
California's groundwater – basics, laws, and beyond

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Kate Williams from the California Water Foundation gives a talk about the importance of groundwater, the problem it poses, and the challenges it faces during the 2015 California Water Policy Seminar hosted by UC Davis Center for Watershed Sciences. Photo Credit: Bo Peng.

By Chris Austin

Groundwater has been receiving a lot of attention lately, and for good reason. California is the heaviest groundwater user in the nation, and our use is increasing after recent, multiple dry years.

The Sustainable Groundwater Supply Act of 2014 sets a [Follow](#) nationally new state water policy to manage and monitor the state's groundwater supply.

The effects will be far-reaching: groundwater supply – about 16.5 million acre-feet of groundwater can

make up more than 65 percent of the state's groundwater supply.

But improving groundwater management and implementation challenges at state and local levels.

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at 40 percent of the state's average annual water supply. Shastas every year. During drought years,

6 million urban users, groundwater is their only

misconceptions of how groundwater works and

Against the backdrop of new groundwater legislation and ongoing drought conditions, the 2016 UC Davis California Water Policy Seminar Series will focus on groundwater, revisiting many of the issues covered during the

Winter 2015 series. Nine presentations from policymakers, hydrologists, legal experts, economists and water managers discussed California's management of groundwater – its past, present and future.

Groundwater – the basics

Tucked away beneath our feet, it's hard to understand what we cannot see. Dr. Graham Fogg shined a light on the mysteries of groundwater. It doesn't look the way we imagine it to look or necessarily work the way we think it does, Dr. Fogg cautioned.

“You see a lot of pictures where it's all blue and there's these little lenses,” he said. “People look at these enough and they get the idea that the system here in the Central Valley is really like that; it's actually nothing like that.”

Take an in-depth look at aquifer systems with Dr. Graham Fogg: [Groundwater Problems and Prospects, part 1: An overview of groundwater](#)

Groundwater does not work in isolation – groundwater interacts with the surface waters above it and sometimes beyond. That connection was explored further with Maurice Hall, who helped draft the SGMA legislation in his previous position with The Nature Conservancy.

“If you have a lot of different wells, you can lower the water levels over miles and miles and miles of aquifer,” he said. “When you do that and the groundwater levels in the surrounding areas are lower than the stream, the stream loses w

ater to groundwater.”



Dr. Richard Frank, professor at UC Davis Law School discussing the issues surrounding the Scott Valley groundwater case. Photo Credit: Bo Peng.

The seminar also included Dr. Thomas Harter and Dr. Richard Frank discussing the issues surrounding the Scott Valley groundwater case, which centered on the groundwater connection to flows in the Scott River.

Find out more: [Groundwater problems and prospects, part 7: Groundwater-dependent ecosystems and the groundwater-surface water connection](#)

The Sustainable Groundwater Management Act

Though a few regions had voluntarily addressed groundwater management prior to the 2014 groundwater legislation, most of the state's groundwater basins remained seemingly unmanaged with the impacts starting to make national news.

Regulating groundwater had long been considered one of the ‘third rails’

of California water. Legislation culminated from an extraordinary collaborative effort that involved bringing together numerous stakeholders – not all of them supportive of the new groundwater policy.

“I've been doing water law for over 15 years and I've been doing policy for five years at the Legislature. If you had asked me two years ago, if we could pass a sustainable groundwater act of any kind, I think anybody would have

said to you, “That would be great and we really need to do that. It’s just never going to happen”” said Assembly policy consultant Tina Cannon Leahy.

A panel discussion presented the story behind the passage of the legislation as seen by three key players: Ms. Leahy, ACWA’s Cindy Tuck, and the California Water Foundation’s Kate Williams: [Groundwater Problems and Prospects, Part 2: The story behind the passage of the Sustainable Groundwater Management Act](#)

Water attorney David Aldajem reviewed the provisions of the Sustainable Groundwater Management Act, noting that the legislation puts responsibility for groundwater management in the hands of local officials, but creates a state intervention process should local efforts fail. Dr. Richard Frank followed with some thoughts and concerns of his own.

“One of my concerns is the effort to self-organize leads me to wonder who and which entities will wind up as Groundwater Sustainability Agencies. In some parts of the state, you have some of these local agencies that have been part of the problem who are now being asked to self-form in this part of the solution,” he said. “I worry about the problem of the fox guarding the hen house and that the same entities that helped cause serious problems with non-sustainability and groundwater overdraft are going to put themselves in position to implement the law.”

The provisions of the Act and legal challenges that might lie ahead are discussed in: [Sharing groundwater: Legal issues and challenges](#)

Implementing the Legislation

The Sustainable Groundwater Management Act requires local agencies and stakeholders to come together to form groundwater management agencies and develop plans to manage their groundwater basins sustainably – no easy task. Doing so will require cooperation, collaboration, and compromise amongst those who have long been accustomed to pumping without regulatory limits. How will implementing the legislation work on the local level?

Getting to sustainable groundwater management is going to be especially challenging for those in the San Joaquin Valley where impacts from excessive groundwater pumping have become acute. Additionally, most of the state’s basins designated as critically overdrafted lie in the San Joaquin Valley, putting those basin managers on a faster timeline to develop management plans.

David Orth, then a member of the California Water Commission, discussed the complications of meshing political boundaries with groundwater basin boundaries, the complexities of flows between subbasins, and what to do about areas that are currently unmanaged by any local entity, as well as gave his ideas for best management practices.

“I still think it makes a lot of sense, although a lot of my peers and a lot of the stakeholders that I represent who are, again, predominantly agricultural stakeholders, are very worried about where this is going to go,” Mr. Orth said of the legislation.



From left to right: Panelist Kate Williams (California Water Foundation), Cindy Tuck (Association of California Water Agencies), and Tina Canon Leahy (California Assembly Committee on Water, Parks and Wildlife) discuss California’s 2014 groundwater legislation. Photo Credit: Bo Peng.

Read about what's ahead: [Groundwater management practices for local sustainability](#)

The Yolo Basin has been working collaboratively on water problems for at least 20 years, having formed an integrated regional management program and established a regional multi-agency groundwater level monitoring network and other technical resources. Yolo County is in a good position, already having learned some time ago that solving groundwater issues is a collaborative effort, Mr. O'Halloran said.

"Nobody can solve this problem on their own, no single agency," he said. "Yolo County couldn't do it, the government agencies couldn't do it, and the water district couldn't do it." Still, he sees challenges ahead: [Toward groundwater sustainability planning in an agro-urban basin](#)

While the Sustainable Groundwater Management Act calls for local agencies to manage their groundwater, the legislation nonetheless has a significant role for the state through the Department of Water Resources and the State Water Resources Control Board. Department of Water Resources David Gutierrez and State Water Board Michael Lauffer each discussed their respective agency's roles.

"What should be clear from all of this is that state has made a fundamental change in how it approaches groundwater management," said Mr. Lauffer. "But fundamentally, it is still going to be a locals first approach. The State Water Resources Control Board and the Department of Water Resources have been given important tools that are essentially designed to scare local agencies and groundwater pumpers into embracing local sustainable groundwater management."

Find out more: [The role of the state in implementing the Sustainable Groundwater Management Act](#)

As challenging as implementing the new legislation may be, it all gets down to economics, Dr. Richard Howitt said in his presentation. He noted that there are several reasons to stabilize groundwater levels, such as to prevent or mitigate the environmental impacts, to prevent subsidence and infrastructure damage, to protect water quality, and to preserve the water as a reserve stock, but it's also about intergenerational equity.

"You are depleting the ability of the next generation to farm the way they want to; it's cashing in the inheritance that you have to give. But even if you look at it from a cold hearted capitalistic viewpoint, the value of the farm as a business will be lower if the groundwater is less available and of poorer quality."

Read more about Dr. Howitt's seminar [here](#).

It's been over a year since Governor Brown signed the historic legislation, and while much has been accomplished, there is still much to be done. Litigation and state intervention may be inevitable for some, but it remains to be seen how often the courts will be chosen over local collaborative efforts. SGMA ushers in a new era of sustainable groundwater management for California, but the outcomes still remain far from certain.

The 4th California Water Policy series will begin in January 2016, focusing on lessons from drought. The schedule is posted [here](#).

Chris Austin is an independent freelance writer who covers California water issues. She publishes online at [Mavens Notebook](#).

Further Watching

[Overview of California Ground Water.](#) **Graham Fogg**, UC Davis

[California's 2014 Groundwater Legislation.](#) **Tina Canon Leahy**, California Assembly Committee on Water, Parks and Wildlife. **Cindy Tuck**, Association of California Water Agencies. **Kate Williams**, California Water Foundation

[Sharing Groundwater: Legal Issues and Challenges.](#) **Richard Frank**, UC Davis School of Law. **David Aladjem**, Downey Brand law firm, Sacramento.

[Toward Groundwater Sustainability Planning in an Agro-Urban Basin.](#) **Tim O'Halloran**, Yolo County Flood Control & Water Conservation District

[Groundwater Management Practices for Local Sustainability.](#) **David Orth**, Kings River Conservation District, Fresno

[State Activities.](#) **Michael Lauffer**, State Water Resources Control Board
David Gutierrez, California Department of Water Resources

[Groundwater Dependent Ecosystems.](#) **Maurice Hall**, Nature Conservancy. **Richard Frank**, UC Davis School of Law. **Thomas Harter**, UC Davis

[Economic Issues and Challenges.](#) **Richard Howitt**, UC Davis

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Isenberg, Phil@DeltaCouncil says:

December 8, 2015 at 11:42 am

Chris:

As a newly-identified “reliable source” for water information, this kind of summary/reporting/analysis will become a big part of what you do in the future. Which means that you also have to provide the interested reader (who is not already deep into the groundwater issue) with a broad overview.

Suggestion: Consider doing a Groundwater summary paper, with the sources for your information clearly identified.

For example, the opening paragraph of this piece says:

“Groundwater has been receiving a lot of attention lately, and for good reason. California is the heaviest groundwater user in the nation, and our use is increasing after recent, multiple dry years.”

That is a fair statement, but you need to specifically reference the “heaviest groundwater user in the nation”, and also document the “our use is increasing...” Consider a web source jump for each factual assertion. The end result is that together w/ references to things the Notebook has previously included.....and you have a very handy briefing memo.

Ph

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fissekis says:

December 11, 2015 at 10:04 am

Our mistake, Phil. In an effort to shorten the piece, we took this out. I don't have full references for the sources Chris had in the original draft, but she may have them on her website. For the statement you mentioned, “California is the nation's heaviest water user,” she referenced USGS.

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