

CHACHA SIKES

# For a New California Water Atlas

A twenty-first-century manifesto

**W**e are nerds for nature. Our millennial generation is fairly ignorant about the great California water system we are about to inherit, but we have a plan to solve this problem.

Water sustains our humanity, though many of us have no idea where our water comes from. We don't need to—our modern water systems were created specifically so that we wouldn't have to think about how we get good, clean drinking water and could instead focus on our lives and work.

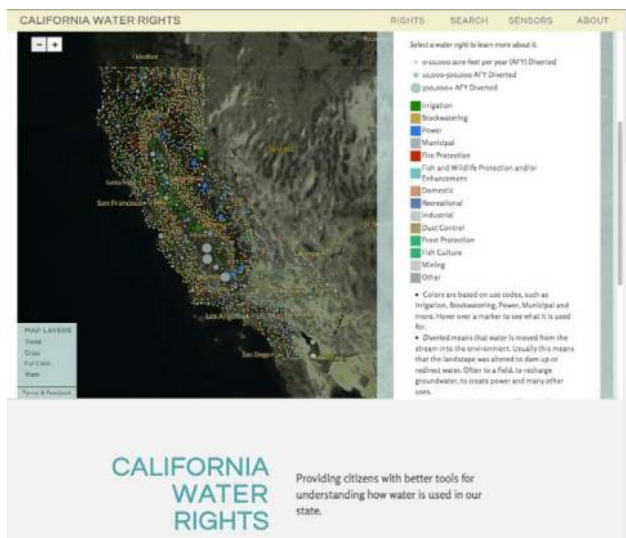
Some say we are headed for serious water crises and possibly even water wars. Reduced snowpack, changing rain patterns, and groundwater depletion are just a few of the big changes coming our way.

We have a project underway to help our generation make sense of the mess we are about to inherit. We are creating a new “Owner's Manual” for water in the State of California. This will be a citizen-focused, interactive *California Water Atlas* that will help us understand where, exactly, our water comes from, where it goes, who uses it, how it interacts with landscapes, both natural and built, and how healthy that water is. We will teach ourselves how to care for our water systems and get ourselves connected back into our democratic public resource management system, but upgraded for modern times.

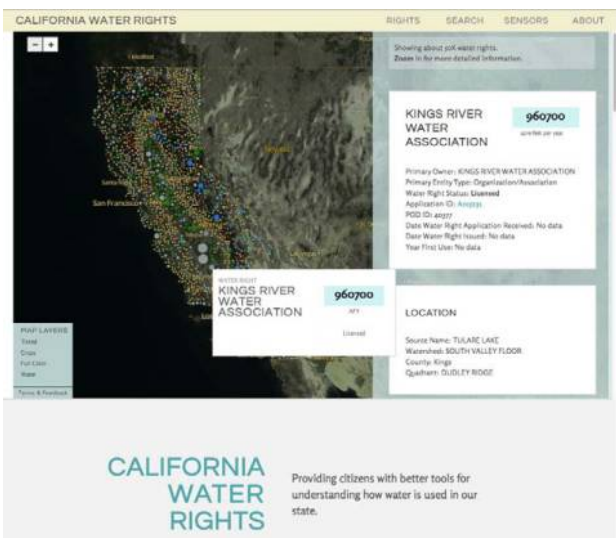
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The New California Water Atlas. COURTESY OF CA.STATEWATER.ORG.



We believe that the days of *Chinatown* are over for California. Secrecy is dying out in favor of openness, transparency, science, and full accountability. We want to get as much unpredictability out of the way—and understand the unpredictability we can’t eliminate. We believe by sharing information about our natural resources more openly and understandably, we can make smarter choices with water and heal the devastation caused by previous generations.

We will make it possible to use our best facilitation and negotiation skills to rehumanize our connection to water. Our generation’s talented technologists, cartographers, environmentalists, agriculturalists, journalists, water professionals, and community advocates will work together to create a *New California Water Atlas* for the twenty-first century.

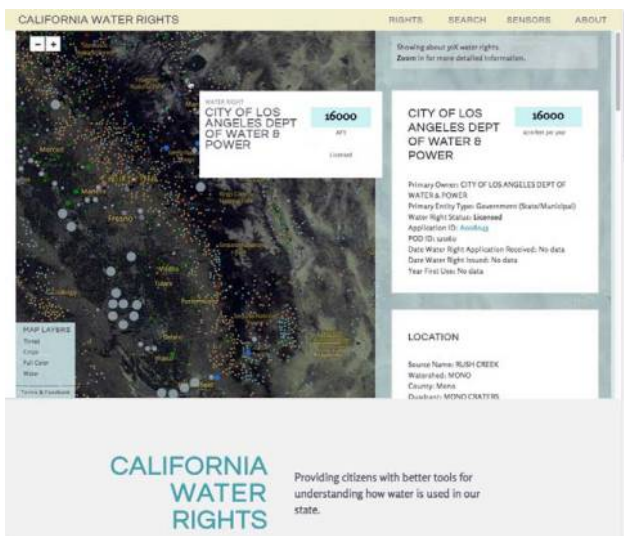
This is not the first time a *California Water Atlas* has been created as a public work. In fact, we are inspired by the original *California Water Atlas*.

In the late 1970s, Californians faced severe water shortages during a prolonged drought. But very few Californians understood our highly engineered water systems statewide, making it difficult to understand how to manage water fairly during times of stress and strain. Governor Jerry Brown commissioned an atlas from the California Department of Water Resources. Stewart Brand, founder of the *Whole Earth Catalog*, chaired the advisory board. Huey Johnson, Secretary of Resources, worked with state agencies to get basic information about water sources, quantities, and uses into a format that could be visualized in the atlas. The

atlas makers used the latest technology available at the time to create maps on computers, and they generated truly beautiful, clear maps that made one of the most complex water systems in the world much easier to understand. The original, giant atlas has since been digitized by historical map collector David Rumsey and can be viewed online.

Standing on the shoulders of those who created the original *California Water Atlas*, the *New California Water Atlas* will provide a critical update to decades-old data and put it all online, where emerging technologies will make the new atlas an exponentially more powerful resource for citizens, government, water managers, and consumers. For one, the tools for producing maps have become much less expensive and allow more people to tell geographically based stories. Similarly, a massive culture of “makers” has emerged. Makers look for opportunities to create; innovative projects that make a difference inspire them. We are now capable of designing sensitive sensors and launching our own satellites. We are also expert in finding ways of presenting complex data.

Like the technology, the process of collaboration will also be open. Guidelines and templates for new digital maps will be publicly available. New companies and communities will be able to develop innovative interactive maps for all Californians. We also want to encourage the active participation and collaboration of the many water users and water resource managers in California, including farmers, well-water users, orchardists, government staff, city water users,



industry, kayakers, environmentalists, and more. We are excited to collaborate with various mapping communities and to leverage remote-sensing and teach a whole new generation how to use the Web to communicate our understanding of water so that we can all do our part to steward our most vital natural resource.

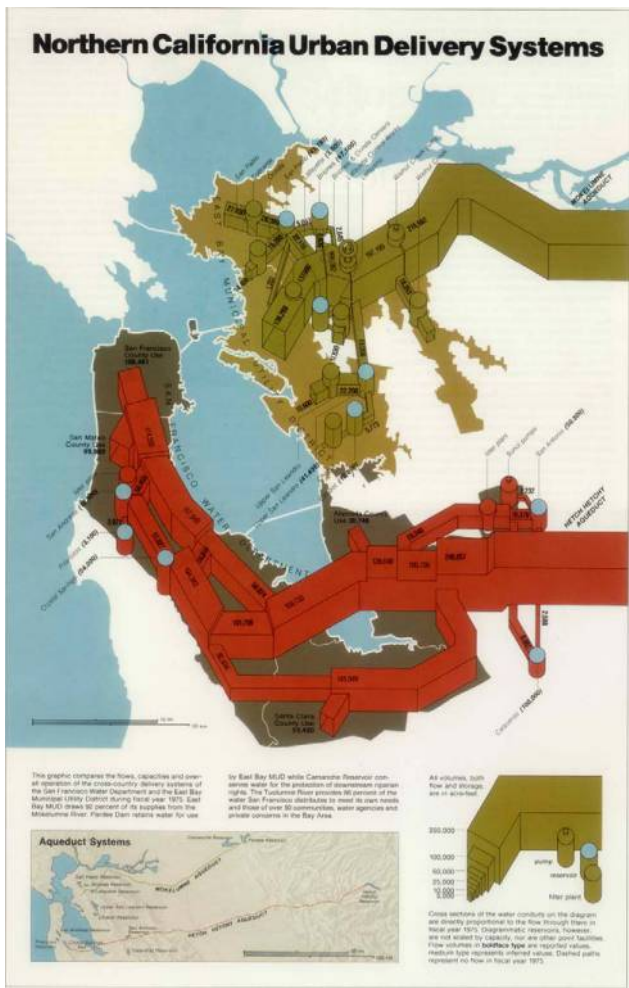
Water is a shared resource in California, and we are all in this together. Partnerships and new collaborations will be encouraged, and we will all get to be proud of what we create. We expect this project to be ramping up for a few years, and for a number of new communities to form that will continue to build upon this new way of presenting public information in ways that will continue to be useful for generations to come. This is because we deserve clear, understandable, accurate, public-friendly, useful information about our water systems.

Once we have the information, we can start to change the way we communicate about the issues. In the open government movement, there is a kind of emerging civic collaboration called *participatory budgeting*. We are inspired by this process, through which the various needs of a city are made public, and carefully facilitated community meetings are held so that those affected by the budget are able to make fair choices. This doesn't mean that everyone gets what they want, but it does reduce some of the conflict and encourages us all to be creative and work toward a common goal. Imagine if we could apply this process to our water budget. California actually does create a new State Water Plan every five years, and one is due in 2013. Let's get involved and

overwhelm this obscure bureaucratic planning process with our enthusiasm for understanding water and bringing a peaceful resolution to age-old conflicts over water in California.

A prototype of just one interactive map for the *New California Water Atlas* was launched earlier this year. The *California Water Rights Atlas* shows all of the approximately 50,000 current and historic water rights holders throughout the state. A color-coded map of water uses—irrigation, stock-watering, power, municipal, fire protection—shows water rights holders' names and how much water they are allotted. Tallying tools allow anyone to see how much water is used along a river. The data comes from the State Water Resources Control Board, a state government entity that ensures that water in California is allocated for beneficial use and is not wasted. This information had never before been brought together in one user-friendly place. Now that it has, we as Californians can begin to understand for ourselves how our water is being managed and whether it is being managed in our best interests. Because we are working in an open and collaborative way, the data is now on its way to getting better, and advocates of water in communities across the state can make derivative maps that tell more specific stories about water usage in their watershed.

Another abiding mystery in California's waterscape is groundwater, which is our second New California Water Atlas project. Groundwater usage has never been fully regulated in California. The state of our overused groundwater aquifers has never been fully understood. Our underground aquifers are connected to surface water, and many are being pumped out at rates faster than they are recharged by water percolating back into the ground. This causes the ground to sink, heavy metal levels to increase, the water table gets lower and lower, and streams dry up. But despite potentially disastrous implications, we have no clear picture of our groundwater levels, and no way to understand the practical realities of our groundwater system for all of the watersheds of California. We will create the map that will change that. Working with scientists, governments, coders, designers, writers, community health and environmental organizations, and water users, we will bring in as much real-time data as we can gather to produce an interactive map of where groundwater is in California, how much there is, and where trouble spots are.



From *The California Water Atlas*, 1979. COURTESY OF DAVIDRUMSEY.COM.

Because a lot of new legislation is happening around groundwater, we are planning to release a digital groundwater visualization kit based on our groundwater interactive, which will make it easier for journalists and policy folks to communicate far and wide about proposed policy changes and why they are important.

Other planned maps can show water pricing, water return flows, and water conflicts. Taken together, these maps will enable us to advocate for responsible management, and at the very least to present challenges in their full complexity back to voting Californians so that we can make more informed decisions about our future. This valuable data will help Californians make critical and informed business decisions where water price and availability are concerned—for farms, vineyards, cities, hydropower, and more.

The availability of water in California is changing. Climate change will accelerate these changes in this century. Our greatest reservoirs for fresh water—the snowpack in our mountains—will diminish. More precipitation will fall as rain rather than snow. The snow will melt faster in the spring, changing the timing of water and requiring us to alter our expectations about the water we can store and deliver throughout the rest of the year. Droughts, floods, and temperature changes will alter the land, water deliveries, and timing of crops. Wastewater treatment, water recycling and reuse, conservation, and desalination will all become even more important. We will try to live sustainably, but will also endure new stresses. Some of us will move away.

For most Californians, the impact of this future is hard to imagine. As it is now, most Californians never really think about where their water comes from or how they use it. For all they know, their water comes from “somewhere in California.” We have handed off responsibility for our water to agencies, which for the most part cannot afford to make big efforts to educate the public outside of urging conservation during major drought years. This has made it far too easy for city dwellers—the majority of Californians—to take no responsibility for the impacts that plans made today will have on our future. We know that California needs to overhaul its entire water system. Dams age. Levees age. Sewer pipes age. It is estimated that California would need to spend \$39 billion to catch up on all of its deferred water infrastructure maintenance.

Outside of the cities, water is a much more immediate, serious, and actively political concern. But whether Californians are concerned about their water or not, it has been very difficult for us to learn more about our water, particularly from unbiased sources. When citizens—not to mention lawmakers, policy analysts, institutional ratepayers, farmers, and journalists—try to become more informed to make better decisions, the problem becomes immediately apparent. Data about our complex water system is in disarray, woefully unorganized, inconsistent, and difficult to navigate. Every day that the data remains unorganized and obscured to the public is another day that new platforms for understanding our challenges and new solutions are delayed, to everyone’s detriment.

Now, we could be totally boring, scientific, regulatory, and bureaucratic about this. We can measure our water

precisely and manage it wisely. But why be boring when we can be feisty? We can still fight about water. But let's at least understand what we're really fighting about—and let's do it in our own California way, using the best data and interactive social technologies. The *New California Water Atlas* will present the state of water in California so that we can all see where we are and argue over where we are going and make better long-term decisions together.

There are no rules. So let's just do this. Join us. Together we can make a *New California Water Atlas* that tells us what we really want to know about water in California.

Our hope is that when it is possible for any individual in California to see and understand the complexity of our water systems, it will encourage more direct action to conserve water in cities, to plan the future of our cities considerably, to understand our agricultural economies, and, ultimately, to work together through our climate crisis. We can choose and design healthy cities, farms, economies, and sustainable water systems.

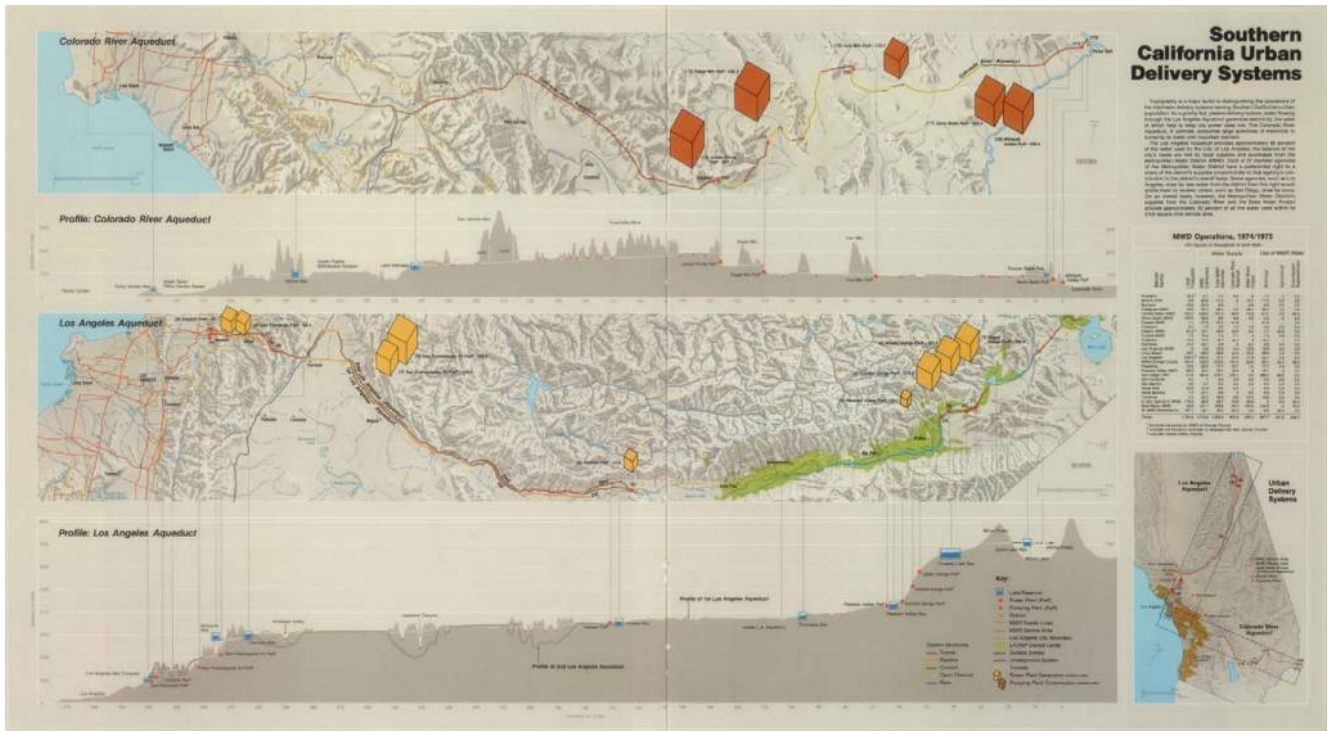
The ultimate goal is a California we can take pride in, with healthy watersheds with happy people and happy fish, clean, intelligent, resilient, water systems for farms and

cities, managed using quality science and open, accurate, and useful government data. In the end, we really are all talking about the same thing.

Times really have changed. We are part of a movement of millennials who want to effect practical change and do the less glamorous work to really solve our ongoing problems. We want to have at the future and use our abundant intelligence to make California even greater.

We grew up caring for the environment. We want rural areas to have healthy water. We are passionate about having healthy food systems. We do not want to continue generations of ignorance and apathy, to hand off control of our water resources to whoever happens to be there, to whoever happens to be the most greedy and opportunistic. We want to understand water and know that we are doing our part.

We need this baseline information because the future itself will be full of dramatic shifts, to the climate, to the rain, but also new technological advances, such as instantly purified water, lower-water footprint foods such as in-vitro meats and chickenless eggs, dam removals, flood plain restoration, new city dwellings on stable ground, water

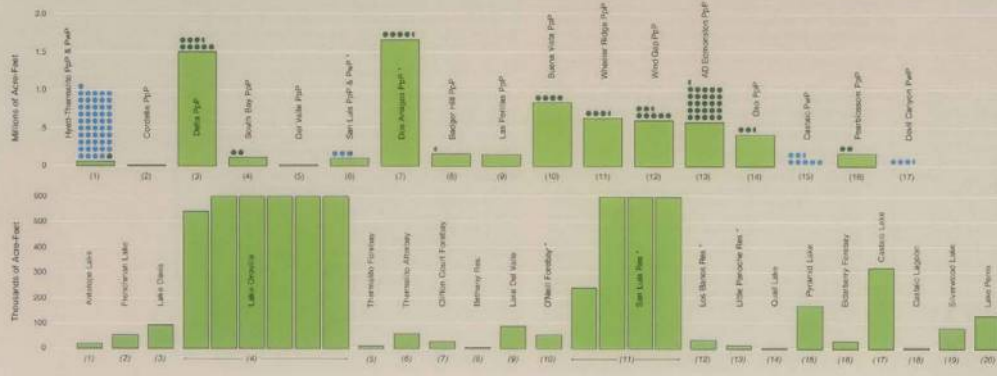
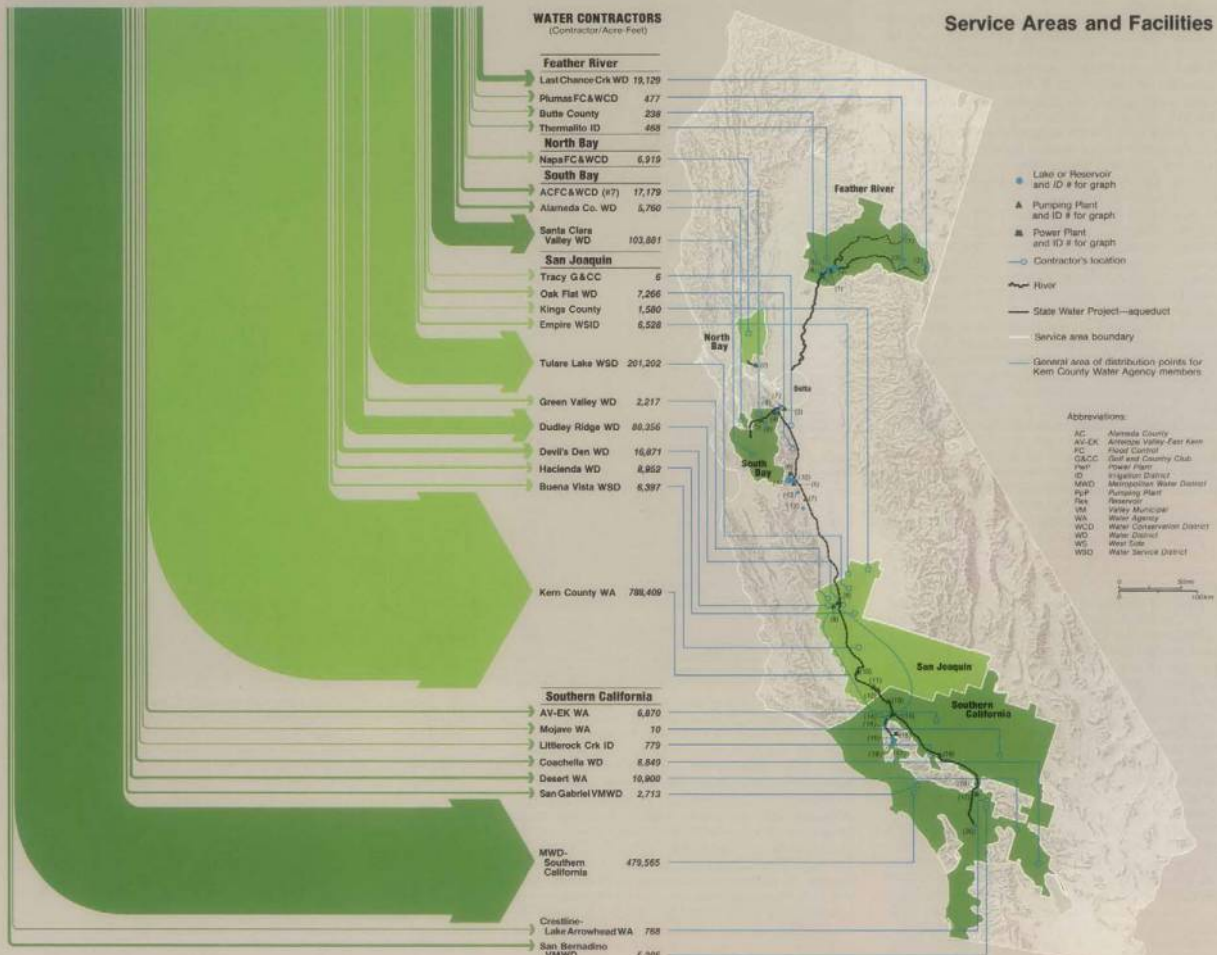


From *The California Water Atlas*, 1979. COURTESY OF DAVIDRUMSEY.COM.

# State Water Project Water Year 1975

## Deliveries

The width of the flow lines is proportional to the quantity of water, in acre-feet, delivered to that water contractor from October 1974 through September 1975.



From *The California Water Atlas*, 1979. COURTESY OF DAVIDRUMSEY.COM.

The atlas makers used the latest technology to make truly beautiful, clear maps that made one of the most complex water systems in the world understandable.

# We can still fight about water. But let's at least understand what we're really fighting about.

recycling, desalination, and who knows what else. We don't know which future technologies will catch on, but we do know we need to turn our attention to making the most of what we have. A readily accessible baseline understanding of California's water system will underlie our success in making California stronger and healthier for centuries to come.

We can't change history. But we can reclaim our connection to our water and feel that deeply human satisfaction that many of us share that we are protecting one thing we truly cannot live without.

## How to Get Involved

The *New California Water Atlas* is a California-wide, open source, collaborative effort uniting the diverse talents of technologists, designers, cartographers, researchers, water

experts, water users, and government entities to build next generation visualization tools for improving public understanding of water for Californians. If you are an organization that works to protect water and healthy communities in California, please reach out to us. We would like to find ways to involve you.

We have seed funding through Patagonia by way of the Resource Renewal Institute, <http://rri.org>, an environmental think tank in Marin, led by Huey Johnson, the Secretary of Resources for California during the time of the creation of the original *California Water Atlas*. We are very grateful to him for pushing our thinking and encouraging us to take this to the edge in ways that will have widespread policy implications.

More information about initiatives, sponsorship opportunities, events, meetings, guidelines, workshops, field trips, and more can be found at <http://ca.statewater.org>. **B**