Appendix C: Control Measures to Improve Riparian Conditions

C.1: Klamath National Forest Long Range Management Plan

The Klamath National Forest Long Range Management Plan (LRMP), Chapter 4, details topically based Management Areas, with Standards and Guidelines for attainment of desired conditions. Among these, Management Area 10 – Riparian Reserves provides Standards and Guidelines of direct relevance to the Attainment Strategy for the Salmon River temperature TMDL. Additional Management Area Standards and Guidelines provided in Chapter 4 of the LRMP should lead to overall improvement of conditions within the watershed which will contribute to more rapid recovery of riparian function, offering additional Margins of Safety for targeted improvements in instream temperatures (Table C.1).

C.1.1: Riparian Reserve Management Goals

* Maintain and restore riparian-dependent structures and functions of intermittent streams.
* Provide benefits to riparian-dependent and associated species other than fish, enhance habitat conservation for organisms that are dependent on the transition zone between upslope and riparian areas, improve travel and dispersal corridors for many terrestrial animals and plants and provide for greater connectivity of the watershed. Provide connectivity corridors among the Late Seral Reserves.
* Be consistent with Aquatic Conservation Strategy goals.

C.1.2: Riparian Reserve Desired Future Condition

"The vegetative communities within forest and rangeland Riparian Reserves contain native and desirable non-native species that are in a good ecological condition. A multi-layered, vegetative canopy is present in forested Riparian Reserves, the exception being where the soils are shallow or unproductive. In meadow areas, overhanging banks with herbaceous and/or shrubby vegetation provide canopy cover. An overstory of conifers provides shade and thermal cover to the streams and lakes. An intermediate layer of deciduous vegetation provides thermal buffering, nutrient cycling, and bank stability. On the ground a mixture of brush, grass, forbs, sedges, etc. provides for bank stability and integrity, sediment filtering and habitat characteristics necessary to contribute to the viability of riparian- dependent species.

The riparian plant community includes all ages and sizes. Plants are at various stages of their growth. Some of the mature and decadent conifers have broken tops and large pieces of wood have fallen into the streams and lakes. Logjams are distributed along the stream channel. Other conifers nearing decadence will eventually provide woody material to the channel.

Occasional openings in the vegetation are apparent where road crossings, trails, camping, fishing access, or other recreational pursuits occur. The road crossings within riparian areas are stable with vegetated roadsides."

"In wet meadow areas without a conifer overstory, the Riparian Reserves primarily support grass, forbs, and shrub species with willows, alders, and overhanging grasses providing much of the shade to the stream or lake. The water table is near the meadow surface with the stream often meandering through the meadow. Few signs of gullying are apparent. Domestic livestock use meadows and streamsides, but do not degrade the systems."

"The riparian vegetation is diverse and dense enough that it stabilizes the stream banks and adjacent hillslopes, providing an area that catches sediment and contributes large wood to the Riparian Reserves. Large woody material, rocks and live vegetation are present along stream and lake edges to help provide stability to the riparian areas and complexity (differing habitat opportunities) to the semi-aquatic and aquatic habitats. Large, deep pools are intermixed with riffles in a beneficial mix for the fish species of primary emphasis in a given stream. The stream maintains itself through normal channel processes with few signs of management improvements."

"Riparian restoration projects, such as plantings of willows or alders along stream banks, help restore the ecological processes and diversity of the Riparian Reserves. The quality of wildlife habitat in Riparian Reserves is stable or improving over time."

"In lakes and streams within forested ecosystems large pieces of wood provide cover, substrate and habitat structure for desired species. Clear, clean water is capable of supporting desired aquatic species.
Stream flows and natural lake levels are adequate to protect semi-aquatic and aquatic habitat and maintain the natural hydrologic processes."
"The water quality in streams and lakes meets or exceeds State water quality requirements. Fine sediment from management activities is not adversely affecting stream channels. Macro-invertebrates that represent the desired water quality conditions are present. Fish habitats in perennial waters are in good condition, with stable populations of fish present at various times of the year. Projects that effectively improve habitats for aquatic species and fish stocks at risk have been given high priority."

C.1.3: Riparian Reserve Standards and Guidelines

Table C.1: Riparian Reserve Standards and Guidelines for the Klamath National Forest (As of 11/21/01 Klamath National Forest – Plan Chapter 4 – Management Direction – Management Area 10)

*MA10-1	Interim widths for Riparian Reserves necessary to meet Aquatic Conservation Strategy objectives are established based on ecologic and geomorphic factors. These interim widths are designed to provide a high level of aquatic species habitat and riparian protection until watershed and site analysis can be completed. Watershed analysis will identify critical hillslope, riparian and channel processes that must be evaluated in order to delineate RR boundaries that assure protection of riparian and aquatic functions. Riparian Reserves are delineated during implementation of site-specific projects based on analysis of the critical hillslope, riparian and channel processes and features. Although RR boundaries may be adjusted on permanently flowing streams, the prescribed widths are considered to approximate those necessary for attaining Aquatic Conservation Strategy objectives. Post-watershed analysis RR boundaries for permanently flowing streams should approximate the boundaries prescribed in these standards and guidelines. However, post-watershed analysis RR boundaries for intermittent streams may be different from the existing boundaries. The reason for the difference is the high variability of hydrologic, geomorphic and ecologic processes in a watershed affecting intermittent streams. At the same time, any analysis of RR widths must also consider the contribution of these reserves to other, including terrestrial, species. Watershed analysis should take into account all species that were intended to be benefited by the prescribed RR widths. Those species include fish, mollusks, amphibians, lichens, fungi, bryophytes, vascular plants, American marten, red tree voles, bats, marbled murrelets, and northern spotted owls. The specific issue for spotted owls is retention of adequate habitat conditions for dispersal. The prescribed widths of Riparian Reserves apply to all watersheds until watershed analysis is completed, a site-specific analysis is conducted and described, and the rationale for final RR boundaries is presented through the appropriate NEPA decision-making process.
Interim Widths	
MA10-2	Fish-bearing streams - Riparian Reserves consist of the stream and the area on each 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 total, including both sides of the stream channel), whichever is greatest. Permanently flowing nonfish-bearing streams - Riparian Reserves consist of the stream and the area on each 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 one site-potential tree, or 150 feet slope distance (300 feet total, including both sides of the stream channel), whichever is greatest. Constructed ponds and reservoirs, and wetlands greater than 1 acre - Riparian Reserves consist of the body of water or wetland and: the area to the outer edges of the riparian vegetation, or to the extent of seasonally saturated soil, or the extent of unstable and potentially 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 wetland greater than 1 acre or the maximum pool elevation of constructed ponds and reservoirs, whichever is greatest. Lakes and natural ponds - Riparian Reserves consist of the body of water and: the area to the outer edges of the riparian vegetation, or to the extent of seasonally saturated soil, or to the extent of unstable and potentially unstable areas, or to a distance equal to the height of two site-potential trees, or 300 feet slope distance, whichever is greatest. Seasonally flowing or intermittent streams, wetlands less than 1 acre, and unstable and potentially unstable areas - This category applies to features with high variability in size and site-specific characteristics. At a minimum, the Riparian Reserves must include: The extent of unstable and potentially unstable areas (including earthflows), The stream channel and extend to the top of the inner gorge, The stream channel or wetland and the area from the edges of the stream channel or wetland to the outer edges of the riparian vegetation, and Extension from the edges of the stream channel to a distance equal to the height of one site-potential tree, or 100 feet slope distance, whichever is greatest. A site-potential tree height is the average maximum height of the tallest dominant trees (200 years or older) for a given site class. Intermittent streams are defined as any nonpermanent flowing drainage feature having a definable channel and evidence of annual scour or deposition. This includes what are sometimes referred to as ephemeral streams if they meet these 2 physical criteria.
MA10-3	As a general rule, standards and guidelines for Riparian Reserves prohibit or regulate activities in Riparian Reserves that retard or prevent attainment of the Aquatic Conservation Strategy objectives. Watershed analysis and appropriate NEPA compliance is required to change RR boundaries in all watersheds.
MA10-4	Coordinate the planning, implementation and monitoring of watershed, fisheries, wildlife, and other habitat restoration projects in Riparian Reserves to ensure that they are integrated and that Aquatic Conservation Strategy objectives are met.
MA10-5	Program projects on a watershed scale to maximize benefits and increase the cost-effectiveness of restoration projects.
MA10-6	Identify and control the cause of riparian area degradation before initiating restoration projects.

MA10-7	The use of heavy equipment within Riparian Reserves for riparian habitat restoration may be approved after interdisciplinary review.
Research	
*MA10-8	A variety of research activities may be ongoing and proposed in Key Watersheds and Riparian Reserves. These activities must be analyzed to ensure that significant risk to the watershed values does not exist. If significant risk is present and cannot be mitigated, study sites must be relocated. Some activities not otherwise consistent with the objectives may be appropriate, particularly if the activities will test critical assumptions of these standards and guidelines; will produce results important for establishing or accelerating vegetation and structural characteristics for maintaining or restoring aquatic and riparian ecosystems; or the activities represent continuation of long-term research. These activities should be considered only if there are no equivalent opportunities outside of Key Watersheds and Riparian Reserves.
*MA10-9	Current, funded, agency-approved research, which meets the above criteria, is assumed to continue if analysis ensures that a significant risk to Aquatic Conservation Strategy objectives does not exist. Research Stations and other Forest Service and BLM units will, within 180 days of the signing of the Record of Decision adopting these standards and guidelines, submit a brief project summary to the Regional Ecosystem Office of ongoing research projects that are potentially inconsistent with other standards and guidelines but are expected to continue under the above research exception. The Regional Ecosystem Office may choose to more formally review specific projects and may recommend to the Regional Interagency Executive Committee modification, up to and including cancellation, of those projects having an unacceptable risk to Key Watersheds and Riparian Reserves. Risk will be considered within the context of the Aquatic Conservation Strategy objectives.
Watershed and Habitat Restoration	
*MA10-10	Design and implement watershed restoration projects in a manner that promotes long-term ecological integrity of ecosystems, conserves the genetic integrity of native species and attains Aquatic Conservation Strategy objectives.
*MA10-11	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 Aquatic Conservation Strategy objectives.
*MA10-12	Do not use mitigation or planned restoration as a substitute for preventing habitat degradation.
Fisheries and Wildlife	
*MA10-13	Design and implement fish and wildlife habitat restoration and enhancement activities in a manner that contributes to attainment of Aquatic Conservation Strategy objectives.
*MA10-14	Design, construct, and operate fish and wildlife interpretive and other user-enhancement facilities in a manner that does not retard or prevent

	attainment of Aquatic Conservation Strategy objectives. For existing fish and wildlife interpretative and other user-enhancement facilities inside Riparian Reserves, ensure that Aquatic Conservation Strategy objectives are met. Where Aquatic Conservation Strategy objectives cannot be met, relocate or close such facilities.
*MA10-15	Cooperate with Federal, tribal and state wildlife management agencies to identify and eliminate wild ungulate impacts that are inconsistent with attainment of Aquatic Conservation Strategy objectives.
*MA10-16	Cooperate with Federal, tribal and state fish management agencies to identify and eliminate impacts associated with habitat manipulation, fish stocking, harvest and poaching that threaten the continued existence and distribution of native fish stocks occurring on Federal lands.
*MA10-17	Identify and attempt to secure in-stream flows needed to maintain riparian resources, channel conditions, and aquatic habitat.
MA10-18	Where possible, manage stream environments to keep summer water temperatures below 68 degrees F wherever anadromous fish are present.
MA10-19	Manage for high quality anadromous fish habitat to meet the following conditions: less than 15% of the stream bottom is composed of fine sediment and less than 20% of stream riffles are embedded (3rd to 5th order streams).
MA10-20	Avoid activities at critical periods that would prevent attainment of the Aquatic Conservation Strategy objectives. Of particular concern are critical low flow periods; when warm water temperatures may result in adverse effects to fish; and during periods of migration, spawning or egg incubation. Discourage activities that may result in disturbance by managing road and trail access through cooperative measures with CDFG and sharing information with the public.
Visual Resource Management	
MA10-21	Manage these areas to meet the intent of the Forest VQO map. As a minimum, manage the lands within the areas to meet a Partial Retention VQO.
Recreation Management	
*MA10-22	New recreational facilities within Riparian Reserves, including trails and dispersed sites, should be designed to not prevent meeting Aquatic Conservation Strategy objectives. Construction of these facilities should not prevent future attainment of these objectives. For existing recreation facilities within Riparian Reserves, evaluate and mitigate impact to ensure that these do not prevent and, to the extent practicable, contribute to attainment of Aquatic Conservation Strategy objectives.
*MA10-23	Adjust dispersed and developed recreation practices that retard or prevent attainment of Aquatic Conservation Strategy objectives. Where adjustment measures such as education, use limitations, traffic control devices, increased maintenance, relocation of facilities and/or specific site closures are not effective, eliminate the practice or occupancy.
*MA10-24	Wild and Scenic Rivers and Wilderness management plans will address

	attainment of Aquatic Conservation Strategy objectives.
MA10-25	Recreation facilities within the 100-year flood plain shall be guided by Executive Order 11990 and 11988 (Floodplain Management) with any exceptions consistent with requirements of FSM 2527 (Wetlands Management).
MA10-26	Manage recreational settings to generally achieve semi-primitive or roaded natural ROS conditions.
Lands Program Management	
*MA10-27	Identify in-stream flows needed to maintain riparian resources, channel conditions and fish passage.
*MA10-28	Key Watersheds: For hydroelectric and other surface water development proposals, require in-stream flows and habitat conditions that maintain or restore riparian resources, favorable channel conditions and fish passage. Coordinate this process with the appropriate state agencies. During relicensing of hydroelectric projects, provide written and timely license conditions to the Federal Energy Regulatory Commission (FERC) that require flows and habitat conditions that maintain or restore riparian resources and channel integrity. Coordinate relicensing projects with the appropriate state agencies. For all other watersheds: For hydroelectric and other surface water development proposals, give priority emphasis to in-stream flows and habitat conditions that maintain or restore riparian resources, favorable channel conditions and fish passage. Coordinate this process with the appropriate state agencies. During relicensing of hydroelectric projects, provide written and timely license conditions to FERC that emphasize in-stream flows and habitat conditions that maintain or restore riparian resources and channel integrity. Coordinate relicensing projects with the appropriate state agencies.
*MA10-29	Locate new support facilities outside Riparian Reserves. For existing support facilities inside RR that are essential to proper management, provide recommendations to FERC that ensure Aquatic Conservation Strategy objectives are met. Where these objectives cannot be met, provide recommendations to FERC that such support facilities should be relocated. Existing support facilities that must be located in the Riparian Reserves will be located, operated and maintained with an emphasis to eliminate adverse effects that retard or prevent attainment of Aquatic Conservation Strategy objectives.
*MA10-30	For activities other than surface water developments, issue leases, permits, rights-of-way and easements to avoid adverse effects that retard or prevent attainment of Aquatic Conservation Strategy objectives. Adjust existing leases, permits, rights-of-way, and easements to eliminate adverse effects that retard or prevent the attainment of Aquatic Conservation Strategy objectives. If adjustments are not effective, eliminate the activity. Priority for modifying existing leases, permits, rights-of-way, and easements will be based on the actual or potential impact and the ecological value of the riparian resources affected.

*MA10-31	Use land acquisition, exchange, and conservation easements to meet Aquatic Conservation Strategy objectives and facilitate restoration of fish stocks and other species at risk of extinction.
MA10-32	Coordinate the development of hydroelectric power projects with the CDFG and the State Division of Water Rights. Provide feedback to hydroelectric projects regarding the need to maintain instream flows for fish, water quality, riparian vegetation, and channel integrity.
Minerals Management	
MA10-33	Mineral operations proposed within Riparian Reserves shall require a written authorization before the start of development as part of the plan of operation, lease, sale contract or permit. Notices of intent for mineral operations under 36 CFR 228 shall not constitute authorization to operate within a RR.
*MA10-34	Require a reclamation plan, approved Plan of Operations and reclamation bond for all minerals operations that include Riparian Reserves. Such plans and bonds must address the costs of removing facilities, equipment and materials; recontouring disturbed areas to near pre-mining topography; isolating and neutralizing or removing toxic or potentially toxic materials; salvage and replacement of topsoil; and seedbed preparation and revegetation to meet Aquatic Conservation Strategy objectives.
*MA10-35	Locate structures, support facilities, and roads outside Riparian Reserves. Where no alternative to siting facilities in Riparian Reserves exists; locate them in a way compatible with Aquatic Conservation Strategy objectives. Road construction will be kept to the minimum necessary for the approved mineral activity. Such roads will be constructed and maintained to meet roads management standards and to minimize damage to resources in the RR. When a road is no longer required for mineral or land management activities, it will be closed, obliterated, and stabilized.
*MA10-36	Prohibit solid and sanitary waste facilities in Riparian Reserves. If no alternative to locating mine waste (waste rock, spent ore, tailings) facilities in Riparian Reserves exists and releases can be prevented, and stability can be ensured, then: a) Analyze the waste material using the best conventional sampling methods and analytic techniques to determine its chemical and physical stability characteristics. b) Locate and design the waste facilities using 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 such releases and ensure stability over the long term, prohibit such facilities in Riparian Reserves. c) Monitor waste and waste facilities after operations to ensure chemical and physical stability and to meet Aquatic Conservation Strategy objectives. d) Reclaim waste facilities after operations to ensure chemical and physical stability and to meet Aquatic Conservation Strategy objectives.

	e) Require reclamation bonds adequate to ensure long-term chemical and physical stability of mine waste facilities.
*MA10-37	For leasable minerals, prohibit surface occupancy within Riparian Reserves for oil, gas and geothermal exploration and development activities where leases do not already exist. Where possible, adjust the operating plans of existing contracts to eliminate impacts that retard or prevent the attainment of Aquatic Conservation Strategy objectives.
*MA10-38	Salable mineral activities such as sand and gravel mining and extraction within Riparian Reserves will occur only if Aquatic Conservation Strategy objectives can be met.
*MA10-39	Include inspection and monitoring requirements in mineral plans, leases, or permits. Evaluate the results of inspection and monitoring to effect the modification of mineral plans, leases and permits as needed to eliminate impacts that retard or prevent attainment of Aquatic Conservation Strategy objectives.
MA10-40	Coordinate mining activities within Riparian Reserves with the appropriate State and Federal agencies.
Transportation and Facilities Management	
*MA10-41	Federal, state, and county agencies should cooperate to achieve consistency in road design, operation, and maintenance necessary to attain Aquatic Conservation Strategy objectives.
*MA10-42	For each existing or planned road, meet Aquatic Conservation Strategy objectives by: a) Minimizing road and landing locations in Riparian Reserves. b) Completing watershed analyses (including appropriate geotechnical analyses) prior to construction of new roads or landings in Riparian Reserves. c) Preparing road design criteria, elements, and standards that govern construction and reconstruction. d) Preparing operation and maintenance criteria that govern road operation, maintenance and management. e) Minimizing disruption of natural hydrologic flow paths, including diversion of streamflow and interception of surface and subsurface flow. f) Restricting sidecasting as necessary to prevent the introduction of sediment to streams. g) Avoiding wetlands entirely when constructing new roads.
*MA10-43	Determine the influence of each road on the Aquatic Conservation Strategy objectives through watershed analysis. Meet Aquatic Conservation Strategy objectives by: a) Reconstructing roads and associated drainage features that pose a substantial risk. b) Prioritizing reconstruction based on current and potential impact to riparian resources and the ecological value of the riparian resources

	affected. c) Closing and stabilizing, or obliterating and stabilizing roads based on the ongoing and potential effects to Aquatic Conservation Strategy objectives and considering short-term and long-term transportation needs.
*MA10-44	New culverts, bridges and other stream crossings shall be constructed, and existing culverts, bridges and other stream crossings determined to pose a substantial risk to riparian conditions will be improved, to accommodate at least the 100-year flood, including associated bedload and debris. Priority for upgrading will be based on the potential impact and the ecological value of the riparian resources affected. Crossings will be constructed and maintained to prevent diversion of streamflow out of the channel and down the road in the event of crossing failure.
*MA10-45	Minimize sediment delivery to streams from roads. Road design measures may include minimum impact location, appropriate road surfacing, armoring of ditchlines, controlled compaction of fills, outsloping of roads, mechanical and vegetative slope protection, wet weather traffic control, annual maintenance and inspection. Outsloping of the roadway surface is preferred, except in cases where outsloping would increase sediment delivery to streams or where outsloping is unfeasible or unsafe. Route road drainage away from potentially unstable channels, fills, and hillslopes.
*MA10-46	Provide and maintain fish passage at all road crossings of existing and potential fish-bearing streams. Construct stream crossings to not divert streamflow out of the channel and down the road alignment.
*MA10-47	Develop and implement a Road Management Plan or a Transportation Management Plan that will meet the Aquatic Conservation Strategy objectives. As a minimum, this plan shall include provisions for the following activities: a) Inspections and maintenance during storm events. b) Inspections and maintenance after storm events. c) Road operation and maintenance, giving high priority to identifying and correcting road drainage problems that contribute to degrading riparian resources. d) Traffic regulation during wet periods to prevent damage to riparian resources. e) Establish the purpose of each road by developing the Road Management Objective.
MA10-48	Give high maintenance priority to road drainage problems that contribute to a degraded riparian resource.
MA10-49	Designed road fills may extend beyond the cleared roadway when the management action is less detrimental to riparian resources.
MA10-50	Closed and restored roads should be configured for long-term drainage and stability.
MA10-51	Close temporary roads and landings, configure them for long-term drainage

	and stability, and restore them to productivity.
MA10-52	Work with private landowners, or other entities, to reduce road-related impacts. Use the necessary permits, easements, or cooperative agreements to reduce impacts from sedimentation or stream shade removal.
MA10-53	Fall roadside safety hazard trees. Allow the removal of these trees where woody debris requirements have been meet.
Vegetation Management	
*MA10-54	Prohibit timber harvest, including fuelwood cutting, in Riparian Reserves, except as described below. RR acres shall not be included in calculations of the timber base. a) Where catastrophic events such as fire, flooding, volcanic, wind, or insect damage result in degraded riparian conditions, allow salvage and fuelwood cutting if required to attain Aquatic Conservation Strategy objectives. b) Salvage trees only when watershed analysis determines that present and future CWD needs are met and other Aquatic Conservation Strategy objectives are not adversely affected. c) Apply silvicultural practices for Riparian Reserves to control stocking, reestablish and manage stands, and acquire desired vegetation characteristics needed to attain Aquatic Conservation Strategy objectives.
MA10-55	Maintain or restore riparian vegetation to provide summer and winter thermal regulation within the riparian area.
MA10-56	Maintain 20 pieces of large wood (40 cubic feet or larger) per 1,000 lineal feet within 3rd to 5th order channels, or as identified in the ecosystem management process at the watershed level.
MA10-57	Where possible, manage the conifer vegetation for a basal area greater than or equal to 250 square feet per acre.
*MA10-58	Fell trees in Riparian Reserves when they pose a safety risk. Keep felled trees on-site when needed to meet CWD objectives.
MA10-59	Use directional felling to protect stream banks in cases where felling trees is used to benefit riparian-dependent resources.
MA10-60	Locate skid trails, cableways and skyline corridors to minimize impacts to Riparian Reserves from adjacent management activities.
MA10-61	Protect stream banks from adjacent timber management activities by fully suspending logs above stream banks during yarding.
MA10-62	Design silvicultural prescriptions for existing regenerated stands to achieve Aquatic Conservation Strategy objectives.
MA10-63	Restore Riparian Reserves to meet Aquatic Conservation Strategy. Design prescriptions to re-establish stands that provide the desired vegetation characteristics (for example, species composition and age class structure).
*MA10-64	Herbicides, insecticides and other toxicants, and other chemicals shall be applied only in manner that avoids impacts that retard or prevent attainment of Aquatic Conservation Strategy objectives.

Fire Management	
*MA10-65	Design fuel treatment and fire suppression strategies, practices, and activities to meet Aquatic Conservation Strategy objectives, and to minimize disturbance of riparian ground cover and vegetation. Strategies should recognize the role of fire in ecosystem function and identify those instances where fire suppression or fuels management activities could be damaging to long-term ecosystem function.
*MA10-66	Locate incident bases, camps, helibases, staging areas, helispots, and other centers for incident activities outside RRS. If the only suitable location for such activities is within the RR, an exemption may be granted following review and recommendation by a resource advisor. The advisor will prescribe the location, use conditions, and rehabilitation requirements. Use an interdisciplinary team to predetermine suitable incident base and helibase.
*MA10-67	Minimize delivery of chemical retardant, foam, or additives to surface waters. An exception may be warranted in situations where overriding immediate safety imperatives exist, or, following review and recommendation by a resource advisor, when an escape would cause more long-term damage.
*MA10-68	Design prescribed burn projects and prescriptions to contribute to attainment of Aquatic Conservation Strategy objectives and to maintain ecological processes.
*MA10-69	Immediately establish an emergency team to develop a rehabilitation treatment plan needed to attain Aquatic Conservation Strategy objectives whenever Riparian Reserves are significantly damaged by wildfire or a prescribed fire is burning outside prescribed parameters.
*MA10-70	In Riparian Reserves, the goal of wildfire suppression is to limit the size of all fires. When watershed and/or landscape analysis, or province-level plans are completed and approved, some natural fires may be allowed to burn under prescribed conditions. Rapidly extinguishing smoldering CWD and duff should be considered to preserve these ecosystem elements. In Riparian Reserves, water drafting sites should be located and managed to minimize adverse effects on riparian habitat and water quality, as consistent with Aquatic Conservation Strategy objectives.
*MA10-71	Locate water drafting sites to minimize adverse effects on stream channel stability, sedimentation and in-stream flows needed to maintain riparian resources, channel conditions and fish habitat.
MA10-72	Do not construct dozer lines parallel to stream channels or shorelines within Riparian Reserves. Extend dozer lines through Riparian Reserves perpendicular to the channel or shoreline where they are essential to safe control of the fire.
Range Management	
*MA10-73	Adjust grazing practices to eliminate impacts that retard or prevent attainment of Aquatic Conservation Strategy objectives. If adjusting practices is not effective, eliminate grazing.
*MA10-74	Locate new livestock handling and/or management facilities outside

	Riparian Reserves. For existing livestock handling facilities inside the RR, ensure that Aquatic Conservation Strategy objectives are met. Where these objectives cannot be met, require relocation or removal of such facilities.
*MA10-75	Limit livestock trailing, bedding, watering, loading, and other handling efforts to those areas and times that will ensure Aquatic Conservation Strategy objectives are met.
MA10-76	Monitor livestock utilization levels. If monitoring indicates the need, utilize the AOI to adjust grazing practices. If this is not feasible, consider putting the allotment into non-use status until it is determined that grazing practices can resume in a manner that would allow attainment of the Aquatic Conservation Strategy objectives.
MA10-77	The use of vegetation reference areas is strongly encouraged as a way to measure potential site productivity and stream channel morphology in the absence of grazing, as well as the condition of the ecosystem. Reference areas may include exclusion plots, larger exclosures or other sites with a low disturbance history. They should be placed in areas representative of the vegetative community and stream channel types to be managed. Design exclosures to exclude both wild and domestic ungulates so a forage use comparison may be made.

C.2: Salmon River Sub-basin Restoration Strategy

The Salmon River Sub-basin Restoration Strategy (SRSRS) is a watershed restoration plan for the Salmon River watershed. The SRSRS provides details of past and future monitoring and assessment of habitat conditions, designation of critical habitat, and prioritized multi-year restoration plan. Watershed Condition Processes and Pathways to Focus Restoration Opportunities are prioritized based on threat to watershed processes (Table C.2). Table C.2 is based on Appendix E, Table E-1 of the SRSRS, which provides a Matrix of Indicators for the Salmon River watershed. These provide numeric temperature objectives within a Landowner Plan. The North Coast Regional Water Quality Control Plan provides only narrative objectives for temperature in the Salmon River watershed. The numeric standards provided in Appendix E of the SRSRS are based on National Marine Fisheries Service/NOAA Fisheries Matrix of Indicators, updated to reflect conditions within the Salmon River, as well as to reflect recent literature emphasis on protecting and maintaining required processes and not fixed habitat parameters (KNF/SRRC, 2002; pp28-29; Appendix E)

C.2.1: Watershed Condition Processes and Pathways

Table C.2: Watershed Condition Processes and Pathways, Salmon River

Ecosystem Processes		**Stressors**		**Restoration Focus**	
General Processes	**Key Processes**	**Natural Influences**	**Human Influences**	**Activities**	**Threat to Watershed Processes**
Hydrologic Regime	Water Storage and Yield	Precipitation, flood, drought, rain on snow, thunderstorms	Diversion, roads, logging, fire, grazing, recreation	Roads Logging Fire Grazing Recreation	**High** Low **High** Low Low
			Diversion,	Hydro Diversions	Low

			impoundment	Hydro Impoundments Hydroelectric	Low Low
Sediment Regime	Surface Erosion Landsliding	Climate, soil erodibility (texture, slope gradient) Rock type, degree of fracture & weathering, slope, climate, soil, landform, seismicity	Disturbance to soil cover: roads, logging, grazing, mining, fire, dams, recreation, agriculture Disturbance to soil or bedrock: roads, mining, harvest, dams, fire	Roads Logging Fire Grazing Recreation Mining Agriculture	**High** Moderate **High** Low Low Moderate Low
Channel Structural Dynamics	Sediment & Wood Transport and Routing	Scouring, deposition, wood interactions	Dredging, filling, roads, logging, mining, dams	Dredging/Filling Mining Roads Logging Dams	Low Moderate **High** Low Low
Energy Exchange Chemical/Nutrient Dynamics	Heat Transfer Chemical & Nutrient Cycling	Insulation, shading, climate Organic, wood input and erosion	Logging, grazing, recreation, fire Harvest, recreation, mining, fire, urbanization	Logging Recreation Fire Grazing Urbanization Mining	Low Low Moderate Low Low Low
Vegetative Succession, Growth, Mortality	Wood, Forage, Browse and Cover Production	Fire, insects, pathogens, wildlife, blow down, flood	Disturbance to vegetation: logging, grazing, recreation	Logging Grazing Recreation Fire	**High** Low Low **High**
Aquatic Riparian Faunal Ecology	Reproduction, Survival, Competition	Flood, drought, food and habitat availability	Forest and fishery management, grazing, recreation, mining, impoundments, diversions, exotics	Fishery Harvest Grazing Recreation Mining Hydro Impoundments Hydroelectric Diversions Invasive Plants Invasive Fauna	Low Low Low Low/Mod Low Low Low **High** Low

C.2.2: Matrix of Factors and Indicators.

"The Matrix of Indicators for the Salmon River sub-basin were updated to reflect conditions within Salmon River and to reflect recent literature emphasis on protecting and maintaining required processes and not fixed habitat parameters (SRSRS Appendix E, Table E-1). Stream systems are dynamic and changes in habitat parameters occur naturally, allowing spatial and temporal variability. Consequently, the landscape was historically a mosaic of varying habitat conditions (Bisson et. al. 1997, Reeves et al. 1995, and Reid and Furniss 1998). Management of stream habitats should focus on maintaining the full range of aquatic and riparian conditions created from natural disturbance events at the landscape scale (Bisson et. al. 1997)."

"In addition to fixed habitat parameters not allowing for natural variability, they set standards that may be geomorphically inappropriate (Bisson et al. 1997). Variability is an inherent property of aquatic ecosystems in the Pacific Northwest and habitats at any given location will change from year to year, decade to decade, and century to century (Bisson et al. 1997). Healthy lotic ecosystems require different parts of the channel system to exhibit very different in-channel conditions and that those conditions change through time (Reid and Furniss 1998)."

"Therefore, the goal of managing aquatic ecosystems should be to allow disturbance and recovery processes to take place as normally as possible and not maintain all streams in the same state over time (Bisson et al. 1997). The Aquatic Conservation Strategy Objectives directs the Forest Service and BLM-administered lands to be managed on process rather than defined habitat parameters: "It is a region-wide strategy seeking to retain, restore, and protect those processes and landforms that contribute habitat elements to streams and promote good habitat conditions for fish and other aquatic and riparian-dependent organisms. At the heart of this approach is the recognition that fish and other aquatic organisms evolved within a dynamic environment that has been constantly influenced and changed by geomorphic and ecological disturbances. ...Current scientific understanding of fish habitat relationships is inadequate to allow definition of specific habitat requirements for fish throughout their lifecycle at the watershed level. ...We believe that any species-specific strategy aimed at defining explicit standards for habitat elements would be insufficient for protecting even the target species" (USDA, 1993)."

"The Factors found within the Matrix have not changed from those published in the August 1996 Attachment 3, Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Watershed Scale (NMFS), however a few of the Indicators have changed. These changes include elimination or further breakdown for complex indicators. The only indicator that was eliminated was "Sediment" because it was covered in the "Substrate" indicator. Those indicators that were changed include "Water Temperature, Substrate, Large Woody Material, Pool Frequency, Width/Depth Ratio, and Stream bank Condition". Water Temperature was changed due to data collected within the Salmon River Sub-basin wilderness streams and broken down by stream order. Large Woody Material was broken down into 3 sub-indicators due to the complexity of this indicator and emphasized aquatic/riparian processes. The remaining indicators that were modified rely on aquatic/riparian ecosystem process as well."

Table C.3: Matrix of Pathways and Indicators for Salmon River, CA and its tributaries.

Factors	Indicators	Properly Functioning	At Risk	Not Properly Functioning
Water Quality	Water Temperature			
	1st - 3rd Order Streams(1) (Instantaneous)	69 °F or less	>69 to 70.5 °F	>70.5 °F
	4th - 6th Order Streams (7 Day Maximum)	70.5 °F or less than 21.4 °C	>70.5 to 73.5 °F	>73.5 °F or 23.0 °C
	Turbidity(2)	Turbidity low	Turbidity moderate	Turbidity High
	Chemical/Nutrient Contamination(3)	Low levels of contamination from agriculture, industrial, and other sources; no excess nutrients. No CWA 303d designated reaches.	Moderate levels of contamination from agriculture, industrial, and other sources; some excess nutrients. One CWA 303d designated reach.	High levels of contamination from agriculture, industrial, and other sources; high levels of nutrients. More than one CWA 303d designated reach.
Habitat Access	Physical Barriers(3)	Any man-made barriers present in watershed allow upstream and down stream passage at all flows.	Any man-made barriers present in watershed do not allow upstream and/or downstream passage at base/low flows.	Any man-made barriers present in watershed do not allow upstream and/or downstream passage at a range of flows.
		Sediment budget is within	Sediment budget is within	Sediment budget is NOT

Factors	Indicators	Properly Functioning	At Risk	Not Properly Functioning
Habitat Elements	Substrate	the range and frequency of channel potential (based on parent material, gradient, disturbance regime, etc.). Anthropogenic effects (roads, harvest, etc.) are negligible and are not interfering with natural sediment budget.	range and frequency of channel potential, however anthropogenic effects are beginning to interfere with natural sediment budget. Trend can be easily reversed.	within the range and/or frequency of channel potential. Anthropogenic effects are interfering with natural sediment budget to such an extent, significant effort and intervention will need to occur to reverse the trend.
	Large Woody Material(4) sub-indicators			
	a) site potential(5)	a) upslope vegetation within one site tree height at site potential for current disturbance regime. If recently disturbed from debris flow, fire, flood, or other natural disturbance mechanism, anthropogenic effects to landscape are negligible and will not interfere with stream achieving late-successional status.	a) upslope vegetation within one site tree height is at 75% site potential for current disturbance regime. If recently disturbed from debris flow, fire, flood, or other natural disturbance mechanism, anthropogenic effects to the landscape will interfere with the stream achieving late-successional status. However the effects can be mitigated to enhance recovery. Recovery is feasible but with human intervention.	a) upslope vegetation within one site tree height is at <75% site potential for current disturbance regime. If recently disturbed from debris flow, fire, flood, or other natural disturbance mechanism, anthropogenic effects to the landscape will interfere with the stream achieving late-successional status. Recovery will take significant effort and intervention.
	b) amount and size of wood observed vs. disturbance regime(6)	b) amount & size of wood is at expected levels for disturbance regime . If recent disturbance (debris flow, fire, landslide) has occurred, large amounts of wood are observed (based on site potential). If no recent disturbance, wood recruitment is occurring from within at least 1 tree height width along the stream. Number of wood pieces may fluxuate during natural events. Anthropogenic effects are negligible and do not affect recruitment.	b) amount & size of wood is 75% of expected level for disturbance regime. If recent disturbance, 75% of expected wood is observed due to anthropogenic interference to wood recruitment (harvest, roads, etc.). If no recent disturbance, wood recruitment is occurring within at least 1 tree height width along stream at 75% expected levels due to anthropogenic interference (harvest, roads, etc.). Number of wood pieces may fluctuate during natural events. Anthropogenic effects do affect 25% or less of the recruitment potential.	b) amount & size of wood is <75% of expected level for disturbance regime. If recent disturbance, <75% of expected wood is observed due to anthropogenic interference to wood recruitment (harvest, roads, etc.). If no recent disturbance, wood recruitment is occurring within at least 1 tree height width along stream at <75% expected levels due to anthropogenic interference (harvest, roads, etc.). Number of wood pieces may fluctuate during natural events. Anthropogenic effects do affect >25% of the recruitment potential.
	c) amount of wood appropriate for stream size(7)	c) amount of wood is at expected levels for stream channel and size	c) amount of wood is 75% of expected level for stream channel and size due to anthropogenic effects (harvest, roads, etc.).	c) amount of wood is <75% of expected level for stream channel and size due to anthropogenic effects (harvest, roads, etc.).
	Pool Frequency and Quality	All processes (sediment regime, wood recruitment, bedrock or other obstruction scour, unaltered flows, etc.) in place to maintain pools and create pools after natural disturbances at potential of the stream	Most processes in place to maintain and create pools after natural disturbances at potential of the stream channel. Pool depth and volume beginning to decrease from what is expected in disturbacne	Minimal processes available, or processes so altered by anthropogenic influences, they can not maintain or create pools at stream channel potential after natural disturbances. Pool depth and volume is

Factors	Indicators	Properly Functioning	At Risk	Not Properly Functioning
		channel. Pool depth and volume are consistent with disturbance regime. Anthropogenic effects on pool forming processes negligible	regime. Anthropogenic effects beginning to interfere with ability of some processes to function properly	well below expected in disturbance regime.
	Off-channel Habitat(3)	Backwaters with cover, and low energy off-channel areas (ponds, oxbows, etc.)	Some backwaters and high energy side channels. Anthropogenic floodplain encroachment on <25% of stream length.	Few or no backwaters or off-channel ponds. Anthropogenic floodplain encroachment on >25% of stream length.
	Refugia(3)	Habitat refugia exists and are adequately buffered (e.g. by intact riparian reserves); existing refugia are sufficient in size, number, and connectivity to maintain viable populations or sub-populations.	Habitat refugia exist but are not adequately buffered (e.g. by intact riparian reserves); existing refugia are insufficient in size, number, and connectivity to maintain viable populations or sub-populations.	Adequate habitat refugia do not exist.
Channel condition and Dynamics	Width/Depth Ratio(8)	W/D ratio <12 on all reaches that could otherwise best be described as "A", "G", and "E" channel types. W/D ratio >12 on all reaches that could otherwise best be described as "B", "F", and "C" channel types. No braided streams formed due to excessive sediment loads as a result of anthropogenic effects.	More than 10% of the reaches are outside of the ranges give for W/D ratios for the channel types specified in "Properly Functioning" block.	More than 25% of the reaches are outside of the ranges given for W/D ratios for the channel types specified in "Properly Functioning" block. Braiding has occurred in many alluvial reaches as a result of excessive aggradation due to high sediment loads as a result of anthropogenic effects.
Channel condition and Dynamics (continued)	Streambank Condition(9)	Streamside vegetation is at site potential; vigorous, deep rooted, and diverse in age structure and composition. Vegetation maintains channel structure and vertical bank angle in consolidated materials. Streambank erosion infrequent, occurring on outside bends and localized constriction points. In non-forested, unconfined systems, active channel mostly entrenched in stable (consolidated) materials with undercut banks common. After natural disturbances, streamside vegetation rapidly re-establishes itself. Anthropogenic effects on streambank stability negligible.	Streamside vegetation vigorous, deep rooted, and diverse in age structure and composition, but discontinuous and sparse in some reaches due to anthropogenic effects. Where vegetative condition is high, channel structure and vertical bank angle are maintained. In non-forested, unconfined systems, undercut banks decreasing or increasing, but generally uncommon. After natural disturbances, streamside vegetation re-establishes at moderate rate due to anthropogenic effects.	Steamside vegetation is sparse, discontinuous, shallow rooted, and largely maintained in an early seral stage due to anthropogenic effects. Streambanks show extensive recent erosion along straight reaches as well as most outside bends in the channel. In non-forested unconfined systems, active channel mostly non-entrenched in stable (consolidated) materials with few undercut banks, or channel abandoning floodplain through rapid downcutting. After natural disturbances, streamside vegetation re-establishes slowly due to anthropogenic effects.
	Floodplain Connectivity(3)	Off-channel areas are frequently hydrologically linked to main channel; overbank flows occur and maintain wetland functions, riparian vegetation, and succession.	Reduced linkage of wetland, floodplains, and riparian areas to main channel; overbank flows are reduced relative to historic frequency, as evidenced by moderate degradation of	Severe reduction in hydrologic connectivity between off-channel, wetland, floodplain, and riparian areas; wetland area drastically reduced and riparian

Factors	Indicators	Properly Functioning	At Risk	Not Properly Functioning
			wetland function, riparian vegetation/succession.	vegetation/succession altered significantly.
Flow/Hydrology	Change in Peak/Base Flow(3)	Watershed hydrograph indicates peak flow, base flow, and flow timing characteristics comparable to an undisturbed (anthropogenic disturbance) watershed of similar size, geology, geography, and disturbance regime.	Some evidence of altered peak flow, baseflow, and/or flow timing relative to an undisturbed (anthropogenic disturbance) watershed of similar size, geology, geography, and disturbance regime.	Pronounced changes in peak flow, baseflow, and/or flow timing relative to an undisturbed (anthropogenic disturbance) watershed of similar size geology, and geography, and disturbance regime.
	Increase in Drainage Network(3)	Zero or minimum increases in drainage network density due to roads.	Moderate (5%) increase in drainage network density due to roads.	Significant (20-25%) increases in drainage network density due to roads.
Watershed Conditions	Road Density and Location(3)	Less than 2 miles per square mile, no valley bottom roads	Two to three miles per square mile, some valley bottom roads.	Over 3 miles per square mile, many valley bottom roads.
	Disturbance History(3)	<15% ECA (entire watershed) with no concentration of disturbance in unstable or potentially unstable areas, and/or refugia, and/or riparian area; and for NWFP area (except AMA's), 15% or more retention of LSOG in watershed.	<15% ECA (entire watershed) but disturbance concentrated in unstable or potentially unstable areas, and/or refugia, and/or riparian area; and for NWFP area (except AMA's), 15% or more retention of LSOG in watershed.	>15% ECA (entire watershed) and disturbance concentrated in unstable or potentially unstable areas, and/or refugia, and/or riparian area; does not meet NWFP standard for LSOG retention.
Watershed Conditions (continued)	Riparian Reserves (hydrologic)(3)	The riparian reserve system provides adequate shade, large woody debris recruitment, and habitat protection and connectivity in all subwatersheds, and buffers or includes known refugia for sensitive aquatic species (>80% intact), and/or for grazing impacts; percent similarity of riparian vegetation to the potential natural community/composition >50%.	Moderate loss of connectivity or function (shade, LWD recruitment, etc.) of riparian reserve system, or incomplete protection of habitat and refugia for sensitive aquatic species (approx. 70-80% intact), and/or for grazing impacts; percent similarity of riparian vegetation to the potential natural community/composition 25-50% or better.	Riparian reserve system is fragmented, poorly connected, or provides inadequate protection of habitat and refugia for sensitive aquatic species (approx. less than 70% intact), and/or grazing impacts; percent similarity of riparian vegetation to the potential natural community/composition is 25% or less.

Footnotes to Salmon River and tributaries matrix of factors and indicators:

1. Stream Order according to Strahler (1957). Proper Functioning criteria for $4^{th}/5^{th}$ Order streams derived from temperature monitoring near the mouth of streams considered to be pristine or nearly pristine (Clear, Dillon, and Wooley Creeks). Seven day maximum temperatures as high as 70.5 °F have been recorded on these streams. At Risk criteria for $4^{th}/5^{th}$ order streams derived from monitoring in streams that support populations of anadromous fish, although temperatures in this range (70.5 to 73.5 °F) are considered sup-optimal. Non-Functioning is sustained temperatures above 73.5 °F that cause cessation of growth and approach lethal temperatures for salmon and steelhead.

Properly Functioning criteria for 1^{st}-3^{rd} order streams is derived from DFC values given in the KLRMP EIS p3-68. At Risk and Not Properly Functioning are assigned on a temperature continuum with values given for $4^{th}/5^{th}$ order streams, with the maximum instantaneous temperature of At Risk of 1^{st} – 3^{rd} order streams coinciding with the minimum seven day maximum of $4^{th}/5^{th}$ order As Risk streams. Similarly for the Not Properly Functioning category.

2. **Properly functioning**: Water clarity returns quickly (within several days) following peak flows.
At Risk: Water clarity slow to return following peak flows.
Not Properly Functioning: Water clarity poor for long periods of time following peak flows. Some suspended sediments occur even at low flows or baseflow.

3. Properly Functioning criteria unchanged from NMFS matrix included in Attachment 3, Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Watershed Scale (1996). Channel types and gradients found within the Salmon River sub basin do not support this type of habitat.

4. The nature of LWM deposition is in clumps, therefore need to look at entire stream and not just reaches to determine which "box" the stream fits into.

5. Disturbance regime = debris torrents, fire, insect and disease, late successional (no disturbance for some time). South and West aspects appear to have significantly lower vegetation density than North and East aspects.

6. Disturbance regime = same as above. The time delay after a disturbance will determine amount of wood - the shorter the period the greater wood expected. In areas of long delays, there may be less wood due to transport at high flows or decay. Have observed on some tributaries to South Fork less wood after high flows but not high enough to cause debris flows or other disturbances to replenish wood lost. Low to moderate intensity fire can also burn out large wood that is in or near the stream, fire doesn't have to be high intensity for this to occur - witnessed this in Specimen Creek in 1994.

7. See greater amounts of wood in smaller, steep channels, such as "A" channels than do in the main stems of North or South Fork where the stream width is wide enough to carry large pieces (whole trees) down river. Wood generally settles on the bars in the larger sections of the river and streams and therefore is not available during low flows. Since inventories occur during low flow periods, the LWM on the bars is not counted although they may offer important refuge during high flows.

8. Width to depth ratio for various channel types is based on delineative criteria of Rosgen (1994). Properly Functioning means that W/D ratio falls within expected channel type as determined by the other four delineative factors (entrenchment, sinuosity, slope, and substrate). Aggradation on alluvial flats causing braiding is well known phenomenon that often accompanies changes in W/D ratio as watershed condition deteriorates.

9. Klamath River Assessment. 1997

C.2.3: Action Plan, Salmon River Sub-basin Restoration Strategy

Table C.4: Action Plan, from Salmon River Sub-basin Restoration Strategy

Recurrent/Ongoing Activities			
Cooperation & Coordination	**Education**	**Watershed Protection**	**Program Management**
SLUG – Develop annual cooperative work plan	Conduct community restoration program	Maintain public and private roads to reduce sedimentation and disruption of runoff flows	Market Restoration Efforts and Secure Funding Sources/ Maintain resouces for ongoing Stewardship and advocacy
Work with Klamath River Basin Task Force and Technical Work Group	Support Watershed Education Program/Involve area schools	Control spread of Noxious Weeds and invasive species	Encourage involvement by Research and Universities in furthering understanding of the Salmon River Subbasin
Continue cooperative planing efforts with Fires Safe Council	Increase awareness and support for eradication and control of noxious weeds	Reduce toxics, hazardous and solid waste sites in subbasin	Maintain and improve information resources within the Salmon Subbasin

Non-Recurrent Activities				
Time Period	**Inventory & Assessments**	**Project Planning**	**Project Implementation**	**Monitoring**
1999	Start Road Inventory: Lower South Fork (LSF) Salmon River Watershed	Complete NEPA and ESA Planning for ERFO Projects	Implement 97 ERFO Projects	Conduct BMPEP & Concurrent (CM) project-level monitoring/evalations
	Initiate Restoration Strategy for Salmon Subbasin	Complete NEPA & ESA Planning for Upper South Fork (USF) ATMP (Summerville)	Implement Steinacher Road Decommissioning	Monitor Implementation of Steinacher Decommissioning
	Complete Stream Inventories: 97 Flood Damaged Streams	Complete NEPA & ESA Planning for Crawford Road Decomm & Stormproofing	Complete Cherry Creek Road Stormproofing	Monitor Implementation of Cherry Creek Stormproofing
			Complete Design Phase For Upper South Fork T.S. Decommissioning	Adopt REO compatible, watershed-scale effectiveness monitoring
			Implement 10% Funded Stromproofing on Taylor	BMPEP & CM project-level monitoring/evaluations
2000	Start Road Inventory: North Fork (NSF) Salmon River Watershed	Submit funding proposals for 'high' priority road work identified in USF roads Summerville Project	Implement Steinacher Road Decommissioning	Review priorities for restoration activities
	Complete Road Inventory & Risk Assessment - LSF	Start S&M surveys, NEPA & ESA for Taylor Fuels project	Implement Upper South Fork T.S. Road Decommissioning	BMPEP & CM project-level monitoring/evaluation
	Start Road Inventory: Mainstem (MS) Salmon River Watershed		Complete 97 ERFO Projects including Decommissioning	Spring and Fall chinook, summer steelhead escapment counts
	Identify all potential road associated migration barriers to anadromous fish			Noxious Weed Monitoring
	Initiate Planning with County to correct all Migration barriers on County roads		Implement Crawford Road Decommissioning	
	Finalize Sediment Waste area disposal Site inventory for Salmon sub-basin		ID maintenance priorities For LSF including correcting stream/road diversion potential	

2001	Complete Road inventory & risk assess – North Fork & Mainstem Salmon	Review existing RAP (except LSF) to reflect new Information from road inventory/ assessment projects	Begin highest priority road work if funding available and planning documents are complete	BMPEP & CM project-level monitoring/evaluation
	Initiate Fish Barrier Inventory of FS & County Roads Salmon Subbasin	Project planning documents for projects identified above	Implement Steinacher Road Decommissioning	Spring and Fall chinook, summer steelhead escapment counts
	Noxious Weed Inventory	Submit funding proposals for 'highest' priority road work identified in other road assessments &/or RAP	Complete Design Phase For Smmerville Road Decommissioning & stormproofing	Noxious Weed Monitoring
		Begin implementation of provisional Fire Management Strategy.	Initiate validation of vegetation & fuels field conditions to be completed by 2004	
2002	Complete Road inventory & risk assess – USF Salmon	Initiate Planning for Fish Barrier Removal on FS & County Roads Salmon Subbasin	Implementation of Summerville Project to Decomm/Stormproof USF Roads	BMPEP & CM project- level monitoring/evaluation
	Complete Fish Barrier Inventory of FS & County Roads Salmon Subbasin	Complete Planning for Taylor Fuels Reduction Phase I; Initiate Phase II	Implement Crawford Road Stormproofing	Spring and Fall chinook, summer steelhead escapment counts
	Rock Pit Inventory and Asbestos Testing	Submit funding proposals for 'highest' priority road work identified in LSF RAP	Complete design for King Solomon Mine Rehab Project	Noxious Weed Monitoring
	Mine Tailing Assessment/ Management Plan	Complete Planning for King Solomon Mine Rehab	Start implementation of Taylor Fuels Rehab Project	
	Noxious Weed Inventory	Complete RAP for Salmon River RD/NEPA/ESA Planning for LSF Roads		
		Address Comments from TWG and Community in Salmon Subbasin Restoration Strategy		
		County Road Management Plan		
		Initiate Project Planning with Fire Safe Council on private And public lands		
2003 – 2008	Complete Provisional Fire Management Strategy for Salmon Subbasin	Submit funding proposals for '**high**' priority road work identified in other road assessments &/or RAP	Complete road work in '**highest**' priority watersheds; work identified & prioritized in RAP &/or road inventory/assessments	BMPEP & CM project- level monitoring/evaluation
	Inventory Riparian Reserve revegetation opportunities	Project planning documents for projects identified above – begin two years ahead of proposed implementation	Implement corrective Measures on Fish passage barriers at road crossings	REO compatible, watershed-scale effectiveness monitoring
			Iimplementation of provisional Fire Management Strategy.	Develop 5-year plan for restoration and monitoring

2009 – 2018		Submit funding proposals for '**moderate**' priority road work identified in road assessments &/or RAP	Complete road work in '**moderate**' priority watersheds; work identified & prioritized in RAP &/or road inventory/assessments	BMPEP & CM project- level monitoring/evaluation
		Project planning documents for projects identified above – begin two years ahead of proposed implementation		REO compatible, watershed-scale effectiveness monitoring
				Review/revise monitoring efforts
2019 – 2028		Submit funding proposals for '**lower**' priority road work identified in road assessments &/or RAP	Complete road work in '**lower**' priority watersheds; work identified & prioritized in ATMs &/or road inventory/assessments	BMPEP & CM at project- level monitoring/evaluation
		Project planning documents for projects identified above – begin two years ahead of proposed implementation		REO compatible, watershed-scale effectiveness monitoring
				BMPEP & CM at project- level monitoring/evaluation
				Review/revise monitoring efforts

C.3: Implementation Plan for Salmon River watershed Temperature TMDL

Regional Water Board staff will meet with Klamath National Forest staff to draft and execute a Memorandum of Understanding (MOU), affirming the understanding and commitment expressed in the LRMP and SRSRS.

Chapter 1 of this report suggests that vegetation may be slow to recover in general, that introduced vegetation additionally impedes recovery of mature forest stands. These facts, taken with the conclusions from the stream temperature analysis, support a watershed-wide approach to riparian vegetation recovery to attain improved trends in temperature, ultimately achieving water quality objectives.

The TMDL, based on the analysis provided, requires a definitive trend of increasing vegetation cover and increasing vegetation height within the defined riparian zone. The MOU will be designed to document a commitment to meet the targets, maintaining Riparian Reserves as defined by USFS, increasing riparian shade.