

APPENDIX D. LANDCOVER FOR WILDLIFE AND FOREST CHARACTERIZATION

Field reconnaissance was conducted to verify and update the mapped vegetative communities. Upland forest stands, wetlands, and stream riparian zones at road crossings were viewed; each of these habitat types will be discussed in this section. Field visits were conducted by an ecologist (J. Vanderhoof) and a basin steward (J. Kahan) in November and December, 2006, and January 2007. Because roads are present uniformly throughout most of the plateau, which is predominantly flat and in agriculture, driving the roads allows one to easily visually assess the aforementioned habitat types, albeit not at the micro-habitat scale. Access was also granted into the private forest land in the Forest Production District, and the forest environs were also primarily visually assessed from various points along the roads. Additionally, the FPD was viewed from the air during an helicopter flight. These methods of visual assessment were chosen as the most efficient manner to cover the greatest area in the ecosystem. High-resolution color aerial photos from 2005 were used to aid detection of habitat patches (i.e., forest stands; stream riparian zones; wetlands), and aerial imagery was also used to extrapolate vegetation community types in areas that were inaccessible.

A landcover spatial data file was built by hand in the County's Geographic Information System (GIS) using field information combined with color aerial photographs from 2005 and infrared images from 2002. Most water bodies and wetlands were ignored during the first polygon-building phase. A wetland shapefile was built separately, as described in greater depth below. The wetland layer was then "intersected" with the landcover layer to produce a new, separate wetland data shapefile that contained landcover information for each wetland polygon. Each wetland polygon was viewed individually using the color and infrared aerial images to assign wetland type. The new wetland shapefile with type information was then "unioned" back onto the original landcover data, and all polygons in the wetland shapefile superseded data in the original landcover file. The resulting shapefile represents one seamless landcover shapefile containing all landcover, including wetlands and other water bodies.

Field reconnaissance was used to create a new landcover map for the ecosystem (Figure D1) and determine the proportion of the ecosystem that each landcover comprises (Table D1).

Figure D1. Map of landcover in used for characterizing wildlife and forest habitats in Newaukum Creek basin.

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Table D1. Landcover in Newaukum Creek Basin.

Habitat Type	Description	Area in acres (% of basin)	Percent of basin area
Forest	Areas with forest cover of 50 percent or more. Vegetation structure characterized by any size forest, ranging from seedlings to mature trees. Includes recent clear-cuts in Forest Production District.	5,202	30%
Shrub	Areas with shrub coverage (as viewed aerially) of more than 50 percent, and typical vegetation height of 20 feet or less.	273	1.6%)
Agriculture or Field	Habitat dominated by grasses, herbs, and forbs with less than 20 percent shrub or tree cover. May include large, mowed lawns and ball fields. Some impervious structures (e.g., outbuildings) may be present.	6,527	37.7 %
Stream/Riparian	Streams and their adjacent areas of influence. These areas typically demonstrate obvious vegetation differences, such as density or structure. However, approximations were made in forested areas where the transition to upland habitat was not easily identifiable. Often does <i>not</i> include channels created to drain fields.	554	3.2%
Wetland	Areas of ground saturation, the frequency of which determines soil development and plant communities present. These areas do <i>not</i> represent delineated wetland boundaries. Includes open water ponds that did not appear to be constructed.	1,408	8.1%
Developed	Constructed farm ponds.	13.4	0.1%
Rural Residential	Areas dominated by moderate-density residential (i.e., neighborhoods) and industrial/commercial (i.e., warehouses, business districts, industrial farm operations) land uses. Less than 10 percent natural vegetation is present. Large areas of impervious surface are present.	878	5.1%
Total	Areas dominated by single-family homes, ranches, estates, and farms. Landscape is a mix of impervious and non-impervious surfaces. May include native and non-native vegetation, lawns, driveways.	2383	13.8%

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Table D2. Landcover in the Newaukum Creek basin as mapped by Washington Gap Analysis.

Acres (Hectares)	Ecoregion* and Vegetation Zone**	Primary Cover***	Secondary Cover	Tertiary Cover
602 (244)		50%-75% Developed; mid-density; mostly residential	25%-50% Developed; mid-density; mostly business	
430 (174)		75%-95% Developed; low-density; mostly residential	5%-25% Conifer forest; seral stage unknown or mixed; closure patchy or mixed; usually Douglas-fir	1%-5% Lakes; including shoreline and possible marshy edges
10777 (4361)	Puget Sound region, Puget Sound Douglas-fir zone	75%-95% Agriculture; non-irrigated, crop type unknown, often extensive in large, wide floodplains	5%-25% Mixed forest; early seral; closed; usually Red Alder/Douglas-fir.	
384 (155)		50%-75% Agriculture; non-irrigated, crop type unknown, often extensive in large, wide floodplains	25%-50% Hardwood forest; seral stage unknown; closure patchy or mixed; usually either riparian forests or oak woodlands	
667 (270)		75%-95% Mixed forest; seral stage unknown; closure patchy or mixed; usually Red Alder/Douglas-fir/shrubs	5%-25% Hardwood forest; seral stage unknown; closure patchy or mixed; usually either riparian forests or oak woodlands	
4439 (1796)	Southwest Cascades region, Western Hemlock zone	50%-75% Mixed forest; early seral; closed; usually Red Alder/Douglas-fir	5%-25% Non-forested; logged	5%-25% Conifer forest; early seral; closed; usually Douglas-fir

*Ecoregion ("region") in this instance was defined by WAGAP as a contiguous geographic area of similar climate and geologic history (e.g., the Northwest Cascades region).

**A vegetation zone was defined as an area in which moisture, temperature, elevation, and other environmental parameters combine to create conditions that favor similar vegetation communities.

***Primary, secondary, and tertiary covers were each assigned one of six occupancy classes indicating the proportion of the polygon occupied by each.