
OKANAGAN

Subbasin Plan

Prepared for the Northwest Power and Conservation Council

Okanogan Subbasin Plan

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Conservation Council

Science is best defined as a careful, disciplined, logical search for knowledge about any and all aspects of the universe, obtained by examination of the best available evidence and always subject to correction and improvement upon discovery of better evidence. What's left is magic. And it doesn't work.

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List of Acronyms

BLM	Bureau of Land Management
BPA	Bonneville Power Administration
BOR	Bureau of Reclamation
BiOP	Biological Opinion
COBTWG	Canadian Okanagan Basin Technical Working Group
CDC	B.C. Conservation Data Center
cfs	cubic feet per second
Corps	US Army Corps of Engineers
Colville Tribes	Colville Tribes
CRITFC	Columbia River Inter-Tribal Fish Commission
CRMP	Cultural Resources Management Plan
CWA	Clean Water Act
DFO	Department of Fisheries and Oceans
DOE	US. Department of Energy
DOI	US Department of the Interior
EA	Environmental Assessment
Ecology	Washington State Department of Ecology
EC	Environment Canada
ECP	Eco-regional Conservation Planning
EDT	Ecosystem Diagnostic & Treatment
EIS	Environmental Impact Statement
EMS	Energy Management System
EPA	US Environmental Protection Agency
ESA	Endangered Species Act
FERC	Federal Energy Regulatory Commission
FWS	US Fish and Wildlife Service
GIS	Geographic Information System
HCP	Habitat Conservation Plan
HEP	Habitat Evaluation Procedure

HGMP	Hatchery Genetic Management Plan
huc	habitat
IBIS	Interactive Biological Information System
ISRP	Independent Scientific Review Panel
JFC	Joint Fisheries Committee
LAW B.C.	Land and Water B.C.
LFA	Limiting Factors Analysis
LUCO	Land Use Coordination Office
LRMP	B.C. Land and Resources Management Plan
MSRM	B.C. Ministry of Sustainable Resource Management
MWLAP	B.C. Ministry of Water, Land and Air Protection
MOF	B.C. Ministry of Forests
NEPA	National Environmental Policy Act
NGO	Non-governmental Organization
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPCC	Northwest Power Planning and Conservation Council
OCD	Okanogan Conservation District
OLAP	Okanagan Lake Action Plan
ONA	Okanagan Nation Alliance
ONFC	Okanagan Nation Fisheries Commission (ONA)
OSBFP	Okanagan-Similkameen-Boundary Fisheries Partnership
PA	Programmatic Agreement
PFRCC	Pacific Fisheries Resource Conservation Council
PUD	Public Utility District
RC&D	North Central Washington Resource Conservation & Development Council
RM	river mile
SSHIAP	Salmon and Steelhead Habitat Inventory and Assessment Project
TMDL	Total Maximum Daily Load

TSS	Total Suspended Sediment
UCSRB	Upper Columbia Salmon Recovery Board
UCRFEG	Upper Columbia River Fisheries Enhancement Group
USFS	US Forest Service
USGS	US Geological Survey
WQI	water quality index
WDFW	Washington Department of Fish and Wildlife
WSCC	Washington State Conservation Commission
Yakama Nation	Tribes and Bands of the Yakama Nation
YFRM	Yakama Fisheries Resource Management

1 Executive Summary

The Okanogan Subbasin Plan is designed to provide the Northwest Power and Conservation Council with a method for allocating fish and wildlife mitigation and conservation resources within the Okanogan subbasin. To involve the community and public, an outreach program was developed and put into practice during the building of the plan and will continue as the plan moves towards implementation.

The plan begins with an expression of the vision for the subbasin and an outline of the founding principles for the plan. It then moves into an overview of the Basin, and its fish and wildlife species and their habitats. Current projects and management programs are discussed and a detailed management plan is then defined. A framework for monitoring the progress of the plan is presented, and, finally, linkages across the plan elements are established and described. A brief overview follows.

Vision

Our Vision for the Okanogan subbasin includes viable, self-sustaining, harvestable and diverse populations of fish and wildlife and their habitats, along with the recognition of the need to support the economies, customs, cultures, subsistence and recreational opportunities within the basin.

To provide a strategy for attaining this future desired condition, a set of principles was developed to guide strategy development. These “actions” represent the most detailed aspect of the subbasin plan, and while they provide tangible direction, they are neither prescriptive nor defined to the discrete project level. The next step in our development progression had the planners use the assessment results to provide impetus and direction for developing the working hypotheses and the objectives contained within the management plan. These in turn provided the testable benchmarks for measuring progress towards achieving the subbasin plan vision.

Subbasin Assessment

The Okanogan (*Canadian spelling used here*) subbasin has its origin in forested mountains of Canada at elevations of over 7,000 feet and drops down into gently sloping valley floors at elevations of less than 1,000 feet. This great diversity of habitat supports a wide range of fish and wildlife, with many listed as Endangered, Threatened or as Species of Concern or at Risk. Notably, the Okanogan subbasin shares an international border containing political boundaries. However, this subbasin plan is predicated upon the biological needs of the fish and wildlife species dependent upon the watershed; and this plan, while sensitive to the geopolitical and socio-economic differences between the United States and Canada, focuses on the Okanogan *ecosystem* as an uninterrupted continuum.

Over 300,000 people live within the Okanogan. The Canadian economy is centered chiefly on the tourism, agriculture, and the service industry while the US economy revolves around forestry and agriculture (orchards and livestock).

Focal Species and Limiting Factors

Focal fish and wildlife species and focal habitats have been chosen to evaluate the health of the ecosystem to ensure we can detect the effectiveness of management actions by monitoring their

trends. This plan discusses habitat requirements of the focal species and the factors that limit their numbers. These metrics then guided the development of the management objectives and strategies for this plan.

The review of limiting factors for the focal species of wildlife shows that the presence, distribution, and abundance of wildlife species in the Okanogan subbasin have been affected by habitat losses. Losses are primarily the result of commercial and residential development, flood control, water extraction, agricultural development, timber extraction, and livestock grazing. These activities have resulted in large areas of high-quality habitat being rendered inaccessible and in significant mortality associated with low flow, the loss of riparian zones, wildlife habitat loss and fragmentation, conversion of land to different ecotypes, vegetation removal and invasion by non-native species of animals and plants.

Throughout the Okanogan highlands timber extraction has had the main impact though in 2003 wildfires changed the landscape considerably. In the lowlands urbanization, flood control, water extraction, and agriculture have been the major causes of habitat alteration

To address factors limiting the focal wildlife species, the Plan calls for protection of the full size and condition of core areas, suitable, yet unoccupied habitats, the physical connections between areas, and buffer zones to ameliorate impacts from incompatible land uses. Attendant with these steps will be the monitoring of improvements in long-term trends and population status. Monitoring of habitat attributes and focal species will provide a means of tracking progress toward recovery and/or meeting trust and mitigation obligations.

Hypotheses, Goals, Objectives and Integrated Strategies

The review of limiting factors for focal species of fish was carried out using a detailed and powerful tool called EDT (Ecosystem Diagnosis and Treatment). The major results of EDT are captured under the plan sections entitled Major Findings and Assessment Unit Summaries. The Assessment Unit Summary Sheets are intended to be used as a *guide* for developing future strategies, projects and direct actions as they relate to salmon and steelhead habitat. They support and form the basis for the Management Plan, and are in turn supported by the subbasin plan's individual sections: Goals and Vision, Species Objectives, Hatchery Integration and the Monitoring and Evaluation Framework.

Taken together and as integrated sections, they form our scientific and socio-economic foundation, and ultimately, the core of the Management Plan itself.

The ecosystem diagnosis method used was intended primarily to address the question: *Is there potential to improve anadromous salmonid population status through improvements to habitat conditions in tributary environments?*

Said in a form of a **central subbasin hypothesis** (for fish, but adaptable for wildlife): *Improvements in habitat conditions will have a positive effect on habitat productivity and thus, improve fish population status through increased abundance, diversity, and spatial structure*

Results

In brief, results from the assessment shows that in the Okanogan Basin habitat losses have chiefly resulted from artificial and natural fish passage barriers, alteration and reduction of riparian habitat, loss of habitat connectivity, instream and floodplain habitat degradation, low

flows and dewatering, and increased water temperatures. Added to these limiting factors within the Okanogan are significant out-of-basin problems including fish passage over mainstem dams and harvest.

To date much of the effort and resources allocated to addressing the limiting factors of fish in the US portion of the subbasin have centered on supplementation with hatchery reared fish. This has resulted in tangible benefits for certain species in certain areas. The Plan states that while the protection of existing wild stocks and the building of self self-recruiting wild populations must be paramount in this region of the Columbia Basin, there is a need to continue with hatchery supplementation in a careful, well-planned and documented fashion into the foreseeable future. Uncertainty about population structure, poor adult returns, and a desire to spread the risk of hatchery intervention strategies will require long term monitoring of population trends and changes in gene pools. On the Canadian side, fisheries authorities often pursue an ecosystem-based approach with wild stocks, using supplementation only where necessary. This comports with the view of the US managers and this plan's measures and strategies.

Inventory of Existing Activities

The section of the plan that provides an inventory of existing activities outlines the extent to which present programs address the limiting factors outlined in the plan. This section of the plan is essential if program overlaps are to be avoided. Of equal importance, this section illustrates the gaps and unknowns that require more resources for inventory, research, monitoring and evaluation.

Management Plan and Monitoring

The final section of the report brings together all the analyses and strategies into a management plan, and presents a vision of what future conditions could be and identifies the route to get there (follow the plan). It concludes by linking the Plan with other major initiatives such as the Endangered Species Act, state and federal recovery planning effort, watershed planning, and the Clean Water Act and recommending a framework program for monitoring and evaluating the recommendations of the Plan.

Implementation

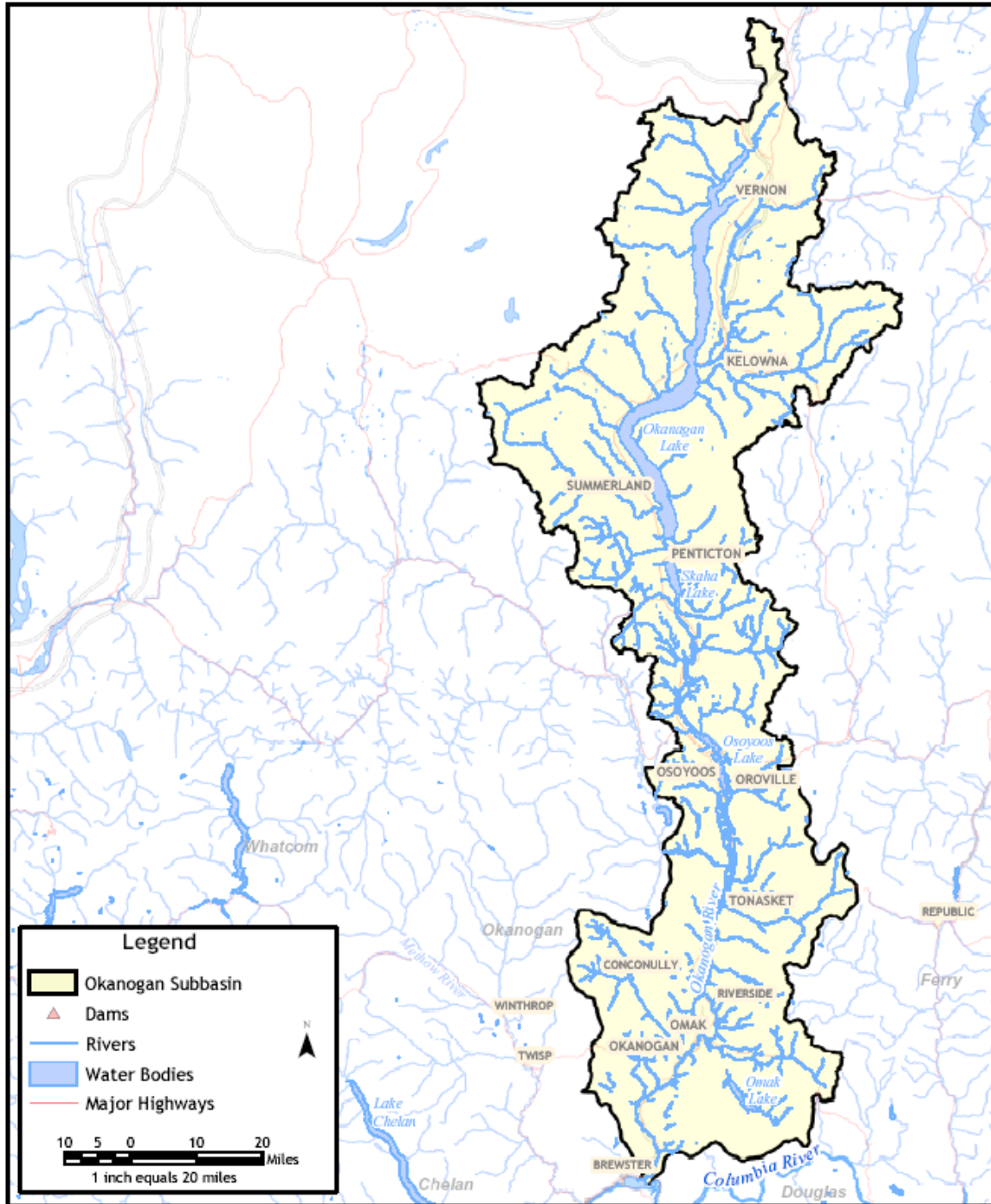
This plan has limitations, and is, in sum, unfinished in terms of its ability to chart a full term course for sustainability. This is due to the significant resource constraints placed on this process and the fact that the Okanogan suffered from a lack of an organized planning framework and a paucity of existing analyses. The fact that this plan was developed within the span of less than a year, unlike any other plan of similar scope or significance, did not escape the planners initially, or in the end. Nevertheless, all parties persisted to produce the best product possible, and have in turn, taken a significant step forward to meet a long list of challenges facing natural resources and communities in the region.

Consequently, this plan represents a thoughtful and credible approach; one collectively derived from a tremendous effort on the part of local governments, state, federal and tribal agencies and the public. Notably, this multifaceted effort was carried out in the largest watershed in North America and home to the *most* imperiled and impacted populations of fish and wildlife in the Columbia Basin. The universal consensus is that the vision, goals, preliminary findings and

management plan that anchor this document outline a reasonable and strategic course for fish and wildlife in the Okanagan basin.

Thus, we are confident that this subbasin plan will now guide state, local, federal and tribal governments, and the Northwest Power and Conservation Council and The Bonneville Power Administration in meeting their respective obligations and implementing various programs to conserve and enhance fish and wildlife.

2 Introduction



Source: Data Layers: Subbasins (Streamnet and TRIM), Dams (Streamnet), Counties & Major Rivers (WA Ecology, TRIM), Highways (WashDOT, TRIM). Projection: Washington State Plane North Zone NAD83. Produced by Jones & Stokes for KWA Ecological Sciences, Inc. Map Date: 5/15/2004

Figure 1. Okanogan subbasin, topography and general hydrology

The Okanogan subbasin comprises one of the largest geographic subbasins in the Columbia River basin (Figure 1). The factors influencing fish and wildlife survival, and population status overlap and extend beyond the geographic boundaries of the Okanogan, and of the United States.

Thus, to achieve ecosystem-based objectives, it is important to coordinate fish and wildlife management across the US-Canada border.

The basin is home to over two dozen species of plants and animals that are currently listed in the US and Canada as nationally Threatened, Endangered, or Vulnerable, and is currently home to one of only two viable populations of sockeye salmon left in the entire Columbia basin. A full one-third of all Red-listed species in British Columbia reside in the Canadian Okanogan, and the National Marine Fisheries Service has concluded that the upper Columbia, where spring Chinook and steelhead are listed as Endangered, is the first priority for recovery planning efforts in the Columbia basin.

The subbasin is also an important ecological corridor for migratory megafauna. Species such as mule deer utilize the north-south corridor that connects the dry landscapes of British Columbia's interior with the grasslands to the south. In addition to salmon and megafauna, this corridor is a crucial part of the flight path for many species of birds during annual migrations between summer and winter ranges.

The Okanogan subbasin plan addresses the limiting factors for fish and wildlife ecosystems in the subbasin. However, the needs of watershed residents, and their critical role in ecosystem stewardship, have been expressly considered as part of overall ecosystem recovery and the benefits of shared stewardship. Although considered throughout the plan, the Similkameen subwatershed above Enloe Dam was not included in salmon ecosystem analysis.

The revised Columbia Basin Fish and Wildlife Program calls for an ecosystem-based approach for planning and implementing fish and wildlife recovery. The Okanogan subbasin plan will lay the foundation to achieve this goal by integrating fish and wildlife assessments, inventories, and management plans in a manner that begins to connect communities of science, interest, and place in the Okanogan subbasin across the US-Canada border.

2.1 Subbasin Planning

In October of 2000, the Northwest Power and Conservation Council adopted a revised Fish and Wildlife Program for the Columbia River Basin. The new program is intended to be more comprehensive than, but complementary to, regional efforts related to the Northwest Power Act, the Endangered Species Act, State-sponsored recovery and watershed planning and coordination efforts, and tribal recovery initiatives and plans.

The revised Program calls for an ecosystem-based approach for planning and implementing fish and wildlife recovery. To accomplish this, the Program divides the Columbia Basin into ecological provinces that are further divided into individual subbasins.

At the heart of the Program is the subbasin plan, consisting of a comprehensive description of the basin general ecology including the identification of specific fish and wildlife needs. Future action strategies and project funding are to be based upon these identified needs.

Subbasin summaries were developed in 2002 as an interim step to organize key planning attributes, to allow near-term implementation of the revised Fish and Wildlife Program until comprehensive subbasin plans can be completed.

The Okanogan Subbasin Plan is the subject of one of six subbasin plans being generated from within the Columbia Cascade Ecoprovince. The Methow, Wenatchee, Lake Chelan, Entiat, and Upper–middle (mainstem) Columbia River subbasins comprise the remainder of this province. The provincial boundaries are also nearly identical to the federal Ecologically Significant Unit (ESU) boundaries for listed salmon and steelhead in the Upper Columbia.

The Okanogan Subbasin Plan draws from the Okanogan Subbasin Summary (NPCC 2002) and the Salmon and Steelhead Habitat Limiting Factors Assessment WRIA 49 (Entrix and Golder 2004), which included an information summary for fish, wildlife, and their habitats, relevant land use planning, human population patterns, and overall management issues for 72 subwatersheds and tributaries. In Canada, the Okanogan Basin Study (1974), the Thompson-Okanogan Land and Resources Management Plan (LUCO 2001), and the draft State of the Okanogan Basin report (in prep., ONA 2004) provide baseline information on the Canadian sections of the subbasin. The Okanogan subbasin plan will also draw from a significant body of additional US and Canadian science to facilitate coordinated recovery planning for the Okanogan salmon and steelhead ecosystem.

Subbasin planning efforts in the Okanogan subbasin were initiated in May 2003. These efforts are guided by the policies of cross-border collaboration on salmon recovery initiated by the Tribes of the Colville Tribes Reservation (Colville Tribes) and the Okanogan Nation Alliance from Canada. However, the work of coordination and collaboration in the development of this plan drew from the leadership of a great many agencies sharing this vision.

Watershed Fish Sustainability Planning, a Canadian fisheries planning strategy, is underway in a parallel, albeit distinct, regional effort in the Canadian Okanogan. Although the US and Canadian subbasin planning efforts in the Okanogan are distinct, and designed to meet differing statutory objectives in B.C. and Washington, salmon ecosystem restoration is an imperative that spans the international border to include the entire watershed system.

Watershed planning in Canada and associated sciences are presently being led by a Canadian Okanogan Basin Technical Working Group (COBTWG) involving federal, provincial and First Nations' fisheries agencies.

Unless references to the Canadian Okanogan River are explicitly Canadian, the Okanogan subbasin plan will defer to the American spelling of the Okanogan River for purposes of brevity; which implicitly includes the entire watershed, subject to law and policy in either country.

The Okanogan Subbasin Plan addresses the limiting factors for fish and wildlife ecosystems; however, the needs of watershed residents and their critical role in ecosystem stewardship have been expressly considered as part of ecosystem recovery and its benefits.

2.2 Planning Process

Writers

Dave Moore (Fisheries Development Services from British Columbia) was the lead editor for the Okanogan subbasin plan, with drafting support from Keith Wolf (KWA) and Julie Dagnon (Okanogan County). Caryn Stroh, Chris Bull, Dave Whiting, Dawn Machin and Deana Machin provided editorial support.

Contributors

Contributors included agency leads from the Colville Tribes, Okanogan County, the Washington Department of Fish and Wildlife (WDFW), the US Forest Service (USFS), the US Fish and Wildlife Service (FWS), specialists from the region, and local stakeholders. A detailed list of contributors is provided at the beginning of the plan.

Reviewers

The Subbasin Core Team led the review of materials and the original manuscripts. Scott Fitkin from WDFW and Sandra Streiby of Highlands Associates Consulting provided editorial review of wildlife materials; Casey Baldwin from WDFW provided editorial review of fisheries materials. Review of the Canadian data sets undertaken in the Ecosystem Diagnostic & Treatment (EDT) analysis was provided through the Okanogan Basin Technical Working Group. Keith Wolf (KWA) reviewed all EDT results and related assessments. Keith Wolf (KWA) Julie Dagnon (Okanogan County), Kurt Danison (Highlands Associates Consulting), and Sandra Streiby, (Highlands Associates Consulting) reviewed management plans and the final manuscript.

Technical Team

Wildlife Technical Teams included Paul Ashley and Stacey Stovall, Scott Fintkin (WDFW), and Sandra Strieby, Highlands Associates Consulting.

Fisheries Technical Teams included Keith Wolf and Sammi Buzzard (KWA), Casey Baldwin Mark Cookson, Kirk Trucsott, and Scott Fitkin (WDFW), Kate Terrell, (FWS), Nancy Wells, (USFS), John Arterburn, Jerry Marco, Chris Fisher (Colville Tribes), Howie Wright, Deana Machin, and Betty Retenolla (Okanogan Nation Alliance [ONA]) and Chris Bull (Glenfir Resources).

The technical team also worked and consulted with over 70 experts during the course of the planning and assessment phase. These included representatives from Canadian resource management agencies, the University of Washington, the Department of Ecology, The Bureau of Reclamation, The United States Geological Service, the United States Department of Agriculture, and others.

2.2.1 Participation

The Colville Tribes, Okanogan County, and the Washington Department of Fish and Wildlife partnered to coordinate Subbasin Planning for the Okanogan subbasin. Okanogan County has been responsible for outreach and public involvement while the state and tribes led the technical effort. However, it must be noted that all parties worked together in a fully collective and integrated fashion in order to bring this plan to completion.

Current participation in discussions and decision-making regarding the Okanogan subbasin's natural resources involves private citizens, irrigation districts, environmental groups, county government, state, provincial and federal agencies, and spans the US-Canada border. In addition, both the Colville Tribes in Washington State and the First Nations represented by the Okanogan Nation in British Columbia (B.C.) have a long history of traditional resource use in the subbasin, also taking an active interest in fish, wildlife and habitat management.

The timeline established by the Northwest Power Planning and Conservation Council (NPPC) has necessitated a compressed process that has allowed limited stakeholder involvement on early drafts completed in May of 2004. A total of 43 formal planning team and various communications meetings were convened between August 2003 and May 2004. E-mail circulars and media releases provided regular updates on Subbasin Planning to more than 250 formal public contacts. These circulars and releases provided a description of next steps, and encouraged stakeholder participation.

Outreach Strategy

Outline-level manuscripts were distributed to the Subbasin Core Team (SCT) for review in February and March and to the public in rough draft form in April and May of 2004. Early drafts of the subbasin plans were placed in local public libraries, sent to stakeholders upon request, and posted on an 'ftp' website. Stakeholders were encouraged to submit comments on the first outline draft (February 11, 2004 – April 16, 2004), and again for the final two-week comment period on the completed draft (April 23, 2004 – May 10, 2004).

The NPCC public review and comment period (June 4 - August 12, 2004), and the proposed three-year rolling review of subbasin plans (2007), should build on these important first contributions. It is expected that the building of the subbasin plan only begins with drafting, and can only end through effective iteration and critical updates. Future refinement based on public and agency comment, and new contributions, knowledge and information will make the subbasin plans more relevant and responsive to the subbasin Vision.

Commitment to public outreach

Okanogan County staff and contractors have used the media and a series of public meetings to communicate progress. In September 2003, the Coordinators assembled an initial outreach list comprising about 130 contacts. The list included representatives of the following interests:

Agriculture

Business

Conservation and the environment

Government (including local government, and local and regional representatives of state, tribe and federal agencies)

Media

Recreation

The list has continued to grow as individuals express interest in Subbasin Planning. It has been used throughout Subbasin Planning to share information, facilitate dialogue among communities of interest, science, and place. The list was also used to distribute public information; an information bulletin describing ongoing progress on the development of subbasin plans, was regularly sent to the stakeholders, enabling them to track the process and any changes to the planning schedule.

Fact sheet

Okanogan County developed a Fact Sheet to introduce Subbasin planning to stakeholders and the media and explain opportunities for public involvement. The Fact Sheet included a telephone number, email, postal mail, and web site addresses that individuals could use to obtain more information, and to provide input and comment on plan drafts.

2.2.2 Infrastructure and Organization

Subbasin Core Team (SCT)

Okanogan County and a working group of co-managers and public stakeholders initiated formation of the Okanogan and Methow SCT. The SCT met 22 times to review and refine the Ecosystem and Diagnosis and Treatment outcomes (refine hypothesis based on local knowledge), and to develop management strategies. Evening summary meetings were convened to accommodate stakeholders who were not able to attend daytime meetings, to provide a window into the outcomes of successive developments.

Briefings were provided to interested groups on eight occasions, and media representatives by request. Three formal public meetings were convened to facilitate public dialogue on the direction of the plan and to answer pertinent questions. Regular e-mail circulars and media releases provided regular updates on Subbasin planning, next steps, and invitations welcoming additional stakeholder participation. More extensive review, including ISRP and the public will be complete by August 2004.

Public comments

Comments collected at public meetings and during public review of draft Subbasin Plans have been appended to this plan as [Appendix G](#). Every effort has been made to fully consider and implement applicable comments that were received during the formal public comment periods for the subbasin plan. However, given this, it is recognized that it may be possible that this was not completely accomplished because of the time constraint of meeting the May 28, 2004 NPCC deadline. During the Response Period, comments received on the initial plan will then be re-reviewed.

2.3 Local and Regional Implementation Conditions

The Okanogan subbasin exemplifies the popularity of the modern rural lifestyle and a paradox of pioneering versus protection practiced by the new valley residents over the last two centuries.

Constraints to the sustainability of anadromous and resident fish, wildlife, and their habitats resulted from growth within the basin; many of these impacts and their resolution have cross-border implications. The economics of the region were founded on what are now stable valley-bottom developments and infrastructure, matured forest and hydroelectric industries, and agriculture, including the growing vineyard businesses (particularly in Canada). The impacts of population growth in the subbasin are cyclic and localized, and have extended their reach from the alpine mountaintops to the confluence with the Columbia River and beyond.

Hydro facilities and their operations (both inside the valley and downstream), water control/management (quality and quantity), urban and infrastructure development, and

introduced species strain to keep a salmon ecosystem in balance with the demands of a growing population.

Dealing with these constraints and sustaining a healthy local economy will require both institutional and technical approaches, and links between communities of science, interest, and place in the implementation of the subbasin plan. The complexity of the jurisdictional arrangements, and the differences in management objectives within the basin and across the US-Canada border, necessitates an extensive and comprehensive process. The successful Okanogan subbasin plan will be sensitive to the needs of federal, state/provincial and local governments, public utility districts and federal hydropower authorities, tribal entities, stewardship bodies, landowners, and other stakeholders.

2.4 Overall Direction and Goal of Subbasin Plan

Many good efforts are already underway to facilitate the coordination and planning needed to recover fish and wildlife in the subbasin, but such coordination with strategic links to ecosystem-base management is still in its infancy, and much remains to be done. Coordination of the Vision contained in this plan, and the parallel efforts being undertaken in the Canadian reaches of the subbasin, are a priority over the next three to five years.

The technical components of this subbasin plan are, undoubtedly, important and useful in the development of projects provided by the framework in this subbasin plan; however, success can only truly occur if the impacts to local communities are considered. Though the continuing balance between technical and community priorities is always a challenge, this planning process, as well as others must continue to try to strike that balance.

Though it is suggested that the vision and supporting items be provided in the management plan portion of the document, the subbasin planners have chosen to provide it at the beginning of the document to “set the tone” for the document. The vision, planning assumptions, foundation principles, and supporting principles are intended to provide the overall direction and goal of this subbasin plan. The logic path for development of the subbasin plan is illustrated in Figure 2

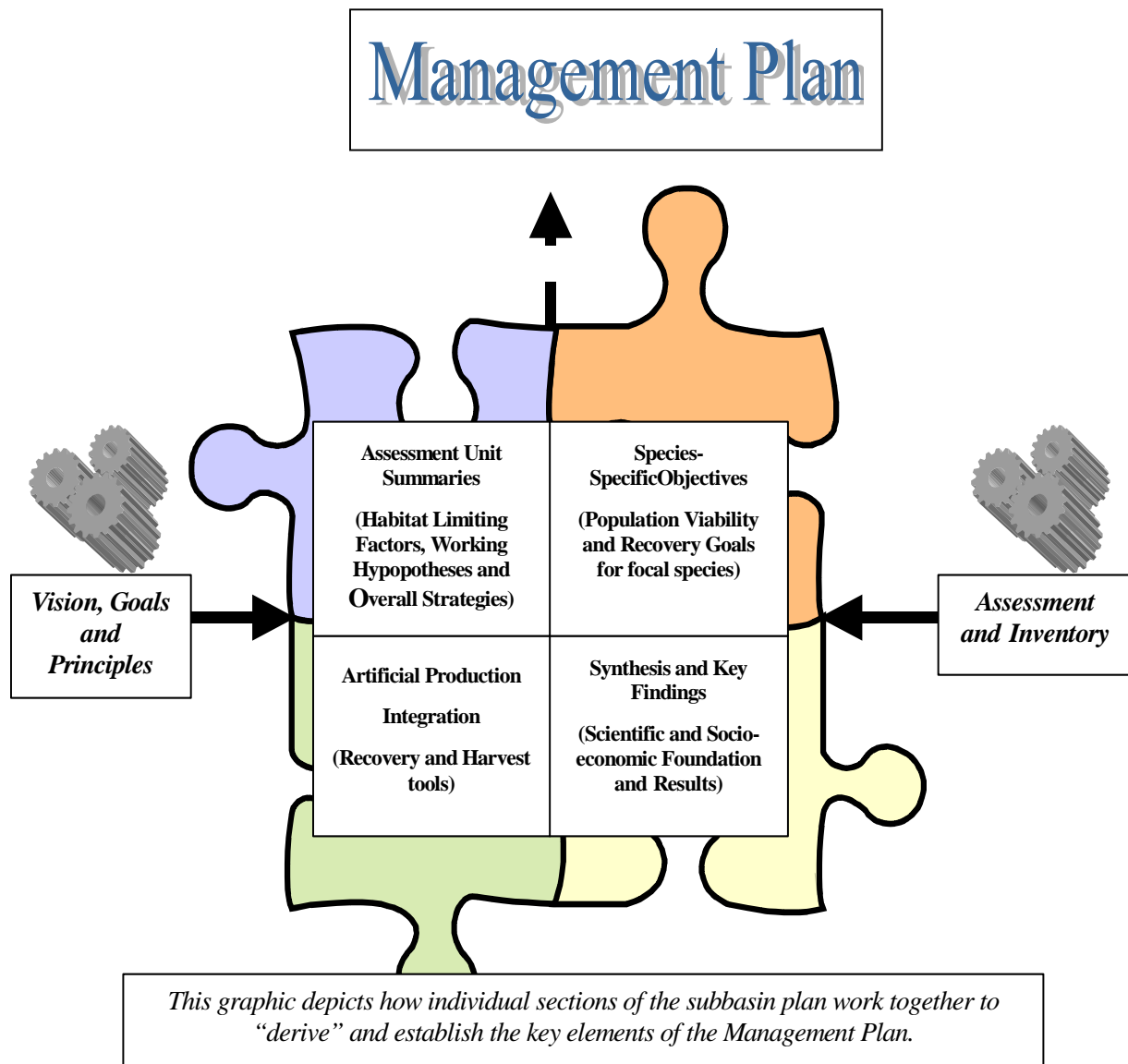


Figure 2 Logic Path for the Development of the Subbasin Plan

2.5 Our Vision for the Okanogan Subbasin

Consistent with the 2000 Columbia Basin Fish and Wildlife Program’s vision, yet tailored specifically to the geographic region of the Okanogan subbasin and its citizenry, within 15 years it is envisioned that we will have:

An Okanogan Subbasin that supports self-sustaining, harvestable and diverse populations of fish and wildlife and their habitats, and supports the economies, customs, cultures, subsistence and recreational opportunities within the basin. Decisions to improve and protect fish and wildlife populations, their habitats and ecological functions are made using open and cooperative processes that respect different points of view, statutory responsibilities, and are made for the benefit of current and future generations.

This vision and subbasin plan to follow is the outcome of an open process, and is intended to provide a framework under which future projects, programs and actions can be developed and implemented. Actions taken in the subbasin should be consistent with the Okanogan subbasin

plan, the NPCC Columbia Basin Fish and Wildlife Program, Clean Water Act, and the Endangered Species Act.

2.5.1 Specific Planning Assumptions

Planning assumptions were developed to incorporate into project plans or actions developed within the framework provided by this subbasin plan. Actions taken in the subbasin should be consistent with these planning assumptions.

As a part of this vision, the subbasin plan adopts the following policy judgments and planning assumptions for the Okanogan subbasin plan:

The ultimate success of the projects, process, and programs used to implement the subbasin plan will require a cooperative and collaborative approach that balances the economies, customs, cultures, subsistence, and recreational opportunities within the basin with the federal/state mandates to protect fish and wildlife.

The subbasin plan is not a land use management plan and contains no regulatory authority, but it is, however, intended to guide Bonneville Power Administration (BPA) in meeting its mitigation obligations.

No single activity is sufficient to recover and rebuild fish and wildlife species in the Okanogan subbasin or in the Columbia River Basin. Successful protection, mitigation, and recovery efforts must involve a broad range of strategies for habitat protection and improvement, as well as improvements to the operations of the hydrosystem, effective and equitable harvest management, and the continued incorporation of artificial production.*

The Bonneville Power Administration should make available sufficient funds to implement projects developed within the framework providing by this plan in a timely fashion.*

This is a habitat-based program, for rebuilding healthy, naturally producing fish and wildlife populations by protecting, mitigating, and restoring habitats and the biological systems within them, including anadromous fish migration corridors. Artificial production and other non-natural interventions will be used judiciously, and will be consistent with the central effort to protect and restore habitat and avoid adverse impacts to native fish and wildlife species.*

It is important to consider out-of-basin effects, including ocean habitat and predation, on salmonid species when evaluating freshwater habitat management, in order to understand all stages of the salmon and steelhead life cycle.*

There is an obligation to provide fish and wildlife mitigation where habitat has been permanently lost because of hydroelectric development. Artificial production of fish may be used to replace capacity, bolster productivity, aid recovery, and alleviate harvest pressure on weak, naturally spawning resident and anadromous fish populations. Restoration of anadromous fish into areas blocked by dams should be actively pursued where feasible.*

Management and artificial production actions must have an experimental, adaptive management design. This design will allow the region to evaluate benefits, address scientific uncertainties, and improve survival. It is important that actions be integrated with research and monitoring activities to evaluate their effects on the ecosystem.*

Harvest can provide significant cultural and economic benefits to the region, and the program should seek to increase harvest opportunities consistent with sound biological management practices. Harvest rates should be based on population-specific adult escapement objectives designed to protect and recover naturally spawning populations.*

Achieving the vision requires that actions in habitat, artificial production, harvest and hydrosystem are thoughtfully coordinated with one another. There also must be coordination among actions taken at the subbasin, province, and basin levels, including actions not funded by this program.

Participation of stakeholders, local and regional planning organizations, and/or groups in implementation of subbasin plans should be fostered to the fullest extent possible, or where appropriate.

These specific planning assumptions are to be incorporated into projects developed within the framework provided by this subbasin plan. Actions taken in the subbasin should be consistent with these planning assumptions.

2.5.2 Foundation Principles

A set of foundation principles have been developed that are reflected in the following framework of six key elements that include the natural and cultural systems from which the subbasin plan is built.

1. Economies, customs, cultures, subsistence, and recreational opportunities within the basin;
2. Regulation of land use;
3. Out of basin effects;
4. Viability and long term sustainability;
5. Healthy fish and wildlife habitats; and
6. Connectivity

Application of our principles

The Okanogan subbasin plan recognizes the following principles of general application. It is intended that all projects developed from the framework provided in this subbasin be consistent with these principles:

The people of the Okanogan subbasin are diverse and independent. They value a wide range of customs and cultures. Actions, strategies, programs, and projects for fish and wildlife and their habitats will be more successful if developed in context with the basin's economic needs, opportunities, and with an understanding of the impacts to the human environment in the basin

Activities associated with the subbasin plan, undertaken to protect and/or restore fish and wildlife, have the potential to improve opportunities for cultural and recreational uses and, thus, the social and economic well being of the communities. Strategies and projects should be reviewed and evaluated based on the potential for such positive impacts and methods developed to measure and monitor the success of such efforts.

The cost of actions to implement the Okanogan subbasin plan is estimated in relation to benefits. Within the context of priorities established to recover listed species, alternatives that achieve the greatest benefits at the least costs are preferred.

Consideration of social costs should include the effects of implementation on short- and long-term economic stability in the subbasin. Consideration should include (but is not limited to) project feasibility, cost-share opportunities, longevity, effects of increased electrical rates, increased development costs, and increased public land ownership.

Actions derived from the Okanogan subbasin plan are undertaken with the understanding that the natural environment, including its fish and wildlife resources, is the cultural heritage that is common to the diversity of human existence; and that such actions play a key role in the long-term sustainability of the common cultural heritage within the subbasin.

Acknowledgement, integration and balancing of human, fish and wildlife needs will be necessary to ensure the successful implementation of this plan. Okanogan subbasin stakeholders' values are clearly stated and reflected in this process.

Actions derived from the Okanogan subbasin plan will be consistent with Federal Tribal Trust responsibilities.

Recreational opportunities are provided for diverse user groups, consistent with conservation and enhancement of subbasin resources.

Programs and actions are monitored and evaluated for effect, and may be altered as necessary to achieve the intended results, recognizing that science, strategies, and the art of restoring ecosystems are evolving.

Regulation of land use. The ability to implement protection or restoration strategies will require a close and cooperative relationship between federal, state, tribal, and local governments and a wide range of interest groups. Protection and/or restoration strategies that affect land use will require action (both for the adoption and implementation) by local, state, federal and/or tribal governments.

No existing water right is affected by actions derived from Okanogan subbasin plan without the consent of the holder of that right.

The processes of subbasin plan preparation, implementation (including project development and planning), and amendment are open, voluntary, and collaborative.

Actions derived from the Okanogan subbasin plan acknowledge the statutory authority of local, state, federal and tribal governments and existing plans, programs, and processes.

Future land use planning and activities that involve potential impacts to fish and wildlife and their habitats should be fully discussed with the agencies and tribes with management authority prior to implementation.

Out of basin effects. The Columbia River basin is characterized by natural environmental variability, fluctuation in production and established human urban and rural activities. Restoration and management of fish and wildlife and their habitats in the Okanogan subbasin must consider both in- and out-of-basin effects within the entire Columbia River basin ecosystem, natural and cultural, including freshwater, estuary, and ocean.

Strategies for recovery or maintenance of self-sustaining populations need to be evaluated within the context of the entire life history of the populations, and not just within the life history stages within the subbasin geographic area.

Important environmental attributes that determine the distribution and productivity of fish and wildlife populations have been influenced by natural and cultural activities in and outside the subbasin.

Long-term sustainability. Life history, genetic diversity, and metapopulation organization are ways that fish and wildlife adapt to their habitat. Diversity and population structure are how fish and wildlife species adapt to spatial and temporal environmental variations. Such diversity promotes production and long-term persistence at the species level.

In addition to fish and wildlife populations that support the custom, culture, subsistence, and recreational opportunities in the subbasin, indigenous fish and wildlife species should be enhanced and restored to be self-sustaining.

For aquatic- and fish-related interests, selection of a broad range of focal species provides a basis for development holistic management strategies. For terrestrial- and wildlife-related interests, the selection of focal habitats and related focal species provide a basis for developing holistic management strategies.

Biological inter- and intra-specific interactions shape fish and wildlife populations. Restoration of individual populations may not be possible without restoring other fish and wildlife populations with which they co-evolved.

Most native fish and wildlife populations are linked across large areas and do not consider political borders, thus reducing the possibilities for extinctions or extirpations. An important component for recovery of depressed populations is to work within this framework and maintain or recreate large-scale spatial diversity.

Populations with the least amount of change from their historic spatial diversity are the easiest to protect and restore, and will have the best response to restoration actions.

Small populations are at greater risk of extinction than are large populations, primarily because they are more vulnerable to environmental changes such as catastrophic events.

Fish and wildlife habitat. Fish and wildlife productivity requires a network of complex, interconnected habitats that are created, altered, and maintained by both natural and human processes in terrestrial, freshwater, estuary, and ocean areas.

The habitat in the Okanogan subbasin should be capable, of supporting self-sustaining, harvestable, and diverse populations of fish and wildlife.

Physical characteristics of the alluvial valley and floodplains of the Okanogan River have changed ecosystem attributes, and restoring watershed processes, where possible, will require a long-term collaborative commitment to fish and wildlife recovery.

The Okanogan subbasin is a dynamic system that will continue to change through natural events and human activities.

Biological Interactions and Connectivity. Population, abundance, and diversity, and the biotic community reflect ecosystem attributes. Co-evolved assemblages of species share requirements for similar ecosystem attributes, and require connectivity among them.

Sustainable, harvestable and diverse populations of fish and wildlife are dependent upon properly functioning environments and the processes that sustain them.

Changes to the physical characteristics and connectivity of the Okanogan subbasin have contributed to the changes of native fish and wildlife populations; therefore reconnecting the native ranges of fish and wildlife species is critical.

Okanogan County Comments on Land Acquisition

In the subbasin plan, a potential management strategy is the protection of existing habitat for both fish and wildlife. Protection of habitat happens mainly by two actions – conservation easements or land acquisition. The Okanogan County Board of Commissioners (Board) believes that these protection activities potentially impact Okanogan County’s economic base and culture. The Board believes that other innovative solutions exist to achieve the same benefit, and urge individuals using the plan to propose actions to explore them.

Though the Board strongly opposes further acquisition of private lands in Okanogan County, they respectfully acknowledge a private landowner’s right to do with their property as they choose. It has been the Board’s experience that, in some instances, government entities often offer a private landowner exorbitant prices for a property, thereby disallowing those in the private sector to compete in purchasing the land.

When the state, federal government, or other groups, such as not-for-profits and the Bonneville Power Association acquire properties in Okanogan County, the Board of County Commissioners desire that the following be considered:

Consider and mitigate the economic impacts of removing the property from the County tax base or decreasing the amount of revenue generated by the property. (Economic impacts can occur not only from lost taxes but also from money spent in the community to maintain the property, the equipment necessary to do so, and possible wages to individuals working on the property).

Develop a multi-use land management plan that is consistent with Okanogan County’s comprehensive plan.

Incorporate the cost to implement the land management plan when requesting funds for the land purchase.

Implement the land management plan.

The Board also wishes to point out that social and economic impacts occur to rural school districts (decreasing enrollment), hospitals, as well as to downtown businesses as a result of poorly developed and implemented land acquisition or easement policies. Typically, removing land from private ownership creates nuisances such as noxious weed control and fire danger, often derived because of the lack of land management.

With the numerous economic impacts from permanently removing private properties from the County’s tax base as well as the increasing disturbance to the County’s culture, the Board

strongly recommends that other actions other than land acquisition occur to assist in the mitigation of impacts to fish and wildlife.

Ecosystem-based Management Principles Adopted in the Canadian Subwatershed

The Canadian Okanagan Basin Technical Working Group (COBTWG) has adopted an ecosystem approach to the management of fisheries to guide the implementation of fisheries actions in the Canadian reaches of the Okanagan subbasin. The COBTWG meets regularly with the US Co-managers and other interested agencies in an ad-hoc forum.

The Canadian approach is guided by agreements that include principles (paraphrased from the COBTWG Terms of Reference, January 2003) related to conservation and protection of indigenous fish stocks considered at imminent risk, and rehabilitation or restoration of highly valued indigenous fish populations and their habitats to satisfy requirements for sustainable use patterns. In addition, management efforts are directed at maintenance or restoration of normative ecosystem processes (C. Coutant 2000) considered essential to ecosystem health, and are to reflect a balance of multi-species ecosystem concerns.

Management actions are further directed by a precautionary approach, including application of an adaptive management framework for implementation of any project considered to involve moderate-to-high levels of risk or uncertainty to long-term sustainability of indigenous species within a healthy aquatic ecosystem. The adaptive management approach includes:

- adoption of a ‘stepwise’ approach to project implementation;
- a commitment to assessment and monitoring prior to, during, and after completion of the project; and
- a cyclical review of incoming assessment information to support a stepwise decision-making process that includes the option of project termination or reversal at any point where information clearly indicates the costs are likely to outweigh the benefits.

In addition to the elements noted under the first two bullets above, the COBTWG acknowledges support for adherence to the set of general ecosystem principles and operational guidelines adopted in May 2000 by Canada as one of the Parties to the United Nations 1992 Convention on Biodiversity.

3 Subbasin Assessment

3.1 Subbasin Overview

The Okanagan Subbasin enters the Columbia River between Wells and Chief Joseph Dams, straddling B.C. and Washington at Osoyoos Lake (Figure 3). The Subbasin is the third largest of Columbia River Basin’s 20 major subbasins, with its confluence at Columbia RM 533. The Okanagan subbasin comprises 16.2% of the Columbia Cascade Ecoprovince, and consists of 5,723,010 acres in the entire watershed.