CHAPTER 12: WATERSHED ANALYSIS RECOMMENDATIONS

EROSION

- The Sawyer Creek slide is part of a 12-acre ancient deep-seated slump that was either reactivated or accelerated when material buttressing the slump's toe was excavated to build the 22-8-29.2 road. Just removing slide material will aggravate the situation. Stabilizing this feature will require geotechnical evaluation and engineering design.
- Road maintenance is essential. If we cannot afford to maintain a road, that road should be decommissioned, or storm-proofed and closed to protect it from damaging agents until the road is needed again.
- Reduce miles of stream-side roads and miles of mid-slope roads that directly connect to streams via the ditch line:
  * Give highest priority to closing roads that cannot be adequately maintained due to lack of funding or inherent site problems.
  * The next highest priorities for closure are natural surface roads and roads with rock surfaces less than 6 inches thick that duplicate access provided by other roads.
  * Reducing miles of road by closing stable ridge-top roads and roads on benches will not help reduce sediment delivery to steams, although it can help in meeting other objectives.
  * The specific road segments to close cannot be identified until information on right-of-way agreements is consolidated, the TMO data base is completed, and an ID Team is selected.
- If a streamside / mid-slope stream intercepting a road is essential, use the following techniques to reduce sediment production:
  * Pave roads that will be regularly used to haul more than 4 loads/ day. If that is not possible, maintain a rock surface > 6 inches thick on roads used to haul more than 4 loads/ day.
  * Limit use of roads with less than 4 inches of rock to light traffic (pickup/ sedan use and short periods of less than 4 log trucks/ day).
  * Have contract administrators and engineers monitor road surface condition on roads used for hauling during extended wet periods. Shut down hauling if the running surface is at risk of breaking down, liquefying, or fines are pumping up from the subgrade. Limit hauling on rocked roads during high-intensity storms.
- Increase vegetation cover where cover is less than 80% on cut slopes:
  * Where cutslopes are steeper than 1:1, reshape the cutslope to reduce steepness on those locations where it is practical.
  * When road side brushing and scotch broom removal exposes bare soil, reseed cutslopes with an erosion control mix.
- In areas with high densities of ditch relief culverts, little ditch water and sediment enter streams where roads cross creeks. Continue to apply this practice as one of the techniques for minimizing sediment input to streams. Monitor ditch lines during rainy periods to identify the ditch segments that have both standing water and are connected to streams. On those segments, install additional culverts or apply other techniques to improve drainage and reduce ditch water directly entering streams.
- If a watershed association or other similar organization is established to address fish and watershed issues in this area, encourage that organization to do a culvert inventory to identify

failing, undersized, and fish-blocking culverts on private land.

HYDROLOGY

- Delineate the high-water line that was defined during November of 1996 and estimate the corresponding flood flows.
- Collect, at a minimum, streamflow, water temperature and turbidity data in order to provide some of the necessary information to evaluate trends and effects of management activities in the future.

VEGETATION

I. Matrix (Connectivity/Diversity Blocks)

- Follow the Objectives and Management Actions/Directions for this Land Use Allocation found on page 22 of the Coos Bay District ROD-RMP (USDI 1995).
- Fifty-five acres were estimated for potential thinning based upon which stands were between 30 and 60 years of age. Subsequent field surveys will identify actual tree stocking density and this information will be used in determining what silvicultural prescription, if any, could be used.
- There were 229 estimated acres of potential regeneration harvest identified based upon which stands were greater than 60 years of age. Approximately 50 to 75% has been identified for harvest in FY 2000 (Sawyer Bridge Regeneration Harvest attached to Appendix Veg-3: Potential Harvest Acres). See Map VEG-4: Potential Thinning and Regen Harvest Units.

II. Late Successional Reserves

- Follow the Objectives and Management Actions/Directions for this Land Use Allocation found on page 18 of the Coos Bay District ROD-RMP (USDI 1995).
- A draft LSR assessment will be completed by April 1997. Refer to recommendations made in the LSR assessment after it has been finalized.
- Possible treatments include thinning the overstory to produce large trees, release advanced regeneration, hardwoods or other plants, or reduce risk from fire, insects, diseases, or other environmental variables:
  - Underplanting and limiting understory vegetation to begin development of multistory stands;
  - Snag and coarse woody debris creation;
  - Reforestation;
  - Prescribed use of fire.

III. Riparian Reserves: Follow the Objectives and Management Actions/Direction for this Land Use Allocation found on page 12 of the Coos Bay District ROD-RMP (USDI 1995).

- See the West Fork Smith River Subwatershed Analysis, Vegetation Recommendations, Riparian Vegetation: Conifer Reestablishment Projects, page 79.
- Riparian areas dominated by red alder have the potential to be converted to conifer dominance. In converting these stands, emphasis would be on releasing established conifer regeneration and in establishing new conifer seedlings. Areas of frequent disturbance would need to identified as improbable targets for project location. Long term management would be aimed at developing late successional/ old-growth forest characteristics. Possible treatment areas are identified in the Aquatic Species and Habitats Recommendation section of this document.

IV. Oak Woodlands: For a discussion on scarce habitat management see West Fork Smith River Subwatershed Analysis, Vegetation Recommendations, Land Use Allocations, page 78.

The Management Actions/Direction for each Land Use Allocation in the ROD-RMP do not address scarce habitat management. See the Botany Recommendation section of this document.

STREAM CHANNEL

- See the Fisheries Recommendations for specific locations.
- Conduct, at a minimum, a level II inventory based on the Rosgen stream classification system.
- Establish permanent channel cross-section monitoring sites to determine channel stability and evaluate changes in channel morphology.

WATER QUALITY

- Collect baseline water temperature and turbidity data to determine the current conditions and to help identify any critical areas.

SPECIES AND HABITAT: AQUATIC

The following recommendations are intended to address both short-term and long-term restoration needs. Riparian restoration projects can provide benefits over decades to centuries, while some types of instream projects can improve aquatic habitat to some degree in a very short time period. These potential projects were based on on-the-ground surveys, but should only be considered as alternatives that might merit interdisciplinary review. Maps FISH-2 & 3 indicate the locations and land ownership pattern for the following sites:

- T. 23 S., R. 08 W., Sec. 23: This ¼ mile section of Mehl Creek is very low gradient with some floodplain access, young conifers in the riparian area, and the channel is deficient in structure (see Map Fish-2). A combination of boulder weirs, boulder clusters, and wood placements (rootwads, logs, and brush bundles) would make significant improvement to fish habitat at this location. Steelhead, coho and cutthroat trout are known to inhabit this reach.
- T. 22 S., R. 08 W., Sec. 29: This reach of approximately ¼ mile in lower Sawyer Creek has a relatively wide floodplain, young conifers in the riparian area, and some channel meandering. Because the channel is deficient in structure that provides complexity, this site could be considered for whole-log and wood cluster placements. Coho, steelhead, cutthroat trout, and possibly chinook utilize this reach.
- T. 22 S., R. 08 W., Sec. 29 and T. 23 S., R. 08 W., Sec. 5: BLM has ownership along about ½ mile of mainstem Sawyer Creek in these sections (see Map FISH-3). There is a fair component of old growth conifer on the west side of the stream, and a young plantation above the road to the east. However, the strip of land between the road and the creek is alder dominated and has potential for both conifer release and conversion.

Because the District can't be assured of obtaining future funding specifically for restoration work in the subwatershed, it is not timely to discuss cooperative efforts with private landowners or watershed associations. However, if or when funding is available, cooperative projects could occur and overlap those on BLM lands. Other opportunities would increase considerably if BLM is able to spend money on private lands, which is likely to occur in the near future.

Culverts associated with roads managed by the BLM that prevent or otherwise impact fish or amphibian passage, and are in need of replacement or modification, will be identified. Due to flood damage and road conditions, it was not possible to survey the entire subwatershed, but the following locations are known problems, and others will be recorded when surveys are completed.

- T. 22 S., R. 08 W., Sec. 29: The culvert on mainstem Sawyer Creek is on a 1.7 to 2.0% slope, and

may also be undersized for a 100-year event. Because of its narrow width, the culvert presently constrains the channel at this location. Replacement of the pipe at close to 0% with a wide, natural bottom, would improve passage for small fish and amphibians during all flow levels, and be in accordance with the BMP's.

- T. 23 S., R. 08 W., Sec. 11: The large culvert and fill on mainstem Fitzpatrick Creek on BLM lands washed out during the flood events in late 1996 (see Map FISH-2). A large slide, originating from private lands immediately upstream, deposited a considerable amount of large wood and gravel upstream of the culvert. This material blocked the culvert, caused the fill to erode away, and the culvert itself prevented the woody debris and gravel from continuing further down the system. Unless there is a compelling reason to regain road access into the LSR on the south side of Fitzpatrick Creek, it would be appropriate to remove the old culvert and fill from the stream channel, and, for safety purposes, block the short section of road leading to the former crossing. These actions would save considerable costs, close about 1 mile of road, and allow the stream channel to function in a natural manner. If it is necessary to provide road access for future management purposes, a wide, natural-bottom crossing would be a considerable improvement over a large culvert. Another alternative would be to use a temporary bridge. The road system cut off by the loss of the culvert should be evaluated and storm-proofed where needed. Pay particular attention to that part of the road system above the rotational slump show on Map EROD-1.

Survey BLM administered lands to determine the entire range of fish presence in the subwatershed, primarily that of cutthroat trout above barriers, would fill an important data gap for management purposes.

SPECIES AND HABITAT: WILDLIFE

Refer to the Wildlife Appendix for general wildlife recommendations that could be applied on a local or landscape scale.

I. Bald Eagle: The Bald Eagle Recovery Plan identified habitat loss as a primary threat to bald eagles (USFWS 1986). This subwatershed is key for habitat for the bald eagle and management should focus on the long term availability of nest sites, roosts, and foraging habitat.

- Recommend that there is no harvest of potential nesting/roosting sites in Matrix late-successional forests that are within 1 mile of the Umpqua River. Potential areas would include ridges, and slopes on the windward side or within view of the Umpqua River. In addition to the nesting/roosting site, acreage of retention within the stand would need to be determined by field reviews. Acreage would be influenced by the amount of wind resistance the stand is providing, provision of security buffers, etc. The following are areas to be considered for no harvest:
  * T.23S., R.7W., Sect. 7 - Connectivity/Diversity Block
  * T.23S., R.7W., Sect. 17 - GFMA
  * T.23S., R.7W., Sect. 19 - GFMA
  * T.23S., R.7W., Sect. 21 NE¼ - Connectivity/Diversity Block
- Recommend acquiring forested lands from willing sellers that are within 1 mile of the Umpqua River. Gould, Hedden and Mehl Creeks are listed as nest sites that should be considered for acquisition by the Bald Eagle Working Team for Oregon and Washington (1990, Appendix B4).
- Prepare a Bald Eagle Habitat Management Plan for the Umpqua River Basin to formulate site-specific plans for existing and potential habitats.
- Recommend management to enhance the growth of large dominant trees with an open branching pattern to provide potential nesting/roosting trees. Silvicultural techniques such as variable spaced

thinning, and selective harvest can help to create dominant trees (USFWS 1986). Reserving all snags in these stands will also provide potential perches and roosting structures. Areas for treatment are as follows:

* T.22S., R.8W., Sect. 25 - GFMA
* T.23S., R.7W., Sect. 21 - GFMA
* T.23S., R.8W., Sect. 25 - GFMA
* T.23S., R.8W., Sect. 13 - LSR
* T.22S., R.8W., Sect. 29 - GFMA

II. Snags: Most of the GFMA is in a younger seral stage which is deficient in hard and soft snags. These GFMA areas do not meet the minimum 40% of potential population levels across adjacent 40-acre parcels for cavity-nesting birds that are listed in the S&Gs (1994) and ROD-RMP (USDI 1995).

- A recommendation is to manage future GFMA sale units to help alleviate the snag deficit by leaving more than the minimum 6 - 8 green trees per acre. Snag surveys would be required so that the actual deficit for the 40-acre areas could be calculated and the appropriate number of green trees reserved.
- Recommend managing the Connectivity/Diversity Blocks for 100% population levels of cavity dependent species (6 hard snags/acre). This snag component would also be utilized by the bald eagle for perching and roosting, and the Blocks are in key locations as they are within 1 mile of the Umpqua River.
- In the LSR, manage for 100% population potentials. Recruit snags in drainages that are below the 40% population potential, and allow drainages above this percentage to naturally reach the 100% level. Inventories on densities and composition would be needed before this recommendation could be implemented. See Brown et al. (1985) for snag composition and distribution recommendations

III. Critical Data Gaps/ Inventory and Monitoring Needs:

- Wildlife inventories for special status species and general wildlife species presence, distribution, and habitat availability/use (with emphasis on: amphibians, reptiles, raptors, neotropical migratory birds, bats, and forest carnivores).
- Surveys for Survey and Manage species after protocols are established (USDA; USDI 1994: C4-6, C29-61).
- Vegetation Inventory.
- Inventories for snags and coarse woody material for density, distribution, size, and decay class.
- Monitor wildlife tree and CWM retention after regeneration harvests (USDI 1995: L-10).
- Continue monitoring for NSO, MAMUs, and bald eagles.
- Implement a District Wildlife Monitoring program.

SPECIES AND HABITAT: BOTANY

- Monitor oak woodland/dry forest habitat on Mehl Creek ridge to detect and eliminate invasions of noxious weeds. Determine if conifers are continuing to encroach upon the oak and take actions (fire) deemed necessary to protect this special habitat type.
- An oak woodland in T. 22 S., R. 8 W., Section 33, SE ¼, NE ¼ (south of ridge) has been converted to a Douglas-fir forest, which has almost overtopped the oak. Harvest the timber and broadcast burn this area. Forego replanting to allow existing oak, and oak seedlings germinated after the burn, to survive until options for restoration of oak woodland habitat have been explored. This area is designated as matrix land. The Coos Bay ROD-RMP Special Status section (page 32)

has as an Objective to "study, maintain, or restore community structure, species composition, and ecological processes of special status plant and animal habitat" (USDI 1995). However, the Management Actions/Directions don't list any directions that would fit this scenario. Oak woodlands/savannas provide habitat for a few SEIS species and a special status plant species.

- Bryophytes and lichen were not identified as an issue in this analysis. However, the team recognizes their importance. Therefore, the discussions and recommendations concerning lichens, fungi and bryophytes in the North Coquille Watershed Analysis are incorporated into this document by reference.

SPECIES AND HABITAT: NOXIOUS WEEDS

- A high priority for this subwatershed is to treat the small populations of meadow knapweed along BLM controlled roads, conduct surveys for more populations near the known sites, and treat any that are found.
- Ensure manual maintenance contracts require cutting all broom in a unit, not just the plants around trees.
- Survey for any biological control agents currently present, and document their locations. Aid the dispersal of these agents.
- Explore ways to control broom in the LSR, particularly the section that is to be used as a reference condition. Treat broom along the roads in this area.
- The following roads have very heavy infestations of Scotch broom: 22-8-27.0, 22-8-32.0, 23-8-27.1, and 23-8-23.1. The broom is overhanging the road such that any vehicle that drives through will act as a seed collection/dispersal mechanism. These roads need to either have the broom treated or the road closed to prevent vehicles from disseminating seed to uninfected areas.

HUMAN USES: MODERN

It is recommended that federal land managers continue efforts to establish and nurture direct communications with private landowners prior to implementing actions affecting the landowners, particularly regarding road use and access. Improvements to the watershed can be more effective with private landowners' cooperation, given the checkerboard land tenure pattern. Listening and guiding, rather than dictating, is also recommended.

RIPARIAN RESERVES

If considering altering Riparian Reserve widths or managing inside the Riparian Reserve, follow the procedures for site evaluation outlined in *Riparian Reserve Evaluation Techniques and Synthesis - Supplement to Section II of Ecosystem Analysis at the Watershed Scale: Federal Guide for Watershed Analysis. Version 2.2.*

The two sites identified as potential locations for altering Riparian Reserves are in the SE¼ of the SE¼ section 31, T.22S., R.8W., and the S½ of the NE¼ section 33, T.22S., R.8W., Will. Mer. Additional locations may be identified through site-level evaluation on a project by project basis.

Summary of Recommendations for Riparian Reserves on Intermittent Streams

Site Conditions			Actions to meet ACS and ROD-RMP objectives
J2 Sp. & Sp. of Local Concern	TPC Classification	Landslide Potential Map	
Present or Absent	FGNW, FGR2	High	Attaining ACS objectives may require Riparian Reserve (RR) widths = or > 1 site potential tree. These widths will satisfy ROD assumption for those J2 species that benefit from a 1-site potential wide RR.
Absent	FGR1	Moderate to High	Attaining ACS objectives may require RR widths = 1 site potential tree. On sites that are inclusions of non-fragile/ low hazard ground, ACS objectives may be obtained with a RR width between a ½ site potential tree and 1 site potential tree.
Absent	Not Classified as Fragile	Moderate to Low	Objectives on some sites may be obtained with a width between a ½ site potential tree and 1 site potential tree, depending on site specific conditions.
Absent	Not Classified as Fragile	Low or None	Objectives may be obtained with a ½ site potential tree width.
Present	Any Classification	Any Classification	Satisfying ROD assumptions for species benefitting from a RR width = to 1 site potential tree will attain or exceed ACS objectives on most sites.

I. Recommendations Based on Table RR-Apdx-3: Wildlife Species Ecological Classification
Riparian: The white-footed vole is strongly associated with riparian alder/small stream habitat (Maser et al 1981). More specific information is lacking on the species habitat requirements (Marshall et al. 1996). To protect habitat for the white-footed vole, historic hardwood-dominated riparian areas should not be reduced.

Four of the forest bats are dependent on riparian areas as source habitat (Table RR-Apdx-2). The bats forage by gleaning insects primarily within the riparian zone. The riparian areas also contain snags/green trees that provide roosting, maternity, and hibernacula sites required by forest bats. One of the primary differences in ratings between Option 1 and 9 was the decreased Riparian Reserve width around wetlands and intermittent streams under Option 9 (Holthausen et al. 1994: J2, pg. 456). To maintain the likelihood of outcome A above 80% for these bat species, we recommend that Riparian Reserves that represent a mature or old-growth seral stage (generally older than 120 years) should not be considered for decreased boundary widths if the area is potential habitat for forest bats.

Aquatic - Lotic: The lower FEMAT rating under Option 9 verses Option 1 for both the southern torrent salamander and tailed frog reflected the likelihood of further loss of local populations through harvest of riparian habitat along headwater streams outside of Tier 1 Key Watersheds (Holthausen et al. 1994: pg. 418). The recommended mitigation was to conduct stream surveys, and maintain a Riparian Reserve width of Option 1 within occupied segments (Holthausen et al. 1994: pg. 418).

Seeps/Springs: All units should be surveyed to ensure that these habitats are discovered and protected for the southern torrent salamander. Seeps/springs should be buffered sufficiently to maintain the characteristics of the site. Seeps/springs will be most likely found in rotational-slump prone areas in the Elkton geologic member.

Late-Successional Species: In this particular subwatershed, the Riparian Reserves are key habitat for the bald eagle. The FEMAT viability for the bald eagle did not change between Option 1 and Option 9. However, key assumptions that make bald eagle viability independent of Riparian Reserve widths are contained in the ROD-RMP (USDI 1995, page 36) which states we will comply with the Pacific Bald Eagle Recovery and Implementation Plan, and provide 440-yard radius buffers around known and future nest sites and protect all snags within 550 yards of nest and roost sites. Maintaining a 1-site potential tree Riparian Reserve on intermittent streams within 1 mile of the Umpqua River, where there is suitable habitat, will help meet those objectives.

Stand manipulations designed to provide large trees suitable for Bald Eagle habitat inside Riparian Reserves within a mile of the Umpqua River, does not appear to be in conflict of the Aquatic Conservation Strategy for immature stands. However, such proposals will have to be evaluated on a site-specific basis through the NEPA process.

Late-successional habitat in the Riparian Reserves also provides key characteristics for marbled murrelet, and American marten. The Riparian Reserve could also serve as dispersal habitat for many wildlife species. Dominant wolfy trees with large mossy limbs may provide nest sites for the marbled murrelet. Large downed logs within the riparian area are critical for the marten. The primary mitigation for the marten in Appendix J2 (Holthausen et al. 1994: pg. 473) is a combination of increased levels of coarse woody material in the Matrix and implementation of Riparian Reserve Option 1 throughout the species range. For these reasons, it is recommended that riparian reserves that represent a mature or old-growth seral stage (generally older than 120 years) should not be considered for decreased boundary widths if the area is potential habitat for the marten.

As this subwatershed has such few acres that would be considered for Riparian Reserve reduction, the reduction of dispersal habitat for the Northern spotted owl is not a concern.

Mollusks: Mollusks were not included in Tables RR-Apdx-2 or RR-Apdx-3 due to a lack of information. None of the Survey and Manage Strategy 1 or 2 Mollusk species are known to occur in the Coos Bay District. *Lanx alta* is the only mollusk from the Riparian Module List 1 and 2 that may be present in the subwatershed (Frest and Johannes 1993). *Lanx alta* is a freshwater snail associated with large streams containing stable cobble-boulder substrates and high water quality. The original distribution included the Umpqua River drainage, and the mollusk species may be better classified under *lanx subrotundata* (Frest and Johannes 1993). It is expected to benefit from Riparian Reserves as its primary habitat association is within the aquatic system.

II. Recommendations Concerning J2 Plant Species / 1-Site Potential Tree Width Riparian Reserve: Prior to reducing the width of Riparian Reserves, on the ground surveys are needed. This Riparian Reserve analysis indicates that surveys should concentrate on the following species:

Helvella spp.	*Phologiotis helvelloides*	*Endogone oregonensis*
Rhizopogon exiguus	*Cimicifuga elata*	