

# Upper and Lower Middle Snake Mainstem Subbasins

## Review Summary

The plans for the Upper and Lower Middle Snake Subbasins, which cover three states and eighteen counties, were presented and reviewed as one plan. This review often refers to these two subbasins as a single unit. Overall, the plan is a good start and many scientific elements for a subbasin plan called for in the Council's 2000 Fish and Wildlife Program and the Subbasin Planning Technical Guide are met, but many elements need improvement before the plan can best guide fish and wildlife management actions and decisions. Foremost, the expert system used in the assessment needs to be better documented, more analysis should be provided to justify the identification of limiting factors, and objectives and strategies need to be further prioritized and tied back to the Assessment.

### Assessment

The Assessment provides a good overview of the subbasin, and the choice and characterization of focal species is adequate. The Assessment includes general statements about the effects of the environment on fish and wildlife. This effort to define environmental conditions may have been handicapped by the lack of existing data and the multi-jurisdictional nature of this artificial grouping of subbasins. Even given the constraints, more details need to be added to this section for it to be adequate.

To further improve this portion of the assessment, the authors need to clarify what systematic method they use to conduct the assessment. The authors found QHA "not suitable" because it was developed for tributaries. Instead, the planners use best professional judgment to rank limiting factors on a scale of 1 to 3. While this might be a useful method, it is important for the planners to provide detail on how they determined the limiting factors. This is a common observation of most plans that did not use EDT or QHA, but never present any systematic method for conducting the assessments. Thus, their discussions, plans, and presentations went directly to limiting factors, without validating how they were determined. This makes all the rest of the steps through the linkages to objectives and strategies difficult to justify scientifically.

The limiting factors section of the Assessment provides a good tabular display for aquatic species, but further work is warranted on this section. To improve upon the aquatic portion it would be helpful to add a more in-depth discussion on current and historic key factors. For terrestrial species, the limiting factor analysis is organized by focal habitat types. This would be improved by including an analysis that is also done by species.

The Assessment includes lots of potentially useful information. The incorporation of the Nature Conservancy's Biodiversity Management Area Selection model results helps to identify high priority sites and is very useful. To further strengthen the utility of the assessment, judgments regarding conditions in a basin that probably cannot be changed should be included. That means acknowledging that a return to historic conditions is not a likely prospect. Given that, the planners should determine what restoration or protection activities have a reasonable chance for

success given human population projections, water and property rights, etc. Including more information or details on working hypotheses, limiting factors, and inter-species relationships would improve the Assessment. In sum, the Assessment needs additional work before it can adequately direct and prioritize management actions.

### **Inventory**

The Inventory provides a worthwhile list of projects and plans but doesn't adequately describe existing protections. To strengthen its utility it needs to include a careful examination of ongoing and past programs to justify support for either new recommendations or continuation of current actions. This interpretation and synthesis, in addition to a meaningful GAP analysis, would be beneficial. Existing plans for some areas likely include elements that would be useful in a subbasin plan. In sum, the ISRP/AB concerns with the Inventory are moderate. The Inventory provides useful information, but it must be strengthened to inform development of the Management Plan.

### **Management Plan**

The Management Plan deserves credit for providing a basic linkage between the described objectives and strategies. To further improve upon this aspect, it would be useful for the plan to make a stronger effort at tying this back to the assessment. Again, the plan is handicapped by a lack of specific data, but the generalized strategies for protection and restoration incorporated sound basic conservation principles - protect the best, restore those areas with greatest potential.

The objectives section of the Management Plan is generally adequate. As an objective, the planners recommend the highest priority for ESA species. To increase the efficacy of this portion of the plan more information, data, and references are needed on bull trout in Indian and Wild Horse creeks. It would also be helpful to know what the core and satellite redband trout populations are.

Although the plan provides a rough prioritization among habitats, more work is warranted on the prioritization of strategies and objectives, which are not prioritized. The plan notes that this process was carried out "collaboratively," but does not specify how this was accomplished. It is important that this is defined, because the prioritization that does occur is done without reference data. The product is a long list of data gaps by species and by location that does not seem to follow a clear logic path and needs to be better linked to the assessment in order for this part of the plan to have substantial utility.

The plan includes a worthwhile start for a sound RME logic path that could result in adaptive management, but most of the RME elements called for in the technical guide are not fully addressed.

Overall, the planners have developed a sturdy foundation for their Management Plan. To improve it, the basic needs of native species regarding the distribution of core and satellite populations, and abundance targets needed for them to persist should be included, or at least calculated or estimated. A realistic assessment of what is likely to be attainable must be applied to this basin. The planners must find out what changes, such as the introduction of exotic species, are likely to be irreversible. What ecological reforms can be accomplished in the subbasin given

water and land management policy? Finally, what outcomes are expected to be produced in terms of ecosystem structure and function, persistence of species, and harvestable surplus? Analyzing the answers to these questions could be a tremendous asset to this subbasin plan.

## 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: The Assessment provides an adequate overview of the subbasin.		
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: The Assessment offers an adequate general description of the subbasin’s macro-environment.		
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 Assessment provides an adequate general description of the subbasin’s anthropogenic disturbances.		
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: The Assessment provides an adequate assessment of species present in the subbasin.			
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 Assessment adequately identifies plants that have been designated as threatened or endangered under the Federal Endangered Species Act.			
<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 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 Assessment provides an adequate description of how this subbasin fits within the regional context of the Columbia River Basin.			
I.A.2.2	Does the assessment 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 <b>units.</b> <sup>1</sup> ) where this information was available during the planning process?		
Reviewers: The Assessment provides an adequate description of the subbasin's relationship to ESA planning units.			
I.A.2.3	Does the assessment 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: The Assessment adequately summarizes external environmental conditions that might have an effect on fish and wildlife in the subbasin.			
I.A.2.4	Does the assessment 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)?		
Reviewers: This Assessment provides an adequate identification of future trends, although it could be enriched with fuller details.			
	<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?		
Reviewers: The overview is adequate.			

<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.)

<b>I.B. Species Characterization and Status</b>		
<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>I.B.1. Does the assessment 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: The Assessment provides an adequate list of focal species.</p>		
<p>I.B.2. Does the assessment 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: The Assessment provides an adequate identification and characterization of focal species populations. The Assessment, however, is lacking viability estimates. Including viability estimates would strengthen this assessment.</p>		
<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: The Assessment provides some density data for redband, but includes very little data for bull trout, and essentially none for whitefish and sculpin although they are present in the subbasin. Providing more details about the historical status of each focal would improve this plan.</p>		
<p>I.B.4. Does the assessment describe the population's life history, including identifying distinct life stages?</p>		
<p>Reviewers: The Assessment provides a general description of faunal focal species. It fails to discuss (or even identify) the habitat requirements and preferences of each life stage. Including this information would improve the plan.</p>		
<p>I.B.5. Does the assessment 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>		

<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.

Reviewers: This Assessment provides a general discussion of non-native species in the mainstem. It also offers some discussion of the sturgeon population problem and possible roles for transplantation or aquaculture. Providing more details on these issues would improve this plan.		
I.B.6. Does the assessment describe historic and current harvest, including both in-subbasin harvest and downstream or ocean harvest affecting the focal species?		
Reviewers: This Assessment offers general statements to describe the historic and current harvest of fish. This plan would be strengthened by the inclusion of statistics on harvest.		
<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 included much helpful information. To further improve, it needs a more fully developed discussion on current status and future viability of the focal species.		

<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>		<i>(Y)es, (P)artial, (N)o Need for additional treatment (0-4)</i>
I.C.1.1	Does the assessment 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?	
<p>Reviewers: Although the authors provided a good generalized discussion, it lacks detail. With respect to the Mid-Snake, the determination of limiting factors may have been handicapped by a lack of data.</p> <p>To improve this plan, the authors need to clarify what systematic method they used to conduct the assessment. The authors found QHA “not suitable” because it was developed for tributaries. Instead, the planners used best professional judgment to rank limiting factors on a scale of 1 to 3. While this is a useful method it would be important for the planners to provide detail on how they determined the limiting factors.</p> <p>The Assessment comes to the general conclusion that the habitat can be made better. This part of the plan would be strengthened by demonstrating the potential to improve the habitat.</p>		

<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.

I.C.1.2	Does the assessment classify 6 <sup>th</sup> field HUCs (or other appropriate assessment units) within the subbasin according to the degree to which each area has been modified and the potential for restoration?		
Reviewers: This plan did not use any particular assessment scale. To improve this plan, this must be included.			
<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.		
Reviewers: The Assessment included a discussion that noted blocks for anadromous fish. Expanding this part of the Assessment to include all fish would improve the plan.			
I.C.2.2	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?		
Reviewers: The Assessment does not include assumptions of external effects for focal species. The ISRP acknowledges that this information is very difficult to obtain or estimate.			
<b>I.C.3. Environment / Population Relationships</b>			
For each focal species, does the assessment 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 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.			
Reviewers: No additional comments.		Partial	3
<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?			
Reviewers: This section makes a general statement about the effects of the environment on fish and wildlife. The effort may have been handicapped by the lack of existing data and the multi-jurisdictional nature of this artificial grouping of subbasins. Even given the constraints, more details need to be added to this section for it to be adequate.			
<b>I.D. Ecological Relationships</b>			
<i>Question to be addressed: Does the assessment describe the key inter-species relationships and the key functional relationships?</i>		(Y)es, (P)artial, (N)o	<i>Need for additional treatment (0-4)</i>
<b>I.D.1. Inter-species Relationships</b>			
Does the assessment 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?		
Reviewers: The Assessment describes several potential inter-species relations including predation of wildlife species on one another; however, the plan does not demonstrate what the impact of these inter-species relationships might be for the species and the subbasin. Other trophic relationships, such as the food-web/pyramid are also not discussed, although this is true in almost all subbasins. This plan also omits a discussion of important competitive relationships between animal species. To increase its utility the plan should include these aspects.		
<b>I.D.2. Processes and Functions</b>		
Does the assessment identify key ecological functions for species within this subbasin and assess the current status of ecological processes and functions in the subbasin?		
Reviewers: There is some discussion of lost anadromous species but more information is needed.		

<b>I.E. Interpretation and Synthesis / Limiting Factors and Conditions</b>		
<b>I.E.1. Limiting Factors and Conditions</b>		
Does the assessment describe: <b>1) Historic factors or conditions</b> that led to the decline of each focal species and of ecological functions and processes? <b>2) Current key factors or conditions</b> within and without the subbasin that inhibit populations and ecological processes and functions relative to their potential.		
Reviewers: This Assessment provides a good tabular display for aquatic species. To improve upon the aquatic portion it would be helpful to add a more in-depth discussion on current and historic key factors.  For terrestrial species the limiting factor analysis is organized by focal habitat types. This would be improved by including an analysis that is also done by species.  Overall, declines are attributed to general categories of environmental changes caused by management decisions. To back up this assertion it would be useful to provide a quantitative demonstration of cause and effect.		
<b>I.E.2. Key Findings</b>		
Is the knowledge gained through the assessment 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?		

<p>Reviewers: The Assessment provides a good discussion of many changes that have occurred in this subbasin; however, the meaning of the phrase "optimal ecological functioning and biological performance," should be clarified.</p>		
<p><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?</p>		
<p>Reviewers: This assessment does not include supporting data for its assumptions regarding the significance of all environmental change. This must be included to increase the utility of this plan.</p>		
	<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>	
<p>Reviewers: The Assessment includes lots of potentially useful information. The incorporation of TNC BMAS model results helped to identify high priority sites and was very useful. To further strengthen the utility of the assessment judgments regarding things in a basin that probably cannot be changed should be included. That means acknowledging that a return to historic conditions is not a likely prospect. Given that, the planners should determine what restoration or protection activities have a reasonable chance for success given human population projections, water, and property rights, etc. Including more information or details on working hypotheses, limiting factors, and inter-species relationships would improve the assessment.</p>		

<p><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></p>		
<p><b>II.A. Existing Protection</b></p>	<p>(Y)es, (P)artial, (N)o</p>	<p><i>Need for additional treatment (0-4)</i></p>
<p>II.A.1</p>	<p>Does the inventory identify areas with protections through stream buffers, municipal or county ordinances, conservation designations, or water resources protection?</p>	

Reviewers: The Inventory presented some discussion of existing protections, but most of the relevant material was found in the Assessment. This section needs to be better integrated into the Inventory in order to strengthen the plan.			
II.A.2	Does the inventory assess the adequacy of protections for fish, wildlife, and ecosystem resources?		
Reviewers: The Inventory assumes that what is being done is not sufficient because it is mostly stream fencing, or that what is being done just needs to be expanded to a larger area. To increase the utility of the inventory more details and analysis need to be given regarding the adequacy of protections.			
<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: The Inventory does identify and review applicable management plans at all tiers.			
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 Inventory presents an assessment of the consistency of existing plans to this plan's assessment section, but it is neither concise nor organized in the manner that this question implies. Reworking this section for brevity and clarity would enrich this plan.			
<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: The Inventory identifies ongoing management programs.			
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 Inventory provides an adequate description of each management program.			
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?		

<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?

Reviewers: The projects are listed in an appendix, but limiting factors were not assigned to individual projects due to the lack of data. Incorporating the information into the body of the text would make this information more accessible and readable.			
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: The accomplishments are identified in physical terms. Demonstrating biological terms would strengthen this plan. Also, it would be instructive to identify some failures.			
II.C.5	Does the inventory 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?		
Reviewers: This plan mostly recommends that more actions, akin to those that have already been done, be taken. It would be useful for the plan to better justify that recommendation.		Partial	
<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).			
Reviewers: The Inventory provides a worthwhile list of projects. To strengthen its utility it needs to include a careful examination of ongoing and past programs to justify support for new recommendations or justification for continuing current actions. This interpretation and synthesis, in addition to a meaningful GAP analysis, would be beneficial. Existing plans for some areas likely include elements that would be useful in a subbasin plan.			

<p><b>III. The Management Plan</b>  <i>(Derived from pages 12-16 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 management plan.</i></p> <p>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).</p>		
<p><b>III.A. The Vision for the Subbasin</b>  Does the Vision Section of the Management Plan 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>	<p>(Y)es, (P)artial, (N)o</p>	<p><i>Need for additional treatment (0-4)</i></p>
Review: The vision statement is very broad, but that has been the norm for all of the subbasins. One way to make the vision statement more specific is to include more of the spirit of the Council’s eight scientific principles.		

<b>III.B. Biological Objectives</b>		
Does the Biological Objectives Section of the Management Plan describe physical and biological changes within the subbasin needed to achieve the vision?		
Reviewers: The Biological Objectives Section adequately describes necessary changes. Quantifying the objectives would improve the plan.		
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: The objectives are laudable for their consistency, but they may be unattainable. For example, objectives regarding opening migration routes and restoring hydrographs do not seem realistic in this part of the basin.		
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 biological objectives are consistent with basin-level visions, objectives, and strategies.		
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: The objectives are broad. To make them more workable they should be broken down to indicators and performance measures.		
III.B.4. Are biological objectives identified for both the short and long-term?		
Reviewers: The objectives are broadly identified for the short and long-term. Some numerical objectives were presented for bull trout and sturgeon. Creating more numerical objectives for other species would enrich this section of the plan.		
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: The biological objectives are complementary to all tiers of water quality management areas in the subbasin. Within the subbasin, the tribes seem to have a greater interest in mitigation for anadromous fish losses.		
III.B.6. <i>Clean Water Act</i> : Does the management plan 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 assess and describe the consistency-coordination-findings of		

<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 CWA. Each state has a schedule for completing TMDLs, which include a Water Quality Management Plan that

the Water Quality Plan with the subbasin plan? <sup>8</sup>		
Reviewers: The Management Plan indicates that it intends to support CWA activities.		
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 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: The planners do recommend the highest priority for ESA species. To increase the efficacy of this portion of the plan, more information, data, and references are needed on bull trout in Indian and Wild Horse creeks. It would also be helpful to know what the core and satellite redband trout populations are. Are there any references for this? If it is impossible to supply this information the planners should note so.		
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: Nothing relating to differing biological objectives was described in the plan or the presentation. If disagreements occurred it would be instructive to comment on them. If there were no disagreements the authors should say so.		

<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: This plan deserves credit for providing a basic linkage between the described objectives and strategies. To further improve upon this aspect it would be useful for the plan to make a stronger effort at tying this		

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.nwcouncil.org/library/2002/nmfstargets2002\\_0404.pdf](http://www.nwcouncil.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.

back to the Assessment.  Again, the plan is handicapped by a lack of specific data, but the generalized strategies for protection and restoration incorporated sound basic conservation principles - protect the best, restore those areas with greatest potential.		
<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: This plan is generally consistent with the Fish and Wildlife Program. It does not, however, show explicit linkage to the Fish and Wildlife Plan as several other subbasin plans have.		
<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: This plan makes a worthwhile effort to demonstrate some consideration of alternate management plans in the terrestrial section. Repeating this effort on the aquatic side and for the Management Plan overall would strengthen the final product.		
<b>III.C.4. Prioritization.</b> Does the Strategies Section describe a proposed sequence and prioritization of strategies?		
Reviewers: The plan provides a rough prioritization among habitats. Objectives and strategies, however, are not prioritized. The plan notes that this process was carried out “collaboratively,” but does not define how this was accomplished. It is important that this is defined, because the prioritization that does occur is done without reference data. The product is a long list of data gaps by species and by location that does not seem to follow a clear logic path and needs to be better linked to the Assessment in order for this part of the plan to have greater utility.		
<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 describes general types of additional data that is needed. To make this section more useful, the needs should be more specific. Also, the needs are indicated throughout various points in the text, condensing this information to one section would be helpful. The assessment needs to demonstrate the potential for desired species in these basins via analysis, modeling, or other methods. As of now the plan assumes that the vision can be attained.		
<b>III.C.6. Clean Water Act:</b> Does the management plan 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?		

<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.

Reviewers: The plan aims to support CWA activities.		
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 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 recognizes ESA plans. To improve this section, the subbasin plan needs to better tie ESA plans to the subbasin plan's proposed actions and focal species.		

### 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: The plan describes general research needs. The material in this section, however, is not treated as gaps. Some gaps can be inferred from items in Tables 9 and 10, but the "gaps" listed there are worded as actions. Good material exists here about needed research, but the "gaps" need to be clarified and identified.			
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 plan describes monitoring needs in general terms. This portion of the plan could be improved by specifying these needs. The planners should also consider monitoring and evaluating socioeconomic results.			
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: The plan's monitoring indicators are implicit in statements describing the desired long-term outcome. To further improve this section it would be useful for the statements to be more explicit.			
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: No additional comment.		Partial	2
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: No additional comment.		Partial	4
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: The plan includes a worthwhile start for a sound RME logic path that could result in adaptive management. To improve this section, details of adaptive management would be useful. Also, the diagram on the RME (Figure 1) is confusing and the text on pages 66-68 was unclear. Fine-tuning the specifics will improve the entire RME section.			
	<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).		
Reviewers: Overall, the planners have developed a sturdy foundation for their management plan. To improve it the basic needs of native species regarding the distribution of core and satellite populations, and abundance needed for them to persist should be included, or at least calculated or estimated. Given the limitations associated with land, water, and property rights, migration blockages, etc. the analysis should determine whether these needs can be met and, if they can, describe what realistic alternatives are available.			

**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: This subbasin plan contains numerous aspects that are in line with some of the Council’s eight principles. Augmenting the plan to draw an explicit connection between its material and each of the Council’s eight principles could reinforce this.

Overall, a realistic assessment of what is likely to be attainable must be applied to this basin. The planners must find out what changes, such as the introduction of exotic species, are likely to be irreversible. What ecological reforms can be accomplished in the subbasin given water and land management policy? Finally, what outcomes are expected to be produced in terms of ecosystem structure and function, persistence of species and harvestable surplus? Analyzing the answers to these questions will be a tremendous asset to this subbasin plan.