

TRENDS, MANAGEMENT IMPLICATIONS, CONCLUSIONS

Sustainable Communities:

- Timber volume offered from this watershed will decrease from the large timber volumes of the past. Special forest products offered from this watershed will increase.
- There will be an increase in tourism within this watershed.
- With current management direction, high water quality within the watershed will continue.
- The agency needs to become more active in keeping the communication lines open to local communities in order to pursue opportunities for offering products and services that will contribute to sustainable communities, while meeting Forest Plan objectives.
- Demand for firewood will remain higher than our ability to supply it under current management guidelines of the Forest Plan. Firewood is frequently stolen along many roads. As a result, down wood habitats can be absent up to 100 feet from the road prism. Additional effort by the agency is needed to resolve conflicts between the demand for firewood and resource needs.

Access and Travel Management:

- Management of the road system is changing due to current and projected federal road maintenance budget declines and to the multiple resource objective needs described in the amended Forest Plan.
 - **Economics:** Decreases in annual maintenance budgets are down 70% from the late 1980s. A direct correlation brings the miles of road that can be maintained in this watershed from approximately 400 miles to an estimated 115 miles. With reductions in the numbers of maintenance workers, resulting in a less efficient operation, 115 miles may be a high estimate.

This mileage corresponds very closely to the system of arterial and collector roads in the watershed (see map 4). Few of the remaining local roads receive annual maintenance. As a result, roads are closing themselves through cut or fillslope failures, stream crossing failures and brush encroachment.

- **Forest Plan as amended by the Record Of Decision (1994):** The future transportation system will be less extensive. It should provide reasonable access to the major points of interest and resource management areas. It will consist of an estimated 115 miles of road identified as either primary or secondary described above. Local roads will be maintained by project funds. The effect less access has on human use patterns within this watershed is described in the Key Processes - Roads section of this report.
- There will be additional time required to survey, plan and prepare projects in areas where roads have been decommissioned or have closed on their own. Alternative methods of access such as hiking, biking or ATV travel will need to be weighed against the costs of opening and closing of roads through contract or force account means. If roads are allowed to close on their own and not by management decision additional time will be needed to determine accessibility of each project. It is difficult to track roads that are closed through neglect. These same conditions will exist for implementation of projects. These conditions may result in increased costs due to either longer access times or the additional cost of opening and closing of roads.

Recreation:

- **Supply:** The existing supply for some opportunities or facilities is inadequate to meet the current and/or future demand. Other opportunities have not been developed. The Upper North Santiam has potential to accommodate the needs and demands for a diversity of opportunities.
- **(SR4a) Demand for Recreation Opportunities:** The Upper North Santiam has the potential to provide a wide range of recreation opportunities outside of Wilderness. Between 2010 and 2030, use within all Wilderness ROS classes will exceed inventory capacity. Within dispersed areas, the watershed has the capability to accommodate a high amount of use, due to stable soils, gentle terrain and mostly forested settings. Practical capacities in dispersed settings have not been realized. Listed are the recreational demands that have been identified for the Upper North Santiam watershed:
 - The Upper North Santiam provides the highest potential areas for **winter recreation** according to a 1989 Detroit Ranger District Winter Sports Management Plan.

A 1993-94 Winter Recreation Survey from individuals who use the Sno-Park system revealed that there is a demand for additional facilities for winter recreation in the central Oregon region (Upper North Santiam area) particularly for snowmobilers.

- **Maxwell Sno-park** use has tripled since it's opening in 1992. Many Maxwell visitors are seeking fewer crowded areas closer to the valley where they do not have to travel through winter conditions on the Santiam Pass.
- A high demand exists for **horse camps** in the West Cascades. Horse use in the Upper North Santiam is increasing with a high demand placed on campsites and riding areas.
- There has been an increasing interest by the public to provide areas for mountain biking, four-wheel driving and all terrain vehicle areas including snowmobiles. A 1994 Oregon State OHV survey indicates that the most important priority item in the state is developing **new trails and riding areas**. There may be opportunities to convert closed roads to trails.
- **Whitewater boating** use is increasing within the Upper North Santiam. Several letters from whitewater boating groups have expressed concern about maintaining existing opportunities for their activity to take place.
- Campground users are becoming more **urban-oriented** desiring more sophisticated improvements such as flush toilets and showers. There has been an increase of recreation vehicle use within the campgrounds. A demand exists to provide RV hookups, sanitary stations, and large spaces for parking.
- **Group sites** are in high demand and short supply in the Detroit area. More groups are camping in dispersed areas due to the lack of group facilities. Horse camping in the Upper North Santiam is generally a group activity. Site saving has become a problem in campgrounds where members of larger groups tie up sites in close proximity of each other.
- More people with disabilities are visiting the forest. There is a demand placed on accessible recreational opportunities, and when feasible, the Forest Service will provide **barrier-free access**. There is a need to upgrade sites within campgrounds to make them accessible for those with limited mobility.

- **Rest area/day use facilities** are in high demand as indicated by the current use of the facilities at Whispering Falls and Riverside Campgrounds. Highway turnouts are often used by highway travelers who are in need of restroom facilities.
- **ROS Supply and Demand:** The 1994 Oregon State Comprehensive Outdoor Recreation Plan (SCORP) states that there is a pronounced preference by the public for more semiprimitive and primitive settings, and that this issue requires greater examination and direction of efforts statewide to meet this demand. On the Forest, even if existing inventories of semiprimitive opportunities were maintained, future demand is expected to exceed capacity by the year 2010 (see map 18).

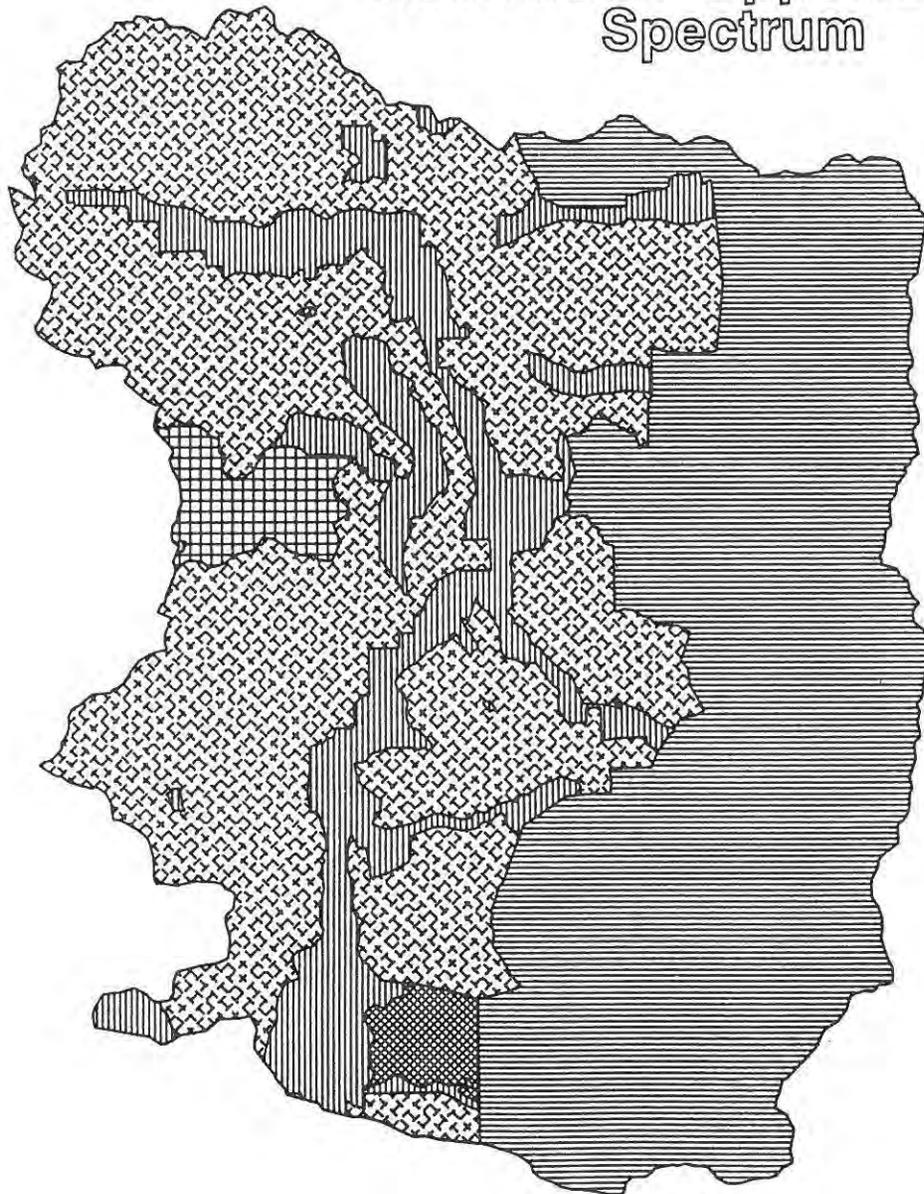
In addition, between 2010 and 2030, use within all wilderness ROS classes will exceed inventory capacity. Thus, it is clear that settings catering to these recreational standards are especially valuable to the public.

- It is likely with future demands at Mt. Jefferson Wilderness, limits to daily entrances will be required. This may have implications on semiprimitive areas outside the wilderness, potentially displacing users to those limited areas. Providing areas alternative to Wilderness will be needed to help alleviate pressure of increasing numbers of visitors desiring that setting and experience.
- **Conflicts:** User group conflicts exist as more people are using a limited resource. These conflicts arise from different perceptions of appropriate uses, user etiquette, and user impacts on the recreation resource.
 - **Funding:** With traditional funding sources for recreation projects declining, alternative funding sources will need to be sought to meet some of the user demands.
 - **Wilderness:** Resource and social standards and guidelines are not being met within the Mt. Jefferson Wilderness. The trend is leaning toward more regulated and restricted measures at highly concentrated and impacted areas in order to meet the intent of the wilderness management policies and direction. Although restrictions are resorted to as last level measures, the sheer numbers of visitors and the anticipated growth of use prompt these actions.

The condition of Wilderness resources and associated experiences are expected to improve in the future based on Wilderness management developments.

- **(SR 4a) Dispersed Sites Outside Wilderness:** The potential demand may place additional pressure on the resources of the Upper North Santiam and amplify the need for intensive management of recreational use within those areas of the watershed. A response to future use may require new strategies for responding to situations where human use exceeds ROS standards for extended periods of the normal use season or if resource degradation becomes a concern. This may possibly include a change to a management area with standards more closely aligned with the type of use taking place or altering kinds of use based on resource driven issues, or hardening or development of the area to better accommodate the type and level of use.
- **Developed Recreation:** For most developed recreation sites, current capacity is sufficient to accommodate projected amounts of increased use. However, it may be inadequate to meet projected demand during peak periods of weekend and holiday use. Whispering Falls and Riverside campgrounds will not be able to accommodate increasing day use. The current capacity of Big Meadows Campground is insufficient to accommodate current peak weekends and holidays, and projected amounts of increased use.
- **Special Uses:** Although recreation homes, private club and organization sites are in high demand, current policy prohibits issuing special use permits for new sites to private clubs and individuals.
- **Riparian Reserves:** The watershed will continue to receive a high intensity of dispersed use within accessible Riparian Reserves resulting in further needed management actions to resolve resource and social impacts.
- **Scenic Conditions:** The future visual condition of the watershed is expected to improve over current conditions when considering several developments and trends affecting Forest land management activities.
 - As Forest managers begin to focus more attention on balancing human use and product extraction with management of natural processes, the appearance of the watershed, in time, is expected to approach a Visual Condition of Moderately to Slightly Altered.
 - The design and distribution of activities within the watershed are expected to be less apparent to the casual viewer.
 - Implementation of standards and guidelines is expected to have a beneficial effect on the quality of the scenic resource in the future.

Recreation Opportunity Spectrum



Legend

- Wilderness Resource Spectrum
- Roded Natural
- Roded Modified
- Semi-primitive Motorized
- Semi-primitive Nonmotorized



Upper North Santiam Watershed Analysis
Detroit Ranger District

Scale 1:200000
07/28/95

Map #18

Recreation and Heritage Resources:

- **Interpretation:** No interpretive services exist in the Upper North Santiam on Forest Service land. The Marion Forks Fish Hatchery provides an interpretive display and tours through their facility. The Forest Plan states natural process, historic and cultural features will be interpreted and displayed for public awareness and enjoyment. Natural and cultural resource interpretation and education are important tools in developing public appreciation, public understanding of management goals/objectives and protection of resources. Potentials for interpretive opportunities within the Upper North Santiam are numerous.

Heritage Resources:

- Management activities should have less effect on heritage resource sites due to the implementation of surveys and mitigation measures.
- Heritage Resource sites will continue to be at risk from recreation use and vandalism. Site testing within recreation sites is a priority.

Aquatic Systems:

- **Aquatic Habitat:**
 - The existing trend for aquatic habitat capability is probably improving but capability is still much less than it was prior to the 1964 flood and subsequent stream cleanout and riparian salvage. Past and proposed restoration work in Marion Creek, the upper North Santiam River, and other isolated stream reaches along with natural processes will continue to contribute to this recovery.
 - Most of the tributary streams to the North Santiam River are in fair to good condition. There are exceptions in specific reaches but generally large wood and pool numbers along with riparian vegetation on fish bearing streams are approaching objectives. Marion Creek and several reaches on the main stem of the North Santiam River are major exceptions. These streams have been heavily impacted by past activities and it may be difficult to restore them fully to historical conditions due to political and social concerns. Examples of conflicts include the Highway 22 corridor along the North Santiam River and the summer homes and the fish hatchery near Marion Creek. Activities that put these things at

unacceptable risk will not be done.

- Modification of stream energies will aid in the recovery of these streams. Energies would be best modified through the use of structure - logs and boulders. This increase in structure will also aid in the creation of diverse habitats.
 - Stream inventories indicate other resident fish streams may need restoration in localized areas and reaches. Restoration would include increasing the amounts of large woody material in channels, improving pool quality and managing vegetation in riparian reserves. More field review is needed but streams such as Whitewater Creek, Pamela Creek, and Boulder Creek are included in the above.
- **Fish Populations:** No statistical information is available on trends of resident fish populations. Populations in streams that receive little fishing pressure are probably stable. Most of the lakes are dependent on stocking by the ODFW to maintain populations. The upper North Santiam River would not be able to support the fishing pressure it receives if it wasn't for the thousands of catchable size rainbow trout the State stocks.
- **Stocking Fish in High Mountain Lakes:** The stocking of fish in lakes, which did not have fish historically, has modified lake ecology. This has occurred in a couple of ways. The addition of a higher predator to the system probably caused a major change in aquatic insect populations as well as amphibians. The second way these introductions have modified lake ecology is through increasing human use around the lakes for fishing. This has caused changes in vegetation, compaction, and sometimes stability around the perimeter of the lake.
- **Slope Instability:** Overall slope instability has little effect on the aquatic ecosystem with the exception of portions of Mary and Straight landform blocks.
- **Roads** do not cause major problems within this watershed. Most system roads are well built, stay out of riparian areas and contribute little sediments to the system. From a sediment generation and movement standpoint, roads have not had an overall significant effect on stream generated sediment and sediment budgets, except for some localized reaches. Consequently, additional roading is acceptable in this Tier 2 watershed within the management constraints described in the ROD and within future budgetary constraints.

Some culverts are suspected of being barriers to fish passage. None have been identified on major streams at this time. Further evaluation should be done before any activities take place to improve fish passage.

- **Water Quality:** Under current management direction, the watershed should continue to produce high water quality due to the recovery of Riparian Reserves and the additional protection of these areas.

Riparian Reserves and Biodiversity:

- **Riparian Reserves:** Table 15 shows growth rates with and without silvicultural treatment at 10, 30, 50 into the future (see maps 19 - 23 a&b). In 50 years, it may be possible to convert about twice as many mid seral acres to late seral acres with silvicultural treatment than without silvicultural treatment. Most of the late seral riparian areas are within the Mountain hemlock zone. Thus most riparian reserves that may benefit overall from treatment occur in the lower elevations.

(SR5a) The total disturbed area of the Riparian Reserves attributable to developed recreation sites and dispersed campsites is less than 1 percent. On a watershed scale, "unacceptable impacts" on water quality and riparian due to recreation use are minimal. These conditions do not have a measurable effect on downstream water quality.

- **Threatened, Endangered, and Species of Concern:** With current management direction, the quality of spotted owl habitats should improve. There will be well-distributed habitats. Habitat trends for the peregrine falcon and bald eagle should remain relatively stable as long as prey species levels are not altered significantly. Habitat for candidate species will also remain stable or improve under current management direction, trending toward recovery of most species.

Northern spotted owl dispersal will improve as the stem exclusion stands on National Forest lands mature and begin to develop understory structure. These stands, if managed with the current forest plan green tree, snag, and down wood retentions, should provide even better dispersal habitats for the owl over time.

Owls should find adequate dispersal, roosting, and resting habitat in the Riparian Reserves across all quarter townships of this watershed.

With silvicultural treatments, an increase of 19% additional late seral habitats could exist within the LSR in 100 years.

- **Connectivity:** There will be an increase of late successional characteristics in riparian reserves, increasing the connectivity of late seral systems. There will be less connectivity along ridgetops due to timber harvest patterns.

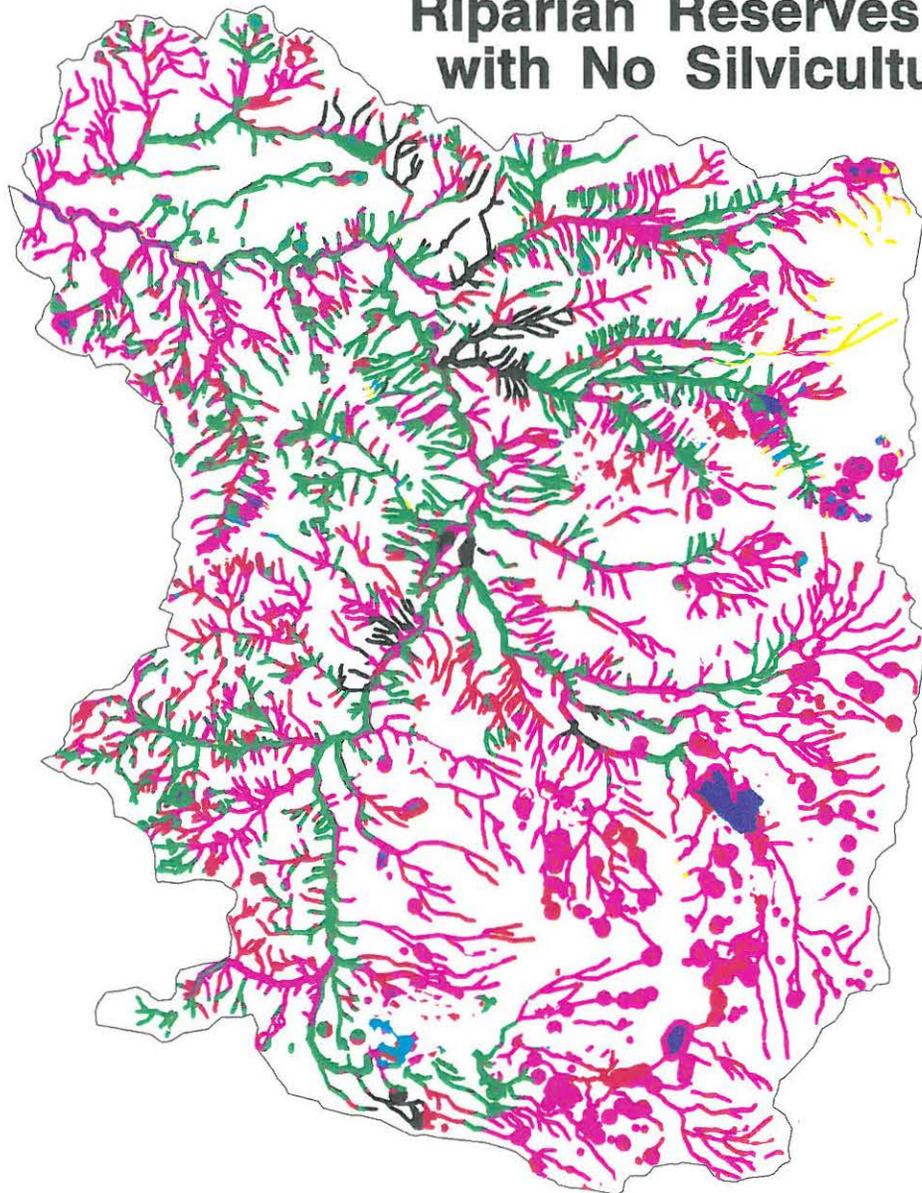
Table 15 - Riparian Reserve Growth with and without Silvicultural Treatment:

In 10 Years		
Seral Stage	% of Riparian Reserve Acres without Silvicultural Treatment	% of Riparian Reserve Acres with Silvicultural Treatment
Early	16%	15%
Mid	49%	50 %
Late	27%	27%
Other	8%	8%

In 30 Years		
Seral Stage	% of Riparian Reserve Acres without Silvicultural Treatment	% of Riparian Reserve Acres with Silvicultural Treatment
Early	6%	3%
Mid	59%	49%
Late	27%	41%
Other	8%	7%

In 50 Years		
Seral Stage	% of Riparian Reserve Acres without Silvicultural Treatment	% of Riparian Reserve Acres with Silvicultural Treatment
Early	0%	0%
Mid	61%	31%
Late	32%	62%
Other	7%	7%

Riparian Reserves Year 10 with No Silvicultural Treatment



Legend

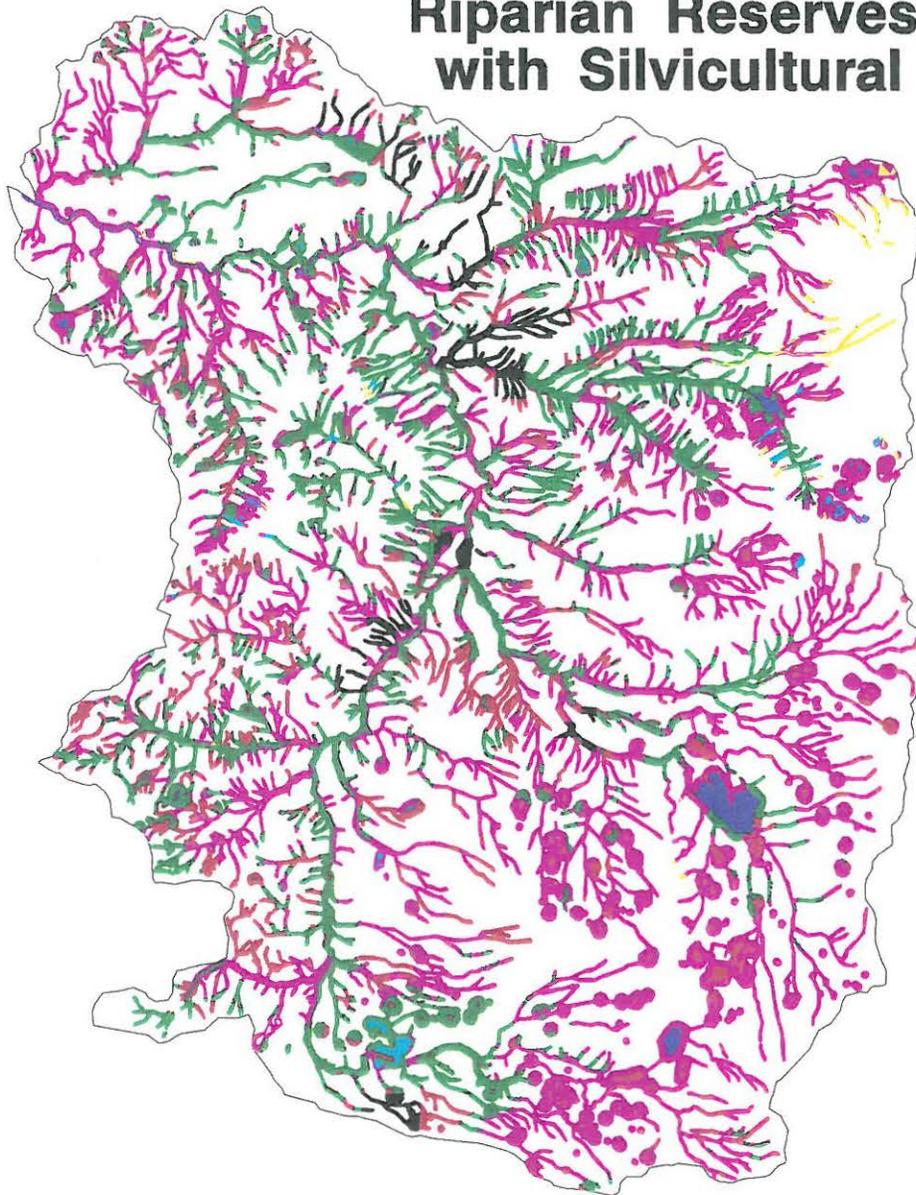
- Early Seral
- Mid Seral
- Late Seral
- Buildings & Rocks
- Meadows & Shrubs
- Water
- RR's in pvt lands

Upper North Santiam Watershed Analysis
Detroit Ranger District

Scale 1:200000
07/28/95

Map #19a

Riparian Reserves Year 10 with Silvicultural Treatment



Legend

- Early Seral
- Mid Seral
- Late Seral
- Buildings & Rocks
- Meadows & Shrubs
- Water
- RR's in pvt lands



Upper North Santiam Watershed Analysis
Detroit Ranger District

Scale 1:200000
07/28/95

Map #19b

Riparian Reserves Year 30 with No Silvicultural Treatment



Legend

- Early Seral
- Mid Seral
- Late Seral
- Buildings & Rocks
- Meadows & Shrubs
- Water
- RR's in pvt lands



Upper North Santiam Watershed Analysis
Detroit Ranger District

Scale 1:200000
07/28/95

Map #20a

Riparian Reserves Year 30 with Silvicultural Treatment



Legend

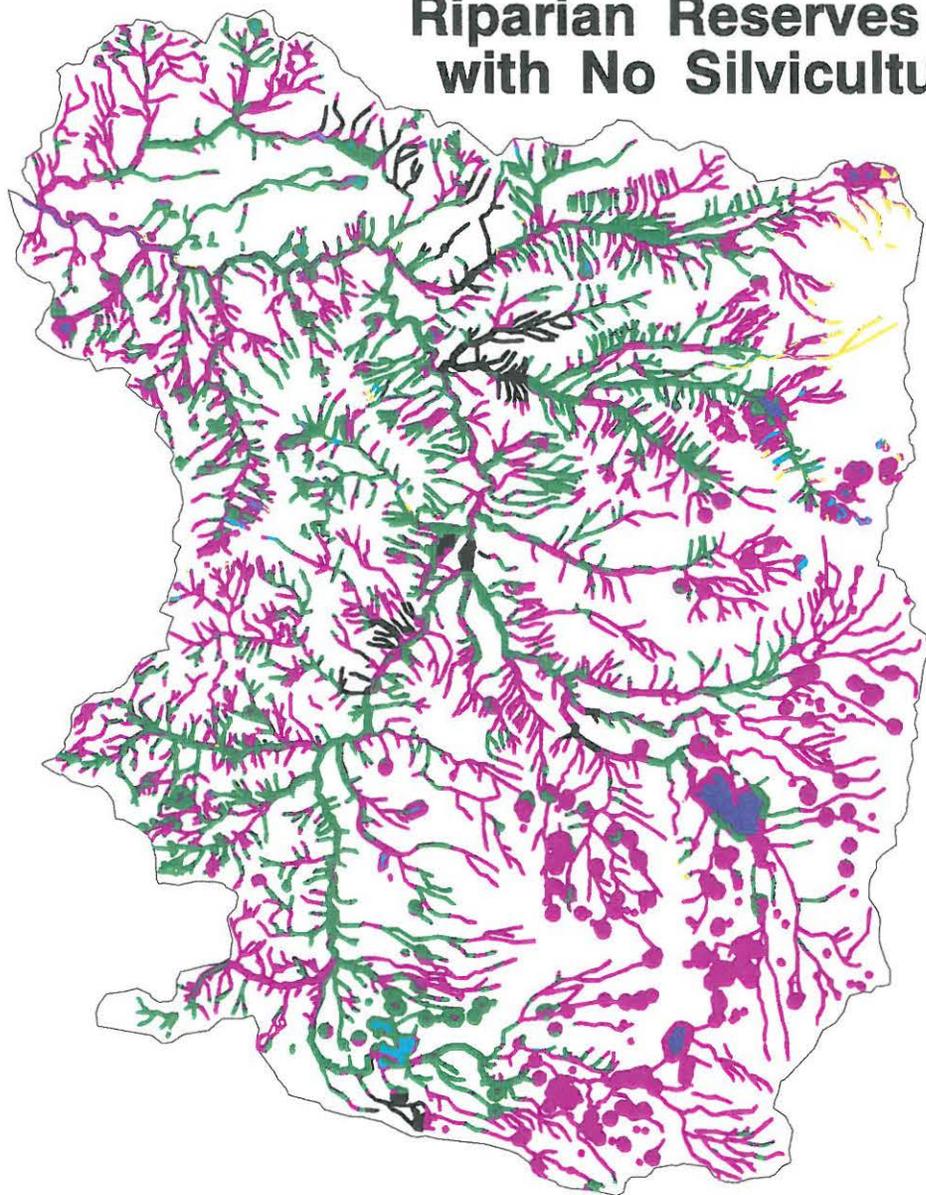
- Early Seral
- Mid Seral
- Late Seral
- Buildings & Rocks
- Meadows & Shrubs
- Water
- RR's in pvt lands

Upper North Santiam Watershed Analysis
Detroit Ranger District

Scale 1:200000
07/28/95

Map #20b

Riparian Reserves Year 50 with No Silvicultural Treatment



Legend

- Early Seral
- Mid Seral
- Late Seral
- Buildings & Rocks
- Meadows & Shrubs
- Water
- RR's in pvt lands

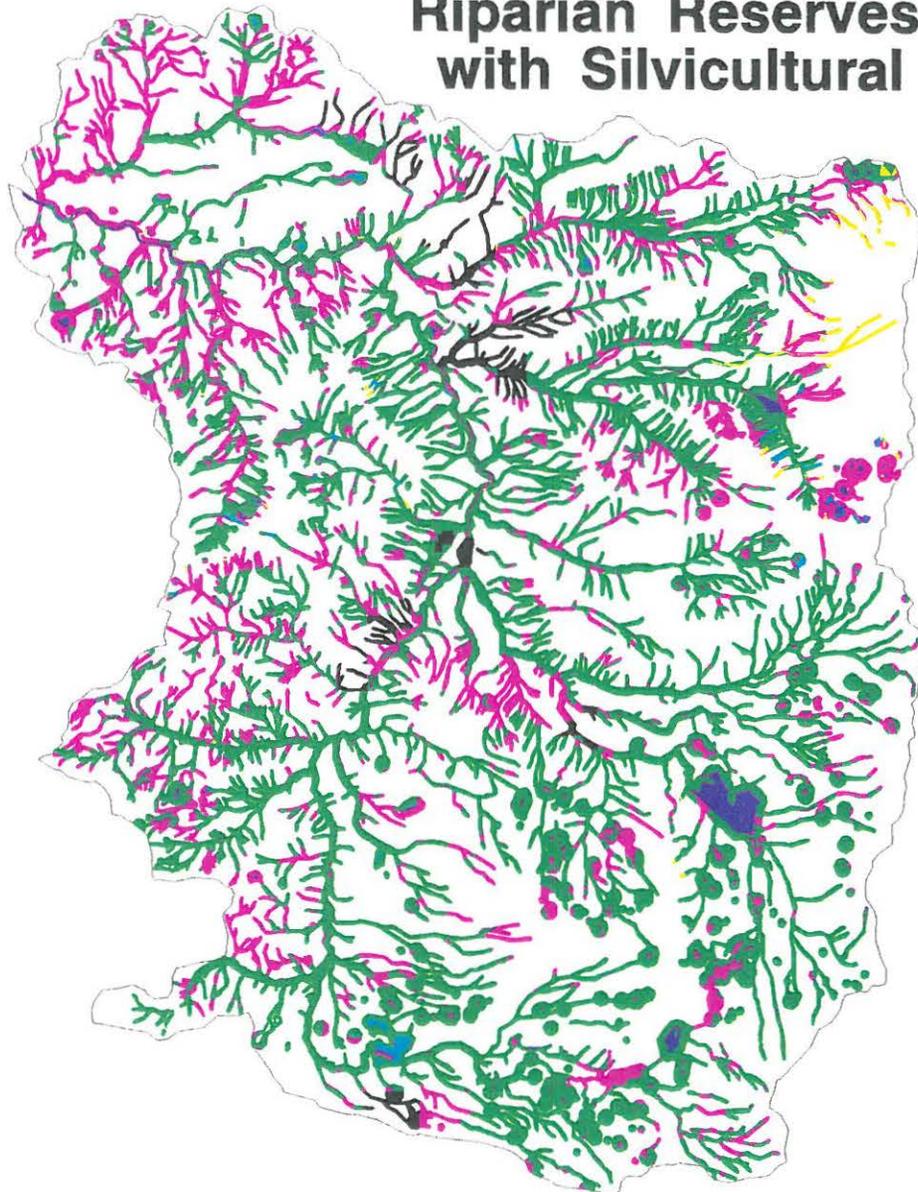


Upper North Santiam Watershed Analysis
Detroit Ranger District

Scale 1:200000
07/28/95

Map #21a

Riparian Reserves Year 50 with Silvicultural Treatment



Legend

- Early Seral
- Mid Seral
- Late Seral
- Buildings & Rocks
- Meadows & Shrubs
- Water
- RR's in pvt lands

Upper North Santiam Watershed Analysis
Detroit Ranger District

Scale 1:200000
07/28/95

Map #21b

Riparian Reserves Year 100 with No Silvicultural Treatment



Legend

- Early Seral
- Mid Seral
- Late Seral
- Buildings & Rocks
- Meadows & Shrubs
- Water
- RR's in pvt lands

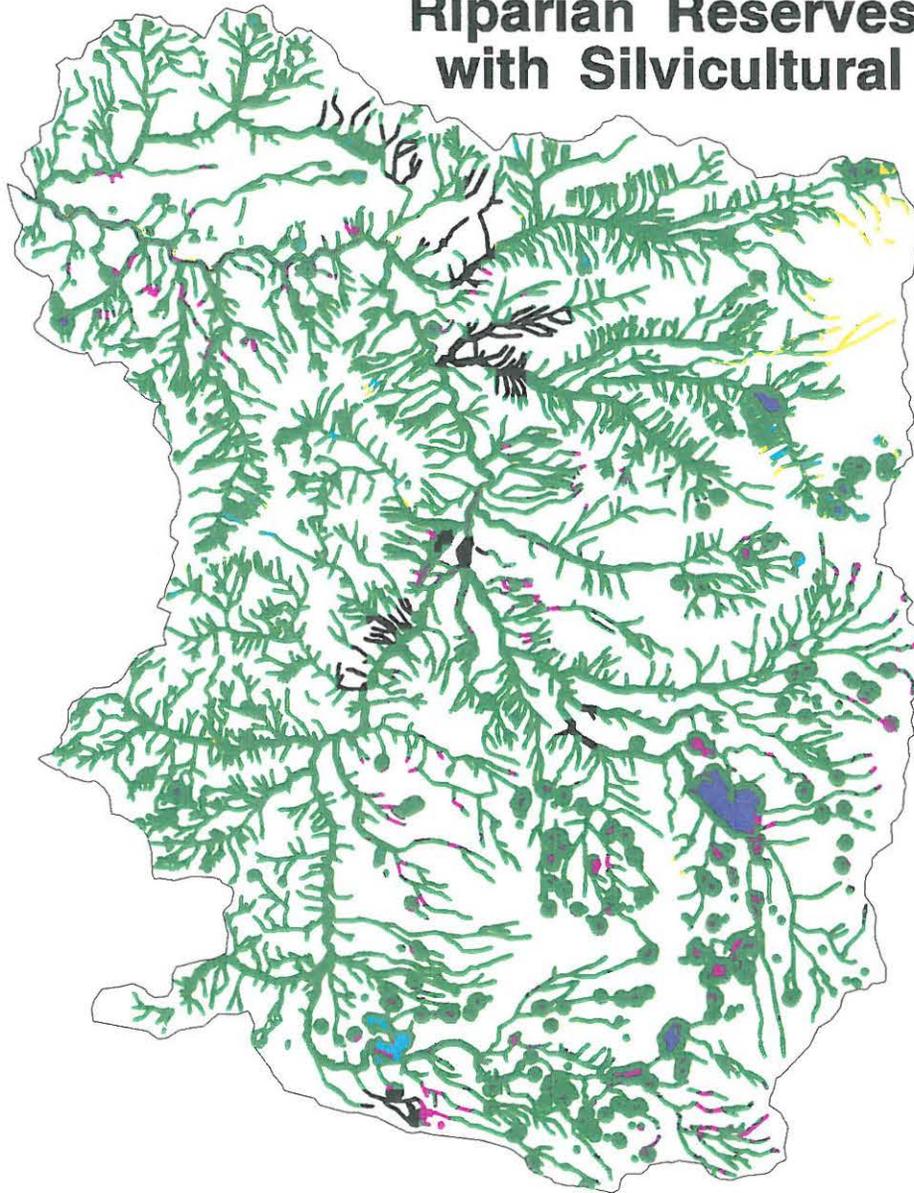


Upper North Santiam Watershed Analysis
Detroit Ranger District

Scale 1:200000
07/28/95

Map #22a

Riparian Reserves Year 100 with Silvicultural Treatment



Legend

- Early Seral
- Mid Seral
- Late Seral
- Buildings & Rocks
- Meadows & Shrubs
- Water
- RR's in pvt lands

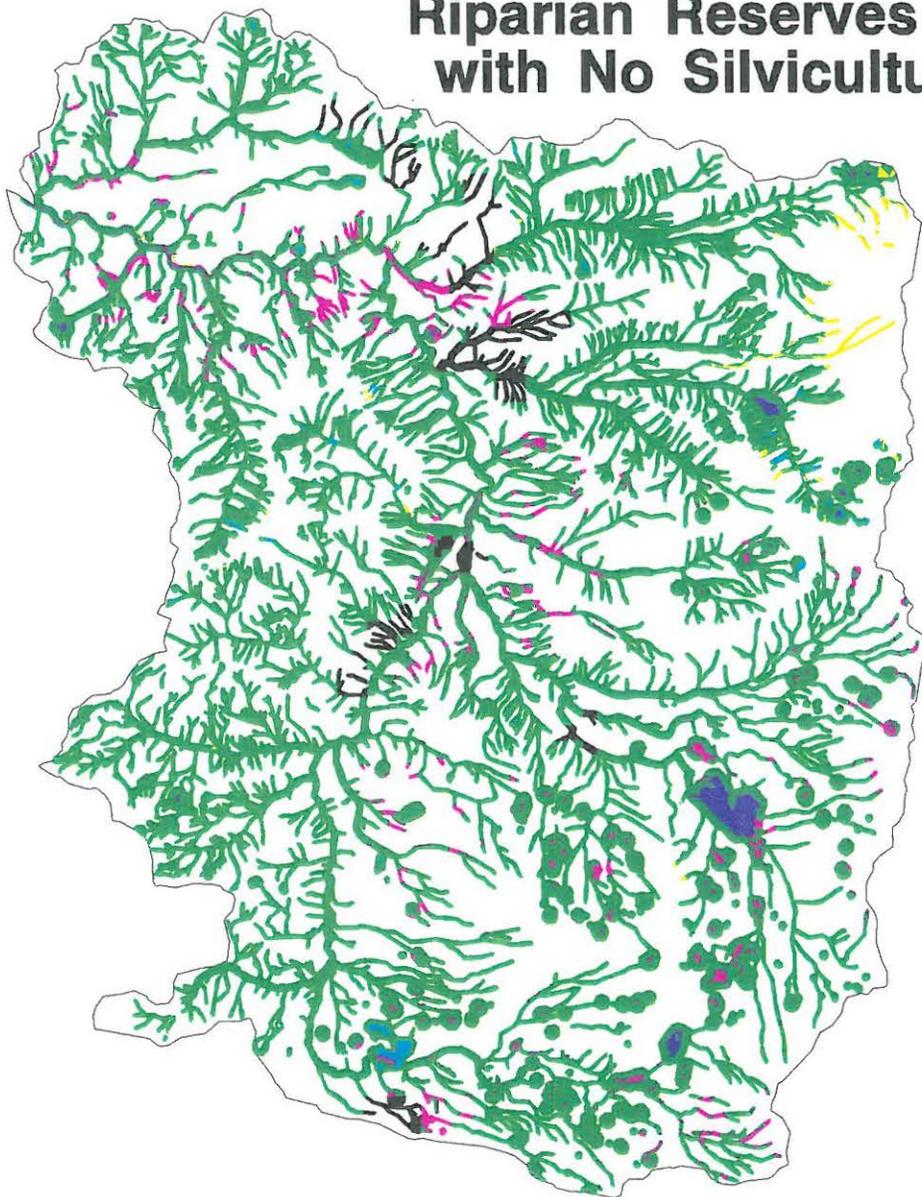


Upper North Santiam Watershed Analysis
Detroit Ranger District

Scale 1:200000
07/28/95

Map #22b

Riparian Reserves Year 150 with No Silvicultural Treatment



Legend

- Early Seral
- Mid Seral
- Late Seral
- Buildings & Rocks
- Meadows & Shrubs
- Water
- RR's in pvt lands

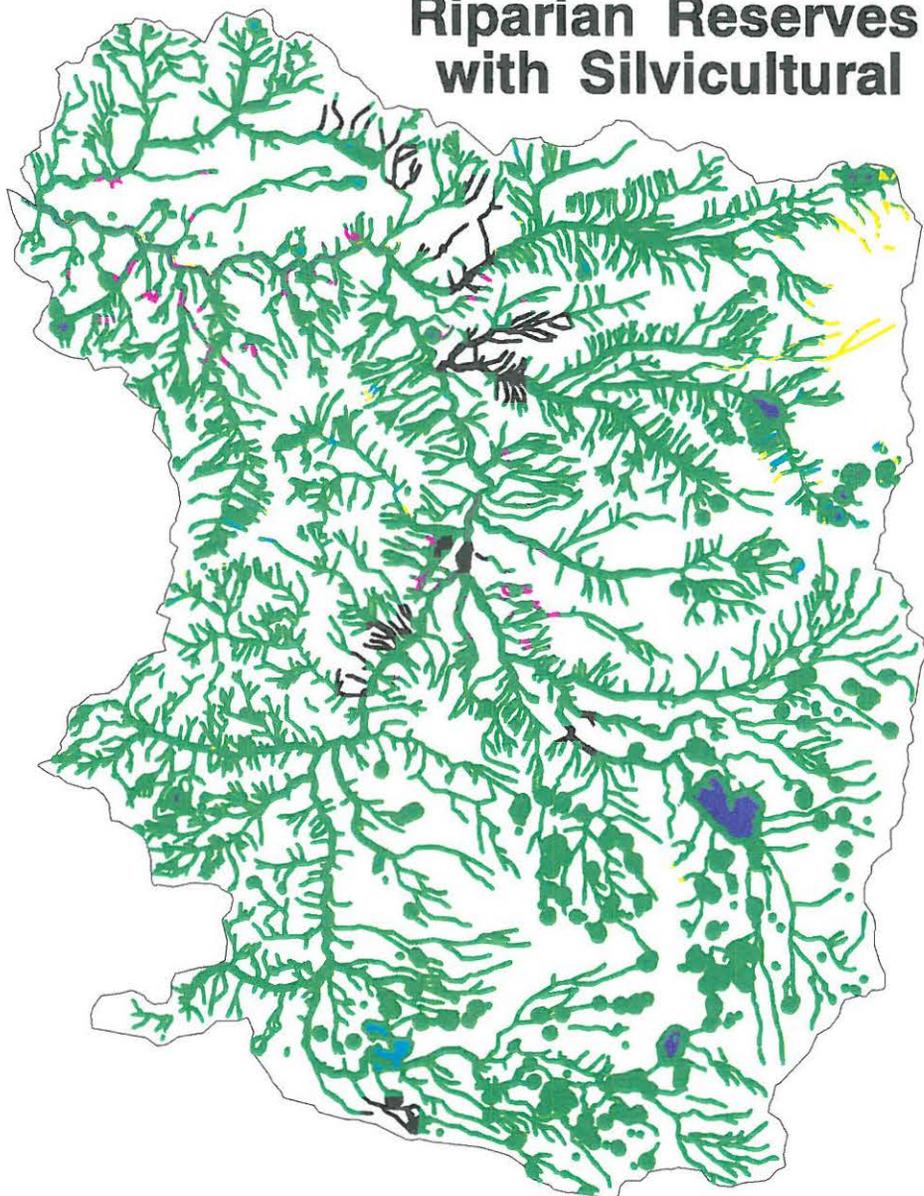


Upper North Santiam Watershed Analysis
Detroit Ranger District

Scale 1:200000
07/28/95

Map #23a

Riparian Reserves Year 150 with Silvicultural Treatment



Legend

- Early Seral
- Mid Seral
- Late Seral
- Buildings & Rocks
- Meadows & Shrubs
- Water
- RR's in pvt lands



Upper North Santiam Watershed Analysis
Detroit Ranger District

Scale 1:200000
07/28/95

Map #23b

- **American marten and pileated woodpecker:** The current riparian reserves are well distributed and thus should be adequate to meet future habitat needs of the American marten and pileated woodpecker. These habitats will continue to improve as late successional characteristics are developed within these stands. The greatest area of concern in the next three decades for dispersal needs is in the Straight landform block and the Coffin mountain area.

Analysis of the aerial photos also verifies that the current network of 100 acre cores for owls along with the current late successional riparian reserves and LSRs is well connected and should meet habitat objectives for American marten and pileated woodpecker, and thus most mature forest associated species.

- **Snags and Log Habitat:** Snag and down woody material levels should increase with fire suppression and changes in management direction.

Due to down woody material requirements of the forest plan, a higher retention of down wood is required than naturally occurred in areas with high fire frequencies. Within the mountain hemlock zone, fire, insects, and east winds shaped the current vegetation and these factors continue to have a strong effect on vegetation. Ignition sources east of the crest feed into risks present within this watershed. Since Mt. Jefferson Wilderness lies between the crest and the rest of the watershed, prescribed natural fire in the wilderness should be considered.

- **Special Habitats:** Trees are encroaching on natural openings due to fire suppression, decreasing the size of these special habitats. Some meadows are also overused by big game due to lack of forage in adjacent stands.
- **Noxious Weeds:** Noxious weeds and invasive nonnative plants will continue to be a threat to native plant diversity along the highway and other highly disturbed sites.

Soils:

- Organic matter within stands should increase with changes in management direction and fire suppression.
- **Compaction:** Compaction from tractor logging has likely affected soil productivity, and the Meadows block likely exceeds regional guidelines for cumulative compaction. Fortunately, the soils that were compacted are some of the most resilient. To reduce compaction from past management, we now require designated skid roads, and often subsoil these skid roads to break up compacted soils.

Vegetation:

- **Fire Risk:** There is increasing likelihood of stand replacement fire due to reduced road access, recent insect mortality, reduced resources, and fuel buildup.

Encouraging late successional development within the highest fire zones would increase fuels and may increase fire severity. We may be less successful in putting out fires in late successional stands within the highest natural fire zones due a decrease in access, and an increase in fuels associated with late successional and insect impacted stands.

- Multi-storied stands in the mountain hemlock zone may increase future budworm damage, acreage and severity. The fire risk within this zone is high.
- **Vegetation Patterns:** The dispersal for the upland terrestrial species can be accomplished through other landscape patterns not necessarily related to class IV stream distribution. Well-distributed patches of late successional habitat linked by patches of mid-seral forest in a pattern similar to the 50-11-40 rule would adequately provide for this function.
- **Productivity:** Overall timber growth in this watershed greatly exceeds harvest or mortality.

Elk and Deer:

- With current management direction there may be a shortage of big game forage within the watershed, affecting our ability to meet Forest Plan goals and ODFW objectives. The trend for elk forage is relative to forest stand development over the next decade. With the watershed dominated by stem exclusion and understory reinitiation stands, only a small portion of the watershed will be in the stand initiation stage, and therefore forage habitats. Thus a shortage of quality forage will occur in the next two decades unless natural fires created new areas.
- Treating mid seral stands provide an opportunity to meet some elk management and late successional objectives.
- (VW11) ODFW objectives, especially within the LSR, and Forest management under the new Forest Plan (ROD C-12) are incompatible with current high elk emphasis areas and winter range.

RECOMMENDATIONS

The following recommendations are potential project opportunities within the watershed. Projects will be selected based on the availability of funding. Site specific project analysis will precede projects coming out of the following recommendations. These recommendations only apply to National Forest lands.

SOCIAL AND RECREATION (SR)

(SR1a) Sustainable Communities / Forest Commodities:

- **SRA.** Provide Special Forest Products opportunities in Matrix.
- **SRB.** Provide Firewood opportunities in Matrix, where down woody material exceeds standards and guidelines, and in areas where fuel loadings have created unacceptable fire risk.
- **SRC.** Timber Harvest: In Matrix, the best opportunities for timber harvest in the next decade are in the Twin Meadows, Upper North Santiam/ Big Meadows, Bugaboo, Marion, Idanha and Boulder subwatersheds (see table 17, map 25).

(SR3a) Heritage Resource Sites:

- **SRD. Monitoring and Site Testing:** A site management plan needs to be developed to establish priorities for mitigation through site testing and evaluation for significance. The plan should emphasize those sites that are at risk of losing their integrity, context, or character from natural causes and human activities. Sites within the plan can be treated as individual properties, thematic groups or historic districts. The plan should establish a schedule of site monitoring to determine those sites at risk. This management plan can help facilitate archeological research that will provide the district with knowledge and understanding of our past as well as other resource planning needs. This recommendation will help us meet Forest Plan Standards and Guidelines FW-265 and FW-266.
- **SRE. Nominating Eligible Sites to the National Register of Historic Places:** Develop a management plan that establishes priorities for nominating eligible historic sites, roads and trails to the National Register of Historic Places, and the maintenance of these sites and features.

Recreation and Heritage Resources:

- **SRF. Interpretive Plan:** A plan should be created in cooperation with the other resource departments on the District that looks at the interpretive values of the Upper North Santiam watershed. It should establish priorities for those natural resources, historic and prehistoric sites to be interpreted. This watershed has a higher value for interpretation because of the high number of recreational visitors it receives each year, and the unique natural and heritage resources.

(SR4a) Recreation Supply and Demand:

- **SRG. Recreation Opportunity Spectrum:** Provide semi-primitive dispersed recreation settings within the Late Successional Reserves. Given the conservation objectives and species viability concerns associated with Reserves, it is likely these settings will result in additional protection, as well as an opportunity to provide this desired recreation setting. In addition, portions of the North and South Mt. Jefferson roadless areas are still in an undeveloped state and can meet the minimum requirements for potential future Wilderness consideration by Congress.
- **SRH. Meeting Other Recreational Demands:**
 - Develop a day use/rest area along the **Highway 22 corridor**.
 - Provide areas for group camping.
 - Construct additional shelters in Maxwell Sno-Park to accommodate day and overnight use.
 - Provide **winter recreation** opportunities identified in Winter Sports Management Plan.
 - **Trails:** Provide horse trails outside of the wilderness for those who do not want a wilderness experience.
 - Create OHV (bicycle, ORVs) opportunities which may include utilizing former system roads, where appropriate.
 - Provide barrier-free opportunities where feasible.
 - **North Santiam River:** Coordinate instream improvement efforts with whitewater boating groups to minimize safety hazards to kayakers.

(SR5a/b) Intensive Recreation Use:

- **SRI. Wilderness:** Support future Wilderness Management Strategies processes to improve physical/social impacts within key impact areas.

- Management methods could include moving trailhead access to lengthen trails to popular destinations, limiting entry during peak periods, designating campsites, closing areas to overnight use, limiting lengths of stay, increasing education, banning campfires, etc.
- Restoration opportunities within high use areas could include rehabilitation of key impact areas surrounding high alpine lakes, streams and meadows; and reconstruction and erosion control on heavily used access trails.
- Solutions to user conflicts may include equestrian trail development outside of wilderness; rehabilitation of impacted areas; and/or regulations or educational efforts needed to alleviate problems between users and/or resources.
- **SRJ. Dispersed Sites Outside Wilderness:**
 - Rehabilitation efforts and facility developments should be focused on heavily impacted campsites such as horse camps, and user developed access trails and roads.
 - Installation of sanitary facilities along Highway 22 corridor and other concentrated use dispersed areas would lessen the impact from improper disposal of human waste.
- **SRK. Developed Recreation Sites:**
 - **Safety:** Provide safe access into campgrounds from Highway 22 and fall hazard trees to protect area visitors.
 - **Restoration:** Open stand canopies in Whispering Falls and Riverside to increase light and encourage understory development which would provide excellent screening between campsites.
 - Upgrade sanitary facilities at campgrounds from current pit toilets to composting toilets. Replace and maintain facilities reported in the Facilities Condition Assessment.
 - **Supply and Demand:** Expand Big Meadows horse camp to accommodate current and projected use. Provide a group area and a reservation system for this campground.
 - Upgrade campsites to make them accessible for those with limited mobility.
 - Improve parking spaces in campgrounds to accommodate Recreational Vehicles.
 - **Special Use Areas:** Permittees want to upgrade existing facilities or create new facilities, e.g., the Boy Scout Camp dining hall.

ACCESS AND TRAVEL MANAGEMENT (AT)

(AT1a/c) Access and Travel Management:

- **ATA.** Complete an access and travel management plan for the watershed. Local roads will generally be candidates for managing for maintenance level 1 or decommissioning. Both road maintenance and decommissioning plans should be based on resource protection needs, public safety, long term access needs and economics. See Appendix 3 for access needs within this watershed.

(AT1b) Resource Impacts:

- **ATB. Road decommissioning:** The level of decommissioning will be based on a road by road analysis determining sedimentation risks, user safety, and potential future needs. The following categories of roads should be decommissioning priorities within this watershed:
 - **System Roads:**
 - Roads adversely impacting riparian functions need to be upgraded or decommissioned.
 - Where public safety is a concern.
 - Roads in secure locations of winter range such as in the McCoy block can meet local big game objectives
 - Where lack of maintenance is causing damage to the road investment.
 - To reduce road densities having an adverse effect on big game and hydrologic recovery.
 - Reduce density of roads within the Tier 2 Key Watershed. If we don't pursue decommissioning opportunities, it could limit our ability to build future roads for timber access.
- **ATC. Non - system roads:**
 - Non-system roads (29 miles in this watershed) need to be inventoried and analyzed to determine if they should be decommissioned or converted to Forest development road status.
 - Old skid roads within glacial bench areas that currently collect normally dispersed runoff would be the highest priority to decommission.

(AT2a/b) Highway Safety:

- **ATE.** Establish a management plan of the highway corridor with the Oregon Department of Transportation to facilitate safety and maintenance projects along Highway 22. Some safety projects include:
 - Removal of hazard trees along the Highway 22 corridor
 - Highway widening
 - Improving access points on the highway to and from recreation sites

FISHERIES AND HYDROLOGY (FH)

(FH1a/b) Fisheries:

- **FHA.** Continue as a high priority, the implementation of habitat restoration activities in historical anadromous fish areas of the upper North Santiam River and Marion Creek that have been degraded by past management actions. This would support the Oregon Department of Fish and Wildlife's objectives to reestablish winter steelhead and spring chinook salmon above Detroit Dam.

(FH2b)(FH3a) Fish Habitat and Stream Conditions:

- **FHB.** Protect the existing condition of aquatic habitats within the watershed within the direction of the Forest Plan and Aquatic Conservation Strategy Objectives for Tier 2 Key Watersheds.
- **FHC. Restoration Priorities:**
 - Priorities for anadromous fish habitat restoration in the Upper North Santiam Watershed are primarily in the main stem of the North Santiam River from Idanha upstream to the Highway 22 bridge and in Marion creek from the mouth to Puzzle Creek.
 - Inventories indicate that Pamela, Boulder and Whitewater Creeks are all low in pool habitat and resident fish populations might benefit from activities that would increase quality pool habitats.

- The Marion Creek subwatershed is probably the highest priority due to the potential for work in restoring side channel habitat and reestablishing links with its floodplain. The main stem of the Upper North Santiam River, which runs through several subwatersheds, would probably be second priority for restoration. Information to go beyond this hasn't been evaluated yet. There are probably many other possible restoration opportunities spread across the watershed that will be identified as field reviews are completed.
- **FHD.** Modify Stream Energies in selected areas to restore aquatic conditions and channel bank stability.
 - Certain class IV streams within the Meadows landform block need to have energies reduced to avoid channel scour, and drying of existing wetlands.
 - Certain class II streams in the Mary landform block need to have energies modified to control slope stability associated with channels.

(VW1a) Riparian Reserves: There are 5 objectives defined in the Aquatic Conservation Strategy of the Forest Plan for the Riparian Reserve Network. They are as follows:

- Objective 1:** Maintain and restore riparian structures and functions of perennial and intermittent streams.
- Objective 2:** Confer benefits to riparian dependent and associated species other than fish.
- Objective 3:** Enhance habitat conservation for terrestrial organisms that are dependent on the transition zone between upslope and riparian.
- Objective 4:** Improve travel and dispersal corridors.
- Objective 5:** Provide for greater connectivity. Serve as connectivity corridors among the Late Successional Reserves.

● **FHE. Riparian Reserve Widths:**

- Management Area 15 widths (LRMP 1990) are adequate for achieving Objectives 1 and 2 in the Whitewater, Pamelaia, Riverside, Marion, and Upper North Santiam subwatersheds.
- A combination of Management Area 15 widths (LRMP 1990) and interim Riparian widths are adequate for achieving Objectives 1 and 2 in Idanha, Bugaboo, Twin Meadows, Tunnel, and Boulder subwatersheds.
- There is not enough information available at this time on wildlife needs to make recommendations for the Riparian Widths necessary to accomplish Objectives 3, 4, and 5.

Until that information is available, interim widths will be established in all subwatersheds.

- **FHF. Riparian Reserve Management:** The Record of Decision recognizes that some management actions may be helpful within the Riparian Reserves if they are to attain the desirable late-successional structure. It is assumed that working toward this structure will also benefit the terrestrial species that depend on that type of structure. Examples of beneficial projects are precommercial and commercial thinning, understory burning, riparian planting, snag creation, large woody material placement, road decommissioning, and in stream structure placements. (see table 17)

Soil Productivity:

- **VWA.** Subsoiling to reduce compaction will be a necessary mitigation for appropriate timber management activities. When funds are available, subsoiling will also be utilized on previously compacted areas not associated with current management.

VEGETATION AND WILDLIFE (VW)

(VW1b) Historic Range of Variability:

- **VWB. Late Successional Reserve RO214:** The Late Successional Reserve Assessment for RO214 will be done during the Breitenbush watershed analysis, since a portion of this LSR falls within that watershed. We cannot implement recommendations until the assessment is completed. Based on the analysis of the portion of the LSR within the Upper North Santiam, we recommend:
 - Accelerating old growth characteristics within stand initiation, stem exclusion, and understory reinitiation stands within the LSR (See table 17 map 24)
- **VWC. Plant Diversity:** Develop implementation and monitoring plans for noxious and nonnative weed removal, native plant propagation programs, revegetation activities, and all sensitive plant and special habitat location protection.
 - Implement specific mitigation measures for Survey and Manage Species found in Appendix J2 of the FSEIS (1994), and further develop the guide to the effects of specific projects on riparian reserve species.

(VW1g/j)Threatened and Endangered Species:

- **VWD. Northern Spotted Owl:** Projects such as timber harvest that remove suitable owl habitat should be focused on the owl home ranges determined to be of lowest priority to save. Table 16 prioritizes home ranges to save based on habitat quality. LSRs (known spotted owl activity centers) are no harvest allocations.

(VW1l/m) Elk and Deer:

- **VWE.** Revisit our agreements with ODFW concerning managing winter range as high elk emphasis in the McCoy, Mt. Bruno, Whitewater, Red Grizzley, and Minto elk emphasis areas. These may be examples of where, because of the land allocation pattern (LSR), we should manage the areas as low or moderate emphasis as outlined in the Forest Plan.

Table 16 - Forest Management and Spotted Owl Habitat Outside of the Late Successional Reserve:

Priority to Save	Owl	Status (Pair or Resident Single)	Reproductive History	Percent Suitable Habitat in Home Range	Habitat Connectivity	“Take” at .7 and/or 1.2 miles
High	41 *	Pair	Moderate	62%	Good	None
High	95 *	Pair	Moderate	53%	Good	None
High	65	Pair	Moderate	41%	Good	.7
Moderate	88 *	Pair	Poor	58%	Good	None
Moderate	69 *	Pair	Poor	37%	Moderate	.7 and 1.2
Moderate	63 *	Pair	Poor	32%	Moderate	.7 and 1.2
Moderate	30 *	Pair	Moderate	39%	Moderate	.7 and 1.2
Moderate	70 *	Pair	Moderate	42%	Moderate	None
Moderate	49 *	Res Single	Poor	51%	Moderate	None
Moderate	28	Pair	Poor	52%	Moderate	None
Moderate	113	Pair	Moderate	41%	Moderate	None
Moderate	71	Pair	Moderate	34%	Good	1.2
Moderate	18	Pair	Moderate	29%	Poor	.7 and 1.2
Low	74 *	Pair	Poor	17%	Poor	.7 and 1.2
Low	111R*	Res. Single	Poor	10%	Poor	.7 and 1.2
Low	27 *	Pair	Good	25%	Poor	.7 and 1.2
Low	54	Pair	Poor	48%	Moderate	.7
Low	22 *	Pair	Poor	36%	Moderate	1.2
Low	82	Pair	Poor	47%	Moderate	None
Low	20	Pair	Poor	44%	Moderate	None
Low	39	Pair	Poor	35%	Moderate	.7 and 1.2
Low	58	Pair	Poor	28%	Poor	.7 and 1.2
Low	64	Pair	Good	15%	Poor	.7 and 1.2
Low	46 *	Res Single	Moderate	31%	Poor	.7 and 1.2
Low	77 *	Pair	Good	21%	Poor	.7 and 1.2

* Management Allocation LSRs (known spotted owl activity centers)

Location in relation to the Late Successional Reserve network is the basis of LSRs designations.

- **VWF.** Forage development or enhancements, focused on winter range should be the priority emphasis.
 - Late seral stands should be retained for thermal/ optimal cover as driven by project level planning. There is an opportunity to convert some mid seral stands to forage where practical.
 - Creation of permanent forage areas in secure locations of winter range such as in the McCoy block can meet local big game objectives.
 - Timber harvest units on south flat slopes are preferred to meet forage needs.
 - Explore opportunities to use stored roads for replacement forage.

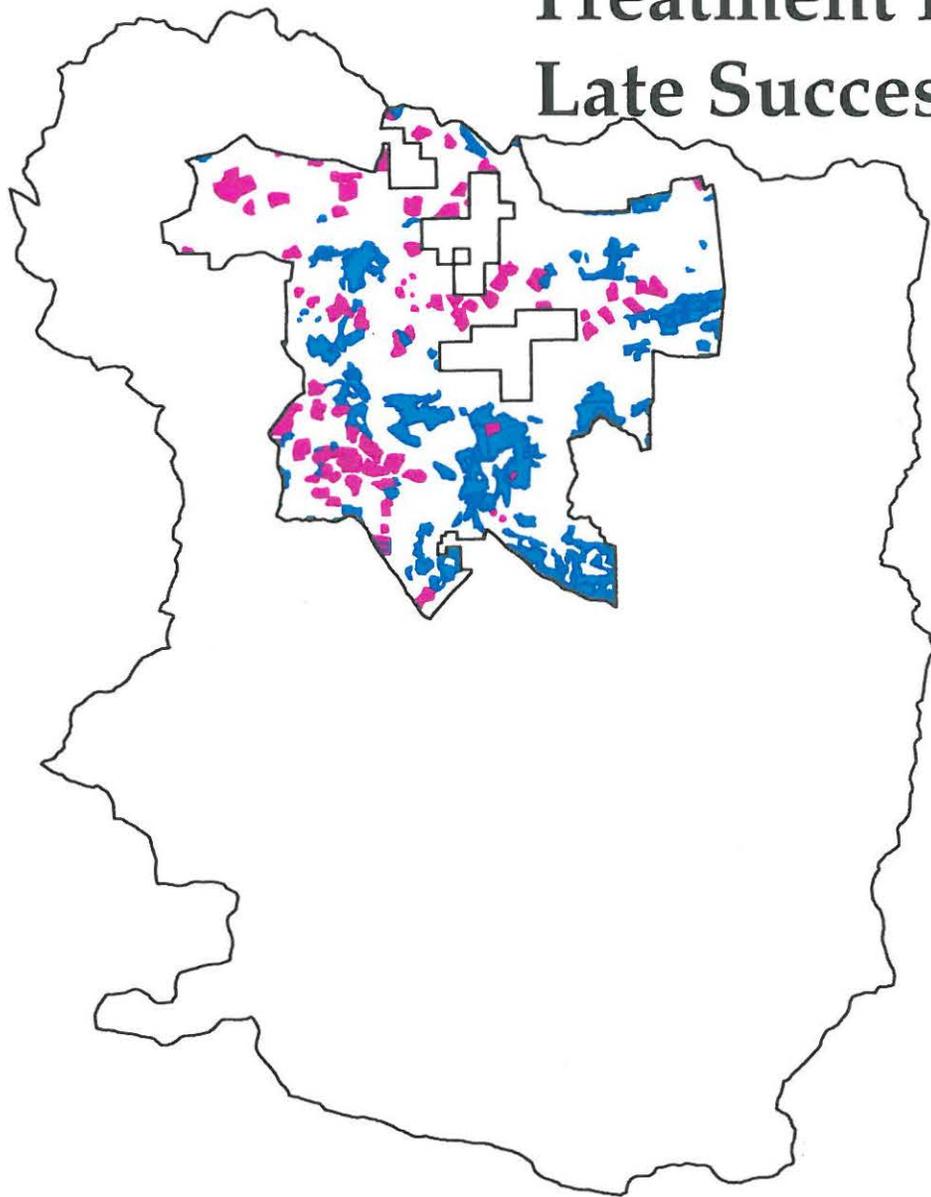
(VW3a) Late Successional Reserve Protection and (VW2) Fire Suppression and Vegetation:

- **VWG.** Opportunities for Reducing Fire Risk within the watershed:
 - Develop an area fire hazard plan - map and field verify fuel hazards; identify critical road access that should be maintained; identify known potential helispots; treat fuels around high recreation use areas; treat fuels generated by management activities to meet resource concerns; and consider fuel breaks where consistent with LSR objectives.
 - Used prescribed fire in and out of the wilderness.
 - Develop a Prescribed Natural Fire Plan within the wilderness.
 - Concentrate efforts in developing late successional habitat in those areas that were historically protected from stand replacement fires. For example, the area just west of Mt. Jefferson was historical old growth. (see map 10, Key Processes-Fire)
 - Develop a fire evacuation plan for the areas around Pamela Lake/ Hunts Cove due to sufficient fire risk, high recreation use, and limited access.

Table 17 - Vegetation Treatments:

Management Allocation	Objectives	Potential Vegetation Treatments
Late Successional Reserves (See map 24) (see Vegetation Treatments in Appendix 3)	Develop old growth characteristics (VW1b), (VW4a) Acceleration of Late Successional Characteristics	<ul style="list-style-type: none"> • Planting multiple species in managed stands • Precommercial thinning of stands < 20 years old • Commercial thinning of stands < 80 years old • Creating snags in deficit areas • Salvage of blowdown concentrations that retard old growth development • Large wood placement in deficit areas
	Prevent large scale disturbances from fire (VW3a)	<ul style="list-style-type: none"> • Treat existing slash in the highest fire risk areas • Prescribe fire and fuel breaks
Riparian Reserves (see Vegetation Treatments in Appendix 3)	Meet Aquatic Conservation Strategy Objectives (VW1b)	<ul style="list-style-type: none"> • Precommercial thinning of stands < 20 years old • Commercial thinning of stands < 80 years old • Fertilization in stands that have not been fertilized in the last 7 years • Salvage where conditions exceed riparian objectives • Large wood placement in deficient streams

Treatment for the Acceleration of Late Successional Characteristics



Legend

-  Late Successional Reserve
-  Commercial Thinning Opportunities
-  Precommercial Thinning Opportunities
-  Project Boundary



Upper North Santiam Watershed Analysis
Detroit Ranger District

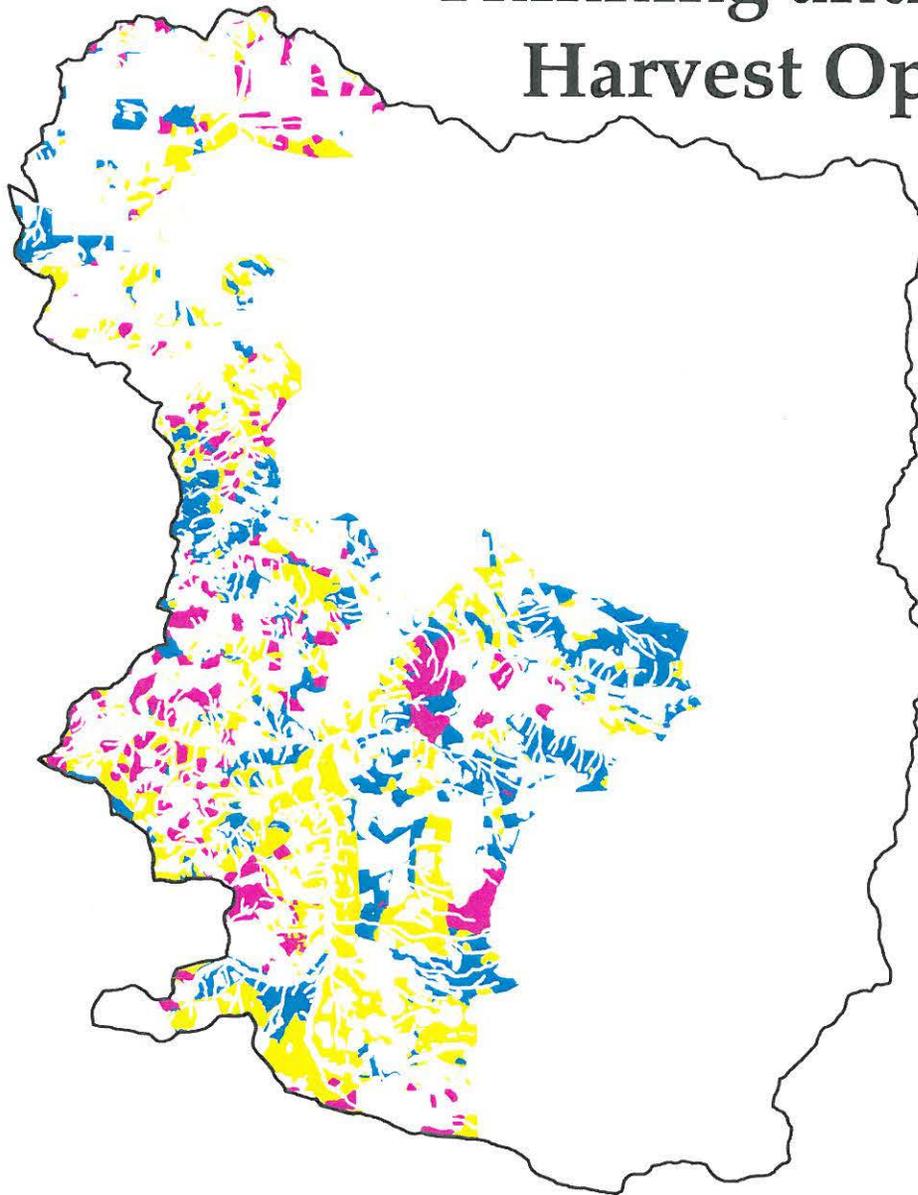
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July 1995

Map #24

Table 17 - Vegetation Treatments (cont.)

Management Allocation	Objectives	Potential Vegetation Treatments
Matrix (see map 25) (see Vegetation Treatments in Appendix 3)	Commercial timber sales Special Forest Products (SR1a)	<ul style="list-style-type: none"> • Regeneration harvests, commercial thins, salvage and other partial cuts. • Thinning, pruning, boughs etc.
	Maintain and enhance growth and health of managed stands, assure reforestation within 5 years of harvest	<ul style="list-style-type: none"> • Precommercial thin of stands < 20 years old • Planting / site preparation based on current reforestation needs • Pruning thinned stands < 30 years old on high sites, and white pine for blister rust control. • Tree release, animal control on stands with less than recommended stocking or growth.
	Increase ecological diversity by: <ul style="list-style-type: none"> • Creating big game forage • Restoring role of underburning (VW1b)	<ul style="list-style-type: none"> • Regeneration cuts , seeding winter range • Regeneration cuts, site preparation, seeding on Beargrass dominated sites • Understory removals, under burning stands with historic under burning.
Wilderness	Reduce catastrophic fire occurrence, restore fire dependent ecosystems (VW1b) (VW3a)	<ul style="list-style-type: none"> • Prescribed fire in areas with fire hazards within historic fire zones.

Thinning and Regeneration Harvest Opportunities



Legend

- Project Boundary
- Regeneration Harvest Opportunities
- Commercial Thinning Opportunities
- Precommercial Thinning Opportunities



Upper North Santiam Watershed Analysis
Detroit Ranger District

Scale 1:200000
July 1995

Map #25

INFORMATION NEEDS/DATA GAPS

The following data gaps prevented us from identifying site specific effects and restoration needs. We will work toward filling these gaps during project level planning, and as more information becomes available through continued monitoring and research.

Access:

- Updated Transportation Management System (TMS) database and the GIS transportation layer. Updated inventories of road systems to improve accuracy of this information.
- Surveys identifying perennial stream crossings for fish passage needs.
- Risk assessments of Class I, II, III stream crossings for a 100 year storm event.

Wilderness Implementation Schedule (WIS):

- **Wilderness Ecosystems:** Baseline data to determine if human influences have had an effect on the overall functioning of the ecosystem in the short or long term.

Recreation:

- Updated Limits of Acceptable Change inventories in order to monitor campsite conditions for more accurate information for wilderness management decisions and future watershed analysis processes.
- **Dispersed Recreation:** Updated inventories in order to more accurately monitor campsite conditions. It would also benefit to include other sites such as non-system access "roads" and social trails.

Updated dispersed use data to give an accurate picture of the kind of use patterns that occur on a watershed scale. Sampling dispersed use information within each opportunity class by watershed would enable managers to track the conditions and use patterns/trends in order to make better management decisions.

Heritage Resources:

- Coordination with tribes to accomplish common objectives and to ensure resource availability for traditional and ceremonial use.

Aquatic Systems:

- Verification of Class III And IV stream types across the watershed. This would entail checking on the presence or absence of fish and whether the stream flows year round.
- Field identification of streams, primarily Class IV, that do not show up on GIS or maps. As areas are verified with on the ground checks, update the GIS stream layer.
- A survey of Minto Creek, the only stream of significant size in the watershed that hasn't been surveyed with level II protocol.
- Channel typing on all streams.
- Information on aquatic species endemic to the Willamette NF from the Appendix J2 list present in this watershed
- Effect of fish stocking on native fish and other aquatic populations.
- Effect of road sanding along the Highway 22 corridor on aquatic habitat

Riparian Reserves Objectives 3 - 5 (See recommendations):

- Specific effects that management activities have on riparian associated Species of Concern to update current efforts.

Vegetation and Wildlife:

- Field verified vegetation data, especially in the wilderness.
- Additional information on fire history, stand ages, and underburning.
- Updates of habitat effectiveness models
- Specific effects of management activities on Species of Concern

APPENDIX 1 - TEAM MEMBERS

Rick Breckel	Wildlife
Bill Funk	Social
Dave Halemeier	Hydrology
Cara Kelly	Heritage Resources
Elaine Larson	Social
Dave Leach	Vegetation
Mike Roantree	Botany
Dani Rosetti	Recreation
Carolyn Sands	Team Leader and Writer/Editor
Mary Lee Sayre	Transportation
Doug Shank	Soils/Geology
Wayne Somes	Fisheries
Diana Walker	G.I.S.
Rick Whitener	Fire

APPENDIX 2 - PUBLIC CONTACTS

Tribes

Warm Springs
Grand Ronde, Siletz

Agencies

City of Detroit , Mayor
City of Idanha, Mayor
City of Salem, Hank Wujcik
City of Stayton, Mayor
County Commissioners, Linn
County Commissioners, Marion
Oregon Department of Forestry (ODF)
Oregon Department of Transportation (ODOT)
U.S. Fish and Wildlife Service, Ray Bosch
Oregon Department of Fish and Wildlife (ODFW), Gary Hostick and John Haxton

Adjacent Landowners/Property Owners

Bugaboo Timber Co., Linda Dunn
Frank Lumber Co., Vince Brand
Freres Lumber Co., Inc., Andy Heuberger
Marion Summer Home Association

Special Interest Groups

AFSEEE
Central Oregon Paddlers Club
Chemeketans, Margaret Forsythe
Communities for a Great Oregon, Karen Clark
Friends of the Breitenbush, Mark Ottenad and Michael Donnelly
Forest Conservation Council, Mark Lear
Kayakers
Mid Valley Trail Riders
Mt. Jefferson Snowmobile Club, Gene Benson
North Santiam Snowmobile Club
Oregon Natural Resources Council, Mark Hubbard
Oregon Nordic Club
Oregon Rivers Council
Pacific Northwest 4WD Association
Pacific Rivers Council
Salem Ancient Forest Alliance, Cheryl Lovre
Santiam Alpine Club
Santiam Flycasters
Santiam Wilderness Committee, Pat Loveland
U.S. Hang Gliding Association, Paul Newberry
Wilderness Watch

APPENDIX 3 - SUPPLEMENTAL INFORMATION

The Following information is to assist the manager and the Interdisciplinary team in project level planning:

Access Needs: For an access and travel management plan

- **Recreation:** Provide for a broad range of recreational opportunities in a variety of settings.
 - Maintain access to all developed campsites and priority trailheads.
 - Road closure can be used as a tool to reduce visitors in high use areas (e.g., Marion Lake).
 - Provide accessible opportunities. For example, Roads 2246 east of Highway 22, provides access to Pamela Lake within the Mt. Jefferson Wilderness. Easy terrain and short hiking distances enable people with a wide range of physical abilities to access the Wilderness.
 - Provide access for people with disabilities around road closure barriers.
 - Road 11, Straight Creek Rd., is a Backcountry Byway designated by BLM in cooperation with the Forest Service. This road encourages travel between Detroit and Sweet Home Ranger Districts.

- **Fire Protection and Prevention:** Address motor patrol needs for fire detection. Priority needs are ridge top roads that access vista points, particularly vistas into areas that see heavy lightening activity.
 - Allow for reasonable response time for initial attack situations. Maintain access to Coffin Mt. lookout.
 - Maintain availability of pump chances.

- **Commercial Operations and Permittees:** Manage access to provide opportunities for timber harvest activities, Special Forest Product harvest, mineral uses and personal use permits.

- **Ownership:** Maintain access to private land and negotiate cooperative agreements to help meet the needs and management objectives of all parties.

- **Administrative:** Provide access to meet resource management needs and management allocation requirements.
 - Silviculture treatments of managed and unmanaged stands.
 - Fuels treatment
 - Habitat enhancement, mitigation, and restoration projects
 - Species surveys

Potential Vegetation Treatments: within Matrix, Late Successional Reserves, Riparian Reserves

Precommercial Thinning:

	PLANT ASSOCIATION SERIES			
	(age range of eligible species)			
	Western hemlock	Pacific silver fir	mountain hemlock	Total
	(10-20 years)	(12-25 years)	(18-30 years)	(18-30 years)
LSR (VW4a)	1465	1386	0	2851
Matrix	1222	4738	94	6054
Total	2687	6124	94	8905

These acres represent the maximum total possible. Any decision on actual treatment would need to be field verified and meet all resource objectives. Many stands will not meet size or stocking level requirements for thinning.

Commercial Thinning

<u>Allocation</u>	<u>Size Class</u>	<u>Maximum potential acres</u>
Matrix	3.5 -4.0 (9-20.9" dbh)	8087
LSR (VW4a)	3.5 - 4.0, stands < 80 yrs old	19
Riparian (outside LSR)	3.5 - 4.0	5262

In matrix, stands in these size classes will be considered for thinning if they need stocking control to achieve recommended stocking levels for optimum growth or to maintain stands for longer periods. Generally, stands which have reached 95% of the culmination of mean annual increment will be considered for regeneration. In LSRs, the primary objective will be to accelerate old growth characteristics. In riparian reserves, the primary purpose will be to developed desired stand structure with emphasis on growing large trees and logs and other late successional characteristics.

Regeneration (Regen) Harvests (SR1a), (VW1b)

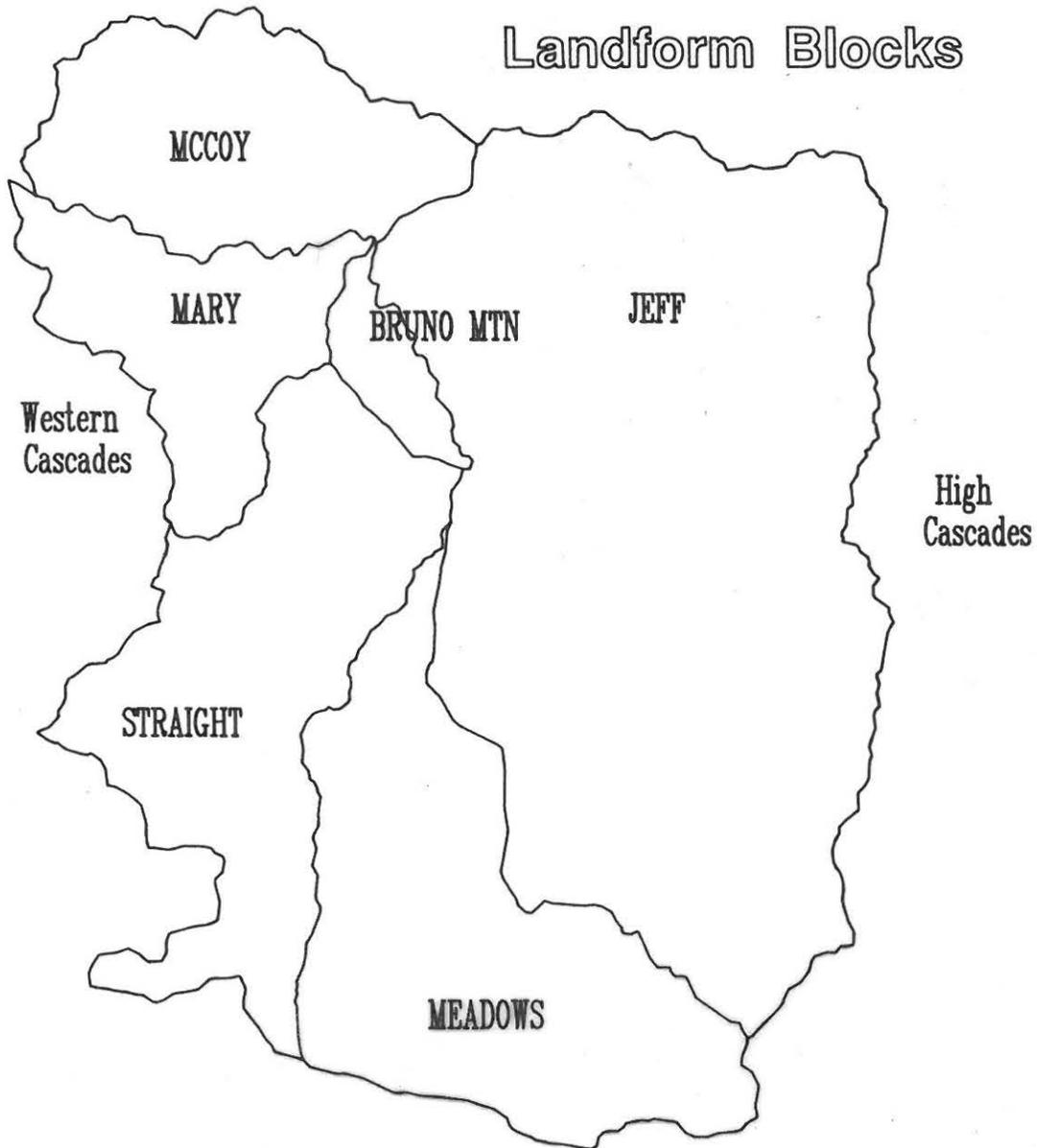
Matrix

- In stands too old or stagnated to respond to release from thinning.
- In late successional stands, if in excess of 15% of specific 5th field watersheds.

Total matrix in 21"+dbh stands = 10,181 acres

Suited and Available acres in Matrix in
All Management Allocations = 8,983 acres

Landform Blocks



Upper North Santiam Watershed Analysis
Detroit Ranger District

Scale 1:200,000
07/28/95

Map #4

Subwatersheds



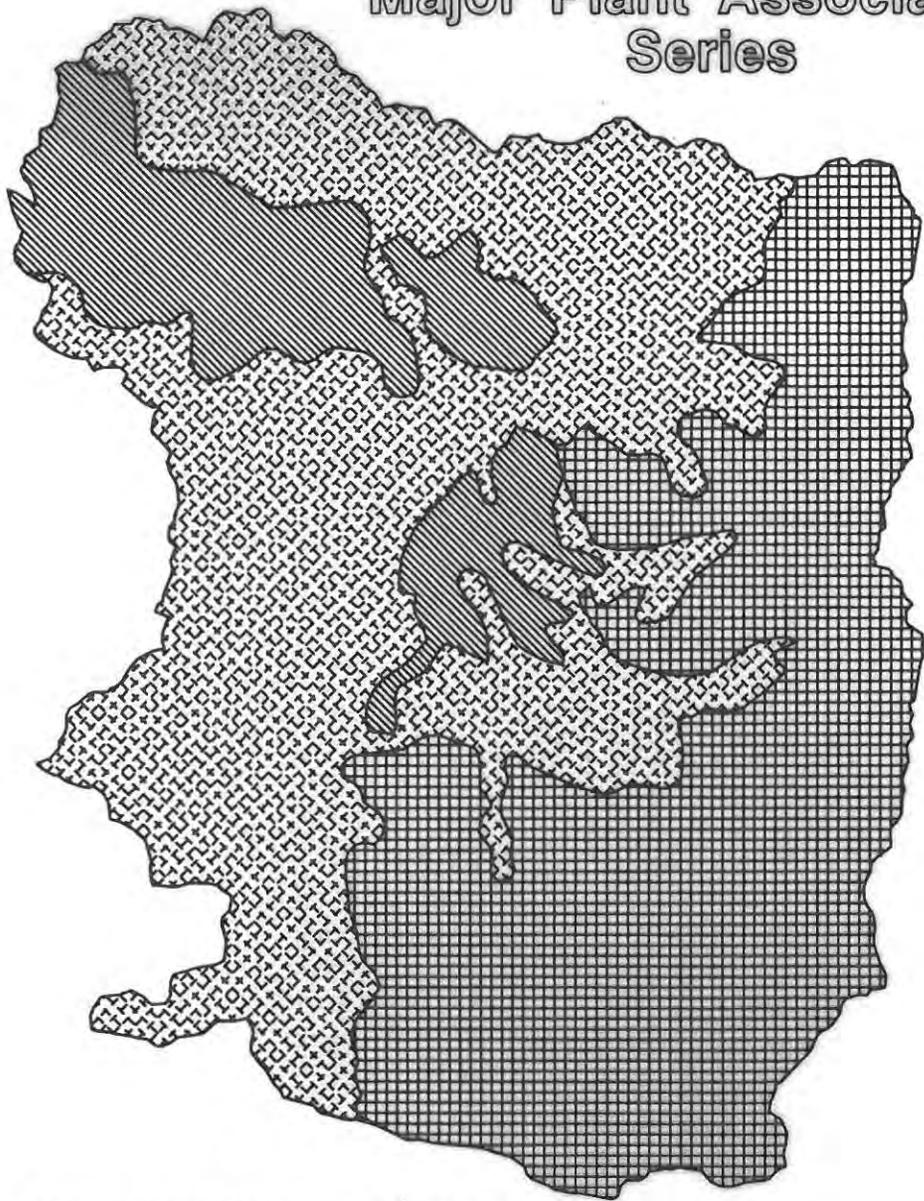
Upper North Santiam Watershed Analysis
Detroit Ranger District

Scale 1:200000
07/26/95

Map #5



Major Plant Association Series



Legend

- Western Hemlock
- Pacific Silver Fir
- Mountain Hemlock

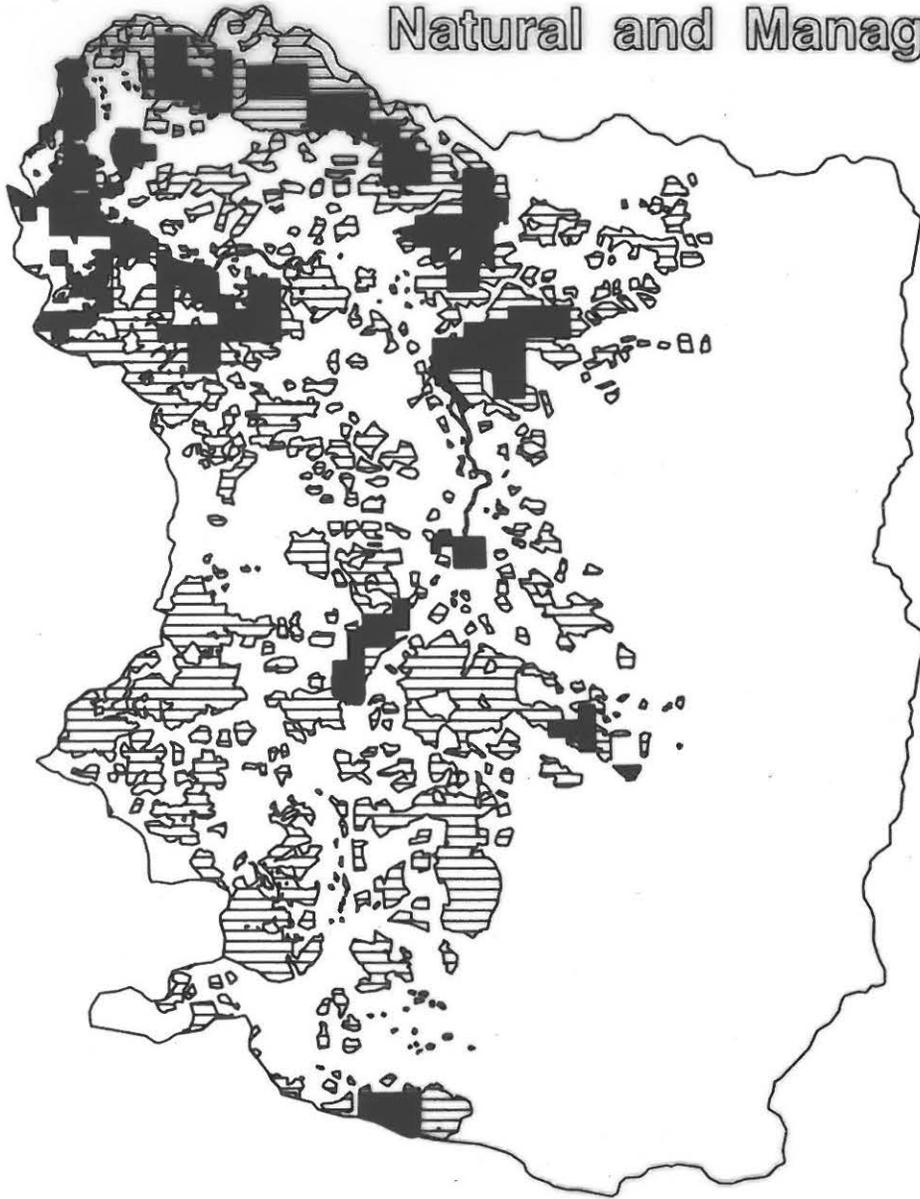


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Map #8

Natural and Managed Stands



Legend

- Private Land
- Managed Stands
- Natural Stands



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Detroit Ranger District

Scale 1:200000
07/28/95

Map #26