FINAL ADDENDUM

Walla Walla Subbasin Plan

November 26, 2004

Prepared for

Northwest Power and Conservation Council

Submitted by

Walla Walla County (on behalf of the Walla Walla Watershed Planning Unit)

and the

Walla Walla Basin Watershed Council

FINAL ADDENDUM DOCUMENT INTRODUCTION

The Northwest Power and Conservation Council (NPCC) and the Bonneville Power Administration (BPA) have requested, supported, and funded planning efforts to develop subbasin plans for the subbasins in the greater Columbia River Basin. The Walla Walla Subbasin Plan has been compiled, and has received public, technical, and policy review. NPCC reviewers have identified one primary task that needs to be completed in order for the subbasin plan to meet the standards for adoption into the Council's 2000 Fish & Wildlife Program. This task involves the development of a prioritization framework that describes the process and criteria that will be used to identify which strategies are priorities for implementation when project selection processes are initiated. In addition, the reviewers and Walla Walla Subbasin Planning Team (SPT) have agreed to address a second task, which involves consideration and incorporation of public and agency comments on the subbasin plan that were submitted to the NPCC.

This Addendum Package generally addresses both tasks mentioned above through a number of subtasks. It also contains six technical appendices (see Table of Contents). The document has been modified based on written comments received from agencies and the public and comments heard during public meetings of the Walla Walla Basin Watershed Council (WWBWC) and the WRIA 32 Planning Unit (WWPU) Meeting. (see Section 1.5). Both the WWBWC and WWPU approved the submittal of this Addendum Package to the NPCC at meetings on November 15th and 16th, 2004, respectively.

The Final Addendum Document is an amendment to the May 2004 version of the Walla Walla Subbasin Plan and these two documents comprise the November 2004 version of the Walla Walla Subbasin Plan. This version of the plan contains a number of editorial changes (misspellings, grammatical changes, missing references, etc.) and corrections to facts or data that were inaccurate or inadvertently left out of the original plan. These changes are not substantive or controversial, and do not constitute a change in policy direction within the plan.

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1. DEVELOPMENT OF PRIORITIZATION FRAMEWORK

1.1 REVISED EDT SCENARIOS

The Northwest Power and Conservation Council (NPCC) and the Bonneville Power Administration (BPA) have requested, supported, and funded planning efforts to develop Subbasin Plans for the subbasins in the greater Columbia River Basin. The Walla Walla Subbasin Plan has been drafted, and has received public, technical, and policy review. The reviewers and Walla Walla Subbasin Planning Team (SPT) have identified a need to describe and analyze some of the probable and significant scenarios for the identified strategies that may receive sufficient economic, social, and political support to be implemented in the Walla Walla Subbasin within the next 15 years. If they were implemented, these strategies would most likely benefit fish populations directly or indirectly through a number of physical, biological, social, or economic pathways. Many of these strategies are still in the planning or implementation phase, while others may soon be proposed by sponsoring entities and their collaborators. This section of the document contains descriptions of the new EDT scenarios that have been modeled during the Fall 2004 Revision Process for the Walla Walla Subbasin Plan. Additional background information on the specific changes that were made to the EDT model is contained in Appendix AD1 of this Addendum Document, along with the results of running the new EDT scenarios.

From a planning perspective, the intent of describing and modeling scenarios showing the potential results for the implementation of restoration strategies is to clearly describe links between the best current state of scientific understanding, and the local process for developing, proposing, funding, and implementing strategies and projects. Due to the advanced state of scientific understanding regarding salmon life history, the NPPC and their independent scientific review bodies have suggested that these links are best described mathematically, using a model of salmon and their ecosystems. The Walla Walla Subbasin Planning Groups (WWBWC and WWPU) will work with technical advisors (Jesse Schwartz, Confederated Tribes of the Umatilla Indian Reservation [CTUIR], Keith Underwood [SP Cramer], and Kevin Malone [Mobrand Biometrics]) to the model scenarios using Mobrand Biometrics EDT model.

The goals of this modeling exercise were:

1. to demonstrate to funding agencies that planning entities are communicating and planning collaboratively to achieve subbasin objectives;

2. to ensure that the planning process has been conducted locally with stakeholder input;

3. to serve as a technical reference tool while developing and implementing the framework for prioritization;

4. to help ensure that reasonable, probable, and significant scenarios were publicly and technically considered by the planning and funding entities.

The objectives of the modeling exercise were:

1. to describe and analyze selected reasonable, probable, and significant restoration scenarios, including strategies that may be implemented in the Walla Walla Subbasin within the next 15 years;

2. to describe this set of strategies quantitatively in the form of restoration "scenarios" that could potentially be implemented in the Walla Walla Subbasin in the next 15 years;

3. to describe any known potential assumptions, complications, benefits, or problems associated with this set of restoration scenarios; and

4. to describe the links between selected scenarios and strategies.

1.1.1 What this modeling exercise does not do

EDT outputs are indices based on best available scientific data and knowledge. They are not absolute values to be used quantitatively (i.e. they are not intended to predict the actual number of fish in the subbasin at any time). Instead, these EDT outputs of fish population numbers should be used in a relative sense. They will help guide aquatic restoration planning, project prioritization, and project development by presenting an estimate of the relative impacts of restoration actions.

There are no legal implications associated with the description of the scenarios. For the Walla Walla Subbasin Plan, scenarios were built upon the stakeholder-reviewed strategies that may or may not be implemented, pending technical, social, political review and funding at the project level, except where projects were already funded and being implemented.

It is not the purpose of the Subbasin Planning Process to endorse, propose, or permit specific projects that would be used to implement strategies. It is not the intent of this planning process to permit the implementation of any strategy in any geographic region of the Walla Walla Subbasin. Implementation of strategies will occur under mandated processes associated with community planning, policy development, project funding, environmental permit review, and public review. The intent and focus of the hypothetical modeling process is to analyze identified, reasonable, probable, and significant strategies that may receive sufficient political, social, and economic support to be effectively implemented in the next 15 years in the Walla Walla Subbasin. The focus is on including the exploration of the largest number of reasonable strategies possible to enable careful planning, while developing the most effective fish restoration funding in the Walla Walla Subbasin via any number of independently developed, collaborative, or cooperative channels that involve NPCC, CBFWA and BPA planning and support.

1.1.2 What is a strategy?

For the purpose of fish restoration planning, a strategy is a plan to address factors that limit fish production in specific geographic areas by using a specific restoration tool. For example, the USDA in collaboration with a number of local management and planning entities is currently implementing a strategy to restore riparian areas through its Conservation Reserve and Enhancement Program (CREP). The approximate benefits of these programs to fish production are well understood, but poorly quantified. In other words, while it is clear that CREP sponsored riparian planting will benefit fish in the Walla Walla Subbasin, we do not have a good understanding of how much benefit should be expected for CREP plantings that have already taken place, or those that will take place in the near future. Since BPA supported restoration projects are often planned in conjunction with CREP projects, it is useful to understand the combined impacts of these efforts.

While it is rarely possible to accurately predict the precise benefits of strategies, it is extremely useful to develop an understanding of the relative benefits of implementing the strategies identified in the Walla Walla Subbasin Plan. The Walla Walla Subbasin Plan identified numerous reasonable, probable, and significant strategies that might be implemented in the Walla Walla Subbasin (Section 7.3 Aquatic Strategies, pages 147-180, Walla Walla Subbasin Plan). While research, monitoring and evaluation (RM&E), planning, and education were mentioned in the WWSBP as specific strategies for restoration, these actions cannot be easily modeled using EDT. Instead it is assumed that each of the possible strategies requires careful planning, public outreach, review, and permitting to result in effective

implementation. Each possible strategy will require monitoring and evaluation to document successful execution and any resulting benefits to fish production.

1.1.3 What is a scenario?

Scenarios are basically hypotheses: theories or proposals of ideas offered as explanations for the occurrences of some specified behaviors or phenomena. Scenarios allow the gathering and application of a number of potential factors and variables to a situation to see what the results might be. By examining several scenarios simultaneously it is possible to determine which hypotheses appear to be most beneficial to fish and community stakeholders, and therefore which restoration hypothesis may be worth testing. This allows for thoughtful careful planning, and for the side-by-side comparison of different fish restoration pathways. In the Walla Walla Subbasin Plan a restoration scenario is a statement of three hypotheses:

1. A hypothesis that describes the factors that limit salmonid production in a given geographic area; e.g. "Sediment is limiting steelhead production on the North Fork Walla Walla River".
2. A hypothesis that relates the implementation of strategies in a given geographic area to the attributes of a stream reach or geographic area; e.g. "Restoring X percent of riparian areas on the North Fork Walla Walla River will reduce sediment inputs by Y percent".
3. A hypothesis that relates the realization of a given scenario to the biological response of each focal salmonid population; e.g. "Reducing sediment inputs by Y percent on John's Creek will increase annual steelhead production by Z percent".

Hypothesis 1 is derived from the subbasin assessment which has been included in the Walla Walla Subbasin Plan. Hypothesis 2 is derived by experts using the best available science describing the potential physical benefits of restoration actions. Hypotheses 3 is derived from the EDT model by running the scenario stated in Hypothesis 2.

1.1.4 How Scenarios are Modeled Using the EDT Model

To estimate the average production of salmonids for a given section of habitat, the EDT model relies upon the information describing the relationships among the factors that limit salmonid production, the current condition of habitat factors (attributes), and the average conditions of the Columbia mainstem and marine ecosystem. The model produces estimates of abundance for each population in the subbasin, a ratio of adult-to-adult productivity, and an estimate of carrying capacity for the available habitat. From a habitat planning perspective, this estimate of carrying capacity is perhaps the most informative because it reflects the ability of the subbasin to provide habitat that will support fish rearing, irrespective of the many forcing functions that may control their abundance. Increasing essential fish habitat in accessible reaches results in an increased estimate of carrying capacity. In this way, alternative strategies and scenarios can be compared on an even playing field.

Scenarios are built and modeled in EDT using software called a scenario builder. The builder is used to alter habitat conditions from their current estimates to simulate a hypothetical "restoration" of stream attributes, while holding Columbia River mainstem and marine conditions constant. The scenario is then modeled as a restoration or degradation over current conditions, resulting in a modified estimate of carrying capacity for available habitat to a given population.

1.1.5 What scenarios were modeled using EDT?

The SPT identified a set of scenarios that are reasonable, probable, and significant to fish production in the Walla Walla Subbasin. These include restoration activities that target flow, fish passage, and essential fish habitat. The subbasin plan does not deal with artificial production (hatcheries, adult outplanting, captive brood programs, etc.) and so the use of artificial production was not modeled or quantitatively analyzed in the subbasin plan. Each scenario described below is described in terms of a combination of specific strategies found in the Walla Walla Subbasin Plan (see Appendix AD1). The following scenarios were modeled using EDT and analyzed by technical and consultant staff.

The May 2004 Walla Walla Subbasin Plan states clearly that restoration actions should target priority geographic areas. The prioritization framework (Section 1.3 of this Addendum) describes a conceptual framework for prioritizing projects in geographic areas wherever possible. However, some NGOs, conservation districts, and other project sponsors will likely implement restoration actions in non-priority geographic areas because their resources are place-focused. Although these specific projects may not receive BPA funding for work outside of priority geographic areas, the benefits of those actions should be considered in the planning process. Therefore, several restoration scenarios were modeled subbasin-wide or in non-priority geographic areas.

1.1.5.1 Flow

In the Walla Walla Subbasin Plan, strategies are identified for flow improvement (Strategies MC7.1.1 through MC7.1.22) and temperature reduction (Strategies MC5.1.1 through MC5.1.20). The scenario for modeling the implementation of these strategies is based on flow restoration targets proposed for various geographic areas as part of the many fish restoration planning processes that have occurred or are ongoing. The potential benefits from implementing this scenario are associated with the restoration of low flow, and corresponding restoration of temperature, habitat availability, and habitat quality, during the summer and early fall. For the Walla Walla mainstem, low-flow targets of 40, 55 (F-2), 80, and 100 (F-1) cubic feet per second (cfs) were modeled using the flow monitoring site immediately downstream of Nursery Bridge Dam (M-4) as a measurement point, and the Walla Walla total maximum daily load (TMDL) model to derive the impacts of flow on temperature (Walla Walla TMDL citation). For Mill Creek, low flow targets of 25 and 50cfs were modeled using the Yellowhawk diversion as a measurement point. For the Touchet River low flow targets of 25 and 50 cfs were modeled using the Dayton fish weir as a management point. The origin of these numbers come from various reports and projects such as IFIM studies, TMDL report and the U.S. Army Corps of Engineers (USACE) flow project target flows.

Flow scenarios modeled for the Walla Walla Subbasin Plan included:

F-1: Development and Implementation of the Walla Walla USACE Feasibility Study water storage project (Feasibility Flow Scenario: 80 to 100 cfs) – CTUIR is currently sponsoring a USACE feasibility study to determine viable alternatives for water exchange, storage, etc. that benefit fish production in the Walla Walla Subbasin without harming economic interests such as agriculture, municipal water requirements etc.

Implementation of this strategy would help achieve the Walla Walla Subbasin Plan Objectives of increased summer flows, flushing flows, and total available habitat during summer rearing, as well as a decrease in summer temperatures.

F-2: Non-storage Instream flow improvements such as improved water conservation, irrigation efficiency, purchase/lease water rights from willing sellers (Conservation Flow Scenario: 40 to 55 cfs) – This strategy will aid in improving streamflow and water quality by reducing the quantity of

water withdrawn for agricultural, industrial or municipal purposes. Typical conservation projects include conversion of flood irrigation systems to sprinklers, piping and lining of irrigation ditch systems, decreased watering of lawns by municipalities, and improvement of municipal diversion facilities. Purchased or leased water rights from willing sellers would remain instream. Objectives addressed include increased summer flows, flushing flows, and total available habitat during summer rearing, as well as a decrease in summer temperatures.

1.1.5.2 Passage

In the Walla Walla Subbasin Plan, passage improvement strategies address the imminent threat presented by obstructions and unscreened diversions. Despite a large number of fish passage restoration projects, unscreened diversions and aged fish passage structures remain in the Walla Walla Subbasin. The overall impact of the restoration of all of these structures has already been modeled in the Walla Walla Subbasin Plan. Individual scenarios were developed to demonstrate the benefit received from the restoration of each of these structures independently, and in combination with various flow and habitat actions in each watershed. The results will allow for the side-by-side comparison of the benefits of restoration of individual structures.

Passage scenarios modeled for the Walla Walla Subbasin Plan include:

P-1: Increase passage efficiency of instream obstructions including culverts, bridges, diversion structures, grade control structures, and unscreened diversions; maintain passage efficiency through ongoing operations and maintenance (O&M) activities/add in gradient (Passage Scenario) –Passage deficiencies should be corrected wherever they exist. Structural fixes installed to provide fish passage over irrigation dams, etc. require maintenance to operate within design criteria. All fish passage facilities should be maintained to provide optimal passage conditions. The objective is to reduce, and eliminate imminent threat of passage obstructions and unscreened diversions.

1.1.5.3 Habitat

In the Walla Walla Subbasin Plan, strategies were identified for the complex and diverse set of habitat restoration activities occurring and planned in the Walla Walla Subbasin. These strategies include those targeted at riparian function (MC4.1.1 through MC4.1.15 and MC4.2.1 through MC4.2.7), substrate embeddedness (MC1.1.1 through MC1.1.23), and channel function (MC2.1.1 through MC2.1.15, MC3.1.1 through MC3.1.13, and MC6.1.1 through MC6.1.11). Habitat restoration was modeled throughout the Walla Walla Subbasin in all geographic areas. The scenarios included modeling and analysis of:

1. The restoration of riparian conditions including riparian function and shade based on all implemented, planned, and future CREP and CREP related activities.
2. The establishment of long term or permanent easements based on CREP, CREP related, and non-CREP conservation activities.
3. The restoration of large woody debris and habitat complexity using direct habitat treatments.
4. The restoration of flood plain connectivity and sinuosity using direct manipulation of channel structure and function.
5. The restoration of sediment loads using direct manipulations of bank, bed load, substrate, and riparian attributes.
6. The restoration of all habitat attributes based on all implemented and planned habitat restoration activities throughout the Walla Walla Subbasin.

Habitat scenarios modeled for the Walla Walla Subbasin Plan included:

H-1: Active Instream Habitat Scenario (LWD, Boulder/Pool) – Where opportunities exist, work on public, federal, state, tribal and private lands will be conducted to improve instream habitat. Placing large woody debris and large boulders directly increases habitat complexity and can improve habitat quantity by increasing the number of pools. Work will also be conducted to increase the quantity of pools and gravel dominated riffles (as opposed to cobble). Straightening and entrenchment of stream channels in the Walla Walla Basin is a common problem that leads to the reduction of pool habitat and gravel dominated riffles. Pools will be constructed by direct intervention, often concurrently with work to restore channel form and function, and the quantity of gravel dominated riffles will be improved by decreasing channel slope, reducing entrenchment and confinement, and restoring pool/riffle sequencing. Objectives addressed include reduced embeddedness, increased large woody debris, increased pools, habitat complexity, etc.

H-2: Passive Instream Habitat Scenario (Riparian) – Improve riparian zone habitat and function by fencing and planting riparian zones and modifying detrimental land use activities, including problematic roads. Where opportunities exist, work on public, federal, state, tribal and private lands will be conducted to improve riparian habitat. Fencing is installed to manage use of the riparian zone by livestock and planting of native vegetation is done to speed the recovery process once grazing or land uses have been modified. Where opportunities exist, change land use activities that may lead to degradation of habitat, thereby allowing stream attributes impacted by these activities to recover without intervention. Common examples of this kind of work are riparian buffers where streamside areas are protected from uses such as livestock grazing or agricultural crops. Modification of land use activities would come from participation in CREP and CCRP, as well as from specific, targeted, BPA funded habitat restoration projects and from volunteer land-use modifications. Riparian structure and species composition will both be addressed. Where opportunities exist, work to maintain, relocate or remove roads on public, federal, state, tribal and private lands will be conducted to address problems caused by roads. Roads in riparian areas are a source of sediment and a means of rapidly routing sediment to streams, occupy historic riparian zones, and often result instream confinement. Riparian habitat improvements can directly impact stream temperature, large woody debris inputs, habitat availability, and sediment inputs through stabilizing stream banks and filtering runoff, water quality, and habitat availability for fishes.

H-3: Modify channel and flood-plain function. Where opportunities exist, work on public, federal, state, tribal and private lands will be conducted to improve form and function of stream channels. This work involves directly or indirectly returning stream channels to a functional state that is determined by the valley form, geology, soils, vegetation and climate, and the restoration of beaver populations and beaver dams that facilitate proper stream function. By working to improve zoning ordinances to reduce development of riparian areas and floodplains, better riparian function and channel-floodplain connection can be attained and/or maintained. Specific objectives often targeted by this type of work include channel width and depth, sinuosity, slope, flood prone area, ratio of channel features, reduce confinement, backwater habitat, etc.

H-4: Protect High Quality Habitat – e.g. Rainwater . Where specific reaches or segments of stream reaches have high value due to their current productive capacity or general importance to particular species, they should be protected to maintain their value. This can be accomplished by easements and other kinds of natural resource protection agreements, or on public lands by varying kinds of protections authorized by statute or rule. Multiple objectives achieved include protection and improvement of riparian habitat, instream habitat, uplands conditions, etc.

H-5: Restore upstream or headwater attributes to improve downstream conditions (Uplands Scenario). In particular, water quality problems are cumulative in a downstream direction. Sources of water quality problems at a particular location can often be sourced to areas upstream. This is also true of large wood debris. The source of large wood debris for some reaches can be primarily from upstream reaches. Limiting factors such as fine sediment, water temperature and large wood debris should be addressed at the watershed scale as well as the reach/geographic area scale. Understanding these problems at the watershed scale is necessary to effectively work at this scale. Actions such as restoration of riparian vegetation and channel function upstream of areas limited by temperature, sediment and/or large wood should be particularly effective.

***NOTE**: Though proposed, this scenario was not modeled due to a lack of data regarding the impacts of upland restoration on stream attributes. This would be an extremely useful and powerful exercise, and should be pursued in the future.*

1.2 CORRECTION/INCLUSION OF OREGON INFORMATION INTO THE ASSESSMENT, INVENTORY AND PLAN TO ACHIEVE WWBWC ENDORSEMENT

The Walla Walla Subbasin Plan (May 2004 Version) was submitted to the NPCC on May 28, 2004 by Walla Walla County and the WWBWC. At the time of submission the WWBWC expressed concern that Oregon information had not been included due to the short timeframe between drafts being presented for review and the deadline to submit the Plan. This included information on Oregon water resource and conservation efforts, watershed and resource-based programs, recognition of Oregon's temperature TMDL findings, Oregon statutory authorities, and that the Snake River Salmon Recovery Board will not play an integral role in Oregon side implementation.

In addition, the WWBWC, Oregon Department of Fish and Wildlife, and Oregon Department of Environmental Quality were aware of more up-to-date quantitative numbers and information pertaining to fish counts and distribution, stream flow, and habitat restoration efforts. For example the inventory fails to mention an aggressive flow restoration effort in Oregon that has recently restored summer flows to the mainstem Walla Walla River for the first time in over 100 years. The WWBWC made efforts to include this type of information before submission of the subbasin plan, however this information could not be included under the tight timeframe required by the NPCC.

Many of the concerns of the WWBWC described above have been addressed in developing this Addendum Package: 1) additional runs of the EDT fish production model have incorporated corrections in the initial EDT runs, 2) information on BPA, federal, and state funded research on bull trout has been addressed,and 3) information on spring Chinook in the Walla Walla River has now been included. Specific responses to comments provided by the WWBWC can be found in Appendix AD2 and, as appropriate, have been addressed in the November 2004 Version of the subbasin plan.

1.3 STRATEGIC PROJECT PRIORITIZATION FRAMEWORK

The NPCC review of the May 2004 Walla Walla Subbasin Plan indicated concern about a lack of prioritization of strategies. Reviewers recommended that subbasin planners revise the plan using one of the following alternatives: 1) develop a clear "ranked" prioritization of strategies or 2) develop a prioritization framework that describes the process and considerations or criteria that will be used to identify which strategies are priorities for implementation when project selection processes are initiated. Walla Walla Subbasin planners chose the latter alternative. This section expands upon the general prioritization information included in the May 2004 version of the Walla Walla Subbasin Plan (page 130) and outlines a more detailed prioritization framework that subbasin planners can use to prioritize protection and restoration projects within the subbasin. It is important to note that this is a proposed framework and a work in progress. It is expected that this framework will be fine-tuned as it is used in future planning processes.

The following language is inserted into Section 7.1.2 at page 131, after the third paragraph, of the May 2004 Version of the Walla Walla Subbasin Plan:

Project Selection Prioritization Framework for Aquatic and Terrestrial Projects

A strategic approach for prioritizing actions necessary to improve habitat conditions for fish and wildlife species is critical to effective watershed planning and project implementation. This section describes the prioritization framework developed for the Walla Walla Subbasin. The framework integrates current knowledge and understanding of physical and ecological factors as well as community social, economic, cultural values and goals in order to prioritize and select proposed projects.

The framework that follows incorporates elements of the strategic prioritization framework developed by the Salmon Recovery Funding Board (SRFB) in Washington State as well as elements from the draft Oregon Watershed Enhancement Board (OWEB) prioritization framework. Although the SRFB and OWEB approaches to project prioritization differ, there are some definite similarities. Both approaches are science-based, with the caveat that local goals and socio-economic concerns will need to be incorporated in order to achieve the most effective outcome in the project selection process. Both approaches also seek to categorize projects based on certain characteristics in order to establish a general model for ranking projects by their estimated importance and effectiveness in addressing overall watershed needs and goals.

Aquatic Habitat and Species

Aquatic habitat and species project prioritization in the Walla Walla Subbasin is organized around four general tiers of priority:

1. Imminent threats to Endangered Species Act (ESA) listed aquatic focal species, regardless of where they occur in the Walla Walla Subbasin, are addressed as a first priority in the project prioritization process. Imminent threats include three types: a) passage obstructions, b) fish screens, and c) dry stream reaches.

2. The second priority in the project prioritization process is to address habitat or artificial propagation factors that are currently impacting survival or abundance of fish species in priority restoration and protection areas. Ecosystem Diagnosis and Treatment (EDT) analysis is used to identify priority restoration and protection areas of the subbasin as well as habitat factors that

can be preserved or improved and will provide the most benefit to focal aquatic species. It is important to note that while EDT analysis was used to identify priority restoration and protection areas for steelhead and spring Chinook, areas that contain bull trout also need to be addressed in this priority category.

3. The third priority for the project prioritization process is projects that are not in an EDT-identified priority reach, but do contain spawning and/or rearing ESA-listed focal aquatic species.

4. The fourth priority in the project prioritization process is projects that are not in an EDT-identified priority reach and that do not currently contain spawning and/or rearing habitat, but have the potential to support this type of habitat with improvements to that area..

The third and fourth priority tiers do not imply that the priority geographic areas agreed upon in the May 2004 Version of the Walla Walla Subbasin Plan should be disregarded. Selection of projects for implementation in non-priority areas will be an exception and require strong justification demonstrating why they should be selected instead of projects in priority areas.

Imminent Threat-type projects are a first priority. These projects must address effects caused to an ESA-listed focal species. These types of projects can be located anywhere in the subbasin (not just priority restoration and protection areas). They must address at least one of the following:

- **Passage obstruction that causes migration delay or completely blocks migration**. A full description of this type of imminent threat is found in section 7.3.1 of the May 2004 Version of the Walla Walla Subbasin Plan (page 148-150). The list of potential passage obstructions in Table 7-4 is believed to be inclusive, but other passage obstructions may be identified over time that meet the criteria for this priority. Note that passage obstructions have different effects on different species and life history stages, and may be crucial at certain times of the year and not as important at others. Projects addressing this type of priority must fully explain the need for the barrier removal in terms of species, life stage, and time of year.
- **Unscreened or inadequately screened water diversions**. A full description of this type of imminent threat is found in section 7.3.1 of the May 2004 Version of the Walla Walla Subbasin Plan (page 150-151). As noted in section 7.3.1, many of these types of imminent threats have been documented, and these lists are available, but other screening problems may be identified over time that meet the criteria for this priority.
- **Dry Stream Reaches**. Dry or low stream flows during certain seasons of the year can be an imminent threat as defined here. A full description of this type of imminent threat is found in section 7.3.1 of the May 2004 Version of the Walla Walla Subbasin Plan (page 151). Many of these types of imminent threats have been documented, and these lists are available, but other problems may be identified over time that meet the criteria for this priority.

In reviewing proposed projects that address Imminent Threats, the following criteria will be applied to determine the order of ranking for any list of proposals. These criteria will be considered equally important in ranking projects:

- Projects that benefit multiple ESA-listed focal fish species will be given a higher priority. Next in priority will be projects that address a single focal species and other species. Lowest priority under this criterion will be projects that only address one ESA-listed focal species.
- The location of the project in the subbasin will affect priority. The intent of this criterion is to acknowledge that the benefits that would be derived from projects can be related to the location

of a project. It is generally assumed that passage projects lower in the subbasin provide more benefits for migrating fish than projects higher in subbasin. Therefore, lower projects are generally a higher priority, but exceptions to this general priority can be funded if fully justified. A project that addresses a dry stream reach in the upper portion of the subbasin may provide more benefit than a passage project lower in the subbasin. This type of exception may be affected by time of year as well. Another exception involves bull trout. Because bull trout generally occur in the upper portions of the basin, projects that address this species need to be given equal priority to projects that address salmon passage lower in the subbasin. If an exception is found for a project evaluated under this criterion, it must be fully explained and justified.

- A project that addresses an imminent threat that causes a greater relative mortality or adverse effect is a higher priority than those that have a lower relative beneficial effect. For example, a project that addresses a passage obstruction that causes 20 percent mortality to 50 percent of the population being addressed is a higher priority than a project that addresses a passage obstruction that causes 10 percent mortality to 50 percent of the population.
- A project that addresses actions called for under an approved recovery plan (such as those being developed for bull trout and summer steelhead in the Walla Walla Subbasin) should also be given higher priority.

The fish passage barrier presented by Mill Creek Flood Control Channel is recognized as a high priority "imminent threat" on Mill Creek. Though recognized as a high priority, the Mill Creek scenario presents unique challenges. The City of Walla Walla recognizes that the scope of the necessary funding as well as the role and responsibility of the federal government in the design and construction of the infrastructure places it well outside the traditional funding mechanisms available to communities on a local, state, and even federal level. Given the unique federal nexus of the Flood Control Channel, the City of Walla Walla supports that funding available under the Subbasin Plan be considered to help resolve these challenges.

Priority Areas and Habitat Factors are the second priority tier for projects funded under this subbasin plan. EDT is used to identify the areas and habitat factors that will be addressed for this type of project. The EDT model assesses the relative importance of individual areas (stream reaches) in the subbasin in terms of contributions to fish abundance, productivity, capacity, and life history diversity (collectively known as population performance). Reaches are ranked as high priority for preservation based on current habitat conditions. High priority preservation reaches, if not further degraded, will contribute more to population performance than will reaches with a lower preservation rank. Reaches ranked as high priority for restoration are based on comparisons between current and historic habitat conditions. If restored to historic conditions, high priority restoration reaches will contribute more to a population's performance than reaches ranked as lower priority for restoration. Some reaches are ranked as a high priority for both preservation and restoration. These reaches currently contribute a good deal to population performance, and if restored to historic conditions, would contribute more to population performance than other reaches in the basin that could be restored.

The results of EDT analysis in the Walla Walla Subbasin produced a list of 25 priority protection and restoration geographic areas (see pages 59 and 62 of the subbasin plan). Further, the subbasin planners used the EDT analysis to identify the most important habitat factors to be addressed in each priority area. The following seven limiting factors were key in these areas: sediment (embeddedness), large woody debris, key habitat (pools), riparian function/ confinement, summer water temperature, bedscour, and flow. These factors are addressed by specific measurable biological objectives. In addition, specific types of actions (strategies) that might be taken to address these factors are identified. Projects proposed under this second priority must address priority habitat factors using the types of actions identified in one or more of the priority restoration and protection areas to be eligible for consideration of funding.

For artificial propagation projects, they must address critical factors which limit fish abundance (as agreed upon by the appropriate technical workgroup) or achievement of numeric objectives in one or more of the priority restoration or protection areas. For example, EDT outputs for spring Chinook indicate a high potential for natural juvenile production but adult return potential from natural production alone does not come close to meeting tribal goals for adult natural production and harvest. This out-of-subbasin low survival issue suggests that overall juvenile abundance may be a critical factor limiting achievement of numeric goals and that a hatchery project may serve as a means to make up the "smolt difference."

In reviewing proposed projects that address Priority Areas and Habitat Factors, the following criteria will be applied to determine the order of ranking for any list of proposals. These criteria will be considered equally important in ranking projects:

- Projects that provide long-term protection will be a higher priority than projects that provide shorter-term protection, all other factors being equal.
- Projects that address multiple objectives in a priority area will be considered a higher priority than projects that will address a single objective. Projects that address the most objectives will be given highest priority.
- Projects that benefit both terrestrial and aquatic focal species will be considered a higher priority than projects that solely benefit terrestrial or aquatic focal species.
- Projects that affect multiple ESA-listed focal species will be given a higher priority. Next in priority will be projects that address a single focal species and other non-focal species. Lowest priority under this criterion will be projects that only address one focal species and no other species.
- Projects that target limiting factors that have the greatest effect on production of focal species will receive higher priority. EDT analysis of the normalized impact of environmental attributes on steelhead productivity for high priority restoration areas is shown in Appendix G, Table 3 of the May 2004 version of the Walla Walla Subbasin Plan.
- A project that addresses actions called for under an approved recovery plan (such as those being developed for bull trout and summer steelhead in the Walla Walla Subbasin) should also be given higher priority.
- Much of the scientific literature emphasizes the protection of functional habitats and ecosystem processes over restoration efforts because protection strategies are generally less costly and more successful than projects aimed at using resources to restore degraded areas (Beechie et al. 2003, Bilby et al. 2003, Roni et al. 2002 as cited in OWEB 2004). For this reason, projects intended to protect habitat or restore habitat processes such as connectivity will be given a higher priority than projects that are aimed at restoring habitat such as rehabilitating channelized streams or installing instream structures to modify aquatic habitat.
- Relative circumstances for the priority area being addressed by the project will also be addressed. This will take into account the following in assigning a high, medium or low priority ranking for relative circumstances surrounding the proposed project: current habitat conditions in the area, habitat forming processes that are taking place in the project area, extent and potential for threat to habitat conditions if the project is not accomplished, and degree of anticipated historical function protected or restored in the area.

Non-Priority Areas with Spawning and/or Rearing Habitat for ESA-listed Aquatic Focal Species are third priority for project funding in the Walla Walla Subbasin. Eligibility requirements for third priority projects are:

- ESA-listed fish must spawn or rear in the project location, and
- The project must address a habitat attribute identified as a limiting factor in the subbasin plan or a subbasin summary, watershed plan, habitat limiting factors analysis, or other similar document.

While projects that fall into this category address important issues, they are not as critical to pursue as projects in the first and second priority tiers. Project proposals that address this priority will be considered on an ad-hoc basis. In order to be funded, a project must score high enough using the ranking criteria specified for second priority projects (Priority Areas and Habitat Factors) and provide sufficient additional justification for funding a project in a non-priority area.

Non-Priority Areas with potential to support Spawning and/or Rearing Habitat for ESA-listed Aquatic Focal Species are fourth priority for project funding in the Walla Walla Subbasin. Eligibility requirements for fourth priority projects are:

- The project must address a reach or reaches with the potential to support spawning and/or rearing habitat for ESA-listed species.
- The project must address a habitat attribute identified as a limiting factor in the subbasin plan or a subbasin summary, watershed plan, habitat limiting factors analysis, or other similar document.

This category acknowledges that there are areas in the subbasin that may be currently degraded but could become valuable habitat for aquatic species if they were targeted with restoration efforts. Similar to the third priority projects, project proposals in this category will be considered on an ad-hoc basis and must score high enough according to the ranking criteria specified for second priority projects and provide sufficient additional justification for funding.

Terrestrial Habitat and Species

Because EDT analysis was not conducted for terrestrial species, there are no priority restoration or protection areas like those identified for the aquatic section. Instead, four focal habitats were selected for the Walla Walla Subbasin: ponderosa pine, eastside interior grasslands, interior riparian wetlands, and shrub-steppe. Focal habitats were chosen to evaluate ecosystem health and establish management priorities at the ecosystem level. In addition, focal species were identified for each of the focal habitats (see pages 98-99 of the subbasin plan). Focal species were chosen in part because of their conservation or management concern status and because they are associated with key habitat elements/conditions that are essential for properly functioning ecosystems. Limiting factors, biological objectives, and strategies were identified for each focal habitat type, keeping the corresponding focal species in mind (see pages 189-201 of the subbasin plan).

The three priority tiers used in categorizing aquatic projects can be condensed to two tiers for terrestrial projects:

1. The first priority for prioritization of terrestrial projects is to address habitat factors that are currently impacting the survival of focal species in focal habitats. Key principles used to guide the selection of focal habitats were:
    - Focal habitats were identified by the Washington Department of Fish and Wildlife (WDFW) at the ecoregion level and reviewed/modified at the subbasin level.
    - Focal habitats can be used to evaluate ecosystem health and establish management priorities at the ecoregion level.

- To identify focal macro habitat types within the ecoregion, ecoregion planners used the assessment tools to develop a habitat selection matrix based on various criteria, including ecological, spatial, and cultural factors.

(see Section 4.1.3 in Appendix F of the subbasin plan for more detail)

Limiting factors for each focal habitat were developed (see Section 7.4.1 of the subbasin plan). Since focal species were chosen in part because they are indicators of functioning ecosystems, projects that target limiting factors in focal habitat areas have the potential to improve conditions for multiple species.

2. The second priority for the prioritization of terrestrial projects is projects that do not focus on focal habitats, but do address focal species or other species of concern. These projects must address a habitat attribute identified as a limiting factor in the subbasin plan, subbasin summary, watershed plan, terrestrial assessment, or other similar document. As explained above under aquatic habitat and species, projects that fall under this category are not as critical as first priority projects and must score high enough according to the project ranking criteria (summarized below) to support their implementation.

   The majority of the criteria used for ranking projects as outlined in the aquatic habitat and species section above also apply to terrestrial habitat and species. In summary, these criteria include prioritizing:

   - projects that benefit multiple ESA-listed focal terrestrial species over projects which benefit single focal species
   - projects that address a threat that causes greater relative mortality or adverse effects over projects with lower relative beneficial effect
   - projects that provide long-term protection over projects that provide short-term protection, all other factors being equal
   - projects that address multiple objectives vs. a single objective
   - projects that benefit both terrestrial and aquatic focal species
   - projects that protect functional habitats and ecosystem processes over restoration efforts
   - projects that score highly when relative circumstances are taken into account (current habitat conditions, habitat forming processes, and extent and potential for threat to habitat conditions if project is not accomplished, etc.)

Process Steps for the Walla Walla Subbasin Prioritization Framework

The following steps will be used to prioritize projects proposed for funding:

1. Identification of subbasin project needs. The first step in this prioritization process is to hold a coordination meeting(s) to examine the subbasin's priority restoration and protection areas, focal habitats and limiting factors in order to determine the type of projects that would provide the most benefit to aquatic and terrestrial species and habitats. This meeting(s) will occur on a regular schedule on a quarterly, semi-annual, or annual basis. It may consist of a range of stakeholders in the watershed or alternatively, it could be conducted by a technical workgroup. An existing group may be used for this purpose (Habitat Conservation Plan [HCP] Coordinating Committee, Planning Unit and Watershed Council, Technical Work Group [TWG], SPT or other) or a new group convened. This step will help to avoid potentially wasted time and effort put into developing proposals for projects that do not address high priority habitat or species abundance

limiting factors in a priority geographic area or focal habitat. It will provide the forum so that public and private plans and opportunities for projects can be identified and discussed.

2. Request for Proposals (RFP). The next step begins the more formal process. RFPs are issued to solicit the submission of proposals to be funded that would address important objectives identified in the subbasin plan. This RFP should clearly state expectations for what must be submitted to qualify for consideration. It should also specify the three general priorities for the Walla Walla Subbasin as identified in the subbasin plan. Further, it should request sufficient information to address the criteria for prioritization listed for the applicable priority tier.

3. Review proposals to determine qualification under the subbasin plan priorities and classify proposals into priority tiers (as described above). Once the proposals have been submitted, they will be reviewed to determine whether they meet the requirements for selection under each of the priorities for the Walla Walla Subbasin. If they do not, they will be rejected. If they do, they will be sorted into the three priority tiers for the subbasin.

4. Technical evaluation of the project proposals. Each proposed project will be evaluated by technical experts to determine the type of project being proposed and the effect it will have on the environment and species. Each proposal will also be evaluated for consistency with applicable actions and plans being implemented inside and outside the subbasin. The required criteria, as noted above for each priority tier, will be applied to the proposals by the technical reviewers. The technical review will also address the following factors that address the likelihood of success for the proposed project based on similar projects in similar situations:
   - Demonstrated success of this type of project
   - Likelihood the benefits anticipated in the proposal will be achieved
   - Professional judgment on whether the methodology selected is appropriate for the situation and anticipated outcome.

   In addition, the technical reviewers will evaluate the technical basis and consistency of the following topics:
   - Projects that address operations and maintenance for ongoing actions,
   - Projects that implement the RM&E plan developed for the subbasin by addressing:
     - an identified priority critical uncertainty
     - an innovative methodology to achieve a stated objective in the Walla Walla Subbasin Plan or RM&E Plan, and/or
     - gathering of information identified in the RM&E plan as a specific need or data gap.
   - Projects that address artificial production.

5. Final Project Prioritization for Funding. Decision-makers will implement this step of the prioritization process. They will consider the technical evaluation and other factors as follows:
   - Cost, benefit, implementation/response time, and probability of success. It is important to look at the relative costs and benefits of projects, as well as their implementation timeframe and probability of success. Projects that are low cost, have a short implementation and response time, and a high probability of success are less risky than those projects with the opposite characteristics. In addition, local support may be higher for projects that can demonstrate results within a shorter timeframe and those that are likely to succeed.
   - Socio-economic factors and watershed-specific issues including financial constraints, social acceptance by citizens within the basin, and any other pertinent local issues. It may be the case that projects that hold up well under scientific scrutiny and promise to provide strong

benefits to aquatic and terrestrial species and habitats are not supported by local citizens or agencies for any number of reasons and face opposition if selected. Therefore, projects that are both well-grounded in science and also accepted by the majority of watershed stakeholders are stronger candidates. Incorporating public input into the prioritization process will ensure much greater success in future work.

- As reflected in the Walla Walla Subbasin Plan vision statement, cultural values are very important. Projects that promote tribal and/or local culture may be considered a higher priority than projects that provide equivalent biological benefits with no cultural benefits (see page 131 of the May 2004 Version of the Walla Walla Subbasin Plan).

Potential Issues for Resolution

The following list of issues includes those that will need to be addressed in implementing this prioritization framework:

- How do species of interest such as lamprey, mussels, and mountain whitefish fit into the prioritization tiers identified above? Also, how do spring Chinook fit into the prioritization framework since they are not an ESA-listed stock in the subbasin?
- How should the funding be allocated between terrestrial and aquatic projects? Should a percentage go to terrestrial and the remainder to aquatic? For instance, divide the funds 50 percent and 50 percent? Within each of these areas, how should the funding be allocated among the priority tiers? For aquatic projects, should all first priority projects be funded first, then 2nd priority tier projects next, if sufficient funding is available, and so on to third tier priority projects? This may be the selected approach, but it ignores that some projects in priority tiers 2 and 3 take longer for benefits to come to fruition. That may not be a good result. Should the budget be allocated to each tier by a percentage; for instance 50 percent first priority tier projects, 40 percent second tier, and 10 percent third tier? The same questions apply to terrestrial project priority tiers.
- The framework described in the draft uses a ranking approach based on relative values (high, medium, and low) to rank projects. Is this appropriate? Should a numerical rating system be used for this purpose?
- Language has been added under the tier 2 priority level to address artificial propagation. How should this prioritization framework apply to artificial production?
- The framework identifies technical reviewers and decision-makers generically. Should specific bodies be identified for these functions? Should these be existing or new bodies? How would membership and qualification be determined?
- Are the criteria that have been identified throughout the framework for various purposes appropriate? Are additional criteria needed?
- The prioritization framework needs to clarify how projects with cultural values will be evaluated – specifically, what criteria will be used to determine whether or not a project will be considered as addressing cultural values?
- Will this process and framework work? How will it be funded – in-kind, outside the subbasin funding, stakeholder inside the subbasin funding, fee-based on applications, fee collected from projects implemented? How often should the process occur?
- Should step 1 of the prioritization process be more specific? For instance, a series of workshops could be held next year to develop a capital investment plan-type approach to investing in the subbasin. This could identify projects, source used to fund, implementer, cost, readiness for implementation, etc.

1.4 LINKAGES

The NPCC review of the Walla Walla Subbasin plan indicated that the linkages between the vision for the subbasin and the more specific objectives in the management plan should be clarified for aquatic geographic areas and terrestrial priority habitats. This section summarizes the process used for aquatic species to identify priority geographic areas and corresponding limiting factors through EDT analysis as well as the development of hypotheses, biological objectives, and strategies designed to lead to project implementation. Likewise, it identifies the approach used to identify priority terrestrial habitat types and corresponding limiting factors, objectives and strategies.

1.4.1 Description of Linkages for Aquatic Elements of the Walla Walla Subbasin Management Plan (Chapter 7)

The management plan of the subbasin plan includes the following elements: vision, working hypothesis, biological objectives, and strategies. The vision provides general guidance and priorities for the long-term future of the subbasin. It describes the common desired future condition of the subbasin. The following vision statement for the Walla Walla Subbasin was developed and approved by the SPT, WWPU, and Walla Walla Basin Watershed Council.

> "The vision for the Walla Walla Subbasin is a healthy ecosystem with abundant, productive, and diverse populations of aquatic and terrestrial species that supports the social, cultural and economic well-being of the communities within the Subbasin and the Pacific Northwest."

Working hypotheses are statements regarding the identified limiting factors for aquatic species and terrestrial habitats. The limiting factors incorporated into the working hypotheses were those identified in the aquatic and terrestrial assessments (see Chapters 3 and 4 of the May 2004 Version of the Walla Walla Subbasin Plan, respectively). Working hypotheses are intended to be testable, in that future research and monitoring will enable evaluation of the accuracy of the working hypotheses.

Biological Objectives are specific, measurable objectives for selected habitat components. Establishment of biological objectives will allow subbasin planners to track progress toward decreasing the impacts of the limiting factors identified in the working hypotheses. Quantitative biological objectives were established wherever sufficient data and information was available to support development of such. In the absence of sufficient data and/or information, subbasin planners established objectives based upon a desired trend (e.g. show downward trend in summer maximum water temperatures).

Strategies identify the specific types of actions that can be implemented to achieve the biological objectives. After development of the working hypotheses and biological objectives, preliminary strategies were developed with the technical team. These were then reviewed and revised with joint meetings of technical staff and the public.

Strategies addressing the Aquatic Environment

Working directly from the biological objectives, strategies that address the aquatic environment were developed that focus on methods to achieve improvements in aquatic habitat. The general assumption is that habitat improvements will enhance fish populations. Given that biological objectives regarding specific numeric fish population goals were not developed, strategies for directly enhancing fish populations were also not developed in the Walla Walla Subbasin Plan.

Two general categories of aquatic strategies were developed: restoration and protection. Applied in their respective priority geographic areas, restoration strategies are focused on enhancing current conditions, while protection strategies are focused on the maintenance of current conditions. In this context, "protection" is defined as implementation of a prescribed management action designed to maintain the desired ecological function of a habitat. Wherever possible, protection will occur with cooperation between the managing agency and landowner. This distinction does not imply that restoration strategies will include only active work, while protection will only include passive work. Both active and passive measures may be implemented to achieve restoration and/or protection measures, where appropriate. Note that in priority geographic areas for restoration of aquatic habitats, both protection and restoration strategies apply because all priority restoration areas are also priority protection areas.

The most common limiting factors identified for priority protection and restoration geographic areas are as follows: sediment (embeddedness), large woody debris (LWD), key habitat (pools), riparian function/confinement, summer water temperature, bedscour, and flow. The subbasin planners developed biological objectives and related strategies for each of the priority geographic areas. The strategies selected work to achieve those objectives.

The specific management strategies developed for each geographic area can be aggregated into more general categories as follows. The numbers in parenthesis refer to specific strategies listed in Section 7.3.2 (see pages 151-167) of the May 2004 Version of the subbasin plan:

1. **Control noxious weed populations/restore perennial vegetation**. Use economic and effective treatment methods for controlling noxious weeds, especially biological controls where feasible. Revegetate both upland and riparian areas with native species and forests, as appropriate. In some cases, non-native species may be used to control sediment and prevent erosion (1.1.4, 5.1.7, 7.1.2).

2. **Instream flow management**. Minimize surface and groundwater withdrawals through leasing or purchasing water rights, quantification of legal withdrawals, and identification and elimination of illegal withdrawals. Work with water users to facilitate and coordinate instream transfers and water leasing and conservation. Conservation projects might include conversion of flood irrigation systems to sprinklers, precision irrigation systems, piping and lining of irrigation ditch systems, decreased watering of lawns by municipalities, water scheduling, and other measures. Investigate feasibility of water storage and shallow aquifer recharge programs. Protect and restore springs, seeps, wetland, and tributaries that may function provide recharge during summer drought periods. These measures will help to enhance flow and decrease temperatures. Pursue opportunities to convert water users from surface water to deep wells. Construct wetlands or ponds and improve municipal stormwater management for peak flow management. Determine appropriate flows to support fish and process to reach those flows over time (5.1.8, 5.1.18, 7.1.9, 7.1.12, 7.1.13, 7.1.14, 7.1.15, 7.7.16, 7.1.16[1], 7.1.18, 7.1.20, 7.1.21).

3. **Improve instream habitat with LWD and large boulders**. Where opportunities exist, work on public, federal, state, tribal and private lands to improve instream habitat. Effective placement of LWD and large boulders directly increases habitat complexity and can improve habitat quantity by increasing the number of pools. Increasing vegetation density and maturity will help add LWD to aquatic systems. Removal of LWD should be limited. Managing beaver

[1] In the May 2004 version of the subbasin plan Strategy MC 7.7.16 on page 160 should have been numbered 7.1.16. Strategy MC 7.1.16 on page 161 is a separate strategy.

populations can also increase LWD contributions to aquatic systems. Education and outreach efforts can help to maintain existing LWD (2.1.1, 2.1.2, 2.1.10, 2.1.11, 2.1.14, 3.1.3, 3.1.9, 6.1.2, 6.1.3, 6.1.11, 7.1.10).

4. **Improve riparian habitat**. Where opportunities exist, work on public, federal, state, tribal and private lands to improve riparian habitat function. Fencing can be installed to manage use of the riparian zone by livestock. Grazing best management practices (BMPs) can be used to improve riparian zone conditions. Planting of native vegetation is done to speed the improvement process. Management of beaver populations can support riparian function improvement. Riparian habitat improvements can directly impact stream temperatures (shading) and sediment inputs (through stabilizing streambanks and filtering runoff). Education and outreach programs can also be used to improve the understanding of the importance of riparian habitat (1.1.1, 2.1.12, 3.1.6, 4.1.3, 4.1.5, 4.1.7, 4.1.15, 5.1.1, 5.1.6, 6.1.8, 7.1.1).

5. **Modify channel and floodplain function**. Where opportunities exist, work on public, federal, state, tribal and private lands to improve form and function of stream channels and floodplains. This work involves directly or indirectly returning stream channels to a functional state that is determined by the valley form, geology, soils, vegetation and climate. Specific parameters often targeted by this type of work include channel width and depth, sinuosity, slope, flood prone area, ratio of channel features, confinement, and others factors. This type of works supports strategy general category 4 above by providing conditions that supports retaining LWD (1.1.15, 2.1.3, 2.1.4, 3.1.5, 3.1.10, 4.1.11, 4.1.12, 4.2.4, 4.2.5, 4.2.6, 5.1.2, 5.1.16, 6.1.1, 6.1.9, 7.1.6, 7.1.7).

6. **Construct pool and riffle habitat using in-stream modifications**. Where opportunities exist, work on public, federal, state, tribal and private lands to increase the quantity of pools and gravel-dominated riffles (as opposed to cobble). Straightening and entrenchment of stream channels can lead to the reduction of pool habitat and gravel dominated riffles. Pools can be constructed by direct intervention, often concurrently with work to restore channel form and function (strategy general category 5 above), and the quantity of gravel-dominated riffles will be improved by decreasing channel slope, reducing entrenchment and confinement, and restoring pool/riffle sequencing (3.1.1, 3.1.2, 3.1.8, 3.1.12).

7. **Maintain, relocate, or eliminate forest, public and private roads in riparian and sensitive areas**. Where opportunities exist, work on public, federal, state, tribal and private lands to address problems caused by roads. Roads are a source of sediment and a means of rapidly routing sediment to streams, occupy historic riparian zones, and often result instream confinement. Maintenance (using BMPs), relocation, or removal of roads are the primary tools for addressing the problems (1.1.5, 1.1.6, 2.1.8, 4.2.1, 5.1.5, 5.1.9, 6.1.6, 6.1.7, 7.1.5).

8. **Increase protective status of priority habitats**. Where habitats have high value due to their current productive capacity or general importance to particular species, they can be protected to maintain their value. This might be accomplished by conservation easements, land exchanges, land acquisition (Oregon only), fee title acquisitions, and promotion of forestry, agricultural, urban BMPs, long-term leases, public education and other kinds of natural resource protection agreements. Public lands can be protected by varying kinds of protections authorized by statute or rule (4.1.6, 4.1.10, 5.1.12).

9. **Improve water quality instream systems**. Address water quality problems including sediment input and water temperature. There are a variety of ways to maximize infiltration, retention, and

base streamflows and reduce sediment delivery to stream systems, such as use of conservation tillage, sediment basins, vegetative buffers, implementation of forestry, agricultural, and bridge construction/maintenance BMPs. Bank stabilization also minimizes sediment delivery. Programs such as agricultural and water quality management plans and TMDL water quality improvement can contribute to alleviating water temperature and sediment impacts. Properly managing municipal, industrial, and construction site stormwater can minimize sediment inputs to the aquatic system, minimize peak flow levels, and improve water quality (1.1.2, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.14, 1.1.22, 2.1.13, 3.1.4, 5.1.10, 7.1.17).

10. **Uphold and strengthen land use regulations**. Land use regulations and instream work regulations can play a significant role in determining the extent of impacts to stream channels, floodplains, and riparian areas. It is essential that such regulations are upheld and strengthened or refined as appropriate. Education about the need for these regulations is also important (1.1.12, 1.1.13, 2.1.6, 2.1.7, 4.1.1, 4.1.2, 4.2.2, 4.2.3, 5.1.3, 5.1.4, 6.1.4, 6.1.5, 7.1.3, 7.1.4).

11. **Encourage participation in and seek additional funding for federal, state, tribal, and local programs that enhance watershed conditions**. Programs that enhance watershed conditions are important contributions to watershed improvements. These include CRP, CREP, Wetlands Reserve Program, EQIP, Landowner Incentive Program, Partners for Fish & Wildlife, Conservation Security Program, and others. Seek additional funding sources to increase landowner enrollment in programs similar to CRP and CREP where those programs are not available or are fully subscribed (1.1.8, 1.1.19, 1.1.23 2.1.15, 3.1.7, 3.1.13, 4.1.4, 4.1.14, 4.2.7, 6.1.10).

12. **Collect data and monitor trends**. Continue to collect data and perform research to identify changes and trends in flow, temperature, stream confinement, and pool development (1.1.11, 2.1.5, 2.1.9, 4.1.13, 5.1.17, 5.1.19, 7.1.19, 7.1.22).

13. **Educate stakeholders and the public on watershed management and improvement**. (1.1.12, 1.1.19, 1.1.20, 2.1.6, 2.1.10, 2.1.15, 3.1.9, 3.1.13, 4.1.1, 4.1.6, 4.1.7, 4.1.14, 4.1.15, 4.2.2, 4.2.7, 5.1.3, 5.1.12, 5.1.18, 5.1.20, 6.1.4, 6.1.10, 6.1.11, 7.1.3, 7.1.10, 7.1.16, 7.1.20,).

1.4.2 Description of Linkages for Terrestrial Elements of the Walla Walla Subbasin Management Plan (Chapter 7)

EDT analysis was not conducted for terrestrial species and related habitat. Therefore, priority restoration or protection areas, like those described above for the aquatic section, were not identified. Instead, four focal habitats were selected for the Walla Walla Subbasin:

- Ponderosa pine
- Eastside interior grasslands
- Interior riparian wetlands
- Shrub-steppe

Focal habitats were chosen to evaluate ecosystem health and establish management priorities at the ecosystem level. In addition, focal species were identified for each of the focal habitats (see pages 98-99 of the subbasin plan). Focal species were chosen in part because of their conservation or management concern status and because they are associated with key habitat elements/conditions that are essential for properly functioning ecosystems. Limiting factors, biological objectives, and strategies were identified for

each focal habitat type, keeping the corresponding focal species in mind (see pages 189-201 of the subbasin plan).

1.4.3 Geographic Area/Focal Habitat Summary Templates

In order to more clearly demonstrate linkages between the subbasin plan management elements described previously, Priority Geographic Area Summaries were assembled. These summaries provide a relatively quick way to examine information for aquatic and terrestrial management plans. Linkages for each aquatic priority area are demonstrated by listing focal species, limiting factors and life stages, objectives, EDT results, and strategies. Linkages for each terrestrial focal habitat are demonstrated by listing limiting factors, focal species, objectives, and strategies. It is expected that this information will be used as a reference for development and review of project proposals in the project selection and prioritization process. These summaries are based on information from the management plan section of the subbasin plan (see Chapter 7 of the May 2004 Walla Walla Subbasin Plan). The aquatic summaries contain information from the EDT analysis completed in this Fall 2004 subbasin plan revision process (see Section 1.1 and Appendix AD1 of this Addendum Document).

EDT results evaluate changes in habitat variables such as obstructions, substrate, and flow. The habitat attributes are used to modify a mathematical equation describing the fish population that could exist in a user-defined reach of stream. The EDT results presented below evaluate the relative value to fish of achieving the biological objectives outlined in the May 2004 Walla Walla Subbasin Plan. The value to fish is described using four measurements: productivity, diversity, capacity, and abundance.

Parentheses indicate a negative value that is usually very close to zero and associated with rounding errors in the model calculations.

Productivity represents the potential rate of increases in the population, and is affected heavily by the rate of birth to death ratio. Increases in the quantity or quality of habitat result in increased births or decreased deaths, and therefore increased productivity. Productivity below a value of one suggests the population is in decline. Diversity refers to the life history diversity. Increases in the quality of habitat can allow fish to express different life history types such as extended or more robust migration patterns. This can result in increased survival rates, or may allow the stock to more easily adapt to a changing environment. These benefits can often translate to increased productivity, and ultimately in increased abundance. The capacity of the habitat describes its average maximum ability to support a number of fish from a segment of the population. Increases in the quantity or quality of habitat can result in an increased ability to support fish from birth to spawning. Increases in capacity are representative of habitat improvement actions, but productivity and diversity must be considered when managing for fish abundance. Abundance is the average number of fish that would exist in the river annually. The equations used to produce the abundance estimate in EDT were not developed to predict the actual number of fish in the Walla Walla Subbasin at any particular point in time. However, increases in habitat quantity and quality may affect productivity, diversity, or capacity in the system resulting in an average increase in fish abundance.

Geographic Area Summary Templates

Priority Geographic Area: Walla Walla River (Mill Creek – E.L. WW)

Focal Fish Species: summer steelhead, spring Chinook, bull trout

Limiting Factors and Life Stages Affected

Limiting Factor	Summer Steelhead	Spring Chinook	Bull Trout
Embeddedness	Overwintering, yearling migrant, yearling rearing, age-2 rearing	Egg incubation, fry, pre-spawning, spawning	Migration
LWD	Overwintering, yearling migrant, yearling rearing, age-2 rearing	Egg incubation, fry, pre-spawning, spawning	Migration
Pools	Overwintering, yearling migrant, yearling rearing, age-2 rearing	Egg incubation, fry, pre-spawning, spawning	Migration
Riparian function	Overwintering, yearling migrant, yearling rearing, age-2 rearing	Egg incubation, fry, pre-spawning, spawning	Migration
Confinement	Overwintering, yearling migrant, yearling rearing, age-2 rearing	Egg incubation, fry, pre-spawning, spawning	Migration
Summer maximum water temperature	Yearling rearing, age-2 rearing	Pre-spawning, spawning	Migration
Bedscour	Overwintering, yearling rearing, age-2 rearing	Egg incubation, fry	---
Summer flow	Yearling rearing, age-2 rearing	Fry, pre-spawning	Migration

--- = Not a Limiting Factor for Bull Trout life histories.

Limiting Factors and Habitat Objectives

Limiting Factor	Quantitative Habitat Objective
Substrate Embeddedness	<10
LWD (pieces per channel width)	1
Pools (% of stream surface area)	20
Riparian function (% of max)	62
Confinement (% of streambank length)	40
Summer maximum water temperature	Less than 4 days >72 degrees F
Bedscour (cm)	<= 15
Summer flow (flow ratings per EDT)	Increase summer flows by 10-15% (or as set by other processes)

Results of EDT Analysis

The EDT analysis demonstrates that achieving all of the quantitative habitat objectives identified for the Walla Walla River (Mill Creek – E.L. WW) geographic priority area will result in:

Walla Walla River (Mill Creek – E.L. WW)

EDT Results		Steelhead	Chinook
Diversity	Adults	0	0
	Juveniles	---	---
Productivity	Adults	0	0
	Juveniles	0	2
Abundance	Adults	29	107
	Juveniles	1,933	3,517
Capacity	Adults	40	131
	Juveniles	1,353	16,773

Management Strategies (not prioritized)

1. **Control noxious weed populations/restore perennial vegetation** (1.1.4, 5.1.7, 7.1.2).

2. **Instream flow management** (5.1.8, 5.1.18, 7.1.9, 7.1.12, 7.1.13, 7.1.14, 7.1.15, 7.7.16, 7.1.16, 7.1.18, 7.1.20, 7.1.21) (see Footnote 1 on page 18).

3. **Improve instream habitat with LWD and large boulders** (2.1.1, 2.1.2, 2.1.10, 2.1.11, 2.1.14, 3.1.3, 3.1.9, 6.1.2, 6.1.3, 6.1.11, 7.1.10).

4. **Improve riparian habitat** (1.1.1, 2.1.12, 3.1.6, 4.1.3, 4.1.5, 4.1.7, 4.1.15, 5.1.1, 5.1.6, 6.1.8, 7.1.1).

5. **Modify channel and floodplain function** (1.1.15, 2.1.3, 2.1.4, 3.1.5, 3.1.10, 4.1.11, 4.1.12, 4.2.4, 4.2.5, 4.2.6, 5.1.2, 5.1.16, 6.1.1, 6.1.9, 7.1.6, 7.1.7).

6. **Construct pool and riffle habitat using in-stream modifications** (3.1.1, 3.1.2, 3.1.8, 3.1.12).

7. **Maintain, relocate, or eliminate forest, public and private roads in riparian and sensitive areas** (1.1.5, 1.1.6, 2.1.8, 4.2.1, 5.1.5, 5.1.9, 6.1.6, 6.1.7, 7.1.5).

8. **Increase protective status of priority habitats** (4.1.6, 4.1.10, 5.1.12).

9. **Improve water quality instream systems** (1.1.2, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.14, 1.1.22, 2.1.13, 3.1.4, 5.1.10, 7.1.17).

10. **Uphold and strengthen land use regulations** (1.1.12, 1.1.13, 2.1.6, 2.1.7, 4.1.1, 4.1.2, 4.2.2, 4.2.3, 5.1.3, 5.1.4, 6.1.4, 6.1.5, 7.1.3, 7.1.4).

11. **Encourage participation in and seek additional funding for federal, state, tribal, and local programs that enhance watershed conditions** (1.1.8, 1.1.19, 1.1.23 2.1.15, 3.1.7, 3.1.13, 4.1.4, 4.1.14, 4.2.7, 6.1.10).

12. **Collect data and monitor trends** (1.1.11, 2.1.5, 2.1.9, 4.1.13, 5.1.17, 5.1.19, 7.1.19, 7.1.22).

13. **Educate stakeholders and the public on watershed management and improvement** (1.1.12, 1.1.19, 1.1.20, 2.1.6, 2.1.10, 2.1.15, 3.1.9, 3.1.13, 4.1.1, 4.1.6, 4.1.7, 4.1.14, 4.1.15, 4.2.2, 4.2.7, 5.1.3, 5.1.12, 5.1.18, 5.1.20, 6.1.4, 6.1.10, 6.1.11, 7.1.3, 7.1.10, 7.1.16, 7.1.20).

Priority Geographic Area: Walla Walla River (E.L. WW – Tumalum Bridge)

Focal Fish Species: summer steelhead, spring Chinook, bull trout

Limiting Factors and Life Stages Affected

Limiting Factor	Summer Steelhead	Spring Chinook	Bull Trout
Embeddedness	Egg incubation, fry, subyearling rearing, yearling rearing	Egg incubation, fry, subyearling rearing, pre-spawning	Summer & Winter Rearing & Migration
LWD	Egg incubation, fry, subyearling rearing, yearling rearing	Egg incubation, fry, subyearling rearing, pre-spawning.	Summer & Winter Rearing & Migration
Pools	Egg incubation, fry, subyearling rearing, yearling rearing	Egg incubation, fry, subyearling rearing, pre-spawning	Summer & Winter Rearing & Migration
Riparian function	Egg incubation, fry, subyearling rearing, yearling rearing	Egg incubation, fry; subyearling rearing, pre-spawning	Summer & Winter Rearing & Migration
Confinement	Egg incubation, fry, subyearling rearing, yearling rearing	Egg incubation, fry, subyearling rearing, pre-spawning	Summer & Winter Rearing & Migration
Summer maximum water temperature	Egg incubation, fry, subyearling rearing, yearling rearing	Subyearling rearing, pre-spawning	Summer & Winter Rearing & Migration
Bedscour	Egg incubation, fry, subyearling rearing, yearling rearing	Egg incubation, fry, subyearling rearing, pre-spawning	---
Summer flow	Egg incubation, fry, subyearling rearing, yearling rearing	Subyearling rearing, pre-spawning	Summer Rearing Migration

--- = Not a Limiting Factor for Bull Trout life histories.

Limiting Factors and Habitat Objectives

Limiting Factor	Quantitative Habitat Objective
Substrate Embeddedness	<10
LWD (pieces per channel width)	1
Pools (% of stream surface area)	20
Riparian function (% of max)	62
Confinement (% of streambank length)	40
Summer maximum water temperature	Less than 4 days >72 degrees F
Bedscour (cm)	<= 15
Summer flow (flow ratings per EDT)	3 (moderately reduced)

Results of EDT Analysis

The EDT analysis demonstrates that achieving all of the quantitative habitat objectives identified for the Walla Walla River (E.L. WW – Tumalum Bridge) geographic priority area will result in:

Walla Walla River (E.L. WW – Tumalum Bridge)

EDT Results		Steelhead	Chinook
Diversity	Adults	0	0
	Juveniles	---	---
Productivity	Adults	0	0
	Juveniles	1	2
Abundance	Adults	25	107
	Juveniles	1,598	3,494
Capacity	Adults	30	131
	Juveniles	1,355	15,389

Management Strategies (not prioritized)

1. **Control noxious weed populations/restore perennial vegetation** (1.1.4, 5.1.7, 7.1.2).

2. **Instream flow management** (5.1.8, 5.1.18, 7.1.9, 7.1.12, 7.1.13, 7.1.14, 7.1.15, 7.7.16, 7.1.16, 7.1.18, 7.1.20, 7.1.21) (see Footnote 1 on page 18).

3. **Improve instream habitat with LWD and large boulders** (2.1.1, 2.1.2, 2.1.10, 2.1.11, 2.1.14, 3.1.3, 3.1.9, 6.1.2, 6.1.3, 6.1.11, 7.1.10).

4. **Improve riparian habitat** (1.1.1, 2.1.12, 3.1.6, 4.1.3, 4.1.5, 4.1.7, 4.1.15, 5.1.1, 5.1.6, 6.1.8, 7.1.1).

5. **Modify channel and floodplain function** (1.1.15, 2.1.3, 2.1.4, 3.1.5, 3.1.10, 4.1.11, 4.1.12, 4.2.4, 4.2.5, 4.2.6, 5.1.2, 5.1.16, 6.1.1, 6.1.9, 7.1.6, 7.1.7).

6. **Construct pool and riffle habitat using in-stream modifications** (3.1.1, 3.1.2, 3.1.8, 3.1.12).

7. **Maintain, relocate, or eliminate forest, public and private roads in riparian and sensitive areas** (1.1.5, 1.1.6, 2.1.8, 4.2.1, 5.1.5, 5.1.9, 6.1.6, 6.1.7, 7.1.5).

8. **Increase protective status of priority habitats** (4.1.6, 4.1.10, 5.1.12).

9. **Improve water quality instream systems** (1.1.2, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.14, 1.1.22, 2.1.13, 3.1.4, 5.1.10, 7.1.17).

10. **Uphold and strengthen land use regulations** (1.1.12, 1.1.13, 2.1.6, 2.1.7, 4.1.1, 4.1.2, 4.2.2, 4.2.3, 5.1.3, 5.1.4, 6.1.4, 6.1.5, 7.1.3, 7.1.4).

11. **Encourage participation in and seek additional funding for federal, state, tribal, and local programs that enhance watershed conditions** (1.1.8, 1.1.19, 1.1.23 2.1.15, 3.1.7, 3.1.13, 4.1.4, 4.1.14, 4.2.7, 6.1.10).

12. **Collect data and monitor trends** (1.1.11, 2.1.5, 2.1.9, 4.1.13, 5.1.17, 5.1.19, 7.1.19, 7.1.22).

13. **Educate stakeholders and the public on watershed management and improvement** (1.1.12, 1.1.19, 1.1.20, 2.1.6, 2.1.10, 2.1.15, 3.1.9, 3.1.13, 4.1.1, 4.1.6, 4.1.7, 4.1.14, 4.1.15, 4.2.2, 4.2.7, 5.1.3, 5.1.12, 5.1.18, 5.1.20, 6.1.4, 6.1.10, 6.1.11, 7.1.3, 7.1.10, 7.1.16, 7.1.20).

Priority Geographic Area: WW River (Tumalum – Nursery Bridge) and Walla Walla River (Nursery Bridge – L. WW)

(Note: These two geographic areas were combined for EDT modeling)

Focal Fish Species: summer steelhead, spring Chinook, bull trout

Limiting Factors and Life Stages Affected for WW River (Tumalum - Nursery Bridge)

Limiting Factor	Summer Steelhead	Spring Chinook	Bull Trout
Embeddedness	Selected life stages	Selected life stages. **	Summer & Winter Rearing & Migration
LWD	Fry, subyearling rearing, overwintering, yearling rearing	Egg incubation, fry, sub-yearling, pre-spawning	Summer & Winter Rearing & Migration
Pools	Fry, subyearling rearing, overwintering, yearling rearing	Egg incubation, fry, sub-yearling, pre-spawning	Summer & Winter Rearing & Migration
Riparian function	Fry, subyearling rearing, overwintering, yearling rearing	Egg incubation, fry, sub-yearling, pre-spawning	Summer & Winter Rearing & Migration
Confinement	Fry, subyearling rearing, overwintering, yearling rearing	Egg incubation, fry, sub-yearling, pre-spawning	Summer & Winter Rearing & Migration
Summer maximum water temperature	Selected life history stages	Selected life history stages. **	Summer Rearing Migration
Bedscour	Fry, subyearling rearing, overwintering, yearling rearing	Egg incubation, fry, sub-yearling	---
Summer flow	Fry, subyearling rearing, yearling rearing	Sub-yearling, pre-spawning	Summer Rearing Migration

** Specific life history stages will be inserted into these objectives when available from WDFW.
--- = Not a Limiting Factor for Bull Trout life histories.

Limiting Factors and Life Stages Affected for WW River (Nursery Bridge – L. WW)

Limiting Factor	Summer Steelhead	Spring Chinook	Bull Trout
Embeddedness			N/A
LWD	Fry, subyearling rearing, overwintering, yearling rearing	Egg incubation, fry, sub-yearling, pre-spawning	Summer Rearing Migration
Pools	Fry, subyearling rearing, overwintering, yearling rearing	Egg incubation, fry, sub-yearling, pre-spawning	Summer Rearing Migration
Riparian function	Fry, subyearling rearing, overwintering, yearling rearing	Egg incubation, fry, sub-yearling, pre-spawning	Summer Rearing Migration
Confinement	Fry, subyearling rearing, overwintering, yearling rearing	Egg incubation, fry, sub-yearling, pre-spawning	Summer Rearing Migration
Summer maximum water temperature	Increase survival of steelhead in selected life history stages	Survival will increase in selected life history stages. **	Summer Rearing Migration
Bedscour	Fry, subyearling rearing, overwintering, yearling rearing	Egg incubation, fry, sub-yearling	---
Summer flow	Fry, subyearling rearing, yearling rearing	Sub-yearling, pre-spawning	Summer Rearing Migration

** Specific life history stages will be inserted into these objectives when available from WDFW.
--- = Not a Limiting Factor for Bull Trout life histories.

Limiting Factors and Habitat Objectives for WW River (Tumalum – Nursery Bridge)

Limiting Factor	Quantitative Habitat Objective
Substrate Embeddedness	<10
LWD (pieces per channel width)	>0.5
Pools (% of stream surface area)	20
Riparian function (% of max)	40
Confinement (% of streambank length)	60
Summer maximum water temperature	5% Reduction
Bedscour (cm)	<15
Summer flow (flow ratings per EDT)	3

Limiting Factors and Habitat Objectives for WW River (Nursery Bridge – L.WW)

Limiting Factor	Quantitative Habitat Objective
Substrate Embeddedness	NA
LWD (pieces per channel width)	>0.5
Pools (% of stream surface area)	20
Riparian function (% of max)	40
Confinement (% of streambank length)	60
Summer maximum water temperature	5% Reduction
Bedscour (cm)	<15
Summer flow (flow ratings per EDT)	3

Results of EDT Analysis

The EDT analysis demonstrates that achieving all of the quantitative habitat objectives identified for the Walla Walla River (Tumalum – Nursery Bridge) and Walla Walla River geographic priority areas will result in:

Walla Walla River (Tumalum – Nursery Bridge) and Walla Walla River (Nurservy Bridge – L.WW)

EDT Results		Steelhead	Chinook
Diversity	Adults	0	0
	Juveniles	---	---
Productivity	Adults	(0)	0
	Juveniles	(1)	0
Abundance	Adults	3	40
	Juveniles	(44)	5,310
Capacity	Adults	7	48
	Juveniles	133	2,665

Management Strategies (not prioritized)

1. **Control noxious weed populations/restore perennial vegetation** (1.1.4, 5.1.7, 7.1.2).

2. **Instream flow management** (5.1.8, 5.1.18, 7.1.9, 7.1.12, 7.1.13, 7.1.14, 7.1.15, 7.7.16, 7.1.16, 7.1.18, 7.1.20, 7.1.21) (see Footnote 1 on page 18).

3. **Improve instream habitat with LWD and large boulders** (2.1.1, 2.1.2, 2.1.10, 2.1.11, 2.1.14, 3.1.3, 3.1.9, 6.1.2, 6.1.3, 6.1.11, 7.1.10).

4. **Improve riparian habitat** (1.1.1, 2.1.12, 3.1.6, 4.1.3, 4.1.5, 4.1.7, 4.1.15, 5.1.1, 5.1.6, 6.1.8, 7.1.1).

5. **Modify channel and floodplain function** (1.1.15, 2.1.3, 2.1.4, 3.1.5, 3.1.10, 4.1.11, 4.1.12, 4.2.4, 4.2.5, 4.2.6, 5.1.2, 5.1.16, 6.1.1, 6.1.9, 7.1.6, 7.1.7).

6. **Construct pool and riffle habitat using in-stream modifications** (3.1.1, 3.1.2, 3.1.8, 3.1.12).

7. **Maintain, relocate, or eliminate forest, public and private roads in riparian and sensitive areas** (1.1.5, 1.1.6, 2.1.8, 4.2.1, 5.1.5, 5.1.9, 6.1.6, 6.1.7, 7.1.5).

8. **Increase protective status of priority habitats** (4.1.6, 4.1.10, 5.1.12).

9. **Improve water quality instream systems** (1.1.2, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.14, 1.1.22, 2.1.13, 3.1.4, 5.1.10, 7.1.17).

10. **Uphold and strengthen land use regulations** (1.1.12, 1.1.13, 2.1.6, 2.1.7, 4.1.1, 4.1.2, 4.2.2, 4.2.3, 5.1.3, 5.1.4, 6.1.4, 6.1.5, 7.1.3, 7.1.4).

11. **Encourage participation in and seek additional funding for federal, state, tribal, and local programs that enhance watershed conditions** (1.1.8, 1.1.19, 1.1.23 2.1.15, 3.1.7, 3.1.13, 4.1.4, 4.1.14, 4.2.7, 6.1.10).

12. **Collect data and monitor trends** (1.1.11, 2.1.5, 2.1.9, 4.1.13, 5.1.17, 5.1.19, 7.1.19, 7.1.22).

13. **Educate stakeholders and the public on watershed management and improvement** (1.1.12, 1.1.19, 1.1.20, 2.1.6, 2.1.10, 2.1.15, 3.1.9, 3.1.13, 4.1.1, 4.1.6, 4.1.7, 4.1.14, 4.1.15, 4.2.2, 4.2.7, 5.1.3, 5.1.12, 5.1.18, 5.1.20, 6.1.4, 6.1.10, 6.1.11, 7.1.3, 7.1.10, 7.1.16, 7.1.20).

Priority Geographic Area: Walla Walla River (L. WW – Forks)

Focal Fish Species: summer steelhead, spring Chinook, bull trout

Limiting Factors and Life Stages Affected

Limiting Factor	Summer Steelhead	Spring Chinook	Bull Trout
Embeddedness			N/A
LWD	Egg incubation, subyearling rearing, overwintering, yearling rearing	Egg incubation, fry, sub-yearling, pre-spawning	Summer & Winter Rearing & Migration
Pools	Egg incubation, subyearling rearing, overwintering, yearling rearing	Egg incubation, fry, sub-yearling, pre-spawning	Summer & Winter Rearing & Migration
Riparian function	Egg incubation, subyearling rearing, overwintering, yearling rearing	Egg incubation, fry, sub-yearling, pre-spawning	Summer & Winter Rearing & Migration
Confinement	Egg incubation, subyearling rearing, overwintering, yearling rearing	Egg incubation, fry, sub-yearling, pre-spawning	Summer & Winter Rearing & Migration
Summer maximum water temperature	Egg incubation	Sub-yearling, pre-spawning	Summer Rearing Migration
Bedscour	Egg incubation, subyearling rearing, overwintering, yearling rearing	Egg incubation, fry, sub-yearling	---
Summer flow	Egg incubation, subyearling rearing, overwintering, yearling rearing	Sub-yearling, pre-spawning	Summer Rearing Migration

--- = Not a Limiting Factor for Bull Trout life histories.

Limiting Factors and Habitat Objectives

Limiting Factor	Quantitative Habitat Objective
Substrate Embeddedness	N/A
LWD (pieces per channel width)	>0.5
Pools (% of stream surface area)	20
Riparian function (% of max)	50
Confinement (% of streambank length)	60
Summer maximum water temperature	5% Reduction
Bedscour (cm)	<15
Summer flow (flow ratings per EDT)	3

Results of EDT Analysis

The EDT analysis demonstrates that achieving all of the quantitative habitat objectives identified for the Walla Walla River (L. WW – Forks) geographic priority area will result in:

Walla Walla River (L. WW – Forks)

EDT Results		Steelhead	Chinook
Diversity	Adults	0	0
	Juveniles	---	---
Productivity	Adults	0	0
	Juveniles	(0)	1
Abundance	Adults	9	30
	Juveniles	445	4,469
Capacity	Adults	12	36
	Juveniles	594	483

Management Strategies (not prioritized)

1. **Control noxious weed populations/restore perennial vegetation** (5.1.7, 7.1.2).

2. **Instream flow management** (5.1.8, 5.1.18, 7.1.9, 7.1.12, 7.1.13, 7.1.14, 7.1.15, 7.7.16, 7.1.16, 7.1.18, 7.1.20, 7.1.21) (see Footnote 1 on page 18).

3. **Improve instream habitat with LWD and large boulders** (2.1.1, 2.1.2, 2.1.10, 2.1.11, 2.1.14, 3.1.3, 3.1.9, 6.1.2, 6.1.3, 6.1.11, 7.1.10).

4. **Improve riparian habitat** (2.1.12, 3.1.6, 4.1.3, 4.1.5, 4.1.7, 4.1.15, 5.1.1, 5.1.6, 6.1.8, 7.1.1).

5. **Modify channel and floodplain function** (2.1.3, 2.1.4, 3.1.5, 3.1.10, 4.1.11, 4.1.12, 4.2.4, 4.2.5, 4.2.6, 5.1.2, 5.1.16, 6.1.1, 6.1.9, 7.1.6, 7.1.7).

6. **Construct pool and riffle habitat using in-stream modifications** (3.1.1, 3.1.2, 3.1.8, 3.1.12).

7. **Maintain, relocate, or eliminate forest, public and private roads in riparian and sensitive areas** (2.1.8, 4.2.1, 5.1.5, 5.1.9, 6.1.6, 6.1.7, 7.1.5).

8. **Increase protective status of priority habitats** (4.1.6, 4.1.10, 5.1.12).

9. **Improve water quality instream systems** (2.1.13, 3.1.4, 5.1.10, 7.1.17).

10. **Uphold and strengthen land use regulations** (2.1.6, 2.1.7, 4.1.1, 4.1.2, 4.2.2, 4.2.3, 5.1.3, 5.1.4, 6.1.4, 6.1.5, 7.1.3, 7.1.4).

11. **Encourage participation in and seek additional funding for federal, state, tribal, and local programs that enhance watershed conditions** (2.1.15, 3.1.7, 3.1.13, 4.1.4, 4.1.14, 4.2.7, 6.1.10).

12. **Collect data and monitor trends** (2.1.5, 2.1.9, 4.1.13, 5.1.17, 5.1.19, 7.1.19, 7.1.22).

13. **Educate stakeholders and the public on watershed management and improvement** (2.1.6, 2.1.10, 2.1.15, 3.1.9, 3.1.13, 4.1.1, 4.1.6, 4.1.7, 4.1.14, 4.1.15, 4.2.2, 4.2.7, 5.1.3, 5.1.12, 5.1.18, 5.1.20, 6.1.4, 6.1.10, 6.1.11, 7.1.3, 7.1.10, 7.1.16, 7.1.20).

Priority Geographic Area: South Fork Walla Walla (mouth-Elbow Creek)

Focal Fish Species: summer steelhead, spring Chinook, bull trout

Limiting Factors and Life Stages Affected

Limiting Factor	Summer Steelhead	Spring Chinook	Bull Trout
Embeddedness	Egg incubation, subyearling rearing, overwintering, yearling rearing	Egg incubation, fry, sub-yearling, pre-spawning	Summer & Winter Rearing & Migration
LWD	Egg incubation, subyearling rearing, overwintering, yearling rearing	Egg incubation, fry, sub-yearling, pre-spawning	Summer & Winter Rearing & Migration
Pools	Egg incubation, subyearling rearing, overwintering, yearling rearing	Egg incubation, fry, sub-yearling, pre-spawning	Summer & Winter Rearing & Migration
Riparian function	Egg incubation, subyearling rearing, overwintering, yearling rearing	Egg incubation, fry, sub-yearling, pre-spawning	Summer & Winter Rearing & Migration
Confinement	Egg incubation, subyearling rearing, overwintering, yearling rearing	Egg incubation, fry, sub-yearling, pre-spawning	Summer & Winter Rearing & Migration
Summer maximum water temperature	Egg incubation, subyearling rearing, yearling rearing	Sub-yearling, pre-spawning	Summer Rearing Migration
Bedscour	Egg incubation, subyearling rearing, overwintering, yearling rearing	Egg incubation, fry, sub-yearling	Spawning
Summer flow	Egg incubation, yearling rearing	Sub-yearling, pre-spawning	Summer Rearing Migration

Limiting Factors and Habitat Objectives

Limiting Factor	Quantitative Habitat Objective
Substrate Embeddedness	<10
LWD (pieces per channel width)	>0.5 (SF 1&2) 1 (SF3)
Pools (% of stream surface area)	20
Riparian function (% of max)	80 (SF 1&2) 90 (SF3)
Confinement (% of streambank length)	60 (SF 1&2)
Summer maximum water temperature	5% Reduction
Bedscour (cm)	<6 (SF 1&2)
Summer flow (flow ratings per EDT)	3

Results of EDT Analysis

The EDT analysis demonstrates that achieving all of the quantitative habitat objectives identified for the South Fork Walla Walla (mouth – Elbow Creek) geographic priority area will result in:

South Fork Walla Walla (mouth – Elbow Creek)

EDT Results		Steelhead	Chinook
Diversity	Adults	0	0
	Juveniles	---	---
Productivity	Adults	0	0
	Juveniles	6	6
Abundance	Adults	79	90
	Juveniles	3,841	2,462
Capacity	Adults	74	104
	Juveniles	4,610	15,178

Management Strategies (not prioritized)

1. **Control noxious weed populations/restore perennial vegetation** (1.1.4, 5.1.7, 7.1.2).

2. **Instream flow management** (5.1.8, 5.1.18, 7.1.9, 7.1.12, 7.1.13, 7.1.14, 7.1.15, 7.7.16, 7.1.16, 7.1.18, 7.1.20, 7.1.21) (see Footnote 1 on page 18).

3. **Improve instream habitat with LWD and large boulders** (2.1.1, 2.1.2, 2.1.10, 2.1.11, 2.1.14, 3.1.3, 3.1.9, 6.1.2, 6.1.3, 6.1.11, 7.1.10).

4. **Improve riparian habitat** (1.1.1, 2.1.12, 3.1.6, 4.1.3, 4.1.5, 4.1.7, 4.1.15, 5.1.1, 5.1.6, 6.1.8, 7.1.1).

5. **Modify channel and floodplain function** (1.1.15, 2.1.3, 2.1.4, 3.1.5, 3.1.10, 4.1.11, 4.1.12, 4.2.4, 4.2.5, 4.2.6, 5.1.2, 5.1.16, 6.1.1, 6.1.9, 7.1.6, 7.1.7).

6. **Construct pool and riffle habitat using in-stream modifications** (3.1.1, 3.1.2, 3.1.8, 3.1.12).

7. **Maintain, relocate, or eliminate forest, public and private roads in riparian and sensitive areas** (1.1.5, 1.1.6, 2.1.8, 4.2.1, 5.1.5, 5.1.9, 6.1.6, 6.1.7, 7.1.5).

8. **Increase protective status of priority habitats** (4.1.6, 4.1.10, 5.1.12).

9. **Improve water quality instream systems** (1.1.2, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.14, 1.1.22, 2.1.13, 3.1.4, 5.1.10, 7.1.17).

10. **Uphold and strengthen land use regulations** (1.1.12, 1.1.13, 2.1.6, 2.1.7, 4.1.1, 4.1.2, 4.2.2, 4.2.3, 5.1.3, 5.1.4, 6.1.4, 6.1.5, 7.1.3, 7.1.4).

11. **Encourage participation in and seek additional funding for federal, state, tribal, and local programs that enhance watershed conditions** (1.1.8, 1.1.19, 1.1.23 2.1.15, 3.1.7, 3.1.13, 4.1.4, 4.1.14, 4.2.7, 6.1.10).

12. **Collect data and monitor trends** (1.1.11, 2.1.5, 2.1.9, 4.1.13, 5.1.17, 5.1.19, 7.1.19, 7.1.22).

13. **Educate stakeholders and the public on watershed management and improvement** (1.1.12, 1.1.19, 1.1.20, 2.1.6, 2.1.10, 2.1.15, 3.1.9, 3.1.13, 4.1.1, 4.1.6, 4.1.7, 4.1.14, 4.1.15, 4.2.2, 4.2.7, 5.1.3, 5.1.12, 5.1.18, 5.1.20, 6.1.4, 6.1.10, 6.1.11, 7.1.3, 7.1.10, 7.1.16, 7.1.20).

Priority Geographic Area: North Fork WW (mouth – L. Meadows Canyon Creek; plus L. Meadows)

Focal Fish Species: summer steelhead, spring Chinook, bull trout

Limiting Factors and Life Stages Affected

Limiting Factor	Summer Steelhead	Spring Chinook	Bull Trout
Embeddedness	Fry, subyearling rearing, overwintering, yearling rearing	Fry, sub-yearling, overwintering, pre-spawning	Summer & Winter Rearing & Migration
LWD	Fry, subyearling rearing, overwintering, yearling rearing	Fry, sub-yearling, overwintering, pre-spawning	Summer & Winter Rearing & Migration
Pools	Fry, subyearling rearing, overwintering, yearling rearing	Fry, sub-yearling, overwintering, pre-spawning	Summer & Winter Rearing & Migration
Riparian function	Fry, subyearling rearing, overwintering, yearling rearing	Fry, sub-yearling, overwintering, pre-spawning	Summer & Winter Rearing & Migration
Confinement	Fry, subyearling rearing, overwintering, yearling rearing	Fry, sub-yearling, overwintering, pre-spawning	Summer & Winter Rearing & Migration
Summer maximum water temperature	Fry, subyearling rearing, overwintering, yearling rearing	Fry, sub-yearling, pre-spawning	Summer Rearing, Migration, Spawning
Bedscour	Fry, subyearling rearing, overwintering, yearling rearing	Fry, sub-yearling, overwintering	Spawning
Summer flow		Fry, sub-yearling, pre-spawning	Summer Rearing, Migration, Spawning

Limiting Factors and Habitat Objectives

Limiting Factor	Quantitative Habitat Objective
Substrate Embeddedness	EDT Rating 0 & 1 (Turbidity)
LWD (pieces per channel width)	>0.5
Pools (% of stream surface area)	20
Riparian function (% of max)	50
Confinement (% of streambank length)	40
Summer maximum water temperature	5% Reduction
Bedscour (cm)	<6 (SF 1&2)
Summer flow (flow ratings per EDT)	3

Results of EDT Analysis

The EDT analysis demonstrates that achieving all of the quantitative habitat objectives identified for the North Fork Walla Walla (mouth – L. Meadows Canyon Creek; plus L. Meadows) geographic priority area will result in:

North Fork Walla Walla (mouth – L. Meadows Canyon Creek; plus L. Meadows)

EDT Results		Steelhead	Chinook
Diversity	Adults	0	0
	Juveniles	---	---
Productivity	Adults	(0)	(0)
	Juveniles	(2)	(1)
Abundance	Adults	24	27
	Juveniles	1,162	2,673
Capacity	Adults	41	36
	Juveniles	775	2,302

Management Strategies (not prioritized)

1. **Control noxious weed populations/restore perennial vegetation** (1.1.4, 5.1.7, 7.1.2).

2. **Instream flow management** (5.1.8, 5.1.18, 7.1.9, 7.1.12, 7.1.13, 7.1.14, 7.1.15, 7.7.16, 7.1.16, 7.1.18, 7.1.20, 7.1.21) (see Footnote 1 on page 18).

3. **Improve instream habitat with LWD and large boulders** (2.1.1, 2.1.2, 2.1.10, 2.1.11, 2.1.14, 3.1.3, 3.1.9, 6.1.2, 6.1.3, 6.1.11, 7.1.10).

4. **Improve riparian habitat** (1.1.1, 2.1.12, 3.1.6, 4.1.3, 4.1.5, 4.1.7, 4.1.15, 5.1.1, 5.1.6, 6.1.8, 7.1.1).

5. **Modify channel and floodplain function** (1.1.15, 2.1.3, 2.1.4, 3.1.5, 3.1.10, 4.1.11, 4.1.12, 4.2.4, 4.2.5, 4.2.6, 5.1.2, 5.1.16, 6.1.1, 6.1.9, 7.1.6, 7.1.7).

6. **Construct pool and riffle habitat using in-stream modifications** (3.1.1, 3.1.2, 3.1.8, 3.1.12).

7. **Maintain, relocate, or eliminate forest, public and private roads in riparian and sensitive areas** (1.1.5, 1.1.6, 2.1.8, 4.2.1, 5.1.5, 5.1.9, 6.1.6, 6.1.7, 7.1.5).

8. **Increase protective status of priority habitats** (4.1.6, 4.1.10, 5.1.12).

9. **Improve water quality instream systems** (1.1.2, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.14, 1.1.22, 2.1.13, 3.1.4, 5.1.10, 7.1.17).

10. **Uphold and strengthen land use regulations** (1.1.12, 1.1.13, 2.1.6, 2.1.7, 4.1.1, 4.1.2, 4.2.2, 4.2.3, 5.1.3, 5.1.4, 6.1.4, 6.1.5, 7.1.3, 7.1.4).

11. **Encourage participation in and seek additional funding for federal, state, tribal, and local programs that enhance watershed conditions** (1.1.8, 1.1.19, 1.1.23 2.1.15, 3.1.7, 3.1.13, 4.1.4, 4.1.14, 4.2.7, 6.1.10).

12. **Collect data and monitor trends** (1.1.11, 2.1.5, 2.1.9, 4.1.13, 5.1.17, 5.1.19, 7.1.19, 7.1.22).

13. **Educate stakeholders and the public on watershed management and improvement** (1.1.12, 1.1.19, 1.1.20, 2.1.6, 2.1.10, 2.1.15, 3.1.9, 3.1.13, 4.1.1, 4.1.6, 4.1.7, 4.1.14, 4.1.15, 4.2.2, 4.2.7, 5.1.3, 5.1.12, 5.1.18, 5.1.20, 6.1.4, 6.1.10, 6.1.11, 7.1.3, 7.1.10, 7.1.16, 7.1.20).

Priority Geographic Area: Coppei Creek

Focal Fish Species: summer steelhead, spring Chinook, bull trout

Limiting Factors and Life Stages Affected

Limiting Factor	Summer Steelhead	Spring Chinook*	Bull Trout
Embeddedness	Egg incubation, fry, subyearling rearing		---
LWD	Egg incubation, fry, subyearling rearing, overwintering		---
Pools	Egg incubation, fry, subyearling rearing, overwintering		---
Riparian function	Egg incubation, fry, subyearling rearing, overwintering		---
Confinement	Egg incubation, fry, subyearling rearing, overwintering		---
Summer maximum water temperature	Egg incubation, fry, subyearling rearing		---
Bedscour	Egg incubation, fry, subyearling rearing, overwintering		---
Summer flow	Egg incubation, fry, subyearling rearing, overwintering		---

--- = Not a Limiting Factor for Bull Trout life histories.

* Spring Chinook are not considered present in the Coppei Creek drainage.

Limiting Factors and Habitat Objectives

Limiting Factor	Quantitative Habitat Objective
Substrate Embeddedness	<10
LWD (pieces per channel width)	1
Pools (% of stream surface area)	15
Riparian function (% of max)	75
Confinement (% of streambank length)	15
Summer maximum water temperature	Less than 4 days >72F & less than 12 days >61F
Bedscour (cm)	$\leq$14
Summer flow (flow ratings per EDT)	2.25

Results of EDT Analysis

The EDT analysis demonstrates that achieving all of the quantitative habitat objectives identified for the Coppei Creek geographic priority area will result in:

Coppei Creek

EDT Results		Steelhead	Chinook
Diversity	Adults	0	0
	Juveniles	---	---
Productivity	Adults	(0)	0
	Juveniles	(0)	0
Abundance	Adults	13	0
	Juveniles	651	0
Capacity	Adults	20	0
	Juveniles	1,146	0

Management Strategies (not prioritized)

1. **Control noxious weed populations/restore perennial vegetation** (1.1.4, 5.1.7, 7.1.2).

2. **Instream flow management** (5.1.8, 5.1.18, 7.1.9, 7.1.12, 7.1.13, 7.1.14, 7.1.15, 7.7.16, 7.1.16, 7.1.18, 7.1.20, 7.1.21) (see Footnote 1 on page 18).

3. **Improve instream habitat with LWD and large boulders** (2.1.1, 2.1.2, 2.1.10, 2.1.11, 2.1.14, 3.1.3, 3.1.9, 6.1.2, 6.1.3, 6.1.11, 7.1.10).

4. **Improve riparian habitat** (1.1.1, 2.1.12, 3.1.6, 4.1.3, 4.1.5, 4.1.7, 4.1.15, 5.1.1, 5.1.6, 6.1.8, 7.1.1).

5. **Modify channel and floodplain function** (1.1.15, 2.1.3, 2.1.4, 3.1.5, 3.1.10, 4.1.11, 4.1.12, 4.2.4, 4.2.5, 4.2.6, 5.1.2, 5.1.16, 6.1.1, 6.1.9, 7.1.6, 7.1.7).

6. **Construct pool and riffle habitat using in-stream modifications** (3.1.1, 3.1.2, 3.1.8, 3.1.12).

7. **Maintain, relocate, or eliminate forest, public and private roads in riparian and sensitive areas** (1.1.5, 1.1.6, 2.1.8, 4.2.1, 5.1.5, 5.1.9, 6.1.6, 6.1.7, 7.1.5).

8. **Increase protective status of priority habitats** (4.1.6, 4.1.10, 5.1.12).

9. **Improve water quality instream systems**. (1.1.2, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.14, 1.1.22, 2.1.13, 3.1.4, 5.1.10, 7.1.17).

10. **Uphold and strengthen land use regulations** (1.1.12, 1.1.13, 2.1.6, 2.1.7, 4.1.1, 4.1.2, 4.2.2, 4.2.3, 5.1.3, 5.1.4, 6.1.4, 6.1.5, 7.1.3, 7.1.4).

11. **Encourage participation in and seek additional funding for federal, state, tribal, and local programs that enhance watershed conditions** (1.1.8, 1.1.19, 1.1.23 2.1.15, 3.1.7, 3.1.13, 4.1.4, 4.1.14, 4.2.7, 6.1.10).

12. **Collect data and monitor trends** (1.1.11, 2.1.5, 2.1.9, 4.1.13, 5.1.17, 5.1.19, 7.1.19, 7.1.22).

13. **Educate stakeholders and the public on watershed management and improvement** (1.1.12, 1.1.19, 1.1.20, 2.1.6, 2.1.10, 2.1.15, 3.1.9, 3.1.13, 4.1.1, 4.1.6, 4.1.7, 4.1.14, 4.1.15, 4.2.2, 4.2.7, 5.1.3, 5.1.12, 5.1.18, 5.1.20, 6.1.4, 6.1.10, 6.1.11, 7.1.3, 7.1.10, 7.1.16, 7.1.20).

Priority Geographic Area: Touchet River (Coppei – Forks; plus Whiskey)

Focal Fish Species: summer steelhead, spring Chinook, bull trout

Limiting Factors and Life Stages Affected

Limiting Factor	Summer Steelhead	Spring Chinook	Bull Trout
Embeddedness	Egg incubation, fry, subyearling rearing, yearling rearing	Fry; subyearling rearing, pre-spawning, spawning	Migration
LWD	Egg incubation, fry, subyearling rearing, yearling rearing.	Fry; subyearling rearing, pre-spawning, spawning	Migration
Pools	Egg incubation, fry, subyearling rearing, yearling rearing.	Fry; subyearling rearing, pre-spawning, spawning	Migration
Riparian function	Egg incubation, fry, subyearling rearing, yearling rearing	Fry; subyearling rearing, pre-spawning, spawning	Migration
Confinement	Egg incubation, fry, subyearling rearing, yearling rearing	Fry; subyearling rearing, pre-spawning, spawning	Migration
Summer maximum water temperature	Egg incubation, fry, subyearling rearing, yearling rearing	Fry; subyearling rearing, pre-spawning, spawning	Migration
Bedscour	Egg incubation, fry, subyearling rearing, yearling rearing	Fry; subyearling rearing	---
Summer flow	Fry, subyearling rearing, yearling rearing	Subyearling rearing, pre-spawning, spawning	Migration

Limiting Factors and Habitat Objectives

Limiting Factor	Quantitative Habitat Objective
Substrate Embeddedness	Continue downward trend in % embeddedness ; assume related decrease in fines & turbidity
LWD (pieces per channel width)	1
Pools (% of stream surface area)	15
Riparian function (% of max)	62
Confinement (% of streambank length)	40
Summer maximum water temperature	Less than 4 days >72F
Bedscour (cm)	$\leq$10
Summer flow (flow ratings per EDT)	3

Results of EDT Analysis

The EDT analysis demonstrates that achieving all of the quantitative habitat objectives identified for the Touchet River (Coppei – Forks; plus Whiskey) geographic priority area will result in:

Coppei – Forks; plus Whiskey

EDT Results		Steelhead	Chinook
Diversity	Adults	0	0
	Juveniles	---	---
Productivity	Adults	(0)	(0)
	Juveniles	(2)	(3)
Abundance	Adults	59	158
	Juveniles	1,516	4,036
Capacity	Adults	34	79
	Juveniles	2,987	5,115

Management Strategies (not prioritized)

1. **Control noxious weed populations/restore perennial vegetation** (1.1.4, 5.1.7, 7.1.2).

2. **Instream flow management** (5.1.8, 5.1.18, 7.1.9, 7.1.12, 7.1.13, 7.1.14, 7.1.15, 7.7.16, 7.1.16, 7.1.18, 7.1.20, 7.1.21) (see Footnote 1 on page 18).

3. **Improve instream habitat with LWD and large boulders** (2.1.1, 2.1.2, 2.1.10, 2.1.11, 2.1.14, 3.1.3, 3.1.9, 6.1.2, 6.1.3, 6.1.11, 7.1.10).

4. **Improve riparian habitat** (1.1.1, 2.1.12, 3.1.6, 4.1.3, 4.1.5, 4.1.7, 4.1.15, 5.1.1, 5.1.6, 6.1.8, 7.1.1).

5. **Modify channel and floodplain function** (1.1.15, 2.1.3, 2.1.4, 3.1.5, 3.1.10, 4.1.11, 4.1.12, 4.2.4, 4.2.5, 4.2.6, 5.1.2, 5.1.16, 6.1.1, 6.1.9, 7.1.6, 7.1.7).

6. **Construct pool and riffle habitat using in-stream modifications** (3.1.1, 3.1.2, 3.1.8, 3.1.12).

7. **Maintain, relocate, or eliminate forest, public and private roads in riparian and sensitive areas** (1.1.5, 1.1.6, 2.1.8, 4.2.1, 5.1.5, 5.1.9, 6.1.6, 6.1.7, 7.1.5).

8. **Increase protective status of priority habitats** (4.1.6, 4.1.10, 5.1.12).

9. **Improve water quality instream systems** (1.1.2, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.14, 1.1.22, 2.1.13, 3.1.4, 5.1.10, 7.1.17).

10. **Uphold and strengthen land use regulations** (1.1.12, 1.1.13, 2.1.6, 2.1.7, 4.1.1, 4.1.2, 4.2.2, 4.2.3, 5.1.3, 5.1.4, 6.1.4, 6.1.5, 7.1.3, 7.1.4).

11. **Encourage participation in and seek additional funding for federal, state, tribal, and local programs that enhance watershed conditions** (1.1.8, 1.1.19, 1.1.23 2.1.15, 3.1.7, 3.1.13, 4.1.4, 4.1.14, 4.2.7, 6.1.10).

12. **Collect data and monitor trends** (1.1.11, 2.1.5, 2.1.9, 4.1.13, 5.1.17, 5.1.19, 7.1.19, 7.1.22).

13. **Educate stakeholders and the public on watershed management and improvement** (1.1.12, 1.1.19, 1.1.20, 2.1.6, 2.1.10, 2.1.15, 3.1.9, 3.1.13, 4.1.1, 4.1.6, 4.1.7, 4.1.14, 4.1.15, 4.2.2, 4.2.7, 5.1.3, 5.1.12, 5.1.18, 5.1.20, 6.1.4, 6.1.10, 6.1.11, 7.1.3, 7.1.10, 7.1.16, 7.1.20)

Priority Geographic Area: South Fork Touchet

Focal Fish Species: summer steelhead, spring Chinook, bull trout

Limiting Factors and Life Stages Affected

Limiting Factor	Summer Steelhead	Spring Chinook	Bull Trout
Embeddedness	Egg incubation, subyearling rearing, overwintering, yearling rearing	Egg incubation, fry; pre-spawning, spawning	Summer Rearing, Migration
LWD	Egg incubation, subyearling rearing, overwintering, yearling rearing	Egg incubation, fry; pre-spawning, spawning	Migration
Pools	Egg incubation, subyearling rearing, overwintering, yearling rearing	Egg incubation, fry; pre-spawning, spawning	Migration
Riparian function	Egg incubation, subyearling rearing, overwintering, yearling rearing	Egg incubation, fry; pre-spawning, spawning	Migration
Confinement	Egg incubation, subyearling rearing, overwintering, yearling rearing	Egg incubation, fry; pre-spawning, spawning	Migration
Summer maximum water temperature	Egg incubation, subyearling rearing, yearling rearing	Pre-spawning, spawning	Migration
Bedscour	Egg incubation, subyearling rearing, overwintering, yearling rearing	Egg incubation, fry	---
Summer flow	Increase survival of steelhead in selected life history stages	Survival will increase in selected life history stages **	Migration

** Specific life history stages will be inserted into these objectives hen available from WDFW.

--- = Not a Limiting Factor for Bull Trout life histories.

Limiting Factors and Habitat Objectives

Limiting Factor	Quantitative Habitat Objective
Substrate Embeddedness	Continue downward trend in % embeddedness; assume related decrease in fines & turbidity*
LWD (pieces per channel width)	1 (SF Touchet 1)
Pools (% of stream surface area)	25 (SF Touchet 1); 35 (Touchet 2 & 3)
Riparian function (% of max)	62
Confinement (% of streambank length)	15 (SF Touchet 1 & 3)
Summer maximum water temperature	Less than 4 days >72F (SF Touchet 1)
Bedscour (cm)	$\leq$15
Summer flow (flow ratings per EDT)	Show improvement in improving summer flows (note – Focus on improving watershed conditions, and irrigation efficiencies

* A sampling regime to measure decreases in fines & turbidity would also be implemented.

Results of EDT Analysis

The EDT analysis demonstrates that achieving all of the quantitative habitat objectives identified for the South Fork Touchet River (South Fork Touchet) geographic priority area will result in:

South Fork Touchet River

EDT Results		Steelhead	Chinook
Diversity	Adults	0	0
	Juveniles	---	---
Productivity	Adults	0	0
	Juveniles	(2)	1
Abundance	Adults	25	58
	Juveniles	1,290	3,165
Capacity	Adults	46	82
	Juveniles	2,797	2,285

Management Strategies (not prioritized)

1. **Control noxious weed populations/restore perennial vegetation** (1.1.4, 5.1.7, 7.1.2).

2. **Instream flow management** (5.1.8, 5.1.18, 7.1.9, 7.1.12, 7.1.13, 7.1.14, 7.1.15, 7.7.16, 7.1.16, 7.1.18, 7.1.20, 7.1.21) (see Footnote 1 on page 18).

3. **Improve instream habitat with LWD and large boulders** (2.1.1, 2.1.2, 2.1.10, 2.1.11, 2.1.14, 3.1.3, 3.1.9, 6.1.2, 6.1.3, 6.1.11, 7.1.10).

4. **Improve riparian habitat** (1.1.1, 2.1.12, 3.1.6, 4.1.3, 4.1.5, 4.1.7, 4.1.15, 5.1.1, 5.1.6, 6.1.8, 7.1.1).

5. **Modify channel and floodplain function** (1.1.15, 2.1.3, 2.1.4, 3.1.5, 3.1.10, 4.1.11, 4.1.12, 4.2.4, 4.2.5, 4.2.6, 5.1.2, 5.1.16, 6.1.1, 6.1.9, 7.1.6, 7.1.7).

6. **Construct pool and riffle habitat using in-stream modifications** (3.1.1, 3.1.2, 3.1.8, 3.1.12).

7. **Maintain, relocate, or eliminate forest, public and private roads in riparian and sensitive areas** (1.1.5, 1.1.6, 2.1.8, 4.2.1, 5.1.5, 5.1.9, 6.1.6, 6.1.7, 7.1.5).

8. **Increase protective status of priority habitats** (4.1.6, 4.1.10, 5.1.12).

9. **Improve water quality instream systems** (1.1.2, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.14, 1.1.22, 2.1.13, 3.1.4, 5.1.10, 7.1.17).

10. **Uphold and strengthen land use regulations** (1.1.12, 1.1.13, 2.1.6, 2.1.7, 4.1.1, 4.1.2, 4.2.2, 4.2.3, 5.1.3, 5.1.4, 6.1.4, 6.1.5, 7.1.3, 7.1.4).

11. **Encourage participation in and seek additional funding for federal, state, tribal, and local programs that enhance watershed conditions** (1.1.8, 1.1.19, 1.1.23 2.1.15, 3.1.7, 3.1.13, 4.1.4, 4.1.14, 4.2.7, 6.1.10).

12. **Collect data and monitor trends** (1.1.11, 2.1.5, 2.1.9, 4.1.13, 5.1.17, 5.1.19, 7.1.19, 7.1.22).

13. **Educate stakeholders and the public on watershed management and improvement** (1.1.12, 1.1.19, 1.1.20, 2.1.6, 2.1.10, 2.1.15, 3.1.9, 3.1.13, 4.1.1, 4.1.6, 4.1.7, 4.1.14, 4.1.15, 4.2.2, 4.2.7, 5.1.3, 5.1.12, 5.1.18, 5.1.20, 6.1.4, 6.1.10, 6.1.11, 7.1.3, 7.1.10, 7.1.16, 7.1.20).

Priority Geographic Area: South Fork Touchet Tributaries

Focal Fish Species: summer steelhead, spring Chinook, bull trout

Limiting Factors and Life Stages Affected

Limiting Factor	Summer Steelhead	Spring Chinook	Bull Trout
Embeddedness	Egg incubation, fry, subyearling rearing, overwintering		Migration
LWD	Egg incubation, fry, subyearling rearing, overwintering		Migration
Pools	Egg incubation, fry, subyearling rearing, overwintering		Migration
Riparian function	Egg incubation, fry, subyearling rearing, overwintering		Migration
Confinement	Egg incubation, fry, subyearling rearing, overwintering		Migration
Summer maximum water temperature			N/A
Bedscour			N/A
Summer flow			N/A

Limiting Factors and Habitat Objectives

Limiting Factor	Quantitative Habitat Objective
Substrate Embeddedness	Continue downward trend in % embeddedness; assume related decrease in fines & turbidity*
LWD (pieces per channel width)	1 (Green Fk); 2 (Burnt Fk, Griffin Fk 1 & 2)
Pools (% of stream surface area)	24 (Green Fk, Burnt Fk); 33 (Griffin Fk 1, 2, 3)
Riparian function (% of max)	82
Confinement (% of streambank length)	15
Summer maximum water temperature	Not an EDT-Identified Limiting Factor for Steelhead or Spring Chinook; May Be Limiting for Bull Trout
Bedscour (cm)	Not an EDT-Identified Limiting Factor
Summer flow (flow ratings per EDT)	Not an EDT-Identified Limiting Factor

* A sampling regime to measure decreases in fines & turbidity would also be implemented.

Results of EDT Analysis

The EDT analysis demonstrates that achieving all of the quantitative habitat objectives identified for the (South Fork Touchet Tributaries) geographic priority area will result in:

South Fork Touchet Tributaries

EDT Results		Steelhead	Chinook
Diversity	Adults	0	0
	Juveniles	---	---
Productivity	Adults	0	0
	Juveniles	0	0
Abundance	Adults	7	0
	Juveniles	265	0
Capacity	Adults	12	0
	Juveniles	544	0

Management Strategies (not prioritized)

1. **Control noxious weed populations/restore perennial vegetation** (1.1.4).

2. **Improve instream habitat with LWD and large boulders** (2.1.1, 2.1.2, 2.1.10, 2.1.11, 2.1.14, 3.1.3, 3.1.9).

3. **Improve riparian habitat** (1.1.1, 2.1.12, 3.1.6, 4.1.3, 4.1.5, 4.1.7, 4.1.15).

4. **Modify channel and floodplain function** (1.1.15, 2.1.3, 2.1.4, 3.1.5, 3.1.10, 4.1.11, 4.1.12, 4.2.4, 4.2.5, 4.2.6).

5. **Construct pool and riffle habitat using in-stream modifications** (3.1.1, 3.1.2, 3.1.8, 3.1.12).

6. **Maintain, relocate, or eliminate forest, public and private roads in riparian and sensitive areas**. (1.1.5, 1.1.6, 2.1.8, 4.2.1).

7. **Increase protective status of priority habitats** (4.1.6, 4.1.10).

8. **Improve water quality instream systems** (1.1.2, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.14, 1.1.22, 2.1.13, 3.1.4).

9. **Uphold and strengthen land use regulations** (1.1.12, 1.1.13, 2.1.6, 2.1.7, 4.1.1, 4.1.2, 4.2.2, 4.2.3).

10. **Encourage participation in and seek additional funding for federal, state, tribal, and local programs that enhance watershed conditions** (1.1.8, 1.1.19, 1.1.23 2.1.15, 3.1.7, 3.1.13, 4.1.4, 4.1.14, 4.2.7).

11. **Collect data and monitor trends** (1.1.11, 2.1.5, 2.1.9, 4.1.13).

12. **Educate stakeholders and the public on watershed management and improvement** (1.1.12, 1.1.19, 1.1.20, 2.1.6, 2.1.10, 2.1.15, 3.1.9, 3.1.13, 4.1.1, 4.1.6, 4.1.7, 4.1.14, 4.1.15, 4.2.2, 4.2.7).

Priority Geographic Area: North Fork Touchet

Focal Fish Species: summer steelhead, spring Chinook, bull trout

Limiting Factors and Life Stages Affected

Limiting Factor	Summer Steelhead	Spring Chinook	Bull Trout
Embeddedness	Egg incubation, fry, subyearling rearing	Fry, subyearling, overwintering, pre-spawning	Migration
LWD	Egg incubation, fry, subyearling rearing, yearling rearing	Fry, subyearling, overwintering, pre-spawning	Migration
Pools	Egg incubation, fry, subyearling rearing, yearling rearing	Fry, subyearling, overwintering, pre-spawning	Migration
Riparian function	Egg incubation, fry, subyearling rearing, yearling rearing	Fry, subyearling, overwintering, pre-spawning	Migration
Confinement	Egg incubation, fry, subyearling rearing, yearling rearing	Fry, subyearling, overwintering, pre-spawning	Migration
Summer maximum water temperature	Egg incubation, fry, subyearling rearing, yearling rearing	Subyearling, pre-spawning	Migration
Bedscour			N/A
Summer flow			N/A

Limiting Factors and Habitat Objectives

Limiting Factor	Quantitative Habitat Objective
Substrate Embeddedness	Continue downward trend in % embeddedness; assume related decrease in fines & turbidity*
LWD (pieces per channel width)	1 (NF Touchet 1-6)
Pools (% of stream surface area)	10 (NF Touchet 1-6)
Riparian function (% of max)	62 (NF Touchet 1-2)
Confinement (% of streambank length)	40 (NF Touchet 1-2)
Summer maximum water temperature	Less than 4 days >72F (NF Touchet 1-5)
Bedscour (cm)	Not an EDT-Identified Limiting Factor
Summer flow (flow ratings per EDT)	Not an EDT-Identified Limiting Factor

* A sampling regime to measure decreases in fines & turbidity would also be implemented.

Results of EDT Analysis

The EDT analysis demonstrates that achieving all of the quantitative habitat objectives identified for the North Fork Touchet River geographic priority area will result in:

North Fork Touchet River

EDT Results		Steelhead	Chinook
Diversity	Adults	0	0
	Juveniles	---	---
Productivity	Adults	0	0
	Juveniles	(2)	5
Abundance	Adults	26	30
	Juveniles	1,353	2,132
Capacity	Adults	47	46
	Juveniles	2,738	1,107

Management Strategies (not prioritized)

1. **Control noxious weed populations/restore perennial vegetation** (1.1.4, 5.1.7, 7.1.2).

2. **Instream flow management** (5.1.8, 5.1.18, 7.1.9, 7.1.12, 7.1.13, 7.1.14, 7.1.15, 7.7.16, 7.1.16, 7.1.18, 7.1.20, 7.1.21) (see Footnote 1 on page 18).

3. **Improve instream habitat with LWD and large boulders** (2.1.1, 2.1.2, 2.1.10, 2.1.11, 2.1.14, 3.1.3, 3.1.9, 6.1.2, 6.1.3, 6.1.11, 7.1.10).

4. **Improve riparian habitat** (1.1.1, 2.1.12, 3.1.6, 4.1.3, 4.1.5, 4.1.7, 4.1.15, 5.1.1, 5.1.6, 6.1.8, 7.1.1).

5. **Modify channel and floodplain function** (1.1.15, 2.1.3, 2.1.4, 3.1.5, 3.1.10, 4.1.11, 4.1.12, 4.2.4, 4.2.5, 4.2.6, 5.1.2, 5.1.16, 6.1.1, 6.1.9, 7.1.6, 7.1.7).

6. **Construct pool and riffle habitat using in-stream modifications** (3.1.1, 3.1.2, 3.1.8, 3.1.12).

7. **Maintain, relocate, or eliminate forest, public and private roads in riparian and sensitive areas** (1.1.5, 1.1.6, 2.1.8, 4.2.1, 5.1.5, 5.1.9, 6.1.6, 6.1.7, 7.1.5).

8. **Increase protective status of priority habitats** (4.1.6, 4.1.10, 5.1.12).

9. **Improve water quality instream systems** (1.1.2, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.14, 1.1.22, 2.1.13, 3.1.4, 5.1.10, 7.1.17).

10. **Uphold and strengthen land use regulations** (1.1.12, 1.1.13, 2.1.6, 2.1.7, 4.1.1, 4.1.2, 4.2.2, 4.2.3, 5.1.3, 5.1.4, 6.1.4, 6.1.5, 7.1.3, 7.1.4).

11. **Encourage participation in and seek additional funding for federal, state, tribal, and local programs that enhance watershed conditions** (1.1.8, 1.1.19, 1.1.23 2.1.15, 3.1.7, 3.1.13, 4.1.4, 4.1.14, 4.2.7, 6.1.10).

12. **Collect data and monitor trends** (1.1.11, 2.1.5, 2.1.9, 4.1.13, 5.1.17, 5.1.19, 7.1.19, 7.1.22).

13. **Educate stakeholders and the public on watershed management and improvement** (1.1.12, 1.1.19, 1.1.20, 2.1.6, 2.1.10, 2.1.15, 3.1.9, 3.1.13, 4.1.1, 4.1.6, 4.1.7, 4.1.14, 4.1.15, 4.2.2, 4.2.7, 5.1.3, 5.1.12, 5.1.18, 5.1.20, 6.1.4, 6.1.10, 6.1.11, 7.1.3, 7.1.10, 7.1.16, 7.1.20).

Priority Geographic Area: North Fork Touchet Tributaries (excluding Wolf)

Focal Fish Species: summer steelhead, spring Chinook, bull trout

Limiting Factors and Life Stages Affected

Limiting Factor	Summer Steelhead	Spring Chinook	Bull Trout
Embeddedness			N/A
LWD	Egg incubation, fry, subyearling rearing, overwintering		Migration
Pools	Egg incubation, fry, subyearling rearing, overwintering		Migration
Riparian function			N/A
Confinement			N/A
Summer maximum water temperature			N/A
Bedscour			N/A
Summer flow			N/A

Limiting Factors and Habitat Objectives

Limiting Factor	Quantitative Habitat Objective
Substrate Embeddedness	Not an EDT-Identified Limiting Factor
LWD (pieces per channel width)	1 (Rodgers): 2 (Jim, Lewis, Spangler)
Pools (% of stream surface area)	15
Riparian function (% of max)	Not an EDT-Identified Limiting Factor
Confinement (% of streambank length)	Not an EDT-Identified Limiting Factor
Summer maximum water temperature	Not an EDT-Identified Limiting Factor
Bedscour (cm)	Not an EDT-Identified Limiting Factor
Summer flow (flow ratings per EDT)	Not an EDT-Identified Limiting Factor

Results of EDT Analysis

The EDT analysis demonstrates that achieving all of the quantitative habitat objectives identified for the North Fork Touchet Tributaries (excluding Wolf) geographic priority area will result in:

North Fork Touchet Tributaries (excluding Wolf)

EDT Results		Steelhead	Chinook
Diversity	Adults	0	0
	Juveniles	---	---
Productivity	Adults	(0)	0
	Juveniles	(0)	0
Abundance	Adults	(0)	0
	Juveniles	(8)	0
Capacity	Adults	0	0
	Juveniles	15	0

Management Strategies (not prioritized)

1. **Improve instream habitat with LWD and large boulders** (2.1.1, 2.1.2, 2.1.10, 2.1.11, 2.1.14, 3.1.3, 3.1.9).

2. **Improve riparian habitat** (2.1.12, 3.1.6).

3. **Modify channel and floodplain function** (2.1.3, 2.1.4, 3.1.5, 3.1.10).

4. **Construct pool and riffle habitat using in-stream modifications** (3.1.1, 3.1.2, 3.1.8, 3.1.12).

5. **Maintain, relocate, or eliminate forest, public and private roads in riparian and sensitive areas** (2.1.8).

6. **Improve water quality instream systems** (2.1.13, 3.1.4).

7. **Uphold and strengthen land use regulations** (2.1.6, 2.1.7).

8. **Encourage participation in and seek additional funding for federal, state, tribal, and local programs that enhance watershed conditions** (2.1.15, 3.1.7, 3.1.13).

9. **Collect data and monitor trends** (2.1.5, 2.1.9).

10. **Educate stakeholders and the public on watershed management and improvement** (2.1.6, 2.1.10, 2.1.15, 3.1.9, 3.1.13).

Priority Geographic Area: Wolf Fork (mouth-Coates; plus Robinson & Coates)

Focal Fish Species: summer steelhead, spring Chinook, bull trout

Limiting Factors and Life Stages Affected

Limiting Factor	Summer Steelhead	Spring Chinook	Bull Trout
Embeddedness	Egg incubation, subyearling rearing, yearling rearing	Egg incubation, fry; overwintering, pre-spawning	Summer Rearing, Migration
LWD	Egg incubation, subyearling rearing, overwintering, yearling rearing	Egg incubation, fry; overwintering, pre-spawning	Summer Rearing, Migration
Pools	Egg incubation, subyearling rearing, overwintering, yearling rearing	Egg incubation, fry; overwintering, pre-spawning.	Summer Rearing, Migration
Riparian function	Egg incubation, subyearling rearing, overwintering, yearling rearing	Egg incubation, fry; overwintering, pre-spawning	Summer Rearing, Migration
Confinement	Egg incubation, subyearling rearing, overwintering, yearling rearing	Egg incubation, fry; overwintering, pre-spawning	Summer Rearing, Migration
Summer maximum water temperature	Egg incubation, subyearling rearing, yearling rearing	Pre-spawning	Summer Rearing, Migration
Bedscour	Egg incubation, subyearling rearing, overwintering, yearling rearing	Egg incubation, fry; overwintering	---
Summer flow			N/A

--- = Not a Limiting Factor for Bull Trout life histories.

Limiting Factors and Habitat Objectives

Limiting Factor	Quantitative Habitat Objective
Substrate Embeddedness	Continue downward trend in % embeddedness; assume related decrease in fines & turbidity*
LWD (pieces per channel width)	1
Pools (% of stream surface area)	15
Riparian function (% of max)	75
Confinement (% of streambank length)	10
Summer maximum water temperature	Less than 4 days >72F & Less than 12 days >61F
Bedscour (cm)	15
Summer flow (flow ratings per EDT)	Not an EDT-Identified Limiting Factor

* A sampling regime to measure decreases in fines & turbidity would also be implemented.

Results of EDT Analysis

The EDT analysis demonstrates that achieving all of the quantitative habitat objectives identified for the Wolf Fork(mouth Coates; plus Robinson & Coates) geographic priority area will result in:

Wolf Fork(mouth Coates; plus Robinson & Coates)

EDT Results		Steelhead	Chinook
Diversity	Adults	0	0
	Juveniles	---	---
Productivity	Adults	(0)	0
	Juveniles	(10)	6
Abundance	Adults	46	0
	Juveniles	5,473	0
Capacity	Adults	861,661	0
	Juveniles	2,588	0

Management Strategies (not prioritized)

1. **Control noxious weed populations/restore perennial vegetation** (1.1.4, 5.1.7).

2. **Instream flow management** (5.1.8, 5.1.18).

3. **Improve instream habitat with LWD and large boulders** (2.1.1, 2.1.2, 2.1.10, 2.1.11, 2.1.14, 3.1.3, 3.1.9, 6.1.2, 6.1.3, 6.1.11).

4. **Improve riparian habitat** (1.1.1, 2.1.12, 3.1.6, 4.1.3, 4.1.5, 4.1.7, 4.1.15, 5.1.1, 5.1.6, 6.1.8).

5. **Modify channel and floodplain function** (1.1.15, 2.1.3, 2.1.4, 3.1.5, 3.1.10, 4.1.11, 4.1.12, 4.2.4, 4.2.5, 4.2.6, 5.1.2, 5.1.16, 6.1.1, 6.1.9).

6. **Construct pool and riffle habitat using in-stream modifications** (3.1.1, 3.1.2, 3.1.8, 3.1.12).

7. **Maintain, relocate, or eliminate forest, public and private roads in riparian and sensitive areas** (1.1.5, 1.1.6, 2.1.8, 4.2.1, 5.1.5, 5.1.9, 6.1.6, 6.1.7).

8. **Increase protective status of priority habitats** (4.1.6, 4.1.10, 5.1.12).

9. **Improve water quality instream systems** (1.1.2, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.14, 1.1.22, 2.1.13, 3.1.4, 5.1.10).

10. **Uphold and strengthen land use regulations** (1.1.12, 1.1.13, 2.1.6, 2.1.7, 4.1.1, 4.1.2, 4.2.2, 4.2.3, 5.1.3, 5.1.4, 6.1.4, 6.1.5).

11. **Encourage participation in and seek additional funding for federal, state, tribal, and local programs that enhance watershed conditions** (1.1.8, 1.1.19, 1.1.23 2.1.15, 3.1.7, 3.1.13, 4.1.4, 4.1.14, 4.2.7, 6.1.10).

12. **Collect data and monitor trends** (1.1.11, 2.1.5, 2.1.9, 4.1.13, 5.1.17, 5.1.19).

13. **Educate stakeholders and the public on watershed management and improvement** (1.1.12, 1.1.19, 1.1.20, 2.1.6, 2.1.10, 2.1.15, 3.1.9, 3.1.13, 4.1.1, 4.1.6, 4.1.7, 4.1.14, 4.1.15, 4.2.2, 4.2.7, 5.1.3, 5.1.12, 5.1.18, 5.1.20, 6.1.4, 6.1.10, 6.1.11).

Priority Geographic Area: Wolf Fork (Coates to access limit; plus Whitney)

Focal Fish Species: summer steelhead, spring Chinook, bull trout

Limiting Factors and Life Stages Affected

Limiting Factor	Summer Steelhead	Spring Chinook	Bull Trout
Embeddedness			N/A
LWD	Egg incubation, subyearling rearing, overwintering, subyearling rearing	Egg incubation, fry; overwintering, pre-spawning	Migration
Pools	Egg incubation, subyearling rearing, overwintering, subyearling rearing	Egg incubation, fry; overwintering, pre-spawning	Migration
Riparian function	Egg incubation, subyearling rearing, overwintering, subyearling rearing	Egg incubation, fry; overwintering, pre-spawning	Migration
Confinement	Egg incubation, subyearling rearing, overwintering, subyearling rearing	Egg incubation, fry; overwintering, pre-spawning	Migration
Summer maximum water temperature			N/A
Bedscour	Egg incubation, fry, subyearling rearing, overwintering	Egg incubation, fry; overwintering	---
Summer flow			N/A

--- = Not a Limiting Factor for Bull Trout life histories.

Limiting Factors and Habitat Objectives

Limiting Factor	Quantitative Habitat Objective
Substrate Embeddedness	Not an EDT-Identified Limiting Factor
LWD (pieces per channel width)	1 (Wolf 3)
Pools (% of stream surface area)	25
Riparian function (% of max)	75
Confinement (% of streambank length)	15
Summer maximum water temperature	Not an EDT-Identified Limiting Factor
Bedscour (cm)	$\leq$14
Summer flow (flow ratings per EDT)	Not an EDT-Identified Limiting Factor

* A sampling regime to measure decreases in fines & turbidity would also be implemented.

Results of EDT Analysis

The EDT analysis demonstrates that achieving all of the quantitative habitat objectives identified for the Wolf Fork (Coates to access limit; plus Whitney) geographic priority area will result in:

Wolf Fork (Coates to access limit; plus Whitney)

EDT Results		Steelhead	Chinook
Diversity	Adults	0	0
	Juveniles	---	---
Productivity	Adults	(0)	0
	Juveniles	(0)	0
Abundance	Adults	1	0
	Juveniles	(102)	0
Capacity	Adults	(1)	0
	Juveniles	(57)	0

Management Strategies (not prioritized)

3. **Improve instream habitat with LWD and large boulders** (2.1.1, 2.1.2, 2.1.10, 2.1.11, 2.1.14, 3.1.3, 3.1.9, 6.1.2, 6.1.3, 6.1.11).

4. **Improve riparian habitat** (2.1.12, 3.1.6, 4.1.3, 4.1.5, 4.1.7, 4.1.15, 6.1.8).

5. **Modify channel and floodplain function** (2.1.3, 2.1.4, 3.1.5, 3.1.10, 4.1.11, 4.1.12, 4.2.4, 4.2.5, 4.2.6, 6.1.1, 6.1.9).

6. **Construct pool and riffle habitat using in-stream modifications** (3.1.1, 3.1.2, 3.1.8, 3.1.12).

7. **Maintain, relocate, or eliminate forest, public and private roads in riparian and sensitive areas** (2.1.8, 4.2.1, 6.1.6, 6.1.7).

8. **Increase protective status of priority habitats** (4.1.6, 4.1.10).

9. **Improve water quality instream systems** (2.1.13, 3.1.4).

10. **Uphold and strengthen land use regulations** (2.1.6, 2.1.7, 4.1.1, 4.1.2, 4.2.2, 4.2.3, 6.1.4, 6.1.5).

11. **Encourage participation in and seek additional funding for federal, state, tribal, and local programs that enhance watershed conditions** (2.1.15, 3.1.7, 3.1.13, 4.1.4, 4.1.14, 4.2.7, 6.1.10).

12. **Collect data and monitor trends** (2.1.5, 2.1.9, 4.1.13).

13. **Educate stakeholders and the public on watershed management and improvement** (2.1.6, 2.1.10, 2.1.15, 3.1.9, 3.1.13, 4.1.1, 4.1.6, 4.1.7, 4.1.14, 4.1.15, 4.2.2, 4.2.7, 6.1.4, 6.1.10, 6.1.11).

Focal Habitat Summary Templates

Focal Habitat: Ponderosa Pine

Limiting Factors

- Timber harvesting has reduced the amount of old growth forest and associated large diameter trees and snags.
- Changes in land use for urban, residential, and agricultural purposes have contributed to loss and degradation of properly functioning ecosystems.
- Fire suppression/exclusion has contributed towards habitat degradation, particularly declines in characteristic herbaceous and shrub understory from increased density of small shade-tolerant trees. There is high risk of loss of remaining ponderosa pine overstories from stand-replacing fires due to high fuel loads in densely stocked understories.
- Overgrazing has resulted in loss of properly functioning conditions, including recruitment of sapling trees and modification of understory vegetation.
- Invasion of exotic plants has altered understory conditions and increased fuel loads.
- Fragmentation of remaining tracts has negatively impacted species with large area requirements.
- Landscapes in proximity to agricultural, residential, and recreational areas may be subject to high levels of human disturbance and disproportionately support non-native species that displace and/or impact native species productivity, e.g. nest competitors (European starlings and house sparrows), nest parasites (brown headed cowbird), and domestic predators (cats and dogs).
- Spraying insects that are detrimental to forest health may have negative ramifications on beneficial moths, butterflies, and non-focal bird species.

Focal Species and Quantitative Habitat Objectives for Ponderosa Pine

Focal Species	Quantitative Habitat Objective
White-headed woodpecker	• >10 trees/acre >21" DBH w/ >2 trees >31" DBH • 10-50 percent canopy closure • >1.4 snags/acre >8" DBH w/>50% >25 DBH
Flammulated owl	• >1 snag/acre >12" DBH and >=6' tall • >8 trees/acre >21" DBH • At least 1 dense, brushy thicket and grassy opening
Rocky Mountain Elk	• Canopy closure 40-70% with >40 ft tall coniferous trees

Management Strategies (not prioritized)

PA1. Identify functioning ponderosa pine habitats, corridors, and linkages classified as ECA Class 1 and 2 for protection.

PA2. Provide information, education, and outreach to protect habitats.

PA3. Use easements, leases, cooperative agreements, and voluntary acquisitions (Oregon only) to protect habitat (long-term protection strategies are preferred over short-term).

PA4. Uphold existing land use and environmental regulations (e.g. critical area ordinances, etc.).

PA5. Identify inadequate land and water use regulations. Work to strengthen existing regulations or refine regulations to improve protection of habitats.

PA6. Complete a more detailed assessment of focal species, focal species assemblages, and obligate species needs to determine their habitat requirements (quantity and quality). Assessment/research would ultimately determine what acreage and distribution of functional habitat is necessary to achieve habitat recovery in the context of focal species needs.

PB1. Identify non-functioning ponderosa pine habitats, corridors, and linkages within ECA Class 1 and 2 areas.

PB2. Identify sites that are currently not in ponderosa pine habitat that have the potential to be of high ecological value, if restored.

PB3. Provide information, outreach, and coordination with public and private land managers on the use of prescribed fire and silviculture practices to restore and conserve habitat functionality.

PB4. Enter into cooperative projects and management agreements with Federal, State, Tribal, and private landowners to restore and conserve habitat function.

PB5. Assist in long-term development and implementation of a Southeast Washington and Northeast Oregon Comprehensive Weed Control Management Plan in cooperation with local weed boards.

PB6. Fund noxious weed control projects to improve habitat function.

PB7. Work with county, state, and federal agencies and private landowners to develop livestock grazing programs on federal and private lands that do not contribute to the invasion of noxious weeds or negatively alter understory vegetation.

PB8. Uphold existing land use and environmental regulations (e.g. critical area ordinances, etc.).

PB9. Identify inadequate land and water use regulations. Work to strengthen existing regulations or refine regulations to improve protection of habitats.

PB10. Identify functioning ponderosa pine habitats, corridors and linkages within protected areas (GAP) and areas of private land that meet one or more of the following conditions: directly contribute to the restoration of aquatic focal species, have high ecological function, are

adjacent to public or other protected land, contain rare or unique plant communities, have threatened, endangered, or sensitive species habitat or populations, or provide connectivity between high quality habitat areas

PB20. See PA Strategies 2 through 6.

PD1. Identify non functioning ponderosa pine habitats, corridors and linkages within protected areas (GAP) and areas of private land that meet one or more of the following conditions: directly contribute to the restoration of aquatic focal species, have high ecological function, are adjacent to public or other protected land, contain rare or unique plant communities, have threatened, endangered, or sensitive species habitat or populations, or provide connectivity between high quality habitat areas.

PD2. See PB Strategies 2 through 7.

Focal Habitat: Shrub-steppe

Limiting Factors

- Extensive permanent habitat conversions of shrub-steppe habitats resulting in fragmentation of remaining tracts.
- Changes in land use for urban, residential, and agricultural purposes have contributed to loss and degradation of properly functioning ecosystems.
- Degradation of habitat from overgrazing and invasion of exotic plant species.
- Fire management, either suppression or over-use, and wildfires.
- Invasion and seeding of crested wheatgrass and other introduced plant species, which reduces wildlife habitat quality and/or availability.
- Loss and reduction of cryptogrammic crusts, which help maintain the ecological integrity of grassland communities.
- Conversion of CRP lands back to cropland.
- Landscapes in proximity to agricultural, residential, and recreational areas may be subject to high levels of human disturbance and disproportionately support non-native species that displace and/or impact native species productivity, e.g. nest competitors (European starlings and house sparrows), nest parasites (brown headed cowbird), and domestic predators (cats and dogs).

Focal Species and Quantitative Habitat Objectives for Shrub-Steppe

Focal Species	Quantitative Habitat Objective
Sage thrasher	• Sagebrush cover 5-20% • Sagebrush height > 31 inches • Herbaceous cover 5-20% • Other shrub cover >10% • Non-native herbaceous cover <10%
Brewer's sparrow	• Sagebrush cover 10-30% • Mean sagebrush height > 25 inches • Herbaceous cover >10% • Open ground >20% • Non-native herbaceous cover <10%>
Mule deer	• 30-60% canopy cover of preferred shrubs <5 ft tall • number of preferred shrub species >3 • mean height of shrubs >3 feet • herbaceous cover >30%

Management Strategies (not prioritized)

SA1 Identify functioning interior shrub-steppe habitats, corridors, and linkages classified as ECA Class 1 and 2 for protection.

SA2 Provide information, education, and outreach to protect habitats.

SA3 Use easements, leases, cooperative agreements, and voluntary acquisitions (Oregon only) to protect habitats (long-term protection strategies are preferred over short-term).

SA4 Uphold existing land use and environmental regulations (e.g. critical area ordinances, etc.).

SA5 Identify inadequate land and water use regulations. Work to strengthen existing regulations or refine regulations to improve protection of habitats.

SA6 Complete a more detailed assessment of focal species, focal species assemblages, and obligate species needs to determine their habitat requirements (quantity and quality). Assessment/research would ultimately determine what acreage and distribution of functional habitat is necessary to achieve habitat recovery in the context of focal species needs.

SB1 Identify non-functioning shrub-steppe habitats, corridors, and linkages within ECA Class 1 and 2 areas.

SB2 Identify sites that are currently not in shrub-steppe habitat that have the potential to be of high ecological value, if restored.

SB3 Provide information, outreach and-coordination with public and private land managers on management practices and the use of prescribed fire to restore and conserve habitat function.

SB4 Enter into cooperative projects and management agreements with Federal, State, Tribal, and private landowners to restore and conserve habitat function.

SB5 Assist in long-term development and implementation of a Southeast Washington and Northeast Oregon Comprehensive Weed

SB6 Control Management Plan in cooperation with local weed boards.

SB7 Fund noxious weed control projects to improve habitat function.

SB8 Work with county, state, federal agencies, and private landowners to develop livestock grazing programs on public and private lands that do not contribute to the invasion of noxious weeds or negatively alter the habitat.

SB9 Restore viable populations of obligate wildlife species where possible.

SB10 Work with USDA programs (e.g. CRP) to maintain and enhance habitat quality.

SB11 Uphold existing land use and environmental regulations (e.g. critical area ordinances, etc.).

SB12 Identify inadequate land and water use regulations. Work to strengthen existing regulations or refine regulations to improve protection of habitats.

SC1 Identify functioning shrub-steppe habitats, corridors, and linkages within protected areas (GAP) and areas of private land that meet one or more of the following conditions: directly contribute to the restoration of aquatic focal species, have high ecological function, are adjacent to public or other protected land, contain rare or unique plant communities, have threatened, endangered, or sensitive species habitat or populations, or provide connectivity between high quality habitat areas.

SC2 See SA Strategies 2 through 6.

SD1 Identify non functioning shrub-steppe habitats, corridors, and linkages within protected areas (GAP) and areas of private land that meet one or more of the following conditions: directly contribute to the restoration of aquatic focal species, have high ecological function, are adjacent to public or other protected land, contain rare or unique plant communities, have threatened, endangered, or sensitive species habitat or populations, or provide connectivity between high quality habitat areas.

SD2 See SB Strategies 2 through 8.

SE1 Encourage landowner participation in existing federal, state, tribal, and local programs that enhance watershed health (e.g. CRP , CREP, Wetlands Reserve Program, EQIP, Partners for Fish and Wildlife, WDFW Landowner Incentive Program, Conservation Security Program, etc.).

SE2 Seek additional funding sources to assist individual landowner to establish and maintain productive habitat. Prioritization should be given for landowners who have already reached their payment limitations in other programs.

SE3 Seek funding sources to develop programs consistent with the goals of CRP, EQIP, and CREP in those areas where site conditions do not meet these program requirements.

SE4 Encourage landowners to convert land to more functional plant communities especially during opportunities such as re-enrollment of CRP

SE5 Enroll areas with documented wildlife damage and areas directly adjacent to high-quality wildlife habitat into CRP using cover practices 2, 3, and/or 4.

Focal Habitat: Eastside (Interior) Riparian Wetland

Limiting Factors

- Loss of habitat due to numerous factors including riverine recreational developments, inundation from impoundments, cutting and spraying of riparian vegetation, etc.
- Alteration of natural hydrology due to diking, channelization, etc. resulting in reduced stream flows, reduction of overall area and extent of riparian habitat, streambank stabilization, and loss of vegetative structure, narrowed stream channels.
- Habitat alteration from 1) hydrological diversions, dams, and control of natural flooding regimes resulting in reduced stream flows and reduction of overall area of riparian habitat, loss of riparian vegetative structure, and lack of recruitment of young cottonwoods, ash, willows, etc., and 2) stream bank stabilization which narrows stream channel, reduces the flood zone, and reduces extent of riparian vegetation.
- Habitat degradation from livestock overgrazing which can widen channels, raise water temperatures, reduce understory cover, etc.
- Habitat degradation from conversion of native riparian shrub and herbaceous vegetation to invasive exotics.
- Fragmentation and loss of large tracts necessary for area-sensitive species.
- Landscapes in proximity to agricultural, residential, and recreational development may be subject to high levels of human disturbance and disproportionately support non-native species that displace and/or impact native species productivity, e.g. nest competitors (European starlings and house sparrows), nest parasites (brown headed cowbird), and domestic predators (cats and dogs).
- Recreational disturbances (e.g., ORVs), particularly during nesting season, and particularly in high-use recreation areas.

Focal Species and Quantitative Habitat Objectives for Eastside (Interior) Riparian Wetland

Focal Species	Quantitative Habitat Objective
Yellow warbler	• 60-80% deciduous shrub cover (>50% comprised of hydrophytic shrubs), shrub height >3 feet
American Beaver	• 40-60% tree/shrub canopy closure • Trees <6" DBH (15cm); shrub height >=6.6 feet • Stream channel gradient <=6% with little to no fluctuation • Woody vegetation <=328 feet from water
Great blue heron	• Grove of trees >= 1 acre in area over water or <= 800 feet from water • Disturbance-free zone around potential nest site of >800 feet on land or >500 feet on water • Foraging zone >=300 feet from human activities or 150 feet from roads

Management Strategies (not prioritized)

PA1. Uphold existing land use regulations and instream work regulations (e.g. critical area ordinances, HPA requirements, DSL requirements, etc.) that limit channel, floodplain, and riparian area impacts and educate the public regarding their implementation.

PA2. Identify jurisdictions with inadequate land use regulations, and work to strengthen existing or refine regulations that better protect streams from floodplain development that leads to loss or degradation of riparian vegetation on the mainstem and tributaries

PA3. Improve the extent, structure, and function of riparian buffers to increase their ecological function through vegetation planting (native species preferred), selected livestock fencing, and similar practices, including tributaries (perennial and intermittent streams) that contribute to priority areas. (also see Hypothesis MC1)

PA4. Seek additional funding sources consistent with current CREP guidelines to increase individual landowner enrollment in programs that achieve similar goals.

PA5. Adjust seasonal timing of livestock grazing within riparian areas to minimize soil compaction, minimize erosion, and maintain or enhance riparian vegetation.

PA6. Protect high quality riparian habitats and riparian habitat in areas of high development pressure through land acquisition (Oregon only), fee title acquisitions (Oregon only), conservation easements, long-term leases, land exchanges, public education, promotion of BMPs, promotion of alternative grazing strategies and the installation of alternative forms of water for livestock, where applicable.

PA7. Increase understanding of the importance of riparian habitat through education and outreach programs for both the general public and road maintenance personnel.

PA8. Continue development of TMDL Clean-up Plans, Oregon Department of Agriculture Water Quality Plan and other watershed scale efforts to remedy local factors that lead to increased nutrient loading.

PA9. Develop a short-term mitigation strategy to address loss of marine-derived nutrients to the terrestrial/inland environment in areas where natural inputs are limited.

PA10. Increase size and connectivity of existing patches of riparian habitat through restoration efforts, and conservation easements and long-term leases, acquisition efforts (Oregon only), where applicable.

PA11. Wherever feasible, use passive and active approaches to allow stream channels to develop and flood naturally, while protecting private and public property rights and uses.

PA12. Restore floodplain connectivity and decrease entrenchment by reducing confinement (see Objective 4.2) and/or elevating the streambed through natural or mechanical methods.

PA13. Identify relative inputs of tributaries (perennial and intermittent streams) to enhance overall riparian function.

PA14. Increase landowner participation in federal, state, tribal, and local programs that enhance watershed conditions (e.g. CRP, CREP, Wetlands Reserve Program, EQIP, CTUIR habitat programs, Landowner Incentive Program, Partners for Fish & Wildlife, Conservation Security Program, etc.)

PA15. Where appropriate and feasible, manage beaver populations to support riparian habitat function, and educate the public regarding benefits of beaver.

PA16. Decommission, modify or relocate (i.e. setback) roads, low-priority dikes, bridges, culverts, other structures and land uses to facilitate greater floodplain accessibility while protecting private and public property rights and uses.

PA17. Uphold existing land use regulations and instream work regulations (e.g. critical area ordinances, HPA requirements, DSL requirements, etc.) that limit channel, floodplain, and riparian area impacts and educate the public regarding their implementation.

PA18. Identify jurisdictions with inadequate land use regulations, and work to strengthen existing or refine regulations that better protect streams from floodplain development that leads to confinement.

PA19. Complete a detailed inventory of confinement throughout the subbasin with cooperation of all stakeholders, including prioritization of dikes based upon their function to protect infrastructure and private property, where possible.

PA20. Wherever feasible, use passive and active approaches to allow stream channels to develop and flood naturally, while protecting private and public property rights and uses.

PA21. Restore floodplain connectivity and decrease entrenchment by reducing confinement and/or elevating the streambed through natural or mechanical methods (see Objective MC4.1).

PA22. Increase landowner participation in federal, state, tribal, and local programs that enhance watershed conditions (e.g. CRP, CREP, Wetlands Reserve Program, EQIP, CTUIR habitat programs, Landowner Incentive Program, Partners for Fish & Wildlife, Conservation Security Program, etc.)

Focal Habitat: Eastside (Interior) Grassland

Limiting Factors

- Extensive permanent habitat conversions of grassland habitats resulting in fragmentation of remaining tracts.
- Changes in land use for urban, residential, and agricultural purposes have contributed to loss and degradation of properly functioning ecosystems.
- Degradation of habitat from overgrazing and invasion of exotic plant species.
- Fire management, either suppression or over-use, and wildfires.
- Invasion and seeding of crested wheatgrass and other introduced plant species, which reduces wildlife habitat quality and/or availability.
- Loss and reduction of cryptogrammic crusts, which help maintain the ecological integrity of grassland communities.
- Conversion of CRP lands back to cropland.
- Landscapes in proximity to agricultural, residential, and recreational areas may be subject to high levels of human disturbance and disproportionately support non-native species that displace and/or impact native species productivity, e.g. nest competitors (European starlings and house sparrows), nest parasites (brown headed cowbird), and domestic predators (cats and dogs).

Focal Species and Quantitative Habitat Objectives for Eastside (Interior) Grassland

Focal Species	Quantitative Habitat Objective
Grasshopper sparrow	• Native bunchgrass cover >15% and comprising >60% of total grass cover • Bunchgrass >10" in height • Native shrub cover <10% • Grass-forb cover >90% • Shrub cover <10% • Variable grass heights between 6-18"
Sharp-tailed grouse	• Mean VOR >6" (1.5dm) • >40% grass cover • >30% forb cover • <10% introduced herbaceous cover (noxious weeds and/or highly invasive species such as cheatgrass) • multi-structure fruit/bud/catkin producing deciduous shrubs (snowberry, rose, waterbirch, aspen, chokecherry, etc.)

Management Strategies (not prioritized)

GA1 Identify functioning interior grassland habitats, corridors, and linkages classified as ECA Class 1 and 2 for protection.

GA2 Provide information, education, and outreach to protect habitats.

GA3 Use easements, leases, cooperative agreements, and voluntary acquisitions (Oregon only) to protect habitats (long-term protection strategies are preferred over short-term).

GA4 Uphold existing land use and environmental regulations (e.g. critical area ordinances, etc.).

GA5 Identify inadequate land and water use regulations. Work to strengthen existing regulations or refine regulations to improve protection of habitats.

GA6 Complete a more detailed assessment of focal species, focal species assemblages, and obligate species needs to determine their habitat requirements (quantity and quality). Assessment/research would ultimately determine what acreage and distribution of functional habitat is necessary to achieve habitat recovery in the context of focal species needs.

GB1 Identify non-functioning interior grassland habitats, corridors, and linkages within ECA Class 1 and 2 areas.

GB2 Identify sites that are currently not in grassland habitat that have the potential to be of high ecological value, if restored.

GB3 Provide information, outreach and-coordination with public and private land managers on management practices and the use of prescribed fire to restore and conserve habitat function.

GB4 Enter into cooperative projects and management agreements with federal, state, tribal, and private landowners to restore and conserve habitat function.

GB5 Assist in long-term development and implementation of a Southeast Washington and Northeast Oregon Comprehensive Weed Control Management Plan in cooperation with local weed boards.

GB6 Fund noxious weed control projects to improve habitat function.

GB7 Work with county, state, and federal agencies and private landowners to develop livestock grazing programs on public and private lands that do not contribute to the invasion of noxious weeds or negatively alter habitats.

GB8 Restore viable populations of obligate wildlife species where possible.

GB9 Work with USDA programs (e.g. CRP) to maintain and enhance habitat quality.

GB10 Uphold existing land use and environmental regulations (e.g. critical area ordinances, etc.).

GB11 Identify inadequate land and water use regulations. Work to strengthen existing regulations or refine regulations to improve protection of habitats.

GC1 Identify functioning interior grassland habitats, corridors, and linkages within protected areas (GAP) and areas of private land that meet one or more of the following conditions: directly contribute to the restoration of aquatic focal species, have high ecological function, are adjacent to public or other protected land, contain rare or unique plant communities, have threatened, endangered, or sensitive species habitat or populations, or provide connectivity between high quality habitat areas.

GC2 See GA Strategies 2 through 6.

GD1 Identify non functioning interior grassland habitats, corridors, and linkages within protected areas (GAP) and areas of private land that meet one or more of the following conditions: directly contribute to the restoration of aquatic focal species, have high ecological function, are adjacent to public or other protected land, contain rare or unique plant communities, have threatened, endangered, or sensitive species habitat or populations, or provide connectivity between high quality habitat areas.

GD2 See GB Strategies 2 through 8.

GE1 Encourage landowner participation in existing federal, state, tribal, and local programs that enhance watershed health (e.g. CRP , CREP, Wetlands Reserve Program, EQIP, Partners for Fish & Wildlife, WDFW Landowner Incentive Program, Conservation Security Program, etc.).

GE2 Seek additional funding sources to assist individual landowner to establish and maintain productive habitat. Prioritization should be given for landowners who have already reached their payment limitations in other programs.

GE3 Seek funding sources to develop programs consistent with the goals of CRP , EQIP, and CREP in those areas where site conditions do not meet these program requirements.

GE4 Encourage landowners to convert land to more functional plant communities especially during opportunities such as re-enrollment of CRP.

GE5 Enroll areas with documented wildlife damage and areas directly adjacent to high-quality wildlife habitat into CRP using cover practices 2,3, and/or 4.

1.5 SUMMARY OF THE PUBLIC PARTICIPATION PROCESS

The Walla Walla Subbasin Plan Fall 2004 Revision Process included several opportunities for public involvement:

- Public comment period for the draft Addendum Package, October 15 – October 22, 2004
- Public Meeting: WWPU and WWBWC Joint Meeting, October 18, 2004
- Public comment period for the final draft Addendum Package, November 3 – November 12, 2004
- Public Meeting: WWBWC, November 15, 2004
- Public Meeting: WWPU, November 16, 2004

A first draft and final draft of the Addendum Package was posted on the Internet for public review before the public meetings took place. Drafts were also available on CD and in hard copy from the WWBWC and WWPU offices by request.

Agendas and written summaries of the public meetings are included in Appendix AD6 of this document. Brief summaries of the meetings are provided below.

Summary of Comments from the Joint Meeting of the WWPU and WWBWC Joint Meeting, October 18, 2004:

A number of questions were raised during the meeting pertaining primarily to the EDT, Prioritization, and Linkages sections of the addendum document. The significant action items that resulted from these questions were:

- Clarify prioritization criterion of addressing imminent threats lower in the basin before those higher in the basin: identify that exceptions may occur to address bull trout and dry stream reaches
- Incorporate terrestrial information into prioritization and linkages sections
- Make it clear that the three values listed in the vision statement are co-equal and not listed in order of importance

Written comments were received from the Walla Walla Watershed Alliance, City of Walla Walla, and Brian Wolcott from the WWBWC. These comments ranged in type from editorial to substantive comments and were incorporated where appropriate and feasible given the time and scope constraints on the addendum package

Comments from WWBWC meeting on November 15, 2004

There were a number of questions about the specifics of the EDT modeling process and its outputs. The most controversial topic raised during the meeting was whether or not to include the EDT results from modeling the Rainwater project because it was the only project-specific alternative that was modeled. It was noted that several opportunities were provided to submit other project-specific alternatives to be modeled, but none were proposed. Ultimately it was decided to include the Rainwater modeling results in the addendum with the understanding that inclusion alone did not confer any priority for funding of this or any other project in future prioritization processes.

Written comments were received on the November 3rd Final Draft Addendum Document from the WWBWC, WDFW, the City of Walla Walla, and several other citizens and local organizations. Comments fell into three categories and were addressed as follows:

1. Editorial Comments: These were incorporated into the Addendum Document as appropriate.

2. Technical Comments: These comments were discussed and resolved at the November 17, 2004 Subbasin Planning Team (SPT) meeting held in Walla Walla, Washington.

3. Substantive Issues: These comments were discussed at the SPT meeting on November 15, 2004 and suggested options for resolution identified. The comments and potential resolutions were presented and agreed to at the November 15 and 16 public meetings.

A table outlining the substantive issues and their resolutions appears at the end of Appendix AD6 in this Addendum Document.

Comments from WWPU meeting on November 16, 2004

In addition to questions raised about EDT modeled scenarios, there was discussion pertaining to dry stream reaches in the Little Walla Walla system and discussion relating to the issues and complexities inherent in addressing fish passage in the context of the Mill Creek Flood Control Channel. Written comments and their resolutions were presented and discussed in a similar manner to the WWBWC meeting on the previous night (see Appendix AD6).

2. CONSIDERATION OF PUBLIC AND AGENCY COMMENTS

2.1 COMMENT/RESPONSE SUMMARY

The May 2004 version of the Walla Walla Subbasin Plan was submitted to the NPCC on May 28, 2004. During the summer of 2004, the NPCC held a public review on the plan and written comments were received. Comments to the aquatic portion of the subbasin plan consisted of both editorial changes and more substantive content revisions or additions. Common themes included:

- Inclusion of more detailed bull trout information
- Prioritization of subbasin strategies
- Consolidation of RM&E aquatic plans
- More detailed numbers on fish populations
- More detailed section on out-of-subbasin effects
- More detailed information on terrestrial habitats and focal species
- Clarification on the meaning of habitat protection status tables

These comments have been addressed individually in Appendix AD2 of this Addendum Package. Subbasin planners addressed these comments to the extent possible within the established time and scope constraints for the Fall 2004 Subbasin Planning Revision Process. Some of these substantive comments have been addressed within this Addendum Package. A number of editorial comments will be incorporated into a newer version of the subbasin plan, which will be made available electronically in November 2004. Finally, some of the comments received will have to be addressed in future versions of the subbasin plan, when additional time and resources are available.

2.2 RESEARCH, MONITORING, AND EVALUATION PLAN SUMMARY

The Walla Walla Subbasin is home to a diverse set of natural resources, user groups, and management entities that interact to produce a dynamic ecological, social, and economic landscape. Recently the subbasin has become a target of a comprehensive restoration program focusing on fish passage, flow augmentation, habitat restoration, and artificial production. Considerable Bonneville Power Administration (BPA) and matching resources have been focused on the system, and plans are in place to continue these restoration efforts. The Walla Walla scientific community is responsible for studying this complex system, informing management of its status, and providing technical recommendations to managers and planners. In addition, the scientific community disseminates results to the public and the scientific community at large, collaborates with academic and government research projects, and participates in adaptive research, monitoring, and evaluation planning. As restoration efforts continue to increase in the subbasin, so do the magnitude and complexity of critical management uncertainties.

The Walla Walla RM&E plan was developed to provide a conceptual framework for cooperative RM&E activities in the subbasin. The plan begins with an outline of current management uncertainties associated with the biological habitat objectives, artificial production programs, and various restoration projects described in the subbasin plan. This outline is followed by a discussion of the research, monitoring, and evaluation context and general experimental design for the subbasin. Next is a preliminary research agenda for the subbasin where critical uncertainty and basic science questions (Tier 3) are described. This is followed by a similar description of the monitoring and evaluation objectives that address status and trend, comparative performance, and action effectiveness (Tier 1 and Tier 2) monitoring requirements for the subbasin. These are followed by a section outlining some of the detailed methods that will be used in the subbasin, a discussion outlining the evaluation process, and a brief set of summary conclusions.

This plan represents considerable progress in RM&E coordination and collaboration in the subbasin, and is suitable for technical review by the public, Independent Scientific Review Panel (ISRP), NPCC, and BPA. It is by no means a final draft plan, and contains several gaps and shortcomings. The co-managers worked diligently to revise and edit the plan for submission with the Walla Walla Subbasin Plan Addendum, but were unable to complete several sections. The most notable problems with this draft plan are as follows:

1. WDFW did not have sufficient time or resources to contribute a detailed research agenda. In part this is due to parallel but unsynchronized planning requirements associated with Washington State Salmon Recovery Planning.

2. The co-managers were unable to fully revise methods associated with several RM&E objectives, including the sections on spawner, juvenile fish, and habitat surveys. In part, this is due to a lack of consensus regionally regarding the appropriate survey techniques for various stream types, species, and life stages.

3. RM&E activities associated with two artificial production programs have yet to be finalized. These activities include those associated with the CTUIR sponsored Walla Walla Spring Chinook Hatchery Master Plan, and those associated with WDFW sponsored endemic steelhead harvest mitigation program.

These three shortcomings are easily overcome and will be addressed in coming months. The sequence for revisions of the RM&E plan is as follows. Edits and comments on this draft plan will be received early in 2005. The Walla Walla Hatchery Master Plan and corresponding RM&E requirements will be submitted

to NPPC for review, with comments and edits to follow. The Walla Walla scientific community will host a series of RM&E planning workshops during the first quarter of 2005 to finalize protocols and experimental designs associated with baseline monitoring activities. These workshops will produce revisions to the RM&E plan. These additions will be compiled and incorporated into a final draft RM&E plan, and will be submitted to ISRP, NPCC, and BPA for review during the 2nd quarter of 2005, as part of the 2006 provincial proposal review process, and as part of Washington State Salmon Recovery Planning due to the National Oceanic and Atmospheric Administration (NOAA) in June of 2005. A final RM&E plan will be submitted for public record during the 4th quarter of 2005.

The co-managers are pleased with the continued efforts to increase coordination, cooperation, and collaboration in the Walla Walla scientific community. Many of these activities take place in the context of the TWG: a semi-formal bi-annual meeting of regional technical experts. In the Walla Walla Subbasin, the TWG is supported by the co-management agencies, but receives no formal support for collaboration. One important step toward increased collaboration in the subbasin may be the establishment of a formal cooperative fisheries research unit and fisheries science center within the Walla Walla Subbasin. This cooperative research group would be responsible for coordination of research activities associated with aquatic resources in the region, collaborative results dissemination, and careful RM&E planning by the co-management agencies. Establishing such a group may be as simple as supporting a part-time TWG coordinator, or could be as complex as the establishment of a formal coordinating program at an academic or non-profit institution. The utility and structure of such a collaboration will be part of the discussions that take place during RM&E planning meetings in the first quarter of 2005.

Regardless of the path that future planning activities take, three things are clear: 1) The Walla Walla Subbasin is a complex system that requires carefully planned and coordinated RM&E efforts to effectively close the adaptive management loop 2) The Walla Walla scientific community has benefited from ongoing planning activities, and will likely benefit from continued and increased attention paid to planning and coordination 3) The development of a final RM&E plan will require significant resources and participation in 2005, but is well within the grasp of the Walla Walla scientific community.

2.3 BULL TROUT INFORMATION AND SPRING CHINOOK OUTPLANTING SUMMARY

This section addresses NPCC and other agency concerns about a lack of bull trout information and spring Chinook outplanting information in the May 2004 Walla Walla Subbasin Plan. Appendix AD4 of this Addendum Package contains detailed information on bull trout and Appendix AD5 contains a summary of the spring Chinook outplanting information within the Walla Walla Subbasin. Both of these appendices are intended to supplement the information on focal species that is referred to on page 29 and provided in Appendix C of the May 2004 Version of the Walla Walla Subbasin Plan.

Appendix AD4 is a revised draft species report on bull trout produced by S.P. Cramer for the Walla Walla Habitat Conservation Plan (HCP). Bull trout life history, habitat requirements, distribution in the Walla Walla Subbasin, listing status, recovery criteria, and critical habitat designation are all discussed. This report has been revised and updated with new data from bull trout spawning ground surveys and telemetry reports, as well as information from the latest version of the U.S. Fish and Wildlife Service's draft Bull Trout Recovery Plan. The following information has been added and/or updated:

1. Goal, objectives and recovery criteria was added and updated from the USFWS draft Bull Trout Recovery Plan, 2004

2. Spawning ground survey data was added for the North and South Forks of the Walla Walla River (ODFW, unpublished data)

3. Population trends of bull trout on the South Fork of the Walla Walla River was added (Budy, P. et al. 2004)

4. Data from bull trout telemetry reports (Schwartz et al. 2004) was received to late to be incorporated into this draft document, but will appear in the next draft.

During the public comment period for this Addendum Document, there were a number of comments received addressing the completeness and accuracy of information in this draft species report. These comments were in addition to information intended to be added to the draft species report during the Fall 2004 Subbasin Planning Revision Process. Due to the short timeframe of the Fall 2004 Subbasin Planning Revision Process, these concerns could not be addressed. These comments are listed as an attachment to the draft species report in Appendix AD4 and will need to be addressed in another process such as the current HCP development process or a future subbasin planning revision process.

The CTUIR prepared Appendix AD5, which describes the spring Chinook outplanting which has been ongoing in the Walla Walla Subbasin for the past several years. It provides data on the number and types of spring Chinook outplanted from 2000 to 2003 and describes the methodology that the CTUIR has used to enumerate redds and evaluate spawning success.

APPENDIX AD1

Results of Alternative EDT Scenarios

APPENDIX AD2

Comments/Responses

APPENDIX AD3

RM&E Plan

APPENDIX AD4

Bull Trout Species Report

APPENDIX AD5

Spring Chinook Outplanting

APPENDIX AD6

Public Meetings: Agendas and Meeting Notes