Six Rivers National Forest-wide Aquatic Restoration Project

Attachment 1. Proposed instream and riparian restoration treatments and key operational design criteria

This attachment provides a narrative description of the suite of proposed instream and riparian restoration treatments and highlights key operational design criteria aimed at enhancing habitat conditions for aquatic species. There is a need for improving anadromous fisheries; particularly federally-listed threatened, endangered, and sensitive fisheries and their critical habitat. State and Federal recovery plans have described types and locations of restoration actions necessary to improve instream habitat for coho salmon; also considered beneficial to all salmon, trout and other aquatic species; guiding prescription methodology below.

Fish Access to Habitat

A number of aquatic species make upstream and downstream migrations. Some obstructions to their movement include: heavy stream bedload deposits, boulders, plunges, chutes, landslides, logs and debris accumulations. Any of these types of obstructions can create a temporary (seasonal), partial or total barrier. Barrier modification projects are intended to improve passage by:

- Providing or improving access to refugia based on species' life cycle, run timing and flow conditions,
- Increasing the duration of accessibility (both within and between years), and
- Partially opening barriers and modifying log jams to facilitate juvenile and adult fish or other aquatic species passage.

This proposed action would improve passage for most aquatic species by modifying the barrier by hand (e.g. using a chainsaw to buck logs, movement of sediment particles, logs, and a portion of the obstruction with a grip hoist, blocks and cables) or where road access currently exists through the use of heavy equipment. After annual site inspections, this type of restoration activity would only be accomplished on an as needed basis and will incur the minimum amount of stream channel reconfiguration needed to achieve the effective aquatic species passage.

Instream Habitat Enhancement

Large woody debris (LWD) is an important part of the forest stream ecosystem and is critical for survival of salmonids and other aquatic species that inhabit streams. LWD diverts water flow, changes velocity to trap sediment or create pools and cover for fish. Increasing instream cover and complexity for juvenile fish survival and spawning success are intended to provide predator escape and resting cover, increase spawning and rearing habitat, improve migration corridors, improve pool to riffle ratios, and add habitat complexity and diversity. Specific techniques for instream habitat enhancement include:

- Placing large woody debris in the stream channel to create or enhance fish habitat and increase stream channel complexity. Logs will be used individually or in combination with other logs, root wads or boulders. Logs with an extensive root network can provide greater complexity and therefore are preferred. Sources of LWD are further described

below. Projects will include both anchored (engineered log jams) and unanchored logs, depending on site conditions and wood availability. LWD placed in streams without cabling would allow for natural distribution of wood in the channel,

- Placing new boulders in stream channel to provide cover and scour opportunities (boulder clusters, deflectors),
- Modification of existing instream fisheries enhancement sites (previously placed boulder and log structures) by making them more effective through reposition or addition of LWD,
- Improvements to existing permitted water diversions (such as upgrading drainage features, outfalls, pipes, instream flow reconnection, redirection or similar devices to control, discharge or maintain water levels),
- Addition of local gravel to limited stream reaches to jumpstart the production of aquatic insects and enhancement of spawning and rearing anadromous fish habitat. Supplementation of natural gravel may be needed to address short-term deficiencies or speed up the recovery process, and
- Restoration of aquatic habitat to support beaver populations through the usage of deciduous shrub and trees, beaver dam supports (BDS) or post assisted woody structures (PAWS).

These projects would occur in stream channels and adjacent floodplains to increase channel stability, rearing habitat, pool formation, spawning gravel deposition, channel complexity, hiding cover, low velocity areas, and floodplain function. Equipment such as helicopters, excavators, dump trucks, front-end loaders, full-suspension yarders, and similar equipment may be used to implement projects.

Large woody debris could come from existing riparian sources or brought in from off-site sources via trucks or helicopters.

- Logs and trees to be placed in streams will be obtained from locations where their removal will not conflict with other valuable functions they might serve,
- Live conifers and other trees can be felled, pulled or pushed over in the riparian and upland areas for in-channel large wood placement only when conifers and trees are fully stocked and fall within those physical and biological features essential to wildlife outlined during ESA consultation,
- Trees that pose a safety risk and trees killed through fire, insects, disease, blow-down and other means could be felled and used for in-channel placement,
- Downed trees from clearings made for illegal marijuana grows, and
- Trees from other management activities may be stock piled for future instream restoration projects. The removal and use of these trees would be analyzed under a separate project.

Side-Channel/Off Channel

Projects would be implemented to reconnect historic side-channels with floodplains by removing off-channel fill and plugs. Furthermore, new side-channels and alcoves can be constructed in geomorphic settings that will accommodate such features. This activity category typically applies to areas where side channels, alcoves, and other backwater habitats have been filled or blocked from the main channel, disconnecting them from most if not all flow events.

These project types would increase habitat diversity and complexity, improve flow heterogeneity, provide long-term nutrient storage and substrate for aquatic macroinvertebrates, moderate flow disturbances, increase retention of leaf litter, and provide refuge for fish during high flows. Creating side channels or off channel rearing habitat has been identified as a critical need for recovering SONCC coho salmon. Types of side channel or off-channel restoration projects include:

- Reconnecting abandoned side channels, pond habitats or remnant oxbows to restore fish access,
- Creating new side channel or off-channel habitat with self-sustaining channels, and
- Improving hydrologic connection between floodplains and main channels.

Restoration projects in this category may be accomplished by hand or through the use of heavy equipment (where access exists) and include: channel and pond excavation, usage of live vegetation, beaver dam analogues, constructing wood or rock control structures, removal or breaching of levees and dikes, and construction of LWD habitat features.

Streambank Restoration

When natural levels of erosion are exceeded, fish habitat may be lost and stream and riparian productivity may have difficulty recovering. This restoration activity would improve streambank conditions by stabilizing these unstable or potentially unstable areas with appropriate site-specific techniques by hand or through the use of heavy equipment where road access exists.

Reduction of streambank sediment input would improve fish habitat and fish survival by increasing fish embryo and alevin survival in spawning gravels, and minimizing the loss of, or reduction in, size of pools from excess sediment deposition. The proposed activities would reduce stream sedimentation from bank erosion by:

- Stabilizing stream banks using live native plant material, cribbing, and armoring with boulders, logs or other materials,
- Reducing recreation impacts associated with concentrated levels of dispersed and developed usage and practices, and
- Constructing barriers to provide controlled access and improve available upslope water sources for livestock.

Riparian Restoration

This restoration activity would help restore species composition and structural diversity of plant communities in riparian areas to provide adequate thermal regulation, nutrient filtering, and appropriate rates of surface erosion, bank erosion and channel migration and to supply LWD sufficient to sustain physical complexity and stability. When opportunities exist, enhance existing riparian conditions by increasing future recruitment of LWD to the stream network. These types of projects will aid in the restoration of riparian habitat by increasing the number of native plants and groupings. Riparian projects include:

- Planting native species,
- Girding alders within dense tree stands to allow natural mortality leading to increased sunlight for conifer recruitment, and
- Removing non-native invasive riparian plant species such as Himalayan blackberry.

Reduction of Impacts related to Illegal Marijuana Grow Clean up

This restoration activity includes the cleanup of illegal marijuana grows that have been cleared by law enforcement and pose risk to aquatic ecosystems. Actions included in this activity would be accomplished by hand or through the utilization of heavy equipment when existing road access permits. These types of activities would:

- Reestablish stream channels and/or remove illegal dams from headwater streams,
- Remove waste such as tarps, pipes, garbage, chemicals or other products,
- Vegetate disturbed sites using native plants, and
- Move illegally cut trees found within clearings for future fisheries enhancement projects.

Mine Reclamation

The restoration of non-active mine locations include the excavation and removal of mine waste from stream channels, banks, terraces and lower hill slopes; stabilization and re-vegetation of mines and associated waste areas, transportation of waste materials to safe impoundment areas and, capping of impoundments with soil and vegetation. This restoration activity would not include actions under the Comprehensive Environmental Response, Compensation and Liability Act (CERLA), commonly known as Superfund, enacted in 1980.

In-channel Nutrient Enhancement

This restoration activity includes the placement of salmon carcasses, carcass analogs (processed fish cakes), or inorganic fertilizers in stream channels to help return stream nutrient levels back to historic levels. This action would help restore marine-derived nutrients to aquatic systems, thereby adding an element to the food chain that is important for growth of macroinvertebrates, juvenile salmonids, and riparian vegetation. This activity would:

- Ensure that the relevant streams have the capacity to capture and store placed carcasses,
- Carcasses should be of species native to the watershed and placed during the normal migration and spawning times that would naturally occur in the watershed, and
- Do not supplement nutrients in eutrophic or naturally oligotrophic systems.

Resident Aquatic Species Stream and Lake Enhancement

Restoration activities described here include the improvement of the native fish and other native aquatic species and their associated habitat. These types of activities include:

- Manual invasive weed removal in natural lakes and ponds,
- Reduction of recreation impacts associated with unauthorized trails and sanitation,
- Maintenance of bass structures at Ruth Reservoir,
- Installation of western pond turtle basking platforms, and
- Manual bullfrog or other non-native species eradication undertaken through non-chemical treatments of streams, natural lakes and artificial ponds (e.g. seining, draining).

Mechanical and Manual Restoration Activities

All project activities would incorporate design features that are intended to minimize potential negative effects to existing aquatic, semi-aquatic and associated terrestrial organisms and their environment. All applicable USFS Pacific Southwest Region Best Management Practices would be implemented for land disturbing activities or projects that may impact water quality (SRNF LRMP S&G IV-71). Implementing these types of projects may require the use of heavy equipment (*e.g.*, self-propelled yarders, mechanical excavators, backhoes); however, hand labor would be used to accomplish manual restoration activities whenever safe and practical.

Since typically the use of heavy equipment can cause more ground disturbance and potential impacts to forest resources than hand labor, the proposed action is spatially displayed under two major categories:

1. **Areas where vehicle access exists/Mechanical [heavy equipment]** - With the higher probability of ground disturbance from the use of heavy equipment, additional design features would be implemented to reduce potential environmental impacts. For example, mitigation measures that may be applicable when using heavy equipment would address: 1/ soil disturbance and sediment discharge, as well as use of petroleum products that may affect aquatic resources, 2/ noise disturbance related to some wildlife species, 3/ potential spread of invasive species to address effects on native plant communities, and 4/ potential impacts to Native American values, contemporary and spiritual uses, and cultural resource locations to name a few. The identification of site locations does not imply that only heavy equipment would be used for restoration actions. In many of these locations, heavy equipment may be used one year, followed by years of work using hand tools.

2. **Areas where vehicle access does not exist/Manual [hand labor]**: Aquatic restoration activities that are expected to have less significant impact to existing forest resources will be accessed by foot and accomplished by hand.

Attachment 2 includes SRNF District Maps with the locations of proposed projects at the watershed and site scale that would be available for fisheries restoration activities under this environmental assessment.

The corresponding list of site specific actions that are indicated on these maps are listed in the table of *Proposed Forest-wide Aquatic Restoration Projects* found in Attachment 3. Only a small percentage of these sites would be implemented in any one year due to available staff support, scheduling, and successful acquisition of funding.

Attachment 2. Project Area

SRNF Maps 1-4 of Forest-wide Aquatic Restoration Activities

Background

Recognizing the declines in watershed condition and fish habitat quality, Forest Service fisheries biologists and hydrologists initiated in-stream and hillslope inventories in the 1980's and 1990's with the goal of identifying what factors were responsible for the degraded conditions and what actions might be taken to "jump-start" watershed recovery.

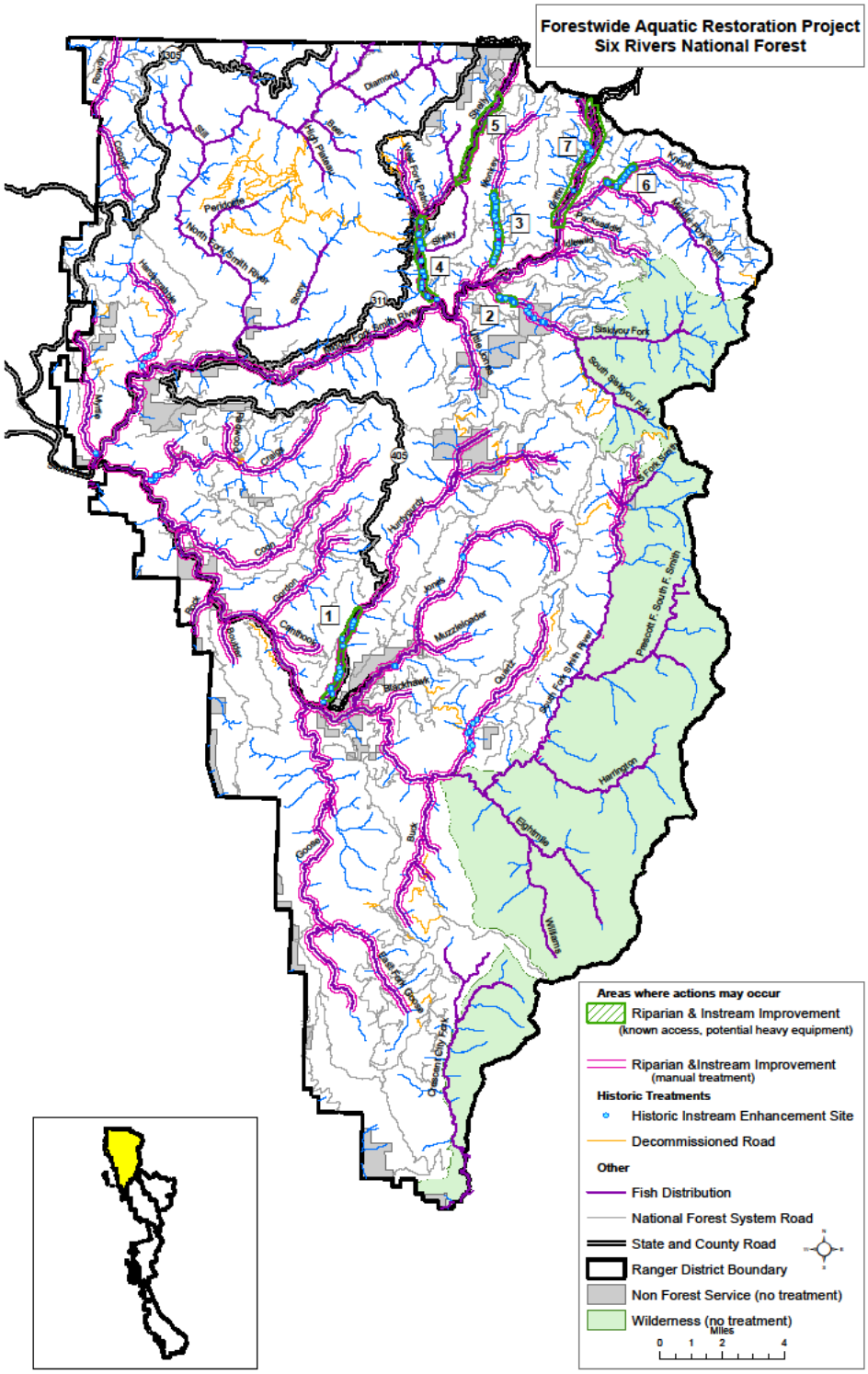
The four maps found in this attachment show our accomplishments of fish and watershed restoration completed on the Six Rivers National Forest since the late 1980's. These historic fish and watershed restoration treatments are featured under two categories: Historic Instream Enhancement Sites (small blue circles) and Decommissioned Roads (orange lines). Even though historic riparian and landslide plantings have occurred on the SRNF during this time, these site locations are not shown on these maps.

In addition to these historic restoration efforts, these District maps reflect the different areas where restoration actions may occur.

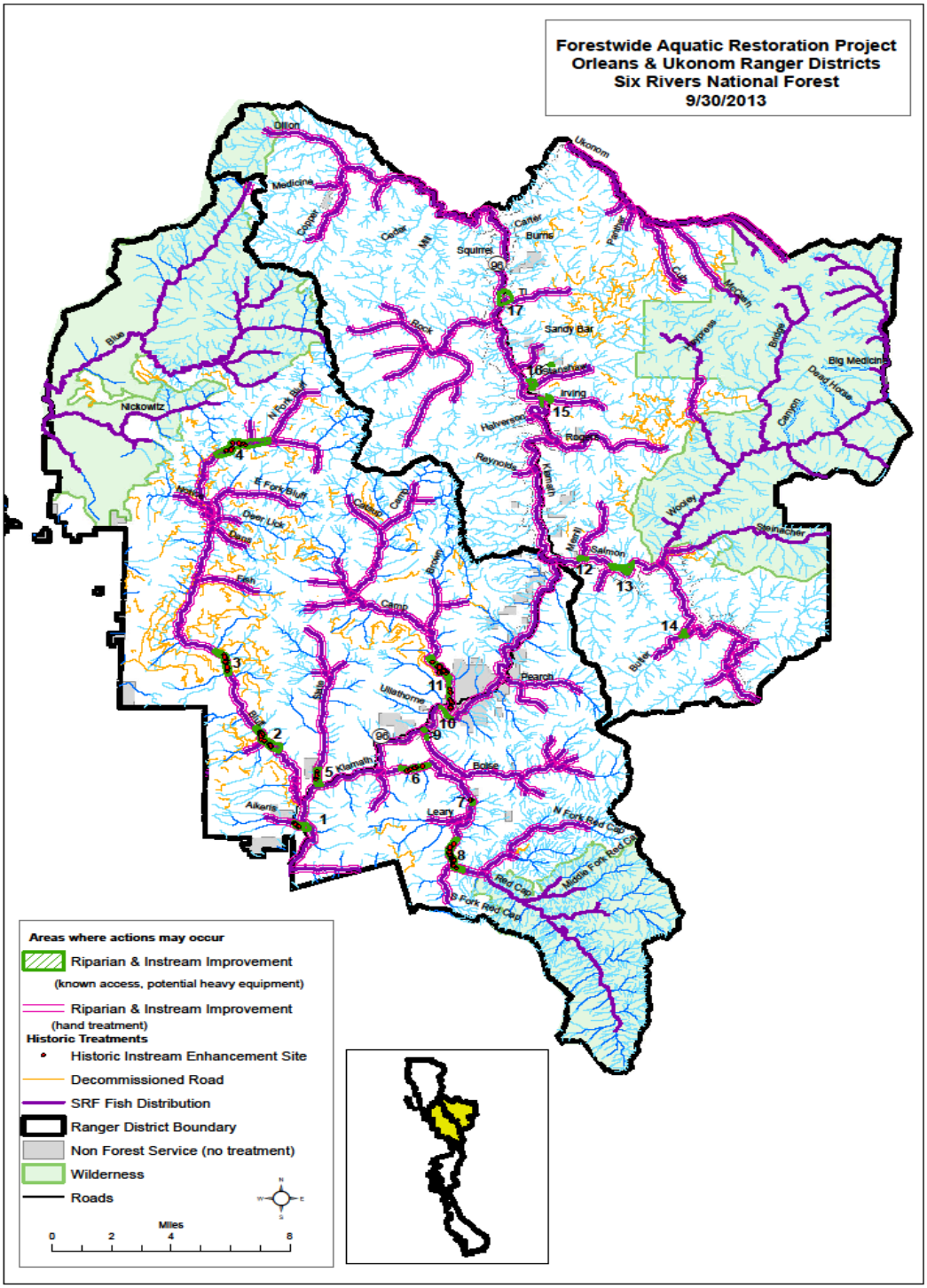
Activities with the "green hatched polygons" are numbered and described in the table found in Attachment 3. Vehicle access typically exists and past restoration may be present. The table describes the planned activities and indicates if the site was previously accomplished or if it is a new site location. These locations would have a higher likelihood of ground disturbing activities due to possible use of heavy equipment; however, not all of the restoration activities planned at the identified locations would require heavy equipment over the 10 year period covered by this analysis.

The "purple parallel lines" are areas that typically have no equipment or vehicle access, would include low probability of ground disturbing actions and would be primarily accomplished by hand crews. These restoration activities are more opportunistic in scope and identified during stream surveys. Restoration and maintenance of historic instream fish structures may occur. The Forest's fish distribution layer was used to determine the extent of where these actions would occur and provide the most benefit to our Forest fisheries resources.

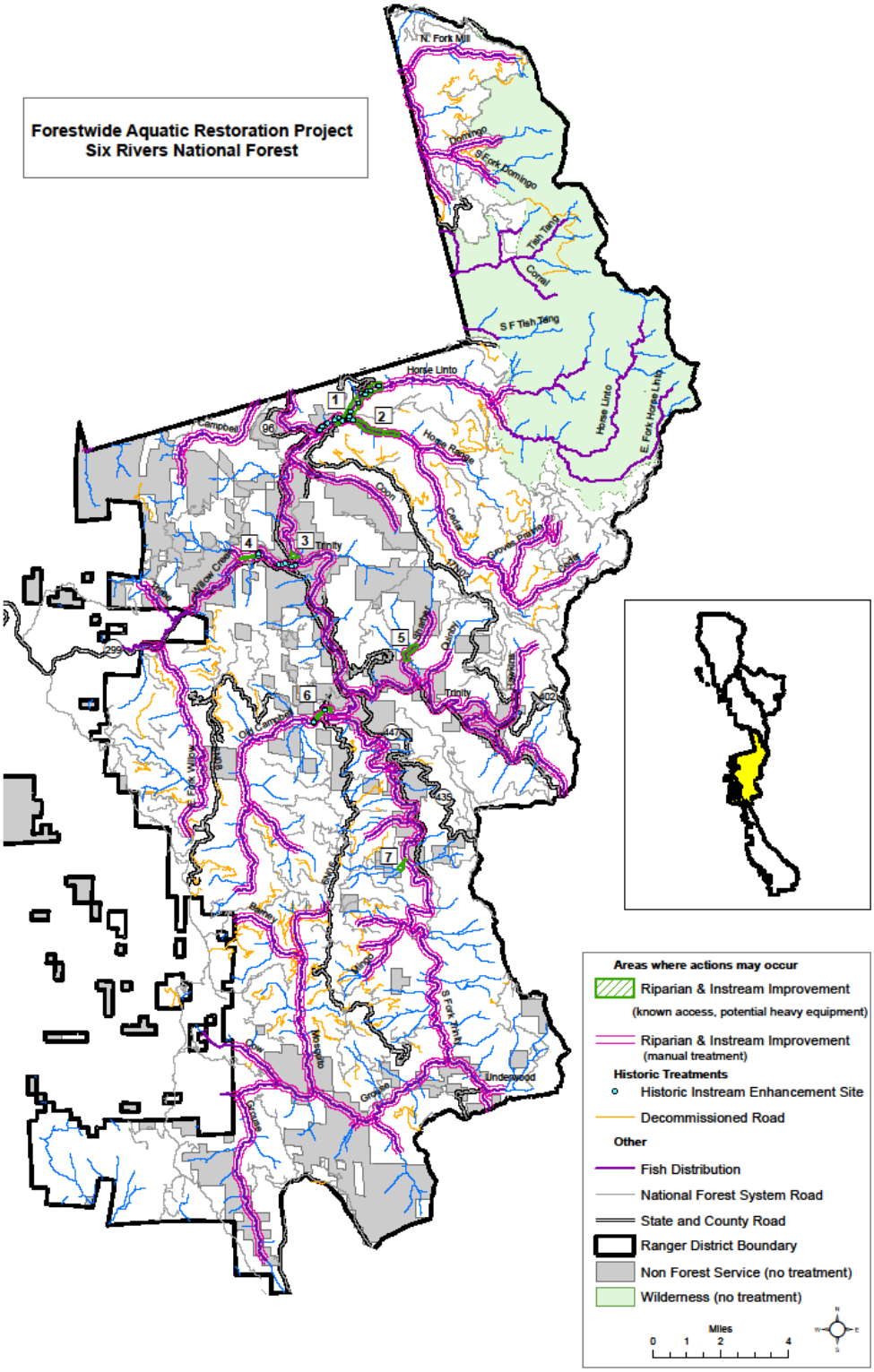
The table located in Attachment 3 provides a list of all project locations with identified activities that could occur under this analysis. The number of each project corresponds to a number on the map showing the location of those known activities. Projects would be implemented based on annual funding received on the Forest and/or through grants and partnerships.



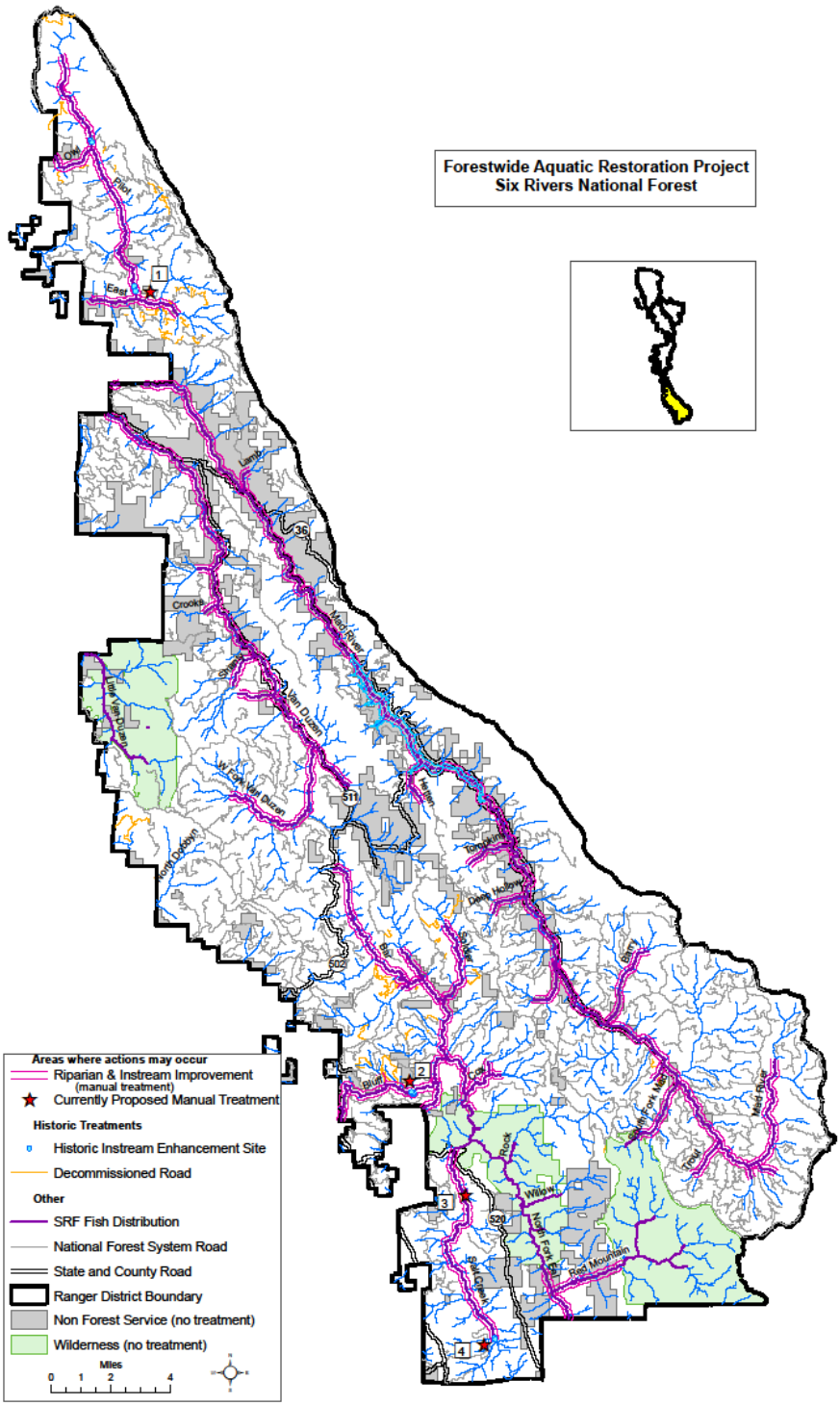
Map 1 – Gasquet Ranger District/Smith River National Recreation Area - Smith River Watershed



Map 2 – Orleans, Ukonom, and Lower Trinity Ranger District- Lower Klamath River Watershed



Map 3 - Orleans, Ukonom, and Lower Trinity Ranger District - Lower Trinity River Watershed



Map 4 – Mad River Ranger District - Mad, Van Duzen, North Fork Eel River Watersheds

Attachment 3. Proposed Forest-wide Aquatic Restoration Activities

Project Name	Map Identifier	Watersheds	Historic Restoration Location?	Description of Proposed Action	Ground Disturbance/Access
Forest-wide Riparian and Stream Treatments	Purple Buffered Streams (District Maps 1-4)	Across Forest adjacent to fish bearing stream reaches	N/A	Provide a broad sweet of opportunities to enhance existing riparian and stream conditions to create a diversity of desirable habitats. Examples include girdling of alders to promote conifer growth for future large woody debris recruitment to adjacent stream channels. Move and align existing down woody debris to reduce sedimentation, increase cover and channel complexity, and enhance holding, spawning and/or rearing fish habitat.	Hand tools only. Little to no ground disturbance - limited to relocation of woody debris within riparian area to adjacent stream channel (dragging, lifting with grip hoists, etc). No new access.
Forest-wide Lake Treatments	Lake Symbol (District Maps 1-4)	Across Forest	N/A	The improvement of those natural lakes where fishing is permitted, as well as the enhancement of other water bodies where native non-salmonid aquatic fish and wildlife species occur. Activities include: installation of aquatic species habitat structures, manual invasive weed removal, reduction of recreation impacts associated with unauthorized trails and sanitation, placement of basking platforms, and eradication of nonnative aquatic species through non chemical treatments (seining, draining) of natural and artificial ponds.	Activities will be accomplished by hand only. Little to no ground disturbance anticipated.
Smith River Tributaries	NRA 1-7 (Map 1)	Hurdygurdy, Siskiyou Fork, Monkey, Patrick, Shelly, Knopki, Griffin Creeks	1-4, 6, parts of 7 are existing 5 and parts of 7 are new	This project would improve existing fish habitat by placing additional LWD to increase cover and promote scour, adjust boulders to improve off-channel connectively and habitat diversity, plant or manually release existing conifers to promote natural future recruitment of LWD, look at utilizing beavers for off-channel/side channel habitat. Project areas may include strategic invasive plant species treatments to improve riparian conditions.	Yes - Activities will likely involve the use of heavy equipment, access will primarily involve existing routes.
Lower Aikens Creek	OR-1 (Map 2)	Lower-mid Klamath River	Existing and New	The lower mile of Aikens Creek occupies the pre-1964 Bluff Creek channel. Currently, the existing stream channel is simplified due to the changes resulting from previous floods, the placement of the existing road and associated dispersed campsites. This project	Yes - Activities will involve the use of heavy equipment, use of existing roads and trails, no new access.

Project Name	Map Identifier	Watersheds	Historic Restoration Location?	Description of Proposed Action	Ground Disturbance/Access
				would widen the channel and reconnect a portion of the remnant floodplain by removing accumulated bedload deposits. Side channel ponds will be created to restore complexity for instream and off-channel salmonid habitat. Placement of LWD will enhance spawning and overwintering rearing fish habitat. Removal of invasive non-native plants will improve the health of existing native vegetation. Riparian plantings will increase shade, enhance vertical/horizontal structure and diversity, and promote future LWD recruitment to the site.	
Fish Lake	OR-2 (Map 2)	Lower Bluff Creek	Existing and New	Eurasian water milfoil is considered to be the most problematic invasive aquatic plant in the area. Because it is widely distributed and difficult to control, existing Eurasian water milfoil would be removed from the boat access and day use areas and perimeter of Fish Lake. Add LWD to enhance cover for bass habitat and basking platforms for western pond turtles. Eradicate bull frogs and other non-native species inhabiting the area.	Yes - Activities will likely involve the use of heavy equipment, use of existing roads and trails, no new access.
Wright's Ranch	OR-3 (Map 2)	Lower Bluff Creek	Existing and New	Since the mid-1980's, fisheries enhancement projects have occurred in Bluff Creek. This project would improve existing fish habitat by align existing boulders to improve off-channel connectively and habitat diversity, placing additional LWD to increase cover, detritus retention and side channel complexity, and stabilize existing lower hillslopes to reduce bank erosion in this reach.	Yes - Activities will likely involve the use of heavy equipment, use of existing roads and trails, no new access.
Dragon Bar	OR-4 (Map 2)	Middle Bluff Creek	Existing and New	This project proposes to adjust and improve existing boulders and place logs with rootwads to provide cover, promote pool scour, sediment sorting and metering, and induce favorable hydraulics and connectivity to existing off-channel features.	Yes - Activities will likely involve the use of heavy equipment, use of existing roads and trails, no new access.
Bluff Mainstem (near FS Rd 12N13H)	OR-5 (Map 2)	Upper Bluff Creek	Existing and New	This stream segment is lacking instream habitat complexity. The placement of LWD in this low gradient reach would create pools, provide cover, reduce gravel movement and enhance slow water habitat.	Yes - Activities will likely involve the use of heavy equipment, use of existing roads and trails, no new access.

Project Name	Map Identifier	Watersheds	Historic Restoration Location?	Description of Proposed Action	Ground Disturbance/Access
Lower Slate Creek	OR-6 (Map 2)	Lower-mid Klamath River	New	This project would incorporate bioengineering techniques to improve bank stabilization and vegetative structure and diversity in the lower reaches. In-stream LWD structures would be added to promote channel scour and thalweg development, as well as increase spawning and rearing fisheries habitat.	Yes - Activities will likely involve the use of heavy equipment or helicopters, use of existing roads and trails, no new access.
Larson's Place	OR-7 (Map 2)	Lower Red Cap Creek	Existing and New	Adjust existing instream structures found within the mainstem and side channel habitat. Add LWD with root wads to increase cover and habitat complexity. Induce favorable hydraulics and connectivity to existing off-channel features. Improve the depth and quality of pool habitat within disconnected side channel features. Remove invasive plant species at strategic locations and plant a diverse array of native riparian species to promote diversity and future LWD recruitment in this stream reach.	Yes - Activities will likely involve the use of heavy equipment, use of existing roads and trails, no new access.
Red Cap Mainstem (near FS 10N02 Bridge)	OR-8 (Map 2)	Middle Red Cap Creek	Existing and New	This project would improve existing fish habitat by removing an old bridge abutment and fence rock gabions. Place additional LWD with root wads in low gradient areas to provide mainstem and side channel habitat complexity by mimicking natural processes. Stabilize existing side slopes to reduce bank erosion in this stream reach.	Yes - Activities will likely involve the use of heavy equipment, use of existing roads and trails, no new access.
Schnable Diggings	OR-9 (Map 2)	Upper Red Cap Creek	Existing and New	This project proposes to adjust existing boulders and place logs with rootwads to provide cover, promote pool scour, sediment sorting and metering, and induce favorable hydraulics and connectivity to existing off-channel features. This project includes some streambank restoration to improve stability, promote native species composition, structural diversity and integrity of existing riparian plant community.	Yes - Activities will likely involve the use of heavy equipment, use of existing roads and trails, no new access.
Lower Boise Creek	OR-10 (Map 2)	Lower-mid Klamath River	New	Modify bedrock outcrop and boulders found near the mouth to improve seasonal passage to adult and juvenile fish. Improve and maintain connectivity of existing off-channel beaver ponds. If	Yes - Activities will likely involve the use of heavy equipment, use of existing roads and trails, no new

Project Name	Map Identifier	Watersheds	Historic Restoration Location?	Description of Proposed Action	Ground Disturbance/Access
				deemed necessary, consider routing a portion of the creek through beaver ponds and around bedrock cascade near the confluence. Consider potential development of other off channel ponds where cold water seeps connect to the old Klamath River floodplain. Remove invasive plant species found within the area. Enhance the existing riparian plant community to improve root cohesion, roughness and vertical and horizontal vegetative structure.	access.
Lower Ullathrone Creek	OR-11 (Map 2)	Lower-mid Klamath River	New	Improve fish habitat found near the confluence of lower Ullathrone Creek and the Klamath mainstem. This restoration activity would remove some of the aggraded bedload deposits, extend the contribution of cold water refugia found in the area, as well as develop off channel rearing ponds and LWD cover for juvenile salmonid summer and winter rearing.	
Lower Camp Creek	OR-12 (Map 2)	Lower Camp Creek	Existing and New	Enhance off-channel ponds and braided side-channels located within this lower reach of Camp Creek. Improve connectivity to channel found on north side of floodplain near mouth. Place LWD with rootwads within backwater stream margins to enhance naturally occurring alcoves and remnant oxbows. Remove proliferation of exotic plants and maintain riparian species composition and structural diversity of native plant community. Accelerate growth of riparian canopy within this entire lower stream reach. Project areas may include strategic invasive plant species treatments to improve streamside conditions.	Yes - Activities will likely involve the use of heavy equipment, use of existing roads and trails, no new access.
Middle Camp Creek Mainstem	OR-13 (Map 2)	Middle Camp Creek	New	This project would restore complexity and resiliency to instream and off-channel habitats by aligning existing structures, removing old cable and rebar, placing additional LWD, and excavating disconnected side channels. Remove introduced exotic plant species, maintain composition and structural diversity of native	Yes - Activities will likely involve the use of heavy equipment, use of existing roads and trails, no new access.

Project Name	Map Identifier	Watersheds	Historic Restoration Location?	Description of Proposed Action	Ground Disturbance/Access
				plant community and accelerate growth of riparian canopy.	
Lower Merrill Creek	OR-14 (Map 2)	Lower Salmon River	New	Low-flow fish passage remains a seasonal concern within lower Merrill Creek. This project proposal would modify the bedrock outcrop and boulders found near the mouth below the Hwy 93 bridge to improve salmonid passage. Willow and other riparian plantings will improve vertical and horizontal vegetative structure and bank stability.	Yes - Activities will likely involve the use of heavy equipment, use of existing roads and trails, no new access.
Oak Bottom	OR-15 (Map 2)	Lower Salmon River	New	Across from Somes Creek, a large right bank river bar is formed at the Oak Bottom River Access. This project proposes to enhance the existing off-channel pools found on the eastern end of the river bar. This enhancement project would capture existing stream flow from this right bank tributary and reconnect this floodplain feature to enhance existing off-channel rearing habitat.	Yes - Activities will likely involve the use of heavy equipment, use of existing roads and trails, no new access.
Lower Butler Creek	OR-16 (Map 2)	Lower Salmon River	New	This project proposes to enhance the left bank side channel of the Salmon River near the mouth of Butler Creek by adding some larger diameter LWD with rootwads to increase cover for juvenile fish. Bioengineering techniques will be used to increase vegetative structure, cover and diversity to the site.	No - Activities will not involve the use of heavy equipment.
Lower Irving Creek	OR-17 (Map 2)	Lower-mid Klamath River	New	This project proposes to integrate the use of willows and other native plants to enhance the riparian community and to place logs with rootwads to promote pool scour, cover and diversify existing monotypic habitat features.	Yes - Activities will likely involve the use of heavy equipment, use of existing roads and trails, no new access.
Stanshaw Creek	OR-18 (Map 2)	Lower-mid Klamath River	New	Enhance the Klamath River off-channel pool located near mouth to increase summer and winter rearing habitat and juvenile coho survival. Add LWD and boulders in lower reach of Stanshaw Creek in order to maintain gradient control, step pool configuration and improve fish passage. This project would incorporate bioengineering techniques to improve bank stabilization and vegetative structure and diversity throughout the watershed. Integrate the use of willows, alders, big leaf maple, as well as other	Yes - Activities will likely involve the use of heavy equipment, use of existing roads and trails, no new access.

Project Name	Map Identifier	Watersheds	Historic Restoration Location?	Description of Proposed Action	Ground Disturbance/Access
				native plants to enhance riparian community. Work with all private landowners to improve existing water diversions, reduce water loss and demand, and return flow.	
Lower Ti Bar	OR-19 (Map 2)	Lower-mid Klamath River	New	The construction of State Highway 96 and the Ti Creek bridge in 1965 confined lower Ti Creek into an incised, single thread channel and disconnected some complex off-channel habitat in this section of the lower-mid Klamath River. This project would provide connectivity to off-channel features by excavating this lower river bar to create side-channels, add LWD, enhance remnant wetlands and oxbows to support salmonid habitat.	Yes - Activities will likely involve the use of heavy equipment, use of existing roads and trails, no new access.
Horse Linto	LT-1 (Map 3)	Trinity River	Existing	This project would improve existing fish habitat by placing additional LWD to increase cover and promote scour, remove or repair old fencing and restoration debris, adjust boulders to improve off-channel connectively and habitat diversity, plant or manually release existing conifers to promote future recruitment of LWD and look at utilizing beavers for creating off-channel/side channel habitat.	Yes - Activities will likely involve the use of heavy equipment, use of existing roads and trails, no new access.
Cedar	LT-2 (Map 3)	Trinity River	Existing	This project would improve existing fish habitat by placing additional LWD to increase cover and promote scour, remove or repair old fencing and restoration debris, adjust boulders to improve off-channel connectively and habitat diversity, plant or manually release existing conifers to promote natural future recruitment of LWD and look at utilizing beavers for creating off-channel/side channel habitat.	Yes - Activities will likely involve the use of heavy equipment, use of existing roads and trails, no new access.
Mainstem Trinity (Below Willow)	LT-3 (Map 3)	Trinity River	Existing	Plant or manually release existing conifers to promote natural future recruitment of LWD.	No - Activities will not involve the use of heavy equipment.
Willow	LT-4 (Map 3)	Trinity River	Existing	This project would improve existing fish habitat by placing additional LWD to increase cover and promote scour, remove or	Yes - Activities will likely involve the use of heavy equipment, use of

Project Name	Map Identifier	Watersheds	Historic Restoration Location?	Description of Proposed Action	Ground Disturbance/Access
				repair old fencing and restoration debris, adjust boulders to improve off-channel connectively and habitat diversity, plant or manually release existing conifers to promote natural future recruitment of LWD and look at utilizing beavers for creating off-channel/side channel habitat.	existing roads and trails, no new access.
Upper Sharber	LT-5 (Map 3)	Trinity River	New	This project would improve existing fish habitat by placing additional LWD to increase cover and promote scour, adjust boulders to improve connectively and habitat diversity, plant or manually release existing riparian trees to promote future recruitment of LWD, look at utilizing beavers to enhance off-channel/side channel habitat and look at effects of past gravel mining.	Yes - Activities will likely involve the use of heavy equipment, use of existing roads and trails, no new access.
Madden (otherwise known as Old Campbell)	LT-6 (Map 3)	South Fork Trinity River	Existing	This project would enhance existing fish habitat by placing additional LWD with rootwads to promote scour and increase cover, remove old fencing and legacy restoration debris, adjust boulders to improve off-channel connectively and habitat diversity, plant or manually release existing conifers to promote future recruitment of LWD, and enhance the confluence of the creek to improve juvenile and adult fish access of this lower thermal refugia associated with the South Fork Trinity River.	Yes - Activities may involve the use of heavy equipment, use of existing roads and trails, no new access.
South Fork Mainstem	LT-7 (Map 3)	South Fork Trinity River	New	Consider Cedar Grove Ranch Slide area for tree planting and erosion control measures. Look at effectiveness of all of the past erosion control measures on the South Fork Trinity River.	No - Activities will not involve the use of heavy equipment.
Pilot Creek	MR 1 (Map 4)	Mad River	Existing	Additional of large wood would provide cover in identified pools and reaches. Wood could come from existing downed wood or from selection of single trees in the area.	No - Activities will not involve the use of heavy equipment.
Bluff Creek	MR 2 (Map 4)	North Fork Eel	Existing	Additional of large wood would provide cover in identified pools and reaches. Wood could come from existing downed wood or from selection of single trees.	No - Activities will not involve the use of heavy equipment. All work would be done by hand.
Salt Creek	MR 3	North Fork Eel	New	Portions of these streams go subsurface, leaving steelhead in	No - Activities will not involve the use

Project Name	Map Identifier	Watersheds	Historic Restoration Location?	Description of Proposed Action	Ground Disturbance/Access
	(Map 4)			isolated pools. Presence of lamprey amocyetes indicates year round subsurface flows. Additional of large wood would provide cover in identified pools and reaches. Wood could come from existing downed wood or from selection of single trees.	of heavy equipment. All work would be done by hand.
Upper Salt Creek	MR 4 (Map 4)	North Fork Eel	Existing	Stream goes dry in summer time with occasional isolated pools. Area is part of an allotment that is being rested. Past restoration activities and livestock exclusion fencing requires cleanup and removal. Addition of large wood for cover, movement of existing boulders to narrow thalweg, streambank protection measures though use of onsite materials.	No - Activities will not involve the use of heavy equipment. All work would be done by hand.
Van Duzen River	MR 5 (Map 4)	Van Duzen	New	Additional of large wood would provide cover in identified pools and reaches. Wood could come from existing downed wood or from selection of single trees.	No - Activities will not involve the use of heavy equipment. All work would be done by hand.
Ruth Reservoir	MR 6 (Map 4)	Mad River	Existing	Maintain brush structures during lowest reservoir levels. Add additional manzanita brush from adjacent hillsides as approved by resource specialists. Manzanita would be cabled to cinder blocks and placed at existing sites.	No – Use of boat to move structures would be necessary. Activities will be accomplished by hand crews.