5.4. Element 4: Plant Communities Assessment.

Information and text for this section provided by Gene Hickman and Paul Kangas

The vegetative component of natural landscapes is one of the most visible features in a watershed. Its importance to the public, to ecological processes, and to watershed management often makes it a centerpiece for inventories and assessments. The Jackson Creek watershed is located in a diverse ecological region which has complex vegetation patterns, primarily because of the geology, climate, and soils, and how these have combined through history. Geologically, most of the mountains in the region are very old, and were never glaciated heavily during the Pleistocene era. It was a refusion area, where organisms could "hide" during periods of climatic change. Many species of flora present today probably originated in the Pliocene, before the last ice age of 18,000 years ago. As Dr.Frank Lang (Southern Oregon University botanist, retired) has noted, *"we are now building our homes and highways in an incredible precious region"* (Jefferson Monthly, November 2000, p.9).

Vegetation inventories are most meaningful when done on an ecological basis and with an ecosystem framework that relates vegetation to its home or environment. This approach has been used in other recent watershed assessments, and will be used here for discussing the vegetative resources of the Jackson Creek watershed.

Two regional vegetation-climatic zones were identified as (1) *Valley Floor Climatic Zone*, and (2) *Upland Dry Oak Conifer Zone*, and mapped within the watershed. The climatic zones are further defined by and subdivided by human uses of the landscape, creating an *Urban Interface Zone* between the valley floor and upland oak/conifer zone, and an *Agricultural Zone* in the valley floor. Local landscapes were classified as potential natural vegetation ecosystems mapped by correlating vegetation with the USDA-SCS soil survey. Potential natural vegetation units were mapped, brief descriptions and plant lists were provided, and management concerns were discussed.

5.4.1. Environmental Factors Affecting the Jackson Creek Ecosystem.

5.4.1.1. History of Forest Vegetation in the Watershed. The vegetation in the watershed has frequently been altered by natural events and man-caused activities. Naturally occurring fires with historical return intervals of 10 to 30 years are common on most upland forest landscapes in Southwest Oregon and the Jackson Creek watershed. First, return intervals were shortened by human intervention as fire was used extensively by Native Americans and the first white settlers to keep vegetation retarded for ease of travel, grazing, hunting and mining. Native Americans were reported to also use fire as a stimulant for acorn production on the oak trees. Frequent, low intensity ground fires were commonly encouraged as a means to remove low, dense, older vegetation in order to promote succulent pioneer species such as grasses, shrubs, and sprouts, preferred by deer and elk.

Long-term climatic changes also have a dramatic effect on the forests in southwest Oregon because of their location between the cooler, wetter Douglas-fir forests to the North and the drier mixed conifer forests to the south. Southwest Oregon forests will develop into older growth

coniferous forests during extended periods of cool, wet weather. During extended drought periods, forests will be arrested in earlier stages of development, containing grass, brush and hardwoods, and repeatedly re-cycle to earlier vegetative species after fires or insects and disease events. Southwest Oregon experienced an extended drought period in the 1980's, which changed the species mix in the forest as many large pine and fir trees were weakened by the drought and then killed by insects. These conditions continue today in Southwest Oregon and in Jackson Creek as a result of drastically over-dense forest stands.

Bureau of Land Management (BLM), Medford District Office records of early 1900 vegetation surveys done by agents of the General Land Office indicate that Southwest Oregon landscapes in that period were much more open with less acreage in dense forest vegetation. The BLM and United States Forest Service have early photographic records that confirm the existence of extensive open landscapes in Southwest Oregon where forests exist today. Forested landscapes were more dispersed than today and fewer stands were multi-layered with tree and shrub species. Many early forests contained only grass and small shrubs on the forest floor. Forested tracts tended toward larger, thicker barked trees capable of surviving the frequent low-intensity fires. Wetter and cooler slopes, including creek bottoms and riparian areas often provided refuge for trees and other plants from fires. The plants in these cooler, wetter landscapes were often the seed source for the advancement of forests across the landscape.

Large and destructive wildfires that occurred in the Mid-West and West in the 1900's caused a war-like response from Congress and a new goal for the U.S. Forest Service to do all that was possible to eliminate wildfire. The campaign was largely successful after the war years in eliminating most fires in all but the driest periods. Current thinking is that the massive fire exclusion effort had negative long-term results and is the primary reason for the unprecedented volume of forest vegetation that began to develop in western forests. The dense stands of vegetation have the potential to fuel massive, stand-replacement wildfires.

The forests of the Jackson Creek watershed had evolved into a dense vegetated condition by the 1950's. In early September 1955, lightning storms started numerous fires in the Rogue Valley and in Northern California. A devastating wildfire, called the Timber Mountain Fire, covered 2,500 acres in the upper Jackson Creek Watershed (Mail Tribune Library). A large share of the timber and other vegetation in the watershed was destroyed or heavily damaged by the fire and the resources in the watershed were set back, ecologically, for decades. The effects of the wildfire are still evident in the upper watershed as brush and trees continue to recover in a vegetative succession process that started with grass and brush and has advanced to hardwood trees and conifers.

5.4.1.2. Geology and Soils. Geology is uniquely related to soil type because of its contribution to soil development, which directly affects Jackson Creek watershed vegetation. Examples of geological effects on the local ecology occur with soils derived from granodiorite, quartz-diorite or granite. Rock types such as granite have special effects on the properties of associated soils, greatly limiting soil fertility and water holding capacity. This affects plant adaptation, production and composition of the landscape. Soil characteristics important to plant adaptation and growth include soil depth, texture, nutrient supply, drainage and rock fragment content. These all function together to either restrict or facilitate the potential for vegetative development

of the landscape to the maximum under the prevailing climate.

The most productive Southwest Oregon soils for Douglas-fir are those that formed in material derived from metamorphosed sedimentary and volcanic rock (Josephine County Soil Survey Report, p. 111). Vegetation on these coarse textured soils encounters increased doughtiness and lower fertility while forest managers encounter regeneration difficulties and high soil erosion potential.

In addition to geology, soil factors alone can alter the vegetation potential. For example, shallow foothill soils limit plant development and support white oak-grass savanna on low elevation southerly aspects, and wet, poorly drained soils of swales or bottomland support hardwoods with grass or sedge understories. A geology map of Oregon shows a large granitic area in the northwest side of this watershed.

5.4.1.3. Climate. The macroclimate of the Bear Creek basin is closely linked to local topography, in that mountain ridges of the upper watershed may average nearly twice the precipitation received by the large open valley. Lower Jackson Creek and its mouth sit in the broad interior valley of central Jackson County with average annual precipitation of less than 20 inches in places. Climate here is characterized by hot summers, late spring frost, a moderately cold winter and a comparatively long growing season. The foothill transition between valley and mountains (Jacksonville and north) is where Douglas-fir appears and averages about 22-24 inches precipitation. High ridges at the top of the watershed may average nearly 35 inches of precipitation annually.

Climate is the primary filter for vegetation regarding plant adaptation to any region. Examples include higher humidity/moisture availability on toe slopes adjacent to creeks or in narrow valleys, and the modification of available moisture with aspect, i.e., hot, dry, southerly slopes and moist, cool, northerly slopes. These conditions are repeated throughout much of this watershed, producing different climatic vegetation zones.

5.4.2. Watershed Vegetation/Climatic Zones.

Vegetation/climatic zones have been identified earlier for this locality by Hickman in a 1994 Bear Creek Watershed appraisal and Jackson Soil Survey publication after correlating climatic records and vegetation patterns with topography, elevation and soil/landscape features. Vegetation inventories and plant distribution patterns were used to delineate zones which are believed to be closely linked to climatic patterns. Climatic relationships are interpreted from vegetation through species presence and abundance, the growth form and vigor of some species, the topographic position of plant communities and the way communities are grouped together across the landscape.

Two vegetative/climatic zones were identified in the watershed. The lowest is the broad, dry, hardwood-conifer bottomland and valley floor. The remainder represents a foothill and mountain slopes zone with conifer forest landscapes that is vegetatively and climatically different than the valley. Vegetation zones for this watershed are delineated on the potential vegetation map.

Glossary for following section:

Alluvial fans - Sedimentary deposits of soil and gravel formed by flowing water in a river valley.
Forest fragmentation - Breaks within forest stands (usually meadows or farmland).
Geomorphology - Study of the effects of land forms, channel shape, and water flows.
Mesic regimes - Having a balanced supply of moisture.
Xeric regimes - A dry, often hot environment.

5.4.2.1. Interior Valley Floor Zone. This zone includes the entire central valley floor and foothills north of Jacksonville covering about 7,000 acres or 40% of the Jackson Creek watershed. Most of the zone is in private ownership and has been converted to agriculture, roads or urban/rural housing. Elevation of the valley ranges from 1,200 to about 1,800 feet. Precipitation for the zone probably averages 18-22 inches annually. Although summer temperatures can be very hot, winters are moderately cold and spring frost occurs in the valley as late as March. Soils in this valley have mesic (moderate) temperature regimes and xeric (hot, dry) moisture regimes. Soil maps and descriptions for this zone are available in the Jackson County soil survey report.

The historic native cover was largely very productive ponderosa pine forest, mixed oak/shrub savanna, meadow wetlands or dense hardwood riparian zones, depending on soil type. Interspersed throughout the area were a few droughty foothills with white oak grassland. Deciduous shrubs were prominent, particularly hazel, snowberry and poisonoak in the extensive bottomland tree sites. Riparian corridors were dense with shrubs under cottonwood, Oregon ash, big leaf maple, white and black oak, white alder, willow, and sometimes incense cedar or ponderosa pine.

Most of the zone (over 95%) has been converted from native cover to other land uses. Therefore, the vegetation section deals primarily with historic ecosystems and the few remnants visible today. Ecosystem mapping was based on the relationship of potential communities to their landscape positions and soil characteristics.

Management concerns in the zone for native/exotic vegetation are as follows. Forestry is not a significant land use in the Interior Valley Floor Zone, except as urban tree management, even though some valley floor soils have a very high productivity potential for ponderosa pine. The potential for wildfire ignition here would be high if fuels were available because of the long dry season and a variety of sources that can cause fires. Weeds (especially exotic grasses/forbs) are widespread and abundant in the zone. This is probably due to 1) the Mediterranean-like climate, 2) a wide variety of environmental communities present within the watershed, 3) disturbance sites that are vulnerable to weed invasion (urban development, agriculture, roads), and 4) the high potential for weed transport into the valley via traffic, agricultural supplies/products, and residential landscaping. Lastly, competition for the use of natural resources and their protection is a concern. Most of the people and industrial, residential and agricultural developments of the watershed are found here. Consequently, the demand for water, wood products, aesthetics, recreational opportunities, fish/wildlife protection, natural cover preservation areas and land for urban development is high.

5.4.2.2. Upland Dry Oak Conifer Zone. The upland forest zone is defined as that portion of the watershed that is forested and contains diverse forest resources and habitats. It also has a reasonable separation in distance and elevation from urban influence, which allows forest resource management to be practiced.

The upland climatic zone occupies the center and west side of the watershed as mountains, foothills and old alluvial fans. It covers about 11,000 acres or 60% of the watershed. Elevations range from about 1,600 feet to about 4,000 feet on the western ridge boundary. Precipitation is estimated to average from about 22 inches at the Interior Valley edge to nearly 35 inches annually at its western boundary. Soils with mesic temperature regimes and xeric moisture regimes are typical of the zone.

Climatic conditions in the Dry Oak Conifer Zone favor conifer forests that include black oak and madrone. North aspects are characterized by Douglas-fir stands that may include madrone and minor ponderosa pine and/or incense cedar during initial stand development. South slopes and flat positions have site potentials for mixed ponderosa pine, incense cedar and Douglas-fir with both madrone and black oak. On all aspects and sites associated with granitic soils, sugar pine is usually a stand component and erosion concerns increase. Shrub cover associated with understories is mostly deciduous species, of which poisonoak, snowberry, deerbrush, hazel and oceanspray are very common. Brush fields normally develop after heavy timber harvesting and burns which persist for years while new stands develop. These are dominated by various combinations of deerbrush, whiteleaf manzanita, poisonoak, madrone and black oak. White oak and wedgeleaf ceanothus are additions on the driest sites.

Some characteristics of the zone have important impacts for management. The hot summers and long dry season greatly increase the length and severity of the fire season. Forest insect and disease problems can be severe on dry forest sites in drought cycles in overstocked stands and when trees are under high stress, producing problems with mistletoe and root rot for Douglas-fir, bark beetles for sugar pine and ponderosa pine. Also of concern is the competitive nature of aggressive hardwoods and shrubs/grass in brush fields, which decrease the potential for regeneration to establish, especially on harsh southerly slopes. Tree productivity is much lower here than in higher rainfall zones of the watershed which limit the returns from forestry and extends the length of the harvest rotation. Lastly, the rather large area of granitic soils, possibly 1/3 of the watershed, have higher erodibility and increased erosion/sedimentation problems for streams and reservoirs.

The general condition of the upland forest vegetation in Jackson Creek is in a recovering condition. Most of the vegetative types are still in developing stages from the 1955 wildfire or from past logging activity. The process and speed of the recovery varies with each site and species and is guided by other factors such as soil quality, rainfall, catastrophic events, and human activities.

5.4.2.2.1. Upland Forest Tree Species. The primary tree species in the upland forest are Douglas-fir, ponderosa pine, black oak, incense cedar, sugar pine, grand fir, and Pacific Madrone. The dominant species in Jackson Creek's upland forest is Pacific Madrone. It is a prolific seeder that will dominate openings created by disturbance and it sprouts from its base

after fire has killed its top. The stump sprouts grow very fast because of a highly developed root system, thereby dominating the landscape rapidly. Some of these stands are so dense, 45 years after the fire, that other trees cannot establish in the understory due to lack of light. If the soil is of reasonable quality and moisture normal, Pacific Madrone would eventually overtake most areas established to grass and manzanita brush. The succession process is long-term, with Madrone starting in the cooler, wetter sites and eventually spreading outward. This process is occurring in the northeast portion of the watershed where large manzanita brush fields exist. Unfortunately, before the natural conversion process can be completed, a fire will usually destroy the vegetation and the site will revert back to grass and brush.

5.4.2.2.2. Differences in Upland Tree Species Related to Aspect. The species, proportions and dominance of trees that are present in the upland forest of Jackson Creek is very dependent on the aspect or direction that the slope faces. The north facing slopes are cooler and wetter and eventually succeed to Douglas-fir. Douglas-fir will usually maintain a seed source in these stands, even after most fires, and will re-seed itself. In the uplands of the Jackson Creek watershed, most north facing slopes were dominated by re-sprouting Pacific Madrone after the 1955 fire. As the Madrone matures, its growth pattern allows slow growing, overtopped Douglas-fir seedlings to eventually grow over the top of the Madrone, which will then shade the Madrone, causing its decline and mortality. Many of the Madrone stands on north facing slopes in the upland forests are presently being overtopped by Douglas-fir. Some other species present include: ponderosa pine, grand fir, sugar pine, black oak, willow, big leaf maple, poisonoak and ceanothus.

South facing slopes, on better soils in the upland forest were also predominantly covered by Madrone early after the fire. They will typically allow several species of conifers to become established because the Madrone on these sites is less dense due to the fact that site conditions are not as good. The conifer species that is best suited to these slopes is ponderosa pine. Other conifer species present in order of presence will be: Douglas-fir, incense cedar and sugar pine. Some other species present are: black oak, willow, manzanita, ceanothus and poisonoak.

East facing aspects, on better soils, in the upland forest are similar to the north facing slopes but will eventually contain a higher proportion of ponderosa pine than on the north slopes. Douglas-fir may have the most trees per acre on these slopes but it does not perform as well as ponderosa pine, incense cedar or sugar pine.

West facing slopes in the upland forest will have species and conditions similar but somewhat better than the south facing slopes. The southwest slopes are the hottest of any slope and would tend to be the harshest for vegetative growth.

5.4.2.2.3. Differences in Upland Vegetation Related to Soil. A primary factor that is significant to vegetative differences in the watershed is related to the quality of the soil. About one third of the upland forest located in the northern portion of the watershed contain granite-based (Tallowbox series) soils. These soils tend to be very low in organic content and are too porous to retain much moisture. Vegetative potential on these soils is reduced toward the ridges, where there is less moisture, and is also limited during drought periods. Most of the manzanita brush fields are located on these soils. The manzanita is perpetuated there because of a cycle of

frequent fires and its ability to re-seed itself. The granite soils are very erosive, which further limits their potential. Where soils are rocky, shallow and moisture limited, black oak will be dominant and a limited number of other plants will be present.

Vegetation on soils such as the Carris-Offenbacher gravelly loams and the Vannoy and Manita loams seem quite productive on the cooler and wetter aspects in the upland watershed. As stated earlier under aspect, these soils are not as productive on the hotter south and west slopes. Steep slopes have not been found to be very erosive.

5.4.2.2.4. Riparian Vegetation in Upland Forests. The portions of streams considered to be in the upland forest zone are: The headwaters of Jackson Creek to the boundary of the City of Jacksonville's watershed property in section 25, T37S, R3W; the headwaters of Norling Gulch Creek to its confluence with Jackson Creek; the headwaters of Cantrall Gulch Creek to its confluence with Jackson Creek; the headwaters of Miller Gulch Creek to the first residences near the creek; and the headwaters of Walker Creek past the gravel quarries. The south fork of Jackson Creek is considered to be in the urban/forest interface zone.

Only the major species of trees and shrubs were recorded during the surveys. Surveys were done from roads adjacent to the riparian areas, at stream crossings and from viewpoints. Survey data recorded is as follows: Primary Tree species, Secondary Tree Species, Shrub Species, Estimated Distance, Property Owner if known, General Condition of riparian area. (Good, Fair, Poor).

HEAD OF W. JACKSON CREEK TO CANTRALL GULCH

PRIME TREES	SEC. TREES	SHRUBS	DISTANCE	OWNER	CONDITION
Pacific Madrone	Black oak	Ocean spray	2.5 Miles	Boise Cascade	Good
White Alder	Willow	Poisonoak		City of Jacksonville	
Big Leaf Maple	Cottonwood	Hazel			
Douglas-fir	Incense Cedar	P. Dogwood			
		Mock orange			
		Ceanothus			

HEAD OF NORLING GULCH CREEK TO JACKSON CREEK

PRIME TREES	SEC. TREES	SHRUBS	DISTANCE	OWNER	CONDITION
Douglas-fir	B. Cottonwood	Hazel	2 Miles	BLM	Good
Pacific Madrone	Willow	P. Dogwood	City of Jacksonville		
Big Leaf Maple		Mock Orange	Spaulding Lbr		
White Alder		Poisonoak			
		Ceanothus			

HEAD OF CANTRALL GULCH CREEK TO JACKSON CREEK

PRIME TREES	SEC. TREES	SHRUBS	DISTANCE	OWNER	CONDITION
Pacific Madrone	B. Oak	Hazel	4 Miles	City of Jacksonville	Fair
Douglas-fir	White Alder	Poisonoak	BLM		
Ponderosa pine	Willow	Ceanothus	Boise Cascade		
B. Cottonwood		Manzanita	M. Riders Assoc.		

JCT. CANTRALL GL. CREEK /JACKSON CR. TO PROP. BOUNDARY

PRIME TREES	SEC. TREES	SHRUBS	DISTANCE	OWNER	CONDITION
White Alder	Pacific Madrone	Hazel	1 Mile	City of Jacksonville	Good to reserv.
Big Leaf Maple		P. Dogwood		M.Riders Assoc.	Poor at reserv.
B. Cottonwood		Poisonoak		Fair below	
Douglas-fir		Ceanothus			

HEAD OF WALKER CREEK PAST GRAVEL QUARRIES

PRIME TREES	SEC. TREES	SHRUBS	DISTANCE	OWNER	CONDITION
B. Cottonwood	B. oak	Hazel	2 ½ Mile	Boise C.	1 3/4M New logging
White Alder	Douglas-fir	P. Dogwood	½ Mile	Jack. County	Fair
Big Leaf Maple		Willow	1 Mile	Pvt. Parties	Fair
Pacific Madrone		Poisonoak			
		Ceanothus			
		Blackberry			
		Mock orange			

HEAD OF MILLER GULCH TO FIRST RESIDENCES

Approximately three fourths of a mile of riparian area is within a part of upper Miller Gulch that was logged in 1993. The vegetation in these riparian areas are still in a recovering state. There are also some roads constructed in the upper drainage during the logging operation that affect the upper drainage. There is approximately one half mile of riparian area between the 1993 logging and the first residence. The species present is similar to Norling Gulch creek and the condition of this section is good.

5.4.3. Urban/Forest Interface Zone. The urban/forest interface zone is defined as that portion of the watershed that is largely forested but has intermingled residences throughout or the potential for them in the future. This zone is located in the mid-elevations of the watershed and extends to the valley floor or city boundaries.

The vegetation in the urban/forest interface zone is generally of poorer quality than in the upland zone. The lower elevations of this zone are subject to higher temperatures for longer daytime periods, and also receive less rainfall because they are in a rain shadow. Most storms passing over the higher elevations from the west deposit the largest share of their moisture in the higher elevations, creating a difference in average rainfall from the high to the low elevations of as much as 10 to 20 inches per year. Increased population density also tends to create fire control problems, road construction, increased tree damage, importation of exotic species, and forest fragmentation.

The conditions described above cause the forests in this zone to remain in their current vegetative state of development for a longer period of time. In order for these forests to advance ecologically, they must have cooler growing conditions, more moisture, and greater care. The cooler conditions and more rainfall are not likely to occur without climate change. The one factor that could advance these forests would be better forest management.

5.4.3.1. Urban/Forest Interface Zone Tree Species. As with the upland forest, the dominant species in the Jackson Creek urban/forest interface is Pacific Madrone. There are less coniferous forests in this zone for reasons stated above. Where conifers do exist, the prevalent species is ponderosa pine. In the hills surrounding Jacksonville, ponderosa pine trees are standing over madrone stands. During periods of drought or where understory vegetation is dense, you may also notice that many of the ponderosa pine trees are dead. Another difference in the species present in this zone is the increased incidence of both black oak and California white oak. It often grows in unison with madrone or may be more exclusive in stands, particularly on hotter south and west slopes, where it may also be accompanied by manzanita and ceanothus brush, grasses and poisonoak.

5.4.3.2. Riparian Vegetation in the Urban/Forest Interface Zone.

JACKSONVILLE WATERSHED PROPERTY BOUNDARY TO HWY 238

PRIME TREES	SEC. TREES	SHRUBS	DISTANCE	OWNER	CONDITION
Ponderosa pine	Pacific Madrone	Hazel	½ Mile	Private	Good, except
B. Cottonwood	Ore. Ash	Poisonoak		last property	
Big leaf maple		Ceanothus			
Douglas-fir		Willow			
White alder					

S. FORK JACKSON CREEK AND LOWER MILLER GULCH TO JCT AT HWY 238

PRIME TREES	SEC. TREES	SHRUBS	DISTANCE	OWNER	CONDITION
Ponderosa pine	B. oak	Ceanothus	3 ½ Miles	BLM	Good except
Douglas-fir	White alder	Hazel		Boise Casc.	near residences
B. Cottonwood		Poisonoak		Private	
Big leaf maple					
Pacific Madrone					
Willow					

S. FORK JACKSON CREEK TO JACKSON CREEK FORKS

The differences in vegetation in this section of the creeks riparian area are not significant from the previous section. The length is approximately one mile. The condition is classified as fair but there are portions near residences and at road crossings that should be considered as poor.

JACKSON CREEK FROM JACKSON FORKS THROUGH BRITT WOODS

The vegetation in this section of riparian area is similar to sections directly upstream. The length

is approximately ½ mile. The condition is classified as good.

JACKSON CREEK FROM BRITT WOODS CROSSING THRU CITY

PRIME TREES	SEC.TREES	SHRUBS	DISTANCE	OWNER	CONDITION
B. Cottonwood Big leaf maple Ailanthus alt. B. locust Ore. Ash	Willow White alder	Blackberry	¾ mile	City J'ville Private	Poor-narrow, Residences, Poor species, etc.

5.4.4. Urban/Agricultural Zone. The urban/agricultural zone is defined as that portion of the watershed that contains cities and suburban communities and intensive agri/forestry operations. Vegetation in this zone contains urban forests, non-native species and cultured species. Riparian areas and their vegetation may be natural in some places but generally display a broad range of quality. Agricultural vegetation was not assessed.

5.4.4.1. Riparian Vegetation in the Urban/Agricultural Zone.

JACKSONVILLE CITY LIMIT TO HANLEY ROAD JCT. TO BEAR CREEK

The condition of the riparian vegetation from the Jacksonville city boundary to the Hanley Road junction and downstream is restricted by the road side location, intensive cropping, and residential development, and dominated by thick blackberry bushes. There is limited space or opportunity to restore natural vegetation in some of these areas.

Table 5.5. Estimated Acres in Watershed Zones.

UPLAND FOREST ZONE ACRES (BY GROUPS and ASCENDING ORDER OF SPECIES PRESENCE IN THOSE GROUPS)

SPECIES	ESTIMATED ACRES
DOUGLAS-FIR Pacific Madrone BIG LEAF MAPLE PONDEROSA PINE BLACK OAK	2,500 A. Combined
Pacific Madrone PONDEROSA PINE DOUGLAS FIR BLACK OAK	3,400 A. Combined
Pacific Madrone BLACK OAK PONDEROSA PINE DOUGLAS FIR	1,800 A. Combined
RECENTLY LOGGED TIMBERLANDS	700 A.
BRUSHFIELD CONVERSION TIMBERLANDS	100 A.
MANZANITA BRUSH FIELDS WITH MADRONE	500 A.
SUBTOTAL	9,000 A.

URBAN/FOREST INTERFACE ZONE ACRES

URBAN/FOREST INTERFACE (ALL SPECIES)	2,400 A.
URBAN/FOREST SUBDIVISIONS (ALL SPECIES)	1,400 A.
SUBTOTAL	3,800 A.

URBAN/AGRICULTURAL ZONE ACRES

FARM, ORCHARD, NURSERIES	2,400 A.
CITIES	700 A.
INDUSTRIAL	200 A.
SUBTOTAL	3,300 A.

WATERSHED TOTAL ACREAGE - 16,100 A.

5.4.5. Ecological Sites and Historic Potential Natural Vegetation.

Ecological Sites were interpreted from soil survey map units for the watershed as shown in two soil legends, which follow. Sites are based on a system, which stratifies natural landscapes using their potential to produce unique historic climax native plant communities. Potential vegetation refers to historic vegetation in the absence of disturbances, except after a period of normal recovery from historic burning. These plant communities, when combined with their natural environmental settings (climate, soil/geology, topography, living organisms) represent local ecosystems that are the basic components of natural landscapes.

In this study, considerable importance was given to recognizing soil-vegetation relationships. Natural vegetation patterns are closely related to local soil landscapes and to the geomorphology of an area. The Dry Oak Conifer Zone consists largely of mountain slopes differentiated by aspect, position on slope, microclimate, soil features and the geology that influenced soil development. Slopes are separated by small drainages and narrow valleys (not described in this report). They are conduits for much of the source material in large alluvial fans at the lower east flank of this zone and main valley floor. In the Interior Valley Floor Zone geomorphic surfaces consist mainly of flood plains, low stream terraces (former flood plains), high stream terraces of even older flood plains, and alluvial outwash fans from nearby uplands. The landforms of each surface have formed soils of different ages with different characteristics.

Eighteen ecosystems and variations are identified for the watershed. Vegetative potential is briefly described in thirteen Ecological Site Descriptions which follow ("Y" axis of Table 5.7). These site descriptions relate to those described in the Jackson Soil Survey Report. Management or disturbance responses are identified. An expanded species list with scientific code names is included with typical potential abundance (opportunity for management). This is not an exhaustive list but a result of sampling and listing of species thought to be native to the site. It should be noted that all species are not always present at each example of the site. Nor are all species resident continuously through all stages of succession associated with the site over time. A simple Plant Association Table (Table 5.7) was prepared to show plant species distribution and how these sites are vegetatively similar or contrasting.

Table 5.6. Plant Associations For Ecological Sites in the Jackson Creek Watershed.

Selected Native Species in Late Seral Stands (Potential) for Ecological Sites of the Jackson Creek Watershed.

Species List: (Selected from site description list **TREES**	Douglas-fir Forest	Douglas-fir Mixed Pine - F	Mixed Pine/Douglas-fir/Fescue	Pine - Douglas-fir/Fescue	Loamy Slopes 18-24" PZ	Deep Loamy Terrace 18-28"	Mixed Oak Terrace	Loamy Hills 20-35" PZ	Droughty Fan 18-24 PZ	Poorly Drained Bottom	Loamy Floodplain	Shallow Mountain Slopes 22-30"	Loamy Shrub Scabland 18-35
Sugar Pine		X	X										
Douglas-fir	X	X	X	X									
Madrone	X	X	X	X	X	X							
Incense Cedar	X	X		X		X							
Ponderosa Pine		X	X	X	X	X	X	X					
Black Oak	X	X	X	X	X	X	X	X	X				
White Oak					X	X	X	X	X	X	X		
Oregon Ash							X			X	X		
Bigleaf Maple											X		
White Alder											X		
Black Cottonwood											X		
SHRUBS													
Little Wild Rose	X	X											
Western Dewberry	X	X											
Oceanspray	X	X				X	X						
Deer brush	X	X	X	X		X	X						
Tall Oregon Grape	X	X	X	X	X	X	X						
Common Snowberry	X	X	X	X	X	X	X						
Poisonoak	X	X	X	X	X	X	X	X	X				X
Hairy Honeysuckle	X	X			X	X							X
Brewers Lupin			X									X	
Pacific Serviceberry				X	X	X	X	X	X				

Species List:	Douglas-fir Forest	Douglas-fir Mixed Pine - F	Mixed Pine/Douglas-fir/Fescue	Pine - Douglas-fir/Fescue	Loamy Slopes 18-24" PZ	Deep Loamy Terrace 18-28"	Mixed Oak Terrace	Loamy Hills 20-35" PZ	Droughty Fan 18-24 PZ	Poorly Drained Bottom	Loamy Floodplain	Shallow Mountain Slopes 22-30"	Loamy Shrub Scabland 18-35
Birchleaf Mt. mahogany				X	X			X					
Klamath Plum					X			X					
Willow						X	X			X			
Heartleaf Buckwheat												X	
Wedgeleaf Ceanothus													X
Skunkbush Sumac						X							
Wildgrape						X							
GRASSES													
Field Woodrush		X											
Mountain Brome	X	X											
Western Fescue	X	X	X										
California Fescue	X	X	X	X									
Blue Wildrye	X	X	X	X	X	X	X	X			X		
Tall Trisctum	X	X	X			X							
Pine Bluegrass			X	X		X		X	X			X	
Idaho Fescue			X	X	X	X		X	X			X	
June grass			X		X			X	X			X	
California Brome				X	X	X		X	X				
Lemon Needlegrass								X	X				
Bluebunch Wheatgrass								X	X			X	
Rush, Sedge										X	X		
Manna grass										X			

5.4.6. Vegetation Improvement Opportunities.

The forests in these zones are always trying to advance ecologically. They do this naturally (or with help) by establishing coniferous trees (ponderosa pine, Douglas-fir, cedar, sugar pine, grand fir) among the hardwood forests and brush fields. As these conifers advance, they attempt to overtop the hardwoods and become dominant in the forest stands.

The conifers in the upland forest zone have the best chance of surviving and maturing into dominant stands but usually need some competitive advantage over competing hardwood and brush species in order to grow freely and at a faster rate. The advantage can be gained during the conifers early to middle ages by an intervention that physically reduces the competing vegetation through some form of density control. Historically, this density reduction was done by fire. It can still be done by fire but with the urban interface expanding, it is becoming more likely that the density control will have to be done by some form of mechanical means (chainsaw, slashbuster machine, etc.). Accomplishing density control in the upland forests increases the tree growth, improves resistance to fire damage and adds to the health and diversity of the forest.

The practices needed to improve the vegetation in the urban/forest interface are much more imperative. Most of the conifers in this zone do not reach the dominant stage as single trees or in stands because they cannot survive periodic droughts and insect attacks. Therefore, these stands revert back to hardwood dominance. It is a necessity in advancing these forests to establish coniferous forests and also reduce the density of the hardwood and brush species. This has two benefits: 1) older, larger and less-dense coniferous stands are less likely to be damaged by fire, 2) more of the available moisture is available for the coniferous species in these stands.

In both the upland forest and the urban/forest interface, the management of vegetative density will promote older, larger and less-dense coniferous stands. These stands will be much more resilient to periods of drought and adverse climate change.