Relationship of Human Presence to River Restoration

The presence of people is an important consideration in prioritizing areas for river restoration. The figures on the facing page show the varying densities of population, rural buildings, and roads per 1 km floodplain slice, which together provide an impression of the density of human presence along the historical floodplain of the Willamette River. The amount of public land per slice is also shown, another consideration in the availability of land for restoration.

To use the human presence data as factors in prioritizing river restoration, it is important to acknowledge that different areas have different levels of long-term investment. Certain places may have a lower commitment to *staying* developed than others—thus they have a higher "reversibility" of development, and may be more available for restoration. Other areas may have a lower reversibility, but the potential gain from restoration may merit the change. There is a wide spectrum of capital investment and land use commitment, so each parcel of land considered for restoration must be individually evaluated in terms of that spectrum.

These measures of human presence define one part of restoration opportunity mapping. The other part, as described on previous and subsequent pages, compares these constraints with maps delineating areas of greatest potential ecological response. The ideal locations are those where constraint is low (low human presence or high reversibility) and potential gain in ecological response is high.

The Data

The 1990 US Census provided the population density data graphed on the facing page. Since this is a measure of residences only, areas which daily have a high human presence, but are primarily business or industrial districts (such as downtown Portland, Fig. 194), show a low density (see page 56 for an explanation of population density mapping).

The rural building density data are based on the buildings mapped on the USGS 1:24,000 topographic quadrangle maps. The USGS maps individual buildings outside of city centers only, using a solid fill for denser urban areas (see page 154 for an example USGS 7.5 minute quadrangle map). As such, the densest parts of cities are not represented on Figure 197.

The road density graph was generated from the 1997 Oregon Department of Transportation roads data, which include all highways, secondary roads, and railroads, but not alleys or driveways. Because it includes both the rural and urban parts of the floodplain, this graph may be the best single gauge on the facing page of the overall density of human presence in the floodplain. However, a fuller assessment considers the population, rural building, and road densities together.

Patterns

An important, if obvious, pattern to recognize is that the vast majority of the human presence in the floodplain occurs within the UGBs. Most cities have not yet fully urbanized the periphery of their UGBs, but in general, the densities of population, buildings, and roads tend to drop off sharply outside the UGB (Fig. 195). This indicates the effectiveness of this device in concentrating urban activities within, and limiting them outside, it.

The population density appears somewhat weighted to the southern end of the floodplain, while the building and road densities are more weighted to the northern end. A possible explanation is that a large portion of Eugene/Springfield lies in the floodplain, including the outlying residential areas; thus the slices there encompass more population. But the floodplain is much narrower toward the north, especially through Portland. The river has traditionally been a center of commerce and industry, and so the narrow floodplain through the urban core tends to have less residential housing, but high densities of roads and buildings (Fig. 194).

Public land does not follow as predictable a pattern as the three density graphs. However, most of the UGBs do show notable spikes of public land, probably due to the larger number of city parks and civic open spaces compared to the surrounding agricultural lands.

Public Land and Potential for Restoration

The public land data come from a composite of ownership information, derived from several sources. The primary source was county taxlot maps, which provided the bulk of the identification of public lands, as well as the lot delineations for lands identified as public by other sources. In the Portland Metro area, the RLIS data set (developed by the Metro Data Resource Center) provided additional detailed information, and filled part of the gap left by the lack of digital taxlot maps for Columbia County. Other sources used to identify public lands and cross-check the main sources are ownership maps developed by the BLM, Mt. Hood National Forest, and Willamette National Forest; the Bio-management digital map developed by Defenders of Wildlife; and the USGS 1:24,000 topographic maps. Where the various sources contradicted each other, the most recent and/or most detailed information was used. The final public land map shows state, county, and city parks, utility land, DEQ easements, state forests and national forests (though none in the floodplain), wildlife refuges, research natural areas, and schools, among other miscellaneous public land types.

Two ways of viewing the amount of public land are graphed on the facing page – the percent of each slice in public ownership, and the total area of publicly owned land per slice. Since the area of public land in each slice varies widely from the north to the south end of the floodplain, the percentage measure gives a good proportional comparison of floodplain ownership, while the actual area of publicly owned floodplain is best compared on the total area graph.

Figure 194. *High human presence: Industrial district near Fremont Bridge, Portland. Historical floodplain and 1 km slices shown in blue. Photo: University of Oregon Map Library.*

Figure 195. *A gradient of human presence, at the northern edge of Eugene (slices 215-16). Residential subdivisions transition abruptly at the Urban Growth Boundary (shown in yellow) to farms and rural residences, which transition to undeveloped floodplain forest and the Willamette River. Photo: University of Oregon Map Library.*

Figures 196-200. (Facing page). *Measures of human presence along Willamette River.*

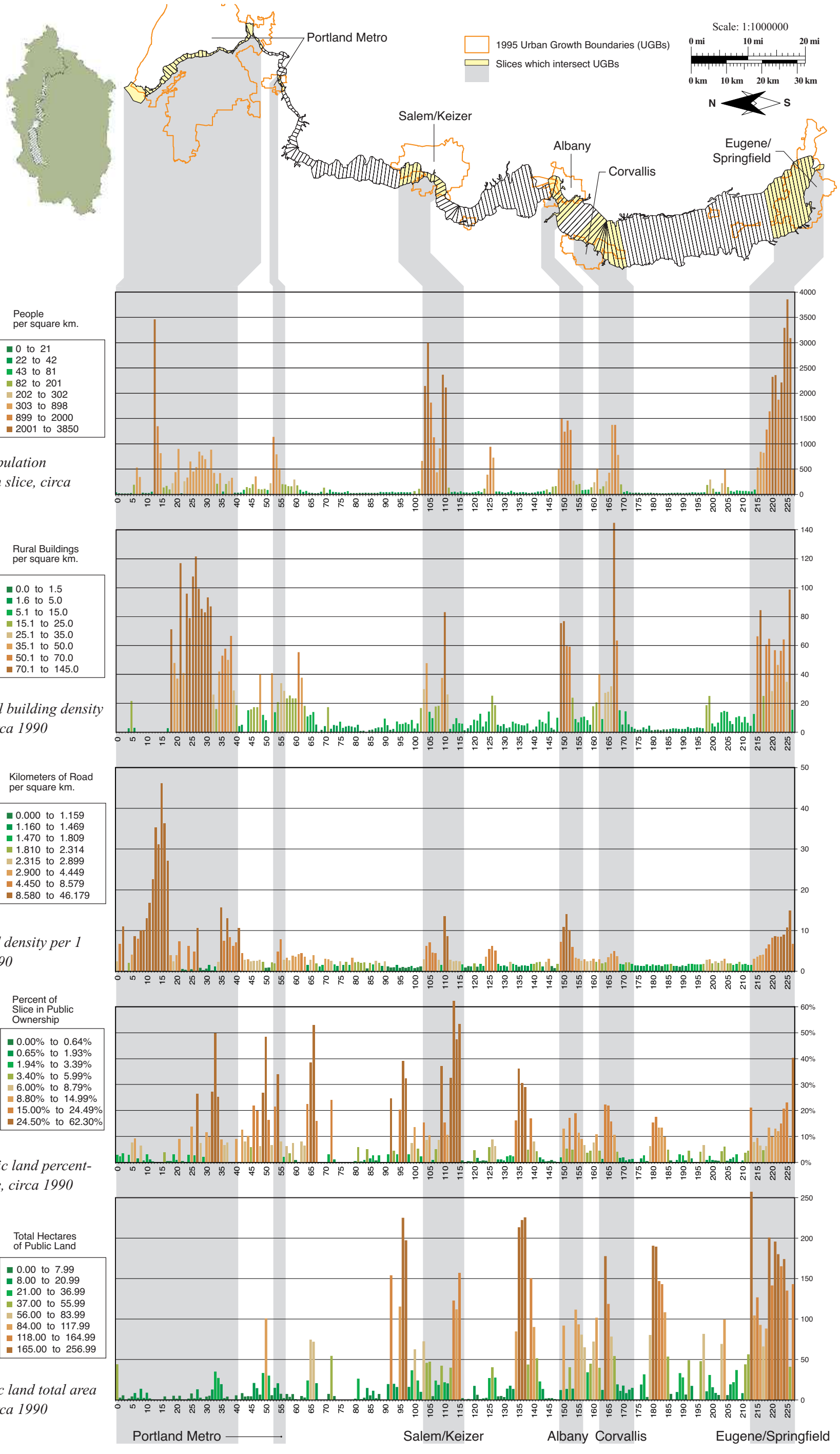

Figure 196. *Population density per 1 km slice, circa 1990*

Figure 197. *Rural building density per 1 km slice, circa 1990*

Figure 198. *Road density per 1 km slice, circa 1990*

Figure 199. *Public land percentage per 1 km slice, circa 1990*

Figure 200. *Public land total area per 1 km slice, circa 1990*

Note: *1km/1km² equals 1.61 mi/1mi², 1 hectare equals 2.47 acres*