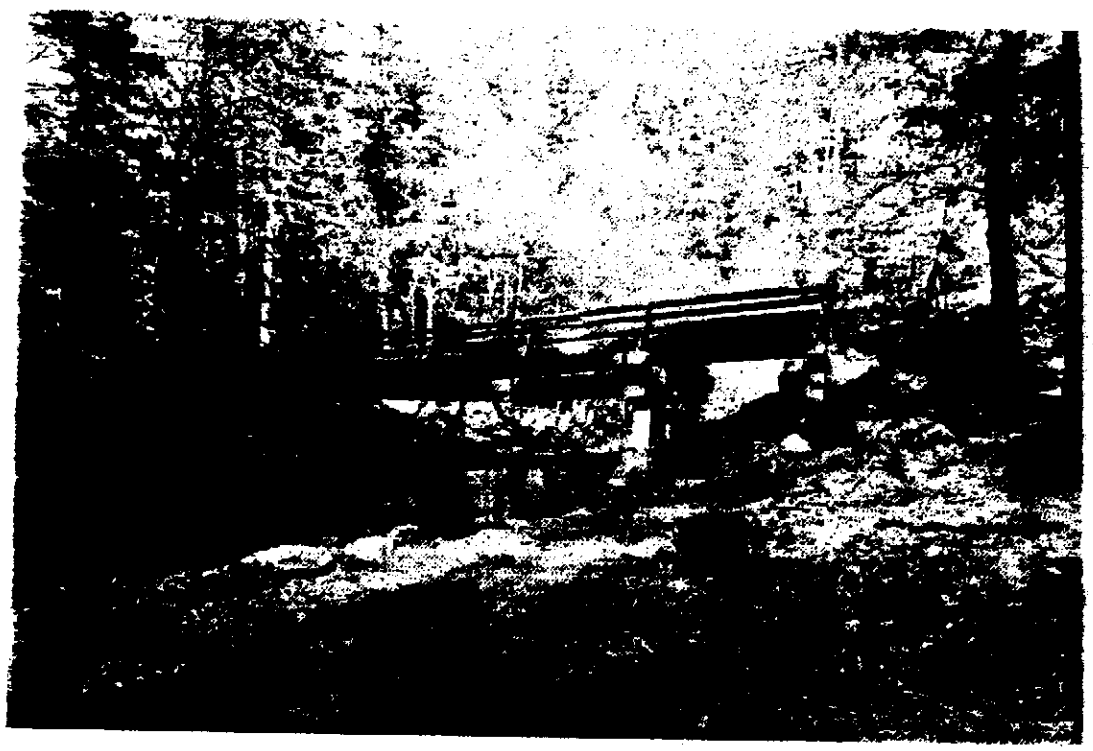
Watershed Analysis
of
West Fork of Evans Creek



West Fork of Evans Creek, ca. 1935

Medford District, Bureau of Land Management
Butte Falls Resource Area
April 1995

WATERSHED ANALYSIS
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Summary: The West Fork of Evans Creek Watershed Analysis Unit (WAU) is located in the Evans Creek Watershed. The current landscape condition was assessed for vegetation, roads, streams/fish, recreation, wildlife, geographic/geologic features, cultural/historical, non-BLM lands, grazing/livestock, cumulative watershed effects, minerals, and realty. The structural elements of the landscape were defined in terms of the amount and spatial distribution as either matrix, patch, or corridor to identify the diversity and stability within the WAU. Landscape flows having the most influence on the current and future condition of the WAU were determined to be people, fire, water, and wildlife. These flows were analyzed for interactions with the landscape elements.

Pre-settlement and post settlement landscape conditions were described in terms of human and natural disturbances. In general, the pre-settlement landscape condition was determined to be more stable and resilient to disturbance than post settlement conditions. The major flows were addressed on a larger scale by linkage with surrounding watersheds. The analysis was blended with standards and guidelines from the FSEIS, Record of Decision, and the Medford BLM District RMP. Three hundred letters were mailed to the local public to identify issues and concerns. The predominant issues identified by respondents were water quality and quantity, fire hazard, smoke emissions, and soil erosion. Seven watershed management objectives were identified. These included: 1) Increasing abundance of coho salmon, steelhead and trout, 2) Reducing sediment delivery rates to stream channels, 3) Providing for a sustainable harvest of forest commodities in matrix, 4) On matrix lands, create and maintain connectivity between late successional reserves and provide refuge/habitat for a variety of organisms associated with late successional forests, 5) Increasing late successional forest conditions, particularly old growth conditions in the four designated connectivity blocks, 6) Providing a variety of recreation opportunities through establishment of a recreation management plan that would assess management and use of established sites, identify potential sites, types of users, amount and location of users and provide direction for future management of the recreation component of the watershed, and 7) Improving forest ecosystem health, diversity and resiliency.

West Fork of Evans Creek Watershed Analysis Team Members and Contributors: Teresa Coffey, Dennis Glover, Jim Harper, Doug Kendig, Jeanne Klein, Dave Orban, Phil Ritter, Bob Smith, Ken Van Etten, Jim Welden, and Jean Williams.

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I. INTRODUCTION

The objective of this analysis is to look at a "watershed" and describe it's "ecosystem" structures and functions. A basic understanding of watershed level processes and interactions is essential in arriving at ecologically sound management decisions. This analytical and subsequent planning process requires a major shift away from conventional single resource systems toward a comprehensive "watershed" approach of managing natural resources. Answers are not easily attainable and will require extensive resource surveys, creative thinking, and trial and error.

The principal objective of managing on a watershed level is to provide for and sustain ecological health and resiliency. This is accomplished through the restoration or maintenance of diversity and complexity within an ecosystem. Processes, levels, and patterns that were present prior to European settlement are used as reference points. Reconstructing what the "watershed" looked like prior to management and fire control provides insight to determine the amount of diversity and complexity to retain or strive for through management actions. Logging, forest plantations, fire suppression, checkerboard ownership patterns, and rural development have altered most landscapes to the extent that a complete return to conditions of previous centuries may not be possible or desired.

Watershed analysis and design processes used in this analysis are based on the methodology outlined in Forest Landscape Analysis and Design (Diaz and Apostle, 1992). This analysis method divides the process into 8 steps: 1) structure, 2) flow, 3) interaction, 4) disturbances, 5) linkages, 6) forest plan (Resource Management Plan), 7) narrative objectives, and 8) spatial design.

II. LANDSCAPE LOCATION/ECOLOGICAL ZONE

The West Evans watershed analysis unit (WAU) is located northwest of Medford and covers approximately 39,176 acres (61.2 square miles). This includes portions of Township 32 South, and Range 3 West. The WAU lies within the Butte Falls Resource area of the Bureau of Land Management (Map 1). The climate of this area is Mediterranean type with typically cool, wet winters and hot, dry summers. Summer temperatures range form the 80's to the high 90's. Occasional daytime temperatures in the summer may reach 100+ degrees fahrenheit (F). Winter lows drop regularly to 10 to 20 degrees F. Annual precipitation ranges from 35 to 50 inches. Typically, most precipitation occurs in the late fall, winter, and early spring as rainfall with the exception of the upper ridges where snow may accumulate.

Ownership within this watershed analysis unit is displayed in Table 1. Delineation of the watershed analysis unit boundary is based upon similar topography, soil types and vegetative conditions.

Table 1. West Evans WAU Ownership

BLM	U.S. FOREST SERVICE	MEDITE	OREGON STATE	OTHER PRIVATE	FARM
54%	<1%	40%	2%	<1%	0
21,310 ACRES	160 ACRES	15,900 ACRES	640 ACRES	160 ACRES	0 ACRES

The elevation ranges from 1520 on the valley floor to the topographic high of 5103 on the top of Cedar Mountain. The dominant ridges forming this drainage are primarily north to south trending with many lateral finger ridges. Typically, the topography is highly dissected by deeply incised drainages. This

broken and irregular ground results in many headwall and overly steep areas of instability. This makes road placement and design especially difficult.

III. IDENTIFICATION AND DESCRIPTION OF CURRENT LANDSCAPE CONDITIONS

A. GEOGRAPHIC FEATURES

1. GEOLOGIC BEDROCK TYPE

The dominant rock type of the northerly portion of the watershed is the White Rock pluton of the Early Cretaceous Period which is approximately 136 million years old(Ma). The mineralogy of this rock determines the rock name, a biotite-hornblende leucotonalite to granodiorite, the parent material of highly erodible granitic soils. An unnamed amphibolite, part of the Western Paleozoic and Triassic belt (190-570 Ma) has been intruded by the White Rock pluton and is characterized by three textural varieties: metaporphry, metadiorite, and metagabbro. This amphibolite structurally underlies the May Creek Schist (Donato 1991).

The Late Jurassic (145 Ma) May Creek Schist, also part of the Western Paleozoic and Triassic belt, is composed of amphibolite-facies metaigneous and metasedimentary rocks, and is the dominant rock type in the southern portion of the watershed. The Wimer pluton also occurs in the southern portion of the watershed, it is a hornblende biotite quartz diorite, and has intruded both the May Creek Schist and the amphibolite.

2. GEOLOGIC HAZARD POTENTIAL

There is less inherent geologic hazard potential associated with plutonic bedrock than with pyroclastics, which tend to be susceptible to an instable bedrock/soil interface. The geologic hazard associated with a pluton is the resulting decomposed granite. Schists may be more susceptible to mass movement in areas of contact with the pluton, and could be prone to slumping where road building disturbs the natural topography of the site. Other sites of instability may occur where extreme folding and faulting exists in the amphibolite. Site specific investigations are needed to determine such areas.

3. SOIL ASSOCIATION/SERIES

Soil types:	Granitic 65%
	Schistic 25%
	other 10% (metavolcanic/metasedimentary)

4. SOIL SERIES CHARACTERISTICS AND LIMITATIONS

The upper portion of the West Evans Drainage is composed predominantly of soils formed from decomposed granitic rocks. The resulting soils are highly erodible and prone to gully erosion and debris slides. Low clay content and a coarse single grain structure contribute to a lack of cohesion which makes stabilizing these soils very difficult after disturbance. This is particularly evident along the extensive network of roads within the drainage where cutbank erosion and channel erosion are common. Roads and skid trials are the major producers of sediments in this drainage.

The lower portion of the drainage has a greater percentage of soils (10%) with relatively more stable bedrock materials. These soils have formed in metavolcanic and metasediemntary rocks. There are, however, frequent geologic contact zones with schistic rocks that create areas of instability especially during wet or saturated conditions.

Granitic and schistic soil types are typically low in organic matter content and are subsequently

sensitive to impacts of prescribed fire (e.g. loss of duff layer). It is also important to maintain a vegetative cover and some overstory canopy during management activities to prevent soil detachment and transportation during intense rainstorms.

Due to the high dissection and deep incisiveness from the stream channels, the topography of this drainage has many headwalls and steep side slopes. These areas of instability have been restricted or withdrawn from management practices through the Timber Production Capability Classification (TPCC) system (see Map 5 - TPCC map).

For detailed soils maps of this drainage contact the Butte Falls Resource Area soil scientist or the Jackson County Soil Conservation Service Office.

B. VEGETATION

Based upon the Medford District plant grouping criteria addressed in the Medford 1992 Draft District Resource Management Plan (DRMP), two plant groupings are identified within the West Evans watershed analysis unit. Plant groupings are aggregations of plant associations with similar management potential, the same dominant late seral conifer species, and the same principal early seral species.

1. Mixed conifer/madrone-deciduous brush/salal grouping makes up approximately 80 percent of the WAU.

In the mixed conifer/madrone-deciduous brush/salal grouping, "early seral vegetation consists of grasses and forbs; however, vegetation maybe sparse for at least a year following fire. Varnish leaf ceanothus is locally plentiful in the early seal stage and may dominate a site within two to three years after fire occurrence. Besides varnish leaf, brush species of the mid-seral state include ocean spray, poison oak, and deer brush. Salal occupies cooler or unburned sites. In the late seral stage the conifer overstory consists of Douglas-fir. Incense cedar and Ponderosa pine are prevalent in some areas. Madrone and other hardwoods exist in the stands but are less significant than in the Douglas-fir/Tanoak-madrone grouping. Golden Chinkapin occurs as both the shrub and tree form varieties along with Canyon Live Oak on dryer sites." (DRMP, 1992) At higher elevations White fir may be a stand component while in some drainages Western hemlock may make up a component of the stand.

2. Mixed conifer/interior valley/grass, approximately 20 percent of the watershed analysis unit.

In the mixed conifer/interior valley/grass grouping, "grass, herbaceous vegetation, poison oak, and deerbrush provide severe competition for conifers during the early seral stage. Deciduous brush offers growth competition in mid-seral stages and may delay conifer establishment on hot aspects. Conifer species of late and mature seral stages are Douglas fir and Ponderosa pine, with Douglas-fir being climax. Tree-form hardwoods are present. Manzanita is locally present and may form dense stands. This group has limited areas which can be considered old growth. A high fire return frequency, coupled with the mortality patterns common to low elevation dry sites, acts to keep this plant grouping in younger age classes." (DRMP, 1992)

THREATENED AND ENDANGERED PLANT SPECIES

Special status plant species are found throughout the watershed on a variety of habitats. A total of 18 sites have been located on BLM lands within the West Evans Creek

Watershed. Examples include open meadows as habitat for Mimulus douglasii (Douglas Monkey Flower), while deep organic duff under closed canopy create an environment suitable for Cypripedium fasciculatum (Clustered Lady's Slipp). (See Appendix B).

A total of 8506 BLM acres have been surveyed for special status plants over the past 14 years. The surveys included varying levels of intensity . During the 1980's most of the surveys were completed by interested employees working in the resource area. More recently the level of intensity and the skill level have increased considerably. Within the last 4 years qualified botanists have been contracted to undertake the surveys.

The list of threatened and endangered plant species changes year to year. The status of many plant species has not changed over the years. Some new species have been added or upgraded while others have been dropped or downlisted. The list is updated yearly and surveys reflect the current list.

The following is a list of potential special status plant species that may occur in the watershed:

1. Calochortus umpquaensis FC1/SE
2. Camassia howellii FC2
3. Cypripedium fasciculatum FC2
4. Plagiobothrys figuratus ssp. corallicarpa FC2
5. Lewisia cotyledon var. howellii FC2
6. Mimulus pygmaeus FC2
7. Mimulus douglasii BTO
8. Fritillaria glauca BAO
9. Cimicifuga elata FC2
10. Rhamnus ilicifolia BAO

FC1 - Federal Candidate 1
FC2 - Federal Candidate 2
SE - State Endangered
BTO - Bureau Tracking - Oregon
BAO - Bureau Assessment - Oregon

No fungi or bryophytes listed in the Standards and Guidelines (Table C-3) of the ROD are known to exist in the West Evans Watershed. Survey and manage protocols are being developed.

C. RIPARIAN/WATER

RIPARIAN FUNCTION AND CONDITION
Very little information is availible that treats riparian function and condition. Stream surveys were conducted in 1992 which focused on the aquatic conditions and provides some information. Riparian function condition surveys will begin in 1995. Aerial photographs display a fragmented canopy cover that lacks the conifer component needed for course woody debris. Most channels have been simplified by repeated harvesting of large trees in the riparian zone and the loss of key system structures.

RIPARIAN VEGETATION
The riparian vegetative community generally includes Douglas fir and white fir in the overstory, Big-leaf maple, red alder, oregon ash, madrone and black oak on the hardwood understory and in openings, and ninebark, oceanspray, dogwood, ferns, grasses, and mosses in lower vegetative levels. Multiple canopy layers existed in some areas with exposed openings on other sections. Additional mapping and surveys are needed for more detailed characteristics.

Timber harvesting has changed the riparian vegetation and cover condition along significant stretches of the West Fork. Significantly less shade protection occurs along the lower stretch from Elderberry Campground to the mouth of West Fork. Wider openings above the streams and a higher degree of fragmented patches of shade allow for increased water temperature. A low amount of organic debris exists on the flood plains as a result of repeated disturbances. The

forest canopy overstory that provided quick replenishment of litter is gone in most stretches. Generally, the forest community lacks large conifer trees and large woody debris (>24" DBH) that would promote natural biological and physical process in the riparian zone. Repeated salvage logging along road systems over the past 20 years has depleted the amount of down logs that would naturally accumulate in the riparian zone.

Tolerant conifers species such as white-fir comprise an increasing component of the riparian forest community. Open riparian areas are bordered by shorter and younger seral age forests. A moderate amount of stream stretches are dominated by stands of red alder with scattered big leaf maple throughout the watershed. Some alder stands are mature and beginning to die and fall apart, especially in upper tributaries. These stands are probably the result of a recovery process that occurred after the catastrophic flood of 1964. A significant number of those stands have a lightly to moderately stocked understory of conifers.

A GIS map on file at the office shows the riparian reserve areas of fish bearing streams based on 300 feet and road prisms within the riparian reserve on federal lands.

RIPARIAN RESTORATION

One trial riparian restoration project was undertaken in 1994 on Rock Creek. The project was designed to thin a dense stand of red alder and release existing conifers in the understory within the riparian zone on about a mile of Rock Creek. An untreated control with somewhat similar characteristics was established on Cold Creek. A monitoring plan is under way. The potential for more riparian restoration opportunities exists. Riparian surveys and restoration projects are planned for 1995.

WETLANDS

There are no documented wetlands greater than one acre in size in this watershed, although no known inventory of smaller wetlands has been conducted. Most likely these smaller wetlands will occur locally along West Fork of Evans Creek within the riparian area, site specific investigations are still needed. One small wetland site does occur in association with the beaver pond known as Sand Creek along West Fork Evans Creek.

LAKES, PONDS AND RESERVOIRS

There are two heliponds, Upper West Fork Evans Creek, T. 32 S., R.2, section 31, and Rock Creek, T.33 S., R.3 W. section 9, one known beaver pond T.33 S., R.3 W., section 19, and four reservoirs (see appendix F).

WATER RIGHTS

BLM filed on the sever water developments for both reservoir permits and surface water permits during the last two years, and water right permits are pending. Most of these reservoirs will require some sort of reconstruction or repair before a water right will be issued by the Oregon Water Resources Department (see appendix F).

MUNICIPAL WATERSHEDS/DOMESTIC WATER USE

There is no municipal watershed within the watershed analysis unit. There are a few households at the south end of the watershed that utilize wells or springs for domestic water.

D. ROADS

The road system is dominated by the 16 mile long asphalt West Evans Creek access road that extends along the valley floor. Major spurs branch up side drainages, branching again into lesser spurs which reach high onto the ridges. Roads in this

watershed traditionally start at water grades, i.e. paralleling the creek gradient, then frequently reach a steep 8-12% grade as they climb across the midslope topography.

This watershed's forest "system" roads (those in the road records inventory, vs unmapped and unmaintained roads) are typically 14'-16' wide subgrades with a 3' wide ditch. Ditch relief drainage is mostly in the form of culverts. Approximately 85% of the system roads have crushed rock or better surfacing.

There are 244 miles of forest system roads (both BLM and timber company controlled) in the watershed, plus another 47 miles of non-system roads, for a total of 291 miles. Total road density averages 4.8 miles per section (4.0 for system roads).

Roads are a major source of sediments in combination with the extremely high erodability of the decomposed granitic soils common to the West Evans Creek Watershed.

Risk hazard assessment of roads to the aquatic environment:

1. Heavily eroding cutbanks with little vegetation.

2. Partial failures on headwall topography.

3. Poorly spaced cross-drains.

4. Several draw culverts are undersized for less than 80% of a 100 year flood.

5. Major draw crossing structures that need to be upgraded to improve anadromous fish passage.

6. Areas of inadequate surfacing on roads, and roads that are actively eroding.

7. Soil compaction and channelization of surface water during storm events.

A "Current Condition" survey is nearly complete in the watershed for roads that are more than one mile long. There is a data gap for information on the shorter spurs, which is needed to assess road blocking and decommissioning opportunities. For the 244 miles of BLM system roads, 182 are rocked, 23 miles are bituminous surface treatment (BST) surfaced, and 39 are natural surface. Twenty two miles of road are behind existing closures. Non-capitalized (unimproved) BLM roads are limited to a few old (>15 years) jeep roads that are rarely used for administrative access, but there is some current disturbance to the soil from ongoing Off Highway Vehicle (OHV) use. On private lands, dead-end spurs are usually narrower, steeper, and typically natural surface. Old skid trail density on private lands in this watershed is greater than on BLM, and many are actively eroding. There are also new powerline roads, (BLM surfaced, private unsurfaced) and powerline roads built in the 1960's which are unsurfaced. Steep grades increase potential for erosion on these unimproved roads.

There are 14 known quarries in the watershed. The Section One quarry (T33S, R4W, Sec 1) is the only one with high grade rock that would be considered a large development.

E. STREAMS/FISH

NATIVE SPECIES

Native species include steelhead, coho salmon and cutthroat trout. Coho has been petitioned for threatened and endangered species status. Response is due in the spring of 1995 by National Marine Fisheries Service. Management strategies in this watershed will be affected by the decision.

FISH DISTRIBUTION AND POPULATIONS IN STREAMS, LAKES, PONDS AND RESERVOIRS

Anadromous fish are known to exist in the main stem of West Fork of Evans Creek and eight tributaries: Raspberry Creek, Battle Creek, Salt Creek, Rock Creek, Cold Creek, Sand Creek, Swamp Creek and Cedar Creek. See Maps 9, 10 and 11 for fish distribution.

STREAM HABITAT CONDITION

Stream surveys were undertaken on the West Fork of Evans Creek from July through September of 1992 by the BLM. The objective was to evaluate riparian condition and collect baseline riparian data for long term trend assessment in fish bearing stretches of the West Fork of Evans Creek and tributaries. Additional surveys were completed by ODF&W on all fish bearing streams on public and private land in the West Fork of Evans Creek during the summer of 1994. The report is expected in the spring of 1995. Riparian surveys on upper tributaries of BLM lands are planned for the summer of 1995.

Stream surveys were completed on 7 miles of stream (9 reaches) on West Fork of Evans Creek. Surveys were also completed on 2 1/2 miles (6 reaches) of Rock Creek and 1 mile (2 reaches) of Battle Creek. The data collected provides a descriptive snapshot in time of the current condition and identifies areas of concern related to critical biological and physical processes.

The summary descriptions of survey reaches provide key observations of the current condition and trends of the aquatic system for management consideration.

Significant Findings:

a. Excessive amounts of sediments and sands (granitics) are filling pools and glides (reduces cover and spawning habitat for coho and chinook)
b. Granitic sands reduce aquatic insect populations and simplify habitat complexity.
c. Pool frequency ranged from 20% to 43% (threshold is 50% level).
d. Channel substrate is heavily embedded and provides minimal cover for small fish and reduces aquatic insect populations.
e. Low amount of large woody debris. Average was 28 pieces per mile, range was 10 to 48 pieces per mile.
f. Temperature may be limiting factor in Cold and Rock Creek. Sand Creek remained cooler.

WATER TEMPERATURE

Stream temperature monitoring stations were established at 6 sites in the West Fork of Evans Creek Watershed and temperatures recorded and collected in 1993 and 1994. Stream temperature monitoring is programmed to continue, and permanent baseline data stations will be established. Other sites will provide temperature data for other tributaries or to reflect monitoring programs established with specific projects. A list of the station locations and a summary of data is found in Appendix F.

MACROINVERTEBRATE BIOASSESSMENT

Macroinvertebrate bioassessment observations provide site specific data that measures the biological health of the aquatic system. Macroinvertebrates feed on smaller plant and animal organisms and are themselves a food source for higher organisms, such as amphibians, reptiles, birds, animals and fish. Macroinvertebrates are indicators of water quality and are key components of the food chain.

A macroinvertebrate bioassessment was gathered in 1990, 1991 and 1992. Five sites were located within the West Fork Evans Creek WAU, three on the main branch and one on Battle Creek and Rock Creek above Cold Creek. The results of the 1992 report includes; 1. General site characteristics, 2. Macroinvertebrate community composition, 3. Erosional habitat description, 4. Margin habitat description, 5. Coarse particulate organic matter description, 6. Narrative summary. Summary information for each station is included in appendix F.

F. RECREATION

1. TRAILS

There are some historical trails in the area. These include Sprignett Butte and Battle Mountain. These trails have not been maintained and need to be inventoried to see if they still exist. There are no other designated trails in this area. However, at Elderberry, there are a number of OHV trails that have been established by the riders. The sites go as far north as above Slick Rock Creek. There is a potential for developing designated trails for OHVs, horses and mountain bikes through the use of ODOT (Oregon Department of Transportation) funds. Due to the erodible soil type (decomposed granitic) in this area it would be beneficial to establish designated trails to concentrate impact and steer users away from more sensitive areas (cut banks, streams, and riparian areas etc.).

Trails are not mapped on GIS and no potential trails are recognized in the RMP for this area. However, it would be beneficial to inventory the area for existing trails and work with private landowners to establish these trails.

2. RECREATION SITES

Currently there are two semi-developed sites in the area. Elderberry Flat Day Use and Campground are both equipped with toilets, picnic tables, fire grills, and garbage cans. These two areas comprise 80 acres along West Fork of Evans Creek. No potable water is available at either site. These sites received approximately 5900 visits in 1990, according to the RMP. The day use area is a walk-in site with separate sites. This area receives low to moderate use. The campground receives moderate to heavy use during the summer months. During the winter months, both sites are closed and gated, but still receive some OHV use. In the 1930's, the Civilian Conservation Corps (CCC) developed two campsites along West Fork of Evans Creek. These sites were located at Salt Creek and Battle Creek. The sites had toilets, picnic tables, fire pits and garbage cans. In 1964, because of limited use, it was recommended that the improvements be removed from the sites and the sites marked only as waysides with one or two picnic tables and fire pits. Currently these sites are dispersed recreation sites that have no improvements.

These sites are included on the GIS maps. Information on the former sites is obtained from the historical files on the two sites. The area is an Extensive Recreation Management Area (ERMA) according to the district RMP.

See Map 2 for the distribution of the recreation sites in the watershed. Visitor information is available through RMIS inventory. (Recreation Management Information System).

3. DISPERSED RECREATION SITES

There are thirteen dispersed sites in the watershed. These are located along West Fork of Evans Creek Road. These sites are along the creek and have a pull-in area for

camping. These sites are undeveloped with the exception of some rock fire rings.

Only two of the thirteen dispersed sites are included in the RMP as potential recreation sites. These are Tin Shed and Raspberry (Battle Creek). These sites are approximately 20 acres each and are listed as having day-use site potential, although they are also used for camping.

4. VISITOR USE AND USER PROFILE
A visitor use form was developed in 1994 and is currently being used to solicit information. Visitor information obtained from that form was entered into the Recreation Management Inventory System (RMIS) program. The information obtained was intermittent, so it does not accurately reflect the use at the sites. Also, the majority of the information was obtained during the weekdays when use was lower. Weekend use figures were rarely taken. Most of the use that occurs is from the locals, with relatively few from other locations in Oregon or other states. From late fall into spring there tends to be a number of people that stay at the sites for an extended period of time. This is a problem, as the maximum length of stay is 14 days and many people stay past that limit. Many times when the site is vacated, garbage is left at the site. Visitor use data is available on the RMIS system.

5. COMMODITY POTENTIAL
Elderberry Flat Campground is the only area that has this potential. However, with the minimal development and a lack of unique attractions, this would be infeasible at this point. If the campground is able to have potable water, a campground host and designated trails, this may become a possibility.

G. WILDLIFE

1. SPECIAL STATUS SPECIES
See Appendix C for a table of various categories of Medford District special status species, presence/absence, level of survey, and assessment of habitat quality for this watershed. Appendix D provides more detail on the habitat requirements for those species.

2. NORTHERN SPOTTED OWL
The entire watershed has been surveyed to interagency protocol standards (6 visits over 2 years) for owl presence. Twelve owl sites have been located within the compartment, with a 100 acre core area late successional reserve (LSR) designated for each (see Map 6). These reserves are also intended to provide for the habitat needs of other species dependant on mature and old growth characteristics. An additional five owl sites are within a mile of the watershed boundary.

Aerial photo interpretation inventory has delineated 2,257 acres of habitat suitable for nesting, and another 4,008 acres suitable for roosting & foraging, totalling 6,321 acres, which is 16% of the total watershed, or 29% of the BLM portion. Spotted Owls in the Medford area often inhabit areas of second growth and past partial cutting - not usually classified as suitable habitat. There is very little suitable habitat on non federal lands in the watershed.

None of the watershed is within a large LSR clump of owl sites. At the far north end of the watershed, 1,475 acres is within designated owl Critical Habitat.

3. OTHER FEDERALLY LISTED SPECIES
Peregrine Falcons and Bald Eagles may occasionally pass through the watershed, but

likelihood of nesting is very slim due to lack of preferred habitat. The compartment is a minimum of 65 miles from the ocean, so there are no Marbled Murrelets believed present.

4. SNAGS, DOWN WOODY MATERIAL, CAVITY NESTERS
There is no data available on snag density and down woody material, but several monitoring transects have been established in the southern portion of the watershed. Some of the special status species (birds, bats) are dependent on cavity habitat for a portion of their life cycle. A portion of one transect route (established in 1994) for long term monitoring of neotropical birds extends into the watershed.

5. SPECIAL HABITATS
There are 5 reservoirs and 2 heliponds mapped in the compartment, and one beaver pond. No cliff habitat has been identified (important to raptors), and no caves or old mineshafts (important to bats). There are two 5-10 acre meadows.

6. GAME ANIMALS
Oregon Department of Fish & Wildlife (ODFW) has a goal of increasing elk numbers from a current estimate of 250 in the vicinity to eventually reach a count of 400 elk spread over the 6 watersheds comprising the west 1/3 of the Butte Falls Resource Area. Herds are non-migratory, but transient. Poaching pressure is heavy.

ODFW feels that black-tailed deer numbers are currently at the desired level or above the target of 4,200 for the west 1/3 of the resource area. The population is stable. A radiotelemetry study on deer was begun in 1994 just to the east to monitor demographics of the population.

Introduced wild turkeys are spreading in the resource area, but currently there are few in this watershed. Band tailed pigeons are not being monitored, but an important special habitat would be the mineral deposits along Salt Creek.

Cougar and bear populations are thought to be stable. Track plate stations were established in winter 1994 at the north end of the unit to attempt to document presence of furbearers (marten, fisher).

H. CULTURAL/HISTORICAL

1. ARCHAEOLOGICAL/HISTORIC SITES
Battle Mountain was the site of an Indian war on August 21, 1853. During this time, two companies of volunteers chasing Indians up Evans Creek had difficulty because of smoke from fires the Indians had set to hinder their pursuers. The battalions returned to Evans Creek following an Indian trail and finally found the Indians at Battle Mountain. The whites won the battle after sustaining many dead.

The Salt Creek Compartment is another archaeological/historic site. Salt, used as a preservative, was mined at "Salt Springs". In 1864 Fuller Company began a salt producing operation which used evaporation and purification vats located near the creek. The salt was processed in large kettles and supplied most of Jacksonville and surrounding settlements until 1883 when arrival of a railroad in Grants Pass put an end to the commercial operation (Boulter and Liles, 1992).

Another historic site is the **Old Guard Station** past Salt Creek. This area is the site of a

state forestry guard station. There are two large sequoias at the site. More research needs to be done on the history of this site.

Cinnabar mining was also done in the area. Reference is made to mining done on the West Fork in the 1940's and the effect it had downstream (Atwell & Lang, 1995).

Data was gathered from numerous books, periodicals, most of them available on district through the District Archaeologist. A draft of the historical study of the Evans Creek Watershed is also available.

2. HISTORICAL RECONSTRUCTION

According to informants interviewed at the Siletz reservation at the turn of the century, this area is within the ethnographic homeland of the Upland Takelma. These people were hunter/gatherers who exploited a wide variety of food resources. Main staples of the Takelma vegetable diet were acorns, camas bulbs, sugar pine nuts, manzanita berries and tarweed. Generally the principal source locations for oaks are low elevation hills and southern aspects of higher elevations (Gray, 1987). There is ample evidence that prehistoric people modified the landscape through the use of fire. The Wilkes/Emmons Exploring Expedition of 1841 passed through southern Oregon on the Hudson's Bay Company trail and gave an eyewitness account of aboriginal burning. Reasons for burning included deer hunting through the use of herding fires, removal of cover for attacking enemies, maintenance of small patches of open prairie, harvesting of tarweed, and collection of grasshoppers, hazelnuts, acorns, berries and root crops (Agee, 1993).

A goal of the Hudson's Bay Company was to create a fur desert in Oregon by trapping out all the beaver, thereby buffering the Columbia country to the north from American settlement. The period of the 1820's through the early 1840's saw European and American interaction with the Upper Rogue River Valley through a system of trapper trails connecting the settlements of the Willamette Valley with California (Follansbee and Pollock, 1978). No information exists to illustrate the changes that trapping may have induced on the local flora and fauna. However the main stem of Evans Creek was trapped the first season white trappers entered the valley with Peter Skene Ogden in 1826 (LaLande,1987). Removal of beaver would have had a substantial impact on the watercourses and biology of associated plants and animals for succeeding decades. The pools created behind beaver dams offer habitat for cutthroat trout and coho salmon and increase water storage capacity of stream banks. This increase in storage can result in higher, cooler flows during summer. Long-term siltation of pools over time can lead to formation of grassy meadow habitat. Eradication of beaver would allow dams to be breached, increasing downcutting and bank scouring through beaver meadows. Riparian vegetation would shift toward more willow and alder, and fewer conifers.

The Donation Land Law of September 27, 1850 encouraged settlement of Indian lands in Oregon by granting a half-section of land (Beckham, 1991). The Homestead Law passed on May 20, 1862 gave settlers the right to enter 160 acres and receive title after 5 years of residence. The Timber and Stone law of 1878 provided for the entry and sale of 160 acres of timberland (Muhn and Stewart,1988). The General Land Office (GLO) Township survey maps in the Mid Evans watershed are dated 1857 and 1858. The West Evans survey was done in 1885. They provide a snapshot narrative of the landscape in that they show a "Gilbert" cabin at the junction of Sykes Creek and Evans Creek, "Weirs" barn and house at the junction of West Fork and Evans Creek, and a wagon road along the later two creeks to the salt spring along Salt Creek. A foot trail along a major ridge runs from the junction of Salt and West Fork of Evans Creeks to the top of Little Battle Mountain. Evidence of human habitation is very sparse throughout the analysis area

during the mid 1850's. Corridors follow old Indian trails, along ridges or in the majority of cases, confined to the major water courses - West Fork and the main stem of Evans Creek. There was a periodic flow of people along the old Indian trail to the salt springs, which eventually was upgraded to a wagon road.

Many attempts to homestead on marginal land continued during the period of 1890 - 1920. In order to meet legal requirements for improving homesteads, settlers burned off timber if there was less than 300,000 board feet per forty acre subdivision (Richardson, 1980). Homestead Exam files for this area are missing. The 1916 Oregon and California (O&C) revestment surveys are sources of information for this period. Preliminary research of the 1916 documents for the Sardine Creek area to the south shows that homesteaders continued to burn the wildlands. Much of the now forested area was described at that time as open grazing land with little in the way of timber.

In 1906 the newly created U.S. Forest Service initiated controlled resource management in the forests of southern Oregon. By the late 1920's forest fire suppression received greater emphasis. The Civilian Conservation Corps (CCC) was established in the early 1930's and fire suppression was one of the major missions. A forest guard station was constructed near the junction of Salt and West Fork of Evans Creeks. A fire lookout tower was built on top of Battle Mountain, and an access trail from Pleasant Creek tied it with a cabin on private land on the east slope of the mountain. Fire suppression forced changes in forest species and stocking to occur over time. Open country once lightly forested with fire resistant ponderosa pine and oak have become overstocked with dense understories of Douglas fir.

The period of the 1940's through the 1980's saw the greatest human influences on the landscape to date. Logging increased during World War II. During the 1960's and early 1970's much of the private forest land was tractor logged in the West Evans watershed. Logging roads and a powerline corridor were built. Sustained yield forestry was practiced on the Federal land, including - clearcuts, herbicide treatments, slash burning, fenced progeny test sites, and conifer plantations.

As the forest became more accessible by auto roads, recreation use began to increase. Deer hunting and camping are two forms of outdoor recreation popular in the area. The West Fork of Evans Creek Road was improved by the BLM in 1960. Elderberry Flat campground was officially dedicated in 1961. Two other nearby campgrounds: Salt Creek and Battle Creek, were maintained during the 1960's. There are now nine other dispersed sites along the west fork in use year round.

3. SOCIAL ASSESSMENT

This description covers the human aspects of the physical environment, a description of the social/cultural context, identification of important issues and BLM's mode of operating. The West Evans Watershed is primarily BLM and Medite land. Other landowners include private landowners at the intersection of Evans Creek Road and West Fork of Evans Creek Road, Boise Cascade Corporation (BCC), the Forest Service, and the State of Oregon (all small parcels of 1/4 section or less). The area is generally uninhabited with the exception of the landowners along the creek in sections 23 and 24, T.34S., R.3W. The main transportation corridor is West Fork of Evans Creek Road, which runs north/south in the watershed. Other roads include Battle Creek Road, Rock Creek Road, Salt Creek Road, and Swamp Creek Road. There are many other logging roads in the area. There are some mining claims in this area, but at this time none of them are active. (See mining section). There are also recreation sites in the area (see recreation section). The area is used primarily by local individuals for camping, swimming, logging, rock quarry use, hunting, OHV use, and forest product collection.

There has been extensive timber cutting in the area by private commercial timber companies and by the BLM. There are several issues in this area. 1. How to meet standards and guidelines of the ROD, and deal with road use agreements. 2. Increasing numbers of homeless and others staying in the recreation sites for an extended period of time. 3. The historical preservation of Salt Creek and the amount and type of use occurring at the recreation sites. 4. The aesthetic value of the land and how human interaction relates to that value. The BLM's mode of interacting with the public in this area is our presence while in the field. This presence is stronger from the spring through the fall and is especially high at recreation sites during the high use months.

I. NON-BLM ELEMENTS

1. AGRICULTURAL LANDS

The agricultural lands (.05% of the WAU) are positioned around the valley floor adjacent to Evans Creek and are all private. The agricultural lands are in the grass types but are not being used to produce hay or grazing. There are scattered residences throughout the bottom land.

2. FOREST LANDS

The non-agricultural lands are forest lands and are classified as industrial forest lands (40%), woodlot (non-industrial) forest lands (<1%), and federal forest lands (58%). The majority of the non-BLM forest lands are in the young forest size class. The majority of these forest lands consist of sapling (<8" dbh) and smaller size trees with some scattered large green cull trees. When forest stands develop into merchantable timer, these stands become available for harvest.

The road system on these lands is a combination of rocked and natural surfaced roads on the agricultural lands. On industrial and woodlot forest lands the road are basically natural surfaced and are maintained during time of use. The majority of the harvest systems have been ground based systems with some cable systems on the extremely steep terrain.

Irrigation water is pumped out of West Fork of Evans Creek during the spring and summer months for agricultural uses at the junction of West Fork Road and Evans Creek Road.

J. GRAZING/LIVESTOCK

There are no active allotments in the West Evans Watershed. The historic data of use is displayed in Appendix E. Fencing of the exterior of the allotment, cattle guards, and a corral are the existing improvements. Utilization studies conducted in 1987 indicate slight to moderate use.

K. CUMULATIVE WATERSHED EFFECTS

Total Acres: 39,176

BLM Acres: 21,310, (54% ownership)

Non-BLM Acres: 16,860

Total Miles of existing roads: 291

Road density: 4.8 miles/section (District average = 3.7mi/sec.)

Estimated percent of drainage in compacted condition: 12.5%

Percent of drainage located in the Transient Snow Zone (TSZ): >15%

Percent of Transient Snow Zone (TSZ) estimated to be in non-recovered openings: 30%

General Observations: Gully and channel erosion is common along the extensive network of skidtrials within the drainage particularly on the private commercial timberlands. Road fillslopes with steep draw crosssings frequently have raveled or sluiced out. Many of the intermittent and ephemeral upland stream channels have scoured down to bedrock.

L. MINERALS

1. MINING CLAIM INFORMATION
There is one active mining claim.

2. MINING CLAIM ACTIVITY
There are numerous inactive claims in the watershed. Most have the potential to be reopened. The potential for restoration of closed claims is possible which could include addressing safety hazards, cleaning up trash dumps, removing abandoned vehicles, mitigating, and grating abandoned adits. A site specific inventory is needed to determine where such projects could occur. There is also a historic salt works along Salt Creek.

3. SURFACE RESOURCE STATUS
Applies to surface resource reservations such as a patented mining claim. Master title plats available.

4. MINERAL POTENTIAL
Maps displaying high, medium, or low ranking of potential locatable, leasable, or saleable minerals such as oil, gas, coal, and geothermal and are extremely general. This watershed received a low potential ranking(for all minerals) for the area associated with the pluton, and a medium ranking associated with the metamorphosed sedimentary rock formation (Map 7). Gold and cinnabar are the two minerals that have received the greatest attention in the past in this watershed.

5. COMMODITY POTENTIAL
There is limited commodity potential in this area. Occasionally recreational dredging (intake hose less than 4") for gold occurs in the West Fork of Evans Creek.

M. REALTY
The Road Use Right-of-Way Agreement OR 48747 occurs on private and Federal land within this watershed.

Two power lines exist within the watershed. The most prominent one is Pacific Power and Light Company's (PacifiCorp) 500 kV line OR 25602 with a right of way covering approximately 47 acres of the watershed with dimensions of 175 feet by 2.2 miles. The second line is also owned by them. It is a 230kV transmission line covering approximately 51 acres with the dimensions of 100 feet by 4.2 miles.

Two telephone lines exist within the watershed. One of them is AT&T's buried fiber optic line covering approximately 6.36 acres with dimensions of 10 feet by 5.3 miles. United Telephone has a switching box and line within one of the Bureau's easements near the intersection of West Fork Evans and Evans Creek Road.

IV. DESCRIPTION OF LANDSCAPE ELEMENTS

Three structural elements within a forest ecosystem are critical in maintaining ecological diversity and complexity. These elements are matrix, patches, and corridors based on Forest Landscape Analysis and Design (Apostol & Diaz, 1992). The structure, amount, and spatial arrangement of the **matrix, patches**, and **corridors** determine the function, resiliency, and species diversity of a forest landscape. Map 4 shows the conifer stand types for this watershed.

The following text describes each element in detail.

A. MATRIX

Matrix - "the most connected portion of the landscape". It is generally the predominant vegetative type and therefore exerts the strongest control over the movement of living and non-living things across the landscape (fire, wind, plants, animals, people). The matrix affects the rate at which various disturbances move through the landscape.

The matrix of the West Fork Evans WAU is defined as early successional forest. Two size classes cover approximately 47 percent of the WAU landscape and provide the strongest influence over landscape flows (Table 2).

Table 2. West Evans Creek Size Classes

EARLY SERAL (0 - 5" dbh)	POLE SERAL (5" - 11" dbh)	MID SERAL (11" - 21" dbh)	MATURE SERAL (21" + dbh)	OLD GROWTH (large dbh or > 200 yrs, multi-layer)
23%	24%	23%	21%	11%
9,200 ACRES	9,504 ACRES	9,124 ACRES	8,354 ACRES	2,240 ACRES

Note: These acres do not include farmland or withdrawn lands (3.05% of landscape). Percent and acres shown are approximate.

a. Early Seral: Grass/forb to seedling/sapling, 0 - <5" diameter. "From disturbance to the time when crowns close and conifers or hardwoods dominate the site. This stage may be dominated by grasses and forbs or by sprouting brush or hardwoods. Conifers develop slowly, gradually replacing grasses, forbs or brush as the dominant vegetation. Forage may be present; hiding or thermal cover may not be present except in rapidly sprouting brush communities" (RMP, 1995). Douglas fir and ponderosa pine are the principal planted species.

b. Pole Seral: Pole, 5" - 11" diameter. "From the time crown closure occurs to the time when conifers would begin to die from competition. Stands are dense and dominated by conifers, hardwoods or dense brush. Grass, forbs and herbaceous vegetation is decreasing. Hiding cover for big game is usually present." (DRMP, 1992).

1. ORIGIN

The early successional matrix was initiated through timber harvest and to a lesser amount, fire. The composition, structure and function of these early successional forests are somewhat different from those that would be initiated by natural causes. These differences include:

-fewer number of snags remaining, particularly larger diameter classes.
-more soil disturbance from timber harvest, road building, and site preparation affecting post disturbance plant succession.
-reduction in the amount, size, and distribution of some woody debris
-planted species (8'x8') spacing grid vs. natural (random) spacing. Douglas fir and ponderosa pine are the principal species planted. Under natural conditions, the species mix would also include hardwoods and a higher proportion of shrub species. Trees are planted all at once vs. natural regeneration which occurs over time.
-the rate of physical/structural change is more rapid due to intensive silvicultural treatments.
-large fire tolerant remnant trees are not present as a scattered stand component.

2. STABILITY
A landscape's stability is a measure of constancy in the absence of major disturbance. Seedling/sapling and pole size stands can be categorized as unstable as the rate of structural change is relatively rapid as opposed to stable, slow changing old growth stands.

3. PATTERN
The matrix pattern is largely determined by the checkerboard ownership boundaries. Approximately 40 percent of the West Evans Creek landscape is managed by private timber industry. On these lands, the majority of merchantable overstory trees have been removed, leaving younger, unmerchantable Douglas fir with lesser amounts of ponderosa pine, incense cedar and scattered hardwoods. BLM managed lands (57 percent) have undergone harvest practices ranging from fire salvage to clearcuts, resulting in 47 percent of BLM ownership in seedling/sapling and pole sized stands.

B. PATCHES

Patches are areas distinctly different from the landscape around them. As a result of timber harvest and fires, small sawtimber, large sawtimber, and old growth stands have become the "patches" within the West Evans landscape matrix. Three types of forest patches can be identified and described. The descriptions for small sawtimber, large sawtimber, and old growth stands apply to unentered/unmanaged stands. Where management has occurred stand conditions will vary.

a. Mid Seral (Small sawtimber), 11"-21" diameter - 23 percent of the landscape. "Stand growth slows. Forest stand are dominated by conifers and hardwoods; canopy closure approaches 100 percent with stand growth decreasing. Stand diversity is minimal; conifer mortality rates and snag formation are rapid. Big game hiding and thermal cover is present. Forage and understory vegetation is minimal except in understocked stand or in meadow inclusions." (DRMP 1992)

b. Mature Seral (Large sawtimber), 21"+ diameter - 21 percent of the landscape. "Forest begin to develop structural diversity. Conifer and hardwood growth gradually declines. Larger trees increase significantly in size. Stand diversity gradually increases. Big game hiding cover, thermal cover and some forage are present. With slowing growth, insect damage increases and stand breakup may begin on drier sites. Understory development is significant in response openings in the canopy created by disease, insects, and windthrow. Vertical diversity increases. Larger snags are formed."

c. Old growth, generally 200 years+, multi-size classes, and multi-layered - approximately 11 percent of the landscape. "This stage represents the potential plant community capable of existing on a site given the frequency of natural disturbance events. Structure, species, composition, and age distribution is dependant upon fire frequency. As mortality occurs, stands develop greater structural diversity. Replacement of individual trees lost to fire results in the creation of a multi-layered

canopy." (DRMP 1992)

1. ORIGIN
The small sawtimber stands are the result of a stand replacement fire approximately 80 years ago. Scattered larger diameter ponderosa pine, Douglas fir, and incense cedar remained following the fire.

The large sawtimber and old growth stands show evidence of historic underburning and partial stand replacement fires. The frequency of underburns can be determined by the amount of seedling and saplings in the understory. In stands that have not experienced recent underburns, a well established sapling to pole size second growth Douglas fir stand is present. A light timber harvest entry has also occurred in some of these stands within the past 30 years. Individual trees were removed, representing approximately 20 percent of the basal area per acre. In the larger canopy holes, Douglas fir has naturally regenerated.

Other agents of change such as windthrow, flood, and disease, have not played a major role as stand replacing events. Insects are currently an active change agent in the lower portion of the West Evans WAU.

2. STABILITY
Compared to the landscape matrix, all three forest patch types are considered stable, with old growth stands having the highest degree of stability. The older the stand, the less likely the structure and compositional elements will change significantly over time, and any change that does occur is slow.

3. PATTERN
The majority of the small sawtimber, large sawtimber and old growth patches within the West Evans landscape are located on federally managed lands. The checkerboard ownership pattern has resulted in a highly fragmented landscape. The patches are generally square or rectangular in shape due to the checkerboard ownership patterns and rectangular shaped timber harvest units.

The location and amount of patches within the matrix has created a high degree of contrast, porosity, and edge effect across the West Evans watershed. Edge represents the interface area between two distinctive vegetative/size classes. Environmental conditions (temperature, light, wind, and humidity) are different within this area, resulting in a drier, windier microclimate along the stand edge. Generally a 500 - foot wide strip adjacent to the edge is affected. The altered microclimate in this area causes a successional change in the species mix and density of herbaceous vegetation and shrub species. Patches 25 acres or less are in effect all edge.

C. CORRIDORS

Corridors provide travel routes for plants, animals and people between similar size classes or vegetative types. Roads, riparian areas, powerlines, and streams are the primary corridors in the West Fork Evans watershed.

1. RIPARIAN AREAS
Human activities have altered vegetative communities within the riparian zones of all of the creeks. Ownership patterns influence the presence or absence of buffer areas adjacent to the creeks. In some areas, harvesting activities have occurred down to the edge of the creeks with scattered trees less than 8 to 10" dbh left. Early seral herbaceous and shrub species are the dominant vegetative type within these areas. In other areas, no-cut riparian buffers were left. The width of the buffer corresponds to the stream class of each of the creeks. The resulting pattern of buffered and nonbuffered areas along each creek has led to broken, poorly connected riparian corridors.

2. ROADS
West Fork of Evans Creek Road, a BLM road, extends through the middle of the WAU. This road parallels the West Fork of Evans Creek throughout the watershed area. Private access roads, private logging roads, and BLM roads are all present in the area.

3. POWERLINES
The Pacific Power 500 Kv line extends the entire distance of the drainage. A corridor 175 foot wide exists beneath the transmission towers. This corridor will be maintained in early successional condition.

4. STREAMS
The West Fork of Evans Creek flows through the central portion of the WAU. Major tributaries within the WAU boundaries are Battle, Salt, Rock, and Cedar creeks. Minor tributaries include Raspberry, Swamp and Sand creeks.

V. LANDSCAPE FLOWS

"Flows" are those factors or elements that move across the landscape. Flows that will be critical to the future landscape and are most likely to be affected by human activities are of the greatest concern. Five major flows considered to be important within the West Fork of Evans Creek WAU are water/hydrology, wildlife/fisheries, human use practices, granitic soils/sediment and fire.

A. WATER/HYDROLOGY AND GRANITIC SOILS/SEDIMENT

Water and sediments are important flows through the West Fork of Evans Creek Watershed. Water quantity and quality are important factors primarily due to effects on fish. Coho salmon has been petitioned for listing as a "Threatened" species and is found in West Fork Evans Creek, and the lower reaches of Cold Creek and Rock Creek. Steelhead can be found in the lower reaches of Battle Creek, Rock Creek, Cold Creek, Sand Creek, West Fork Evans Creek, Swamp Creek, and Cedar Creek. Resident trout are also present in many of the streams listed above. Issues such as high summer water temperatures, degraded riparian areas, a lack of large woody debris, lack of quality fish habitat, and the transportation of large amounts of granitic sediments along streambeds interact with and are effected by the flow of water and sediments through this drainage.

B. WILDLIFE/FISH

Wildlife flows through the area in a variety of ways. Temporal and spatial wildlife flows occur. Some species move through the area during the breeding season, while others move through the landscape as the temperatures and seasons change. Species flow across the landscape in the long-term as fire and natural succession modifies the habitat. A change in the habitat may benefit one species while harming another. Adult northern spotted owls are resident, but juveniles disperse across the landscape. Game species such as elk, deer, bear, turkey, quail, and grouse are present in the WAU and flow on a larger scale across the area. Bull elk may spend the summer separated from the main herd, but during the late summer/fall breeding season, move into the area with the cows. In the spring, cow elk move to calving areas to give birth. Snakes, lizards, and salamanders all flow through the area in a much smaller scale. Coho and steelhead migrate into and through Evans Creek and travel up the tributaries to spawn. Appendix D gives more detail as to the habitat uses of sensitive species.

C. HUMAN USE PRACTICES

People are an important flow across the West Fork of Evans Creek landscape. The people utilize roads, streams, and trails. Heaviest activity occurs along roaded areas. Use is low away

Table 3 Interactions between flows and elements

LANDSCAPE FLOWS — WEST FORK OF EVANS CREEK WATERSHED

LANDSCAPE ELEMENTS

		WATER/HYDROLOGY	WILDLIFE/FISHERIES	HUMAN USE PRACTICES	GRANITIC SOILS/SEDIMENT	FIRE
MATRIX	EARLY SERAL 0-5" DBH Seedling-sapling	-Increased saturation and rapid runoff -Low interception	-Provide forage for elk and deer -Low suitability for spotted owl habitat -Limited source of large woody debris -Limited shade for fish	-High existing recreation (ORV) use on skid trails) -Seasonal secondary forest product yield	-Extreme soil movement potential (slumping, slides, etc.) -Granitic soils most sensitive to fire effects	-High potential for large, fast moving fire - low intensity
	POLE SERAL 5-11" DBH Poles	-Moderate interception -Moderate runoff	-Provides forage and hiding cover for deer and elk -Low suitability for spotted owl habitat -Limited source of large woody debris	-Limited recreation & commercial timber values	-Extreme soil movement potential (slumping, slides, etc.) -High erosion potential (unstable granitic soils)	-Same as PEOPLE -Most intensive fires -High potential for large fires -Soils sensitive to mgt. activities
PATCHES	MID SERAL 11-21" DBH Small timber	-High interception -Low runoff	-Spotted owl dispersal habitat -Limited source of large woody debris -Thermal and hiding cover for big game -High quality fish habitat	-High commercial timber values -Recreation opportunities limited	-Moderate soil movement potential (slumping, slides, etc.)	-Vegetation moderately sensitive to fire -Potential for large, moderate to high intensity fires
	MATURE/OLD GROWTH SERAL 21+" DBH Large timber	-Same as mid seral -Acts to stabilize hydrologic process -High interception/low runoff	-High value to spotted owl -Large woody debris and snags available -Goshawk habitat -Thermal cover for big game -Optimal for most salamanders -High quality fish habitat	-Highest commercial timber values and volume -Highest potential for recreation values -Highest aesthetic values	-Moderate soil movement potential (slumping, slides, etc.)	-Less potential for large fires -Low intensity fires
	GRASS,SHRUB, HARDWOOD	-Low runoff	-Important winter forage for big game -Upland game bird habitat -Provides contrast and edge	-Firewood source -Hunting, OHV use -Increase harassment/disturbance for wildlife -Seasonal secondary forest product yield	-Moderate erosion potential	-Flashy fuels -Low intensity fires
	ALTERED (campgrounds, quarries)	-Increased overland flow & rapid runoff -Dispersed recreation increases erosion potential	-Increased harassment of wildlife -Low suitability for most wildlife	-Elderberry campground, dispersed campgrounds -Two rock quarries (short periods of seasonal use) -Higher risk from fire	-Extreme soil movement potential (slumping, slides, etc.) in uncompacted soils.	-Increased fire starts -Increased complexity of fire suppression (campgrounds, etc)
CORRIDORS	ROADS	-West Evans Creek road alters function of riparian zone -High cumulative impact due to road density -Roads increase intensity & frequency of peak flows	-Open roads increase disturbance to wildlife (poaching, traffic, noise) -High cumulative impact due to road density -High potential risk to aquatic habitat due to sedimentation	-Conflict over need for roads (i.e. hunting) -Highest potential for spread of noxious weeds -Primary access for most users	-Extreme potential for erosion of granitic soils -Timing and degree of road maintenance critical due to granitic soils -High cumulative impacts due to high road densities	-Access for fire suppression -Fire break (potential) -Increased starts
	RIPARIAN	-Increase storage -Regulates flows & temp -Increased importance in filtration function and stabilization	-Nesting, roosting, foraging habitat for wildlife -Provides thermal buffer for wildlife -Important salamander habitat -Provides travel corridor	-Increased use & alteration of riparian corridor -Increase potential for riparian degradation due to human activities on granitic soils -Reduce the connectivity -Increased recreation opportunities -Riparian degradation due to loss of conifer component and large woody debris	-Continuous deposition of granitic sediments along stream banks inhibits riparian vegetation growth and establishment	-May act as fire break -High potential for alteration by fire
	POWER LINES	-Same as early seral	-May provide some forage and travel corridors for big game	-Increased access for OHV use -Decreased aesthetic values -Potential increased management constraints	-Same as early seral -Roads within powerline have extreme potential?	-Same as early and mid seral -Increase value at risk -Increase complexity of fire suppression
	STREAMS	-Influences stream flows -Major vehicle for sedimentation -Provides for movement of water out of sub-watershed -Collectors of water	-Existing low water quality, quantity, and high sedimentation (granitics) limits cold water fish habitat -Lack of large, woody debris is limiting factor in stream health	-Influences water quality & quantity -Alters and destabilizes stream structure and flows -Recreation opportunities	-Alters stream morphology, high sedimentation -Granitic sediment limits aquatic production? -Instability due to highly dissected (deeply incised) uplands increases sedimentation	-Alters stream morphology

Highlighted cells identify key issu .rom element/flows intersection.

from roads trails and streams. West Fork of Evans Creek Road is the main thoroughfare in the area. People flow along this corridor and other corridors for recreational activities (such as OHV riding, hunting, fishing), timber removal, tree planting. Highest recreational use occurs from spring through fall.

D. FIRE

As a flow, fire can have a variety of extremes as an agent of disturbance. These extremes are influenced by changes in weather patterns, vegetative species composition, vegetation age classes, and topography.

Fire will exert influence over vegetation in the seedling/sapling and pole size classes. Conifers are most susceptible to a fire's influence in these early successional stages. The West Evans Creek WAU is at medium risk for large destructive wildfires. The medium risk is a result of lower amounts of easily ignited fuels such as grasses and fewer people residing in the watershed. In the upper portions of the WAU, where more sawtimber patches (small & large) and old growth occur fire risk is lowered due to the vegetative composition and elevation.

As a general rule, later successional stages, including old growth, are at least risk from high intensity fires. However, fire occurrence rates will remain unchanged.

VI. INTERACTIONS

The interaction of the major flows and the landscape elements contained in the matrix, patches, and corridors will help identify how the different flows affect and are affected by the environment. Key issues are italicized. (Table 3)

A. EARLY SERAL -- Seedling/Sapling, 0-5" diameter (Matrix)

1. WATER/HYDROLOGY: Rapid runoff with an increase in soil movement and low interception of precipitation resulting in erosion is identified as the major interaction of concern occurring between this flow and size class.

2. WILDLIFE: This size class provides a higher abundance of shrubs and forbs for elk and deer forage and hiding cover. Berries and fruits are usually more abundant in these areas, which provide forage for bear, birds, and small mammals. Early seral stages receive little use by spotted owls. Due to past management practices, much of this acreage is deficient in coarse woody debris.

3. HUMAN USE PRACTICES: High existing recreation (OHV) use on skid trails. Seasonal secondary forest product yield.

4. GRANITIC SOILS/SEDIMENT: Extreme soil movement potential (slumping, slides, etc.) Granitic soils most sensitive to fire effects.

5. FIRE: High potential for large, fast moving fires of low intensity.

B. POLE SERAL -- 5"-11" diameter (Matrix)

1. WATER/HYDROLOGY: Moderate runoff with some soil movement and moderate interception of precipitation are dominant with this interaction.

2. WILDLIFE: This size class provides forage and hiding cover for elk and deer. These areas are of low value to the northern spotted owl. There is no replenishment of downed logs.

3. HUMAN USE PRACTICES: Recreation and commercial timber values are limited.

4. GRANITIC SOILS/SEDIMENT: Extreme soil movement potential (slumping, slides, etc.) High erosion potential because of unstable granitic soils.

5. FIRE: High potential for large, high intensity fires. Soils sensitive to management activities.

C. MID SERAL -- Small sawtimber, 11"-21" diameter (Patches)

1. WATER/HYDROLOGY: Moderate interception, low runoff and low erosion potential protect water quality.

2. WILDLIFE: This size class provides dispersal habitat for the northern spotted owl, and thermal cover for big game. Along stream banks, the supply of coarse woody debris is renewed.

3. HUMAN USE PRACTICES: High commercial timber values with limited recreation opportunities.

4. GRANITIC SOILS/SEDIMENT: Moderate soil movement potential (slumping, slides, etc.).

5. FIRE: Vegetation is moderately sensitive to fire. Potential for large, moderate to high intensity fires.

D. MATURE/OLD GROWTH SERAL -- Large sawtimber, 21"+ diameter (Patches)

1. WATER/HYDROLOGY: High interception, low runoff, and low erosion potential protect water quality.

2. WILDLIFE: These stands have high value to the northern spotted owl and the northern goshawk, providing nesting, roosting, and foraging habitat. Thermal cover for big game animals provides buffering during temperature extremes. Recruitment of large down woody debris adds to diversity of habitat for ground species such as salamanders. Higher snag densities provide habitat for cavity nesters and bats.

3. HUMAN USE PRACTICES: Highest commercial timber opportunities (both volume and value). There is the highest potential for recreation opportunities and aesthetic values as the timber becomes established.

4. GRANITIC SOILS/SEDIMENT: Moderate soil movement potential (slumping, slides, etc.)

5. FIRE: Less potential for large fires. Fires that occur would be of low intensity.

E. GRASS/SHRUB/HARDWOOD - (Patches)

1. WATER/HYDROLOGY: High interception, low runoff, and low erosion potential protect water quality.

2. WILDLIFE: Shrubs and forbs provide important winter forage for big game. This stage provides important upland bird habitat (nesting, foraging, wintering).

3. HUMAN USE PRACTICES: Provide a firewood source and other seasonal secondary forest products. Opportunity for hunting, OHV use. Increased harassment/disturbance for wildlife.

4. GRANITIC SOILS/SEDIMENT: Moderate erosion potential.

5. FIRE: Flashy, low intensity fuels are present in the grass, shrub hardwood patches.

F. ALTERED (Patches) Campgrounds, Quarries

1. WATER/HYDROLOGY: Increased overland flow and rapid runoff increases soil erosion and results in increased sedimentation.

2. WILDLIFE: Campgrounds and quarries receive relatively little wildlife use due to human disturbance or lack of habitat. Rock piles in quarries may provide talus-like habitat for some herptiles.

3. HUMAN USE PRACTICES: Altered patches include Elderberry Flat Campground and Day Use Area and the 9 other dispersed recreation sites. There are two rock quarries which receive seasonal use. There is a higher risk for fire from human uses in these areas.

4. GRANITIC SOILS/SEDIMENT: Extreme soil movement potential (slumping, slides etc.) in uncompacted soil.

5. FIRE: Increased fire starts and increased complexity of fire suppression with the presence of campgrounds and people.

G. ROADS (Corridors)

1. WATER/HYDROLOGY: The Evans Creek Road alters the function of the riparian zone. Roads can also increase the intensity and frequency of peak flows and increase potential for erosion. High cumulative impact due to road density reduces water quality.

2. WILDLIFE: Open roads increase disturbance to wildlife through poaching, traffic, noise, and increased roadkill mortality. Conversely, roads concentrate human use away from unroaded areas. Roads provide forest opening edge that benefits some raptors.

3. HUMAN USE PRACTICES: Values conflict over the need for, and the management of roads. Roads provide the highest potential for spreading noxious weeds and provide the primary access for most users.

4. GRANITIC SOILS/SEDIMENT: Extreme potential for erosion of granitic soils. Timing and degree of road maintenance critical due to granitic soils. High cumulative impacts due to high road densities.

5. FIRE: Provides access for fire suppression, potential fire breaks and potential for increased starts.

H. RIPARIAN ZONE (Corridors)

1. WATER/HYDROLOGY: Riparian areas influence flow and temperature, provide large woody debris, and increase water storage to regulate flows. A properly functioning riparian area increases the filtration function of the stream and aids in stability.

2. WILDLIFE: Riparian areas provide diverse nesting, roosting, and foraging habitat for many species of wildlife. They can serve as dispersal corridors for herptiles, birds, and mammals. Cooler summer temperatures offer refuge to elk, deer, bear and other animals. Forage values are high for many animals. Higher humidities benefit amphibians.

3. HUMAN USE PRACTICES: Riparian areas offer increased recreation opportunities. People use and alter the riparian areas through camping, woodcutting, tree removal, and other activities. There is an increased potential for riparian degradation due to these activities on granitic soils. Human use may also reduce the connectivity of the riparian area.

4. GRANITIC SOILS/SEDIMENT: Granitic sediment doesn't support riparian vegetation and lacks organic matter. Sediment influences vegetation composition of riparian zone.

5. FIRE: Riparian areas may act as a fire break. Fire may have a high potential to alter riparian vegetation.

I. POWERLINES (Corridors)

1. WATER/HYDROLOGY: Same as seedling/sapling & pole size classes. Low interception and rapid runoff contribute to erosion and subsequent sedimentation.

2. WILDLIFE: The seedling/sapling & pole size classes may provide forage and travel corridors for big game animals. Habitat is altered when lines are constructed. Raptors hunt the edge habitat.

3. HUMAN USE PRACTICES: Powerline roads increase access to the area. The lines affect aesthetic values and may reduce property values. Increased management constraints are present in powerline areas.

4. GRANITIC SOILS/SEDIMENT: Extreme soil movement potential (slumping, slides, etc.) Granitic soils most sensitive to fire effects. Roads within the powerline have extreme erosion potential

5. FIRE: The Pacific Power 500 Kv line right-of-way vegetation is maintained in the early successional size class. The spread of fire through these areas is the same as those listed above in the discussion of these stages. Powerlines increase the complexity of fire suppression.

J. STREAMS (Corridors)

1. WATER/HYDROLOGY: The amount of water present regulates stream flows and quality. Streams act as collectors of water and provides movement out of sub watersheds. Water provides movement of sediment through the landscape.

2. WILDLIFE: Existing low water quantity and quality can limit cold water fish habitat, and may interfere with movement of fish throughout the landscape. Genetic interchange for fish is provided by movement through stream corridors.

3. HUMAN USE PRACTICES: Human use influences water quantity and quality, alters and destabilizes stream structure and flows. The majority of the recreation opportunities exist along streams.

4. GRANITIC SOILS/SEDIMENT: High sedimentation alters stream morphology. Granitic sediment limits aquatic production. Instability due to highly dissected (deeply incised) uplands increases sedimentation.

5. FIRE: Fire can alter stream morphology, alter flows, and destabilize stream structures which can influence water quality and quantity.

VII. DISTURBANCES/SUCCESSION

A. PLANT COMMUNITY SUCCESSION

Succession is the replacement of plant (and animal) populations in a regular progression (seral stages) toward a highly stable "climax" vegetative community. The problem with describing succession in this manner is that few stands ever reach "climax" because of frequent disturbance events (fire). To acknowledge the role of disturbance in succession and plant community stability a reference point called "potential natural vegetation" is used rather than "climax". For forest communities the "potential natural vegetation" is generally represented by the conditions found in unmanaged old growth stands.

Within the West Fork Evans watershed two vegetative series are present: pine, and Douglas fir. All the vegetative series are found on lower elevation sites. The white oak series is on the driest and warmest end of the environmental gradient, followed by the pine series and then the Douglas fir series.

Within the series, climate and fire (natural and human) are the principal factors that have an influence on the structure, composition, spatial pattern, and seral stage of the series.

Climate: Hot, dry summers limit biomass productivity and increase transpirational demands. Moisture limitations affect the survival and growth of vegetation, therefore, drought tolerant species predominate throughout all the series. Low elevation sites and southerly aspects represent the hottest and driest conditions and are the least productive sites within the West Fork Evans watershed. Accumulation of downed woody debris is limited with decomposition rates slow.

Fire: Fire frequency and intensity have influenced vegetative structure, composition and seral stage. Fires occur as either low intensity underburns, partial stand replacement or catastrophic stand replacement events. Snags and downed logs are generally rare as many are/were consumed by repeated fire.

SUCCESSIONAL PATTERNS

1. PONDEROSA PINE SERIES
Ponderosa pine typically occurs as isolated stands and as a topographic climax on southerly slopes. Timber productivity is low to moderate with slow growth rates and stocking limitations. Natural regeneration is slow due to infrequent seed crops, low soil moisture availability, and vegetative competition.

Fire is the principal disturbance event within the pine series. Following fire, herbaceous vegetation and grasses would be the first plants to occupy the site. Shrub species would begin to re-sprout or grow from dormant seed. Ponderosa pine and oak species may be present as fire remnants and would provide a seed source for natural regeneration. White and black oak may occur as a minor "climax" species with incidental amounts of Douglas fir on favorable microsites.

2. DOUGLAS FIR SERIES
Depending upon the severity of disturbance, Douglas fir follows the successional trends. Common early successional hardwoods may include madrone, black oak, and big leaf maple. Shrubs may include: oceanspray, poison oak, oregon grape, hazel, deerbrush ceanothus, creeping snowberry, and rubus species. Herbaceous vegetation may include baldhip rose, western starflower, fern, lupine, hairy honeysuckle, and strawberry. Within the series Incense Cedar, Ponderosa Pine, and Sugar Pine are often found in the stands composition. At higher elevations white fir is also a component of the stand. In moist areas and higher elevations western hemlock is often found. The dominant species within the series however, is Douglas fir.

B. PRE-SETTLEMENT LANDSCAPE CONDITIONS

1. WATERSHED/HYDROLOGY

In general, the impacts from natural disturbances such as floods, were less damaging to the aquatic resources because of a greater resiliency to withstand such occurrences. A larger amount of vegetative cover, smaller amounts of compacted acres, and more properly functioning riparian areas help stabilize and aid in the recovery of these natural disturbances. Vegetation intercepts and protects the soil from runoff. Compacted ground contributes to rapid runoff. Properly functioning riparian areas trap sediment, store water, and help regulate water temperatures and flows. These factors reduce the risk of high magnitude impacts to the aquatic resources.

2. HUMAN USE PRACTICES

a. Native American Influence

Any description of the historic vegetation in the West Fork of Evans Creek WAU must be based on the assumption that it resulted from human intervention. There is no specific information about the pattern of vegetation in southwestern Oregon, but general ideas can be generated. There is evidence that the Indians of this region had a dynamic relationship with the environment and existed in equilibrium with it, through a sustainable pattern of use for thousands of years.

The Indians of the Rogue Valley used fire as a management tool, and this changed the entire ecology of the forest, plant, and animal communities they interacted with. Low intensity ground fires set by humans were much more common than is often realized. Burning extended the range of forest types that depend on a frequent fire regime. Burning by American Indian people created an element of ecosystem stability that would not have existed without it. Frequent, low intensity, human-caused fires substantially reduced the numbers and area of less frequent, but high intensity, stand replacing holocausts that otherwise would have occurred.

Other information about native influences on the landscape were mentioned in the cultural/historic overview already prepared for this WAU. Disturbances led to a landscape that where forested, supported widely scattered (8 to 12 trees per acre) large diameter Douglas fir and ponderosa pine with an understory of grass.

b. Livestock

Domesticated livestock were not introduced until after white settlement, therefore there were no impacts.

c. Noxious and Nonnative Weeds

Prior to white settlement in the Evans Creek valley, there were no noxious weeds or nonnative plants as we know them today. For the most part, all the plants that grew in this WAU were indigenous and had their own predators. There may have been a few isolated plants whose seeds were brought in by birds or through trading by native Americans, but those cases were very rare.

3. INSECT & DISEASE

The amount and extent of insects and disease within a forest landscape is an indicator of forest ecosystem health. Widespread mortality from insects and disease indicates poor forest health. Whereas, the mortality of individual or small groups of trees represents a "natural" component of a healthy ecosystem. This low level of mortality maintains and/or creates structural and species diversity.

Widespread vegetative changes due to insects and/or diseases were most likely

minimal. Mortality was probably limited to individual trees or small groups of trees. Some insect populations may have increased to moderate levels following fires due to fire induced stress (cambial damage and/or crown scorch). Otherwise, both insect and disease were present at low levels and were not a major disturbance agent.

Two environmental conditions are the primary reasons why insect and disease disturbances were kept low.

a. Frequent low intensity underburns, and partial or catastrophic stand replacement fires regulated stand density. Stand conditions in the pine, and Douglas fir series were considerably more open than post-settlement. The lower density levels maximized tree vigor, there by reducing susceptibility to insect and disease attack.

b. Species diversity (hardwoods, conifers, and shrubs) provided a vegetative mosaic within the landscape. This species mix provided "natural" barriers that restricted the spread of insects and disease.

4. FIRE

Prior to settlement, fire played a role in the disturbance regime in the West Evans WAU. In this report, American Indian practices of burning will be considered as part of the natural process. The resulting fire and vegetation patterns before European settlement will be considered part of the natural system.

Accurate data on fire occurrence and intensities for the last 25 years are available. Prior to this, fire scars and age classes of reproduction are used to establish fire return intervals. In addition, vegetation types recorded in various documents, such as the 1916 Revestment surveys and survey notes can be used. Historical references can be used to establish fire occurrence rates.

In the West Evans watershed the "natural return interval" of wildfire would have been 20 to 40 years in the mixed conifer/madrone-deciduous brush/salal group. In the mixed conifer/interior valley/grass group a 10-20 year return interval is anticipated. The south aspects in both groups would have been maintained in an early seral to mid seral stage because of the short fire return interval. Natural and live fuels would not have had sufficient time to accumulate to provide for high intensity fires. Fire originating on the south slopes would have raced up these slopes, and backed down the north slopes to provide for low to moderate intensity burns.

C. POST SETTLEMENT LANDSCAPE CONDITIONS

1. WATERSHED/HYDROLOGY

In contrast to pre-settlement, the impacts from floods as a result of post-settlement disturbances has increased the potential for greater damage to the aquatic resources. Roads, timber harvest activities, and greater intensity of wildfires (partially human caused) have contributed to destabilize and decrease the capability to recover from natural disturbances.

Flood frequency in the area is approximately every 9 to 11 years. Major floods in the last 50 years occurred in 1945, 1953, 1955, 1964, 1973, and 1982. The largest flood recorded in the area occurred in 1861. This flood event eclipsed the 1964 flood, which was the largest in the 20th century. The potential for future damage will likely be high due to disturbances which have occurred in the riparian areas with the removal of large trees which help capture debris and slow the velocity of the water.

2. HUMAN USE PRACTICES

a. Post-settlement

The first documented occurrence of Euro-American disturbance in the Lower Evans WAU occurred in March of 1827 when a party of trappers with Peter Skene Ogden's expedition explored the Evans Creek valley. While the number of beaver trapped over the ensuing three decades is unknown, that animal's population was probably reduced to some degree. Stream morphology could have changed due to breaching of dams and increased bank scouring. Riparian vegetation may have shifted toward more willow and alder, and fewer conifers.

The discovery of gold in Jacksonville in 1851 started a new influx of people to southern Oregon. Cinnabar mining, salt mining and lumbering were major elements that changed the watershed. After Theodore Roosevelt became President in 1901, the central theme of his conservation policy was to provide the "greatest good for the greatest number for the longest time." This called for developing public lands in a manner that promoted the best and highest use of resources. Fire suppression activities were given increased emphasis and this allowed development of dense understories of Douglas fir to occupy space in stands that were historically more open. These higher densities make the stand more susceptible to disturbance. A single event can negatively impact a large portion of the landscape-such as the Sykes Creek fire of 1987. There is little likelihood of achieving an equilibrium state with present conditions which are easily altered. With ongoing management disturbances there will continue to be changes in vegetative communities. Where frequent low intensity fires once maintained stable and healthy forests, ladder fuels and woody debris accumulated. The landscape created by the native people was changing from open oak and grass woodlands in the valley and mixed conifer forest in the higher elevations to one choked with brush. There is little likelihood of achieving an equilibrium state with these conditions because a single disturbance event can negatively impact a large portion of the watershed.

From the time of the Oregon & California Act of 1937 until the mid-1950's, BLM harvest operations were partial cuts. The O & C Act called for implementation of a sustained yield cutting program so that continuous forest production could be assured. Logging became the greatest human influence on the watershed during the late 1960's and early 1970's when a majority of the private land was harvested. Access road construction and a system of three-stage shelterwood cutting became the preferred logging treatment in the early 1970's. This method gave way to the use of clearcut logging in 1979 when a new Management Framework Plan was signed. New guidelines in this plan included clearcut size limitations, stream buffer width guidelines and impetus for intensive forest management.

Disposal of domestic trash and abandoned vehicles is currently a problem. Further information regarding human influences on the ecosystem can be found in Atwood and Lang's "Evans Creek Watershed Landscape Analysis and Historical Study" written under contract as a part of this analysis.

b. Livestock

It is difficult to say how much of an impact domestic livestock have had on the vegetation within the West Fork of Evans Creek WAU since the advent of human settlement. Livestock may have contributed as much to the spread of noxious weeds as earth moving or fire fighting equipment. Although in some parts of the west, livestock have drastically altered the vegetative community, there is no indication that they have done so here.

c. Noxious Weeds

Noxious and nonnative plant species are a serious threat to the natural biological community. The number of introduced plant species is increasing and their ranges are spreading rapidly as a result of increasing human activities. Most species are prolific seed producers or develop extensive root systems that outcompete and exclude native species. The list of nonnative plant species is broader than noxious weed species and exerts a more significant influence on the biological community than the species classified as noxious weeds.

The WAU team recognizes the importance of nonnative plant species invasion, vegetation community changes and the corresponding change in animal community habitat. The geographic position and habitat conditions of West Fork of Evans Creek corresponds to the seasonal growth requirements of many noxious and nonnative plant species from California, Eastern Oregon and the Great Basin area.

Human activity is widespread across the WAU and is the primary factor for the introduction and distribution of nonnative plants throughout the WAU. Human disturbance such as timber harvesting, site preparation, road construction, pipeline and powerline construction and fire rehabilitation projects has dramatically increased the opportunity for dispersion and establishment of nonnative plants. Mechanized equipment is the main vector of introduction and spread of new noxious weed species. Agricultural, farm animals, and residential homes in the valley bottoms of the rural interface are other key means of introduction and spread of noxious and nonnative plants. The existence of nonnative plant populations within the WAU and the proximity of other new noxious and nonnative plant populations along with the high level of human activity in the West Fork of Evans Creek WAU increase the risk of introduction and spread. The West Fork of Evans Creek watershed has numerous noxious and nonnative weed invasions and the trend is for increased invasions and expansion of existing populations. (See Appendix H).

Many common weeds are nonnative species. They are very prevalent in West Fork of Evans Creek WAU. Very little is known about the dynamics of nonnative plants and their interaction with the larger ecosystem. Most weed species are established on disturbed sites and thrive in full sunlight. As disturbed sites are reforested and sunlight reduced, some nonnative plant species populations should decline. In open or filtered sunlight conditions they persist, produce seed and expand their range.

3. INSECT AND DISEASE

Fire suppression has resulted in higher stand densities than would have occurred under natural fire regimes. With higher stand densities, greater inter-tree competition for site resources occurs. The most critical influence on the infestation of insects and disease are from a lack of moisture, particularly in the lower elevations and mixed conifer/interior valley/grass group. At higher elevations and the mixed conifer/madrone-deciduous brush/salal group soil nutrient deficiencies may also influence stands. Moisture availability determines vegetative growth, vigor, and survival. High stand densities result in earlier summer water deficits and reduced tree vigor. Sustained periods of low moisture availability reduces photosynthetic activity, depletes carbohydrate reserves, decreases tree canopy and inhibits defense mechanisms. The nutrient deficiencies also impact the vegetative communities present because sufficient nutrients are not available for usage by the existing vegetation.

Current conditions: Within the West Evans watershed, conifer mortality due to drought and bark beetles is occurring on ridgelines, and south and west aspects in the Douglas fir series. In the pine series conifer mortality is occurring throughout all topographic features.

Western pine beetle (Dendroctonus brevicomis), mountain pine beetle (Dendroctonus ponderosa) and red turpentine beetle (Dendroctonus valens) are present and are affecting low vigor ponderosa pine and sugar pine. The Douglas fir beetle (Dendroctonus pseudotsugae) is less active and has attacked individual and small groups of small diameter Douglas fir.

Future trend: Insects have the potential to become a major disturbance factor. If precipitation trends remain low, stand density levels remain high, and if the predicted climate change (global warming) materializes, insect population levels will increase substantially. Beginning in dense stands (relative density 40%+) epidemic levels of insects may occur and would affect all vigor and size classes. Stand replacement may occur, shifting stands towards an earlier successional state. Bat and bird populations

can provide buffering effect on severity of insect outbreaks.

The impact of disease within the West Evans watershed has been minimal and is not expected to play a significant role in shaping future landscape conditions.

4. FIRE

Except for the Sykes Creek Fire in 1987, fire has not had a large impact on the West Evans Creek Watershed. This watershed currently averages 1.4 fires starts per year. This average is obtained by examining fire records for the last 25 years. The majority of these fires start as lightning strikes. The lower portion of the WAU represented by the mixed conifer/interior valley/grass group is affected by fire more than the mixed conifer/madrone deciduous brush/salal group due to the difference in vegetative composition and higher elevations.

Currently a large portion of the West Evans WAU is a medium risk for wildfire. 72% of the fire starts are lightning caused. One large fire in this WAU has occurred in the last 38 years. The fire originated in the Sykes Creek Drainage. The 10,000 acre fire burned approximately 800 acres in the West Evans WAU in 1987. The fire burned stands that appear to have been 20-30 years old. Currently 47% of this watershed falls into this age group. Due to the high percentage of early age classes and the presence of patches of knobcone pine, which indicate frequent fire incidences, this WAU is placed in a medium risk and high hazard category. (Hazard is defined as the amount of fuel present on the site).

Changing time frames under which human caused ignitions occur, we have shifted the area from that of low intensity and high frequency, to one of high intensity and low frequency. By altering this fire frequency, the vegetation successional patterns have changed. As vegetation becomes more dense, fire control can be expected to be more difficult and costly.

There is a definite need to begin some hazard reduction treatments in this watershed. Some examples would be shaded fuel breaks on ridges, density management areas, and fuel treatments around homes, etc. Some of these actions can be implemented by federal and local governments, but others must be implemented by private landowners.

The majority of fuel buildup is occurring in the live vegetation component at this time. This trend will continue until either some form of density management is performed accompanied by some form of fuels treatment, or the area is subjected to another wildfire. It is important to include some form of fuel management, or when fires occur the intensity of those fires will be greater.

VIII. LINKAGES

Linkages describe how flows interact with areas in adjacent watersheds and what landscape element contributes to, or effects the interaction.

A. WATER/HYDROLOGY AND GRANITIC SOILS/SEDIMENT

West Fork of Evans Creek is an important source of water flow and sediment deposition to downstream landscapes such as the Mid and Lower Evans watersheds and ultimately the Rogue River. The West Fork of Evans Creek is one of the main headwater drainages of the Evans Creek watershed and as such serves as one of the last links to the entire drainage. This is important because typically these are the areas where the majority of migrating fish come to spawn. The quality of this habitat can have a major effect on the potential fish production in these stream systems. Large depositions of granitic sediments both within and downstream of the West Fork of Evans Creek adversely effect the quality of the fish habitat. There are no natural barriers to migrating fish, however, several stream crossing culverts have been identified as limiting or restricting

to fish passage.

There are very few diversions of water from the West Fork of Evans Creek for irrigation. This means the West Fork of Evans Creek is an important link to regulating stream flows in the mainstem of Evans Creek where much of the summer flows are diverted for irrigation.

B. WILDLIFE

Elk, deer, and turkeys move among West Fork of Evans Creek and the surrounding watersheds. There are no significant barriers to movement between adjacent watersheds for big game.

Neotropical birds move into the watershed when returning from southern wintering grounds and migrate out of the area during the fall and winter months. The success of nesting in the northern areas is important to the survival of the species.

Juvenile northern spotted owls disperse across the landscape in and out of adjoining watersheds in search of territories, mates, and suitable habitat for roosting, nesting, and foraging.

The interchange of genetic material within individual species in the watershed is a critical component in the genetic diversity and survival of the individuals in a species and the species as a whole. The "gene flow" across the landscape is an important "linkage" that should not be overlooked.

C. HUMAN USE PRACTICES

People flow in and out of this WAU generally along the West Fork of Evans Creek BLM Road. The area is uninhabited with the exception of a few residences at the junction of Evans Creek and West Fork roads. Commodity extraction occurs from this watershed out to the local population centers of Medford, Rogue River and Grants Pass. Primary commodity extraction has been timber, with other special forest products secondary.

Recreation use within the WAU is moderate to high from spring through fall and low in the winter. Camping, OHV riding, hunting, fishing, and swimming are the main types of use in the area. People also pass through West Fork Evans Creek to access other recreation areas to the north including Galesville Reservoir, Cow Creek Falls, and Devil's Flat Campground on the Umpqua National Forest.

D. FIRE

Fires may move from one watershed to another if weather conditions are conducive to large fires. Fires will only move across topographic barriers if vegetation (live fuel) or concentrations of dead or down fuels (such as heavy concentrations of activity fuels or concentrations of standing dead) are continuous enough to provide fire control problems. Normally, in order for fires to move across topographic barriers these fires must be very intense. Fires usually move across these barriers by long range spotting and/or crown fires. Fires may also move into the watershed from agricultural and residential land adjacent to the watershed.

Multiple ignitions may occur as lightning storms move across the landscape. Often these storms create many fires that may burn together, linking several drainages into one conflagration.

IX. PLANS CONFORMANCE

A. CONSISTENCY WITH FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT (FSEIS)

The following is based on the FSEIS. Many of the guidelines presented below must be confirmed, or can be modified by the watershed analysis. This includes, among others, riparian reserve widths, coarse woody debris requirements, the role of fire, identification of species/habitats that will require survey to protect identified species.

1. MATRIX
Federal lands outside of reserves, withdrawn areas, and managed Late-Successional areas.

2. RIPARIAN MANAGEMENT AREA
RMAs generally parallel the stream network, but also include areas necessary for maintaining hydrologic, geomorphic, and ecological processes. RMAs occur throughout the watershed unit. The widths are defined as follows:

a. Fish bearing streams - width equal to 2 site potential tree heights, or 300 ft., whichever is greater.
b. Permanent flowing non fish-bearing streams - 1 site tree height or 150 ft., whichever is greater.
c. Intermittent streams - 1 site potential tree height or 100 ft., whichever is greater.
d. Constructed ponds and reservoirs - 1 site potential tree height or 150 ft, whichever is greater.
e. Lakes and natural ponds - 2 site potential tree height or 300 ft, whichever is greater.

The watershed analysis needs to define the "site potential tree" for each site class (see FEMAT) and arrive at definite distances. The FEMAT site class distances are as follows: II=250 ft, III=210 ft, IV=170 ft, and V=140 ft. The watershed analysis may change the distance of these RMAs based upon individual area characteristics. The distances are vertical and apply to both sides of the streams. Where catastrophic events have altered the biological functions in RMA's, physical landforms or topography may be used to determine riparian reserves on intermittent streams. If the above widths are changed it is still important to meet the objectives of the Aquatic Conservation Strategy in Riparian Reserves. There may be instances where riparian reserves will be entered to implement management and improve the function of the reserves.

Salvage of dead trees in RMAs will only be allowed when coarse woody debris requirements are met and other riparian objectives are not adversely affected.

3. OWL ACTIVITY CENTERS
The 100 acre core areas around owl activity centers (known and mapped in BLM Geographical Information System (GIS) as of January 1, 1994) are to be managed as Late Successional Reserves. No new owl activity centers are to be added even if new ones are discovered and no existing centers are to be deleted if owls abandon the site. In other words, these are fixed sites that are to be managed for the benefit of a variety of old-growth associated species. However, in the course of consultation with U.S. Fish and Wildlife Service, new owl cores may be protected.

4. GREEN TREE RETENTION GUIDELINES

a. Connectivity/Diversity (C/D) Blocks: C/D blocks established in 1993. Manage in 150 year old rotation, retain 12 to 18 green trees per acre in harvest units, and 25 to 30 percent of each C/D block must be in a late successional forest condition at any point in time.

b. Due to the granitic soils, the watershed is being managed as Southern General Forest Management Area (GFMA): Leave 16 to 25 large green trees per acre in harvest units.

There is no spacing or clumping requirement for leave trees.

The green tree retention guidelines are minimums that may not be changed downward by watershed analysis.

5. SNAG RETENTION GUIDELINES
Retain snags, live cull trees, and green merchantable trees to provide a minimum 40 percent of optimum primary excavator population needs across the watershed within each 40 acre block (1.2 per acre average greater than 16" dbh perpetuated over time).

Green tree retention requirements can be used to meet long term (greater than three decades) snag requirements. However, sufficient snags must be left on site at the time of harvest to meet short term (less than three decades) snag requirements.

6. COARSE WOODY DEBRIS
The objective is to meet the needs of species and provide for ecological function by providing for a renewable supply of down logs well distributed across the matrix. Interim guidelines are a minimum of 120 linear feet of logs per acre, greater than 16 ft. long and 16" in diameter.

7. PROTECT REMAINING LATE SUCCESSIONAL STANDS IN 5TH FIELD WATERSHEDS
The definition of 5th field watersheds equals our analytical watersheds as mapped for the RMP. This would include national forest land where appropriate. The guideline (subject to change) is to retain at least 15 percent of federal land within analytical watersheds in a late successional condition at any point in time. All land allocations (RMAs reserves, LSR, recreation sites, etc.) are to be used when calculating the 15 percent. Also, the 15 percent applies to each analytical watershed, not an average across the resource area or district. Late successional stands include mature and old-growth stands which are 80+ years old.

8. SALVAGE
Salvage must meet the guidelines for all land use allocations that occur within the matrix. For example, if there is an established or proposed recreation site within the area, timber management and salvage guidelines must meet the management objectives for that allocation, such as hazard tree reduction and overall site maintenance.

Salvage within owl activity centers must meet the same standards and guidelines for late successional reserves. Salvage harvest within the matrix must ensure that standards and guidelines for coarse woody debris, snags, and green tree retention guidelines are not violated.

9. FIRE
See FSEIS appendix B-8, p. B-133, for fire management standards and guidelines for all land use and general management guidelines.

Prescribed burning must adhere to smoke management and air quality guidelines described in the FSEIS, Chapters 3 and 4, the Air Quality section, p. B-83 through B-103.
Specific standards and guidelines for each major land use allocation are discussed on page B-134.

B. CONSISTENCY WITH PRMP

Defer the following drainages identified as having high cumulative effects from management activities:
As identified in the PRMP.
West Fork Evans Headwaters (1,311 BLM acres)
West Skeleton Mountain (1,023 BLM acres)
Ash Flat (1,498 BLM acres)
Cold Creek (1,423 BLM acres)

Management activities include timber harvest and other surface disturbing for the next ten years starting from January 1993. Management activities of a limited nature (e.g. riparian, fish or wildlife enhancenemt, salvage, etc.) could be permitted in these areas if the effects will not increase the cumulative effects. Watershed management plans will be prepared if rehabilitation is deemed appropriate. (Medford District PRMP Chp 2 pg. 24)

Fragile, nonsuitable woodlands and forest lands within deferred watersheds will not be available for timber harvest and other surface disturbing activities will be prohibited unless adequately mitigated to maintain site productivity and protect water quality.

Surface-disturbing activities will be limited on all lands dominated by fragile granitic, schist, and pyroclastic soils to maintain site productivity, reduce soil erosion, and minimize water quality degradation. Restrictions to meet objectives could include, but are not limited to, no facility construction, shelterwood retention harvest systems, minimal impact or no road construction and minimal impact rights-of-way disturbance, no tractor yarding, seasonal restrictions on surface disturbing activities, and only broadcast burning when cool burns could be assured. Cutslopes, ditchlines, and fill slopes will be stabilized where appropriate on roads that are to remain open for public and administrative use.

X. PUBLIC INVOLVEMENT SUMMARY

A. PUBLIC INVOLVEMENT SOLICITATION

During this watershed analysis process attempts were made to seek input and involvement with the public in the identification of issues and concerns and the development of objectives for the West Fork Evans watershed unit. The initial effort was to mail over 300 letters to landowners within the watershed, along with interested public, and seek input as to what they identify as issues, concerns, or opportunities within the WAU (Sample letter in Appendix G). Thirteen responses to this letter were received. The majority of respondents indicated that they would like to be kept informed.

The issues and concerns identified in this initial effort are summarized below. Included are responses to the District RMP that were determined to be related to the West Fork of Evans Creek Watershed Unit. It should be noted that the responses are for the Mid and West Evans Watershed Units and some issues may be specific to West Evans. This document addresses only the West Fork of Evans Creek WAU.

Those respondents that requested to be kept informed will be included in the review of our "DRAFT" West Fork of Evans Creek Watershed Analysis. A public meeting will be held for further identification of and concerns to work toward developing a cooperative effort in meeting objectives within this watershed.

B. ISSUES AND CONCERNS IDENTIFIED BY PUBLIC RESPONSE

1. SOILS

a. Erosion resulting from culverts which are undersized and in poor repair.
b. Fisheries/Stream Sediment from excessive road density and unstable soils.
c. Sediment bedload in the upper reaches.
d. Erosion - Culverts are undersized
e. Excessive road density and unstable soils has resulted in extreme stream sediment which has seriously impacted fish
f. Density management of overstocked conifers so what remains will be supported by soils

2. RECREATION

a. Quality of Recreational Areas irreversibly impacted by irresponsible timber harvest practices.
b. Area is ugly due to overcutting - clean-up and replant with nitrogen fixing species such as Red Alder
c. Establishment of Off Highway Vehicle and horse trails at Elderberry Flat.

3. PEOPLE

a. Difficult to manage with checkerboard ownership and getting cooperation with all landowners.
b. Demonstrate Ecosystem Based Management to the Public
c. Identify projects and seek public support (i.e. SOTIA, Headwaters) so injunction will be released
d. Prescribed fire will scare people
e. Smoke in Rogue Valley will be unacceptable
f. Dislikes past timber harvest and clear cutting, including Rock and Salt Creek areas.
g. Sufficient timber removed - no longer economically feasible to consider timber harvest a viable land use

4. CUMULATIVE EFFECTS

a. Too many roads - put unneeded roads to bed

5. WATER

a. Water quantity, East Evans Creek drying up.
b. Streams/fisheries have be affected by too much timber harvest
c. Fisheries/stream sediment from excessive road density and unstable soils
d. Sediment bedload in upper reaches
e. Stream temps. elevated due to loss of riparian cover
f. Stream sediment loads are heavy
g. Large trees/logs removed from riparian areas - resulting in scoured stream beds and few deep pools

6. WILDFIRE

a. Fire protection
b. Recommend density management and thinning of overstocked conifers
c. Rural Interface Area (RIA) - rising fire protection costs
d. RIA - need to reduce threat of wildfire
e. Should study the effects of wildfire on wildlife (i.e. cavity nesting species) and on erosion
f. Practice uneven age management to reduce exposure to disastrous single canopy fires (i.e.Evans Creek Fire 1992)

XI. LANDSCAPE MANAGEMENT OBJECTIVES

An objective is defined as something towards which management effort is directed, or the desired outcome. Well written objectives should clearly state what is needed, why it's needed, where it's needed, how much or how many are needed, and how to determine when it is accomplished. These sound like easily answered questions, but the more time spent developing objectives, the more one realizes how cumbersome these tasks can become.

The more control there is over any given situation, the quicker and easier the objective can be accomplished. With scattered land ownership patterns, such as the situation in southwest Oregon, the task becomes more complicated, more costly, more time consuming, and can be more difficult to achieve. Even if local objectives are achieved, regional objectives may not be realized until adjacent land management objectives are fulfilled. For example, all the physical fish barriers on Evans Creek could be removed in this sub-watershed, but unless downstream land managers do the same, salmon will never reach the upper portions of this watershed. This dilemma points to several obvious, if somewhat time consuming solutions, the most widely accepted of which is partnerships with the other landowners or participants and possible future land exchanges in the task of land management. With dedicated partnerships, control over the situation is increased, more broadly based decisions can be made, action plans have a wider acceptance, results are realized sooner, and more people have a sense of ownership and pride in the results.

The best written plans, objectives, or intentions have several unforseen obstacles that are difficult to mitigate. These include such things as funding constraints, natural occurrences (fire, flood, etc), political impulses, and overriding priorities outside the influence of the project team. Even with these stumbling blocks, the challenge of accomplishing proper land management objectives should be continued. The following objectives are prioritized in order of importance.

A. OBJECTIVE: IMPROVE THE HABITAT FOR COHO SALMON, STEELHEAD AND TROUT.

RATIONALE: To prevent listing coho and steelhead as a "Threatened and Endangered" species and to improve fishery resources in the stream.

POSSIBLE ACTION/PROJECTS: Improve/increase fish passage and habitat in West Fork of Evans Creek by:

1. Stabilizing streambanks

2. Removing or modifying manmade barriers (culverts, etc.)

3. Improving function and complexity of riparian reserves by selective treatments (thinnings, hardwood and conifer planting, etc) that meet the Aquatic Conservation Strategy objectives.

4. Reducing sediment from roads (upgrade, obliterate or decommission roads; stabilize and revegetate road cutbanks)

5. Improving stream structure and complexity (riffle-pool ratio, large woody debris, etc.) through restoration or habitat enhancement projects.

MEASUREMENT/MONITORING: Fish population census, redd counts, stream survey data collection, macroinvertebrate sampling, temperature monitoring, riparian function surveys.

SUCCESS: Increased coho salmon and steelhead production with higher numbers of coho salmon, steelhead and trout in West Fork of Evans Creek. Reduction of flow of granitic soils into the aquatic system. Change in abundance or diversity of macroinvertebrates or a shift to cold water taxa. Increase in large woody debris measured in pieces per mile. Sustained lower water temperatures. High percent of shade covering streams. Increase in redd counts. Increase fish counts as determined by shocking.

B. OBJECTIVE: REDUCE SEDIMENT DELIVERY RATES TO STREAM CHANNELS.

RATIONALE: Currently the deposition of granitic sediments are found throughout the stream system in this watershed. Reducing sediments yields toward more natural conditions would aid in the recovery of degraded fish habitat and help restore stream channel stability.

POSSIBLE ACTIONS/PROJECTS:

1. Continue to upgrade existing roads to meet 100 year flood drainage standards by improving crossdrain spacing and installing adequate size stream crossing culverts. Rock surface or resurface natural or inadequately surfaced roads needed for future access.

2. Identify actively eroding jeep roads and/or skid trials and implement appropriate erosion control measures. (e.g. waterbars, establishing vegetative cover, rock or other protective fabrics.).

3. Continue effort to reduce road densities by obliterating or decommissioning roads not needed

for future access.

4. Continue effort to stabilize road cutbanks and fillslopes by establishing vegetative cover or other protective covering. (e.g. hydromulching, rock blanketing).

5. Limit tractor yarding to slopes less than 20%.

6. Identify opportunities to ameliorate soil compaction by ripping or subsoiling existing skid trials or jeep roads.

7. Continue to work closely with road maintenance crew to ensure timely and necessary maintenance actions that will meet road management objectives for this watershed.

MEASUREMENT/MONITORING: Continue collecting macroinvertebrate data to determine trends in stream sedimentation. Use stream sampling techniques to monitor turbidity levels for selected projects. This will help in establishing some baseline data for determining the effects of various projects on sediment production. Conduct periodic (1 every 5 years) inventories on representative stream segments to evaluate trends in stream channel stability and riparian functioning condition.

SUCCESS: Increased numbers of fish populations. Increased numbers of positive macroinvertebrate indicators. Observed and data validated indications of reduced turbidity and sediment production. Observed reduction of eroded gullies and channels from roads and skid trials. Observed restabilitization of actively eroding areas.

C. OBJECTIVE: PROVIDE FOR A SUSTAINABLE HARVEST OF FOREST COMMODITIES IN MATRIX. FOREST COMMODITIES INCLUDE TIMBER, FIREWOOD, AND SPECIAL FOREST PRODUCTS (boughs, mushrooms, burls, etc.).

RATIONALE: Provide for a sustained flow of forest products for economic stability. Maximize growth and yield of timber resources to insure sustainable harvest levels.

POSSIBLE ACTION/PROJECTS:

1. To enhance tree vigor and growth, a variety of silvicultural treatments will be utilized, including: site preparation, tree planting, mulching, tubing, scalping, brushing, fertilization, gopher baiting, thinning, etc.

2. Identify potential timber harvest areas. Conduct stand exams to assess current stand conditions and management needs. Use exam information to prioritize treatment areas. Proposed harvest areas will be compatible with landscape and management plan objectives.

3. On harvested areas, maintain long-term site productivity and biological legacies by retaining coarse woody debris, snags, and green trees of various species.

4. Identify current and potential areas for special forest products (firewood, burls, mushrooms, boughs). Manage special products to prevent excessive use or unacceptable impacts to the resource or site.

MEASUREMENT/MONITORING: Utilize permanent 5-point inventory plots to monitor forest growth and to adjust or develop probable sale quantities. Develop a monitoring plan for special forest products.

SUCCESS: Demonstrated sustainability of commodities.

D. OBJECTIVE: ON MATRIX LANDS, CREATE AND MAINTAIN CONNECTIVITY BETWEEN LATE SUCCESSIONAL RESERVES (LSR) AND PROVIDE REFUGE/HABITAT FOR A VARIETY OF ORGANISMS ASSOCIATED WITH LATE SUCCESSIONAL FORESTS.

RATIONALE: Late successional forests provide a variety of benefits, including: buffering of microclimates during seasonal climate extremes, nutrient retention, carbon storage and nutrient recycling. They also are a source of arthropods, salamanders, lichen, mosses and other organisms beneficial to ecosystem functions. Late successional forests stabilize soil and provide habitat for late successional dependent species, especially for those with limited dispersal capabilities.

POSSIBLE ACTION/PROJECTS:

1. Identify existing and potential connectivity corridors of late successional forest in riparian and upland areas throughout the matrix and between the large LSR's. There is a concern for maintaining connectivity along the Rogue-Umpqua Divide between large LSR's 0223 (Galesville) and 0224 (Elk Creek) across the northern tier of the West Evans watershed. Maintenance of 40 to 80 acre blocks of older habitat (connectivity nodes) in T32S, R3W, Sections 34 and 35 plus T33S, R3W, Sections 1 and 11 would augment the stepping stones already provided by existing connectivity blocks and critical habitat. See Map 6.

2. In upland areas, identify late successional patches (>150 years and at least 50 acres in size) that are suitable to maintain or enhance for interior forest conditions.

3. Design management activities to provide edge-to-area ratios that are needed to achieve desired interior forest conditions.

4. Develop surveys for lichens, arthropods, etc., to determine habitat requirements.

5. Maintain and enhance designated spotted owl critical habitat in older successional structural characteristics. The portion of critical habitat unit 32 (CHU-32) in this watershed includes T32S, R3W, Sections 30, 31 and T32S, R4W, Sections 25 and 35.

MEASUREMENT/MONITORING: The availability of identifiable connectivity patches and corridors that provide late successional forest conditions. Include the matrix lands in biological survey to assess species diversity.

SUCCESS: Riparian corridors moving towards late successional condition. Plant and animal diversity maintained. Diversity of forest stands with differing sizes and structures.

E. OBJECTIVE: INCREASE LATE SUCCESSIONAL FOREST CONDITIONS, PARTICULARLY OLD GROWTH CONDITIONS, IN THE FOUR DESIGNATED CONNECTIVITY BLOCKS. (T33S, R3W, Sec. 3, 5, 27 and T34S, R3W, Sec. 17-partial).

RATIONALE: Connectivity blocks and late successional stands provide for movement and dispersal of plant and animal species. The blocks provide for biological and ecological flows.

POSSIBLE ACTIONS/PROJECTS:

1. Manage even-age plantations to accelerate the development of stand structure. Create canopy gaps, favor development of a variety of tree species (conifer and hardwood). Thin to differing residual density levels; dependant upon topographic position and aspect. Leave clumps of un- thinned trees.

2. Maintain and protect stands that are currently greater than 150 years old.

3. Conduct stand exams to describe existing vegetative condition and structure in pole size and larger stands to identify opportunities to return stands to older structure characteristics.

4. Manage fuel loadings with light underburns, change in fuel breaks, to increase or maintain late successional forest condition.

MEASUREMENT/MONITORING: Use stand exam data to compare with stand growth models. Attempt to monitor old growth dependent animal species. Monitor a representative sample of connectivity blocks.

SUCCESS: A minimum of 25 to 30 percent of the connectivity block closely resembles old growth systems in composition, structure and function.

F. OBJECTIVE: PROVIDE A VARIETY OF RECREATION OPPORTUNITIES THROUGH ESTABLISHMENT OF A RECREATION MANAGEMENT PLAN THAT WOULD ASSESS MANAGEMENT AND USE OF ESTABLISHED SITES, IDENTIFY POTENTIAL SITES, TYPES OF USERS, AMOUNT AND LOCATION OF USERS AND PROVIDE DIRECTION FOR FUTURE MANAGEMENT OF THE RECREATION COMPONENT OF THE WATERSHED.

RATIONALE: There is a high amount of recreational use of West Fork of Evans Creek watershed. Currently, two semi-developed sites exist along with many dispersed sites. These sites receive moderate to high use during the summer and low use during the winter. There is a high amount of OHV use associated with Elderberry Flat area along with bicycling, horseback riding, gold dredging, picnicking and camping. Many of the other sites receive high use in the summer because of their location along the creek. Elderberry Flat has minimal development, while the other sites have no development.

POSSIBLE ACTIONS/PROJECTS:

1. Develop a recreation management plan for the watershed that would assess the recreational use of the dispersed sites, semi-developed sites, trails and other recreational use of the area. From this plan, the following possible actions may occur.

2. Designate trails around Elderberrry Flat for seasonal OHV, horse, bicycle use, to keep users on trails with less sensitive soils and to reduce stream crossings and sedimentation.

3. Determine how to better use the day use area at Elderberry Flat. Possible options include making it a hike-in or vehicle accessible campground, or a horse campground.

3. Assess impacts at the dispersed sites. Possible actions could include closing sites, developing sites, or leaving them as is. Because of the intense use of the riparian area by people recreating, areas of erosion could be addressed by planting of riparian vegetation and willow wattles.

4. Upgrade Elderberry Flat Campground by replacing old picnic tables, numbering sites, blocking the pull-in from the campsite. Place a foot bridge across creek for access to day use site. Look into the possibility of getting a campground host during the summer to help reduce vandalism and help take care of the site.

5. Develop enhanced visitor use reports to determine amount and type of users. More intensive on-site BLM management to obtain more accurate visitor use figures. Set up site registers at Elderberry Campground and Day Use areas. Install road and trail counters.

MEASUREMENT/MONITORING: Visitor use reports, site register, trail and vehicle counters. Interview users to determine satisfaction with opportunities available. Monitor impacts of

recreational use of sites and trails. Observe conditions of use.

SUCCESS: Appropriate use of the recreation sites along West Fork of Evans Creek (reduce the number of extended stays and misuse of the sites). Reduced impacts from recreational use of the area. Confine OHV, horse and bicycle use to established trails and away from more sensitive areas (cutbanks, streams). Enhance recreation opportunities while minimizing impacts to streams.

G. OBJECTIVE: IMPROVE FOREST ECOSYSTEM HEALTH, DIVERSITY, AND RESILIENCY.

RATIONALE: Improving forest ecosystem health, diversity, and resiliency increases stand resistance and tolerance of climatic extremes/fluctuations, reduces potential for major insect and disease outbreaks, reduces potential for large fires, reduces erosion, and increases soil productivity.

POSSIBLE ACTION/PROJECTS:

1. Promote and improve species diversity by encouraging natural levels of diversity found in native plant communities.

2. Thin dense conifer stands. Prioritize stands that are less than 150 years old with relative densities greater than 50 percent. Utilize underburning to thin where appropriate.

3. Improve horizontal and vertical diversity in even-aged plantations, create canopy gaps, encourage species diversity and maintain unthinned clumps.

4. Reduce detrimental impacts to important invertebrates, fungi, mosses, lichens by minimizing litter and topsoil disturbance during management activities.

5. Reduce existing populations of noxious weeds and prohibit expansion of weeds from surrounding watersheds by use of native species of grasses, forbs, and shrubs whenever possible.

6. Maintain a diversity of age/size/species classes throughout the landscape. Utilize historic range of natural variability to determine target acres (Atzet's 1988).

7. Provide environmental conditions that are beneficial for insect predators (salamanders, bats, birds, etc...) by leaving woody debris, down logs and snags for habitat.

8. Maintain and improve existing water developments to meet the Oregon Department of Water Resources requirements and receive water right permits. These developments provide water for wildlife, road operations, prescribe fire, and emergency fire suppression. They also protect the habitat for the Western pond turtle, known to inhabit the Upper West Fork of Evans helipond and the nearby uplands (i.e. south facing slopes and grasslands).

MEASUREMENT/MONITORING: Measurement of relative densities of managed stands are 35 to 50 percent (stand vigor and growth are maximized). Diversity of plant and animal species is increasing. Continue to conduct annual insect and disease aerial surveys. Continue to conduct regeneration surveys, stand exams, survey and manage species, threatened and endangered species surveys for indication of species diversity. Continue to take aerial photos every five years.

SUCCESS: The type, amount and distribution of seral stages within landscape are within desired range. Increased stand vigor and growth rates, endemic levels of insect and disease, and viable populations of a variety of plants and animals.

XII. SPATIAL DESIGN

Spatial design provides a landscape view of desired conditions and vegetation patterns. The design provides direction and defines trends necessary to accomplish the stated landscape objectives.

The first step in spatial design is defining which biological and physical conditions are sustainable. Four factors that play a significant role in ecological sustainability and diversity in the West Fork of Evans Creek WAU are:

1. Human disturbances, eg. road building, timber harvesting.

2. Natural disturbance regimes, such as fire, drought.

3. Topography/landform
   * highly dissected topography by drainages
   * sensitive soil types (decomposed granitics, schists)

4. Plant communities and successional stage

Future desired conditions need to be consistent with the ecological capabilities of the landscape. Incorporating the four factors above are essential in planning management actions and projecting target landscape conditions.

Natural forest ecosystems are complex, dynamic, and always changing. No single condition can be maintained permanently. Instead, a range of variability occurs over time. Ecosystems within this range of variability are considered functional and sustainable. Ecosystems that fall outside this range are potentially unstable, and may not be sustainable.

To establish the range of variability for the West Fork of Evans Creek watershed, refer to the document on the history of the area by Atwood/Lang. A map was done on the 1916 landscape based on the O & C revestiture survey notes and is available. Following is a summary of the historic condition based on the document by Atwood/Lang.

A. HISTORIC CONDITION SUMMARY

Within the West Fork of Evans Creek Watershed there is a history of fire, due to lightning, that resulted in some portions of the watershed being in an early seral condition. Due to the elevation of the watershed, the frequency of fire was considerably less than in other watersheds at lower elevations. Lower fire occurrences and less utilization by native americans resulted in the development of more mature and old-growth seral conditions to occur in the watershed. In reviewing the 1916 inventory of the O&C revested lands, the majority of the watershed was timbered with sugar pine, ponderosa pine, and Douglas fir. The conifer volumes ranged from approximately 2M bd ft per acre to 55M bd ft per acre. The conifer diameters averaged 50 to 70 inches DBH for sugar pine and 28 to 36 inches DBH for Douglas fir and ponderosa pine. In the inventory records, it is also noted that there were areas previously burned and revegetated with brush species. With the volumes indicated by the 1916 inventory, the forest stands were more open and park-like at the lower elevations of the watershed. The higher elevations of the watershed contained forest stands that were less dense than the stands of today. But, those stands were not as open and park-like as the stands found in the lower elevations of the watershed. The conifer stands present in 1916 would be in the mature and old growth stage except for those areas affected by fires that occurred in the watershed.

B. CURRENT CONDITION

Presently, the West Fork of Evans Creek Watershed is composed of early and pole seral

classes. These classes are forested with a mixture of ponderosa pine, Douglas fir, incense cedar and sugar pine plantations. There are patches of mature and old growth composed of Douglas fir, white fir, and western hemlock. Ponderosa pine and sugar pine are represented in these patches but at lower densities than in the 1916 inventory. Within the existing plantations, brush is dense and native grasses are scarce. The plantations are well stocked though maintenance and release operations are needed to promote conifer growth. The maintenance and release work will also assist in moving from the early seral stages to the mature/old growth stage.

C. DESIRED FUTURE CONDITION

The intent of the watershed design is to identify land management direction that will best meet the resource objectives. The design team has recognized that ownership within the landscape is fragmented, and implementing this design on only BLM lands will not fully meet the identified objectives. If landowners embrace these objectives, future desired conditions will include partnerships that can work together towards these objectives.

1. FISHERIES, AQUATIC AND RIPARIAN CONDITIONS

The desired stream condition includes high quality spawning and rearing habitat for anadramous and native fish. Habitat in the larger streams should be represented by complex stream structures and conditions, properly functioning riparian zones, stream bed stability, continuous supply of all sizes of organic debris and moderate amounts of input of sediments and parent material. Riparian reserves should be primarily composed of late seral stage forests.

Aquatic insect populations should be abundant and diverse. They should be representative of small, cool aquatic systems, i.e. Rock Creek, Battle Creek.

Properly functioning riparian reserves would consist of a continuous, stable, late successional forest community that would help regulate stream flows, temperature, increase storage, and provide natural recruitment of down woody material. There is a need to maintain a diversity of all species which are needed to produce large amounts of organic debris and provide nutrients for the food chain that begin with bacteria and fungi.

Desired future condition should reduce the amount of roads within the riparian reserve. Impacts by other activities such as quarries, rock stockpiles, off highway vehicles should be reduced or eliminated where possible.

2. SEDIMENTATION

Reducing sediment rates is an important factor in restoring the health of the stream systems within the West Fork of Evans Creek watershed. Healthy streams are stable, resilient and provide for a properly functioning aquatic ecosystem. Desired characteristics are streams with adequate amounts of gravels for spawning fish and macroinvertebrate sustainabilty, functioning riparian areas that regulate stream flow and temperatures and supply enough large conifer trees to provide for streambank stability and down coarse woody materials.

Future conditions that would help meet these objectives are stabilization of actively eroding areas particularly roads and skid trials. All roads within the watershed would meet 100 year flood standards, and road densities would be reduced to 4 miles/section from the current 5 miles per section over the next five years. This would reduce the potential risk to the aquatic habitat by lowering the frequency and magnitude of peak flows and flooding which scour stream channels and create excessive sediment yields.

3. FOREST COMMODITIES

Harvesting of forest commodities would occur throughout the landscape where opportunities

exist. Inventories would indicate opportunities for sustainable harvest levels of forest products. Consideration would be made to utilize those forest products which become available in meeting other resource objectives.

4. CONNECTIVITY

Connectivity within and between watersheds would increase by maintaining existing late successional reserves and increasing late successional stages in riparian management areas, designated connectivity blocks, and owl core areas. This will provide a buffering of microclimates, nutrient retention, carbon storage, and nutrient recycling, along with protection of a diversity of late successional dependent species.

Riparian reserves anchor key connectivity habitat and create corridors along the bottomlands within and between watersheds. The desired future condition would include the following components:

a. Increase continuity of connectivity zones.
b. Improve the quality and increase the area of late successional forest community in riparian reserves.
c. Establish connectivity corridors between riparian reserves and owl core areas.
d. Maintain an evenly distributed range of seral stages adjacent to riparian reserves and core areas.

5. RECREATION OPPORTUNITIES

Many recreation opportunities exist in the West Fork of Evans Creek watershed. There is a high amount of recreational use of the area. The desired future condition includes implementation of a recreation management plan for the watershed that would determine recreation opportunities, type and amount of users and management actions that need to take place to provide these opportunities. Some potential desired future conditions include designated trails for users around Elderberry Flat, minimizing impacts at recreation sites, accurate use figures on amount and type of use that occurs in the area, and proper use and reduction of extended stays at recreation sites.

6. FOREST HEALTH

Healthy forest stands would consist of a diversity in species, size, and age classes. Healthy forests would support a diversity of wildlife species. Stands would be thinned to reduce current dense conditions and encourage diversity. Regeneration harvest within the landscape would meet the Southern General Forest Management Area regime in order to protect sensitive soils, moderate temperature extremes, create diversity, and reduce fire intensities. Emphasis for timber harvesting would be in the matrix lands within the landscape.

Seral diversity is discussed in chapter 4 of the PRMP (Environmental Consequences), pg. 24. It states, "Because the planning area contains large amounts of privately-owned land, an optimum mixture of seral stages on BLM administered land may not be optimum for the landscape." (PRMP, 1994)

Comparing the past conditions with the existing Atwood/Lang document, it appears there is little chance that the West Fork of Evans Creek watershed will ever contain the seral diversity and percentages as stated in the RMP.

XIII. CONCLUSIONS

Based on the preceding analysis, the following conclusions can be drawn for the West Fork of Evans Creek Watershed:

1. Human activities and highly erodible soil types have played a major role in this WAU. Timber harvest and road construction has had a major influence on soil erosion and subsequent sedimentation of streams. As a result, the fisheries habitat has been degraded and is in need of restoration.

2. This watershed, based on land ownership patterns, will never meet the goal of desired forest seral stages identified for the Southwest Oregon Ecosystem as described in Chapter 4 (Environmental Consequences) of the PRMP.

3. Without partnerships between private landowners and public land managers, the landscape management objectives listed in this document will be difficult, if not impossible, to achieve. It will require a long term commitment from all those involved to meet identified objectives.

4. Some of the issues addressed in this document have little available inventory information. The need for more in-depth surveys has been identified. Such issues as presence of sensitive wildlife species, neotropical birds, amount of snags and down woody material, and vegetative condition on private lands are but a few of the issues which need more data to support the decision making process.

5. This is a dynamic document which is open to change as more information is gathered.

More specific means of achieving these objectives have been outlined under the possible action/projects section of objectives A-G in the text.

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GLOSSARY

GLOSSARY OF TERMS

Adit - A horizontal entrance to a mine

Analytical Watershed - For planning purposes, a drainage basin subdivision of the planning area used for analyzing cumulative impacts on resources.

Anadromous Fish - Fish that migrate as adults from the ocean into fresh water streams to reproduce young that return to the ocean to grow to maturity ie salmon, steelhead.

Animal Unit Month (AUM) - The amount of forage necessary for the sustenance of one cow or its equivalent for one month.

Big Game - Large mammals that are hunted, such as Roosevelt elk, black-tailed deer, and black bear.

Biological Diversity - The variety of life and its processes.

Biological Legacies - Components of the forest stand (e.g., large trees, down logs, and snags) reserved from harvest to maintain site productivity and to provide structure and ecological functions in subsequent forest stands.

Broadcast Burning - A controlled fire that burns within defined boundaries to achieve management objectives.

Bureau Assessment Species - Plant and animal species on List 2 of the Oregon Natural Heritage Data Base, or those species on the Oregon List of Sensitive Wildlife Species (OAR 635-100-040), which are identified in BLM Instruction Memo No. OR-91-57, and are not included as federal candidate, state listed, or Bureau-sensitive species.

Bureau-Sensitive Species - Plant or animal species eligible for federal listed, federal candidate, state listed, or state candidate (plant) status, or on List 1 in the Oregon Natural Heritage Data Base, or approved for this category by the State Director.

Cambial - A layer of cells in the stems and roots of vascular plants that generates phloem and xylem.

Candidate Species - Those plants and animals included in Federal Register "Notices of Review" that are being considered by the Fish and Wildlife Service (FWS) for listing as threatened or endangered. There are two categories that are of primary concern to BLM. These are:

> Category 1. Taxa for which the FWS has substantial information on hand to support proposing the species for listing as threatened or endangered. Listing proposals are either being prepared or have been delayed by higher priority listing work.
>
> Category 2. Taxa for which the FWS has information to indicate that listing is possibly appropriate. Additional information is being collected.

Cavity Dependent Species - Birds and animals dependent on snags for nesting, roosting, or foraging habitat.

Cavity Excavator - A wildlife species that digs or chips out cavities in wood to provide a nesting, roosting, or foraging site ie woodpeckers.

Cavity Nester - A wildlife species that nests in cavities.

Climax Plant Community - The theoretical, final stable, self-sustaining, and self reproducing state of plant community development that culminates plant succession on any given site. Given a long period

of time between disturbances, plant associations on similar sites under similar climatic conditions would approach the same species mixture and structure. Under natural conditions, disturbance events of various intensities and frequencies result in succession usually culminating as sub-climax with the theoretical end point occurring rarely if at all.

Commodity Resources - Goods or products of economic use or value.

Community Stability - The capacity of a community (incorporated town or county) to absorb and cope with change without major hardship to institutions or groups within the community.

Concern - A topic of management or public interest that is not well enough defined to become a planning issue, or does not involve controversy or dispute over resource management activities or land use allocations or lend itself to designating land use alternatives. A concern may be addressed in analysis, background documents, or procedures or in a noncontroversial decision.

Connectivity - Habitat that provides components of older forest characteristics to provide stepping stones for genetic interchange for plants and animals.

Connectivity Nodes - An additional block of habitat to provide a supplemental stepping stone in a corridor between large LSR's.

Consistency - Under the Federal Land Policy and Management Act, the adherence of BLM resource management plans to the terms, conditions, and decisions of officially approved and adopted resource related plans, or in their absence, with policies and programs of other federal agencies, state and local governments and Indian tribes, so long as the plans are also consistent with the purposes, policies, and programs of federal laws and regulations applicable to BLM-administered lands. Under the Coastal Zone Management Act, the adherence to approved state management programs to the maximum extent practicable, of federal agency activities affecting the defined coastal zone.

Core Area - The 100 acre area of habitat essential in the breeding, nesting, and rearing of young up to the point of dispersal of the young.

Corridors - Provides routes between similar seral stages or vegetative types, corridors may include roads, riparian areas, powerlines, timber.

Cover - Vegetation used by wildlife for protection from predators to mitigate weather conditions or to reproduce.

Critical Habitat - (1) Specific areas within the geographic area occupied by a threatened or endangered species at the time it is listed. These areas must have physical or biological features essential to the conservation of the species and which may require special management considerations or protection. (2) Specific areas outside the geographical area occupied by a threatened or endangered species at the time it is listed determined by the Secretary to be essential for the conservation of the species.

Cull - A tree or log that does not meet merchantable specifications.

Cultural Resource - Any definite location of past human activity identifiable through field survey, historical documentation, or oral evidence; includes archaeological or architectural sites, structures, or places, and places of traditional cultural or religious importance to specified groups whether or not represented by physical remains.

Cumulative Effect - The impact which results from identified actions when they are added to other past, present, and reasonably foreseeable future actions regardless of who undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

Density Management - Cutting of trees for the primary purpose of widening their spacing so that growth

of remaining trees can be accelerated. Density management harvest can also be used to improve forest health, to open the forest canopy, or to accelerate the attainment of old growth characteristics if maintenance or restoration of biological diversity is the objective.

DBH - (Diameter At Breast Height) The diameter of a tree 4.5 feet above the ground.

Dispersed Recreation - Outdoor recreation in which visitors are diffused over relatively large areas. Where facilities or developments are provided, they are primarily for access and protection of the environment rather than comfort or convenience of the user.

Early Seral Stage - See Seral Stages.

Economically Feasible - Having costs and revenues with a present net value greater than zero.

Ecosystem - An interacting natural system including living organisms and the nonliving environment. Ecosystems may vary in size. For example, the community of microorganisms in water, the lake which contains the water, the watershed the lake resides in, and the mountain range containing the watershed.

Edge Effect - An ecologically important biological effect that occurs in the transition zone where two plant communities or successional stages meet and mix.

Endangered Species - Any species defined through the Endangered Species Act of 1973 as amended as being in danger of extinction throughout all or a significant portion of its range and published in the Federal Register.

Environmental Impact - The positive or negative effect of any action upon a given area or resource.

Environmental Impact Statement (EIS) - A formal document to be filed with the Environmental Protection Agency that considers significant environmental impacts expected from implementation of a major federal action.

Exotic Plants - Plants that are foreign to the watershed, not native.

ERMA = An Extensive Recreation Management Area is an area that receives moderate/low use with less developed recreation facilities. These facilities require medium/low recreation investment and/or management. These are smaller areas with lower recreation resource values. (Definition adapted from the Medford District RMP)

Forest Health - A condition which expresses the forest's relative ability to remain productive, resilient, and dynamically stable over time and to withstand the effects of periodic natural or man-caused stresses such as drought, insect attack, climatic change and changes in management practice and resource demands.

Fragile Nonsuitable - A Timber Production Capability Classification indicating forestland having fragile conditions, which if harvested, would result in reduced future productivity even if special harvest or restrictive measures are applied. These fragile conditions are related to soils, geologic structure, topography, and ground water.

Green Tree Retention - A stand management practice in which live trees as well as snags and large down wood are left as biological legacies within harvest units to provide habitat components over the next management cycle.

> High Level - A regeneration harvest designed to retain the highest level of live trees possible while still providing enough disturbance to allow regeneration and growth of the naturally occurring mixture of tree species. Such harvest should allow for the regeneration of intolerant and tolerant species. Harvest design would also retain cover and structural features necessary to provide foraging and dispersal habitat for mature and old growth dependant species.

Low Level - A regeneration harvest designed to retain only enough green trees and other structural components (snag, coarse woody debris, etc.) to result in the development of stands that meet old growth definitions within 100 to 120 years after harvest entry, considering overstory mortality.

Hiding Cover - Generally, any vegetation used by wildlife for security or to escape from danger. More specifically, any vegetation capable of providing concealment (e.g., hiding 90 percent of an animal) from human view at a distance of 200 feet or less.

Home Range - The area an animal traverses in the scope of normal activities; not to be confused with territory which is the area an animal defends.

Impact - A spatial or temporal change in the environment caused by human activity.

Indigenous - Living or occurring naturally in a specific area or environment.

Intermittent Stream - A stream that flows most of the time but occasionally is dry or reduced to pools.

Landscape - An area composed of interacting ecosystems that are repeated because of geology, landforms, soils, vegetation, climate, and human influences.

Landscape Management - The application of ecosystem management practices to the specific area affected by the PRMP.

Late Seral Stage - See Seral Stages.

Late Successional Reserve (LSR) - A forest in its mature and/or old growth stages that has been reserved in the ROD to maintain older characteristics.

Lode mining - Mining an ore vein deposit.

Long-Term - The period starting l0 years following implementation of the Resource Management Plan. For most analyses, long-term impacts are defined as those existing 100 years after implementation.

Matrix - "the most connected portion of the landscape". It is generally the predominant vegetative type and therefore exerts the strongest control over the movement of living and non-living things across the landscape (fire, wind, plants, animals, people). The matrix affects the rate at which various disturbances move through the landscape.
Mature Seral Stage - See Seral Stages.

Mid-Seral Stage - See Seral Stages.

Multi-layered Canopy - Forest stands with two or more distinct tree layers in the canopy; also called multi-storied stands.

Neotropical Migrants - A wide variety of bird species, which breed in temperate North America but migrate to tropical habitats in Central and South America during winter.

Nonsuitable Woodland - All fragile nonsuitable forestland.

Noxious Plant - A plant specified by law as being especially undesirable, troublesome, and difficult to control.

Noxious Weed - See Noxious Plant.

Off-Highway Vehicle (OHV) - Any motorized track or wheeled vehicle designed for cross country travel

over natural terrain.

Off-Highway Vehicle Designation-

> Open: Designated areas and trails where off-highway vehicles may be operated subject to operating regulations and vehicle standards set forth in BLM Manuals 834l and 8343.
>
> Limited: Designated areas and trails where off-highway vehicles are subject to restrictions limiting the number or types of vehicles, date, and time of use; limited to existing or designated roads and trails.
>
> Closed: Areas and trails where the use of off-highway vehicles is permanently or temporarily prohibited. Emergency use is allowed.

Old-Growth Seral Stage - See Seral Stages.

Patches - Patches are distinct areas different than the general landscape around them.

Peak Flow - The highest amount of stream or river flow occurring in a year or from a single storm event.

Perennial Stream - A stream that has running water on a year round basis.

Plant Association - A plant community type based on land management potential, successional patterns, and species composition.

Plant Community - An association of plants of various species found growing together in different areas with similar site characteristics.

Porosity - degree of fragmentation

Prescribed Fire - Introduction of fire under controlled conditions for management purposes.

Raptor - Any of the birds of prey, which includes eagles, hawks, falcons, and owls.

Redd - The spawning ground or nest for various fishes ie a depression in stream gravel.

Relative Stand Density- Density in trees per acre of a stand divided by the maximum density in trees per acre attainable in a the stand

Resource Management Plan (RMP) - A land use plan prepared by the BLM under current regulations in accordance with the Federal Land Policy and Management Act.

Right-of-Way - A permit or an easement that authorizes the use of public lands for specified purposes, such as pipelines, roads, telephone lines, electric lines, reservoirs, and the lands covered by such an easement or permit.

Riparian Management Area - An area allocated in the plan primarily to protect the riparian and/or streamside zone.

Riparian Zone - Those terrestrial areas where the vegetation complex and microclimate conditions are products of the combined presence and influence of perennial and/or intermittent water, associated high water tables and soils which exhibit some wetness characteristics. Normally used to refer to the zone within which plants grow rooted in the water table of these rivers, streams, lakes, ponds, reservoirs, springs, marshes, seeps, bogs and wet meadows.

Rotation - The planned number of years between the regeneration of an even-aged forest stand and its final cutting.

Rural Interface Areas - Areas where BLM-administered lands are adjacent to or intermingled with privately owned lands zoned for 1 to 20-acre lots or that already have residential development.

Seral Stages - The series of relatively transitory plant communities that develop during ecological succession from bare ground to the climax stage.
There are five stages:

> Early Seral Stage - The period from disturbance to the time when crowns close and conifers or hardwoods dominate the site. Under the current forest management regime, the duration is approximately 0 to 10 years. This stage may be dominated by grasses and forbs or by sprouting brush or hardwoods. Conifers develop slowly at first and gradually replace grasses, forbs, or brush as the dominant vegetation. Forage may be present; hiding or thermal cover may not be present except in rapidly sprouting brush communities.
>
> Mid-Seral Stage - The mid-seral stage occurs from crown closure to the time when conifers would begin to die from competition; approximately age 10 to 40. Stands are dense and dominated by conifers, hardwoods, or dense brush. Grass, forbs, and herbaceous vegetation decrease. Hiding cover for big game is usually present.
>
> Late Seral Stage - Late seral stage occurs when conifers would begin to die from competition to the time when stand growth slows; approximately age 41 to 100. Forest stands are dominated by conifers or hardwoods; canopy closure often approaches 100 percent. Stand diversity is minimal; conifer mortality rates and snag formation are rapid. Big game hiding and thermal cover is present. Forage and understory vegetation is minimal except in understocked stands or in meadow inclusions.
>
> Mature Seral Stage - This stage exists from the point where stand growth slows to the time when the forest develops structural diversity; approximately age 101 to 200. Conifer and hardwood growth gradually decline. Developmental change slows. Larger trees increase significantly in size. Stand diversity gradually increases. Big game hiding cover, thermal cover, and some forage are present. With slowing growth, insect damage increases and stand breakup may begin on drier sites. Understory development is significant in response to openings in the canopy created by disease, insects, and windthrow. Vertical diversity increases. Larger snags are formed.
>
> Old-Growth - This stage constitutes the potential plant community capable of existing on a site given the frequency of natural disturbance events. For forest communities, this stage exists from approximately age 200 until when stand replacement occurs and secondary succession begins again. (Also see definitions of old-growth conifer stand and potential natural community.)

Short-Term - The period of time during which the RMP will be implemented; assumed to be l0 years.

Site Class - A measure of an area's relative capacity for producing timber or other vegetation.

Site Preparation - Any action taken in conjunction with a reforestation effort (natural or artificial) to create an environment that is favorable for survival of suitable trees during the first growing season. This environment can be created by altering ground cover, soil or microsite conditions using biological, mechanical, or manual clearing, prescribed burns, herbicides or a combination of methods.

Slope Failure - See Mass Movement.

Smoke Management - Conducting a prescribed fire under suitable fuel moisture and meteorological conditions with firing techniques that keep smoke impact on the environment within designated limits.

Snag - Any standing dead, partially-dead, or defective (cull) tree at least l0 inches in diameter at breast height (dbh) and at least 6 feet tall. A hard snag is composed primarily of sound wood, generally merchantable. A soft snag is composed primarily of wood in advanced stages of decay and

deterioration, generally not merchantable.

Soil Productivity - Capacity or suitability of a soil for establishment and growth of a specified crop or plant species.

Special Forest Products - Firewood, shake bolts, mushrooms, ferns, floral greens, berries, mosses, bark, grasses, and etc., that would be harvested in accordance with the objectives and guidelines in the PRMP.

Special Status Species - Plant or animal species falling in any of the following categories (see separate glossary definitions for each):

- Threatened or Endangered Species,
- Proposed Threatened or Endangered Species,
- Candidate Species,
- State Listed Species,
- Bureau Sensitive Species
- Bureau-Assessment Species.

Species Diversity - The number, different kinds, and relative abundance of species.

Stand Density - An expression of the number and size of trees on a forest site. May be expressed in terms of numbers of trees per acre, basal area, stand density index, or relative density index.

State Critical - Species for which listing as threatened or endangered is pending; or those for which listing as threatened or endangered may be appropriate if immediate conservation actions are not taken. Also considered critical are some peripheral species which are at risk throughout their range, and some disjunct populations.

State Peripheral or naturally rare - peripheral species refer to those whose Oregon populations are on the edge of this range.

State Threatened and Endangered - Plant or animal species listed by the State of Oregon as threatened or endangered pursuant to ORS 496.004, ORS 498.026, or ORS 564.040.

State Undetermined - Species for which status in unclear. They may be susceptible to population decline of significant magnitude that they could qualify for endangered, threatened, critical, or vulnerable status; but scientific study will be required before a judgment can be made.

State Vulnerable - Species for which listing as threatened or endangered is not believed to be imminent and can be avoided through continued or expanded use of adequate protective measures and monitoring.

Stream Class - A system of stream classification established in the Oregon Forest Practices Act. Class I streams are those which are significant for: 1) domestic use, 2) angling, 3) water dependent recreation, and 4) spawning, rearing, or migration of anadromous or game fish. All other streams are Class II. Class II special protection streams are Class II streams that have a significant summertime cooling influence on downstream Class I waters, which are at or near a temperature at which production of anadromous or game fish is limited.

Stream Reach - An individual first order stream or a segment of another stream that has beginning and ending points at a stream confluence. Reach end points are normally designated where a tributary confluence changes the channel character or order. Although reaches identified by BLM are variable in length, they normally have a range of 1/2 to 1-1/2 miles in length unless channel character, confluence distribution, or management considerations require variance.

Structural Diversity - Variety in a forest stand that results from layering or tiering of the canopy and the die-back, death and ultimate decay of trees. In aquatic habitats, the presence of a variety of structural

features such as logs and boulders that create a variety of habitat.

Succession - A series of dynamic changes following disturbance by which one group of plants succeeds another through stages leading to the potential natural community or to climax. The developmental series of plant communities is called a sere and defined stages are called seral stages.

Suitable Woodland - Forestland occupied by minor conifer and hardwood species not considered in the commercial forestland PSQ determination and referred to as noncommercial species. These species may be considered commercial for fuelwood, etc. under woodland management. Also included are low site and nonsuitable commercial forestland. These lands must be biologically and environmentally capable of supporting a sustained yield of forest products.

Thermal Cover - Cover used by animals to lessen the effects of weather. A stand of conifer trees that are 40 feet or more tall with an average crown closure of 70 percent or more.

Threatened Species - Any species defined through the Endangered Species Act as likely to become endangered within the foreseeable future throughout all or a significant portion of its range and published in the Federal Register.

Timber Production Capability Classification (TPCC) - The process of partitioning forestland into major classes indicating relative suitability to produce timber on a sustained yield basis.

Transpiration - The passage of water vapor from a living body through a membrane or pores.

Travel Corridor - A route used by animals along a belt or band of suitable cover or habitat.

TSZ (Transient Snow Zone) - This is the elevation zone between 3500 - 4500 feet where cumulated snow packs may have rain on snow creating flood conditions.

Viable Population - A wildlife or plant population of sufficient size to maintain its existence in spite of normal fluctuations in population levels.

Water Quality - The chemical, physical, and biological characteristics of water.

WAU - Watershed Analysis Unit.

Wetlands or Wetland Habitat - Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that und
Wildlife Tree - A live tree retained to become future snag habitat.

Withdrawal - A designation that restricts or closes public lands from the operation of land or mineral disposal laws.

Woodland - Forestland producing trees not typically used as saw timber products and not included in calculation of the commercial forestland PSQ.

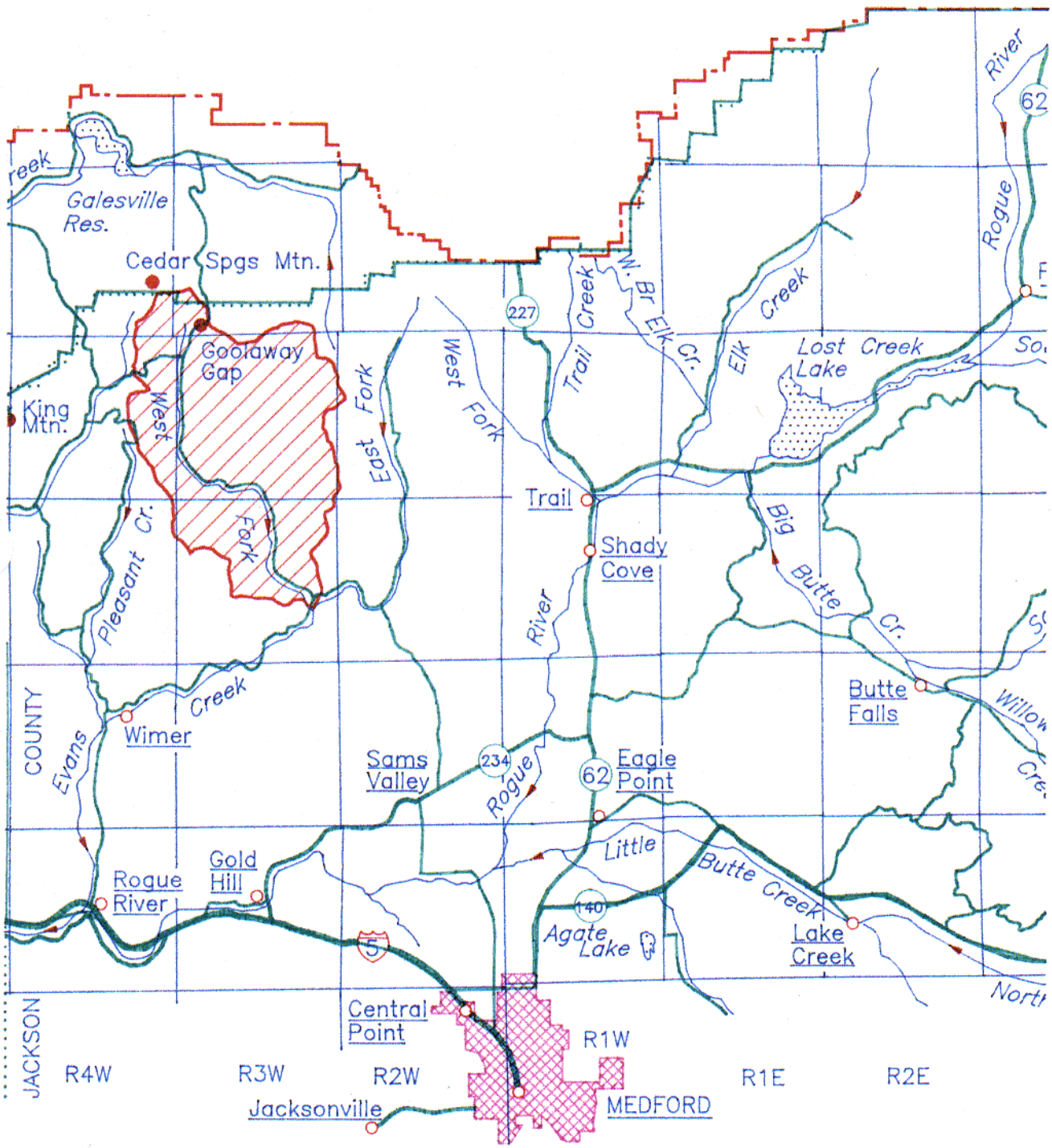
Xeric sites - Adapted to a very dry habitat.

Yarding - The act or process of moving logs to a landing ie by tractor or helicopter.

APPENDICES

Appendix A
Maps

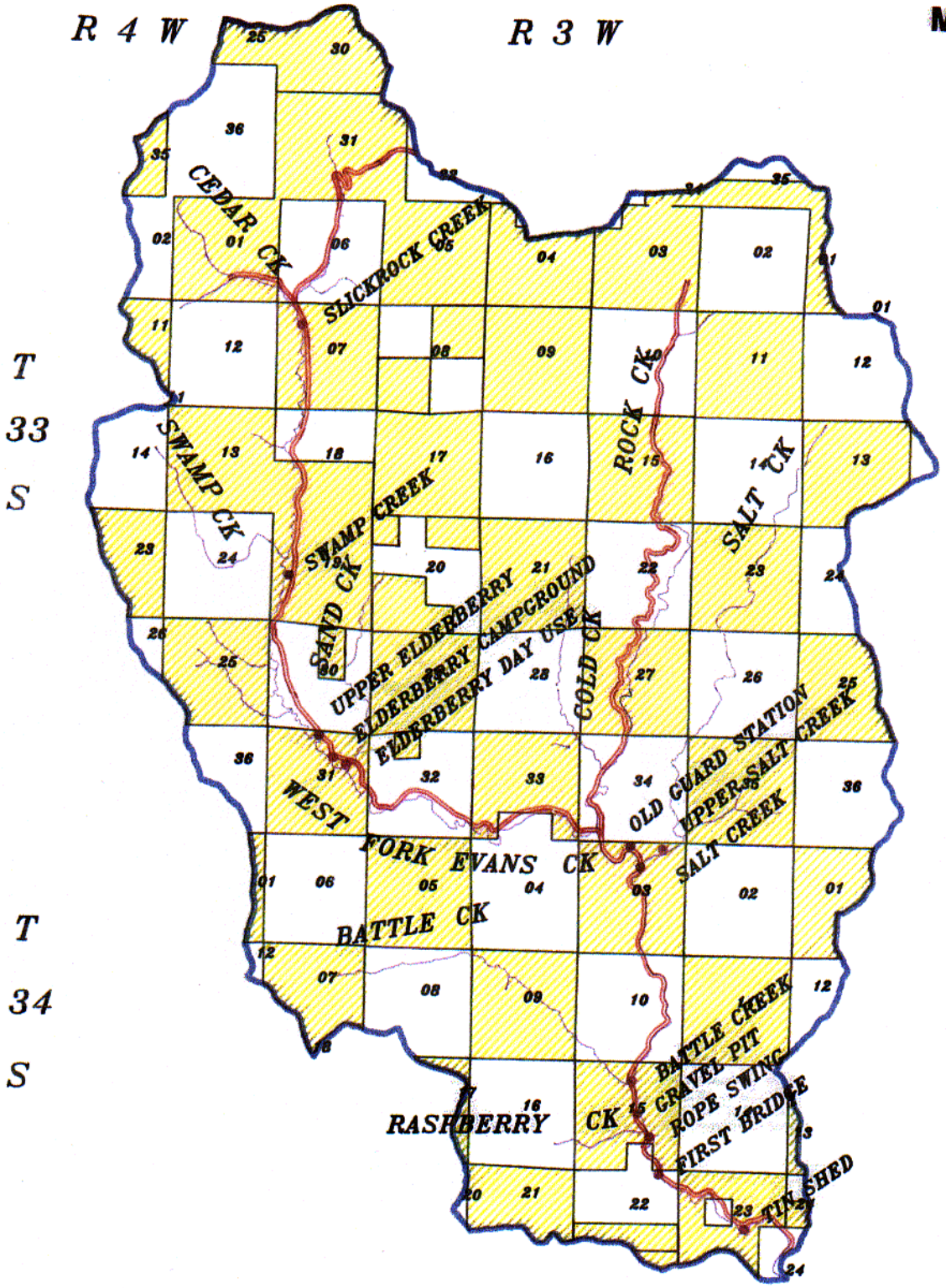
BUREAU OF LAND MANAGEMENT
Butte Falls Resource Area
General Location Map # 1



West Evans Crk. W.A.U.

W.FORK EVANS RECREATION SITES

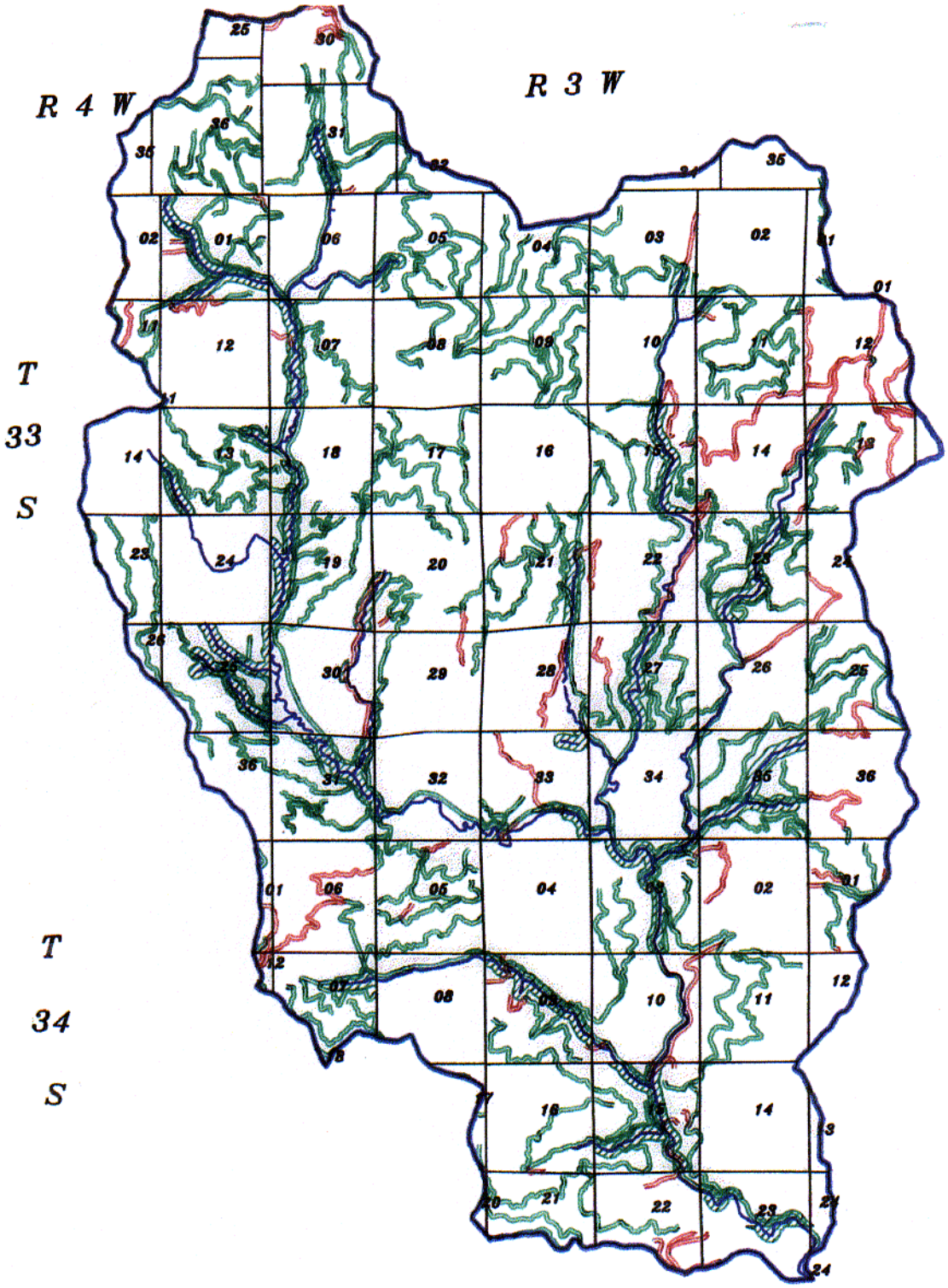
MAP # 2



SCALE 1: 95000

WATERSHED ANALYSIS UNIT
CUTTHROAT TROUT STREAMS
RECREATION SITE

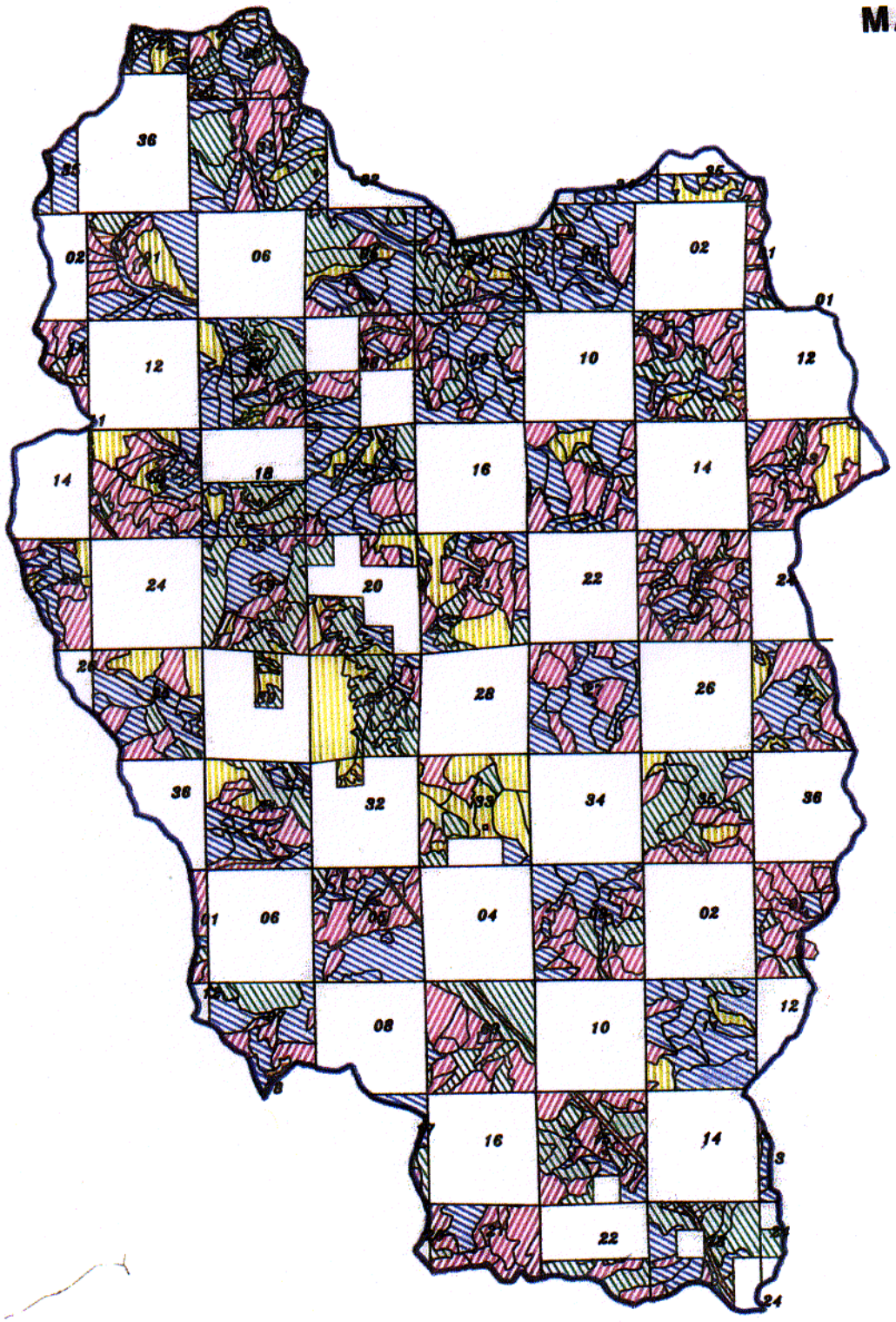
MAP #



SCALE 1: 95000

CUTTHROAT HABITAT
RIP.RESERVES-FISH STREAMS
SURFACED ROADS 211 MI
NON-SURFACED ROADS 39 MI

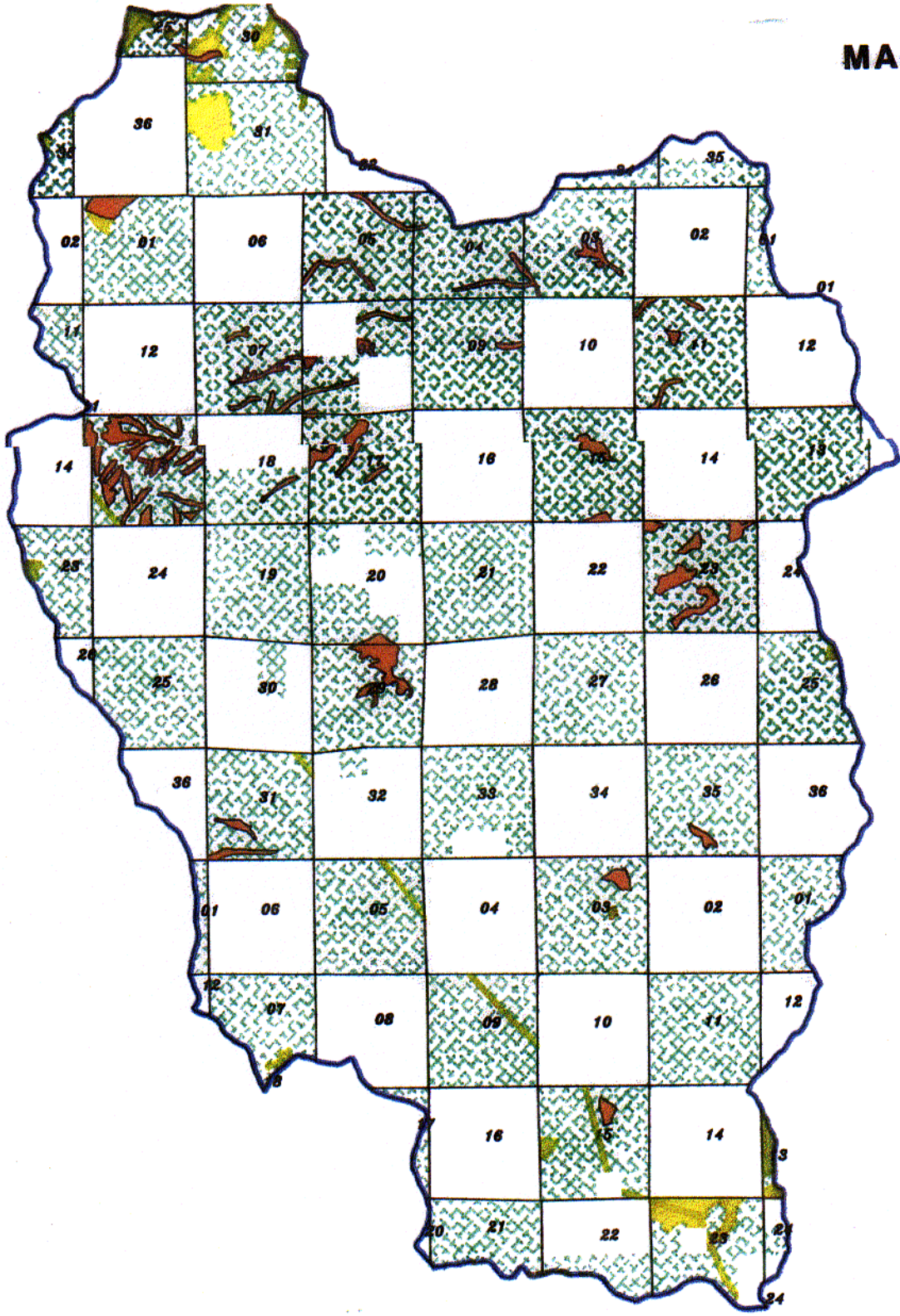
MAP # 4



SCALE 1: 95000

CLASS 1 GRASS, FORBS
CLASS 2,3 NF,LSW,NCW
CLASS 4,5 EARLY, SEEDLINGS
CLASS 6 POLES 5-11
CLASS 7 MID-SIZE 11-21
CLASS 8 MATURE / OLD GROWTH

MAP # 5



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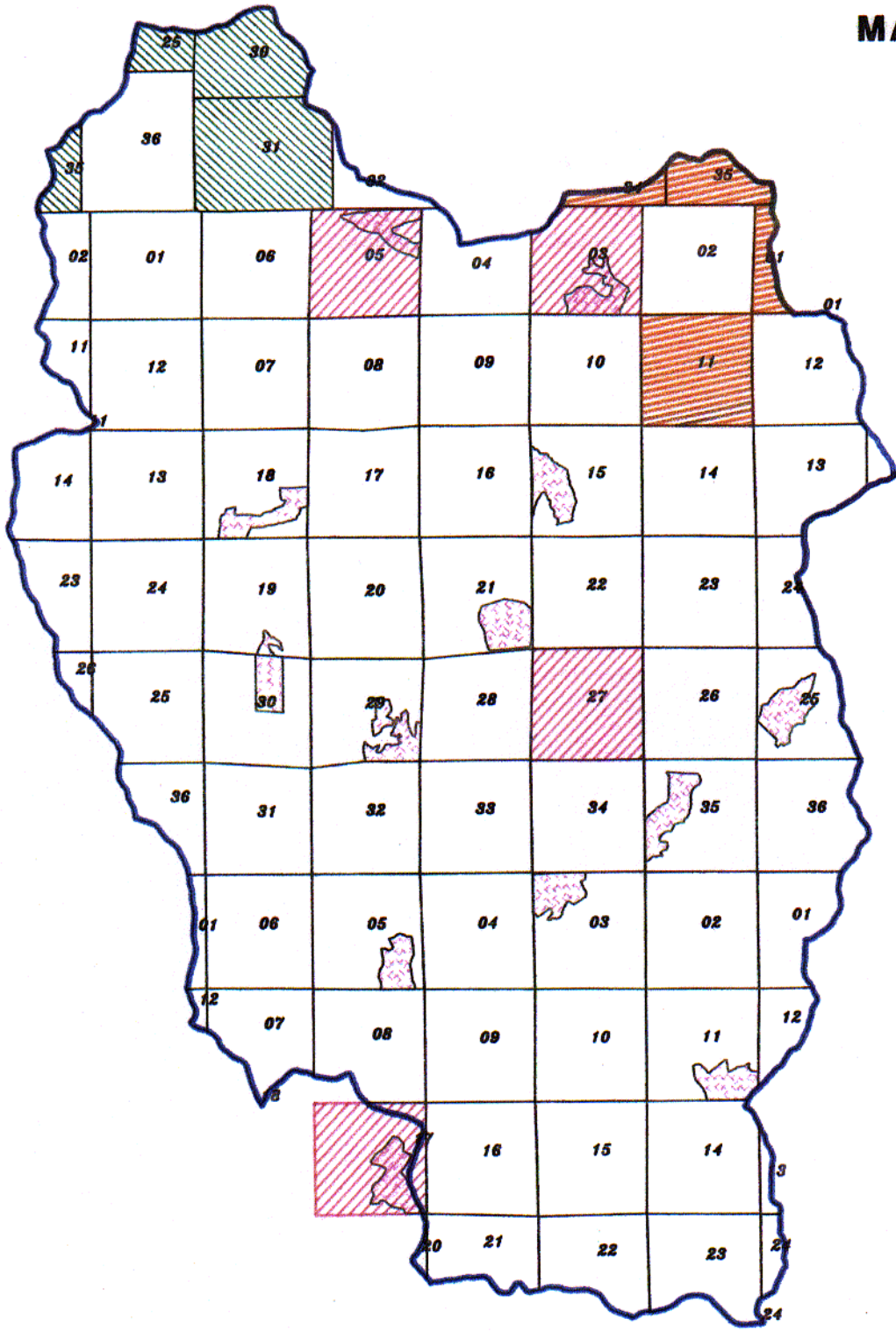
PRIVATE LAND
COMMERCIAL FOREST-IN BASE
WOODLAND & OTHER WITHDRAWN
FRAGILE SOIL WITHDRAWN

MAP # 6



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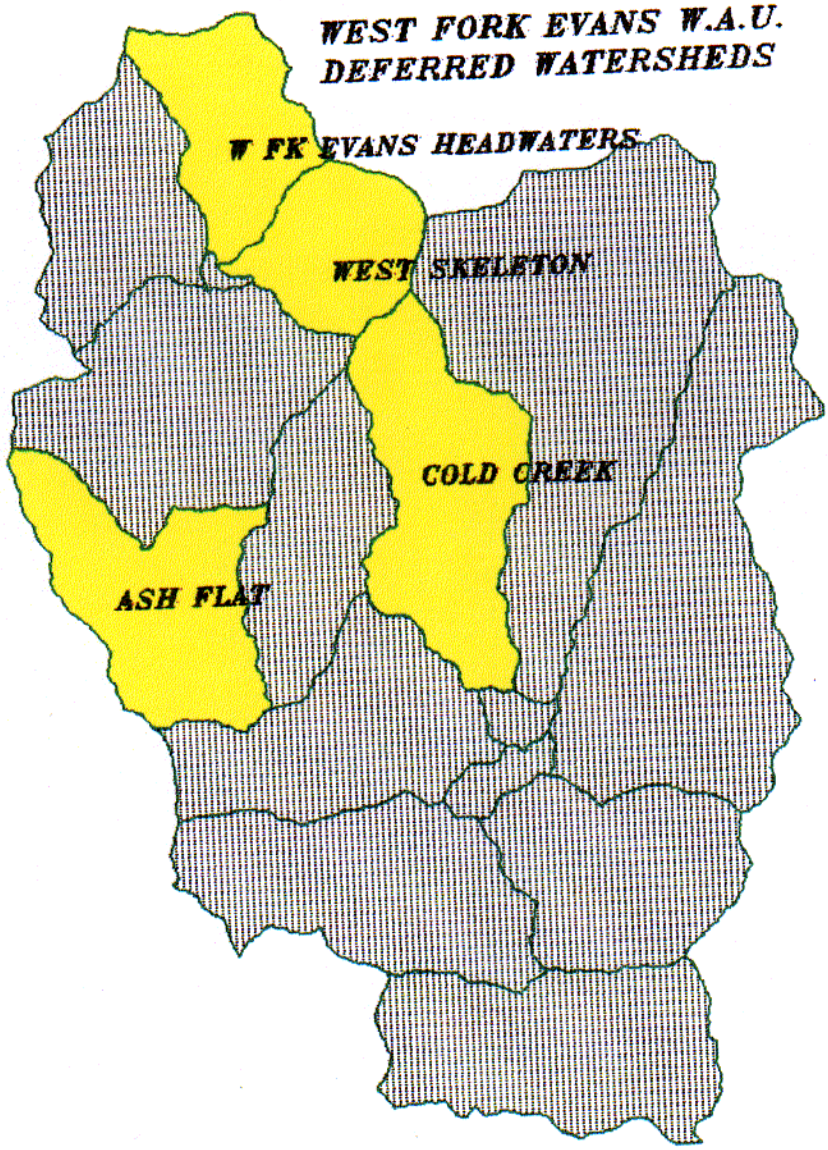
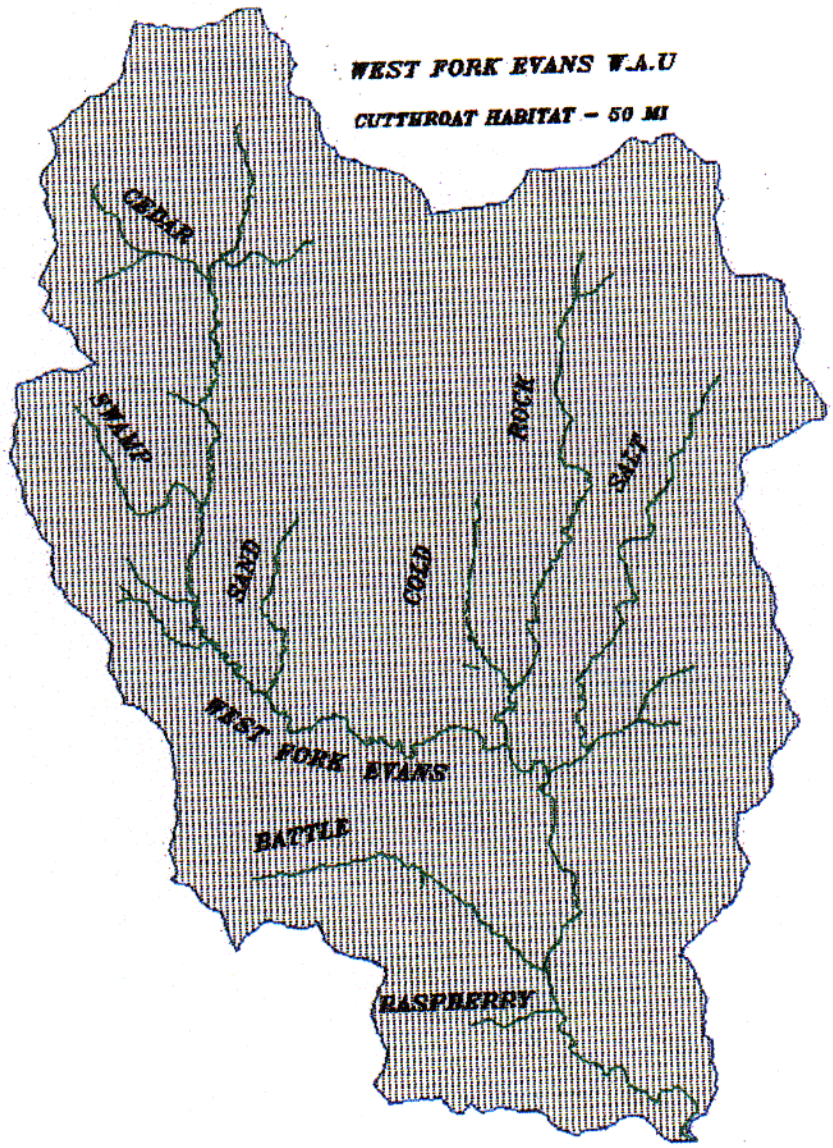
SECTION LINES
CONNECTIVITY BLOCK
CONNECTIVITY NODE
CRITICAL HABITAT UNIT
LATE SUCCESSIONAL RESERVE

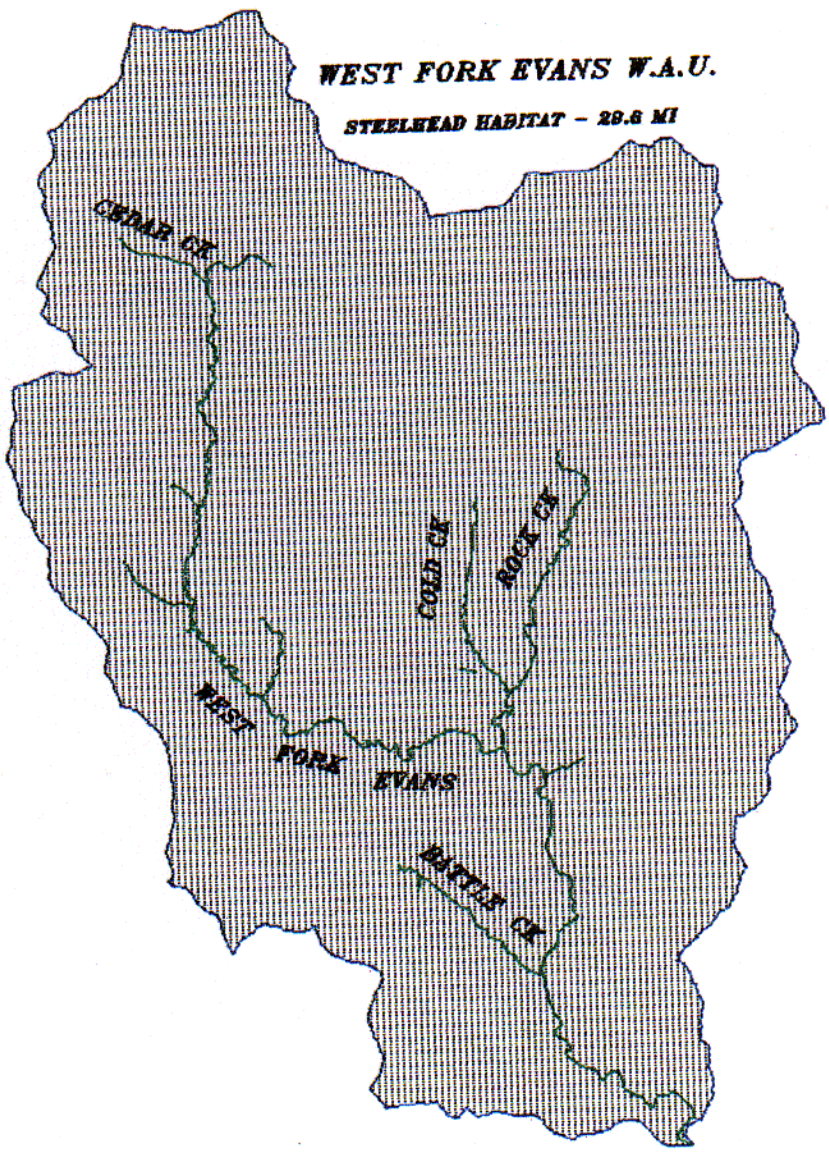
MAP # 8


WEST FORK EVANS W.A.U.
DEFERRED WATERSHEDS
W FK EVANS HEADWATERS
WEST SKELETON
COLD CREEK
ASH FLAT

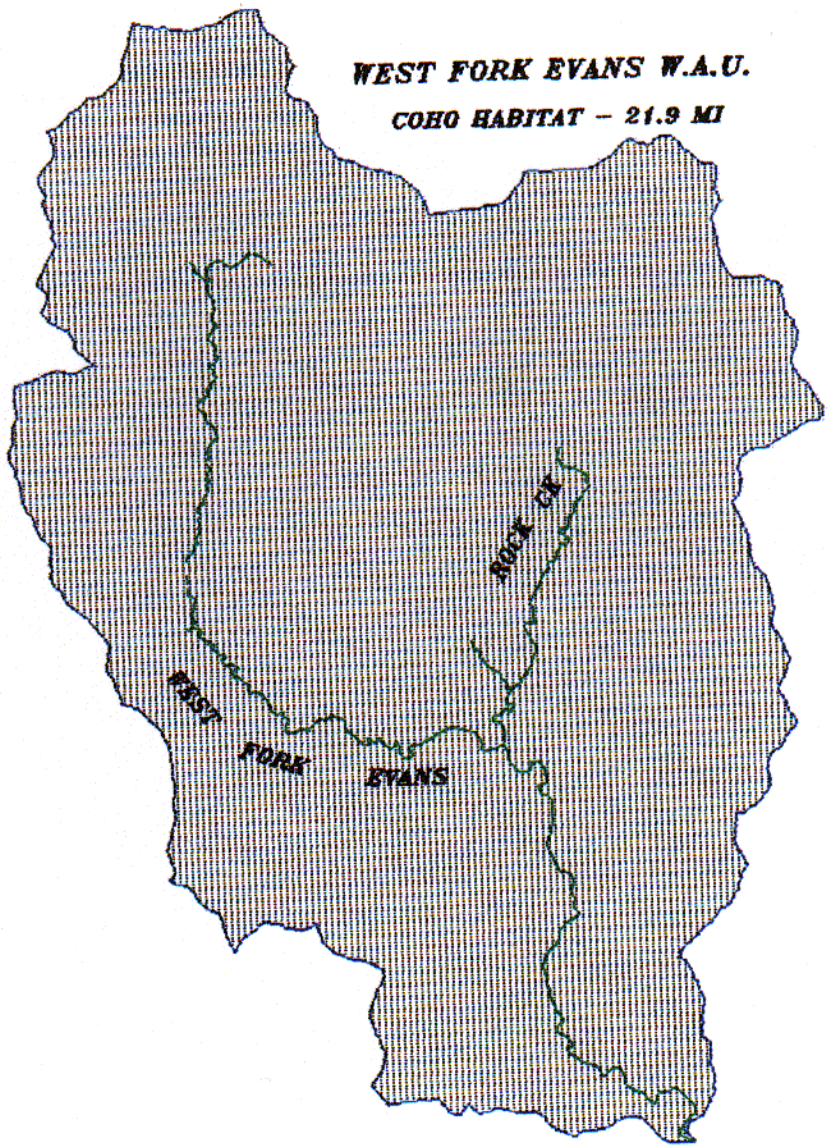
MAP # 9


WEST FORK EVANS W.A.U
CUTTHROAT HABITAT – 50 MI
CEDAR
SWAMP
SAND
COLD
ROCK
SALT
WEST FORK EVANS
BATTLE
RASPBERRY

MAP # 10


WEST FORK EVANS W.A.U.
STEELHEAD HABITAT - 29.6 MI
CEDAR CK
COLD CK
ROCK CK
WEST FORK EVANS
BATTLE CK

MAP # 11


WEST FORK EVANS W.A.U.
COHO HABITAT – 21.9 MI
ROCK CR
WEST
FORK
EVANS

Appendix B
West Fork of Evans Creek Watershed Analysis Unit
Threatened and Endangered Plant Species

WEST FORK OF EVANS CREEK WAU			
SPECIES	NO. OF KNOWN SITES	LOCATION	STATUS
1. Mimulus douglasii	4	T34S., R3W., sec 23 T34S., R3W., sec 24 T34S., R2W., sec 17	Bureau Tracking
2. Cypripedium fasciculatum	8	T34S., R3W., sec 13 T34S., R3W., sec 11 T34S., R3W., sec 7 T34S., R3W., sec 5	Federal Candidate #2
3. Cypripedium californica	3	T32S., R3W., sec 31 T32S., R3W., sec 30	Bureau Tracking
4. Phacelia capitata	2	T32S., R3W., sec 31	Delisted
5. Cypripedium montanum	1	T33S., R3W., sec 19	Bureau Tracking

Appendix C
West Fork of Evans Creek Watershed Special Status Species

U.S. FISH & WILDLIFE LISTED T&E SPECIES					
SPECIES	STATUS	RANGE (Y/N)	P/A	HABITAT QUALITY	LEVEL OF SURVEY
Gray wolf	FE, SE	N	A	Medium	None
Peregrine falcon	FE, SE	Y	A	Absent	Limited
Bald eagle	FT, ST	Y	A	Absent	Limited
Northern spotted owl	FT, ST	Y	P	High	Thorough

U.S. FISH & WILDLIFE FEDERAL CANDIDATE SPECIES					
SPECIES	STATUS	RANGE (Y/N)	P/A	HABITAT QUALITY	LEVEL OF SURVEY
Spotted frog	FC1,SC,BS	N	A	Low	None
Cascade frog	FC2, SC	N	A	Low	None
Foothill yellow legged frog	FC2	Y	U	Meduim	None
Red legged frog	FC2, SU	Y	U	Low	None
Tailed Frog	FC2, SV	Y	U	High	None
Northwestern pond turtle	FC2, SC	Y	P	Medium	Limited
Northern sagebrush lizard	FC2	Y	U	Low	None
Northern goshawk	FC2, SC	Y	S	Meduim	None
Tricolored blackbird	FC2, SP	N	A	Low	None
Western burrowing owl	FC2, SC	N	A	Low	None
Mountain quail	FC3	Y	P	High	Incidental
Fringed myotis	C2,SV,BS, SM	Y	U	Meduim	Limited
Long eared myotis	FC2, SM	Y	P	Meduim	Limited
Long legged myotis	FC2, SM	Y	U	Meduim	Limited

SPECIES	STATUS	RANGE (Y/N)	P/A	HABITAT QUALITY	LEVEL OF SURVEY0
Townsend's big eared bat	FC2, SC	Y	U	Low	Limited
Yuma myotis	FC2	Y	U	Low	Limited
California red tree vole	FC2, SM	Y	S	Medium	None
Fisher	FC2, SC	Y	U	Low	Limited
California wolverine	FC2	Y	U	Historic (1980's)	None
Coho salmon	Prop (FT)	Y	P	Low	Thorough
Steelhead trout (summer & winter)	Prop (FT)	Y	P	Low	Thorough
Pacific lamprey	FC2	Y	U	Low	None
Burnell's False Water Penny Beetle	FC2	UNK	U	Meduim	None
Denning's Agapetus caddisfly	FC2	UNK	U	Meduim	None
Green springs Mt. faurlan caddisfly	FC2	UNK	U	Meduim	None
Schuh's homoplectran caddisfly	FC2	UNK	U	Meduim	None
Siskiyou caddisfly	FC2	UNK	U	Medium	None
Siskiyou chloealtis grasshopper	FC2	UNK	U	Low	None
Franklin's bumblebee	FC2	UNK	U	Low	None

OTHER (ODFW AND BLM) SPECIAL STATUS SPECIES)

SPECIES	STATUS	RANGE	P/A	HABITAT QUALITY	LEVEL OF SURVEY
Clouded salamander	SC, BS	Y	U	High	None
California mt. kingsnake	SP, AS	Y	U	Low	None
Common kingsnake	SP,AS	Y	U	Low	None
Sharptail snake	SV, AS	UNK	U	Low	None
Acorn woodpecker	SV	Y	S	Low	None
Black backed woodpecker	SC,AS	Y	U	Medium	None
Flammulated owl	SC, AS	Y	S	Low	None
Grasshopper sparrow	SU	N	A	Low	None
Great gray owl	SV, AS, SM	Y	S	Low	None
Greater sandhill crane	SV	N	A	Low	None
Lewis' woodpecker	SC, AS	Y	S	Low	None
Northern pygmy owl	SU	Y	P	Medium	Incidental
Northern saw-whet owl	AS	Y	P	Medium	Incidental
Pileated woodpecker	SC, AS	Y	P	High	Incidental
Pygmy nuthatch	SV	N	U	Low	None
Three-toed woodpecker	SC, AS	N	A	Low	None
Western bluebird	SV, AS	Y	U	Low	None
White headed woodpecker	SC	N	A	Low	None
Silver haired bat	SM	Y	U	Medium	Limited
Pacific pallid bat	SC, AS, SM	Y	U	Meduim	Limited
American marten	SC, AS	Y	U	Low	Limited
Ringtail	SU	Y	U	Low	None

Status Codes:
FE - Federal Endangered - in danger of extinction throughout a significant portion of its range.
FT - Federal Threatened - likely to become an endangered species within the forseeable future.
FC - Federal Candidate - under consideration for listing as threatened or endangered.
Category 1 - listing is warranted but precluded due to workload.
Category 2 - listing possibly appropriate, but more information needed.
Category 3 - once considered, but no longer under consideration, will be dropped.
SE - State Endangered - listed in danger of extinction by the State of Oregon.
ST - State Threatened - listed as likely to become endangered by the State of Oregon.
SC - State Critical - listing is pending, or appropriate if immediate conservation action not taken.
SV - State Vulnerable - listing is not imminent, and can be avoided through continued or expanded use of adequate protective measures and monitoring.
SP - State Peripheral or naturally rare - populations on the edge of their geographic range, or historically low numbers due to naturally limiting factors.
SU - State Undetermined - status unclear, insufficient information to document decline to vulnerable.
BS - Bureau Sensitive (BLM) - eligible for addition to the Federal Notice of Review, and known in advance of official publication. Generally these species are restricted in their range and have natural or human caused threats to their survival.
AS - Assessment Species (BLM) - not presently eligible for official federal or state status, but are of concern and which may at a minimum need protection or mitigation in BLM activities.
SM - Survey & Manage - Forest Plan ROD directs protection of known sites and to survey for new sites.

P/A Presence/Absence:
P - Present
S - Suspected
U - Uncertain
A - Absent
T - Possibly transitory

Appendix D
Habitat and Occurrence of Special Status Wildlife Species in the West Fork of Evans Creek Watershed.

THREATENED AND ENDANGERED SPECIES
Federally Listed

Gray wolf (Canis lupis)

The gray wolf is believed to be extinct in Oregon. Purported sightings have created controversy as to whether they actually do exist in southern Oregon. Sightings are probably wolf/dog hybrids that have been released by pet owners. Until confirmed sightings occur, they are considered to be extinct in the Medford BLM District.

American peregrine falcon (Falco peregrinus anatum)

Primary nesting habitat is tall cliffs. While there are two active sites on Medford District, there are no suitable cliffs in the watershed. Occasional sightings are made during the winter months, but these are thought to be migrating individuals. Forest lands provide habitat for prey species (mostly birds) for peregrines.

Bald eagle (Haliaeetus leucocephalus)

In Oregon, the majority of nests (84%) are located within one mile of lakes, reservoirs, large rivers, and coast estuaries. There are no bodies of water larger than one acre in or adjacent to the watershed, so likelihood of nesting is low. The nearest eagle nest is over ten miles away on the Rogue River. Wandering eagles may occasionally pass through the compartment. Nest trees are larger, dominant or co-dominant trees in the stand and are usually components of old growth or older second growth forests. Prey is fish, waterfowl, small mammals (rabbits, etc.), and carrion.

Northern spotted owl (Strix occidentalis caurina)

Old growth coniferous forest is preferred nesting, roosting and foraging habitat, or areas with some old growth characteristics with multi-layered, closed canopies with large diameter trees with an abundance of dead and down woody material. Northern spotted owls commonly nest in cavities 50 or more feet above the ground in large decadent old growth trees. Other nest sites include large mistletoe clumps, abandoned raptor nests, and platforms formed by whorls of large branches. Twelve owl sites have been located in the watershed, with another five sites within a mile of the boundary. Prey is primarily small arboreal mammals, such as flying squirrels, woodrats, voles, etc. and occasionally small birds.

FEDERAL CANDIDATE SPECIES (C1)
Listing Warranted but Precluded at this time

Spotted frog (Rana prettiosa)

Spotted frogs are likely extirpated from Medford District BLM lands. Their habitat is marshy edges of ponds, lakes, or slow moving streams with permanent water where the bottom is soft and muddy. The nearest known population is the Wood River in Klamath County.

FEDERAL CANDIDATE SPECIES (C2)
Under Consideration for listing - not enough information

Cascade frog (Rana cascade)

Found in the Cascade mountains, above 2600 feet, on the east side of the District, with low probability of being found in this compartment. They are most commonly found in small pools adjacent to streams flowing through meadows. They are also found in small lakes, bogs, and marshy areas that remain damp thorough the summer.

Foothill yellow legged frog (Rana Boylii)

Habitat is permanent streams with rocky, gravelly bottoms. Distribution is west of the Cascade crest from sea level to 1800 feet. These frogs are closely associated with water.

Red legged frog (Rana aurora)

Red legged frogs prefer slack water of ponds and low gradient streams with emergent vegetation for reproduction. These frogs are found in lower elevations and can be found during the summer months up to 1000 feet from standing water in humid, old growth forests and moist meadows.

Tailed frog (Ascaphus truei)

Habitat is cold, fast flowing permanent streams in forested areas. Temperature tolerance range is low, 41-61 degrees fahrenheit. Tailed frog are closely tied to water.

Northwestern pond turtle (Clemmys marmorata marmorata)

Live in most types of freshwater environments with abundant aquatic vegetation, basking spots and terrestrial surroundings for nesting and over-wintering. Some northwestern pond turtles leave water in late October to mid-November to overwinter on land. They may travel up to 1/4 mile from water, bury themselves in duff and remain dormant throughout winter. Turtles have been found to generally stay in one place in areas with heavy snowpack, but may move up to 5-6 times in a winter in areas with little or no snow. General habitat characteristics of overwintering areas appear to be broad. There may be specific microhabitat requirements, which are poorly understood at this time.

In many areas, predation on the hatchlings and competition from bullfrogs, bass, and other exotic species is limiting population levels. Adult turtles are relatively long lived, but as the adults age, recruitment is not occurring at levels which can maintain future healthy populations.

Northern sagebrush lizard (Sceloporus graciosus graciosus)

Most common in sagebrush areas, but it also occurs in open forests of ponderosa and lodgepole pine that have open brushy understories. The lizards are ground dwellers, but may occasionally be seen resting on larger branches of sagebrush, but never more than a few inches above ground level.

Northern goshawk (Accipiter gentilis)

Goshawks are found in a variety of mature forest types, including both deciduous and conifer types. Dense overhead foliage or high canopy cover is typical of nesting goshawk habitat. Perches where they pluck their prey, known as plucking posts, are provided by stumps, rocks, or large horizontal limbs below the canopy. No nest sites have been confirmed in the watershed, but presence is likely.

Tricolored blackbird (Agelaius tricolor)

Tricolored blackbirds are found in the interior valleys of southern Oregon, near freshwater marshes and croplands. Individuals have been reported near Roxy Ann Peak, in Sams Valley, and near Table Rock.

Western burrowing owl (Speotyto cunicularia)

A viable population no longer exists in the Rogue River Valley, where they were formerly present. May occasionally be present in winter. Habitat is sagebrush steppe, grasslands, pastures, and airports where vegetation is sparse and terrain is level.

Fringed myotis bat (Myotis thysanodes)

Fringed myotis is a crevice dweller which may be found in caves, mines, buildings, rock crevices, and large old growth trees. They have been captured in openings and in mid-seral stage forest habitats. Food consists of beetles, butterflies and moths.

Long eared myotis (Myotis evotis)

A crevice dweller which is found in coniferous forests in the mountains. Individuals are frequently encountered in sheds and cabins. They have also been found beneath the loose bark of trees. They seldom reside in caves, but may occasionally use caves as a night roost. They are not known to occur in large colonies.

Long legged myotis (Myotis volans)

Long legged myotis is an open forest dweller which is found in small pockets and crevices in rock ledges, caves and
buildings. When in caves, they hang in clumps in deep twilight zones.

Pacific Townsend's big-eared bat (Plecotus townsendii townsendii)

Roost in mines, caves, cavities in trees, and attics of buildings. They have low tolerance to changes in temperature and humidity and removal of trees around these sites may change airflow patterns to make the area less desirable as a hibernaculum, maternity, or roosting site. Food consists primarily of moths, and other arthropods.

Yuma myotis (Myotis Yumanensis)

Yuma myotis is commonly found in human structures, closely associated with water nearby. They will use caves as night roost areas. The species is colonial and hangs in a closely clumped group, often under bridges, in mines and caves.

California red tree vole (Arborimus pomo)

An arboreal vole which lives in Douglas fir, spruce and hemlock forests. Food consists entirely of leaves of the tree in which they are living. They build a bulky nest, up to the size of a half bushel measure in the branches, usually near the trunk, 15-100 feet above the ground. The nest becomes larger with age, and may be occupied by many generations.

Fisher (Martes pennanti pacifica)

Habitat is mature and old growth forests. They appear to be closely associated with riparian areas in these forests. In a study done in Trinity County, California, a preference was shown for conifer forests with some hardwoods present. They seem to prefer 40-70% canopy cover. They mainly use large living trees, snags and fallen logs for denning. Occasional sightings on the Medford district, but little information is available as to distribution and density.

California wolverine (Gulo gulo luteus)

Wolverine use Douglas fir, mixed conifer forests. Historic sightings near Medford BLM lands have occurred at White Rock Creek near Oregon Caves (1975) and near Dry Creek, east of Medford, in 1970. Recent wolverine sightings have been reported by fur trappers in the Rogue River National Forest lands adjoining BLM lands. Large areas of medium or scattered mature timber and ecotone areas around cliffs, slides, swamps, and meadows are important habitat components. They appear to prefer remote areas away from humans. Wolverines may use higher elevations in summer and lower elevations in winter.

Coho salmon (Oncorhynchus kisutch)

Coho are present in most of the larger lower elevation rivers and larger perennial streams on the district. South Coast coho was listed as depressed by the National Marine Fisheries Service in November, 1993.

Summer and winter steelhead trout (Oncorhynchus mykiss)

Steelhead are present in most of the larger streams on the district in the Rogue River drainage system.

Pacific lamprey (Lampetra tridentata)

Present in the Rogue River and larger tributaries. Migrates up river from the ocean and reproduces in the Rogue, Illinois, and Applegate rivers and larger perennial tributary creeks. Little habitat information is available.

Burnell's false water penny beetle (Acneus burnelli)

This species has not been found in the Medford BLM district, but could be present. Adults are found along small, rapid, low elevation streams, frequently near waterfalls. Larvae were found in rapid sections of a stream in pools of quiet water protected form any current by large boulders. This species has been found in Coos Co., Upper Middle Creek, 15 miles SW of Powers, OR.

Denning's agapetus caddisfly (Agapetus denningi)

This species has not been found in Medford BLM district, but could be present here. No habitat information is available. The only information available is from the life history of A. taho, a similar species, which is found in cool, mid to large size streams of moderate gradient in forested areas over a large elevation range. A single specimen was collected in Rogue River National Forest.

Green springs Mt. farulan caddisfly (Farula davisi)

Species of Farula inhabit cool, highly humid areas. This species was collected near a small stream with a marshy area nearby. One is probably the habitat. Two adult specimens were collected from Green Springs Mt., 10 miles east of Ashland near a large stream.

Schuh's homoplectran caddisfly (Homoplectra schuhi)

Larvae are found in spring-seepage habitats in forested montane areas. Homoplectra sp. are found in streams with moderate to close shading from a forest canopy with most sites having a mixed deciduous- conifer canopy. The distribution of the species appears to be limited with specimens found in the Cascade and Coast range mountains of southwestern Oregon and northern California, where suitable habitat is found.

Siskiyou caddisfly (Tinodes siskiyou)

Adult collection records indicate the larvae are associated with mid-size streams, with moderate to dense shading from a mixed hardwood/conifer overstory. Adults have been collected adjacent to both cool, spring-fed streams and from streams with a high annual temperature range. Members of this genus have been found from the coastal mountains of northern Calif. and from 2 disjunct populations in Oregon, one from the Squaw Lakes region of the Rogue River National Forest, 10 miles SW of Medford.

Siskiyou chloealtis grasshopper (Chloealtis aspasma)

This species has been found in the Siskiyou Mountains near Mt. Ashland and near Willow Lake. Appears to be associated with elderberry plants. Females lay eggs in the pith of elderberry plants.

Franklin's bumblebee (Bombus franklini)

Franklin's bumblebee has been found in herbaceous grasslands between 1400-4000 ft. elevation. Activity spans the entire blooming season, so they do not appear restricted to a particular host or flower. Adults probably present and in active flight from May (on warm sunny days) through early September. Range restricted to southwestern Jackson County, Oregon, perhaps southeastern corner of Josephine Co., perhaps part of northern California.

FEDERAL CANDIDATE SPECIES (C3)
Listing Not Warranted

Mountain quail (Oreortyx pictus)

Commonly found in forests above the interior valleys in the Medford district. These quail use a variety of habitats, including open meadow, shrub fields, other openings, and forested stands. Mountain quail are more common than originally thought and unless a downward population trend is observed, will likely be removed from the USFW sensitive species list within the next two years.

OREGON STATE SENSITIVE SPECIES
*(C=critical, V=vulnerable, P=peripheral, U=undetermined)

Clouded salamander (Aneides ferreus) <U>

Habitat requirements are forest and forest edges from sea level to 1500 meters. There is a correlation between clouded salamander abundance and large conifers as well as down woody material. They occur mainly under loose bark in decayed, standing and fallen snags, and stumps. They have been found as high as 20 feet in trees. May also be found in cracks in cliff rocks, under moss and leaf litter.

California mountain kingsnake (Lampropeltis zonata) <P>

Habitat includes oak and pine forests. Found under or inside rotting logs and in talus areas. They are not common, and are mostly found in the western part of the District.

Common kingsnake (Lampropeltis getulus) <P>

In Oregon, they are found only in Douglas, Jackson, and Josephine Counties in the more mesic river valleys. Common kingsnake inhabit oak/pine woodlands, open brushy areas, and river valleys, often along streams, and in thick vegetation. They may also be found in farmlands, especially near water areas.

Sharptail snake (Contia tenuis) <V>

Habitat is conifer forests and oak grassland edges. Found in rotting logs, moist talus, under rocks, boards or other objects, mostly in interior valleys.

Acorn woodpecker (Melanerpes formicivorus) <V>

Found in the Rogue river valley and surrounding foothills. Preferred habitat is oak woodlands, riparian areas, and mixed conifer oak forests which have high canopy closure. Excavates nests and nest cavities in oaks and other trees. Store acorns in holes excavated in thick bark or other soft dead wood.

Black-backed woodpecker (Picoides arcticus) <C>

Presence is undetermined in the Medford BLM district. Has been documented in Cascade Mountains in Jackson County and in the Siskiyou Mountains in Josephine County. In Oregon, the black-backed woodpecker tends to occur in lower elevation forests of lodgepole pine, ponderosa pine, or mixed pine/conifer forests. Dead trees used for foraging have generally been dead three years or less.

Flammulated owl (Otus flammeolus) <C>

Habitat is a mosaic of open forests containing mature or old-growth ponderosa pine mixed with other tree species. In California, habitat included conifer and black oak. Nests mainly have been located in abandoned Northern flicker or pileated woodpecker cavities. The presence of dense conifers for roosting may be a necessary habitat components. Feeds mostly on insects. May also eat other arthropods and small vertebrates.

Grasshopper sparrow (Ammodramus savannarum) <U>

Grasshopper sparrows inhabit grasslands which have some shrubs. Populations have been reported near White City and Eagle Point in Jackson County.

Great gray owl (Strix nebulosa) <V>

Habitat preference is open forest or forest with adjoining deep-soil meadows. Nest in broken top trees, abandoned raptor nests, mistletoe clumps, and other platforms created by whorls of branches. Majority of nests in one study were in over-mature or remnant stands of Douglas fir and grand fir forest types on north facing slopes. Probably found in low densities across the district.

Greater sandhill crane (Grus canadensis tabida) <V>

A spring and summer resident of Oregon, sandhill cranes roost, nest and rear young in wet meadows, including wild, irrigated hay meadows and shallow marshes. The cranes may use agricultural croplands for feeding during non-nesting season. Sandhill cranes have been observed on the Ashland Resource Area near Howard Prairie and Hyatt Lake and in the Butte Falls Resource area near the communities of Prospect and Butte Falls.

Lewis' woodpecker (Melanerpes lewis) <C>

These woodpeckers breed sparingly in the foothill areas of the Rogue and Umpqua river valleys in Douglas, Jackson, and Josephine counties. Habitat preference is hardwood oak stands with scattered pine near grassland shrub communities. Breeding areas in the Rogue valley are uncertain. In some locales, the woodpeckers breed in riparian areas having large cottonwoods and in oak conifer woodlands. They usually do not excavate nest cavities, but most often use cavities excavated by other woodpecker species. They winter in low elevation oak woodlands.

Northern pygmy owl (Glaucidium gnoma) <U>

Believed to be present across district. Population numbers and trends are unknown. Habitat needs are not clear, but the species is regularly recorded in forested areas of numerous types and age classes in Oregon, most commonly along edges of openings such as clearcuts or meadows. Nests in tree cavities excavated by woodpeckers. Feeds on insects, small vertebrates and birds.

Northern saw-whet owl (Aegolius acadicus) <BLM assessment>

Believed to be present across the district. Population numbers and trends are unknown. Habitat is dense conifer and mixed conifer/hardwood forests. Nest in abandoned woodpecker holes and natural cavities. Feed on small mammals and birds.

Pileated woodpecker (Dryocopus pileatus) <V>

Pileated woodpeckers are common across the Medford BLM district. They are found mainly in old growth and mature forests, but can feed in younger forests and clearcuts. A new nest is excavated each year. They mainly use dead trees that have the strength to handle a nest cavity that averages 8 inches wide and 22 inches deep ($\geq$20 inches dbh). Pileated woodpeckers excavate an new nest each year, and need 1-2 hard snags per 100 acres. Studies show that the pileated woodpeckers need about 45 large trees with existing cavities in their home range (300-1000 acres) to provide roosting habitat.

Pygmy nuthatch (Sitta pygmaea) <V>

Habitat is mature and old growth ponderosa pine, especially open stands with less than 70% canopy. The birds will forage in young ponderosa pines. It nests and roosts in cavities more than 20 feet from the ground that are located in large dead or decaying ponderosa pines which usually exceed 20 inches dbh. It excavates its own nest cavities which are often started in a fissure in a soft snag. Found in the Cascade mountains. Pygmy nuthatch populations drop significantly with timber harvest and snag removal.

Three toed woodpecker (Picoides tridactylus) <C>

Presence is undetermined in the Medford BLM district. Range is along the crest of the Cascade Range and eastward. Generally found in higher elevation forests, above 4000 feet. In eastern Oregon, three-toed woodpeckers nest and forage in lodgepole pine forests. They are occasionally found roosting in hemlock and Engelmann spruce trees in mature and overmature

mixed conifer forests. Bark beetle larvae are primary food source.

Western bluebird (Sialia mexicana) <V>

In western Oregon, western bluebirds nest in open areas near farms and in clearcuts in standing snags. They nest in natural cavities, old woodpecker holes, and in nest boxes.

White headed woodpecker (Picoides albolarvatus) <C>

Presence in the BLM Medford district is undetermined. White headed woodpeckers occur in ponderosa pine and mixed ponderosa forests. They forage mainly on trunks of living conifers for insects. Nest cavities are within 15 feet of ground in dead trees which have heart rot. Standing and leaning snags and stumps are used. Area is in periphery of known range.

Pallid bat (Antrozous pallidus) <V>

This bat is a crevice dweller. Rock crevices and human structures are used as day roosting sites. Recent radiotelemetry studies indicate that these bats also use interstitial spaces in the bark of large conifer trees as a roost site. One colony of pallid bats was observed roosting in a hollow tree. Food consists of beetles, grasshoppers, moths, and other insects found on or near the ground or on grasses or shrubs.

American martin (Martes americana) <C>

Martins inhabit mature and old growth forests that contain large quantities of standing and downed snags and other coarse downed woody material, often near streams. They often use down logs for hunting and resting. They feed on small mammals, birds, fruits, and insects.

Ringtail (U) (Bassariscus astutus) <U>

Ringtails are most commonly found in areas having cliffs, rocky terrain near water, riparian hardwoods, and sometimes conifers. They nest in hollow trees, brush piles, caves, and abandoned buildings. They are encountered infrequently across the District.

*__C =__ Critical-species for which listing as threatened or endangered is pending.
__V__ = Vulnerable-species for which listing as threatened or endangered is not believed to be imminent and can be avoided through continued or expanded use of adequate protective measures and monitoring
__P =__ Peripheral-species whose Oregon populations are on the edge of their range.
__U =__ Undetermined-species whose status is unclear. They may be susceptible to decline.

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Appendix E
Round Top Evans Grazing Allotment

The Round Top Evans Allotment #0006 has been canceled. Previous operators include: TJ Gann (1981), Ralph Bryant (1977 - 1989), Bill Lankford (1990). The Lankford lease was initiated in 1990 and canceled in 1993.

YEAR	# OF COWS	BEGIN DATE	END DATE	AUMS / USER
1977 - 1980	20 - 30	05/01	10/15	110 / Bryant
1981	25	05/01	10/15	125 / Gann
1982 - 1989	20 - 30	05/01	10/15	165 / Bryant
1990	30	05/01	10/15	110 / Lankford

Appendix F
Completed Riparian Monitoring and Inventory Projects in the West Evans Watershed

1. STREAM INVENTORY, 1992 WEST FORK EVANS CREEK, BUTTE FALLS R.A., MEDFORD DISTRICT.

   The survey focused principally on physical processes of the stream channel that are important for fish species. In addition data was recorded that relates to biological processes such as cover habitat and vegetation. The key data elements described in the survey are: 1. pool, riffle, glide percent; 2. side channel and alcove percent; 3. shade and cover by dominant and subdominant species; 4. large woody debris over 6 inches; 5. stream bank and channel descriptions.

2. STREAM TEMPERATURE MONITORING, 1993 and 1994, WEST FORK EVANS CREEK, BUTTE FALLS R.A., MEDFORD D.O.

   A summary table of water temperature for the months of July, August, and September includes the following data elements:

   1. Average daily maximum, minimum, mean temperatures and diurnal fluctuation.
   2. Days with maximum temperatures less than 60 degrees fahrenheit, between 60 and 65 degrees, between 65 and 70 degrees and greater than 70 degrees fahrenheit.

   A summary table of air temperature covers the months of May, June, July, August, and September and includes the same data elements described above.

   Water Temperature Monitoring Station Locations:
   1. Battle Creek (near the mouth)
   2. Cold Creek (above confluence with Rock Creek)
   3. Right Fork of Salt Creek (above confluence with Salt Creek)
   4. Rock Creek (above Cold Creek confluence)
   5. Salt Creek (above Right Fork of Salt Creek)
   6 West Fork of Evans Creek (near the mouth)

   Air Temperature Monitoring Station locations:
   1. West Fork of Evans Creek (near the mouth)

3. AQUATIC ECOSYSTEM INVENTORY, MACROINVERTEBRATE ANALYSIS

   Sites:
   1. West Fork of Evans Creek, 3 Stations, 1990-1991.

   The Biotic Condition Index (a percentage index of how close an aquatic ecosystem is to its own potential) was rated as 81 at station #1, 79 at #2 and 95 at station #3. Stations #1 and #2 were moderate in potential with room to improve. Sedimentation was the key factor that influenced the macroinvertibrate community. Station #3 was rated at close to its potential. Good diversity and resident population numbers indicated there was relatively good stability in these ecosystems, especially at the upper and lower stations. Overall the samples indicated good water quality and some good instream substrate habitat.

   2. Macroinvertebrate Biomonitoring Synopsis, West Fork Evans Creek, 1992
   Sites:
   1. Battle Creek, Medford, BLM
   2. Rock Creek, West Fork Evans Creek

   A complete Macroinvertebrate bioassessment was completed by Aquatic Biology Associates in 1992. Two sites were located within the West Evans Creek WAU on Battle Creek and Rock Creek above Cold Creek. The report is complete and detailed and includes: summary tables of bioassessment scores, bioassessment by site and for all three habitat types, narratives for each site, field notes, an appendix listing sample data and an appendix listing complete metric print-outs.

Each site includes a general site characteristics, general characteristics of macroinverebrates, erosional habitat description, margin habitat description and coarse particulate organic matter description followed by a narrative summary.

The bioassessment summary observations and recommendations below are site specific but useful for comparison to other similar tributaries in the watershed. Although not representative of all the tributaries in the watershed, these two sites provide insight to the macroinvertebrate community, condition and trends that indicate the health and resilience of the habitat and aquatic community.

4. RESERVOIR INVENTORY FOR WATER RIGHTS, FALL 1994

BLM filed on the following developments for both reservoir permits and surface water permits during the last two years, and water right permits are pending. Most of these reservoirs will require some sort of reconstruction or repair before a water right will be issued by the Oregon Water Resources Department.

Reservoirs (ie. pump chances):

ID #387	East Salt Creek	T.33S.,R.3W.,Sec.25
ID #388	Skeleton Mountain	T.33S.,R.3W.,Sec.3
ID #283	Beach Party	T.33S.,R.4W.,Sec.11
ID #202	Ash Flat #2	T.33S.,R.4W.,Sec.25

Heliponds

ID #286	Upper West Fork Evans Creek	T.32S.,R.3W,sec.31
ID #54	Rock Creek	T.33S.,R.3W.Sec.9

5. Water Temperature:

The summer of 1994 was one of the driest and hottest seasons since records have been kept. A temperature level of approximately 68 degrees fahrenheit is considered a threshold level for the survival of anadromous fish species. The hottest air temperature period occurred between the beginning of July to the beginning of August. Average daily temperatures decreased gradually until mid September when another steep increase occurred for approximately a two week period but was less severe and shorter in duration.

The water temperature daily averages closely mirror the air temperature at the station located at the mouth of West Fork of Evans Creek. The maximum water temperature during the month of July and August was over 68 degrees fahrenheit for approximately 40 continuous days . The minimum temperature was above 68 degrees for approximately 5 days.

Upstream monitoring stations show lower average daily maximums, minimums and mean temperatures. All stations recorded maximum temperatures above the 68 degree fahrenheit temperature threshold for anadromous fish. Right Fork of Salt Cr., Salt Creek, and Rock Creek sustained maximum temperatures at or above 68 degrees for extended periods during the months of July and August. Battle Creek recorded only 2 days and Cold Creek recorded 4 days at or above 68 degrees fahrenheit.

6. Macroinvertebrate Bioassessment:

Although not representative of all the tributaries in the watershed, the two sites listed below provide an indication of the health of the macroinvertebrate community, physical condition and critical factors for monitoring that may indicate the vitality of the habitat and aquatic community. This assessment is useful for comparison with other tributaries in the watershed with similar characteristics.

Main Points Summary[1]:
Battle Creek Station:
1. Small stream associated invertebrate fauna seems diminished. Taxa specifically associated with small streams is absent. (Probable higher stream temperatures and loss of small stream habitat.)

2. There are some warm water intolerant mayfly and stonefly taxa present, that indicate that stream temperatures do not get very high in the summer; thus riparian shading is sufficient to keep these taxa from disappearing all together.

3. There are also some warm water tolerant insect taxa present, that are more typically associated with mid-large size, more open streams.

4. Battle Creek has been heavily sluiced by past flood events. The channel is wide and shallow. The margin habitat (the moist, humid area above the water line) is considerably degraded by embedding, siltation and scour. The shredder insect community is limited with organic retention capabilities of the stream system appearing to be poor.

5. There is moderate to high embedding and depositing of silt where there are cobble/boulder riffles closing off much of the large crevice space. Large, long-lived invertebrate taxa, dependendent on crevice space for refugia are present but rare.

6. The channel is sluiced to bedrock in many places. Where surface deposits have accumulated, their depth is shallow, and fines fill large pore spaces. Thus the hyporheic habitat (habitat below the stream bottom) is essentially closed.

7. Resorting of substrates during the extended drought cycle appears to have been low, but the potential for heavy scouring and resorting is there when larger flood events occur.

8. Improvements in habitat structure and complexity will probably do little to improve conditions until fine sediment inputs are brought under control.

Rock Creek Station:
1. The caddisfly and stone fly shredder community is weakly developed. Many of the slower, winter growing taxa are missing, indicating that leaves flushed out early in most years.

2. Both the erosional and marginal habitat invertebrate community indicate that winter scour is high in most years. There are vast quantities of course and fine gravel in the system that will be mobilized at high water and scour rock surfaces.

3. Taxa dependent on stable crevice space in the armor layer rocks and taxa found in the large pores in hyporheic substrates are rare or absent. Embedding is high and greatly decreases habitat complexity.

4. Control of fine sediment inputs will do the most to enhance biotic and habitat integrity. The stream needs to move the fine sediments out, so structures that impede transport would be counter productive at this point.

5. The cool-adapted fauna is present, but in low numbers, while warm-adapted fauna are more prevalent. Increasing shading from riparian vegetation should tip the balance back to a higher prevalence of the cool-adapted taxa.

BIBLIOGRAPHY

[1]Macroinvertebrate Biomonitoring Synopsis, West Fork of Evans Creek, 1992

1. STREAM INVENTORY, 1992 WEST FORK EVANS CREEK, BUTTE FALLS R.A., MEDFORD DISTRICT.

2. 1993 and 1994 STREAM TEMPERATURE MONITORING, WEST EVANS CREEK, BUTTE FALLS R.A

3. AQUATIC ECOSYSTEM INVENTORY, MACROINVERTEBRATE ANALYSIS, West Fork of Evans Creek, 3 Stations, 1990-1991.

Appendix H
Table of Noxious Weeds in the West Fork of Evans Creek

GENUS/SPECIES	COMMON NAME	LOCATION	HABITAT	NOTES
Carthanus lanatus	Distaff Thistle	Douglas CO, Riddle		New Invader. Highest Priority
Centaura diffusa	Diffuse knapweed	Blackwell Hill/Rt 140-Greensprings Rd.	roadsides/ dry sites	High Priority. Small infestations. Manual or biological controls.
Centaurea maculosa	Spotted Knapweed	Butte Falls Progeny site.	good soils/disturbed areas	New invader. Highest priority. Herbicide control.
	Purple/Iberian Starthistle	No known locations in OR. Prevalent in Northern Cal.		New Invader.
Centaurea solstitialis	Yellow starthistle	Scattered populations/valley bottoms. Jackson, Josephine, Douglas Co.	Wide range-roadways/ dry sites. West Fork of Evans Cr. Road	High priority. Bio-control measures. Seeds.
Chondrilla juncea	Rush skeletonweed	Scattered locations. rather common. Douglas, Josephine Co.	Disturbed areas/ roadways.	Bio-control - Mite/midges/ rust. Seed & roots.
Cirsium arvense	Canada Thistle	Everywhere. Perennial	Wide range of conditions	Bio-control. Low effectiveness (Urophora carduii). Seeds/roots
Cirsium vulgare	Bull Thistle	Most clearcuts	Wide range of conditions	Bio-control (Urophora stylata) Insects available in May. Seed producer.
Cytisus sp	Spanish Broom	Rogue River and Ashland.		New Invader. No leaf. No bio-control agents.
Cytisus sp	French Broom	Cow Cr area.		New Invader. Larger leaf sp.

Cytisus scoparius	Scotch broom	West Fork of Evans Cr.	Good soils/ disturbed area	Biological control. Roadways/seed producer. 3 Million acres.
Euphorbia esula	Leafy spurge	No known sites.	Streams/ open areas.	High priority. New invader. Seed producer/roots
Hypercium perferatum	Klamath Weed	Very common. All drainages.	Wide range of conditions.	Low priority. Bio-control -very effective. (Chrysallina Beetle).
Isatis tinctoria	Dyers woad	Gravel bars. Jackson/ Josephine Co.	Sandy/gravel soils.	Low priority. Seeds.
Lythrum salicaria	Purple loosestrife	No known sites. S.Umpqua/ Rogue River.	Riparian/ wetlands.	New species. Bio-control. No chemical control. Seed/rhizomes
Senecio jacobaea	Tansy ragwort	Fringe of Range. Jackson, Josephine, Douglas Co.	Wide range of soils.	Moderate priority. Effective Bio-control. (Cinnabar moths/ Flea beetle) /seeds.
Taeniatherum caput-medusae	Medusahead rye	Everywhere.	Pasture/open forest	Low priority. Seed producer

The publication "A Guide to Selected Weeds of Oregon" by the Oregon Department of Agriculture, Noxious Weed Control Program, 1985 provides physiological description, habitat, vectors of dissemination, detrimental effects and economic impact along with color photos of the species. Additionally, O.D.A. Noxious Weed Control Program bulletin of 1993 describes the policy, classification system, the economic significance of noxious weeds and the O.D.A. Noxious Weed Rating system.

Appendix J
Mining Claim Information

Mining Claim Location: T. 32 S., R. 4 W., section 25 SE 1/4
Claimants Name:Dorothy A Kartes and Emily J Kartes
Claim Number: 53380
Claim Type: Load
Claim Name: Cedar Springs #2

There is one mining claim which has had active mining, however, the claimants have not paid their latest assessment fees.

Mining Claim Location: T. 32 S., R. 4 W., section 25 SE 1/4
Claimants Name: Patrick L. Morgan
Cibola Mining and Development
Michael W. Morgan
Claim Number: 37794, and 126263(Michael W. Morgan)
Claim Type: Placer
Claim Name: Black Bart

Appendix K
Realty Issues

There is a recreation site withdrawal ORE 16183D Public Land Order 3869 for the Elderberry Flat campground. It encompasses 404.35 acres and was withdrawn from mining on November 12, 1965.

Six timber access road easements have been acquired for the United States within the watershed.

Two of Robert Dollar's old roads which are a part of the watershed were purchased by the Medford District.

The Medford District and the Oregon Department of Forestry traded road access rights for timber hauling purposes in the Angel Camp area.

There is a communication site for the Medford District on Cedar Springs Mountain. It has a site area of 200 feet by 100 feet and also includes a 20 foot by 3,000 foot access road.

The Medford District has established four gravel stockpiles within the West Evans watershed. This amounts to a de facto withdrawal from mining for these areas.