

MANAGEMENT STRATEGY · FARMS AND GROUNDWATER

Groundwater pumping limits via reduced crop acreage in the Central Valley

A management strategy in the COEQWAL scenario library

This strategy reduces irrigated crop acreage across the Central Valley relative to the 2020 land-use reference, lowering irrigation demands with the aim of reducing long-term groundwater decline. Groundwater pumping is limited indirectly, through the reduced demand, rather than by an explicit pumping cap.

This brief describes *a scenario that incorporates groundwater pumping limits via reduced crop acreage in the Central Valley*, one of 28 management strategies in the COEQWAL scenario library. Each strategy is simulated once under each of five hydroclimates; the references note at the end of this brief lists the model runs.

§2 WHAT THIS STRATEGY CHANGES

The strategy implements a reduction in irrigated acreage, relative to the 2020 LandIQ reference level, across the entire Central Valley. Reductions are spatially variable and are set according to historical groundwater decline in demand units across the valley, taking into account the frequency and fraction of surface-water deliveries meeting baseline demands. Where crop acreage is reduced, it is replaced with an unirrigated “native vegetation” land-cover type in the CalSimHydro pre-processing model.

Groundwater pumping is limited indirectly, through the reduced irrigation demand; explicit pumping limits of the kind used in the companion pumping-limits strategy would be redundant here.

The configuration is meant to mimic, in part, groundwater management actions that may occur under the Sustainable Groundwater Management Act (SGMA). It should not be read as a direct or detailed implementation of that process as it exists now or as it may evolve.

§3 THE CONFIGURATION IN DETAIL

The table compares the eight operational fields that define this strategy against current operations — the strategy that represents existing operational rules, recent (2020) land use, and TUCPs. Rows that match current operations are shown in light gray; rows that differ are highlighted.

ASPECT	CURRENT OPERATIONS	THIS STRATEGY
TUCP actions	Active	Active
SGMA actions	None	Limit irrigated acreage for the entire Central Valley
Land use	2020 LandIQ	2020 LandIQ with reduced agricultural acreage in selected areas across the Central Valley
Delta regulations	Standard	Standard
BiOps	2019 / 2020 ITP	2019 / 2020 ITP
Infrastructure	Standard	Standard
Flows	Standard	Standard
Allocation / priorities	Standard	Standard

§4 LINEAGE AND SOURCE

This strategy was developed by the COEQWAL team using the COEQWAL Current Operations as the base; the difference is the irrigation demands set for demand units across the Central Valley, derived from the reduced-acreage land-

use map. The CalSim model files for this strategy are referenced by the run IDs in the references note at the end of this brief.

§5 RELATED STRATEGIES

RELATED STRATEGIES — FARMS AND GROUNDWATER

Groundwater pumping limits in the San Joaquin Valley. Monthly groundwater pumping limits for San Joaquin Valley demand units, set at levels estimated to minimize long-term groundwater storage decline.

Groundwater pumping limits via reduced crop acreage in the San Joaquin Valley. Reduced irrigated crop acreage in the San Joaquin Valley, lowering irrigation demands and indirectly limiting groundwater pumping.

Groundwater pumping limits in the Central Valley. Monthly groundwater pumping limits for demand units across the Central Valley, set at levels estimated to minimize long-term groundwater storage decline.

Functional environmental flows with reduced crop acreage. Functional flow requirements combined with reduced irrigated acreage across the Central Valley, reflecting groundwater management under SGMA.

Winter-run refuge flows with reduced crop acreage. The winter-run refuge flows combined with reduced irrigated acreage across the Central Valley, reflecting groundwater management under SGMA.

§6 WHAT THIS DOESN'T SAY

This brief describes a scenario representation in CalSim, not a real-world policy proposal or implementation plan. The strategy as modeled may not capture all details necessary to support direct translation to actual operations. The brief does not predict, evaluate, or recommend any outcome — it describes what the scenario changes about CalSim's representation of the system. For what the model produces under this strategy, see the result briefs referenced in §7.

§7 SEE RESULTS FOR THIS STRATEGY

To see modeled outcomes under this strategy across all nine key outcomes at the reference hydroclimate, see the *Farms and groundwater* theme brief.

To see outcomes at a specific location of interest, see the relevant LOI briefs — particularly those for groundwater and agricultural locations across the Central Valley.

Compare this strategy in the data explorer → (<https://coeqwal.org/explore?strategy=s0028>)

REFERENCES — MODEL RUNS

Each strategy is simulated once under each of five hydroclimates. The table lists the model run behind this strategy and the current-operations run it is compared against, for each hydroclimate, so any reader can trace this page to specific CalSim runs.

HYDROCLIMATE	THIS STRATEGY	CURRENT OPERATIONS
Historical hydroclimate (adjusted)	s0028	s0020
Moderate climate stress (EC-Earth3-Veg)	s0141	s0134
Moderate-high climate stress (cc50)	s0069	s0047
High climate stress (cc95)	s0089	s0056
Extreme climate stress (TaiESM1)	s0115	s0108

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