled into the mitigation program for the life of the above hydropower projects.
  - Upper Columbia:
    - Obj. 1A1-1A9 a;
  - San Poil:
    - Obj. 1A1-1A9 a;
  - Lake Rufus Woods:
    - Obj. 1A1-1A10 d;
  
6. Evaluate and provide sufficient long-term quality and quantity habitat for elk, mule and white-tailed deer populations to provide current and future subsistence use to compensate for anadromous fish losses to the Colville Confederated Tribes
  - Upper Columbia:
    - Obj. 1A1-1A9 a,b,c; 1B1 a; 1B2 a,b; 2B1 a,b,c,d,e,f,h,i; 2B2 a,b,c,d,e,f,g;
  - San Poil:
    - Obj. 1A1-1A9 a,b,c,d; 1B1 a; 1B2; 2A4 a,b,c; 2B2 a,b,c,d,e,f; 2B3 a,b,c,d,e,f,g,h,i,j; 2B4 a,b,c,d,e,f; 2B5 a,b,c,d,e,f,g,h
  - Lake Rufus Woods:
    - Obj. 1A1-1A10 a,b,c,d,e,f; 1B1 a,b; 1B2; 2A4 a,b; 2B a,b; 2B1 a; 2B2 a,b,c,d,e,f,g,h
  
7. Assess, enhance and protect non-game species and specialized habitats affected by the construction and inundation of the federal hydropower projects (neotropical and resident song birds, small mammals, amphibian, and reptile species etc.).
  - Upper Columbia:
    - Obj. 1A1-1A9 a,b,c; 1B1 a; 1B2 a,b; 2A1 a,b,c; 2A2 a,b,c; 2A3 a,b,c; 2A4 a,b; 2B1 a,b,c,d,e,f,g,h,i; 2B2 a,b,c,d,e,f,g;
  - San Poil:

- Obj. 1A1-1A9 a,b,c,d; 1B1 a; 1B2; 2A1 a,b,c,d; 2A2 a,b,c,d; 2A3 a,b,c,d; 2A4 a,b,c; 2A5 a,b,c; 2B1 a,b,c; 2B2 a,b,c,d,e,f; 2B3a,b,c,d,e,f,g,h,i,j; 2B4 a,b,c,d,e,f; 2B5 a,b,c,d,e,f,g,h;
  - Lake Rufus Woods:
    - Obj. 1A1-1A10 a,b,c,d,e,f; 1B1 a,b; 1B2; 2A1 a; 2A2 a,b,c,d,e,f; 2A3 a,b,c,d,e,f; 2A4 a,b; 2B a,b; 2B1 a; 2B2 a,b,c,d,e,f,g,h
  
- 8. In conjunction with Tribal Fisheries, assess, protect, enhance and restore identified riparian and island habitats along tributaries adjacent to and including the Columbia River within the bounds of the Colville Reservation to enhance both fish and wildlife species and habitats.
  - Upper Columbia:
    - Obj. 1A1 a,b,c; 1A2 a,b,c; 1A4 a,b,c; 1A5 a,b,c; 1A6 a,b,c; 1A8 a,b,c; 2A1 a,b,c; 2A2 a,b,c; 2B1 a,b,c,d,e,f,g,h,i;
  - San Poil:
    - Obj. 1A1 a,b,c,d; 1A2 a,b,c,d; 1A4-1A6 a,b,c,d; 1A8 a,b,c,d; 2A1 a,b,c,d; 2A2 a,c; 2B3 a,b,c,d,e,f,g,h,i,j;
  - Lake Rufus Woods:
    - Obj. 1A1 a,b,c,d,e,f; 1A4 a,b,c,d,e,f; 1A7 a,b,c,d,e,f; 2A1 a; 2A2 a,b,c,d,e; 2B a,b; 2B1 a;
  
- 9. Conduct a study to reintroduce and maintain a viable population of pronghorn antelope on the Colville Reservation as a traditional/cultural subsistence species to offset impacts to other ungulate populations from anadromous fish losses.
  - Upper Columbia:
    - Obj. 1A2-1A9 a,b,c; 1B1 a, 1B2 a,b; 2B1 a,b,c,d,e,f,g,h,i; 2B2 a,b,c,d,e,f,g
  - San Poil:
    - Obj. 1A2-1A9 a,b,c,d; 1B1 a, 1B2, 2A4 a,b,c; 2B2 a,b,c,d,e,f; 2B3 a,b,c,d,e,f,g,h,i; 2B5 a,b,c,d,e,f,g,h;
  - Lake Rufus Woods:
    - Obj. 1A1-1A2 a,b,c,d,e,f; 1A5-1A8 a,b,c,d,e,f; 1B1 a,b; 1B2; 2A2 a,b,c,d,e; 2A3 a,b,c,d,f; 2A4 a,b; 2B a,b; 2B1 a; 2B2 a,b,c,d,e,f,g,h;
  
- 10. Conduct long-term wildlife monitoring program to assess effectiveness of protection, restoration, and enhancement activities for species and habitats.
  - Upper Columbia:
    - Obj. 1A1-1A9 c; 2A1 c,
  - San Poil:
    - Obj. 1A1-1A9 d; 2A1 d; 2A2 c; 2A3 d; 2A4 c; 2A5 b; 2B2 d; 2B3 h; 2B4 f;
  - Lake Rufus Woods:
    - Obj. 1A1-1A10 c; 2A1 a; 2A2 c; 2A3 b; 2A4 b; 2B2

*Aquatic measures*

11. Operate, maintain, monitor, and evaluate the production of a minimum of 50,000 pounds of trout annually at the Colville Tribal Trout Hatchery that are stocked in waters on or surrounding the Colville Reservation. (This measure is consistent with Provincial Level Objective 2C1 and all associated strategies in the San Poil, Rufus Woods and Upper Columbia subbasins)
12. Monitor and research methods to manage fish entrainment at federal hydropower and irrigation projects in cooperation with the Army Corp of Engineers and Bureau of Reclamation. (This measure is consistent with Rufus Woods subbasin Objectives 2D2, 1B2, 1B1, 1A1 and respective strategies I, a and d, e and l, e. and Upper Columbia subbasin objective 1A1 strategies b, c, & d.)
13. Develop artificial production programs, including monitoring and evaluation, to increase abundance, distribution and diversity of natural-origin kokanee stocks in the San Poil River and Nespelem River systems in conjunction with reintroducing kokanee throughout their native range in tributaries of Lake Roosevelt and Lake Rufus Woods. (This measure is consistent with Provincial Level Objective 2A1 2A2, 2C2 along with the associated strategies in the San Poil, Rufus Woods and Upper Columbia subbasins)
14. Operate and maintain net-pen operations and fish purchase programs to enhance the harvest opportunities in Lake Roosevelt and Lake Rufus Woods. Monitor and evaluate these efforts for cost-effectiveness and biological/ecological performance to optimize harvest benefits. (This measure is consistent with Rufus Woods subbasin objectives 2A3, 2C2, 2D2 and strategies a, b, d along with Upper Columbia subbasin Objective 2C1 strategy b.)
15. Study the genetic distribution of redband trout throughout the intermountain province in coordination with other co-managers. (This measure is consistent with San Poil subbasin objective 2A2, strategy e.)
16. Research the distribution and habitat utilization of benthic fishes in Lake Roosevelt and Lake Rufus Woods. (This measure is consistent with objective 1A2, strategies b, c, & d in the Rufus Woods subbasin and objective 2A2, strategy a in the Upper Columbia subbasin.)
17. Construct, implement, monitor, and maintain permanent littoral areas along Lake Roosevelt that are unaffected by reservoir pool elevations and/or develop structures or seeding programs that provide a sustainable surrogate for littoral habitats along exposed shorelines. (This measure is consistent with all strategies listed under objective 1A2 for the Upper Columbia subbasin)
18. Enhance and monitor/evaluate the physical habitat, water quality, and biotic communities of lakes and lake tributaries located in the Colville Reservation.

(This measure is consistent with Provincial Level Objective 1B and associated strategies in the San Poil, Rufus Woods and Upper Columbia subbasins)

19. Replace, remove, or enhance man-made barriers to fish migration in the tributaries to San Poil River, Lake Roosevelt, and Lake Rufus Woods including the Mainstem Columbia River. Monitor and evaluate the results of these actions. . (This measure is consistent with Subbasin objective 1B1 in the San Poil and Rufus Woods subbasins and all associated objectives. In the upper Columbia subbasin the measure would be consistent with all strategies under Objective 1B1 and strategy f under objective 1B2)
20. Improve the physical habitat and water quality in the San Poil River and its tributaries and work in coordination with the San Poil Watershed Work Team and private landowners to restore and protect areas identified in the QHA analysis for the focal species in the San Poil Subbasin. Improve the quality of habitat assessment data and collect data in areas where data gaps currently exist. (This measure is consistent with Subbasin objectives 1B1, 1B2, 1B3, 1B4, 1B5,1B6, and 1B7 and associated strategies in the San Poil subbasin)
21. Conduct long-term monitoring of land use impacts and other limiting factors identified in tributaries to the San Poil River, Lake Roosevelt, and Lake Rufus Woods. (This measure would be used to monitor and evaluate activities implemented to meet Provincial level Objective 1B associated subbasin level objectives and strategies in the San Poil, Rufus Woods and Upper Columbia subbasins)
22. Determine minimum in-stream flow requirements for target species in tributaries to Lake Roosevelt and Lake Rufus Woods. (This measure is consistent with objectives 1A1, 1B2, 1B6, 1B7 strategies g, c, e, c in the Rufus Woods subbasin and objectives 1B1, 1B2, 1B3, 1B8, strategies c, j, g, c in the Upper Columbia subbasin.)
23. Conduct a feasibility analysis for anadromous fish reintroductions above Chief Joseph Dam. This study should not be limited to, but include: 1) available habitat, 2) species interactions with existing fish communities, 3) survival studies and habitat utilization for adult and juvenile life histories, 4) analysis of both full and limited passage (trap and haul) passage options both up and down stream that includes passage mortality estimates, and cost estimation for construction or infrastructure needs. (This measure is consistent with Provincial Level Objective 2D1 and associated strategies in the San Poil, Rufus Woods and Upper Columbia subbasins)
24. Implement measures deemed feasible in 23 (above) to reintroduce anadromous fish above Chief Joseph Dam using the best available hatchery stocks. Monitor and evaluate activities and use adaptive management to restore this population to harvestable levels using an open process and collaborative efforts of the co-

managers and other local stakeholders. (This measure is consistent with all strategies listed under objective 1A1 for the Rufus Woods subbasin)

25. Improve the physical habitat and water quality in the Rufus Woods subbasin and work in coordination with the Subbasin Work Teams to restore and protect areas identified in the QHA analysis for the focal species. Improve the quality of habitat assessment data and collect data in areas where data gaps currently exist. (This measure is consistent with all objectives and strategies listed under Provincial Objective 1B for the Rufus Woods subbasin)
26. Monitor and evaluate the resident fish communities in Lake Rufus Woods. Determine a baseline for abundance, species and genetic diversity, habitat utilization, food-web dynamics and species interactions that can be used to develop long-term trend data and help to evaluate the success or failure of the combined implemented actions and improve management decisions. (This measure is consistent with objective 1A1, strategy a in the Rufus Woods subbasin)
27. Continue to implement white sturgeon recovery measures in Lake Roosevelt as identified in the *Upper Columbia White Sturgeon Recovery Plan*. (This measure is consistent with objective 2C1, strategy c in the Rufus Woods subbasin)
28. Conduct research on the population status, distribution and habitat preference of burbot in Lake Roosevelt and Lake Rufus Woods. (This measure is consistent with objective 1A2, strategies b, c, & d in the Rufus Woods subbasin and objective 2A2, strategy a in the Upper Columbia subbasin.)

### **Kalispel Tribe**

1. As partial mitigation for anadromous fish losses, operate and maintain a warm water low-capital bass hatchery on the Kalispel Indian Reservation. Mark all hatchery production. Monitor success of hatchery stocking program [Pend Oreille Subbasin Objectives (strategies) 2C1(a)].
2. As partial mitigation for anadromous fish losses, complete advanced designs, and construct, operate and maintain habitat improvement projects to enhance bull trout and westslope cutthroat trout in all tributaries of the Pend Oreille Subbasin. The Kalispel Tribe will prioritize tributaries for habitat improvements and implementation schedules, and develop detailed biological objectives for each tributary [Pend Oreille Subbasin Objectives (strategies) 2A1(a), 2A3 (a) and (b); 1B1 (a), (c), and (d); 1B4 (a) and (b); 1C1 (a) and (g); 1C5 (a)].
3. As partial mitigation for anadromous fish losses, collaborate with the U.S. Forest Service, Idaho Department of Fish and Game, and Washington Department of Fish and Wildlife to remove exotic brook trout within tributaries of the Pend

Oreille River Subbasin so as to enhance bull and westslope cutthroat trout [Pend Oreille Subbasin Objectives (strategies) 2A2(a); 1C5(a)].

4. As partial mitigation for anadromous fish losses, construct, place, and monitor the effectiveness of artificial cover structures to increase the amount of bass fry winter cover in the lower Pend Oreille River [Pend Oreille Subbasin Objectives (strategies) 2C1(b)].
5. As partial mitigation for anadromous fish losses, conduct a long-term monitoring program to assess effectiveness of bull and cutthroat trout habitat improvements in tributary streams [Pend Oreille Subbasin Objectives 2A1(a), 2A3(a) and(b); 1C5(a)].
6. As partial mitigation for anadromous fish losses, fund a cooperative project among the Confederated Colville Tribes, Kalispel Tribe, Spokane Tribe, and the Washington Department of Fish and Wildlife to assess stock status of resident fish species and associated habitats in the areas above Chief Joseph and Grand Coulee Dams [Pend Oreille Subbasin Objectives (strategies) 2A1(a), 2A3 (a) and (b); 1B1 (a), (b) and (c); 1B2 (b), (c) and (d); 1B3 (a)].

Phase I. Assess existing data and develop a database, identify data gaps and develop standardized data collection methodologies.

Phase II. Conduct field sampling to gather the needed data, assess data and identify management, protection and recovery efforts.

Phase III. Implement management, protection, recovery, monitoring and evaluation.

7. As partial mitigation for anadromous fish losses, purchase management rights and enhance habitat in critical watershed areas (riparian corridors and associated uplands) along tributaries within the Pend Oreille Subbasin to benefit fish and wildlife resources [Pend Oreille Subbasin Objectives (strategies) 2B1; 1B1 (a); 1B4 (a); 1B8 (a)].
8. As partial mitigation for anadromous fish losses and in collaboration with the U.S. Fish and Wildlife Service and Washington Department of Fish and Wildlife, investigate the feasibility of a conservation aquaculture facility for westslope bull and cutthroat trout. Construct, operate and maintain this facility based upon positive findings of feasibility study [Pend Oreille Subbasin Objectives (strategies) 2A1(b); 1B1 (a); 1B4 (a)].

### **Kootenai Tribe of Idaho**

Note: In addition to measures submitted above (Albeni Falls Dam Wildlife Mitigation) for the IMP, the Kootenai Tribe of Idaho developed other measures included in subbasin plans developed by or with the participation of the Kootenai Tribe of Idaho.

## Spokane Tribe of Indians

### *Aquatic measures*

1. As partial mitigation for anadromous fish losses, fund a cooperative project among the Spokane Tribe of Indians, Confederated Colville Tribes and the Washington Department of Fish and Wildlife to monitor and evaluate the Lake Roosevelt biota to assess the effectiveness and impacts of artificial production measures, effects of exotic introductions, and determine impacts of reservoir operations on native species and on achieving biological objectives outlined for Lake Roosevelt (Table 2). (Upper Columbia Subbasin Objectives (strategies) 1A2 (c), 1A3 (e), 1A4 (a), 1A5 (d), 1B2 (k), 1B4 (b), 2A1 (c, d), 2A2 (a, b, c M&E, e), 2B, 2C1 (a, b, f), Research, monitoring and evaluation plan. Spokane Subbasin Objectives 1B2 (j), 2C2 (c)).
  - Conduct a year-round reservoir-wide creel survey to assess the efficacy of the artificial production program. (Upper Columbia Subbasin Objectives (strategies) 2A1 (a), 2A2 (b, c), 2C1 (e). Spokane Subbasin Objectives 1A1 (a, b), 2A1 (b, c), 2A2 (a), 2C1 (a, b) Research, monitoring and evaluation plan)).
  - Conduct relative-abundance surveys by electrofishing, hook and line, gill netting, trawling or other appropriate sampling methodologies to collect fisheries population, life history and diet information. (Upper Columbia Subbasin Objectives (strategies) 1B2 (c, d), 2A1 (a, c), 2A2 (a, b, c), 2C1 (e). Spokane Subbasin Objectives: 1A1 (a, b); 1B1 (a), 2A1 (a, b, c), 2A2 (a)).
  - Conduct water quality, hydrology and productivity surveys to determine physical, chemical, and biological effects on zooplankton biomass available for fish consumption and to complete modeling efforts. (Upper Columbia Subbasin Objectives (strategies) 1A1 (a, b), 1A2 (a, b, d), 1A3 (a, b, d, e), 1B2 (h, i). Spokane Subbasin Objectives 1B2 (e), 1B3 (e, h, j), 1B4 (b), 1B6 (a), 1B7 (a, b, c)).
  - Complete a Lake Roosevelt ecology model to determine effects of changing hydro-operations, water retention time, water quality and predation on productivity in Lake Roosevelt. (Upper Columbia Subbasin Objectives (strategies) 1A1 (a, b), 1A2 (b, d), 1A3 (a, b, d), 1B2 (h, i). Spokane Subbasin Objectives 1B2 (e), 1B3 (e)).
  - Conduct mark-recapture studies of the artificial production program to determine release strategies that maximize harvest and adult returns. (Upper Columbia Subbasin Objectives (strategies) 1A1 (a, b), 1B2 (c), 2A1 (a, c), 2A2 (c). Spokane Subbasin Objectives 1B7 (b)).
  - Map the availability of fish habitat in Lake Roosevelt at various lake elevations to determine shifts in habitat availability at changing lake levels. (Upper Columbia Subbasin Objectives (strategies) 1A2 (a), 1B2 (h), 2A1 (a), 2A2 (a, b). Spokane Subbasin Objectives 1B1 (a), 1B2 (i), 1B7 (a, b, c)).
  - Develop a Lake Roosevelt Management Plan to guide management decisions. (Upper Columbia Subbasin Objectives (strategies) 1A2 (c), 1A3

- (e), 2A1 (b, c, d), 2A2 (a, b, d, e), 2C1 (a, b, d, e, f). Spokane Subbasin Objectives 1B2 (c), 2A2 (a, d, e, f), 2A3 (f, g), 2C2 (c)).
- ❑ Collect macroinvertebrate community data to monitor temporal-spatial physical, chemical, and population indices. (Upper Columbia Subbasin Objectives (strategies) 2A1 (a, b), 1A2 (a, c, d); Spokane Subbasin Objectives 1B1 (d, i), 1B7 (a, c, d)).
2. As partial mitigation for resident fish losses, fund a cooperative project among the Spokane Tribe of Indians, Confederated Colville Tribes and the Washington Department of Fish and Wildlife to complete a baseline assessment of white sturgeon populations and associated habitats in Lake Roosevelt from Grand Coulee Dam to the international border, including the Spokane Arm of Lake Roosevelt. (Upper Columbia Subbasin Objectives (strategies) 2A1 (a), 2A2 (a, c, d, e), 2B, 2C1 (a, c); Spokane Subbasin Objectives 1A1 (a, b), 2C1 (a, b), 2C2 (a, c), Research, monitoring and evaluation plan).
    - ❑ Complete assessments of current population size, abundance of each age class, age/length frequency, recruitment rate, mortality, distribution and migration patterns, life history, habitat use, environmental factors affecting abundance. (Upper Columbia Subbasin Objectives 2C1 (c). Spokane Subbasin Objectives 1A1 (a, b)).
    - ❑ Assess feasibility for a conservation artificial production facility. (Upper Columbia Subbasin Objectives (2A1 (a), 2A2 (c, d, e), 2C1 (a, c). Spokane Subbasin Objectives 2C1 (a, b), 2C2 (a, c)).
    - ❑ Implement research, monitoring, evaluation and recovery measures using the Upper Columbia White Sturgeon Recovery Initiative plan as a guide. (Upper Columbia Subbasin Objectives 2A1 (a), 2A2 (a, c, d, e), 2B, 2C1 (a, c). Spokane Subbasin Objectives 1A1 (a, b), 2C1 (a, b), 2C2 (a, c)).
  3. Operate Grand Coulee Dam as recommended by the Northwest Power and Conservation Council's Mainstem Amendments to the Columbia River Basin Fish and Wildlife Program (2003). (Upper Columbia Subbasin Objectives (strategies) 1A1 (a, b, c, d); Spokane Subbasin Objective (strategies): 1A1 (c)).
  4. Assess genetic distribution of redband trout and other native species throughout the intermountain province in coordination with fisheries co-managers (Upper Columbia Subbasin Objectives (strategies) 1C1 (a), 2A1 (a); Spokane Subbasin Objective (strategies): 1C1 (a), 2A1 (a-c)).
  5. As partial mitigation for anadromous fish losses enhance and monitor/evaluate water quality, productivity, habitat, and fish communities of lakes and tributaries on and adjacent to the Spokane Indian Reservation. (Spokane Subbasin Objectives (strategies) 1B1 (a-e), 1B2 (a-g) 1B3 (a-j), 1B4 (a-h), 1B5 (a-c), 1B6 (a, b), 1C4 (a-d), 1C6, 2A1 (a-c), 2A2, (a-f), 2A3 (a-h), 2B1 (a-c), 2C1 (a-b), 2C2 (a-c), 2C3 (b)).

6. Support objectives to assess feasibility for anadromous fish reintroductions above Chief Joseph Dam and Grand Coulee Dam (Upper Columbia Subbasin Objectives (strategies) 2D1 (a, b), 2D2; Spokane Subbasin Objectives 2D1 (a, b), 2D2).
7. Assist in funding transboundary water quality issues and monitoring and implementation of water quality strategies that benefit the upper Columbia River and its tributaries, including alternative reservoir operation scenarios. [Spokane Subbasin Objectives (strategies) 1B3 (h, i, j), 1B5 (a, b)].
8. Operate and maintain Lake Roosevelt and Banks Lake artificial production program (Spokane Tribal, Sherman Creek and Ford Trout Hatcheries and Lake Roosevelt Net Pen Project) to continue production of kokanee salmon and rainbow trout. [Upper Columbia Subbasin Objectives (strategies) 2A1 (b, d), 2A2 (b, c, d, e), 2C1 (a, b, d, f); Spokane Subbasin Objectives (strategies) 2C1 (a, b), 2C3 (b, f)].
9. Perform baseline investigation to assess current status of kokanee salmon populations, determine and implement habitat improvement necessary to achieve wild kokanee salmon biological objectives and develop harvest management regulations to protect wild kokanee salmon. Upper Columbia Subbasin Objectives (strategies) 1A1 (a, b, d), 1A2 (a-d), 1A3 (a-e), 1A5 (a-d), 1B2 (a-k), 1B3 (a-g), 1B6 (a-e), 1B7 (a-g), 1B8 (a-d) 2A1 (a-d), 2A2 (a-e); Spokane Subbasin Objectives (strategies) 1A1 (a, b), 1B1 (a-e), 1B2 (a-j), 1B4 (a-h), 1B5 (a-c), 1B7 (a-e), 1C4 (a), 2A1 (a-c), 2A2 (a-f), 2A3 (a-h), 2C2 (a), 2C3 (b, f)).
10. Complete habitat improvements in selected tributaries to improve passage and habitat for sensitive salmonid species. [Upper Columbia Subbasin Objectives (strategies) 1A1 (a, b, d), 1A2 (a-d), 1A3 (a-e), 1A5 (a-d), 1B2 (a-k), 1B3 (a-g), 1B6 (a-e), 1B7 (a-g), 1B8 (a-d) 2A1 (a-d), 2A2 (a-e); Spokane Subbasin Objectives (strategies) 1A1 (a, b), 1B1 (a-e), 1B2 (a-j), 1B4 (a-h), 1B5 (a-c), 1B7 (a-e), 1C4 (a), 2A1 (a-c), 2A2 (a-f), 2A3 (a-h), 2C2 (a), 2C3 (b, f)].

*Terrestrial measures*

11. Complete mitigation for the construction and inundation losses of wildlife habitat, as defined in the Wildlife Protection, Mitigation and Enhancement Planning for Grand Coulee Dam (Final Report 1986). (Upper Columbia Subbasin Objectives 1A1 through 1A9, 2C2; Spokane Subbasin Objectives 1A1 through 1A9; 2B3).
12. Conduct annual Operation and Maintenance activities on lands that are acquired as wildlife mitigation (consistent with the CBFWA Wildlife Operation, Maintenance, and Enhancement Guidelines). [Upper Columbia Subbasin Objectives (strategies) 1A (a, c); Spokane Subbasin Objectives 1A10, 1A11].

13. Conduct annual Monitoring and Evaluation activities on lands that are acquired through wildlife mitigation. [Upper Columbia Subbasin Research, Monitoring and Evaluation Plan; Spokane Subbasin Research, Monitoring and Evaluation Plan].
14. Implement as partial mitigation a Sharp-tailed Grouse Restoration Project on the Spokane Indian Reservation. [Upper Columbia Subbasin Objectives (strategies) 1A8 (a, b, c) and 2A2; Spokane Subbasin Objectives 1A8 and 2A2].
15. Conduct a terrestrial operational loss assessment for Grand Coulee Dam, develop a mitigation plan, and implement projects as mitigation for identified losses. [Upper Columbia Subbasin Objectives 1B1 and 1B3; Spokane Subbasin Objectives 1B1 through 1B3].

## **Biological Objectives**

### **Coeur d'Alene Tribe**

#### *Coeur d'Alene Subbasin*

##### Restoration

The Coeur d'Alene Tribe will implement habitat restoration and enhancement measures primarily in Lake, Benewah, Evans and Alder Creeks located within the Coeur d'Alene Indian Reservation. Projects will be prioritized based on their potential for fostering long-term ecological recovery and will be pursued in locations that restore habitat linkages to highly productive habitats.

Strategies include:

- 1) removing or modifying those land use impacts that are causing habitat degradation,
- 2) re-establishing riparian/stream linkages and removing barriers to fish passage,
- 3) restoring natural ecosystem processes and riparian plant communities,
- 4) improving stream channel stability through restoration of incised stream reaches,
- 5) reduction of sediment mobilization and transport from upland sources, and
- 6) improving instream habitat complexity.

##### Harvest

These measures will be addressed in a phased approach that provides interim fishery benefits while the risks of hatchery production to natural fish can be developed and refined based on evaluations of critical uncertainties.

Strategies include:

1. Phase 1 involves immediate provision of harvest opportunities through the use of a hatchery to produce or grow out trout for release into isolated catch out ponds that provide a 'put and take' sport fishery on the reservation.
2. Phase 2 provides a put-and-take cutthroat trout fishery in reservation streams currently lacking natural populations. A hatchery will produce captive-reared progeny of wild parents for release into streams for put-and-take cutthroat trout fisheries.
3. Phase 3 will address the feasibility of utilizing hatchery production to conserve wild populations and re-establishing and creating populations where they currently do not exist.

### Habitat Acquisition

1. Implement plans to purchase or acquire conservation easements on high priority land that includes specific riparian and/or wetland habitat or other habitats that exert a demonstrable influence on processes affecting the abundance and distribution of target species. These lands would then be managed in perpetuity specifically for fish and wildlife production. Other incidental uses would have to be compatible with those purposes, as determined by supporting biological information.

### Research Monitoring and Evaluation

The Tribe will pursue a research, monitoring and evaluation (RM&E) program to identify and resolve critical uncertainties relative to the response of westslope cutthroat trout populations to habitat improvements and the ability of natural populations to provide harvest opportunities to offset anadromous fish losses (*see box 1*).

Strategies include:

1. measure a core set of physical, chemical and biological variables at a number of stratified, randomly selected "control" and treatment sites in target tributaries,
2. measure the annual production of cutthroat trout in target streams and evaluate changes in production relative to habitat modifications,
3. evaluate the effectiveness of brook trout removal strategies in Alder and Benewah creeks and monitor the response of cutthroat populations,
4. measure life-stage survival rates of adfluvial westslope cutthroat trout in stream and lake environments using mark-recapture techniques;
5. measure the annual production of non-native species (e.g. northern pike, largemouth and smallmouth bass) that prey on adfluvial westslope cutthroat trout in Coeur d'Alene Lake.

Adaptive management strategies will be implemented based on the results of RM&E work to improve the long-term success of Program measures.

### Education and Outreach

1. The Tribe will conduct an educational/outreach program for private landowners, students and the general public within the Coeur d'Alene Reservation to facilitate a "holistic" watershed protection process.

#### **Box 1: Critical Uncertainties Regarding Cutthroat Trout Use, Limiting Factors, and Restoration**

1. Habitat and rearing density limitations on cutthroat trout production.
2. Constraints in tributaries associated with other species, especially including brook trout.
3. Life stages and survival rates that currently regulate cutthroat trout population sizes.
4. Relationship of resident and adfluvial life history traits in cutthroat trout.
5. Interactions in lake between wild cutthroat and potential fish predators.
6. Feasibility of using hatchery production to reintroduce resident and adfluvial cutthroat into streams where they do not currently exist.
7. Feasibility of using hatchery production to reduce extinction risks in natural populations of adfluvial fish.
8. Interactions in stream habitats between hatchery and naturally produced fish.

### *ur d'Alene Reservation Tributary Biological/Habitat Objectives*

Biological objectives for the adfluvial and resident life histories of cutthroat trout in tributaries on the Coeur d'Alene Reservation located within the Coeur d'Alene Subbasin include restoring populations to a desired future condition based on the estimated historic abundance levels for adult fish in four target watersheds. This will be accomplished by achieving interim biological and habitat objectives (25, 50 and 75 percent of optimal level) by the target dates noted in the following tables (*Tables 1 and 2*).

The biological objectives are the sum of escapement and harvest targets, with the 100 percent target level approximating the number of adult fish needed to fully seed the available spawning habitat (*Table 1*). This target level is thought to be roughly equivalent to the historic abundance of adfluvial cutthroat in the respective systems. Escapement targets have yet to be determined, but will be derived as part of the ongoing process of refining program measures. Escapement targets will ultimately be determined from estimates of the probability of persistence after Dennis et al. (1991) to ensure that persistence over the next 100 years would exceed 99%. Once minimum escapement targets are reached, harvest targets will be incrementally increased to meet the subsistence needs of Tribal members. Harvest targets will also be determined as part of the ongoing process of refining program measures.

Achievement of cutthroat trout biological objectives is related to enhancing habitat indicators in each tributary to achieve desired future conditions (*Table 2*). The habitat indicators include key parameters affecting production and growth of resident salmonids and are consistent with the monitoring protocols being implemented by the Coeur d'Alene Tribe. Optimal and/or target conditions were derived from peer reviewed scientific literature and habitat suitability indices.

*Table 1. Biological Objectives for Coeur d'Alene Reservation Tributaries in the Coeur d'Alene Subbasin.*

<b>Tributary</b>	<b>Target Level<sup>a</sup></b>	<b>Escapement Target<sup>c</sup></b>	<b>Harvest Target<sup>d</sup></b>	<b>Biological Objective<sup>b</sup></b>	<b>Year</b>
Alder Creek	25	TBD	TBD	2,628	2015
	50	TBD	TBD	5,256	2025
	75	TBD	TBD	7,882	2035
	100	TBD	TBD	10,510	Beyond
Benewah Creek	25	TBD	TBD	3,353	2015
	50	TBD	TBD	6,704	2025
	75	TBD	TBD	10,053	2035
	100	TBD	TBD	13,405	Beyond
Evans Creek	25	TBD	TBD	1,514	2015
	50	TBD	TBD	3,028	2025
	75	TBD	TBD	4,540	2035
	100	TBD	TBD	6,054	Beyond
Lake Creek	25	TBD	TBD	3,080	2015
	50	TBD	TBD	6,160	2025
	75	TBD	TBD	9,240	2035
	100	TBD	TBD	12,320	Beyond

<sup>a</sup> Target level is defined as the percent of estimated historic abundance levels based on the productivity of undisturbed habitats.

<sup>b</sup> Biological objective is the sum of escapement and harvest targets. The 100 percent target level is defined as the number of adult fish needed to fully seed the available spawning habitat, given the following assumptions:

- Spawning is primarily restricted to 2<sup>nd</sup> order tributaries (CDA Tribe population data, 1994-1998);
- Usable spawning habitat comprises 4.1% of the total stream area in 2<sup>nd</sup> order tributaries, when averaged across the four target watersheds (CDA Tribe habitat assessment data, 1998);
- Potential spawning gravel was defined as patches of substrate at least 0.25 m<sup>2</sup> in area with particles 2-35 mm in diameter and average redd size is 0.15m<sup>2</sup> (Magee et al. 1996).
- 1:1.6 male to female spawner ratio (IDFG 1998);
- 3 redds for every 2 spawning females (Scott and Crossman 1973);

<sup>c</sup> Escapement targets will be calculated as the minimum number of spawning adults needed to ensure a probability of persistence greater than 99% over 100 years (Dennis et al 1991).

<sup>d</sup> Harvest targets will be established as part of the ongoing process to refine program measures.

Table 2. Habitat objectives for Coeur d'Alene Reservation tributaries in the Coeur d'Alene Subbasin.

**Lake Creek**

Habitat Indicators	Baseline Condition (1998)	Optimal Condition	Target Conditions		
			25	50	75
<b>Tributaries</b>					
Residual Pool Depth	TBD	1.5 m			
Stream Canopy Density	52%	75%	58	64	69
LWD Density	0.013 m <sup>3</sup> /m	0.133-0.514	0.104	0.196	0.288
Pool Frequency	24.7%	35-65%	35	45	55
Fines (<4mm) in	39.0	<10%	31.7	24.5	17.3
Channel/Bank Stability	106	<77	98	90	82
Max Water Temperature	<16°C	16°C	NC	NC	NC
<b>Mainstem</b>					
Residual Pool Depth	TBD	1.5 m			
Stream Canopy Density	37%	75%	47	56	66
LWD Density	0.013 m <sup>3</sup> /m	0.133-0.514	0.104	0.196	0.289
Pool Frequency	19.7%	35-65%	31	43	54
Fines (<4mm) in Riffle-	36.5%	<15%	31	26	20
Channel/Bank Stability	87	<77	84	81	77
Max Water Temperature	20°C	18°C	19	18	NC

**Benewah Creek**

Habitat Indicators	Baseline Condition (1998)	Optimal Condition	Target Conditions		
			25	50	75
<b>Tributaries</b>					
Residual Pool Depth	TBD	1.5 m			
Stream Canopy Density	64%	75%	67	70	72
LWD Density	0.003 m <sup>3</sup> /m	0.133-0.514 m <sup>3</sup> /m	0.098	0.193	0.289
Pool Frequency	48.3%	35-65%	52	57	61
Fines (<4mm) in Spawning Gravels	18.8%	<10%	16.6	14.4	12.2
Channel/Bank Stability	91	<77	87	83	79
Max Water Temperature	17°C	16°C	16	NC	NC
<b>Mainstem</b>					
Residual Pool Depth	TBD	1.5 m			
Stream Canopy Density	31%	75%	42	53	64
LWD Density	0.003 m <sup>3</sup> /m	0.133-0.514	0.098	0.193	0.289
Pool Frequency	21.7	35-65%	33	43	54
Fines (<4mm) in Riffle-	4%	<15%	NC	NC	NC
Channel/Bank Stability	87	<77	84	81	78
Max Water	22°C	18°C	21	20	19

### Alder Creek

Habitat Indicators	Baseline Condition (1998)	Optimal Condition	Target Conditions		
			25	50	75
<b>Tributaries</b>					
Residual Pool Depth	TBD	1.5 m			
Stream Canopy Density	61.9%	75%	65	68	72
LWD Density	0.006 m <sup>3</sup> /m	0.133-0.514 m <sup>3</sup> /m	0.101	0.197	0.292
Pool Frequency	40.7	35-65%	47	53	59
Fines (<4mm) in Spawning Gravels	13.6%	<10%	12.7	11.6	10.5
Channel/Bank Stability	80	<77	79	78	77
Max Water Temperature	16.6°C	16°C	16	NC	NC
<b>Mainstem</b>					
Residual Pool	TBD	1.5 m			
Stream Canopy	52.9%	75%	58	64	69
LWD Density	0.006 m <sup>3</sup> /m	0.133-0.514	0.101	0.197	0.292
Pool Frequency	38%	35-65%	45	52	58
Fines (<4mm) in	<15%	<15%	NC	NC	NC
Channel/Bank	86	<77	83	81	77
Max Water	19°C	18°C	18	NC	NC

### Evans Creek

Habitat Indicators	Baseline Condition (1998)	Optimal Condition	Target Conditions		
			25	50	75
<b>Tributaries</b>					
Residual Pool Depth	TBD	1.5 m			
Stream Canopy Density	80%	75%	NC	NC	NC
LWD Density	0.016 m <sup>3</sup> /m	0.133-0.514 m <sup>3</sup> /m	0.111	0.207	0.302
Pool Frequency	>65%	35-65%	NC	NC	NC
Fines (<4mm) in Spawning Gravels	13.5%	<10%	12.6	11.8	10.9
Channel/Bank Stability	73	<77	NC	NC	NC
Max Water Temperature	<16°C	16°C	NC	NC	NC
<b>Mainstem</b>					
Residual Pool	TBD	1.5 m			
Stream Canopy	61%	75%	65	68	72

LWD Density	0.016 m <sup>3</sup> /m	0.133-0.514	0.111	0.207	0.302
Pool Frequency	41%	35-65%	47	53	59
Fines (<4mm) in	<15%	<15%	NC	NC	NC
Channel/Bank	93	<77	88	84	79
Max Water	17°C	18°C	NC	NC	NC

### *Spokane Subbasin*

The Coeur d'Alene Tribe will implement habitat restoration and enhancement measures in Hangman Creek, and its tributaries. Projects will be prioritized based on their potential for fostering long-term ecological recovery and will be pursued in locations that restore habitat linkages to highly productive habitats. Strategies include: 1) removing or modifying those land use impacts that are causing habitat degradation, 2) re-establishing riparian/stream linkages and removing barriers to fish passage, 3) restoring natural ecosystem processes and riparian plant communities, 4) improving stream channel stability through restoration of incised stream reaches, 5) reduction of sediment mobilization and transport from upland sources, and 5) improving instream habitat complexity.

Harvest objectives will be addressed in a phased approach that provides interim fishery benefits while the risks of hatchery production to natural fish can be developed and refined based on evaluations of critical uncertainties. Phase 1 involves immediate provision of harvest opportunities through the use of a hatchery to produce or grow out trout for release into isolated catch out ponds that provide a 'put and take' sport fishery on the reservation. Phase 2 provides a put-and-take trout fishery in reservation streams currently lacking natural populations. A hatchery will produce captive-reared progeny of wild parents for release into streams for put-and-take trout fisheries. This phase of the project will simultaneously address the feasibility of utilizing hatchery production to conserve wild populations and re-establishing and creating populations where they currently do not exist.

Implement plans to purchase or acquire conservation easements on high priority land that includes specific riparian and/or wetland habitat or other habitats that exert a demonstrable influence on processes affecting the abundance and distribution of target species. These lands would then be managed in perpetuity specifically for fish and wildlife production. Other incidental uses would have to be compatible with those purposes, as determined by supporting biological information.

The Tribe will pursue a research, monitoring and evaluation (RM&E) program to identify and resolve critical uncertainties (*Box 1*) relative to the response of native trout populations to habitat improvements and the ability of natural populations to provide harvest opportunities to offset anadromous fish losses.

RM&E strategies will be developed in the final year of assessment and will follow the same approach described in the comprehensive research monitoring and evaluation plan (Vitale et al. 2003). The RM&E strategies include: 1) measure a core set of physical, chemical and biological variables at a number of stratified, randomly selected "control" and treatment sites in target tributaries, 2) measure the annual production of native trout in target streams and evaluate changes in production relative to habitat modifications, 3) evaluate the effectiveness of removal of non-native fish, 4) measure life-stage survival rates of fluvial and resident redband trout in streams using mark-recapture techniques; 5) Measure discharge, temperature, and Total Suspended Solids, as a response to restoration efforts. Adaptive management strategies will be implemented and refined based on the results of RM&E.

Adaptive management strategies will be implemented based on the results of RM&E work to improve the long-term success of Program measures. Also, the Tribe will conduct an educational/outreach program for private landowners, students and the general public within the Coeur d'Alene Reservation to facilitate a "holistic" watershed protection process.

**Box 1: Critical Uncertainties Regarding Redband Trout Use, Limiting Factors, and Restoration**

1. Habitat and rearing density limitations on Redband trout production.
2. Constraints in tributaries associated with other species, especially including non-native cutthroat trout.
3. Life stages and survival rates that currently regulate Redband trout population sizes.
4. Relationship of resident and fluvial life history traits in Redband trout.
5. Feasibility of using hatchery production to reintroduce resident and fluvial Redband trout into streams where they do not currently exist.
6. Feasibility of using hatchery production to reduce extinction risks in natural populations of fluvial fish.
7. Interactions in stream habitats between hatchery and naturally produced fish.

*Hangman Creek Biological/Habitat Objectives*

Biological objectives for the fluvial and resident life histories of redband trout in the mainstem and tributaries of Hangman Creek within the Spokane Subbasin include restoring populations to a desired future condition. Quantifying the desired future condition is difficult given the lack of historic abundance levels for of adult fish. Ongoing interviews with local landowners reveal that salmonid distribution was widespread just twenty to thirty years ago when riparian burning and channel alterations by state and federal agencies occurred within agriculture impacted areas. However, this type of information lacks population data as well as reliable species composition. Recent qualitative habitat assessments and

distribution and relative abundance of redband trout in the Hangman Creek drainage reveal that current conditions are characterized by highly degraded habitat with only a small fraction of the unknown historical redband trout production. The program goal is to develop a subsistence fishery for tribal members while sustaining a robust natural population of redband trout with a high probability to persist in the future. With the above goal in mind, we will increase the natural production of redband trout through large-scale habitat improvements and management practices that protect the habitats. Ultimately, when natural production rates increase, we will develop harvest targets that maintain the escapement target to sustain natural production. The escapement target will ultimately be determined from estimates of the probability of persistence after Dennis et al. (1991) to ensure a 99% probability of persistence of redband trout over the next 100 years. Once minimum escapement targets are reached, harvest targets will be incrementally increased to meet the subsistence needs of Tribal members. If RM&E results reveal that the redband trout population is depressed to the extent that it cannot respond to habitat restoration, then artificial production strategies will be evaluated to reintroduce redband trout into historical habitats and provide a tribal subsistence fishery.