



Luckiamute/Ash Creek Study

5 HUMAN HABITATION

5.1 Settlement

Historic Settlement

Archaeological information provides insight into where Native Americans settled in the Willamette Valley. Artifacts and burial sites throughout the Willamette Valley reveal tools, food remains, and other indications of native culture and lifestyle. Hager's grove, near Salem has artifacts associated with charcoal-filled fire hearths and earth ovens. Other artifacts include narrow-pointed arrowheads from around 2,500 BP, apparently used for arrows, and charred camas bulbs, hazelnuts and acorns (Aikens, 1992). Archeologists conclude that this site was used as a seasonal hunting site, probably used during midsummer or fall, where game was hunted and plants were collected (Aikens, 1992). With information from many sites like this, archeologists have reached some major conclusions about indigenous peoples in this area. Indigenous peoples of the Luckiamute Valley lived in small, independent groups, but belonged to the larger Kalapuyan family of peoples who occupied the Willamette Valley. In the Luckiamute Valley, there were probably six different bands (Ruby and Brown, 1992) who were speakers of Central Kalapuyan, one of the three Kalapuyan languages (Aikens, 1992). These people made seasonal camps within their individual ranges, so that groups could harvest various resources as they ripened or were most readily obtained (Aikens, 1992). Camas root was harvested throughout the summer,

and fishing occurred mainly in spring, fall, and winter.

As in other places in the United States, many Native Americans were killed by diseases introduced by European-American settlers. Even before 1812, when contact with fur-traders and explorers began, native populations were being decimated by European-American diseases such as smallpox and malaria (Whitlock and Knox., 2002). Arrival of European-American settlers and the policies of the federal government further displaced Native Americans from their homelands. The residents of the Luckiamute Valley were "relocated" twice and, in 1855, moved to a reservation designated by the U.S. government in Grand Ronde, just north of the Luckiamute homelands. The Native Americans of the Luckiamute Valley lived on this reservation along with people from other tribes until the reservation was dissolved in 1957 (Ruby and Brown, 1992). The Donation Land Act of September 29, 1850 gave incentive for Americans to move to the West. Settlers were given land, provided that they live on and cultivate them. A man was offered 640 acres if married and 320 acres if single.

For more information on the history of the Luckiamute / Ash Creek watersheds, see Appendix B.

Historic Sites

The following list of historic sites was supplied by the LWC.



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Fort Hoskins- this pre-settlement site is located in Kings Valley.

Old California Trail- this major wagon trail was used during settlement of the watershed.

Sulphur Springs- the site of mineral springs and a historic spa in the Soap Creek valley. The site is now administered by OSU Research Forests.

Soap Creek Historic School House – it is a National Historic Site.

Parker School House

Pioneer Cemeteries – including the Pedee Cemetery; a list is available from the Polk Co. Historical Museum.

Cities

The Luckiamute/ Ash Creek study area includes the cities of Monmouth, Independence, Dallas, and Falls City, as well as the communities of Adair Village, Airlie, Buena Vista, Hoskins, Kings Valley, Pedee, and Suver (Map 1). Major cities in the region, but outside of the study area, are Corvallis and Albany to the south and Salem to the northeast.

McArthur (1992) provides information on the naming of cities within the study area (see also Section 5.4).

Adair Village- Adair Village is located just south of the Luckiamute Watershed on state highway 99W. Adair Village was named for Camp Adair (see Section 5.4 for more information on Camp Adair).

Airlie- This town was established at the terminus of a narrow gauge line of the Oregon Railroad Company. The railroad track was removed in 1929, but the community of Airlie remained.

Buena Vista- The land for this community was donated from the land claim of Reason B. Hall. Buena Vista received its name in 1850, and was named thus because one of Hall's relatives fought in the battle of Buena Vista in Mexico.

Dallas- The town of Dallas was initially called 'Cynthia Ann'; it was settled in the 1840s but moved more than a mile south in 1856 due to an insufficient water supply. The town was later named for George Mifflin Dallas, a vice-president of the United States under Polk. Dallas was chosen over Independence as the county seat of Polk County after securing a narrow gauge railroad into the town at the cost of \$17,000 in 1878-1880.

Falls City- Falls City was named for the falls in the Little Luckiamute River, on the western edge of this community. Falls City started as the town of Syracuse. The place originally served as a post office named Syracuse, which was established in February 1885. In 1889 Frank Hubbard decided to move Syracuse two miles to the site of present day Falls City (Arlie Holt, personal communication). The name of the post office was changed to Falls City in October 1889.



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Photo 5

Hoskins- The community of Hoskins is close to the site of Fort Hoskins. The Fort was established on July 26, 1856 by the federal government to oversee the “resettlement” of western Oregon native peoples to the newly established Coastal Indian (Siletz) Reservation. The location of the fort was on the Luckiamute River near the mouth of what is now Bonner Creek. The land was probably owned by Rowland Chambers.

Independence- This city was founded by Elvin A. Thorp, from Missouri, who named it for Independence, Missouri. Thorp acquired the land for the community from a donation land claim.

Kings Valley- This community was named for the pioneer Nahum King who arrived in Oregon in 1845. A flourmill was built at this site by Rowland Chambers in 1853. Kings Valley post office was established on April 13, 1855.

Lewisville- Lewisville was established on the donation land claim of and named for David R. Lewis, a pioneer living around 1845. Lewisville is

located about 0.7mi North of Maple Grove.

Monmouth- This city was settled by a group of pioneers from Monmouth, Illinois who arrived in 1852. The same party gave 640 acres of land on which to establish a town and college. This college, originally known as Monmouth University, later became Christian College. In 1883, the Oregon Legislature passed a bill creating the Oregon State Normal School, which was later renamed the Oregon College of Education, then Western Oregon State College, and today is known as Western Oregon University.

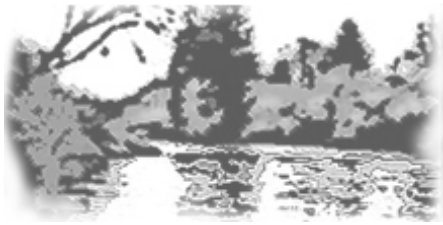
Pedee- the Pedee community is near the mouth of Pedee Creek, a tributary to the Luckiamute River. Pedee creek was named by Colonel Cornelius Gilliam who came to Oregon in 1848 from North Carolina, home of its own famous Peedee River.

Suver- This community is named for the pioneer Joseph W. Suver who was born in Virginia in 1819 and settled on a donation land claim in the area in 1845.

5.2 Human Population

The human population within the study area has increased dramatically. Using data from the U.S. Census Bureau, we looked at changes in the populations of cities within and near the study area, and in Benton and Polk Counties.

From 1990 to 2000, most of the cities in or near the study area saw an increase in population, with the



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exception of Adair Village. Table 13 shows the population change for several of these cities (U.S. Census Bureau, 2002). Within the study area, the population of Independence

increased by approximately 27%, Monmouth by almost 19% and Falls City's population by about 17%.

Table 13. Population change for cities in or near the study area (U.S. Census Bureau, 2002).

City	1990 Population	2000 Population	% Change
Adair Village ³	548	536	-2.2%
Albany ³	29,463	40,852	27.9%
Corvallis ³	44,757	49,322	9.3%
Dallas ²	9,422	12,459	24.4%
Falls City ¹	800	966	17.2%
Independence ¹	4,425	6,035	26.7%
Keizer ³	21,884	32,203	32.0%
Monmouth ¹	6,288	7,741	18.8%
Salem ³	107,786	136,924	21.3%

¹ City is within the study area, ²City is partially within the study area, ³City is near the study area and information is provided for comparison.

During the same 10-year period, Polk County's population grew by about 22% and Benton County's population by about 9% (U.S. Census Bureau, 2003). For comparison, the state of Oregon grew by 18% during this same period (U.S. Census Bureau, 2003).

From 1860 to about 1945 there was a gradual rate of increase in the populations of Benton and Polk

Counties. From 1945 to 2000, the rate of population increase became exponential. At the time of the last census, the population of Benton County was 77,926 and Polk County was 63,679 (U.S. Census Bureau Population Division, 1995; University of Virginia Geospatial and Statistical Data Center, 1998; U.S. Census Bureau, 2003).



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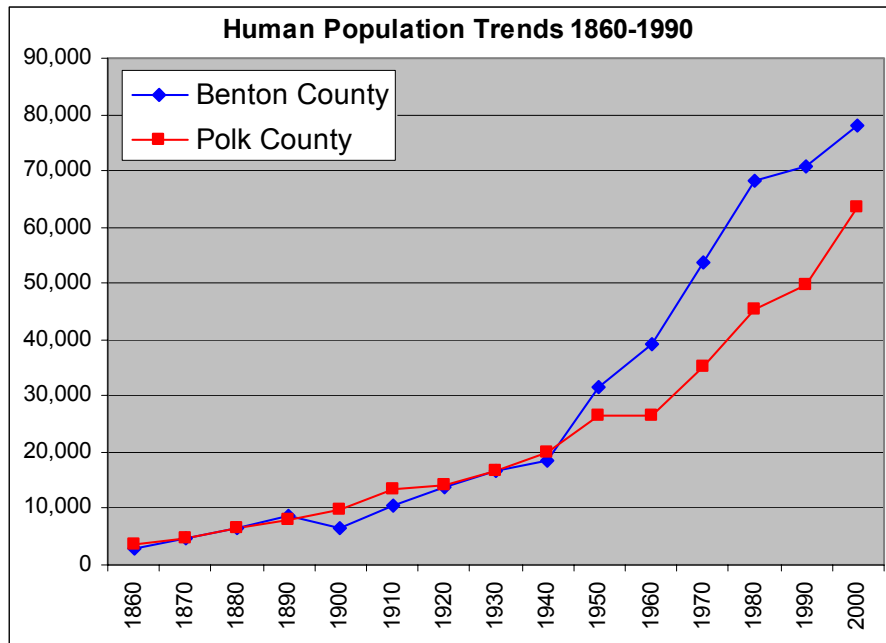


Figure 1. Human population trends in Benton and Polk Counties from 1860-1990 (U.S. Census Bureau Population Division, 1995; University of Virginia Geospatial and Statistical Data Center, 1998; U.S. Census Bureau, 2003).

5.3 Transportation

Roads

Two state and one regional highways pass through the study area (Map 1). Oregon State Highway 99W runs along the eastern perimeter of the study area. Oregon State Hwy 223, also known as Kings Valley Highway, crosses through the western portion of the study area. Both 99W and Hwy 223 are oriented north to south. The Monmouth Highway runs from Monmouth in an east-west direction between the two other highways (Map 1).

Knowledge of the type and location of roads is important for a watershed assessment (see Section 6). For example, roads located in floodplains and roads that cross streams can

directly affect hydrologic patterns by constraining stream channels.

Indirectly, road building replaces permeable soils with impervious surface so that instead of slowly infiltrating soils, water runs along road surfaces and enters the stream network over a short period of time. In extreme cases, roads have actually functioned as extensions of the stream network during storm events (Wemple, 1994). Since roads also act as barriers for many types of wildlife and transportation corridors for invasive species, roads can have a dramatic impact on watershed wildlife habitat.

The Watershed Assessment Manual (Watershed Professionals Network, 1999) suggests that when impervious surfaces of roads cover 4% to 8% of a



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watershed's area, there is a moderate to high risk of alteration to hydrologic peak flows. As water moves over a road surface it can transport pollutants and sediments to the stream network. A study by an independent group of scientists reported that roads could be a chronic source of sediments to streams (Independent Multidisciplinary Science Team, 1999).

In order to determine the risk of sediment (and pollutant) delivery and stream channel constraint that roads pose to each watershed, it is necessary to map and categorize roads throughout the basin. This would include classification of roads into paved and unpaved categories, and determination of road width. If road densities were to be calculated, a uniform-scale map of roads is necessary. The best available roads information is provided on paper USGS topographic maps at a scale of 1:24,000. Although it is possible, it is very time consuming to make many of the measurements called for in the OWEB watershed assessment using the paper maps. In addition, without the

proper equipment rounding errors usually make measurements made from paper maps less accurate than those made using a computerized system. Fortunately, there is a GIS layer depicting roads in the study area available from the BLM. While there are known quality issues with this layer (especially in the description of the road surfaces on each road segment), this layer represented the best data available at the time this assessment was conducted. Therefore, the BLM roads layer is used throughout the assessment. **We recommend that the LWC develop a more accurate roads layer from USGS topographic maps and other sources, if more accurate road information is needed for action planning.**

Using the BLM roads layer, we found that there is a total of 1,432.2 miles of roads in the study area, with the majority of the roads with a known road surface having an aggregate surface (16.5%) (Table 14).

Road Surface	Length (mi)	% Total Length
Aggregate Base ASC - Aggregate Surface	236.5	16.5%
Bituminous	41.0	2.9%
Hard Surface	36.1	2.5%
Natural Unimproved	8.8	0.6%
Not Designated	3.4	0.2%
Not Known	1,061.9	74.1%
Pit Run	44.5	3.1%
Total	1,432.2	100.0%



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Railroads

Railroads have been important in the area since the early 1900s. The Valley & Siletz Railroad, which was incorporated in 1912 by the Cobbs & Mitchell Lumber Company, passed through the watershed along the Luckiamute River linking Kings Valley and Pedee with Independence. It connected to the Southern Pacific Railroad at Independence. The primary goal of its construction was to move timber, but it was also used to move agricultural products. The line was purchased in late 1984/early 1985 by the Willamette Valley Railroad Company. The Willamette Valley Railroad Company continued to operate carrying cargo for the Mountain Fir Lumber Company until the lumber facility closed in May of 1992. This railroad is no longer in use (<http://www.pnwc-nrhs.org/rr-history/rr-history-VS.html>).

Airports

There are several airports in the study area. The Independence State Airport is located north of the City of Independence. McNary Field in Salem is the closest regional airport, and the closest international airport is located in Portland.

Ports

The Buena Vista Ferry, not really a port but rather a transportation corridor, runs across the Willamette River from Independence/Buena Vista (<http://publicworks.co.marion.or.us/operations/ferries/bvinfo.asp>).

5.4 Land Use

Land use is discussed in more detail in Section 7.

Mills

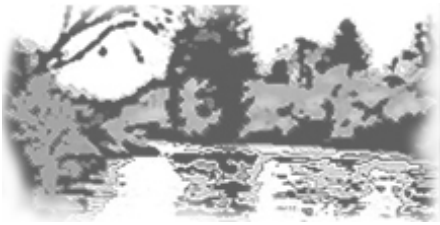
The LWC asked the team to identify mills associated with some of the early Land Claims. Table 15 lists Donation Land Claims for the Luckiamute/Ash Creek study area.



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Table 15, Donation Land Claim settlers and mill sites in the Luckiamute Valley. Listed are the owner, year of claim, township and range, quarter section and notes. Sources of information are listed below.

Owner	Year	Township	Range	Section	Quarter/ Other
Sawmills Identified within the OSU Research Forest (Wisner, 1992)					
Coote/Cornutt	1935-1937	T10S	R5W	9	north half, middle
Coote/Cornutt	1929-1935	T10S	R5W	16	north half, middle
Coote/Weinert	1936-1939	T10S	R5W	15	SE 1/4
Cooper's Mill	1930s	T10S	R5W	8	SW 1/4
Bennett Brothers	1930s	T10S	R5W	16	SW 1/4
Oak Creek Mill	1910-1920	T11S	R5W	7/18	
Oak Creek Mill	1910-1937	T11S	R5W	18	SW 1/4
Oak Creek Mill	1910-1937	T11S	R5W	17	NW 1/4
OSU Mill	1947-1955	T11S	R5W	20	NW 1/4
Govier Mill	1931-1939	T10S	R5W	10	SE 1/4
Soap Creek Mill	1890	T10S	R5W	35	SW 1/4
Valley Mill	1935-1955	T11S	R5W	3	NE 1/4
Calloway Creek Mill	1911-1916	T10S	R5W	36	E middle
Mt. View Mill	1934-1937	T11S	R5W	2	NE 1/4
Zager Mill	1937	T11S	R6W	24	E middle
Zeller Mill	1937	T11S	R6W	12	E middle
Unnamed	1937	T11S	R5W	10	W middle
Sulphur Springs Mill	1890	T11S	R5W	5	NW 1/4
Sharp's Mills		T8W	R4W	20	
Scott's Mill		T8W	R4W	28	
Sawmills identified near Falls City (fall city draft document received from C. Vandenberg)					



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John Thorp	1853	T9W	R4W	11	
Shrader-Mowery			on teal creek, near the Falls City water reservoir		
Rowell			9 miles west of Dallas		
Palmehn			above Falls City, above Dutch Creek		
Sawmills near Kings Valley (Theurer, 2003)					
Barnhart-Kochis			upper end of the Luckiamute		
Henry Baumann	1920s		up Luckiamute canyon		
Earl Godsey	early 1930s		Luckiamute river, in the "flat field along the river". Powered by steam tractor and did not have a mill pond		
Alvin Jones	1916		"in this area"		
Moody brothers	1930s		Benton County, below Barnhart's mill, no burner or pond		
Frantz family - Big mill at Hoskins	before 1910		on the old Fort Hoskins site. Mill put on Luckiamute and run with water power.		
Bayless Moser and Bill Coote	early 1920s		Between Hoskins and Kings Valley, beside railroad		
Archie and Dorval Bevens	1923		on the Walter Cosgrove farm, west of Kings Valley		
Charles Moser	1931		above Hoskins, on Burgett Creek		
Simpsons	Unknown		Maxfield Creek Road		
Christenson	1906		up the "canyon"		



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Mining

Locations of mines, gravel pits and quarries are important watershed features because they can affect water quality and wildlife. We examined available USGS topographical maps for quarries and mines. We found fifty-five quarries or gravel pits located in the study area (Table 16), these are used primarily for road aggregate (S. Taylor, personal communication). In addition to the USGS topographical maps, we

found the S2F quarry, located on Coffin Butte that is used as a source for rock to cover the landfill (*mindat.org*). Admittedly, only a small amount of the quarry's total production goes to the landfill. We also searched the Oregon Department of Geology and Mining Industries (*www.oregongeology.com*) web page for information on mines in the study area. Unfortunately, we did not find anything for the Luckiamute/Ash Creek study area.

Table 16. List of Gravel Pits and Quarries by 7th field watershed. Source was 7.5' USGS topographical map

Sub-Basin Name	HUC	Feature	Number
Upper Luckiamute	17090003060101	Pit	3
Miller Creek	17090003060102	Pit	1
Wolf Creek	17090003060201	Pit	1
		Quarry	2
Hoskins	17090003060203	Quarry	1
Woods Creek	17090003060302	Quarry	1
Price Creek	17090003060303	Quarry	1
Maxfield Creek	17090003060304	Pit	1
		Quarry	1
Bump Creek	17090003060305	Quarry	1
	17090003060401	Quarry	2
Upper Pedee Creek	17090003060402	Pit	2
		Quarry	2
McTimmonds	17090003060502	Quarry	1
Jont Creek	17090003060504	Quarry	1
Upper Little Luckiamute	17090003060601	Pit	4
Cold Springs	17090003060602	Pit	5
Black Rock Creek	17090003060603	Pit	2
		Quarry	1
Waymire Creek	17090003060703	Quarry	1
Bridgeport	17090003060704	Quarry	4
Upper Teal Creek	17090003060801	Pit	2
Lower Teal Creek	17090003060802	Pit	1
S2F (Coffin Butte: Not shown on topo map)	17090003061003	Quarry	1



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Table 16. List of Gravel Pits and Quarries by 7th field watershed. Source was 7.5' USGS topographical map

Sub-Basin Name	HUC	Feature	Number
Upper Soap Creek	17090003061101	Quarry	7
Upper Berry Creek	17090003061201	Quarry	2
Harman Slough	17090007020503	Pit	3
Upper North Fork Ash Creek	17090007020601	Quarry	1
		Total	55

Landfills

The Coffin Butte Landfill is located near Adair Village just west of Oregon State Highway 99. It is situated at the head of an unnamed tributary to the Luckiamute River, between Poison Oak Hill and Coffin Butte. Valley Landfills, Inc., of Corvallis, operates the landfill, and the land now occupied by the landfill was previously used as part of the Camp Adair Army Training Facility (Taylor *et al.*, 2003). The Coffin Butte Landfill is the second largest landfill in Oregon and is classified by the EPA as a multi-layered composite lined subtitle "D" facility operating under Oregon DEQ permit #306. The Valley Landfills, Inc. property covers 700 acres, about 116 acres of which are being used as a landfill at this time. The site has nine cells which will eventually be filled. Cell 1 has been completely filled landfill receives approximately 1,800 to 2,000 tons of municipal solid waste a day during the spring, and as much as 2,500 to 3,000 tons a day in the summer. Valley Landfills, Inc. plans on increasing tonnage received every year, as demand dictates. The site is equipped with a leachate treatment system, and a methane-base electrical generator (Benson, 2003). There are

water quality monitoring wells located around the facility (see Section 6).

Our assessment team was asked by LWC to follow up on reports of a historic landfill located on the military camp. We examined historic aerial photos and military camp building layout blueprints, and did not find evidence of an onsite landfill. The manager and workers at the E.E. Wilson Wildlife Refuge were also unaware of a historic landfill. We did find evidence of a sewage yard located along the east side of the compound and a drainage ditch running through the center of the camp. All maps and blue prints were viewed at the E.E. Wilson Wildlife Refuge.



Photo 6:Coffin Butte Landfill



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Military Facilities

Camp Adair, named in honor of Henry Rodney Adair (a West Point graduate and descendant of Oregon pioneers who was killed in 1916) is located 10 miles north of Corvallis. Camp Adair was a military training facility that operated in the southern portion of the Luckiamute watershed between 1941 and 1946. Camp Adair, a WWII army cantonment, occupies 50,000 acres in Benton and Polk Counties. The camp itself occupied only a small portion of that land and covered an area 2 miles wide and 6 miles long, along Oregon state highway 99W near the Benton County line. It was once used as a training site for army infantry, artillery and engineering units and associated support personnel. The camp had over 1,800 buildings, consisting of barracks, mess halls, offices, churches, five movie theaters, stores, a post office, a bank, and a hospital. Although Camp Adair never reached its full complement of men and women, it quickly became the second largest city in Oregon. Interestingly, full-scale models of European towns were constructed in this area for training troops. During WWII casualties from the Pacific Theater were brought to Camp Adair for treatment and recuperation; the hospital facility could care for 3,600 individuals. Once the troops left Camp Adair, it served as a prisoner-of-war (POW) camp for Italians, then Germans from 1944 through 1946.



Photo 7: Camp Adair

Today, the site is owned by state and local governments and a few individuals; only a few buildings and foundations remain of the WWII camp. The former army camp now hosts the E. E. Wilson Wildlife Area and is home to upland game birds, waterfowl, bald eagles, deer and other species. There are trails, stocked ponds and hunting (during fall and winter) for visitors. Bullets are still being found in trees in the area that is now the McDonald forest (Rogers, 2003). The portion of Camp Adair that is now E. E. Wilson no longer has shooting ranges. However, a shooting range, located on Rifle Road, is still used by the National Guard (personal communication, C. Smitker). There were reports that area police departments also used this shooting range but we were unable to determine if the area was used by



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Oregon State Patrol or the Corvallis Police Department. The Benton Co. Sheriff Department no longer uses this area.

Today, the area that was Camp Adair has many land uses, including Coffin Butte Landfill (see previous section), the McDonald State Forest, and E.E. Wilson Wildlife area (see next section). For more information visit <http://home.teleport.com/~eewilson/campadair.html> or <http://www.ohwy.com/or/e/eewilswa.htm>

Wildlife Preserves

The E.E. Wilson Wildlife Area (formerly Camp Adair) is managed by Oregon Fish and Wildlife. The area supports a diversity of habitats for a variety of sensitive species such as the sharp-tailed snakes, red-legged frogs, and the western pond turtles. Trails are well established at E.E. Wilson. See Section 7 for information on ORNHP ecological cells.



Photo 8: E.E. Wilson Wildlife Area

5.5 Land Ownership

Land ownership affects the condition of the landscape indirectly because of the various uses for which different owners have used the land. Past land uses have set the stage for the current condition of the natural resources of the Luckiamute/ Ash Creek study area (see Section 7). Land ownership also directly affects the current management practices and restoration potential for individual land parcels. Consequently, patterns in land ownership become very important when developing watershed management and restoration plans.

Tables 17 and 18 show the current ownership patterns for the study area. In the Luckiamute/ Ash Creek study area, most ownership is private; therefore, most monitoring and restoration is likely to occur on private lands. The ownership data set is a combination of the Polk and Benton County tax lot GIS data. After the two data sets were merged in a GIS, the ownership information from the tax lot data was reclassified into public or private ownership. **We recommend that a more detailed ownership assessment be performed (i.e., identify public and willing private land owners) to develop a monitoring and restoration plan.**



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Table 17. Land ownership in the Luckiamute Watershed study area.

Ownership	Area (acres)	% Total
Private	170,305.6	84.7%
Public, County	1,141.0	0.6%
Public, Federal	8,339.8	4.1%
Public, Municipal	51.8	0.0%
Public, State	7,314.1	3.6%
Unknown	13,958.9	6.9%
Total	201,111.2	100.0%

Table 18. Land ownership in the Ash Creek Watershed study area.

Ownership	Area (acres)	% Total
Private	31,510.6	93.1%
Public, County	23.5	0.1%
Public, Federal	59.7	0.2%
Public, Municipal	276.3	0.8%
Public, State	255.4	0.8%
Unknown	1714.4	5.1%
Total	33,839.9	100.0%

5.6 Zoning and Regulations

By 1975, the State of Oregon had adopted 19 statewide land use planning goals covering topics from housing to natural resource use, which are achieved through local comprehensive plans. State law requires each city and county to adopt a comprehensive plan that meets the 19 goals, and develop the zoning and land-division ordinances needed to put that plan into effect. These goals are intended to promote consistency in statewide land use and coordination between various local governments. Goal 5, which was amended in 1996, governs natural resources, scenic and historic areas, and open spaces.

Goal 5: Natural Resources, Scenic and Historic Areas, and

Open Spaces (Oregon Department of Land Conservation and Development, 2003)

- Plan development to conserve open spaces
- Plan to conserve natural resources: renewable and non-renewable
- Consider efficient consumption of energy when using natural resources
- Protect fish and wildlife areas, in accordance with Oregon Wildlife Commission's fish and wildlife management plans
- Protect stream flow and water levels at an adequate level for fish
- Inventory historically and ecologically significant natural areas
- Investigate building in cluster



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developments

- State and federal agencies should develop plans for natural resources, historic areas, and open spaces that coordinate with local and regional plans

Goal 5 requires state and local governments coordinate plans for rivers, trails and natural resources, such as wetlands, riparian corridors, wildlife habitat, federal wild and scenic areas. For more information see <http://www.lcd.state.or.us/goalpdfs/goal05.pdf>. The Oregon Legislature passed Senate Bill 1010 to improve agricultural practices near streams. Senate Bill 1010, or the Agricultural Water Quality Management Act was passed in 1993 at the request of many agricultural interests so that Oregon agriculture could regulate itself as much as possible. Senate Bill 1010 directs the Oregon Department of Agriculture (ODA) to develop an Agricultural Water Quality Management Plan and Rules for watershed in Oregon where there are water quality problems. The ODA along with other agencies identifies priority watersheds for development of Agricultural Water Quality Management Plans. The Luckiamute / Ash Creek study area falls within the Middle Willamette Agricultural Water Quality Management Area. Under this plan local operators will be asked to deal with identified problems such as soil erosion, crop nutrient loss from fields, or degraded streamside areas. Farmers

are allowed to choose their own ways of meeting established water quality goals; however, if problems are identified, those who are asked to deal with a problem but continually refuse to do so could be assessed a civil penalty. For more information see <http://www.peak.org/~bentoncd/SB1010.html>.

5.7 Recommendations

We recommend that the LWC develop a more accurate roads layer from USGS topographic maps and other sources. More accurate road information will be needed for action planning. Information on location and type are particularly important. A roads layer can be obtained from private industry or by digitizing digital orthoquad photographs.

We recommend that a more detailed ownership assessment be performed (i.e., identify public and willing private land owners) to develop a monitoring and restoration plan.

