

The Value of Land Conservation: Groundwater

THE HEALTHY LANDS AND HEALTHY ECONOMIES INITIATIVE

CASE STUDY



**AG +
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SPACE**
SONOMA COUNTY

CONTEXT

Aquifers are a critical and irreplaceable source of water for homes, businesses, and farms in Sonoma County and throughout California. The California legislature acknowledged the importance of aquifers when it passed the Sustainable Groundwater Management Act (SGMA), which established a new structure for managing California's valuable groundwater resources. Locally, the importance of aquifers is exemplified by the Santa Rosa Plain Aquifer — one of the four major groundwater basins in the county — which, in an average year, provides more water to residents than Lake Sonoma.

Land conservation is essential to maintaining the recharge of high-quality groundwater that keeps these aquifers healthy. Aquifers are replenished by water that percolates into the ground, and water can't percolate into paved landscapes.

To date, Ag + Open Space has protected **18,658 acres** of groundwater basins and natural recharge areas. Natural areas — whether grasslands, chaparral, pastures, oak woodlands, or conifer forests — all contribute to groundwater recharge by providing space for rainwater to seep deep into the earth.

This study assesses some of the many values provided by the Santa Rosa Plain Aquifer, which lies in part beneath the county's most populated and developed areas. Figures on water volumes and prices were provided by Sonoma Water.

RISKS: AQUIFER DEPLETION, SALTWATER INTRUSION

The Santa Rosa Plain Aquifer lost roughly 120,000 acre-feet* of water from storage between 1976 and 2010 due to pumping. Available data suggests that water levels in the shallow aquifers in the Santa Rosa Plain have remained stable, while many of the deeper aquifers (which do not recharge as quickly) have declined.

Aquifer depletion near a saline water body can lead to contamination of freshwater aquifers with salt water. In southern Sonoma County, which is adjacent to San Pablo Bay, groundwater levels have dropped more than 100 feet. In some areas, saltwater intrusion has created areas of brackish water that are no longer suitable for agriculture or require additional treatment.

Sonoma Water has been proactive in managing the region's groundwater. The Santa Rosa Plain Watershed Groundwater Management Plan, released in 2014, outlines a suite of strategies for sustainably managing the aquifer, including through new groundwater recharge projects and the protection of natural recharge areas.

METHODS

This study was based on a literature review as well as discussions with Sonoma Water, which plays an important role in groundwater management in the region.

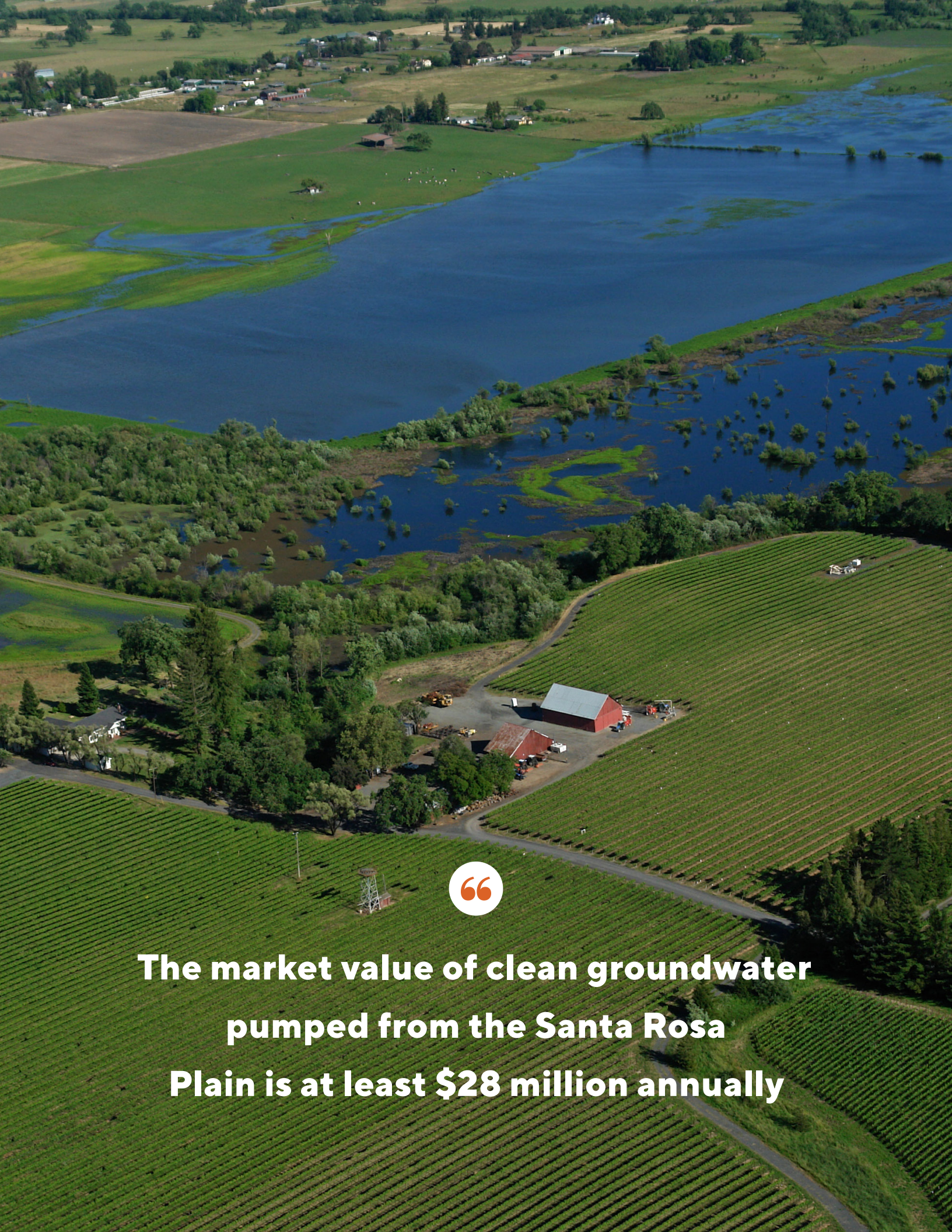
FINDINGS

Value: WATER SUPPLY

The Santa Rosa Plain Aquifer provided an average of 42,000 acre-feet of water annually to all water users between 2004 and 2010. Based on water rates used by Sonoma Water (\$672.03 per acre-foot), the market value of this water is at least **\$28 million** annually.

The water stored in aquifers also serves as a critical backup supply during drought. One way to value this safeguard is by asking people how much water supply reliability is worth to them. One survey in Northern California found that households were willing to pay an additional \$21 to \$28 per month (in 2017 dollars) on their water bill to avoid water shortages. That's an implied value of at least **\$24 million** per year for every 100,000 households.

*An acre foot of water is the amount of water needed to cover an acre one foot deep in water, or 325,851 gallons.



**The market value of clean groundwater
pumped from the Santa Rosa
Plain is at least \$28 million annually**



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Sonoma County Ag + Open Space permanently protects the diverse agricultural, natural resource and scenic open space lands of Sonoma County for future generations. We are responsible for the perpetual protection of over 116,000 acres of land throughout our region. These agricultural and open space lands are protected through a quarter-cent sales tax approved by voters in 1990 and reauthorized in 2006. For more information, please visit www.sonomaopenspace.org.



THE HEALTHY LANDS AND HEALTHY ECONOMIES INITIATIVE

The Healthy Lands and Healthy Economies Initiative documents the economic value and community benefits of natural and working landscapes. This research helps to show that Sonoma County's investments in land conservation pay real dividends, now and into the future. This Initiative would not have been possible without contributions from the Gordon and Betty Moore Foundation, the S. D. Bechtel, Jr. Foundation, and the California State Coastal Conservancy.

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