

# Lake Rufus Woods

## Review Summary

The Lake Rufus Woods Subbasin Plan benefited from the assessment and inventory information provided in the Intermountain Province Plan, but for the Lake Rufus Woods Subbasin Plan additional treatment is needed as called for in the Council's 2000 Fish and Wildlife and Subbasin Planning Technical Guide. A notable strength of the subbasin plans in the Intermountain Province is their consistency and direct linkage to the Fish and Wildlife Program and its base principles. This plan, however, puts too much emphasis on the effects of the hydropower system. The planners' choice to focus on objectives and strategies they feel are most consistent with Bonneville's mitigation responsibilities detracts from the ecological approach that is central to the base principles of the Fish and Wildlife Plan.

### Assessment

When combined with the Overview of the Intermountain Province Plan, this Assessment provides a brief but adequate general overview of the subbasin.

The Assessment is particularly strong regarding the status of species, and the determination of key limiting factors. It is deficient with regards to the biological performance of aquatic focal species in relationship to the environment, the health of the overall aquatic and terrestrial ecosystem, and the potential conflicts and compatibilities between individual species and ecological processes - this is especially true with regards to effects of the exotic brook trout. The Assessment presents a variable amount of detail across its sections. The planners tend to overly emphasize limiting factors due to the hydropower system. They should consider a more ecological approach to looking at the subbasin's overall fish and wildlife habitat.

### Inventory

The Lake Rufus Woods Subbasin Plan benefited from the Inventory information provided in the Intermountain Province Plan. The overall impression of the Inventory is that it is a thorough description of the few projects in the subbasin. It makes a brief statement about gaps that could have been better addressed by reference to synthesis of limiting factors. The information should be better synthesized to identify gaps between ongoing and needed actions for the entire subbasin, including government agency programs, such as CRP and CREP in the Department of Agriculture.

### Management Plan

The Management Plan is strong in specifying objectives and strategies that address the limiting factors identified in the Assessment and that are consistent with province and basin-level objectives. The plan includes prioritization of objectives and strategies, however the stream habitat objectives/strategies that are so well expressed are buried so far down in the scheme of priorities that they might be rendered almost insignificant. For terrestrial species, the focus is on completing mitigation Habitat Units, but strategies are also prioritized. The Research Monitoring and Evaluation (RME) section is incomplete, but constitutes a good start. Adaptive management is not adequately addressed in the subbasin RME plan.

The overall Management Plan needs to have a more ecological outlook; the planners appear to be limiting their plan to what they believe Bonneville will fund.

## Review Checklist

<b>I. The Subbasin Assessment</b>		
(See generally pages 4-6, 9-10 of the Technical Guide; the checklist is derived from 18-24 of the Technical Guide.) Reviewers should consider the soundness, completeness, analytical approach, and transparency (documentation of methods and decision-making process) of the following components of a subbasin assessment.		
<b>I. A. Subbasin Overview</b>		
<i>General Question to be addressed: Does the assessment provide the geographical, demographical, and environmental context for fish and wildlife resources in this subbasin? The Council specifically asked that the independent scientific review evaluate whether the subbasin assessment was thorough and substantially complete. The following checklist is to aid reviewers in that determination.</i>		
<b>I. A.1. General Description</b>		(Y)es, (P)artial, (N)o  Need for additional treatment (0-4)
I.A.1.1	Does the assessment provide a general orientation to the subbasin (location, size, distinguishing natural and cultural features, land use, land ownership) and an overview of jurisdictional authorities (state, county, federal lands, tribal lands and fishing rights)?	
Reviewers: A good general, albeit brief, orientation to the subbasin is provided in the subbasin plan as well as in the provincial plan, although more of the information focuses on physical descriptions than on human uses or cultural features. A lot more detail on tribal cultural features is expected, given that a large proportion of the subbasin is the Colville Indian Reservation.		Yes 1
I.A.1.2	Does the assessment provide a general description of the subbasin's macro-environment (geology, climate and weather, land cover, vegetation) and of the subbasin's water resources (hydrography and watersheds, hydrologic regimes, water quality, riparian and wetland resources), water uses, and modifications to water resources (hydropower projects and operations, water diversions, channel modifications)?	
Reviewers: An adequate, but brief, description of the subbasin's macro-environment is provided.		Yes 1
I.A.1.3	Does the assessment provide a general description of anthropogenic disturbances to the aquatic and terrestrial environment, organized by the source of disturbance (urbanization, agriculture, forest practices, water development, mining, transportation, and other)?	
Reviewers: The plan describes anthropogenic disturbances briefly, but adequately.		Yes 1
I.A.1.4	Does the assessment provide a list of native and non-native fish and wildlife species present in this subbasin including those species that: a. have been designated as threatened or endangered under the Federal Endangered Species Act or state equivalents, b. have been recognized by applicable federal, state, or local resource management agencies, or by the Nature Conservancy or state heritage program, as being especially rare or significant in the local area,	

	c. have special ecological importance within the subbasin, d. are recognized by Native American tribes as having special cultural or spiritual significance, or e. are not native to this subbasin?		
	Reviewers: Fifty-one native and nonnative aquatic species are listed, preceded by a brief general description of the types of species found in different water bodies. A list of twelve priority terrestrial species is presented. All told, the presentation is too brief and would benefit from greater detail.	Yes	2
I.A.1.5	Does the assessment identify plants that have been designated as threatened or endangered under the Federal Endangered Species Act or state equivalents, and/or that are recognized by Native American tribes as having special cultural or spiritual significance, or (optional) that have special ecological importance within the subbasin?		
	Reviewers: The subbasin plan offers no discussion of plants of interest. This is surprising, because there are plants of special interest for the Colville Tribe in the Rufus Woods Lake subbasin. The specific locations of special interest plants need not be given.	No	4
<b>I.A.2. Subbasin in the Regional Context</b>		<i>(Y)es, (P)artial, (N)o</i>	<i>Need for additional treatment (0-4)</i>
I.A.2.1	Does the assessment adequately describe how this subbasin fits within its regional context (size in relation to the total Columbia Basin, placement within the ecological province and relationship to other subbasins in this province, qualities that distinguish this subbasin from others in the province)?		
	Reviewers: The subbasin Assessment provides an adequate description of how the subbasin fits with its regional context. Linkages between this subbasin and other subbasins, the province and the region are addressed well in the provincial plan.	Yes	0
I.A.2.2	Does the assessment adequately describe this subbasin's relationship to Endangered Species Act planning units (NOAA Fisheries-designated evolutionarily significant units (ESU) and U.S. Fish and Wildlife Service-designated bull trout planning units. <sup>1</sup> ) where this information was available during the planning process?		
	Reviewers: The plan makes reference to bull trout recovery planning and to the recovery units for listed terrestrial species, but it should have included more detail on bull trout habitat if present in the subbasin.	Yes	1
I.A.2.3	Does the assessment adequately summarize external environmental conditions that might have an effect on fish and/or wildlife in this subbasin (the ocean, the estuary, the mainstem downstream from the subbasin, and, as relevant, upstream areas and adjacent subbasins)?		
	Reviewers: External environmental conditions are adequately described in the subbasin Assessment and in the provincial plan.	Yes	0
I.A.2.4	Does the assessment adequately identify macroclimate and human occupation and use trends that may affect hydrological or ecological processes in this subbasin over the long-term (50 years into the future and beyond)?		

<sup>1</sup> The USFWS bull trout planning hierarchy includes, from large areas to small, distinct population segments, recovery units, recovery sub-units, core populations, core areas, and local populations. A subbasin would typically correspond to a recovery unit or sub-unit.)

<p>Reviewers: The plan briefly describes existing human uses but does not project these into a 50-year time horizon. Human influences are described in the Overview of the Intermountain Province Plan but not sufficiently to adequately develop an ecosystem based plan for the future.</p>	<p>Partial</p>	<p>1</p>
<p><b>Summary comments and evaluation on the Subbasin Overview:</b> Does the assessment provide the geographical, demographical, and environmental context for fish and wildlife resources in this subbasin?</p>		
<p>Reviewers: When combined with the Province Level Section of the Intermountain Province Plan this Assessment overview provides a brief but adequate general introduction to the Lake Rufus Woods subbasin, however, some additional work would improve the document. For instance, the Assessment's overview of its streams should be more detailed.</p>	<p>Yes</p>	<p>2</p>

<p><b>I.B. Species Characterization and Status</b></p>		
<p><i>General question: Does the assessment adequately describe the current status of fish and wildlife focal species?</i></p>		
<p>Note to reviewers: for this section of the review, the checklist should be applied to each focal species. Please identify which species your evaluation applies to in the comment field. Use the ranking fields (Y,P,N; 0-4) to give an overall evaluation across all focal species. Note differences among approaches to species in the comment field. If necessary, once the plans are received, assignments will be made to cover an individual species or a series of focal species.</p>	<p>(Y)es, (P)artial, (N)o</p>	<p><i>Need for additional treatment (0-4)</i></p>
<p>I.B.1. Does the assessment adequately identify a series of focal species that will be used to characterize the status of fish and wildlife species within the subbasin? These should include one or more wildlife, resident fish, and, where present, anadromous fish species. Anadromous fish may also be included in subbasins where they were historically present and where there is a reasonable probability that these fish could be restored to sustainable levels. Criteria suggested for selecting focal species include a) designation as Federal endangered or threatened species, b) local ecological significance,<sup>2</sup> and c) cultural significance.</p>		
<p>Reviewers: Five focal aquatic species are selected. They are: chinook salmon because the species is extirpated and has cultural significance, recreational value, and is a native species. Kokanee salmon because of their subsistence and recreational values, and ecological significance; brook trout because of their recreational and subsistence values, and suitability to habitat; rainbow trout because of their recreational and subsistence value and ecological significance; white sturgeon because of their cultural importance and ecological significance. Three "species of interest" are identified: Pacific lamprey, burbot, and walleye. For terrestrial species, four focal habitats are identified: wetlands, riparian and riparian wetlands, steppe and shrub-steppe, and upland forest. A brief description of each is presented. Twelve priority species are listed; among them three are listed under the ESA. Brief descriptions of each are presented. There is no explicit discussion of the availability of data to monitor focal species.</p>	<p>Yes</p>	<p>3</p>

<sup>2</sup> Species that could be considered under the ecological significance criterion might include those that: a) are particularly rare within the subbasin (regardless of ESA classification), or b) perform a particularly important or unique ecological function.

<p>Many of them appear not to have data available.</p> <p>The selection of the non-native species brook trout as one of the focal species that the Management Plan will be centered on is confusing. Its use in substitution fisheries in lakes appears to be logical under current circumstances, but managing for brook trout in streams may be ecologically unwise. The effects on the redband populations of stocking artificially propagated rainbow trout are not adequately considered in the plan.</p> <p>The selection of focal fish species has too much emphasis on nonnative fish species to be fully consistent with the Council's Fish and Wildlife Program. Very little attention is paid to native bull trout, westslope cutthroat or redband trout.</p>		
<p>I.B.2. Does the assessment adequately identify and characterize focal species populations; i.e. delineate unique population units and, as applicable and where information is available, meta-populations, subpopulations and/or other genetic/behavioral groupings used by scientists or managers?</p>		
<p>Reviewers: Focal species populations are well described to the extent that population information is available.</p>	Yes	1
<p>I.B.3. Does the assessment describe the current and historic status of each focal species population and summarize available population data (abundance, productivity, spatial structure, etc., with particular emphasis on trend data)?</p>		
<p>Reviewers: Although it varies in degree of detail by species, overall good descriptions are provided of the historic and present status and management of the focal species. The planners, however, did not include much trend data, so this section needs more expansion.</p>	Partial	2
<p>I.B.4. Does the assessment adequately describe the population's life history, including identifying distinct life stages?</p>		
<p>Reviewers: The Assessment adequately describes species population's life history to the extent that information is available, but there is not much information on some species.</p>	Yes	2
<p>I.B.5. Does the assessment adequately characterize the genetic diversity of the population, especially regarding possible effects of artificial production? Specifically does the assessment describe the historic and current status of introductions, artificial production, or captive breeding programs in this subbasin or affecting the subbasin through straying or other means, and describe the relationship between the artificial and naturally produced populations?</p>		
<p>Reviewers: The plan presents genetic information in so far as it is available on focal aquatic species. Information is lacking on native bull trout, westslope cutthroat trout, redband trout and terrestrial focal species.</p>	Partial	1
<p>I.B.6. Does the assessment adequately describe historic and current harvest, including both in-subbasin harvest and downstream or ocean harvest affecting the focal species?</p>		
<p>Reviewers: Recreational bag limits of harvestable species are described under "current management," but harvest levels over time are not described for aquatic species. Harvest is summarized for deer. Overall, the plan offers little information on harvest.</p>	Partial	2

	<b>Summary comments and evaluation on the Species Characterization and Status Subsection:</b> Does the assessment adequately describe the current status of fish and wildlife focal species?		
Reviewers:	The Assessment appears to be a reasonable description of focal species status, to the extent that information is available. The Assessment needs to be more consistent with the Intermountain Province Overview and the Council’s Fish and Wildlife Program, particularly with respect to native bull trout, west slope cutthroat trout, and redband trout. The use of brook trout as a focal species is questionable and the ramifications of this choice are not adequately examined. Terrestrial focal habitats are assessed with relatively little information given on individual terrestrial focal species.	Partial	2

<b>I.C. Environmental Conditions</b>			
<i>General question to be addressed: Does the assessment adequately describe the effect of the environment on fish and wildlife populations?</i>			
<b>I.C.1. Environmental Conditions within the Subbasin</b>		(Y)es, (P)artial, (N)o	<i>Need for additional treatment (0-4)</i>
I.C.1.1	Does the assessment adequately describe the current condition of the environment in this subbasin, and characterize the condition of the environment under the following reference conditions: a) historic, <sup>3</sup> b) potential, <sup>4</sup> c) future/no new action, <sup>5</sup> and the potential condition of aquatic and terrestrial habitats within the subbasin? Does the assessment include a determination of the difference between current conditions and the various reference conditions?		
Reviewers:	The subbasin Assessment briefly describes current environmental conditions by subarea, but it does not include a discussion of historic conditions or potential conditions with and without action. QHA is performed for three aquatic focal species and provides a comparison between existing and reference conditions in the focal species section. There is no comparison of future/no new action scenarios in the plan for either aquatic or terrestrial species.	Partial	2
I.C.1.2	Does the assessment adequately classify 6 <sup>th</sup> field HUCs within the subbasin according to the degree to which each area has been modified and the potential for restoration?		
Reviewers:	The Assessment uses adequate reach units. QHA is used to analyze stream reaches. IBIS is used for current wildlife.	Yes	0
<b>I.C.2. Out-of-Subbasin Effects and Assumptions</b>			
I.C.2.1	Does the assessment identify factors outside of the subbasin that have a significant effect on each focal species, with particular attention to bottlenecks? These might include effects associated with upstream conditions, downstream conditions, and, in the case of migratory wildlife, conditions in adjacent subbasins. Outside effects are particularly relevant for anadromous fish and may include mainstem passage and habitat, estuary conditions, ocean conditions, and harvest.		

<sup>3</sup> The historic condition refers to the state of the environment at the time of European settlement, or 1850.

<sup>4</sup> The potential condition is defined as the optimal condition for the subbasin in the year 2050, but it acknowledges cultural modifications that are not reversible such as urbanization.

<sup>5</sup> The future/no new action condition is the state of the environment in 2050 assuming that current trends and current management continues.

<p>Reviewers: A brief general discussion pertaining to all species notes that the hydroelectric system is the major out-of-basin effect. The discussions of aquatic focal species include identification of some out-of-subbasin effects. There is not much information given on out-of-basin effects on wildlife. Upstream problems are discussed.</p>	<p>Yes</p>	<p>1</p>
<p>I.C.2.2</p>	<p>For each focal species, does the assessment establish assumptions for each external effect that can be used to calculate the effects of external conditions on the productivity and sustainability of fish and wildlife within this subbasin?</p>	
<p>Reviewers: The plan does not establish any assumptions about the impact of out-of-subbasin effects on the sustainability of fish and wildlife in the subbasin. Perhaps this issue could be discussed for wildlife.</p>	<p>No</p>	<p>3</p>
<p><b>I.C.3. Environment / Population Relationships</b></p>		
<p>For each focal species, does the assessment adequately identify, for each life stage, environmental factors that are particularly important for the species' survival and determine the characteristics that constitute optimal conditions for species health? Does the assessment adequately describe and make a finding regarding the environment's ability to provide such optimal conditions, or conditions that support the long-term viability of these populations.</p>		
<p>Reviewers: A brief description is provided of the environmental factors by area, with more detail provided in the individual aquatic focal species discussions. This discussion should be more specific and detailed.</p>	<p>Yes</p>	<p>2</p>
	<p><b>Summary comments and evaluation on the Environmental Conditions Section:</b> Does the assessment adequately describe the effect of the environment on fish and wildlife populations?</p>	
<p>Reviewers: The Assessment's description of the interaction between environmental conditions and the aquatic focal species' status is adequate. However, it should be improved with a more complete discussion of out-of-basin effects and environmental conditions in the subbasin. The future out-of-basin effects on chinook should be assessed should the species be reintroduced to the subbasin.</p>	<p>Yes</p>	<p>2</p>
<p><b>I.D. Ecological Relationships</b></p>		
<p><i>Question to be addressed: Does the assessment describe the key inter-species relationships and the key functional relationships?</i></p>		<p>(Y)es, (P)artial, (N)o</p> <p><i>Need for additional treatment (0-4)</i></p>
<p><b>I.D.1. Inter-species Relationships</b></p>		
<p>Does the assessment adequately identify important inter-species relationships or interactions, both positive and negative, with specific attention to relationships between anadromous fish and wildlife and specifically identify: 1) wildlife species and habitats that may be influenced, positively or negatively through direct effects of changes in fish abundance or fish community composition; 2) fish species and habitats that may be influenced, positively or negatively, through direct effects of changes in wildlife abundance or wildlife community composition; and 3) key species relationships within this subbasin based on the above?</p>		

Reviewers: Interspecies interactions and ecological effects are addressed indirectly in the focal species sections. Relationships between fish and wildlife are considered in the Province Overview. The plan's consideration of inter-species relationships is inadequate. For example, the influence of brook trout on other species is hardly mentioned, if at all.	Partial	3
<b>I.D.2. Processes and Functions</b>		
Does the assessment adequately identify key ecological functions for species within this subbasin and assess the current status of ecological processes and functions in the subbasin?		
Reviewers: Key ecological processes and functions are addressed indirectly in the focal species and limiting factors sections and in the Province Overview but they are not explicitly addressed in the subbasin plan. The ecological role of focal aquatic species should be explicitly presented.	Partial	2

<b>I.E. Interpretation and Synthesis / Limiting Factors and Conditions</b>		
<b>I.E.1. Limiting Factors and Conditions</b>		
Does the assessment adequately describe:		
1) <b>Historic factors or conditions</b> that led to the decline of each focal species and of ecological functions and processes?		
2) <b>Current key factors or conditions</b> within and without the subbasin that inhibit populations and ecological processes and functions relative to their potential.		
Reviewers: The plan assesses limiting factors with QHA for kokanee, brook trout, and rainbow trout. The limiting factors for chinook and lamprey are blocked passage. A very good synthesis discussion of limiting factors by subarea is presented. Limiting factors for terrestrial species are described by construction mitigation HUs, which are only 16% completed. The plan puts too much emphasis on the harvest of non-native fish species, and does not offer a holistic approach to key factors influencing fish and wildlife habitat in the entire subbasin.	Yes	2
<b>I.E.2. Key Findings</b>		
Is the knowledge gained through the assessment adequately synthesized in regard to: 1) the status of species, 2) the status of the subbasin environment, 3) the biological performance of focal species in relationship to the environment, 4) the health of the overall ecosystem, 5) potential conflicts and compatibilities between individual species and ecological processes, 6) a determination of the key factors that impede this subbasin from reaching optimal ecological functioning and biological performance?		
Reviewers: The Assessment is particularly strong regarding the status of species, and the determination of key limiting factors. It is deficient with regards to the biological performance of aquatic focal species in relationship to the environment, the health of the overall aquatic and terrestrial ecosystem, and the potential conflicts and compatibilities between individual species and ecological processes - this is especially true with regards to the exotic brook trout.	Partial	2

<b>I.E.3. Subbasin-wide Key Assumptions/Uncertainties (“Working Hypothesis”)</b>		
Does the assessment describe the key assumptions (including uncertainties) that have been made in the “Key Findings” above, and document the data sources and/or analytical tools relied upon?		
Reviewers: The guiding principles and working hypotheses are developed at the provincial level, in an explicit attempt to integrate and provide consistency across subbasins.	Yes	1
<p><b>Overall impression and evaluation of the Assessment:</b> Does the assessment adequately synthesize the information regarding the health and functioning of this subbasin ecosystem? Does it adequately: a) bring together the single-species and community assessments to form a holistic view of the subbasin’s biological and environmental resources, b) provide a foundation for the development of scientific hypotheses concerning ecological behavior and the ways that human intervention might prove beneficial? As needed elaborate on your evaluation of the various Sections enumerated above. If the plan provides additional analysis beyond what is laid out above in the checklist please comment here (e.g., socio-economic descriptions or analysis).</p>		
Reviewers: The Assessment is particularly strong regarding the status of species, and the determination of key limiting factors. It is deficient with regards to the biological performance of aquatic focal species in relationship to the environment, the health of the overall aquatic and terrestrial ecosystem, and the potential conflicts and compatibilities between individual species and ecological processes - this is especially true with regards to the exotic brook trout.  The Assessment is variable across sections in the amount of detail it presents. The planners tend to overly emphasize limiting factors due to the hydropower system. They should consider a more ecological approach to looking at the subbasin’s overall fish and wildlife habitat.	Partial	2

<b>II. The Inventory</b>		
<i>(This checklist section was developed from pages 11-12 of the Technical Guide.)</i>		
<i>Reviewers should consider the soundness, completeness, analytical approach, and transparency (documentation of methods and decision-making process) of the following components of a subbasin inventory, specifically whether the inventory includes an assessment of the adequacy of current legal protections, plans, and projects to protect and restore fish, wildlife, and ecosystem resources. Does the inventory adequately synthesize past activities and their biological achievements? Planners were requested to, as applicable, describe the extent to which these programs and activities extend beyond the subbasin to a larger scale (provincial and basin-wide).</i>		
<b>II.A. Existing Protection</b>	(Y)es, (P)artial, (N)o	Need for additional treatment (0-4)
II.A.1	Does the inventory adequately identify areas with protections through stream buffers, municipal or county ordinances, conservation designations, or water resources protection?	
Reviewers: Brief mention is made of bull trout. ESA and state protections for terrestrial focal species are described.	Yes	1
II.A.2	Does the inventory assess the adequacy of protections for fish, wildlife, and ecosystem resources?	
Reviewers: The consistency of existing plans with the subbasin plan is not assessed.	No	3

<b>II.B. Existing Plans</b>		
II.B.1	Does the inventory identify and review applicable local, state, tribal, and/or federal fish and/or wildlife management plans and water resource management plans that affect fish and wildlife?	
Reviewers: State, tribal and federal management plans are described in the provincial plan. The subbasin plan describes conservation districts. Synthesizing this information would strengthen the plan.		Yes 1
II.B.2	Does the inventory assess the extent to which existing plans are consistent with the subbasin assessment and their adequacy in protecting and restoring fish, wildlife, and ecosystem resources? (It is possible that this analysis is done in another section of the plan, e.g. in the management plan.)	
Reviewers: The consistency of existing plans with the subbasin plan is not assessed.		No 3
<b>II.C. Management Programs / Restoration and Coordination Projects</b>		
Does the inventory identify management programs implemented through on-the-ground restoration and conservation projects that target fish and wildlife or otherwise provide substantial benefit to fish and wildlife? These include, at a minimum, those implemented within the past five years regardless of funding source.		
II.C.1	Does the inventory identify ongoing or planned public and private management programs or initiatives that have a significant effect on fish, wildlife, water resources, riparian areas, and/or upland areas? <sup>6</sup>	
Reviewers: A detailed description of ongoing projects is presented, some with descriptions of monitoring programs and performance outcomes.		Yes 0
II.C.2	For each management program (or project where not clearly part of an overarching management program), does the inventory describe the program, project or activity; identify the management or lead entity; identify how the program/project was authorized and who is responsible for implementation; identify the funding source; and identify the relationship to other activities in the subbasin?	
Reviewers: The information requested above is provided for both management programs that concern aquatic and terrestrial species.		Yes 0
II.C.3	For each management program (or project where not clearly part of an overarching management program), does the inventory identify limiting factors or ecological processes the activity is designed to address?	
Reviewers: The Inventory only identifies limiting factors for some of the management programs. For aquatic species, a summary section addresses the extent to which ongoing projects are addressing limiting factors. This information is presented in pie charts. For terrestrial species, the focus is on meeting the construction mitigation HUs.		Yes 2
II.C.4	For each management program (or project where not clearly part of an overarching management program), does the inventory summarize accomplishments/failures of activity	
Reviewers: Accomplishments are summarized for completed projects, with particular successes noted. An overall evaluation of success or failure is not presented.		Partial 1
II.C.5	Does the inventory adequately relate the assessment to the existing activities and identify the gaps between actions that have already been taken or are underway and additional actions that are needed to address the limiting factors and meet recovery and other goals, and identify inadequacies in both design and implementation?	

<sup>6</sup> Among other programs, the Technical Guide requested for artificial production programs that the inventory include and summarize relevant HGMPs (both BPA-funded and non-BPA funded programs) and Council APRE evaluations?

<p>Reviewers: For aquatic species, the assessment of gaps consists of noting the small number of projects, and a statement that the most obvious gap is the lack of any action. For terrestrial species, the gap is presented in terms of the remaining construction mitigation HUs to be completed. Overall synthesis of gaps between ongoing and needed actions for the entire subbasin is missing.</p>	<p>Partial</p>	<p>2</p>
<p><b>Overall impression and evaluation of the Inventory:</b> As needed elaborate on your evaluation of the various Sections enumerated above. If the plan provides additional information or analysis beyond what is laid out above in the checklist please comment here (e.g., socio-economic descriptions or analysis).</p>		
<p>Reviewers: The Lake Rufus Woods Subbasin Plan benefited from the Inventory information provided in the Intermountain Province Plan. The overall impression of the Inventory is that it is a thorough description of the few projects in the subbasin. It makes a brief statement about gaps that could have been better addressed by reference to synthesis of limiting factors. The information contained in the Inventory should be better synthesized to identify gaps between ongoing and needed actions for the entire subbasin, including projects such as CRP and CREP in the Department of Agriculture and other government agencies.</p>	<p>Partial</p>	<p>2</p>

### III. The Management Plan

*(Derived from pages 12-16 of the Technical Guide.)*

*Reviewers should consider the soundness, completeness, analytical approach, and transparency (documentation of methods and decision-making process) of the following components of a subbasin management plan.*

These checklist tables incorporate Council Question 4, Consistency with the Provincial- and Basin-level Program: Are the vision, objectives, and strategies proposed in the subbasin management plan consistent with those adopted in the program for the province and/or basin levels? This is a three-part question and reviewers must be familiar with the vision, objectives, and strategies described in the 2000 Fish and Wildlife Program (pp. 13-33) and, for mainstem subbasin plans, the Mainstem Amendments (pp.11-28).

#### III.A. The Vision for the Subbasin

Does the Vision Section of the Management Plan adequately 1) describe the desired future condition for the subbasin; 2) describe a vision that will drive development of the biological objectives and thereby the strategies that are incorporated to change conditions within the subbasin; and 3) incorporate the conditions, values and priorities of the subbasin in a manner that is consistent with the Vision described in the Council's 2000 Fish and Wildlife Program? (Council Question 4 to the ISRP):

<p>(Y)es, (P)artial, (N)o</p>	<p><i>Need for additional treatment (0-4)</i></p>
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Reviewers: The plan utilizes a general vision statement that is developed at the province level. The province document makes frequent and explicit reference to the Fish and Wildlife Plan's vision and objectives. The Upper Columbia Mainstem vision is a slightly more specific vision nestled within the Intermountain Province Plan's statement.

<p>Yes</p>	<p>0</p>
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#### III.B. Biological Objectives

Does the Biological Objectives Section of the Management Plan adequately describe physical and biological changes within the subbasin needed to achieve the vision?

Reviewers: Most of the plan's biological objectives are written in specific measurable terms. Some strategies are general, and others are specific and measurable. Again, the objectives appeared to be somewhat limited by the attention paid to the effects of the hydropower system.	Yes	1
III.B.1. Are the biological objectives consistent with basin-level visions, objectives, and strategies adopted in the program? (Council Question 4) The 2000 Fish and Wildlife Program, pages 16-18, provides general descriptions for basin-level goals, objectives, and strategies. The Mainstem Amendments provide additional biological objectives as well on pages 11-14. <sup>7</sup>		
Reviewers: A strength of the Intermountain Province approach is the close linkage among subbasin, province and basin levels. Goals and objectives of the Fish and Wildlife Plan are the framework within which province and subbasin goals and biological objectives are developed. The subbasin Management Plan's biological objectives are explicitly tiered to those of the higher levels of aggregation. The biological objectives appear to be somewhat limited by the attention paid to the effects of the hydropower system, particularly for terrestrial resources.	Partial	1
III.B.2. Are the biological objectives based on the subbasin assessment? (This question relates to the Logic Path in the subbasin plan. Question III.C.1 is a similar question for the Strategies Section.)		
Reviewers: The Management Plan begins with a summary of limiting factors by focal species identified in the Assessment. Objectives are developed to address these limiting factors.	Yes	1
III.B.3. Where possible, are the biological objectives empirically measurable and based on an explicit scientific rationale; i.e., quantitative with measurable outcomes?		
Reviewers: Most of the plan's biological objectives are written in specific measurable terms.	Yes	1
III.B.4. Are biological objectives identified for both the short and long-term?		
Reviewers: No explicit differentiation is made between short-term and long-term, although several biological objectives have target dates attached.	Partial	2
III.B.5. Are the biological objectives complementary to programs of tribal, state and federal land or water quality management agencies in the subbasin?		
Reviewers: It is difficult to tell if the plan's biological objectives are complementary to programs of tribal, state and federal land or water quality management agencies in the subbasin. The biological objectives do make explicit reference to the Washington bull trout recovery unit.	Partial	1
III.B.6. <i>Clean Water Act</i> : Does the management plan adequately describe how the objectives and strategies are reflective of and integrated with the water quality management plan and Total Maximum Daily Load schedule within that particular state? I.e., does this subsection of the management plan adequately assess and describe the consistency-coordination-findings of the Water Quality Plan with the subbasin plan? <sup>8</sup>		

<sup>7</sup> Given the Fish and Wildlife Program's emphasis on building from subbasin level management plans upward into provincial and basin level objectives, reviewers should evaluate whether the plans have a framework that will facilitate the development and linkage of objectives from the subbasin to the province to the basin.

<sup>8</sup> *Clean Water Act*: The Water Quality Management Plans developed for watersheds within each state includes the following information: 1) Management measures tied to attainment of TMDL; 2) Timeline for implementation; 3) Timeline for attainment of Water Quality Standards; 4) Identification of responsible parties; 5) Reasonable assurance of implementation; and 6) Monitoring and evaluation. The status of Total Maximum Daily Loads (TMDLs) is generally the responsibility of the state, which is delegated the responsibility for implementing the

Reviewers: Reference to existing TMDL monitoring and proposed TMDL strategies is made. The plan also addresses dissolved gas from Grand Coulee.	Yes	0
III.B.7. <i>Endangered Species Act</i> : The USFWS and NOAA Fisheries are developing recovery plans for listed species (bull trout, white sturgeon, salmon). Recognizing that those ESA-based efforts are in various states of completion across the Columbia basin (some efforts are well underway, others just beginning), does the management plan adequately describe how the objectives of the subbasin management plan are reflective of and integrated with the ESA-based goals for listed species within the subbasin? <sup>9</sup>		
Reviewers: References to ESA recovery actions are weak on bull trout and redband.	Partial	2
III.B.8. If there are disagreements among co-managers that translate into differing biological objectives, are the differences and the alternative biological objectives fully presented? (The Council's review will examine whether the plan is consistent with legal rights and obligations of fish and wildlife agencies and tribes with jurisdiction over fish and wildlife in the subbasin, and agreed upon by co-managers in the subbasin.)		
Reviewers: The plan discusses a disagreement over the prioritization of objectives. It is not known if there are other disagreements.	Yes	1

<b>III. C. Strategies<sup>10</sup></b>		
III.C.1. <b>Internal Consistency of the Plan.</b> Does the Strategies Section of the Management Plan explain the linkage of the strategies to the subbasin biological objectives, vision and the subbasin assessment? (Council Questions 2 and 3) <sup>11</sup>		
Reviewers: The linkage between the strategies to the subbasin biological objectives, vision and the subbasin Assessment are clear. The strategies toward protecting and restoring stream habitat are very well developed and logically set forth.  Also, a specific point:  Within Subbasin Objective 1A1: "Develop and implement plans to reduce hydropower impacts to native and focal species," two of the strategies seem not to logically belong there:	Partial	1

CWA. Each state has a schedule for completing TMDLs, which include a Water Quality Management Plan that describes how the allocations in the TMDL will be met. Basic information on TMDL's can generally be found on the web (see Resources).

<sup>9</sup> E.g. NOAA Fisheries has provided interim targets in a letter from NOAA Fisheries to the Council, Bob Lohn to Larry Cassidy: [http://www.nwncouncil.org/library/2002/nmfstargets2002\\_0404.pdf](http://www.nwncouncil.org/library/2002/nmfstargets2002_0404.pdf).

<sup>10</sup> *Definition*: Strategies are sets of actions to accomplish the biological objectives. Strategies are not projects but instead are the guidance for development of projects as part of the implementation plan. Strategies identified within the subbasin plans will be used as a basis for Council recommendations to the Bonneville Power Administration regarding project funding. Proposed measures will be evaluated for consistency with biological objectives and strategies. The strategies may be organized by categories of habitat, artificial production, harvest, hydrosystem passage and operations, and wildlife.

<sup>11</sup> This is one of the most important review questions. The set of seven questions from Council asks the ISRP to evaluate the internal consistency, scientific soundness, and thoroughness of subbasin plans. Internal consistency means there is scientific support for the conclusion that the strategies proposed in a subbasin plan will in fact address the problems identified by the subbasin assessment; i.e., does the Strategies Section take into account not only the desired outcomes, but also the physical and biological realities of the subbasin environment. The ISRP's Subbasin Plan Logic Path flow chart, attached below, provides a straightforward illustration of the logic path reviewers should look for in subbasin plans. Rick Williams, ISRP chair, developed and has presented this flow chart to subbasin planners around the basin, emphasizing the importance that subbasin plans demonstrate a clear logic path.

Strategy d: Develop plan to work with local fish farms to monitor trends in fish health and environmental conditions; and Strategy e: Ensure fish stocking activities are coordinated between Indian Tribes, USFWS, WDFW, NMFS, and private aquaculture operations.		
<b>III.C.2. Consistency with the Fish and Wildlife Program.</b> Are the Strategies proposed in the subbasin management plan consistent with those adopted in the program? (Council Question 4)		
Reviewers: The plan's consistency with the Fish and Wildlife Program is addressed, however the strategies appear to be somewhat limited by the attention paid to the effects of the hydropower system, particularly for terrestrial resources.	Yes	3
<b>III.C.3. Consideration of Alternative Management Responses.</b> Does the Strategies Section explain how and why the strategies presented were selected over other alternative strategies (e.g. passive restoration strategies v. intervention strategies)? (Council Question 5) <sup>12</sup>		
Reviewers: A discussion of alternative management strategies is not provided, but a good description of the prioritization process is provided.	Partial	2
<b>III.C.4. Prioritization.</b> Does the Strategies Section describe a proposed sequence and prioritization of strategies?		
Reviewers: The plan includes prioritization. A systematic approach was taken to assigning priorities for aquatic species. A very good summary of subbasin priorities is presented and a good discussion of prioritization process. For terrestrial species, the focus is on completing mitigation HUs, but strategies are also prioritized. The stream habitat objectives/strategies that are so well expressed are buried so far down in the scheme of priorities that they may be rendered almost insignificant. These should perhaps be placed more prominently. Also, category 1 and 2 objectives should be ranked against each other to augment the plan.	Yes	2
<b>III.C.5. Additional Assessment Needs.</b> Does the Strategies Section describe, if necessary, additional steps required to compile more complete or detailed assessment?		
Reviewers: The plan does not include a discussion of additional assessment needs. If none are necessary, then the plan should place a sentence to that effect in the document.	No	3
<b>III.C.6. Clean Water Act:</b> Does the management plan adequately describe how the strategies are reflective of and integrated with the water quality management plan and Total Maximum Daily Load schedule within that particular state?		
Reviewers: Water quality issues and a TMDL assessment are referenced in the plan. Explicit reference is made to existing TMDL implementation plans.	Yes	0

<sup>12</sup> The 2000 Fish and Wildlife Program directs that the subbasin management plan's strategy section must include an explanation of how and why the strategies presented were selected over other alternative strategies (e.g. passive restoration strategies v. intervention strategies). The Council does not expect subbasin plans to be structured like an Environmental Impact Statement with a list of alternative actions and descriptions of why each were not recommended. The Council's primary interest is on why and how a strategy was selected -- the rationale for the selected strategy -- which necessary includes some discussion of alternatives.

III.C.7. <b>Endangered Species Act:</b> Recognizing that ESA-based efforts are in various states of completion across the Columbia basin, does the management plan adequately describe how the strategies of the subbasin management plan are reflective of and integrated with the ESA-based goals for listed species within the subbasin?		
Reviewers: The plan explicitly addresses ESA goals.	Yes	0

### III.D. Research, Monitoring, and Evaluation

This RME Checklist Section provides the review elements necessary for the ISRP/ISAB to answer *Council Question 6. Plan for Assessing Progress toward Subbasin Goals*. The ISRP/ISAB is asked to determine whether a subbasin plan includes a procedure for assessing how well subbasin objectives are being met over time. This question focuses on accountability and self-assessment, and reflects on the adequacy of the Management Plan’s research, monitoring and evaluation component. This RME component needs to be closely connected to a limiting factors analysis and the biological and environmental objectives. A prioritized RME agenda reflecting the critical uncertainties and limiting factors should be developed and presented with the detail requested below (Technical Guide pp. 14-16). *NOTE: The focus of the RME component should be on the strategy level rather than individual project level.*

Subbasin planners were encouraged to incorporate, or link their RME framework and strategies with the “regional” RM&E strategies being developed by the Pacific Northwest Aquatic Monitoring Partnership and the Columbia Basin-Wide Research, Monitoring and Evaluation (RM&E) Program, a coordinated effort developed by State, Federal, and Tribal entities in response to the Basin-wide Salmon Recovery Strategy 2000 and the FCRPS 2000 Biological Opinion. Products from these regional RME efforts could be used to meet elements of a subbasin plan’s RME section (Technical Guide pp. 14-16), particularly in the areas of monitoring protocols and methodologies. The subbasin plan should also explain how they incorporated existing monitoring guidance from state programs.

III.D.1	<b>Research:</b> Does the RME section of the plan describe a research agenda with specific conditions and situations identified in the subbasin that will require specific research studies to help resolve management uncertainties? Is the research agenda framed around the relationships between the assessment data and the stated vision, biological objectives, and strategies in describing uncertainties? Does the RME section prioritize research topics that are of critical importance to the subbasin?	(Y)es, (P)artial, (N)o	<i>Need for additional treatment (0-4)</i>
Reviewers: Because RME was covered in Intermountain Provincial Plan; the ISRP/AB comments on RME provided here are the same as those provided for all the Intermountain Province subbasins. The province plan identifies research needs. These are not prioritized within the subbasin. The RME plan is essentially in tabular form. It would make this section more useful to have more text on explanation and rationale, The tables worked better for M and E than for Research. The research could be tied closer to the objectives. This research section flowed more from the Management Plan than from the Assessment and Inventory; it should link back to them more clearly.		Partial	2
III.D.2	<b>Monitoring Objectives:</b> Does the RME subsection identify what kind of information needs to be collected in order to determine if the plan’s vision and objectives are being met? I.e., what indicator variables will be monitored?		
Reviewers: The RME subsection represents substantial progress in developing a monitoring and evaluation plan. Monitoring types and scales are listed by strategy and objective. Specific indicators are not identified; the section tends to be very general on this. Methods are shown (inconveniently for readers) by code numbers that refer to a “tool box,” which is a list of standard technical references. The methods lists		Partial	2

	shown for various objectives appear not to designate which method would be best for a specific purpose.		
	More work is needed on the RME plan. There is an inadequate statement of coordination for standard protocols. Evidence of progress towards cooperative monitoring of projects within the basin is lacking.		
III.D.3	<b>Monitoring Indicators:</b> Does the RME subsection identify measurable indicators of physical, chemical, biological, or socioeconomic conditions that may act as environmental signposts by which progress towards achieving the stated vision can be evaluated? E.g., does the RME subsection describe performance standards or quantitative benchmarks for reference conditions against which observations can be compared? Does the plan prioritize which indicators are most needed to answer management questions (include a short list)?		
	Reviewers: No monitoring indicators are listed other than those expressed or implied in the objectives. The Intermountain Province comment implies that the “tool box” identifies indicators, but the reviewers find that statement too indirect and unwieldy. Desired future conditions and measurable objectives should be explicitly discussed in terms of appropriate indicators.	No	3
III.D.4	<b>Data and Information Archive:</b> Does the RME subsection describe an infrastructure to archive relevant data and meta data generated through monitoring efforts in existence for the subbasin (e.g., locally or at a regional Fish and Wildlife Program funded database such as StreamNet, the Fish Passage Center, or DART)? Specifically, does the RME subsection include discussion of quality assurance/quality control (QA/QC), data management and analysis, and data reporting?		
	Reviewers: The plan describes no infrastructure for RME quality assurance, data management/analysis, data reporting, and data archiving.	No	4
III.D.5	<b>Coordination and Implementation:</b> Does the RME subsection describe who will collect the information and data collection methods whether collection is done by a subbasin, provincial, state, or a regional entity, or a combination of entities? This should include a description of coordination with regional RME efforts in the basin (Regional Partnership, Action Agencies Research, Monitoring, and Evaluation Plan, etc) with standardization of data methods. It should also include estimates of how much the proposed M and E will cost.		
	Reviewers: Agency responsibility for RME work is not shown. The toolbox might represent a start toward coordination, but further steps are needed. A top-down decision needs to be made on standard regional protocols.	No	3
III.D.6	<b>Summary Question. RME Logic Path (Evaluation and Adaptive Management):</b> Does the subbasin plan provide a scientifically supportable procedure for refining the biological objectives as new information becomes available about how fish, wildlife, and the environment interact, and in relationship to how the plans are implemented over time? (Council Question 7) Specifically, does the RME subsection describe a scientifically sound logic path for how to test if the subbasin plan’s strategies are helping to reach the stated vision and objectives? I.e., Is the RME agenda adequately framed around the relationships between the assessment data and the stated vision, biological objectives, and strategies in describing uncertainties?		
	Reviewers: Adaptive management is not addressed in the subbasin RME plan. The logic path presentations in the province plan do incorporate this, but the subbasin RME plan does not seem to refer back to this. Failure to explain how the information from monitoring and evaluation will be used for adaptive management is a major flaw that ultimately	Partial	3

will hamper effectiveness of restoration and protection in the subbasin.		
<p><b>Overall impression and evaluation of the Management Plan:</b> As needed elaborate on your evaluation of the various Sections enumerated above. If the plan provides additional analysis beyond what is laid out above in the checklist please comment here (e.g., socio-economic descriptions or analysis).</p>		
<p>Reviewers: The Management Plan is strong in specifying objectives and strategies that address the limiting factors identified in the Assessment and that are consistent with province and basin-level objectives. The plan includes prioritization of objectives and strategies, however the stream habitat objectives/strategies that are so well expressed are buried so far down in the scheme of priorities that they might be rendered almost insignificant. For terrestrial species, the focus is on completing mitigation HUs, but strategies are also prioritized. The Research Monitoring and Evaluation (RME) section is incomplete, but constitutes a good start. Adaptive management is not adequately addressed in the subbasin RME plan.</p> <p>The overall Management Plan needs to have a more ecological outlook; the planners appear to be limiting their plan to what they believe Bonneville will fund.</p>	Partial	3

**General Council Question. Consistency with the Fish and Wildlife Program and its Scientific Foundation**

The Council asks the ISRP to evaluate a subbasin plan for its consistency with the Scientific Foundation adopted as part of the Program and with the requirements for “biological objectives” as described in the program. The core of the Council’s Scientific Foundation is a set of eight Scientific Principles:

1. The abundance, productivity, and diversity of organisms are integrally linked to the characteristics of their ecosystem.
2. Ecosystems are dynamic, resilient and develop over time.
3. Biological systems operate on various spatial and time scales that can be organized hierarchically.
4. Habitats develop, and are maintained, by physical and biological processes.
5. Species play key roles in developing and maintaining ecological conditions.
6. Biological diversity allows ecosystems to persist in the face of environmental variation.
7. Ecological management is adaptive and experimental.
8. Ecosystem function, habitat structure and biological performance are affected by human actions.

*See 2000 Fish and Wildlife Program, pages 14-15 for full detail.*

Questions on consistency with the objectives and strategies section of the Fish and Wildlife Program are incorporated in the table above. Consistency with the Program’s scientific foundation is interwoven throughout the checklist, and this comment table provides reviewers a place to specifically summarize and identify how well the eight principles were addressed.

**Summary comments and evaluation of the subbasin plan’s consistency with the eight principles of the Fish and Wildlife Program’s Scientific Foundation:**

Reviewers: A notable strength of the subbasin plans in the Intermountain Province is their consistency and direct linkage to the Fish and Wildlife Plan and its base principles. This plan has put too much of an emphasis on the effects of the hydropower system at the expense of a complete fish and wildlife plan for an adequately functioning ecosystem. Also, the choice of brook trout as a native species is questionable.	Partial	3
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