

About Contact FAQ Support Maven's Notebook

# MAVEN'S NOTEBOOK



California water, verbatim.

FRONT PAGE

LATEST POSTS

LATEST NEWS FROM AROUND THE WEB

NOTEBOOK NEWS ARTICLES

WEEKLY FEATURES

RESOURCE PAGES

CALENDAR

ABOUT

## The truth be told: The Delta, the tunnels, and the tributaries, part 1

October 28, 2015 Maven Best of the Notebook, Conferences and Seminars



### Mountain Counties event highlights upstream concerns for flows in the tributaries and the impact of the Delta tunnels project

The Sierra Nevada mountain range is a key part of the California's natural water infrastructure, collecting rain and snow in the winter months that melts in the warmth of spring, filling the creeks and streams that form the tributaries of the Sacramento and San Joaquin rivers and ultimately flow into the Delta. Water is the number one resource exported from the Sierra Nevada, with 40% of the state's developed supply originating in the mountain counties. As the state works to solve the water crisis in California, the potential for redirected impacts upstream is a major concern for those that live and manage water in the region.

With this in mind, the Mountain Counties Water Resources Association

Scroll to Top

HELP SUPPORT MAVEN'S NOTEBOOK!

MAKE A TAX DEDUCTIBLE DONATION TO MAVEN'S NOTEBOOK and make an investment in California's water future

SIGN UP FOR DAILY EMAIL SERVICE

Sign up for daily email service and receive a single email with all the Notebook's content by gam. Breaking news alerts, too!

Enter your email address

Sign me up!

SIGN UP FOR INSTANT EMAIL SERVICE

Want your news sooner than gam? Enter your email address for this list

brought together local and state officials and water managers for the event, "The Truth Be Told: The Delta, the tunnels, and the tributaries" on October 16 in Auburn for a focused conversation on upstream impacts. The panel featured Mark Cowin, Director of the Department of Water Resources; Campbell Ingram, Executive Officer of the Delta Conservancy; Don Nottoli, Sacramento County Supervisor; Roger Patterson, Assistant General Manager of the Metropolitan Water District; Ara Azhderian, Water Policy Administrator with the San Luis & Delta-Mendota Water Authority; Steve Rothert, California Director of American Rivers; and Andy Fecko, Director of Resource Development with the Placer County Water Agency.

Mountain Counties Water Resources Association Executive Director John Kingsbury opened up the conference by noting that most people have an opinion on the tunnels and the Delta. "You can read about it every day in the newspaper," he said. "What you don't really hear too much about are the upstream impacts of the BDCP, now called the California Water Fix and California Eco Restore. So that's what the program's going to be about today. ... the linkage to the watershed and tributaries where the water's going to be coming from and who has their hand on the valve if and when the tunnel or some other conveyance system comes out of this whole process."

"We hear a lot about the interest for more flows to and through the delta to improve water quality standards, ecosystem, delta ecosystem, and export interests," he said. "There's a lot of competing interests, so this is the view from ground zero. These are our interests, and up here, this is what's at stake. It's really no different than anywhere else in California."

Each of the speakers then was given time to present their perspective, their role, and their interests on the project.

## MARK COWIN, Director of the Department of Water Resources

"The extremes that were a part of the slideshow this morning really gets at the kind of challenges and the new reality for California that we and the Brown administration are confronting, and what we're expecting in the future is more extreme," Mark Cowin began. "In the past few weeks, I've had back to back meetings in the governor's office. First, our regular meetings on the drought task force continuing to be concerned about drought impacts this year and the potential for a dry 2016. And then the meetings for flood preparedness for potential El Nino storm event system this year. But that's what it comes down to. We have to be

Scroll to Top

and you'll receive an email instantly, every time there's a new post!

Enter your email address

Sign me up!

### UPCOMING EVENTS

FEB  
**5**  
Fri  
(http://mavensnotebook.com/calendar/action~oneday/exact\_date~2-5-2016/)

**8:00 am** Municipal Law Institute Symposium @ McGeorge School of Law (http://mavensnotebook.com/event/municipal-law-institute-symposium/?instance\_id=47)

FEB  
**8**  
Mon  
(http://mavensnotebook.com/calendar/action~oneday/exact\_date~2-8-2016/)

**all-day** The role of models and data in i... @ UC Davis (http://mavensnotebook.com/event/the-role-of-models-and-data-in-implementing-the-sustainable-groundwater-management-act/?instance\_id=24)

**9:00 am** Byron Bethany Irrigation Distric... @ Cal EPA Headquarters (http://mavensnotebook.com/event/byron-bethany-irrigation-district-pre-hearing-

prepared for both extremes."

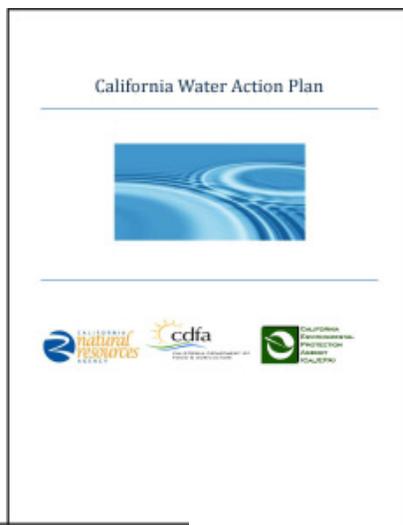


A lot of the preparations for drought overlap with preparations to mitigate flood risks and to take advantage of flood flows when we receive them, he said. "That's the way we need to think about water resources management in the future. How do we manage the extremes such that we can provide for reliable, sustainable supplies of water resources

to support our natural ecosystems, as well as the needs of Californians? And that's really what the governor's California Water Action Plan is all about."

Before any discussion about the Delta or the nexus between upstream tributaries and the delta, Mr. Cowin said it's important to set the context. "For a couple of years now, the Brown administration has been using the California Water Action Plan as that context," he said. "It is a comprehensive approach to dealing with our natural resources and our water resources in particular, that we feel is the path forward. It's comprehensive in nature - there's a lot to be done. In some ways, it's a little intimidating to look at the long list and the specific goals we've set for ourselves, but this is it."

The California Water Action Plan describes ten different sets of actions: making conservation a California way of life; increasing regional self-reliance through integrated water management across all levels of government; achieving the coequal goals for the Delta; protecting and restoring important ecosystems; managing and preparing for dry periods; expanding water storage capacity; improving groundwater



Scroll to Top

conference-at-the-state-water-board-2/?instance\_id=23)

FEB 10 Wed (http://mavensnotebook.com/calendar/action~oneday/exact\_date~2-10-2016/)

all-day Urban Water Institute Spring Con... @ Hilton Palm Springs Hotel (http://mavensnotebook.com/event/urban-water-institute-spring-conference/?instance\_id=25)

1:30 pm Interagency Ecological Program (... @ Department of Water Resources, West Sacramento, Room 119 (http://mavensnotebook.com/event/interagency-ecological-program-iep-2016-quarterly-stakeholder-meetings/?instance\_id=174)

FEB 13 Sat (http://mavensnotebook.com/calendar/action~oneday/exact\_date~2-13-2016/)

10:00 am Science Communication Seminar @ Powerhouse Science Center Discovery Campus (http://mavensnotebook.com/event/science-communication-

management; providing safe water for all communities; increasing flood protection; and increasing operation and regulatory efficiency.

Click image to download a copy of the plan.

Mr. Cowin said the hardest element of the plan may be identifying sustainable and integrated financing opportunities. "It really comes down to how we are going to pay for it," he said. "What's the most equitable way to invest in the projects and the strategies that we know we need? We've seen less federal investment in California water projects and that has left us in a lurch. Should we continue to press Congress? Hope Congress is going to provide money through the Corps of Engineers or the Bureau of Reclamation? Or other agencies? Or are we ready to take the bull by the horns and find different funding sources? Obviously every project comes down to a different equation, but trying to solve that riddle I think is probably one of the biggest linchpins in moving California water forward."

Importantly, all of the actions in the California Water Plan have to be advanced together, he said. "You can't choose your three favorites; if we're going to make adequate progress, we know that we need to confront each of these issues and continue to make progress."

"The California Water Action plan has some very specific goals that we hope to accomplish through the remainder of Governor Brown's term in office, and we intend to use that as our measure of success," he said. "I hope you all will hold us to it."

He then turned to the subject of today's event, the Delta and its nexus to upstream watersheds.



First, he explained the recent changes that were made to the Bay Delta Conservation Plan, and the decision to bifurcate the project into the California Water Fix and California Eco Restore projects. "About 10 years ago, a group of

regulators, state agencies, federal agencies, and water users started thinking about how to make substantial fundamental improvements to the Delta," he said. "That was the birth of the Bay Delta Conservation Plan. It essentially took the notion that we ought to consider all the

Scroll to Top

seminar  
/?instance\_id=183)

FEB  
**16**  
Tue  
(http://mavensnotebook.com/calendar/action~oneday/exact\_date~2-16-2016)

**9:00 am** Los Angeles County Stormwater Ro...  
(http://mavensnotebook.com/event/southern-california-stormwater-roundtable/?instance\_id=231)

FEB  
**17**  
Wed  
(http://mavensnotebook.com/calendar/action~oneday/exact\_date~2-17-2016)

**all-day** AGWA/AGWT Annual Conference: "Ev... @ Radisson Ontario Airport  
(http://mavensnotebook.com/event/agwaagwt-annual-conference-everything-aquifers-and-groundwater-management/?instance\_id=228)

**9:00 am** California Water Commission  
(http://mavensnotebook.com/event/california-water-commission-2/?instance\_id=27)

**12:00 pm** Alternative Monitoring Approache... @ Park Tower Building

*stressors that are affecting the ecosystem decline and water supply reliability in the delta, and try to address them through one comprehensive plan."*

*"Part of that process was to use a special provision in the endangered species act called section 10, habitat conservation planning in order to ground the plan in permit terms," he continued. "There are special provisions that go along with the habitat conservation; you not only have to mitigate for your project's impact but make a substantial contribution towards recovery of species. It's a voluntary contribution to go above and beyond simply mitigating for the project you're going to build."*

In return for that contribution under section 10 of the ESA, the permittees receive regulatory assurances, he said. *"We were asking for a 50 year permit term in which the terms of the plan would be in effect,"* he said. *"We tried to develop that plan for many years; we spent a whole lot of money and eventually came to the realization that given the uncertainty that climate change is inflicting and the way the Delta is changing, it was impossible for us to come up with a durable plan that would last 50 years, that didn't require such tremendous up-front investment on the part of the plan participants to make it affordable."*

Ultimately, the conclusion was made within the Brown administration that the Section 10 habitat conservation planning approach was too big of a lift, he said. *"Endangered Species Act regulations and statutory requirements just didn't give us the room we needed to craft a plan that would work so we decided to break down the pieces,"* he said. *"That was the birth of California Water Fix and California Eco Restore. Essentially, we've gone back to a normal Endangered Species Act Section 7 approach to California Water Fix, so we will provide mitigation for our impacts of our project. We also have committed to California Eco Restore which has a goal of restoring 30,000 acres within the Delta in the next 5 years."*

*"This doesn't mean that the administration is not committed to a comprehensive approach to the Delta and to the broader strategy needed for California water resources as outlined in the California Water Action Plan,"* he said. *"What it does mean is that we acknowledge that we have to address the appropriate problems in the appropriate forums in order to make our way through all of the process necessary and we've got to take it in a more step-wise approach."*

Turning to the issue of improving Delta conveyance, Mr. Cowin said that there are many stressors affecting the decline of the Delta and the populations of covered fish, one of those being the operation of the state

(http://mavensnotebook.com/event/alternative-monitoring-approaches-for-large-bay-delta-estuarine-wetland-restoration-projects-adapting-to-uncertainty-and-novelty-during-accelerated-climate-change/?instance\_id=230)

[View Calendar](http://mavensnotebook.com/calendar/) → (http://mavensnotebook.com/calendar/)

UPCOMING CONFERENCES & EVENTS

SEARCH THE NOTEBOOK

Enter your search term here to search all posts:

Google™

Browse posts, filtering by category and/or tag:  
All Categories   
All Tags   
Submit

LIKE MAVEN ON FACEBOOK

Scroll to Top

and federal water projects. The Delta is a series of channels and islands, many below sea level, and through this myriad of channels, fresh water from the Sacramento River combines with the San Joaquin River to flow west out through the Delta.

*"The fact that state and federal water projects were designed such that their intakes are in the southern parts of the Delta has caused the pumping action to pull water from the Sacramento River side down through the Delta channels toward those intakes for the 50 years that the projects have been operating," he said. "That action causes what we refer to as reverse flows. It causes entrainment of covered fish species, and has resulted in enactment of biological opinions through the Endangered Species Act that protect against those reverse flows."*

*"Many of the conversations look at improving Delta conveyance as a water supply development project. That's not my perspective. My perspective is that this is a component of the ecosystem restoration program that needs to take place." –Mark Cowin*

This creates situations like 2012 where there were flood flows coming down the Sacramento River, but because of the concern about reverse flows, they were unable to take advantage of those flood flows, Mr. Cowin said. *"We calculated that we missed an opportunity to export about 800,000 acre-feet of water that went to the ocean but didn't serve any specific ecological purpose. That's what we're trying to address through improved Delta conveyance."*

*"We have an opportunity to modernize the way that state and federal water projects extract water from the Delta, which gets down to the fundamental perspective, or the difference of opinions," he said. "I think there are a lot of different conversations going on right now throughout different parts of California regarding the project. Many of the conversations look at improving Delta conveyance as a water supply development project. That's not my perspective. My perspective is that this is a component of the ecosystem restoration program that needs to take place."*

*"It so happens that if you are able to address this reverse flow issue through this physical solution, it does create some amount of water," said Mr. Cowin, noting that the example he gave from 2012 happens fairly often. "The more we're able to take advantage of that, the more we're able to actually improve water supply for all those Californians*

[Scroll to Top](#)

Maven  
447 likes

Like Page Share

2 friends like this

**FOLLOW MAVEN ON TWITTER**

Tweets Follow

Maven @MavensNotebook 2h  
Here's what's happening today in California water, 02/05/2016 #cawater - [eepurl.com/bPwU45](http://eepurl.com/bPwU45)

Maven @MavensNotebook 2h  
#CAWater planning in the climate change era; 400,000 winter-run salmon planned for Sacto... [mavensnotebook.com/2016/02/pic.twitter.com/92oH3VrZs8](http://mavensnotebook.com/2016/02/pic.twitter.com/92oH3VrZs8)

THE DAILY DIGEST

Tweet to @MavensNotebook

**MORE WAYS TO STAY IN TOUCH**

**TAGS**

ACWA Bay-Delta Plan Bay Delta

*that rely upon the state and federal projects without causing the current harms to native fish species that occurs because of these reverse flows."*

Another reason for pursuing this project is to add sustainability and durability for the projects, said Mr. Cowin. *"In the event of sea level rise, flood flows, or seismic events that result in failure in the Delta, we stand the risk of losing access to fresh water supplies for all of our customers, and obviously this project would help us in that regard as well."*

The project doesn't address the outflow needs for native fish, Mr. Cowin acknowledged. *"That is a key question in California today. What flows are needed for what species of fish? Both in the tributaries, how do those combine to provide for sufficient outflow through the Delta? Those flows will fundamentally be decided over time, both through the Endangered Species Act through biological opinions that directly affect the state and federal project, as well as the State Water Resources Control Board."*

Another discrepancy in the conversations is that a lot of time is spent talking about what the operational rules for the state and federal projects might look like 15 years from now if the tunnels are built, but not much time is spent talking about what is to be done in the meantime, Mr. Cowin said. *"If we don't build the project at all, ultimately, what are the flow needs going to be both in the tributaries and in the Delta? That will be the subject of the State Water Resources Control Board update of their water quality control plan which you all will be engaged in that one way or another."*

Mr. Cowin said that the Natural Resources Agency is very interested in working with upstream tributary users, water agencies, and exporters from the Delta to create a voluntary plan that can be presented to the State Board as an alternative to the regulatory approach that they're engaged in right now. *"I think it's a very important element of this plan and that needs to happen regardless of what happens with California Water Fix."*

Mr. Cowin then gave his vision for California in 20 years. *"Aside from this debate regarding California Water Fix, I personally think that improving Delta conveyance is an extremely important part of the entire plan,"* he said. *"We know with implementation of the Sustainable Groundwater Management Act, we're going to have to provide more surface flows to recharge groundwater basins if we want to continue the kind of water use that we have in California today. Without Delta conveyance, we're unable to move appropriate amounts of flow from new storage across the Delta. It provides a nexus for all of these elements of the California Water Action Plan."*

[Scroll to Top](#)

## Conservation Plan

Bay Delta Science Conference  
Bureau of Reclamation  
California Water  
Commission California  
Water Fix

## California water news

California Water Policy  
Seminar Series Central  
Valley Project climate change  
curtailments Delta inflows &  
outflows Delta Plan Delta  
Science Plan delta smelt Delta  
Stewardship Council  
Delta tunnels  
Department of Water  
Resources drought  
endangered species federal  
legislation groundwater  
guest blogger habitat  
restoration hydrology  
lawsuits and legal rulings  
legislative hearings  
Metropolitan Water District  
Public Policy Institute of California  
salmon science Senate  
Natural Resources and Water  
Committee state legislation  
State Water Project  
State Water  
Resources Control  
Board Sustainable  
Groundwater Management  
Act urban water  
conservation water allocations  
water bond water  
policy water quality water  
rights water storage  
weather and climate

### MAVEN'S PHOTO LIBRARY ON FLICKR



*"It's an extremely important part of the plan, but it's not the only part of the plan," he said. "From my perspective, I don't think that we can effectively restore the Delta ecosystem without California Water Fix. On the other hand, I don't think that we can effectively manage California water supply reliability without California Water Fix either. It truly is a vital element of the dual goals we have for the Delta."*

*"I think the east coast takes great pleasure in seeing California in crisis, but I think we've done remarkably well," he said. "Obviously there are significant challenges, and some parts of California felt it a lot worse than others, but the fact that we've made appropriate investment in California water resources over the last couple of decades have led us to a situation where we've managed 4 years of historic drought with reasonable amounts of impact on California. We'll see how we do in a potentially dry 2016, and there's always more to do, but we ought to give ourselves some pat on the back for the work we've done to make California a more resilient place already."*

Continued advancement of integrated regional water management is the path forward to break down the silos and get local agencies to work together on a regional basis, he said. *"I think there truly is untapped potential for improving our water resources management through those efforts,"* he said *"I'm hopeful that kids today that have grown up through these last 3 or 4 years will take a better understanding about how precious our water is moving forward, and we'll be able to count on a greater conservation ethic in the future. I think we have to increase investment in water recycling and storm water capture in our urban areas, and improving watershed and forest management in the upper watersheds has got to be an important part of the plan."*

Mr. Cowin said the sustainable groundwater management legislation was one of the most important developments in California water that will happen during his career. *"There are a lot of challenges out there to get the sustainable groundwater agencies in place and develop these plans;*

**"From my perspective, I don't think that we can effectively restore the Delta ecosystem without California Water Fix. On the other hand, I don't think that we can effectively manage California water supply reliability without California Water Fix either. It truly is a vital element of the dual goals we have for the Delta." –Mark Cowin**

[Scroll to Top](#)



[Click here to visit Maven's photo library on flickr.](#)



#### MAVEN'S TROPHY CASE



#### RSS FEED BY CATEGORY

- [Everything](#)
- [Featured Articles](#)
- [Daily Digest](#)
- [Other News](#)
- [Weekly Features](#)
- [Meetings and Seminars](#)
- [Science](#)



*I know in some places it's going to be harder than in other places."*

Successful investment in proposition 1 dollars in storage and other projects that add flexibility back to the system that's so sorely needed right now is an important part as is better investment in a robust science program and more adaptive management practices to guide regulation and investment, he said. *"Sorting out how we intend to invest in California water resources is probably one of the most important things we can make progress on,"* Mr. Cowin concluded.

*"I appreciate your time ... "*

## CAMPBELL INGRAM, Executive Officer for the Delta Conservancy

Campbell Ingram then took the floor to talk about the role of the Delta Conservancy. He began by saying that he agreed with Mark Cowin that a lot of conversations today are people talking past each other. *"I think if we're going to be effective, we have to get more effective at having the conversations, and become more efficient about how we deal with these issues, because we need to make progress quickly."*



The Delta Conservancy is the newest state conservancy, and it plays a similar role to the Sierra Nevada Conservancy, Mr. Ingram said. *"We serve our geographic area, which is the legal delta and the Suisun Marsh,"* he said. *"We have dual responsibilities. The first is to be a lead agency, a role we share with some of the other agencies for ecosystem restoration;*

*the second is to support efforts that promote environmental protection and the economic well-being of all Delta residents."*

The legislature gave the Conservancy 12 very broad mandates, but there are three primary ones: do ecosystem restoration, preserve and protect ag-lands and working landscapes, and look for opportunities to increase recreation and tourism in the Delta, he said. *"We're governed by 23 member board, 11 of those members are voting members; there are 5 county supervisors, one from each of the 5 counties in the Delta, the*

[Scroll to Top](#)



Fiercely independent.  
Neutral and nonpartisan.  
The Switzerland of  
California water.

*governor's appointees, senate appointees, and assembly appointees, and then the Secretary for Natural Resources, and the Director of Finance."*

*"You can envision us as an implementer of some of the plans, certainly for parts of California Eco Restore," he said. "We try to work with all of the agencies and entities – the Natural Resources Agency, the Department of Water Resources, Department of Fish and Wildlife, the Delta Stewardship Council, the Delta Protection Commission, and of course the counties, trying in some way to bring a coordination and integration to a lot of the efforts that are ongoing."*

Proposition 1 brought \$50 million to the Delta Conservancy for ecosystem restoration, watershed, water quality, and ag sustainability projects as they relate to water in the Delta, said Mr. Ingram. *"Typically when conservancies are created, there is a bond that passes that provides funding for the conservancy; the water bond that was intended to pass in 2010 was postponed to 2012 and then was postponed to 2014,"* he said. *"So essentially for the last 5 years we have been doing a lot of coalition building, relationship building, and bringing other resources, federal grants and other state grants to priority issues in the delta. But it's very gratifying now to have a large block of funding to be able to realize our objectives."*

The Conservancy received 17 proposals totaling about \$15 million for restoration projects in the Delta. The Conservancy plans to disburse about \$9 million per year for the next 5 years. The proposals are concept proposals at this stage; the board will consider those projects on November 4th to decide which proposals will move forward and be asked to provide full proposals. The Conservancy hopes to make final awards in March of 2016.

*"We are also working closely with Department of Water Resources and Department of Fish and Wildlife to coordinate all of the Prop 1 funding for the Delta,"* he said. *"In total, there's about \$423 million in Prop 1 for restoration and flood work in the Delta over the next 5-10 years. So we want to work with all those with some jurisdiction over those pots of money, to coordinate and integrate that money, so it's not just random pots of money working on the landscape, but there's a larger plan."*

He then turned to California Eco Restore, the counterpart to the California Water Fix project. *"California Eco Restore is a continuation of the recognition that we need to try to restore some semblance of ecological processes in the Delta,"* he said. *"It's been fundamentally changed from an enormous wetland to a very productive agricultural*

[Scroll to Top](#)

*system, but if we want healthy ecosystems and if we want to try to reduce the problem with native species, we need to restore some semblance of ecological processes back into the Delta."*

California Eco Restore proposes to restore 30,000 acres in the Delta, about three-quarters of that is associated with the biological opinions for delta smelt and salmon for the state and federal water projects in the Delta. Those projects are being led by Department of Water Resources and the Bureau of Reclamation and are funded by the water contractors who are responsible for implementing the biological opinion; that leaves about 5,000 acres that is not already in progress that can be funded by Prop 1, he said.

*"There's about 3,500 acres for managed wetlands for carbon emission reduction, carbon sequestration, and subsidence reversal in the Delta," he said. "The Delta Conservancy's been very active in this area for a long time. We helped coordinate the production of a California wetland protocol that would allow for verification of carbon sequestration and emission reductions around using managed wetlands or rice in the delta, as well as in the coastal areas of California. The protocol is in draft form currently, being reviewed by the American Carbon Registry. Hopefully once approved, it would then go to California ARB and hopefully be adopted into the compliance market as well."*

The intent is to get the incentives right so the producers and farmers in the Delta can seriously consider changes in their practices that would result in a significant reduction in carbon emissions for California, sequestration, and even subsidence reversal, he said. *"In*

---

“We’re bringing together local stakeholders, subject matter experts, and the agencies, and we’re trying to take advantage of the computational power available today in data platforms, data visualization tools, and even decision support tools ... The intent is to do a much better job at comprehensively identifying scientifically what we want to do and why, how we think we’re going to do it, and how that works within the current landscape so we can start to restore ecosystem processes and bring back a functioning ecosystem, but to do it in a manner that is least disruptive to the current systems.” –Campbell Ingram

---

Scroll to Top

*the central Delta, there's 200,000-250,000 acres that are deeply subsided, so it's a great opportunity. California Eco Restore recognizes that need, and puts that target of 3,500 acres out in the near term."*

Another component California Eco Restore directs the Delta Conservancy to facilitate locally led regional planning efforts to identify where restoration should happen in the Delta. *"With the biological opinions and projects that are happening now, we know that we have to continue to do work in the Delta, but we also need to be able to put that restoration work in a broader context. What does it mean on the landscape? How do we interconnect these projects, and how does it result in a functioning ecosystem over time?"*

The Delta Conservancy is embarking on two pilot efforts, one in the Cache Slough region and the other in the northeast Delta that are comprehensive, collaborative, regional planning efforts for where restoration can happen in the Delta. *"We're bringing together local stakeholders, subject matter experts, and the agencies, and we're trying to take advantage of the computational power available today in data platforms, data visualization tools, and even decision support tools; we can bring all the information together in real time with all the stakeholders and identify, what is the scientific basis for the restoration we want to do and what's the ecological potential of these sub regions? But then, equally as important, take a look at the ag system that's in place. Where's the high value agriculture? The low value agriculture? Drainage issues? Ag infrastructure? How do we try to make sure we can do restoration with the least amount of impact of major land use in the Delta?"*

Mr. Ingram pointed out that there are many other factors to be considered as well, such as the flood protection system, the surrounding habitat conservation plans with their overlapping objectives, and recreation opportunities. *"The intent is to do a much better job at comprehensively identifying scientifically what we want to do and why, how we think we're going to do it, and how that works within the current landscape so we can start to restore ecosystem processes and bring back a functioning ecosystem, but to do it in a manner that is least disruptive to the current systems."*

Mr. Ingram then discussed the Delta Conservancy's coordination efforts with the Sierra Nevada Conservancy and Coastal Conservancy. Conservancies typically function in large geographic areas with many government entities, and one of the roles that they play is to try to coordinate, integrate, and leverage efforts to initiate

[Scroll to Top](#)

conversations to get people working together better, he said.

About 2 years ago, the Delta Conservancy began thinking the connectivity between the upper watershed, the middle watershed, and the lower watershed, and all those ecosystem services that go both ways. *"We thought that maybe the conservancies might be a place to try to stimulate some of that conversation,"* he said. *"So in March of 2014, we had a joint board meeting with the Sierra Nevada Conservancy down in Sacramento, and we had agency representatives, legislature, and local stakeholders and the board members all discussing the significance of the connectivity of these regions. Most of that discussion centered on water supply, water quality, and climate change, and how that's going to affect all these issues."*

They held a similar joint meeting in June of this year with the Coastal Conservancy that focused on the same issues and format. *"The ultimate result of that process was a joint resolution for both meetings, which had a lot of "whereas's" in it of course, trying to recognize the importance of what we're trying to do, but ultimately, it was a recognition that we all need to focus on these interconnections between the Sierra, the Delta, and the Coast, and that we need to work collaboratively to try to address water quality, water quantity, and climate change issues."*

*"Further, it was a call on policy and funding decision makers to similarly recognize those connections in our funding strategies and our funding programs to make sure there are resources available to try to address these issues,"* Mr. Ingram said. *"Lastly, it committed us collectively to work together to identify projects that are significant, and recognize those connections, and potentially jointly fund them into the future."*

*"That's essentially the Delta Conservancy's role and where we fit into Eco Restore, and how we hope to be beneficial in creating a place where conversations can happen and really thinking more about that upper, middle, and costal connection between all of our areas,"* he said.

*"Thank you very much, it's been great being here."*

## **DON NOTTOLI, Sacramento County Supervisor**

Don Nottoli began by saying he would build upon the information presented by the previous two speakers and hopefully relate that geographically to the watersheds in the Sierra Nevada where people make their homes and the highways and the waterways that cut across the geography and topography, and to

[Scroll to Top](#)

Sacramento-San Joaquin Delta. *"I want to do that in a way that helps folks to understand the relevance both in the Delta and certainly to those folks in the upper watersheds, as well as the folks that rely on water that runs through the Delta."*



He then gave some facts about the Delta. *"The Delta encompasses about 700,000-715,000 acres,"* he said *"It's about the size of the state of Rhode Island, a little smaller, so if you want to imagine that all being compressed to 1,100 square miles of land area, surrounded by about 1,100 miles of levees. We recognize that there certainly are fragilities to the levees, and the system that protects a lot of the people and the ongoing activities in the Delta. It's also important to recognize that about a half million*

*people reside in the legally defined Delta, which resides in parts of 5 Delta counties -Contra Costa, San Joaquin, Sacramento, Solano, and Yolo Counties."*

*"About 4 million people reside in those five counties, many of them live outside of the Delta, but there's relevance to the connectivity to this place that gets a lot of attention, and the discussion about conveyance and tunnels, and the impacts both upstream and downstream,"* he said.

The Delta is a place not unlike the towns, communities, and the cities in the areas that you serve within your water agency jurisdictions and where people make their lives, Mr. Nottoli said. *"They have done so for generations; they farm there, they recreate there, their kids attend school there, they attend their churches, and there are many businesses both small and medium, and even some large sized businesses that support both the agricultural and recreational aspects,"* he said. *"It's an area where commerce occurs; people get up in the morning just like we all did this morning, we travel somewhere to go to work or to the activities of the day, and we return home there."*

I make that point because I have learned about how water matters, and how important it is to the essence of life and to the day to day activities, he said. *"When we talk about the Delta, it's not just a place that's a hub for movement of water; it's not just a plumbing fixture,"* he said. *"One of the concerns I have is sometimes there*

[Scroll to Top](#)

*about the Delta and about its ability to survive environmentally but also because of the fragility of the aspects of having levees that protect the area. People will often say, well if it's not the earthquakes or the floods going to get you, it'll be sea level rise. And yes, granted, all those things are risks, but we live with risks in our lives in all different respects."*

*"In my view, it's a very precious place, and it depends on the water that emanates in the watersheds above it," Mr. Nottoli said. "That water quality and that water supply is just important to the Delta as it is to the folks in the Mountain Counties, as it is to the folks in Central California, as it is to those in Southern California. So the reason I try to put a face to that is when we talk about it, it's not just about a project that may have massive impacts on the landscape or be beneficial to some as it relates to movement of water to areas that rely upon the water that moves through the Delta; it's also a place where people live, have made their lives as a settlement of California. And so I think it's very important that that not get lost in the conversation."*

Mr. Nottoli pointed out that this has been legislatively recognized. *"With the coequal goals that were embedded in the Delta Reform Act in 2009, it's embedded in the water code, and it's the structure in which we're working as it relates to both the California Water Fix and Eco Restore, and BDCP prior to that,"* he said. *"As a part of that, in calling for water supply reliability and ecosystem restoration, there was a very important modifier as a part of that. Those two coequal goals need to be achieved in a manner that's consistent with the protection and the enhancement and preservation of some very important aspects of the Delta: Delta life, Delta commerce, agriculture, recreation, the natural environment, and the cultural and historical values that are very much a part of the Delta as a place."*

*"And you could say the same about any community and any place else*

---

*"When we talk about the Delta, it's not just a place that's a hub for movement of water; it's not just a plumbing fixture ... it's not just about a project that may have massive impacts on the landscape or be beneficial to some as it relates to movement of water to areas that rely upon the water that moves through the Delta; it's also a place where people live, have made their lives as a settlement of California." –Don Nottoli*

---

Scroll to Top

*in California," he said. "Those places are important. They're our homes, and water obviously is very critical to that."*

As a local supervisor who has represented folks on the Sacramento County Board of Supervisors, he's learned a lot. *"The takeaway that is really important to me is that, as tough as the issues are, the solution set, in my experience in local government, tells me that you have to continue to work towards something that may have consideration for risk, the economic impacts, the environmental impacts, and the people who inhabit the state, Sacramento County, and the towns and communities in the mountain counties and elsewhere."*

Mr. Nottoli said he has reviewed the Governor's California Water Action Plan, and there are many good things in it. *"There are strategies in there that the counties and many folks in this room, if not all, could embrace,"* he said. *"Whether it relates to storage or to conservation or recycling or self-reliance in our regions and working to do that, and whether it's the financing is the question this year, or some of the other challenges, we can really work together to find solution sets that address our immediate communities and certainly that address the broader statewide issue."*

But the conveyance issues ties back to the tunnels, he noted. *"It's something that in our county and the other Delta counties has been very problematic as it relates to the project,"* he said. *"It's not only what we see are the detriments, but ... the benefits would accrue to a very thirsty state population. We believe that there are better strategies."*

Mr. Nottoli pointed out that 15 years ago in Sacramento County, 40 agencies came together to enter into the Water Forum agreement because of concerns about flows in the lower American River, as well as groundwater sustainability in the region. *"We really looked at what we could do at the county level, working with our regional partners,"* he said. *"We acknowledged the Sacramento River and the American River, and that they provide great benefit, but they also provide challenges for both our upstream as well as our downstream neighbors, and for us that are right in the middle of the equation."*

*"So we've worked very hard to put together a groundwater management plan in different segments of the county, and we worked cooperatively after a 30 year lawsuit with East Bay Municipal Utility district to preserve the flows in the lower American and to actually take the water from the Sacramento that provides*

---

*"We believe that there are solution sets that would allow us as Californians to work together, recognize high decisions,*

[Scroll to Top](#)

*water in certain dry years for that entity, but also brought surface water to match our conjunctive use program in the southern part of Sacramento County," he continued. "We, like all of you in this room, have worked very hard in recent years because of the drought, and I think it's good common sense to conserve and to do things that really do protect our water source, and to recognize it as the asset that it is."*

Mr. Nottoli said that as he was arriving today, he was looking for a point of reference for the magnitude of the size of the tunnels. *"Some of the larger oak trees in the parking lot probably stand 40*

*feet high, so imagine two of those in circumference, 35 miles long bored underneath the Delta," he said. "The impacts of construction for year after year, and what that would do to local communities, let alone, where the flows would come from that match the expectation of how much water would then be channeled through those tunnels."*

Our concern is that while the costs may not be borne financially by those in the Delta, the impacts of construction will, Mr. Nottoli pointed out. *"The question that we pose to folks is would we be better to invest that money in some of the other solution sets that are out there, including storage," he said. "Our county supports storage in the state of California, recognizing that we're in a lower region and it might not make sense at the ground level in Sacramento County, but you can do that in the watersheds and actually have better operation in and through Delta context."*

*"We believe that there are solution sets that would allow us as Californians to work together, recognize the tough decisions, and not to have a region of the state or the Delta bear the brunt," he said. "We believe over time because of the investment of levees particularly in the lower Delta, that if there's not an incentive to continue to stay in that common pool, even though some of that water would continue to move through the Delta, we ought to look at the investment in the through delta strategy, recognizing there are environmental impacts that need to be addressed today. Going forward, that would be a much better place*

and not to have a region of the state or the Delta bear the brunt ... If we're going to make the investment, let's be smart about that investment and work together with the Delta counties and the communities in the Delta and let's find a solution that we can all get behind and support." –Don Nottoli

Scroll to Top

*to put our money, our resources, and our efforts into working cooperatively rather than having a region of the state be sacrificed for other regions of the state."*

*"As an elected official with fellow supervisors in the audience, and other water agency boards of directors, members, and so forth, the local piece of this is so very important," Mr. Nottoli said. "We're all Californians, yes, but we also have our regions and our home communities ... We are very concerned about the degradation to the Delta over time. Maybe doing nothing's not an option and that's not what we're arguing; what we're arguing is that if we're going to make the investment, let's be smart about that investment and work together with the Delta counties and the communities in the Delta and let's find a solution that we can all get behind and support."*

*"It's going to take a willingness by you folks those you represent to be a part of that as well," he said. "Because I wouldn't want your areas of the state being sacrificed for other areas, whether central California, southern California, for the benefit of some other place. Not everything's a win win in life, I get that, but I do believe very strongly that we need to recognize people's homes, respect the local governance, and respect the fact that mother nature's going to bring what she brings, and she hasn't brought a lot of water or precipitation or snow in recent years ... "*

*We need to be smart about the way we spend our money and about the way we do projects, and work together collaborative and cooperatively, he said. "That's what I would ask on behalf of the Delta communities is to find a path that doesn't leave us in a place where over time we see life degraded, agriculture impacted, and the local economies impacted to the degrees that those communities aren't as livable as they are today," he said. "That is not what you would want for your communities, nor what we would want for the Delta communities."*

*"So with that I'll stop ... "*

## **ROGER PATTERSON, Assistant General Manager, Metropolitan Water District**

*"California is such a huge, diverse state that it is really hard to have a conversation on any subject," Roger Patterson began. "Every time I'm up into the hills and I talk to folks, I like to call it a tree to tap because there is a true relationship between what goes on up in the watersheds and what's at the tap. Most people have no idea about that relationship, but it's an important one, and I think it gets short shaft."*

[Scroll to Top](#)

We need to take that broader view because we are in this together, he said. *"We all need to look out for our own interests, but in the bigger picture, the state and the state's economy is really affected by the collective decisions that we make, and we need to do our homework and need to be smart about that,"* he said.



Mr. Patterson said he's been at Metropolitan Water District for about 9 years. *"It's a very interesting, unique organization. It's the regional entity for southern California. Our service area includes 19 million people, so 1 out of every 2 people in California live the in the Metropolitan Water District. It came about in*

*1928 when folks in Southern California realized that if they were to continue to grow, and the economy in southern California was going to grow, water supply was going to be one of the factors that needed to be dealt with. So Metropolitan was created essentially to build the infrastructure to bring in part of California's Colorado River supplies."*

Metropolitan is a wholesale water provider with 26 member agencies in Southern California that deliver the water out to the businesses and people that live there; many of those that have sub-suppliers with about 300 water agencies down on the ground. Metropolitan is governed by a 38-member board.

Southern California uses about 4 million acre-feet a year with about 25% coming from the Colorado River, 30% through the State Water Project, and about 45% are water supplies that have been developed locally in southern California, he said.

The drought in the late 80s and early 90s was a real turning point for the way Metropolitan has done business. *"Prior to that, the general more was to conserve water to the degree that you can, but look to the Colorado River and the State Water Project to meet our needs for growth,"* he said. *"The drought in the 90s made it pretty clear that that wasn't a business model that was going to work going into the future. So our board adopted a portfolio approach called our Integrated Resources Plan that*

[Scroll to Top](#)

*basically said that all of our future growth needs are going to have to be met with local projects."*

So Metropolitan ramped up their conservation programs and provided incentives to get people to conserve water, Mr. Patterson said, noting that there are about 50 devices now Metropolitan provides incentives for people to purchase and implement that will conserve water.

It was a huge year for turf removal in Southern California, Mr. Patterson said. Metropolitan had started providing incentives for turf removal over a decade ago. Two years ago, they increased it to \$1 per square foot, and after the governor sent out a statewide goal of removing 50 million acre-feet of turf statewide, Metropolitan increased the incentive to \$2 a square foot with some member agencies putting even more on top of that.

*"All of a sudden, we had people that could get up to \$3.75 to remove one square foot of turf. It took off like crazy. In one week, we had \$49 million in applications come in. It was just crazy," he said. "Normally we spend about \$20 million a year on all of our conservation efforts. The board, because of the drought, had upped that to \$100 million. ... After about 6 weeks of pretty tough decision making, the board decided to add \$350 million to that particular effort. And we have now committed all of that. And we got a \$19 million waiting list. ... We figure it's about 170 million square feet of turf that will be removed. It's transformational. We want people to realize where they live. Southern California is in a desert. People need to understand that you have to take care of every drop of water that you get, and you've got to realize the kind of climate you live in."*

*"The next debate's going to be over how much are we going to put in these programs in our next 2-year budget," he said. "We will see. I'm sure the board will make significant investments in that."*

Metropolitan adopted their first Integrated Resources Plan in 1996 and started investing in a diverse portfolio of local projects, such as waste

---

“Our board now has started a conversation about Metropolitan partnering with Los Angeles sanitation district in building a new 150,000 acre-foot recycling facility. It would by far be the largest ever built in the world. ... Is it going to be expensive? Yes, it's really going to be expensive to do. But something that we need to think about.”—Roger Patterson

---

Scroll to Top

water reuse, groundwater cleanup, and increased conservation efforts. *"We've been able to add 4 million people over that 25 year period in our service area and not rely on any additional imported water, so it's working. We're in the process right now of updating that plan for the next 25 years, and the board has set out the goal of the same thing. We're not going to be looking at increasing imported water into the service area. We're going to make those investments in southern California to meet those needs."*

Metropolitan's conservation programs are reducing demands by about a million acre-feet per year, Mr. Patterson said. *"A couple years ago when I looked at our total water supply, the State Water Project was well under 1 MAF; the Colorado was under 1 MAF. So our single most important thing to getting through the drought was conservation that we had been doing since the late '80s."*

Metropolitan has also invested in storage. *"A lot of folks say that it's hard to build storage and it is," he said. "But we have increased the amount of storage for Metropolitan from just a little over 300,000 acre-feet to now more than 5 million that we have available to us. That has helped us these last few years, because when you do have a good year, you can be adding to your savings account. Storage within Metropolitan has been a big investment, but it's been one that has paid off. We are supportive of storage in general, recognizing that state-wide, we need to add additional storage to the system."*

With respect to waste water recycling, Mr. Patterson said that those who use are dumping treated wastewater into the ocean need to consider cleaning that water up and putting it back to use. *"If you're inland and you recycle, it has less effect, because if you don't recycle it, it goes downstream and it meets somebody else's supply," he said. "But when you're on the ocean, I think you have a responsibility to recycle. We're doing 450,000 acre-feet a year recycling through our various agencies. Our member board now has started a conversation about Metropolitan partnering with Los Angeles sanitation district in building a new 150,000 acre-foot recycling facility. It would by far be the largest ever built in the world. ... Is it going to be expensive? Yes, it's really going to be expensive to do. But something that we need to think about."*

Metropolitan is adding 150,000 people a year to the service area mainly from birth rates, so there will be 1.5 million people in 10 years. *"That means we have to have a water supply available to meet that extra million and a half people that show up in 10 years," he said. "Which means we've got to do this recycling*

[Scroll to Top](#)

*things. The Carlsbad ocean desalinization plan is coming online in the next few months that's 50,000 acre-feet. It's those kinds of investments, even though they're really expensive, that we have to meet to meet that new demand going forward."*

It's also important to have reliable and stable supplies from the Colorado River and the State Water Project, Mr. Patterson said. In 2003, California entered into the 4.4 plan which essentially means that California is legally entitled to 4.4 million acre-feet a year off of the Colorado River. The majority of that water goes to agriculture in the Imperial and the Coachella Valley, but 550,000 of that is for Metropolitan Water District. This was significant because for 50 years, California had access to excess water that other upstream states weren't using, but that water went away, he explained.

*"As a result, we lost half of the water supply that we have enjoyed on the Colorado River over 50 years, in 1 year. It was a jolt," he said. "There was supposed to be what was called a soft landing, which means we'd come down over a few years, but not so much. It hit, this drought started, we're in the 14th year now in the Colorado River of dry times. So what our board did is get out the checkbook and go start talking to people. We now have programs with the agricultural users in California who receive Colorado River water where we've invested in their systems to improve conservation - we've lined canals, we have voluntary following programs. As a result, this year, we got 1.1 million acre-feet. So we've been able to stabilize that supply, and if we can hold it at at least 900,000 in the decades to come, we can make this plan work of meeting demand through local projects in southern California."*

The State Water Project is next, and it's even more vexing than the Colorado River. *"We have been in the middle of that discussion of what do we do, how do we make the system work, and what do we do about conveyance which has been on the agenda for 60+ years," he said. "If you look at the average amount of water available in this watershed, about 4.5-5% on average comes to Southern California. But it's a critical piece of making the economy and meeting the needs in Southern California. So we're committed, it's expensive, we're looking at adding roughly \$200 an acre-foot on every acre-foot of water that moves through the projects."*

The water for the California Water Fix will come from the same place it has been coming from, such as Lake Oroville, but more importantly, it's about the excess storm flows that can occur, said Mr. Patterson. *"Even as bad as this year was, we had 2 storms that*

[Scroll to Top](#)

*for almost 2 weeks. As dry as it was, it was above any environmental requirements or fish flow standards and we could have picked up 200,000 acre-feet out of each of those storms. It's a no harm, no foul thing, and that's really what this does. You're investing in the big gulp, so when you have excess storm flows, you can pick up some water."*

Metropolitan is a big supporter of California's water right system, Mr. Patterson said. *"First in time, first in right, even though we know we're last. We learned that on the Colorado River. But to make a functional system of water rights work, you have to honor that first in time, first in right."*

Metropolitan also supports the ability of upstream areas to exercise the area of origin. *"We support that because it brings stability to the system. And that means if someone up in the tributaries has a need for new supplies, they can develop that, and they cut in line ahead of people like us in the projects. That's the way the law is structured, we're supportive of that because it works."*

*"When we restored our Colorado River supplies, we were able to do it because we knew who the senior people were," he said. "We knew that Palo Verde Irrigation District had the senior water rights on the river so we entered into a conversation with them about what could they do to make water available at certain times we may need it in way that worked for them. That's the key – that worked for them."*

*"We were able to do that because we knew who had what rights and that lets people get together and work out voluntary agreements," he said. "If you don't have that, you're always in turmoil, and collectively you don't get anywhere. So I think it's important that people talk to each other."*

Mr. Patterson encouraged people to come down to Southern California and see how Metropolitan does business with water. *"I think you would be impressed with the way we manage it," he said. "You would also probably not be surprised with how little most of our population knows about what happens. Everybody has their daily life, they've got to take care of their issues, but one thing we try to do is make sure for that every*

---

*"Metropolitan is a big supporter of California's water right system – First in time, first in right, even though we know we're last. We learned that on the Colorado River. But to make a functional system of water rights work, you have to honor that first in time, first in right." –Roger Patterson*

---

Scroll to Top

*drop of water we get into our service area, we take good care of it. Because we know that we're all connected, and it really does get down to the tree to taps."*

*"So I appreciate the chance to be here ..."*

## **ARA AZHDERIAN, Water Policy Administrator, San Luis & Delta Mendota Water Authority**

Ara Azhderian then talked about why the San Luis & Delta Mendota Water Authority invested in the Bay Delta Conservation Plan and what's at stake for those he represents.



He began by giving some basic information about the San Luis & Delta Mendota Water Authority. The Authority's service area lies in the central part of the state,

straddling the coast range, extending from Tracy in the south Delta down to Kettleman City and includes the Silicon Valley and San Benito County. The San Luis & Delta Mendota Water Authority also serves the second largest contiguous wetlands in the United States after the Everglades, as well as 1.1 million acres of agriculture on the west side of the San Joaquin Valley.

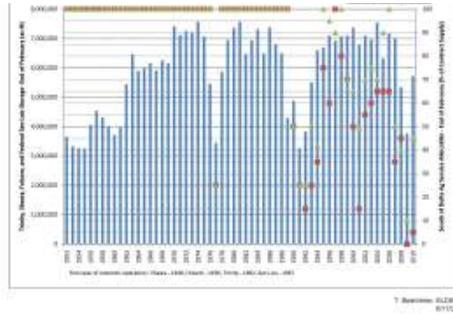
*"We serve agriculture primarily, but also wildlife refuges and the Silicon Valley," he said. "It's not just about the big metropolis here, it's also very much about small agricultural, rural, often disadvantaged communities along the west side. These communities have borne very much the brunt of the changes that have occurred over the last 25 years, primarily changes resulting from regulatory choices, by and large by the state and federal governments."*

California leads the nation in over 80 different crops that are grown with over a dozen being exclusive to California, he said. *"I think oftentimes outside folks don't think of California as being an ag state, but it certainly is - it's the number 1 ag state in the nation,"* Mr. Azhderian said. *"Nine of the top ten ag producing counties in the nation are in California, and five of those counties are within our service area. So agriculture is a huge thing for us."*

The reason agriculture chose to invest \$50



million in the Bay Delta Conservation Plan comes down to the changes that have occurred over the past 25 years, Mr. Azhederian explained, presenting a chart showing CVP storage and agricultural



allocations. "For the first 40 years or so, the Central Valley Project serving San Joaquin Valley, our water supply and our water supply reliability were nearly perfect," he said. "People want to conflate supply and reliability, but they are extraordinarily different. Except for in the 1977 drought, the federal project was able to provide full contract supplies without exception. So people were getting what they signed up for, what they bought and paid for, and are still buying and paying for."

"In the 1990s, we began to see huge changes in the regulatory environment, primarily driven by three federal statutes: implementation of the Endangered Species Act, passage of the Central Valley Project Improvement Act, and amendments to the Clean Water Act," he said. "Supplies went from 100% to about 65% of average, and the reliability went from very reliable – you didn't even give it a second thought – to very unreliable. It's really this change over time that fundamentally changed not only the region we serve and the communities that are there, but really was the catalyst for why we moved on the Bay Delta Conservation Plan."



"Prior to the Bay Delta Conservation Plan, there was a large effort to address these changes that was called Cal-Fed," he said. "As these changes were occurring, members of the environmental community, the urban community, and the agricultural community recognized the need to come together. I think

one constant theme you're going to hear [Scroll to Top](#) us here today is the

*need to communicate and collaborate. Our partnerships are important. And they came to an accord that was formalized in the creation of the Cal-Fed program."*

*"The Cal-Fed program attempted to resolve some of these issues as well as the environmental issues for a number of years, but by the mid-2000s, having spent several billion dollars, we were not seeing the sort of progress that we thought was important," he said. "So the water agencies and the federal agencies got together and decided that it was time to develop a plan that more narrowly focused on the needs of the Delta and that could promote and move forward water supply projects. At the time, the peripheral canal or the twin tunnels as it is today wasn't even on the radar. It was more about picking up projects that were being contemplated in context of Cal-Fed and trying to move them forward."*

Mr. Azhderian said there were a number of reasons why the Bay Delta Conservation Plan failed. *"I think there are a lot of reasons for that. Mark touched on the issue of climate change and the uncertainty associated with that. I think it's a little bit more than that. Certainly the uncertainty did drive an unwillingness to embrace a comprehensive approach, and while the tunnels get a lot of ink, there were 22 conservation measures there ultimately attempting to take on a myriad of ecological stressors, including habitat restoration. Ultimately we couldn't get the regulatory agencies to recognize the value of that, which is interesting. We're a little schizophrenic on the value of habitat restoration. I think the Delta Conservancy and the California Department of Fish and Wildlife value it far more than federal agencies do, but there is a disconnect there. We haven't found a way to translate habitat restoration into improved water supply, even though we've been told for decades that the path forward to restoring water supply is restoring the environment."*

---

“Ultimately we couldn't get the regulatory agencies to recognize the value of that, which is interesting. We're a little schizophrenic on the value of habitat restoration. ... there is a disconnect there. We haven't found a way to translate habitat restoration into improved water supply, even though we've been told for decades that the path forward to restoring water supply is restoring the environment.”—Ara Azhderian

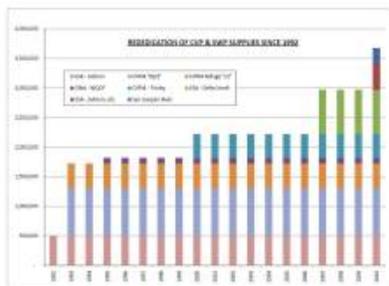
---

[Scroll to Top](#)

Another issue is that conservation planning is a very different beast, Mr. Azhderian said. "It's breaking out of boxes, it's being creative and trying new things, and experimenting, failing, and trying again," he said. "We brought the Section 7 regulatory folks to the BDCP table ... Now these are good people, they're well-intended, but these are people who build boxes. They don't break them open. And so I think fundamentally, we didn't have the right sort of mindset in trying to bring creative and comprehensive solutions."

"Oftentimes, we're trying to fix regulatory problems with concrete and steel," he said. "Mark had talked about the need to face the interim, and I think for us, the interim is very much about how do we improve the regulatory environment?"

Mr. Azhderian used the year 2013 as an example. "It's March 22nd, and the Bureau of Reclamation announces that it's going to decrease allocations for ag service contractors from 25 to 20 percent as a result of extremely dry conditions," he said. "The water supply on March 22nd, 2013 in Shasta reservoir is 106% of average. In 1977, we had a 25% plus supplies, and emergency supplemental supplies were made available that year. So in 2013, with 2.5 MAF more water in storage, federal government was only able to deliver 20% for contract supplies. This isn't about the reservoir, this isn't about pumps or canals; we're farming less acres, we're farming more efficiently than ever. This is about how we've changed fundamentally the ability of these projects to operate to serve the needs that they were originally envisioned to serve."



"It is the sum of policy choices that have been made over the last 25 years. Beginning with cold water pool for winter-run salmon, the Delta smelt, and all the way through and into the biological opinions

today," he said. "So on a daily basis, given the constraints that they have to contend with, the operators of the Central Valley Project have really done a pretty remarkable job in trying to get us through these droughts. We certainly don't agree with all the decisions that have been made, but the work and effort from the operators at DWR and Reclamation has been extraordinary."

"The State Water Resources Control Board Quality Control Plan

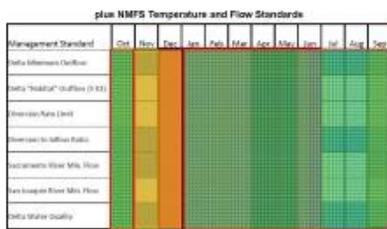


standards affect project operations 365 days a year," he said. "Layer on to that discretionary actions under the Central Valley Project Improvement Act, layer onto that the pumping restrictions for longfin smelt under the California Endangered Species Act, layer onto that pumping restrictions for Delta Smelt under the federal Endangered Species Act, pumping restrictions for salmon under the federal Endangered Species Act, pumping restrictions for steelhead under the federal Endangered Species Act, outflow requirements for Delta smelt under the Fish and Wildlife Service biological opinion, and temperature control standards under the National Marine Fisheries Service."



Bay-Delta Standards as set by D 1641

When Regulations Affect the CVP & SWP

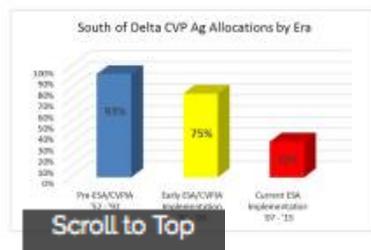


Layers of regulations affect project operations at all times of the year.

"We've fundamentally changed how these projects operate," Mr. Azhderian pointed out. "We haven't changed the size of the reservoirs, the canals, or the pumping plants; we've changed how we use them, and that is driving the shortages

that we're seeing today more than any other factor. But we do continue to try to find brick and mortar, concrete and steel solutions to these problems. It is going to take decades to implement and modernize our infrastructure, this is a key area that we have to focus in on moving forward in the interim."

The result for those that have seen their water supply reliability go from somewhere around 75% of their allocations through the 1990s and into the mid-2000s to



close to a 30% allocation over the last decade. *"This is not sustainable and what you see as a result is a lot of social turmoil," he said. "If any of you've traveled up and down Interstate 5, I'm sure you have seen the road signs about Congress-created dust bowls, and 'solve the water crisis.' This year we have probably about better than north of a half a million acres of land fallow. This is acreage with state of the art irrigation systems, so you can't improve efficiency if there's no water to put through those highly efficient systems."*



*"The last consequence that is often overlooked is to the farm communities that have been left behind," he said. "I think what's most frustrating for the people who are standing in food lines and hoping for*

*work, and who are receiving handouts from food grown in China, is the fact that the United States has been very persistent and consistent in wanting to minimize the harms, that the policy choices they've made have inflicted upon, in particular, disproportionately, on the west side of the San Joaquin Valley. The most recent example is a draft environmental impact statement on implementation of the 2007 and 2008 biological opinions which essentially says, there is no difference. There is no harm."*

*"The Sustainable Groundwater Management Act is a great new challenge for us and to the communities, to air quality, to the farms and families that live throughout the west side of San Joaquin Valley," Mr. Azhderian added.*

*"So for these reasons – for these families, for these farms, we have invested in the Bay Delta Conservation Plan significantly," he said. "So it's changed. I think the question that comes out, is there hope for the California Water Fix? I think the answer to that question is yes, but we're certainly waiting to see."*

First thing we need to figure out is how much it's going to cost, noting that Roger had quoted a \$20 per acre-foot increase. *"That's dependent on a great many things, and in particular, our ability to manage this question of uncertainty going forward," he said. "How are these projects that won't be constructed for 15 years*

[Scroll to Top](#)

*those decisions about that today? Do we develop processes to help inform decisions in the future? I think answering that question is fundamental."*

*"Clearly the quickest path forward to a solution is a reasonable application of the existing regulatory discretion," Mr. Azhdarian said. "Fear about what may happen in the absence of Cal Water Fix or BDCP is real, but I think for the view of many of the folks that live in our area, we don't need to bet \$7.5 billion to find out what might happen."*

*"Another important part is clearly distinguishing between science and what it can tell us, and policy choices," he said. "Often they get conflated; and we are presented that science is the only option and that's never the case. This is frankly true for all projects moving forward. These risks, these burdens that I see anyways, are things that we all share."*

*"Ultimately going forward, what do we do?" he said. "The money in Prop 1 is great, but good ideas are better than money. I think from our perspective, regulatory reform is huge. Accountability, about how we're using water and money for environmental management is huge. There isn't a water manager in the state, ag or urban, who doesn't have to account for every drop of water that they're delivering but we don't have that expectation or demand for our environmental water managers."*

*"Some of these things that we've been doing, we've been doing for 25 years, and almost all cases people and the species are both worse off than when we started," he said. "25 years of*

*experimentation, billions of dollars spent, millions of acre-feet dedicated, tens of thousands of people affected, not much to show for it. So big frustration."*

Permitting reform is a big issue, he said, citing a fish screen project on the San Joaquin River that was unopposed and well-liked, but still took eleven years from conceptualization to finalization; ten of those years were permitting and nine months were construction. *"So if we're going to be nimble and flexible moving forward, and to be able to change how we operate in the face of both dry and*

---

*"This isn't about the reservoir, this isn't about pumps or canals; we're farming less acres, we're farming more efficiently than ever. This is about how we've changed fundamentally the ability of these projects to operate to serve the needs that they were originally envisioned to serve." –Ara Azhdarian*

---

[Scroll to Top](#)

*extremes, clearly the permitting process has to be reformed."*

*"I think we really just need to be able to have honest dialogues about what's going on," he said. "When we look at an environmental impact statement that claims that there's no impact from the implementation on the biological opinions, and we see in real world what's going on, it's beyond frustrating – it's egregious and it's very counterproductive. So I think a better dialogue, but also more honest dialogues are essential."*

*"And then lastly, I'm going to hit this theme again: partnerships and collaboration," Mr. Azdherian said. "Everybody said it and it's key. We all have differences, but at the same time, we all have a lot of similarities, and we need to be able to leverage the potential to synthesize those."*



*"Progress represents the combined will of the American people. Only when they are joined together for action can this country move ahead. We prepare the way for those who come after us."*

*"San Luis Reservoir was dedicated by JFK, one of the 2 presidents to visit the west side of the San Joaquin Valley, and he told us then that he was a great believer in the value of irrigated agriculture, and he said*

*quite clearly that only when we join together are we going to move forward," he said. "This isn't just about taking better care of what was given to us, because we're the beneficiaries of our forefathers' visions and make no mistake – California is a hydraulic society and everything we know about our quality of life and about our economy is related to that fact. So hopefully, I know some of us are skeptical, but hopefully we can leave things better than we found them."*

*"So thank you very much."*

## **STEVE ROTHERT, California Director, American Rivers**

Steve Rothert is the California Regional Director for American Rivers. He began by noting that he lives in the Grass Valley area and he has a small diversion on one of Nevada Irrigation District's irrigation ditches, so he has a tiny sense of some of the water issues that Mountain Counties water managers deal with.



*"American Rivers was formed and founded in 1973 to take*  
*Scroll to Top* *Page of the Wild and*



*Scenic Rivers Act and to protect rivers in perpetuity, those rivers that exhibit great natural and social value," he said. In California, American Rivers works to restore meadows and improve forest management in the Sierra, restore salmon populations and floodplains in the Central Valley, and to improve water*

supply reliability and salmon habitat in coastal watersheds. *"It's been a great program that we've enjoyed success over the last few years," he said.*

*"American River's motto is 'rivers connect us," Mr. Rothert said. "The rivers themselves and the water they carry really connect all of us. They're connecting us in this room; they connect us with the past and also to our future. American rivers is really committed to working with partners to try to develop effective and durable solutions to problems that we're facing, big and small, in California and across the country and to better manage rivers and water resources so that we can all go forward together."*

It's a remarkable time we are living in as we are seeing a confluence of forces and opportunities that we haven't seen before, he said. *"From the numerous regulatory proceedings, FERC relicensings, State Water Resources Control Board water quality plan update, the Central Valley Flood Protection Plan which will be updated again in 2017, the Sustainable Groundwater Management Act, the California Water Fix, and others coupled with this historic drought that we're still in the midst of, and the potential for epic precipitation events with one of the most extreme El Nino conditions," he said. "We're living in a time that is important for the work that we do, and I think the shared interests we have for managing our waters in a sustainable way for the benefit of society."*

Mr. Rothert said recently he's been reading a book to his young daughter about the Greek gods, and the council of gods that sit above Mount Olympus that throw down to Earth all sorts of challenges and opportunities to see

---

*"I think we're going to have to realize that we're going to have to give to get ... We're going to have to give*

[Scroll to Top](#)

what man does. *"I think we're sort of in a period where the council of gods is up there trying to wake us up from a slumber of complacency about the way we manage our waters, to get us to wake up and take action and make decisions, and go forward in a way that's better than the past, otherwise we'll face the wrath of those gods."*

*up the 100% ideal solution that we're after because that's just not going to work. It's a zero-sum game that leads to endless litigation and solutions that are not durable."*  
-Steve Rothert

*"We don't have to get religious or mythological about it," Mr. Rothert said "I think we all recognize that the effects if we don't change the way we manage things and fix the problems, we're going to face ongoing litigation, economic disruption if not catastrophe, decline and loss of species, catastrophic fires in these areas, and so on. So this situation that we're in is thankfully forcing conversations, decisions, actions, and partnerships that were unimaginable just a few years ago."*

Mr. Rothert pointed out that there is now a law that takes steps towards managing our groundwater resources, the voters passed Proposition 1 to make big investments in our water system, and recent polls that show that there is a higher recognition of the drought and the importance of water than has ever been in the public's mind, a great opportunity that all of us in the water field need to seize. American Rivers is participating in discussions about voluntary partnerships that step across traditional boundaries to try and figure out if there's a way to work together to solve mutual interests in a way that works for people, he said. *"So we've made a good start and I think we've seen some important changes."*

The California Water Action Plan is an important improvement the state's policy and direction in water management, but there's a long way to go, Mr. Rothert said. *"It's my view that we have to fundamentally change the way we manage water and I have 3 things that I think we need to do,"* he said. *"First, I think we're going to have to realize that we're going to have to give to get, or in other words, we're going to have to give something to get what we believe we need. We're going to have to give up the 100% ideal solution that we're after because that's just not going to work. It's a zero-sum game that leads to endless litigation and solutions that are not durable."*

Number 2, we're going to have to talk. *"We're going to have to get to know each other and understand the different interests and values that are part of the conversation in order to*

[Scroll to Top](#)

solutions," he said. "We don't have to be friends on Facebook, but we're going to have to get to know each other enough so that we can develop solutions that are going to work for people, for everybody."

Number 3, we're going to have to get real, and get serious about getting real. "We don't live in the tropics, we don't even live in a humid climate on average, we live in a dry state by and large," he said. "I think we have to take article 10 of the California constitution seriously, which prohibits the unreasonable and wasteful use of water. I think in the urban sector, that means recycling, efficiency, and conservation. In the agricultural sector, I think there's a lot of the same that has to be done there, and questions about what crops we're growing where, and on what land."

The second thing about getting real is that we can't solve problems one at a time. "We need to focus on multi-benefit projects that can address several needs at the same time," he said. "In the Central Valley, floodplain restoration projects can not only provide the habitat necessary for young salmon and other fish species that can grow like crazy on floodplains, but floodplain restoration can also help protect communities from the risk of flooding. There are numerous projects up and down the Central Valley that can achieve these twin goals. In addition, there's a possibility that those sorts of projects could also help recharge groundwater as the water sits on the flood plain it percolates back down into the soil."

We also have to become more scientific and accountable, Mr. Rothert said. For example, the State Water Resources Control Board water quality control plan has been focused on flow, and unimpaired flows. "It's our view that it's not going to be the strategy that can solve the problem for the San Joaquin River basin, the Sacramento basin and the Delta," he said. "We need to look at

---

“It's our view that unimpaired flows is not going to be the strategy that can solve the problem for the San Joaquin River basin, the Sacramento basin and the Delta. We need to look at all the factors that are contributing to the situation and develop a plan that specifically addresses biological goals and objectives that we develop for the various main stem and tributary reaches that are addressed in the water quality control plan; we need to implement plans that hold people accountable for results.”—Steve Rothert

---

Scroll to Top

*all the factors that are contributing to the situation and develop a plan that specifically addresses biological goals and objectives that we develop for the various main stem and tributary reaches that are addressed in the water quality control plan; we need to implement plans that hold people accountable for results, including those that would come from flow, that we can actually measure the effects of and modify and adapt as time goes on as we get more information about what's working and what's not working."*

Those are some of the things American Rivers has been focusing on over the last several years. *"It's my view that we don't have a choice here,"* he said. *"No action is not an option. We have to act now, we have to take advantage of this opportunity, this confluence of threats and opportunities to fundamentally change the way we manage water in this state. We don't really have a choice to have any other attitude towards what is before us."*

*"It might seem like a herculean task, but I think with some of the models and the partnerships that have been started over the last few years and some of the progress that's been made from the legislature on down to small projects on the ground, I think it's showing the way that we have to go,"* he said. *"I'm hoping that we can together figure out ways to get there. Thank you."*

## **ANDY FECKO, Director Resource Development, Placer County Water Authority**

Andy Fecko began by noting that there is remarkable consistency across the different interests that falls into a couple of categories. *"It falls into collaboration, because what we've all figured out that in the water community to a greater or lesser extent, we are all connected together,"* he said. *"In particular, the Placer County Water Agency realized about 20 years ago that we couldn't keep our head down anymore and we were in fact connected to the Delta, so we decided to do something about that. We decided that we had an interest in a healthy Delta, a healthy lower American River, and a healthy export community, and what we expected in return from those interests is that they have an interest in healthy tributaries. And I think the last 2 decades have actually proved that out. I think the American River system, both the upper tributaries, Folsom Lake, and the lower American, are a good case study in collaboration, cooperation, and innovative solutions."*



Mr. Fecko said he would  
about that today as

[Scroll to Top](#)



maybe there are parallels to other tributary systems that attendees can take away to improve management. "I say all this with a specter of the body of regulation that has come at us and will come at us in the future. so think about what I'm about to say in the context of

*protecting yourself from regulatory proceedings that are often don't use the best science to come up with outcomes."*

The American River has three forks that flow into Folsom Lake. The north fork of the American River is an undammed tributary. On the middle fork of the American River, the Placer County Water Agency has 340,000 acre-feet of storage in two reservoirs, the French Meadows and Hell Hole reservoirs. PCWA has recently completed a FERC relicensing which took 7 years and cost \$35 million which prescribes flows, minimum storage elevations, and habitat actions. "All in all, from our perspective, a very good solution," Mr. Fecko said. "We're awaiting a license on that system now. But essentially, that system is done. It's had the best available science applied to it, and it's had a set of solutions applied to it that make recreation, fishery, and water supply reliability and hydro power – all of us healthy going forward."

It's similar on the south fork of the American, River where Sacramento Municipal Utility District owns roughly half million acre-feet of storage; the flows on that system are prescribed, and essentially they have a license that they received this year, he said.

"So we have a good expectation of what will be input into Folsom Lake from the three forks of the American River on any given year, from the very driest to the very wettest," he said.

Folsom Lake is owned and operated by the Bureau of Reclamation; it's a dual purpose reservoir – flood control for the city of Sacramento, as well as water supply. "Folsom has a constant tension

---

“Responding to Delta water quality has done more to drive Folsom operations than anything else that the locals have done, either on the input side or the extraction side. ... on a perverse sort

[Scroll to Top](#)

*with protecting Sacramento from flood, and storing enough water to get not only Sacramento but the entire CVP system through dry years," he said. "Folsom is surrounded by communities that were built when you could rely on water supplies from Folsom, so all the infrastructure of Sacramento is reliant on Folsom always being there and water always being in it."*

*of way, by prioritizing species in the Delta, we're actually hurting the tributaries. We think that there's a better balance to be had there."*—Andy Fecko

---

The tension between flood control and water supply leads to drawdowns of the reservoir in order to prepare for winter floods. *"Folsom is quite small for the watershed," he said. "So it tends to spill 3 years out of 4. Now, that hasn't been the last 3 years, but 3 years out of 4, Folsom will spill. The local communities that surround Folsom only really use about 10-20% in any given year of the throughput of Folsom Lake. There is about 2 million acre-feet of average annual flow, and there's about 200,000 acre-feet of demand in the local area."*

All the water that comes through Folsom is part of the Central Valley Project system, and because of Folsom's proximity to the Delta, it is the first responder for Delta water quality needs, he said. *"Responding to Delta water quality has done more to drive Folsom operations than anything else that the locals have done, either on the input side or the extraction side. It's an interesting fact that as regulations in the Delta have squeezed the window to export water, what it's done is drive release patterns in the lower American River exactly out of phase as to how they would have been naturally. Typically, species in the lower American River, particularly salmon and steelhead, have all adapted to a pattern where you have heavy, high winter flows, and then in tapers off gradually in the spring, and then low summer flows. But because of the regulatory paradigm in the Delta, and the need to have water all the way around and back down the San Joaquin River, what we have instead is that we try to conserve as much water in the spring as possible, to the extent we can control it, and then summer flows are very high. Even in the driest of years, we had almost 4,000 cubic feet a second in July and August in the lower American River. And it's exactly opposite of the natural condition."*

*"So in a perverse sort of way, by prioritizing species in the Delta, we're actually hurting the tributaries," he said. "We think that there's a better balance to be had there, and that's a conversation that I think all of us –*

[Scroll to Top](#)

*the export communities and the folks on the tributaries, need to be having, because it doesn't do you any good to get your salmon through the Delta and up into the tributaries if by the time they get there, your tributaries are out of cold water, because you've drained them all in the summer to meet Delta water quality requirements and exports at the same time."*

The tributaries have been forced into a very difficult situation this year where the American River was essentially sacrificed for winter run salmon in the Sacramento River. *"I understand it; the Sacramento winter-run are the most endangered species of salmon we have. But at the same time, we lost the entire year class of steelhead in the American River because we ran ourselves out of cold water. Now the temperature is about 70 degrees, and no steelhead can survive that. So these difficult conversations about balancing Delta needs with tributary needs are going to be the focus of water quality control plan update to a great extent, and I think that's where tributary interests really have to speak up."*

Mr. Fecko said there are solutions. *"I think that the opportunities for co-optimization of the requirements of export and the requirements of upstream water supply reliability and habitat are big,"* he said. *"If we could reduce the amount of water that we send down the lower American for instance in the summertime, have higher carry-over storages in Folsom as a requirement, and perhaps have higher spill flows and higher flows in the winter that could be picked up by folks who have a new facility that doesn't impact the species in the Delta, we think that that is actually a solution that is worth talking about."*

He noted how earlier panelists had mentioned high flows that they weren't able to move into storage. *"In our view, if you manage the reservoirs and tributaries correctly, those high flows could occur more often, maybe at low magnitude, but could occur more often, and if you had the opportunity to pick those up and move them to where they need to be, I think there's a win-win there."*

Mr. Fecko said that the Sacramento region in particular does not take advantage of its very ample groundwater resources. *"There's 100,000 acre-foot reservoir underlying the city of Sacramento and parts north and south of the river of which we only use about 25%,"* he said. *"For a long time,*

---

*"The way we're going to buy water supply reliability back for the Sacramento region is to diversify our surface water supplies by*

Scroll to Top

*groundwater levels were declining because of over-pumping, but we got our act together, and about 20 years ago, PCWA began supplying even areas outside of Placer County. We had to expand our place of use under our water rights, and we did that so that in wet years, we could serve those areas surface water, and in exchange, they would go off of the groundwater, and the groundwater levels have recovered in those areas. It's an absolute success story."*

That program needs to be expanded, he said. When Folsom is spilling, nobody should be pumping groundwater; everybody should be on surface water at that point; and when Folsom is in the condition it's in this year, more people in the Sacramento River need to go on groundwater, he said. *"The way we're going to buy water supply reliability back for the Sacramento region is to diversify*

*our surface water supplies by moving some demand over to the Sacramento River, and greatly expanding our conjunctive use potential here, so that we take pressure off of Folsom. We have to do everything we can to take pressure off of Folsom Lake in the dry years, otherwise we're going to have more endangered species in the lower American River. The regulation that's behind us is going to come forward, and it's going to squeeze us down not by choice, but by force."*

*"There are tremendous opportunities, and I think that working with the Water Fix folks, the Sites Reservoir folks, and doing a water bank in the Sacramento region – if we put those things together do it in a way that we share the investment with the state of California, because we built our system with reliability in mind, and that reliability has been slowly etched away, and I think the state has a responsibility through bond funding to help us buy some of that back," he said. "But it's going to take local investment, it's going to take putting those kinds of infrastructure pieces you need for reliability in your rates, but I think it will also take cooperation with the state of California, the Bureau of Reclamation, Central Valley project, and all reservoir*

*moving some demand over to the Sacramento River, and greatly expanding our conjunctive use potential ... We have to do everything we can to take pressure off of Folsom Lake in the dry years, otherwise we're going to have more endangered species in the lower American River. The regulation that's behind us is going to come forward, and it's going to squeeze us down not by choice, but by force."*—Andy Fecko

[Scroll to Top](#)

"My message to you is that if you have a system that's like ours, and you can do something on your side of infrastructure, the investment will come," he said. "There are people that need water supply reliability, and this drought has exposed that, and if you can provide a project to them that they can invest in, there's a win on both sides of that. And I encourage you to think about that as you listen to the panel discussions this afternoon. Thank you."

## For part 2 ...

[The truth be told: The Delta, the tunnels, and the tributaries, part 2](#)



# Help Maven bridge the funding gap!

Your help is needed for Maven's Notebook to continue operations in 2016.

[Click here to find out how you can help.](#)

Share this:

[Twitter](#)
[Facebook 28](#)
[LinkedIn 5](#)
[Pocket](#)
[Reddit](#)
[Email](#)

[Print](#)

### Related Posts:

- [1. The truth be told: The Delta, the tunnels, and the tributaries, part 2](#)
- [2. Calendar notes: Food and Ag Board to discuss subsidence, groundwater mgt; H2o Hackathon; and the Delta Tunnels: The Truth Be Told](#)
- [3. This just in ... Restore the Delta: Delta Tunnels "Confidential" Documents Reveal State Plans to Take Delta Farms – Includes AP Story Link](#)
- [4. Guest commentary: Former Delta Watermaster Craig Wilson with more on his alternative to the Delta tunnels](#)

[Scroll to Top](#)

One comment Bay Delta Conservation Plan, California Water Fix, Delta inflows & outflows, Delta tunnels

You might also like ....



The truth be told: The Delta, the tunnels, and the tributaries, part 2

October 29, 2015



California Water Fix: A road map for the revised Delta tunnels documents

July 15, 2015



The Connections, Resiliency, and Management of Flows in the Delta

October 29, 2014



Jerry Meral and Jonas Minton debate the Bay Delta Conservation Plan

September 26, 2014

One comment



Joe Ditto

October 29, 2015 at 7:38 am

It is not "The Sierra Nevada Mountains".

Sierra Nevada Mountains is redundant. Sierra means mountains.

Sierra Nevada is a Spanish term meaning "snow-covered mountain range" (sierra is one of the Spanish words for "mountain range").

https://en.wikipedia.org/wiki/Sierra\_Nevada\_(U.S.)

Reply

Scroll to Top

## Leave a Reply

---

Enter your comment here...



# MAVEN'S NOTEBOOK

*The diary of a confessed obsessive-compulsive California water news junkie*

This website was developed, built, and implemented by Chris Austin (Maven) using the [Smartline theme by Theme Zee](#). © Maven's Notebook,

2015

**Thank you for visiting!**

[Scroll to Top](#)