

Malheur

Review Summary

The Malheur Subbasin Plan meets many of the scientific elements of a subbasin plan described in the Council's 2000 Fish and Wildlife Program and Subbasin Planning Technical Guide, but the objectives and strategies are not prioritized and the RM&E is incomplete. For the plan to be most useful in directing management actions, and soliciting, developing, and selecting project proposals, more work is warranted on prioritization of strategies. The plan provides a strong foundation on which to further prioritize strategies and the thorough, broad-based stakeholder involvement demonstrated throughout the planning process should facilitate future buy-in.

Assessment

The Assessment is adequate and, compared to other subbasin plans, above average. The planners deserve kudos for their strong job of documenting how they developed their limiting factors and conditions and for incorporating results from relevant studies outside of the subbasins. The three limiting factors identified in the plan for aquatic resources were developed for the three main fish-bearing areas, and this was then linked to work at the watershed level. This demonstrates that the planners used good judgment to adopt the approach best adapted to the situation. The limiting factors section of the assessment would be further improved by a more coherent discussion of how low-temperature could act as a limiting factor for focal fish species.

The redband and bull trout life histories are well described, but the Assessment could be improved with more complete information for focal species - especially redband - regarding their genetic diversity, harvest levels and their historic status and trend data. The terrestrial section needs to be further developed to meet the level of the aquatic section.

For aquatic species, QHA was used for analysis and to make assertions on the likelihood of achieving improvements in habitat and population status. No long-term viability analysis, however, was done for conditions necessary to maintain populations. Including this information would be useful. The authors acknowledge that population abundance and trends are important end-products, so monitoring and evaluation are very important to provide a test of the relationship between numbers and habitat conditions.

In general, the terrestrial section of the Assessment takes a holistic or "ecological" approach, which if applied to the aquatic section, would improve the overall Assessment. Although the plan includes general comments on socio-economic and future population issues, they are brief, and it would be beneficial to expand these comments. The plan could be improved by providing a more complete assessment of land ownership for each watershed, putting the subbasin in a better regional context, including a more complete identification of significant plants, and providing a more thorough analysis of future human use trends. Although the existing Assessment could be improved it does provide the needed information to select and prioritize objectives and strategies.

Inventory

Overall, the Inventory was adequate and very responsive to the Council's guidelines. To improve this section, gaps could be discussed in a more detailed manner including identification of specific areas (topical and geographic) where future work is needed.

Management Plan

The Management Plan includes an excellent start at addressing the elements called for in the Council's program and the technical guide, but the prioritization sequence has not been taken to its logical conclusion. The planners suggest that QHA has identified priority objectives and strategies, but they have not made adequate use of this analysis. The plan indicates other factors must be considered, but those factors are not prioritized. For example, the strategy of protecting/recovering redband trout is not complete.

To improve the plan, the strategies need to be prioritized and more fully described, with rationales provided to justify the prioritization. To further develop the plan, the requirements for focal species to persist need to be estimated for this subbasin. The possibilities for meeting these requirements should then be described along with an assessment of whether or not the requirements can be met. That is, if they can be met, then the plan should explain how. If they cannot, then the plan should illustrate where the bottlenecks are and what has to happen if these bottlenecks are to be overcome. Although the plan now assumes that the vision can be attained, data corroborating that assumption would be desirable.

Obviously, data do not exist to be precise in setting these requirements, but modeling/expert systems can be used to make the estimates of what the projected potential is for preferred species in these basins compared to desired goals. Careful monitoring can help to provide the basis for identifying appropriate adjustments. In other words, a realistic look at this basin is needed to show what is likely to be attainable, given the changes in physical and biotic environments. What changes are likely to be irreversible (e.g., exotic species will likely continue to exist)? What can be changed given water and land management policy? What outcomes are expected regarding ecosystem structure and function, persistence of species, and harvestable surpluses? The plan should provide more information on monitoring objectives and indicators as well as identify who will collect monitoring information and where it will reside.

Review Checklist

<p>I. The Subbasin Assessment (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.</p>			
<p>I. A. Subbasin Overview <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></p>			
<p>I. A.1. General Description</p>		<p>(Y)es, (P)artial, (N)o</p>	<p>Need for additional treatment (0-4)</p>
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 adequately provides a general orientation to 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 plan provides an adequate 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 a good general description of the anthropogenic disturbances to the aquatic and terrestrial environment.			
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 plan does an adequate job of listing native and non-native fish and wildlife 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: A list of threatened and endangered plant species was not found in the assessment or the plan.			
I.A.2. Subbasin in the Regional Context		(Y)es, (P)artial, (N)o	Need for additional treatment (0-4)
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: Although the Assessment adequately describes how the subbasin fits in the regional context, this portion of the plan could be improved.			
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 units !) where this information was available during the planning process?		
Reviewers: The Assessment adequately describes the Malheur's relationship to the ESA.			
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, with an especially good discussion for wildlife issues.			
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: The Assessment identifies macroclimate and human occupation trends, but it only does so in Appendix A1. This plan would be improved by adding this information to the body of the report.			
	Summary comments and evaluation on the Subbasin Overview: Does the assessment provide the geographical, demographical, and environmental context for fish and wildlife resources in this subbasin?		
Reviewers: Although the Assessment is adequate, it could be improved by better describing the subbasin in a regional context, better identifying plants, and undergoing a more thorough examination of human use trends in the future.			

¹ 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.)

I.B. Species Characterization and Status		
<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>		
	(Y)es, (P)artial, (N)o	Need for additional treatment (0-4)
<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,² and c) cultural significance.</p>		
<p>Reviewers: The plan provides a good discussion of focal species. Chinook salmon are no longer present in the subbasin, and their inclusion as a focal species did not prove that useful.</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: This plan makes an adequate characterization of the aquatic focal species. For terrestrial focal species, however, the discussion is less complete due to the emphasis on habitat. A discussion of the potential linkages and viability requirements for redband or bull trout would also be useful.</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: As with the characterization of focal species, the historic status of focal species is generally adequate and is better for aquatic species. This portion of the plan would be improved by presenting more trend data for bull trout and by including trend data for redband. There is present trend data in the plan for the game birds: blue and sage grouse.</p>		
<p>I.B.4. Does the assessment describe the population's life history, including identifying distinct life stages?</p>		
<p>Reviewers: All told this section is adequate. Similar to the rest of the species characterization and status section, however, the aquatic section of the life history portion of the plan is presented more thoroughly than the wildlife section.</p>		

² 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>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>		
<p>Reviewers: Overall, this section is adequate. As commented above, the aquatic section of the life history portion of the plan is presented more thoroughly than the wildlife section. Within the aquatic section, the genetic diversity of bull trout is characterized well. However, the relatively unhybridized redband trout deserve more attention.</p>		
<p>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?</p>		
<p>Reviewers: The plan seems to include the little that is known about current harvest levels of fish species; there is only some data on the harvest of stocked trout. If more complete data is available it would aid the plan. As is true of the rest of this section of the plan, the section on aquatics is more complete than the section on terrestrials.</p>		
<p>Summary comments and evaluation on the Species Characterization and Status Subsection: Does the assessment adequately describe the current status of fish and wildlife focal species?</p>		
<p>Reviewers: The presentation of this section was very good. The aquatic portion of this subsection is mostly adequate; it would be improved with more complete information for focal species - especially redband - regarding their genetic diversity, harvest levels, and their historical status and trend data. The wildlife section needs to be further developed to meet the level of the aquatic section.</p>		

<p>I.C. Environmental Conditions <i>General question to be addressed: Does the assessment adequately describe the effect of the environment on fish and wildlife populations?</i></p>			
<p>I.C.1. Environmental Conditions within the Subbasin</p>		<p>(Y)es, (P)artial, (N)o</p>	<p><i>Need for additional treatment (0-4)</i></p>
I.C.1.1	<p>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,³ b) potential,⁴ c) future/no new action,⁵ 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>		
<p>Reviewers: The Assessment adequately describes the current condition of the environment; however, it does not present the various potential future condition of the environment depending on what restoration regimes are implemented. Adding this information would aid the plan.</p>			

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

⁴ 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.

⁵ 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 th 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 provided a good summary that utilized stream reaches rather than HUCs.			
I.C.2. Out-of-Subbasin Effects and Assumptions			
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: There was a good discussion of out-of-subbasin effects for the terrestrial species.			
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: There was a limited discussion of established assumptions. This discussion did not include all the focal species. It only included the harvested species. More thorough information on this part of the plan would be helpful.			
I.C.3. Environment / Population Relationships			
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: The redband and bull trout life histories are well described. Although QHA was used to conduct analyses and make assertions on the likelihood of achieving improvements in habitat and population status, no long-term viability analysis was done for conditions necessary to maintain populations. Including this information would be useful.			
Summary comments and evaluation on the Environmental Conditions Section:			
Does the assessment adequately describe the effect of the environment on fish and wildlife populations?			
Reviewers: The redband and bull trout life histories are well described. Although QHA was used to conduct analyses and make assertions on the likelihood of achieving improvements in habitat and population status, no long-term viability analysis was done for conditions necessary to maintain populations. Including this information would be useful. The authors acknowledge that population abundance and trends are important end-products, so monitoring and evaluation are very important to provide a test of the relationship between numbers and habitat conditions.			

I.D. Ecological Relationships		
<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>
I.D.1. Inter-species Relationships		
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 plan does a good job noting the importance of the loss of nutrients from extirpated anadromous fish species, chronicling that fish are food for river otter, and describing the effects of fish and frogs on the ecosystem. This plan needs to build upon this foundation and include a more thorough analysis of inter-species interactions.		
I.D.2. Processes and Functions		
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: This plan did a good job in discussing terrestrial focal species, but more information and analysis for aquatic species would be useful. Overall, the description provided was general and would benefit from more detail.		
I.E. Interpretation and Synthesis / Limiting Factors and Conditions		
I.E.1. Limiting Factors and Conditions		
Does the assessment describe: 1) Historic factors or conditions that led to the decline of each focal species and of ecological functions and processes? 2) Current key factors or conditions within and without the subbasin that inhibit populations and ecological processes and functions relative to their potential.		
Reviewers: The planners deserve kudos for their strong job of documenting how they developed their limiting factors and conditions and for incorporating results from relevant studies outside of the subbasins. Three limiting factors were developed for the three main fish-bearing areas, and this was then pulled back to work at the watershed level, demonstrating that the planners used good judgment to adopt the approach best adapted to the situation. This portion of the plan would be further improved by a more coherent discussion of how low-temperature acts as a limiting factor of aquatic focal species.		

I.E.2. Key Findings		
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?		
Reviewers: The planners provide a good general discussion of the key factors. To improve this section, more future thinking is needed on the specific biological performance of focal species in the Malheur environments.		
I.E.3. Subbasin-wide Key Assumptions/Uncertainties (“Working Hypothesis”)		
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 planners present a generally clear and useful discussion of key assumptions and uncertainties.		
	Overall impression and evaluation of the Assessment: 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).	
Reviewers: The Assessment is above average compared to other subbasin plans. A more holistic or "ecological" approach is applied to the terrestrial section. It would improve this section if the terrestrial approach could be applied to the aquatic section as well. There are brief and general comments on socio-economic issues; it would benefit the plan to expand these. In sum, this is a good job.		

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

Reviewers: Although some discussion of existing protections is provided, it would be useful if the planners could include an overview of local and other protections, e.g. CREP and CREP programs.			
II.A.2	Does the inventory assess the adequacy of protections for fish, wildlife, and ecosystem resources?		
Reviewers: This plan adequately describes federal and state protections for ecosystem resources, and the planners have concluded that many activities in the basin are consistent with the findings of these processes. Again, this part of the plan would be improved with the inclusion of local protections. If no local protections exist the planners should state this.			
II.B. Existing Plans			
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: This plan adequately identifies and reviews applicable management plans.			
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: This plan adequately assesses the extent to which existing plans are consistent with the subbasin assessment.			
II.C. Management Programs / Restoration and Coordination Projects			
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? ⁶		
Reviewers: Adequate.			
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 plan adequately describes the management programs although more detail would be useful.			
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 planners do an adequate job of generally discussing the plans, but this section would be improved by analyzing the plans with respect to the limiting factors identified in the Assessment.			
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		

⁶ 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: Although Table 3 lists some of the accomplishments or failures of the management programs, much more detail would be beneficial.			
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: The Inventory does a good job of summarizing existing activities in general terms. To improve this section gaps should be discussed in a more detailed manner including identification of specific areas (topical and geographic) where future work is needed.			
	Overall impression and evaluation of the Inventory: 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: Overall, this is an adequate Inventory that seems to have been very responsive to the Council's guidelines, at least through the development of general objectives. To improve the inventory more synthesis of accomplishments is needed, and gap identification should be more detailed.			

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 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):

<i>(Y)es, (P)artial, (N)o</i>	<i>Need for additional treatment (0-4)</i>
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Reviewers: The vision statement does a good job of providing a general visualization for the subbasin. As is the case with almost all other subbasin plans, however, it is too broad. Specifically, the vision statement would be more pertinent if there was a way to conclude whether or not the vision has been achieved. As it is written, the vision statement may already be realized.

III.B. Biological Objectives

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

Reviewers: As is the case with other subbasins, this plan adequately outlines physical and biological changes within the subbasin that would aid in achieving the vision. These changes, however, are not developed to a level that they can be characterized as measurable objectives. This plan needs to further refine the changes it would like to see in this subbasin.		
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. ⁷		
Reviewers: This plan does a good job of presenting objectives that are consistent with its vision. It is not clear, however, that completion of these objectives will accomplish the vision. This plan can be improved by more clearly making the indication that an objective has been reached.		
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: This plan did a fine job of linking the objectives to the logic path. There were many clear links.		
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 planners have made a commendable effort to link the health of aquatic habitat to riparian habitat and then to population abundance. This plan is on the right track regarding the aquatic section. This plan could be refined further by defining its biological objectives in terms of measurable performance.		
III.B.4. Are biological objectives identified for both the short and long-term?		
Reviewers: The planners have done a good job defining short-term objectives. However, the long-term objectives are discussed in the collection but not as a separate category of "long-term" objectives.		
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: This plan adequately demonstrates that its biological objectives are complementary to existing water quality management agencies.		
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 the Water Quality Plan with the subbasin plan? ⁸		

⁷ 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.

⁸ *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

Reviewers: This plan adequately describes its objectives and strategies' integration with the TMDL schedule.		
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? ⁹		
Reviewers: This plan does an adequate job of recognizing ESA-based goals.		
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 differences presented in this plan were small and appeared to be related to differing interpretations among managers as to the relative importance of certain limiting factors. These may be resolved as projects progress and data are analyzed.		

III. C. Strategies¹⁰		
III.C.1. Internal Consistency of the Plan. 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) ¹¹		
Reviewers: This plan does an adequate job of linking strategies to objectives. The strategies were listed in tables. When possible, links were provided from strategies to maps and locations where strategies would be applied.		
III.C.2. Consistency with the Fish and Wildlife Program. Are the Strategies proposed in the subbasin management plan consistent with those adopted in the program? (Council Question 4)		

describes how the allocations in the TMDL will be met. Basic information on TMDL's can generally be found on the web (see Resources).

⁹ 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.

¹⁰ *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.

¹¹ 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.

Reviewers: This plan did an adequate job of presenting strategies that are consistent with the Council's Fish and Wildlife Program.		
III.C.3. Consideration of Alternative Management Responses. 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) ¹²		
Reviewers: This plan provides no discussion of how or why the strategies presented were selected over alternative strategies. This plan would be strengthened if this could be explained, even if no alternative strategies were proposed.		
III.C.4. Prioritization. Does the Strategies Section describe a proposed sequence and prioritization of strategies?		
Reviewers: The planners have made a good start, but they have not followed the prioritization sequence to its logical conclusion. They suggest that QHA has identified priority objectives/strategies, but then do not use that information. They say other factors must be considered, but do not prioritize those factors. The strategy of protecting/recovering redband trout fell well short of being complete. To improve this section of the plan, the strategies need to be more fully developed and prioritized. In general, however, this section did provide a good discussion.		
III.C.5. Additional Assessment Needs. Does the Strategies Section describe, if necessary, additional steps required to compile more complete or detailed assessment?		
Reviewers: The Assessment does a good job of describing needed additional steps. To further improve this section, the plan needs to demonstrate via analysis/modeling etc. what the projected potential is for preferred species in these basins compared to desired goals. It now assumes that the vision can be attained; data corroborating that assumption would be advantageous.		
III.C.6. Clean Water Act: 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?		
Reviewers: The Clean Water Act is not discussed relative to individual strategies. The authors state that they considered the Act, but to improve the plan they need to be more specific.		
III.C.7. Endangered Species Act: 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 ESA is not discussed relative to individual strategies. The authors state that they considered the Act, but to improve the plan they need to be more specific.		

¹² 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.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.

<p>III.D.1</p> <p>Research: 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?</p>	<p>(Y)es, (P)artial, (N)o</p>	<p><i>Need for additional treatment (0-4)</i></p>
<p>Reviewers: The planners do a generally adequate job setting up an RME regime.</p>		
<p>III.D.2</p>	<p>Monitoring Objectives: 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?</p>	
<p>Reviewers: Needs are discussed, but the planners’ use of indicator variables and data collection procedures are not given. To improve the plan this should be discussed.</p>		
<p>III.D.3</p>	<p>Monitoring Indicators: 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)?</p>	
<p>Reviewers: Needs are discussed, but the planners’ use of indicator variables and data collection procedures are not given or prioritized. To improve the plan this must be discussed and prioritized.</p>		
<p>III.D.4</p>	<p>Data and Information Archive: 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?</p>	

<p>Reviewers: The planners list development of a database both as an objective and as a strategy in the terrestrial habitat section. There is no mention of the storage of data in state or regional databases. This information should be included.</p>		
<p>III.D.5</p>	<p>Coordination and Implementation: 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.</p>	
<p>Reviewers: This plan included some discussion of data collection by different agencies. The plan provided no discussion of who will collect new data. Including this information would assist in improving the plan.</p>		
<p>III.D.6</p>	<p>Summary Question. RME Logic Path (Evaluation and Adaptive Management): 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?</p>	
<p>Reviewers: Although this plan did a good job of including a logic path, to be of greater utility, it needs to be more detailed. This plan has incorrect definitions of Tiers One, Two and Three; this should be corrected to improve the plan.</p>		
	<p>Overall impression and evaluation of the Management Plan: 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: This is a strong foundation on which to build a plan and the thorough, broad-based stakeholder involvement demonstrated throughout the planning process should facilitate buy-in down the road. The basics are present in this plan, but the RM&E is incomplete and the objectives and strategies are not prioritized. To further develop the plan, the requirements for focal species to persist need to be estimated for this subbasin. The possibilities for meeting these requirements should then be described along with an assessment of whether or not the requirements can be met. If they can be met, then the plan should explain how. If they cannot, then the plan should illustrate where the bottlenecks are and what has to happen if they are to be overcome. Obviously, data do not exist to be precise in setting these requirements, but modeling/expert systems can be used to make estimates, and careful monitoring can help to provide the basis for identifying appropriate adjustments.</p>		

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: The planners have done a generally good job of making this plan consistent with the Council’s Fish and Wildlife Program. To further refine the plan, a realistic look at this basin is needed to show what is likely to be attainable given the changes in physical and biotic environments. What changes are likely to be irreversible (e.g., most exotics)? What can be changed given water and land management policy? What outcomes are expected regarding ecosystem structure and function, persistence of species, and harvestable surpluses? The Malheur Plan has many good things going for it, but it has ignored land ownership, and an assessment of landownership for each watershed would enrich this plan.		
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