

The Willamette River is a ninth-order tributary of the Columbia which passes through a productive and populous region in northwest Oregon. Where unconstrained by shoreline revetments, the floodplain of this river is a high-energy, dynamic system which supports a variety of riparian forests and floodplain habitats. On the Green Island Restoration Site, north of the city of Eugene, several geomorphological features common to much of the Willamette floodplain are present. These features, ranging from young bare gravel bars, islands supporting mature forest stands, to agricultural areas bounded by levees. As part of a Memorandum of Understanding with the McKenzie River Trust, USEPA has constructed a network of fifty shallow monitoring wells on the Green Island site. Among the purposes are to characterize the hydrogeology of the multiple-island floodplain, the extent of hyporheic flow, and the temperature regime. The monitoring wells are located in areas ranging from a few meters from the river edge to several hundred meters away, within the agricultural areas. By automatic data-logging, flow nets will be developed using numerical modeling. Water quality data will be collected to measure the degree to which subsurface biogeochemistry is influenced by geomorphologic features that are determined by the processes of river channel migration, island formation, and colonization by riparian forest. The monitoring network will also be used to measure the groundwater quality effects of restoration projects currently underway. These include reforestation of previously agricultural areas, and levee removal.