

The Willamette River Basin

Beginning in the Calapooia Range of the Cascade Mountains, the Willamette River drains a basin lying between the Cascades and the Coast Range approximately 180 miles (290 kilometers) long and 100 mi (161 km) wide, encompassing 11,478 square miles (29,728 km²).

The interaction of water and land in a large-scale hydrological system creates a dendritic drainage pattern, emulating the branching pattern of deciduous trees, or the vascular system of leaves. Map 4 on the facing page depicts stream order, a way of describing the pattern of connections within the hydrological network. Stream size, in terms of flow and area drained, generally increases with increasing stream order. The best available map sources for streams do not include smallest perennial streams or ephemeral ones. Field work suggests that these small streams are ecologically important and numerous. Their omission significantly understates the actual length of the stream network and causes stream order to be under-reported by approximately two orders.

Streams on the west side of the basin tend to be more sluggish, with lower base and minimum discharges and higher temperatures than streams on the east side of the basin where the influence of geology and snowpack make for more uniform temperature and flow rates.

The Hydrologic Unit Coding System

The U.S. Geological Survey uses hydrologic pattern to construct its system for identifying hydrologic units.³⁵ The largest subdivision of this system is called a region, which is further divided into sub-regions, then basins, subbasins, and so on. Each of these units is identified with a two-digit code number called a “field.” The Willamette River Basin (WRB) lies within the Pacific Northwest region (17), Willamette sub-region (09), basin code (00), or 170900. Together these numbers are the Hydrologic Unit Code (HUC). Figure 15 and Table 3 below provide spatial statistics at the fourth field (subbasin) level, while Figures 16 and 17 describe the fifth field HUCs within each subbasin. Note that particularly in low-lying areas these hydrological units are not bounded by ridges but are defined by the branching hierarchy of the river network.

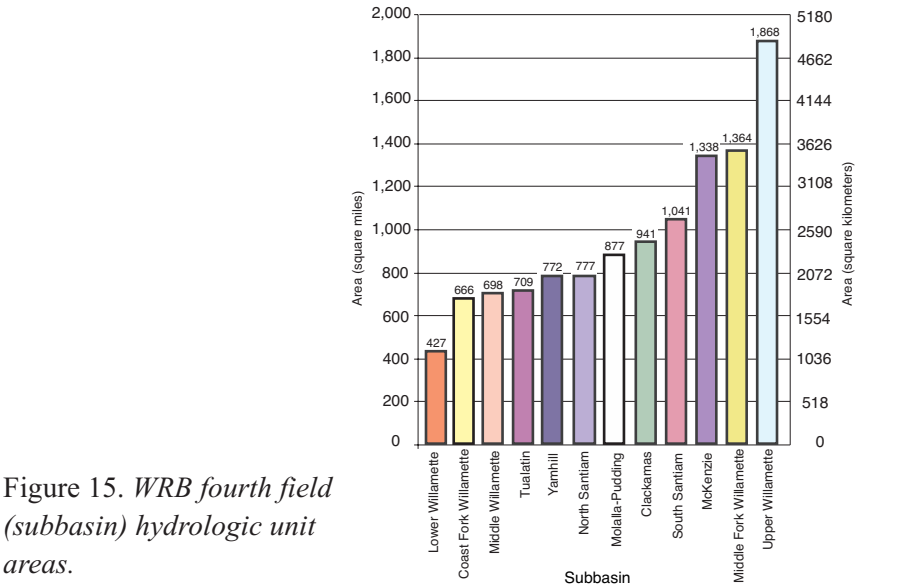


Figure 15. WRB fourth field (subbasin) hydrologic unit areas.

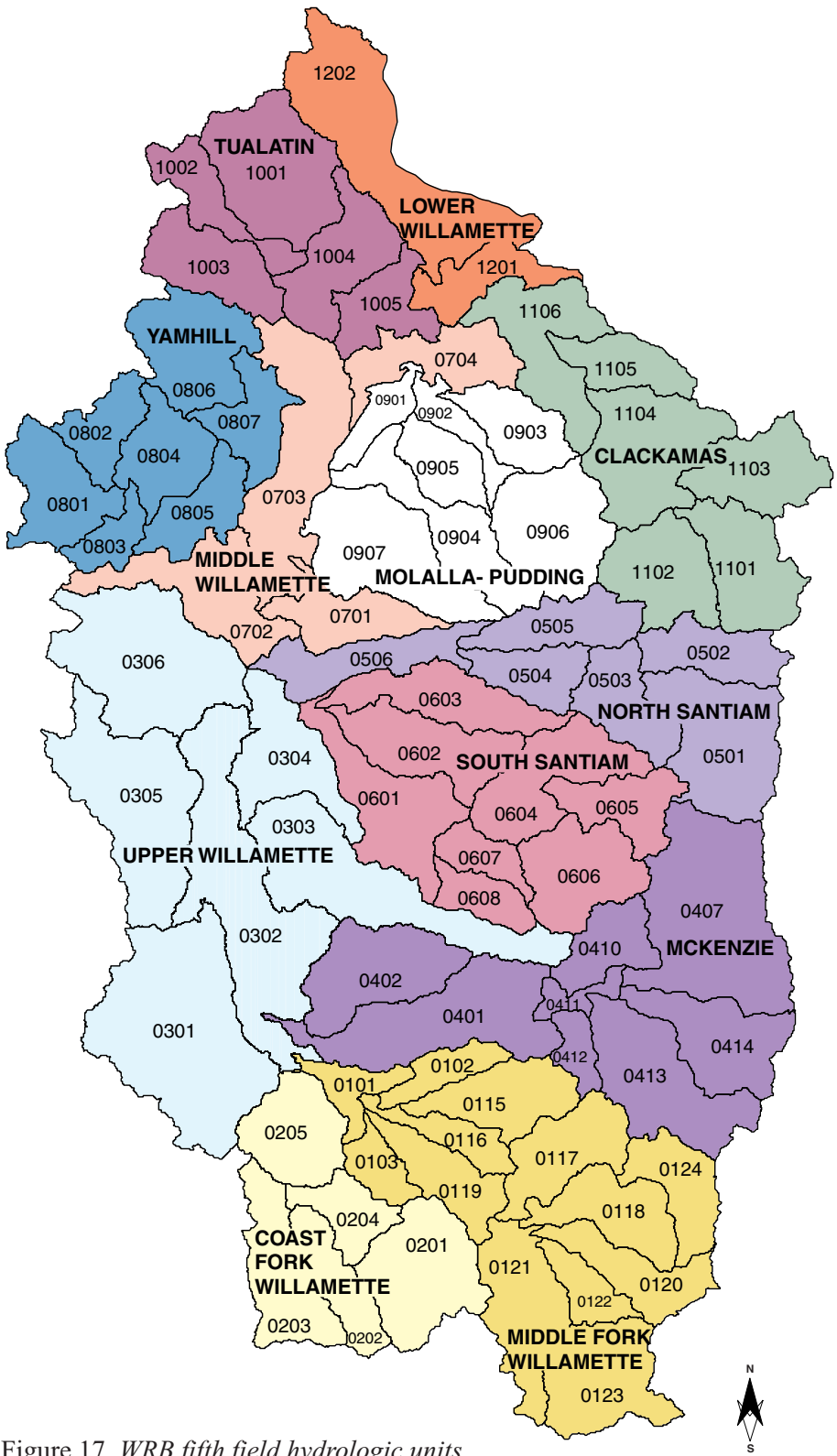


Figure 17. WRB fifth field hydrologic units. (Not to scale)

Subbasin Name	Subbasin Code	Area mi ²	Area km ²
Clackamas	17090011	941	2,436
Coast Fork Willamette	17090002	666	1,725
Lower Willamette	17090012	427	1,107
McKenzie	17090004	1,338	3,465
Middle Fork Willamette	17090001	1,364	3,533
Middle Willamette	17090007	698	1,807
Molalla-Pudding	17090009	877	2,272
North Santiam	17090005	777	2,012
South Santiam	17090006	1,041	2,696
Tualatin	17090010	709	1,837
Upper Willamette	17090003	1,868	4,839
Yamhill	17090008	772	1,998
Willamette River Basin Totals		11,478	29,727

Table 3. WRB fourth field (subbasin) statistics.

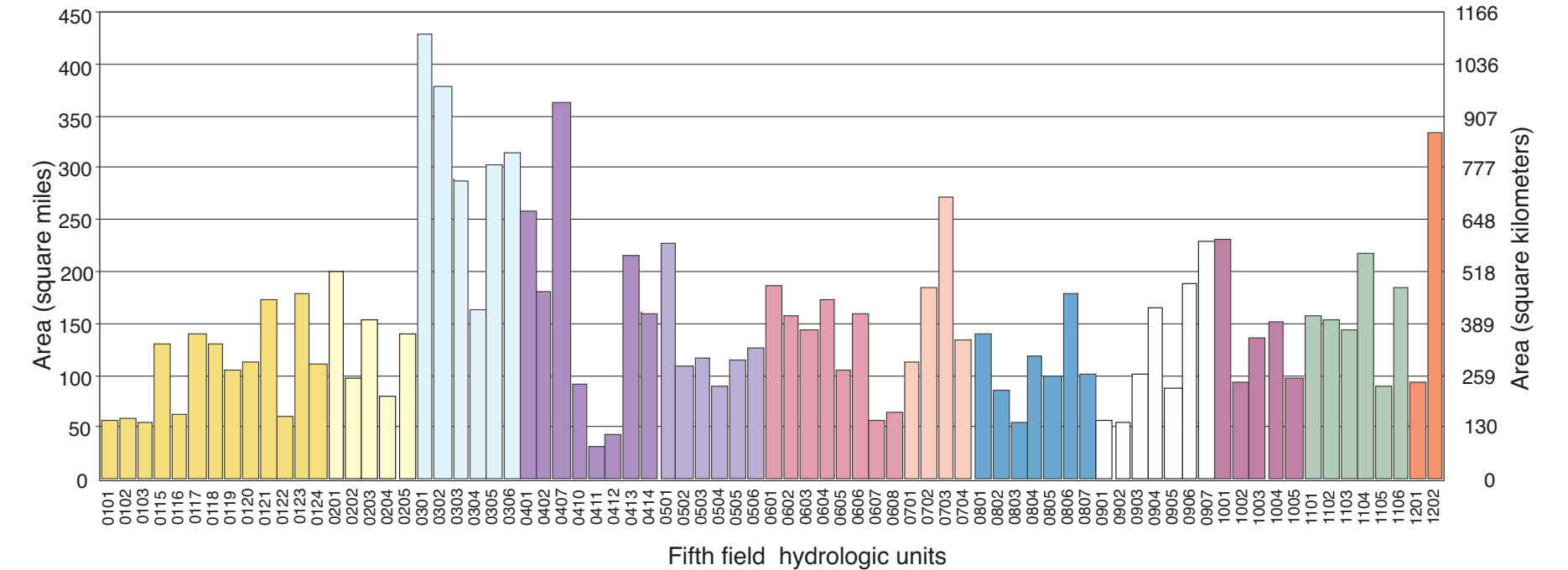


Figure 16. WRB fifth field hydrologic unit areas

