We analyze the determinants and long-run effects of prior appropriation surface water rights. Prior appropriation replaced riparian water rights over an immense area within 40 years, suggesting large economic benefits. We develop a model to show how prior appropriation facilitated search, coordination, and investment by reducing uncertainty about resource conditions and the threat of new entry. We derive testable hypotheses and use a novel dataset of location, date, and size of all water rights in eastern Colorado from 1852–2013 and infrastructure investment, irrigated acreage, crops, topography, stream flow, soil quality, precipitation, and drought measures. Prior search lowered costs for subsequent claimants, and secure property rights facilitated coordination by reducing uncertainty and heterogeneity, doubling average infrastructure investment. Prior appropriation contributed up to 20% of state income in 1930 in the West, but economic returns from prior appropriation were lower in that part of Colorado where preexisting Hispanic sharing norms dominated.