

## APPENDIX C

### **Forest Plan Standards and Objectives Relating to Range Activities, Riparian Areas, Water Quality and Fish Habitat**

*Forest Plan (1990):* The original Forest Plan standards for grazing in riparian areas are listed in Chapter IV of the Forest Plan. There are seven standards that pertain to range for both Management Area 3A (non-anadromous riparian areas) and 3B (anadromous riparian areas). These standards can be found on pages IV 57-58 (MA3A), and IV 64-65 (MA3B) of the FLMP.

The original Forest Plan established quantifiable utilization standards for grazing in riparian areas in Chapter IV of the Forest Plan (See MA3A/3B standard 18). These standards were utilization levels of grass and grass-like species, and shrubs (see Tables IV-4 and IV-5).

*Amendment 29 (1994):* In response to the Columbia River Basin Policy Anadromous Fish Habitat Management Policy and Implementation Guide (1991) the Forest modified Standard 5 of the Fish and Wildlife resource elements. The amended Standard 5 included forest-specific numerical desired future conditions (DFCs) for MA3A and 3B. The DFCs addressed: 1) sediment/substrate, 2) water quality, 3) stream channel morphology, and 4) riparian vegetation.

Amendment 29 did not set specific quantifiable standards for grazing activities. However, grazing activities can directly affect the attainment of Amendment 29 DFCs for: 1) sediment/substrate (cobble embeddedness), 2) channel morphology (bank stability, lower bank angle, width to depth ratios, 3) riparian vegetation (ground cover, percentage of stream bank vegetated), and 4) shade/canopy closure (hardwood/meadow complex).

*PACFISH/INFISH Amendments (1995):* The Regional Forester amended the Forest Plan in 1995 with the PACFISH and INFISH amendments to increase protection and increase the rate of recovery of aquatic habitat. PACFISH/INFISH established eight riparian goals, six riparian management objectives for aquatic habitat (RMOs) and four standards for grazing management activities (GM-1 to GM-4). PACFISH/INFISH RMOs are equivalent to Amendment 29 DFCs. PACFISH/INFISH amendments supplemented existing management direction in the Forest Plan by replacing existing conflicting direction that provided less protection for aquatic habitat. PACFISH/INFISH amendments did not replace existing Forest Plan direction where the Forest Plan provided more protection for aquatic habitat.

PACFISH/INFISH standards and guidelines GM-1 to GM-4 state that grazing activities will not to retard or prevent the attainment of RMOs. Retard is defined as slowing the rate of recovery below the near natural rate of recovery. RMOs that can directly be affected by grazing activities are: 1) bank stability, 2) lower bank angle, and 3) width to depth ratio. Additional guidelines for grazing activities were provided in Enclosure B of the PACFISH implementation direction letter from the Regional Forester.

The Forest has developed a riparian monitoring strategy to determine if grazing activities are retarding the natural rate of recovery. Monitoring is divided into: 1) grazing use indicator (i.e. move trigger) monitoring, 2) implementation monitoring, and 3)

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effectiveness monitoring. Permittees are responsible for grazing use monitoring and the Forest is responsible for implementation and effectiveness monitoring. See the Malheur National Forest Riparian Monitoring (Condition and Trend) Strategy for a detailed description of the monitoring strategy.

### **Forest Plan Objectives (FLMP, Chapter IV)**

#### RESOURCE SUMMARIES

*Fish and Wildlife:* Manage fish habitat and riparian areas to achieve increases in fish habitat capability. This habitat improvement will be accomplished by a combination of the following:

- (a) Implementation of livestock management strategies to achieve better distribution of livestock, and better control of forage utilization in riparian areas. This will help achieve a more diverse and abundant riparian vegetation condition and geomorphic recovery of the stream channel.

*Riparian Areas:* All riparian areas will be managed to protect or enhance their value for water quality, fish habitat and wildlife.

All new or updated allotment management plans will include a strategy for managing riparian areas for a mix of resource uses. A measurable desired future riparian condition will be established based on existing and potential vegetative conditions. When the current riparian condition is less than that desired, objectives will include a schedule for improvement. Allotment management plans will identify management actions needed to meet riparian objectives within the specific time frame. The allotment management plan will address the monitoring needed to determine if the desired rate of improvement is occurring.

A riparian inventory will be completed by 2000 for the entire Forest based on the & process described in 'Managing Riparian Ecosystems (Zones) for Fish and Wildlife in Eastern Oregon and Eastern Washington' 1979. This inventory procedure will evaluate the present condition of riparian habitat, its potential for improvement, and provide a basis for establishment of riparian area habitat management objectives for all riparian dependent resources. The schedule for updating the allotment management plans may be amended based on this inventory (see Appendix A, Activity Schedule A-10). The riparian inventory that will be implemented on the Forest will accomplish the following:

- (a) Identify and prioritize riparian areas where high riparian resource value potential exists.
- (b) Evaluate riparian areas using parameters such as percent stream surface shaded, percent streambank stability, percent streambed sedimentation, and percent grass, shrub, and tree cover.
- (c) Determine the site potential of each stream reach for vegetative response, the time frame required to attain the desired response, and the management actions needed to meet the objectives.

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Grazing allotments with riparian areas in less than desirable condition are identified in this Forest Plan. Appendix A, Activity Schedule A-10 establishes a schedule for updating all the allotment management plans on the Forest. This schedule has been prioritized to update the allotments in less than desirable condition first. The annual use of available forage in riparian areas on allotments in a satisfactory condition will be 45% of grass and grasslikes; and 40% of shrubs. In riparian areas on allotments in unsatisfactory condition the annual use of available forage will range from 0 to 35% of grass and grasslikes; and 0 to 30% of shrubs. This corresponds to Strategy C, Extensive Management in Tables IV-4 and IV-5.

All available methods may be employed to achieve the desired levels of utilization by permitted livestock and big game. Design the methods selected for controlled livestock use to fit the site-specific requirements for improving the riparian area to satisfactory condition. Any one or a combination of methods may be used to treat less than desirable riparian areas such as: corridor fencing, herding, additional water developments, salting, nonuse for resource protection, early and late season use, shorter grazing season, reduced livestock numbers, control of degree of use, and/or creating additional pastures through fencing.

### **Management Area 3A Direction - (FLMP, Chapter IV)**

#### MANAGEMENT AREA 3A (19,268 acres) - NON-ANADROMOUS RIPARIAN AREAS

##### *1. Description*

Management Area 3A consists of lakes, perennial streams and seasonally flowing streams; lands adjacent to lakes, perennial and seasonal streams, floodplains and wetlands; wet, moist areas such as meadows, springs, seeps, bogs, and wallows; and quaking aspen stands in watersheds that do not support anadromous fish. These areas shall correspond to at least the recognizable area dominated by riparian vegetation. Often the area is nearly flat, and may be subject to various degrees of flooding or saturation.

Streams and adjacent lands in this management area support populations of resident fish, and include all Class I, II, and III streams and adjacent lands where practices are modified to protect water quality and aquatic resources. Also included in this management area are those Class IV streams and upland riparian areas, such as seeps, springs, meadows and bogs, which have high water table conditions during some parts of the growing season. Class IV channels will be recognized as the important link between the uplands and the downslope perennial streams. They will be managed to ensure bank and channel stability. This will be determined from a site specific evaluation which will include the size of the area, plant and animal species present, and overall watershed condition.

Geographical boundaries of riparian areas are to be determined by on-site characteristics of soil and vegetation, but will be a minimum of 100 feet from the edge of all Class I, II, and III streams. All other riparian areas including Class IV streams and upland riparian areas will be identified and mapped during project planning and implementation. These

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Class IV and other riparian areas will have a variable width, depending on site specific needs for all riparian-dependent resources.

### 2. Goals

Manage riparian areas to protect and enhance their value for wildlife, resident fish habitat, and water quality. Manage timber, grazing, and recreation to give preferential consideration to riparian-dependent species on that portion of the management area 'suitable' for timber management, grazing, or recreation. Design and conduct management in all riparian areas to maintain or improve water quality and beneficial uses

### 3. Standards

The Forest-wide management direction included in Chapter IV, Section E, of this Plan applies to this management area except where superseded by the following standards:

#### RESOURCE ELEMENT STANDARDS

##### *Fish and Wildlife:*

5. Provide the necessary habitat to maintain or increase populations of management indicator species: bull trout, cutthroat trout, and rainbow/redband trout.
6. Cooperate and coordinate with other agencies and groups to achieve the following objectives:
  - (a) Develop instream habitat improvement projects for resident fish species with emphasis on cooperative projects with the Oregon Department of Fish and Wildlife, Bonneville Power Administration, Isaac Walton League, Trout Unlimited, and others, as appropriate.
  - (b) Maintain adequate minimum flows for resident fish species. Coordinate with Oregon Department of Fish and Wildlife in the identification of problems and the development of solutions.
7. Maintain dead and defective tree habitat capable of supporting at least 60% of the potential population of the management indicator species for primary excavators.
8. Manage the composition and productivity of key riparian vegetation to protect or enhance riparian-dependent resources. Emphasis will be on the reestablishment of remnant hardwood shrub and tree communities
9. Plan, design and implement riparian habitat improvement activities to upgrade riparian areas that are not in a condition to meet management objectives or the desired future condition.
10. Improve the rate of recovery in riparian areas that are not in a condition to meet management objectives by eliminating or reducing the impacts of management activities that may slow riparian recovery.
11. Maintain or enhance water quality and/or fish habitat through instream or riparian improvements. Implement instream activities outside of the spawning and egg incubation period.
12. Provide for input of large, woody debris into all classes of streams and evaluate to determine if objectives are being met. Remove material that causes unacceptable channel and/or bank damage.
13. Maintain or enhance wet meadow habitats that are used by greater sandhill cranes for nesting or feeding

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14. Maintain non-stream associated riparian areas such as: seeps, springs, bogs and wallows together with their associated vegetative structure. Develop mitigation measures for management activities during project level environmental analysis.

*Range*

15. Grazing allotments with riparian areas in less than desirable condition will be identified and updated according to the schedule shown in Appendix A (Activity Schedule A-10)

16. Include in allotment management plans (AMPs) a strategy for managing future riparian areas for a mix of resource uses. Establish a measurable desired future condition based on existing and potential vegetative conditions. When the current riparian condition is less than that desired, objectives will include a schedule for improvement. AMPs will identify management actions needed to meet riparian objectives within specific time frames. Measurable objectives will be set for key parameters, such as amount of stream surface shaded, streambank stability, sedimentation, cover provided by trees, shrubs, forbs, grasses and grasslike vegetation. This process is described in 'Managing Riparian Ecosystems (Zones) for Fish and Wildlife in Eastern Oregon and Eastern Washington' (1979). The AMP will specify the monitoring needed to determine if the desired rate of improvement is occurring. AMPs currently not consistent with this direction will be developed or revised on a priority basis as shown in Appendix A (Activity Schedule A-10).

17. Using Activity Schedule A-10 and available funding, prepare Allotment Management Plans for every grazing allotment on the Malheur National Forest as soon as possible. This process will use information gathered through the range allotment analysis activity, including the analysis of the management situation. Prepare an allotment management plan for each allotment that provides the techniques to reach an agreed upon interdisciplinary desired future condition. Establish resource value ratings and the range resource management level needed to reach the desired future condition. Use Table IV-5 to establish utilization levels for grass/grasslikes and shrubs by range resource management level. Inventory existing conditions to determine if the riparian area is satisfactory or unsatisfactory.

18. Establish annual forage utilization requirements for each grazing allotment as a tool to achieve or maintain the desired condition. Use the forage utilization standards shown in Table IV-4, except where site-specific monitoring information shows that a higher level of utilization will achieve the desired future condition without delaying the rate of improvement. As a minimum, the desired condition must be 'satisfactory.'

**Table IV-4. Allowable Utilization of Available Forage in Riparian Areas (Percent Allowable Use of Available Forage)**

Range Resource Management Level	Grass and Grasslikes		Shrubs	
	S	U	S	U
STRATEGY B - Stewardship Management	40	0-30	30	0-25

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STRATEGY C - Extensive Management	45	0-35	40	0-30

Employ all available methods to achieve the desired levels of utilization by permitted livestock and big game. In cooperation with Oregon Department of Fish and Wildlife establish riparian area carrying capacity of big-game. Limit game populations to the level necessary to achieve riparian objectives for all riparian resources. Special emphasis needs to be placed on big game riparian winter range management.

Design the methods selected for controlled livestock use to fit the site-specific requirements for improving the riparian area to desirable condition. Any one or a combination of methods may be used to treat less than desirable riparian areas, such as corridor fencing, herding, additional water developments, salting, nonuse for resource protection, early and late season use, short-term grazing rather than season long, reduced livestock numbers, control of degree of use, and/or creating additional pastures through fencing.

19. Manage allotments to protect or enhance riparian-dependent resources.
20. Manage livestock grazing so that water quality meets Oregon State standards and fish populations are maintained at an acceptable condition or in an upward trend.
21. Maintain sufficient streamside vegetation to maintain streambank stability and fish habitat capability.

### **Management Area 3B Direction - (FLMP, Chapter IV)**

#### **MANAGEMENT AREA 3B (28,092 acres) - ANADROMOUS RIPARIAN AREAS**

##### *1. Description*

Management Area 3B consists of lakes, perennial streams and seasonally flowing streams; lands adjacent to lakes, perennial and seasonal streams; floodplains and wetlands; wet, moist areas such as meadows, springs, seeps, bogs, and wallows and quaking aspen stands in watersheds currently or potentially supporting anadromous fish. These areas shall correspond to at least the recognizable area dominated by riparian vegetation. Often the area is nearly flat, and may be subject to various degrees of flooding or saturation.

Streams and adjacent lands in this management area support populations of anadromous and resident fish, and include all Class I, II, and III streams and adjacent lands where practices are modified to protect water quality and aquatic resources. Also included in this management area are those Class IV streams and upland riparian areas, such as seeps, springs, meadows and bogs, which have high water table conditions during some parts of the growing season. Class IV channels will be recognized as the important link between the uplands and the downslope perennial streams. They will be managed to ensure bank and channel stability. This will be determined from a site specific evaluation which will

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include the size of the area, plant and animal species present, and overall watershed condition.

Geographical boundaries of riparian areas are to be determined by on-site characteristics of soil and vegetation, but will be a minimum of 100 feet from the edge of all Class I, II, and III streams. All other riparian areas including Class IV streams and upland riparian areas will be identified and mapped during project planning and implementation. These Class IV and other riparian areas will have a variable width, depending on site specific needs for all riparian-dependent resources.

### *2. Goals*

Manage riparian areas to protect and enhance their value for wildlife, anadromous fish habitat, and water quality. Manage timber, grazing, and recreation to give preferential consideration to anadromous fish on that portion of the management area 'suitable' for timber management, grazing, or recreation. Design and conduct management in all riparian areas to maintain or improve water quality and beneficial uses.

## RESOURCE ELEMENT STANDARDS

### *Fish and Wildlife:*

5. Provide the necessary habitat to maintain or increase populations of management indicator species with special emphasis on steelhead.
6. Cooperate and coordinate with other agencies and groups to achieve the following objectives:
  - (a) Develop instream habitat improvement projects for anadromous species with emphasis on cooperative projects with the Oregon Department of Fish and Wildlife, Bonneville Power Administration, Isaac Walton League, Trout Unlimited, and others, as appropriate.
  - (b) Cooperate with the Oregon Department of Fish and Wildlife in the identification and resolution of illegal taking of anadromous species
  - (c) Maintain adequate minimum flows for resident fish species. Coordinate with Oregon Department of Fish and Wildlife in the identification of problems and the development of solutions.
7. Maintain dead and defective tree habitat capable of supporting at least 60% of the potential population of the management indicator species for primary excavators.
8. Manage the composition and productivity of key riparian vegetation to protect or enhance riparian-dependent resources. Emphasis will be on the reestablishment of remnant hardwood shrub and tree communities
9. Plan, design and implement riparian habitat improvement activities to upgrade riparian areas that are not in a condition to meet management objectives or the desired future condition.
10. Improve the rate of recovery in riparian areas that are not in a condition to meet management objectives by eliminating or reducing the impacts of management activities that may slow riparian recovery.

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11. Maintain or enhance water quality and/or fish habitat through instream or riparian improvements. Implement instream activities outside of the spawning and egg incubation period.
12. Provide for input of large, woody debris into all classes of streams and evaluate to determine if objectives are being met. Remove material that causes unacceptable channel and/or bank damage.
13. Maintain or enhance wet meadow habitats that are used by greater sandhill cranes for nesting or feeding
14. Maintain non-stream associated riparian areas such as: seeps, springs, bogs and wallows together with their associated vegetative structure. Develop mitigation measures for management activities during project level environmental analysis.

### *Range*

15. Grazing allotments with riparian areas in less than desirable condition will be identified and updated according to the schedule shown in Appendix A (Activity Schedule A-10)
16. Include in allotment management plans (AMPs) a strategy for managing future riparian areas for a mix of resource uses. Establish a measurable desired future condition based on existing and potential vegetative conditions. When the current riparian condition is less than that desired, objectives will include a schedule for improvement. AMPs will identify management actions needed to meet riparian objectives within specific time frames. Measurable objectives will be set for key parameters, such as amount of stream surface shaded, streambank stability, sedimentation, cover provided by trees, shrubs, forbs, grasses and grasslike vegetation. This process is described in 'Managing Riparian Ecosystems (Zones) for Fish and Wildlife in Eastern Oregon and Eastern Washington' (1979). The AMP will specify the monitoring needed to determine if the desired rate of improvement is occurring. AMPs currently not consistent with this direction will be developed or revised on a priority basis as shown in Appendix A (Activity Schedule A-10).
17. Using Activity Schedule A-10 and available funding, prepare Allotment Management Plans for every grazing allotment on the Malheur National Forest as soon as possible. This process will use information gathered through the range allotment analysis activity, including the analysis of the management situation. Prepare an allotment management plan for each allotment that provides the techniques to reach an agreed upon interdisciplinary desired future condition. Establish resource value ratings and the range resource management level needed to reach the desired future condition. Use Table IV-5 to establish utilization levels for grass/grasslikes and shrubs by range resource management level. Inventory existing conditions to determine if the riparian area is satisfactory or unsatisfactory.
18. Establish annual forage utilization requirements for each grazing allotment as a tool to achieve or maintain the desired condition. Use the forage utilization standards shown in Table IV-5, except where site-specific monitoring information shows that a higher level of utilization will achieve the desired future condition without delaying the rate of improvement. As a minimum, the desired condition must be 'satisfactory.'

**Table IV-5. Allowable Utilization of Available Forage in Riparian Areas  
(Percent Allowable Use of Available Forage)**

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Range Resource Management Level	Grass and Grasslikes		Shrubs	
	S	U	S	U
STRATEGY B - Stewardship Management	40	0-30	30	0-25
STRATEGY C - Extensive Management	45	0-35	40	0-30

Employ all available methods to achieve the desired levels of utilization by permitted livestock and big game. In cooperation with Oregon Department of Fish and Wildlife establish riparian area carrying capacity of big-game. Limit game populations to the level necessary to achieve riparian objectives for all riparian resources. Special emphasis needs to be placed on big game riparian winter range management.

Design the methods selected for controlled livestock use to fit the site-specific requirements for improving the riparian area to desirable condition. Any one or a combination of methods may be used to treat less than desirable riparian areas, such as corridor fencing, herding, additional water developments, salting, nonuse for resource protection, early and late season use, short-term grazing rather than season long, reduced livestock numbers, control of degree of use, and/or creating additional pastures through fencing.

19. Manage allotments to protect or enhance riparian-dependent resources.

20. Manage livestock grazing so that water quality meets Oregon State standards and fish populations are maintained at an acceptable condition or in an upward trend.

21. Maintain sufficient streamside vegetation to maintain streambank stability and fish habitat capability.

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### Amendment 29 Desired Future Conditions MA3A/3B

#### Desired Future Condition (DFC)

Maintain or restore the habitat conditions which result in compliance with Oregon Water Quality Standards and ensure viable populations of aquatic and riparian-dependent species. The habitat elements (features) of sediment/substrate, water quality, channel morphology and riparian vegetation will be managed within their natural ranges of variability. The balance of these elements within these ranges of variability is to be considered the quantitative expression of achieving desired condition.

#### RESOURCE ELEMENT

Fish, Water, Quality, and Wildlife

Standard 5. Manage riparian areas to achieve the following desired conditions by habitat element, sub-element and numeric value. These values are to be measured on a subwatershed basis, and to the degree the individual riparian area contains these specific habitat elements.

**Table 1. Desired future conditions for habitat elements.**

Element	Sub-Element	Numeric Values <sup>1</sup>
A. Sediment/Substrate	1) Cobble embeddedness	≤ 20% embedded
B. Water Quality	1) Water Temperature	
	a. Forestwide, existing temperature < 68 F	No increase
	b. Forestwide, existing temperature > 68 F	Reduce to 68 F
	c. Bull trout spawning and rearing habitat	≤ 55 F
	d. Cutthroat trout spawning and rearing habitat	≤ 55 F
C. Channel Morphology	1) Large woody debris	
	a. Ponderosa pine ecosystems	Maintain 20 to 70 pieces/mile; at least 12 inches in diameter and 20% > 20 inches in diameter; and at least 35 feet long or 1 ½ times the bankfull width of stream
	b. Mixed conifer ecosystems	Maintain 80 to 120 pieces/mile; at least 12 inches in diameter and 20% > 20 inches in diameter; and at least 35 feet long or 1 ½ times the bankfull width of stream

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	c. Lodgepole pine ecosystems	Maintain 100 to 350 pieces/mile; at least 6 inches in diameter and 20% > 12 inches in diameter; and at least 35 feet long or 1 ½ times the bankfull width of stream
	2) Pool frequency	Based upon range expected for Rosgen type B & C streams, with upper limits (see Table 2) adjusted for streams > 75 to be consistent with 'PACFISH' values.
	3) Bank stability (forested ecosystem)	90% stable, no decrease if above 90% stable
	4) Lower bank angle with stream gradients ≤ 2% (non-forested ecosystems)	50-70% of banks with 90 degree angle or greater (undercut)
	5) Width:Depth Ratio	<10, mean wetted width divided by mean depth (all systems)
D. Riparian Vegetation	1) Potential large woody debris (forested ecosystem)	To provide a rate of input to maintain large woody debris standard C.1
	2) Ground cover	90% of site potential, covered by herbaceous species, litter, rock, moss, of lichens
	3) % of stream bank vegetated	90% of site potential
	4) Shade/canopy closure	
	a) Ponderosa pine series	40-55% canopy closure
	b) Mixed conifer species	50-65% canopy closure
	c) Lodgepole pine	60-75% canopy closure
	d) Hardwood/meadow complex	80% shaded

**Table 2. Desired future condition for pool frequency.**

Bankfull width (ft)	5	10	20	25	50	75	100	125	150	200
Pools per mile	151-264	75-132	38-66	30-53	15-26	10-23	8-18	6-14	5-12	4-9

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### INFISH Goals, Objectives, and Grazing Standards and Guidelines

#### Riparian Goals

The goals establish an expectation of the characteristics of healthy, functioning watersheds, riparian areas, and associated fish habitats. Since the quality of water and fish habitat in aquatic systems is inseparably related to the integrity of upland and riparian areas within the watersheds, The strategy identifies several goals for watershed, riparian, and stream channel conditions. The goals are to maintain or restore:

- (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, the stability and effective function of stream channels, and the ability to 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 non-native 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; and
- (8) habitat to support populations of well-distributed native and desired non-native plant, vertebrate, and invertebrate populations that contribute to the viability of riparian-dependent communities.

#### Riparian Management Objectives

In the development of PACFISH, landscape-scale interim Riparian Management Objectives (RMOs) describing good habitat for anadromous fish were developed, using stream inventory data for pool frequency, large woody debris, bank stability and lower bank angle, and width to depth ratio. Applicable published and non-published scientific literature was used to define favorable water temperatures. All of the described features may not occur in a specific segment of stream within a watershed, but all generally should occur at the watershed scale for stream systems of moderate to large size (3rd to 6th order streams).

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This material was reviewed in regard to its applicability to inland native fish. It has been determined that the Riparian Management Objectives described in PACFISH are good indicators of ecosystem health. The analysis that led to development of the RMO's involved watersheds in Oregon, Washington, and Idaho that include inland native fish as well as anadromous fish. With the exception of the temperature objective, which has been modified, the RMO's represented a good starting point to describe the desired condition for fish habitat.

Under the Inland Native Fish Strategy, these interim RMO's would apply where watershed analysis has not been completed. The components of good habitat can vary across specific geographic areas. Interim RMO's are considered to be the best watershed scale information available; National Forest managers would be encouraged to establish site-specific RMO's through watershed analysis or site-specific analysis.

RMO's should be refined to better reflect conditions that are attainable in a specific watershed or stream reach based on local geology, topography, climate, and potential vegetation. Establishment of RMO's would require completion of watershed analysis to provide the ecological basis for the change. However, interim RMO's may be modified by amendment in the absence of watershed analysis where watershed or stream reach specific data support the change. In all cases, the rationale supporting RMO's and their effects would be documented.

The interim RMO's for stream channel conditions provide the criteria against which attainment or progress toward attainment of the riparian goals is measured. Interim RMO's provide the target toward which managers aim as they conduct resource management activities across the landscape. It is not expected that the objectives would be met instantaneously, but rather would be achieved over time. However, the intent of interim RMO's is not to establish a ceiling for what constitutes good habitat conditions. Actions that reduce habitat quality, whether existing conditions are better or worse than objective values, would be inconsistent with the purpose of this interim direction. Without the benchmark provided by measurable RMO's, habitat suffers a continual erosion.

As indicated below, some of the objectives would apply to only forested ecosystems, some to non-forested ecosystems, and some to all ecosystems regardless of whether or not they are forested. Objectives for six environmental features have been identified, including one key feature and five supporting features. These features are good indicators of ecosystem health, are quantifiable, and are subject to accurate, repeatable measurements. They generally apply to 3rd to 6th order watersheds.

Under the strategy, interim RMO's would apply to watersheds occupied by inland native fish. Application of the interim RMO's would require thorough analysis. That is, if the objective for an important feature such as pool frequency is met or exceeded, there may be some latitude in assessing the importance of the objectives for other features that contribute to good habitat conditions. For example, in headwater streams with an abundance of pools created by large boulders, fewer pieces of large wood might still constitute good habitat. The goal is to achieve a high level of habitat diversity and complexity through a combination of habitat features, to meet the life-history requirements of the fish community inhabiting a watershed.

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Many people commented on the draft what it meant to not retard the attainment of the RMOs. For the purposes of analysis, to "retard" would mean to slow the rate of recovery below the near natural rate of recovery if no additional human caused disturbance was placed on the system. This obviously will require professional judgement and should be based on watershed analysis of local conditions.

**Table A-1. Interim Riparian Management Objectives.**

Habitat Feature	Interim Objectives
Pool Frequency (kf <sup>1</sup> ) (all systems)	Varies by channel width (see Table A-2).
Water Temperature (sf <sup>2</sup> )	No measurable increase in maximum water temperature (7-day moving average of daily maximum temperature measured as the average of the maximum daily temperature of the warmest consecutive 7-day period). Maximum water temperatures below 59F within adult holding habitat and below 48F within spawning and rearing habitats.
Large Woody Debris (sf) (forested systems)	East of Cascade Crest in Oregon, Washington, Idaho, Nevada and western Montana: >20 pieces per mile; >12 inch diameter; >35 foot length.
Bank Stability (sf) (non-forested systems)	>80 percent stable.
Lower Bank Angle (sf) (non-forested systems)	>75 percent of banks with <90 degree angle (i.e., undercut).
Width/Depth Ratio (sf) (all systems)	<10, mean wetted width divided by mean depth

1. Key feature. 2. Supporting feature.

**Table A-2. Interim objectives for pool frequency.**

Wetted width (ft)	10	20	25	50	75	100	125	150	200
Pools per mile	96	56	47	26	23	18	14	12	9

### Riparian Habitat Conservation Areas

Interim Riparian Habitat Conservation Areas (RHCAs) would be delineated in every watershed on National Forest System lands within the geographic range of the strategy.

Riparian Habitat Conservation Areas are portions of watersheds where riparian-dependent resources receive primary emphasis, and management activities are subject to specific standards and guidelines. Riparian Habitat Conservation Areas include traditional riparian corridors, wetlands, intermittent streams, and other areas that help maintain the integrity of aquatic ecosystems by (1) influencing the delivery of coarse sediment, organic matter, and woody debris to streams, (2) providing root strength for

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channel stability, (3) shading the stream, and (4) protecting water quality (Naiman et al. 1992).

The Riparian Habitat Conservation Areas under the strategy would be nearly identical to those under the Idaho Conservation Strategy (Idaho Department of Fish & Game Commission's Bull Trout Conservation Strategy, 1995). The main difference is that, under the Idaho Conservation Strategy, Riparian Habitat Conservation Areas would apply only in key watersheds. Since their key watersheds are large and cover much of the National Forest System lands in Idaho, there would be little difference between the two Strategies in regard to Riparian Habitat Conservation Areas within occupied bull trout habitat.

Widths of interim Riparian Habitat Conservation Areas that are adequate to protect streams from non-channelized sediment inputs should be sufficient to provide other riparian functions, including delivery of organic matter and woody debris, stream shading, and bank stability (Brazier and Brown 1973, Gregory et al. 1984, Steinblums et. al 1984, Beschta et al. 1987, McDade et al. 1990, Sedell and Beschta 1991, Belt et al. 1992). The effectiveness of riparian conservation areas in influencing sediment delivery from non-channelized flow is highly variable. A review by Belt et al. (1992) of studies in Idaho (Haupt 1959a and 1959b, Ketcheson and Megehan 1990, Burroughs and King (1985 and 1989) and elsewhere (Trimble and Sartz 1957, Packer 1967, Swift 1986) concluded that non-channelized sediment flow rarely travels more than 300 feet and that 200-300 foot riparian "filter strips" are generally effective at protecting streams from sediment from non-channelized flow.

Interim RHCA widths would apply where watershed analysis has not been completed. Site-specific widths may be increased where necessary to achieve riparian management goals and objectives, or decreased where interim widths are not needed to attain RMOs or avoid adverse effects. Establishment of RHCA's would require completion of watershed analysis to provide the ecological basis for the change. However, interim RHCAs may be modified by amendment in the absence of watershed analysis where stream reach or site-specific data support the change. In all cases, the rationale supporting RHCA widths and their effects would be documented.

### *Standard Widths Defining Interim RHCAs*

The four categories of stream or water body and the standard widths for each are:

Category 1 - Fish-bearing streams: Interim RHCAs consist of the stream and the area on either side of the stream extending from the edges of the active stream channel to the top of the inner gorge, or to the outer edges of the 100-year floodplain, or to the outer edges of riparian vegetation, or to a distance equal to the height of two site-potential trees, 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: Interim RHCAs consist of the stream and the area on either side of the stream extending from the edges of the active stream channel to the top of the inner gorge, or to the outer edges of the 100-year flood plain, or to the outer edges of riparian vegetation, or to a distance equal to the height of one site-potential tree, or 150 feet slope distance (300 feet, including both sides of the stream channel), whichever is greatest.

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Category 3 - Ponds, lakes, reservoirs, and wetlands greater than 1 acre: Interim RHCAs 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 to the extent of moderately and highly unstable areas, or to a distance equal to the height of one site-potential tree, 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, wetlands less than 1 acre, landslides, and landslide-prone areas: This category includes features with high variability in size and site-specific characteristics. At a minimum the interim RHCAs must include:

- a. the extent of landslides and landslide-prone areas
- b. the intermittent stream channel and the area to the top of the inner gorge
- c. the intermittent stream channel or wetland and the area to the outer edges of the riparian vegetation
- d. for Priority Watersheds, the area from the edges of the stream channel, wetland, landslide, or landslide-prone area to a distance equal to the height of one site-potential tree, or 100 feet slope distance, whichever is greatest
- e. for watersheds not identified as Priority Watersheds, the area from the edges of the stream channel, wetland, landslide, or landslide-prone area to a distance equal to the height of one-half site potential tree, or 50 feet slope distance, whichever is greatest

In non-forested rangeland ecosystems, the interim RHCA width for permanently flowing streams in categories 1 and 2 is the extent of the 100-year flood plain.

### **Standards and Guidelines**

Project and site-specific standards and guidelines listed below would apply to all RHCAs and to projects and activities in areas outside RHCAs that are identified through NEPA analysis as potentially degrading RHCAs. The combination of the standards and guidelines for RHCAs specified below with the standards and guidelines of existing forest plans and Land Use Plans would provide a benchmark for management actions that reflects increased sensitivities and a commitment to ecosystem management.

Under the strategy, the standards and guidelines listed below would be applied to the entire geographic area for the project. Due to the short-term duration of this interim direction, provisions for development and implementation of road/transportation management plans and the relocation, elimination, or reconstruction of existing roads, facilities, and other improvements (i.e., RF-2 c, RF-3 a and c, RF-4, RF-5, GM-2, RM-1, and MM-2) would be initiated but would be unlikely to be completed during the interim period. Where existing roads, facilities, and other improvements found to be causing an unacceptable risk cannot be relocated, eliminated, or reconstructed, those improvements would be closed. Also, due to the short-term duration of this direction, adjustments to management not within the sole discretion of the Agencies

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(i.e., RF-1, LH-3, RA-1, WR-2, FW-3, and FW-4) would be initiated but would be unlikely to be completed during the interim period.

The standards and guidelines under the Inland Native Fish Strategy have the same intent as the 38 standards and guidelines under the Idaho Conservation Strategy. The Inland Native Fish Strategy has one additional standard and guideline (RA-4), related to storage of fuels and refueling in RHCA's.

Many people commented on the draft what it meant to not retard the attainment of the RMOs. For the purposes of analysis, to "retard" would mean to slow the rate of recovery below the near natural rate of recovery if no additional human caused disturbance was placed on the system. This obviously will require professional judgement and should be based on watershed analysis of local conditions.

### *Grazing Management*

GM-1 Modify grazing practices (e.g., accessibility of riparian areas to livestock, length of grazing season, stocking levels, timing of grazing, etc.) that retard or prevent attainment of Riparian Management Objectives or are likely to adversely affect inland native fish. Suspend grazing if adjusting practices is not effective in meeting Riparian Management Objectives.

GM-2 Locate new livestock handling and/or management facilities outside of Riparian Habitat Conservation Areas. For existing livestock handling facilities inside the Riparian Habitat Conservation Areas, assure that facilities do not prevent attainment of Riparian Management Objectives. Relocate or close facilities where these objectives cannot be met.

GM-3 Limit livestock trailing, bedding, watering, salting, loading, and other handling efforts to those areas and times that would not retard or prevent attainment of Riparian Management Objectives or adversely affect inland native fish.

GM-4 Adjust wild horse and burro management to avoid impacts that prevent attainment of Riparian Management Objectives or adversely affect inland native fish.

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## PACFISH Grazing Standards and Guidelines

**Riparian Goals** – Same as INFISH

**Riparian Management Objectives** – Same as INFISH

**Riparian Habitat Conservation Areas** – Same as INFISH

### **Standards and Guidelines**

#### *Grazing Management*

GM-1 Modify grazing practices (e.g., accessibility of riparian areas to livestock, length of grazing season, stocking levels, timing of grazing, etc.) that retard or prevent attainment of Riparian Management Objectives or are likely to adversely affect listed anadromous fish. Suspend grazing if adjusting practices is not effective in meeting Riparian Management Objectives and avoiding adverse effects on listed anadromous fish.

GM-2 Locate new livestock handling and/or management facilities outside of Riparian Habitat Conservation Areas. For existing livestock handling facilities inside the Riparian Habitat Conservation Areas, assure that facilities do not prevent attainment of Riparian Management Objectives or adversely affect listed anadromous fish. Relocate or close facilities where these objectives cannot be met.

GM-3 Limit livestock trailing, bedding, watering, salting, loading, and other handling efforts to those areas and times that would not retard or prevent attainment of Riparian Management Objectives or adversely affect listed anadromous fish.

GM-4 Adjust wild horse and burro management to avoid impacts that prevent attainment of Riparian Management Objectives or adversely affect listed anadromous fish.