APPENDIX F—AQUATIC AND RIPARIAN MANAGEMENT STRATEGY—ALTERNATIVES B, C, AND D

INTRODUCTION

The Cottonwood Aquatic and Riparian Management Strategy provides guidance and programmatic direction for watershed (includes subwatersheds), riparian, and aquatic ~~and riparian~~ conservation and restoration and is integrated with other management direction. Conservation of fish, wildlife, plants, and habitats at risk of degradation should be considered together with the full array of broad-scale ecosystem components addressed by the strategy, which include the following: landscape dynamics, terrestrial source habitats, aquatic species and riparian and hydrologic processes, ~~and~~ social-economics and tribal governments. Management actions will balance short-term risks (to aquatic and other resources) with long-term benefits as actions are considered to move these resources toward a natural variability of conditions or desired conditions.

The key components of the Cottonwood Aquatic and Riparian Management Strategy are as follows:

- Aquatic and riparian management direction (for example, goals, objectives, and desired conditions).
- Establishment of Riparian Conservation Areas (RCAs), which are areas where aquatic and riparian dependent resources receive management emphasis.
- Protection of population strongholds for listed or proposed species and narrow endemics.
- Multiscale analysis and how it will be used in subsequent project-level decisions.
- Restoration priorities and guidance will be identified for geographic areas and by general type.
- Monitoring/adaptive management to determine if plan is being implemented correctly and is achieving desired results.
- Standards and Guidelines and Best Management Practices (BMPs), which are applicable to all RCAs and to projects and activities in areas outside of RCAs that are identified through NEPA analysis as potentially degrading to RCAs and desired conditions.

AQUATIC AND RIPARIAN GOALS

The goals establish an expectation of the characteristics of healthy, functioning~~,~~ watersheds, riparian areas, and associated fish habitats. Because the quality of water and fish habitat in aquatic systems ~~is~~ are inseparably related to the integrity of upland and riparian areas within the watersheds, the goals are to maintain, strive towards, or restore the following:

1. Water quality, to a degree that provides for stable and productive riparian and aquatic ecosystems.
2. Stream channel integrity, channel processes, and the sediment regime (including the elements of timing, volume, and character of sediment input and transport) under which the riparian and aquatic ecosystems developed.
3. Instream flows to support healthy riparian and aquatic habitats, which promote the stability and effective function of stream channels, and the ability to effectively route flood discharges.

4. Natural timing and variability of the water table elevation in meadows and wetlands.
5. Diversity and productivity of native and desired ~~nonnative~~ plant communities in riparian zones.
6. Riparian vegetation to:
    a. Provide an amount and distribution of large woody debris characteristic of natural aquatic and riparian ecosystems;
    b. Provide adequate summer and winter thermal regulation within the riparian and aquatic zones; and
    c. Help achieve rates of surface erosion, bank erosion, and channel migration characteristic of those under which the communities developed.
7. Riparian and aquatic habitats necessary to foster the unique genetic fish stocks that evolved within the specific geo-climatic region.
8. Habitat to support populations of well-distributed native and nonnative plant, vertebrate, and invertebrate populations that contribute to the viability of riparian-dependent communities.

AQUATIC AND RIPARIAN MANAGEMENT DIRECTION

~~The BLM is encouraged to establish area-wide riparian management objectives (RMO) to apply them where analysis for determining area-wide specific RMOs has not been done.~~

Desired Conditions and Watershed and Aquatic Condition Indicators (WACIs)

Description and Management Intent

Desired Conditions and Watershed and Aquatic Condition Indicators (WACIs) are an integrated suite of aquatic (including a biological component), riparian (including riparian-associated terrestrial species), and hydrologic (including uplands) condition measures that are primarily intended to be used at the watershed and subwatershed scale. These watersheds and subwatersheds are typically 5th to 7th code HUCs, and will be referred to as watersheds in this appendix. See **Appendix W** (Volume III) for a description of desired conditions and WACIs. They are intended to serve two primary purposes:

1. To assist in effectiveness monitoring as measurable indicators of how effective management actions are in attaining river/stream or reach specific desired conditions and/or broad-scale landscape or watershed aquatic/riparian/hydrologic objectives (WACIs).

2. To indicate the baseline and current condition of a stream or watershed and to help land managers design projects and determine the appropriateness of management activities with respect to achievement of aquatic/riparian/hydrologic objectives.

Desired conditions are more specific to stream or reach specific aquatic and riparian objectives. WACIs are used to provide baseline condition rating information at a watershed level. WACIs provide context and decision support information to determine whether combined actions would contribute to attainment of objectives (desired WACIs) at the watershed and larger scales. The WACIs, should be used as a suite of integrated indicators. They should not be used individually as fixed targets toward which to manage or as specific thresholds from which to make "go/no go" project implementation decisions. However, they should be used to help design appropriate

management actions or alter or mitigate proposed activities to move watersheds toward desired conditions. If certain indicators highlight a concern in a watershed, then analysis should disclose how proposed management actions would be designed to take into account the concerns, and/or when the proposed action is needed to achieve aquatic/riparian/hydrologic objectives. WACI criteria values are not absolute criteria, and are rated in regards to a functional condition or ecological/biological condition. The WACIs are rated using the following watershed and aquatic habitat condition ratings (see **Appendix W** [Volume III]).

Relative Watershed and Aquatic Habitat Quality Condition	**Relative Watershed and Aquatic Habitat Quality Condition**	**Relative Watershed and Aquatic Habitat Quality Condition**
High Watershed and Aquatic Condition Rating	High Watershed and Aquatic Condition Rating	High Watershed and Aquatic Condition Rating
Moderate Watershed and Aquatic Condition Rating	Moderate Watershed and Aquatic Condition Rating	Moderate Watershed and Aquatic Condition Rating
Low Watershed and Aquatic Condition Rating	Low Watershed and Aquatic Condition Rating	Low Watershed and Aquatic Condition Rating

Watershed and Aquatic Condition Indicators

To achieve the "Watershed, Riparian, and Aquatic Goals and Objectives," specific riparian and aquatic desired conditions and WACIs are identified (**Appendix W** [Volume III]). Aquatic and riparian habitat condition indicators are rated for functional condition using the Matrix of Pathways and Indicators of Watershed ~~Condition~~and Watershed and Aquatic Conditions, which has local adaptation (1997 and modified 1998) and ~~use~~is used by the North Central Idaho Level 1 Team (BLM CFO, Nez Perce National Forest, Clearwater National Forest, National Marine Fisheries Service (NMFS), and US Fish and Wildlife Service (USFWS). ~~With updated monitoring, science/literature, and supporting rationale, watershed indicators~~The general objective is to achieve the "functioning appropriately" condition rating for WACIs. However, it is recognized that optimum conditions may ~~be changed in the future to more accurately depict local planning area aquatic, riparian, and watershed condition indicators~~not always be achieved for specific WACIs and watersheds. **Table F-1** ~~depicts the Watershed Condition Indicators~~ identifies the WACIs included in the referenced matrices (**Appendix W** [Volume III]).

Table F-1
Pathways—Indicators of Watershed/Aquatic Conditions[1]

Watershed Conditions	**Habitat Elements**
1. Watershed road density	1. Cobble embeddedness
2. Streamside road density	2. Percent surface fines
3. Landslide prone road density	3. Percent fines by depth
4. Riparian vegetation condition	4. Large woody debris
5. Peak/base flow	5. Pool frequency
6. Water yield (equivalent clearcut acres)	6. Pool quality
7. Sediment yield	7. Off-channel habitat
	8. Habitat refugia
Channel Condition and Dynamics	**Take**
1. Width/depth ratio	1. Harassment
2. Streambank stability	2. Redd disturbance
3. Floodplain connectivity	3. Juvenile/adult harvest

Table F-1
Pathways—Indicators of Watershed/Aquatic Conditions[1] *(continued)*

Water Quality	Subpopulation Characteristics and Habitat Integration
1. Temperature—spawning 2. Temperature—rearing/migration 3. Suspended sediment 4. Chemical contaminants/nutrients	1. Subpopulation size 2. Growth and survival 3. Life history diversity, isolation 4. Persistence and genetic integrity 5. Integration of species and habitat condition
Habitat Access	
1. Physical barriers—adults 2. Physical barriers—juveniles	

[1]Watershed ~~indicators from USFWS and National Marine Fisheries Service~~and Aquatic Condition Indicators (WACIs) from USFWS and NMFS matrices as adapted by North Central Idaho Level 1 Team (1997 and 1998 modification)

~~Desired and achievable Watershed Condition Indicators need to be identified~~ Desired WACIs that are ~~specific to~~ appropriate for the ~~project/activity plan implementation at the subwatershed level~~watershed scale and baseline ratings (for example, 5th , 6th, 7th code HUC~~).~~) are included in Appendix W (Volume III). The functional condition ratings for ~~Watershed Condition Indicators~~WACIs is an objective and may be a quantifiable or subjective rating for desired aquatic, riparian, and watershed ~~functional~~ conditions adapted locally~~ for providing for~~ , and identify optimal aquatic, riparian, and watershed conditions. Appendix W (Volume III)~~,~~ identifies the desired functional condition (functioning appropriately – good/excellent condition) WACIs. It is acknowledged that "optimum" conditions may not always be achievable for every watershed because of legacy land uses, land ownerships (e.g., private ownership and non-BLM land uses) and specific watershed characteristics.

Existing Conditions for Watersheds (WACIs)

Existing conditions for watershed specific WACIs are on file at the BLM Cottonwood Office for the watersheds identified in **Appendix C** (Volume II). Because BLM ownership often comprises a small percentage of the total watershed area, the emphasis for surveys and monitoring efforts will be in watersheds where public lands generally comprises the majority of the ownership (see **Appendix C** [Volume II]). Other watersheds with BLM lands not included in **Appendix C** (generally small amount of public land ownership) may have resource surveys and monitoring conducted (to determine existing conditions), and management actions implemented which support achievement of desired conditions.

Updating Ratings for Desired Conditions and Watershed and Aquatic Condition Indicators

Based on monitoring, surveys, science/literature, watershed analysis, and supporting rationale; specific condition ratings for desired conditions and WACIs may be changed in the future (e.g., poor condition, good condition, etc.) to more accurately depict local planning area aquatic and riparian characteristics, range of natural variability. Desired conditions and WACIs may be refined at the watershed scale to illustrate the variability of conditions among watersheds within a landscape context. As needed for updated ratings, local experts (e.g., Fisheries Biologist, Ecologist, Botanist, Hydrologist) shall establish this environmental baseline and identify rationale supporting the change.

RIPARIAN CONSERVATION AREAS~~, ALTERNATIVE B~~

RCAs are portions of watersheds where riparian-dependent resources receive primary emphasis and management activities are subject to specific standards and guidelines. However, they are not intended to be treated as no management zones since treatments may be essential to achieving or maintaining desired riparian and aquatic conditions. This strategy allows for adjustment to RCAs to reflect specific site conditions while also recognizing watershed ~~wide~~ riparian conditions and trends.

Important values to consider in identifying and managing RCAs ~~include fine organic litter, bank stability, sediment control, nutrients and other dissolved materials, riparian microclimate and productivity, wind throw, importance of small (perennial and intermittent) streams, importance of hill slope steepness, parent soil material and erosion risks, potential and active large woody debris, and~~ may be specific to the riparian ~~functional condition.~~area/stream channel, life stage of specific fish, watershed characteristics, and land uses. Refer to **Appendix W** (Volume III) for a list of desired conditions and WACIs.

RCA Delineation and Modification

~~Default~~ Specific default RCA widths apply~~ where~~, unless a watershed analysis or site-specific (local) analysis has ~~not~~ been completed. ~~Establishment~~Modification of RCAs requires watershed or site specific analysis to provide the ecological basis for the change~~. However,~~ or may be specific to land uses taking place or proposed to take place within the RCA.

RCA Widths (Alternative B)

RCAs ~~may be modified by amendment in~~ are portions of watersheds where riparian-dependent resources receive primary emphasis and management activities are subject to specific standards and guidelines. RCAs are lands that are most sensitive to land uses that are likely to affect the condition and/or function of aquatic habitat, and include areas adjacent to streams, ponds, lakes, and wetlands. The dimensions of such lands and uses that promote or do not preclude achievement of functional conditions may be best defined by site-specific analysis or watershed analysis. In the absence of ~~watershed~~such analysis~~ where stream reach or site-specific data support~~, the ~~change. In all cases, the rationale supporting~~ following default RCA widths apply.~~and their effects would be documented. Refer to previous listed important values for managing RCAs; pertinent values need to be specifically addressed in supporting rationale for modifying RCAs.~~

Category 1—Fish-bearing streams: RCAs consist of the stream and the area on either side of the stream. This area extends from the edges of the active channel to the top of the inner gorge, or to the outer edges of the 100-year floodplain, or to the outer edges of the riparian vegetation, or **300 feet** slope distance (600 feet, including both sides of the stream channel), whichever is greatest.

Category 2—Permanently flowing non-fish-bearing streams: RCAs consist of the stream and the area on either side of the stream. This area extends from the edges of the active channel to the top of the inner gorge, or to the outer edges of the 100-year floodplain, or to the outer edges of the riparian vegetation, or **150 feet** slope distance (300 feet, including both sides of the stream channel), whichever is greatest.

Category 3—Ponds, lakes, reservoirs, and wetlands greater than one acre: RCAs consist of the body of water or wetland and the area to the outer edges of the riparian vegetation, or to the extent of the seasonally saturated soil, or **150 feet** slope distance from the edge of the maximum pool elevation of constructed ponds and reservoirs, or from the edge of the wetland, pond, or lake, whichever is greatest.

Category 4—Seasonally flowing or intermittent streams and wetlands less than one acre: This category includes features with high variability in size and site-specific characteristics. The RCA is the area from the edges of the stream channel, the wetland, the extent of riparian vegetation, or **~~80~~100 feet** slope distance, whichever is greatest.

Nonforested rangeland ecosystems Category 1 and 2 streams are the extent of 100-year floodplain.

RIPARIAN CONSERVATION AREAS, ALTERNATIVE C

RCA Widths (Alternative C)

RCAs are portions of watersheds where riparian-dependent resources receive primary emphasis and management activities are subject to specific standards and guidelines.

~~RCA widths apply where watershed analysis has not been completed. Establishment of~~ RCA~~s requires watershed analysis~~are lands that are most sensitive to ~~provide~~land uses that are likely to affect the ~~ecological basis for the change. However, RCAs~~condition and/or function of aquatic habitat, and include areas adjacent to streams, ponds, lakes, and wetlands. The dimensions of such lands and uses that promote or do not preclude achievement of functional conditions may be ~~modified~~best defined by ~~amendment in the absence of watershed analysis, where stream reach or~~ site-specific ~~data support the change.~~analysis or watershed analysis. In ~~all cases, the rationale supporting~~the absence of such analysis, the following default RCA widths ~~and their effects would be documented~~apply.

Category 1—Fish-bearing streams: RCAs consist of the stream and the area on either side of the stream. This area extends from the edges of the active channel to the top of the inner gorge, or to the outer edges of the 100-year floodplain, or to the outer edges of the riparian vegetation, or **300 feet** slope distance (600 feet, including both sides of the stream channel), whichever is greatest.

Category 2—Permanently flowing non-fish-bearing streams: RCAs consist of the stream and the area on either side of the stream. This area extends from the edges of the active channel to the top of the inner gorge, or to the outer edges of the 100-year floodplain, or to the outer edges of the riparian vegetation, or **225 feet** slope distance (400 feet, including both sides of the stream channel), whichever is greatest.

Category 3—Ponds, lakes, reservoirs, and wetlands greater than one acre: RCAs consist of the body of water or wetland and the area to the outer edges of the riparian vegetation, or to the extent of the seasonally saturated soil, or **150 feet** slope distance from the edge of the maximum pool elevation of constructed ponds and reservoirs, or from the edge of the wetland, pond, or lake, whichever is greatest.

Category 4—Seasonally flowing or intermittent streams and wetlands less than one acre: This category includes features with high variability in size and site-specific characteristics. The RCA is the area from the edges of the stream channel, the wetland, the extent of riparian vegetation, or **125 feet** slope distance, whichever is greatest.

Nonforested rangeland ecosystems Category 1 and 2 streams are the extent of 100-year floodplain~~.~~

RIPARIAN CONSERVATION AREAS, ALTERNATIVE D

RCA Widths (Alternative D)

RCAs are portions of watersheds where riparian-dependent resources receive primary emphasis~~,~~ and management activities are subject to specific standards and guidelines.

~~RCA widths apply where watershed analysis has not been completed. Establishment of~~ RCAs ~~requires watershed analysis~~are lands that are most sensitive to ~~provide~~land uses that are likely to affect the ~~ecological basis for the change. However, RCAs~~condition and/or function of aquatic habitat, and include areas adjacent to streams, ponds, lakes, and wetlands. The dimensions of such lands and uses that promote or do not preclude achievement of functional conditions may be ~~modified~~best defined by ~~amendment in the absence of watershed analysis where stream reach or~~ site-specific ~~data support the change.~~analysis or watershed analysis. In ~~all cases, the rationale supporting~~the absence of such analysis, the following default RCA widths ~~and their effects would be documented~~apply.

Category 1—Fish-bearing streams: RCAs consist of the stream and the area on either side of the stream. This area extends from the edges of the active channel to the top of the inner gorge, or to the outer edges of the 100-year floodplain, or to the outer edges of the riparian vegetation, or **300 feet** slope distance (600 feet, including both sides of the stream channel), whichever is greatest.

Category 2—Permanently flowing non-fish-bearing streams: RCAs consist of the stream and the area on either side of the stream. This area extends from the edges of the active channel to the top of the inner gorge, or to the outer edges of the 100-year floodplain, or to the outer edges of the riparian vegetation, or **150 feet** slope distance (300 feet, including both sides of the stream channel), whichever is greatest.

Category 3—Ponds, lakes, reservoirs, and wetlands greater than one acre: RCAs consist of the body of water or wetland and the area to the outer edges of the riparian vegetation, or to the extent of the seasonally saturated soil, or **50 feet** slope distance, whichever is greatest.

Category 4—Seasonally flowing or intermittent streams and wetlands less than one acre: This category includes features with high variability in size and site-specific characteristics. The RCA is the area from the edges of the stream channel, the wetland, the extent of riparian vegetation, or **50 feet** slope distance, whichever is greatest.

Nonforested rangeland ecosystems Category 1 and 2 streams are the extent of 100-year floodplain.

RCA Delineation

To promote or maintain desired conditions or objectives for WACIs, default RCA widths identify areas where riparian and aquatic dependent resources receive emphasis for management. The default RCA widths generally provide proper and adequate dimensions to address primary influence areas that may affect key riparian and aquatic processes. It is acknowledged that RCA modification and delineation needs to consider ecological and geomorphic factors, which vary across the Field Office management area. Delineation of site specific or specific watershed RCAs requires fine-scale application of appropriate criteria using a two-tier approach.

The **first tier** involves identification of ecological and geomorphic delineation criteria. This is done by applying a protocol identified through a watershed analysis and/or site specific analysis, or a programmatic planning analysis. This analysis is intended to provide the context needed to understand riparian area interactions and processes.

The **second tier** applies the criteria from the first tier analysis to specific areas on the ground in conjunction with proposed management activities.

Conceptually, the first tier analysis results in identification of ecologically appropriate RCA criteria by using existing information to characterize the extent, conditions, and trends of riparian areas within the analysis area. This analysis identifies dominant physical and biological features in the watershed that influence the riparian network, and addresses important biophysical functions and processes. The issues associated with the riparian system, including past, current, and potential future management emphases, are used to ascertain the rigor and depth of analysis needed. The resulting information is synthesized and interpreted using a process in which potential criteria are examined and selected or eliminated based on their appropriateness to meet the overall intent of aquatic and riparian management objectives at the finer scale.

The overall intent of the first tier analysis is to document relationships between key riparian processes and functions and ecological and/or geomorphic factors (such as shade and site potential tree height), which should help to appropriately identify RCAs. Default widths would be used to delineate RCAs, until the first tier analysis has been completed.

The second tier applies the RCA criteria to specific areas on the ground while designing and planning proposed management actions. The intent is that the associated site-specific analysis and decision would disclose how the criteria would be used to delineate RCAs on the ground and the degree to which they provide for riparian processes and functions and contribute to meeting aquatic and riparian management objectives. Any necessary, site-specific refinements of the criteria would also be documented in the analysis and decision document.

RCA Modification (Alternatives B, C, and D)

RCAs may be modified by amendment in the absence of watershed analysis where stream reach or site-specific data support the change. Watershed analysis or site-specific analysis is not a decision process, it would provide information for ecologically appropriate criteria that would support site-specific analysis and determination on RCA delineation. In all cases, the rationale supporting RCA

widths and their effects would be documented. Refer to previous listed important values for managing RCAs; pertinent site-specific, stream reach, and watershed values (e.g., desired conditions, WACIs, specific riparian or aquatic characteristics, slope, soils, etc.) need to be specifically addressed in supporting rationale for modifying RCAs and land uses occurring in these areas.

During watershed analysis and/or site-specific analysis or through the appropriate programmatic planning processes, default RCA dimensions may be modified with site specific analysis and determination of land uses that are consistent with the RCA management intent and the attainment of RCA management objectives (i.e., ~~WACIs~~desired conditions).

These criteria shall be identified using scientific information in combination with local knowledge and information on riparian and aquatic processes and functions, resource values, and risks (first tier). Application of criteria to delineate RCAs shall occur during project-level planning or implementation for management activities that could affect attainment of RCA objectives (second tier). Rationale for identifying final RCA delineation criteria shall be presented through the appropriate analysis making process.

PROTECTION OF POPULATION STRONGHOLDS FOR AQUATIC SPECIAL STATUS AND NARROW RANGE ENDEMIC SPECIES

Refer to **Appendix C**, Conservation and Restoration Watersheds (Volume II), for criteria and identification of conservation watersheds, which have important value for protecting populations of special status aquatic species and narrow range endemics. Currently, only a few watersheds ~~within the~~ (with BLM lands) within the BLM planning area may meet the criteria for designation as a stronghold or conservation watershed for special status species. The intent of this designation and management direction of these watersheds is that they will provide high quality habitat for species and will support expansion and recolonization of species to adjacent watersheds. These areas should conserve key processes likely to influence the persistence of populations or metapopulations. Management consideration for these watersheds includes the following:

- In general, these areas are at the scale of the species' subpopulation and contribute to their conservation and recovery.
- Characteristics/considerations for stronghold delineation include high genetic integrity, connectivity, relationship of the subpopulation to the species as a whole, and restoration and population expansion potential into adjoining watersheds.
- The plan provides for additions to, deletions from, or modifications of strongholds and conservation watersheds based on new information.
- As with RCAs, management activities in strongholds and conservation watersheds should emphasize achieving or maintaining the riparian and aquatic values, including key processes, for which they are being managed. Active management within strongholds may be required to achieve and maintain these values. Passive management strategies can also be an effective tool for meeting stronghold objectives in some watersheds.
- Conservation ~~sub~~watersheds have watershed, riparian, and aquatic processes and functions that occur in a relatively undisturbed and natural landscape setting.
- Watersheds may also be identified for such purposes as protecting other emphasis species or other high value riparian-dependent resources.

MULTISCALE ANALYSIS AND ECOSYSTEM ANALYSIS AT THE WATERSHED SCALE

Watershed Analysis

The purpose of an ecosystem analysis at the watershed scale is to develop and document an understanding of the ecological structures, functions, processes, and interactions occurring at the watershed scale. This process is designed to describe past and current conditions and develop restoration and management recommendations. The ultimate goal is to provide guidance for management actions that would sustain or improve the health and productivity of natural resources.

Objectives of Watershed Analysis

1. Evaluate cumulative watershed effects – *watershed analysis enhances the ability to estimate direct, indirect, and cumulative effects of management activities.*

2. Define watershed restoration needs, goals and objectives – *provides guidance on the general type, location, and sequence of appropriate activities within a watershed.*

3. Monitor the effectiveness of watershed protection measures – *process for adaptive management feedback loop.*

4. Provide sufficient watershed context for understanding and carrying out land use activities with a geomorphic context – *important tool used in meeting ecosystem management objectives.*

Appropriate Methodology

The Federal Guide for Watershed Analysis—Ecosystem Analysis at the Watershed Scale Version 2.2 (Forest Service 1995) was used as a guide. This six-step process is not issue-driven but focuses on analysis topics, along with specific watershed problems and concerns. This analysis is not a decision making process but will help identify opportunities for future management actions, including planning, project development, and regulatory compliance. Below is a summary of each of the six steps taken to develop an ecosystem analysis at the watershed scale.

Step 1—Characterization of the Watershed

The purpose of Step 1 is to identify the dominant physical, biological, and human processes or features of the watershed that affect ecosystem functions or conditions, including the relationship between these ecosystem elements and those occurring in the river basin and/or watersheds. When characterizing the watershed, ~~teams~~team members identify the most important land allocations, plan objectives, and regulatory constraints that influence resource management in the watershed.

Step 2—Identification of Issues and Key Questions

The purpose of this step is to focus the analysis on the key elements of the ecosystem that are most relevant to the management questions and objectives, human values, or resource conditions within the area.

Step 3—Description of Current Conditions

This step is to develop more detailed information relevant to the issues and key questions identified in Step 2. Step 3 is where the current range, distribution, and condition of the relevant ecosystem elements are documented.

Step 4—Description of Reference Conditions

This step is to explain how ecological conditions have changed over time as a result of human influence and natural disturbances. A reference is developed for later comparison with current conditions over the period that the system evolved and with key management plan objectives.

Step 5—Synthesis and Interpretation of Information

The purpose of Step 5 is to compare existing and reference conditions of specific ecosystem elements and to explain significant differences, similarities, or trends and their causes. The capability of the system to achieve key management plan objectives is also evaluated.

Step 6—Recommendations

The purpose of Step 6 is to identify management recommendations that address resource problems noted in this analysis and then to change the current watershed conditions toward the desired future condition for this area. Recommendations, monitoring needs, and data gaps are identified and described. These are recommendations to date based on the data we have available at present. This is an ongoing process and alternative or additional recommendations may be made in the future.

Multiple-~~scaled~~Scaled Assessments

~~No~~Generally, no single assessment will adequately address the complex issues facing resource managers today. Fine-scale assessments provide necessary context for management and project planning, but they cannot adequately address broad patterns and processes, such as habitat conditions for wide-ranging species. Broad-scale assessments provide necessary context for policy formulation and for mid- and fine-scale assessment, but they cannot by themselves provide detailed information, such as site-specific habitat conditions. Together, multiple-scale assessments provide a comprehensive basis for sustainable land management.

~~Four~~Multiple levels of review and assessment provide the context to ~~appropriately~~ implement broadscale decisions on individual BLM districts and within a field office area. As needed, multiscale analysis may be used for future plan amendments or revisions and for subsequent project-level decisions. The four potential analysis scales are basin, subbasin, watershed, and project. Analysis at the appropriate scale is generally recognized to provide needed context for (and thus it improves) decision making. Following are the four levels of review/assessment that ~~will~~may be used for multiscale analysis:

1. Broad-scale (e.g., Assessment of Ecosystem Components in the Interior Columbia Basin;
2. Mid-scale (e.g., Ecosystem Review at the Subbasin Scale);
3. Fine-scale (e.g., Ecosystem Analysis at the Watershed Scale);

4. Site-scale (e.g., reach analysis, project/site analysis).

Management considerations for multiscale analysis includes the following:

- Plans are generally developed and analyzed at the scale of the land management unit, normally analogous to a subbasin (or group of subbasins) scale.
- Subsequent finer scale analysis, such as to support restoration prioritization and monitoring strategy development, should include interagency coordination.
- Assessments should include evaluation of existing conditions, factors limiting aquatic species populations, resource risks, management needs, and restoration opportunities.
- Information developed at the finer scale should be considered in implementing the aquatic conservation ~~elements~~or restoration measures and used to make adjustments or modifications to ~~the elements~~appropriate management actions, as warranted.
- Multiscale analysis provides a basis for integrating and prioritizing conservation measures for wide-ranging species.

Cottonwood Field Office Watershed and Site-Specific Analysis Direction

BLM lands managed within the planning area often consist of small scattered tracts of land and BLM ownership within a watershed may not comprise the majority ownership. Many watersheds have scattered tracts of land occurring in a watershed that is primarily private or non-federal ownership. The greatest opportunity for completing new or updating existing watershed analyses or subbasin assessments occur in drainages that majority ownership is comprised of BLM and Forest Service lands. Because the BLM is not the majority landowner, the BLM Cottonwood Field Office will collaborate with other Forest Service offices to complete watershed analyses and subbasin assessments or updates.

For small or scattered tracts of BLM lands, watersheds with small amounts of BLM lands, or in areas where a watershed analysis has not been completed, the use of site-specific (focused) analysis or stream reach analysis using approaches similar to what is described above is appropriate. The site-specific or reach analysis should also follow the six-step process identified above, but be limited in geographic scope. The level of site-specific or focused reach analysis will be commensurate with the scope, magnitude, and issues related to BLM activities or projects and related aquatic resources and values. Where appropriate, an abbreviated watershed analysis may be used in conjunction with the focused site-specific analysis.

The BLM and Forest Service have completed several watershed analyses and subbasin assessments within the planning area. The BLM has been the lead agency on several watershed analyses, and the BLM has collaborated with the Forest Service on others when BLM ownership occurs in the watershed or subbasin. A large amount of BLM lands are also intermingled with Idaho Department of Fish and Game lands, which provided opportunity for the BLM to be a lead agency for completion of watershed analysis in these areas (Craig Mountain Wildlife Management Area). These documents have been used to provide guidance for cumulative effects analysis, prioritization for restoration and management actions, and direction and information for landscape and ecosystem management efforts that involve mixed land ownerships. The following table summarizes watershed

and subbasin assessments that have been completed within the planning area that provide guidance for BLM planning and management efforts.

Table F-2
Summary of Watershed Analyses and Subbassin Assessments Within the Planning Area

Name	Type of Analysis or Assessment (Watershed/Subbasin)	Year Completed	Lead Agency
LOWER SNAKE RIVER SUBBASIN			
Lower Snake River Ecosystem Analysis at the Watershed Scale	Watershed Analysis – Captain John Creek, Corral Creek, Snake River Face Drainages	2002	BLM Cottonwood Field Office
LOWER SALMON RIVER SUBBASIN			
John Day Creek Watershed Analysis	John Day Creek	1999	BLM Cottonwood Field Office
Slate Creek Ecosystem Analysis at the Watershed Scale	Watershed Analysis – Slate Creek	2000	Nez Perce National Forest
Lower Salmon River Ecosystem Analysis at the Watershed Scale	Watershed Analysis – China Creek, Eagle Creek, Deer Creek, and Salmon River Face Drainages	2002	BLM Cottonwood Field Office
LITTLE SALMON RIVER SUBBASIN			
Boulder Creek Watershed Analysis, Working Draft	Watershed Analysis – Boulder Creek	1999	Payette National Forest
Little Salmon River Subbasin Review	Subbasin Assessment – Little Salmon River Subbasin	2003	Payette National Forest
CLEARWATER RIVER SUBBASIN			
Clearwater Subbasin Ecosystem Analysis at the Watershed Scale	Watershed Analysis – Potlatch River, Orofino Creek, Lolo Creek, Clearwater River	1997	Clearwater River National Forest
SOUTH FORK CLEARWATER RIVER SUBBASIN			
South Fork Clearwater River Landscape Assessment	Subbasin Assessment – South Fork Clearwater River	1998	Nez Perce National Forest
Red River Ecosystem Analysis at the Watershed Scale	Watershed Analysis – Red River	2003	Nez Perce National Forest

MONITORING AND ADAPTIVE MANAGEMENT

Monitoring and Evaluation of the Resource Management Plan

The BLM planning regulations require the monitoring and evaluation of RMPs at appropriate intervals. After approval of the RMP an implementation schedule will be completed and would incorporate monitoring plans. Monitoring data would be used to assess resource conditions, identify resource issues and conflicts, determine if resource objectives are being met, determine trends for achievement of desired conditions, and periodically refine and update desired conditions and management strategy.

Monitoring is an essential component of natural resource management because it provides information on the relative success of management strategies. The implementation of the RMP will be monitored to ensure that management actions follow prescribed management direction

(implementation monitoring), meet desired objectives (effectiveness monitoring) and are based on accurate assumptions (validation monitoring).

Monitoring will be coordinated with other appropriate agencies and organizations in order to enhance the efficiency and usefulness of the results across a variety of administrative units. The approach will build on past and present monitoring work. In addition, specific monitoring protocols, criteria, goals, and reporting formats will be developed.

Adaptive Management

Adaptive management requires knowledge of the current conditions; potential or capability of riparian sites and streams; current management and effects of the management on the resources; and management changes that may be made to move the current condition toward the desired condition. Single indicators of conditions or trend are usually not adequate to make good decisions. Information on the condition and trend of the vegetation, streambanks, aquatic resources, and knowledge of current management practices can help establish "cause-and-effect" relationships that are important to make appropriate decisions. Such information allows refinement and development of more realistic, locally-derived project or activity design, standards, or criteria.

Monitoring will be an integral component of many management approaches such as adaptive management and ecosystem management. Adaptive management is based on monitoring that is sufficiently sensitive to detect relevant ecological changes. In addition, the success of adaptive management depends on the accuracy and credibility of information obtained through inventories and monitoring. Close coordination and interaction between monitoring and research are important for the adaptive management process to succeed. Data obtained through systematic and statistically valid monitoring can be used by scientists to develop research hypotheses related to priority issues. Conversely, the results obtained through research can be used to further refine the protocols and strategies used to monitor and evaluate the effectiveness of RMP implementation.

Monitoring results will provide managers with the information to determine whether an objective has been met, and whether to continue or modify the management direction. Findings obtained through monitoring, together with research and other new information will provide a basis for adaptive management changes to the plan. The monitoring process and adaptive management share the goal of improving effectiveness and permitting response to increased knowledge and a changing landscape. The monitoring program itself will not remain static. The monitoring plan will be periodically evaluated to ascertain that the monitoring questions and standards are still relevant, and will be adjusted as appropriate. Some monitoring items many be discontinued and others may be added as knowledge and issues change with implementation.

Implementation and Effectiveness Monitoring

The basics of RMP level monitoring ~~should~~ will (1) determine if the plan ~~is~~, project, or activities are being implemented correctly and is achieving desired results, (2) provide a mechanism for accountability and oversight, (3) evaluate the effectiveness of recovery and restoration efforts, and (4) provide a feedback loop (adaptive management) so that management direction may be evaluated and modified.

Management considerations for monitoring include the following:

- Focus monitoring on key questions that inform decision making and allow adjustments to management.
- Monitoring emphasis and intensity should be commensurate with the importance of the question being asked. For example, if adaptive decision making is being used, it will be important to monitor the key parameters to the degree necessary to support the current course of action or to trigger an alternate approach.
- Plan level monitoring should make use of, and not duplicate, broad-scale monitoring programs. To the extent practicable, monitoring done at the plan scale should be compatible with, and complementary to, broader and finer scale monitoring.
- Monitoring should be coordinated with, and where possible consolidated with, similar efforts of other agencies.
- Outcome-based management approaches rely on monitoring for their success. These approaches typically require a different level and type of monitoring than prescriptive approaches.
- Monitoring commitments in plans should be feasible and achievable.

Monitoring is a process of gathering information through observation and measurement to ensure that project design criteria and mitigation are implemented and to determine if goals and objectives for project/program are achieved. The two types of monitoring identified are implementation and effectiveness. Specifics of these types of monitoring are described below:

- Implementation monitoring is used to determine if management practices are implemented as identified in an activity plan, environmental assessment, EIS, Biological Assessment, or Biological Opinion.
- Effectiveness monitoring is used to determine if management practices, as designed and executed, are effective in meeting project goals and objectives as defined in an activity plan, environmental assessment, EIS, Biological Assessment, or Biological Opinion.

The results of ~~all~~ monitoring will be summarized and shared, as requested, with state and federal agencies, and tribes~~, private groups, or individuals~~.

The design criteria and mitigation would be monitored on a specific action or subsample of activity or project. Agency representatives overseeing the actions would do the monitoring, as well as an interdisciplinary or multiparty team, through a combination of any of the following methods:

- Review Environmental Assessment, Biological Assessment, and Biological Opinion identified project specifications and terms and conditions to ensure that monitoring is provided for in contract or ~~plan~~plans of operation (project design and mitigation criteria);
- Review designs and plans of operation;
- Review contract administration reports (daily diaries); and
- Review activities on the ground before, during, and after implementation.

Where appropriate, photograph conditions before the project begins, during its implementation, and after it is completed.

The Cottonwood FO implementation and effectiveness monitoring strategy will include the use of databases and reporting mechanisms. Monitoring protocols will be in accord with appropriate BLM Technical Bulletins or other acceptable monitoring methods which would address the Watershed and Aquatic Condition Indicators included in **Appendix W** (Volume III). Acceptable monitoring methods would be adaptive and include protocols that have been generally approved and accepted by state, federal, and Tribes to document existing desired conditions.

RESTORATION PRIORITIES AND GUIDANCE

Refer to **Appendix C,** Conservation and Restoration Watersheds (Volume II), for criteria and identification of restoration watersheds, ~~which have priority~~and prioritization for restoration projects and achievement of desired conditions. Restoration subwatersheds were identified because biological and physical processes and functions do not reflect natural conditions because of past and long-term land disturbances. Refer to **Figures 3** (Alternative B), **4** (Alternative C), and **5** (Alternative D) in Volume IV of the Draft RMP/EIS for maps of Conservation and Restoration Watersheds identified for various alternatives. Management consideration for these watersheds includes the following:

- Identify restoration objectives, desired conditions, and the types of management actions likely to be used to achieve those objectives or desired conditions;
- Make finer scale prioritization a part of plan implementation rather than plan development;
- Support restoration prioritization with analysis at the appropriate scale (e.g., subbasin, watershed);
- Integrate aquatic and terrestrial restoration priorities;
- Emphasize restoration opportunities that provide benefits for multiple resources; and
- Structure the plan to provide for additions to, deletions from, or modifications of restoration watersheds based on new information.

STANDARDS AND GUIDELINES

Standards and guidelines apply to all RCAs and to projects and activities in areas outside of RCAs that are identified through NEPA analysis as potentially degrading RCAs. RCA desired conditions for aquatic and riparian habitats are identified in **Appendix W**. WACIs used for rating baseline conditions for watersheds and streams, and are also identified in **Appendix W**.

Standards and Guidelines	Conservation Measures
Riparian Conservation Areas	

Standards and Guidelines	Conservation Measures
RCA-1	~~Activities~~ New activities in RCAs or activities outside RCAs that affect desired conditions for WACIs must be designed to enhance, restore, or maintain the physical and biological characteristics of the RCA by implementing the following: • Activities outside or in RCAs that are intact and functioning in a desired condition, as indicated by ~~RMOs~~specific desired conditions and WACIs (**Appendix W**) or other measures, must be designed to at least maintain that desired condition; • Activities outside or in RCAs that are not at desired condition, as indicated by ~~RMOs~~specific desired conditions and WACIs (**Appendix W**) or other measures, should include a restoration component as part of the project~~;~~ when such may be practical and appropriate for the scope of the project; and • ~~c.~~ Activities outside or in RCAs must not result in long-term degradation to aquatic conditions. Limited short-term adverse effects from activities in the RCA may be acceptable when outweighed by the long-term benefits to the RCA and aquatic resources. • New road construction, landings, timber harvest, salvage logging, or construction of recreation sites within RCAs will require a watershed analysis and/or site-specific analysis prior to implementation. The level of analysis will be commensurate with the scope, magnitude, and issues of the project and related aquatic resources and values.
Timber Management	
TM-1	~~Vegetation~~Apply vegetation management practices, such as timber harvest, salvage logging, fuelwood cutting and fuels treatments, ~~may be used in RCAs.~~within RCAs where needed to acquire desired vegetation characteristics essential to achieving functional desired conditions~~WACIs~~. Vegetation treatments will be allowed only to maintain, restore, or enhance physical and biological characteristics of the RCA. Implemented treatments will, at a minimum, maintain existing conditions and not impede achievement of desired conditions in the long term ~~RMOs.~~WACIs. Management actions will balance short-term risks (to aquatic and other resources) with long-term benefits as actions are considered to move toward a natural variability of conditions. Complete watershed analysis and/or site-specific analysis prior to conducting timber harvest or salvage logging in RCAs. RCAs are not included in the land base when determining PSQ.
TM-2	New management activities within or affecting RCAs shall be conducted only if they are consistent with the RCA management objectives of not precluding attainment of, or maintaining functional aquatic/riparian conditions and processes, and improving conditions and processes (through either active or passive measures) that are not fully functional (~~WACIs~~desired conditions).

Standards and Guidelines	Conservation Measures
TM-3	When management activities are conducted within the sediment delivery influences area, ground disturbance shall be minimized and sufficient ground cover shall be retained (existing vegetation and/or by seeding, plantings, and erosion control measures) to limit soil movement into or within the RCA to allow attainment of RCA objectives (desired conditions). Buffer widths, vegetation cover, and/or natural topography features should be sufficient to minimize risks for erosion/sediment reaching stream channels and other water bodies.
TM-4	Management activities in RCAs shall be implemented to maintain or support attainment of aquatic and RCA management objectives (WACIs).
Roads Management	
RF-1	Cooperate with federal, tribal, state, and county agencies and cost-share partners to achieve consistency in road design, operation, and maintenance necessary to ~~attain RMOs.~~reduce adverse effects and support achievement of desired conditions and WACIs in the long term.
RF-2	For ~~planned~~new or existing roads ~~in an RCA, manage achieve RMOs~~(authorized across BLM lands or BLM easement across other lands), strive to support achievement of desired conditions and WACIs and ~~to~~ avoid ~~or minimize~~ adverse effects ~~on TES~~to native fish.
RF-2a	Complete a watershed or site-specific analysis, ~~tiering to existing watershed analyses where available,~~ before building new roads or landings in RCAs. Site-specific analysis will reference to existing watershed analysis when available. The level of analysis should be commensurate with the scope and issues of the project and related aquatic resources. ~~At a minimum, the analysis should in all cases address sediment, LWD supply/recruitment, water temperature, and floodplain and riparian encroachment. Analysis will include the site scale, in the context of the reach scale, and watershed scales.~~
RF-2b	Minimize new road and landing locations in RCAs. Permanent new roads are not allowed unless long-term resource management and public resource needs can be identified through the development of a Road Management Plan or System Road Analysis. Analysis should be specific to why alternative routes outside of RCA are not practical and how road design features would minimize or avoid adverse effects to aquatic and riparian resources at site-specific, reach, and watershed scales.

Standards and Guidelines	Conservation Measures
RF-2c	Initiate development and implementation of a road management plan or a transportation management plan for BLM-controlled roads. At a minimum, address the following items in the plan: • Road design criteria, elements, and standards that govern construction, reconstruction, and maintenance; • The long-term management needs for each road; • Road management objectives for each road; • Criteria that govern road operation, maintenance, and management; • Guidance for inspections and maintenance before, during, and after storms; • Traffic regulation during wet periods to minimize erosion and sediment delivery; • Monitoring plans for road stability, drainage, and erosion control; and • Mitigation plans for road failures.
RF-2d	Temporary roads within RCAs will be decommissioned a maximum of three years after their construction.
RF-2e	Avoid or minimize sediment delivery to streams from the road surface to allow attainment of appropriate WACIs through implementation of the following. • Outsloping the roadway surface is preferred, except in cases where outsloping would increase sediment delivery to streams or where outsloping is infeasible or unsafe; • ~~Route~~Where practical or feasible, route road drainage away from potentially unstable ~~stream channels,~~ fills~~,~~ and hillslopes~~.~~; • Where practical or feasible, route road drainage so it cannot reach streams, this may be accomplished with road drainage directed off roads prior to reaching streams and being filtered through adequate vegetation buffers; and • When management activities are conducted within the sediment delivery influence area, ground disturbance shall be minimized and sufficient ground cover shall be retained (existing vegetation and/or by seeding, plantings, and erosion control measures) to limit soil movement into and within the RCA.
RF-2f	~~Avoid or minimize adverse impacts on natural hydrologic flow paths.~~Avoid sidecasting road surface material which may reach streams and fish bearing water bodies.
~~RF-2g~~	~~Avoid sidecasting road surface material, which is prohibited on road segments within or leading into RCAs.~~

Standards and Guidelines	Conservation Measures
RF-3	Avoid adverse effects on TES and other native fish by implementing the following: • Relocating or reconstructing roads and drainage features that are not effective at controlling sediment delivery; • Prioritizing reconstruction based on the current and potential habitat damage and the ecological value of the riparian resources affected; and • Stabilizing, closing, or obliterating roads not needed for future management activities. Prioritize these actions based on the current and potential damage to native fish and the ecological value of riparian resources affected.
RF-4	New, ~~and~~ replacement, and reconstructed stream crossings (culverts, bridges, and other stream crossings) must be designed to: • Accommodate a 100-year flood, including associated bedload and debris; • Maintain fish and aquatic organism passage; ~~and~~ • Maintain channel integrity~~.~~; and • Accommodate mean bankfull channel widths. ~~For replacement crossings, potential benefits will be greater than the potential degradation to riparian conditions.~~ ~~See road construction and maintenance BMPs RF2c-1.~~
RF-5	Refer to Road Management Guidelines in **Appendix B** (Best Management Practices) (Volume II) for a complete list of road management standards and guidelines.

Standards and Guidelines	Conservation Measures
Grazing Management	
GM-1	~~Modify grazing practices (e.g., accessibility of riparian areas to livestock, length of grazing season, stocking levels, and timing of grazing) that retard or prevent attainment of RMOs or that are likely to adversely affect TES fish. Suspend grazing if adjusted practices are not effective in meeting RMOs and avoiding adverse effects on TES fish.~~Range project plans, allotment management plans, and annual plans of operation shall be developed, revised, and maintained where needed to achieve desired conditions and functional WACIs. These plans establish objectives and identify actions for managing vegetation resources to achieve desirable riparian and aquatic conditions. This may include grazing schedule, grazing system, season of use, class of livestock, stocking levels, forage products and utilization rates, and improvements needed to achieve functional desired conditions. The results of monitoring riparian and streamside condition will be used to determine the need for change.
GM-2	~~Locate new livestock handling and management facilities outside of RCAs. Ensure that existing livestock handling facilities inside RCAs do not prevent attainment of RMOs or adversely affect TES fish. Relocate or close facilities where these objectives cannot be met.~~ New management activities within or affecting RCAs shall be conducted only if they are consistent with the RCA management objectives of maintaining fully functional aquatic/riparian conditions and processes, and improving conditions and processes (through either active or passive measures) that are not fully functional (desired conditions).
GM-3	~~Limit livestock~~ Existing land uses (trailing, bedding, watering, salting, loading, ~~and~~ other handling efforts~~ to those areas and times that would not prevent or retard attainment of RMOs or adversely affect TES fish.~~ , etc.), facilities (e.g., livestock handling and management facilities), and actions within or affecting RCAs shall be modified, discontinued, or relocated if they are not maintaining fully functional aquatic/riparian conditions and processes, or improving conditions and processes (through either active or passive measures) that are not fully functional.
GM-4	Develop and implement grazing practices in areas of known or suspected TES fish spawning to avoid or ~~reduce~~restrict trampling of redds (may require fencing) and other direct and indirect effects that may result in adverse impacts on the species.
GM-5	Following is a summary of the grazing management monitoring protocol for the riparian and aquatic strategy for the Cottonwood Field Office. 1. All grazing allotments will have an established designated monitoring area (DMA). A DMA is the location in riparian areas and along the streambanks of a livestock grazing unit where monitoring takes place. The DMA would be permanently marked (e.g., reference tags, rebar) and identified (e.g., mapped, GPS). The DMA should reflect typical livestock use where they enter and use vegetation in riparian areas immediately adjacent to the stream. 2. Within an allotment, emphasis for selection of DMAs would be on stream reaches with TES species, where spawning and/or early rearing occur (typically tributary streams to large mainstem rivers or 3rd to 5th order streams), or non-fish bearing streams that may affect TES streams, or mainstem rivers if riparian/streambank impacts are occurring from livestock use. 3. Monitoring requirements may include various levels or combinations of

Standards and Guidelines	Conservation Measures
	effectiveness monitoring and/or implementation monitoring. Examples of effectiveness monitoring would include greenline vegetation composition, woody species regeneration, streambank stability, and stream channel morphology. Examples of implementation monitoring would include residual vegetation measurement (e.g., stubble height), streambank alteration, compliance with season of use, and stocking rates. Effectiveness and implementation indicators monitored would be dependent on riparian and aquatic conditions and resource concerns. 4. Three intensities (e.g., high, moderate, and low) of grazing allotment monitoring will be conducted, and is dependent on sensitivity of the stream channel and potential for grazing effects to riparian areas, streambanks, and TES species. • High intensity monitoring (e.g., low gradient B and C channels, spawning and early rearing TES habitat, with high potential for grazing effects to TES species and habitats) and would include establishment of a streambank and riparian monitoring site (DMA) and monitoring a minimum of every one to three years. • Moderate intensity monitoring (e.g., low gradient B and C channels, spawning and early rearing TES habitat, with moderate potential for grazing effects to TES species and habitats) and would include establishment of a streambank and riparian monitoring site (DMA) and monitoring a minimum of every four to five years. • Low intensity monitoring (e.g., high gradient A channel, intermittent/perennial non-fish bearing stream, low potential for grazing effects to TES species or habitats), may include establishment of a photo point(s) and narrative description of channel, streambank, and riparian habitat, and monitoring would be conducted every 10 to 15 years. 5. The results of monitoring and BLM land attributed grazing effects to TES species and habitats would be evaluated for needed changes. If warranted, needed changes to grazing would be implemented to support achievement of desired conditions. Coordination would take place with BLM grazing leasees on actions that would change existing grazing authorizations. As needed, coordination would also occur with other federal and state agencies.

Standards and Guidelines	Conservation Measures
Recreation Management	
RM-1	~~Design, construct, and operate recreation facilities, including trails and dispersed sites, in a manner that does not retard or prevent attainment of the RMOs and that avoids adverse effects on TES fish. Complete watershed analysis before building recreation facilities in RCAs. The level of watershed or site-specific analysis should be commensurate with the scope and issues of the project and related aquatic resources. For recreation sites, the level of analysis would be more detailed for 5th-code HUCs and smaller, while for mainstem rivers (4th-code HUCs) the ability to adversely affect RMOs may not be as significant.~~ ~~At a minimum, the analysis should in all cases address sediment, LWD supply/recruitment, water temperature, and floodplain and riparian encroachment. Analysis will include the site scale, in the context of the reach scale, and watershed scales. Depending on site characteristics, additional factors may be included.~~ ~~For existing recreation facilities inside RCAs, ensure that the facilities or use of the facilities will not prevent attainment of RMOs or adversely affect TES fish. Relocate or close recreation facilities where RMOs cannot be met or adverse effects on TES fish cannot be avoided.~~Existing land uses, facilities (e.g., dispersed and developed recreation facilities and practices), and actions within or affecting RCAs shall be modified, discontinued, or relocated if they are not maintaining fully functional aquatic/riparian conditions and processes, or improving conditions and processes (through either active or passive measures) that are not fully functional. Avoid or minimize adverse effects on TES fish and habitats and desired conditions.
RM-2	~~Adjust dispersed and developed recreation practices that retard or prevent attainment of RMOs or adversely affect TES fish. Eliminate the practice or occupancy in cases where adjustment measures, such as education, use limitations, traffic control devices, increased maintenance, facilities relocation, and specific site closures are not effective in meeting RMOs and avoiding adverse effects on TES fish.~~Developed recreation sites will have a plan for each site that addresses site vegetation management, riparian/streambank management, implementation and effectiveness monitoring, and operating plans. Plan will identify actions needed to avoid or minimize adverse effects on TES fish and habitats and desired conditions.
RM-3	~~Address attainment of RMOs and potential effect on TES fish in Wild and Scenic Rivers, Wilderness, and other Recreation Management Plans.~~Complete watershed analysis and/or site-specific analysis prior to construction of a new developed recreation site in an RCA.
RM-4	New management activities within or affecting RCAs should be conducted only if they are consistent with the RCA management objectives of maintaining fully functional aquatic/riparian conditions and processes, and improving conditions and processes (through either active or passive measures) that are not fully functional. New recreation site development and operation will avoid or minimize adverse effects on TES fish and habitats and desired conditions.

Standards and Guidelines	Conservation Measures
RM-5	When management activities are conducted within the sediment delivery influences area, ground disturbance shall be minimized and sufficient ground cover shall be retained to limit soil movement into the RCA to allow attainment of RCA objectives (desired conditions). Buffer widths, vegetation cover, and/or natural topography features should be sufficient to minimize risks for erosion/sediment reaching stream channels and other water bodies.
RM-6	Management activities and land uses in RCAs shall be implemented to attain proper functioning condition as an initial step to move habitat conditions of streams, riparian areas, lakes, and ponds toward achieving aquatic and RCA management objectives (desired conditions).
Minerals Management	
MM-1	~~(PACFISH) Avoid adverse effects on listed species and designated critical habitat from mineral operations. Require a reclamation plan, approved plan of operations (or other governing document), and reclamation bond if the notice of intent indicates that a mineral operation would be located in an RCA or could affect attainment of RMOs or adversely affect listed anadromous fish. For effects that cannot be avoided, plans and bonds must address the costs of removing facilities, equipment, and materials; recontouring disturbed areas to the topography before the land was mined; isolating and neutralizing or removing toxic or potentially toxic materials; salvaging or replacing topsoil; and preparing and revegetating seedbeds to attain RMOs and avoid adverse effects on listed anadromous fish. Ensure reclamation plans contain measurable attainment and band release criteria for each reclamation activity.~~For those management activities conducted pursuant to valid existing rights that may pose risks to achievement of RCA management objectives (desired conditions), existing authorities shall be used to mitigate and/or require, to the extent authorized, design features that would contribute to the maintenance of banks, shorelines, bottom configuration, water quality, amount and distribution of woody debris, thermal regulation, characteristic erosion rates, and amount and distribution of source habitats.
MM-2	~~Locate structures, support facilities, and roads outside RCAs. Where there is no alternative to siting facilities in RCAs, locate and construct the facilities in ways that avoid impacts on RCAs and streams and adverse effects on TES fish. Where there is no alternative to road construction, keep the number of roads to the minimum necessary for the approved mineral activity. Close, obliterate, and revegetate roads no longer required for mineral or land management activities.~~ Management activities and land uses in RCAs shall be implemented to attain proper functioning condition as an initial step to move habitat conditions of streams, riparian areas, lakes, and ponds toward achieving aquatic and RCA management objectives (WACIs).

Standards and Guidelines	Conservation Measures
MM-3	~~Prohibit solid and sanitary waste facilities in RCAs. If there is no alternative to locating mine waste (waste rock, spent ore, tailings) facilities in RCAs and if releases can be prevented and stability can be ensured, then:~~ When management activities are conducted within the sediment delivery influences area, ground disturbance shall be minimized and sufficient ground cover shall be retained (existing vegetation and/or by seeding, plantings, and erosion control measures) to limit soil movement into the RCA to allow attainment of RCA objectives (desired conditions). Buffer widths, vegetation cover, and/or natural topography features should be sufficient to minimize risks for erosion/sediment reaching stream channels and other water bodies.
~~MM-3a~~	~~Analyze the waste material using the best conventional sampling methods and analytic techniques to determine its chemical and physical stability characteristics;~~
~~MM-3b~~	~~Locate and design the waste facilities using the best conventional techniques to ensure mass stability and prevent the release of acid or toxic materials; if the best conventional technology is not sufficient to prevent releases and ensure stability over the long term, prohibit these facilities in RCAs;~~
~~MM-3c~~	~~Monitor waste and waste facilities to ensure chemical and physical stability, and make adjustments to operations as needed to avoid adverse effects on TES fish and RMOs;~~
~~MM-3d~~	~~Reclaim and monitor waste facilities to ensure chemical and physical stability and revegetation to avoid adverse effects on TES fish and to attain the RMOs; and~~
~~MM-3e~~	~~Require reclamation bonds adequate to ensure long-term chemical and physical stability and successful revegetation of mine waste facilities.~~
MM-4	New management activities (subject to existing mineral laws) within or affecting RCAs shall be designed to be consistent with the RCA management objectives of maintaining fully functional aquatic/riparian conditions and processes, and improving conditions and processes (through either active or passive measures) that are not fully functional (desired conditions). New mineral management projects and operation will avoid or minimize adverse effects on TES fish and habitats, and desired WACIs.~~For leasable minerals, prohibit surface occupancy within RCAs for oil, gas, and geothermal exploration and development activities where contracts and leases do not already exist, unless there are no other options for location and RMOs can be attained and adverse effects on TES fish can be avoided. Adjust the operating plans of existing contracts to eliminate impacts that prevent attainment of RMOS and avoid adverse effects on TES fish.~~
MM-5	Locate structures, support facilities, solid and sanitary waste facilities, and roads outside RCAs. Where there is no alternative to locating facilities or mine waste (waste rock, spent ore, tailings) in RCAs, locate and construct the facilities or manage mine waste in ways that avoid impacts on RCAs and streams and adverse effects on TES fish and habitats, and desired conditions. Where there is no alternative to road construction, keep the number of roads to the minimum necessary for the approved mineral activity. Close, obliterate, and revegetate roads no longer required for mineral or land management activities.~~Permit sand and gravel mining and extraction within RCAs only if no alternatives exist, if the action would not retard or prevent attainment of RMOs, and adverse effects on TES fish would be avoided.~~

Standards and Guidelines	Conservation Measures
MM-6	Permit sand and gravel mining and extraction within RCAs only if no alternatives exist, if the action would not retard or prevent attainment of desired conditions, and adverse effects on TES fish would be avoided.~~Develop inspection, monitoring, and reporting requirements for mineral activities. Evaluate and apply the results of inspection and monitoring to modify mineral plans, leases, or permits as needed to eliminate impacts that prevent attainment of RMOs and avoid adverse effects on TES fish.~~
MM-7	Develop inspection, monitoring, and reporting requirements for mineral activities. Evaluate and apply the results of inspection and monitoring to modify mineral plans, leases, or permits as needed to eliminate impacts that prevent attainment of desired conditions and avoid adverse effects on TES fish and habitats.
Fire Management	
FM-1	~~Design and implement fire suppression strategies, practices, and actions so as not to retard or prevent attainment of RMOs in the long term (see RA-6). Strategies should recognize the role of fire in ecosystem function and identify those instances where fire suppression actions could perpetuate or be damaging to long-term ecosystem function or TES fish.~~ Fire Suppression strategies, practices, and actions in RCAs should be designed to maintain desired conditions and minimize disturbances of riparian ground cover and vegetation. Minimum impact suppression techniques shall be used within RCAs unless safety to human live or property is an issue.
FM-2	~~Locate incident~~An interdisciplinary team, including a fishery biologist, to the extent practical shall be used to predetermine incident base, dipping, and helibase locations during pre-suppression planning. Incident bases, camps, helibases, staging areas, helispots, and other centers for incident activities shall be located outside of RCAs. If the only suitable location for these activities is within the RCA, an exemption may be granted following a review and recommendation by a resource advisor. The advisor ~~will~~should prescribe the location, use conditions, and rehabilitation requirements, with avoidance of adverse effects ~~on TES fish~~to terrestrial, aquatic, and riparian resources as a primary goal.~~ Use an interdisciplinary team, including a fishery biologist, for fire prevention planning to determine incident base and helibase.~~
FM-3	Avoid delivery of chemical retardant, foam, or additives to, or discharge of gray water into, surface waters. An exception is warranted where overriding immediate safety imperatives exist~~ or if these materials are approved for aquatic use~~, or, following a review and ~~pose no risk to TES fish. An exception may be warranted~~ recommendation by a resource advisor, when the action agency~~, with concurrence from the resource advisor, fisheries biologist, or line officer~~ determines a~~n escape~~ fire would cause more long-term damage to fish habitats than chemical delivery to surface waters.
FM-4	~~Design prescribed burn projects and prescriptions to contribute to the attainment of the RMOs.~~Management activities and land uses in RCAs shall be implemented to attain proper functioning condition for aquatic and riparian habitats as an initial step to move habitat conditions of streams, riparian areas, lakes, wetlands, and ponds toward achieving aquatic and RCA management objectives (desired conditions).

Standards and Guidelines	Conservation Measures
FM-5	New management activities within or affecting RCAs shall be conducted only if they are consistent with the RCA management objectives of not precluding or maintaining functional aquatic/riparian conditions and processes, and improving conditions and processes (through either active or passive measures) that are not fully functional (desired conditions). Management actions will balance short-term risks (to aquatic and other resources) with long-term benefits as actions are considered to move toward a natural variability of conditions.
FM-6	Immediately establish an interdisciplinary team to develop a rehabilitation plan to support achievement of desired conditions and avoid adverse effects on TES species whenever RCAs or uplands have experienced severe damage to soils and vegetation from fire.
Lands and Realty	
~~LH-1~~LR-1	New management activities (subject to existing laws) within or affecting RCAs shall be designed and implemented to be consistent with the RCA management objectives of maintaining fully functional aquatic/riparian conditions and processes, and improving conditions and processes (through either active or passive measures) that are not fully functional (WACIs). New lands and realty projects will avoid or minimize adverse effects on TES fish and habitats, and desired conditions. ~~Require instream flows and habitat conditions for hydroelectric and other surface water development proposals that maintain or restore riparian resources, favorable channel conditions, and fish passage, reproduction, and growth. Coordinate this process with the appropriate state agencies. When relicensing hydroelectric projects, provide written and timely license conditions to the Federal Energy Regulatory Commission that require fish passage and flows and habitat conditions that maintain/restore riparian resources and channel integrity. Coordinate relicensing projects with the appropriate state agencies.~~
~~LH-2~~LR-2	For those management activities conducted pursuant to valid existing rights that may pose risks to achievement of RCA management objectives (desired WACIs), existing authorities shall be used to mitigate and/or require, to the extent authorized, design features that would contribute to the maintenance of banks, shorelines, bottom configuration, water quality, amount and distribution of woody debris, thermal regulation, characteristic erosion rates, and amount and distribution of source habitats. ~~Locate new hydroelectric ancillary facilities outside RCAs. For existing ancillary facilities inside the RCA that are essential to proper management, provide recommendations to Federal Energy Regulatory Commission to ensure that the facilities would not prevent attainment of the RMOs and that adverse effects on TES fish are avoided. Where these objectives cannot be met, recommend to Federal Energy Regulatory Commission that these ancillary facilities should be relocated. Locate, operate, and maintain hydroelectric facilities that must be located in RCAs to avoid effects that would retard or prevent attainment of the RMOs and avoid adverse effects on TES fish.~~

Standards and Guidelines	Conservation Measures
~~LH-3~~LR-3	When management activities are conducted within the sediment delivery influences area, ground disturbance shall be minimized and sufficient ground cover shall be retained (existing vegetation and/or by seeding, plantings, and erosion control measures) to limit soil movement into the RCA to allow attainment of RCA objectives (WACIs). Buffer widths, vegetation cover, and/or natural topography features should be sufficient to minimize risks for erosion/sediment reaching stream channels and other water bodies. ~~Issue leases, permits, rights-of-way, and easements to avoid effects that would retard or prevent attainment of the RMOs and TES fish. Where the authority to do so was retained, adjust existing leases, permits, rights-of-way, and easements to eliminate effects that would retard or prevent attainment of the RMOs or adversely affect native aquatic species or water quality. Priority for modifying existing leases, permits, rights-of-way, and easements would be based on the current and potential adverse effects on TES fish and the ecological value of the riparian resources affected.~~
~~LH-4~~LR-4	During licensing or relicensing of hydroelectric projects, terms and conditions that achieve aquatic and RCA management objectives (i.e., desired conditions) over the new license term shall be submitted to the Federal Energy Regulatory Commission, where appropriate. ~~Use land acquisition, exchange, and conservation easements to meet RMOs and facilitate restoration of fish stocks and other species at risk of extinction.~~
LR-5	Use land acquisition, exchange, and conservation easements to support achievement of desired conditions and facilitate restoration of TES species.
General Riparian Area Management	
RA-1	Management activities and land uses in RCAs shall be implemented to attain proper functioning condition as an initial step to move habitat conditions of streams, riparian areas, lakes, wetlands, and ponds toward achieving aquatic and RCA management objectives (desired conditions).~~Identify and coordinate with federal, tribal, state, and local governments to secure instream flows needed to maintain riparian resources, channel conditions, and aquatic habitat.~~
RA-2	~~Trees may be felled in~~New management activities within or affecting RCAs ~~when~~shall be conducted only if they ~~pose a safety risk. Keep felled trees on-site when needed to meet woody debris~~are consistent with the RCA management objectives of maintaining fully functional aquatic/riparian conditions and processes, and improving conditions (WACIs) and processes (through either active or passive measures) that are not fully functional. Riparian management actions will avoid or minimize adverse effects on TES and other native fish and habitats, and desired conditions. Management actions will balance short-term risks (to aquatic and other resources) with long-term benefits as actions are considered to move toward a natural variability of conditions.
RA-3	Identify and coordinate with federal, tribal, state, and local governments to secure instream flows needed to maintain riparian resources, channel conditions, and aquatic habitat. ~~Apply herbicides, pesticides, and other toxicants, and other chemicals in a manner that does not retard or prevent attainment of RMOs and avoids adverse effects on TES fish.~~

Standards and Guidelines	Conservation Measures
RA-4	Trees may be felled in RCAs when they pose a safety risk. Keep felled trees on-site when needed to meet woody debris objectives. ~~Prohibit storage of fuels and other toxicants and refueling within RCAs unless there are no other practicable alternatives. Refueling sites and storage areas within an RCA must be approved and have an approved spill containment plan.~~
RA-5	~~Locate water drafting sites to avoid adverse effects on TES fish~~Apply pesticides (herbicides, insecticides, etc.), and ~~instream flows~~other toxicants, and other chemicals in a manner that does not retard or prevent attainment of ~~RMOs.~~ desired conditions~~WACIs~~ and avoids adverse effects on TES fish. When applying pesticides, etc. in a RCA, a spill kit will onsite at all times. Prohibit storage and mixing of pesticides (herbicides, insecticides, etc.) within RCA's unless there are no other practicable alternatives.
RA-6	Prohibit storage of fuels and other toxicants and refueling within RCAs unless there are no other practicable alternatives. Refueling sites and storage areas within a RCA will have an approved refueling and spill containment plan.~~Do not undertake management activities that would retard attainment of trends toward improving aquatic and riparian habitats in restoration subwatersheds. Short-term adverse effects (discountable or negligible effects) are acceptable, if they would not preclude attainment of long-term improvement to aquatic and riparian habitats. Because of past land uses and habitat degradation (e.g., road encroachment on streams, dredge mining, fish passage barrier culverts), it is acceptable to have short-term adverse effects to achieve long-term benefits.~~
RA-7	Locate water drafting sites to avoid adverse effects on TES and other native fish and instream flows and in a manner that does not retard or prevent attainment of desired conditions.
RA-8	Do not undertake management activities that would retard attainment of trends toward improving aquatic and riparian habitats in restoration subwatersheds. Short-term adverse effects are acceptable, if they would not preclude attainment of long-term improvement to aquatic and riparian habitats. Because of past land uses and habitat degradation (e.g., road encroachment on streams, dredge mining, fish passage barrier culverts), it is acceptable to have short-term adverse effects to achieve long-term benefits.
Watershed and Habitat Restoration	
WR-1	Management activities and land uses in RCAs shall be implemented to help promote achievement or maintenance of desired WACIs. ~~Design and implement watershed restoration projects in a manner that promotes the long-term ecological integrity of ecosystems, conserves the genetic integrity of native species, and contributes to attainment of RMOs.~~

Standards and Guidelines	Conservation Measures
WR-2	New management activities within or affecting RCAs shall be conducted only if they are consistent with the RCA management objectives of maintaining fully functional aquatic/riparian conditions and processes, and improving conditions and processes (through either active or passive measures) that are not fully functional good quality conditions and WACIs. New watershed and habitat restoration projects will avoid or minimize adverse effects on TES fish and habitats, and desired conditions. Management actions will balance short-term risks (to aquatic and other resources) with long-term benefits as actions are considered to move toward a natural variability of conditions.~~Cooperate with federal, state, local, and tribal agencies and private landowners to develop watershed-based coordinated resource management plans or other cooperative agreements to meet RMOs.~~
WR-3	Design and implement watershed restoration projects in a manner that promotes the long-term ecological integrity of ecosystems, conserves the genetic integrity of TES species, and contributes to attainment of desired conditions and high-quality WACIs.~~Do not use planned restoration as a substitute for preventing habitat degradation; that is, use planned restoration only to mitigate existing problems not to mitigate the effects of proposed activities.~~
WR-4	Cooperate with federal, state, local, and tribal agencies and private landowners to develop watershed-based coordinated resource management plans or other cooperative agreements to meet desired conditions and high-quality WACIs.
WR-5	Do not use planned restoration as a substitute for preventing habitat degradation; that is, use planned restoration only to mitigate existing problems not to mitigate the effects of proposed activities. It is acknowledged that some proposed activities may have short term adverse effects, but shall not degrade or preclude trends to achieve desired conditions and high-quality WACIs in the long term.
Fisheries and Wildlife Restoration	
FW-1	Management activities and land uses in RCAs shall be implemented to attain proper functioning condition as an initial step to move habitat conditions of streams, riparian areas, lakes, wetlands, and ponds toward achieving aquatic and RCA management objectives (desired conditions).~~Design and implement fish and wildlife habitat restoration and enhancement actions in a manner that contributes to attainment of RMOs.~~
FW-2	New management activities within or affecting RCAs shall be conducted only if they are consistent with the RCA management objectives of maintaining fully functional aquatic/riparian conditions and processes, and improving conditions and processes (through either active or passive measures) that are not fully functional. New fisheries and restoration projects will avoid or minimize adverse effects on TES fish and habitats, and desired conditions. Management actions will balance short-term risks (to aquatic and other resources) with long-term benefits as actions are considered to move toward a natural variability of conditions.

Standards and Guidelines	Conservation Measures
FW-3 ~~FW-2~~	Design, construct, and operate fish and wildlife interpretive and other user-enhancement facilities in a manner that does not retard or prevent attainment of the ~~RMOs~~ desired conditions or adversely affect TES fish. For existing fish and wildlife interpretive and other user-enhancement facilities inside RCAs, ensure the RMOs are met and adverse effects on TES fish are avoided. Where RMOs cannot be met or adverse effects on TES fish avoided, relocate or close these facilities.
FW-4	Cooperate with federal and state wildlife management agencies to identify and eliminate wild ungulate impacts that prevent attainment of the desired conditions or adversely affect TES fish.
FW-5 ~~FW-4~~	Cooperate with federal and state fish management agencies to identify and eliminate adverse effects on native anadromous fish associated with habitat manipulation, fish stocking, fish harvest, and poaching.

This page intentionally left blank.