BAY AREA WATER SUPPLY AND CONSERVATION AGENCY

BOARD POLICY COMMITTEE MEETING

July 15, 2016

Correspondence and media coverage of interest between June 6, 2016 and July 14, 2016

Correspondence

East Palo Alto:

Date: June 29, 2016
From: The Hon. Jerry Hill, Senator
To: The Hon. Francesca Vietor, President, SFPUC
Subject: East Palo Alto's request for an increase in water supply

Date: June 28, 2016
From: The Hon. Donna Rutherford, Mayor East Palo Alto
To: The Hon. Francesca Vietor, President, SFPUC
Subject: East Palo Alto's request for an additional 1.5 mgd in water supply

Date: June 24, 2016
From: The Hon. Rich Gordon, Assemblyman
To: The Hon. Francesca Vietor, President, SFPUC
Subject: Support of East Palo Alto's request for additional 1.5 mgd in SFPUC's 2035 water map

Date: June 6, 2016
From: The Hon. Jackie Speier, Congresswoman
To: The Hon. Francesca Vietor, President, SFPUC
Subject: Request of the City of East Palo Alto for an additional 1.5 mgd in water supply

Water Conservation:

Date: June 29, 2016
From: Nicole Sandkulla, BAWSCA CEO/General Manager
To: Katey Rademann
Subject: Drought and Conservation Messaging

Date: June 22, 2016
From: Randy Breault, BAWSCA Chair of the Board
To: Catherine Novick
Subject: Hetch Hetchy Reservoir Shade Balls

SFPUC:

Date: July 14, 2016
From: Nicole Sandkulla, BAWSCA CEO/General Manager
To: Steve Ritchie, Assistant General Manager, Water Enterprise
Subject: Comments on Waiver of Minimum Purchase Requirements During Drought

Media Coverage

Restore Hetch Hetchy:

Date: July 13, 2016
Source: The Union Democrat
Article: Restore Hetch Hetchy files appeal notice

Drought:

Date: July 13, 2016
Source: Water Deeply
Article: Drought Felt in Low-Income Bay Area Communities

Date: July 1, 2016
Source: Water Deeply
Article: Fighting Drought Will Be a Long-Term Battle, Says Study

Date: June 28, 2016
Source: SF Gate
Article: California drought bummer: Sierra water runoff coming up short

Conservation

Date: July 6, 2016
Source: SF Chronicle
Article: Big Drops in urban water use, state finds

Date: July 2, 2016
Source: San Jose Mercury News
Article: Keegan: Water conservation needs to be a way of life

Date: June 30, 2016
Source: SF Chronicle
Article: Put away the Slip 'N Slide this summer

Date: June 28, 2016
Source: Daily Journal
Article: Water mandates over for county residents

Date: June 17, 2016
Source: East Bay Times
Article: Accepting 'new normal' for water, brings more challenges (East Bay Times guest commentary)

Date: June 6, 2016
Source: Maven's Notebook
Article: Californians ramp up water conservation to 26.1% in April

Date: June 8, 2016
Source: San Jose Mercury News
Article: El Nino rains fail to dampen drought-tolerant gardening trend in Bay Area

Water Supply:

Date: June 30, 2016
Source: SF Examiner
Article: Will San Mateo begin converting wastewater into drinking water?

Date: June 27, 2016
Source: Washington Post
Article: California may have a huge groundwater reserve that nobody knew about

Date: June 27, 2016
Source: Sacramento Bee
Article: Groundwater could be a godsend, if we protect it

Date: June 20, 2016
Source: Palo Alto Weekly
Article: East Palo Alto runs out of water, development on hold

Date: June 20, 2016
Source: Water Deeply
Article: What Lake Mead's Record Low Means for California

Water Management:

Date: July 4, 2016
Source: Water Deeply
Article: How California Could Reinvent the Water Sector

Date: June 30, 2016
Source: Sacramento Bee
Article: Court rules that sale of Delta islands can proceed

Date: June 29, 2016
Source: Stanford News
Article: Stanford researchers highlight steps toward sustainable groundwater management in California

Date: June 29, 2016
Source: Sacramento Bee
Article: California needs action now on groundwater protection

Date: June 29, 2016
Source: Sacramento Bee
Article: Shasta water release plan has no cutbacks to farmers – for now

Water Policy:

Date: June 29, 2016
Source: Central Valley Business Journal
Article: California senate approves water storage bill

Date: June 20, 2016
Source: East Bay Times
Article: Should California limit the number of small, new water systems?

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California State Senate

SENATOR JERRY HILL

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June 29, 2016

The Honorable Francesca Vietor, President
San Francisco Public Utilities Commission
525 Golden Gate Aveue, 13th Floor
San Francisco, CA 94102

Dear President Vietor:

I am writing in support of the City of East Palo Alto's request for an increase in water supply of 1.5 million gallons per day. This increase is crucial to East Palo Alto's continued economic development as well as the construction of much-needed affordable housing in the region.

While the Bay Area faces a serious lack of affordable housing, East Palo Alto has proven to be a leader in addressing this shortage, with affordable housing making up 40 percent of the city's housing stock.

In addition to East Palo Alto's efforts to address the housing crisis, city leaders are also working to create more local job opportunities through the development of additional commercial spaces. Without additional water allocations, these projects will be stymied and their benefits to the community will never be realized.

I urge the SFPUC to approve East Palo Alto's request for an increase to its water supply. Thank you for your consideration.

Sincerely,

Jerry Hill
Senator, 13th District

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City of East Palo Alto

Office of the Mayor

June 28, 2016

Honorable Francesca Vietor, President
San Francisco Public Utilities Commission
525 Golden Gate Ave., 13th Floor
San Francisco, CA 94102

Subject: East Palo Alto's request for an additional 1.5 mgd in water supply

Dear President Vietor:

I would like to thank you for your support for East Palo Alto's request for an additional 1.5mgd of water supply. The City of East Palo Alto relies solely on the SPUC for water supply. Between 2001 and 2014, the City has exceeded its Individual Supply Guarantee of 1.963 mgd four times, most recently 2013. The lack of water supply has immediate negative impacts on the City's ability to develop affordable housing and achieve its economic development goals, including postponing a 120 unit affordable housing project, 1.6 million square feet in new office development, and a 500 student private school.

We understand that the issue is multifaceted and there are multiple potential ways to solve the issue in collaboration with the SFPUC and BAWSCA. However, a critical step is to have the support of the SFPUC, and we appreciate your prioritizing this issue and helping us find solutions. We are doing all that we can at the local level. We have the lowest gross per capita water usage among BAWSCA members, we have adopted a Groundwater Management Plan, and we have increased water rates to invest in water supply and conservation projects. We look forward to working with the SFPUC and BAWSCA to solve this challenge.

Commissioner Kwon mentioned a tour of East Palo Alto at the June 14, 2016 SFPUC meeting. We would greatly appreciate the opportunity to give the SFPUC a tour of East Palo Alto. To arrange for a tour, or if you have questions, please contact Sean Charpentier, Assistant City Manager, at (650) 833-8946 or scharpentier@cityofepa.org.

Yours truly,

Donna Rutherford

Donna Rutherford
East Palo Alto Mayor
drutherford@cityofepa.org

cc: East Palo Alto City Council
Steve Richie, Assistant General Manager
SFPUC Commissioners
Nicole Sandkulla, BAWSCA

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ASSEMBLYMAN, TWENTY-FOURTH DISTRICT

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CHAIR: SEA LEVEL RISE AND THE CALIFORNIA ECONOMY

June 24, 2016

Honorable Francesca Vietor, President
San Francisco Public Utilities Commission
525 Golden Gate Avenue
San Francisco, CA 94102

RE: Support for East Palo Alto's request for additional 1.5 mgd in SFPUC's 2035 water map

Dear President Vietor,

I write to strongly encourage you to allocate an additional and critical 1.5 mgd of water to East Palo Alto. Each day that East Palo Alto proceeds without additional water, is a day that increased access to affordable housing, education and economic development slips by. Each day that East Palo Alto proceeds without additional water, the historic inequity that has deprived this city of economic prosperity is reinforced. Each day that East Palo Alto proceeds without additional water, is a day that East Palo Alto is unable to help itself and neighboring cities.

Consider affordable housing; wealthy peninsula communities are actively resisting new low-income housing projects. East Palo Alto is eager to build it. 120 units of low-income housing are scoped and planned on Weeks Street, but lack of water prevents construction, perpetuates the regional housing crisis and deprives struggling families of a safe place to build a life.

Lack of water is also halting construction of a new private school that would provide top-quality education and health care for little to no cost for up to 500 low-income students. This community needs quality educational opportunities; on the state's new Smarter Balanced test in 2014-15, only 18% of students from East Palo Alto's Ravenswood School District met standards in English and only 12% met that bar for math. Education can break the cycle of poverty, but without water, this significant effort to close the opportunity gap is shut off.

Without sufficient water, two new office buildings that could provide over 5,000 jobs are stalled. East Palo Alto has one of the lowest jobs per employed resident ratios in Silicon Valley and receives about half the as much in property, sales and transient occupancy tax compared to other Silicon Valley cities. Water could get these buildings off the ground,

provide employment and infuse this community with economic vitality. Instead, East Palo Alto remains cruelly cut-off from the prosperity on the other side of 101.

East Palo Alto has tremendous need, but its residents also deserve to be acknowledged for their efficient and careful water consumption. At 56.9 gallons per day per capita, East Palo Alto has the lowest daily per capita usage among BAWSCA members. On average, BAWSCA members consume twice as much as East Palo Alto at 124.3 gallons per person per day. And, as if rewarding wasters and punishing savers, many high-consuming communities are allocated more water than they need, providing them with a surplus while East Palo Alto remains thirsty.

You have before you the historic opportunity to help close the income and opportunity gap that divides the people of East Palo Alto from their wealthy neighbors. To delay an additional 1.5 mgd to East Palo Alto, or worse, to maintain the status quo is to prevent this city from realizing its potential. I urge you to turn on the tap immediately and enable this community to build itself and contribute to the wider peninsula community.

Sincerely,

Richard S. Gordon, Assemblymember AD-24

RSG/fas

c: Carlos Martinez

JACKIE SPEIER
14TH DISTRICT, CALIFORNIA

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Senior Whip

June 6, 2016

The Honorable Francesca Vietor, President
San Francisco Public Utilities Commission
525 Golden Gate Ave., 13th Floor
San Francisco, CA 94102

Dear President Vietor:

I write to respectfully support the request of the City of East Palo Alto for an additional 1.5 mgd in water supply. The inability of the city to approve affordable housing developments is contributing to the housing crisis of residents, and the constraints on the economic opportunity of residents of East Palo Alto are significant.

According to the most recent U.S. Census, the median income of East Palo Alto households is about $53,000 compared to a median countywide income of about $92,000. About 16% of East Palo Alto residents live in poverty compared to about 8% countywide. As is true throughout the Bay Area, rents have skyrocketed in East Palo Alto. Longtime residents report extraordinary living conditions. Earlier this week, a longtime resident stood before the City Council to report that he, his wife and two children were living in the basement of a building in order to sustain a residence in East Palo Alto. It is not uncommon for firefighters, upon responding to a fire or emergency call, to find multiple families living in a single family residence.

The city is dedicated to approving and encouraging the construction of affordable housing for existing residents but it is stymied at every turn by a vice-like water shortage that prevents construction. Residents who need jobs are unable to work locally because construction of commercial and retail development is contorted by years of delay as investors seek a secure source of water. An essential local medical clinic was recently rebuilt but its construction was also delayed because of a lack of water.

My district extends from San Francisco to East Palo Alto. Within this vast district, there is an essential public resource that is highly restricted for a single jurisdiction while being legally bountiful to all others. That jurisdiction is East Palo Alto, a community that has also historically been denied many of the advantages of its sister communities. I view the request of East Palo Alto as the latest chapter in a civil rights struggle that began decades ago when discrimination

was lawful and widely practiced. The consequences of that discrimination are concrete and deleterious in the year 2016.

There are, in my opinion, several opportunities for this generation to right wrongs that arose from the actions of the past. One of these opportunities is before the San Francisco Public Utilities Commission. With additional water, the human beings in East Palo Alto will have additional shelter from our housing crisis and they will more fully participate in America's economy. Without it, economic and social security will remain elusive and stunted.

I respectfully suggest that the Commission examine the federal legislation that created the rights of the Commission to provide water. Federal law established the right for the benefit of all participating communities. At this moment, and in light of the historic mandate to be a beneficial steward on behalf of all participants in the system, I respectfully urge the Commission to set right what has for so long been wrong. Please deliver additional, long-needed water to East Palo Alto. In your public duties, you will rarely be so proud as to be able to use your authority on behalf of such a magnificent cause as the economic development of this amazing community and its hard working, talented people.

All the best,

Jackie Speier

KJS/bp

BAWSCA
Bay Area Water Supply & Conservation Agency

June 29, 2016

Katey Rademann
477 Elsinore Way
Livermore, CA 94550

Subject: **Re: Drought and Conservation Messaging**

Dear Miss Rademann,

Thank you for contacting us and doing your part to help promote water conservation throughout California.

While improved water supply conditions have resulted in the modification of statewide emergency drought regulations, the SFPUC is still calling for a 10% voluntary system-wide reduction from all customers of the San Francisco Regional Water System. BAWSCA will continue to promote this reduction through our various conservation programs and marketing avenues.

BAWSCA is a special district that provides regional water supply planning, resource development, and conservation program services for 26 cities, water districts, and private utilities in San Mateo, Santa Clara, and Alameda County.

BAWSCA and its member agencies will continue to offer water conservation rebates and programs for residents and commercial entities. In your efforts to promote water conservation, we encourage you to refer people to www.BayAreaConservation.org for water conservation resources and to www.BayAreaGardening.org for information of water wise gardening.

In addition, please visit https://www.calwater.com/conservation/rebates-and-programs/ to learn more about your local water agency's conservation programs.

Water use efficiency is not simply a drought issue, but a way a life in California. We thank you again for your efforts in promoting water conservation practices during the drought and beyond!

Sincerely,

Nicole Sandkulla
Chief Executive Officer/General Manager

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477 Elsinore Way
Livermore, CA 94550
June 7, 2016

Bay Area Water Supply and Conservation Agency
155 Bovet Road, Suite 650
San Mateo, California 94402

Dear Bay Area Water Supply and Conservation Agency,

Greetings! My name is Katey Rademann, a junior at Granada High School in Livermore, CA. I have been researching and studying the current drought and have discovered issues with the choice of lifting specific water conservation laws as we recover from this horrible period. It is important for the Bay Area, and all of California, to know that the need for conserving water is not over, especially as we enter into a hot, dry summer. While water usage in the Bay Area stays mostly consistent throughout cities, cities down south are not going unnoticed or ignored for their over use of water. San Bernardino uses approximately 119.57 gallons per capita comparatively to Livermore and San Jose that uses approximately 80.67 gallons per capita. Whether this difference is due to overwatering or the desire for more water due to the slight increase in temperature, the Bay Area is proving to be a force to be reckoned with in the water conservation community. State regulators voted to lift the cutbacks in irrigation and household water use for the Sacramento region and urban communities across the state. Although statistics may show that the drought is over, lifting cutbacks before summer is not efficient, considering California does not have a sufficient amount of water yet.

Water conservation cutbacks need to be in place throughout the hot, humid months in order to efficiently resolve the California drought. As summer concludes, cutbacks will be slowly lifted, as they will not all be lifted at the same time. This strategy assures California will not re-enter the drought. Promoting and enforcing the cutbacks will need to be done throughout California. I would like to promote the cutbacks on television commercials, as well as social media. I would love your help and support in marketing the importance of conserving water until the summer concludes. You can contact me through my email: krademann6@gmail.com or phone: (925) 784-6239.

Sincerely yours,

Katey Raden

Katey Rademann

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BAWSCA
Bay Area Water Supply & Conservation Agency

June 22, 2016

Catherine Novick
731 Paul Ave.,
Palo Alto, CA 94306

Dear Ms. Novick,

Thank you for your letter of June 6, 2016, and for your thoughtful analysis of the potential use of shade balls in the Hetch Hetchy Reservoir.

According to the Los Angeles Department of Water and Power, the "shade balls" which were released onto the surface of the Los Angeles Reservoir are primarily intended to bring the reservoir into compliance with federal water quality mandates for treated water reservoirs. The Hetch Hetchy Reservoir, located within Yosemite National Park, is not a treated water reservoir. Rather, Hetch Hetchy Reservoir stores untreated water from the Tuolumne River, which is subsequently treated after leaving the reservoir prior to delivery to Bay Area residents within San Francisco, San Mateo, Santa Clara, and Alameda counties. Because the Hetch Hetchy Reservoir does not store treated water, it is not necessary to cover the reservoir with shade balls or other means. All the treated water reservoirs within the San Francisco Regional Water System are covered.

In addition to managing the Hetch Hetchy Reservoir for water supply purposes, the San Francisco Public Utilities Commission (SFPUC) is responsible for environmental stewardship issues related to the operation of the Hetch Hetchy Project facilities. For example, through the Upper Tuolumne River Ecosystem Program, the SFPUC works to support broad river ecosystem values while maintaining water supply reliability for the 2.6 million San Francisco Bay Area customers. More information on the Upper Tuolumne River Ecosystem Project can be found at www.sfwater.org.

BAWSCA represents the 26 water suppliers that purchase water on a wholesale basis from the SFPUC and provides this response based on that experience as BAWSCA does not operate the Hetch Hetchy Reservoir or the Regional Water System. For further questions regarding the operation of the Hetch Hetchy Reservoir, please contact Mr. Steve Ritchie, the Assistant General Manager for the Water Enterprise with the SFPUC. Mr. Ritchie's email address is SRitchie@sfwater.org.

We commend your passion for finding innovative, effective and worthwhile solutions to protect our water supply and the environment. For more information about BAWSCA and our water conservation efforts, you may visit www.bawsca.org.

Sincerely,

R J Breault

Randy Breault
Chair of the Board

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Item 7

May 25th, 2016
Chairman Randy Breault
BAWSCA
155 Bovet Road, Suite 650
San Mateo, CA, 94402

RECEIVED JUN 6 2016

Dear Mr. Breault,

My name is Catherine Novick. I am a student at Gunn High School in Palo Alto, California, where we have been studying policy. I am writing to talk to you about shade balls.

There are 96 million black, plastic, 4-inch diameter shade balls currently covering the surface of the LA Reservoir located in Sylmar. There, they prevent the loss of around 300 million gallons of water per year to evaporation. They also prevent the harmful, sunlight-triggered chemical reaction between naturally occurring bromide in the water and chlorine in the water (from treatment). LA Reservoir is 175 acres and has had an average of 70 ppb of bromide in their treated water, while Hetch Hetchy is nearly 2,000 acres and has had an average of 20 ppb of bromide in their treated water.

LA Department of Water and Power states that implementing these shade balls, at a cost of $34.5 million, instead of the other option of building a dam on the reservoir and installing two floating covers, at a cost of $350 million, saved a lot of money. Also, they say that these balls help with tackling the drought. However, these shade balls are not as cost-effective as they say. According to LA Weekly, 300 million gallons of water cost $2 million. Since the balls need to be replaced every 10 years, that saves $20 million in water for 10 years but costs $34.5 million to install new balls.

My opinion is that we should not implement these shade balls onto Hetch Hetchy Reservoir because in terms of saving water, they are cost-ineffective. In terms of preventing the chemical reaction between chlorine and bromide, they are also cost-ineffective since Hetch Hetchy only has an average of 20 ppb of bromine, compared to the 70 ppb of bromine in the LA Reservoir. Overall, they are cost-ineffective for Hetch Hetchy, since Hetch Hetchy is almost 12 times bigger than LA Reservoir. Hetch Hetchy does not have a strong need for shade balls, and it wouldn't be practical to implement them.

This topic is important to me because I care about the environment, and I want to be part of the effort to tackle our drought with innovative, effective, and worthwhile solutions. Thank you for your time and consideration.

Sincerely,

Catherine Novick
731 Paul Ave
Palo Alto, CA, 94306

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BAWSCA
Bay Area Water Supply & Conservation Agency

July 14, 2016

Steve Ritchie, Assistant General Manager, Water Enterprise
San Francisco Public Utilities Commission
525 Golden Gate Avenue, 13th Floor
San Francisco, CA 94102

Subject: Comments on Waiver of Minimum Purchase Requirements During Drought

Dear Mr. Ritchie,

Thank you for your letter dated June 23, 2016 regarding the extended waiver of the minimum purchase requirements for ACWD, Milpitas, Mountain View, and Sunnyvale through FY 2016-17. BAWSCA agrees that waiving this requirement during the current drought condition is appropriate.

BAWSCA does have a concern on the condition #5 included in the letter. Our understanding is that the SFPUC is thinking about adjusting the Proportional Annual Use shares, as a part of the Wholesale Revenue Requirement (WRR) calculation, due to the Imputed Water Sales (shortage between actual metered water sales and the minimum purchase requirement amounts) in the years when the minimum purchase requirements are waived. However, per the 2009 WSA Section 5.02 E., "the Wholesale Customers should pay their share of expenses incurred by the SFPUC in delivering water to them on the basis of Proportional Annual Use". Proportional Annual Use is defined as "the shares of deliveries from the Regional Water System used by City Retail Customers and by the Wholesale Customers in a fiscal year, expressed as a percentage. The percentages of annual use are calculated each year as described in Section B of Attachment J and are shown on lines 10 and 11 of Table 1 of that Attachment." BAWSCA believes it is not appropriate to adjust the Wholesale Customers' Proportional Annual Use percentage to include the water not delivered to them.

BAWSCA also believes that the purpose of having a minimum purchase requirement is to protect the system-wide financial stability. However, the reliability of the regional water system and its users, including both SFPUC's Retail Customers and the Wholesale Customers, benefit from the water saved in SFPUC's storage reservoirs as a result of ACWD, Milpitas, Mountain View, and Sunnyvale not making the minimum purchase requirement during the current drought conditions from FY 2013-14 through FY 2016-17. Therefore, since the benefits accrue to the entire regional water system, BAWSCA thinks that the cost associated with Imputed Water Sales should be equally shared among all users of the Regional Water System. Specifically, the Proportional Annual Use calculation should reflect the actual deliveries in FY 2013-14 through FY 2016-17.

I understand that both parties agreed to adjust the Proportional Annual Use calculation in FY 2011-12 WRR to include the Imputed Water Sales in FY 2010-11. However, FY 2010-11 was a normal year. The reason two BAWSCA agencies did not make the minimum purchase requirement FY 2010-11 was due to an overall economic downturn in that year, not drought. Specifically, the Imputed Water Sales in FY 2010-11 resulted in system spills, while the Imputed Water Sales in current drought condition accrued the water to overall system storage that benefit all users of the Regional Water System.

I have requested Christina Tang, BAWSCA's Administrative Analyst, to reach out to Charles Pearl and Crispin Hollings to work on this issue and figure out the best methodology for sharing the costs associated with Imputed Water Sales between all users of the Regional Water System as part of the FY 2014-15 WRR review.

BAWSCA looks forward to working with you on this matter.

Sincerely,

Nicole Sandkulla

Nicole Sandkulla
CEO/General Manager

cc: SFPUC Commission Members
H. Kelly, SFPUC
C. Perl, SFPUC
E. Levin, SFPUC
D. Briggs, SFPUC
J. Milstein, SFPUC
R. Shaver, ACWD
G. Hosfeldt, City of Mountain View
M. Nasser, City of Sunnyvale
S. Machida, City of Milpitas
C. Tang, BAWSCA
A. Schutte, BAWSCA Legal Counsel

Restore Hetch Hetchy files appeal notice
The Union Democrat | July 13, 2016 | Guy McCarthy

Oakland-based activists who want Hetch Hetchy Valley restored in Yosemite National Park have filed a notice of appeal in Tuolumne County Superior Court, challenging a Sonora judge's ruling that blocks their lawsuit against the City of San Francisco and other agencies.

Restore Hetch Hetchy's case alleges the reservoir flooding Hetch Hetchy Valley under 300 feet of water violates water diversion mandates in the California constitution. They want California courts to weigh the value of restoration against the cost of water system improvements necessary for San Francisco to retain existing uses of the Tuolumne River without Hetch Hetchy Reservoir.

In April, Tuolumne County Superior Court Judge Kevin M. Seibert ruled the state constitution has no bearing on Hetch Hetchy Reservoir because permission for its construction was granted by U.S. Congress to San Francisco in 1913. Seibert also ruled the statute of limitations for any such lawsuit has expired.

Seibert's ruling stalled legal moves by activists who want Hetch Hetchy Valley in Yosemite National Park restored to what it looked like before workers in Tuolumne County completed O'Shaughnessy Dam more than 90 years ago.

Restore Hetch Hetchy officials said in late April they were going to file a notice of appeal in Tuolumne County Superior Court. They filed their three-page notice of appeal Tuesday in Sonora.

"The next step is to put together the record of what's happened in court, and it will be filed in the appellate court in Fresno, the Fifth District Court of Appeal," Spreck Rosekrans, executive director for Restore Hetch Hetchy, said Wednesday in a phone interview.

Their original complaint in April 2015 and in November they touted a Superior Court ruling that proceedings would take place in Tuolumne County.

Seibert's ruling in April prevents California courts from considering the merits of restoring Hetch Hetchy Valley in Yosemite, Restore Hetch Hetchy staff and public relations contractors said in a statement this week. That is why they are appealing in Fresno.

O'Shaughnessy Dam and the Hetch Hetchy Water & Power System are operated by San Francisco Water, Power and Sewer and overseen by the San Francisco Public Utilities Commission.

"The Tuolumne County Superior Court analyzed the issues extremely thoroughly, and reached the same conclusion we did: as a matter of law, this litigation is a non-starter," Matt Dorsey, press secretary for San Francisco City Attorney Dennis Herrera, said when Restore Hetch Hetchy people announced their intent to appeal on April 29. "We don't expect an appellate court to reach a different conclusion."

Tuolumne River

City of San Francisco leaders began looking at the Tuolumne River and Hetch Hetchy Valley back in the 1880s, a decade after conservationist John Muir visited Hetch Hetchy for the first time.

Historians say the devastating 1906 earthquake and fire that destroyed parts of San Francisco underscored the city's need for a more reliable water system. The city applied to the federal Department of Interior to gain water rights to Hetch Hetchy, and in 1908 Interior Secretary James Garfield granted San Francisco rights to develop the Tuolumne River.

Then in 1913, President Woodrow Wilson signed the Raker Act, which permitted San Francisco's development of the Hetch Hetchy project. Construction of O'Shaughnessy Dam began in 1914.

Building the dam and other parts of the Hetch Hetchy system brought thousands of workers to Tuolumne County over several decades. O'Shaughnessy Dam was completed to its final dimensions in 1938.

Behind O'Shaughnessy Dam, when Hetch Hetchy Reservoir is full it floods eight linear miles of the Tuolumne River, submerging Hetch Hetchy Valley and the lowermost section of the Grand Canyon of the Tuolumne. The dam and reservoir receive water from 459 square miles of the Tuolumne River watershed.

Descendants of Hetch Hetchy laborers today live all over the Mother Lode. Restore Hetch Hetchy was founded in 1999.

'Adversaries'

Last week, Rosekrans said Restore Hetch Hetchy staff and supporters look forward to the day when Hetch Hetchy Valley is restored and becomes a Yosemite attraction. He said Restore Hetch Hetchy people believe San Francisco will eventually support restoration.

For now, San Francisco and other communities that depend on the Tuolumne River for water supply are opposed to the Restore Hetch Hetchy campaign. Activists say San Francisco is their chief adversary. Their legal actions name three other parties as "real parties in interest and defendants."

They are the Bay Area Water Supply and Conservation Agency, which serves San Francisco's suburban customers, Turlock Irrigation District and Modesto Irrigation District.

San Francisco Water, Power and Sewer staff say removing O'Shaughnessy Dam would require complete re-engineering of the water and power delivery system that serves more than 2.6 million people on a daily basis.

The State of California estimated re-engineering costs to be anywhere from $3 billion to $10 billion, according to San Francisco Water, Power and Sewer. Re-engineering the entire system

would also have negative impacts on water supply reliability and water quality, on legal rights to property and water, and on statewide water allocations and agreements.

‘Historic mistake’

Restore Hetch Hetchy activists say O’Shaughnessy Dam and Hetch Hetchy Reservoir are part of a “century-old historic mistake.” They want the Fifth District Court of Appeal to consider the merits of restoring what Muir called “one of nature’s rarest and most precious mountain temples.”

The activists say their appeal is coming on “the eve” of centennial celebrations for the National Park Service, which was created in August 1916 in response to public backlash against plans to dam Hetch Hetchy inside Yosemite park boundaries.

According to a National Park Service Yosemite web page headlined “Remember Hetch Hetchy: The Raker Act and the Evolution of the National Park Idea,” the 1913 Raker Act and Hetch Hetchy plan sparked public debates about what designation of a national park actually meant.

“As people tried to answer that question for themselves, the public disapproval that was generated after the bill’s passage was one of the driving forces behind the creation of the National Park Service,” the federal web page states.

Within three years, Congress passed the Organic Act, formally defining national parks and creating a new federal agency, the National Park Service. The National Park Service turns 100 on Aug. 25, 2016.

San Francisco argues the Hetch Hetchy reservoir is subject only to federal law, not to California law, and any legal complaints should have been filed decades ago.

But the federal government has no direct stake in San Francisco’s water and power system, and Congress specifically requires that all elements of the city’s water system comply with California law, said Michael Lozeau, chief counsel for Restore Hetch Hetchy.

“The trial court ruling, that the statute of limitations for filing a complaint under the California Constitution has expired, is inconsistent with past court rulings that form the bedrock of State water law,” added Richard Frank, co-counsel for Restore Hetch Hetchy. “We don’t think it will be upheld on appeal.”

Rosekrans says that as the National Park Service centennial approaches, it is worth noting that no one would consider damming an iconic glacier-carved valley in Yosemite National Park today.

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Drought Felt in Low-Income Bay Area Communities

The impact of the drought in rural California has been well documented, but urban areas are also feeling the effects – and low-income communities are especially hard hit, a new report finds.

Water Deeply | July 13, 2016 | Tara Lohan

California's drought, now in its fifth year, has grabbed headlines – many of them focused on the state's mandatory conservation measure enacted last year or the impacts on the agricultural sector, said Heather Cooley, the water program director of the Pacific Institute, a global water think tank.

"Impacts on disadvantaged communities have received far less attention," she said. "And the attention that there has been has focused on wells running dry in the San Joaquin Valley. There has really been less of a review about the drought and disadvantaged communities more broadly."

That's changed since the Pacific Institute teamed up with the Environmental Justice Coalition for Water and eight grassroots organizations to put together a community-based participatory research project on Drought and Equity in the San Francisco Bay Area. The research area covers the San Francisco Bay hydrologic region, which is 4,500 square miles (12,000 sq km) and includes San Francisco County and parts of Marin, Sonoma, Napa, Solano, San Mateo, Santa Clara, Contra Costa and Alameda counties.

The area, Cooley said, is an important case study because it contains a mix of small, rural water systems, and highly urbanized, large systems. These serve communities with racial, social and economic diversity.

While there are few documented cases of wells running dry in the Bay Area, the drought's impacts have manifested in other ways. Margaret Gordon, co-director of West Oakland Environmental Indicators Project, cited aging infrastructure and high prices for water as two of the biggest problems in her community and across the region.

"Old infrastructure and payment – it's the same all over," said Gordon. "From Sonoma to Bayview-Hunters Point to Richmond to East Oakland to West Oakland to Marin – it's the same thing. The oldest parts of cities historically have been communities of color and there's a lack of a real system that protects them and ensures they have good water."

Affordability is an issue that's been exacerbated by the drought, said Cooley – with water rates rising faster than inflation and some communities being hit by drought surcharges from water agencies. Research from the Public Policy Institute of California found that water bills have increased two to three times quicker than inflation in urban areas of the state between 2000 and 2010. "This was needed to cover some of the fixed costs associated with water service," said Cooley. "But they can exacerbate affordability concerns for low-income households."

Another concern is inequitable use of water. In general, low-income households use less water than those with higher incomes, which are more likely to have pools, larger lots and bigger lawns. For example, the report compares Hillsborough, where the median household income is $250,000 a year and per capita water use last year was 181 gallons (685 liters) a day, to East

Palo Alto, less than 20 miles (32km) away, where median household income is $53,000 and per capita water use is 43 gallons (163 liters) a day.

“Higher levels of water use place additional burdens and costs on the water system and increase the likelihood of having to develop more expensive water supplies,” the report noted.

As some communities face diminished water supplies and need to augment water resources, an equity issue arises. “Who is driving the need for, the demand for those new supplies, who pays for it and how is it allocated?” asked Cooley.

There are other drought impacts on water systems and ratepayers, as well. In West Oakland, Gordon said that new developments are putting increased pressure on aging infrastructure, when hundreds or thousands of new connections are added to existing pipelines – making a bad problem even worse.

Drought can also lead to overpumping of aquifers (which can cause subsidence and decrease water quality) and increased costs for expensive upgrades to water treatment systems. Some communities reliant on water through the Sacramento-San Joaquin Delta may be on the hook for future costs related to infrastructure and habitat restoration.

“The Bay Area, despite its wealth, is vulnerable, in many of the same ways, if not to the same degree, as other parts of the state that get a lot more attention – like much of the San Joaquin Valley and the Central Coast, where wells are running dry in mass numbers,” said Colin Bailey, executive director of the Environmental Justice Coalition for Water. “The Bay Area is not immune and the equity impacts of drought are felt statewide first and worst by low-income communities of color, but they have implications for our society as a whole.”

In rural areas the impacts of drought are most often the result of small water systems that are unable to serve a dispersed community with limited resources. In those cases, the entire community is impacted. But in more urban regions, like the Bay Area, “it’s really about pockets of communities that are struggling,” said Cooley. “The solutions are within our reach. There are programs we can implement to help households and we should be doing it. It isn’t just the drought, they are much broader and more long-term.”

The report outlined what an equitable response to drought would look like and grouped the solutions into six categories: fair and equitable water rates; billing practices that meet low-income household needs; low-income financial assistance programs; programs to reduce water use in low-income households; effective communication and outreach strategies; and stakeholder engagement in decision-making processes.

Gordon said that in her community of West Oakland, she’d like to see discussion of a new bond to address equity issues around water infrastructure and water-saving technologies, like gray-water systems, and help them become accessible and widespread.

Later this summer a summit will convene the area’s water suppliers with community leaders who worked on the report – which include representatives from Youth United for Community Action, West Oakland Environmental Indicators Project, West County Toxics Coalition, North Richmond Shoreline Open Space Alliance, Greenaction for Health and Environmental Justice, Shore Up Marin, California Indian Environmental Alliance and Alviso Water Collaborative. There there will be an “opportunity to present their findings and find common cause,” said Bailey.

Research in the coming months will also broaden to encompass the drought impacts on equity statewide. “In some senses, the Bay Area was a primer for what is to come,” said Bailey. “We found that one area of California most widely assumed to not have impacts, in fact does, and the results of a statewide analysis will give rise to a pretty broad sense that no region is in any way immune from some dire consequences for low-income communities of color, which in some parts of the state is an overwhelming majority.”

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Fighting Drought Will Be a Long-Term Battle, Says Study

Using new snowpack data collected by satellites, we now have a better view of California's water deficit, and it is not a pretty picture. Steven Margulis of UCLA explains just how deep the problem is.

Water Deeply | July 1, 2016 | Matt Weiser

The California drought is now in its fifth year. But what if we told you it could take four more years to get out of it?

That's the alarming result of a study published June 21 in Geophysical Research Letters. The study analyzed California's mountain snowpack to assess the severity of the current drought and compare it to past water shortages.

The study found that the current drought is, without question, the worst ever recorded in the state as measured by the "deficit" in the snowpack and the crucial freshwater it provides to the state. And largely because of its long duration, it will also likely take several years of winter storms to make up that deficit – 4.4 years, to be exact.

That estimate was developed, first, by analyzing historical on-the-ground snowpack measurements together with a new resource: detailed satellite imagery of the mountain snowpack, gathered in recent decades by the federal government's Landsat program. This new data provides a more comprehensive picture of the snowpack because it looks at all of it, not just location-specific data gathered by sensors on the ground.

The researchers, led by Steven Margulis, a professor of civil and environmental engineering at the University of California, Los Angeles (UCLA), then ran thousands of computer models using the data to estimate how much longer it will take to erase a drought of this magnitude.

Water Deeply recently spoke with Margulis to gain a better understanding of his findings and what they mean for California water management.

Steven Margulis, a professor of civil and environmental engineering at UCLA, helped author a study to measure California's water supply deficit from drought. (UCLA)

Water Deeply: Refresh us on this drought. How unique is it, based on your study?

Steven Margulis: One of the main novelties of our work was trying to embed this satellite-based data into a framework that allows us to tease out how much water is stored in the snowpack. By quantifying the amount of water stored, one of our specific results showed that 2015 was by far the lowest amount of snow water stored in the Sierra Nevada over the record we examined. The main period of our new dataset is 31 years, which corresponds to the remote sensing records.

And further extending it back to 65 years using in-situ [snow collecting] data, we found that 2015 was the driest year on record in terms of the Sierra, by far.

In our 31-year data set, the average amount of water stored in the Sierra was about 18.6 cubic kilometers (4.5 cubic miles), averaging over all years. And 2015 was only 2.9 cubic kilometers (0.7 cubic miles), so about 15 to 16 percent of the normal.

To put it another way, we used our dataset to calculate the return period, which tells you how often a part-event is expected to occur. What we found is that 2015 has a return period of over 600 years, meaning, on average, you wouldn't expect it to occur but once every 600-plus years.

Last year – 2015 – just jumps out as a very extreme water year. Secondary to that, it happened on the tail-end of a multi-year drought. It was an extreme year which was compounding several other extreme years happening prior to it.

Water Deeply: You found that, historically, most California droughts ended after just one year of near-normal rainfall. But not this time. Why is that?

Margulis: We were able to develop a new metric, called a drought deficit. This dataset allows you to add up how much in deficit you are throughout the course of the drought. We were able to do that over the full 65-year record we have.

In California, with respect to snowpack, it's typically a year-to-year thing. People are just waiting for the next above-average year to get things back to normal. What we found in computing this deficit is, in most cases, that's fully justified. If you go back over the 65 years, in all other years but one, a [snowpack] deficit would go back to zero, meaning it would end, within one year. What stood out was that the deficit at the end of 2015 was almost twice as large as any other deficit on record. It was like digging this big hole.

The other subtle but important thing is that any time we have a drought year in snowpack, that's water that is going to have to come from somewhere else, whether groundwater pumping, reservoir storage or conservation. What we're saying is not that we're not going to have above-average years going forward. There's this hole that's been dug and it's going to take many years for the snowpack water to get back to normal. That effect that's been propagated downstream is likely to be a multi-year recovery.

Specifically, what we found is the expected duration of recovery from this drought would be a little over four years.

Water Deeply: Four years, that's a long recovery. How can this information be helpful to people who have already been through a drought for five years now?

Margulis: The method we developed was really motivated by trying to get better knowledge on how it varies year-to-year. In the depths of the drought, that's useful to water managers. Most of the models they use are based on the historical data we have. If we can improve the historical knowledge, that's helpful.

With respect to the drought specifically, it's a cautionary note in that we as Californians have a short memory. What this research shows is that in these circumstances, the planning we need to do might be a little bit longer-term. One good year may not get everything back to normal.

Water Deeply: Does this mean we need four years of normal precipitation?

Margulis: We did 10,000 random simulations [from the dataset], each of which sampled likely snowpack years from the historical record, but going forward. Some of those 10,000 realizations say if we have a huge snowpack next year, we could end the deficit. Others say we might not end the deficit for 10 years. If you take the average of all those realizations, that's where the average of four years comes from.

It's important to keep in mind, the drought could end sooner than that if we have a sequence of very wet years. Or it could take longer if we have more dry years.

This four years is not saying next year won't be above-average. That's certainly a possibility. It's saying that an above-average year might not be enough to offset the several below-average years that we've had.

Water Deeply: It seems like lots of people get confused about this idea of a water supply deficit. Can you elaborate on that concept?

Margulis: In places like the Central Valley, where there's lots of [groundwater] pumping going on, much of that pumping is because they're not getting water from the snowpack. In thinking about drought, our study was really only looking at snowpack. But the system is really interconnected. If there's a water deficit in one part of the system, that needs to be made up from another part of the system. So once you take that water out, now you have a deficit in groundwater.

We're saying given what the snowpack may be, there's this big hole the system is digging out of. That deficit is not just in the snowpack. Because it's such a long-duration event that includes the biggest drought year on record, it's going to take time for the system to recover because of its connectedness.

Water Deeply: Climate change predictions consistently warn that we'll see less snow and more rain in the mountains. Did this happen in 2015?

Margulis: The characteristics that we saw are similar to that. The question is, what's the mechanism? 2015 was an odd year in at least a couple ways. In terms of the amount of snowfall, it was the lowest on record. It was just a very, very dry year. But it also happened to be the warmest year on record.

Where temperature can play a role, there are two main ways. One is that precipitation will fall as rain instead of snow. If you just raise the temperature, where that freezing line is will be at a higher elevation, and lower elevations are going to experience rain instead of snow. The other way is that, in between storms there's going to be more melt of the snow.

This study was not about climate change per se. It's implicit, of course, in everything. But 2015, you could argue, maybe, that it's a sign of things to come in the sense that it had most of the snowpack at the higher elevations. Temperature played a role, but it was just such a dry year.

There are implications with respect to the current [snowpack] monitoring system. All of these in-situ sensors, the snow courses and the snow pillows, they tend to be at middle elevations, largely for practical reasons. To get to those locations to maintain sensors is a difficult proposition in winter. So you can't usually site them at the highest elevations of the range because they are just too hard to get to. So the whole system which has been set up to predict water resources in California is based primarily on these sensors at middle elevations.

So as the snow starts to recede upward, what's sampled at these sites is less and less representative of what's there. The sensors that we do have become problematic in that they're not necessarily sampling where the snow is mainly located. That's one of the benefits of our

method is that [using satellite data] it provides estimates across the whole range, including at elevations where we don't have sensors.

Water Deeply: Does that argue for deploying more sensors, or simply mastering the tools you're working with?

Margulis: I think it's both. Those kinds of in-situ estimates that do exist are very, very valuable for giving us on-the-ground information. There's also definitely a push in the scientific community to develop these kinds of methods [using satellite and airborne tools] where you're able to get pictures of what's going on over the full [mountain] range. Because no matter where you site these things, they are very much point-scale estimates of something that can vary considerably over time. You're getting an estimate at a given location when what you really want is the total amount of snow over the whole range.

Water Deeply: Your study correctly predicted the drought was very unlikely to end in 2016, estimating the likelihood at only 7 percent. What are the odds in 2017?

Margulis: I wouldn't say we correctly predicted it. All indications are it hasn't solved the deficit, but we haven't confirmed that per se. Whether that's proven, I'd be hesitant to say that matter-of-fact until we construct the snow water volumes for 2016.

We estimated what the likelihood will be out to five years. The 7 percent was the likelihood we would have expected in one year. But in our analysis, we have a probability for each year going forward. So in 2017, the probability of the deficit going to zero is about 25 percent – still rather low. Three years out, it's about 45 percent. And then four years out, it's a little over 60 percent. What we found is that once it's more than 50 percent, you can think of that as, OK, it's equally likely that it will end.

In many of the other droughts that have occurred over the years, when probabilities were greater than 50 percent that they would end in one year, they did. The only thing that's different this year versus others is the starting point of the deficit. That's the reason these numbers are low. It's not projecting anything different going forward. The deficit is so large relative to anything seen over the last 65 years that it's going to take longer to get out of that hole, in all probability.

# # #

California drought bummer: Sierra water runoff coming up short
SF Gate | June 28, 2016 | Kurtis Alexander

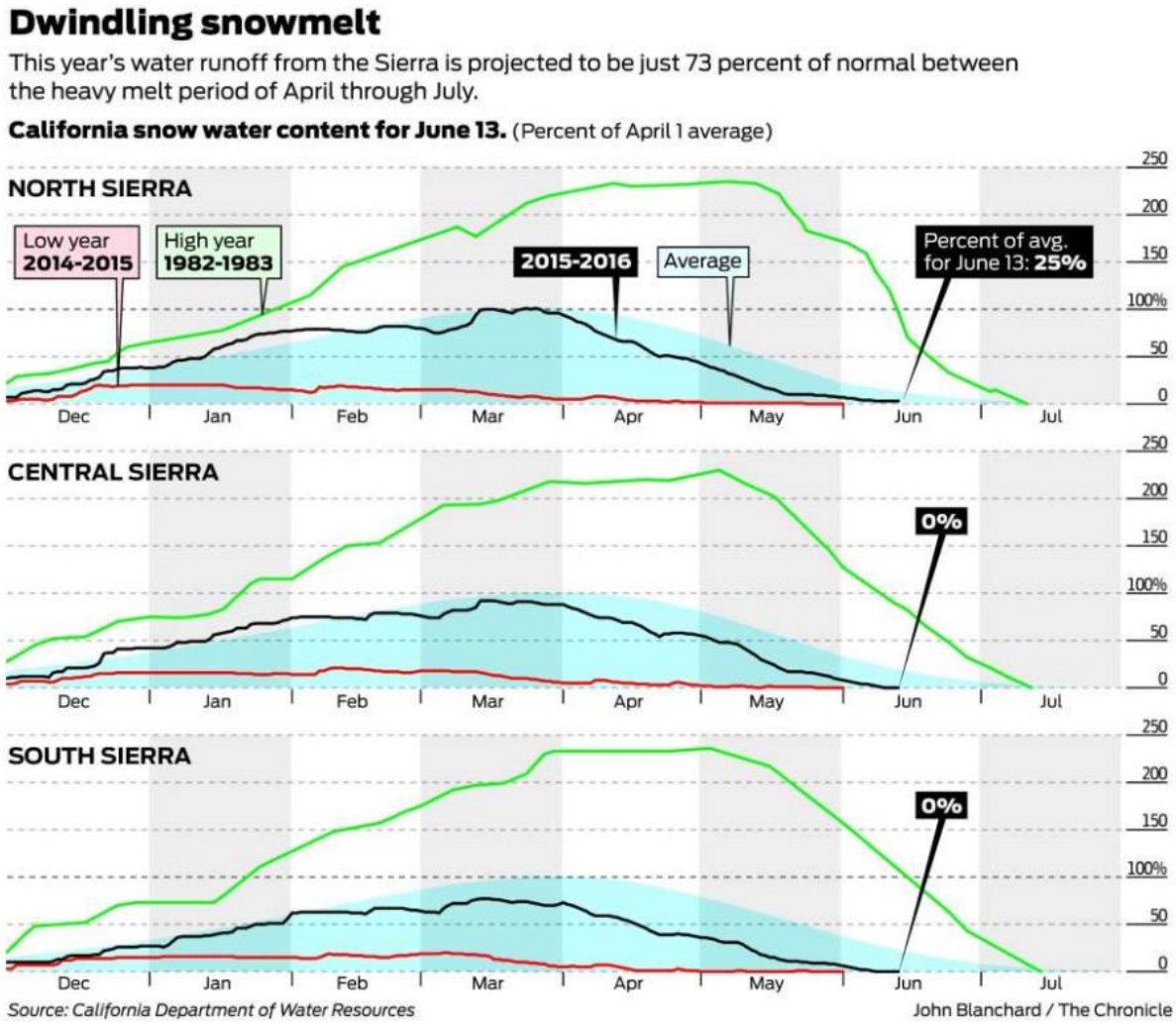
The El Niño-fueled storms that coated the Sierra with nearly normal snow this winter brought blasts of hope to drought-weary California.

But after the flurries stopped and the seasons changed, the melt-off from the high country has been swift and disappointingly scant, according to new water supply estimates from the state.

The Department of Water Resources now projects that the mountains will produce about three quarters of normal runoff during the months of heaviest snowmelt, shorting the rivers and reservoirs that typically provide a third of California's water — and cementing a fifth year of historic drought for the Golden State.

The projections arrive alongside forecasts for potentially dry La Niña weather next winter. And they come as cities and towns face a crucial deadline for deciding how much water to ask consumers to save in the coming year as part of the state's broader conservation effort.

If this year's snowmelt "was among a bunch of normal years, it wouldn't be alarming," said Steve Nemeth, water supply forecaster for the Department of Water Resources. "But (the melt) is not good enough to erase all the concerns after four years of record drought."



Snowmelt's earlier arrival

Runoff from the northern Sierra will be just 71 percent of normal between April and July, according to the state estimates. The central Sierra will yield roughly 77 percent of average over the same time, while the range's southern end will produce only 63 percent.

The lackluster runoff prompted the U.S. Drought Monitor, a partnership of federal and university experts tracking water problems, to lift all of California into the category of "abnormally dry" last week, after nearly a year of slightly wetter conditions.

"With the rapid snowmelt this year, water supply may be a concern later this summer," the experts wrote in their weekly update.

Recent studies have shown the snowmelt in California is coming increasingly early, putting peak runoff further ahead of the peak demand seen in the dry summer months. The trend is driven by rising temperatures and the fact that more precipitation is falling as rain instead of snow.

The state water board is scheduled to receive declarations Wednesday from all urban water suppliers in California on how much water they plan to save through January. Allowing the suppliers to set their own goals represents a significant easing of the government's rationing measures, which until recently involved mandatory caps set by the state.

Maintaining reserve

The new terms require water agencies to cut back enough to maintain a reserve big enough to last for three dry years.

Officials with the State Water Resources Control Board say the less rigid policy is warranted because of the boost in Sierra snow this winter. Snowpack measured 87 percent of average at the traditional peak time of April 1 — compared with just 5 percent of average at the same point last year, when the mountains were essentially barren.

But runoff tracks differently than snowpack, depending on factors like the temperature and storm frequency, how dry the earth is and how much water is used by plants.

Critics of the state's move to ease water policy say the change is premature after five years of below-average snow.

"Returning the conservation targets to local control is going to have negative consequences," said Sara Aminzadeh, executive director of the conservation advocacy group California Coastkeeper Alliance. "Already you're seeing it."

Several water agencies, in anticipation of this week's deadline, have said they don't need to conserve any water to ensure they have a three-year reserve supply, including the San Francisco Public Utilities Commission.

The city's water supplier, though, says it will continue to urge conservation even as it maintains ample water in its Sierra-fed Hetch Hetchy system.

"Because we had an above-average precipitation year at Hetch Hetchy, we were able to fill the reservoir and refill our water bank a substantial amount," said Charles Sheehan, an agency spokesman.

The commission's supply stands at 87 percent of the historical average.

The East Bay Municipal Utility District, meanwhile, says its mountain-fed supplies are at 100 percent of normal for this time of year. The agency has not yet calculated how much it plans to save in the remainder of the year.

California's two largest reservoirs, Lake Shasta and Lake Oroville, also remain at or above their typical levels. Most reservoirs to the south, however, are short of where they normally stand.

Gloomy forecast

The U.S. Climate Prediction Center is pegging the chances of a La Niña emerging this fall or winter at 75 percent, which could spell more bad news for California.

The climate event, which is characterized by cooler-than-normal water temperatures in the equatorial Pacific, tends to produce weather that's distinctly opposite of that of its sibling El Niño.

"Still too early to know exactly what that means for California," said Daniel Swain, a climate researcher at Stanford University, "though it probably does not bode well for drought relief."

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Big drops in urban water use, state finds
SF Chronicle | July 6, 2016 | Kurtis Alexander

Californians are saving an extraordinary amount of water, new records show, even after winter rains prompted state regulators to begin easing drought-driven restrictions on cities and towns.

The State Water Resources Control Board reported Wednesday that urban water use dropped 28.2 percent in May compared with the same period in 2013 — the second-biggest monthly reduction since the state's water rationing program began last year. May's savings followed an impressive 26.1 percent reduction in April.

With state regulators relaxing water rules, however, some are doubting whether such high levels of savings will continue — and whether they even need to. Already, many water agencies have passed the state's new "stress test" and are no longer required to save water under a policy being praised by suppliers and criticized by conservationists.

"We're not out of a drought yet," said Sejal Choksi-Chugh, executive director of the conservation advocacy San Francisco Baykeeper. "Once the mandatory rules are lifted, there's not as much incentive to conserve. I don't see this much of a conservation rate staying in place."

The state water board loosened its conservation policy this spring in response to complaints from local water providers who said near-normal rain and snow last winter gave a sufficient boost to supplies. The agencies said top-down regulation was no longer needed.

Agencies set targets

State regulators in June began allowing the local agencies to set their own conservation targets as long as they have enough water on hand to weather three more years of drought.

Nine of the state's 10 largest water suppliers, including the San Francisco Public Utilities Commission and East Bay Municipal Utility District, said they met the state's supply requirement and consequently do not have to commit to any savings.

The policy is a far cry from the one initiated a year ago that set specific cuts of up to 36 percent for suppliers.

The change has prompted many local water agencies to ease conservation rules for homes and businesses, from allowing outdoor watering more days of the week to eliminating caps on total water use.

2 Danville fountains

This month, East Bay water officials allowed Danville officials to turn on two park fountains popular with children. The play features at Hap Magee Ranch and Sycamore Valley Parks had been closed because they didn't recirculate the water, which officials previously had deemed wasteful.

"Our water supply is in good shape," said Andrea Pook, spokeswoman for EBMUD, noting that El Niño-fueled storms filled the agency's reservoirs to average levels for the first time in years.

The district also recently stopped requiring households to use less than 1,000 gallons of water a day, a limit that yielded thousands of violations and many hefty fines.

Even without such rules in place, Pook expects customers to continue saving water at close to the 24 percent level of conservation averaged over the past year.

Turf lawns and toilets

The East Bay water agency, like many other suppliers, has encouraged customers to make physical changes to their homes, such as installing turf lawns and water-efficient toilets, that will result in a lifetime of conservation.

Some suppliers have put money into new sources of water, like desalination plants.

“When we looked overall at how the state was doing in getting through the drought, the urban and suburban sector was by far doing the best and was really the most drought-resilient,” said Ellen Hanak, director of the Water Policy Center at the Public Policy Institute of California. “A lot of local agencies have made a lot of investment in storage and supply diversification.”

Substantial reductions

Through May, urban water providers had cut back 24.5 percent during the past 12 months, according to the new state numbers. May’s conservation rate was second to only July 2015, when suppliers saved 31.4 percent.

As good as the numbers have been, many say the state should not ease up on the local agencies, noting that their savings can be a boon for wildlife that enjoy healthier rivers and farmers who want fuller reservoirs.

“It’s a finite resource,” said Choksi-Chugh, “and to decide that your region should use more use is just not appropriate.”

# # #

Keegan: Water conservation needs to be a way of life
San Jose Mercury News | July 2, 2016 | Barbara Keegan

Our community has done an outstanding job of reducing water use, and we thank you for embodying all of our water savings slogans: Brown became the new green. Rain or shine, you kept saving water. You fought the drought, inside and out.

We know that you're tired of the drought. But, it's not over. In fact, we may face more frequent droughts in the future as our climate changes. Now is not the time to let our guard down. We need to be ready in case the next few years are as dry as the last few.

Readiness means having enough water stored underground to get through another dry period. Our groundwater basins have helped carry us through some of the driest years in our county's recorded history, but we need to protect these reserves.

Currently, groundwater storage in Santa Clara County remains below normal. Recognizing that the conditions have improved but we are not out of the woods yet, the Santa Clara Valley Water District Board is now calling for 20 percent reductions through January 2017, down from our previous call of 30 percent.

When the current drought began in 2013, our groundwater reserves were plentiful due to the water district's active management. In 2014, those reserves dropped by more than 82,000 acre-feet, enough water to nearly fill our largest reservoir, Anderson. This trend had to stop to minimize the risk of land subsidence, the sinking of the land surface as a result of groundwater overdraft.

Fortunately, the community responded in 2015 with water savings of 27 percent, beating the statewide average. The water district assisted on the supply side, bringing water into the county that we had wisely banked in wetter years, and purchasing supplemental imported water. Local water retailers also played a key role by getting the message out and shifting sources.

Nevertheless, groundwater reserves continued to fall, but at a much slower pace in 2015.

Our situation improved with the El Niño-fueled storms of last winter. Our local reservoir storage was near average by the end of March, and we are promised a much improved allocation of imported water that comes through the Sacramento-San Joaquin Delta.

But those groundwater reserves have only just begun to rebound. With the water we have available, we are able to supply our three drinking water treatment plants and return our groundwater recharge ponds into use. Most of our nearly 100 percolation ponds are now filling, and that water is beginning to make its way to our aquifers. This means that the replenishing of groundwater has begun, but it is far from finished.

Furthermore, the community is continuing to respond with savings of 29 percent this year.

Through our landscape rebate program, more than 7.7 million square feet of lawns have been converted to low water using landscapes. Hundreds of leaking and poorly aimed sprinklers were reported and fixed. These changes will continue to save millions of gallons for years to come.

Looking to the future, we are investing in conservation and developing drought-proof supplies like recycled and purified water and graywater. Our plan is to boost water reuse from 6 percent of our supply to 10 percent by 2025, reducing our reliance on imported water.

This is California, where we care about our precious natural resources and know how to plan for the future. We should never go back to ignoring broken sprinkler heads and leaving the faucet on while we brush our teeth.

Keep up your great habits and make saving water a way of life.

# # #

Barbara Keegan is the chair of the Santa Clara Valley Water District Board of Directors. She wrote this for the Mercury News.

Put away the Slip 'N Slide this summer
SF Chronicle | June 30, 2016 | By Harlan L. Kelly Jr. and Francesca Vietor

Put away the Slip 'N Slide. The reports about the demise of water conservation in Northern California have been greatly exaggerated. San Francisco's commitment to conservation is stronger than ever.

As the water provider for 2.6 million people throughout the Bay Area, the San Francisco Public Utilities Commission has been insistent that customers need to conserve. That's why we decided several months ago to continue asking customers to voluntarily reduce water consumption by 10 percent from 2013 levels. On Tuesday, our commission adopted this conservation request as official policy for 2016. In addition, the commission reduced, but did not eliminate, mandatory conservation requirements for select landscape irrigation accounts.

The Bay Area Water Supply & Conservation Agency, which represents 26 wholesale agencies that buy our Hetch Hetchy Water, agrees that we need to continue asking customers to voluntarily reduce consumption by 10 percent.

We made substantial progress this spring in filling our water system, but we're not going to fill it to capacity. We recognize 2017 and beyond may be dry; prudence dictates that conservation needs to be a permanent lifestyle choice for residents and businesses. Brown lawns — get used to them. Better yet, replace 'em.

In 2014, we asked customers to cut back voluntarily by 10 percent, and they exceeded that target with a 13 percent savings rate. In 2015, with a mandatory curtailment, customers notched an even more impressive 20 percent reduction in water usage. For 2016, we're on track to meet our 10 percent voluntary conservation request. The data doesn't lie; we challenged customers to save and they took action. We want to thank our customers for their fierce response.

However, we're not resting on our laurels. Historically, we've offered conservation programs that residents and businesses have consistently taken advantage of. That's one reason why water consumption has declined over the past decade even though population has increased.

Today, water-wasting prohibitions are becoming permanent. We're launching programs to help residents replace their old water-wasting toilets with new efficient toilets. We continue to operate our water conservation program, which features leak detection, free water-wise evaluations, rebates for fixtures, discounts for rain barrels and residential laundry-to-landscape programs.

Under the state's requirements, we are not obligated to conserve because we have sufficient storage to meet demand over the next three years should the drought continue. We may have passed the state's stress test, but that doesn't mean we're going to stop working toward our own conservation goals.

Looking beyond conservation, we will strengthen the reliability and resiliency of our water system by diversifying our water sources with new groundwater supplies and by expanding our portfolio of recycled water facilities with San Francisco's Westside Recycled Water Project. Perhaps most importantly, new habits and behaviors adopted during this drought will continue to drive down water consumption.

For more information about the drought and a list of water restrictions, please visit www.sfwater.org/drought.

Harlan L. Kelly Jr. is the general manager of the San Francisco Public Utilities Commission and Francesca Vietor is the president of the San Francisco Public Utilities Commission.

# # #

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Water mandates over for county residents
Local suppliers follow SFPUC's10 percent voluntary drought cutbacks

Daily Journal | June 28, 2016 | Samantha Weigel

San Mateo County will once again be on the same page — well, as far as drought-related orders and water conservation is concerned. Local residents are no longer mandated to reduce consumption, instead, they're asked to cut back 10 percent.

The prior patchwork of different regulatory tiers various local cities and utilities in the county had under Gov. Jerry Brown's land-mark conservation requirements has, for now, been eliminated.

Whether you live in San Bruno which previously had a low 8 per-cent cutback requirement, or in Hillsborough where residents faced the highest 36 percent man-date, everyone in San Mateo County is now back to a 10 per-cent voluntary reduction. The alleviation is due to improved hydrology conditions with the San Francisco Public Utilities Commission's Hetch Hetchy system now 84.5 percent full, or about 91 percent of normal for this time of year. Local water officials are pleased but remain cognizant the state is still in a dry spell and urge residents, many who've far exceeded earlier mandates, to continue conserving.

"Droughts are long and cyclical," said Nicole Sandkulla, CEO of the Bay Area Water Supply and Conservation Agency. "We always want to be respectful when we ask for a mandatory high-level conservation because we know there's impacts to customers. They're not planting vegetable gardens, they're letting their lawns go brown, they're taking shorter showers. So we want to save those extraordinary levels of savings when we're in that extraordinary circumstance."

The new requirements are part of a recent shift in how conservation targets are determined, as regulators announced individual utilities would self-certify requirements based on their own supplies.

The Hetch Hetchy Reservoir System benefited from increased precipitation and a more bountiful snowpack this year and, with the vast majority of San Mateo County residents served by the SFPUC, many wholesale customers are taking its lead in seeking a 10 per-cent voluntary reduction.

Steve Ritchie, SFPUC's assistant general manager for water, said the utility consistently monitors storage levels, which include the Hetch Hetchy Reservoir that was at one recent point literally spilling over. Even if the rules change, he's confident customers will continue their remarkably thrifty habits.

"Our customers have really demonstrated a strong conservation ethic for years and years now. And in fact, with these mandatory requirements, people were conserving far more than what was required," Ritchie said. "I kind of joked that conservation was out of control. They were just going like gangbusters!"

But Ritchie and water officials are looking toward the long haul and he noted it's all about storage and preserving enough for future years of drought. Officials don't expect to fully return to normal this year let alone the next, and Ritchie said they decided to return to asking for a 10 percent reduction —the same as before the state instituted mandated cutbacks.

State water officials agreed to begin drafting a framework for permanent conservation regulations early next year and Ritchie expressed support for prohibiting waste. Things such as washing cars without a shut-off nozzle, serving water in restaurants before a customer requests it or running decorative fountains without a recirculation system are a few behaviors that will likely remain permanently outlawed.

“Conservation is a complete way of life for us and anybody who thinks differently is just wrong. We have to go into each year assuming it’s the continuation or beginning of a drought. Because it doesn’t pay off to assume everything’s OK,” Ritchie said. “We have to manage our resources.”

Even cities and water suppliers that don’t source 100 percent from the SFPUC and have alternate storage or access to ground waterbasins, are following the big-city utility’s lead. The California Water Service Company, which has various districts that serve those in San Mateo, South San Francisco and customers in its Bear Gulch region, also has alternate sources but is following the SFPUC’s rules.

“We certainly want to be aligned with our wholesale suppliers and other retailers in the area so we all provide a consistent message, ”said Cal Water spokeswoman Yvonne Kingman. “It’s much stronger when we have a unified voice.”

Cal Water’s Bear Gulch District earned significant attention during the drought with customers required to cut back 36 percent. The district is comprised of many large landscaped properties in Atherton, Portola Valley, Woodside, parts of Menlo Park as well as portions of unincorporated Redwood City and San Mateo County. Although it was of the few regions in the county to miss its target during several months, Bear Gulch customers finished strong with April data showing they saved an accumulative 36.2 percent as compared to the same time in 2013.

Now, Cal Water will also alleviate mandated cutbacks for many customers and eliminate surcharges against those who exceeded their water budgets, Kingman said. Bear Gulch and San Mateo customers will no longer face fines of $10 for every 748 gallons they go over their budget, and South San Francisco customers won’t have their $5.65 surcharges.

Kingman also noted Los Altos customers supplied by the Santa Clara Valley Water District have been asked to continue with a 20 percent cutback and Sandkulla, whose agency represents 26 suppliers across several counties, noted Sunnyvale was issued a 5 percent mandated cutback.

As Cal Water one of the largest regulated water utilities west of the Mississippi with nearly 480,000 customers across California, Kingman noted the new regulations take the state’s diverse geography into account. Still, with permanent requirements on the horizon, now is not the time to stop conserving, she added. “Conditions are different up and down the state. … We understand we received more rain this year, but we still want to be very clear that we know we are in a drought and drought conditions are not gone,” Kingman said. “We want to create long-lasting changes.”

# # #

Accepting 'new normal' for water, brings more challenges (East Bay Times guest commentary)
East Bay Times | June 17, 2016 | Alexander R. Coate and Jerry D. Brown

Droughts happen. And every one teaches us new habits and shows us new challenges. Droughts remind us that water is precious.

We write this on behalf of 10 member agencies of the Bay Area Water Agencies Coalition who serve more than 6.3 million Bay Area residents and thousands of businesses in Alameda, Contra Costa, San Francisco, San Mateo, Santa Clara, Sonoma and Solano counties.

We thank our customers for their exceptional response to this drought and their tremendous conservation actions.

We also know they will maintain these water-wise habits for years -- reducing demands on future supplies. Is conservation here to stay? Count on it.

These are not just water-wise habits. Our customers have taken permanent water efficiency actions: upgrades in appliances and irrigation systems, replacement of turf, repair of leaks.

In just the last two years alone, customer rebates for high-efficiency toilets, efficient clothes washers, and lawn replacements will save 831 million gallons per year of drinking water for Bay Area communities.

These permanent savings are not a new trend. Our local water agencies have active conservation programs that have been in place for decades.

Our rebate programs, home water-wise evaluations and audits, and lawn replacement programs were in place and ready for when dry years arrived.

We have been advancing water efficiency, water-wise habits, and leak detection in various forms for years. With this recent drought, we are learning new lessons that will help us advance our programs and maintain the water savings our customers have achieved.

As we look ahead and consider new state directives, improved snowpack and water-supply conditions, and the possibility of returning dry conditions, we want to thank Gov. Jerry Brown and the State Water Resources Control Board for recognizing that local water agencies know our customers, water supplies and challenges best.

Our water systems, many put in place 100 years ago or more, are incredibly reliable.

As we adapt to a "new normal," we also must recognize challenges that lie ahead.

With successful conservation and water wise habits come reduced water sales, challenging revenue shortfalls and the need for cost efficiencies.

Water service is a capital-intensive business. With substantial fixed costs, achieving financial sustainability is key. Forgoing upkeep on the maintenance of the water systems that the Bay Area depends upon is not an option.

We also must pursue local and regional water supply reliability efforts, which include new infrastructure, recycled water projects and development of other alternative water supplies.

Municipal water systems are amazing, complex operations that must be managed responsibly. Before a single drop of water is delivered to your tap, it has been collected and transported from its source, treated and tested, and traveled miles to get to your home or business.

The complex water treatment and delivery process is a responsibility entrusted to us by our customers, and we work to deliver that service to homes and businesses, with the fire protection and water quality you expect, 24 hours a day, 7 days a week.

We are proud of the service we provide, and we encourage you to learn how we deliver safe drinking water to your tap every day.

Thank you again to our customers, local leaders and the state. Together, we successfully made it through this dry period. Together, we will move forward with new habits learned, new efficiencies locked in, and a commitment to planning wisely for the future.

Alexander R. Coate is general manager of East Bay Municipal Utility District and Jerry D. Brown is general manager of the Contra Costa Water District. Also signing the piece were water managers Robert Shaver, Alameda County Water District; Nicole Sandkulla, Bay Area Water Supply and Conservation Agency; Joy Eldredge, city of Napa; Krishna Kumar, Marin Municipal Water District; Harlan L. Kelly Jr., San Francisco Public Utilities Commission; Grant Davis, Sonoma County Water Agency; Roland Sanford, Solano County Water Agency; and Jill Duerig, Zone 7 Water Agency.

# # #

Californians ramp up water conservation to 26.1% in April

State Water Board stresses need to continue water savings as drought persists

Maven's Notebook | June 6, 2016 | SWRCB

SWRCB logo water boardsThe State Water Resources Control Board today applauded a high-level of water conservation in April—a 26.1 percent reduction over 2013 usage—but reminded urban water suppliers that they must continue to make water conservation a top priority amidst ongoing drought conditions across California.

Despite near average rainfall in much of Northern California this past winter, 60 percent of the state remains in severe drought. Groundwater basins and many reservoirs are badly depleted as the state's drought grinds into a fifth year.

"Californians continue to demonstrate that they are serious about water conservation, which is fabulous," said State Water Board Chair Felicia Marcus. "We will be watching closely to make sure that water agencies continue to prioritize the conservation habits their customers have adopted, and don't fall back into business as usual. In particular we expect them to continue to enforce bans on the worst types of wasteful water use, and to take a prudent approach with their water budgets."

The newly adjusted State Water Board regulation places responsibility on each local water supplier to calculate its own conservation standards for customers based on a "stress test," which requires them to prove they have sufficient water supplies to withstand three years of continuous drought, or take additional measures that include mandatory conservation targets. Water suppliers that fail to meet these new conservation standards may stillBucket face enforcement from the State Water Board.

While water agencies may calculate lower conservation targets for the next nine months, the State Water Board expects that they will continue to achieve water conservation with their customers regardless of local supply situations.

The recently adopted regulation also continues the statewide ban on specific wasteful uses, such as hosing off sidewalks, driveways and other hardscapes, and watering lawns in a manner that causes runoff. Prohibitions remain as well against home owners associations or local governments taking action against homeowners who reduce or stop watering lawns.

Additionally, last month Governor Edmund G. Brown Jr. issued an executive order calling for new permanent water use targets for each urban water supplier and concrete improvements to local agencies' drought preparedness.

Including the results for April, Californians have saved more than 1.43 million acre-feet of water since June 2015, a 24.1 percent reduction in water use compared to the same months in 2013. Water saved during the 11 month period was enough to supply 7.2 million Californians for one year, or 18 percent of the state's population.

Continued conservation is especially critical during the hot summer months, when the potential for water savings is greatest.

“Summer is when we use far more water than we need to,” Chair Marcus said. “Keeping our lawns on a water diet is the easiest way to save every valuable drop we can in our local reservoirs and groundwater basins for the future. Californians most need to keep up their impressive conservation in the summer months—wherever they are in the state. The fact is that we could be staring down the barrel of continued drought into 2017 and last winter’s rain and snow could just be a punctuation mark in a longer drought.”

Under the new “stress test” approach adopted by the State Water Board last month, local water agencies are required to publicly disclose the projections and calculations used to determine their conservation standards, and to continue their monthly water conservation reporting. The localized “stress test” approach took effect June 1, with each agency expected to identify its conservation standard no later than June 22. The “stress-test” conservation standards will be in effect through January 2017.

“While El Nino didn’t bring the record precipitation predicted, it did help many communities. But we don’t know what next year will bring, so we need to keep conserving. We are trying a different approach, replacing a top-down requirement with a ‘show us the water’ approach that requires urban water suppliers show us, their consumers, and the public exactly what water supplies they are relying on, in concert with conservation, to be water secure for at least three more dry years on top of the four tough years we’ve already seen,” Chair Marcus said.

“While we’re relieved at the snow and rainfall some areas of the state got this winter and have adjusted our approach accordingly, we will be looking carefully at the data that comes in on water sources and on conservation rates and will be prepared to raise questions and to step back to a top-down requirement if necessary, in individual cases or overall. Conservation must become a California way of life—it’s just the smart thing to do with a precious resource.”

April Conservation Data

- Cumulative statewide percent reduction for June 2015 to April 2016 (eleven months) was 24.1 percent, which equates to 1,431,101 acre-feet (466.3 billion gallons).
- Statewide water savings for April 2016 was 26.1 percent (134,171 acre-feet or 43.7 billion gallons), an increase from March 2016’s 24.3 percent savings. See fact sheet here.
- Associated with higher monthly savings, and due to the adjustments and credit included in the extended emergency regulation, April 2016 continued with an increased level of compliance; 71 percent of suppliers met or were within one percent point of their conservation standards.
- Even with the February 2016 credits and adjustments adopted by the Board to address equity concerns raised by suppliers and customers, conservation levels have remained high, even increasing from March to April.
- Statewide average water use was 77 residential gallons per capita per day (R-GPCD) for April 2016, up from 66 R-GPCD in March 2016 but below 90 R-GPCD reported for April 2015.

Background

In his April 1, 2015 Executive Order, Gov. Edmund G. Brown Jr. mandated a 25 percent water use reduction by users of urban water supplies across California. In May 2015, the State Water Board adopted an emergency regulation requiring an immediate 25 percent reduction in overall potable urban water use. The regulation uses a sliding scale for setting conservation standards, so that communities that have already reduced their per-capita use through past conservation have lower mandates than those that have not made such gains since the last major drought.

On Feb. 2, 2016, based on Gov. Brown's November 2015 Executive Order, the State Water Board approved an updated and extended emergency regulation. The extended regulation responded to calls for continuing the conservation structure that has spurred such dramatic savings so far while providing greater consideration of some factors that influence water use: climate, population growth and significant investments in new local, drought-resilient water supplies such as wastewater reuse and desalination.

On May 9, 2016, Governor Edmund G. Brown Jr. issued Executive Order B-37-16, requiring the Board to adjust its emergency water conservation regulation through the end of January 2017 in recognition of the differing water supply conditions across the state and, separately, take action to make some of the requirements of the regulation permanent. The Board adopted the revised regulation on May 18.

Since June 2014, the State Water Board has been tracking water conservation for each of the state's larger urban water suppliers (those with more than 3,000 connections) on a monthly basis. Compliance with individual water supplier conservation requirements is based on cumulative savings. Cumulative tracking means that conservation savings will be added together from one month to the next and compared to the amount of water used during the same months in 2013. Under the new reporting structure, water districts will continue to report water use, but their conservation standard will be based on any shortfall in projected supply after three drought years.

California has been dealing with the effects of an unprecedented drought. To learn about all the actions the state has taken to manage our water system and cope with the impacts of the drought, visit Drought.CA.Gov. Every Californian should take steps to conserve water. Find out how at SaveOurWater.com. While saving water, it is important to properly water trees. Find out how at www.saveourwater.com/trees. In addition to many effective local programs, state-funded turf removal and toilet replacement rebates are also available. Information and rebate applications can be found at: www.saveourwaterrebates.com/.

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El Niño rains fail to dampen drought-tolerant gardening trend in Bay Area
San Jose Mercury News | June 8, 2016 | Annie Sciacca

While this year's El Niño rains have brightened the outlook for Bay Area nursery and gardening businesses heading into the summer, the new landscape ushered in by the state's water crisis may be here to stay, even if the drought is not.

Several businesses believe the shift toward more drought-tolerant landscaping is permanent despite the lifting of water restrictions that prompted many residents to let their lawns and plants go brown in recent years.

Oakland-based East Bay Wilds, a nursery and landscaping company that specializes in plants native to Northern California, has seen a huge uptick in business from people looking to landscape with native plants, such as the California lilac or manzanita, which often do not require as much water and maintenance as more foreign plants, according to owner Pete Veilleux.

"I think people are kind of waking up to the fact that the more we try to manage the landscape to suit just our needs, the more damage we do," Veilleux said. "The native plant landscaping has skyrocketed in the last few years, and we have more requests for work than we could possibly do."

Dave Stoner, president and CEO of Sloat Garden Centers, which has locations throughout the Bay Area, said his business will continue to emphasize xeriscaping (a form of gardening that reduces the need for irrigation) and landscaping with native and drought-resistant plants -- something it has done for the past 20 years.,

Even with the relaxed drought measures, it does not seem that many Bay Area consumers necessarily want to go back to their pre-drought ways.

Concord resident Jane Cordingley replaced her lawn with a more drought-resistant garden after she bought her home and saw the yard did not hold up well in the heat and drought. She's happy with the lower maintenance of the garden and the lower water bill.

And, she added, "(It is) a nicer-looking yard than a lawn and easier upkeep. I even gave my lawn mower away."

Encouraging this type of change, Bay Area water agencies have offered rebates and assistance for people to remove their lawns. Contra Costa Water District, for example, offers to pay $1 per square foot (with a maximum of $1,000) of lawn that is removed at a single-family residence ($20,000 maximum for commercial properties). Since January 2014, the district's program has paid for 1.5 million square feet of lawn to be removed.

A similar program by the East Bay Municipal Utility District took out 2.8 million square feet of lawn between January 2014 and March 2016. San Mateo-based Bay Area Water Supply and Conservation Agency has been offering lawn-removal rebates since 2010, but a vast majority of participants -- 225 out of the total 290 rebates -- have sought the rebates in the last two years of the drought.

"Having some rain this year, even though it's not as much as everyone would have liked, has had a positive impact so far on the spring gardening season," said Chris Zanobini, president of the California Association of Nurseries and Garden Centers (CANGC). But he was quick to point out that with efforts by nurseries, landscapers, gardening associations, water agencies and consumers themselves to learn about and invest in drought-friendly gardening, the industry is on the upswing.

"We're definitely impacted by these dry cycles ... but people know a lot more now," Zanobini said. "(Garden centers) are growing the right plants and educating staff and consumers -- there is so much more information than ever."

Drought is not the only challenge the garden industry has had to overcome. Among the worst years in recent memory for the industry were 2008 to 2010, during which California retail sales of lawn and garden products, including nursery items, declined $1.6 billion to $11.7 billion, according to a study from UC Davis agricultural economist Hoy Carman. Nursery production and retail companies lost roughly 25,492 jobs in 2008 and 2009. Carman and the CANGC attribute the loss to the national economic recession in addition to drought effects.

Since then, however, rising home values and a better economy have boosted people's ability to invest in landscaping. At the same time, Bay Area landscapers, garden centers and consumers have embraced drought-tolerant landscaping practices -- a good sign for the nursery business, experts say, as consumers invest in new irrigation systems, buy new types of plants and seek out the services of drought-savvy landscapers.

Christie Reed, a landscape and irrigation designer in Concord, has installed only two lawns in the past two years, which she sees as a sign that people are paying attention to the implications of the drought and the need to conserve outdoor water use.

The most recent severe drought has essentially been a turning point for outdoor water-conservation efforts, much like the push for indoor water use reduction that came on the heels of a major California drought from 1987 through 1992, said Ellen Hanak, a water expert at the nonpartisan Public Policy Institute of California. That push led to widespread use of low-flow showers and toilets, among other innovations to reduce indoor water usage.

During this drought, the focus has been on ways to cut down outdoor water use.

To survive in the landscaping and gardening business during the recent drought has often meant adapting to the new practices. While garden centers or landscapers with sufficient

resources and knowledge are able to keep up with the drought-induced trends, it's important to educate smaller companies, Hanak said.

The Bay Area Water Supply and Conservation Agency offers classes on drought-tolerant landscaping and water-efficient irrigation, and various water agencies offer free materials to help with water conservation during gardening.

Hanak said there have been efforts over the past decade or so to improve awareness about xeriscaping, efficient irrigation systems and outdoor water restrictions.

"I think we've kind of reached that tipping point where there is a combination of recognition of the need to conserve and an availability of options that look good and probably will add value (to people's homes)," she said.

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Will San Mateo begin converting wastewater into drinking water?
SF Examiner | June 30, 2016 | Brendan Bartholomew

Big improvements are in store for San Mateo's sewage treatment facilities, including possibly turning wastewater into drinking water.

In the near term, the changes will result in cleaner wastewater flowing to the San Francisco Bay, and enable much of the city's car and truck fleet to be powered by energy reclaimed from waste.

The city's short-term goals also include turning wastewater into nonpotable "gray" water that will be used to irrigate landscaped medians and parks.

Long-term, however, city officials may even begin converting wastewater into safe, potable drinking water depending on the outcome of California's drought.

San Mateo's wastewater treatment plant is located east of U.S. Highway 101, and serves San Mateo and Foster City, as well as portions of Hillsborough, Belmont, the Crystal Springs Sanitation District and unincorporated San Mateo County.

The roughly $23 million project includes upgrading the facility's computer control network, installing a new crane for improved safety and operations, replacing motor control centers, and replacing various filters, pumps, pipes, gates and valves.

The plant's ability to extract solid waste and convert it to compressed natural gas (CNG) is also getting a big boost with the addition of new refinery equipment and a CNG gas station for fueling city vehicles.

Some of the renovation and upgrade work is well under way, but the city held a groundbreaking ceremony Monday.

Councilwoman Maureen Freschet noted San Mateo had just 500 residents when it was incorporated in 1894, but the town still relies on some of the same wastewater infrastructure installed during that era, despite its population having grown to more than 102,000 residents.

Mayor Joe Goethals elicited laughs from the gathering of city officials and contractors when he joked that some of the equipment being replaced was older than City Manager Larry Patterson, who is 65 and has worked for the city since 2000.

Councilwoman Diane Papan also provoked chuckles when she quipped, "When I ran for office, my big slogan was, 'I'm gonna make sewers sexy!'"

But when it comes to some decidedly un-sexy topics, Clean Water Program Manager Cathi Zammit said the city would need strong cooperation from residents.

Baby wipes and similar products for adults can create huge problems in sewer systems, and must be separated from wastewater before solid waste can be converted to CNG, Zammit said.

"Baby wipes are not biodegradable like they say they are," the program manager noted.

Zammit explained baby wipes often clog the sewer lateral lines connecting homes to city sewers, forcing homeowners to pay thousands of dollars to repair pipes on their properties

Zammit said the acronym “FOG,” for fats, oils and grease, can help residents remember what substances should not be poured down drains.

“Please don’t pour cooking oil or fat from steak down your drain,” Zammit said.

San Mateo Facilities and Fleet Services Manager David Fink said the plant’s increased ability to manufacture CNG from waste would play a key role in the city’s plan to rotate 75 percent of its nonemergency fleet to natural gas-powered vehicles over the next two years.

That means about 220 staff cars, along with Public Works and Parks and Recreation trucks, will have their carbon footprints reduced by running on CNG. But when it comes to emergency services, Fink noted police and fire officials tend to prefer to wait and see whether new vehicle technologies prove themselves in less critical applications.

The city, for instance, plans to have Police Chief Susan Manheimer trade in her unmarked Ford Taurus-based Police Interceptor for a CNG-powered Chevrolet Impala so she can determine whether its performance and reliability are adequate for police work.

The city expects its wastewater treatment plant upgrades to be completed by November 2018

# # #

California may have a huge groundwater reserve that nobody knew about
Washington Post | June 27, 2016 | Chris Mooney

In a surprising new study, Stanford researchers have found that drought-ravaged California is sitting on top of a vast and previously unrecognized water resource, in the form of deep groundwater, residing at depths between 1,000 and nearly 10,000 feet below the surface of the state's always thirsty Central Valley.

The resource amounts to 2,700 billion tons of freshwater, mostly less than about 3,250 feet deep, according to the paper published Monday in the influential Proceedings of the National Academy of Sciences. And there is even more fresh or moderately salty water at more extreme depths than this that could potentially be retrieved and desalinized someday for drinking water, or for use in agriculture.

"There's a lot more fresh groundwater in California than people know," said Stanford's Rob Jackson, who conducted the research with the university's Mary Kang, the study's lead author. "It's like a savings account. We can spend it today, or save it for when we really need it.…There's definitely enough extra groundwater to make a difference for the drought and farmers."

But two other groundwater researchers contacted by the Post questioned aspects of the findings, or their framing, suggesting that the freshwater portion of the resource may already have been used, or that its existence would do little to change California's water plight. The response suggests the new research could prove controversial among scientists trying to interpret what it means for a state that has battled over water, and its distribution, going back many decades.

The problem is the type of water involved: groundwater, which accounts for 95 percent of the planet's freshwater that is not contained polar glaciers and ice sheets. This is the water originating as rain and snow that does not end up in lakes or rivers, or getting drawn up by plants. Instead, it slowly penetrates ever deeper into the ground, so long as there are still cavities that can hold it.

The vast groundwater resource at question in the study is, in many cases, very deep — and the deeper in the ground it lies, the more likely it is to be salty. The resource's huge size, Jackson said, is related to the mountainous terrain — water cascades off mountains and pools in deep underground pockets over very long periods of time.

But extracting this deep groundwater could be expensive and would run the risk of causing considerable land subsidence, as the empty cavities that once held it collapse. It would also mostly be a one-time fix, according to Jackson: The deep groundwater resource would not replenish for hundreds to thousands of years.

And perhaps most troubling of all — oil and gas companies, whose data provided the basis for the discovery, may already be despoiling some of this water with their activities, the research suggests.

The new study "improves the estimates for the total possible volume of groundwater, and how deep it is, and a little bit about its quality, primarily salinity," said Peter Gleick, a water resources expert and president of the Pacific Institute, who also edited the study for the journal. "But it doesn't say anything about whether that stuff's going to be economic to pump, or sustainably

managed in the long run, or an important contributor to solving our water problems. Those are unresolved issues still."

To uncover the new finding, Jackson and Kang pored over data reported by what Jackson calls "really the only industry that cores deeply into the Earth" — oil and gas. The researchers say that they examined data from nearly 35,000 wells, as well as 938 "oil and gas pools," spread across eight counties in the Central Valley and beyond.

The study then extrapolated for the entire Central Valley. Most pertinently, it found 2,200 billion tons of fresh and somewhat salty water within about 3,000 feet of the surface, making it the most accessible.

Still, the study suggests that desalinating this water would actually be cheaper than withdrawing larger amounts of salt from seawater, as a new California desalination plant in the San Diego area has begun to do.

At the same time, the research also wades deeply into ongoing social and political controversy by suggesting that there is likely to be at least some overlap between oil and gas extraction activities in the state, and these previously unknown deep groundwater repositories. And here the research is singling out not only hydraulic fracturing or fracking, but also the practice of wastewater disposal in deep geological reservoirs.

"Oil and gas activities happen a lot out West directly into and around freshwater aquifers," Jackson said. "And there aren't any restrictions to that practice."

To be clear, Jackson is merely noting this risk — he is not asserting that any specific damage has been done. While some deep or shallow freshwater in the Central Valley may have been contaminated, he said, "I think most of it is fine. But I don't really know."

In a statement, Sabrina Lockhart, communications director for the California Independent Petroleum Association, countered that "It is not accurate to say that underground injection is not regulated." Lockhart noted that wastewater injection wells require permits and state and EPA permission for siting, saying these regulators "have strict criteria that ensures that there is no harm to potential sources of drinking water."

The new research prompted skeptical reactions from two researchers asked to comment by the Post.

"A lot of the water that they're talking about may actually be gone, when you think about the Central Valley, right now, where the average depth of the water table is already at 2,500 or 3,000 feet," said Jay Famiglietti, a water expert with both NASA's Jet Propulsion Laboratory and the University of California, Irvine.

Famiglietti did agree about the deeper, saltier water sources, though, and praised the study for "highlighting that brackish groundwaters may eventually be an important water source."

"Just because they've seen that the depth of freshwater in this basin is deeper than people thought, does not mean that you can go pump more freshwater out of this system at all. It unequivocally does not mean that," added Graham Fogg, a hydrogeologist with the University of California-Davis. Fogg did not dispute the new study's overall numbers, so much as whether the finding would be useful in the context of trying to supply more water to the state.

The problem, Fogg said, is that there is a difference between the amount of water that may exist below the ground and the amount that can be extracted either safely — without major ecological impact — or sustainably.

Stanford's Jackson agreed that when it comes to replenishing of the deep groundwater resource, "very little of it, at that depth, is sort of immediate." But he still thinks the state has an unexpected resource that it can now decide how to use — and manage.

"I hope it prompts a conversation about monitoring and safeguarding our groundwater," Jackson said. "We're lucky that we have more than we expected. Now we need to use it wisely and take care of it."

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Groundwater could be a godsend, if we protect it
Sacramento Bee | June 27, 2016 | Special to the Bee

Despite winter rains and the lifting of urban conservation rules this month, California is still desperate for water. Reservoirs in Southern California are low, and we're sucking groundwater from the Central Valley.

But what if there's a vast pool of unidentified water? How much would we use immediately, how much would we save and how would we protect it?

Our new study published this week in the Proceedings of the Academy of Natural Sciences concludes that the Central Valley has almost three times more fresh water underground than the state estimates. Previous estimates are decades old and include only data for the top 1,000 feet or less. Most of the extra fresh water we identified is between 1,000 and 3,000 feet underground.

We also provide the first estimate for slightly saltier water that needs treatment before reaching our taps. Groundwater desalination is increasingly common here and elsewhere. A facility in Chula Vista is doubling its capacity. Other states, including Texas and Florida, and countries, including China and Australia, are also desalinating brackish ground water. It's a resource we may need in the future.

Having more water than expected is good news, but our work raises some concerns. If pumping increases, so will land subsidence. Portions of the Central Valley have already dropped by tens of feet as shallower ground water disappeared. Subsidence permanently reduces the ground's ability to hold water and can damage canals, buildings and other infrastructure.

Another concern is how common it is for oil and gas activities to occur directly into fresh and usable groundwater. We identified hundreds of cases where companies injected chemicals into fresh water through hydraulic fracturing and other processes. In Kern County, the core of California's oil and gas industry, one in every six cases occurred directly into fresh water aquifers.

The 1974 federal Safe Drinking Water Act protects the quality of all water sources that are or could be used by people. The act requires companies to obtain permits whenever they use underground injection to dispose of chemicals.

The 2005 Energy Policy Act amended the Safe Drinking Water Act to clarify that the injection of fluids underground for hydraulic fracturing was not covered. To the industry, the act reaffirmed previous policy. To environmentalists, it exempted hydraulic fracturing from the act.

California's recent Sustainable Groundwater Management Act and the Well Stimulation Bill both mandate new monitoring and data collection. That's good news, but both of these efforts emphasize shallow aquifers only.

Assembly Bill 1755, scheduled to be heard Tuesday by the Senate Committee on Natural Resources and Water, establishes a shared water database for surface and groundwater and water diversions. Unfortunately the bill, authored by Assemblyman Bill Dodd, a Napa Democrat, doesn't include data collection from the 2014 Well Stimulation Bill. California should be banking public water data everytime someone drills an energy or public water well.

The Legislature should consider whether additional safeguards are needed for energy extraction in groundwater. Extra permits may sometimes be warranted, with potential restrictions on oil and gas activities in freshwater aquifers above 3,000 feet. Such a change would affect only a minority of oil and gas operations.

There's a windfall of water below our feet. Now that we know it's there, California should start planning how best to use or save it.

# # #

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East Palo Alto runs out of water, development on hold

City asks water agency for additional monthly allocations to meet needs

Palo Alto Weekly | June 20, 2016 | Sue Dremann

Office buildings, being developed by the Sobrato Organization, are going up on University Avenue and Donohoe Street in East Palo Alto, which is currently facing a water shortage, on June 16. Photo by Veronica Weber.

Hundreds of units of affordable housing and millions of square feet of commercial construction in East Palo Alto cannot be developed because the city doesn't have enough water, according to city leaders.

East Palo Alto has been allotted 1.96 million gallons per day by the San Francisco Public Utilities Commission (SFPUC), which supplies water to local municipalities, but the city could use another 1.5 million gallons per day, city officials say.

East Palo Alto's water consumption per person is already the lowest of any of the utility's 26 wholesale water customers -- 57 gallons per day, according to a 2013-2014 survey by the Bay Area Water Supply & Conservation Agency (BAWSCA). The nearby affluent city of Hillsborough consumes five times that amount -- 302 gallons per capita per day.

To remedy the situation, East Palo Alto officials on Tuesday, June 14, asked the commission to allocate another 1.5 million gallons per day to the city's guaranteed water supply.

In addition, city leaders are asking the commission and BAWSCA, whose members are the utility's wholesale customers, to create ways and incentives for the cities that are not using their full water allotments to transfer some to East Palo Alto and other cities that are facing increased demands.

Without additional water, East Palo Alto must put off major projects that would create affordable housing and thousands of jobs, proponents for the increased allocation told commissioners Tuesday. The city's general plan calls for 2,519 additional residential units; 333,406 square feet of additional retail; 1.9 million square feet of additional office space; and 267,987 square feet of additional industrial space by 2035.

Current proposed projects on hold include 120 units of affordable housing on city-owned land at 965 Weeks St.; a new private school funded by Facebook CEO Mark Zuckerberg and his wife, Dr. Priscilla Chan, for up to 500 students that includes health care and other services; a 200,000-square-foot office project at 2111 University Ave. that could create 650 new jobs; and a 1.4 million-square-foot office project at 2020 Bay Road, the former Romic chemical plant location, that could provide up to 4,500 new jobs, according to a city manager's report.

East Palo Alto has exceeded its Hetch Hetchy allotment four times in the last 14 years, most recently in 2012, according to a city staff report. And that doesn't even factor in the future water needs of three major projects already underway: Edenbridge Homes, with 166 new residential units; the 215,000-square-foot Sobrato office project; and the 4 Corners mixed-use project.

East Palo Alto's water woes were set in motion decades ago when little attention went into planning for future growth by San Mateo County agencies. The city incorporated in 1982, but it was served by the county-run water district, which included Belle Haven in Menlo Park and East Palo Alto.

The water requests were handled by the San Mateo County Board of Supervisors until that time, said Steven Ritchie, assistant general manager of the SFPUC Water Enterprise, which is responsible for overseeing water system operations and planning from Hetch Hetchy through the Regional Water System.

In 2001 East Palo Alto lost a share of its water to Menlo Park in when the East Palo Alto County Waterworks District dissolved. Today, in addition to the Hetch Hetchy allotment, several hundred East Palo Alto residents and small businesses get water from underground wells.

City Councilwoman Lisa Gauthier petitioned the commission to consider that East Palo Alto can play a major role in providing affordable housing for the region, but only if it gets more water.

About 40 percent of the city's current housing stock is affordable. The city is willing to take on more affordable housing, Gauthier said.

An increased water allocation factors heavily into economic equity issues, Gauthier said. She noted that at 0.23 jobs per resident, East Palo Alto has the lowest jobs-per-capita ratio in the county, an unemployment rate that is twice the county average. More water could enable more development of businesses, which would create more work for local residents.

Other speakers joined Gauthier in advocating for the city to receive more water.

"The City of East Palo Alto is in a tough position. ... Basic needs can't be provided," said Brian Perkins, district director for U.S. Rep. Jackie Speier's office. "The choice is often between paying high rents or paying for food or medical care. That's not acceptable. ... The most essential service is readily available (elsewhere in the Bay Area), but not in East Palo Alto, and that's water."

East Palo Alto also faces pressures with Facebook on its border. The social-media giant's workforce has exploded, and it is giving $10,000 bonuses to employees to live within 10 miles of its campus. East Palo Alto residents, whose annual median income is $52,000, can't compete with a Facebook bonus that is 20 percent of their salaries, Perkins said. The additional water would allow the city to create economic opportunity and diverse housing that can be spread broadly across the community, proponents said.

Maeve Johnston, community health planner for the San Mateo County Health System, said the lack of water is also a public health issue for East Palo Alto residents. The high price of housing forces many residents to live in basements, where they are exposed to pests and mold, or to double or triple up in cramped quarters, increasing stress and exposure to communicable diseases -- problems that cannot be solved without more housing and the water to support it.

Nicole Sandkulla, BAWSCA CEO and general manager, said the agency supports the additional 1.5-million-gallon-per-day allocation for East Palo Alto. She also urged the commission to speed up the process for East Palo Alto and not to wait until 2018 to approve additional allocation guarantees.

The commissioners are not scheduled to add allocations until 2018, which would include considering whether to make the cities of San Jose and Santa Clara permanent customers. Currently, both cities have temporary status and are not guaranteed minimum water allocations, but they are seeking permanent status and increased water allocations, which could be granted as early as 2018.

Ritchie said it would not be detrimental for cities to transfer some of the allocations to East Palo Alto. The commission's allotments to permanent wholesale members total 184 million gallons per day, but that level has not been reached and it is not expected to reach close to capacity until at least 2040, when demand is projected at 177.8 million gallons per day, including requests from San Jose and Santa Clara, Ritchie said.

Many cities are going to use less than their allotments due to successful conservation efforts, water reuse and other technologies. Palo Alto has a 17.08-million-gallons-per-day allocation, but the city actually only purchased 9.68 million gallons per day last year, including 0.11 million gallons to Stanford Hospital, according to commission's 2015 Urban Water Management Plan for the City and County of San Francisco. Mountain View has 13.46 million gallons per day, but it purchased only 7.61 million gallons supply assurance.

But Ritchie acknowledged that many cities might be anxious to give up water they might need for future development. Financial incentives might encourage sharing.

"If demands don't bounce back, they will still have to pay minimum purchase requirements," he said. East Palo Alto would take on that purchase cost if it takes on the additional allocations, he said.

The commission did not vote on the topic, but board Vice President Anson Moran said it would probably be an uphill battle to get cities to give up their water allotments, although contractually it would be the easiest way to obtain the needed water supply.

In the longer term, additional water supplies will have to be created for all of the customers. He suggested that staff create priority lists for how future goals can be met. That would include conservation and reclamation. In addition to East Palo Alto, Purissima Hills Water District, San Jose and Santa Clara are asking for greater allotments.

Other potential water supplies the commissioners might look at include additional water diversion from the Tuolumne River, regional desalination, desalination of brackish groundwater and the use of nonpotable groundwater for irrigation, he said.

East Palo Alto has two other potential groundwater sources, but they are not expected to be enough for its demand and are not reliable. The Gloria Bay Well, which is not in production, has

high concentrations of manganese. The city is working with a consultant to design a treatment system to filter out the excessive manganese so the water can be used.

Another site on a triangle of property at East Bayshore Road and Clarke Avenue, known as Pad D, is another potential source, but the well there has not yet been dug. Both sources would help the city establish emergency water supplies, city officials have said.

Gauthier said she was encouraged by the commission's response and observed that commissioners seemed to understand that the city needs the water now. She reiterated that it comes down to an equity issue. With so much hanging in the balance for the city in terms of jobs, housing and educational opportunities, she said that she hopes the city can work with other water customers to develop a solution to East Palo Alto's dilemma.

"Everybody knows the urgency. It's not like we can wait a year or until 2018," she said.

# # #

What Lake Mead's Record Low Means for California

After 16 years of drought in the Colorado River Basin, Lake Mead has hit its lowest point ever. Here's a look at what impact this will have on the 19 million Californians who depend on the water supply.

Water Deeply | June 20, 2016 | Michael Levitin

When the U.S. Bureau of Reclamation announced last month that the country's largest reservoir, Lake Mead, had fallen to its lowest-ever level at 1,074ft (327m), the question many asked was: How will it affect one of California's primary drinking sources?

After all, some 19 million Californians, nearly half the state's population, receive some part of their water from the Colorado River, which flows into the 80-year-old reservoir created by Hoover Dam outside Las Vegas.

By inching below the 1,075ft threshold, the lake's historic low provoked a Level 1 Water Shortage declaration, signaling the start of potential water cuts to Arizona and Nevada. If Lake Mead sinks to 1,025ft (312m), the Department of Interior will seize control of its management and water allocation, and if it falls to 900ft (274m) it will be considered "deadpool," meaning that water is no longer passing through the turbines. Falling water levels are the result of a drought in the Colorado River Basin that has dragged on for 16 years and counting.

For Glen MacDonald, the John Muir memorial chair in geography and former director of the Institute of the Environment and Sustainability at the University of California, Los Angeles, the May pronouncement was "the line in the sand."

"According to the laws, [California] wouldn't have to take a cut. But they're worried if this goes down to 1,045ft, and then 1,025ft, it's going to be really problematic," said MacDonald. Like most state water experts, he doesn't think shortages will be triggered next year, but he isn't ruling out water cuts in 2018 and beyond. The Bureau of Reclamation reports a 64 percent chance that Lake Mead, with its 60 million acre-foot (74 billion cubic-meter) capacity, will fall below the 1,025ft threshold by 2019, requiring an emergency federal response. Given the unknowns, he said, "this is the best over-the-horizon look we can get."

The legislation MacDonald referred to, the Colorado River Compact of 1922, handed California senior rights over the river and stipulated that Nevada and Arizona must be the first to make cuts in times of shortage. But if bad turns to worse in the region's persistent drought, officials are already discussing the possibility of new negotiations taking shape.

"Cuts to California? Not anytime soon," said Jeffrey Kightlinger, general manager of the Metropolitan Water District of Southern California, which distributes 4 million acre-feet (4.9 billion cubic meters) of water – most of it from Lake Mead – to 19 million customers each year. The crucial period, he said, is between 1,075ft and 1,020ft, because "we have no rules lower than 1,020, so everyone has to talk about next levels of action. The expectation is, at some point, California would likely be sharing the pain as well. [So] while California is not willing to put water on the table, we also agree that we shouldn't wait until 1,020ft – we should be having the conversation earlier."

Unofficial proposals that are being floated include eventual Colorado River cuts to California in the range of 300,000–350,000 acre-feet (370–430 million cubic meters) – a little less than 10 percent of the 4.4 million acre-feet the state currently draws from the river. "Losing 10 percent of

your water portfolio would be tough," said MacDonald, who suggested California negotiators may sit down sooner to hammer out a deal, mitigating to avoid the more precarious political impacts of a water crisis engulfing the West.

On the upside, increased rainfall this winter enabled California's Department of Water Resources to announce in April that it is boosting water delivery to meet 60 percent of requests through the 2016 calendar year – up from 20 percent last year and 5 percent in 2014. (The last time 100 percent of water requests were allocated was 2006.)

Plants grow out of dry cracked ground that was once underwater near Boulder Beach in the Lake Mead National Recreation Area near Boulder City, Nevada. About 19 million Californians, nearly half the state's population, receive some part of their water supply from the Colorado River. (John Locher, AP)
Plants grow out of dry cracked ground that was once underwater near Boulder Beach in the Lake Mead National Recreation Area near Boulder City, Nevada. About 19 million Californians, nearly half the state's population, receive some part of their water supply from the Colorado River. (John Locher, AP)

Heavy rains brought on by El Niño helped fill key reservoirs in northern California, including Lake Oroville (now at 92 percent capacity), Shasta (90 percent capacity) and Folsom (83 percent). More than two-fifths of California still remains in what the U.S. Drought Monitor calls "extreme drought," but the State Water Resources Control Board responded to the wet winter by loosening restrictions on water use.

Yet despite the significant relief to the north, that's not likely to translate into additional water moving south from the Delta to compensate for the eventual shortages caused by a shrinking Lake Mead – not least because of the tenuous recovery and preservation efforts of the Delta's fragile fisheries. "The allocations are already set from the Delta. There's not going to be any more allocated," said Shane Hunt, public affairs officer at the Bureau of Reclamation for the Mid-Pacific region. "We are still dealing with the drought. Just because two of our reservoirs, Shasta and Folsom, are above average doesn't mean the rest of them are. We're having a lot of problems delivering to customers."

MacDonald said it's physically conceivable, but politically improbable, that more Bay-Delta water will be sent south to offset future demands of Metropolitan. "In a perfect world, if we had cuts in the Colorado River, and we had surplus capacity up in the San Joaquin Valley, you would offset the amount of water needed," he said. "But nobody here is counting on being able to do that. No rational person is thinking that we're going to get a lot more water out of the Delta for L.A."

Kightlinger of Metropolitan agrees. "We don't see a Delta impact in the near future. Our game plan is that we'll be making up [the shortage] with more conservation and more recycling," a process that currently reuses about 400,000 acre-feet (490 million cubic meters), or 10 percent of the region's water each year, he said. "We expect to have some losses, but to stem our losses best we can. We don't expect to get more imported water from either the Colorado or northern California."

So, returning to the original question of how Lake Mead's historic low will impact California's crucial drinking source, the best answer may be: in the near term not a whole lot, but in the long term, quite a bit. Still, UCLA's MacDonald strikes a note of optimism. "This is manageable right now by taking strong action in terms of conservation and infrastructure," he said, suggesting that

if Southern California increases stormwater capture to 300,000 acre-feet by 2025, it could offset the potential 10 percent cut from the Colorado River. But time is of the essence.

“This is it. We’ve seen our vulnerabilities,” said MacDonald. “In a sense, we should take advantage of the drought: If we can learn some lessons, we can put into place some strategies that will get us through this century.”

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How California Could Reinvent the Water Sector
Water Deeply | July 4, 2016 | Newsha Ajami

The state has an opportunity to be a real leader but would need devote more resources to funding innovation and research, and diversifying its portfolio with more water reuse, greywater, stormwater capture, efficiency and conservation.

California's epic drought is not yet over and it still presents a tremendous opportunity.

It's not the first time the state has faced a major resource crisis, and, if history is a guide, the Golden State could lead the way to reinvent its – and the U.S. – water sector.

Dry spells have become a recurring phenomenon in California, undermining assumptions upon which the state's heavily engineered water system was built. While this sophisticated systems of dams, aqueducts and channels has enabled great social and economic growth in the past century, it is reaching the end of its lifespan.

The drought has spurred state and federal governments to use various financial vehicles to ease impacts. Over the past year, California has set aside billions of dollars for drought relief and new water infrastructure, while enacting new groundwater protections and measures to increase water efficiency and recycling. The Obama administration has also recently pledged millions of dollars to enhance California's water supply quality and quantity through watershed restoration.

In the early 1990s, California endured an energy crisis. The state used that experience to overhaul its energy sector with a series of strategic research and development investments and a shift in pricing and regulatory policies. This led to the creation of California's Renewable Energy Portfolio Standard (RPS) in 2002, which transformed the electricity sector through the growth of new energy sources, such as solar and wind energy. These systemic changes ultimately triggered a transformation of the national energy policies. For example, currently 23 states plus Washington D.C. have established RPS.

Water shortages and scarcity is not only a California problem. According to the U.S. Government Accountability Office, 40 out of 50 states expect some level of water shortage in the coming decade. Drought, flooding, climate change, water quality degradation and aging infrastructure pose significant challenges to America's water and wastewater systems.

Once again, California has the chance to lead a nationwide paradigm shift. This time, it can be a revolution in water management that better tackles challenges the sector is facing. To do that, California needs to place greater emphasis on a diverse portfolio of innovative solutions such as water reuse, graywater systems, storm and rainwater capture, efficiency and conservation and smart water systems. It should also consider making smart investments in research, development and dissemination of new and innovative solutions that would promote a more holistic and integrated approach to regional water resource management.

Emergency drought funds and bond money can initiate the transformation of California's water sector by buying down the cost of new technologies and providing initial investment capital to attract private and public funding. However, this is only a one-time funding boost. Making the leap to a more flexible and reliable water system will require a steady and sustainable funding source devoted to innovation.

There needs to be a nationwide realization that the era of undervalued water is over. The water sector needs to fundamentally change the way it values water as a resource by adjusting water rate structure and pricing policies to capture the full cost of services provided to its customers.

The average cost of water in the United States is one of the lowest compared to other developed countries while its per capita water use is among the highest (Figure 2). Underpricing water could often lead to a gap between revenue collected from customers and the total costs to operate water systems, leaving limited options to pursue and implement innovative solutions. The water sector should move away from the price-per-unit model, and decouple their revenue stream in a way that would reflect the marginal cost of consumption and scarcity.

In addition, the establishment of a local or regional water innovation fund could enable utilities to strategically invest in research and development and create new markets. This would reduce the risk and cost of realizing innovative solutions and can be leveraged to attract additional private and public monies. To facilitate this multiplier effect, some of these efforts have to be backed up by policies that can pave the water sector's path to innovation.

Even though the El Niño weather pattern brought rain to different parts of California, it has not been enough to eliminate the impacts of a four-year drought. California should act on the current momentum and public awareness to address its short and long-term water challenges. The state should seize the opportunity to bring the water sector into the 21st century.

The views expressed in this article belong to the author and do not necessarily reflect the editorial policy of Water Deeply.

# # #

Court rules that sale of Delta islands can proceed
Sacramento Bee | June 30, 2016 | Ryan Sabalow

The Metropolitan Water District of Southern California's $175 million purchase of five islands in the heart of the Sacramento-San Joaquin Delta has been cleared to move forward, even as legal challenges continue.

On Thursday, the 3rd District Court of Appeal lifted a temporary stay order it had issued in June that briefly prevented the sale from closing. A coalition of environmental groups and local water districts, along with San Joaquin and Contra Costa counties, had requested the stay as part of a broader lawsuit challenging the sale.

Those groups sued in April, arguing the purchase could not go forward without an environmental review. Metropolitan officials have said it makes no sense to do an environmental review before the agency has a firm proposal for how it wants to use the islands. The case will be heard in San Joaquin Superior Court, even as the sale moves forward.

Metropolitan has suggested the islands could be used to store equipment or possibly fill dirt for Gov. Jerry Brown's twin tunnels project, which is designed to improve the reliability of water shipments to areas south of the Delta. The project is unpopular among environmentalists and elected officials in the Delta region, and they have taken aim at Metropolitan's pending land purchase, as well.

Delta Wetlands Properties, a subsidiary of Swiss financial services conglomerate Zurich Insurance Group, bought the islands 20 years ago with the aim of converting them into giant reservoirs that could store water in wet years and ship it to Southern California when supplies run low. Local governments and landowners sued, and in 2013 negotiated a series of settlements that restrict what can be done with the land.

A separate lawsuit filed in Contra Costa Superior Court argues that Delta Wetlands signed a contract that requires future buyers to abide by the negotiated settlements. Metropolitan has said it has no plans to use the islands as reservoirs.

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Stanford researchers highlight steps toward sustainable groundwater management in California

Survey of groundwater professionals points to need for standardized data monitoring and makes policy recommendations for successful implementation of historic groundwater legislation.

Stanford News | June 29, 2016 | Rob Jordan

After decades of dysfunction that have exacerbated chronic water problems, historic groundwater legislation has brought California to the cusp of a new era of water management. Meeting the law's goals, however, will require overcoming stubborn systemic obstacles, according to a report by researchers at Stanford's Water in the West program and the Gould Center for Conflict Resolution at the Stanford Law School.

The statewide survey of groundwater professionals found a range of shortcomings in groundwater data collection and use. The report also outlines regulatory and policy actions that could improve data collection and coordination, vastly improving how California handles the source of up to 60 percent of its water supply.

"Like a bank account, managing groundwater effectively requires understanding what comes into the system and what goes out," said lead author Tara Moran, sustainable groundwater program lead at Water in the West, a joint program of the Bill Lane Center for the American West and the Stanford Woods Institute for the Environment. "That's been impossible on a statewide level in California and even on the level of groundwater basins, which are usually managed by multiple agencies that are not required to share information."

The Sustainable Groundwater Management Act (SGMA), passed in 2014, requires sustainable management and takes important steps toward ensuring more effective collection and integration of groundwater data. It also calls for the monitoring of groundwater basins, permeable areas that drain large amounts of water to natural underground storage areas. But the law stops short of requiring local agencies to adopt statewide monitoring protocols, instead allowing flexibility to determine the monitoring activities that best meet their needs. Yet, standardized monitoring would make groundwater information more shareable across regions and the state.

Uncoordinated and inconsistent data collection among California's more than 2,000 local and state agencies involved in groundwater management is one of the factors contributing to poor groundwater management in the state. This has led to massive drops in groundwater levels, dry domestic wells, land subsidence – the gradual sinking of land – of more than one foot per year in some locations, ecosystem die-outs and reduced stream flows.

The survey finds, among other things, that many local agencies do not have dedicated groundwater-monitoring wells and many data necessary for sustainable groundwater management are missing or are highly uncertain. Twelve percent of respondents with established groundwater monitoring networks do not have a single dedicated monitoring well. Up to 38 percent of respondents indicated a high degree of uncertainty about groundwater recharge potential, sustainable yield estimates, groundwater recharge locations and groundwater-dependent ecosystems.

Based on their findings, Moran and her colleagues suggest regulatory and policy changes for local, state and federal groundwater management agencies. Among them: use the authority

under SGMA to monitor private production wells and to implement groundwater extraction metering; and develop a statewide advisory committee to provide guidance on new data collection technologies and other data-related topics.

“Achieving SGMA’s goal of sustainably managed groundwater basins will require building a shared understanding of groundwater conditions across a diverse range of interested parties,” said co-author Janet Martinez, director of the Gould Center. “This survey provides us with critical insights on the data management efforts needed to accomplish this.”

The researchers plan to release more detailed survey analysis in a series of reports and academic publications that combine survey results with key findings from an ongoing four-part groundwater data workshop series at Stanford.

# # #

Co-authors of “From the Ground Down: Understanding the Groundwater Data Collection, Adequacy and Sharing Practices of Local Groundwater Management Agencies in California” also include Amanda Cravens, collaborative technology specialist and researcher at the U.S. Geological Society; and Leon Szeptycki, executive director of Water in the West and Stanford Woods Institute professor of the practice.

California needs action now on groundwater protection
Sacramento Bee | June 29, 2016 | Editorial

As if California's water supplies weren't already sufficiently imperiled, a bill that would have taken a small step toward groundwater regulation unfortunately has now stalled.

Sen. Lois Wolk's Senate Bill 1317 would have slowed the speed at which new wells are drilled, and denied permits for wells in critically overdrafted basins until groundwater regulations begin to take effect in 2022. But it ran into opposition from agricultural interests and local government agencies.

Water agencies and farmers should recognize the urgent need to better manage the overuse of this precious resource. Groundwater is a major source of potable water for homes and critical to California's $54 billion agriculture production.

Prolonged drought has spurred a scramble to drill new groundwater wells. The results have ravaged the Central Valley and pitted neighbor against neighbor.

In some parts of the Valley, land has subsided at an alarming rate due to overpumping. A NASA study found an area near Corcoran that sank 13 inches in eight months. Rural residents have lost drinking water to deeper wells sunk by neighbors in shared aquifers.

Wolk sought to require cities and counties to create a process for issuing drilling permits and to prove that new wells would not cause an "undesirable result," such as subsidence, saltwater intrusion or an unreasonable lowering of groundwater levels. The law was to take effect on Jan. 1, 2018, and end in 2022, or once a county established a plan to sustain its groundwater.

Why wait six more years? As it is, sustainable groundwater management is proceeding at a snail's pace. California is the last state in the West to regulate groundwater; the Legislature passed the Sustainable Groundwater Management Act in 2014. But the law forces local agencies only to create plans for sustainably managing groundwater by 2022. Achieving sustainability isn't required until 2042.

Damage already has occurred to California's aquifers from overuse. If the state doesn't get a handle on drilling in basins already strained by drought and overpumping, irrevocable damage could happen in the next 20 years before sustainability plans take effect.

Groups that opposed SB 1317 – the Delta Coalition, the League of California Cities, the California State Association of Counties and others – should consider the long-term harm being done to this valuable resource. Californians should be working toward sustainably managing groundwater. The sooner it is accomplished, the better for everyone.

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Shasta water release plan has no cutbacks to farmers – for now
Sacramento Bee | June 29, 2016 | Ryan Sabalow and Michael Doyle

After weeks of uncertainty and pressure from members of Congress, federal officials on Wednesday announced a plan for managing water releases from California's largest reservoir this summer in a manner that will not involve cutbacks in farm water deliveries – at least if all goes as hoped.

For more than a month, federal agencies have battled behind the scenes over how to balance the needs of California farms and two endangered fish species whose populations have been decimated by years of drought and environmental decline.

Federal fisheries officials – who hold considerable sway over how the U.S. Bureau of Reclamation operates Shasta Dam and other federal reservoirs – had been weighing whether to hold back substantial volumes of water at Shasta Lake into the summer to protect juvenile winter-run Chinook salmon. A companion proposal called for letting more water flow to the Pacific Ocean through the Sacramento-San Joaquin Delta during summer, in hopes of bolstering survival rates for another species teetering on the brink of extinction, the Delta smelt.

Both plans met with forceful opposition from Central Valley farmers, who rely heavily on Shasta water deliveries for irrigation. The proposals would have meant another year of curtailed deliveries during key portions of the growing season.

Instead, the Shasta plan released Wednesday marked a victory for farm interests and a significant about-face for fisheries officials. Rather than the more drastic proposal under discussion, the National Marine Fisheries Service and U.S. Fish and Wildlife Service reverted to a model for operating Shasta Dam that stays the course for giving farmers more water deliveries than in recent years.

Agency officials said their compromise plan should still result in ample cool water to keep endangered winter-run Chinook from dying in the Sacramento River. The bureau will be required to closely monitor temperatures in Shasta Lake to ensure that cold-water releases are possible through summer and fall. If they determine that Shasta is too warm, they will cut back releases to ensure there is enough cool water for later in the year.

Barry Thom, a deputy regional administrator for the National Marine Fisheries Service, acknowledged in a letter signing off on the plan that, even with the monitoring, "some temperature-dependent mortality is expected" for the winter-run Chinook.

Reclamation spokesman Shane Hunt said the less drastic approach was justified following a relatively wet winter in Northern California after four dry years. The reservoir has almost twice as much water this year as it did last year, he said.

But he noted that uncertainty remains for California's water supply, and farm deliveries still could be curtailed if the bureau isn't able to maintain stable temperatures.

"It's possible there could be changes," Hunt said. "That's always a possibility."

Salmon fishing groups and environmentalists expressed disappointment in the more tepid approach outlined Wednesday, and also skepticism about the federal government's commitment to rescuing endangered Delta fish.

"They agreed to something earlier in the year that would have been more protective; they failed to make that, and now they're falling back from that," said Jonathan Rosenfield, a conservation biologist at the nonprofit Bay Institute of San Francisco. "That's not a good start."

In 2014, a similar scenario played out: Federal and state officials announced a plan to keep temperatures in key portions of the Sacramento River below 56 degrees, the point above which young salmon start to die. The bureau calculated that the water would be cold enough to ensure survival of 30 percent of the fish. But its calculations proved faulty, and only 5 percent of the juveniles lived.

Last year was worse; water temperatures exceeded the maximum 1,600 times and only 3 percent of the juveniles survived.

Earlier this year, with Shasta Lake temperatures yet again outpacing predictions, federal fisheries officials expressed frustration with the bureau's forecasting models, and discussed setting even lower temperature requirements through summer to provide a cushion for the winter run's survival.

Concerned at the prospect of cutbacks, California's powerful farm lobby and its congressional allies began pressuring the agencies to ensure that promises of increased water deliveries made to Central Valley farmers last spring would be met. On June 9, 15 House members from California sent a letter urging the Obama administration to reject the more stringent Shasta plan under discussion, saying it would cripple the state's farming economy and possibly lead to water shortages for cities.

In addition, individual lawmakers followed up with the kind of personal lobbying that can amplify influence.

Rep. Jim Costa, D-Fresno, for instance, talked to Commerce Secretary Penny Pritzker, who oversees the National Marine Fisheries Service, and Deputy Interior Secretary Michael L. Connor, a Westerner who has immersed himself in California water issues. The staff of House Majority Leader Kevin McCarthy of Bakersfield was in contact with Bureau of Reclamation officials.

On Wednesday, Costa celebrated the announcement of the revised Shasta proposal.

"It is a fair outcome in a very challenging water year," Costa said in a prepared statement, "but now, it is incumbent upon the Bureau of Reclamation to meet these performance standards to ensure that communities in the San Joaquin Valley do not have their water supplies cut further, and that the third-year class of winter-run Chinook salmon is not put further at risk."

Michael Milstein, a spokesman for the National Marine Fisheries Service, said improved temperature monitoring this year, among other guarantees, should help avoid a crisis. "We made some significant additions to the plan to ensure that the cold-water pool is protected for these fish," he said.

The Shasta operating plan is subject to approval by the State Water Resources Control Board. Spokesman Tim Moran said the board will hear an update at its July 6 meeting.

Meanwhile, the federal government still has no formal plan to rescue the Delta smelt. Once the plan for Shasta – the linchpin in the federal Central Valley Project – is in place, Hunt said, officials will turn their attention to how other reservoirs could be managed this summer to aid in the species' survival.

# # #

California senate approves water storage bill
Central Valley Business Journal | June 29, 2016

SACRAMENTO — The California Senate Committee on Governance and Finance passed, by a 6-0 vote, AB 2552 aimed at helping build crucial water storage projects like the Sites Reservoir and Temperance Flat Dam. The bill now heads to the Senate Appropriations committee for further consideration.

The bill, which was a bipartisan measure championed by Republicans Kristen Olsen, James Gallagher and Democrat Rudy Salas, would help California build water storage facilities by allowing projects that receive funding from the 2014 Water Bond to use alternative delivery methods. The bill will improve flexibility in design and reduce construction costs and time to complete the projects.

“We cannot meet the needs of Californians without increasing our state’s water supply,” said Olsen, from Riverbank. “This bill provides an important tool that will allow long-awaited storage projects to finally be built.”

Gallagher, from Nicolaus, said the bill would allow the state to increase the water storage quickly and more cost efficiently.

Californians passed Proposition 1, the Water Quality, Supply, and Infrastructure Improvement Act in November, 2014. The bond included $2.7 billion in funding for water storage projects, but current law severely restricts the types of contracting public works projects may use. The bill aims to address that issue.

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Should California limit the number of small, new water systems?
East Bay Times | June 20, 2016 | Paul Rogers

California's drought has revealed that when it comes to water, not every community is equal.

Large urban areas, from the Bay Area to Los Angeles, asked residents to conserve, raised rates to buy water from other places and generally have gotten by without much inconvenience, other than brown lawns and shorter showers.

But communities served by smaller systems, from farm towns to forest hamlets -- often lacking money, expertise and modern equipment -- have struggled and, in some cases, nearly run out of water entirely.

Now, a bill by a Bay Area state lawmaker aims to slow the spread of little "mom and pop" water providers by making it very difficult to create new ones.

The problem, says state Sen. Bob Wieckowski, D-Fremont, is that California has 7,642 water systems. Some serve only campgrounds, prisons or schools. Of the ones in communities with full-time residents, 63 percent have 200 or fewer connections.

Many have no permanent employees. Some own only one well and have leaky, aging pipes and tanks. State records show they have far more health violations than large city water districts, involving everything from arsenic to bacteria levels in drinking water.

"We see a proliferation of these small districts, some with 100 homes, 200 homes, even 15 homes," Wieckowski said. "Some of them are just putting in a well and saying, 'this is a water district' without the money or the technical expertise to operate it."

Under current law, in much of California anyone can create a private company or a new public agency to set up a water system with a vote from local officials, such as the county.

Wieckowski's bill, Senate Bill 1263, would require applicants instead to identify other water agencies within 3 miles, then meet with those agencies, and write a report comparing how much it would cost residents to simply connect to the existing, larger water system rather than creating a new one. Every new system would need a permit from the State Water Resources Control Board in Sacramento.

"There's no rhyme or reason now," he said. "We need to be more efficient."

The bill, which passed the Senate 21-14 last month, also requires a study of how a new system's supply would hold up over 20 years, including in droughts.

But the debate, pitting environmentalists against business interests, is raising questions about whether bigger is better, and how much local control matters.

Opponents include the California Chamber of Commerce, California Building Industry Association and Association of California Water Agencies. They note that it's often developers who need to create new water systems, particularly if they can't work out agreements with existing ones.

"In its current form, the bill would set up an open-ended bureaucratic process that could make it more expensive to build new homes and developments," said Valerie Nera, a lobbyist with the California Chamber of Commerce.

Supporters cite a 2015 state water board report that showed systems with under 200 connections accounted for 69 percent of all arsenic violations in the state, 94 percent of nitrate violations and 92 percent of bacteria violations.

"Some of these smaller agencies are not able to provide people with clean water," said Kathryn Phillips, director of Sierra Club California. "We've seen a lot of that happening in the San Joaquin Valley, and we want to make sure that doesn't happen again. This provides more oversight."

But others say having larger agencies provide water gives locals less say over rates and rules.

"We've seen what happens with consolidation of smaller business into larger corporations. Sometimes you don't have the same level of service, and you can fall through the cracks," said Tyler Boswell, who works as an operator for seven small water systems in the mountains between Los Gatos and the Santa Cruz County line.

In 2014, as the drought worsened, Boswell watched as Aldercroft Heights, a small community near Lexington Reservoir whose water system serves 350 people, was told by San Jose Water Co., which serves 1 million people, that it might run out of water. The reason: San Jose Water was going to stop releases of water from Lake Elsman, which empties into Los Gatos Creek, the main source of water for Aldercroft Heights.

The tiny community dug a well, put in strict conservation rates and got by when natural springs continued to feed the creek. Other small areas had an even rougher time.

Lompico, a community of 480 people east of Boulder Creek in the Santa Cruz Mountains, saw its wells drying up in 2014.

"It was pretty bad. We were running out of water," said Merrie Schaller, a former member of the Lompico Water District board. "We have old redwood tanks. Everything leaks. We had to tell people, 'Don't use water unless you have to.' Nobody could grow a garden."

The district, founded generations ago when the area was a collection of summer vacation cabins, raised rates and got a grant from the state to build an emergency pipeline connecting it with the larger San Lorenzo Valley Water District. A vote to merge with that district failed by one vote, but then passed on a later vote, and took effect this month.

"A lot of it is emotional," she said. "People here said it was cool to have our own water district. They thought nobody gets to tell us what to do. But the state tells us what to do. Everybody has to meet the public health standards, and it's not cheap."

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