

# A Year of **Fire & Water**

Report on Accomplishments 2024



**San Bernardino Valley  
Water Conservation District**

Helping Nature Store Our Water



# General Manager's Letter

2024 was another record water year for the San Bernardino Valley Water Conservation District and we have a lot to be proud of.

We saw our fourth highest water recharge record of all time since 1912: 74,958 acre-feet of water, or 24,425,171,383 gallons, thanks to high levels of rain and snowmelt, as well as the district's efficient water capture and storage in local underground aquifers.

Even during record-breaking storms, we always consider the best use of every drop of water. Some water is appropriate for drinking, or sinking into the recharge basins, or for use by CalFire. This hierarchy of highest and best use of water helps guide our decisions during big storm events, such as the ones we experienced this year.

It was a year of water, as well as fire, with the Line Fire burning within just a few feet of our facilities in the Santa Ana Wash. Our thanks go to the many first responders who worked tirelessly in blistering heat to get the Line Fire under control. We are also grateful to our field staff for their readiness to lend a hand and remain solutions-focused.

This year we experienced the loss of a respected director and had long-term staff departures, but through it all the district's team worked together and were resilient. Like nature, we are now in a regenerative phase as we welcome newcomers to the district, including newly elected District 2 Director Mark E. Falcone (see page 7 to learn more).

We are excited for our 2024 accomplishments and expect to exceed our recharge numbers as new interagency projects come online in the coming months and years. Through it all we will uphold the vision of helping nature store our water as we apply the most cost-effective, environmentally harmonious, and resilient way to safeguard our region's precious water supply.



Betsy Miller Vixie  
General Manager

## Current Board Members

### Division 1:

Richard Corneille  
Term of office expires:  
December 09, 2024

### Division 2:

Mark E. Falcone  
Term of office expires:  
December 11, 2026

### Division 3:

Robert Stewart  
Vice President  
Term of office expires:  
December 11, 2024

### Division 4:

John Longville  
Term of office expires:  
December 14, 2026

### Division 5:

Melody McDonald  
President  
Term of office expires:  
December 14, 2026



# Strengthening Water Security in the Southland

With water scarcity becoming a greater concern in California, the district achieved its fourth highest recharge record of all time since 1912: 74,958 acre-feet of water, or 24,425,171,383 gallons. This extraordinary figure includes 25,525 acre-feet from the State Water Project and 6,409 acre-feet from in-river channel recharge.

The Conservation District began keeping records in 1912, including “in-river recharge” which is water that naturally seeps into the ground as it flows through local creeks and rivers. Since its inception, the SBVWCD has conserved more than 1.47 million acre-feet or 481.74 billion gallons of water by diverting the natural flow of the Santa Ana River and Mill Creek into 91 percolation basins.

## Cleaning the Recharge Basins

In 2024, the district’s field team removed 5,482 cubic yards of silt, sand, and algae from the basins at our Santa Ana River Groundwater Recharge Facility. From atmospheric rivers to seasonal monsoons to light rain, the resulting build-up of stormwater-related debris in the district’s water catchment basins needs



Recharge basins at the Santa Ana River Groundwater Recharge Facility require regular maintenance to remove trash and unwanted vegetation. Photo Credit: SBVWCD

to be cleaned out regularly. The removal process ensures optimal water percolation into the groundwater aquifers. This allows us to take full advantage of precipitation so we can infiltrate as much water as possible. Regular maintenance of the district’s multi-benefit, wildlife-friendly, stormwater infrastructure systems ensures that they are capturing the maximum amount of water possible in the district every year. The basins are dried prior to being cleaned, and then the water recharge cycle can begin again.



After seasonal rains, stormwater sinks into the district’s catchment basins. Photo Credit: SBVWCD

## New Construction Increases Recharge into Bunker Hill Aquifer

Last January the district began recharging the first water flows into the newly-built Santa Ana River Enhanced Recharge Project basins. This was a collaborative, joint-agency project to increase recharge capacity into the Bunker Hill Groundwater Basin by 80,000 acre-feet each year. The multi-phased project allowed each basin to begin serving the community as soon as it was completed. We extend our deepest thanks to the project partners including the San Bernardino Valley Municipal Water District, Western Municipal Water District, and Riverside Public Utilities.



Water flows through the Bunker Hill Basin which consists of porous alluvial materials that underlie the San Bernardino Valley. Photo Credit: SBVWCD.



The Line Fire encroaches upon homes in the City of Highland.  
Photo Credit: SBVWCD

# Fire & Water

Fire is always a threat in Southern California - not just to the San Bernardino Mountains, Upper Santa Ana River Wash, and Bunker Hill Basin, but to our communities, air quality, and water supply.

While fire has its benefits to the landscape (see sidebar), the resulting stormwater debris presents some unique challenges to groundwater recharge. The district's staff is especially skilled at meeting these challenges head-on, regardless of the season or circumstance.



## Line Fire Response

During fire season, the district is on high alert to support first responders, including teams from the US Forest Service and CalFire. During this year's Line Fire, to help combat a rapid escalation, first responders setup a fire retardant dipping station on district property due to our close proximity to the fire in an area that had been cleared for other work. The district's basins also served as a critical component of the water supply infrastructure for helicopter efforts near the fire-impacted areas.

## Wildfire Risk Reduction

Thanks to an \$800,000 grant from the Bureau of Land Management, the district and San Bernardino Valley Conservation Trust is using a firewise preventative approach to guard against future fires. This strategy is also expected to improve conditions for the local flora and fauna, including endangered species. It also includes wildfire risk reduction measures such as hazardous fuels management and ignition risk reduction.

"We're honored that the Bureau of Land Management recognizes the power of our collaborative partnerships to protect the ecosystem and natural processes of this land," said Conservation District General Manager Betsy Miller Vixie.

## Successful Partnerships

Through the decades we have learned that the best approach to mitigating fire and managing stormwater is a network of trusted partnerships. These relationships allow us to continue maximizing groundwater recharge during and after wildfires, while limiting maintenance costs and assisting firefighting efforts.

During the Line Fire, while supporting first responders, the district also worked closely with our partners to maintain water deliveries. Together, we ensured that water unfit for treatment due to fire debris contamination could instead be diverted to CalFire helicopters for nearby fire-drops.

While no natural disaster is completely preventable, we actively work to mitigate the risks to the Upper Santa Ana River Wash and neighboring communities. The district collaborates with other water districts, as well as the US Geological Survey, US Fish and Wildlife, and Bureau of Land Management to help remain vigilant in our efforts to protect the natural resources – including our water supply – that we dearly depend upon.



During the Line Fire, helicopters from CalFire used the district's property to replenish fire retardant to fight the nearby fire. Photo Credit: SBVWCD.

## The Ecology of Fire

Wildfire is part of the ecology of the San Bernardino Mountains and San Bernardino Valley. It plays an important role in recycling nutrients back into the soil and regenerating fire-adapted plant species such as chaparral and pine trees.

In Southern California, rainfall also plays a crucial role, impacting both the frequency and severity of wildfires. Rain helps suppress fire ignition in the short term by increasing soil moisture and reducing immediate fire risk. Precipitation also replenishes our local groundwater and supports native habitat.

However, the growth of invasive plant species that follows seasonal rains can become highly flammable during the dry summer and fall months. When we experience drought or limited precipitation, this non-native vegetation dries out more quickly than local species and the landscape becomes more vulnerable to ignition. As we have seen in recent years, these conditions can prolong the fire season, setting the stage for larger and more intense wildfires as the landscape dries out. This is especially true when combined with strong seasonal gusts, such as the Santa Ana winds.

## Seven Oaks Dam Settlement



Seven Oaks Dam  
Photo Credit: U.S. Army Corps of Engineers

A landmark settlement for Highland's Seven Oaks Dam was finalized and will include beneficial habitat measures for the federally protected San Bernardino kangaroo

rat and Santa Ana sucker fish. The 400 acres of planned habitat will also benefit native flora including the endangered Santa Ana woolly-star and will be located near the Santa Ana River Wash in the upper Santa Ana Canyon, south of Running Springs. "This is a historic negotiation between environmental groups, the U.S. Army Corps of Engineers, county flood control districts, and water districts," said Conservation District's GM, Betsy Miller Vixie. "We are especially excited about the optimized release of water flow from the Seven Oaks Dam that will benefit groundwater recharge to the floodplain below."

## Kangaroo Rat Initial Data Analysis

In January 2024, the District released a U.S. Geological Survey data analysis that tallied two years of monitoring both occupancy and abundance of the San Bernardino kangaroo rat in the Upper Santa Ana River Wash. This provided a first-ever look at the colonization and extinction dynamics of the species as well as robust estimates of distribution and abundance across the wash. The models provided new insight into the habitat relations of this fragile desert dweller, informing management decisions aimed at supporting the species recovery. "The collected data and statistical analyses are allowing us, for the first time, to document reliable measures of the kangaroo rat's distribution and abundance and associated habitat requirements over much of the Upper Santa



Ana River Wash," said Conservation District Land Resources Manager Milan J. Mitrovich, PhD.

The San Bernardino kangaroo rat was listed as endangered in 1998 and continues to be threatened by loss of its alluvial scrub habitat and changes in natural hydrological processes. Photo Credit: Leo Jones

## Spineflowers Sprout, Tripling Their Known Population

In January 2024, 1,000 federally-endangered slender-horned spineflower seedlings had sprouted at six new sites established to expand the population in the San Bernardino Santa Ana River Wash. By February of 2024, a whopping 2,961 plants had sprouted, not including any natural populations. These new sites tripled the known population in the Wash Plan Preserve and is remarkable progress for the endangered species. The slender-horned spineflower is a small annual plant in the buckwheat family that makes its home in areas prone to drought, such as alluvial scrub habitats in southwestern California.



Found in alluvial fans and floodplains in the San Bernardino Valley, the small, annual slender-horned spineflower grows in areas that are high in silt and low in nutrients. Photo Credit: SBVWCD



# Cal Poly Pomona & Plunge Creek

In August, district General Manager Betsy Miller Vixie and Consulting Chief Engineer John Lambie met with senior engineering students at Cal Poly Pomona to discuss the possibility of increasing groundwater recharge near Plunge Creek. Guided by Professor of Civil Engineering Dr. Seema C. Shah-Fairbank P.E., Ph.D., the collaboration contributed to the district's Program for the Expansion of Recharge Capacity (PERC). PERC more realistically evaluates the cost/benefit of proposed recharge projects, which will ultimately increase water capture in stormwater and groundwater facilities across the region. The collaboration provided real-world experience for the Cal Poly Pomona Senior Project, which is funded by the Conservation District. The goal is for students to submit their work to a water resource-related conference and increase their job-readiness as they prepare to enter the workforce.



Looking westward from the Plunge Creek restoration area.  
Photo Credit: SBVWCD.

## Mill Creek Construction

Construction was completed for the Mill Creek Diversion and Debris Management Project. This vital operation will help maintain water diversion during high flow events while limiting the amount of debris entering district recharge facilities. It will also decrease maintenance costs associated with sediment accumulation. Mill Creek's existing diversion was replaced with enlarged gates, diverter walls, and a low flow outlet. These critical improvements will boost function of the recharge facility and help return more potential stormwater-carried material back into natural flow paths. Our thanks go to district staff for their all-hands-on-deck approach to completing this project on time and under budget.



Construction underway at the Santa Ana River's Mill Creek diversion percolation basins. Photo Credit: SBVWCD.

## Remembering District 2 Director, David E. Raley

It is with deep sadness that we announce the passing of District 2 Director, Colonel David E. Raley, USAF (Retired) following a short illness. Director Raley served our community faithfully with firm fiscal responsibility and accountability since December 4, 2009. "Director Raley was my go-to guy for finance and budget. I could be assured that he had eagle eyes on the numbers. He saw things in a visionary way because he was such an independent thinker," says District Board President, Melody Henriques-McDonald.



David E. Raley  
Photo Credit: Stephen Readmond

## Conference Presentations

In mid-June, GM Betsy Miller Vixie spoke at the 3rd International Groundwater-Agriculture Conference in San Francisco. The panel was titled "Best Practices for Groundwater Supply" and was chaired by Amal Talbi from the World Bank. In November, Land Resources Manager, Milan J. Mitrovich, PhD, traveled to Manhattan, Kansas, to speak at the 2024 Natural Areas Conference. Dr. Mitrovich presented a case study about monitoring the Federally-listed San Bernardino kangaroo rat.



Milan J. Mitrovich  
Photo Credit: Stephen Readmond

## WaterSMART Applied Science Grant

A \$361,117 WaterSMART Applied Science grant was awarded to the district from the Bureau of Reclamation. Funding will be shared by the district and Sacramento State University, resulting in the use of the Integrated Santa Ana River Model to optimize aquifer stewardship. The project is expected to be complete by July 2026.



## State Assembly Honors 30 Under 30: Anna Frey

Anna Frey, Assistant Biologist, was selected by Assemblymember Eloise Reyes (50th District), for the prestigious 30 Under 30 Award in the S.T.E.M. Innovators category. Each year, Assembly Member Reyes accepts nominations for 30 exemplary constituents under the age of 30 to receive the award. This year, more than 100 nominees applied.



Anna Frey  
Photo Credit: Stephen Readmond



# Welcome District 2 Director Mark Falcone

We are pleased to welcome Mark E. Falcone as the new Board Director for Division 2. Mr. Falcone ran in a special election on November 5, 2024, replacing Dr. Hillary Jenkins, who had filled the vacant Division 2 position after former Director David Raley passed away. Mr. Falcone brings to the district 35 years of business management



Mark E. Falcone  
Photo: Courtesy of Mark Falcone

experience from the private sector. He currently serves as a Commissioner on the Community Advisory Commission for East Valley Water District and has lived in Highland for 31 years.

While running for the two-year term, Director Falcone advocated for collaboration among local produce growers, city planners, water wholesalers/retailers and community members. He also emphasized the importance of education and innovative technologies in water management. His priorities included maximizing water capture, balancing conservation and use, and prioritizing water security.

# Welcome New Staffer Allison Zecher

In October, Allison Zecher joined the San Bernardino Valley Water Conservation District as the new Administrative Specialist and Board Secretary. Allison has more than 15 years of experience in executive support, project management, and organizational efficiency, and brings a wealth of knowledge that will contribute greatly to the continued



Allison Zecher  
Photo Courtesy of Allison Zecher

success of the district's operations. She is passionate about fostering collaboration and integrating innovative practices that drive successful outcomes, and brings a strong commitment to supporting teams and creating environments that promote seamless communication and progress. Allison holds a BA in English Literature and Writing from La Sierra University and an MBA from the University of Redlands.

## SBVWCD 2023 By The Numbers:

- 5 Covered Species Protected And Managed
- 481.74 Billion Gallons Stored to Date
- 91 Mill Creek Percolation Basins
- 10 Full-time Staff Members
- 4,892 Acres in Wash Plan
- 788 Acres in Preserve
- \$5.22M Annual Budget (FY '24/'25)
- \$4.8M Capital Improvement Budget



# SBVWCD IN THE NEWS

## 2024 California Water - Inland Empire Edition

The district was featured in the California Water, Inland Empire 2024 edition which was included in the daily print editions of the Riverside Press Enterprise, Redlands Daily Facts, Inland Valley Daily Bulletin, and San Bernardino Sun. General Manager Betsy Miller Vixie was interviewed about the agency's record water year, as well as the collaborative efforts exemplified by the 2023 visit by U.S. Department of the Interior Secretary Deb Haaland and Congressman Pete Aguilar (D-CA-33). That visit highlighted work to make the Inland Empire more resilient to deadly wildfires as part of the Biden Administration's Investing in America agenda.

[Read More >>](#)



## KVCR, 91.9FM

During the early February rains, General Manager Betsy Miller Vixie was featured on KVCR, 91.9FM to discuss Southern California's atmospheric rivers. At the time, the Conservation District had collected nearly 750 million gallons of stormwater for recharge into the aquifer, which was a drop in the bucket compared to the 500 billion gallons the district has gathered through the course of our history. "The water collected from recent storms is enough to cover the indoor water use needs of 43,000 Inland Empire residents for a year," said Miller Vixie. This work by the district was completed at the cost of \$39,000 – or less than \$1 per person, per year.

[Read More >>](#)



## GM Betsy Miller Vixie Featured in PBS Report

KLCS PBS interviewed the district's General Manager Betsy Miller Vixie for "Sustaining US," hosted by reporter David Nazar. The report focused on cloud seeding, a type of weather modification used to increase precipitation by releasing particles of silver iodide into clouds to increase the chance of droplet condensation. Piloted by SAWPA, the Santa Ana Watershed Project Authority, the district is a participant in the program to test cloud seeding in our region which continues through April, 2027. "The way this project was setup was not just to try something new but also to study what we're doing," said General Manager Miller Vixie. "The theory is that with this program we'll get potentially more rainfall in the upper watershed. We could see improvements in our forest health, we could see increased resilience to drought and increased resilience to insect infestations for our forests, but we don't know for sure and so we're going to study it."

[Watch the Video >>](#)





## SBVWCD – Our Values

**We embody integrity** through fiscal responsibility in public service by holding ourselves accountable to our partners and community at large.

**We continue to build our community** of employees, partners, businesses, and neighbors who drive our mission. Our success depends on responsive collaboration and transparent communication.

**We are stewards of the water, land, and environment** and are committed to sustainable practices that will ensure a resilient future.

**We are ethical** and respect both people and the environment to serve our community's diverse values.

**We balance innovation and time-tested pragmatism** to advance professional excellence, continually improving to meet the evolving priorities of today and a changing world tomorrow.

**We are resilient.** We adapt to address future climate impacts and ensure the District's next 100 years with our continued humble, flexible, and curious approach to water and the natural world.

## Summary of Fiscal Stewardship

- **Received a clean financial audit for Fiscal Year 2023-24.**
- **Approved a balanced budget for Fiscal Year 2024-25, including capital projects funded under multi-year capital budget.**
- **Contributed operations savings and aggregate management funding to reserves.**
- **Both funded and used District Reserves for capital projects under 2024 Reserve Policy.**
- **Fully funded annual OPEB (retiree health benefit) Trust and CalPERS actuarial liability for District staff pension.**

Efficiency builds trust with our community as we plan for the future and ensure that we have reserves in place to address maintenance needs following record-setting recharge years.



# What Drives Us...and Why

## MISSION

As one of California's first sustainable groundwater replenishment agencies, the District proactively recharges water, improving supply for the benefit of water users, local businesses, and native flora and fauna in a financially responsible way.

The District leverages our unparalleled expertise as stewards of the water and land, responsibly innovating in water and habitat conservation, harmonizing and enhancing working landscapes, and enriching open space as a community asset.



## San Bernardino Valley Water Conservation District

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