

**A REGULAR MEETING OF THE BOARD OF DIRECTORS
UPPER SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT
602 E. HUNTINGTON DRIVE, SUITE B, MONROVIA, CA 91016
9:00 A.M. – SEPTEMBER 23, 2020**

**SPECIAL NOTICE
Teleconference Accessibility**

Pursuant to Executive Order N-29-20 issued by Governor Newsom in response to the COVID-19 pandemic, the Upper District will hold its board meeting via teleconference or the most rapid means of communication available at the time. Instructions to participate in the teleconference are below:

Attendee Join Zoom Meeting

<https://us02web.zoom.us/j/84900799369>

Meeting ID: 849 0079 9369

Telephone Dial:

1 (669) 900 - 6833

Meeting ID: 849 0079 9369

Public comments may be made through teleconference when prompted by the President during the public comment period. Public comments may also be provided by emailing christy@usqvmwd.org in advance of the meeting. Please indicate "PUBLIC COMMENT" in the subject line.

*If you have difficulty connecting to the teleconference line, please call (626) 443-2297 or email ruben@usqvmwd.org. **It may take a few minutes to join Zoom or connect via telephone so please join early.***

AGENDA

1. PLEDGE OF ALLEGIANCE
2. ROLL CALL OF BOARD OF DIRECTORS
3. ADOPTION OF AGENDA [1]
4. PUBLIC COMMENT
Anyone wishing to discuss items should do so now. The Board of Directors may allow additional input during the meeting. A three-minute time limit on remarks is requested.
5. CONSENT CALENDAR [1]
 - (a) Approve minutes of a regular meeting of the Board of Directors held on September 9, 2020 at 9:00 a.m.
6. ACTION/DISCUSSION ITEMS [1]
 - (a) MWD Rate Structure. (A Representative from MWD will provide a presentation at the meeting.

Recommendation

This item is for information only. No action is anticipated.

(b) Upper District 60th Anniversary Review – Part 1 of 3 Series. *(Staff will provide a presentation at the meeting.)*

Recommendation

This item is for information only. No action is anticipated.

7. INFORMATION ITEMS (These items are for the information of the Board of Directors and require no action) [2]
 - (a) Press Releases.
 - (b) Newspaper Articles.
8. ATTORNEY’S REPORT [2]
9. GENERAL MANAGER’S REPORT [2]
10. DIRECTOR’S COMMENTS [2]
11. FUTURE AGENDA ITEMS [1]
12. ADJOURN TO CLOSED SESSION
 - (a) Conference with Legal Counsel (Government Code Section 54956.9); Potential Litigation: one case.
13. RESUME REGULAR MEETING AND REPORT ON CLOSED SESSION
14. ADJOURNMENT - To a regular meeting of the Board of Directors to be held on October 14, 2020 at 9:00 a.m. via teleconference or the most rapid means of communication available at the time.

LEGEND: [1] INDICATES ACTION ANTICIPATED BY BOARD OF DIRECTORS ON THIS ITEM
[2] INDICATES INFORMATION ITEM - NO BOARD ACTION NECESSARY

PRESIDENT ED CHAVEZ, PRESIDING

American Disabilities Act Compliance *(Government Code Section 54954.2(a))*



To request special assistance to participate in this meeting, please contact the Upper District office at (626) 443-2297 or Valeria@usgvmwd.org at least 24 hours prior to meeting.



**A REGULAR MEETING OF THE BOARD OF DIRECTORS
OF THE UPPER SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT
602 E. HUNTINGTON DRIVE, SUITE B, MONROVIA, CALIFORNIA 91016
9:00 A.M. – September 9, 2020**

Pursuant to Executive Order N-29-20 issued by Governor Newsom in response to the COVID-19 pandemic, the Upper District held a regular meeting of the Board of Directors via zoom teleconference on September 9, 2020 at the hour of 9:00 a.m.

ROLL CALL

DIRECTORS PRESENT: Chavez, Contreras, Fellow, Santana, and Treviño.

DIRECTORS ABSENT: None.

STAFF PRESENT: Tom Love, General Manager; Steve O'Neill, District Counsel; Steve Johnson, Consulting Engineer; Robert Tock, Assistant General Manager; Evelyn Rodriguez, Director of Finance and Administration; Patricia Cortez, Director of Government and Community Affairs; Christy Hawkins, Executive Assistant; Nichol Delgado, Government and Community Affairs Assistant; Ruben Gallegos, Project Assistant; and Valeria Rodriguez, Secretary Receptionist.

OTHERS PRESENT

David Muse, Kelly Gardner, Skylar Stephens, Dan Arrighi, Dave Michalko, Anteneh Tesfaye, Tony Zampiendo, Stephanie Moreno, Ben Lewis, Paul DiMaggio, Jose Martinez, and Bob Kuhn.

ADOPTION OF AGENDA

On motion by Vice President Contreras, seconded by Secretary Fellow, the agenda was adopted as presented by the following roll call vote:

CONTRERAS: AYE
FELLOW: AYE
SANTANA: AYE
TREVIÑO: AYE
CHAVEZ: AYE

PUBLIC COMMENT

None.

CONSENT CALENDAR

On motion by Vice President Contreras, seconded by Treasurer Treviño, the consent calendar was unanimously approved by the following roll call vote:

CONTRERAS: AYE
FELLOW: AYE
SANTANA: AYE
TREVIÑO: AYE
CHAVEZ: AYE

- (a) Approve minutes of a regular meeting of the Board of Directors held on August 26, 2020 at 9:00 a.m.
- (b) Approve List of Demands
- (c) Financial Reports – July 2020
 - 1. Financial Statements
 - 2. Directors' Public Outreach

RECOMMENDED LEGISLATIVE BILL POSITIONS

President Chavez summarized staff's recommendation to approve federal and state legislative bill positions: H.R. 2, H.R. 6395, H.R. 7575, and SB 414 which are consistent with Upper District's 2019-20 Legislative Policy Principles adopted by the Board in February 2019.

On motion by Director Treviño, seconded by Secretary Fellow, the Board approved the federal and state legislative bill positions: H.R. 2, H.R. 6395, H.R. 7575, and SB 414 by the following roll call vote:

CONTRERAS: AYE
FELLOW: AYE
SANTANA: AYE
TREVIÑO: AYE
CHAVEZ: AYE

**LOS ANGELES COUNTY LOCAL
 AGENCY FORMATION COMMISSION
 (LAFCO) BALLOT FOR SPECIAL
 DISTRICT LAFCO ALTERNATE
 REPRESENTATIVE**

The General Manager provided the Board with a brief background on the candidates for LAFCO's special district alternate representative. He stated that Upper District staff is not making any specific recommendations to the Board. He enumerated some factors to consider when choosing a representative. He then suggested that the Board consider either Robert Lewis or Melvin Mathews as special district alternate representative. He stated that these candidates provide the best fit for Upper District in terms of qualification, background, and area served.

Secretary Fellow recognized the compatibility between Mr. Lewis' board and Upper District's and nominated him for consideration as LAFCO's special district alternate representative.

President Chavez seconded Secretary Fellow's nomination.

On motion by Treasurer Treviño, seconded by Secretary Fellow, the Board authorized the General Manager to cast the District's vote via mail-in ballot for Mr. Robert Lewis for LAFCO's special district alternate representative by the following roll call vote:

CONTRERAS: AYE
FELLOW: AYE
SANTANA: AYE
TREVIÑO: AYE
CHAVEZ: AYE

INFORMATION ITEMS

The following items listed on the agenda for the information of the Board were read and ordered received and filed:

- (a) Press Releases.
- (b) Newspaper Articles.

ATTORNEY'S REPORT

District Counsel reported on transactional matters and recent consultations with staff concerning the District's employee handbook and review of certain agreements, including the cyclic storage agreement. He reported that the General Manager's annual performance evaluation will be conducted during closed session, results of which will be announced in open session.

He then provided an update on the San Diego County v. Metropolitan Water District (Metropolitan) case. He stated that the final judgement for the 2010-2012 case was handed down and that the 2014 – 2016 cases will now go to litigation.

ENGINEER'S REPORT

The District Engineer provided a report on hydrologic conditions, Basin deliveries, reservoir storage and releases and rainfall averages. He stated that the Baldwin Park Key Well groundwater elevation was 203.1 feet as of September 4, 2020. He also reported that no notices of wells shutdown due to contamination were received during the month of August 2020.

The District Engineer reported on a recent conversation with Vice President Contreras regarding the effects of the ongoing fire on the San Gabriel watershed. He stated that during the wet season, the Los Angeles County Flood Control assists in checking water quality before run-offs are released to the spreading grounds.

The District Engineer also stated that Watermaster's coordination of PFAS sampling for the producers as a whole will ensure a more consistent, streamlined approach in terms of getting sampling direction from the Division of Drinking Water (DDW), having a dedicated staff to coordinate sample testing with the laboratory, and submitting the results to DDW for the whole group instead of independent efforts from each water agency.

Director Santana and the District Engineer discussed the funding for PFAS testing which will be sourced from Watermaster's Administrative Assessment Fund.

The following is a summary of contamination ranges found in samples under Title 22 from 45 wells during July 2020.

<u>Contaminant</u>	<u>Range (ppb)</u>	<u>MCL (ppb)</u>
PCE	ND – 3.2	5*
TCE	ND – 4.0	5*

A detailed written engineer's report on hydrologic conditions was also provided to the Board.

GENERAL MANAGER'S REPORT

The General Manager reported reaching out to cities impacted by the fire particularly the Cities of Arcadia and Monrovia in case there is a need to reactivate the Metropolitan connection during this time. He stated that he also offered the District office as potential emergency evacuation center or as meeting location for first responders.

He reminded the Board about an upcoming status conference with Judge Duffy-Lewis as well as the need to get next year's nominees for the Watermaster Board to Watermaster by November.

He stated that a Metropolitan staff is scheduled to provide a presentation on Metropolitan's rate structure at the next board meeting. He also reported that the Metropolitan board is scheduled to revisit their proposed rate increases for the next calendar years. He stated that Chairwoman Gloria Gray expressed interest in reconsidering the board's position regarding the proposed rate increases because of the current economic situation. He then discussed the concerns raised by some water agencies about the compounded effects of significantly higher rate hikes in future years should the board decide to hold off on the proposed rate increase for 2021 and 2022.

Treasurer Treviño expressed support for Metropolitan's scheduled incremental rate increases to avoid significant increases in the future. He then sought direction from the Board on how he should approach the issue.

Secretary Fellow expressed support for Treasurer Treviño's stand on Metropolitan's proposed rate increases.

President Chavez and Ms. Kelly Gardner, Watermaster's Assistant Executive Officer, discussed the required pre-registration for the status conference with Judge Duffy-Lewis which has now been closed for additional attendees.

A detailed General Manager's report was also provided to the board.

METROPOLITAN REPORT

Metropolitan summary report was provided in the Board’s agenda packet.

WATER QUALITY AUTHORITY REPORT

A Water Quality Authority summary report was provided in the Board’s agenda packet.

WATERMASTER REPORT

A Watermaster summary report was provided in the Board’s agenda packet.

AB 1234 COMPLIANCE REPORT

A summary report was provided in the Board’s agenda packet.

DIRECTOR’S COMMENTS

Secretary Fellow requested that the meeting be adjourned in memory of former La Puente Councilmember, Mr. Dan Holloway.

President Chavez concurred with Secretary Fellow’s request and shared some memories about Mr. Holloway.

Vice President Contreras reminded the public about the unseen dangers of vegetation roots also burned by the recent forest fires.

FUTURE AGENDA ITEMS

None.

ADJOURN TO CLOSE SESSION

A closed session was held pursuant to Government Code Section 54957; Performance Review: General Manager.

REPORT ON CLOSED SESSION

The Board reconvened after closed session. District Counsel reported that following discussion, no formal action was taken by the Board and that the Board will address the General Manager’s performance at the next meeting.

ADJOURNMENT

President Chavez asked if there were other business to come before the Board. There being none, the meeting was adjourned, in memory of Mr. Dan Holloway, to a regular meeting of the Board of Directors to be held on September 23, 2020 at 9:00 a.m. via teleconference or the most rapid means of communication available at the time.

ATTEST

PRESIDENT

SECRETARY

SEAL

Attachment 1
Consent Item 6 (b)
September 16, 2020

Demands numbered 20856 through 20878 on the General Fund Account of the Upper District at Citizens Business Bank, in the amount of \$313,992.13 and demands numbered 923 through 928 on the Water Fund Account at the same bank in the amount of \$566,769.09.

20856	Nancy Alison Martin Associates	Inv. 08/12/20UD, Tenant Security Deposit <i>(Previously Paid 08/13/20)</i>		2,241.00
20857	Los Angeles County Auditor-Controller	Inv. FY 2020-21, LAFCO Cost Allocation <i>(Previously Paid 08/27/20)</i>		10,622.47
20858	Accent Computer Solutions, Inc.	Inv. 137029, APC Backup Battery Inv. 137584, IT Management Support, September 2020 Inv. 137671, Software Subscription Inv. 137672, Software Subscription <i>(Board approved 10/06/15)</i>	86.37 3,052.37 149.00 <u>407.88</u>	3,695.62
20859	ACWA/JPIA	Inv. 0651580, Health Insurance Premium - September 2020		27,301.39
20860	Best Best & Krieger, LLP	Inv. 884211, Lobbying Services through July 31, 2020 <i>(Board approved 2/3/15)</i>		7,500.00
20861	City of Arcadia	Inv. Sept 19CR, Return of Payment		3,804.90
20862	Ecotech Services, Inc.	Inv. 1685, Water Bottle Filling Station - July 20 <i>(Board approved 08/07/18)</i>		6,500.00
20863	Foothill Technology Center LLC	Inv. OCT 20LEA, Office Lease - October 2020 <i>(Board approved 04/19/11)</i>		20,751.00
20864	Green Media Creations, Inc.	Inv. 1355, Video Production and Graphic Design Inv. 1369, Educational Services- Edible Gardening Workshops <i>(Board approved 09/06/16)</i>	5,000.00 <u>2,500.00</u>	7,500.00
20865	John Robinson Consulting, Inc.	Inv. UD201501-30, State/Federal Loan/Grants Reporting - August 2020 <i>(Board approved 08/04/15)</i>		2,400.00
20866	Kelly Services, Inc.	Temporary Staff Inv. 31007895, W/E 08/02/20 Inv. 32008155, W/E 08/09/20 Inv. 33008700, W/E 08/16/20 Inv. 34010348, W/E 08/23/20 <i>(Board approved 02/07/19)</i>	202.35 202.35 202.35 <u>314.18</u>	921.23
20867	Olivarez Madruga Lemieux & O'Neill, LLP	Professional Legal Services, July 2020 Inv. 325-001-11494, Transactional Fees Inv. 325-050-11702, Transactional Fees Inv. 325-996-11496, Transactional Fees Inv. 325-999-11498, Retainer <i>(Board approved 5/17/11)</i>	105.00 457.75 3,520.00 <u>3,675.00</u>	7,757.75
20868	The Solis Group	Inv. 5865, LPVCWD Labor Compliance, June 2020 Inv. 5962, LPVCWD Labor Compliance, July 2020	1,136.25 <u>817.50</u>	1,953.75
20869	Stetson Engineers, Inc.	Inv. 2533-172, General Engineering Support Services, July 2020 Inv. 2728-013, Integrated Resources Plan Update, July 2020	16,128.92 <u>4,293.02</u>	20,421.94
20870	Tetra Tech, Inc.	Inv. 51613784, Asset Management Plan Support, Services through 06/26/20 Inv. 51626287, Asset Management Plan Support, Services through 07/24/20	420.00 <u>5,040.00</u>	5,460.00
20871	Upper District Revolving Payroll Fund	Inv. JUL 20, Reimbursement for Payroll and Payroll Taxes for Employees Inv. JUL 20D, Reimbursement for Payroll Taxes for Directors	148,163.48 <u>13,138.63</u>	161,302.11
20872	Upper District Revolving Fund	Replenish Revolving Fund Account - August 2020 Office Supplies Computer Systems/Office Equipment/Maintenance & Service Telephone/Utilities Water Conservation Program Expenses Water Recycling Programs Expenses Medical/ODA Reimbursement/Processing Fee	724.29 841.06 2,165.36 1,373.16 7,381.34 <u>2,154.80</u>	14,640.01

20873	U. S. Bank Corporate Payment System	CalCard Charges through 08/24/20 Meeting, Travel, Conferences Computer Systems/Office Equipment/Supplies/Maintenance & Service Utilities Conservation Program Expenses, Education and Outreach	69.98 184.84 <u>159.00</u>	413.82
20874	Anthony Fellow	Director's Compensation, August 2020 10 Days District Business Meeting/Travel Expenses/Allowance Less Deferred Comp. Less Taxes Withheld	2,550.00 516.87 (500.00) <u>(1,050.34)</u>	1,516.53
20875	Edward L. Chavez	Director's Compensation, August 2020 10 Days District Business Meeting/Travel Expenses/Allowance Less Deferred Comp. Less Taxes Withheld	2,550.00 516.87 (1,667.00) <u>(775.80)</u>	624.07
20876	Charles M. Treviño	Director's Compensation, August 2020 10 Days District Business 10 Days MWD Business Meeting/Travel Expenses/Allowance Less Deferred Comp. Less Taxes Withheld	2,550.00 2,550.00 516.87 (1,500.00) <u>(1,263.75)</u>	2,853.12
20877	Alfonso Contreras	Director's Compensation, August 2020 10 Days District Business Meeting/Travel Expenses/Allowance 1 Less Deferred Comp. Less Taxes Withheld	2,550.00 516.87 (500.00) <u>(612.39)</u>	1,954.48
20878	Jennifer Santana	Director's Compensation, July 2020 1 Days District Business Director's Compensation, August 2020 9 Days District Business Meeting/Travel Expenses/Allowance Less Deferred Comp. Less Taxes Withheld	255.00 2,295.00 516.87 (500.00) <u>(709.93)</u>	1,856.94
TOTAL			<u>\$ 313,992.13</u>	
923	Central Basin MWD	Invoice No. USGV-JUL20, Purchase of 5.7 AF of Recycled Water in June 2020 <i>(Previously Paid 08/27/20)</i>		\$ 3,960.71
924	City of Industry City Hall	Invoice No. JUL-20, Purchase of 103.20 AF of Recycled Water in July 2020		27,348.00
925	Metropolitan Water District	Invoice No. 10159, Purchase of 410.8 AF of Treated Water Delivered through Service Connections in July 2020		495,965.40
926	San Gabriel Valley MWD	Invoice No. 519, 100.42 AF of Water Delivered through the Alhambra/MWD Exchange Agreement in July 2020 @ \$200 per AF		20,084.00
927	San Gabriel Valley Water Company	Invoice No. 20-08218, O&M Cost for FY 2019-20		17,873.85
928	Suburban Water System	Invoice No. 6614, Phase IIB Normal Operating Charge, August 2020		<u>1,537.13</u>
TOTAL				<u>\$ 566,769.09</u>



The Metropolitan Water District of Southern California

NEWS RELEASE

P. O. Box 54153, Los Angeles, California 90054-0153 • (213) 217-6485 • www.mwdh2o.com

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Sept. 15, 2020

METROPOLITAN BOARD CUTS SPENDING IN RESPONSE TO PANDEMIC, LOWER WATER SALES

In response to lower water sales and concerns about the financial impacts of COVID-19 on its member agencies and the public, the board of directors of the Metropolitan Water District of Southern California today voted to approve a [cost-cutting plan](#) to reduce district expenditures.

The cuts will save about \$11.7 million, while allowing Metropolitan to continue providing the safe, reliable water supply Southern California depends on. Staff will continue exploring additional opportunities for savings to bring back to the board for a mid-cycle budget review next summer.

The full consequences of the pandemic's financial impact on Metropolitan's member agencies are not yet known, and declining revenue, low water sales, and an increased reliance on district reserves necessitate fiscal discipline, Metropolitan board Chairwoman Gloria Gray said.

“While most of our member agencies are successfully managing through these difficult times, there is a lot of uncertainty ahead. So it is critical that we take every step possible to cut spending without sacrificing the essential service we provide to the region,” Gray said. “COVID-19, wildfires and other challenges to our water supply due to climate change require us to maintain and adapt our water system to ensure Southern California's people, businesses, hospitals and communities have the water they need through these difficult times.”

The board also directed staff to develop a penalty-free payment deferment program, evaluate potential new revenue-generating programs, and place a moratorium on non-emergency, unbudgeted spending. The latest cuts come on top of additional measures to reduce spending made in April, when the board approved the biennial budget.

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The Metropolitan Water District of Southern California is a state-established cooperative that, along with its 26 cities and retail suppliers, provide water for 19 million people in six counties. The district imports water from the Colorado River and Northern California to supplement local supplies, and helps its members to develop increased water conservation, recycling, storage and other resource-management programs.

9-16-20- Creek Fire ignites fire management debate on 102 million trees killed by beetles, drought



When the Creek Fire exploded to 160,000 acres in just 72 hours, ripping through a jewel of the Sierra Nevada just south of Yosemite National Park, California and the world looked on in horror and surprise.

But the stage had long been set for the mega blaze, one of a half-dozen transforming millions of acres of Golden State landscapes to ash. Droughts supercharged by

climate change dried out vegetation, aiding its transition into fuel. And as observers ranging from foresters to Californians living in the wildland urban interface predicted, the state's zealous, century-long fight to suppress fires meant this flammable concoction grew to unstable levels.

"This is a situation many of us have been dreading over the past five years," said Chris Dicus, a professor of wildland fire and fuels management at Cal Poly, San Luis Obispo. "All it would take is a single spark to ignite these trees, and that's what we saw happen."

Droughts also exacerbated another variable that has devastated Western forests: the bark beetle. Although native to the region, the beetle wreaks havoc under the wrong conditions, including droughts. According to statistics from firefighting officials, between 80% and 90% of the Creek Fire's fuel — a full 2,000 tons per acre — came from beetle-killed timber.

But was this truly what caused the Creek Fire to explode into something historic, an inferno that as of Tuesday morning had consumed more than 220,000 acres but was only 16% contained, even with more than 2,600 people battling its flames?

The answer's not that simple, experts say. While some researchers and government agencies believe beetle-killed trees are fuel that should be logged and removed, several scientists' question whether those play a significant role in fires.

Cal Fire, for example, claims the one-two punch of drought and bark beetles convert forests to "dry fuel." But some researchers accuse land management agencies of bulldozing science and siding with the logging industry. Timber companies benefit from fire policies that encourage the private sector to thin forests, they say.

"They're calling it fuel reduction," he said. "Really what they're doing is removing the least combustible material, the tree trunk."

Did Smokey Bear get it wrong?

Some academics estimate that prior to 1800 roughly 4.5 million acres burned across California each year, a significant portion of it sparked by Native Americans employing traditional burning practices. Ecologists call these "good fires" — blazes that are a necessary part of the Sierra ecosystem.

The difference between beneficial and harmful fires is a nuance that, they say, was all but erased in the era of Smokey Bear. Until recently, the U.S. Forest Service sought to prevent and contain wildfires at all costs. This included aggressive fire suppression even in remote areas that did not pose an immediate threat to the public.

The result has been an overgrowth in California's forests. They are now two-to-three times thicker than at any time in recorded history. That birthed a smorgasbord for hungry fires that burn quickly due to the High Sierra's abundance of oxygen and the northern reaches of the strong Santa Ana winds.

"We do have a huge fuel problem," said Jon Keeley, a research scientist with the U.S. Geological Survey and an adjunct professor at UCLA. "What we're seeing is sort of the perfect combination of everything that could go wrong has gone wrong."

Locals have watched the forest of their youth transform into an overgrown tinderbox.

"You look out in the forest, and it's a hedge. Before, you could easily walk through it. Now, it is nearly impossible ... There are too many trees," said Brother Chris Donnelly, Huntington Lake Volunteer Fire Department's chief of 17 years. "This was a disaster waiting to happen."

Ravages of the bark beetle



In the Sierras, these raging fires have ignited another debate: what to do with millions of dead trees.

California's historic five-year drought has killed numerous evergreens and left hundreds of millions vulnerable to bark beetles, which infest and prey on water- and nutrient-deprived pines. More than 102 million trees have died from these two factors alone since 2010, according to

Cal Fire, in some places leaving forests 85% devoid of living trees.

"We saw an incremental growth in trees. Then, a super drought came along and kicked those trees in the teeth, causing mass mortality," Dicus said, adding that the problem is exacerbated by climate change bringing hotter and drier conditions across the region.

More than 129 million trees in total spanning nearly 9 million acres have died across the iconic range since 2010, with the southern Sierra Nevada being the most heavily impacted region, according to a 2017 report from the Forest Service.

To solve the problem of so much fuel, some of the same people who once cheered the dismantling of mills and the lumber industry across California's wildlands are now clamoring for the return of responsible foresters who can help reduce Sierra fuel loads, Dicus said. From the Fresno Bee's editorial board to conservative blogs and President Donald Trump, a chorus has demanded various levels of logging.

While standing dead trees contribute little heat to wildfires, once they crack and fall to the forest floor, they become a ticking time bomb, according to Scott Stephens, wildfire ecologist and UC Berkeley professor. Typically, fires are hottest at their edges, where they are actively growing, with burned-through areas measuring cooler. Not so with the Creek Fire.

"For the first 36 hours, satellite imagery picking up heat showed the fire's interior was just as hot as its edge," he said. "It's really unprecedented and so scary. All that energy is what caused the 35,000-foot cloud to form that created its own weather."



burn.

But logging and removing dead trees is a hotly contested idea, with many experts and environmentalists saying it is no solution.

Hanson from the John Muir Project pointed out that the Creek Fire ripped through scars of the earlier French and Aspen fires, both of which had later been logged but did not stop this blaze. He also disagreed with Stephens' thought that dead trees are a highly combustible problem, saying they soak up large amounts of soil moisture and are difficult to

Without logging, the highly combustible oil in trees' needles dissipates within two years of a tree being killed by drought or bark beetles, while the needles themselves decay into dirt. Meanwhile, leaving upright dead trees in place maintains a degree of forest-cooling canopy as well as windbreaks.

"Weather and climate — and therefore climate change — are the dominant drivers in wildfires, overwhelmingly," Hanson said.

Keeley, the USGS researcher, said fuel is still the major problem, but it is not the old growth trees targeted by logging companies. Young, small-diameter trees that burn more easily need to be cleared, but they do not produce useful timber.

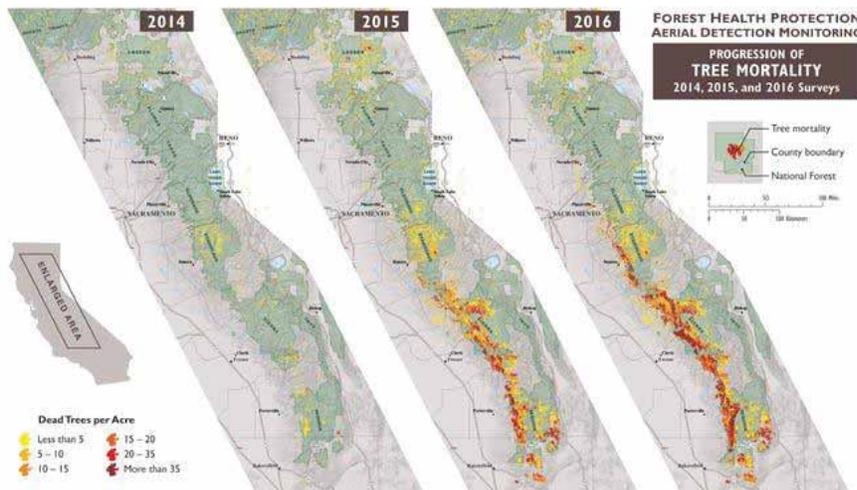
Lacking a profit motive, that task falls to the government and is expensive. Logging also introduces easily ignited, invasive grasses when workers drive heavy machinery through forests.

"You can't get a timber company that can make money cutting those trees down," Keeley said. "They can't do it."

What comes next?

California and the Trump administration — in a rare moment of accord — recently signed a memorandum of understanding to jointly reduce fire conditions on 1 million acres annually by 2025.

Sen. Dianne Feinstein, D-Calif., and Sen. Steve Daines, R-Mont., also introduced legislation that calls for the creation of a Prescribed Fire Training Center. A similar facility in Florida has found success, generating dozens of jobs, and helping to preserve some of the region's wildlands. In 2019 alone, Florida set 750,000 acres ablaze with controlled burns. Neighboring Georgia burned a similar number.



Meanwhile, California has employed controlled burns over just 75,000 acres, not even a tenth of what was completed in the Southeast over the same period, Stephens said. The Berkeley researcher said rethinking the state's approach to fire suppression could help revitalize mountain and foothill communities

where economies have been decimated by the timber industry's decline.

"I think that could create another workforce that could be used extensively. Once you begin to do this work, the maintenance goes on forever," Stephens said, adding that the initial investment in thinning and prescribed burns would be less expensive than the long-term firefighting costs.

Prescribed burns, though, also come with controversy, as they do not bring the varying levels of heat — a factor that is ecologically useful — that more naturally occurring wildfires do. Additionally, there are only small windows of opportunity when firefighting agencies can control such burns.

Another factor to consider, according to Cal Fire spokesperson Edwin Zuniga, is that dead trees pose a risk to firefighters on the ground. The husks can fall and injure or even kill firefighters, meaning crews must approach these blazes more cautiously.

With this year bringing a degree of fire never seen in California's recorded history, researchers believe that it is time to make decisions on wildfire management.

"This has only become normal because of the actions and inactions of the past hundred years," Dicus said. "It's going to take a lot of time and money to fix the problem."

Stephens fears the window to effect change and prevent the new normal from becoming reality is closing. He sees the next decade as pivotal to California's resiliency. "If things don't change in the next couple years, there will be an opportunity missed — probably some of the final opportunities that we have," he said.

Risking 'treasured places'

There is too much fuel in California's forests and not enough beneficial burning. Those are some of the major areas where there seems to be relative consensus among Western fire researchers.

We simply "got really good at putting out fires," said Dicus, who was a wildland firefighter for 10 years. He remembers being a frustrated 19-year-old on the front lines, thinking "I'm only exacerbating the problem. If I put it out now, it's going to grow up and burn hotter later."



For Dicus, the Creek Fire is personal. He was hiking alongside Lake Thomas A. Edison with his wife on Sunday and narrowly escaped the blaze. From a vantage point near their campsite, they saw smoke plumes billow above the only road out and decided to leave immediately. At least 50 other people did not get out so quickly and had to be evacuated in a daring helicopter rescue executed by the U.S. National Guard, which used night-vision and infrared sensors to

navigate the dark and smoke.

"I spent a lot of time in that area exploring this summer. I thought I had found a new treasured place to recreate in the future," he said.

Dicus believes that if drastic steps aren't taken to shift California toward a more proactive fire management approach, including more "good fire" and clearing the forest floor of dangerous materials, there may not be many "treasured places" to return to in the coming decades.

Others like Hanson are quick to remind that not all forms of forest clearing, and fire mitigation are created equal. "We just need more what we call 'managed wildfire,'" he said. "Native wildlife and plant species in our forest have evolved to depend on a mix of fire intensity."

Researchers largely agree that California and the federal government must take steps to reduce certain fuels, learn to coexist with wildfires and aggressively address climate change.

"We've got to be proactive. We can't just wait to see what happens because that is what we're experiencing right now," Dicus said. "It's not good for people or the environment."

The Guardian – 9-15-20

‘We’ve always known ours was contaminated’: the trouble with America’s water

America's water crisis

Ageing infrastructure, legacy pollution and emerging contaminants across the US are driving a growing urgency to do something about America’s water crisis

California resident Florencia Ramos has been purchasing drinking water for herself and her family for more than a decade Photograph: Gary Kazanjian/Ensaia

Once a week, Florencia Ramos makes a special trip to the market in Lindsay, California. “If you don’t have clean water, you have to go get some,” says Ramos, a farm worker and mother of four who lives in the neighboring Central Valley town of El Rancho.

She has been purchasing water for more than a decade now. At first, the county well water that flowed through her tap contained high levels of nitrate, a pervasive health hazard across the rural US, where nitrogen-rich fertilizer and livestock manure seep into groundwater. While it never tasted bad, she recalls her water service provider instructing her not to drink it. Things did not get any better in 2016, when El Rancho plugged into the city of Lindsay’s water system. That water was – and still is – polluted with potentially harmful disinfection byproducts, which form when chlorine used to kill harmful organisms reacts with manure and other organic matter.

“We’ve always known our water was contaminated,” says Ramos, a member of the Agua Coalition, a local grassroots group that advocates for safe, clean and affordable water.

Over the years, she watched as people in her community fell ill. One woman died of cancer; another succumbed to kidney disease. Ramos cannot be sure dirty water was to blame, but she is suspicious and continues to buy bottled water for drinking and cooking. And it is not cheap. Buying water at the market costs her about \$30 a month on top of her roughly \$130-a-month tap water bill – not to mention the time lost in making the weekly trips. The financial challenge became even greater last November when she was laid off from her agricultural field work. Her employer told her that she would be back to work by March or April, but when the time came, she was told not to return due to the Covid-19 pandemic.

Across the US, drinking water systems serving millions of people fail to meet state and federal safety standards. Millions more Americans may be drinking unsafe water without anyone knowing because limits set by the US Environmental Protection Agency (EPA) are too high, the contaminants it contains are unregulated or their drinking water source is too small to fit under EPA regulations. (An estimated 20% of private wells, which fall outside EPA regulation, have contaminants that exceed EPA standards.) The nitrate and disinfection byproducts that worry

Ramos represent a fraction of the many chemical and biological pollutants that find their way into drinking water systems through agricultural runoff, discharges from industry, ageing pipes and all the stuff that flushes down our toilets, sinks, showers and washing machines. From coast to coast, people are starting to recognize the pervasiveness of potential problems and rally around efforts to make drinking water safe for all.

“By and large, water quality in the US is some of the best in the world,” says Maura Allaire, a water economist at the University of California, Irvine. Improved management and treatment technologies have resulted in cleaner water for most Americans. Yet, each year, between 7% and 8% of community water utilities report at least one health-based violation of federal standards, according to her research.

“How can we help those falling through cracks?” Allaire asks.

In 2015, Flint, Michigan, made headlines when a change in its water supply exposed thousands of children to high levels of lead, a neurotoxic metal. The tragedy led other communities around the country to take a closer look at their own drinking water. Many places, such as Newark, New Jersey, have since discovered dangerously high lead levels, too.

Meanwhile, per- and polyfluoroalkyl substances, or PFASs – difficult-to-destroy chemicals widely used in nonstick pans, stain-resistant carpets and firefighting foam – have infiltrated major water supplies and grabbed headlines across the US as potential carcinogens and endocrine disruptors. The US Centers for Disease Control and Prevention (CDC) recently issued a statement warning that exposure to high levels of PFAS might also suppress the immune system and raise the risk of infection with Covid-19. The CDC further referenced evidence from human and animal studies that PFAS could reduce response to vaccines – on top of posing a number of other health threats.

Plastics, pesticides and pathogens also fall on the long list of threats to safe drinking water.

Between 10% and 15% of Americans are on private wells or tiny water systems that serve fewer than 15 residences. The rest of the country relies on community water systems – upwards of an astounding 50,000 in total.

Infernos, infections, and chemical cocktails

The first water pipes under America’s streets were not necessarily laid for the purpose of drinking, eating, or bathing.

Beginning in Boston in the mid-1600s, cities constructed water systems primarily for fire protection. “Urban infernos were a real concern,” says Greg Kail, director of communications for the American Water Works Association (AWWA), the largest trade group for water supply professionals.

Most systems were ultimately adapted to supply water to commercial and residential properties. And, in the early 20th century, the practice of filtering and disinfecting water began. Untreated water supplies had been sickening people with pathogens like typhoid and cholera. “One of the

miracles of the 20th century is that drinking water treatment decreased mortality, including from a host of afflictions people didn't even realize were related to water," says David Sedlak, an environmental engineer at the University of California, Berkeley.

But disinfection had a downside, too. In the 1970s, researchers discovered that a commonly used disinfectant, chlorine, could produce harmful byproducts under some circumstances. Chronic exposure to these byproducts has been linked in animal and epidemiological studies with liver, kidney, and nervous system problems, as well as a potential increased risk of cancer. "But it's important that we don't stop using disinfectants because of fears of disinfection byproducts," says John Fawell, an independent drinking water consultant based in Slough, in the UK. "Pathogens ... are still very able to cause significant problems."

In the 1970s it also became clear that water was being polluted with contaminants that disinfectants were helpless against. Scientists were increasingly recognizing the threat of toxic chemicals from industrial sources, many of which posed risks over long periods of time. Congress enacted the Toxic Substances Control Act (TSCA) and the Resource Conservation and Recovery Act (RCRA) in 1976, and in 1980 established the Superfund program, which focuses on cleaning up hazardous waste sites and so helps prevent drinking water supplies from becoming contaminated.

The key piece of legislation protecting drinking water, however, is the Safe Drinking Water Act. Congress passed the act in 1974, through which the EPA now sets minimum health-based standards on more than 90 drinking water contaminants, including lead, nitrate, arsenic, disinfection by-products, pesticides, solvents, and microbial contaminants. It is primarily up to each state to implement and enforce those standards – or set and enforce their own more stringent standards.

The more we study water supplies and the more stress that is put on existing water supplies, the more problems we discover
David Sedlak

"Great progress was made," says Sedlak. "But I think the more we study water supplies and the more stress that's put on existing water supplies, the more problems we discover." The EPA lists about 86,000 chemicals in its TSCA Chemical Substance Inventory – a number of which could find their way into our water in some way or another.

Seth Siegel, author of *Troubled Water: What's Wrong With What We Drink*, underscores the evolution over time in contamination concerns, from the biological to the chemical. "A dab of chlorine might address microorganisms, but it does nothing about these synthetics," he says. "We are ingesting, in micro quantities, a cocktail of chemicals all the time."

Beyond Flint

Allaire lived in Lansing, Michigan, when the water crisis broke in Flint, about an hour north-east. Flint had just switched its water source from the Detroit water and sewerage department to the Flint River. The river water was slightly more acidic – and therefore more corrosive – than Detroit’s water. Local water officials did not use common corrosion control methods. As a result, lead and other pollutants began to leach from the pipes that distribute water to the city’s residents.

“We weren’t far away, and we were in a similar situation: a former industrialized city that had a massive exodus of its population,” she says. The tragedy led her to wonder just how far water quality issues extended beyond Flint. “Were there mini-Flints around the country, or was this a one-off event?” Allaire asks.

The answer, according to her 2018 study, is clearly the former. In 2015, the same year that the nation learned of Flint’s lead contamination, she found that about 21 million other people in the US were receiving water from utilities that violated the Safe Drinking Water Act. People who lived in rural, low-income areas seemed to be most at risk of exposure to contaminants linked to a range of health problems – from a bout of diarrhea to cognitive impairment or cancer. “Nine out of 10 violations don’t face any formal enforcement action by the state or federal government,” says Erik Olson, senior strategic director for health and food at the Natural Resources Defense Council (NRDC). “What we have is comparable to everyone on the interstate speeding and virtually no one being pulled over or getting tickets with any penalty.”

An algal bloom in a flood channel next to Silicon Beach in the Ballona Wetlands, Playa Vista, California. Excess fertilizer applications on farms also trigger major algal blooms that can contaminate drinking water. Photograph: Citizens of the Planet/UIG/Getty Images



Pathogens and pesticides

Pathogens remain a serious issue, too. *E coli* in drinking water has caused deadly outbreaks. Norovirus, giardia, and cryptosporidium have also contaminated drinking water supplies in recent years. But the pathogens perhaps highest on the minds of experts today are those that grow in pipes.

Legionella, the bacterium that causes Legionnaires’ disease, a type of pneumonia, offers a critical case in point. In Flint, the same issue that caused the release of lead into the drinking water also resulted in deadly cases of legionnaires’ disease in the surrounding community. Repeated outbreaks at a Quincy, Illinois, veterans’ home have killed more than a dozen people since 2015.

When buildings go unused for long periods of time stagnant water can become a breeding ground for the bacteria. “That’s a real worry post-Covid,” says Olson.

Agricultural practices remain implicated in much of the nation's tainted drinking water. Studies have shown that pesticides pose a serious threat. For example, atrazine has been associated with low birth weight in babies. "Every spring in the Midwest, a pulse of atrazine comes off the fields. Tough luck on you if you happen to be carrying a child during that period," says Sedlak.

Excess fertilizer applications on farms also trigger major algal blooms that can contaminate drinking water. Toxins produced by algae in Lake Erie fed by runoff from farms in the watershed shut down the Toledo, Ohio, drinking water system in the summer of 2014. Almost half a million people were told to avoid drinking, bathing, or cooking with their tap water for a couple of days; 110 people got sick.

Seeking solutions

When farmer Duane Munsterteiger's one-year-old son got sick with respiratory syncytial virus (RSV) in 1993, the idea that his family's drinking water could be to blame did not cross his mind. "It was the most beautiful tasting water you'd ever want," says Munsterteiger, of Ogilvie, Minnesota. But subsequent tests of the water from his well found high levels of nitrates, which research suggests may raise the risk of respiratory infections such as RSV.

In addition to drilling a new, deeper well to supply his home, Munsterteiger has also adopted a number of conservation practices in his farming such as using cover crops and rotating his cows to different parts of his land, which helps the soil, minimizing runoff, and reduces the nitrates that seep into the groundwater.

The Clean Water Act, in theory, regulates discharges into US waters and therefore protects sources of drinking water. However, this year the Trump administration issued a new regulation, the Navigable Waters Protection Rule, that narrows the scope of the Clean Water Act by revoking federal protections for millions of miles of streams and millions of acres of wetlands.

Some states are stepping up to fill in the gaps. Munsterteiger is among farmers participating in the Minnesota Agricultural Water Quality Certification Program, which offers incentives, including financial assistance.

Allaire and other experts suggest strategies such as increasing funds for the EPA to identify and regulate contaminants and upgrading water systems infrastructure more quickly. They also underscore the need for more technological solutions.

Joel Ducoste, a professor of civil, construction and environmental engineering at North Carolina State University, highlights one key challenge: Many of the emerging contaminants of concern for drinking water, such as PFAS, were previously unknown. "We didn't know it was there," he says.

Contaminated drinking water disproportionately affects small water systems, which serve predominantly rural, low-income communities with relatively high percentages of people of

color. Sometimes those systems cannot even afford the salary of a full-time operator. Florencia Ramos's hometown of El Rancho has only 65 people. "A lot of these folks are farm workers, who are [unwittingly] helping to poison themselves," says Anne Schechinger, a senior analyst with the non-profit Environmental Working Group.

There is now a push to build economies of scale so small systems do not have to go it alone. Kentucky has been a leader in water system consolidation. The state has gone from more than 3,000 systems in the 1970s to fewer than 800 systems in 2018. But such consolidations do not always go so smoothly.

Just a few miles down the road from El Rancho is Tooleville. For a long time, the small town dealt with high levels of nitrate and hexavalent chromium, the compound that garnered notoriety from the movie Erin Brockovich. Tooleville, which is majority Latino, has been trying for years to connect its water system with that of the neighboring city of Exeter. But Exeter voted last year to reject Tooleville's pleas and has tabled the talks.

Benjamin Cuevas, a resident of Tooleville, says that he and his wife have been careful to make sure their three daughters and two grandchildren do not consume any of the water out of their taps. His wife rinses the kids down with bottled water after they shower.

"I wish a lot more could be done so that we could have clean water," Ramos says. "I urge people to be involved, to go to meetings, to give your input."

California AG -9-14-20

Doing Every Possible to Have Water Storage for Drought Years

By Patrick Cavanaugh

Save Water Resources Act is written by Congressman Josh Harder representing the Modesto area. The Act will fund the construction or upgrades of several water storage areas such as Sites Reservoir, Del Puerto Canyon Reservoir, Los Vaqueros and San Luis Reservoirs and provides \$100 million in storage funding.

It is all about helping Californian's including the farmers during drought. "That's right. I mean, we know that we are having more and more extended droughts. We know the next one is around the corner and we know what we have to do to address it," said Harder

"In order to make sure that we have a full, comprehensive approach to water and all of the above approaches that combined storage with recycling and groundwater recharge," noted Harder

Harder said shipping all the water out to the ocean is not the way to go. "Instead of just shipping out water to the ocean, we can actually make sure that we can put it in these reservoirs such as Los Vaqueros, Sites and Del Puerto and that's going to be really essential for the almond and walnut growers in the Central Valley," Harder said.

"When you have tree crops, you have to have a reliable source of water. We cannot just be in a boom and bust cycle where you have water one year and not the next; maybe that works for row crops, but it does not work very well for trees. And so, these reservoirs are going to go a long way towards ensuring water, stability, and water security for the long-term," Harder said.

9-14-20 -The consequences of spraying fire retardants on wildfires



Fire retardants being sprayed from a jet. “These fire retardants haven’t been fully studied over long periods of time at the increased amounts we’re currently using,” says Jordyn Ellorin. Credit: Gary Tabor

Wildfires started burning in California early again this dry season—more than two million acres have burned so far. Larger and larger wildfires are occurring as new heat records are being broken each year.

Firefighting efforts have leaned heavily on aerial spraying of fire retardants, but their environmental and health effects are little studied, says Jordyn Ellorin, VG19, a native Californian who received an M.S. in conservation medicine (MCM) from Cummings School of Veterinary Medicine.

For the capstone requirement of her master's program, Ellorin focused on the sustainability of current methods for fighting wildfires in California. (She now works as an animal diet technician for San Diego Zoo Global, where she did her MCM externship.)

Tufts Now talked to Ellorin about what she learned about wildfire management and mitigation—and the consequences of those efforts.

Tufts Now: Does the use of these long-term fire retardants in California seem to be increasing?

Jordyn Ellorin: I cannot speak to what is occurring with this round of fires. However, I can tell you from my research that the safety and usage guidelines for the fire retardants were developed nearly forty years ago. And the research that informed those guidelines was based on the amounts of chemicals that they were spraying back then, not at these increased amounts we see now.

The California Department of Forestry and Fire Protection (CalFire) and the U.S. Forest Service (USFS) publish an estimated budget each year that contains the amount of flame retardant that they expect to use during the next fire season based on previous years and label-use specifications of the products. At the end of the year another report is published stating the amount of fire retardant used. These reports show that the actual use exceeded the anticipated amount for all years since 2014.

Why is that?

It is due in part to larger wildfires that are occurring as new heat records are being broken each year and from climate change and humans further encroaching on wildland areas.

The use of long-term fire retardants is designed to slow the fire ahead of ground crews so they can access and gain control of the fire. But fire retardants are now being used instead of ground crews, according to Firefighters United for Safety, Ethics, and Ecology (FUSEE), and the 19 million gallons sprayed on California's federal lands is being applied differently than originally intended.

CalFire and USFS are not supposed to spray retardants within 300 feet of any waterway for environmental health reasons. However, there is an addendum to that rule that says you can spray near any waterway if human life or property is in danger.

In recent years, more people are living in forested areas, areas between urban and wild habitats, and other places where there is a fuel load for wildfires. So now there is a need to spray retardants in areas where they traditionally would not have been allowed—and then downstream effects from that.

What are the downstream effects on animals?

The worrisome aspect is that we do not truly know. These fire retardants have not been fully studied over long periods of time at the increased amounts we are currently using.

We do know that sprayed fire retardants feed harmful algal blooms along waterways and are toxic to fish. A 2014 study showed that the active ingredient in one common sprayed fire retardant is toxic to chinook salmon, causing death from direct exposure, as well as gill damage that would lead to reduced ocean survival at even dilute amounts. This is concerning, as salmon populations are a major contributor to the California river and ocean ecosystems and already in jeopardy as a native species.

On a larger scale, studies in the Canadian Arctic have shown that brominated fire retardants, which are now banned, accumulate in food systems from fish to wolf.

Until recently, these retardants were commonly used in close-contact household items such as furniture, so their effects have been better studied. It demonstrates the potential for exposure to fire retardants to create ripple effects in the environment and wildlife far from where they are first used.

And what about the effect on people?

On the human side, the chemicals' material safety data sheets say that the retardants are not toxic to people but should not be ingested. The retardants are dyed orange so that when people see them come out of the planes, they know they should not eat any food from their garden.

However, things can get tricky if your garden is sprayed while you are evacuated, because the fire retardants turn clear once exposed to sunlight. Meanwhile, California supplies more than two-thirds of the nation's fruit and vegetables.

The U.S. Geological Services has a group, Columbia Environmental Research Center, that is working to pull together longitudinal research on effects of these fire-retardant chemicals. But there is currently nothing published on their effects on California's agricultural products.

Human health researchers also have expressed concern that, although there is published research about the human hazards of smoke inhalation from wildfires, little is known about the inhalation of fire-retardant chemicals once they are burned off by wildfires.

Can spraying fire retardants create more fuel for fire down the road?

One of the main components of most fire retardants is ammonium phosphate, which is a basic plant multi-nutrient fertilizer. When we essentially spray a fertilizer over California, so-called invasive plant species grow faster and outcompete the state's native plant species, which do not thrive in a fertilized environment.

The non-native plant species then flourish in California's wet season. And when this season changes to a very dry summer, there is a lot of dead brush or dead plant material that creates the fuel load for wildfires.

How can California adapt to prevent these dangerous fires before they start?

That is the key question. Fires are environmentally necessary. They burn dead or dry brush and other plant material first, clearing the forest and allowing space and light for new plants to thrive. Within some ecosystems, fires influence seedling germination, forest structure, and soil composition. They are how many wild plants seed and regrow, so they are important for the state's native species.

But if we're spraying fertilizer and all these non-native species are coming up and outcompeting the native species, how do we stop that cycle from feeding these huge wildfires? My case study while I was at Cummings looked at two potential mitigation tactics: prescribed fires and grazing.

Pine needles and other dry plant material burns hot and fast and, at a small level, that is okay. You want that dry plant material to burn and replenish the nutrients into the soil. But if too much of it burns, it starts catching the trees on fire. Once the trees start burning, the fire becomes super-hot and starts moving fast. That is hard to stop.

California does not really have the human resources to safely conduct enough small controlled burns to thin that potential fuel load. And in the dry summer months, you do not want to conduct these prescribed fires, because that's when things can get out of control.

What about grazing—is it a more feasible mitigation measure?

You do not want to graze those native plant habitats that are vital to our state. But grazing could be a useful mitigation tactic in hilly or mountainous areas. Firefighters have a really hard time fighting fires on hills because they cannot get trucks in there and fires tend to move up and down hills very quickly. So, using livestock animals that can climb up and down those hills and graze and clear the ground of dead brush and plants would be helpful.

Goats may be a little bit less detrimental to the environment. You need fewer of them to browse an area clean, as they eat many different types of plant material when compared to cattle. They are also not quite as heavy as cattle, so they do not till up the ground quite as much as cows do. However, grazing is still a measure that must be undertaken carefully, as domestic animals still will eat native plants that wildlife could be eating.

The USFS already leases land to agriculture professionals for grazing purposes, but this approach to land use could be further utilized to holistically benefit humans, animals, and the environment.

It sounds like there are competing interests at issue here—people's safety and their property versus wildlife and the environment.

Growing up in northern California, I had experienced "fire season," but within the last 10 years, every fire season has been labeled "unprecedented" and devastating to larger populations of the state. I think now that most people living in the state have experienced the panic of evacuating or are related to someone who has.

It is hard to balance people feeling safe where they live and knowing how human actions are affecting the environment, they live in. Further studying the effects of what we are doing currently will give people a better idea of humans' impact and the opportunity to come up with innovative solutions for fire management.

Water News -9-11-20

Western Wildfires Damage, Contaminate Drinking Water Systems

As they tear through forests and developed areas, fires in California, Oregon, and Washington have destroyed water infrastructure and released chemical contaminants.



The CZU Lightning Complex Fire burned through the forests of Santa Cruz County, California. The fire damaged water infrastructure for San Lorenzo Valley Water District. Photo courtesy of Carly Blanchard/SLVWD

The American West is in flames, ablaze in one of the region's worst fire episodes in the last hundred years.

More than 300,000 acres burned in Washington state on Monday, twice the total acres that burned in all of 2019.

In Oregon, the small towns of Detroit and Gates were leveled by wind-fueled flames racing down Santiam Canyon. As of Thursday night, a half million people in the state lived in areas under evacuation orders or alerts.

In California, where a record 3.1 million acres have burned this year, thick banks of smoke enveloped the Bay Area, obscuring mid-day skies with an eerie orange hue. The U.S. Forest Service, citing extreme fire risk, earlier this week closed all national forests in the central and southern parts of the state to visitors.

Taking refuge in hotels, emergency centers, or with family, many people do not yet know whether their homes are still standing. For communities where evacuation orders have been lifted, the damage is readily apparent. Not only have houses and businesses been scorched. Essential public infrastructure has been destroyed. That includes drinking water systems, which in some cases are showing signs of contamination from chemicals released during the fires.

State and local agencies say they are still surveying water system damage and do not have precise information currently. The Oregon Health Authority said that it has heard of several small water systems along the Interstate 5 corridor between Ashland and Medford that have been destroyed. The Washington State Department of Health says that 11 water systems lost pressure during power outages connected to fires in that state. Their customers are being advised to boil their water or use bottled water for drinking.



One of the most severe examples is the San Lorenzo Valley Water District, which serves parts of inland Santa Cruz County, in central California. More than 7 miles of an HDPE plastic water supply pipeline were destroyed in the CZU Lightning Complex Fire, according to Rick Rogers, the district manager. The pipe was mostly located above ground. Most of the district's water system was spared in the fire that started on August 16, and the district has switched to backup water sources, including groundwater. But Rogers noted a list of other

infrastructure impairments: damage to booster pumps, transmission mains, tanks, intakes, water meters, and sampling stations in certain areas. The preliminary, back-of-the-envelope damage estimate is \$10 million.

Parts of the district have been under a Do Not Drink/Do Not Boil advisory since August 29 due to benzene contamination. Very few water samples have been tested so far — several dozen from 25 points in the distribution system — but one taken on September 4 revealed benzene contamination above the state drinking water standard, which is 1 microgram per liter. The sample measured 2.7 micrograms per liter.

Earlier this week, the district lifted the Do Not Drink/Do Not Boil order for parts of the service area that did not show benzene contamination, but staff said they did not know when the all-clear sign would be flashed district-wide.

“This is a marathon, not a sprint,” Nate Gillespie, San Lorenzo Valley water treatment and system supervisor, said during an online meeting on September 3.

The destruction and contamination of drinking water systems is a new and unsettling chapter in the story of wildfires in the West. Past fires have burned watersheds, depositing into reservoirs debris and ash that interfere with the water-treatment process. Now, subdivisions are burning, putting the plumbing itself at risk.

Nine of the 12 most destructive wildfires in California history, measured by the number of structures that burned, have occurred since 2015. As housing developments expand into areas vulnerable to fire and a warming planet increases the likelihood of large conflagrations, water managers and regulators expect to be dealing with the risks to drinking water systems for years to come.

A San Lorenzo Valley Water District staff member stands next to the remains of a plastic water supply pipe that melted during the CZU Lightning Complex Fire. Photo courtesy of SLVWD

“Since about 2015 we started seeing fires that quickly wipe out large sections of community, and it seems like every year since then we’ve seen one fire or the other that has done this, so I fear

that it is something we're going to be living with," Stefan Cajina of the State Water Resources Control Board's Division of Drinking Water told Circle of Blue.

In addition to San Lorenzo Valley, a Do Not Drink advisory was also issued by Big Basin Water Company because of damage from the CZU Lightning Complex Fire.

The first instance of fire-related benzene contamination of a public water system in California happened in Santa Rosa, in 2017. The next year the town of Paradise was nearly obliterated by the Camp Fire, which, in addition to killing 85 people, destroyed 90 percent of the town's structures and inflicted substantial damage to the drinking water system.

Kevin Phillips, formerly the manager of Paradise Irrigation District and now the town manager, told Circle of Blue that the capital cost of rebuilding the water system and replacing contaminated pipes has reached \$150 million.

Andrew Whelton, an associate professor of civil and environmental engineering at Purdue University, helped Paradise officials assess the condition of their system after the Camp Fire. He is worried about the thoroughness of post-fire drinking water assessments in other areas.

"The question is, will the safety of those systems be determined appropriately, or will substandard approaches be applied, and systems put back in use and people won't know if they are receiving safe water or unsafe water?" Whelton told Circle of Blue.

Drinking water systems can be contaminated by fire in several ways. When pipes break, water pressure drops, which can draw in pollutants from the soil, groundwater, and air, including organic chemicals in smoke. Plastic components of a water system — pipes, meters, valves — can also burn and release chemicals into the water system. These volatile and semi-volatile organic chemicals can vaporize out of water. Short-term exposure can cause dizziness, while long-term exposure can cause anemia or leukemia.

San Lorenzo Valley officials issued their Do Not Drink/Do Not Boil advisory in consultation with the state Division of Drinking Water. Cajina is the chief of the division's north coastal section, which includes San Lorenzo Valley.

"We recommended that they not use terminology like 'Do not use,'" Cajina said. "If they say, 'Do not use,' then it becomes unclear if people can even do things like use water for basic sanitation or firefighting. And that was certainly not the message we wanted to give. Also, we had no evidence that there was going to be anything beyond the normal type of contamination you expect when a system depressurizes."

The Do Not Drink/Do Not Boil advisory was issued before any water samples had been tested. Cajina said the determination was made based on an analysis of water flows in the system, which areas had lost pressure, and where the fires had burned. He said that district officials acted proactively by closing valves and physically isolating parts of the system before the flames arrived, actions that prevented potentially contaminated water from spreading through the pipes.

After finding benzene, Cajina said that the district, based on the state’s recommendations, revised the language on its public notice. The changes noted that residents in the affected area should limit use of hot water, limit shower time, not take baths, and not use hot tubs or swimming pools — all activities that could vaporize the chemicals.

The district is sampling water only from the distribution system and other points that it operates. Individual homes, which are not being tested, could still be at risk of contamination from their service lines, depending on their proximity to the fire, said James Furtado, director of operations, during the September 3 meeting.



A HDPE plastic water supply pipeline for San Lorenzo Valley Water District burns. Photo courtesy of SLVWD

Towns whose pipes are contaminated have two choices, Whelton said. They can flush out the contaminants or replace the pipes. The best course of action depends on the extent of contamination and the pipe material, he said. Plastic pipes hold organic chemicals like benzene more tightly than steel. Whelton said that, in an analysis from the Camp Fire, a plastic pipe that had severe benzene contamination took more than nine months to reach the point where the pipe supplied water that met the California drinking water standard.

Phillips and Cajina also recommended quickly and repeatedly flushing water in one direction through the system to clear contaminants.

San Lorenzo Valley is aiming to repair its system as quickly as possible to get water flowing to all homes in the district. For speed, some plastic components are being reinstalled. A conversation about whether those materials are most suitable for the long-term is a conversation that will happen after the emergency period, Rogers said.

“We are looking at putting these facilities back and hardening them against fire,” Rogers said. “The district does not want to put them back and go through this again.”

Whelton agreed that this new era of fire risk should give authorities reason to reevaluate their infrastructure choices.

“Should plastic pipe have been installed above ground in a forest that is prone to wildfires? No,” Whelton said, referring to the San Lorenzo Valley water supply line that burned. “Unless you expect to have to replace that under a situation where it is damaged. These discussions need to be happening in state capitols and communities that make infrastructure selection decisions.”

California Globe -9-10-20

California's Four Water Entities: What's the Difference?



The DWR manages California's water resources, systems, and infrastructure, including the State Water Project

By: Chris Micheli

California has four water-related entities: California Water Commission, California Water Quality Monitoring Council, Department of Water Resources, State Water Resources Control Board. What are the differences?

California Water Commission

In Water Code Division 1, Chapter 2, Article 2, Section 150, there is established a California Water Commission in the Department of Water Resources. Section 151 specifies that the Commission has nine members who are

appointed by the Governor and confirmed by the State senate. Seven members are chosen for their expertise related to the control, storage, and beneficial use of water and two are chosen for their knowledge of the environment

According to the Commission, it provides a public forum for discussing water issues, advises the Director of the Department of Water Resources on matters within the Department's jurisdiction, approves rules and regulations, and monitors and reports on the construction and operation of the State Water Project. The Commission also distributes public funds set aside for the public benefits of water storage projects.

The roles and responsibilities of the California Water Commission are defined in the Water Code, as well as sections of the Government Code and the Civil Procedures Code.

California Water Quality Monitoring Council

Water Code Division 7, Chapter 3, Article 4, Section 13181 requires the California Environmental Protection Agency and the Natural Resources Agency to enter into a memorandum of understanding for the purposes of establishing the California Water Quality Monitoring Council, which is administered by the State Water Resources Control Board.

The California Water Quality Monitoring Council includes representatives from state entities and nonstate entities, such as representatives from federal and local government, institutions of higher education, the regulated community, citizen monitoring groups, and other interested parties. The Council is required to review existing water quality monitoring, assessment, and reporting efforts, and recommend specific actions and funding needs necessary to coordinate and enhance those efforts.

In November 2007, a Memorandum of Understanding (MOU) was signed by the Secretaries of the California Environmental Protection Agency (CalEPA) and the California Natural Resources Agency to establish the California Water Quality Monitoring Council (Monitoring Council). The MOU was mandated by CA Senate Bill 1070 (Kehoe, 2006) and requires the boards, departments

and offices within CalEPA and the Resources Agency to integrate and coordinate their water quality and related ecosystem monitoring, assessment, and reporting.

According to the Council, the Monitoring Council may recommend new monitoring or management initiatives, it will build on existing effort to the greatest extent possible. The Monitoring Council published its initial recommendations in December 2008, and its recommendations for A Comprehensive Monitoring Program Strategy for California in December 2010.

Department of Water Resources

Water Code Division 1, Chapter 2, Article 1, Section 120 provides that there is in the Resources Agency the Department of Water Resources, which is under the control of an executive officer known as the Director of Water Resources. The director is appointed by the Governor and holds office at the pleasure of the Governor. The appointment of the director is subject to confirmation by the State Senate.

Section 123 provides that the Department succeeds to and is vested with all of the powers, duties, purposes, responsibilities, and jurisdiction in matters pertaining to water or dams vested in the Department and Director of Public Works, the Division of Water Resources of the Department of Public Works, the State Engineer, the Water Project Authority of the State of California, or any officer or employee.

According to the Department, the DWR manages California's water resources, systems, and infrastructure, including the State Water Project (SWP), in a responsible, sustainable way.

The Department's responsibilities and duties include:

- Preventing and responding to floods, droughts, and catastrophic events
- Informing and educating the public on water issues
- Developing scientific solutions
- Restoring habitats
- Planning for future water needs, climate change impacts, and flood protection
- Constructing and maintaining facilities
- Generating power
- Ensuring public safety
- Providing recreational opportunities

State Water Resources Control Board

Water Code Division 1, Chapter 2, Article 3, Section 175 establishes the State Water Resources Control Board. Section 174 provides a series of legislative findings and declarations. For example, one finding is that, in order to provide for the orderly and efficient administration of the water resources of the state, it is necessary to establish a control board that shall exercise the adjudicatory and regulatory functions of the state in the field of water resources.

It is also the intent of the Legislature to combine the water rights, water quality, and drinking water functions of the state government to provide for coordinated consideration of water rights, water quality, and safe and reliable drinking water.

Section 175 provides that there is in the California Environmental Protection Agency the State Water Resources Control Board consisting of five members appointed by the Governor. One of the members appointed must be an attorney who is qualified in the fields of water supply and water rights, one shall be a registered civil engineer who is qualified in the fields of water supply and water rights, one shall be a registered professional engineer who is experienced in sanitary

engineering and who is qualified in the field of water quality, and one shall be qualified in the field of water quality.

The members are required to serve full time and be composed of members from different regions of the state. The members are appointed by the Governor and are subject to confirmation by the State Senate. Pursuant to Section 179, the board succeeds to and is vested with all of the powers, duties, purposes, responsibilities, and jurisdiction vested in the Department and Director of Public Works, the Division of Water Resources of the Department of Public Works, the State Engineer, the State Water Quality Control Board, or any officer or employee.

Climate Change May Bring Unexpected Benefits To San Francisco Bay-Delta -9-9-20



San Francisco South Bay tidelands and waterway tributaries at low tide.

The San Francisco Bay-Delta is literally threatened from all sides: rising sea levels from the ocean, disruptions to sediment supply from upstream, and within the Bay-Delta itself, development and other land use changes have left only a tiny fraction (5%) of marshland untouched.

Under climate change, coastal wetlands across the world, like the Bay-Delta, are disappearing. The rivers

that feed coastal wetlands sediment which provide habitat for wildlife and form the structure of the ecosystem are transporting about a third less sediment, on average. Less sediment supply contributes to increased erosion of the ecosystem.

These delicate ecosystems provide several benefits to humans, such as protecting our shorelines, maintaining water quality, preventing damaging floods, and providing a peaceful place to recreate. In addition, they provide habitat for birds, fish, and other wildlife and play an important role in nutrient cycling, particularly carbon storage.

A recent study by scientists at the U.S. Geological Survey used historical streamflow and sediment data to calibrate models in order to predict what will happen to the Bay-Delta under varying levels of climate change.

In the future, California will continue to get about the same amount of rain, however, storms will be less frequent but more powerful. Therefore, streamflow will increase, and the faster speed of the water will carry more sediment into the bay.

Rivers draining through the Sacramento Valley make their way to the Bay-Delta, and these waterways will likely experience higher peak streamflows. The new models projected that faster waters will carry 39 to 69 percent more sediment down to the Bay-Delta by 2100.

Unfortunately, the increased transport of sediment will bring an increased amount of pollutants. However, there are some silver linings to the projected sediment transport into the Bay-Delta:

Scientists think the higher sediment levels in the Bay-Delta will reduce impacts from sea level rise by raising the level of the Bay-Delta in concert with sea level rise, potentially reducing the amount of erosion exacerbated by rising oceans.

Turbidity, or how difficult it is to see through cloudy water, may increase, providing habitat for fish that can hide more easily from predators.



San Francisco south Bay tidelands and waterway tributaries at low tide.

Ecosystems around the world face different challenges from climate change. While there are silver linings to the climate change impacts in the San Francisco Bay-Delta, this is not the case when we look at global climate change.

Understanding how local areas will experience climate change is key to effective natural resource management and to guide the best areas to invest our efforts to adapt to and mitigate climate change in our communities.

LA Times – 9-9-20

Bobcat fire nearly doubles in size, but moves away from cities, towns near San Gabriel Mountains

Although the Bobcat fire nearly doubled in size Wednesday, the blaze moved northeast and away from the cities and towns in the foothills of the San Gabriel Mountains that only a day earlier had been poised to evacuate.

By Wednesday evening, one of those communities, Arcadia, had lifted a voluntary evacuation warning, although fire officials warned that capricious Santa Ana winds could at any moment pick up and drive the flames in an unexpected direction.

The Bobcat Fire, which ignited Sunday above Azusa in the Angeles National Forest, has burned 19,796 acres and was 0% contained as of 7 p.m. Wednesday, officials said. The cause of the fire remains under investigation.

Winds remained calm overnight and through the day Wednesday. Although fire crews had feared Santa Ana gusts whipping the blaze toward the foothill cities, the winds that did blow Wednesday pushed the flames east, away from homes and structures, officials wrote in an evening update.

Although wind conditions appeared to have steadied Wednesday, officials warned that residents should have evacuation plans in place, organize their emergency evacuation supplies and have essential personal belongings easily accessible. Vehicles should be fully fueled, facing out in driveways and ready to leave.

“With these Santa Ana winds, you never know when they’re going to turn,” said Linda Attalla, a representative of the Arcadia Fire Department. “Just be ready, and know if it gets down to it, you’re going to have a fireman beating on your door telling you to get moving.”

The fire is one of dozens burning across the state, including at least six in Southern California, said Christine McMorrow, a spokeswoman for the California Department of Forestry and Fire Protection. Combined, the statewide fires have burned more than 2 million acres in what has been called the most destructive wildfire season on record in terms of acreage.

“We do still have a red flag warning through this evening,” McMorrow said Wednesday. “The winds are still a concern.”

Evacuations have been ordered for residents and Angeles National Forest visitors from Big Santa Anita Canyon, Mt. Wilson, San Gabriel Canyon and Monrovia Canyon, and national forests in the region remain closed.

Maria Taylor, another representative of the Arcadia Fire Department, said smoke and ash were contributing to unhealthy air quality. She said the department is fully staffed, with all reserve engines ready should the fire escalate.

“We are actively monitoring the situation,” she said. “The main message that we have is get a plan, and plan ahead.”

Residents with large animals such as horses or cattle are being urged to begin moving those animals. Limited accommodations are available at the Fairplex fairground in Pomona for livestock and other large animals.

The Red Cross has set up a temporary evacuation point at Santa Anita racetrack. At least three residents have accessed the facility, which is being used as a rest site for residents to gather and assess their needs and for the relief agency to present lodging options, said Red Cross Los Angeles communications officer Marium Mohiuddin. More evacuees are expected, she said.

“We are asking people to come there so we can help them get to more comfortable places,” Mohiuddin said, noting that the Red Cross is working with nearby hotels and shelters to arrange potential accommodations.

“Wildfires go fast, so just make sure you’re ready,” she said.

Smoke advisories related to the Bobcat and El Dorado fires have been extended for most of Los Angeles County and parts of Orange, Riverside and San Bernardino counties, the South Coast Air Quality Management District said Tuesday night on Twitter.

Forecasts call for continued warm and dry weather, as well as gusty wind conditions, according to the National Weather Service, although “diminishing winds are possible” by Thursday, which may bring some relief.

LA Times -9-9-20

Bad air quality, rain of ash hits Southern California



Ash falls on a parked car as the Bobcat fire burns in the distance Wednesday morning. (Wally Skaliy / Los Angeles Times)

Smoke from wildfires is causing bad air and falling ash in some parts of Southern California.

Air quality officials have issued a wildfire smoke advisory for much of the region through Wednesday evening, warning, “Meteorological conditions will bring smoke and ash

into portions of Los Angeles, San Bernardino, Riverside and Orange counties.”

The worst concentrations of smoke, which contains tiny, lung-damaging pollution particles known as PM2.5, are expected in communities closest to the Bobcat and El Dorado fires, according to the South Coast Air Quality Management District.

“Smoke transported from fires in Central and Northern California may also contribute to widespread elevated PM2.5 concentrations,” the district said. While air quality in much of Southern California has remained in the “good” to “moderate” level at the ground level, satellite imagery shows smoke higher up in the atmosphere over much of the region.

The district warned that the region could also see more falling ash as “larger particles settle out of the atmosphere.”

The situation was even worse in the Bay Area, where smoke was dimming the sun and causing red and orange hues in the sky.

There were a number of fires burning across Northern California Wednesday that could play a role in darkening the region’s skies.

The August Complex fire — now the second largest fire on record in California — has burned more than 421,000 acres north of the Bay Area, in Mendocino, Glenn, Lake, Tehama and Trinity counties.

The North Complex fire, which includes the Bear fire, has burned about 254,000 acres northeast of Lake Oroville, California's second largest reservoir. On Tuesday, the fire spread as fast as 2,000 acres per hour, spread by 45 mph winds, blowing to the southwest. That prompted preparations for evacuations in Butte, Plumas, and Yuba counties, and potentially threatens the towns of Paradise and Concow, which were devastated in the 2018 Camp Fire.

The Creek fire in the Sierra National Forest in Fresno and Madera counties has burned more than 163,000 acres, and has destroyed at least 60 single-family homes, 20 other minor structures and two commercial structures. It was burning on both sides of the San Joaquin River near Mammoth Pool Reservoir, forcing hundreds of campers to be rescued by helicopter.

The Dolan fire in the Big Sur region of Monterey County has charred more than 93,000 acres, largely in the Ventana Wilderness. Several large wildfires in Oregon also have the potential to send smoke over Northern California.