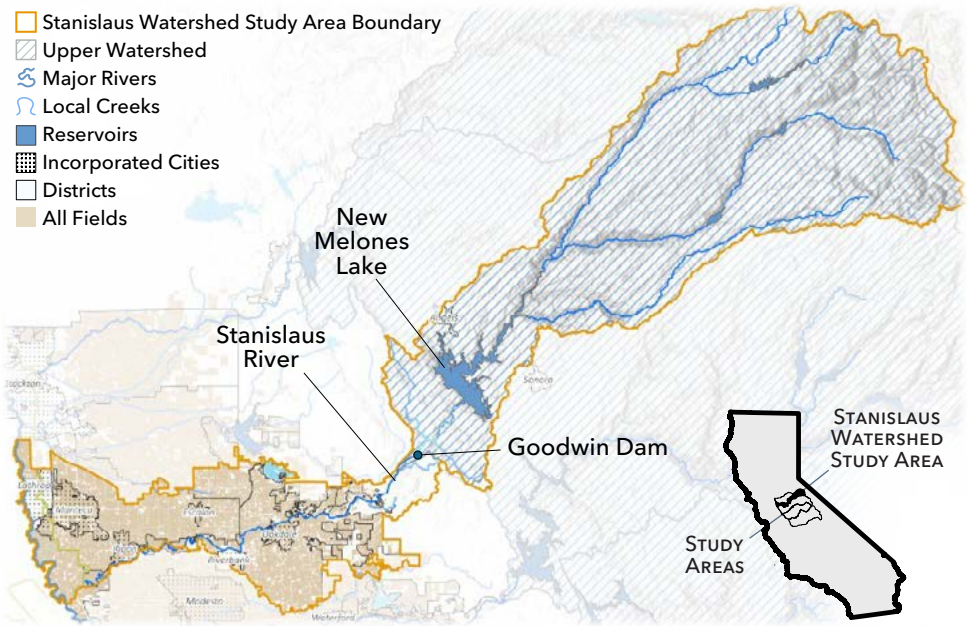
San Joaquin Basin Watershed Studies

Stanislaus Watershed Study Area

The Stanislaus watershed lies in the northern portion of San Joaquin Basin, stretching from the high Sierra Nevada to the San Joaquin River near Manteca. The region's landscape transitions from a mountainous upper watershed to the heavily developed valley floor, creating a mix of rural, environmental, and urban water needs. **The watershed depends on seasonal rainfall and snowmelt, making it vulnerable to both flooding in wet years and water shortages in dry years.**



Big Challenges Lie Ahead with Changing Conditions

DWR modeling shows that by 2050 – one generation from now – climate change will reshape water, flood, and habitat conditions across the Stanislaus watershed study area.

What's Changing?	How It Affects You:	Why It Matters:
Less Water to Go Around	Watershed runoff could decline by **29,000 acre-feet each year** – enough water for 87,000 homes.	**Less water is available for communities, farms, and local ecosystems.**
More Surface Water Demand	**Rising temperatures will cause plants, soil, and the air to absorb 21,000 acre-feet more water each year** – enough water for 63,000 homes.	**Water supplies will be tighter, especially during drought years.**
More Dependence on Groundwater	To meet higher demands and make up for lost surface water, **people may pump 21,000 acre-feet more groundwater each year** – enough water to fill more than 10,000 Olympic-sized pools. **This could cause 5,000 acre-feet per year of overdraft and drop groundwater levels by 3 to 6 feet.**	**Wells for homes and farms could run dry, and the ground could sink from overpumping.**
Increased Flood Risk	River flows reach **potentially hazardous levels in roughly one out of every four years.**	**Potential flood damage to neighborhoods and farmland.**

READ THE STANISLAUS WATERSHED STUDY REPORT

Turning Floods into a Resource:

The I-FIRM Adaptation Strategy

Water managers along the Stanislaus River could ease some of the worst effects of climate change by implementing the Integrated Forecast-Informed Resources Management (I-FIRM) adaptation strategy. I-FIRM combines MAR (managed aquifer recharge) with FIRO (forecast-informed reservoir operation) to guide when to release water from reservoirs or capture floodwater and store it underground for future use.

What I-FIRM Does:	The Results:	Why It Works:
Captures and Stores Floodwater	39,000 acre-feet of water could be stored underground each year using existing infrastructure – enough to supply roughly 117,000 homes.	FIRO combined with MAR allows operators to safely capture high flows and release water slowly over subsequent weeks for recharge.
Reverses Groundwater Decline	Reduces overdraft by 3,000 acre-feet annually and raises groundwater levels by up to 7 feet, protecting wells from going dry.	Recharge management areas target water to disadvantaged communities, and historically groundwater-dependent, subsidence-prone areas. The large volume of captured water replenishes groundwater storage, raising water tables across the watershed.
Reduces Flood Risk	The chance of flooding drops to once every 100 years – a 95% reduction in the occurrence of potentially hazardous flood flows.	FIRO combined with MAR at New Melones Dam allows operators to safely hold more water in the reservoir's flood space and make smaller flood control releases.
Supports Ecosystem Health	Improves seasonal wetland habitat to support shorebirds that rely on shallow flooded areas.	FIRO creates flexibility to time water releases for creating seasonal wetland habitat along the Pacific Flyway.

The Vision: A Resilient Stanislaus Watershed

By putting the I-FIRM strategy into action, the Stanislaus watershed can shift from being vulnerable to floods and droughts to becoming more resilient and responsive to them. This vision will take strong support and partnerships across agencies, communities, and those within the entire watershed. For more information: Visit DWR's website for complete watershed study reports and Flood-MAR resources.