

RECOMMENDATIONS

CHAPTER V

RECOMMENDATIONS

INTRODUCTION

The following recommendations are made "to bring the results of the previous steps to conclusion, focusing on management recommendations that are responsive to watershed processes identified in the analysis." (USDA, USDI, 1995). The recommendations are based upon the analysis synthesis presented in the preceding Interpretation Chapter. While a summarization of the rationale is presented with each specific recommendation, a review of the discussions interpreting the analyses for each issue statement (Chapter IV) will assist in a full understanding of the rationale behind these recommendations.

In many cases not enough site specific data or relevant studies exist to absolutely quantify the full ramifications of the current conditions. In the face of this incomplete information, the watershed analysis team, in an interdisciplinary process, has relied upon known resource problems and professional judgment to generate these recommendations which in many cases are conceptual in nature.

ISSUE #1

Intensity and pattern of vegetation manipulation related activities.

Riparian Reserve Widths

One of the primary reasons for this watershed analysis was to determine whether prescribed interim riparian reserve widths can or should be changed (USDA, USDI, 1994a, page B-13). Riparian reserves provide dispersal and connective habitat for terrestrial animals and plants as well as protection of aquatic environments. These corridors and connections will in many cases be wider than prescribed due to overlap with special wildlife habitat allocations, supplemental Late-Successional Reserves, green tree retention clumps, and areas unsuitable for timber management. It is recommended that interim widths as stated in the Northwest Forest Plan be maintained unless site specific analysis supports modification. Consider site class and plant association in determining site potential tree height, Appendix D. This analysis has found no information indicating the interim widths are excessively wide or too narrow to accomplish the objectives of the Aquatic Conservation Strategy and providing for terrestrial habitat connectivity. Due to the scope of this analysis, it is recognized that site specific project analysis could reveal circumstances that require consideration for modifications to the interim riparian reserve widths. Unless further analysis supports deviating from the interim riparian reserve widths, the rationale for these differences must be documented and demonstrate that Aquatic Conservation Strategy objectives and terrestrial habitat connectivity would not be adversely affected. (Refer to 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)

It is recommended that definitions and buffer prescriptions in the Willamette National Forest Special Habitat Management Guide be utilized for management activities around wetlands less than 1 acre in size.

Riparian Reserve Restoration

It is recommended that riparian reserves in this watershed can best be served, from an aquatic and terrestrial connecting habitat perspective, by an aggressive program of riparian restoration in areas where past clearcut harvest has created large areas of early-successional forests. This restoration should consist of any activities that would speed up the development of late-successional conditions. Such restoration activities could include density control to develop larger stem size and a shade tolerant understory, reintroduction of large woody material and/or other structural elements into channels, reforestation and underplanting, and possibly fertilization. Riparian reserves draining into or directly adjacent to wetlands should be treated with caution to avoid detrimental effects to amphibian populations.

Activities in Riparian Reserves

Watershed analysis is also conducted to determine what management activities are appropriate within this watershed (USDA, USDI, 1994a, page C-7) and specifically within riparian reserves (USDA, USDI, 1994a, pages C-31 and 32).

Considering past experience in this and adjacent watersheds, it is recommended that the following activities are generally acceptable within riparian reserves, assuming appropriate, site specific environmental analysis determines they are consistent with Aquatic Conservation Strategy objectives, Forest Plan Standards and Guidelines, and terrestrial habitat needs. In many cases the following activities are beneficial to the attainment of Aquatic Conservation Strategy Objectives. Those that do not directly benefit are neutral to those objectives.

- **Commercial Thinning of Young Stands**

Commercial thinning (usually cutting and/or removal of trees greater than 6 inches in diameter) is beneficial to riparian reserve objectives if it is shown that thinning will increase the average diameter of the stand, and/or accelerate the development of a shade tolerant understory. Accelerating the diameter growth and increasing horizontal and vertical diversity of riparian stands will assist in creation of late-successional conditions sooner and provide for a faster development of large woody material sources for in-stream and terrestrial habitat. See Appendix D for a more in-depth discussion of the detriments and benefits of thinning.

- **Young Stand Density Management**

Thinning such as cutting trees less than 6 inches in diameter and leaving them on site, has the same future advantages for stand development. Density management may also include cutting or girdling of trees greater than 6 inches. Young stand density management prescriptions should consider options that avoid a later commercial thinning entry, especially where additional entries may result in excessive soil compaction, logging feasibility problems or poor cost effectiveness. Tighter spacing may be appropriate where these concerns are not prevalent and where ground level shade and moisture levels or closed sapling habitats are of concern.

- **Planting and Underplanting**

The establishment of forest cover and the re-establishment of shade tolerant understories in otherwise undiverse young stands have advantages to future riparian habitat. Planting of cedar into previously cedar dominated sites should be considered.

- **Collection of Regenerative Materials (seed, scions, cuttings, etc.)**

Seed material and cuttings are collected and used for general reforestation and riparian area revegetation. Removal of this kind of material in a well vegetated riparian zone will have little influence on the amount of vegetation within riparian zones. Seed without the proper, early-successional environment may not germinate or seedlings will not survive and cut shrubs will vigorously resprout. Collection of such material can have high off-site benefits to riparian zones and upland areas needing revegetation. Such collections should have a neutral effect on the riparian zone experiencing the collection, given that this material is annually renewed and that collection would be done prudently leaving a substantial percentage of the vegetation in place.

- **Collection of Special Forest Products**

Commercial harvesting of berries and conifer boughs is considered neutral to riparian resources since these collections do not remove the associated plants, and involve the harvest of material that is annually renewable and, since collection would be done prudently, leaving a substantial percentage of the vegetation in place.

- **Road Maintenance**

The cutting of road side brush and trees, including blowdown trees that fall across roads, to provide for better visibility and a passage wide enough for vehicles, occurs only within the roadway prism. It would occur in areas where decisions have been made to keep the roads open for a variety of resource, administrative, and recreational reasons. Road side brush and tree cutting would have a neutral effect on riparian systems since it would generally affect a small percentage of any stream reach. (see the ROD Standards and Guidelines, C-32 & C-33) Roadside brushing will provide access for drainage monitoring and culvert maintenance. This potentially reduces the risk of road related impacts to riparian areas and slope stability.

- **Wildlife Tree Creation or Enhancement**

The killing, topping or modification of green trees to create dead and defective tree habitat in areas that are currently deficient in this habitat component has a beneficial effect on riparian objectives. It creates a more diverse forest

structure and could generate large woody material faster than natural processes for in-stream and terrestrial habitat. Treatments are generally distributed within a stand such that canopy closure is negligibly affected.

- **Improving Aquatic Habitat (i.e., large woody material or other structural placement in stream channels)**

While there could be some short term negative effects due to sediment production and damaging of small amounts of riparian vegetation, introduction of various channel structural elements in stream reaches currently deficient in large woody material (due to floods or past management) would improve the complexity and productivity of in-channel habitat for fish and other wildlife species, as well as improving bank stability. Habitat improvement projects should be based upon a limiting factor analysis. Habitat improvements may be prioritized by protecting and improving habitat in areas where high quality habitat and healthy fish populations exist and where threats to habitat and structures from high flows are low. Habitat that is badly degraded may be found to be a lower priority. A more project specific analysis is needed to determine which areas have highest priority.

- **Browse Enhancement or Release of Trees**

Cutting of brush for forage generation or to release sapling trees occurs in young, managed stands that have yet to close their tree canopy. This activity could have negative effects if it occurs on channel edges close enough to stream channels to affect channel shade. With this precaution taken this activity has a neutral effect on riparian objectives, and tree release can have long term benefits if that activity accelerates the development of a diverse coniferous forest.

- **Fertilization**

Fertilization benefits riparian area function to the extent that it accelerates the growth and development of vegetation (as long as there is no direct application to water surfaces). It also may increase the productivity of the stream system by generating increases in energy and nutrients that enter the stream through litter fall. Fertilization is not recommended within stream channels, near domestic water sources, wetlands or within 200' from wetlands and streams during amphibian breeding season.

- **Provision of Recreational Opportunities (trails, campgrounds, river and lake access, viewpoints, dispersed sites, ski area development and McCredie Springs.)**

Current recreational sites and facilities often contain areas of bare soil and comparatively low vegetation density. Many campground and dispersed sites are on flat or stable ground that is relatively resistant to erosion. Since the bare areas are relatively few and far between, the current number and use level of these sites and facilities have a low effect on the function of riparian systems. It is recommended that all recreational development and associated seasonal activities be monitored and appropriate mitigating actions taken to minimize surface erosion and effects on riparian reserves.

- **Creation and Maintenance of Water Sources**

Creation of sites for pumping water to supply fire suppression and road maintenance water needs can be detrimental to riparian connectivity and fish passage if improperly designed and placed. If properly designed, placed, used, and maintained they can increase the diversity in riparian habitat by creating deep pools where none existed before. These facilities can be beneficial or neutral where their creation is designed with appropriate analysis. These facilities should be monitored for the presence of T, E, and S species and fish before any maintenance or enhancement work is begun.

- **Creation of Skyline Corridors if Needed to Avoid Construction of Excessive Amounts of Road**

Road construction is often the largest source of sediment. It may sometimes be preferable to yard logs through riparian zones to avoid the need to construct road to access landing sites providing for yarding away from streams. Though skyline corridor clearing may increase the amount of solar radiation entering a riparian zone, the effect is short lived as narrow canopy gaps can close fairly quickly. Skyline corridors are most compatible with riparian area objectives if properly designed and trade-offs between corridor effects and road construction are evaluated. They may be the least impact alternative if their creation is to avoid the construction of potentially more damaging roads. Reserve trees felled for corridors shall be left in riparian reserves.

- **Use of Individual Trees for Cable Yarding System Tail Holds**

Cable yarding tail and guy line anchor points often involve the cutting of a tree to provide a secure anchor. If in riparian areas, these trees are usually left in place when felled. Since these tail holds usually involve one tree and there are relatively few landings near riparian zones, their effect on riparian functions is negligible and their creation is in most circumstances neutral to riparian values. Since there is value to down trees as well as standing trees, there

may be some benefit to riparian resources if down trees are needed to enhance riparian or terrestrial habitat. Additionally, if tail holds in the riparian zone can accomplish full log suspension on adjacent upland areas, there would be a benefit to riparian areas by avoiding adjacent soil disturbance. Where anchor trees are not felled during harvest operations, they should be left standing.

- **Fuels Treatments (generally hand pile and burn or light underburning)**

Reduction of fuels may be prescribed to protect a riparian zone from future fire risk, especially in areas where fuel is generated by thinning. Treatment of such fuel accumulations has the additional advantage of providing for easier travel for large animals. See also the discussion of prescribed underburning of LSR's discussion in Issue #2 of this chapter. Piles of woody debris also provide habitat for a variety of birds, small mammals, reptiles, and amphibians. Thus, where consistent with fire risk concerns, some piles should be left unburned as wildlife habitat.

- **Noxious Weed Treatment**

Killing or reduction of noxious weeds, if properly and sensitively done, can have large benefits to riparian systems. Such treatment can avoid exclusion of native species. Certain noxious plants can affect the use of riparian zones by out competing favorite forage plants or by restricting travel (as Himalayan blackberry can).

- **Crossing of Streams by New Road Construction**

Road crossings should be properly designed, constructed, and maintained to have minimal effect to riparian management objectives. Avoid road crossing in riparian reserves where possible. Road construction may be preferable to yarding across streams if acceptable log suspension cannot be achieved from existing roads. Alternative yarding methods should be considered (e.g., helicopter). All new culverts will be evaluated for 100 year flood criteria for installation based on restoration needs.

- **Culvert and Bridge Maintenance**

Cutting of selected trees within 100 feet upstream of large culverts and all bridges is sometimes proposed to protect these structures from debris that could, if large amounts accumulate against trees growing within or between channels, i.e. sand bars in the stream channels, cause a failure of the stream crossing structure. Such cutting can have small negative effects, but prevention of structure failure may have larger, long term benefits to riparian resources. Where practical, place woody material downstream of the structure, especially when a stream is low or deficient of large woody material.

- **Aquatic Habitat Management**

It is recommended that reintroduction of bull trout and spring chinook salmon be considered for this watershed. There is a need to maintain and restore habitat for future reintroduction of spring chinook salmon and bull trout as well as for existing aquatic species in the watershed (specifically in reaches where habitat is currently deficient). Stream habitat improvement projects in Salt Creek and its fish bearing tributaries should continue in anticipation of the eventual reintroduction of spring chinook salmon and bull trout into this watershed as well as for the existing resident fish populations.

Habitat components such as large woody material, spawning and rearing areas, and overwintering habitat, are available throughout portions of the Salt Creek watershed (see the Reference/Current Conditions chapter: specifically Resident Salmonid section, pages 70). In addition, brook trout are only present in reaches above Salt Creek Falls, as well as in Fall Creek, Diamond Creek and Deer Creek. They have not been located elsewhere in the mainstem of Salt Creek or its tributaries.

In areas used by boaters, large woody material or other channel structures that span the width of the creek should not be used in the mainstem of Salt Creek to avoid creating boating hazards.

District should work with local ODOT maintenance section to assure sediment and sanding material or other de-icing components do not adversely affect Salt Creek water quality or instream habitat.

If any recreational suction dredging begins to occur it should be closely monitored to determine its effects on salmonid eggs and young in order to determine how or if potential impacts could be decreased should this activity become more common.

Activities in Upland Areas

In addition to activity recommendations listed for riparian reserves, the following activities (again with appropriate, site specific environmental analysis) are also considered acceptable in upland areas.

- **Wildlife Habitat Management**

Prohibit habitat altering and disturbance activities within bald eagle or peregrine falcon primary management zones. Management plans should be used to guide activities proposed within primary, secondary, and tertiary zones. The focus should be on reproductive security and prey species habitat enhancement for these areas.

Apply silvicultural practices in matrix, such as post thinning underplanting, which promote progression of hiding cover to thermal cover for big game, especially on winter range. Implement treatments (such as seeding, fertilization and browse cutback) to improve forage quality in BGEAs currently below standards.

Identify riparian and upland areas during project planning with high potential to provide late-successional habitat connectivity between adjacent watersheds and between large LSRs. Propose management activities that maintain or restore habitat features for long-term connectivity potential in such areas.

- **Sensitive Plant Habitat**

Continue to identify and classify special habitats during project level planning. Ground truth during field visits to confirm or reclassify SHABs identified during watershed analysis. Analyze SHABs to determine buffer prescriptions to maintain the integrity of the site. Refer to Special Habitat Management Guide.

Rare forested stands identified in the Willamette National Forest Special Habitat Guide should be evaluated for significance when encountered during harvest project analysis to determine if they need to be included in a Research Natural Area, or otherwise protected from disturbance.

Conduct surveys, consistent with the Northwest Forest Plan Record of Decision, for C-3 Survey and Manage Species known in the watershed during planning efforts. Consider opportunities to designate special interest areas or areas of critical concern for "hot spots" of biological diversity on a planning area basis.

- **LSR Activities**

Young stand density management (or early thinning), commercial thinning, and stand fertilization activities should be prescribed in Late-Successional Reserves, consistent with the findings of the interim LSR Assessment, to accelerate the development of late-successional habitat.

- **Noxious Weeds**

Continue noxious weed surveys to identify new invaders and "sleepers" (those that may have the potential for dramatic future spread). Inventory other invasive non-natives at the same time. Continue introduction of biological control agents.

Recognize that the main travel routes for weeds are roads, and consider opportunities during the Access and Travel Management Plan analysis to close and decommission roads to allow native species to shade out non-native plants.

Look for opportunities such as using Jobs-in-the-woods crews, YCC crews, FS road maintenance, etc., to control scotch broom and blackberries in sites that are not well established and on edges of distribution range.

Collect and propagate native species for use on decommissioned roads and other ground disturbing project sites that promote non-native spread. Prioritize higher elevation roads and sites that are not likely to revegetate quickly or shade out weedy species after closing for re-seeding with native herbaceous species. Consider the use of native leguminous species. Consider the use of native species with a potential for Special Forest Products collection opportunities.

Use prescribed fire plots to eradicate any weeds.

Monitor fire areas for noxious weeds and use small prescribed fire test plots to evaluate noxious weeds control. Consider selective use of herbicides on new invader species.

- **Thinning**

For the reasons mentioned in Appendix D, in addition to the objective of maximizing timber volume production in matrix lands, thinning of young stands is recommended. As with all other activities, thinning should only occur when site specific exams and stand growth modeling show that thinning would better or more quickly accomplish various stand management objectives such as producing larger stems, more diverse stand structure, or capturing suppression mortality.

- **Fuels Management**

It is recommended that prescribed burning be considered in strategic areas, including within the LSRs, to more closely mimic natural processes and to better protect reserves from catastrophic fire. Wildfire is a wide spread ecosystem process in this area, and extensive portions of the area have periodically underburned during times when stand replacement wildfire occurred. As mentioned in the Chapter II discussion of fire history, not enough is known of the extent of underburning in this area to provide specific prescriptions in terms of area per unit of time. It is recommended that natural fire patterns be evaluated to develop a better idea of how frequently and where prescribed fire may be appropriate. Prescribed fire can be detrimental to late-successional habitat in terms of removing large wood, soft snags, and shade tolerant trees but may be beneficial on a landscape level in terms of protection from catastrophic fire and creation of new snags. It is felt that the percentage of this watershed treated with prescribed fire in a given decade should not be large. See the prescribed fire discussion under Issue #2 of this chapter for a more thorough discussion of underburn fire prescriptions.

- **Erosion**

Erosion potential and slope stability should also be considered in determining where green trees, snags, and large woody material are to be retained in harvest areas, in addition to other objectives, such as those for habitat structure and logging feasibility.

- **Compaction**

Least impact methods such as cut-to-length yarding, harvester forwarder, and grapple piling or other method should be considered to minimize soil compaction effects. An associated monitoring program should be implemented to evaluate whether these methods are successfully meeting the Forest Plan Standards and Guidelines (not greater than 20% of activity area in a detrimental soil condition). Amelioration of compaction through sub-soiling should be considered in compacted areas if such activities will not affect the health and function of live trees already on the sites.

ISSUE #2

The exclusion of natural fire from the ecosystem has altered the natural processes.

Prohibit habitat altering and disturbance activities within bald eagle or peregrine falcon primary management zones. Management plans should be used to guide activities proposed within primary, secondary, and tertiary zones, and should focus on reproductive security and prey species habitat enhancement for these areas.

The various reserve areas in this watershed are important in maintaining diversity and meeting management direction. Fire suppression efforts are critical to maintaining the values of these reserves. Provision of access, establishment of fuel breaks, and providing for quick response to fires may be preferred since fuels reduction could be appropriate in late-successional habitat. Underburning may be acceptable in some areas. Protection of younger stands from fire promotes development of older seral stages. It is recommended that priority road access be maintained in the Late-Successional Reserve. Consider the development of fuel breaks to assure the needed protection, in addition to treatment of fuels. Creation of fuel breaks should involve treatment of fuels along strategic locations such as roads or ridges.

Prescriptions for underburning in Late-Successional Reserves should be considered. Treated areas may include the riparian reserve areas and may be dominated by Douglas-fir and other coniferous species. The area to be treated should be determined by an LSR assessment and LSR fire management plan. Benefits to prescribed burning in LSRs include: the more fire susceptible early seral stands would be buffered and the risk of stand replacement fires may be reduced. Effort should be made to protect classic old-growth from fire until younger stands acquire characteristics of late-successional habitat. Underburning in LSR's could have some short term detriment to late-successional habitat

and short term benefit for big game. It may have long term benefit for late-successional habitat in terms of protection from future catastrophic fire.

Prescribed natural fire could help to restore big game forage quality and quantity in areas where current forage values are below reference conditions (the eastern portion of subwatersheds 20 2 and all of 20 3). Opportunities exist to allow fires to play their natural role. Prescribed fire should be considered in BGEAs currently below standard in forage quality (refer to Table 3.5-3). The majority of the areas likely to be considered for prescribed fire treatments are in wilderness, semi-primitive dispersed recreation areas, special interest areas, and riparian areas.

Consider use of prescribed fire, girdling, and selective harvest methods to maintain and/or restore non-forested meadow complexes that are presently being encroached upon by trees. Prescribed fire could be used as a tool to encourage germination of fire dependent species such as woodland milkvetch and branching montia. Monitor burns to determine whether they were successful in releasing these species from the seed bank.

Issue #3

The density, condition, use, and location of roads and trails has altered the landscape processes and influenced wildlife habitats.

Implement road closures to be in compliance with Willamette National Forest Plan Big Game Habitat Quality standards in BGEAs:

Basin	=9.7 miles	Hatchery	= 1 miles
Eagle Head	= 12 mile	Wicoppe Fields	= 5 miles

As opportunities arise, the above road closures could be implemented to assist in accomplishing road restoration goals as identified in the Watershed Improvement Needs (WIN) surveys, and as determined by the ATM planning process.

Consider closures or relocation of roads and trails in bald eagle or peregrine falcon primary management zones. Management plans should be used to guide activities proposed within the primary, secondary, and tertiary zones and should focus on reproductive security and prey species habitat enhancement for these areas.

An inventory of roads, railroad access roads, and railway beds located on steep ground needs to be done with an emphasis on the road system constructed prior to 1980 and railroad drainage and sidecast material.

The Access and Travel Management Plan team should initiate the following:

- Review non-system roads to determine if any should be converted to system roads or placed on the trail system. If not placed in the system, either road or trail, the recommended method of decommissioning to reduce the potential resource impacts should be identified.
- Review system roads that have chronic maintenance problems. Determine what actions to take to protect resources.
- Determine which road systems produce high sediment delivery into the streams and recommend what actions to take.
- Determine if the road user should pay for maintenance of system roads when access to that road is primarily for that user, or users, if road maintenance funds are not available.
- Determine what actions to take if funds are not available to maintain system roads.
- Identify priorities for road stream crossing restoration.

Since less than 1% of the culverts within the analysis area have been assessed for hydraulic capacity relative to a 100 year flood, this work needs to continue. The District WIN database indicates a number of culverts have diminished hydraulic capacity due to plugging, damage, or deterioration. The WIN information should be used to prioritize culvert restoration work. Culverts with a high likelihood to fail and lead to degraded stream channel conditions should be repaired first. Continued analysis along timber sale haul routes should identify deficient culverts and utilize funding opportunities. Additional emphasis should be placed on analysis of culverts in streams identified as having high aquatic habitat value.

Road maintenance scheduling should factor in the results of culvert inventories. Culverts with identified deficiencies that are easily corrected, plugged inlets for example, should be treated as soon as possible.

Replace or modify culverts that are currently blocking fish passage to suitable habitat or compromising habitat connectivity. Tributary stream culverts that would increase access to the greatest amount of habitat should receive the highest priority for such modification. Consider providing habitat connectivity for small mammals and amphibians. Review the results of culvert condition surveys to determine the feasibility of developing small contracts for fish passage improvements. Continue to conduct surveys of railway culverts to assess effects to aquatic/riparian habitat connectivity. Develop plans to mitigate these affects cooperatively with UPRR (Union Pacific Rail Road).

Bridges and culverts that are passable to fish that cross tributary streams should continue to be installed as new roads and trails are built in the watershed.

Review railroad special use permits, and document local protocol for dealing with hazardous spills, including coordination with Forest Service district personnel.

Revisit these recommendations during ODOT Highway 58 corridor planning document preparation. Coordinate with ODOT to insure hazardous spill incidences are addressed in the Highway 58 corridor plan.

ISSUE #4

Aquatic communities may have been changed from reference conditions due to the introduction of non-native species, migration barriers and other management activities.

Study the effects of the introduction of fish into naturally fishless lakes in coordination with ODFW.

Brook trout should not be stocked in lakes which have outlets that are tributaries to Salt Creek. Where naturally reproducing populations of brook trout in lakes occur, measures should be considered to prohibit brook trout from establishing populations in streams where spring chinook salmon and bull trout could be potentially reintroduced.

ISSUE #5

There is a concern for how existing and proposed developed and dispersed recreation may have effected landscape processes and wildlife habitat.

- Assess new winter sports development affects on water quality and impacts to great gray owls and forest carnivores within the basin and adjacent basins.
- Update Winds of Destruction roadside interpretive signs to reflect ecological benefits and recognize Warner Creek fire and floods of 1996. Emphasize interpretive information on natural disturbances.
- When evaluating current and proposed developed recreation sites, consider alternatives that minimize site impacts to resources and enhance or restore riparian areas while meeting long-term recreation objectives.
- Current concerns for wildlife habitat (such as disturbance and pollution) provides additional support for the overland/oversnow motorized travel restriction of the Waldo road in this portion of the Salt Creek watershed.