

ISSUE BRIEF

CALIFORNIA'S STREAM FLOW MONITORING SYSTEM IS ESSENTIAL FOR WATER DECISION MAKING

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STREAM FLOW DATA TRACK THE PULSE OF CALIFORNIA'S WATERWAYS

With California's drought risk, flood risk, and demand for water all increasing, effective monitoring is more important than ever to water decision making. Stream gages monitor the most basic vital sign of California's waterways—stream flow.¹ Stream flow data support day-to-day decisions about how to manage water and operate water infrastructure. In turn, those decisions have important implications for flood control and the water supplies upon which residential, industrial, agricultural, and environmental water users depend. Stream flow information also provides technical insights into basin hydrology, and those insights aid long-term water planning. As pressures on the state's water systems intensify, the need for accurate and timely stream flow information will continue to grow. Opportunities for better water management created by groundbreaking legislation such as the Sustainable Groundwater Management Act (SGMA), the Open and Transparent Water Data Act, and Proposition 1 will be severely limited without an effective network of continuous stream gaging.

CALIFORNIA'S CURRENT STREAM FLOW MONITORING IS INADEQUATE

California experiences dramatic variations in precipitation and streamflow from stream to stream (Figure 1) and from one year to the next. This variability—and longer-term changes in climate, demand for water, land use, and land cover—makes trends in water availability difficult to predict. Ongoing monitoring is essential.

Today, the vast majority of California's waterways lack adequate monitoring.² Stream flow monitoring generally relies on stream gages. A stream gage typically measures water height, which is used to calculate flow rate. Alarming, the number of stream gages in use continues to decrease as funding dwindles and gages are decommissioned. This is a tremendous loss because water managers need long-term flow records to make accurate forecasts and to understand the likely repercussions of their day-to-day management decisions. Records lasting several decades or longer are especially valuable. Where monitoring is insufficient, scientists and decision makers must rely on crude estimates that do not accurately represent actual hydrological conditions. At best, this results in inefficiencies in an overtaxed water system. At worst, it could lead to inaccurate calculations that lead to poor decisions or otherwise harm human and environmental health.