Stanford | Water in the West

Policy Brief

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Fulfilling the Promise of California's Sustainable Groundwater Management Act: Improving Groundwater Data Collection and Understanding

Background

Before the passage of the Sustainable Groundwater Management Act of 2014 (SGMA), California lacked a statewide framework to regulate groundwater, which accounts for over a third of the state's freshwater supply. Without statewide regulation, declining groundwater levels resulted in dry domestic wells, land subsidence of more than one foot per year in some areas, ecosystem die-outs, and reduced stream flow. The purpose of SGMA is to maintain California's groundwater basins in a condition that assures their long-term sustainability through effective management within twenty years of implementing of their groundwater sustainability

About the Researchers

The research and analysis covered in this brief was conducted by **Tara Moran**, Sustainable Groundwater Program Lead at Stanford's Water in the West program and Stanford Woods Institute for the Environement Research Associate; **Amanda Cravens**, postdoctoral fellow with Water in the West and Stanford Law School's Gould Martin Gould Center for Conflict Resolution; **Janet Martinez**, Director of Stanford Law School's Martin Gould Center for Conflict Resolution; and **Leon Szeptycki**, Executive Director of Water in the West and Stanford Woods Institute for the Environment Professor of the Practice.

plans. The act took effect in January 2015, but many questions remain about the state's ability to meet the extensive management goals set out in the legislation.

Effective groundwater management is complicated by multiple agencies responsibile for managing groundwater basins using different metrics and methods to assess groundwater conditions. Faced with a mandate under SGMA to "improve data collection and understanding" statewide and achieve common data standards across each basin, groundwater managers must first address years of uncoordinated management and inconsistent data across hundreds of regions and more than 2,000 local and state agencies.

The legislation makes monumental steps toward ensuring more effective collection and integration of groundwater data at the basin-scale. However, additional regulatory and policy actions would improve data collection and coordination statewide; overcome some implementation issues such as the failure to require consistent statewide monitoring standards necessary for data integration across all regions in the state; and vastly improve how California manages this valuable resource.

Key Findings

The researchers conducted a groundwater data survey of managers and stakeholders across the state to learn more about their current groundwater data collection, use and sharing practices, and to identify some of the common data-related issues that local agencies may face during SGMA implementation. The survey responses indicate that effective groundwater management is hindered by a range of data-related challenges.

MISSING OR HIGHLY UNCERTAIN GROUNDWATER DATA

Percentage of survey respondents who indicated having missing or highly uncertain data in each category (n=50). Responses are not mutually exclusive. GD is groundwater-dependent; GW is groundwater.

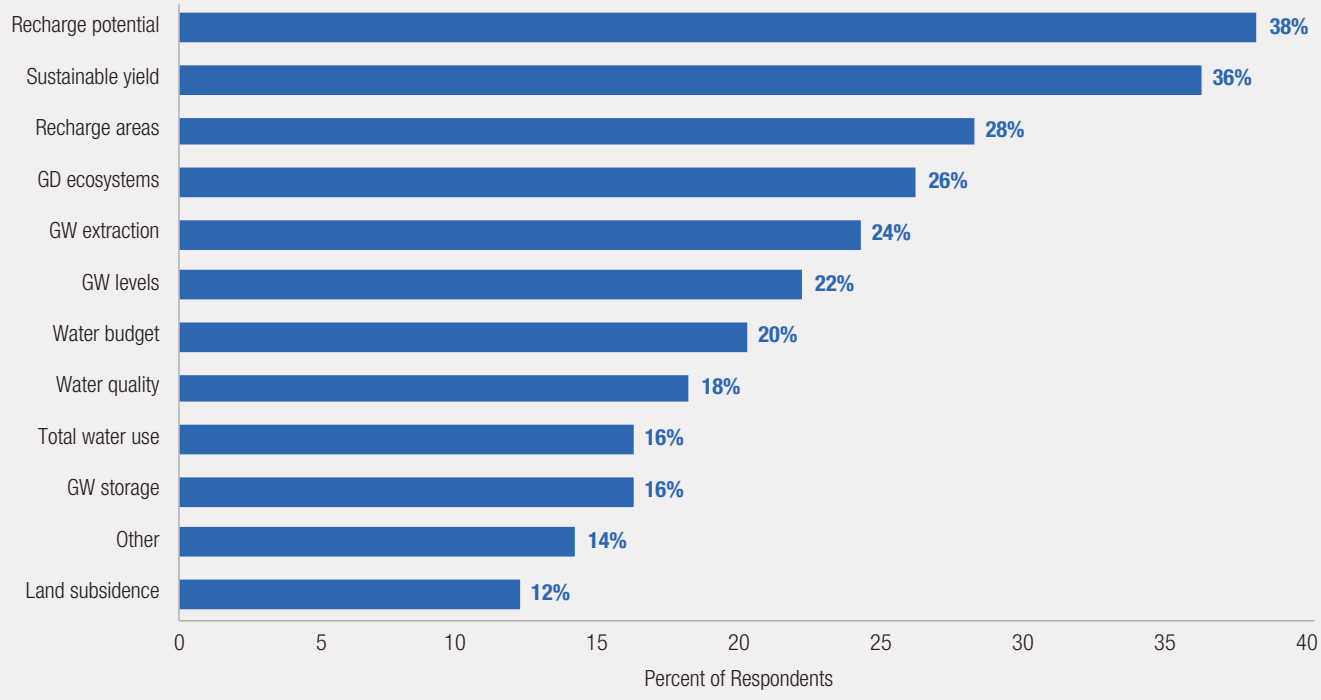

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Photo courtesy of the CA Department of Water Resources

Key Findings

Missing or Highly Uncertain Data: survey respondents indicated a high degree of uncertainty associated with many data necessary for effective groundwater management, specifically:

- 38 percent of respondents indicated a high degree of uncertainty associated with groundwater recharge potential;
- 36 percent of respondents indicated a high degree of uncertainty associated with sustainable yield estimates;
- 28 percent of respondents indicated a high degree of uncertainty associated with groundwater recharge areas; and
- 26 percent of survey respondents indicated a high degree of uncertainty associated with groundwater-dependent ecosystems.

Fragmented Jurisdictions: 58 percent of survey respondents to an open-ended survey question indicated a need for standardized data collection methods and a common data-sharing platform.

An Inability to Monitor Private Wells: only slightly more than half of survey respondents consider the geographic coverage (54 percent) and monitoring frequency (56 percent) of groundwater levels data to be adequate for decision-making purposes. An inability to access private wells for groundwater monitoring may limit the geographic coverage and data collection necessary for sustainable groundwater management.

A Lack of Dedicated Groundwater Monitoring Wells: 33 percent of survey respondents with wells in their jurisdictional area did not have a dedicated groundwater monitoring well network.

Key Recommendations for Policymakers

- Require local groundwater management agencies to use consistent statewide data collection and monitoring standards and a common data-sharing platform to ensure that data can be integrated and shared effectively across all regions of the state.
- Use the authority given under SGMA to monitor private production wells and measure groundwater extraction through metering or other means.
- Develop a statewide committee to advise on geophysical methods, technologies and other data-related issues.
- Maintain and expand state and federal datasets for water management.
- Make local groundwater data publicly available to ensure transparency and accountability.

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Conclusions

Results from this survey suggest that consistent statewide data collection and reporting methods and publicly available local datasets would reduce uncertainty, increase communication among stakeholders, and improve information quality for decision-makers. Many local agencies across California already have a strong foundation from which to improve their groundwater monitoring networks and ensure sustainable groundwater management. However, as basins move toward SGMA basin-scale coordination requirements and mangement goals, it will be increasingly important to focus on acquiring data using consistent collection and reporting methods that enable data integration across all regions.

This brief is based on findings from the 2016 survey of California groundwater managers, *"From the Ground Down: Understanding the Local Groundwater Data Collection, Adequacy, and Sharing Practices in California,"* released by Water in the West, a joint program of the Stanford Woods Institute for the Environment and the Bill Lane Center for the American West. T. Moran, A. Cravens, J. Martinez, and L. Szeptycki. To view the full report: *http://bit.ly/WitWPublicationsDirectory*

About Water in the West

Water in the West, a joint program of the Stanford Woods Institute for the Environment and the Bill Lane Center for the American West, marshals the resources of one of the world's preeminent research universities to answer one of the most urgent questions about the American West's future—how can the region continue to thrive despite growing water scarcity? Through Water in the West, Stanford University's world-class faculty, researchers and students are working to address the West's growing water crisis and to create new solutions that move the region toward a more sustainable water future. Learn more: waterinthewest.stanford.edu

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