Annual Report

FY 2020/2021

Riverside County Flood Control and Water Conservation District

Mission

WE RESPONSIBLY MANAGE STORMWATER IN SERVICE OF SAFE, SUSTAINABLE, AND LIVEABLE COMMUNITIES.

Vision

TO BE A LEADER IN THE FIELD OF STORMWATER MANAGEMENT, ACHIEVE EXTRAORDINARY RESULTS FOR OUR CUSTOMERS, BE THE HOME OF HIGH QUALITY TEAMS, AND RETURN VALUE TO OUR COMMUNITY.

Contents

Message

from the General Manager-Chief Engineer Jason E. Uhley

Fiscal Year 2020-2021 was a year like no other. We faced the Apple and El Dorado Fires, another year of below average rainfall and extended drought, and COVID-19. Our staff faced many challenges as we attempted to balance safety with the need to maintain services and address the very real mudflow risks created by last summer's fires.

The Apple and El Dorado Fires required the District to develop mud and debris mitigation projects along our Noble Creek and Little San Gorgonio Creek drainage systems. We are incredibly proud of our staff that, once again, had to quickly rally to ensure our facilities were ready for potential mudflows emanating from the new burn scars. Staff performed emergency maintenance, constructed lines of debris bollards along Noble Creek, placed k-rail and other barriers along the Little San Gorgonio Creek, and modified the Little San Gorgonio water conservation facilities, all while maintaining COVID-19 safety precautions. I'd also like to thank our many partners, including the Beaumont-Cherry Valley Water District, San Gorgonio Pass Water Agency, Cities of Beaumont and Banning, CalFire, Riverside County Sheriff's Department, Beaumont Police Department, Riverside County Emergency Management Department, Morongo Band of Mission Indians, and dozens of other agencies, entities, and private businesses for their support with installing mitigation measures and supporting community meetings ahead of the 20/21 winter season and during the pandemic. The good news is that the 20/21 winter season was mild. The downside of the mild winter is that the burn scars did not heal as much as we would have liked. The risks of mud flows, evacuations, and private property damage will remain with these communities through at least one more winter.

Even more disconcerting is that the well below average rainfall contributed to an ongoing drought – now more commonly referred to as a megadrought. As I write this, Lake Mead sits at 37% capacity and the first ever water shortage declaration was just issued for the Colorado River. Fortunately, the District is finalizing several water conservation projects in conjunction with local water agencies this year to improve our drought resilience. We partnered with Beaumont-Cherry Valley Water District on the Beaumont Line 16 – Noble Creek Basin recharge project, with the Lake Hemet Municipal Water District to expand the Bautista Creek Recharge Basins, and with the City of Riverside to do a dry weather diversion to sewer project. The diversion to sewer project will protect water quality in the Santa Ana River and help augment local reclaimed water supplies.

Our mission of responsibly managing stormwater in service of safe, sustainable, and livable communities is more important than ever. Despite another devastating fire season, COVID-19, and ongoing drought, the team continues to rise to the occasion with the strong support from our Board of Supervisors and County leadership team.

Very truly yours,

Jason E. Uhley
General Manager-Chief Engineer

Value Statements

INTEGRITY

Speak honestly and follow through. We make commitments responsibly and honor them. We will be fair and consistent in our actions.

ACCOUNTABILITY

We are responsible for results. We set goals, measure how we're doing, and seek feedback. We continuously use that data to inform decision -making, recognize successes and learn from mistakes. Focusing on results promotes initiative, individual responsibility and team effectiveness.

EXCELLENCE

We deliver outstanding results and exceed expectations. We are dedicated to providing high quality, appropriate, professional and timely service. We provide proactive and innovative solutions, to go beyond and ask "What more can we do?" We support continuous learning and embrace change as it will enable us to quickly and effectively adapt to community needs and expectations.

TEAMWORK

Shared purpose, shared values, shared achievement. Collaboration between staff, community stakeholders, and partner agencies leads to better results. Effective teamwork builds on and reinforces the shared values of integrity, trust, transparency, and accountability. We value an atmosphere of honest communication, respect, support and encouragement.

TRANSPARENCY

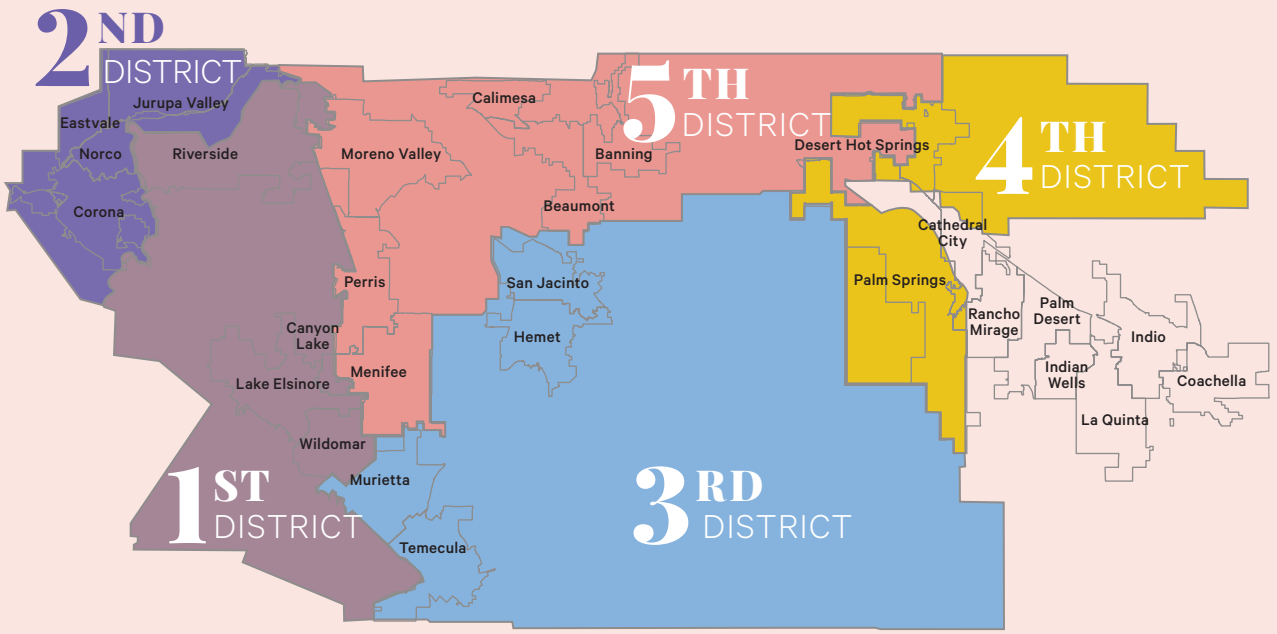
Our actions will be visible and understandable. We will share ideas and information freely and promote a culture of openness and transparency in all our work. We will facilitate access to information and actively engage the community, partner agencies and stakeholders in our decisions and initiatives.

TRUST

We count on each other and others can count on us. Our community trusts us to deliver results with their tax dollars. We are committed to a workplace where honest communication fosters collaboration, competency, and character. By creating trust, delegation and shared responsibility follow; this is critical to delivering and ensuring staff development.

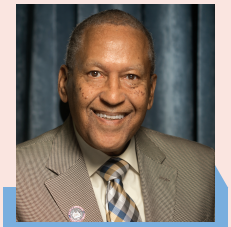
DISTRICTS OF THE RIVERSIDE COUNTY

Board of Supervisors



FIRST DISTRICT
Kevin Jeffries

SECOND DISTRICT
Karen Spiegel



THIRD DISTRICT
Chuck Washington

FOURTH DISTRICT
V. Manuel Perez

FIFTH DISTRICT
Jeff Hewitt

Management Team

Front row left to right

Richard Boon
Chief of Watershed Protection

Imad Guirguis
Chief of Operations & Maintenance

Joan Valle
Chief of Regulatory

Edwin Quiñonez
Chief of Planning

Claudio Padres
Chief of Design & Construction

Back row left to right

Jim McNeill
Chief of Surveying & Mapping

Jeanine Rey
Chief of Finance

John Carrillo
Chief of Watershed Analytics

Robert Cullen
Assistant Chief Engineer

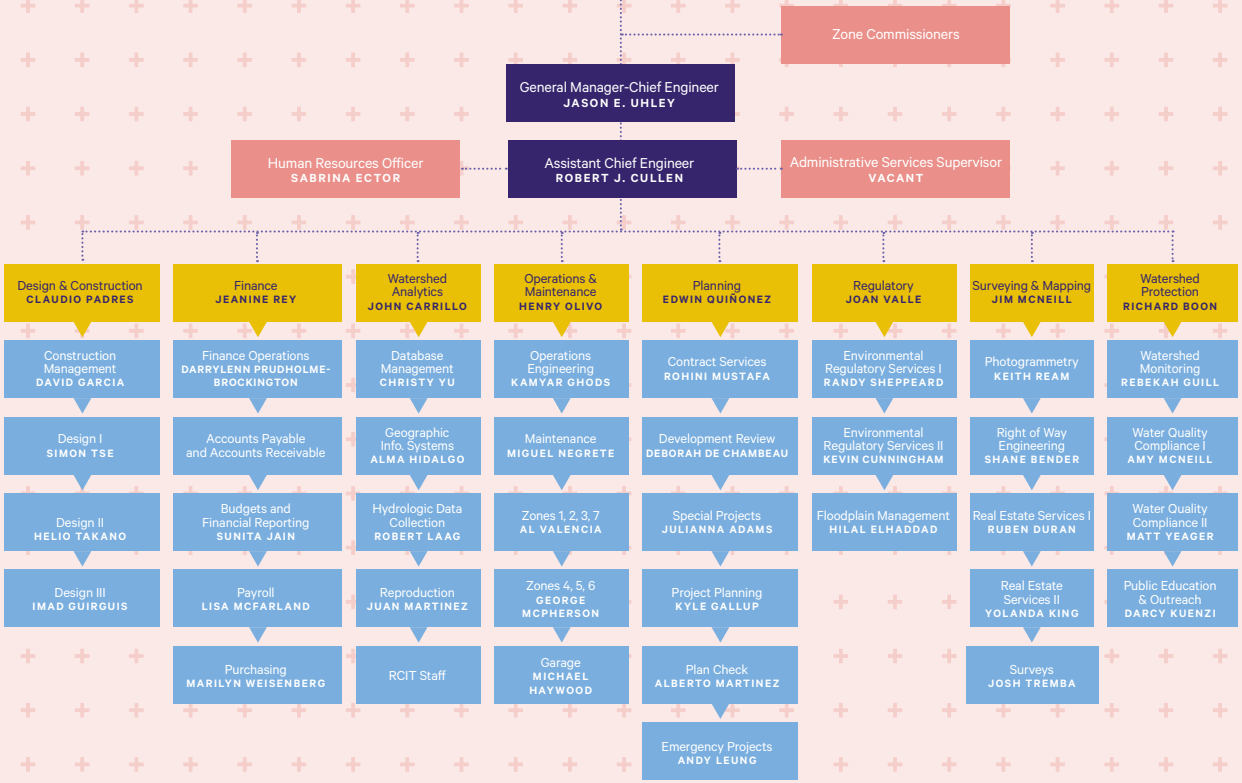
Jason Uhley
General Manager-Chief Engineer

* Not shown in picture **Beth DeHayes**, Executive Assistant II

Organizational Chart

BOARD OF SUPERVISORS

DISTRICT 1 Kevin Jeffries **DISTRICT 2** Karen Spiegel **DISTRICT 3** Chuck Washington **DISTRICT 4** V. Manuel Perez **DISTRICT 5** Jeff Hewitt



Leadership

National Association of Flood and Stormwater Management Agencies (NAFSMA)
Jason Uhley
Board of Directors

Joan Valle
Flood Management Committee Co-Chair

Floodplain Management Association
Kyle Gallup
South California Public Director

California Spatial Reference Center's (CSRC) Executive Committee
Josh Tremba
Treasurer

California Stormwater Quality Association
Richard Boon
Treasurer

Matt Yeager
BMP Effectiveness Subcommittee Co-Chair

Rebekah Guill
Monitoring and Science Co-Chair

Southern California Stormwater Monitoring Coalition
Rebekah Guill
Chair

Southern California Water Coalition
Darcy Kuenzi
Legislative Taskforce

American Society of Civil Engineers — Young Member Forum San Bernardino/Riverside Branch
Olivia Pearson
Recruiting Chair

American Society of Civil Engineers — Young Member Forum San Bernardino/Riverside Branch
Andrew Chan
Technical Tour Advisor

Inland SoCal United Way — Board of Directors
Julianna Adams

SBVC GIS Industry Advisory Committee Member
Alma Hidalgo

Adjunct Geography/GIS Faculty at San Bernardino Valley College
Alma Hidalgo

Alert Users Group
Robert Laag
Treasurer

Association of Environmental Professionals Inland Empire Chapter
Joan Valle
Legislative Liaison

Cal Poly Pomona Department of Urban and Regional Planning Alumni Association
Kevin Cunningham
Vice President

Community

CONTRIBUTION & INVOLVEMENT

LOVE YOUR NEIGHBORHOOD

is a County-wide pollution prevention initiative between the Riverside County Watershed Protection Program and the Western Riverside Council of Governments.

June 26, 2021 — Multi-City Cleanup
A kickoff event was held with the cities of Lake Elsinore, Canyon Lake, and Wildomar.

OBJECTIVES:
Real-time data collected during **Love Your Neighborhood** events, through an interactive map, track pollution-prevention actions such as trash removal, recycling, over watering, and household hazardous waste disposal.

2,140 TRASH

217 VOLUNTEERS

BULKY ITEMS — Couches: **4**, Mattresses: **1**, Washer/Dryers: **2**, Furniture: **2**, Shopping Carts: **5**, Refrigerator: **1**, Dishwasher: **1** and several Tires.

Riverside County Employee Campaign

VOLUNTEER CHARITABLE EVENT COORDINATORS

As part of the Riverside County Employee Campaign, the District fundraises every October to support **BREAST CANCER AWARENESS**. Team Pink hosted several raffles and a thank you breakfast. With the tremendous support of District staff, the District raised over $3,100 for a local breast cancer resource center.

LEANN CLEVELAND, BETH DEHAYES AND RUTH GOLLER
Team Pink

LESLIE LEVY AND JEFF SHIM
District Coordinators

LifeStream Blood Drives
Beth DeHayes

Thanksgiving Food Drive
Elsa McKinney

Fill-A-Backpack School Supply Drive
Elsa McKinney

Snowflake Toy Drive
Elsa McKinney

Culture of Heath Ambassadors
Firas Kassem and Rick Landeros

Youth In Government
Devraj Oza, Coordinator

American Heart Walk
Charlene Warren

Zone
COMMISSIONERS

+ ZONE 1

DON HARRIGER, 1st District
CHUCK KRIEGER, 2nd District
VACANT, 1st District

+ ZONE 2

SERENA BURNETT, 1st District
TED HOFFMAN, 2nd District
BAXTER MILLER, 2nd District

+ ZONE 3

RICH BELLANTE, 1st District
CRIS GIBSON, 1st District
JACK WAMSLEY, 1st District

+ ZONE 4

ROY "PETE" BLECKERT, 5th District
KEN GRAFF, 3rd District
BRAD SCOTT, split 3rd/5th District

+ ZONE 5

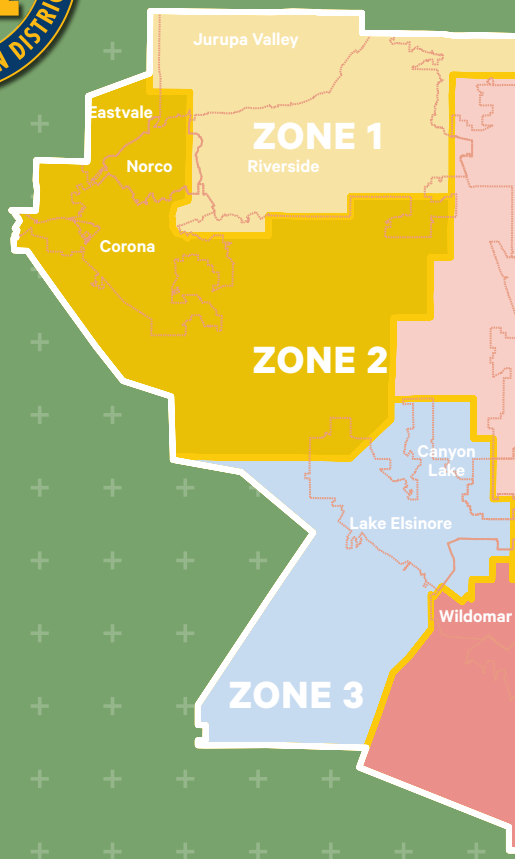
DEBBIE FRANKLIN, 5th District
KERRI MARINER, 5th District
PAUL ST. MARTIN, 5th District

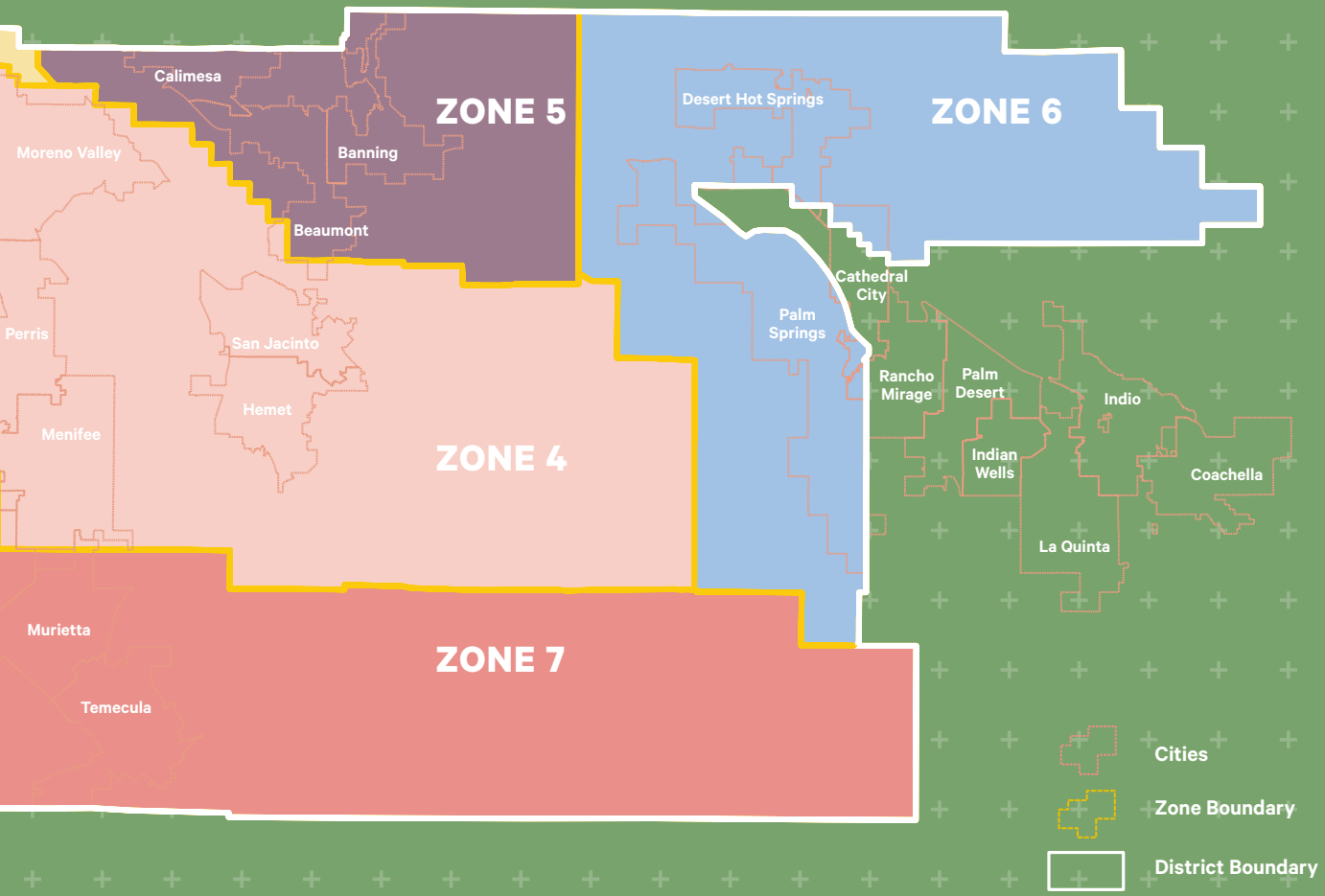
+ ZONE 6

IVAN SEWELL, 4th District
STEVEN STEWART, 4th District
VACANT, 4th District

+ ZONE 7

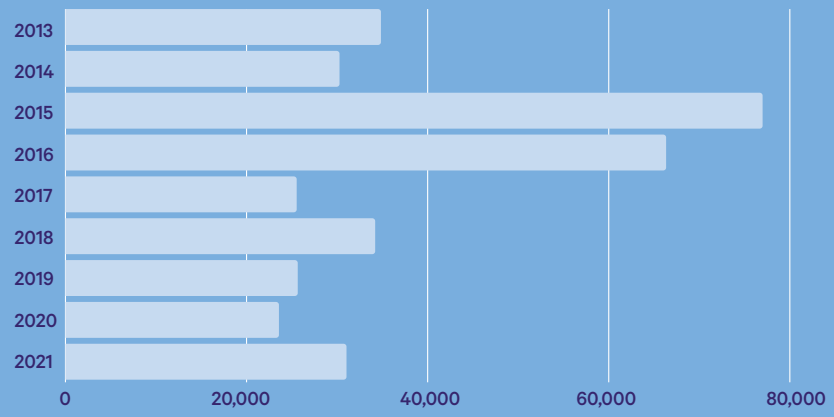
HANNAH GBEH, 3rd District
VINCENT SCARPINO, 1st District
VACANT, 3rd District




ZONE 5
ZONE 6
ZONE 4
ZONE 7
Calimesa
Banning
Beaumont
Moreno Valley
Perris
San Jacinto
Hemet
Menifee
Murietta
Temecula
Desert Hot Springs
Cathedral City
Palm Springs
Rancho Mirage
Palm Desert
Indio
Indian Wells
Coachella
La Quinta
Cities
Zone Boundary
District Boundary

Dashboard
2020/2021

CAPITAL PROJECT EXPENDITURES (1,000S)



REVENUE

TAXES
62,092,000

OTHER REVENUE
18,314,000

CHARGES FOR SERVICES
1,811,000

STATE AID
1,332,000

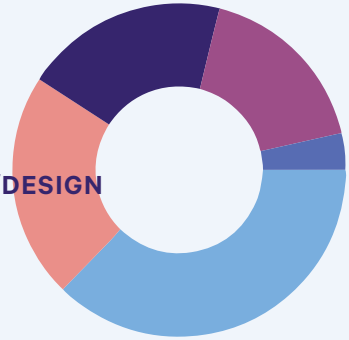
USE OF MONEY
489,000

2,248 STRUCTURES REMOVED FROM THE FLOODPLAIN

221 ACRES OF HARMFUL FLOODPLAIN REMOVED

1,745 ACRES OF UNDETERMINED FLOODPLAIN RISK REMOVED

EXPENSES



ADMINISTRATION
25,558,000

CONSTRUCTION
14,985,000

RIGHT-OF-WAY/SURVEY/DESIGN
13,545,000

MAINTENANCE
12,009,000

LAND USE/PURCHASE
2,447,000

FEMA NFIP COMMUNITY RATINGS SYSTEM

The Community Rating System (CRS) program provides discounts on flood insurance premiums based a communities' efforts to mitigate flood damage. If the community goes above and beyond the minimum, its residents will receive a discount on their flood insurance. In 2021, the District, led by the Floodplain Management Section, successfully secured a CRS Level 6, which entitles residents to a 20% discount on their flood insurance premium. As a Level 6, the annual premium savings average $142 per policy for a total estimated savings of $311,235 County-wide. The projected savings for County residents over the next five years is expected to be $1.5 million.

Rainfall & Runoff

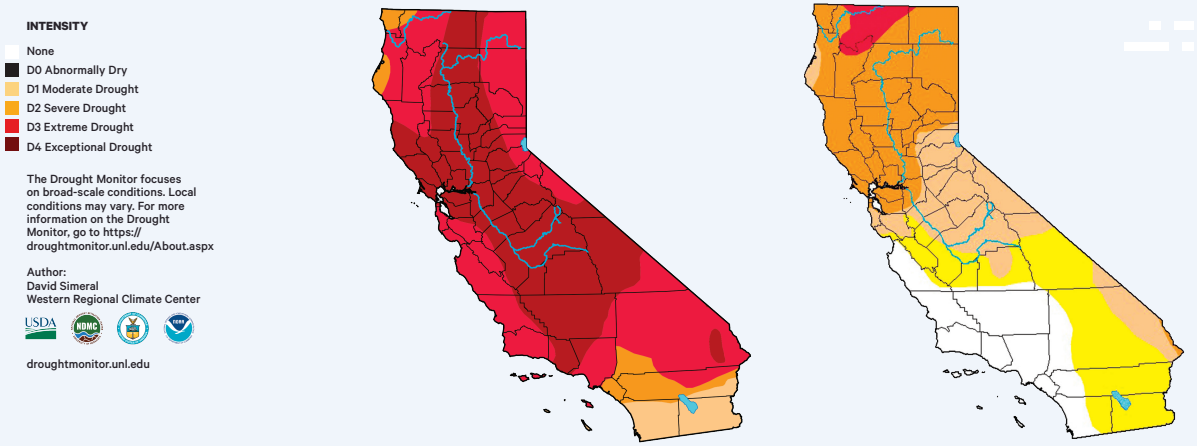
WATER YEAR 2021 (OCTOBER 1, 2020 TO SEPTEMBER 30, 2021) MARKED A RETURN TO DRIER CONDITIONS STATEWIDE, WITH NEARLY THE ENTIRE STATE EXPERIENCING ONLY 50 PERCENT OR LESS OF THE AVERAGE RAINFALL.

Southern California was no exception with most areas showing below average annual precipitation during the entire water year. Over the last four years, Southern California has been experiencing what is referred to as the whiplash effect, going from a dry year to a very wet year and then back to dry. This back-and-forth effect may be a new normal moving forward as the climate evolves and science grapples with understanding the changes.

There were only two weak to moderate Atmospheric Rivers this year compared to five last year. The lack of these large rain producing events has significantly contributed to the drought conditions we are currently experiencing along the West Coast.

The State's snowpack as of May 1st was 25 percent of average compared to last year's 40 percent of average, whereas in 2019, the May 1st snowpack was 160 percent of average.

Statewide Reservoir Storage is 48.2% of average through the end of September, which is approximately 7.435 million acre-feet.



U.S. Drought Monitor California

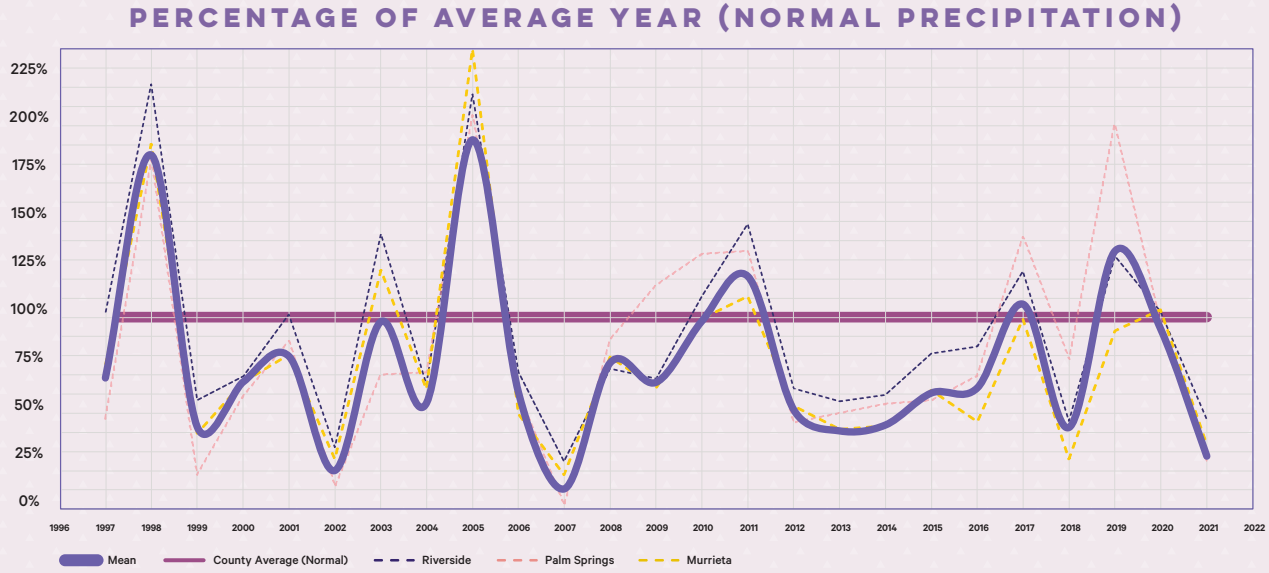
September 7, 2021
Valid 8 a.m. EDT
(Released Thursday, Sep. 9, 2021)

September 8, 2020

Precipitation

RIVERSIDE COUNTY EXPERIENCED WHAT IS REFERRED TO AS THE “WHIPLASH EFFECT“, IN WHICH LAST YEAR WAS A NORMAL RAIN YEAR WHERE THIS YEAR WAS 50% OF NORMAL.

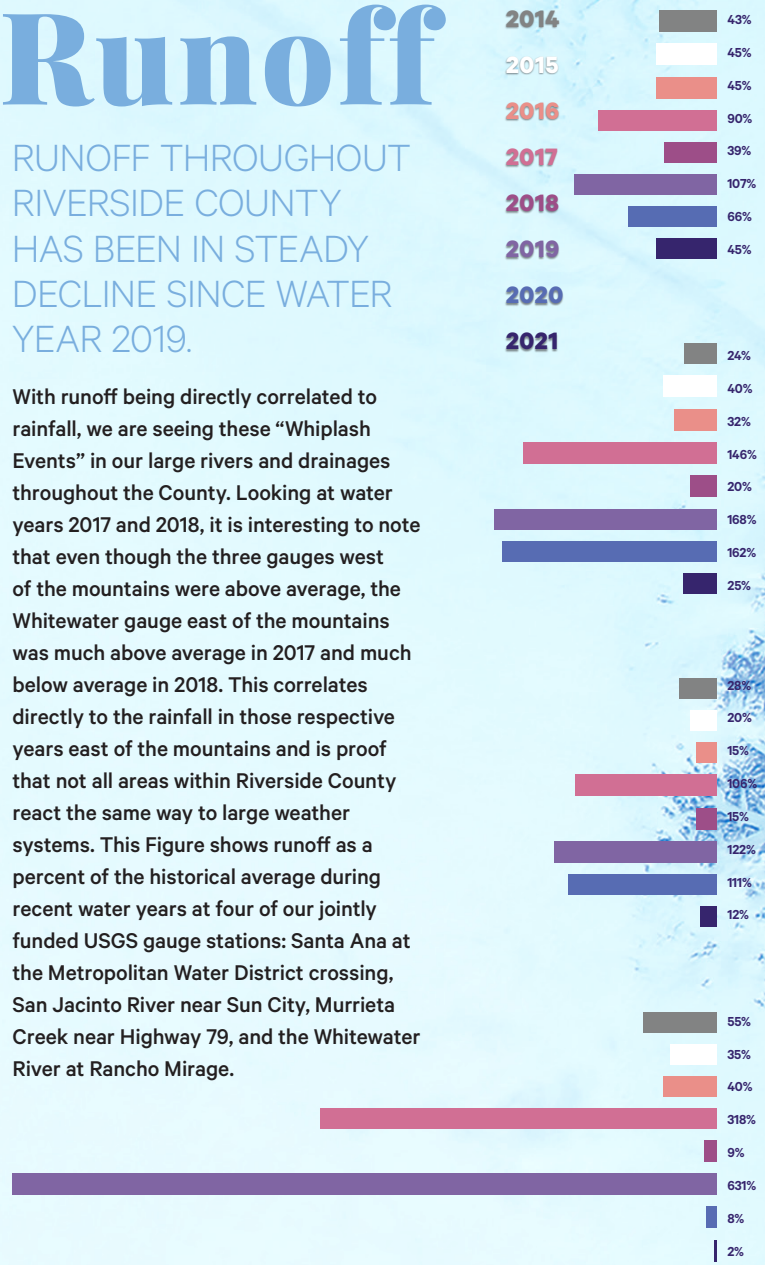
After water year 2019 ended as an above average year, water year 2020 ended as an average year for rainfall. Then as water year 2021 progressed, it became obvious that Riverside County and the majority of the State were headed for below average rainfall, which would amount to 50% or less than the norm. For Riverside County, water year 2021 would end up being the driest year since 2007. The figure below summarizes actual rainfall as a percent of annual precipitation for three representative areas throughout Riverside County.



Runoff

RUNOFF THROUGHOUT RIVERSIDE COUNTY HAS BEEN IN STEADY DECLINE SINCE WATER YEAR 2019.

With runoff being directly correlated to rainfall, we are seeing these "Whiplash Events" in our large rivers and drainages throughout the County. Looking at water years 2017 and 2018, it is interesting to note that even though the three gauges west of the mountains were above average, the Whitewater gauge east of the mountains was much above average in 2017 and much below average in 2018. This correlates directly to the rainfall in those respective years east of the mountains and is proof that not all areas within Riverside County react the same way to large weather systems. This Figure shows runoff as a percent of the historical average during recent water years at four of our jointly funded USGS gauge stations: Santa Ana at the Metropolitan Water District crossing, San Jacinto River near Sun City, Murrieta Creek near Highway 79, and the Whitewater River at Rancho Mirage.



ATMOSPHERIC Rivers

DEFINITION: **An Atmospheric River (AR) is a long, narrow, and transient corridor of strong horizontal water vapor transport that is typically associated with a low-level jet stream ahead of the cold front of an extratropical cyclone.** *(Center for Western Weather and Water Extremes)*

In recent years, we hear this term used a lot in the news and other media outlets. When you look closely, it is evident that these phenomena are a sizable contributor of rainfall to what might be a much drier West Coast without them. It is important to realize that not every wet storm is attributed to ARs. In fact, less than 25% of storms that hit the West Coast are preceded by ARs. The fact that such a low number actually make land fall is interesting because in an average water year 30% to 50% of the precipitation is attributed to ARs. Historically, nearly 80% of the years where California has seen major storms and flooding, can be linked to Atmospheric River events.

These Figures show the difference in the number of ARs that contributed to the annual precipitation on the West Coast in the last two years. The rainfall totals for the last two years were less than stellar, but when you look at the graphics below, it becomes obvious that both the number and strength of the ARs contributed to the difference in these totals, especially in Southern California.

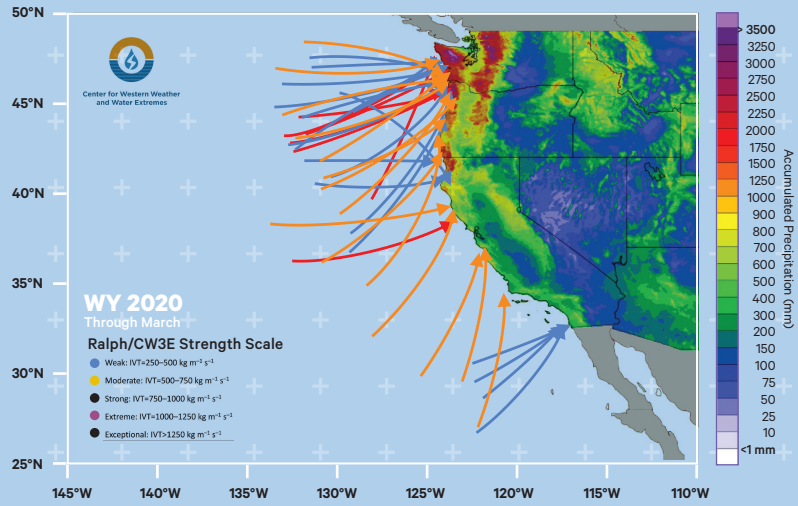


Figure 1: Water Year 2020 Atmospheric River events by date and strength. (Produced by C. Hecht and F. M. Ralph)

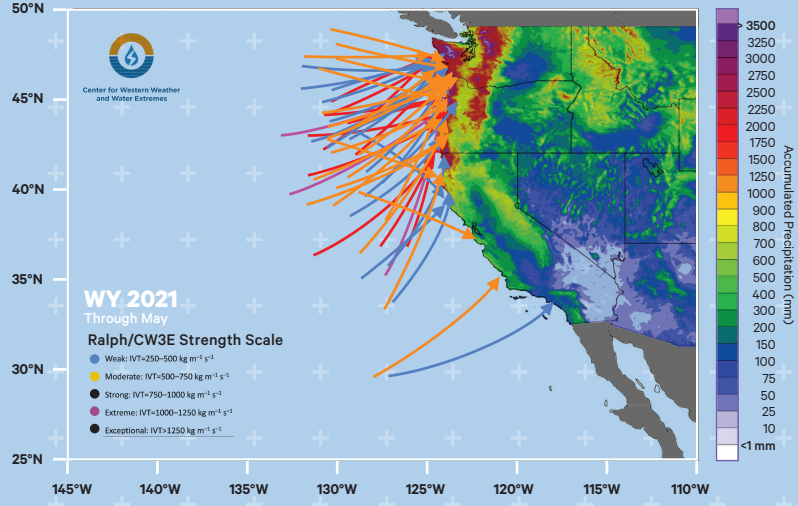


Figure 2: Water Year 2020 Atmospheric River events by date and strength. (Produced by C. Hecht and F. M. Ralph)

VISUAL RUNOFF MONITORING EQUIPMENT (CAMERAS)


Site Preconstruction Visit: August 18, 2020


Pouring Concrete Footings: September 17, 2020


Fence, Camera mounting pole and Gauge House installed: September 24, 2020


Installation complete and Site Operational: October 8, 2020


San Gorgonio River near Morongo Reservation Camera Site


Upper Little San Gorgonio Creek Camera Site

REAL TIME TELEMETERED RAIN GAUGE INSTALLATIONS (ALERT GAUGES)


Oak Glen Conservation Camp


Calimesa at Singleton Road


Cabazon North of Interstate 10


Bogart Park (Beaumont)


Morongo Indian Reservation (Potrero Canyon)

Post-Fire Hydrologic HAZARD WARNING SYSTEM

In August 2020, the Apple and El Dorado Fires destroyed the vegetation along the southern slopes of the San Bernardino National Forest and the foothills immediately upstream of the cities of Beaumont and Banning and the Morongo Indian Reservation creating a substantial flood and debris flow risk for downstream properties.

The District's Hydrologic Data Collection Section was integral in the post-fire design and implementation of an automated flood warning system which consisted of both telemetered real time rain gauges and cameras. This equipment was placed at locations deemed critical to allow for the early warning of residents to ensure the public's safety. Hydrologic Data Collection, along with the Data Analytics and Reporting Section, provided the Emergency Management Department with a dashboard that would show real time rainfall amounts and live video to aid in decision making related to debris flows and flooding.

FPM's Emergency Response

IN AUGUST 2020, THE **APPLE** AND **EL DORADO** FIRES COMBINED BURNED APPROXIMATELY 55,000 ACRES IMMEDIATELY UPSTREAM OF THE CITY OF BEAUMONT CREATING A SUBSTANTIAL FLOOD AND DEBRIS FLOW RISK FOR DOWNSTREAM PROPERTIES.

The District's Floodplain Management Section (FPM) was integral in the post-fire emergency response. FPM's contribution was two-fold: 1) conducted computer-aided modeling to identify the areas at greatest risk of post-fire flooding; and 2) modeled various flood control mitigation projects so the District could identify the effectiveness of the mitigation alternatives. Specifically, using 2-D HEC-RAS FPM prepared two-dimensional models for four watersheds: Noble Creek, Little San Gorgonio Creek, Marshall Creek, and Smith Creek. Two-dimensional modeling is particularly helpful because it can identify both the direction of flood flows and the quantity and depth of the water. FPM modeled over 30 scenarios with and without mitigation.

The mitigation alternatives included installing K-rail, HESCO bags, and debris bollards to direct flows or to filter out large debris. In addition to aiding the District in selecting which mitigation projects would be most effective, FPM's contribution was critical to the County's Emergency Response Team planning efforts, and also provided vital information to the residents and other stakeholders for the overall public awareness and outreach. FPM teamed up with the Emergency Management Department and County Transportation to inform the residents and businesses at greatest risk—the Outreach Team knocked on over 100 doors!

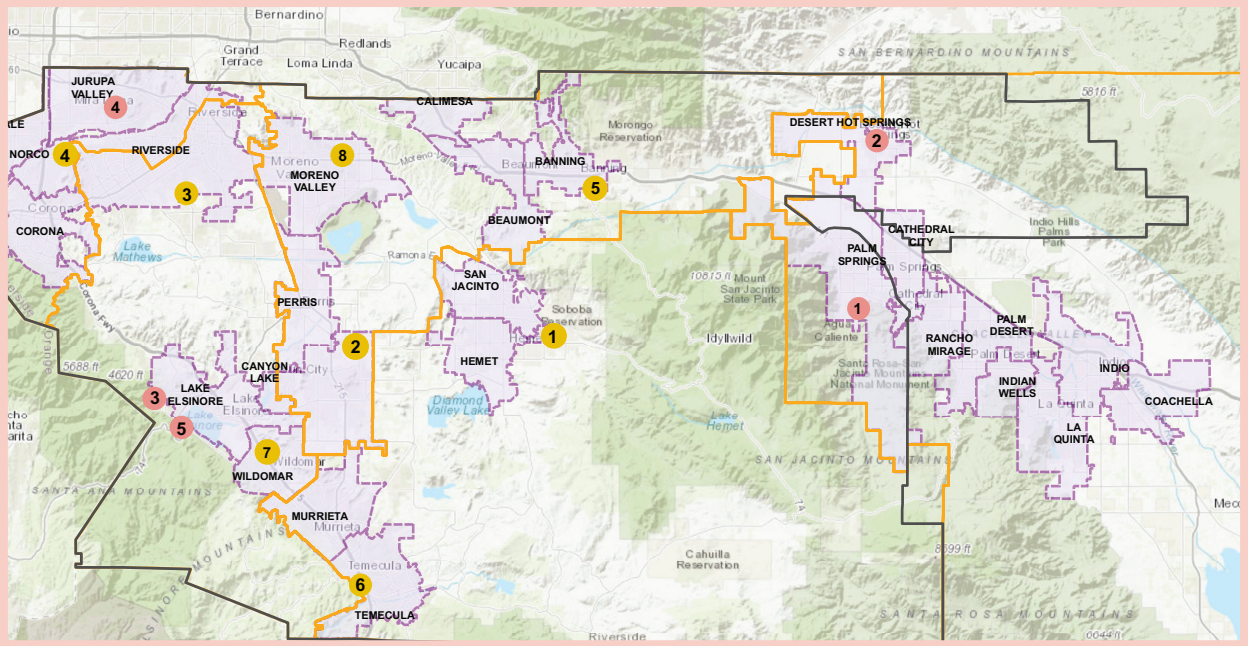
This FPM snippet shows just one of the many ways the District sprang into action to mitigate the potential flood risk due to the Apple and El Dorado Fires.

Staff performed emergency maintenance, constructed lines of debris bollards along Noble Creek, placed k-rail and other barriers along the Little San Gorgonio Creek, and modified the Little San Gorgonio water conservation facilities.

CAPITAL PROJECT

Highlights

Riverside County Flood Control
and Water Conservation District CIP Projects FY 20-21



District Boundary Zone Boundary Cities

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

COMPLETED PROJECTS

1. Palm Canyon Wash, Stage 93 Emergency Levee Restoration
2. Desert Hot Springs MDP Line E-5
3. Leach Canyon Dam–Spillway Restoration
4. Jurupa Pyrite Line A-2
5. Ortega Channel Retrofit
6. Santa Ana River BNSF Bridge Protection Project

ONGOING PROJECTS

1. Bautista Creek Channel Recharge Basin
2. Romoland MDP Line A-3, Stages 2 and 3
3. Woodcrest Dam Outlet Modification
4. Norco–Crestview Drive Debris Basin
5. Banning MDP Line H
6. Murrieta Creek Flood Protection and Environmental Restoration Project Phase 2
7. Sedco Line F, Stage 2
8. Moreno MDP K-1, Stage 2

COMPLETED

Projects

1 2

1. Palm Canyon Wash, Stage 93–Emergency Levee Restoration

This is a District-led emergency restoration project of approximately 3,200 lineal feet of levee in the city of Palm Springs. The primary objective of this project is to repair damaged levee sections and extend toe down depth along Palm Canyon Wash from the corner of Murray Canyon Drive and Toledo Avenue downstream to the wash crossing at Palm Canyon Drive (Highway 111).

2. Leach Canyon Dam — Spillway Restoration

The Leach Canyon Dam Spillway Restoration project is a District-led project that will repair and reinforce the spillway that sustained significant damage after major storm events in February 2019. The existing dam is located at the end of Amorose Street in an unincorporated community of Lake Elsinore. The project includes the replacement of lost rock riprap, construction of two cut off walls, grouted rock areas, a 3-foot tall grouted rock weir, and restoration of the earthwork grading.

The District is applying for FEMA public assistance to reimburse a portion of the construction costs of this project, pursuant to the federal emergency declaration.

3. Desert Hot Springs MDP Line E-5

This District-led storm drain improvement project consists of 5,000 lineal feet of pipe (36”-66”). The primary objective of this project is to reduce flooding along 8th Street between Mesquite Avenue and West Drive in the city of Desert Hot Springs.

4 5

4. Santa Ana River BNSF Bridge Protection Project

Representatives of local, county, state, and federal agencies gathered on May 27th to celebrate the official completion of the BSNF Railroad Bridge Pier Protection Project. The completion of the more than $100-million bridge pier protection feature is part of the $2.8-billion Santa Ana River Mainstem Project. The purpose of the project is to minimize risk to the railroad bridge in flood conditions and during increased water releases from Prado Dam resulting from periods of heavy rainfall. The bridge is now fully equipped to handle up to 30,000-cubic-feet-per-second release of water from Prado Dam. The project entered the design phase in 2014, was awarded in 2017, and is the result of a partnership among the U.S. Army Corps of Engineers, the Riverside County Flood Control and Water Conservation District, Orange County, and San Bernardino County.

5. Jurupa Pyrite Line A-2

The District-led project consists of constructing an interim portion of Line A-2 to alleviate flooding hazards to the properties located at the end of Bellmore Street and surrounding the project site. This interim project follows the master drainage plan alignment and collects flows at the southern end of Bellmore Street and conveys the flows westerly of Agate Street.

6. Ortega Channel Retrofit

The District-led retrofit project will facilitate the maintenance of and the removal of sediment from the existing Ortega Channel Storm Drain located in the city of Lake Elsinore. The proposed project will replace roughly 600 lineal feet of sediment-prone underground storm drain pipe (84”-96”) and replace it with roughly 600 lineal feet of 10’Hx12’W RCB and three access structures which will allow for more timely maintenance.

Active CONSTRUCTION PROJECTS

Bautista Creek Channel Recharge Basin:

This District-led project, in partnership with Lake Hemet Municipal Water District, will expand groundwater recharge by constructing six infiltration basins on the existing 17.5 acres of open space adjacent to Bautista Creek Channel. This project is funded by a combination of District funds, and external funding from a Proposition 84 state grant administered by the California State Department of Water Resources and a contribution from the Lake Hemet Municipal Water District.

Romoland MDP Line A-3, Stages 2 & 3

This is a District-led project that will ultimately protect existing neighborhoods along Varela Lane and properties south of Varela Lane and east of Palomar Street. Stage 1 of Line A-3 was already constructed near Case Road in Palomar Street. Stages 2 and 3 will extend this storm drain system north in Palomar Road to Varela Lane. The total length of these two stages is approximately 3,200 feet of underground box storm drain (12'Wx6.5'H). This project also enables the future construction of Stages 4 and 5 which extend east along Varela Lane. The full benefit of this project will not be realized until Stages 4 and 5 are also constructed. This project is funded by the District.

Woodcrest Dam Outlet Modification

This is a District-led project to upgrade the safety and operation of Woodcrest Dam. The improvements include replacing the existing gate assembly and control system, replacing the existing outlet structure with a new debris rack outlet structure to reduce clogging potential, and installation of erosion control measures on the embankment slope. This project is funded by the District.

Norco — Crestview Drive Debris Basin

This District-led project requested by the City of Norco proposes to reduce mud/debris issues along Crestview Drive by constructing a debris basin (1.8-acre site) at the foot of the La Sierra Hills. The debris basin will collect mud/debris at three locations along the La Sierra Hills. After settling larger sediment and debris in the basin, 10-year flows will drain from the basin southwesterly into the recently constructed underground storm drain in Crestview Drive (Norco MDP Line NA-1, Stage 2).

Woodcrest Dam Outlet Modification

Banning MDP Line H

This is a District-led storm drain improvement project of approximately 4,000 lineal feet of pipe (48”-72”) and 225 feet of 7’W x4’H reinforced concrete box. The primary objective of this project is to reduce flooding along Hathaway Street between Barbour Street and Wesley Street in the city of Banning. The project will collect flows along Hathaway Street beginning at Barbour Street and convey them southerly to Wesley Street where they are then conveyed easterly along Wesley Street and ultimately discharge into Smith Creek.

Murrieta Creek Flood Protection and Environmental Restoration Project Phase 2

The District continues to work with the US Army Corps of Engineers to complete the Phase 2A construction and prepare for the Phase 1 and 2A sediment removal project that will be completed in fiscal year 2021/2022. This project will improve flood protection for Old Town Temecula and reduce the likelihood of a repeat of the catastrophic 1993 floods that resulted in more than $22 million in damages to the Old Town Temecula community. The project also incorporates extensions of existing trails for residents and new habitat conservation corridors for the environment. We continue to work with Congressman Ken Calvert and the local congressional delegation to obtain the remaining $100 million in funds necessary to complete this critical flood protection, environmental restoration, and recreation project for the cities of Murrieta and Temecula.

Sedco Line F, Stage 3

This City of Wildomar-led project includes approximately 950 feet of varying RCP (48”-60”) in Bundy Canyon Road extending from the existing Line F in Sellers Road to the culvert at Interstate 15. The City is building this storm drain in conjunction with the Bundy Canyon Road widening project. This Project construction began in fiscal year 2020/2021 fiscal year and District acceptance for operation and maintenance is anticipated in fiscal year 2021/2022.

Moreno MDP K-1, Stage 2

This City of Moreno Valley-led project consists of an underground facility that will reduce local and freeway flooding. The approximately 1,600 feet facility is located along Ironwood Avenue between Oliver Street and Petit Street. The City is building this project in conjunction with the SR-60/ Moreno Beach Drive Interchange Improvements. Moreno MDP Line K-1, Stage 2 was advertised and awarded during the 2020/2021 fiscal year.

Norco - Crestview Drive Debris Basin

Banning Mdp Line H

Active
DESIGN PROJECTS

In addition to the 'Completed' and 'In-Progress' projects previously listed, the District is actively pursuing new projects in order to carry out our mission. There are two categories of projects that the District funds. District-led projects are projects that the District is designing and building; Partner-led projects are projects led by local public agencies or federal agencies with District funding support. The table below lists the projects that were actively being designed in Fiscal Year 2020-2021.

ACTIVE DESIGN PROJECTS	PROJECT CATEGORY	SUPERVISORIAL DISTRICT	DISTRICT ZONE
Beaumont MDP Line 16 Recharge Basin Feeder:	*District-led*	5	5
Bedford Canyon Channel	*District-led*	2	2
Calimesa Channel, Stage 3	*Partner-led*	5	5
El Cerrito Channel Restoration	*District-led*	2	2
Gilman Home Channel, Stage 6 and 7	*Partner-led*	5	5
Good Hope — Olive Avenue Storm Drain	*District-led*	1	4
Green Acres Dam and Outlet	*District-led*	3	4
Lakeland Village MDP Line H	*District-led*	1	3
Lakeview/Nuevo MDP — Lateral D	*District-led*	5	4
Little Lake MDP Line B, Stage 2	*District-led*	3	4
Marshall Creek	*District-led*	5	5
Mockingbird Canyon Stabilization	*District-led*	1	2
Monroe MDP Line E, Stage 2 and 3	*Partner-led*	1	1
Moreno MDP Line F-18 and F-19	*Partner-led*	5	4
Moreno MDP Line F-18, Stage 1 and F-19, Stage 1	*Partner-led*	5	4
Moreno MDP Line K-1, Stage 2	*Partner-led*	5	4
Murrieta Creek Channel (Phase II and III)	*Partner-led*	3	7
Norco MDP Line N-3	*Partner-led*	2	2
Norco MDP Line N-3, Stage 1	*Partner-led*	2	2
Norco MDP Line S-2	*Partner-led*	2	2
Norco MDP Line N, S, Nb and Eastvale Line E	*Partner-led*	2	2

ACTIVE DESIGN PROJECTS	PROJECT CATEGORY	SUPERVISORIAL DISTRICT	DISTRICT ZONE
North Norco Channel Line N-2	District-led	2	2
North Norco Channel Line NB	District-led	2	2
North Norco Channel, Stage 11	District-led	2	2
Palm Springs Line 20, Stage 3	Partner-led	4	6
Palm Springs MDP Line 41, Stages 3 and 4	District-led	4	6
Perris Valley Channel Lateral B	District-led	5	4
Perris Valley MDP Line E	Partner-led	5	4
San Jacinto MDP Line E-2 & E-2A	Partner-led	3	4
San Jacinto River (Stage 3 MDP)	District-led	5	4
Santa Ana River Stabilization (District Reach)	District-led	2	1
Santa Ana River Stabilization (Federal Reach)	Partner-led	2	1
South Norco Channel	Partner-led	2	2
Sunnymead MDP Line B-16A, Stage 2	Partner-led	5	4
Sunnymead MDP Line F, F-7	Partner-led	5	4
Sunnymead Mdp- Line F, Stage 5 and F-7, Stage 1	Partner-led	5	4
Sunnymead — Cactus Ave Channel	Partner-led	5	4
Sycamore Dam Outlet Modification	District-led	1	1
Temecula Creek — Morgan Valley Wash	District-led	3	7
Temescal Creek Flood Plain AQ	District-led	1,2	2
Whitewater River — Levee Restoration	District-led	4	6
Wildomar MDP Lateral C, Stage 3	District-led	1	7
Woodcrest — Rinehart Acres Drainage Plan Improvements	District-led	1	2

DISTRICT ANNUAL

Highlights

SURVEYING & MAPPING

APPLE AND EL DORADO FIRE WORK

Floodplains

THE SURVEYING AND MAPPING DIVISION FACED THE CHALLENGE OF DELIVERING MAPPING OF THE APPLE AND EL DORADO FIRE BURN AREAS BEGINNING IN THE FALL OF 2020.

The mapping limits covered approximately 118 square miles, the majority of which was mountainous and largely inaccessible, as well as portions of Banning, Beaumont, and Cherry Valley. The Photogrammetry Section utilized high density LiDAR to map the topographic features of the burn area and create Digital Terrain Models (DTM's).

Imagery was also collected and processed so that an orthorectified and mosaiced image that covers the entirety of the mapping limits could be provided. This process was completed a second time with a more limited scope in early 2021. The mapping products were utilized to study mudslides, to aid in emergency preparations for upcoming storms, and decide which areas would need to be evacuated. Smaller mapping sites were flown with more frequency by the Survey Section using drone technology. Sites flown by the drone included Little San Gorgonio Creek and Noble Creek Channel.

The District's Floodplain Management Section (FPM) prepares floodplain maps and coordinates with the Federal Emergency Management Agency (FEMA) to remove Special Flood Hazard Area designations when stormwater management structures are constructed that reduce flood hazards. FPM works hard to update and revise the floodplains to benefit County residents in multiple ways.

FPM established a 20% discount on flood insurance premiums for County residents via FEMA's NFIP Community Rating System (CRS) program; FPM updated 17 dam inundation maps that were subsequently approved by Cal OES; and FPM submitted five Letters of Map Revision (LOMR) to FEMA, three of which were approved with the remaining two expected to be approved by the end of 2021. These efforts resulted in the removal of 2,248 structures, 221 acres of harmful floodplain, and 1,745 acres of undetermined floodplain risk. FPM's efforts also aid in the County's economic development by formally reducing regulated floodplains.

Environmental Protection

Photo: Casey's June Beetle

Photo credit: Senior Biologist Dale Hameister, Wood Environment & Infrastructure, Inc.

THE REGULATORY DIVISION'S ENVIRONMENTAL AND REGULATORY SERVICES SECTIONS (ERS) ENSURE THAT THE DISTRICT IS COMPLIANT WITH APPLICABLE ENVIRONMENTAL LAWS SUCH AS CEQA, FESA, CESA, PORTER COLOGNE, AND VARIOUS SECTIONS OF THE FEDERAL CLEAN WATER ACT AND THE CALIFORNIA FISH AND GAME CODE. IN ADDITION TO SUPPORTING OUR TYPICAL CONSTRUCTION AND MAINTENANCE ENDEAVORS, IN THE PAST YEAR ERS:

- Acquired the necessary regulatory and environmental approvals for the preemptive mitigation work that was recently completed in order to protect residents and businesses downstream of the Apple and El Dorado Fire burn areas.
- Collaborated with multiple agencies, including the US Army Corps of Engineers (USACE) and the US Fish and Wildlife Service (USFWS), to secure approvals for the District's Palm Canyon Wash Sediment Removal project, the Palm Canyon Wash Levee Repair project, and the Tahquitz Creek Debris Basin. These facilities were in critical need of maintenance following the 200-year storm event that hit the region in 2019. Acquiring the permits to do the work was a huge achievement for the District due to the project being sited within designated critical habitat for the Casey's June beetle, an endangered insect whose only known existence is confined to less than 800 acres in southern Palm Springs.
- Secured the necessary regulatory agency approvals to allow the construction of the Murrieta Creek Phase IIA project and to remove sediment from the Murrieta Creek Phase I project area. The project originally commenced in 2000 and was put on hold several times due to lack of federal funding so this was a big victory for the District!
- Coordinated with the Regional Conservation Authority (RCA), USFWS, and California Department of Fish and Wildlife (CDFW) in order to obtain the agency approvals required to secure more than $4 million in funding from FEMA for the Bautista Basin maintenance project. This was a big undertaking for ERS staff due to the basin being located in or adjacent to critical habitat or survey areas for three state/federally listed species including the Los Angeles Pocket Mouse, San Bernardino Kangaroo Rat, and Arroyo Toad.
- Prepared the CEQA documentation and negotiated the regulatory permits for the Ortega Channel Retrofit project. This project was unique in that there were over 1,000 bats roosting in the underground pipe that needed to be replaced! This was a first for ERS, but staff quickly mobilized to develop a safe and humane plan to exclude the bats without adversely affecting them.

- Assisted with the annual Santa Ana River Walk effort to collect habitat data along the Santa Ana River. This data helps map the habitat quality for the Santa Ana Sucker and changes in the habitat from year to year. Within Riverside County, this species is generally limited to the Santa Ana River.
- Worked with USACE headquarters in Washington DC to discuss existing and pending policy and legislation that affects the District and to propose improvements therein that ultimately benefit the nation's wetlands and waterways.

Maintenance

56,471
CUBIC YARDS OF SEDIMENT REMOVED

Noble Creek

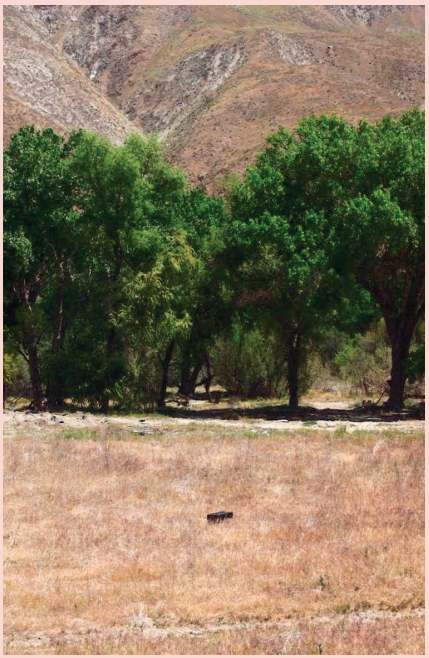
56.93
TONS OF TRASH REMOVED

Temescal Creek

Little San Gorgonio Vineland St

3,608 HOURS DEVOTED TO HOMELESS CLEAN UP

Highlight San Jacinto River Transient Encampment Cleanup approximately 134.27 tons of debris removed. The encampment residents were contacted several days before the scheduled cleanup and offered services, all services were declined. The Riverside County Sheriffs Office posted notices to vacate. The Districts Biologists gave clearance and the clean up ensued.



443,200 SQUARE FEET OF GRAFFITI REMOVED

120 FEET OF NEW FENCE INSTALLED

2,422 FEET OF FENCE REPAIRED

5,446 FEET OF ACCESS ROADS WERE REBUILT

695 ACRES MOWED

92 MILES GRADED

Finance

THE FINANCE DIVISION STRIVES TO PROVIDE EXCELLENT FISCAL SUPPORT, OVERSIGHT, AND INTERNAL CONTROL TO ENSURE PROPER FISCAL MANAGEMENT, BUDGETING, AND ACCOUNTING.

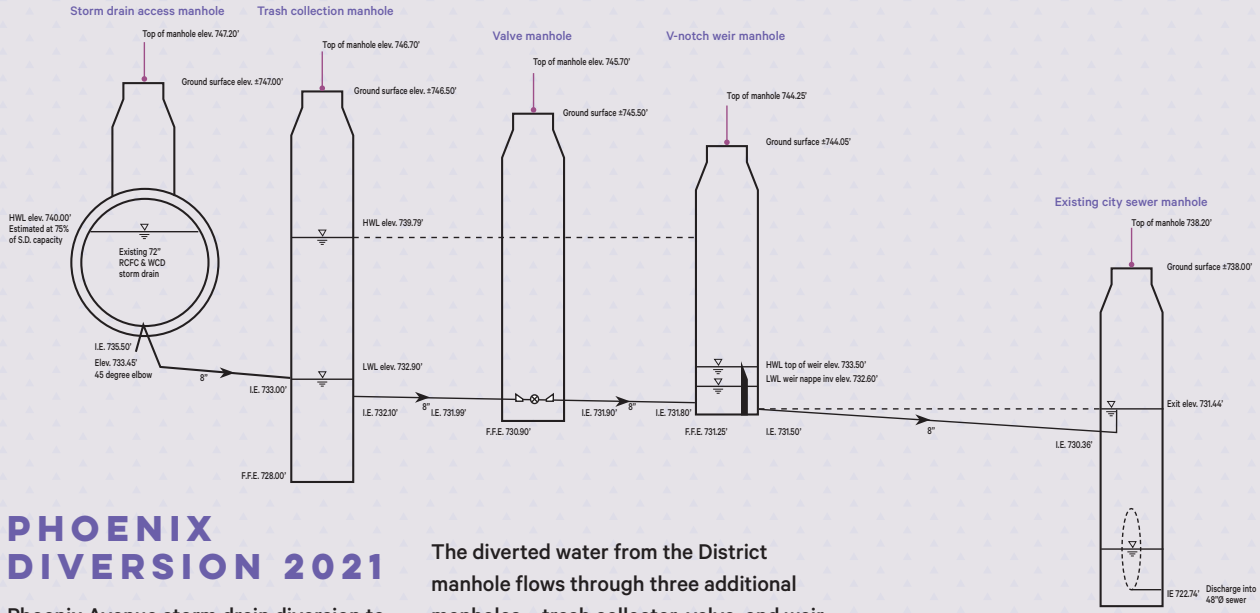
During fiscal year 20/21, the Finance Division was presented an award for their 30th consecutive Certificate of Achievement for Excellence in Financial Reporting from the Government Finance Officers Association (GFOA) for its Comprehensive Annual Financial Report. This is the highest form of recognition in the area of governmental accounting and financial reporting. The Finance Division's goal is to continually seek methods of improving financial reporting and accountability. To accomplish this goal, the Finance Division successfully implemented a new Fixed Assets database providing enhanced capabilities in tracking and maintaining capital asset transactions and improving operational efficiency.

Planning
DEVELOPMENT SERVICES

THE DISTRICT'S DEVELOPMENT SERVICES TEAM INCLUDES DEVELOPMENT REVIEW, PLAN CHECK, AND CONTRACT SERVICES.

Over the past year, this team has worked together to provide technical assistance to the County of Riverside and Cities with the review and approval of new development proposals. Development Review staff reviewed over 210 entitlement cases, answered over 700 inquiry calls, provided feedback on the District's interest of over 400 development cases in incorporated cities, and reviewed approximately 110 flood proofing cases or residential structures proposed in a floodplain. Plan Check reviewed over 73 projects and approved 14 sets of storm drain improvement plans for proposed facilities to be maintained by the District. In addition, Plan Check reviewed, issued, and inspected about 133 encroachment permits for use, access, trails, and connections within District right of way. Plan Check updated approximately 132 record drawings to reflect modifications due to issued encroachment permits.

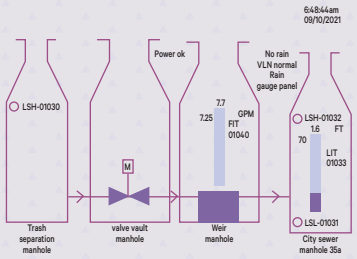
Contract Services prepared over 185 agreements, and successfully negotiated and executed 120 agreements this past year. Additionally, Contract Services processed 58 term extensions for the District's on-call consultant contracts, answered over 50 public records requests, and processed 48 administrative clearances for developer projects and professional services. Contract Services continues to work on the Apple and El Dorado Fire emergency contracting and reporting to the Board of Supervisors. Contract Services also executed District policy for electronic signatures for legal documents, such as cooperative agreements with public agencies, license agreements, and professional services agreements. These contracts can now be digitally approved as long as the signatures meet the California Uniform Electronic Transaction Act (CUETA).



PHOENIX DIVERSION 2021

Phoenix Avenue storm drain diversion to sewer project is being led by the City of Riverside in collaboration with the District with the goal of minimizing bacteria levels in the Middle Santa Ana River (MSAR). Studies have found significantly elevated concentrations of E. coli bacteria at the Phoenix Storm Drain outfall and it has been prioritized for dry weather flow mitigation activities. The project will divert up to 1 cfs of dry weather flow into a nearby City of Riverside sewer line.

The diverted water from the District manhole flows through three additional manholes – trash collector, valve, and weir manholes – until ultimately emptying out into the City of Riverside's sewer as shown in the figure to the right. This project is the first stormwater diversion to sewer project in Riverside County and will serve as a pilot project for additional future diversions to address the MSAR bacteria TMDL. Construction for the project was completed in July 2021 and will be monitored to quantify bacteria reduction and water quality improvements.



Watershed
PROTECTION DIVISION

MONITORING

Annually, the Watershed Protection Division conducts an extensive synoptic environmental quality monitoring in each of the County's three principal watersheds. This monitoring provides key information on the condition of the County's surface waters, insight into the effectiveness of management interventions, and provides data for the calibration and validation of models. During the 2020-2021 monitoring year, staff conducted over 130 dry weather and wet weather monitoring events. This accomplishment was enabled by a robust rainfall tracking system, inter divisional staff camaraderie, and adroit field coordination.

Each year, the synoptic monitoring is complemented with special studies. In the Santa Margarita River (SMR) Watershed, staff completed over 170 inspections of District outfalls in dry weather, thereby successfully fulfilling the mandated field screening requirements. The inspection teams also collaborated with SMR City and County colleagues and consultants to initiate an enhanced SMR Illicit Discharge Detection and Elimination activities program, as well as begin a multi-year Outfall Continuous Flow Monitoring special study.

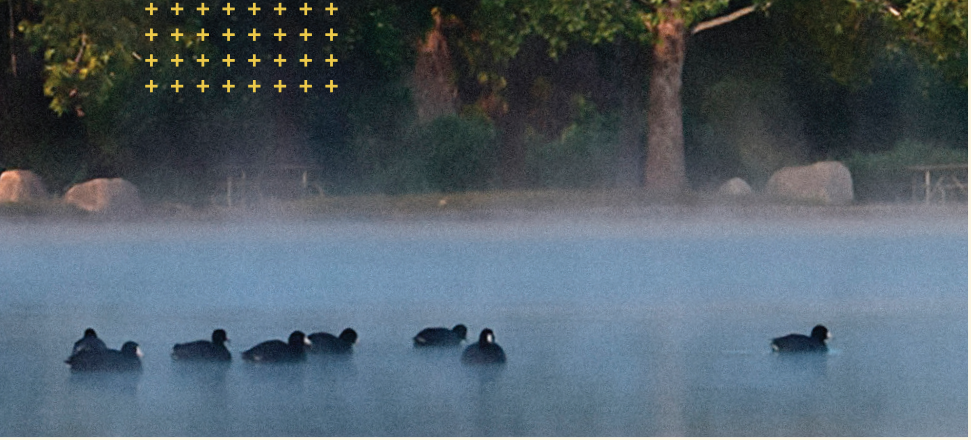
In the Middle Santa Ana River (MSAR) watershed, staff partnered with the City of Riverside to conduct an innovative bacterial source investigation within the tributary area of the Magnolia Center Storm Drain outfall. This five-week study utilized the latest USEPA approved method for analyzing the human DNA marker, HF183. Samples from 11 locations were analyzed for E. coli, surfactants, and HF183 as well as field parameters (pH, dissolved oxygen, turbidity, specific conductivity, and temperature). The results of this investigative study are being presented at the 2021 CASQA Conference.

PLANNING

The Storm Water Management Planning Act of 2014 requires a Storm Water Resource Plan (SWRP) as a condition of receiving grant funds for storm water and dry weather runoff capture projects from any bond approved by California voters after January 2014. On January 12, 2021, the District received notification of State Water Resources Control Board (SWRCB) approval of its Upper Santa Margarita River Watershed Storm Water Resource Plan. Shortly thereafter, the SWRCB also approved the Coachella Valley Stormwater Resources Plan for which the District had provided funding to enable its completion.

LOW IMPACT DEVELOPMENT (LID) RESEARCH

The District commenced collaborating with staff from the US Environmental Protection Agency and the Southern California Coastal Water Research Project (SCCWRP) to reconfigure two bioretention planter boxes at the District's LID Campus and conduct intensive hydrologic monitoring to investigate how water moves through the planters' piping and soil media during storm events. Calibrated weirs and an array of soil moisture sensors



and pressure transducers are being installed in each box to measure flow rate and volume of runoff entering and exiting the boxes, the water content of the media throughout the boxes, the level of water in the gravel base layer, and the depth of ponding at the surface of the media. Influent and effluent flows will be sampled and analyzed to determine levels of pollutants entering and leaving the boxes, and rain gages will measure rainfall at the site. The District, USEPA, and SCCWRP are sharing costs and staff expertise through a Memorandum of Understanding. Results are expected to inform design and sizing specifications for planter boxes.

PUBLIC EDUCATION AND ENGAGEMENT

A new countywide pollution prevention initiative called "Love Your Neighborhood" was launched with a kickoff event held with the cities of Lake Elsinore, Canyon Lake, and Wildomar.

The result: nearly 2,000 pounds of litter and dozens of bulky waste items removed from these communities.

Volunteers were provided with trash pickers, trash bags, reusable gloves, and wristbands. They collected items ranging from food wrappers, cigarette butts, plastic bags, and tire and automobile debris to large appliances with the help of public works crews.

The Love Your Neighborhood program tracks the number of pollutants removed from communities in support of meeting stormwater mandates and other environmental objectives. The real-time data collected during Love Your Neighborhood events also help track key issues related to pollution such as litter, recycling, over-watering, and household hazardous waste disposal.

Love Your Neighborhood is a pollution prevention initiative administered by the Western Riverside Council of Governments in partnership with Riverside County Watershed Protection Program.

In Memoriam

DAVID SHELDON
(01/11/20)

David Thomas Sheldon, affectionally known as DTS (pronounced "ditz") retired from the District in 1992 as our Assistant Chief Engineer. A Cal State LA graduate, David began his District career as an Assistant Engineer in 1963 at the age of 26, leaving SCE for a $145/month raise (bringing his pay to $4.98 an hour!). He worked throughout the District and was instrumental in the success of our 1971 Flood Control Bond Issue. He also led the Planning Division through what could be called our golden age of Master Drainage Plans in the early-mid 1980's and Riverside County's first real development boom in the late 80's. Upon his retirement he and his wife Carol moved to Flagstaff Arizona. David was a rare combination of engineer-manager, especially good at turning supervisors into effective leaders and was much respected by all who knew him.

RICHARD CROMWELL III
(02/17/20)

Richard Cromwell III, better known to his friends and family as Dick, grew up in the San Diego area and moved to Palm Springs at the age of 28. After successful careers with department stores Walker Scott and Harris' and Sunline Transit Agency, Dick started his own consulting company, Richard Cromwell III & Associates, working on various projects for the city of Desert Hot Springs and the Coachella Valley. The number of projects and organizations in which Dick was involved was plentiful, from the Board of Directors for the Riverside County Fair to Planning Commissioner for the City of Desert Hot Springs to President of the Palm Springs Unified School District to Commissioner for the Riverside County Flood Control Commission. Dick loved to be involved and had a passion for working with people to improve the community. The District is very appreciative of his active and interested participation in the Flood Control Commission.

ROBERT (BOB) EID
(02/24/20)

A centenarian, Robert Eid was born in Minnesota and grew up in Wisconsin. During World War II, Bob served in the Army Engineers in Oahu, Hawaii and was a Pearl Harbor survivor. After his discharge from the Army, he earned his engineering degree from the University of Wisconsin, then moved to Montana with his wife, where he worked for the Bureau of Reclamation. In 1954, Bob and his wife moved to Riverside where he worked for the Riverside County Flood Control and Water Conservation District until retiring in 1977. They raised a family in Riverside and enjoyed camping and RV trips through the mountains of the western states.

PATRICIA LARSON
(06/03/20)

Patricia "Corky" Larson grew up as a self-described "army brat". She graduated from UCLA, later starting a farming and construction business in Palm Springs with her husband. Corky was active in church, AFS, and many other civic duties, with a particular passion for education. She was a member of the Palm Springs School Board, which led to her becoming a Riverside County Supervisor (1982-1994), then Director of Coachella Valley Association of Governments, the Coachella Water District, and many more. While serving as a Supervisor, Corky earned her law degree and was admitted to the California State Bar. She was instrumental in the expansion of the Indio Courthouse, which is now named the Larson Justice Center in her honor. She created the Regional Access Project Foundation, which provides health care to low-income residents of eastern Riverside County, was a founding member of the Salton Sea Authority, and has served on numerous Boards and Commissions, including the Coachella Valley Mountains Conservancy Board to protect and preserve the desert region. To name all of Corky's accomplishments or to list all of the ways in which she touched and forever changed the Coachella Valley would be almost impossible.

MICHAEL HAYWOOD
(02/02/21)

Michael Haywood worked for the Riverside County Flood Control and Water Conservation District for fifteen years, supervising its Garage and Fleet Services. Well respected and liked by District staff at all levels, Mike is described by those who knew him well as a passionate man; he felt that whatever you do, you should care about it and show some enthusiasm for it. He loved his family, golf, and his Harley.

KAOPUA GOODWIN
(01/27/21)

Kaopua Goodwin worked for the Riverside County Flood Control and Water Conservation District for only a short time, but those who knew her spoke of her positive attitude and contagious smile. Kaopua is missed by the District's clerical unit and all those affected by her enthusiasm to do a job well done.

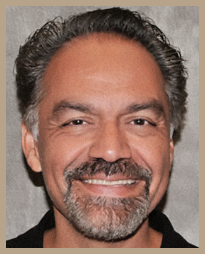
Celebrating Service

GEORGE MCPHERSON
Regional Flood Control Maintenance Supervisor
41 years of service

MIKE WONG
Engineering Project Manager
33 years of service

ROBERT MEALS
Associate Civil Engineer
31 years of service

DEMEKE MUAREGA
Associate Civil Engineer
31 years of service



HENRY OLIVO
Chief of Operations & Maintenance
31 years of service

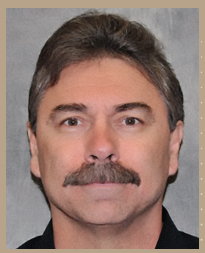
PAUL CLEMENTS
Principal Engineering Technician
31 years of service

MARK ZAVISLAK
Principal Engineering Technician
29 years of service

JOHN NEWSON
Senior Equipment Operator
27 years of service

STEPHEN HOUSE
Senior Heavy Equipment Mechanic
21 years of service

TIM MELENDREZ
Equipment Operator I
17 years of service



RON TALBOT
GIS Specialist II
5 years of service

Riverside County Flood Control and Water Conservation District

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