



The 2022 Delta Drought Response Pilot Program Report and Technical Analysis Staff Report

This agenda item presents an overview of 2022 Delta Drought Response Pilot Program Report, which includes a technical appendix that analyzes water savings and evapotranspiration estimates on enrolled acres.

BACKGROUND

DDRPP 2022 was funded by the Department of Water Resources (DWR) and administered through an interagency agreement with the Sacramento-San Joaquin Delta Conservancy (Delta Conservancy). Developing and implementing the 2022 DDRPP facilitated collaboration among the Delta Water Agencies, the State Team, and Delta water users. The Program promoted a coordinated response to the common threat of poor water quality posed by the extended drought. Along the way, individuals and institutions developed better understanding of the perspectives, objectives, motivations, limitations, and opportunities from their concerted effort.

DESCRIPTION

The 2022 Delta Drought Response Pilot Program (the Program) Report describes the initiation, solicitation, selection, and analysis of incentivized water conservation actions taken by Delta agricultural water users during the 2021/2022 water year (October 1, 2021 through September 30, 2022). The full report will be available on the Delta Conservancy's website (<http://deltaconservancy.ca.gov/grant-program/delta-drought-response-pilot-program/>) by March 21. The objective of the Program was to implement a variety of water conservation actions and explore their effectiveness. The report draws three major conclusions. First, the analysis found less consumptive use savings than predicted. Second, there was substantial variability in water savings among project sites even when comparing like practices. Last, the need for more data and the continued drought called for renewing a modified DDRPP for water year 2023.

On January 19, 2022, the Conservancy began soliciting applications for grants from farmers willing to undertake water conservation actions during the remainder of the 2022 water year. A Selection Committee evaluated applications and recommended projects for funding. The Delta Conservancy executed agreements with 33 unique Delta farmers, covering approximately 8,800 acres, at a total grant cost of \$7,967,097, based on a fixed price of \$900 per acre enrolled. Grants covered a variety of proposed water conservation actions and were spread among the various subregions of the Legal Delta. Grant applicants were asked to make non-binding estimates of how much water their actions might save during the water year. Total water conservation was estimated to be approximately 22,000 acre-feet for accepted grants. An Oversight Committee worked with farmers to carry out their proposed actions and then evaluate the results of the water conservation practices.

The Committee's analysis compared evapotranspiration – or the combination of water vaporization from soil (i.e., evaporation) and plants (i.e., transpiration) – of DDRPP participant fields, and fields managed by "business-as-usual" practices. The Committee used data from OpenET, which provides satellite-based estimates of evapotranspiration (ET), to make these comparisons. OpenET is a scientifically rigorous, consistent, credible (with both water users and regulatory agencies), transparent, accessible, and inexpensive source of data to compare ET across practices and evaluate the water savings attributable primarily to the incentivized conservation actions under the Program. Notwithstanding rigorous implementation of the water conservation actions from roughly March (when grants were executed) through September, water savings measured through OpenET were less than what grant applicants estimated. The Oversight Committee analysis (Technical Appendix of the 2022 Program Report) estimated water conservation for the Program was between 3,300-5,500 acre-feet. Among the potential reasons for this discrepancy are:

- Water is physically abundant in the Legal Delta even during drought in the watershed; thus, water is continually available and susceptible to evapotranspiration.
- The Program required Healthy Soils practices, which maintained harvested crop stubble or a cover crop to reduce oxidation of peat soils or erosion of bare soils, and plant transpiration from stubble and cover crops can increase evapotranspiration.
- Agricultural fields in the Delta occur at variable elevations, with many fields below the surrounding surface water levels outside of levees, and these conditions require extensive drainage systems to manage seepage and reduce losses to evapotranspiration, regardless of farming practices.
- Water from the water table, adjacent drainage ditches, seepage, or runoff from nearby fields may have contributed to evapotranspiration on Project Sites, particularly for crops with deeper root systems.
- Evapotranspiration was estimated across the entire water year, even though conservation actions were concentrated during the summer.

Even though measured water savings were lower than those initially estimated, the Program provided a wealth of data about water consumptive use, water use actions, and incentives in the unique and complex setting of the Legal Delta. One major pattern seen in this data was the variability in estimated water savings among Project Sites, even when comparing like practices. Additional data gathered from additional sites may help reveal the mechanism driving this variability. The information derived from the 2022 DDRPP analysis was sufficiently valuable to warrant refinement and redeployment of a follow-up Pilot Program during water year 2023. DWR sought and received budget funding to gather additional data, test hypotheses suggested by the 2022 Program, and to study results at varying locations.

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