

4 Inventory of Existing Activities

Introduction

Inventory of existing activities is a key element of the subbasin plans. The following section summarizes agency program, management and regulatory activities, which represents each agencies role in the management of the subbasin. In addition, an inventory of projects follows. This inventory is designed to be compared with the needs for fish and wildlife identified in this plans Assessment.

In both Canada and US, federal, state and provincial agencies, local municipalities, tribal groups, and public interest groups all manage, regulate, or otherwise are involved in land and water usage within their respective jurisdictions. In the Okanogan subbasin this also involves trans-boundary institutions like the International Joint Commission (regulation of water-benefit arrangements and joint management orders) and the BC-Washington Environmental Council (cooperative management of water and air-sheds), and the Georgia Basin/Puget Sound Ecosystem Initiatives (cooperative basin environmental protection).

For the most part, these governing bodies and stakeholders have policies and guidelines to control the demands placed upon the watershed and their mandates include the management of natural resources for society while maintaining a level of protection of water, land, fish, and wildlife resources.

This subbasin plan's inventory of projects includes projects from the last ten years. An extensive effort, through multiple planning processes, has occurred to develop this inventory of projects; however, the list is not all-inclusive. Further, not all other planning processes have required the level of information that is required by NPCC. Given the timeframe and funding level, the subbasin planners could not provide all of the information that was suggested in the Technical Guide for Subbasin Planners (Council Document 2001-20. This included: identifying the limiting factors or ecological processes the activity is designed to address; summarizing accomplishments/failures of the activity; and identifying the relationship to other activities in the subbasin. Further, subbasin planners were not able to accomplish identifying the gaps between actions that have already been taken or are underway and additional actions that are needed.

The information presented in this section is specifically designed to provide context for subbasin planners and to reduce or eliminate duplication of efforts between parties. The tables attempt to categorize project types and geographic areas as well as identify project sponsors. To a degree, this information can be viewed as a snapshot of what is happening on the ground at this time for fish and wildlife protection and restoration. However, it does not depict the full range of actions that have been recommended in the Province even as "high priority actions." This situation is especially prevalent in the Columbia Cascade Province, especially when viewed within the context of population status, past losses and mitigation history, and, when compared to implementation levels in other Provinces.

To provide a regional context for this subbasin plan, [Appendix B](#). provides summarized information for the Columbia Cascade and for the Okanogan (Methow) subbasin. This information details an accounting of what project categories and funding levels have been

recommended by the basin technical teams, fish and wildlife managers, the ISRP, the CBFWA and the NPPC. The results depict what BPA has actually funded in the 2001-2003 period.

Programs and projects in the Okanogan

Programs and projects in the subbasin relating to fish and wildlife are primarily directed at rebuilding or maintaining anadromous and resident fish, wildlife, and habitat result from many of the direct and indirect impacts within the basin; many of these impacts and their resolution have cross-border implications.

Such impacts include hydroelectric facilities and their operations, water consumption, water management, urban development, infrastructure, agriculture, forestry, water quality, ground disturbances, out right habitat loss, and introduced species.

Programmatic Actions

A number of US-based programs are available that provide project resources to address offsite mitigation for salmon entrainment in downstream dams, as well as programs to address endangered species recovery and clean water management. Habitat conservation plans prescribe mitigation for habitat and fish losses associated with development etc.

In Canada, several provincial and federal programs were available over the last decade that provided forestry-based watershed assessments and inventories, multi-agency habitat restoration and stewardship, and public education in the Okanogan-Similkameen Watershed. However, most of these programs were discontinued in 2001/02 due to fiscal and policy changes in government. Some limited provincial habitat restoration remains, however it is dedicated to fish and habitat projects of provincial responsibility associated with resident fisheries.

While cross-border program coordination and collaboration remains in its relative infancy, some successful fish and water management, and pilot habitat projects have been developed in the effort among agencies to mitigate the losses of Canadian sockeye passing through Wells Dam, and have been led by an ad-hoc Okanogan Basin Technical Working Group. Initial funding for the project came through the Wells Committee and Douglas County PUD.

Formalized in Canada, the cross-border information-sharing and collaborative programming forum is a model of future ecosystem-based management for agencies working with trans-boundary stocks in the subbasin. An extension to other fish species, habitats and wildlife promises to generate ecosystem-level benefits.

Existing Protection in the subbasin

Approximately 13 percent (199,143 acres) of the lands in the US Okanogan subbasin have permanent protection from conversion of natural land cover and a mandated management plan in operation to maintain a natural state within which disturbance events of natural type are allowed to proceed without interference or are mimicked through management (high protection).

An estimated 0.8 percent (12,798 acres) of the Subbasin has permanent protection from conversion of natural land cover and a mandated management plan in operation to maintain a primarily natural state (medium protection status) (Figure 50).

Approximately 438,793 acres (29 percent) of the Subbasin has permanent protection from conversion of natural land cover for the majority of the area, but is subjected to uses of either a

broad, low intensity type or localized intense type (low protection status). Lands owned by WDFW fall within the medium and low protection status categories and include six wildlife management areas. The majority of the US portions of the subbasin (56 percent; 839,345 acres) have no amount of protection. Many aquatic / fish habitats and functions are in need of protection and restoration.

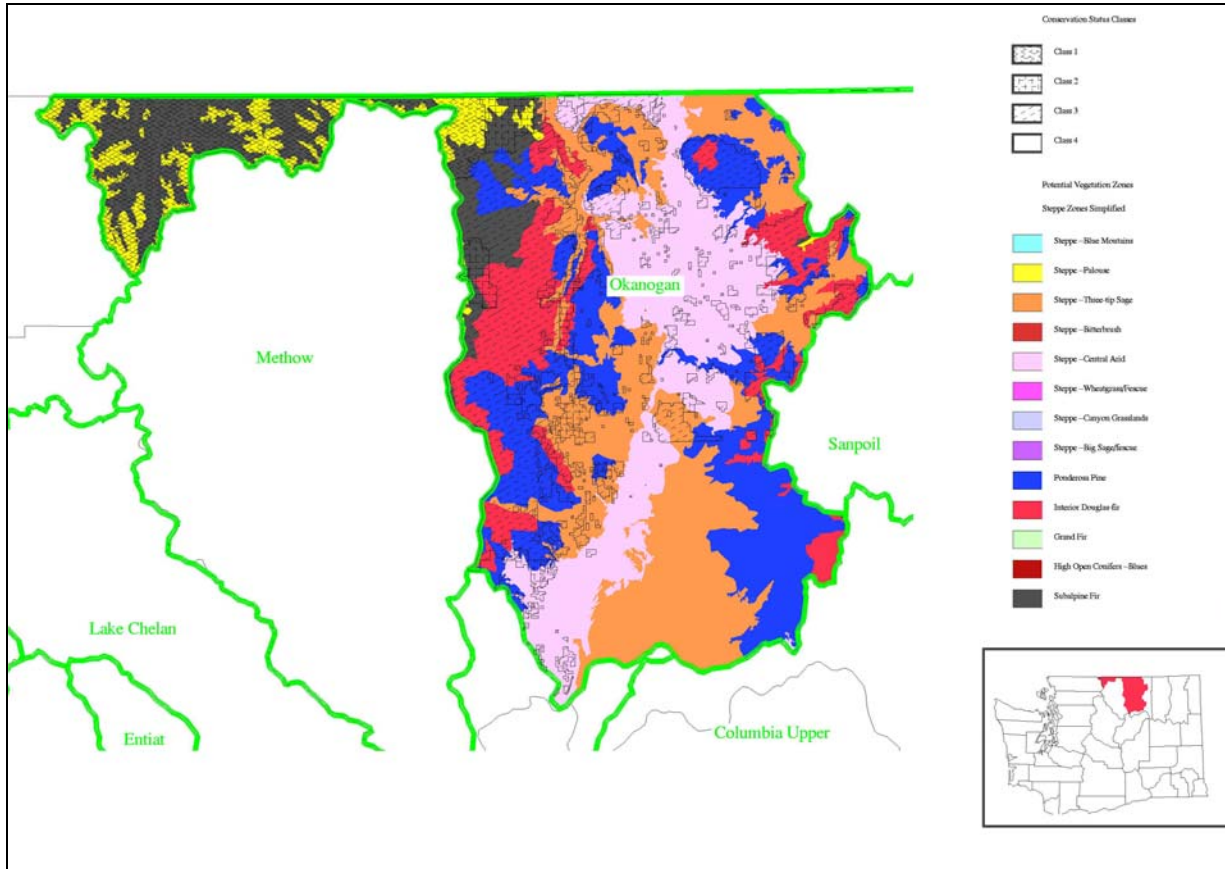


Figure 50 Gap protection status and vegetation zones of the Okanogon subbasin, Washington (Cassidy 1997).

4.1 Fish and Wildlife Programming in the Subbasin (Canada and US)

Programs and projects in the subbasin relating to fish and wildlife are primarily directed at rebuilding or maintaining anadromous and resident fish, wildlife, and habitat result from many of the direct and indirect impacts within the basin; many of these impacts and their resolution have cross-border implications.

Such impacts include hydroelectric facilities and their operations, water consumption, water management, urban development, infrastructure, agriculture, forestry, water quality, ground disturbances, out right habitat loss, and introduced species.

A number of US-based and Canadian programs are available that provide project resources to address regional management priorities.

Offsite mitigation for salmon entrainment in downstream dams, and programs to address Endangered species recovery and clean water management, occupy the primary program priorities in US. The recently published Okanogan Chinook HGMP (Colville Tribes 2003) describes a management plan to aid in the conservation of Upper Columbia Chinook in this ESU.

In Canada, habitat management and conservation plans prescribe mitigation for losses associated with development. Significant program efforts in the last decade include fish-water management modeling to balance sockeye and lake kokanee survival, Okanogan Lake Kokanee restoration, forestry-based watershed restoration, and in the river, reconnecting the floodplane, side channel and wetland habitat restoration, and public stewardship. Recently, a study to explore reintroduction of sockeye to Skaha Lake is underway as part of an Okanogan Nation Alliance program to restore former salmon access to headwater habitats.

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Canada

In the Canadian subbasin, the B.C. Government has designated 23 parks. More parks are continuing to be designated as a result of the implementation of the Okanogan-Shuswap Land and Resource Management Plan. This plan led to the protection of an additional 169,000 acres of the Okanogan subbasin in recent years. The Okanogan-Shuswap LRMP has also provided strategic direction for the expansion of the Okanogan Wildlife Management Area associated with the Okanogan River between Vaseaux and Osoyoos Lakes. A new wildlife management area (Direnzy near Skaha Lake is also an outcome of the approved LRMP.

Within the Canadian subbasin, Protected Areas encompass approximately 9% of the land base or 381,000 acres. These areas have permanent protection from conversion of natural land cover and a mandated management plan in operation.

Major protected areas within the subbasin include Manning (subbasin portion of 89,200 acres), Cathedral (81,171 acres), Snowy Protected Area (62,769 acres), Okanogan Mountain (25,448 acres) Greystokes Protected Area (28,866 acres) and Kalamalka (10,160 acres) Various degrees of protection on the public lands outside the Protected Area system is afforded at the strategic level through the Resource Management Zones of the Okanogan-Shuswap Land and Resource Management Plan with the exception of the headwaters of the Similkameen River (much of which is within Provincial Parks). These zones are defined by the presence of resource values and uses and have associated resource management direction in the form of objectives and strategies. The plan is unique in that Resource Management Zones can overlap, depending on the resource values and uses in a specific area. As a result, layers of resource management objectives and strategies apply to operational planning wherever it is proposed on the public land

base. Because of the “three dimensional” nature of the Okanagan-Shuswap LRMP it is housed within a web based map browser that provides for the display of resource management zones (and associated objectives and strategies) for any specific site within the public land outside protected areas. The objectives and strategies that apply to the proposed development provide protection to resource values and uses. The Okanagan-Shuswap LRMP is found at <http://srmwww.gov.bc.ca/sir/lrmp/okan/> Examples of objectives and strategies appropriate to this plan are found in Appendix E.

4.2 Management and Regulation

US – Canada Treaty

Treaty Between The Government of Government of Canada and the Government of the United States of America Concerning Pacific Salmon

Annex IV Chapter 1 Transboundary Rivers

Recognizing that stocks of salmon originating in Canadian sections of the Columbia River constitute a small portion of the total populations of Columbia River salmon, and that the arrangements for consultation and recommendation of escapement targets and approval of enhancement activities set out in Article VII are not appropriate to the Columbia River system as a whole, the Parties consider it important to ensure effective conservation of up-river stocks which extend into Canada and to explore the development of mutually beneficial enhancement activities.

Therefore, notwithstanding Article VII, paragraphs 2, 3, and 4, the Parties shall consult with a view to developing, for the transboundary sections of the Columbia River, a more practicable arrangement for consultation and setting escapement targets than those specified in Article VII, paragraphs 2 and 3. Such arrangements will seek to,

- ensure effective conservation of the stocks;
- facilitate future enhancement of the stocks on an agreed basis; and
- avoid interference with United States management programs on the salmon stocks existing in the non-transboundary tributaries and the main stem of the Columbia River.

Washington-British Columbia Environmental Cooperation Council (ECC)

The ECC was established by the Environmental Cooperation Agreement entered into by the Governor of Washington State and the Premier of B.C. on May 7, 1992. Its purpose is to ensure coordinated action and information sharing on environmental matters of mutual concern. The ECC has been identified by the Provincial policy makers as the preferred choice for B.C.- Washington coordination on Okanagan subbasin restoration.

US Program Actions

USDA Forest Service

The Tonasket Ranger District, in the Okanogan and Wenatchee National Forest, manages 357,000 acres in the Okanogan Basin. The land is managed according to the Okanogan National Forest System Land and Resource Management Plan (USDA, 1989), as amended by the

Decision Notice for the Interim Strategies for Managing Anadromous Fish- Producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California (PACFISH) (USDA, USDI 1995).

Most of the National Forest land is in mid- to upper elevation forest. The 1989 Forest Plan divides the land into management areas, each with a management prescription based on unique habitat conditions. The majority of National Forest land is managed for multiple uses, including lynx habitat, deer winter range, timber, and livestock grazing.

A small portion of National Forest land in the northeast corner of the district is designated Wilderness, with no motorized equipment allowed. There is also a small parcel of land designated as a Research Area, and another relatively small parcel is managed as semi-primitive, with no motor vehicles allowed. The USFS Tonasket Ranger District maintains 42 cattle allotments on National Forest land.

USDA Bureau of Land Management

The BLM management follows the same legal multiple-use mandate that guides the US Forest Service. Management direction is outlined in the Spokane District Resource Management Plan (USDI, 1987), as amended by PACFISH (USDA, USDI, 1995).

BLM lands in the basin include two large areas in the Similkameen and Salmon watersheds, and numerous small, scattered parcels throughout the basin. Management is centered on the two large areas; the scattered parcels are used primarily in land exchange deals.

US Army Corps of Engineers

Section 10 Permit - Work in Navigable Waters

A Corps permit is required when locating a structure, excavating, or discharging dredged or fill material in waters of the United States or transporting dredged material for the purpose of dumping it into ocean waters. Typical projects requiring these permits include the construction and maintenance of piers, wharfs, dolphins, breakwaters, bulkheads, groins, jetties, mooring buoys, and boat ramps.

However, not every activity requires a separate, individual permit application. Certain activities and work can be authorized by letters-of- permission, nation-wide permits, or regional permits. Some activities authorized by these permits are permitted in advance. Typically, little or no paperwork is required, and consequently permitting time is reduced. So, before submitting an application, contact the District Engineer's office for current information about the type of permit required.

Activity which requires the Permit: Locating a structure, excavating, or discharging dredged or fill material in waters of the United States or transporting dredged material for the purpose of dumping it into ocean waters. Fees are variable.

Statewide Contact:

US Army Corps of Engineers, Seattle District Regulatory Branch, PO Box 3755, Seattle, WA98124-2255. Telephone: (206) 764-3495 Fax: (206) 764-6602

* Permit information last updated 10/1/1998.

401 Water Quality Certification

Applicants receiving a section 404 permit from the Army Corp of Engineers, a Coast Guard permit or license from the federal Energy Regulatory Commission (FERC), are required to obtain a section 401 water quality certification from the Department of Ecology. Issuance of a certification means that the Ecology anticipates that the applicant's project will comply with state water quality standards and other aquatic resource protection requirements under Ecology's authority. The 401 Certification can cover both the construction and operation of the proposed project. Conditions of the 401 Certification become conditions of the federal permit or license.

For 404 permits the Corps has developed Nation-wide permits to streamline the process for specific activities. The Corps reviews a proposed project to determine if an individual 404 permit is required, or if the project can be authorized under a Nation-wide permit. The Nation-wide permits also need 401 Certification from Ecology. Ecology has already approved, denied or partially denied specific Nation-wide permits.

If approved, no further 401 Certification review by Ecology is required. If partially denied without prejudice, an individual certification or Letter of Verification from Ecology is required. If denied without prejudice, an individual certification is required for all activities under that nation-wide permit.

Activity which requires the Permit: Applying for a federal permit or license to conduct any activity that might result in a discharge of dredge or fill material into water or non-isolated wetlands or excavation in water or non-isolated wetlands.

Fees: No fee for certification

Online Application: The application for an individual permit, which is called Joint Aquatic Resources Permit Application Form (JARPA), is online and can be downloaded at <http://www.ecy.wa.gov/programs/sea/pac/jarpa.html>

Application Requirements: If applicable to the project: Mitigation plans, Operation and maintenance plans, Stormwater site plans and Restoration plans.

Permit Dependencies: In most cases State Environmental Policy Act (SEPA) compliance is needed. If you live within any of Washington's 15 coastal counties then you may need a Coastal Zone Consistency Determination (CZM).

Permit Time Frame: Individual 401's: Minimum twenty-day public notice; up to one year to approve, condition, or deny. Usually less than three months, see notes/comments. Nation-wide permits that have been partially denied may take a few days or weeks, after receipt of the JARPA and a letter from the Corps issuing a LOV. Letter of Verification (LOV): Usually takes 30 days but can take up to 180 days.

Permit Review Process: Review is conducted in Shoreline and Environmental Assistance within each regional office (except dredging and WSDOT projects which are done at Ecology's Headquarters). Regional staff reviewed the applications for completeness and send out a letter or call if additional information is needed. Once the application is considered complete the regional staff starts reviewing the project to recommend approval or denial. Modifications to plans submitted maybe required. Also a site visit maybe required as part of the process.

Permit Duration: 401 Certification becomes part of the federal permit or license. The duration of the 401 Certification would be in effect for same time period as the permit or license, however Ecology issues 401 Certifications as 90.48 administrative orders, so they may have conditions that apply to the project longer than the federal permit or license.

Permit Appeal Information: Appealable to Pollution Control Hearings Board within thirty days of Ecology's decision. P.C.H.B. may not hear case for six or more months.

Notes / Comments: If an applicant receives a nation-wide permit and Ecology issues a LOV, there are no public notice requirements under 401 certification for that specific project. If the applicant receives a nation-wide permit but is required to obtain an individual 401 Certification, public notice is required.

Legal Authority:

Chapter 173-201A State Water Quality Rule WAC

Chapter 173-225 Federal Clean Water Act, Section 401 WAC

Chapter 90.48 State Water Quality Law RCW

Statewide Contact:

Department of Ecology, 300 Desmond Drive, Lacey, WA98503. Telephone: (360) 407-6000

* Permit information last updated 10/23/2003.

Section 404 Permit - Discharge of Dredge and Fill Material

A Corps permit is required when locating a structure, excavating, or discharging dredged or fill material in waters of the United States or transporting dredged material for the purpose of dumping it into ocean waters. Typical projects requiring these permits include the construction and maintenance of piers, wharfs, dolphins, breakwaters, bulkheads, groins, jetties, mooring buoys, and boat ramps.

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Tribal Plans

Current management and recovery programs involve harvest management among US co-managers relevant to, but not part of the US v Oregon, and cooperative management efforts involving the US agencies and Colville Tribes and the Canadian agencies and the Okanogan Nation.

The Colville Tribes Natural Resources Department has a vision of restoring all species and stocks of native fish to their historic habitats within their Reservation and Trust Lands. A comprehensive anadromous fish Master Plan – based on an integrated Natural Resources framework – is essential in order to accomplish this Vision.

The Colville Tribes Integrated Resource Management Plan...

The Colville Tribes recently published an Okanogan summer/fall Chinook salmon HGMP (Colville Tribes and Washington Department of Fish and Wildlife April 2003) to guide restoration programs planned from a new hatchery situated below Chief Joseph Dam. The HGMP addresses a comprehensive program for the upper Columbia River summer/fall Chinook ESU in the Okanogan River and the Columbia River from Chief Joseph Dam downstream to the confluence of the Okanogan River. The plan also takes into account the summer/fall Chinook destined for the Methow River in this population. Integrated Recovery Program objectives identify that these populations will be managed to primarily aid in the conservation of this ESU. Objectives include increasing abundance, distribution and diversity of natural-origin summer/fall Chinook in the Columbia, Okanogan and Similkameen Rivers. Acclimation and release sites target historic rearing habitats at Similkameen, Bonaparte and Tonasket ponds.

Yakama Nation leads salmon recovery projects on the Methow Subbasin that may help rebuild depressed coho salmon populations in the upper Columbia River, including the Okanogan Subbasin.

Okanagan Nations Alliance (ONA)

The ONA entered into a Letter of Understanding with the Colville Tribes in March 2001 that addressed the common goal for ecosystem-based recovery of salmon in the Okanogan Subbasin, and refocused plans for salmon introduction plans in the upper Similkameen River on subbasin-wide salmon recovery in the Okanogan.

The Okanogan Nation Alliance has led a trans-boundary effort to restore Okanogan salmon ecosystems and their historic fisheries. Called Tc'p'lk'stem (from Syilx – to bring back) the recovery program takes a habitat-based approach to restoring historic salmon stocks and their habitats. Restoring Okanogan sockeye to their former range into the upper watershed is a flagship project drawing agencies from the region and across the border into a science-based collaboration.

Currently, the ONA is leading a Watershed-based Fish Sustainability plan to coordinate Canadian agency and public efforts for recovery of the Okanogan salmon ecosystem. A State of the Okanogan Basin report is pending as one of the first reference documents in this effort (ONA in prep. 2004).

Colville Tribes

On the western third of the Colville Tribes Reservation, 344,146 acres of tribal land fall within the Okanogan Subbasin drainage. This massive tract of land, inclusive of tribal, ceded, and traditional areas, supports viable breeding and/or migratory populations of state and federally listed Species of Concern, Threatened or Endangered.

In 2000, the Colville prepared a Plan for Integrated Resource Management (IRMP) to provide guidance for management of approximately 1.4 million acres of Reservation lands for the next 15 years or more, or until replaced by a revised plan.

The IRMP has been prepared in accordance with the Bureau of Affairs planning regulations found in 43 CFR 1600. The Environmental Impact Statement (EIS) was prepared to disclose action in the IRMP and evaluate the environmental consequences of such action in accordance with the Council of Environmental Quality's (CEQ) regulations for implementing the National Environmental Policy Act (NEPA) of 1969, found in 40 CFR 1500. Federal laws and executive orders affecting management of the Colville Reservation as they relate to preparation of an Integrated Resource Management Plan were reviewed by Hall (1991). In the Colville Tribes Integrated Resource Management Plan (2000 – 2014), the Tribal Vision states that the Colville Tribes will manage the natural resources under its jurisdiction on the Reservation to enhance and maintain the ecological health of the environment and the social well being of Tribal Members and other human populations.

The Colville Tribes is leading an effort to document what species are still or are now occurring in the Upper Columbia River, including the Okanogan Subbasin, to assess after the study period concludes for this area, which species are no longer detected, which are least abundant and thus, potentially at risk, and to manage and partially mitigate with that information.

The Chief Joseph and Grand Coulee Dam hydroelectric projects forced the Colville Tribes to rely largely on resident fish and wildlife resources. The ensuing decline in wildlife resources and native salmonid fish stocks significantly and negatively impacted the traditional subsistence lifestyle of Colville Tribes' Tribal members. The extent of that impact to historical and current native wildlife species must be measured for fair partial mitigation and adequate management of the remaining resource for subsistence, cultural, and ceremonial use. The Bonneville Power Administration has committed to protecting native fish and wildlife habitat on the Colville Tribes Reservation as a mean of partially mitigating the impacts of the Columbia River Hydroelectric System.

Grand Coulee and Chief Joseph hydroelectric projects destroyed, essentially forever, in excess of 88,000 acres of critical low elevation wildlife habitat. This was largely comprised of riverine, island, riparian, shrubsteppe, and mixed and coniferous habitats. This habitat, rich in biodiversity, supported a large number and abundance of wildlife species. Existing conditions throughout the region very likely preclude management entities from ever being able to fully mitigate these losses; however, many projects throughout the region and on this reservation provide some partial mitigation leading toward the fulfillment of full mitigation for losses because of the dams and the subsequent and continuing habitat loss.

The Colville Tribes Fish and Wildlife Department has focused recovery efforts of anadromous salmonids in the Okanogan River Basin. To effectively recover summer steelhead and spring

Chinook salmon in the Okanogan River Basin restoration efforts have been directed toward tributaries. In addition to this project, the Colville Tribes Fish and Wildlife are also sponsors of restoring anadromous salmonids in Okanogan tributaries.

Cold water is an uncommon physical condition in the Okanogan River Basin. During 1998 water temperatures exceeded 80oF in the mainstem of the Okanogan River (Colville Tribes, Fish and Wildlife Dept., unpublished data). The current water temperature regime in the mainstem of the Okanogan River is not conducive to support salmonids that require one or more years in freshwater. To successfully re-establish native salmonids in the Okanogan River, the few cool water sources that exist must be protected and others restored. Therefore the restoration or conservation efforts directed toward key tributaries will begin reducing water temperatures and improve habitat conditions for the recovery of anadromous tributary spawners in the Okanogan River.

Restoration efforts may also be beneficial to anadromous salmonids that use the Okanogan River as a migration corridor. Sockeye (*Oncorhynchus nerka*), which migrate up the Okanogan River, are often delayed by high water temperatures (> 21.5°F or conversion). When water temperatures dip sockeye swim the Okanogan River from the confluence to the north end of Lake Osoyoos (approx. 80 miles).

By re-establishing flows in Salmon Creek, improving riparian habitat and increasing canopy closure along Omak Creek and conserving the water quality in Aeneas Creek, plumes of cold water would be delivered to Okanogan River and provide thermal refuges for migrating sockeye. These cool water refuges may improve the survival of adults to current spawning areas and historical areas such as Skaha Lake, which is currently being evaluated for the feasibility of re-introduction.

The Colville Tribes participates in ongoing cooperative studies of forest carnivores with both WFWD and Forest Service including the lynx tracking study and a proposed marten habitat and prey base diet suitability study for the Okanogan Highland area. All native and desired non-native species are of management interest to the Colville Tribes. Forest carnivores, specifically: Grizzly bear, black bear, wolf, coyote, fox, cougar, lynx, bobcat, wolverine, fisher, marten, badger, mink, and weasel, are all very important in spiritual, cultural, economic, and ecological ways. It is a priority to the tribes that the predators continue to persevere here in a biologically balanced way. These animals are of high regard ceremonially as are the furbearers that include otter, beaver, muskrat, raccoon, and rabbits.

Okanogan County

Lead Entity Strategy

Okanogan County and the Colville Tribes are co-leads and thus co-coordinators for the Okanogan County Lead Entity. Occurring since the creation of the Okanogan County Lead Entity in 1999, this co-coordination effort has proven to be mutually beneficial. A portion of the Colville Tribes reservation lands is within the boundaries of Water Resource Inventory Area 49: Okanogan Basin.

The primary purpose of the Okanogan County Lead Entity Strategy is to provide specific and strategic guidance regarding the development of habitat protection and restoration projects

primarily for the Salmon Recovery Funding Board's grant process, and Okanogan County's related contractual work with the Washington State Department of Fish and Wildlife.

The lead entity strategy is a habitat protection and restoration action plan for the watershed(s) within the lead entity area. It provides a stepwise approach to how, where and when to take action to restore and protect habitat and the watershed processes that are necessary to support salmon.

Each participating Lead Entity maintains a separate Citizen Committee and project prioritization process. For the last three years (2nd, 3rd, and 4th Salmon Recovery Funding Board grant rounds) the separate three lead entities have demonstrated the region's cohesiveness by submitted an integrated regional project list.

Many in the Upper Columbia region view the regional salmon recovery plan as the overall plan for salmon recovery with the many other ongoing processes feeding directly into the appropriate sections of the regional recovery plan. In the long-term, the Collaborative Upper Columbia Tri-Lead Entity Strategy will be directly derived from the applicable habitat portions of the regional recovery plan.

The following tools are being used in the Okanogan/Methow Subbasin:

Zoning

Zoning is the most important tool for regulating land use. The basic purpose of zoning is to promote a jurisdiction's public health, safety, and welfare; and to assist in the implementation of the comprehensive plan. In a zoning ordinance the jurisdiction is divided into zoning districts, with types of uses, permit requirements and other land use regulations defined for each district. The most basic regulations pertain to: the height and bulk of buildings; the percentage of a lot which may be occupied and the size of required yards; population density; and the use of buildings and land for residential, commercial, industrial, and other purposes.

Subdivision

Subdivision regulations are intended to regulate the manner in which land may be divided and prepared for development. They apply whenever land is divided for purposes of sale, lease or transfer. State law specifies that any subdivision of land that results in the creation of a parcel of less than five acres in size must comply with state and local subdivision requirements. There are two basic forms of subdivision: long plats, which contain five or more lots; and, short plats, which contain four or fewer lots. Regulations pertaining to both types of subdivisions are adopted and enforced at the local level in accordance with provisions and statutory authority contained in state law. The regulations specify methods of subdivision procedures for the developer and the local government, minimum improvements (streets, utilities, etc.) to be provided by the developer, and design standards for streets, lots, and blocks. Subdivision regulations are intended to encourage the orderly development and redevelopment of large tracts in the planning area.

Planned Development

Planned development regulations are intended to provide an alternative method for land development that:

Encourages flexibility in the design of land use activities so that they are conducive to a more creative approach to development which will result in a more efficient, aesthetic and environmentally responsive use of the land;

Permits creativity in the design and placement of buildings, use of required open spaces, provision of on-site circulation facilities, off-street parking, and other site design elements that better utilize the potential of special features, such as geography, topography, vegetation, drainage, and property size and shape;

Facilitates the provision of economical and adequate public improvements, such as, sewer, water, and streets

Minimizes and/or mitigates the impacts of development on valuable natural resources and unique natural features such as agricultural lands, steep slopes, and floodplain and shoreline areas.

Planned development regulations may be incorporated into a jurisdiction's zoning ordinance or developed as a separate ordinance. It is also possible for the City, County or Tribes to use the planned development process for certain uses that, because of their nature, may be more appropriately reviewed under such regulations.

Binding Site Plan

The binding site plan is a relatively new method for dividing property for commercial and industrial purposes, and in some cases for residential uses such as manufactured home and recreational vehicle parks where the individual parcels are not to be sold. This method for regulating development is intended to provide a flexible alternative to developers and requires that a specific site plan be developed which shows the layout of streets and roads and the location of utilities required to serve the property. The binding site plan is a legally enforceable document which, when required, can be amended to reflect changing conditions. The plan also must be reviewed to ensure that the cost of providing basic services and the maintenance of those services does not represent an unreasonable burden on residents of the planning area.

Shoreline Master Program (SMP)

The SMP is, in effect, a special comprehensive plan and zoning ordinance for those areas falling under shoreline jurisdiction, as defined in the State Shoreline Management Act of 1971.

Uniform Building Code

The Uniform Building Code (U.B.C.) is a uniform set of regulations used to regulate and enforce construction activities. The U.B.C. may be used in conjunction with other implementation tools to ensure compliance and conformance with the comprehensive plan.

Flood Damage Prevention Ordinance

Flood Damage Prevention ordinances are required for jurisdictions that have areas subject to inundation by 100-year flood events. The purpose of this type of implementation tool is to ensure that new or substantially improved structures and fills are constructed in a manner that not only will minimize flood damage to the structure but also minimize the potential for increasing the flood hazard on adjacent properties.

Watershed Planning

In 1998, the Washington State legislature approved ESHB 2514 to create RCW 90.82. This RCW enables local stakeholders within their watersheds to develop management strategies related to water quantity (required by the bill), water quality (optional), instream flow (optional), and habitat (optional).

There is no RCW 90.82 watershed management plan at this time.

State Programs

Washington Department of Natural Resources (WDNR)

The WDNR manages 134,000 acres in the Loomis Forest. The Chopaka Natural Reserve, in the Loomis Forest, is a 3,000-acre natural preserve area. In the year 2000, two parcels totaling 25,000 acres were designated as Natural Areas, with access for recreation and grazing. The remaining area in the Loomis Forest is managed for multiple uses, including timber harvest and livestock grazing. There are 15 million board feet harvested annually from the Loomis Forest (C. Johnson 2001, pers. comm.).

Washington Department of Fish and Wildlife (WDFW)

The WDFW's mission embodies sound stewardship in fish and wildlife and encourages partnerships with public and international entities, tribal leaders, public volunteers and service groups to share responsibility for fish and wildlife. WDFW maintains five wildlife areas in the Okanogan Basin, and is an active participant in salmon recovery and subbasin planning.

In addition, the WDFW is responsible for the administration of State statute directed at the protection of fish and wildlife habitats.

Programmatic description of Shoreline Management Act: Reference ***<http://www.ecy.wa.gov/programs/sea/SMA/index.html>***

Washington's Shoreline Management Act (SMA) was passed by the State Legislature in 1971 and adopted by the public in a 1972 referendum. It is codified within RCW 90.58. The SMP is essentially a shoreline comprehensive plan and zoning ordinance with an environmental orientation customized to local circumstances. The SMA emphasizes accommodation of reasonable and appropriate shoreline uses, protection of shoreline environmental resources, and protection of the public's right to access and use shorelines. All allowed uses are required to mitigate for any adverse environmental impacts and preserve the natural character and aesthetics of the shoreline.

The SMA seeks to provide for a balance of authority between local and state government. Cities and counties are the primary regulators. The SMA applies to all 39 counties and more than 200 cities with "shorelines of the state" or "shorelines of statewide significance" within their jurisdictional boundaries. Ecology is the lead state agency, and it provides technical assistance and reviews local programs and permit decisions. The SMA places a strong emphasis on public involvement in developing local shoreline programs, and it provides opportunities for public involvement in individual permits.

In December 2003, new shoreline master program (SMP) guidelines were adopted by the state. These state rules are used by cities and counties as they update plans that regulate development

and the use of shorelines of marine waters, rivers and larger streams, lakes and reservoirs over 20 acres, associated wetlands, and portions of flood plains. In addition, the 2003 legislature adopted amendments to the SMA addressing integration with the Growth Management Act.

Fish and Wildlife and the Growth Management Act

The Growth Management Act (GMA) (RCW 36.70A) is intended to avoid the possibility of uncoordinated and unplanned growth inherent in anticipated population increases. It requires county and city governments to adopt locally derived plans and regulations around a basic framework of natural resources issues defined by the state legislature. One of the primary intents of the GMA is to prevent unwise use of natural resource and critical areas in accommodating urban growth.

Each jurisdiction must classify and designate their resource lands and critical areas, and each must adopt development regulations for their critical areas. In addition, some jurisdictions must adopt planning policies and comprehensive plans that address many aspects of urban growth and development that are expected to occur in the county, including land use, housing, utilities, transportation, and others. Subsequent amendments to the GMA require that counties and cities include the best available science in developing policies and development regulations to protect the functions and values of critical areas. In addition, counties and cities must give special consideration to conservation or protection measures necessary to preserve or enhance anadromous fisheries.

The Washington Department of Fish and Wildlife (WDFW) has biologists in 5 of its 6 regions that provide technical assistance to local jurisdictions in complying with the requirements of the GMA regarding fish and wildlife resources. One of the primary goals of WDFW is to integrate its Priority Habitats and Species (PHS) program into the local jurisdictions' GMA planning activities.

Priority Habitat and Species Program

The Priority Habitats and Species (PHS) Program fulfills one of the most fundamental responsibilities of the Washington Department of Fish and Wildlife (WDFW): to provide comprehensive information on important fish, wildlife, and habitat resources in Washington. Initiated in 1989, the PHS Program was identified as the agency's highest priority. Today, the PHS Program serves as the backbone of WDFW's proactive approach to the conservation of fish and wildlife.

PHS is the principal means by which WDFW provides important fish, wildlife, and habitat information to local governments, state and federal agencies, private landowners and consultants, and tribal biologists for land use planning purposes. PHS is the agency's primary means of transferring fish and wildlife information from agency resource experts to those who can protect habitat. PHS information is used:

to screen 12,000 - 15,000 Forest Practice Applications, 10,000 - 18,000 Hydraulic Project Applications, and over 3,000 SEPA reviews annually;

- by a majority of cities and counties to meet the requirements of the Growth Management Act;
- for the development of Habitat Conservation Plans on state, federal, and private lands;

- by state, federal, and tribal governments for landscape-level planning and ecosystem management;
- for statewide oil spill prevention planning and response.

PHS provides the information necessary to incorporate the needs of fish and wildlife in land use planning. The PHS program addresses three central questions:

1. Which species and habitat types are priorities for management and conservation?
2. Where are these habitats and species located?
3. What should be done to protect these resources when land use decisions are made?

To answer those essential questions, the PHS Program:

- identifies habitats and species determined to be priorities based on defensible criteria;
- maps the known locations of priority habitats and species using GIS technology;
- provides information on the conditions required to maintain healthy populations of priority species and viable, functioning priority habitats using best available science;
- provides consultation and guidance on land use issues affecting priority habitats and species;
- distributes this information and makes it easily accessible.

PHS also furnishes products that enable the agency to provide competent and efficient customer service. In this regard, PHS staff annually produce and distribute:

- over 4,000 copies of the Priority Habitats and Species List. The PHS List identifies and defines which species and habitats are priorities, and it outlines criteria used for choosing them.
- over 3,500 copies of Management Recommendations for Washington's Priority Habitats and Species. These detailed documents identify the needs of fish and wildlife based on the best available science. Guidelines for their incorporation in management decisions are provided.
- nearly 2,000 state-of-the-art Geographic Information System (GIS) maps which display locations and extent of priority species and habitats on 29 million acres in Washington State.

Okanogan-Similkameen Conservation Corridor Program

The goal of conservation OS CCP is to maintain the rich biodiversity of the region, including the species at risk, and a viable ecological Corridor between the deserts to the south and the grasslands to the north. This program will protect and restore wildlife habitats on public and private land, with an emphasis on the following priority habitats: shrubsteppe, dry coniferous forest, riparian, and rugged terrain. Program staff will coordinate efforts between state, federal, local, tribal, Canadian, and nonprofit entities, within the Okanogan and Similkameen watersheds, and seek to expand community involvement and promote ecologically sustainable land use.

Road Maintenance/Transportation

RCW 77.55.060 requires that “a dam or other obstruction across or in a stream shall be provided with a durable and efficient fishway approved by the director.” Culverts and other stream crossing structures often create obstructions to upstream or downstream fish passage.

Fish Passage Barrier and Surface Water Diversion Screening Assessment and Prioritization Manual

WDFW has developed the Fish Passage Barrier and Surface Water Diversion Screening Assessment and Prioritization Manual (contact Dave Caudill, Habitat Technical Applications Division, 360-902-2486), which includes protocols for assessing fish passage barrier status at culverts and other instream structures, and juvenile fish screening and bypass status at water diversions.

WDFW conducts fish passage barrier assessments and provides protocol training to other agencies and grant groups interested in conducting fish passage barrier assessments. WDFW also maintains a statewide Fish Passage and Diversion Screening Inventory database (contact Brian Benson, Habitat Science Division, 360-902-2570) that includes information on barrier status of inventoried culverts and other stream crossing structures, and known diversion screening information.

The WDFW Habitat Program Technical Applications Division (TAPPS) also provides technical assistance to fish passage, screening, and habitat restoration project sponsors, to help them develop habitat-related projects. In addition, WDFW in cooperation with other state and federal agencies have developed Aquatic Habitat Guidelines technical guidance documents for certain types of habitat projects.

The two guidance documents currently available include the Fish Passage Design at Road Culverts and Integrated Streambank Protection Guidelines (ISPG); soon to be available will be Salmon Habitat Restoration Guidelines (SHRG). Information on technical assistance opportunities and contacts are available on the WDFW website at <http://wdfw.wa.gov/hab/tapps.index.htm>

The Hydraulic Code and Hydraulic Code Rules

The Hydraulic Code (Chapter 77.55 RCW) and the associated Hydraulic Code Rules provide WDFW with a regulatory mechanism to protect fish life and their habitat from the impacts of most hydraulic projects.

The Hydraulic Code requires that “in the event that any person or government agency desires to construct any form of hydraulic project or perform other work that will use, divert, obstruct, or change the natural flow or bed of any of the salt or fresh waters of the state, such person or government agency shall, before commencing construction or work thereon and to ensure the proper protection of fish life, secure the approval of the department as to the adequacy of the means proposed for the protection of fish life.”

WDFW’s authority extends only to the protection of fish life. Fish life is broadly defined to be “all fish species, including but not limited to food fish, shellfish, game fish, and other nonclassified fish species and all stages of development of those species.” Furthermore, “protection of fish life” is defined to mean “prevention of loss or injury to fish or shellfish, and

protection of the habitat that supports fish and shellfish populations.” Even though other animals such as amphibians, reptiles or birds may be impacted by hydraulic projects, the Hydraulic Code is specific to fish life and HPAs may not be conditioned to protect species other than fish. Measures to protect fish life imposed in HPAs often have multi-species benefits, though, because many species share the same habitat.

Hydraulic project proponents must apply to WDFW for authorization to conduct their projects. With the exception of emergency projects and pamphlet HPAs, which may be applied for verbally, applications must be submitted in writing. Processing time for complete applications is mandated by statute to be no greater than 15-days for expedited projects and 45-days for standard projects. Projects declared to be emergencies by county legislative authorities or by WDFW must be granted approval immediately upon request.

Procedures administering the Hydraulic Code, including mitigation requirements and appeal rights, are specified in Chapter 220-110 WAC. Site-specific requirements and mitigation for unavoidable impacts to fish life are written into the HPA by the local Area Habitat Biologist.

Hatchery and Genetic Management Plans (HGMP)

Upper Columbia Summer Chinook Salmon Mitigation and Supplementation Program-Eastbank (Rocky Reach and Rock Island Settlement Agreements) and Wells (Wells Settlement Agreement) Fish Hatchery Complexes.

The Upper Columbia HGMPs address Upper Columbia River spring and Summer/fall-run ESU Chinook salmon (*Oncorhynchus tshawytscha*) upstream of Priest Rapids Dam. The summer Chinook salmon supplementation project operated and managed by WDFW in the upper Columbia River region are “integrated harvest” programs.

The Colville Tribes have completed drafts for summer/fall, steelhead and spring Chinook HGMP’s and are using these plans to plan for integrated recovery, integrated harvest and restoration of natural broodstock programs in the Okanogna and Upper Middle Mainstem subbasins.

WDFW is the lead agency in this summer Chinook salmon run size enhancement program funded by Public Utility District (PUD) No. 1 of Chelan County and PUD No. 1 of Douglas County for the purpose of mitigation for lost fish production as a result of fish mortality at the Rock Island, Rocky Reach, and Wells hydroelectric projects.

The goal of the regional summer Chinook artificial propagation programs is to mitigate for the loss of summer Chinook salmon adults that would have been produced in the region in the absence of Wells, Rocky Reach, and Rock Island hydroelectric projects.

This goal can be met through the use of the artificial environment of fish rearing facilities to increase the number of adults that return to the basin by increasing survival at life-history stages where competitive or environmental bottlenecks occur. Concurrently, a release strategy for artificial production is employed that will not create a new bottleneck in productivity through competition with the naturally produced component of the population and other naturally produced stocks.

The Chief Joseph Dam Hatchery Master Plan

The Master Plan for the Chief Joseph Dam Hatchery Program (CJDHP) describes the rationale, local and regional context, conceptual design of artificial production facilities, conceptual monitoring and evaluation plans, and estimated costs necessary to implement a comprehensive management program for summer/fall Chinook salmon in the Okanogan subbasin and the Columbia River between Wells and Chief Joseph dams. The content of the CJDHP Master Plan was developed to meet the Step 1 requirements of the Council's three-step process for artificial production initiatives. Additionally, in its overall design and through its programmatic objectives and actions, the CJDHP is consistent with recommendations presented in the Independent Science Advisory Board's Review of Salmon and Steelhead Supplementation and the Council's recently completed draft Artificial Production Review and Evaluation. The full Master Plan is available from the NPCC and/or BPA. An electronic appendix to this subbasin plan also provides further information on this program

The Okanogan Conservation District (OCD)

The Okanogan Conservation District strongly endorses the voluntary Coordinated Resource Management planning process for managing natural resources. In the Okanogan Watershed Management Planning Area there are 15 active Coordinated Resource Management planning groups with another eight planning groups starting up in the next five years in the Omak Creek Watershed.

These local planning groups operate within a framework of existing laws and regulations. They can assist and work with, but not over-ride, the decision-making authority of those responsible for public and private lands and resource management. The process provides for a voluntary coordination of activities toward common objectives and solves management problems through plan implementation.

Non-Government Organizations

The Upper Columbia Salmon Recovery Board (UCSRB)

Our proposal to cooperatively provide the analytic foundation complements the high level of policy and technical coordination already occurring. Policy coordination is facilitated by the Upper Columbia Salmon Recovery Board (UCSRB), a partnership among Chelan, Douglas, and Okanogan counties, the Yakama Nation, and the Colville Tribes in cooperation with local, state, and federal partners.

One clear objective is to provide an all-inclusive analytic foundation for the aquatic component of subbasin plans on a timely basis, consistent with the NPPC guide, to maximize the likelihood that defensible subbasin plans are completed on schedule.

Additionally, technical coordination is occurring with the Upper Columbia Regional Technical Team and the Regional Assessment Advisory Committee and well as individual members of BPA, the NWPPC and the CBFWA.

Upper Columbia River Regional Fisheries Enhancement Group (UCRFEG)

The UCRFEG was created to facilitate community stewardship of fish and fish habitats in the Upper Columbia Region, including the Okanogan watershed. The group coordinates delivery of state salmon recovery funding for local community projects and has facilitated some cross border US-Canada community demonstration projects in the Okanogan in partnership with the OSBFP.

North Central Washington Audubon Society (NCWAS)

North Central Washington Audubon Society, a local chapter of the National Audubon Society, is dedicated to furthering the knowledge and the conservation of the environment of North Central Washington, our Nation, and the World.

The status of the yellow-breasted chat population in the Okanogan Valley of B.C. is of significance to the society in the Okanogan as an indicator of riparian ecosystem health. This is of concern in the Okanogan where much riparian habitat has been replaced by other land uses. The Washington population of yellow-breasted chat plays an important role in the persistence of the species in B.C. Current breeding populations of yellow-breasted chats are down to about 40 pairs there. The chapter also sponsors regular field trips, publishes a local newsletter and plays an active role in education events and land conservation issues throughout the Chelan, Douglas, Okanogan and Ferry county region.

Canadian Federal

Fisheries and Oceans Canada (DFO)

Fisheries and Oceans Canada is responsible for policies and programs in support of Canada's economic, ecological, and scientific interests in oceans and inland waters. Its mandate, (based in the Federal Fisheries Act) includes the conservation and sustainable utilization of Canada's fisheries resources in marine and inland waters; leading and facilitating federal policies and program on oceans; and safe, effective, and environmentally sound marine services responsive to the needs of Canadians in a global economy.

DFO is the main agency holding authority under the federal Fisheries Act for the management of fish and fish habitat and has been a lead advocate for the federal government in the restoration of Okanogan salmon populations and their habitat, and the First Nations salmon fisheries in the region.

Environment Canada (EC)

Environment Canada is a federal agency whose mandate is to preserve and enhance the quality of the natural environment, including water, air, and soil quality. In addition, this agency strives to conserve Canada's renewable resources, including migratory birds and other non-domestic flora and fauna, and to protect Canada's water resources.

Environment Canada enforces the rules made by the Canada–United States International Joint Commission relating to boundary waters, and coordinates environmental policies and programs for the federal government related to the joint Georgia Basin-Puget Sound Ecosystem Initiative. There has been some consideration given to the engagement of the Okanogan programs in this trans-boundary partnership with respect to coordinating the recovery of federally listed Endangered species/species at risk in both Canada and US.

Canadian Okanogan Basin Technical Working Group (COBTWG)

This group is a cooperative endeavor between ONA, FOC, and MWALP to coordinate management of salmon and steelhead restoration with the management of resident fish stocks like kokanee within the Okanogan Basin.

Current activities include restoration of sockeye passage in the Skaha Lake system, developing fish-water management tools for balancing lake and river flows to optimize kokanee and salmon management objectives, and Okanagan river habitat restoration.

Canada – B.C. Agreement on the Management of Pacific Salmon Fishery Issues

In 1997 the federal and provincial fisheries agencies in the B.C. Pacific Region created a forum for reviewing policy initiatives and coordinating agreed salmon-related initiatives being pursued by the two governments.

The Agreement established a Council of Fisheries ministers. This agreement gives rise to important guidelines for habitat management coordination between the provincial and federal governments on fish habitat restoration in the trans-boundary Okanogan River.

The Pacific Fisheries Resource Council (PFRCC)

The PFRCC advises the Council of Fisheries Ministers regarding matters of conservation and long-term sustainable use of salmon resources and habitat. The PFRCC released a report in 2002 highlighting the need for trans-border cooperation in salmon ecosystem recovery in the Okanagan River.

Province of B.C.

B.C. Ministry of Water, Land and Air Protection (MWLAP)

MWLAP is a provincial government agency that is responsible for fish and wildlife habitat and species protection and recreational fish and wildlife management.

This agency also includes management of air, land and water pollution, environmental emergencies, parks, recreation and protected areas, and flood plain management.

The province also exercises delegated authority under the federal Fisheries Act for the management of the non-salmon freshwater fisheries. A significant body of knowledge has been generated by this ministry on the status of fish stocks and habitats in the Okanagan subbasin.

The Okanagan Lake Action Plan

The Okanagan Lake Action Plan is a significant provincial fisheries program of the MWLAP in the Okanagan valley, initiated in 1996 after the closure of the kokanee sport fishery the previous year.

The goal of the plan is to identify biological relationships within Okanagan Lake to determine limiting factors to kokanee production. In addition, the plan will determine remedial measures that will result in the recovery of the lake's kokanee population.

B.C. Ministry of Sustainable Resource Management (MSRM)

The B.C. Ministry of Sustainable Resource Management is responsible for Crown land policy and protected areas establishment, and sustainable resource planning including the coordination of implementation of Land and Resource Management Plans (LRMPs). In addition, MSRM is responsible for coordinating resource inventories, archaeology, surveying and mapping and data base development, and environmental assessment.

The MSRM is participating in a planning partnership with the Regional Development of Central Okanagan to develop a Water Use Plan for the Trepanier Creek Watershed, a tributary of Okanagan Lake. In response to the Growth Management Strategy of the regional district, this planning initiative is to allocate water (if any) at the strategic level with proposed land use designations on private land to accommodate future settlement while maintaining instream flows to support aquatic ecosystems

The MSRM is working collaboratively with the Okanagan Basin Technical Working Group on the development of a Watershed-based Fish Sustainability Plan that is being developed to dovetail with the Okanagan Subbasin Plan and the Okanagan-Shuswap LRMP.

Land and Water B.C. (LWB.C.)

LWBC is a crown corporation (owned by government, but operated as a semi-autonomous corporation) responsible for water management and licensing under the direction of lead provincial agencies for planning, fish and wildlife.

LWBC is responsible for managing lake levels at water flow control structures on Okanagan Lake, Skaha Lake and Vaseux Lake, and is a partner in the fish-water management tools project associated with the COBTWG. As a provincial agency, LWBC administers Crown land and water consistent with the Okanagan-Shuswap LRMP

B.C. Ministry of Forests (MoF)

B.C. MoF is a provincial government agency that strives to encourage maximum timber resource productivity. Its mandate is to manage timber resources responsibly to achieve the greatest short- and long-term social benefits; practice integrated resource management; encourage a globally competitive forest industry; and assert the financial interests of the Crown. As a provincial ministry, all operational planning approved by MoF is to be consistent with the Okanagan-Shuswap LRMP.

Significant watershed and fish habitat assessment, inventory and restoration activities were funded over the last decade through Forest Renewal B.C. in cooperation with MWLAP. That program was discontinued in 2002.

Watersheds B.C.

The Watershed B.C. project is hosted by the B.C. MWLAP with the objective to supply decision-makers with information on land and water resources throughout B.C. This assessment project consists of a users guide, a map of 18,000 provincial watersheds, and a database with 436 attribute measurements for each watershed. It may be found at <http://home.gdbc.gov.bc.ca/watershedsB.C>.

B.C. Watershed Ranking Tool

Hosted by MWALP, the B.C. Watershed Ranking Tool summarizes province-wide data sets from Watershed B.C., and consists of three complementary products:

- a spreadsheet containing 150 attributes for each watershed
- an associated GIS data set

- a Watershed Ranking Atlas which maps watershed boundaries

More information on the Watershed Ranking Tool, including data sets may be viewed at www.env.gov.bc.ca/gdbc/watershed_ranking.

Interior Watershed Assessment Procedures

Under the B.C. Forest Practices Code, numerous interior watersheds assessments (IWAP) were required for watersheds with high value fisheries potential were conducted in the Okanagan in collaboration between the B.C. Ministry of Forests (MOF) and MWLAP in association with local forest industry and local partners.

The IWAP results were used in the Thompson Okanagan Resource Management Plan. For further information on IWAPs, refer to the Interior Watershed Assessment Procedure Guidebook from the MOF or refer to www.for.gov.bc.ca/tasb/legsregs/fpc/fcguide/iwap/

Thompson-Okanagan Resource Management Plan

The Thompson-Okanagan Resource Management Plan was funded by Forest Renewal B.C. in 1998/99 to develop a guide to restore fish habitat and water quality in key watersheds damaged by past forest practices. Watersheds were ranked according to fish use, domestic water consumption, logging impacts and restoration potential. For further information on this plan, refer to the Thompson-Okanagan Regional Plan 1998-2005, or go to www.for.gov.bc.ca/cpp/rmp/wrp/

Okanagan Land and Resource Management Plan (LRMP)

The Okanagan- Shuswap LRMP, approved by the BC Cabinet in 2001, provides strategic resource management direction to the use of land and resources over the public land (outside Protected Areas) in the subbasin. Because of the high area of Provincial Crown land, the Okanagan-Shuswap LRMP applies to approximately 65% of the sub-basin area..

Some Okanagan LRMP recommendations applicable to Okanagan watershed restoration include:

Inventory and identify environmentally sensitive and critical fish habitats

Restore depressed salmon and freshwater fish populations to the capacity of the system

Restore salmon and freshwater fish habitat where it is not functioning at, or near capacity

Restore habitats on private lands through voluntary stewardship agreements

For further information on the Okanagan LRMP, refer to For further information on the Okanagan LRMP, refer to Appendix E or website: <http://srmwww.gov.bc.ca/sir/lrmp/okan/>.

A summary of objectives and strategies pertaining to the enhancement and restoration of fish and wildlife habitats and populations that apply within the subbasin is in appendix ?.

Watershed-based Fish Sustainability Planning (WFSP)

WFSP was designed as a standard planning framework designed by the provincial and federal government with input from First Nations and key stakeholders. The objective is to make fish planning more consistent throughout B.C. and to enable coordinated government involvement with local partners.

The WFSP is designed to accommodate any number of common objectives and to integrate existing or new information in planning for fish and habitat restoration on public and private lands.

The WFSP is the preferred model for use in the Okanagan by the COBTWG to incorporate past government efforts and existing data sets, and new information as required. The tool is very similar to the subbasin plan, and is considered suitable to adapt the Canadian agency participation in the subbasin planning effort.

For further information about the WFSP process e-mail wfsp.info@pac.dfo-mpo.gc.ca

B.C. Conservation Data Center (CDC)

The British Columbia Conservation Data Center (CDC) systematically collects and disseminates information on the rare and Endangered plants, animals and plant communities of British Columbia.

This information is compiled and maintained in a computerized database that provides a centralized and scientific source of information on the status, locations and level of protection of these rare organisms and ecosystems.

The CDC is part of the Registries and Resource Information Division in the B.C. Ministry of Sustainable Resource Management. It is also part of NatureServe, an international organization of cooperating Conservation Data Centers and Natural Heritage Programs all using the same methodology to gather and exchange information on the Threatened elements of biodiversity. Several freshwater resident fish stocks indigenous to the Okanagan-Similkameen Watershed are contained in the data center listings as Endangered, Threatened or of special concern.

Further information on the CDC can be found at <http://srmwww.gov.bc.ca/cdc/index.htm>

Sensitive Ecosystems Inventory (SEI)

The purpose of the SEI project is to identify remnants of rare and fragile terrestrial ecosystems and to encourage land-use decisions that will ensure the continued integrity of these ecosystems. It is intended for use in a variety of land-use planning processes. A Conservation Manual provides guidance on the protection of sensitive ecosystems.

Because the information was mapped at a 1:20,000 scale, the boundaries of an identified sensitive ecosystem will have to be verified through a field check.

The Regional District of Central Okanagan in partnership with the Ministry of Environment, Lands and Parks (Resources Inventory Branch, Wildlife Inventory Section and the B.C. Conservation Data Centre) and with the support of the Habitat Conservation Trust Fund is now completing a Sensitive Ecosystems Inventory. The inventory will provide a baseline of information for conservation planning and voluntary land stewardship activities in the region. The Terrestrial Ecosystems Mapping (TEM) approach

The study area for the Central Okanagan SEI includes the low and mid-elevation lands within the electoral areas of the Regional District. These are areas that are under strong pressure to urbanize as growth in the region pushes out well beyond the City of Kelowna's municipal boundaries.

The inventory work complements the exhaustive habitat inventory work completed in the South Okanagan (see Habitat Atlas for Wildlife at Risk, South Okanagan and Similkameen) and provides another key building block for an Okanagan-wide conservation strategy.

For more information visit <http://srmwww.gov.bc.ca/cdc/sei/seiprojects.htm> or contact Ken Arcuri, Director of Planning Services, Regional District of Central Okanagan (250) 868-5246.

Canadian Non-Government Organizations

Okanagan-Similkameen-Boundary Fisheries Partnership (OSBFP)

The OSBFP is a Canadian-based partnership of community and government organizations whose priority it is to protect and restore regional wild indigenous fish stocks and their habitat for present and future generations.

Created in 1999, the OSBFP functioned as a delivery partner with the B.C. Government program called Fisheries Renewal B.C. (discontinued in 2001). This group is hosted by the ONA and remains committed to coordinating community participation in fisheries planning in the Okanagan valley.

South Okanagan Similkameen Conservation Program (SOSCP)

A partnership of over 40 conservation groups, agencies, universities, First Nations organization, and other Non-government organizations, the South Okanagan-Similkameen Conservation Program facilitates collaboration on conservation efforts to address species at risk in the South Okanagan region.

SOSCP is a key non-government agency in facilitating wildlife stewardship across the border in the Okanagan Subbasin.

Partners in Flight B.C./Yukon and the Canadian Intermountain Joint Venture (CIJV)

Partners in Flight B.C./Yukon and the CIJV support advancement of transboundary conservation efforts in the Okanagan/Okanogan-Similkameen region in partnership with existing programs and initiatives including the South Okanagan - Similkameen Conservation Program (SOSCP), the Okanagan - Similkameen Conservation Corridor Project (OSCCP) and the Intermountain West Joint Venture (IWJV).

The Intermountain West Joint Venture (IWJV) has been working with the State of Washington to identify key habitat focus areas for conservation work important to birds and have identified priority areas for collaborative work. These areas are being identified in an All-Bird Implementation Plan.

Collaborative development of a regional resolution to address fish passage issues at Enloe Dam

On March 29, 2001, The Colville Tribes Business Council and the Okanagan Nation Alliance signed a joint letter of commitment, quoted here:

In this joint letter of commitment, the Colville Tribes Business Council and the Okanagan Nation Alliance commit to the collaborative development of a regional resolution to fish passage issues at Enloe Dam, and working with the Upper and Lower Similkameen Bands in particular to

protect related fishing rights and interests. The collaborative activities will include working together on common fisheries interests to facilitate a broader ecosystem approach to fisheries, focusing on common restoration programming in the Okanagan-Similkameen sub-basin.

Collaborative fisheries programming will address long-term ecosystem perspectives in the restoration of the subbasin and the region's tribal/First Nation's fisheries. Restoration programming may consider subbasin fisheries as part of broader collaborative fisheries programming in the Columbia watershed, and in the Upper Columbia Watershed in particular. Key elements of the collaborative programming will address, although are not limited to the following:

- protection of fishing rights and interests;
- rehabilitation of the watershed's aquatic environments;
- cooperative conservation and management of common fisheries interests; and
- development of the regions' tribal/First Nation's fisheries.
- The Council confirms its respect for the spiritual prohibitions against salmon passage at Enloe Dam, and the need to involve the Upper and Lower Similkameen Bands in related policy and program planning.

4.3 Artificial Production

In 1937 the Grand Coulee Fish Maintenance Project (GCFMP) was launched to mitigate for the loss of anadromous fish anticipated because of the impending completion of Grand Coulee Dam. Under the GCFMP, between 1939 and 1943 all adult salmon and steelhead were intercepted at Rock Island Dam for brood stock (Fish and Hanavan 1948; Chapman et al. 1995). Some adults were released in enclosed areas of each river to spawn naturally, while others were brought into the hatcheries for artificial production.

The various tributary stocks of each species were mixed in the hatchery program with the resultant young released throughout the Wenatchee, Entiat, Methow and Okanogan River drainages. After 1943 the hatchery depended on eggs from previous hatchery stock, augmented with eggs from non-indigenous populations from other Columbia River Basin locations (BAMP 1998).

The construction of the Mid-Columbia hydroelectric projects (Rocky Reach and Priest Rapids dams in 1961, Wanapum Dam in 1964 and Wells Dam in 1967) contributed to further declines in naturally occurring anadromous fish production in the Mid-Columbia River Basin. The hatchery programs developed to mitigate for losses associated with the Mid-Columbia hydroelectric projects relied historically (and at present) on locally returning populations of anadromous fish (spring Chinook, summer Chinook, summer steelhead and sockeye).

Initially, Mid-Columbia anadromous fish production, like much hatchery production throughout the basin, was designed to replace lost productivity with little emphasis placed on recovery of locally adapted populations. Today's hatchery programs seek to address mitigation obligations in addition to preserving and enhancing indigenous fish populations.

There are four hatcheries that supply/supplied salmonids to the Okanogan Basin lakes and streams in recent history. Salmon supplementation programs are addressed by two HGMPs: Upper Columbia fall (summer) Chinook and Mid-Columbia Coho Reintroduction. Details outlining production objectives are contained in Management of Focal Species.

Although no coho reintroduction programs are considered at this time to the Okanogan subbasin as part of the Mid-Columbia River Coho Reintroduction HGMP, the Winthrop National Fish Hatchery may be considered in the future for rearing juvenile coho from broodstock returning to the Methow basin.

Okanagan hatchery supplementation programs are currently designed to operate in a manner consistent with the Mid-Columbia River Biological Assessment and Management Plan (NMFS, 1998b). The first objective of outplanting of salmon is in response to the Endangered Species Act (ESA 1973 and amendment 16 USC. 1531 et seq.) to support the conservation of Threatened and Endangered species in their natural habitats to self-sustaining levels without further legal protection.

Upper Columbia Fall Chinook supplementation has been planned as a result of fish mortality at the Rock Island, Rocky Reach, and Wells hydroelectric projects.

Various processes are underway within the Columbia Basin that direct hatchery program implementation. The listing of certain populations of fish under the ESA has also dictated hatchery program modifications and reform. The principal processes are described in the following overview.

Federal

Hatchery and Genetic Management Plans

The Hatchery and Genetic Management Plan (HGMP) process was initiated to identify offsite mitigation opportunities associated with operation of the federal Columbia River Power System. The HGMP process is designed to describe existing propagation programs, identify necessary or recommended modifications of those programs, and help achieve consistency of those programs with the Endangered Species Act. The HGMP process only addresses anadromous salmon and steelhead programs.

Hatchery and Genetic Management Plans are described in the final salmon and steelhead 4(d) rule (July 10, 2000; 65 FR 42422) as a mechanism for addressing the take of certain listed species that may occur as a result of artificial propagation activities. NOAA Fisheries will use the information provided by HGMPs in evaluating impacts on anadromous salmon and steelhead listed under the ESA. In certain situations, the HGMPs will apply to the evaluation and issuance of section 10 take permits. Completed HGMPs may also be used for regional fish production and management planning by federal, state, and tribal resource managers.

The primary goal of the HGMP process is to devise biologically-based artificial propagation management strategies that ensure the conservation and recovery of listed Evolutionarily Significant Units (ESUs). The HGMP process also seeks to document and implement hatchery reform in the Columbia Basin. Much of the initial work on the HGMP process was coordinated and combined with efforts to complete the Artificial Production Review and Evaluation (APRE – see below)) analysis, which looked at the same sorts of information.

4.3.1 Artificial Production Review and Evaluation (APRE)

The APRE process seeks to document progress toward hatchery reform in the Columbia Basin. The NPCC used consultants and representatives of the Columbia Basin fishery managers to analyze existing programs and recommend reforms; a draft report that will go to the Council and the region has been prepared. The APRE process includes both anadromous and non-anadromous fish in its analysis.

Pacific Coastal Salmon Recovery Fund

The Pacific Coastal Salmon Recovery Fund (PCSRF) was established in FY2000 to provide grants to the states and tribes to assist state, tribal and local salmon conservation and recovery efforts. The PCSRF was requested by the governors of the states of Washington, Oregon, California and Alaska in response to Endangered Species Act (ESA) listings of West Coast salmon and steelhead populations. The PCSRF supplements existing state, tribal and federal programs to foster development of federal-state-tribal-local partnerships in salmon recovery and conservation; promotes efficiencies and effectiveness in recovery efforts through enhanced sharing and pooling of capabilities, expertise and information. The goal of the Pacific Coastal Salmon Recovery Fund is to make significant contributions to the conservation, restoration, and sustainability of Pacific salmon and their habitat.

The PCSRF's enhancement objective is: To conduct activities that enhance depressed stocks of wild anadromous salmonids through hatchery supplementation, reduction in fishing effort on depressed wild stocks, or enhancement of Pacific salmon fisheries on healthy stocks in Alaska. This includes supplementation and salmon fishery enhancements.

US v. OR

United States v Oregon, originally a combination of two cases, *Sohappy v. Smith* and *US v. Oregon*, legally upheld the Columbia River treaty tribes reserved fishing rights. Specifically the decision acknowledged the treaty tribes reserved rights to fish at "all usual and accustomed" places whether on or off the reservation, and were furthermore entitled to a "fair and equitable share" of the resource. Although the *Sohappy* case was closed in 1978, *US v. Oregon* remains under the federal court's continuing jurisdiction serving to protect the tribes' treaty reserved fishing rights. This case is tied closely to *US v. Washington*, which among other things defined "fair and equitable share" as 50 % of all the harvestable fish destined for the tribes' traditional fishing places, and established the tribes as co-managers of the resource.

In 1988, under the authority of *US v. Oregon*, the states of Washington, Oregon and Idaho, federal fishery agencies, and the treaty tribes agreed to the Columbia River Fish Management Plan (CRFMP), which was a detailed harvest and fish production process. There are no financial encumbrances tied to the process. Rather, the fish production section reflects current production levels for harvest management and recovery purposes, since up to 90% of the Columbia River harvest occurs on artificially produced fish. This Plan expired in 1998, and has had subsequent annual rollover of portions in which agreement has been reached. However, a newly negotiated CRFMP is forthcoming.

Hatchery production programs in the upper Columbia sub-basins are included in the management plans created by the fishery co-managers identified in the treaty fishing rights case *United States v Oregon*. The parties to *US v Oregon* include the four Columbia River Treaty Tribes –

Yakama Nation, Warm Springs, Umatilla, and Nez Perce tribes, NOAA-Fisheries, US Fish and Wildlife Service, and the states of Oregon, Washington, and Idaho. The Shoshone-Bannock Tribe is admitted as a party for purposes of production and harvest in the upper Snake River only. These parties jointly develop harvest sharing and hatchery management plans that are entered as orders of the court that are binding on the parties. The “relevant co-managers” described in the US v Oregon management plans are, for the mid-Columbia sub-basins, the federal parties, Yakama Nation, and Washington Department of Fish and Wildlife.

Hatchery programs are viewed by some tribes as partial compensation for voluntary restrictions to treaty fisheries imposed by the tribe to assist in rebuilding upriver populations of naturally spawning salmonids. Because treaty and non-treaty fisheries are restricted on the basis of natural stock abundance, the tribal priority is to use hatcheries in a manner that supplements natural spawning and increases average population productivity. Perspectives on the appropriate use of hatchery-origin fish for supplementation vary between federal, state, and tribal fish co-managers. Federal, and, to a lesser degree, state co-managers place a higher priority on managing the genetic risks of hatchery supplementation of natural populations, while the tribe sees the demographic threats of habitat loss and degradation as the greater risk to natural populations. In general, however, all parties agree that hatcheries can and should be operated as integral components of natural populations where the survival benefits of the hatchery can result in a significant increase in net population productivity.

ESA Permits

Section 7

The Endangered Species Act (ESA) has a broader mandate than simply directing the USFWS and NOAA Fisheries to protect listed fish, animals and plants. It directs all federal agencies to participate in Endangered species conservation. Under section 7 of the ESA, federal agencies are required to consult with USFWS and NOAA-Fisheries to ensure that actions they fund, authorize, permit or otherwise carry out will not jeopardize the continued existence of any listed species or adversely modify designated critical habitats. For further information regarding consultation see <http://Endangered.fws.gov/consultation>.

USFWS, Central Washington Field Office 215 Melody Lane, Suite 119, Wenatchee WA 98801. Telephone: (509) 665-3508.

NOAA Fisheries, 304 S. Water Street, #201, Ellensburg, WA 98926. Telephone (509) 962-8911

Section 10 : Habitat Conservation Plans

In 1982, the US congress amended section 10 of the ESA to authorize “incidental take” through the development and implementation of Habitat Conservation Plans (HCP). An incidental take permit allows property owners, state or county entities to conduct otherwise lawful activities in the presence of listed species. A non-federal entity develops an HCP in order to apply for an incidental take permit under section 10(a)(1)(B) of the ESA. The HCP integrates the applicant’s proposed project or activity with the needs of the species. It describes, among other things, the anticipated effect of a proposed taking on the affected species and how that take will be minimized and mitigated. Such information must be submitted with any incidental take permit.

In 2002, habitat conservation plans (HCPs) were signed by Douglas and Chelan PUDs, WDFW, USFWS, NOAA Fisheries, and the Colville Tribes. The overriding goal of the HCPs is to achieve No Net Impact on anadromous salmonids as they pass Wells (Douglas PUD), Rocky Reach, and Rock Island (Chelan PUD) dams. One of the main objectives of the hatchery component of NNI is to provide species specific hatchery programs that may include contributing to the rebuilding and recovery of naturally reproducing populations in their native habitats, while maintaining genetic and ecologic integrity, and supporting harvest. For more information regarding HCPs, see <http://Endangered.fws.gov/hcp/>.

USFWS, Central Washington Field Office 215 Melody Lane, Suite 119, Wenatchee WA 98801. Telephone: (509) 665-3508.

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Natural Resource Conservation Service

One of the purposes of the NRCS is to provide consistent technical assistance to private land users, tribes, communities, government agencies, and conservation districts. The NRCS assists in developing conservation plans, provides technical field-based assistance including project design, and encourages the implementation of conservation practices to improve water quality and fisheries habitat. Programs include the CRP, River Basin Studies, Forestry Incentive Program, Wildlife Habitat Improvement Program, the Environmental Quality Incentives Program, and Wetlands Reserve Program. The USDA Farm Services Administration (FSA) and the NRCS administer and implement the federal CRP and Continuous CRP.

Conservation Reserve Program (CRP)

The enrollment of agricultural land with a previous cropping history into CRP has removed highly erodible land from commodity production. The land is converted into permanent herbaceous or woody vegetation to reduce soil and water erosion. Conservation Reserve Program contracts are for a maximum of 10 years per sign-up period (the contracts may be extended) and have resulted in an increase in wildlife habitat. Cover Practices (CP) that occur under CRP include planting introduced or native grasses, wildlife cover, conifers, filter strips, grassed waterways, riparian forest buffers, and field windbreaks.

Conservation Reserve Program contract approval is based, in part, on the types of vegetation landowners are willing to plant. Cover Practice planting combinations are assigned points based on the potential value to wildlife. For example, cover types more beneficial to wildlife are awarded higher scores. Seed mixes containing diverse native species generally receive the highest scores (FSA 2003).

There are currently an estimated 4,064 acres enrolled in CRP in Okanogan County. Conservation Reserve Program and associated cover practices that emphasize wildlife habitat increase the extent of shrubsteppe habitat, provide connectivity/corridors between extant native shrubsteppe and other habitat types, reduce habitat fragmentation, contribute towards control of noxious weeds, increase landscape habitat diversity and edge effect, reduce soil erosion and stream sedimentation, and provide habitat for a myriad of wildlife species.

Continuous Conservation Reserve Program (CCRP)

The CCRP focuses on the improvement of water quality and riparian areas. Practices include shallow water areas with associated wetland and upland wildlife habitat, riparian forest buffers, filter strips, grassed waterways and field windbreaks. Enrollment for these practices is not limited to highly erodible land, as is required for the CRP, and carries a longer contract period (10 - 15 years), higher installation reimbursement rate, and higher annual annuity rate.

Conservation Reserve Enhancement Program (CREP)

The CREP, established in 1998, is a partnership between USDA and the State of Washington, and is administered by FSA and the WCC. The CREP provides incentives to restore and improve salmon and steelhead habitat on private land. Program participation is voluntary. Under 10 or 15-year contracts, landowners remove fields from production, remove grazing, and plant trees and shrubs to stabilize stream banks.

This also provides wildlife habitat, reduces sedimentation, shades stream corridors, and improves riparian wetland function. Landowners receive annual rent, incentive and maintenance payments, and cost share for practice installations. Payments made by FSA and WCC can result in no cost to the landowner for participation. Both the CRP and CREP utilize herbaceous seedings, shrubs, and trees to accomplish conservation measures that provide short-term high protection for wildlife habitats. It is unknown how many acres in the Subbasin are protected by CREP.

Wildlife Habitat Incentive Program (WHIP)

The WHIP is administered and implemented by NRCS and provides financial incentives to develop wildlife habitat on private lands. Participants agree to implement a wildlife habitat development plan and NRCS agrees to provide cost-share assistance for the initial implementation of wildlife habitat development practices. The NRCS and program participants enter into a cost-share agreement for wildlife habitat development. This agreement generally lasts a minimum of 10 years. It is unknown how many acres in the Subbasin are protected by WHIP.

Environmental Quality Incentives Program (EQIP)

The EQIP is administered and implemented by the NRCS and provides technical, educational, and financial assistance to eligible farmers and ranchers to address soil, water, and related natural resource concerns on their lands in an environmentally beneficial and cost-effective manner. The program assists farmers and ranchers with federal, state, and tribal environmental compliance, and encourages environmental stewardship. The program is funded through the Commodity Credit Corporation.

Program goals and objectives are achieved through the implementation of a conservation plan that incorporates structural, vegetative, and land management practices on eligible land. Eligible producers commit to 5 to 10-year contracts. Cost-share payments are paid for implementation of one or more eligible structural or vegetative practices such as animal waste management facilities, terraces, filter strips, tree planting, and permanent wildlife habitat. Furthermore, incentive payments are made for implementation of one or more land management practices such as nutrient management, pest management, and grazing land management. It is unknown how many acres in the Subbasin are protected by EQIP.

Wetlands Reserve Program (WRP)

The WRP is also administered and implemented by the NRCS. This voluntary program is designed to restore wetlands. Participating landowners can establish permanent or 30-year conservation easements, or they can enter into restoration cost-share agreements where no easement is involved. In exchange for establishing a permanent easement, the landowner receives payment up to the agricultural value of the land and 100 % of the restoration costs for restoring the wetlands. The 30-year easement payment is 75% of what would be provided for a permanent easement on the same site and 75% of the restoration cost. The voluntary agreements are a minimum of 10 years in duration and provide for 75% of the cost of restoring the involved wetlands. Easements and restoration cost-share agreements establish wetland protection and restoration as the primary land use for the duration of the easement or agreement. It is unknown how many acres in the Subbasin are protected by WRP.

The Public Law 566 Small Watershed Program (PL 566)

The Public Law 566 Small Watershed Program can be leveraged with other federal, state, or local program funds to provide wildlife and fisheries protection. Soil and water conservation districts using other project funding sources leverage NRCS program resources in combination to concentrate conservation within watersheds of concern.

Agricultural Community

Private landowners manage the vast majority of ponderosa pine, shrubsteppe, and riparian wetland habitats in the Subbasin. Many landowners protect, enhance, and maintain privately owned/controlled steppe communities and riparian habitats through active participation in the USDA's CRP and CREP programs.

Agriculturalists apply Best Management Practices (BMPs) to croplands to reduce the amount of soil leaving these areas. The BMPs include: upland sediment basins designed to catch sediment; terraces to direct runoff to sediment basins or grassed waterways and filter strips; strip cropping; and direct seeding of crops reducing summer-fallow acres and reducing erosion by 95% on those acres. Landowners also control noxious weeds, which severely affect wildlife habitats and populations.

4.3.2 State

The state, along with the federal government have various forums in which they are active. All have some role in determining or balancing artificial production programs, as well as the ones that follow under "other". Essentially no specific action would occur until the action is determined to be warranted in the already established processes.

4.3.3 Other

FERC processes

The federal Energy Regulatory Commission (FERC): Under current settlement agreements and stipulations, the three mid-Columbia PUDs pay for the operation of hatchery programs within the Columbia Cascade Province. These programs determine the levels of hatchery production needed to mitigate for the construction and continued operation of the PUD dams.

Biological Assessment and Management Plan

The biological assessment and management plan (BAMP) was developed by parties negotiating the HCPs in the late 1990s. The BAMP was developed to document guidelines and recommendations on methods to determine hatchery production levels and evaluation programs. It is used within the HCP as a guiding document for the hatchery programs.

All of these processes affect the hatchery programs within the Upper Columbia Basin in one way or another.

Historic programs

Other than two releases of sockeye as part of the Grand Coulee Fish Maintenance Project, anadromous fish releases began in the Okanogan Basin in the early 1960s, when steelhead were released into the Similkameen River as part of a state program (Chapman et al. 1994). Periodic releases of steelhead have been made since the 1960s (and regularly since the early 1990s) into Omak Creek, and regularly since 1966 into the mainstem Okanogan River as mitigation for the operation of Wells Dam, which is funded by Douglas PUD. A small number of “catchable” trout were also released into the Okanogan, once in the 1940s, and then three more times in the 1970s. Since the early 1990s, summer/fall Chinook have been released in the Similkameen River.

Current program overview

Currently, there are releases of summer/fall Chinook, steelhead, and experimental programs for spring Chinook and sockeye (in Canada).

Table ?. Current artificial anadromous fish production in the Okanogan Subbasin

Fish Species	Facility	Funding Source	Production level goals
Spring Chinook	Omak Creek, Ellisford Pond	BPA, COLVILLE TRIBES	30,000-150,000 (current production is dependent on availability of Carson-stock eggs)
Steelhead	Wells hatchery, Omak Cr.	DPUD	100,000
Summer Chinook	CPUD	Similkameen rearing pond	576,000
Sockeye	none	Douglas PUD	To compensate for impacts to smolts, DPUD has funded a cooperative water flow effort in the Okanogan River upstream from Lake Osoyoos, which has increased survival of incubating sockeye.
Coho	n/a	n/a	n/a

NNI refers to achieving a virtual 100% survival of anadromous salmonids as they pass the mainstem projects. This is achieved through 91% survival of adults and juveniles (or 93% for juveniles) passing the projects, and 7% compensation through hatchery programs and 2% contribution through a tributary fund, which will fund projects to improve salmonid habitat in the tributaries.

State and other programs

Summer/Fall Chinook: Artificial propagation of summer Chinook was initiated in 1989 through a mitigation agreement with Chelan and Douglas PUDs. The program is intended to mitigate for the loss of summer Chinook from the operations of Wells, Rocky Reach, and Rock Island dams (WDFW 1999). This program also provides surplus fish for recreational and tribal ceremonial and subsistence fisheries.

Spring Chinook: Spring Chinook were extirpated from the Okanogan River before the 1930s because of excessive harvest in the lower Columbia River, and habitat destruction in Canadian waters and tributaries of the Okanogan River in the US (Craig and Suomela 1931; Fish and Hanavan 1948). There has never been a formal mitigation program for spring Chinook in the Okanogan River.

Currently, spring Chinook are artificially propagated and released in the Okanogan subbasin through a cooperative agreement between NOAA Fisheries, USFWS, COLVILLE TRIBES, and WDFW, as an interim, segregated harvest program to support tribal ceremonial and subsistence fishing and provide information for a proposed, long-term integrated recovery program.

Steelhead: Wells Hatchery is funded by Douglas PUD and operated by WDFW as mitigation for passage mortalities at Wells Dam. Steelhead are artificially propagated and released in the Okanogan subbasin as an integrated harvest program. The Colville Tribes have also initiated a local broodstock program and will be starting a kelt reconditioning program to create a comprehensive integrated recovery program through funding by BPA.

Release numbers and locations of Wells Hatchery stock steelhead have varied considerably over the past 12 years. In the lower Similkameen River, releases have varied from 37,500 to 82,415 since 1992 (APRE 2003b). Releases elsewhere in the Okanogan subbasin, primarily Omak and Salmon Creeks, has varied from 30,000 to 160,756 since 1992 (APRE 2003a). Current releases of Wells Hatchery stock steelhead are planned at 50,000 into the lower Similkameen River and 50,000 at other locations in the Okanogan subbasin.

Coho: There never has been an artificial propagation program for coho salmon in the Okanogan subbasin, and none are proposed at this time, but may the Yakama are currently piloting a coho restoration plan in the Methow, which if successful includes future extension into the Okanogan River.

Sockeye: Sockeye salmon were to be propagated in the subbasin as part of the authorized mitigation program for Grand Coulee Dam. However, while there were two releases of sockeye into Lake Osoyoos during the GCFMP, the sockeye hatchery was not constructed. A short-term sockeye propagation program was initiated in the 1990s at Cassimer Bar Hatchery, but suspended after only a few years as success was questionable and the direction of mitigation was shifted to habitat improvement in Canadian waters.

Currently, a program funded by Douglas PUD for compensation of sockeye passage losses at Wells Dam, coordinates water releases in the upper Okanogan River, which has increased egg and fry survival of sockeye.

Facilities Description

Summer/fall Chinook

This propagation program is operated as an integrated harvest program to mitigate for the effects of the three PUD dams. Adult summer Chinook are collected at the Wells Dam trap, held at Eastbank Hatchery located on the Columbia River at Rocky Reach Dam, north of Wenatchee. All spawning, incubation and early rearing occur at Eastbank Hatchery. In October, the fingerling Chinook are transported to Similkameen Pond, located at river mile 3.1 on the Similkameen River. Here the fish are acclimated through the winter until their release in April of the following year. In 2004, 100,000 of the program's 576,000 smolt release were reared at the Bonaparte Pond, located at river mile 56 on the Okanogan River, with the intent of dispersing subsequent spawning of returning adults in historical habitats. This program may continue in the future if facility modifications are made to reduce over-winter mortality.

Spring Chinook

Two spring Chinook programs have been initiated in the Okanogan subbasin on an interim, informal basis. In Omak Creek, an integrated recovery program is underway to reintroduce spring Chinook in this historical habitat. The program was initiated in 2001 with scatter planting of 40,000 yearling spring Chinook in Omak Creek, below Mission Falls. These fish were of Carson stock origin reared at Winthrop NFH. These releases continued in 2002 with a scatter planting of 48,000 Carson stock Chinook from Leavenworth NFH. In 2003, 35,000 spring Chinook from Leavenworth NFH were again released in Omak Creek, but were first acclimated at the newly constructed St. Mary's Mission Acclimation Pond. All 45,000 Chinook scheduled for release in 2004 were lost when the new acclimation pond's pump failed. These releases are intended to test the capability of Omak Creek and the Okanogan River to again support spring Chinook.

In the Okanogan River, a segregated harvest program was initiated in 2001 with the acclimation of 254,000 Carson stock spring Chinook in Ellisforde Pond for release in April 2002. These fish were from Winthrop NFH and were surplus to management needs in the Methow subbasin. Releases of 100,000 spring Chinook from Leavenworth NFH were made in 2003 (from Bonaparte Pond) and 2004 (again from Ellisforde Pond). The first returns from these fish are expected in 2005 as four-year-olds. The objective of these fish is to test the capability of the Okanogan River to support spring Chinook migration and to provide a tribal ceremonial and subsistence fishery. No spawning of these fish in the Okanogan River is desired.

Steelhead

Wells Hatchery is located adjacent to Wells Dam at river mile 535 of the Columbia River. The hatchery production destined for the Okanogan is currently operated as an integrated recovery program, contributing to the conservation of the population, but also providing some harvest opportunity. Broodstock is collected from the west bank fish ladder at Wells Dam and from volunteer returns to the Hatchery, held to maturity and spawned at the Hatchery. Two mating categories are used, wild x hatchery crosses and hatchery x hatchery crosses (APRE 2003a). The latter crosses have been released in the Okanogan subbasin, however, plans are now to release H x W crosses in the Okanogan whenever possible. Juvenile steelhead are reared to yearlings, then transported to the Okanogan subbasin where they are scatter planted in the Similkameen River

(50,000), Omak Creek, Salmon Creek, and the Okanogan River (50,000) in late April to mid May.

In 2003, the Colville Tribes initiated a local broodstock program, collecting steelhead returning to Omak Creek. Eggs are incubated and subsequent fingerlings and pre-smolts reared at Colville Trout Hatchery, river mile 542 of the Columbia River. The integrated recovery program is planned to release 20,000 smolts in April or May of each year (NMFS 2003).

Genetic Integrity of Populations

Summer/fall Chinook

The Okanogan subbasin population of summer/fall Chinook is a fully integrated between the natural and hatchery origin fish. “There are no known genotypic, phenotypic, or behavior differences between the hatchery stocks and natural stocks in the target area” (WDFW 1999). The Okanogan and Methow populations have been managed as a single entity with a common hatchery broodstock.

The later-arriving component of the Okanogan summer/fall Chinook population has been severely depressed because of mortalities imposed by passage through nine mainstem dams, higher harvest rates on these fish in lower river fall Chinook fisheries, and the lack of artificial propagation. This component of the run is proposed by intensive propagation to restore its abundance (COLVILLE TRIBES 2004a).

Spring Chinook

There currently is no natural spring Chinook population although the Colville tribes have begun a program to reestablish and restore natural broodstock and populations in the Okanogan subbasin.

Steelhead

Current steelhead populations originated from a mix of indigenous upper Columbia Basin stocks intercepted during the GCFMP of the 1930s and 1940s, and potential resident fish. The Wells Hatchery stock was initiated in the 1960s from naturally spawning populations migrating past Priest Rapids Dam. The genetic background of the stock is therefore from a mix of populations. The stock is considered highly domesticated from years of broodstock collection at the hatchery and the low level of natural-origin fish available for inclusion in the broodstock. With about 81% of the natural spawning escapement consisting of hatchery-origin fish and the Okanogan subbasin receiving progeny of H x H crosses, the natural populations have been substantially affected by the Wells Hatchery program.

The new conservation programs initiated by the Colville Tribes and further efforts of WDFW at the hatchery to incorporate different matings (HxW, etc.) are intended to improve the viability and adaptability of steelhead in the Okanogan (and other) subbasin.

Program Goals and Objectives

Summer/fall Chinook

The goal of the Similkameen Pond program is “...to mitigate for the loss of summer Chinook salmon adults that would have been produced in the region in the absence of Wells, Rocky

Reach, and Rock Island hydroelectric projects” (WDFW 1999). To this end, the mitigation agreement requires the production and release of 576,000 yearling summer Chinook in the Okanogan subbasin. Performance objectives and performance indicators have been established for the program (WDFW 1999) that addresses program benefits and risks.

Spring Chinook

The goal of the integrated recovery program in Omak Creek is to restore a natural spawning population of spring Chinook in historical habitats that contributed to the fisheries of the Tribes of the Colville Reservation. This program would also assist, longer-term in the recovery of Endangered Upper Columbia River Spring Chinook when Carson stock is replaced with Methow Composite stock. Phase I of this program is intended to return 200- 700 adults to the subbasin to allow assessment of survival parameters and suitability of habitat.

The goal of the segregated harvest program is to mitigate for the loss of spring Chinook because of the construction of Grand Coulee, Chief Joseph, Wells, Rocky Reach, Rock Island, Wanapum, Priest Rapids, McNary, John Day, The Dalles, and Bonneville Dams. The fish will be managed for tribal ceremonial and subsistence fisheries and recreational angling. The Phase I of this program is intended to return 400 – 1,400 adults to the Okanogan River for tribal and recreational harvest. These fish will also be used to test the feasibility of live-capture, selective fishing gears the Colville Tribes intend to deploy for subsistence fishing.

Steelhead

The goal of the Wells Hatchery program in the Okanogan subbasin is to contribute to the conservation and recovery of steelhead while providing for recreational and tribal harvest when compatible with recovery.

From brood year 1981 through brood year 1996, smolt-to-adult survival for Wells Hatchery stock has ranged from 0.29% to 7.54%, with a median survival of 0.92% and a mean survival of 1.63% (WDFW 2002).

Proposed programs

Summer/fall Chinook

The Colville Tribes are proposing the construction of Chief Joseph Dam Hatchery and the use of 2 new acclimation ponds on the Okanogan River to increase the abundance, distribution and diversity of the propagation program for summer/fall Chinook in the Okanogan subbasin.

The Colville Tribes (2004a,) have proposed to increase production levels of summer/fall Chinook to increase the abundance, diversity, and distribution of the naturally spawning population and provide a more stable base for tribal ceremonial and subsistence fishing and recreational angling. The proposed program would initially release an additional 400,000 yearling summer/fall Chinook from a new acclimation site proposed near river mile 49, and 700,000 yearling and sub-yearling Chinook from a new acclimation pond at the mouth of Omak Creek (river mile 32). The broodstock for these releases would constitute the later-arriving Chinook that are not included in the current propagation program.

This subbasin plan supports the premise that salmon (bull trout and steelhead) recovery is a race between the time a population or group of populations will be extirpated and the time habitat to

support those populations can be recovered. Whether supplementation is appropriate for a population depends on the anticipated time to extirpation compared to the time required for habitat recovery. Supplementation should be considered appropriate if a population would be extirpated before habitat could be recovered, and, if the habitat could be recovered in the extended period, that supplementation could provide. Given this line of reason, and a vision reflective of the unmitigated history of losses caused by hydropower, agricultural and industrial development in the main stem, valley bottom, and tributary areas across our trust lands, the Colville Tribes conclude that the current state-of-affairs for fish populations and their ecosystems in the Okanogan unequivocally corresponds to this fundamental premise.

It is reasonable to argue that no other region in the Columbia Basin exemplifies the need for strategic, comprehensive, and substantive actions more poignantly or literally than the combined territory of the Okanogan River Basin, the Columbia Cascade Province, and the Upper Columbia ESU. The effort to reestablish viable native fish populations and sustainable natural production habitats in this region will fail without cumulative (positive) effects derived from habitat improvement and protection, implementation of appropriate harvest rates, reductions in mortality associated with hydropower operations and facilities, and (in combination with), the effective and judicious use of artificial production.

The Chief Joseph Hatchery Conceptual Plan and its monitoring components will provide guidance for performance standards in the following categories:

- Legal Standards
- Conservation Standards
- Life History Characteristics
- Genetic Characteristics
- Research Activities
- Operation of Artificial Production facilities
- Socio-economic effectiveness
- Harvest Standards
- Non-target population impacts
- Target population production
- Target population long-term fitness

Also, in 2001, the Colville Tribes submitted a monitoring plan to the Northwest (then the Power Planning Council) Power and Conservation Council and Bonneville that included the US/Canada Okanogan/Okanagan and the Similkameen River basins. This plan has been strongly endorsed in 2001 by the ISRP as a “model” for the entire Columbia Basin and is used extensively by reference in the Pacific Northwest Aquatic Monitoring Partnership’s “Guidance to Subbasin Planners.” The Baseline Monitoring and Evaluation Program (the Baseline M&E), is now collecting data on many, but not all, of the performance indicators for this program. Consequently, and as part of the Master Planning process, the Colville Tribes have prepared a

complementary monitoring plan to describe, in general, the scope of efforts and range of supplementary information needed to detect and report overall production program performance as described in HGMPs.

These integrated efforts will begin to provide essential information on habitat conditions, capacity and fish populations, beginning in 2004. The information derived will then be used to detect the effectiveness (or lack thereof) of the hatchery production and supplementation and the integrated harvest and recovery programs as each element comes on line. This will allow the co-managers to operate all facilities in a manner consistent with efforts to detect the trends and effectiveness between and among other subbasins, ESUs, and across a broader group of “H’s” and planning processes. Previously unattained levels of cost-effectiveness, standardization of performance metrics and crosscut data and communications management, represent the by-products and benefits of this coordinated approach.

The current escapement goal for summer/fall Chinook in the Okanogan and Methow rivers is 3,500 fish past Wells Dam. The Colville Tribes have proposed to expand this escapement initially by 1,200 later-arriving summer/fall Chinook in the Okanogan subbasin. The Colville Tribes, in their draft Okanogan River Summer/Fall Chinook HGMP, are proposing an expanded management program to increase the escapement of summer/fall Chinook throughout their historical range in the Okanogan River by employing habitat enhancement and an expanded and diversified propagation program. The ultimate management goal will need to be derived from monitoring and evaluating the significant new program. The goal will need to include both increased escapement and stable harvestable surpluses for tribal and recreational fisheries.

Spring Chinook

The Colville Tribes are seeking an extension of the interim programs described above until a larger and more formal program can be initiated. The Colville Tribes are seeking a program that would initially release 200,000 Carson stock spring Chinook from Ellisforde Pond and 50,000 from St. Mary’s Mission Pond. Eggs for this program would be collected at Leavenworth NFH then incubated and reared at Willard NFH prior to transfer to the two acclimation ponds in October (COLVILLE TRIBES, 2004b). The current HGMP and the integrated hatchery program described in detail above for summer/fall Chinook also applies to spring Chinook, and is envisioned as a future program by the Colville Tribes.

Thus, the Colville Tribes have proposed in their Okanogan River Spring Chinook HGMP to initiate a significant reintroduction effort. This would begin using Carson stock in an integrated recovery program followed by a transition to Endangered Upper Columbia River Spring Chinook from the Methow subbasin upon its availability. The Colville Tribes are also proposing an initial isolated harvest program using Carson stock Chinook to be converted later to an integrated harvest program upon the availability of Methow subbasin fish. The HGMP’s recovery goal is to restore spring Chinook in their historical tributary habitats, including eventually in Canadian waters. Enumerating a recovery goal at this time is premature until the Colville proposals are approved.

Steelhead

The Colville Tribes have initiated preparation of an Okanogan River Steelhead HGMP. The goal of the program will be to restore Endangered steelhead in their historical habitats and create

harvestable surpluses for tribal ceremonial and subsistence fisheries and for recreational harvest. Recovery of steelhead will require a mix of habitat restoration actions in tributary streams and artificial propagation. The later will include initiating a local Okanogan River broodstock to replace the homogenized, domesticated stock at Wells Hatchery and a kelt reconditioning program. Enumerating a recovery goal at this time is premature until the Colville Tribes' HGMP has been completed and implementation approved.

The objective of the new local broodstock project is to release 20,000 yearlings in Omak Creek starting in 2004. At that time, Wells Hatchery steelhead will no longer be released in Omak Creek.

The Colville Tribes will also soon be initiating a kelt recondition project in Omak Creek as part of a research experiment to compare the relative reproductive success of natural-origin, hatchery-origin, and reconditioned kelts in producing offspring.

The Colville Tribes are initiating development of a comprehensive HGMP for future management of steelhead in the Okanogan subbasin, working directly with WDFW and other fishery co-managers. Objectives for future management will include recovery of the population and provisions for tribal ceremonial and subsistence harvest and recreational angling that is consistent with recovery

Sockeye & Coho

There have never been nor are there any longer artificial propagation programs for sockeye or coho salmon in the Okanogan subbasin. Rehabilitation of the sockeye population in the Okanogan subbasin is currently being pursued through habitat rehabilitation efforts largely in Canada. First Nations in Canada, in coordination with the Colville Tribes, have also initiated an artificial propagation program to increase fry production in lake waters and a reintroduction of sockeye into Skaha Lake. This program is now progressing into the implementation and monitoring phase. The Colville Tribes may soon propose a coho salmon reintroduction program for the Okanogan River. At that time, an HGMP will be prepared.

Relationship Between Artificial and Natural Populations

Summer/fall Chinook

The current propagation program uses broodstock collected at Wells Dam from mid July through August 28th, a combination of Chinook destined for the Okanogan and Methow rivers (and perhaps Columbia River). The Similkameen Pond program has successfully increased the abundance of the naturally spawning Chinook as evidenced by the high proportion of hatchery fish in the spawning population. The resulting population of hatchery-origin and natural-origin fish is fully integrated.

It appears that the Similkameen program has been essential in maintaining at least the short-term health of the summer/fall Chinook population in the Okanogan subbasin. [note – this is speculative, and if it is just dam based – then why has the Wenatchee late-run population been increasing over the last 40 years?] As with almost all supplemented populations of salmon, however, what is not known is the relative reproductive success of these hatchery-origin fish compared to the natural-origin Chinook in producing offspring.

Historically, natural Okanogan summer/fall Chinook have displayed a dominant sub-yearling or ocean-type life history strategy with juvenile fish entering the ocean in their first year. More recently, biologists have been documenting that many natural-origin adults are the result of a yearling or reservoir reared life history, apparently over-wintering in the Columbia River reservoirs prior to entering the ocean (J. Sneak, WDFW, pers. comm.). However, the presence of the reservoir-reared pattern became apparent well before demographic changes could have taken place through the summer Chinook supplementation yearling programs. And in fact, the reservoir rearing could be an environmental adaptation for summer Chinook in the impounded Columbia River system. The Similkameen Pond propagation program releases yearling smolts that have been shown in other summer/fall Chinook programs to survive at much higher rates than sub-yearling releases. The effect of yearling releases on the long-term health of the population is not known.

A second variation of the artificial propagation program relative to the natural population is the timing of broodstock collection. All broodstock collected for the hatchery program is done from mid-July through August 28th, although summer/fall Chinook continue to migrate past Wells Dam into November. This truncated collection period was initiated to avoid including stray fall Chinook from lower river programs in the broodstock. This straying problem has since been eliminated, because Turtle Rock no longer uses Priest Rapids Hatchery fall Chinook, but rather uses summer Chinook collected at Wells Hatchery.

The expanded propagation program proposed by the Colville Tribes (2004) has been designed to enhance the qualities of the current Similkameen Pond program. Adult Chinook would be collected in or near the Okanogan River to create a fully localized broodstock of fish adapted to the Okanogan River. Broodstock would include the later-arriving population component (September to early November) that is believed to spawn in the lower river reaches, later in the fall. The added numbers of juvenile fish would be acclimated at two new sites in the mid and lower Okanogan River (Riverside and Omak) to seed these underutilized, historical habitats. And also, about 40% of the juvenile releases at Omak would be sub-yearling fish, the natural life history, to monitor their success relative to the yearling hatchery releases and the natural-origin migrants.

Spring Chinook

Spring Chinook salmon were extirpated from the Okanogan subbasin so there is no natural population. Carson stock spring Chinook have been used as eggs and are readily available from the Wenatchee subbasin and the stock has performed relatively successfully in the Columbia Cascade Province when artificially propagated. The Colville Tribes have proposed to use Carson stock until a surplus of ESA-listed Methow Composite stock is available from Winthrop NFH and Methow State Hatchery that can be introduced into the Okanogan subbasin as an experimental population under the terms of the ESA (COLVILLE TRIBES 2004b).

Steelhead

Steelhead populations are currently listed as Endangered in the Columbia Cascade Province with natural cohort replacement rates prior to 1995 thought to be 0.3 or less for the various populations. The Okanogan subbasin has been a low priority for steelhead recovery efforts. At one time, NOAA Fisheries concluded that, "Current habitat conditions are not conducive to steelhead in the Okanogan River subbasin." Further, the Wells Hatchery releases destined for

the Okanogan subbasin are from hatchery x hatchery crosses that would be expected to have the least success in natural reproduction. WDFW's spawning ground objective for the listed ESU has been 6,000. However, the Okanogan subbasin was not included in this objective.

With recent habitat improvements in Omak and Salmon creeks, natural reproduction of steelhead in the Okanogan subbasin has been increasing. In 2002, 39 steelhead redds were observed in 2 miles of reference reaches and natural-origin steelhead fry were abundant (Fisher 2003a). In 2003, 21 steelhead redds were observed in the same reaches. Fry were again abundant in some reaches, but not others because of a kill resulting from an accidental dumping of fire retardant (Fisher 2003b). Also in 2003, six steelhead redds were observed in Salmon Creek following an experimental release of water by the Okanogan Irrigation District. Subsequently, fry production was observed (Fisher 2003c). Further demonstrating the improved status of natural-origin steelhead in the Okanogan subbasin, with issuance of Section 10 (a)(1)(A) Permit 1395 to WDFW in October of 2003, NOAA Fisheries designated mortality limitations to natural-origin steelhead in the Okanogan River with runs up to 600 natural-origin fish.

Internal and External Consistency of Program to Purpose

Summer/fall Chinook

The Similkameen Pond program has been operated consistently with the planned objective of managing the Okanogan and Methow summer/fall Chinook as a single population. Actions that need to be undertaken in the Okanogan subbasin to improve the consistency of the existing program include:

1. Develop a local Okanogan broodstock, separate from the Methow population.
2. Propagate the entire summer/fall Chinook run, including fish arriving in September, October, and November.
3. Propagate and evaluate the benefits and costs of releasing the natural sub-yearling type juvenile in addition to the yearling smolts.
4. Continue to disperse acclimated hatchery releases throughout the full range of historical habitat.
5. Develop harvest strategies that manage for the proportion of hatchery-origin fish in the spawning population to optimize the population's viability.

Spring Chinook

The programs are too new to evaluate internal or external consistency. A key external risk that must be evaluated is the extent, if any, to which the Carson-stock spring Chinook stray to the Methow subbasin and spawn with ESA-listed Chinook of the Upper Columbia River Spring Chinook ESU or survive through the summer in the Okanogan River and spawn with summer/fall Chinook. Management actions will be taken to minimize these risks.

Steelhead

The current steelhead program in the Okanogan subbasin is going through a substantial change. Additional planning and execution via a new HGMP will be required to direct a holistic and

consistent program. Actions that need to be undertaken in the Okanogan subbasin to improve the consistency of the existing program include:

1. Implement new acclimation sites for Wells Hatchery stock steelhead in the Okanogan subbasin that will provide ongoing conservation and fishery benefits, but not conflict with the new local broodstock and kelt reconditioning programs being developed in Omak Creek.
2. Transition from the aggregate, domesticated Wells Hatchery stock to an entire Okanogan subbasin program supported by local broodstock.
3. Implement a steelhead marking program that will support, yet differentiate the Wells Hatchery stock and Omak Creek programs.
4. Expand the local broodstock and kelt reconditioning programs from a base of Omak Creek to programs appropriate for the entire Okanogan subbasin.
5. Adjust proposed programs based on results of planned research in Omak Creek to evaluate the relative reproductive success of hatchery-origin, natural-origin, and reconditioned kelt steelhead.

Program Operations

Summer/fall Chinook

To implement the current Similkameen Pond program, broodstock are collected at the Wells Dam east ladder trap from mid-July through August 28th then immediately transported to Eastbank Hatchery for holding and maturing. For both the Okanogan and Methow programs, 556 Chinook are taken with equal numbers of males and females. In taking broodstock, there is no protocol for selecting for or against any particular trait. The program has specific protocols that ensure broodstock collection does not adversely affect natural spawning goals (WDFW 1999).

Adults are primarily spawned from late September through late October. A 1:1 mating scheme is employed. Eggs are placed in Heath stack incubators. Ponding of swim-up fry occurs after accumulation of about 1,700 temperature units from early May through June. About 85% of fertilized eggs survive to fry ponding. Rearing of juveniles is performed in raceways following loading densities of 6 lbs./gpm and 0.75 lbs./cu. ft. (WDFW 1999).

Fish health and disease are continuously monitored (10-15 times) by professionals in compliance with standard fish health policy standards. BKD is the primary disease of concern.

In October, fingerlings are transferred from Eastbank Hatchery to Similkameen Pond where they are reared for 6 months through the winter until release in early April. The objective for smolts is 576,000 at 10 fpp. All smolts are adipose fin clipped and coded wire tagged for identification.

Okanogan summer/fall Chinook contribute in various amounts to fisheries along the West Coast from S.E. Alaska to the Columbia River. Prior to recent harvest restrictions implemented because of widespread listings of salmon species pursuant to the Endangered Species Act, summer Chinook were harvested at high rates in ocean fisheries of Alaska and British Columbia. With the increased runs of the past three years, recreational fishing and tribal treaty fisheries in the Columbia River have enjoyed increased harvests. In the past two years, recreational fishing in the Okanogan River has resumed. The Okanogan summer/fall Chinook provide the Colville

Tribes' with their last remaining ceremonial and subsistence fishery of any magnitude. Average Tribal harvests have been consistently below 1,000 fish until the past few years when harvest has exceeded 3,000 Chinook.

Spring Chinook

Broodstock collection, mating, egg incubation, and early rearing of the spring Chinook released in the Okanogan subbasin is performed at Leavenworth NFH, the operations of which can be viewed in the appended Okanogan River Spring Chinook HGMP (Colville Tribes 2004b) or sought in that facility's HGMP or the Wenatchee Subbasin Plan.

In October of each year the fingerling spring Chinook are transported to St. Mary's Mission Pond on Omak Creek and Ellisforde Pond on the Okanogan River. Ellisforde Pond is an open-air pond, is 225' x 90' x 6' deep, and has 121,500 cubic feet of useable rearing volume. The Pond's water is supplied by six pumps, each delivering 5 cfs from the Okanogan River. The pond is located on the left bank of the Okanogan River at river mile 62, near the community of Ellisforde. St Mary's Mission Pond is 72' x 12' x 4' and served with gravity flow from Omak Creek and from a well. Either water source can provide the necessary 550 gpm water supply. The Chinook are fed a restricted diet through the winter months followed by increased feeding and accelerated growth prior to their April release. The size objective for these Chinook is 15 fpp.

Steelhead

Steelhead broodstock for the Wells Hatchery stock program are collected in the west ladder of Wells Dam and from volunteer returns to the Hatchery. Fish are collected from throughout the run starting in August and into the following spring. To supply sufficient steelhead for all subbasins in the upper Columbia, 420 steelhead are collected for broodstock. Wild-origin fish have made up 5-12% of the broodstock. Fish are spawned in the spring as they ripen.

Steelhead matings for the program are W x W, H x W, and H x H, with the latter destined for the Okanogan subbasin.

For the new local broodstock program, the 10 - 16 adult fish required for broodstock are collected at a weir and trap located at approximately river mile 0.5 in Omak Creek near its confluence with the Okanogan River. The trap is operated from March until early May. Collected steelhead are transported to Cassimer Bar Hatchery for holding. Hatchery-origin broodstock may be returned to Omak Creek if natural-origin steelhead are later trapped in order to meet broodstock protocols. Broodstock are examined weekly for ripeness and accordingly spawned. The mating preference is W x W crosses and secondarily H x W crosses.

At Cassimer Bar Hatchery, eggs are incubated in vertical Heath trays. Green egg to eyed egg survival is expected to be about 80%. Upon hatching and button-up, fry are transferred to modified Capillano troughs (63 cu. ft). Steelhead are reared in the troughs until July or when they reach 400/lb, when they are transferred to outside raceways (Golder 2002). Fingerlings are marked using elastomer-type tags. Due to water and space limitations at Cassimer Bar Hatchery, final rearing of the steelhead occurs at Colville Trout Hatchery.

Steelhead are reared to a size of 10 to 15 fish per pound and then scatter-planted in Omak Creek prior to mid-April. Any production above the 20,000 smolt objective will be planted into other Okanogan River tributaries (e.g. Tunk or Bonaparte creeks).

Program Success

Summer/fall Chinook

The Similkameen Pond program has been operated consistently with the planned objective of managing the Okanogan and Methow summer/fall Chinook as a single population. The program has been successful in maintaining at least minimum numbers of spawning fish through years of poor freshwater and marine survival. In more recent years, the program has supported revitalized recreational and tribal fisheries throughout the Columbia River. Recent dispersal of production to Bonaparte Pond should improve the program contribution to population diversity in the Okanogan Basin.

The propagation of summer Chinook in the Okanogan subbasin was initiated with the 1989 brood year and a subsequent release of 352,600 yearling smolts in 1991. Since that time, releases have varied about the 576,000 program objective (WDFW 1999). Through 2003, all releases were made from Similkameen Pond. However, this has resulted in excessive use of the spawning habitat in the Similkameen and upper Okanogan rivers while other historical habitats are under utilized. In 2004, 100,000 of the Chinook historically released from Similkameen Pond may be released from Bonaparte Pond. If successful, this release may be increased to 200,000 yearlings (depending on modifications to the pond – see above).

The summer/fall Chinook destined for the Okanogan River has recently experienced a substantial increase. From runs of fewer than 5,000 fish passing Wells Dam, returns since 2001 have ranged from about 40,000 to 69,000 adults. The proportion of hatchery-origin fish in the naturally spawning population is substantial ranging from just under 50% in the lower runs of recent years to over 70% in the last few larger runs.

The smolt-to-adult return rate for the Similkameen rearing pond has averaged 0.74 for brood years 1989 through 1997, ranging from 0.001-2.11.

Spring Chinook

Adults are not expected to start returning until May or June of 2005. Therefore no measurements of program success are available. Performance standards and indicators have been developed for the program and will be the basis for a monitoring and evaluation program.

Rearing in the new acclimation ponds has not been without mishap, however. At St Mary's Mission Pond, 10,000 fish were lost just prior to release. In 2004, all 45,000 fish were lost when the gravity water supply iced up and the auxiliary pump failed.

Steelhead

From brood year 1981 through brood year 1996, smolt-to-adult survival for Wells Hatchery stock has ranged from 0.29% to 7.54%, with a median survival of 0.92% and a mean survival of 1.63% (WDFW 2002).

4.4 Restoration and Conservation Projects

The information presented in this section is specifically designed to provide context for subbasin planners and to reduce or eliminate duplication of efforts between parties. The tables attempt to categorize project types and geographic areas as well as identify project sponsors. To a degree, this information can be viewed as a snapshot of what is happening on the ground at this time for fish and wildlife protection and restoration. However, it does not depict the full range of actions that have been recommended in the Province even as "high priority actions." This situation is especially prevalent in the Columbia Cascade Province, especially when viewed within the context of population status, past losses and mitigation history, and, when compared to implementation levels in other Provinces.

To provide a Columbia Cascade Eco-province context for this subbasin plan, Appendix D provides summary project information (2001 – 2003) that details project categories and BPA funding levels recommended by the basin technical teams, fish and wildlife managers, the ISRP, the CBFWA and the NPPC. To review a summary of projects in the Okanogan subbasin (US and Canada, organized by Assessment Unit) for the last 10 years, see [Appendix D](#).

4.4.1 Assessment of Projects

This subbasin plan's inventory of projects includes projects from the last ten years. An extensive effort, through multiple planning processes, has occurred to develop this inventory of projects; however, the list is not all-inclusive. Further, not all other planning processes have required the level of information that is required by NPCC. Given the timeframe and funding level, the subbasin planners could not provide all of the information that was suggested in the Technical Guide for Subbasin Planners (Council Document 2001-2002). Future work is required for subbasin planners to identify the gaps between actions that have already been taken or are underway and additional actions that are needed.

Project efforts in the Okanogan subbasin over the past 10 years span a broad range of habitat restoration work, education and awareness, improvements to irrigation systems, etc. These represent largely cooperative efforts of various combinations of local government, private organizations, private citizens, tribes and state agencies. In addition, an inventory of projects follows. This inventory is designed to be compared with the needs for fish and wildlife identified in this plan's Assessment.

5 Management Plan

The management plan described in this section is a culmination of extraordinary efforts by the subbasin planners, the public and stakeholder input. Its development came as a laborious result of carrying out the assessment and inventory work and formation of the vision, goals and principles sections of the subbasin plan. Additional guidance and direction was derived from the conscientious integration of socio-economics, harvest, hydropower and artificial production information and synthesis into the final construct.

As a result, this management plan depends upon an assimilation of this information and careful review and full use of all sections of the subbasin plan and its key findings.