Coachella Valley
Regional Water Resilience Plan

Draft Plan
November 2026



COACHELLA VALLEY WATER DISTRICT

TORRES MARTINEZ DESERT CAHUILLA INDIANS
MAU · WAL · MAH
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Pueblo Unido CDC
EASTERN COACHELLA VALLEY

A Note from the Funder

The CVRWRP is supported by the Regional Resilience Grant Program at the Governor's Office of Land Use and Climate Innovation (Formerly the Office of Planning and Research (OPR)). The Regional Resilience Grant Program is an initiative of OPR's Integrated Climate Adaptation and Resiliency Program (ICARP). ICARP advances climate adaptation and resilience in California by coordinating investments, partnerships and climate science to ensure people, natural systems, and the built environment are protected, prepared, and thrive in the face of climate change.

As communities in California experience more frequent, prolonged, and severe impacts from climate change, communities and governments at all scales are developing strategies and implementing actions to build a climate- resilient future. However, many jurisdictions, especially under-resourced communities in California, lack the capacity, tools, guidance, and resources to effectively prepare for climate impacts. The RRGP addresses this capacity gap by providing funding to help fill planning needs, providing communities with the resources to identify climate resilience priorities, and supporting the development of climate resilience projects across the state. The RRGP enables communities to climate risk and adaptation considerations into planning activities and prepare for climate readiness and resilience in the long term.

The RRGP is an initiative of the Integrated Climate Adaptation and Resiliency Program (ICARP) housed within the Governor's Office of Planning and Research. ICARP advances statewide climate adaptation and resilience by coordinating investments, partnerships and climate science to ensure people, natural systems, and the built environment are protected, prepared, and thrive in the face of climate change.

Through direct and equity-focused investments and resources, ICARP helps build climate adapted and equitable communities in California, with a Page 17 Exhibit D, Special Terms and Conditions Office of Planning and Research – Regional Resilience Grant Program – Round 1 Grant Number: SPPD23130, CVWD focus on solutions that both address the impacts of climate change and reduce greenhouse gas emissions. ICARP works to advance these priorities across all levels of government by developing actionable science and research; providing guidance, tools, and technical assistance; and administering climate resilience-focused grant programs.

Learn more: https://lci.ca.gov/climate/icarp/

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Appendix A Domestic Well and Small Water System Inventory

Acronyms

AF	Acre-feet
AFY	Acre-feet per year
CAL FIRE	California Department of Forestry and Fire Protection
Cal OES	California Governor's Office of Emergency Services
CEQA	California Environmental Quality Act
CEDEN	California Environmental Data Exchange Network
CDFW	California Department of Fish and Wildlife
CDFA	California Department of Food and Agriculture
CIP	Capital Improvement Program
CMIP6	Coupled Model Intercomparison Project Phase 6
CNRA	California Natural Resources Agency
CWA	Coachella Water Authority
CWSRF	Clean Water State Revolving Fund
CVAG	Coachella Valley Association of Governments
CVCC	Coachella Valley Conservation Commission
CVIRWM	Coachella Valley Integrated Regional Water Management
CVMC	Coachella Valley Mountains Conservancy
CVMSHCP	Coachella Valley Multiple Species Habitat Conservation Plan
CVRWMG	Coachella Valley Regional Water Management Group
CVRWRP	Coachella Valley Regional Water Resilience Plan
CV-SNMP	Coachella Valley Salt and Nutrient Management Plan
CVWD	Coachella Valley Water District
DAC	Disadvantaged community
DEH	Riverside County Department of Environmental Health
DOC	California Department of Conservation
DWA	Desert Water Agency
DWR	California Department of Water Resources
DWSRF	Drinking Water State Revolving Fund
EPA	U.S. Environmental Protection Agency
EVRA	East Valley Reclamation Authority
FEMA	Federal Emergency Management Agency
FFWI	Fosberg Fire Weather Index
GHG	Greenhouse gas
GSA	Groundwater Sustainability Agency
GWL	Global Warming Level
IID	Imperial Irrigation District
IRWM	Integrated Regional Water Management
IWA	Indio Water Authority
LCJA	Leadership Counsel for Justice and Accountability
LCI	Governor's Office of Land Use and Climate Innovation
LOCA2	Localized Constructed Analogs, Version 2
MAR	Managed aquifer recharge
MS4	Municipal Separate Storm Sewer System
MSWD	Mission Springs Water District
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
O&M	Operations and maintenance
PARC	Prioritization, Adaptation, and Resilience for Communities
POE	Point-of-entry

POU	Point-of-use
PUCDC	Pueblo Unido Community Development Corporation
RAC	Replenishment Assessment Charge
RWQCB	Regional Water Quality Control Board
SAFER	Safe and Affordable Funding for Equity and Resilience
SCE	Southern California Edison
SDRC	San Diego River Conservancy
SGMA	Sustainable Groundwater Management Act
SNMP	Salt and Nutrient Management Plan
SSP	Shared Socioeconomic Pathway
SWP	State Water Project
SWRCB	State Water Resources Control Board
TMDCI	Torres Martinez Desert Cahuilla Indians
UCR	University of California, Riverside
USDA	U.S. Department of Agriculture
USACE	U.S. Army Corps of Engineers
USBR	U.S. Bureau of Reclamation
USEPA	U.S. Environmental Protection Agency
VCP	Vulnerable Communities Platform
VSD	Valley Sanitary District
WCB	California Wildlife Conservation Board
WIFIA	Water Infrastructure Finance and Innovation Act
WIIN	Water Infrastructure Improvements for the Nation Act
WQ	Water quality
WRF	Water reclamation facility
WRP	Water reclamation plant or Watershed Resilience Program, depending on context
WRFP	Water Recycling Funding Program
WSP	Water supply plan
WWTP	Wastewater treatment plant

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Glossary

Acre-Foot (AF)
A unit used to measure large volumes of water. One acre-foot is the amount of water needed to cover one acre of land to a depth of one foot.
Adaptation
Actions taken to prepare for, respond to, and recover from climate change impacts.
Adaptive Capacity
The ability of a community, organization, ecosystem, or infrastructure system to adjust to changing conditions and recover from disruptions.
Alluvial Fan
A fan-shaped area of sediment deposited where water flows from steep mountains onto flatter land.
Alternative Plan
A groundwater management approach approved under the Sustainable Groundwater Management Act (SGMA) as an alternative to a Groundwater Sustainability Plan.
Aquifer
An underground layer of sand, gravel, or rock that stores and transmits groundwater.
Aquifer Recharge
The process of water entering and replenishing an aquifer.
Arsenic
A naturally occurring element that can occur in groundwater and may pose health risks at elevated concentrations.
Backup Power System
An alternative source of electricity used during power outages to maintain operation of critical facilities.
Basin Sustainability
The long-term management of groundwater resources to avoid undesirable outcomes such as groundwater depletion, water quality degradation, or land subsidence.
Black Start Capability
A power station or grid's ability to recover from a total or partial shutdown (blackout) independently, without relying on external electrical power from the transmission network.
Climate Hazard
A climate-related event or condition that can cause harm, such as drought, flooding, extreme heat, wildfire, or high winds.
Climate Mitigation
Actions that reduce greenhouse gas emissions or increase carbon storage.
Climate Projection
A scientific estimate of future climate conditions.
Climate Resilience
The ability of communities, ecosystems, and infrastructure systems to withstand, recover from, and adapt to climate impacts.
Climate Vulnerability
The degree to which a system, community, or resource may be affected by climate change.
Community-Based Organization (CBO)
A local organization that works directly with residents to provide services, outreach, advocacy, education, or technical assistance.
Conjunctive Use
The coordinated use of groundwater and surface water resources to improve water supply reliability.
Consolidation
The physical, managerial, or operational integration of water or wastewater systems to improve service reliability and efficiency.

Constituent of Concern
A substance in water that may negatively affect water quality or public health.
Contaminant
A biological, chemical, or physical substance that degrades water quality.
Decentralized Infrastructure
Smaller-scale infrastructure systems that serve individual properties, neighborhoods, or communities rather than a centralized service area.
Disadvantaged Community (DAC)
A community identified through state criteria as having lower household incomes and often facing disproportionate environmental and infrastructure challenges.
Domestic Well
A privately owned groundwater well that serves a residence or a small number of households.
Downscaling
A process used to convert global climate model outputs into higher-resolution local climate projections.
Emergency Intertie
A physical connection between water systems that allows water to be transferred during emergencies.
Environmental Justice
The fair treatment and meaningful involvement of all people in environmental decision-making.
Evapotranspiration
The combined loss of water through evaporation and plant transpiration.
Exposure
The presence of people, infrastructure, ecosystems, or resources in areas that may be affected by climate hazards.
Extreme Heat
Periods of unusually high temperatures that may threaten public health, infrastructure, water supplies, and ecosystems.
Extreme Precipitation
Intense rainfall events that exceed typical historical conditions.
Floodplain
An area subject to inundation during flood events.
Flood-Managed Aquifer Recharge (Flood-MAR)
The intentional use of floodwaters to replenish groundwater basins.
Global Warming Level (GWL)
A measure of global average temperature increase relative to historical conditions used to evaluate future climate impacts.
Green Infrastructure
Natural or engineered features that use vegetation and soils to manage stormwater and provide environmental benefits.
Greenhouse Gas (GHG)
A gas that traps heat in the atmosphere, including carbon dioxide, methane, and nitrous oxide.
Groundwater
Water stored beneath the earth's surface in soil and rock formations.
Groundwater Basin
A geologic area capable of storing and transmitting groundwater.
Groundwater Dependent Ecosystem
An ecosystem sustained in whole or in part by groundwater.
Groundwater Monitoring Network
A system of monitoring wells used to track groundwater conditions over time.
Groundwater Recharge
The process of replenishing groundwater supplies.
Groundwater Sustainability
The long-term management of groundwater resources to maintain a healthy basin.

Imported Water
Water transferred into a region from another watershed or water supply system.
Implementation Roadmap
A structured plan identifying actions, partners, funding sources, timelines, and next steps needed to implement a strategy.
Indirect Potable Reuse (IPR)
The use of advanced-treated recycled water that is first introduced into an environmental buffer, such as a groundwater basin, before reuse as drinking water.
Interconnection
A physical connection between water systems that allows water transfers.
Intertie
A water system connection used to increase reliability and support emergency operations.
Infiltration
The movement of water into soil and underlying geologic materials.
Low-Impact Development (LID)
A planning and design approach that captures, infiltrates, treats, and manages stormwater close to where it falls.
Managed Aquifer Recharge (MAR)
The intentional recharge of groundwater basins using stormwater, recycled water, imported water, or other water sources.
Nature-Based Solution
An approach that uses natural processes to address challenges such as flooding, heat, habitat loss, or water quality degradation.
Nitrate
A compound commonly associated with fertilizers, septic systems, and wastewater that can affect groundwater quality.
Non-Potable Water
Water that is not intended for drinking but may be suitable for irrigation, industrial uses, or groundwater recharge.
Operations and Maintenance (O&M)
Activities necessary to operate, repair, and sustain infrastructure over time.
Overdraft
A condition in which groundwater pumping exceeds groundwater replenishment.
Point-of-Entry (POE) Treatment
A treatment system installed where water enters a building and treats all water supplied to that location.
Point-of-Use (POU) Treatment
A treatment device installed at a specific fixture, such as a kitchen faucet.
Polanco Park
A mobile home park eligible for certain health and safety improvements under California's Polanco Act.
Potable Reuse
The use of highly treated recycled water to augment drinking water supplies.
Public Water System
is any piped or constructed water system that provides water for human consumption to at least 15 service connections or serves an average of at least 25 people for at least 60 days a year
Recharge Basin
A facility specifically designed to infiltrate water into groundwater aquifers.
Recharge Facility
Infrastructure used to replenish groundwater supplies.
Recycled Water
Wastewater that has been treated and reused for beneficial purposes.
Redundancy
Backup infrastructure, facilities, equipment, or supplies that improve system reliability.

Regional Water Resilience
The ability of interconnected communities, ecosystems, and water systems across a region to adapt to changing environmental conditions.
Resilience Action
A project, program, or policy intended to reduce climate-related risks.
Resilience Portfolio
A coordinated collection of projects and actions designed to improve resilience outcomes.
Riparian Corridor
Vegetated areas adjacent to rivers, streams, or washes.
Saline Intrusion
The movement of saltwater or high-salinity groundwater into freshwater aquifers.
Septic System
An onsite wastewater treatment system typically serving individual homes or small developments.
Septic-to-Sewer Conversion
The replacement of septic systems with connections to a centralized wastewater collection system.
Shared Socioeconomic Pathway (SSP)
A future scenario used in climate modeling that incorporates assumptions regarding population growth, development, technology, and emissions.
Small Water System
A water system that produces and delivers potable (drinking) water to a limited population or group of connections, typically operating outside of large municipal networks. These systems typically serve 5 to 14 service connections and 24 or fewer individuals for more than 60 days per year.
Source Substitution
The replacement of groundwater pumping with alternative water supplies.
Stormwater Capture
The collection and beneficial use of stormwater.
Technical Assistance
Support provided through engineering, planning, funding, training, or other specialized expertise.
Total Dissolved Solids (TDS)
The combined concentration of dissolved minerals and salts in water.
Tribal Sovereignty
The inherent authority of Tribal Nations to govern themselves and manage their lands and resources.
Urban Water Management Plan (UWMP)
A long-term planning document that evaluates water supplies, demands, and reliability.
Vulnerability Assessment
A systematic evaluation of how climate hazards may affect communities, infrastructure, ecosystems, and water resources.
Vulnerable Community
A community that may experience disproportionate impacts from climate hazards because of social, economic, environmental, or health conditions.
Wastewater
Water that has been used in homes, businesses, industries, or agriculture and requires treatment before reuse or discharge.
Wastewater Treatment Plant (WWTP)
A facility that treats wastewater before discharge or reuse.
Water Conservation
Practices that reduce water use while maintaining desired services or benefits.
Water Quality Monitoring
The collection and analysis of water samples to evaluate water quality conditions.
Water Reliability
The ability to consistently provide safe and adequate water supplies.

Water Resilience
The ability of water systems and the communities that depend on them to prepare for, withstand, recover from, and adapt to climate-related and other disruptions.
Water Supply Portfolio
The collection of water sources available to meet regional demands.
Water Use Efficiency
Practices and technologies that reduce water consumption while maintaining performance.
Watershed
An area of land that drains to a common waterbody.
Wellhead Treatment
Water treatment conducted directly at or near a groundwater well.

A Tribal Perspective on Water, Sovereignty and Resilience

TORRES MARTINEZ DESERT CAHUILLA INDIANS

Long before modern governments, political boundaries, or water management systems, our ancestors lived upon and cared for the lands and waters of the Coachella Valley. Central to our history was Ancient Lake Cahuilla, a vast freshwater lake upon which our ancestors depended for water, food, settlement, and cultural traditions. Ancient Lake Cahuilla was not the Salton Sea of today. Although the landscape has changed, our people's connection to these ancestral lands and waters remains.

For the Torres Martinez Desert Cahuilla Indians (TMDCI), water is more than a resource to be allocated or managed. It is fundamental to our identity, culture, and survival. Our ancestors understood that water, land, plants, wildlife, and people are interconnected. When water sources decline or disappear, habitats are lost, wildlife suffers, exposed lakebeds can contribute to airborne dust, and the health, cultural practices, and livelihoods of surrounding communities are threatened.

Modern water rights and allocation systems were established long after our ancestral relationship with these lands and waters. Water scarcity must never justify diminishing, disregarding, or extinguishing our rights to water. Regional solutions involving consolidation or reliance on outside providers must respect our sovereignty and self-determination. Any arrangement that compromises Tribal self-determination risks perpetuating historical injustices and pressures toward cultural assimilation. Cooperation must strengthen Tribal communities, not diminish their independence.

We recognize that the Coachella Valley is home to multiple sovereign Tribal Nations, each with its own history, rights, and perspectives. This letter reflects TMDCI's perspective alone and does not represent, replace, or supersede the views or rights of any other Tribal Nation. We respect each Nation's sovereignty and authority to speak for itself.

TMDCI follows a seven-generation policy: decisions made today must protect the ability of those seven generations from now to thrive. Water resilience cannot be measured solely by what we secure today, but by what remains for those who follow us. We cannot wait until water sources disappear, ecosystems collapse, or communities lose their ability to sustain themselves before taking meaningful action.

Now is the time to act. Through our participation in the Coachella Valley Regional Water Resilience Plan, we seek to advance responsible stewardship, meaningful Tribal participation, protection of water resources, and solutions that preserve sovereignty while strengthening environmental and community resilience. Our responsibility is to ensure that seven generations from now, our descendants inherit not only our history and traditions, but also the water, healthy lands, and freedom necessary to carry them forward.

Draft — Pending Tribal Review and Approval

Contributors Acknowledgement

The Coachella Valley Regional Water Resilience Plan (CVRWRP) was made possible through the collaboration, leadership, and commitment of numerous organizations, agencies, Tribal representatives, community partners, and residents throughout the Coachella Valley. The project team extends its sincere appreciation to all who contributed their expertise, time, and perspectives to the development of this Plan.

Special recognition is given to the CVRWRP Core Team, whose leadership guided the planning process from inception through completion. The Core Team, consisting of the Coachella Valley Water District, Pueblo Unido Community Development Corporation, and the Torres Martinez Desert Cahuilla Indians, helped shape the project vision, guided technical analyses, supported community engagement efforts, and ensured that the needs of domestic well users, small water systems, Tribal communities, disadvantaged communities, and other vulnerable populations remained central to the Plan.

The project team also gratefully acknowledges the members of the CVRWRP Advisory Group, including representatives from Desert Water Agency, Indio Water Authority, Mission Springs Water District, Coachella Water Authority, and the Leadership Counsel for Justice and Accountability. Advisory Group members provided valuable technical guidance, regional perspectives, and strategic input throughout the planning process, helping align the CVRWRP with ongoing efforts related to water supply reliability, groundwater sustainability, water quality, flood management, and climate resilience across the Coachella Valley.

The project team also gratefully acknowledges the Governor's Office of Land Use and Climate Innovation (LCI) for its financial support of this effort. LCI's investment helped advance a collaborative, community-centered planning process focused on improving long-term water resilience, climate adaptation, and equitable outcomes for communities throughout the Coachella Valley. The project team further recognizes Todd Groundwater and Rincon Consultants, who served as the consultant team supporting development of the CVRWRP.

Finally, we extend our deepest appreciation to the community members, Tribal representatives, local organizations, domestic well users, small water system operators, and residents who participated in workshops, surveys, community events, site visits, planning sessions, and outreach activities. Their lived experiences, local knowledge, and vision for a more resilient future directly informed the identification of climate vulnerabilities, development of adaptation strategies, and implementation priorities presented in this Plan.



EXECUTIVE SUMMARY

A ROADMAP TO WATER RESILIENCE

The Coachella Valley Regional Water Resilience Plan (CVRWRP) provides a roadmap for strengthening the resilience of regional water resources, systems, and infrastructure, along with the communities that demand on them, in the face of a changing climate. Developed through a partnership among the Coachella Valley Water District (CVWD), Pueblo Unido Community Development Corporation (PUCDC), the Torres Martinez Desert Cahuilla Indians (TMDCI), regional water agencies, community organizations, and local stakeholders, the plan focuses on protecting the communities and water systems most vulnerable to climate-related impacts. The CVRWRP places particular emphasis on domestic well users, small water systems, Tribal communities, disadvantaged communities, farmworker communities, and mobile home parks, recognizing that these populations often experience climate risks first and have the fewest resources available to respond. The CVRWRP was funded through a grant through the Regional Resilience Grant Program (RRGP) from the California Governor's Office of Land Use and Climate Innovation (LCI).

The Coachella Valley is in central Riverside County and is characterized by a unique desert environment, rapidly growing communities, extensive agricultural production, and a complex network of groundwater, imported water, recycled water, and stormwater management systems. The region experiences a hot arid climate with minimal annual precipitation, high summer temperatures, and increasing exposure to climate hazards such as drought, extreme heat, flooding, high winds, and power disruptions.

The Coachella Valley is also one of California's most socially and economically diverse regions. The eastern Coachella Valley contains numerous Tribal communities, domestic well users, farmworker communities, and mobile home parks that face unique water resource and infrastructure challenges. Previous planning efforts have identified disparities in access to safe and reliable drinking water, wastewater disposal, flood protection, and climate adaptation resources. Many residents rely on small water systems, domestic wells, or aging infrastructure that may be particularly vulnerable to drought, groundwater quality concerns, flooding, and extreme weather events.

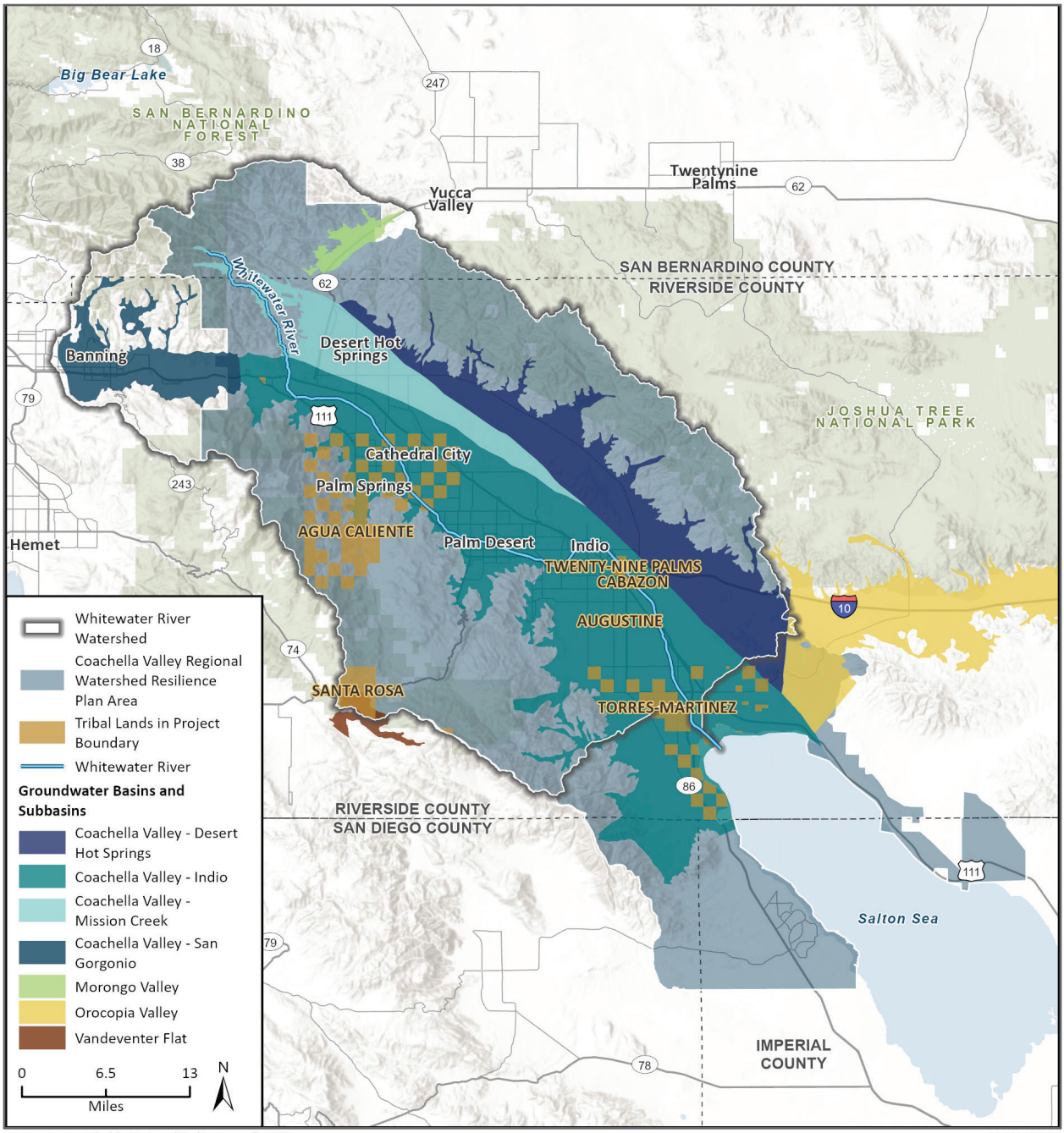
Groundwater remains the primary domestic water supply source for the Coachella Valley and has played a central role in the region's development. Historically, groundwater pumping exceeded natural recharge, contributing to declining groundwater levels in the portions of the Coachella Valley Groundwater Basin that underly the Valley floor (Indio and Mission Creek Subbasins). However, significant investments in groundwater replenishment, imported water deliveries, source substitution, and water use efficiency have helped stabilize and recover groundwater levels within both the Indio and Mission Creek Subbasins. Figure 1 shows the CVRWRP planning area, in addition to local Tribal territories.



Documenting small, independent groundwater systems, the Well Inventory Study helps to fill a critical data gap in understanding groundwater use across the Coachella Valley. New information from this study ensures that these small water sources are considered in future planning, basin management, and climate resilience efforts.

Domestic Wells

A domestic well is a privately owned groundwater well that supplies water to a single residence or a small number of residences and is not operated as a regulated public water system. Domestic wells are typically self-supplied, rely on a single groundwater source, and are responsible for their own operation, maintenance, water quality monitoring, and treatment. A small water system is a groundwater-dependent drinking water system that serves a limited number of connections.



Basemap provided by Esri and its licensors © 2026.
Additional data provided by CPAD, 2025; NHD, 2024; DWR, 2024.

24-15644 WRP
Fig 1 Whitewater River Valley

Figure ES-1. CVRWRP Planning Area

The plan builds upon decades of investment in groundwater sustainability, flood management, water quality protection, habitat conservation, and regional water planning. Rather than replacing existing plans, the CVRWRP serves as an implementation-focused framework that integrates climate risk information, community priorities, and water management objectives into a coordinated strategy for action.

Technical Elements of the CVRWRP

Key components of the planning process included:

Quantitative Domestic Well and Small Water System Inventory

Conducted field assessments of domestic wells and small water systems to better understand existing conditions, infrastructure needs, and water quality challenges for communities that rely on small water systems.

Climate Hazard Projections and Vulnerability Assessment

Evaluated future climate risks using recently released climate projections from California's Fifth Climate Change Assessment to assess potential impacts from drought, extreme heat, flooding, wildfire and wind.[1]

Development of Resilience Actions and Implementation Roadmaps

Identified priority actions to improve water reliability, water quality, emergency preparedness, flood resilience, groundwater sustainability, and community capacity, and translated those actions into implementation-focused roadmaps that identify funding opportunities, partnerships, barriers, and next steps.



Water stewardship connects generations. Through conversations at community pop-up events, participants of all ages learned about local water infrastructure and systems and how these systems can build resilience.

The CVRWRP benefited from robust community participation and leadership throughout the planning process. The CVRWRP facilitated workshops, community pop-ups, planning input sessions, surveys, and site visits. CVWD, PUCDC, TMDCI and regional water agencies led the project. Figure 3 demonstrates the key leadership and roles that influenced the CVRWRP outcomes. Key leadership and roles that influenced the CVRWRP outcomes can be seen on page 8.

1. Governor's Office of Land Use and Climate Innovation. California's Fifth Climate Change Assessment. Accessed here: https://lci.ca.gov/climate/icarp/climate-assessment/. Accessed August 2026.

The Vision for a Resilient Coachella Valley

The CVRWRP envisions a future where all residents have access to safe, reliable, and affordable water; where communities are prepared for drought, flooding, extreme heat, and other climate hazards; and where natural and built systems work together to sustain long-term environmental, economic, and community well-being. The plan recognizes that resilience extends beyond infrastructure and includes healthy ecosystems, strong community partnerships, reliable drinking water, protected cultural resources, and equitable access to adaptation resources.



The CVRWRP finds that climate change will intensify existing water challenges rather than create entirely new ones. Declining imported water reliability, groundwater stress, extreme heat, flooding, water quality concerns, aging infrastructure, and limited system redundancy will disproportionately affect domestic well users, small water systems, Tribal communities, and other underserved areas. The plan responds with implementation-ready actions focused on safe drinking water, resilient infrastructure, groundwater sustainability, flood protection, emergency preparedness, and long-term community capacity.





We envision a community where all residents have reliable access to clean, safe, and affordable water. Our region is prepared for climate extremes and can bounce back when flooding and heat events occur. We have social networks and natural and built infrastructure that support long-term human and ecological health. We will achieve resilience by centering community needs through inclusive planning and locally driven solutions.

CVRWRP Goals

The CVRWRP Goals were developed and revised throughout the CVRWRP planning process, to best represent community vision for water resilience.

Build Physical and Nature-Based Connections

Upgrade groundwater well and water delivery systems to improve wellhead protection, water pressure, reliability, and storage capacity for small water systems. Improve our physical infrastructure to store, move, and share water more flexibly and integrate innovative nature-based strategies.

Address Water Quality Needs

Prioritize actions that improve access to clean water. Reduce presence of contaminants in delivered groundwater supplies, and address taste, odor, and discoloration concerns.

Expand Local Water Access

Reduce reliance on bottled water and improve trust in tap water quality through transparent communication and assistance programs. Manage imported water to sustain and enhance local groundwater resources.

Be Ready

Prepare for more intense climate threats, including more severe and frequent droughts, wind, wildfire, precipitation, floods and heat events. Improve onsite infrastructure and preparedness planning and improve communications, recovery strategies, and adaptive management to weather these evolving hazards.

Enhance Community Contributions

Provide residents with water treatment technologies and water quality information to actively participate in resilience planning and decision-making. Actively listen to all perspectives and prioritize solutions that address the needs of vulnerable community members.

CVRWRP Leadership

The CVRWRP was guided by a collaborative leadership structure that combined technical expertise, community knowledge, and regional planning experience. The Core Team, led by CVWD, PUCDC, and TMDCI, directed the planning process, helped shape the project vision, and ensured that the needs of domestic well users, small water systems, Tribal communities, and disadvantaged communities remained central to the plan. Their leadership was instrumental in designing the climate vulnerability assessment, conducting the small water system inventory, engaging communities, and identifying practical resilience actions.

An Advisory Group composed of regional water agencies, wastewater agencies, and community-based organizations provided technical guidance at key decision points and helped align the CVRWRP with ongoing water management, groundwater sustainability, water quality, and resilience initiatives throughout the Coachella Valley. Equally important, community members, Tribal representatives, and local organizations contributed direct input through workshops, surveys, community events, and planning sessions, shaping the implementation actions included in the plan.



Input sessions between the community and water agency partners provided critical dialogue and feedback that later informed the development of strategies to address the resiliency of Coachella Valley's water systems.

CVRWRP Leadership

Advisory Group

Provided guidance at key decision points and shared regional expertise to shape technical elements of the CVRWRP.

Core Team

Led planning effort and provided oversight of planning vision and outcomes.

The Public

Provided insight on community priorities and values.

- Community Members
- Community Organizations

CVRWRP Development

1. Climate vulnerability analysis
2. Small water system inventory and domestic well survey
3. Community workshops and input sessions
4. Adaptation strategies
5. Implementation roadmaps

Community Engagement and Relationship-Driven Planning

Community engagement was the foundation of the CVRWRP. The planning process was designed to ensure that local knowledge, lived experience, and community priorities directly informed the vulnerability assessment, adaptation strategies, and implementation actions.

Engagement Highlights

150+
Survey Responses

25+
Organizations Participated

170+
Community Members Engaged

120+
Domestic Well and Small Water System Site Visits

Community workshops, planning input sessions, community pop-ups, and Tribal engagement activities conducted throughout the planning process

What We Heard

Across surveys, workshops, site visits, and community events, residents consistently identified:

- Drinking water quality concerns
- Reliance on bottled water
- Aging and deteriorating water infrastructure
- Persistent flooding during extreme rain events
- Water reliability concerns
- Limited support for domestic well users and small systems

Many residents described resilience in simple but powerful terms: confidence that their water is safe to drink, cook with, and use every day. Community priorities directly shaped the resilience strategies and actions included in the CVRWRP.



The Water Fair, held March 2026, provided an opportunity for meaningful dialogue between residents, scientists, engineers, and water professionals. Residents of Coachella Valley shared about their experiences with drought and flooding, highlighting the need for investment in emergency response for water agencies.



Hands-on games and activities at community events, like the Water Fair, made learning about water, climate resilience, and environmental stewardship fun and accessible for all ages.



Community engagement played a critical role in the development of the Coachella Valley Regional Water Resilience Plan. At local events, TMDCI and PUCDC exchanged information and local knowledge with community members, helping ensure that community perspectives informed the Plan's priorities, strategies, and implementation.

Residents also expressed strong interest in household-scale solutions, including filtration systems, improved treatment technologies, and access to alternative water sources where existing supplies are unreliable.

Priorities include:

- Improve and protect drinking water quality
- Upgrade aging wells, pipelines, and water infrastructure
- Expand access to safe and affordable water supplies
- Increase technical assistance and support for residents and small water systems
- Protect groundwater resources and natural water supplies
- Strengthen emergency preparedness and water system reliability during drought, extreme heat, and other climate hazards
- Improve community communication and access to water-related information

Climate Hazards and Key Vulnerabilities

The CVRWRP evaluated the impacts of five primary climate hazards:

Drought

To sustain groundwater levels for users across the Coachella Valley, CVWD and DWA contract, exchange, and replenish surface water from California's State Water Project into the groundwater basin. By 2043, average State Water Project deliveries (imported water from the Sacramento-San Joaquin Delta) are projected to decline from approximately 54% of the contractor's allocations today to 43–48%, while deliveries during extended drought periods may decline to as little as 13–15%. Locally, climate scenarios indicate groundwater levels could decline by up to 50 feet near Coachella, Indio, and Bermuda Dunes in the Indio Subbasin and by approximately 30 feet in portions of the Mission Creek Subbasin if ongoing groundwater management and replenishment efforts are not maintained, potentially affecting more than 60 domestic wells.[2]

State Water Project Water and Coachella Valley

Water delivered through California's State Water Project originates in Northern California and is conveyed through the Sacramento-San Joaquin Delta, a critical hub in the state's water delivery system. CVWD holds State Water Project entitlements of up to 138,350 acre-feet per year, which are exchanged for Colorado River water and used to replenish local groundwater supplies, helping support long-term water reliability throughout the Coachella Valley.

Extreme Heat

Extreme heat is projected to intensify substantially between 2045 and 2074, with the largest increases occurring across the eastern and central Coachella Valley, including communities near Coachella, Indio, La Quinta, and the Salton Sea. Climate projections indicate these areas may experience 700 to more than 900 days above 114 degrees over a 30-year period, equivalent to roughly 25–30 additional extreme heat days per year. Under California's Global Warming Level framework, the region is projected to experience an average increase of approximately 20 additional extreme heat days annually at 3.0°C warming (2060-2100), increasing water demand, evapotranspiration, and stress on groundwater-dependent resources.

2. For more information about the Indio Subbasin, please click here: https://www.indiosubbasinsgma.org/. To learn more about the Mission Creek Subbasin, visit please click here: https://www.missioncreeksubbasinsgma.org/

Wildfire

While much of the Coachella Valley is projected to experience little change or slight decreases in overall fire-weather conditions, localized increases are projected along the northern mountain front near Desert Hot Springs and Highway 62, foothill communities extending through Palm Springs, Cathedral City, Rancho Mirage, Palm Desert, Indian Wells, and La Quinta, and portions of the Salton Sea shoreline. Under a 3.0°C Global Warming Level, these areas are projected to experience more frequent periods of hot, dry, and windy conditions conducive to wildfire ignition and spread.

Wind

Climate change is expected to increase the frequency of conditions associated with hot, dry, and windy weather, particularly along the mountain front between Desert Hot Springs and La Quinta and in localized areas surrounding the Salton Sea. These conditions may increase dust generation, evaporation losses, wildfire risk, and infrastructure maintenance needs, particularly in exposed areas of the eastern Coachella Valley.

Analysis of future climate conditions, existing water systems, domestic wells, small water systems, and community vulnerability identified eight key climate vulnerabilities.

Extreme Precipitation and Flooding

Although annual precipitation is not projected to increase substantially, a growing share of rainfall is expected to occur during short-duration, high-intensity storm events. By the mid-century period (2045–2074), approximately 12–33% of annual precipitation may occur during extreme rainfall events, particularly across the eastern Coachella Valley, the northeastern corridor above Desert Hot Springs, and areas adjacent to major washes and the Salton Sea shoreline.



Flash flooding from Tropical Storm Hillary, August 20, 2023 in Palm Desert. As climate change increases the frequency and intensity of extreme precipitation events, understanding local vulnerabilities will be crucial to protect infrastructure and communities.

Source: AP Photo/ Mark J. Terrill; Coachella Valley mud flows: Cathedral City, Palm Springs hit with major flooding, shutting down 10 Freeway - ABC7 Los Angeles

8 Key Climate Change Vulnerabilities

Key vulnerabilities for the CVRWRP were identified through an integrated assessment of climate hazard projections, existing plans and studies, and extensive stakeholder engagement. Input from the CVRWRP Core Team, Advisory Committee, surveys, interviews, and community workshops was used to validate and refine vulnerabilities based on local conditions, community concerns, and regional resilience priorities.

01

Water Reliability Concerns Under a Changing Climate: Rising temperatures are increasing urban, agricultural, and outdoor water demand while variability in State Water Project and Colorado River deliveries and a shift from snowpack-dominated runoff to rainfall reduces supply reliability.

02

Regional Groundwater Quality Degradation: Elevated nitrate, total dissolved solids (TDS), Chromium 6, Arsenic and emerging contaminants threaten groundwater quality and increase treatment costs, particularly for small systems, domestic wells, and Tribal communities.

03

Flooding Risk to System Infrastructure and Access Issues: Many communities rely on aging infrastructure prone to flooding-induced mechanical failure, reduced drainage capacity, and overflows. Flooding can damage onsite well and water distribution systems and facilities and damage mobile homes, further risking access. Road closures and poor conditions can delay maintenance and emergency repairs, prolong outages, and limit response. Lack of system redundancy increases risk of disruption.

04

Septic System Vulnerability and Water Quality Impacts: Hotter, drier conditions reduce soil infiltration, increasing flash-flood risk and mobilizing contaminants from septic systems into surface and groundwater supplies. Intense rainfall events overwhelm stormwater and wastewater systems, with recent flooding and sediment transport in Polanco parks highlighting ongoing compliance, water quality, and public health concerns.









> “With rising ambient temperatures, system demand naturally increases, reducing our ability to fill storage tanks before peak energy hours. To manage this, we must start our pumps earlier than usual to meet demand while minimizing operations during peak periods. The goal is to limit energy usage during these high-demand times to reduce electrical costs and help prevent strain on the power grid that can lead to brownouts or blackouts for residential customers—events that can be dangerous, especially when air conditioning is essential for public safety.”
>
> **– Levi Anderson, CVWD**

05

Drought, Fire, and Wind Interactions: Fire risk, driven by ongoing drought and persistent wind conditions, can strain water supplies and impact water quality, as demonstrated by recent fires that disrupted schools and communities, including on Tribal lands. Lack of planning capacity for fire restricts mobilization and proactive action. Inadequate property maintenance and debris clearing, in conjunction with inconsistent booster pump testing, can increase risk.

06

Energy Constraints and Water Infrastructure Vulnerability: Extreme heat drives higher electricity demand, stressing the regional power grid and increasing the risk of Public Safety Power Shutoffs that can disrupt water pumping, treatment, and emergency response. Lack of redundant power sources at onsite water distribution makes small water systems and Polanco parks more vulnerable.

07

Capacity, Trust, and Data Limitations for Small Water Systems: Limited capacity, fragmented responsibility for well oversight, limited capacity for water quality treatment, and insufficient coordination among agencies (including Tribal and federal entities) constrain effective water management.

08

Groundwater Level Decline and Reliability Risk: Local water levels could decline due to changes in groundwater replenishment and/or increased pumping. These water level declines could result in domestic well pumping issues, loss of storage, and potentially land subsidence or dry wells.







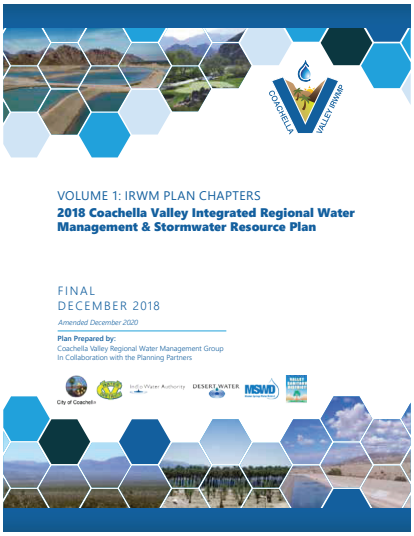


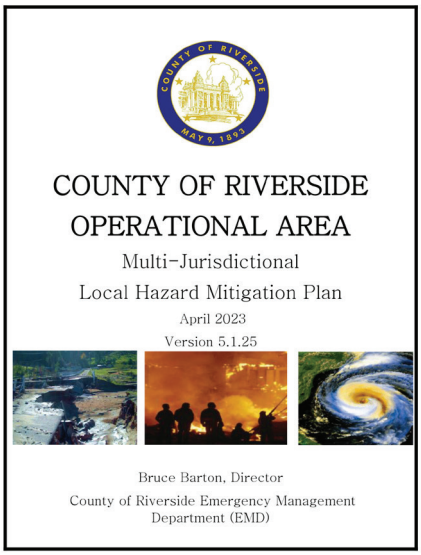
Elevating Existing Plans and Investments

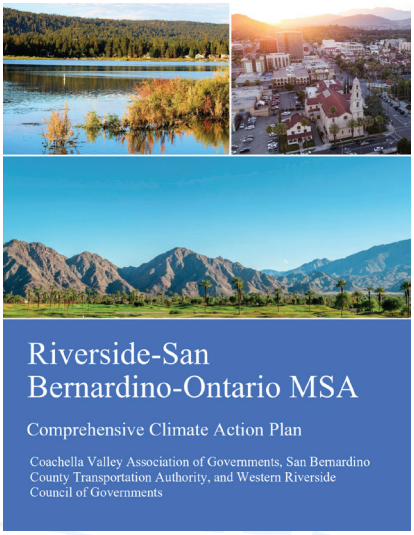
A key objective of the CVRWRP is to amplify and accelerate implementation of existing regional plans and investments. The plan does not create a new planning framework; instead, it helps connect climate resilience objectives with ongoing water management, infrastructure, ecosystem, and community development efforts already underway throughout the Valley.

The CVRWRP Supports Implementation of:

- Coachella Valley IRWM & Stormwater Resource Plan
- Indio Subbasin Alternative Plan
- Mission Creek Subbasin Alternative Plan
- Regional Urban Water Management Plan
- Coachella Valley Salt and Nutrient Management Plan
- CVWD Hazard Mitigation Plan
- Riverside County Multi-Jurisdictional Hazard Mitigation Plan
- Eastern Coachella Valley Water Supply Plan
- Coachella Valley Stormwater Master Plan
- Coachella Valley Multiple Species Habitat Conservation Plan
- Salton Sea Management Program
- CVAG Comprehensive Climate Action Plan
- Tribal habitat restoration and stewardship initiatives







Domestic Wells Face Unique Challenges

Domestic wells and small water systems are a vital part of this groundwater ecosystem of the Coachella Valley region, as they are often the sole source of drinking water for residents outside of municipal service areas, including mobile home parks, Polanco parks, Tribal communities, and rural residents. These systems face unique challenges. The map on the following page shows the density of domestic wells which are most prone to flood exposure and social flood vulnerability.

CLIMATE HAZARD IMPACTS TO
Small Water Systems in Coachella Valley

Drought
Prolonged droughts can reduce groundwater recharge and associated water levels, straining small water systems' ability to meet demand.

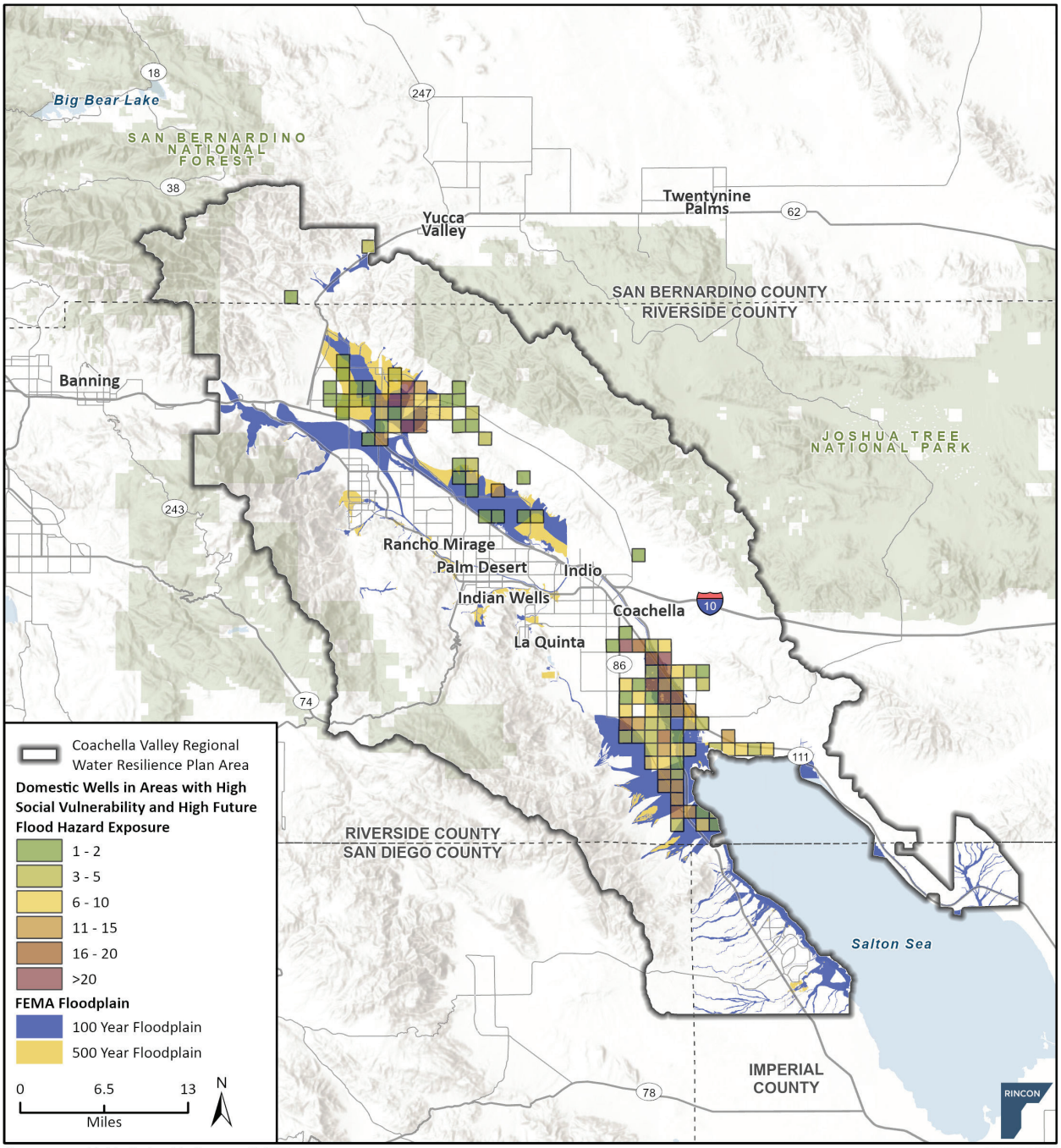
Extreme Heat
Rising temperatures can intensify water evaporation and increase demand, putting additional pressure on small water systems to maintain adequate supply and infrastructure.

Extreme Precipitation
Sudden and intense rainfall events may overwhelm infrastructure, causing flooding, contamination, and damage to small water systems.

Fire
Fires can damage infrastructure, degrade water quality through ash and debris contamination, and disrupt water supply lines for small systems.

Extreme Wind
Wind can increase evaporation rates, intensify dust storms that degrade water and air quality, and disrupt critical infrastructure.

Figure ES-2 below illustrates the overlap between the location of domestic wells, social vulnerability, and future flood hazard exposure within the Coachella Valley Regional Water Resilience Plan area. Grid cells represent areas with domestic wells and are colored according to a combined index of social vulnerability and high future flood hazard exposure. Darker orange and brown tones indicate higher values, while blue and yellow areas represent FEMA's 100-year and 500-year flood zones, respectively. The map highlights two primary concentrations of potentially vulnerable communities that rely on domestic wells: the northern/central portion of the valley near the Palm Springs–Rancho Mirage area, and the eastern/southern portion of the valley around Coachella and northwest of the Salton Sea. In several of these areas, domestic wells are located within or immediately adjacent to identified flood zones, highlighting locations where households that rely on individual wells may face both flood exposure and social vulnerability.



Basemap provided by Esri and its licensors © 2026.
Additional data provided by CPAD, 2025; NHD, 2024; DWR, 2024, TODD Groundwater, 2026; FEMA, 2025; Vulnerable Communities Platforms, 2026.

24-15644 WRP
Fig 8 Domestic Wells and Future Flood Risk

Figure ES-2. Domestic Wells and Future Flood Risk.

Climate Change and Water

A diverse set of water resource systems support communities, ecosystems, and working lands throughout the region.

Ecosystems

The interconnected terrestrial and aquatic habitats, species, and ecological processes that support biodiversity, ecosystem functions, and the natural resources upon which communities depend.

Flood Management

The natural and engineered systems, practices, and infrastructure that manage stormwater and flood flows to reduce risks to people, property, critical infrastructure, and natural resources.

Tribal and Cultural Resources

The lands, waters, cultural landscapes, traditional knowledge, sacred sites, and natural resources that hold cultural, historical, and spiritual significance for Tribal Nations and local communities.

Water Supply

The surface water, groundwater, imported water, recycled water, and supporting infrastructure systems that provide reliable water for communities, agriculture, ecosystems, and economic activities throughout the Coachella Valley region.

Groundwater Management

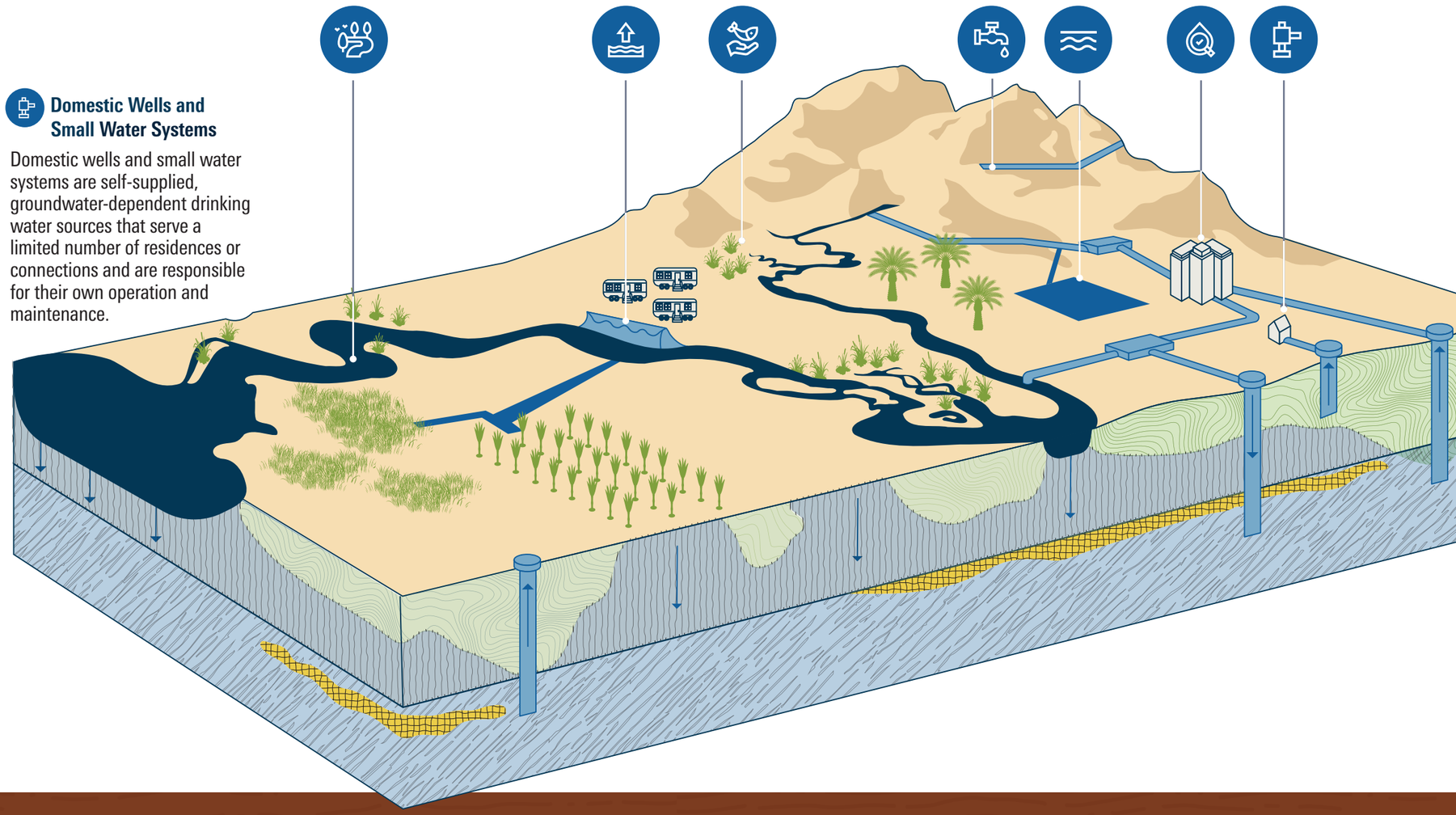
The sustainable management of groundwater resources through recharge, storage, extraction, monitoring, and conservation practices that support long-term water reliability and basin health.

Water Quality

The physical, chemical, and biological characteristics of surface water, groundwater, and recycled water that influence their suitability for drinking water, agriculture, ecosystem health, recreation, and other beneficial uses.

Domestic Wells and Small Water Systems

Domestic wells and small water systems are self-supplied, groundwater-dependent drinking water sources that serve a limited number of residences or connections and are responsible for their own operation and maintenance.



CLIMATE CHANGE WILL IMPACT WATER SYSTEMS AND COMMUNITIES IN COACHELLA VALLEY IN A VARIETY OF IMPORTANT WAYS:

Water Supply and Reliability

- Decreased deliveries of State Water Project and Colorado River water supplies due to scarcity across the West
- Increased demands resulting in groundwater depletion risks
- Increased evapotranspiration rates leading to higher outdoor and agricultural water use
- Increased reliance on groundwater during drought periods
- Wind-driven electrical line damage leading to power outages and water access issues

Infrastructure, Water Quality and Public Safety

- Increased runoff resulting from extreme precipitation events and associated flooding and damage to vital infrastructure
- Damage to water conveyance infrastructure from flooding events
- Increased risk of sediment, pesticides, and nutrients in water bodies due to elevated runoff rates
- Shifts in groundwater quality, including changes in contaminant concentrations due to altered recharge patterns and drought
- Impacts to public health and safety during storm events

Habitat and Ecosystem Health

- Increased vulnerability of habitats and species to temperature increases
- Increased vulnerability of vegetation and wildlife to invasive species
- Increased risk of habitat degradation

KEY RESILIENCE STRATEGIES
for the Coachella Valley

Implementation Action 1
Target Technical Assistance and System Upgrades to Improve Water Quality for Small Water Systems

Implementation Action 2
Improve Emergency Preparedness and Redundancy of Critical Services

Implementation Action 3
Strengthen Energy Resilience for Water Infrastructure

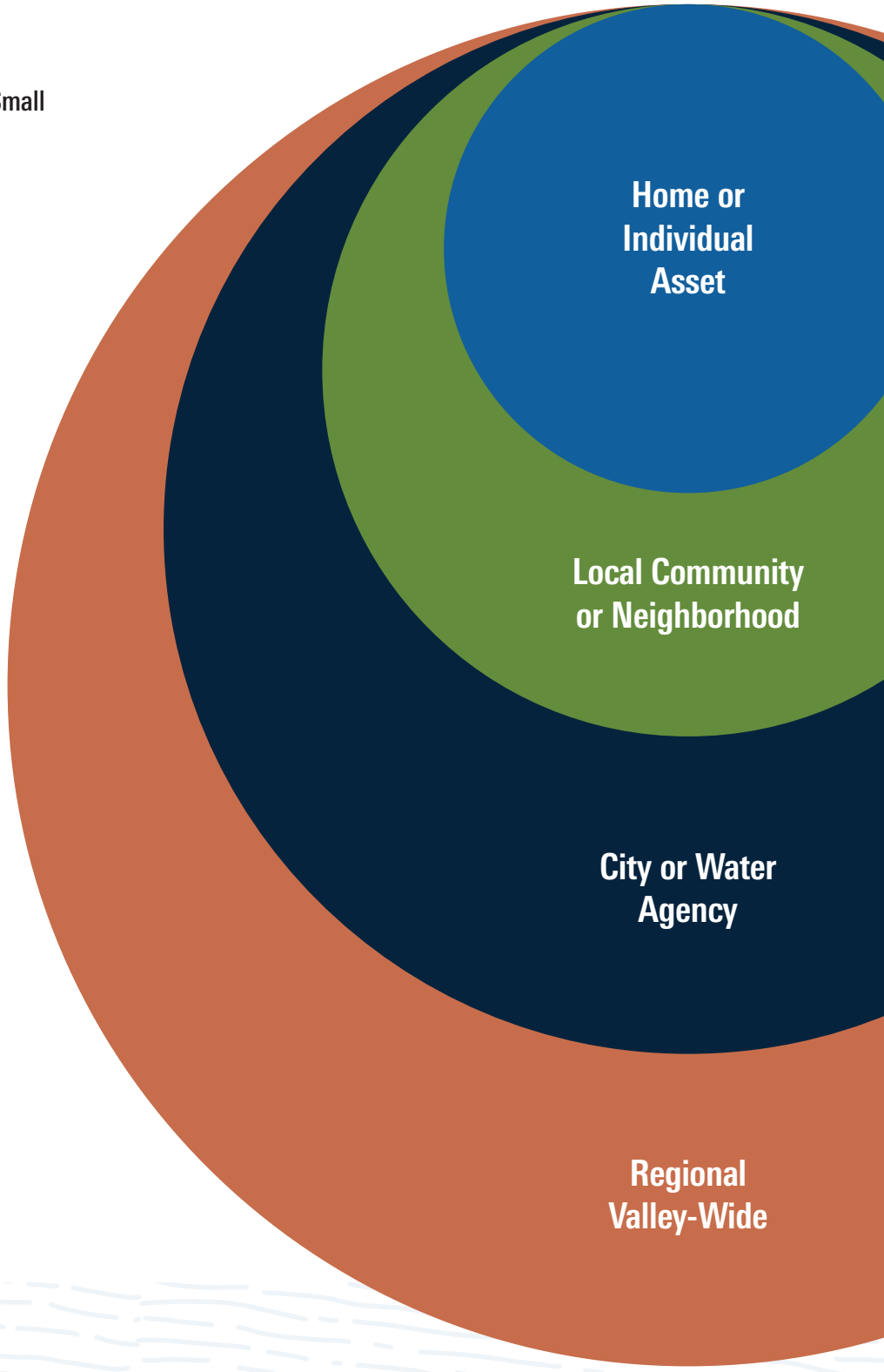
Implementation Action 4
Develop Decentralized Flood Management and Stormwater Capture

Implementation Action 5
Build Regional Support to Adapt Small Water Systems

Implementation Action 6
Advance Water Supply Projects and Facility Expansions

Implementation Action 7
Advance Outdoor Water Use Efficiency Priorities

Implementation Action 8
Engage in Strategic Policy Change and Regulatory Streamlining



Key Strategies and Actions

Strategy	Implementation Action	Implementation Roles		Relevant Funding Opportunities
Implementation Action 1 - Target Technical Assistance and System Upgrades to Improve Water Quality for Small Water Systems	Translate regional water quality monitoring and domestic well/small water system inventory data into a targeted treatment implementation program for groundwater-dependent communities. The program should consolidate available EPA, Riverside County, water agency, CVRWRP inventory, and CV-SNMP monitoring data into a publicly accessibly database. Identify priority water quality gaps and direct funding toward the installation, routine testing, filter replacement, operator support, and long-term maintenance of wellhead, Point of Entry, and Point of Use treatment systems in underserved areas affected by arsenic, nitrate, chromium-6, and other contaminants.	**City**	• Provide municipal water, land-use, and infrastructure data; identify affected neighborhoods and facilities. • Support local outreach and issue land-use, building, encroachment, or intertie approvals, as applicable. • Coordinate treatment projects with emergency planning and longer-term service or consolidation decisions.	• SWRCB - DWSRF/CWSRF and Clean, Safe, Reliable Drinking Water - $610M • DWR - Sustainable Groundwater Management Grant Program - $386.25M • DWR - Watershed Resilience Program - $100M • CNRA - Tribal Nature-Based Solutions Program - $10M • DWR - Technical Support Services - amount varies • SWRCB - State Revolving Fund Programs - capitalization varies
		County	• Riverside County Environmental Health provides domestic-well and small-system information and coordinates drinking-water compliance. • Support sampling priorities, permits, privacy protections, and referrals for unincorporated communities. • Coordinate County data with the regional database and help identify high-vulnerability locations.	
		Water Agency	• Integrate monitoring and inventory datasets; identify contaminant and monitoring gaps. • Complete treatment feasibility reviews and implement wellhead, POE/POU, shared-service, or consolidation solutions. • Provide operator support, routine testing, filter replacement, repairs, long-term O&M, and SGMA/CV-SNMP reporting.	
		NGO/Tribes	• PUCDC leads the working group and trusted engagement with households, mobile home parks, and Tribal communities. • Support enrollment, field verification, treatment selection, funding navigation, and understandable public information. • Conduct household follow-up and elevate community preferences, affordability concerns, and maintenance needs.	
Implementation Action 2 - Improve Emergency Preparedness and Redundancy of Critical Services	Expand water storage tanks to support both emergency response and domestic water supply needs. Coordinate dual-purpose storage requirements with fire departments so storage can support both fire flows and domestic water systems.	**City**	• Identify municipal storage, fire-flow, outage, and emergency-access deficiencies. • Support tank siting, land-use approvals, grading/building permits, easements, and integration into local hazard and capital plans. • Participate in operating, communication, and reimbursement agreements.	• DWR - Small Communities Flood Risk Reduction Program - $250M • Cal OES - Wildfire Mitigation Grant Program - $135M • CAL FIRE - Local Fire Prevention and Workforce Development - $185M • SWRCB - DWSRF/CWSRF and Clean, Safe, Reliable Drinking Water - $610M • USDA Rural Development - Emergency Community Water Assistance Grants
		County	• Riverside County Fire leads the countywide assessment and development of dual-purpose storage criteria. • Emergency Management integrates facilities into emergency operations and continuity planning; Environmental Health supports drinking-water requirements. • Coordinate liability, reimbursement, private-well protection, communications, and priorities in unincorporated communities.	
		Water Agency	• Assess storage capacity, tank condition, interties, backup power, distribution compatibility, and system deficiencies. • Lead feasibility studies, engineering, permitting, construction, commissioning, asset management, and long-term O&M. • Establish operating protocols that preserve water quality and domestic reliability while meeting emergency fire-flow needs.	
		NGO/Tribes	• Document community reliability gaps and past concerns regarding emergency use of private infrastructure. • Support transparent siting, design, and operating discussions with disadvantaged and Tribal communities. • Help identify priority mobile home parks and small systems and communicate available assistance.	

Implementation Action 3 - Strengthen Energy Resilience for Water Infrastructure	Deploy solar-powered backup systems with battery storage, black-start capabilities, and pump-compatible controls to maintain operation of wells, booster pumps, and critical small water system facilities during grid outages. Prioritize collaborative pilot projects at Tribal and small water system sites, leveraging available battery incentives, direct-pay financing opportunities for Tribes, and lessons learned from existing backup power installations to overcome the technical and financial barriers associated with powering submersible groundwater pumps.	**City**	• Identify critical municipal water or emergency facilities and outage-sensitive locations. • Process electrical and building permits and incorporate resilient power into local emergency and climate planning. • Coordinate public-facility pilot opportunities where relevant.	• Cal OES - Wildfire Mitigation Grant Program - $135M • CAL FIRE - Local Fire Prevention and Workforce Development - $185M • CVMC - Reduce the Risks of Climate Change Impacts - $11M • CEC - Electric Program Investment Charge - amount varies • CEC - Community Energy Resilience Funding - amount varies • U.S. DOE - Tribal Energy Program - amount varies
		County	• Emergency Management identifies continuity-of-operations priorities and outage scenarios. • Office of Economic Development helps coordinate incentives, financing, technical partners, and scalable deployment. • Support emergency planning links among Tribes, utilities, water providers, and small systems.	
		Water Agency	• Assess electrical loads, pump startup surges, battery sizing, controls, black-start capability, and utility interconnection needs. • Lead design, procurement, installation, commissioning, safety compliance, performance monitoring, and equipment replacement planning. • Document cost-effectiveness and lessons learned for regional replication.	
		NGO/Tribes	• TMDCI and PUCDC lead Tribal and small-system pilot partnerships and priority-site identification. • Support community communication, direct-pay and incentive navigation, and locally appropriate ownership models. • Help document service-reliability and environmental-justice benefits.	
Implementation Action 4 - Develop Decentralized Flood Management and Stormwater Capture	Coordinate with Riverside County, CVWD's stormwater program, and local jurisdictions to identify and implement flood mitigation projects in underserved communities, manufactured housing areas, and critical infrastructure corridors with documented flooding concerns, including locations such as 70th Street, Pierce Street, and communities throughout the eastern Coachella Valley. Incorporate centralized and decentralized stormwater catchment features into flood management approaches, where feasible, to slow, capture, store, infiltrate, and beneficially use stormwater closer to where runoff is generated while complementing regional flood control infrastructure. Integrate future flood risk projections into capital improvement planning, development review, infrastructure design standards, and groundwater sustainability planning to support flood-risk reduction, groundwater quality protection, and aquifer replenishment.	**City**	• Map recurring flood locations and risks to neighborhoods, roads, manufactured housing, and critical infrastructure. • Integrate future flood risk and centralized/decentralized stormwater catchment opportunities into capital planning, development review, infrastructure design standards, and land-use planning. • Identify City-owned streets, parks, facilities, and other suitable sites for distributed stormwater catchment, and provide local permits, rights-of-way, and long-term maintenance for priority projects.	• DWR - Flood Control Subventions Program - $150M • DWR - Small Communities Flood Risk Reduction Program - $250M • SWRCB - Storm Water Grant Program - $110M • DWR - Watershed Resilience Program - $100M • WCB - Protect and Enhance Fish and Wildlife - $668M • FEMA - BRIC/Flood Mitigation Assistance - amount varies
		County	• Lead regional flood-risk assessment and coordinate major flood-management infrastructure and projects in unincorporated areas • Integrate future flood risk into County transportation corridors, land-use review, infrastructure planning, permitting, and capital investments. • Advance projects in underserved and manufactured housing communities with documented flooding concerns, including areas near 70th Street and Pierce Street, while identifying opportunities to combine regional flood infrastructure with decentralized stormwater catchment.	
		Water Agency	• Provide technical leadership for stormwater management, catchment, infiltration, groundwater recharge, and groundwater-quality considerations, consistent with agency authority. • Coordinate with the County and local jurisdictions to identify where centralized facilities and decentralized catchment features can complement CVWD's existing regional flood-control system. CVWD's existing system includes debris basins, levees, stormwater channels, and the Coachella Valley Stormwater Channel. • Evaluate stormwater capture, infiltration, recharge, and groundwater-quality performance and incorporate applicable groundwater outcomes into regional groundwater planning and reporting.	
		NGO/Tribes	• Document community flooding concerns, access constraints, infrastructure vulnerabilities, and priority locations, particularly in underserved communities. • Support community and Tribal participation in project identification, prioritization, and design, including consideration of decentralized catchment opportunities. • Support community outreach, funding applications, construction communication, and post-project feedback to help ensure investments respond to locally identified needs.	

Implementation Action 5 - Build Regional Support to Adapt Small Water Systems	Expand septic-to-sewer conversion, wastewater consolidation, and wastewater infrastructure improvement programs throughout disadvantaged communities in the eastern Coachella Valley to reduce groundwater contamination, protect drinking water supplies, improve public health outcomes, and support long-term groundwater sustainability. Building upon CVWD's Sanitation Master Plan, the ongoing Consolidation Master Plan update, and work led through the DAC Infrastructure Task Force, this action prioritizes extending centralized wastewater collection and treatment infrastructure to communities currently reliant on aging or failing septic systems.	**City**	• Coordinate land-use, street, utility, and capital projects with sewer extensions and customer connections. • Issue encroachment, grading, construction, and other local approvals; support easements and service-area changes. • Help identify public facilities and neighborhoods that can be efficiently connected.	• SWRCB - DWSRF/CWSRF and Clean, Safe, Reliable Drinking Water - $610M • SWRCB - Water Recycling Funding Program - $386.25M • DWR - Regional Conveyance Grant Program - $2.67M • SWRCB - SAFER Program - amount varies • USDA Rural Development - Water and Waste Disposal Program - amount varies • EPA - WIIN and Community Infrastructure programs - amount varies
		County	• Environmental Health coordinates septic abandonment, inspections, public-health compliance, and service transitions. • Support rights-of-way, permits, utility coordination, and implementation in unincorporated communities. • Participate through the DAC Infrastructure Task Force and identify communities remaining on septic systems.	
		Water Agency	• CVWD completes the Consolidation Master Plan update and project prioritization. • Plan backbone and trunk infrastructure; lead feasibility, environmental review, design, permitting, funding, construction, connections, and operations. • Monitor customer connections, nitrate-loading reduction, system performance, affordability, and groundwater-quality outcomes.	
		NGO/Tribes	• LCJA, PUCDC, TMDCI, and the DAC Infrastructure Task Force lead community needs identification and sustained outreach. • Assist households with easements, connection requirements, affordability programs, and construction coordination. • Deliver septic maintenance education and financial-assistance information in areas remaining unsewered.	
Implementation Action 6 - Advance Water Supply Projects and Facility Expansions	Advance implementation of recycled water, groundwater replenishment, and water reuse projects identified in the Indio and Mission Creek Alternative Plans, including expansions of WRP-4, WRP-7, WRP-10, Nancy Wright RWRF, Horton Wastewater Treatment Plant, EVRA potable reuse, four different groundwater recharge facilities, and non-potable distribution systems. Prioritize SGMA-benefit and source substitution projects that reduce groundwater pumping through the expansion of recycled water, blended recycled water with Colorado River Aqueduct supplies, and groundwater replenishment projects to improve basin sustainability.	**City**	• Coordinate land-use approvals, rights-of-way, construction permits, and recycled-water customer conversions. • Align municipal capital projects and landscape irrigation with non-potable distribution expansion. • Support public outreach for recycled-water and potable-reuse projects.	• SWRCB - Water Recycling Funding Program - $386.25M • DWR - Sustainable Groundwater Management Grant Program - $386.25M • SWRCB - DWSRF/CWSRF and Clean, Safe, Reliable Drinking Water - $610M • DWR - Regional Conveyance Grant Program - $2.67M • DOC - Multi-benefit Land Repurposing Program - $200M • USBR - WaterSMART - amount varies
		County	• Coordinate land-use and infrastructure approvals for treatment, storage, conveyance, and recharge facilities in County areas. • Support easements, utility crossings, construction coordination, and regional project alignment. • Help connect projects to County climate, drought, and disadvantaged-community priorities where applicable.	
		Water Agency	• CVWD and partner agencies update schedules and sequence projects using readiness, demand, regulation, and SGMA benefits. • Lead feasibility, alternatives analysis, design, environmental review, permitting, finance, construction, commissioning, and operation. • Track recycled-water production, recharge, source substitution, pumping reduction, groundwater response, and SGMA performance.	
		NGO/Tribes	• Support transparent public education and community engagement, particularly for potable reuse. • Advocate for equitable distribution of reliability, affordability, and groundwater benefits. • Participate in regional coalitions, letters of support, and customer outreach when appropriate.	

Implementation Action 7 - Advance Outdoor Water Use Efficiency Priorities	Coordinate with CVWD, local water suppliers, jurisdictions, agricultural operators, golf courses, HOAs, businesses, institutions, and community partners to build upon CV Water Counts as the regional platform for coordinated water-use efficiency implementation. Expand existing education, outreach, rebate, turf-conversion, and irrigation-efficiency efforts while using regional conservation data to identify underserved customer segments, target the highest-value conservation opportunities, and improve measurement of resulting water savings. Use the existing CV Water Counts framework to test, coordinate, evaluate, and scale water-efficiency strategies across participating agencies.	**City**	• Implement and promote CV Water Counts programs and participating-agency incentives through local outreach, planning, and community programs. • Identify municipal facilities, parks, streetscapes, and other high-water-use landscapes for turf conversion, irrigation-efficiency upgrades, and demonstration projects. • Apply local landscape and water-efficiency requirements and coordinate with water suppliers to increase participation among residents, HOAs, businesses, and institutional customers.
		County	• Promote CV Water Counts resources and available conservation programs in unincorporated communities. • Identify County facilities and landscapes where water-efficiency improvements and demonstration projects could be implemented. • Support outreach and partnerships with agricultural operators, large landowners, businesses, institutions, and underserved communities to broaden participation in water-efficiency programs.
		Water Agency	• Lead and coordinate CV Water Counts, including regional education, outreach, conservation messaging, and coordination among participating water suppliers. CV Water Counts was established by regional water suppliers for coordinated water-conservation education and awareness. • Implement and refine rebates, landscape conversion, irrigation-efficiency, audits, and other conservation programs based on customer needs and regional conservation data. CVWD already offers residential, HOA and commercial landscape and irrigation incentives and conducts outreach and education. • Track participation, water savings, program saturation, and cost-effectiveness to identify gaps and target future investments. The Regional Water Conservation Study provides an existing foundation for evaluating savings, targeting, incentive levels, and program saturation.
		NGO/Tribes	• Support culturally and community-appropriate outreach and education to increase awareness of water-use efficiency programs and available incentives. • Help identify barriers to participation and underserved customer groups and connect residents and landowners with appropriate programs and resources. • Partner on education, demonstration projects, and community engagement that can expand participation in CV Water Counts and reinforce long-term water conservation.
			• DOC - Multi-benefit Land Repurposing Program - $200M • SWRCB - Storm Water Grant Program - $110M • DWR - Watershed Resilience Program - $100M • WCB - Protect and Enhance Fish and Wildlife - $668M • SDRC - Conservation, Nature-Based Solutions, and Public Access - $48M • CDFA - Healthy Soils - $65M

Implementation Action 8 - Engage in Strategic Policy Change and Regulatory Streamlining	Align CVRWRP implementation actions with Riverside County Ordinance 348 and related land use, floodplain management, environmental health, and development review requirements. Identify opportunities to develop clear permitting pathways, interagency coordination procedures, and project review guidance that support implementation of stormwater capture, groundwater recharge, flood mitigation, decentralized water infrastructure, habitat restoration, and other resilience projects for small water systems. Incorporate future climate conditions, flood risk projections, groundwater sustainability objectives, and water quality considerations into project planning and design standards to reduce regulatory uncertainty and help priority projects move more efficiently from planning to implementation.	**City** • Document municipal permits, standards, responsible departments, review sequencing, and typical information needs. • Participate in the interagency working group and test the permitting matrix on priority projects. • Incorporate adopted climate-informed review procedures into development, capital, hazard, and resilience planning. **County** • Planning and Public Works lead the Ordinance 348 and County-process review, subject to County confirmation. • Convene Environmental Health, Emergency Management, Flood Control, water agencies, Tribes, cities, and NGOs. • Develop the permitting matrix, standardized review guidance, pilot pathway, staff procedures, and periodic updates. **Water Agency** • Define technical, operational, and regulatory requirements for recharge, stormwater, flood, decentralized-water, and habitat projects. • Provide pilot projects and coordinate with the Regional Water Board, EPA, and other permitting agencies. • Align guidance with SGMA, Alternative Plans, capital programs, and groundwater-quality objectives. **NGO/Tribes** • Identify barriers experienced by community organizations, small systems, Tribes, and disadvantaged communities. • Help develop plain-language guidance, applicant checklists, technical assistance, and community-facing information. • Participate in pilot reviews and track whether streamlined processes improve project readiness and access.	• DWR - Watershed Resilience Program - $100M • CVMC - Reduce the Risks of Climate Change Impacts - $11M • SDRC - Conservation, Nature-Based Solutions, and Public Access - $48M • CNRA - Nature and Climate Education Facilities Program - $25M • FEMA - Building Resilient Infrastructure and Communities - amount varies • EPA - Environmental Justice and Community Capacity programs - amount varies

Notes: Action language is reproduced verbatim from the implementation roadmaps provided. Roles synthesize the roadmaps' priority next steps, permitting needs, and identified partnerships. Funding amounts shown are total Proposition 4 allocations where provided; "amount varies" indicates that no single amount was supplied in the roadmap materials. Confirm current eligibility, available balances, match, and solicitation requirements before application. Action 8 County lead roles remain subject to County confirmation.

Measuring Success Toward Water Resilience

The CVRWRP is intended to advance implementation and deliver measurable improvements in water resilience for communities throughout the Coachella Valley. As projects move forward, partners may consider tracking the following indicators to evaluate progress and inform future investment decisions:

- **Households and water systems receiving assistance** through water quality testing, technical assistance programs, treatment system installation, or funding support.
- **Domestic wells and small water systems assessed, monitored, or added to regional databases** to improve understanding of water quality, infrastructure conditions, and climate vulnerability.
- **Treatment, backup power, and resilience systems installed**, including point-of-entry (POE) and point-of-use (POU) treatment systems, shade trees, emergency generators, solar-plus-storage systems, and other reliability improvements.
- **Additional emergency water storage and system redundancy created** through expanded storage capacity, interconnections, backup supplies, and other emergency preparedness measures.
- **Flood and stormwater mitigation projects advanced**, including projects that reduce community flood risk, improve groundwater recharge, and provide multiple environmental and community benefits.
- **Grant funding and implementation resources secured** from local, state, federal, Tribal, and private-sector funding programs.
- **Workforce, operator, and technical capacity expanded** through training, technical assistance, partnerships, and programs that support long-term operation and maintenance of water infrastructure.





Moving from Planning to Implementation

The CVRWRP's primary contribution is translating climate vulnerability information and community priorities into implementable projects, partnerships, and funding opportunities. Through resilience portfolios, implementation roadmaps, and priority actions, the plan provides a pathway for advancing projects that improve drinking water quality, protect groundwater resources, reduce flood risk, enhance ecosystem health, and strengthen the resilience of communities throughout the Coachella Valley.

Align and Amplify Existing Regional Efforts

The Coachella Valley already benefits from extensive planning and investment through innovative water supply projects and Tribal and community-led initiatives that are actively improving water quality for vulnerable communities. Aligning priorities, bundling projects, and pursuing coordinated implementation can maximize resilience benefits and improve competitiveness for funding.

Build Capacity to Operate and Maintain Resilience Infrastructure

Many of the resilience investments identified through the CVRWRP require long-term operations and maintenance to deliver lasting benefits. Long-term resilience will depend on a skilled workforce capable of operating, maintaining, and upgrading domestic wells, small water systems, decentralized treatment systems, and resilience infrastructure.

Build Redundancy into Critical Water and Power Systems

Many domestic wells, small water systems, and Tribal water systems rely on a single well, pump, power source, or treatment system, leaving communities vulnerable to outages, equipment failures, flooding, and extreme weather events. Expanding backup water supplies, emergency storage, interconnections, alternative power sources, and redundant treatment and pumping infrastructure can improve system reliability and help ensure continued access to safe drinking water during emergencies and prolonged disruptions.

Prioritize Multi-Benefit Solutions

Projects that address multiple challenges simultaneously, such as groundwater recharge, stormwater capture, water reuse, habitat restoration, flood management, and water quality improvements, provide the greatest return on investment and resilience benefits.

Streamline Policies and Permitting

Many resilience projects face complex permitting and regulatory requirements. Improving interagency coordination, integrating climate considerations into planning and permitting, and reducing implementation barriers can accelerate delivery of priority projects.





Funding and Implementation Strategy

Because the identified actions span water quality, groundwater sustainability, flood management, energy resilience, emergency preparedness, recycled water, and community resilience, no single funding source will be sufficient. Instead, implementation should focus on bundling projects, sequencing investments, and aligning projects with multiple state, federal, Tribal, and private-sector funding opportunities to maximize competitiveness and long-term impact.

Leverage Proposition 4, WaterSMART, and Regional Funding Opportunities

Several priority actions align closely with California's Proposition 4 funding programs expected to be released between 2027 and 2030, including the Water Resilience Projects (WRP) program and Sustainable Groundwater Management (SGM) program administered by DWR. Groundwater recharge, domestic well protection, recycled water reuse, flood management, nature-based solutions, Tribal resilience projects, and drinking water quality improvements are all likely to align strongly with Proposition 4 priorities. At the federal level, the Bureau of Reclamation's WaterSMART program continues to provide funding for drought resilience, water reuse, conservation, recharge, and climate adaptation projects. Many CVRWRP actions, including recycled water expansions, groundwater recharge, source substitution projects, and domestic well resilience efforts, are strong candidates for future WaterSMART funding opportunities.



Additional opportunities may include:

- State Water Board SAFER Program for domestic well assistance, water quality testing, and drinking water improvements.
- FEMA BRIC and Hazard Mitigation Assistance Programs for flood mitigation, emergency preparedness, backup power, and critical infrastructure protection.
- California Strategic Growth Council and Extreme Heat & Community Resilience Programs for shade, cooling, and community resilience projects.
- Salton Sea Management Program funding for habitat, dust reduction, stormwater management, and community resilience projects in the eastern Coachella Valley.
- Regional Water Board funding programs supporting groundwater quality, stormwater capture, septic-to-sewer conversion, and nonpoint source pollution reduction.

Bundle Projects Into Regional Resilience Portfolios

Rather than pursuing funding for individual projects, agencies and partners should package related investments into multi-benefit resilience portfolios. For example, stormwater capture, groundwater recharge, flood mitigation, septic protection, and habitat restoration projects can be combined into a single regional funding package. Similarly, domestic well monitoring, water quality testing, POE/POU treatment, and technical assistance programs can be advanced together under a drinking water resilience initiative. Bundling projects increases funding competitiveness, demonstrates regional coordination, and allows partners to leverage multiple funding sources simultaneously.

Expand Public-Private and Tribal Partnerships

Many CVRWRP actions can be strengthened through partnerships with agricultural operators, developers, utilities, Tribal governments, community organizations, and philanthropic partners. Public-private partnerships may be particularly effective for stormwater infiltration, agricultural return-flow management, distributed energy systems, water-use efficiency programs, and habitat restoration projects. Tribal partners may also benefit from direct-pay provisions, battery incentives, and other federal financing opportunities that can support resilient water and energy infrastructure.



Groundwater continues to support the diverse activities of the Coachella Valley. It provides a critical water supply that sustains agriculture, animal husbandry, industry, residences, and cultural resources.

Implementation Spotlight: From Planning to Action

With support from the California Governor's Office of Land Use and Climate Innovation (LCI), the CVRWRP is already advancing on-the-ground resilience projects that directly benefit communities served by small water systems. Through this implementation effort, PUCDC is installing seven point-of-entry (POE) treatment systems to improve drinking water quality for households in eastern Coachella Valley facing groundwater contamination concerns, while TMDCI is upgrading a critical groundwater well by installing a new air compressor system to improve reliability and long-term water access. These projects demonstrate how targeted technical assistance and relatively small capital investments can provide immediate benefits for communities that rely on domestic wells and small water systems. By addressing site-specific water quality and reliability challenges, these efforts help build resilience while providing practical examples that can be replicated in other underserved communities throughout the Coachella Valley.

2 Introduction

2.1 Purpose of the Plan

The Coachella Valley Regional Water Resilience Plan (CVRWRP) was developed to strengthen the long-term resilience of water resources, water infrastructure, and communities throughout the Coachella Valley in the face of increasing climate change-related challenges. Building upon extensive technical analysis, community engagement, and coordination with regional partners, the CVRWRP identifies vulnerabilities to water systems and communities and establishes a framework for advancing resilience through implementable actions and partnerships. The plan places particular emphasis on small water systems, domestic wells, disadvantaged communities (DACs), Tribal communities, and other populations that may face disproportionate climate and water-related risks. In the context of Coachella Valley, a domestic well is a privately owned well that supplies water for domestic use to an individual household or up to four service connections, and a small water system is a drinking water system that provides piped water to 5–14 service connections and regularly serves fewer than 25 people (SWRCB 2026).

The CVRWRP was developed using the California Department of Water Resources Watershed Resilience Planning Framework (DWR 2024), which emphasizes integrated, multi-benefit planning that addresses climate risks across water supply, water quality, flood management, ecosystem health, infrastructure resilience, and community well-being. Consistent with this framework, the CVRWRP combines technical assessments with community knowledge to identify vulnerabilities, develop adaptation strategies, and prioritize actions that can improve resilience over time.

Through surveys, community events, site visits, workshops, and collaboration with community-based organizations, residents directly informed the identification of climate risks, resilience goals, and implementation actions. This community-informed approach recognizes that effective resilience planning must be grounded in both technical analysis and lived experience.

Climate change has already caused harm in Coachella Valley, leading to flooding of communities, extreme heat and drought conditions, and power disruptions. A central objective of the CVRWRP is to ensure that resilience planning reflects the needs and priorities of residents in Coachella Valley as they respond to these changes.

The CVRWRP also supports and complements several ongoing regional planning and groundwater management efforts. The Plan builds upon information developed through implementation of the Sustainable Groundwater Management Act (SGMA), including the Indio Subbasin Alternative Plan and Mission Creek Subbasin Alternative Plan (Indio and Mission Creek Subbasin Groundwater Sustainability Agencies 2026).[1] These efforts provide important information regarding groundwater conditions, water supply reliability, recharge activities, and long-term groundwater sustainability. The CVRWRP also leverages research from the 2025 Coachella Valley Regional Urban Water Management Plan, developed by the Coachella Valley Regional Water Management Group (CVRWMG 2025) related to water supplies and drought contingency planning. The Plan aligns with the objectives of the 2018 Coachella Valley Integrated Regional Water Management and Stormwater Resource Plan (CVIRWM- 2018) which promotes collaborative, multi-benefit approaches for managing water supply, water quality, flooding, and natural resources throughout the region.

[1] Indio Subbasin Alternative Plan: www.IndioSubbasinSGMA.org
Mission Creek Subbasin Alternative Plan: www.MissionCreekSubbasinSGMA.org

2.2 Community Context

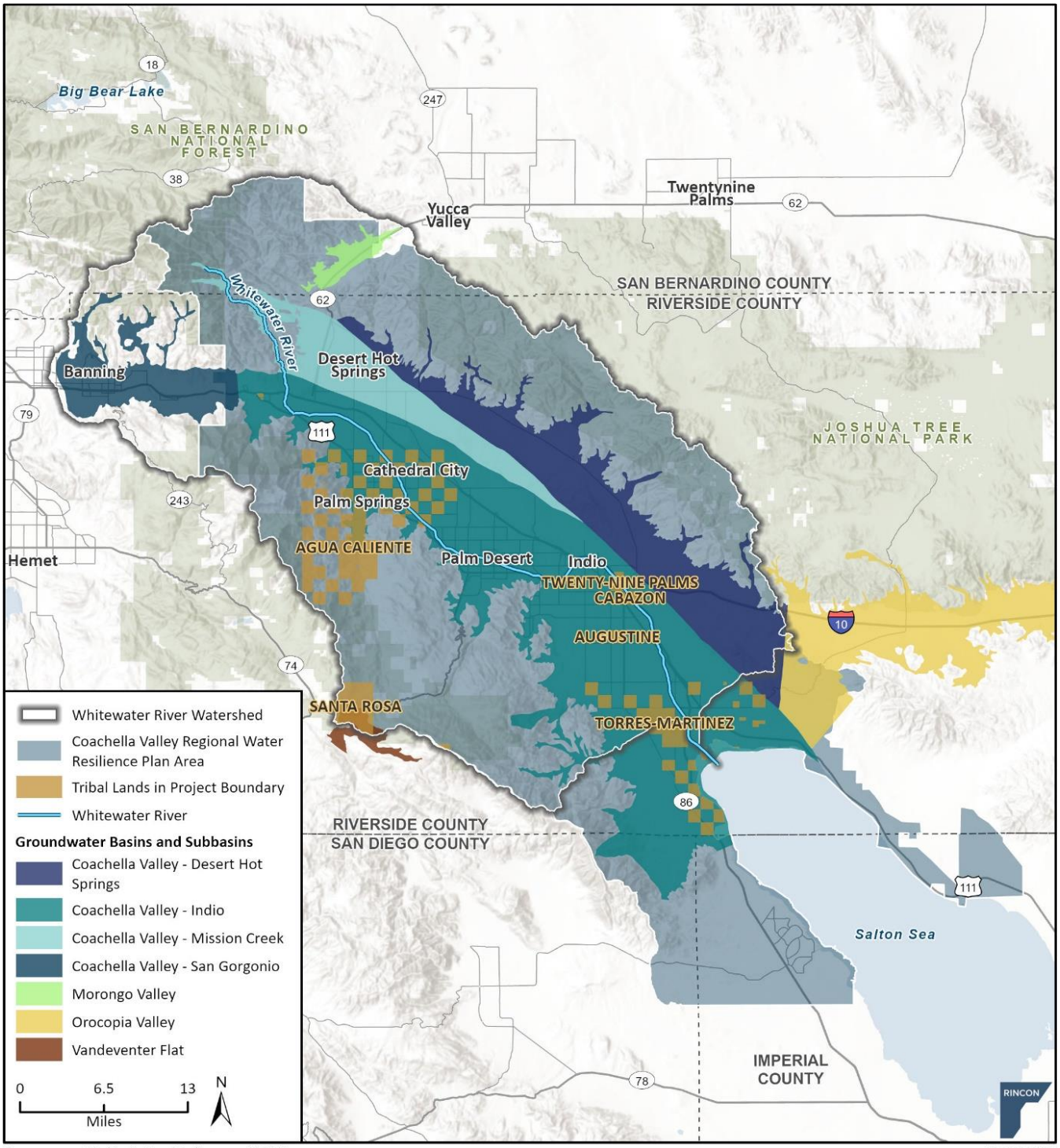
The Coachella Valley is located in the Whitewater River Watershed, which is home to Tribal Nations Agua Caliente, Augustine, Cabazon, Santa Rosa, Torres Martinez, Twenty-Nine Palms, and spans Riverside, San Bernardino, Imperial and San Diego Counties. The region is characterized by a unique desert environment, rapidly growing communities, extensive agricultural production, and a complex network of groundwater, imported water, recycled water, and stormwater management systems. Cities in the region include the cities of Cathedral City, Coachella, Desert Hot Springs, Indian Wells, Indio, La Quinta, Palm Desert, Palm Springs, Rancho Mirage, and unincorporated areas such as Thermal and Thousand Palms. The region experiences a hot arid climate with minimal annual precipitation, high summer temperatures, and increasing exposure to climate hazards such as longer and more severe droughts, extreme heat, flooding, high winds, and power disruptions. These conditions create both opportunities and challenges for water resource management and community resilience.

The Coachella Valley is also one of California's most socially and economically diverse regions. The eastern Coachella Valley contains numerous Tribal communities, domestic well users, farmworker communities, and mobile home parks that face unique water resource and infrastructure challenges. Previous planning efforts have identified disparities in access to safe and reliable drinking water, redundancy of power, wastewater services, flood protection infrastructure, and emergency response capacity. Many residents rely on small water systems, domestic wells, or aging infrastructure that may be particularly vulnerable to drought, groundwater quality concerns, flooding, and extreme weather events.

Tribal Nations have long served as stewards of the lands, waters, and natural resources of the Coachella Valley and continue to play an important role in advancing water resilience for communities throughout the region. In addition to managing water resources and protecting culturally significant landscapes, Tribal governments have helped address drinking water challenges affecting small water systems, domestic well users, and other groundwater-dependent communities. Many Tribal communities face similar vulnerabilities, including water quality concerns, aging infrastructure, flooding, power outages, and reliance on groundwater supplies. Through environmental programs, water infrastructure improvements, technical assistance efforts, community partnerships, and participation in regional planning initiatives,

Groundwater remains the primary local water supply source for much of the Coachella Valley and has played a central role in the region's development. Historically, groundwater pumping exceeded natural recharge, contributing to declining groundwater levels in portions of the Coachella Valley Groundwater Basin. However, significant investments in groundwater replenishment, imported water deliveries, and water use efficiency have helped stabilize and recover groundwater levels within both the Indio and Mission Creek Subbasins. Figure 1 shows the CVRWRP planning area, in addition to local Tribal territories.

Figure 1 CVRWRP Planning Area



Basemap provided by Esri and its licensors © 2026.
Additional data provided by CPAD, 2025; NHD, 2024; DWR, 2024.

24-15644 WRP
Fig 1 Whitewater River Valley

2.3 Building on Existing Investments in Water and Community Resilience

Community-based organizations and Tribal partners have played a critical role in advancing resilience and improving drinking water conditions for small water system users throughout the eastern Coachella Valley. Pueblo Unido Community Development Corporation (PUCDC), the Leadership Counsel for Justice and Accountability (LCJA), and the Torres Martinez Desert Cahuilla Indians (TMDCI) have provided technical assistance, community outreach, advocacy, and capacity-building support to help residents navigate complex water quality challenges, access funding opportunities, and participate meaningfully in water planning processes. Through initiatives such as domestic well testing, drinking water outreach, point-of-use and point-of-entry treatment programs, community education, and participation in regional planning efforts, these organizations have elevated community priorities and strengthened connections between residents, water agencies, and decision-makers.

The CVRWRP builds upon previous efforts by integrating new climate hazard analysis and a small water system inventory with extensive community engagement to identify practical, implementable actions that improve resilience for both water systems and the people who depend on them.

The region has also engaged in numerous planning and water supply initiatives that provide a foundation for this effort led by regional water purveyors, including Coachella Valley Water District (CVWD), Desert Water Agency (DWA), Mission Springs Water District (MSWD), Indio Water Authority (IWA), and Coachella Water Authority (CWA). Foundational planning efforts include the Coachella Valley Integrated Regional Water Management Program, SGMA implementation, Salt and Nutrient Management Planning, Urban Water Management Planning, Climate Adaptation Planning, Hazard Mitigation Planning, and various efforts focused on DACs, domestic wells, and small water systems. These plans reflect a growing recognition that climate resilience requires coordinated action across jurisdictions, water resource sectors, and communities.

2.3.1 Key Elements of the CVRWRP

Key components of the planning process included:

- **Domestic Well and Small Water System Inventory (Appendix A) –** Field assessments of domestic wells and small water systems were conducted to better understand existing conditions, infrastructure needs, and water quality challenges for communities that rely on small water systems.
- **Climate Hazard Projections and Vulnerability Assessment –** Future climate risks were evaluated based on the latest global climate models as part of California's Fifth Climate Change Assessment to assess potential impacts from drought, extreme heat, flooding, wildfire and wind.
- **Robust Community Participation –** Community members were engaged through workshops, community pop-ups, planning input sessions, surveys, site visits, and ongoing collaboration to ensure local experiences and priorities guided resilience planning.
- **Development of Resilience Actions and Implementation Roadmaps** – Priority actions were identified to improve water reliability, water quality, emergency preparedness, flood resilience, groundwater sustainability, and community capacity. Actions were translated into implementation-focused roadmaps that identify funding opportunities, partnerships, barriers, and next steps.
- **Community and Tribal Leadership –**Strong leadership and partnership from CVWD, PUCDC, TMDCI and regional water agencies and non-governmental organizations, including LCJA, DWA, MSWD, IWA and CWA supported planning efforts. Figure 2 demonstrates the key leadership and roles that influenced the CVRWRP outcomes.

2.4 CVRWRP Leadership

The CVRWRP was guided by a collaborative leadership structure that combined technical expertise, community knowledge, and regional planning experience. The Core Team, led by CVWD, PUCDC, and TMDCI, directed the planning process, helped shape the project vision, and ensured that the needs of domestic well users, small water systems, Tribal communities, and DACs remained central to the plan. Their leadership was instrumental in designing the climate vulnerability assessment, conducting the small water system inventory, engaging communities, and identifying practical resilience actions.

An Advisory Group composed of regional water agencies, including CVWD, CWA, DWA, IWA, MSWD, wastewater agencies, and community-based organizations provided technical guidance at key decision points and helped align the CVRWRP with ongoing water management, groundwater sustainability, water quality, and resilience initiatives throughout the Coachella Valley.

Equally important, community members, Tribal representatives, and local organizations contributed direct input through workshops, surveys, community events, and planning sessions, shaping the implementation actions included in the Plan.

Figure 2 CVRWRP Leadership



2.5 CVRWRP Vision and Goals

The CVRWRP Vision and Goals were developed and refined throughout the planning process by the Core Team, incorporating input from community members, local agencies, technical experts, and other interested parties.





We envision a community where all residents have reliable access to clean, safe, and affordable water. Our region is prepared for climate extremes and can bounce back when flooding and heat events occur. We have social networks and natural and built infrastructure that support long-term human and ecological health. We will achieve resilience by centering community needs through inclusive planning and locally driven solutions.

CVRWRP Goals

The CVRWRP Goals were developed and revised throughout the CVRWRP planning process, to best represent community vision for water resilience.

Build Physical and Nature-Based Connections

Upgrade groundwater well and water delivery systems to improve wellhead protection, water pressure, reliability, and storage capacity for small water systems. Improve our physical infrastructure to store, move, and share water more flexibly and integrate innovative nature-based strategies.

Address Water Quality Needs

Prioritize actions that improve access to clean water. Reduce presence of contaminants in delivered groundwater supplies, and address taste, odor, and discoloration concerns.

Expand Local Water Access

Reduce reliance on bottled water and improve trust in tap water quality through transparent communication and assistance programs. Manage imported water to sustain and enhance local groundwater resources.

Be Ready

Prepare for more intense climate threats, including more severe and frequent droughts, wind, wildfire, precipitation, floods and heat events. Improve onsite infrastructure and preparedness planning and improve communications, recovery strategies, and adaptive management to weather these evolving hazards.

Enhance Community Contributions

Provide residents with water treatment technologies and water quality information to actively participate in resilience planning and decision-making. Actively listen to all perspectives and prioritize solutions that address the needs of vulnerable community members.

2.6 Community Engagement and Relationship-Driven Planning

2.6.1 Building a Community-Informed Resilience Plan

Community engagement was a foundational element of the CVRWRP. Engagement activities were designed to ensure that the experiences, concerns, and priorities of eastern Coachella Valley residents, Tribal communities and community-based organizations directly informed the vulnerability assessment, resilience strategies, and implementation actions. The outreach process emphasized meeting community members where they are, providing culturally relevant engagement opportunities, and creating multiple pathways for participation.

Community Vision for Resilience

"Clean healthy drinking water, safe for cooking, drinking and bathing."

"Filtered water for all homes."

"To be able to drink the water without any health problems."

"Happiness and peace of mind that my family will not get sick because of the water conditions."

Our Approach

The CVRWRP employed a multi-faceted engagement strategy that combined community events, surveys, site visits, workshops, and input sessions. Outreach activities included community pop-ups at events such as Tribal Fiesta and GANAS de Fiesta (GANAS), participation in the DACs Infrastructure Task Force, more than 120 site visits to small water systems and domestic wells, bilingual surveys, community workshops, and dedicated planning input sessions. Collectively, these efforts engaged more than 170 community members and over 25 organizations while generating more than 150 survey responses.

What We Heard

The outreach process provided a detailed understanding of community water challenges, climate concerns, and resilience priorities. Water quality emerged as the dominant concern across virtually all engagement activities. Community members consistently described concerns regarding arsenic contamination, odor and taste issues, water discoloration, skin irritation, and reliance on bottled water because of concerns about drinking water safety. These concerns were reinforced through surveys, discussions during community events, and observations during site visits.

Survey responses demonstrated that residents associate resilience with having clean and safe water. Residents desire water that is safe to drink, cook with, and use every day. Participants repeatedly emphasized that they do not want to depend on bottled water or household treatment systems to feel secure.

Most Frequently Reported Water Challenges

- Arsenic contamination and concerns about drinking water safety
- Low water pressure affecting household use
- Odor, taste, and smell issues
- Water discoloration
- Health concerns, including skin irritation
- Reliance on bottled water due to lack of confidence in tap water quality

Priority Climate & Water Concerns

Community surveys and outreach activities revealed widespread concerns regarding drinking water quality, reliability, and affordability, that are all exacerbated by climate change. Residents described both visible and experienced water quality issues that affect daily life and contribute to ongoing concerns about health and safety. Many residents indicated that bottled water has become a necessity rather than a choice, reflecting broader concerns about water system reliability and trust in existing drinking water supplies. Community members repeatedly emphasized a desire for water that is safe to drink, cook with, and use without fear of negative health impacts.

Community Engagement

4
Community Pop-Ups Hosted

- April 14, 2025 GANAS de Fiesta (PUCDC)
- April 26, 2025 Tribal Fiesta (PUCDC)
- December 6, 2025 Tribal Fiesta (TMDCI)
- January 21, 2026, Disadvantaged Communities Infrastructure Task Force (DACITF) meeting

Coordinate Accessible Events and Invite Meaningful Participation

25+
Community Organizations Engaged

2
Community Workshops

2
Planning Input Sessions

Actively Listen to Community Needs and Priorities

150+
Survey Responses

120+
Small Water System Site Visits Conducted

170+
Community Members Engaged

Provide Resources and Tools to Community Members

150
Activity Books and Brochures Distributed

80+
Conservation Kits Distributed

Water Fair
Co-Hosted with Ganas


April 2025 Ganas de Fiesta Popup


July 2026 Input Sessions


December 2025 Tribal Fiesta

From Community Input to Resilience Actions

What Actions Matter Most to Residents?

Engagement outcomes directly informed development of the CVRWRP adaptation strategies and resilience actions. Residents identified priorities that extended beyond infrastructure investments alone, including improved communication, increased access to technical assistance, affordable water solutions, household filtration options, and stronger support for DACs and small water systems. Survey responses demonstrate that residents are looking for practical, community-centered solutions that improve water quality, strengthen infrastructure, and increase access to reliable and affordable water supplies. Participants consistently prioritized actions that address immediate water needs while building long-term resilience to climate change.

Top Community Priorities

Residents also expressed strong interest in household-scale solutions, including filtration systems, improved treatment technologies, and access to alternative water sources where existing supplies are unreliable. Priorities include:

- Improve and protect drinking water quality
- Upgrade aging wells, pipelines, and water infrastructure
- Expand access to safe and affordable water supplies
- Increase technical assistance and support for residents and small water systems
- Protect groundwater resources and natural water supplies
- Strengthen emergency preparedness and water system reliability
- Improve community communication and access to water-related information

Planning also involved water agency and government-focused input sessions involving 27 participants representing 16 organizations to refine community priorities and translate community concerns into implementable regional actions. Participants in these input sessions emphasized the need for policy and regulatory solutions, coordinated funding strategies, technical assistance programs, water system improvements, and expanded partnerships.

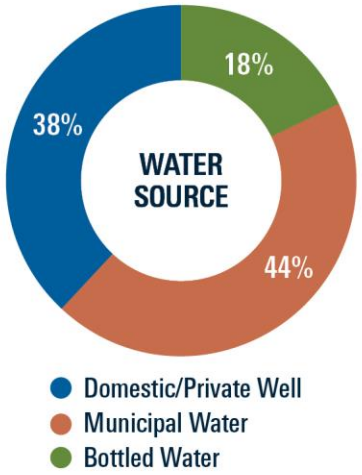
Lessons Learned and Keys to Meaningful Engagement

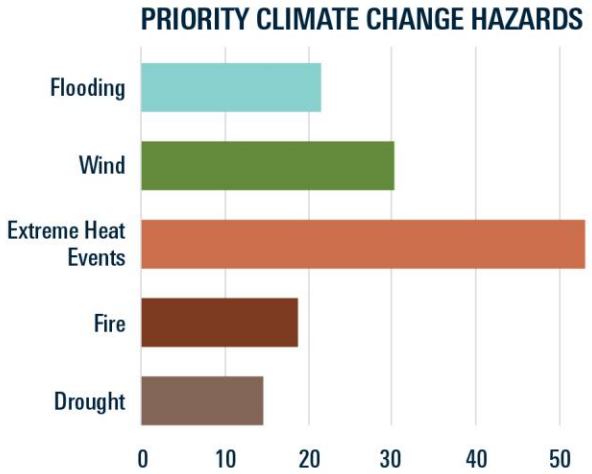
Several important lessons emerged from the engagement process. First, meaningful engagement requires sustained presence in communities and partnerships with trusted local organizations and Tribal governments. Collaboration with organizations such as GANAS and Tribal partners helped build trust and expand participation. Second, residents are eager to engage when conversations focus on tangible community needs and implementation opportunities rather than policy concepts. Third, combining technical assessments with lived experience results in a more complete assessment of water system vulnerabilities and community resilience needs. Community members expressed a strong desire to see tangible improvements and ongoing communication regarding implementation efforts, funding opportunities, and project progress.

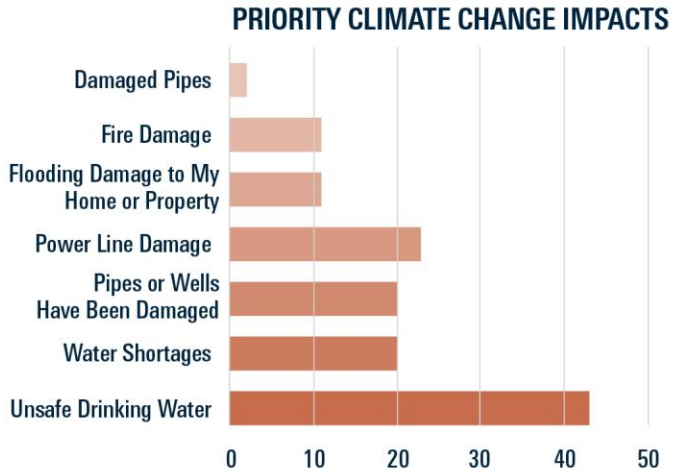
A defining outcome of the CVRWRP engagement process is the transition from planning to implementation. Community members consistently emphasized the need for measurable improvements in drinking water reliability, water quality, and community resilience. As the CVRWRP advances into implementation, engagement findings will continue to inform project prioritization, implementation roadmaps, partnership development, and future investments. Long-standing efforts such as point-of-entry treatment installations, small water system improvements, technical assistance programs, and regional resilience initiatives demonstrate how community input is actively being translated into actions that directly address identified needs and priorities.

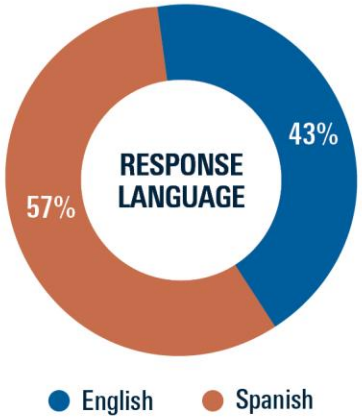
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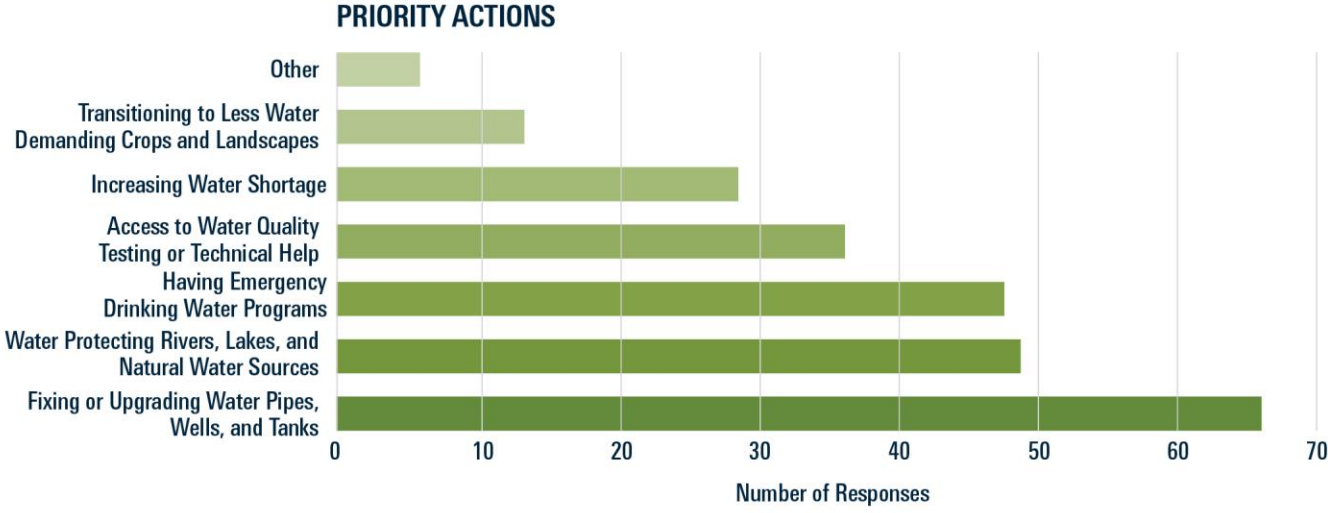
CLIMATE RESILIENCE PRIORITIES











3 Planning Context and History of Climate Change

3.1 Water Resources and Management in the Region

The Coachella Valley relies on an interconnected water supply system that relies on imported water infrastructure and groundwater management infrastructure to replenish aquifers and provide water directly to homes, businesses and agriculture. The system is supported by both natural and built infrastructure, including the Whitewater River and the Indio and Mission Creek Subbasins of the Coachella Valley Groundwater Basin and other smaller aquifers, imported water supplies, recycled water and wastewater treatment facilities, and an extensive network of wells, recharge facilities, canals, pipelines, and pump stations.

Located within the Colorado Desert, the Coachella Valley faces unique water management challenges associated with minimal natural precipitation and recharge, naturally-occurring constituents causing water quality concerns, population growth, agricultural demand, climate variability, extreme weather events, and aging infrastructure. These pressures affect every component of the region's highly connected water system and require ongoing coordination among water agencies, Tribal governments, regulatory agencies, and community partners. Through a diverse portfolio of water supplies, groundwater replenishment programs, recycled water projects, flood management infrastructure, and water quality initiatives, the region has developed an integrated approach to managing water resources.

Climate Change and Water

A diverse set of water resource systems support communities, ecosystems, and working lands throughout the region.

Ecosystems

The interconnected terrestrial and aquatic habitats, species, and ecological processes that support biodiversity, ecosystem functions, and the natural resources upon which communities depend.

Flood Management

The natural and engineered systems, practices, and infrastructure that manage stormwater and flood flows to reduce risks to people, property, critical infrastructure, and natural resources.

Tribal and Cultural Resources

The lands, waters, cultural landscapes, traditional knowledge, sacred sites, and natural resources that hold cultural, historical, and spiritual significance for Tribal Nations and local communities.

Water Supply

The surface water, groundwater, imported water, recycled water, and supporting infrastructure systems that provide reliable water for communities, agriculture, ecosystems, and economic activities throughout the Coachella Valley region.

Groundwater Management

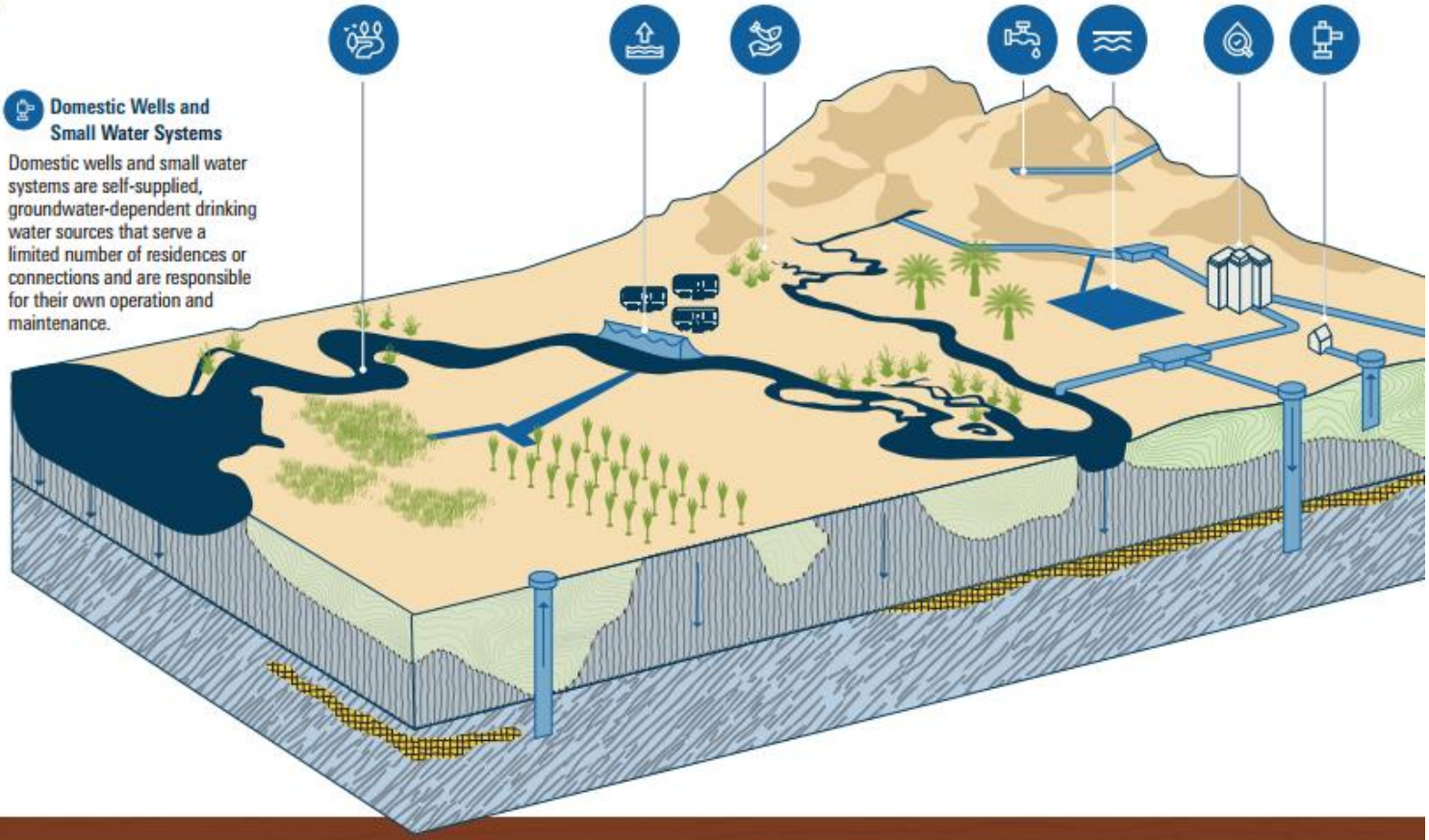
The sustainable management of groundwater resources through recharge, storage, extraction, monitoring, and conservation practices that support long-term water reliability and basin health.

Water Quality

The physical, chemical, and biological characteristics of surface water, groundwater, and recycled water that influence their suitability for drinking water, agriculture, ecosystem health, recreation, and other beneficial uses.

Domestic Wells and Small Water Systems

Domestic wells and small water systems are self-supplied, groundwater-dependent drinking water sources that serve a limited number of residences or connections and are responsible for their own operation and maintenance.



CLIMATE CHANGE WILL IMPACT WATER SYSTEMS AND COMMUNITIES IN COACHELLA VALLEY IN A VARIETY OF IMPORTANT WAYS:

Water Supply and Reliability

- Decreased deliveries of State Water Project and Colorado River water supplies due to scarcity across the West
- Increased demands resulting in groundwater depletion risks
- Increased evapotranspiration rates leading to higher outdoor and agricultural water use
- Increased reliance on groundwater during drought periods
- Wind-driven electrical line damage leading to power outages and water access issues

Infrastructure, Water Quality and Public Safety

- Increased runoff resulting from extreme precipitation events and associated flooding and damage to vital infrastructure
- Damage to water conveyance infrastructure from flooding events
- Increased risk of sediment, pesticides, and nutrients in water bodies due to elevated runoff rates
- Shifts in groundwater quality, including changes in contaminant concentrations due to altered recharge patterns and drought
- Impacts to public health and safety during storm events

Habitat and Ecosystem Health

- Increased vulnerability of habitats and species to temperature increases
- Increased vulnerability of vegetation and wildlife to invasive species
- Increased risk of habitat degradation

3.1.1 Water Supply

The Coachella Valley's municipal water supply is directly dependent on groundwater, while imported Colorado River supplies, exchanged State Water Project supplies, and recycled water play a critical role in groundwater replenishment, overdraft reduction, and long-term water supply reliability. There are five water purveyors in the area, with CVWD serving the largest population in the Coachella Valley, providing potable, recycled, and agricultural water supplies across much of the region and managing key groundwater replenishment and flood-control infrastructure. Groundwater is the primary source of potable municipal supply in the Coachella Valley, with all urban water demands currently served from the Indio and Mission Creek Subbasins. A network of wells, groundwater infrastructure, treatment plants, reservoirs, storage tanks, canals, aqueducts, pipelines, and pump stations work together to move water from its source to the communities and landscapes that depend on it

Urban water supply in the valley remained relatively stable between 2020 and 2025, ranging from about 164,000 to 179,000 AFY, with a regional low in 2023 followed by a rebound to approximately 174,000 AF in 2024 and 2025. Groundwater accounts for nearly all urban supply, and CVWD is the region's largest urban supplier, providing well over half of the total. Despite annual fluctuations, urban supply has not shown sustained growth since 2020. At the same time, non-urban, non-potable water use is more than twice the volume of urban supply, driven overwhelmingly by agricultural and golf irrigation, which together account for approximately 97% of reported non-urban demand. In 2025, total non-urban non-potable use was 385,121 AF.

Although groundwater is the primary source of potable water delivered to customers, the long-term reliability of the basin is heavily dependent on imported Colorado River and exchanged State Water Project supplies that are used to replenish groundwater storage and offset historical overdraft. CVWD receives Colorado River water through the Coachella Canal and, under existing agreements, has access to approximately 459,000 AF per year of Colorado River supplies through 2050 (CVWD 2026). These supplies are used primarily for agricultural irrigation, landscape irrigation, groundwater recharge, and other non-potable purposes rather than direct municipal delivery. CVWD and DWA also hold State Water Project entitlements totaling up to 138,350 AF per year and 55,750 AF per year, respectively, of Table A water through a combination of contracts and transfers. Because the Coachella Valley has no direct connection to the SWP, CVWD exchanges this water with Metropolitan Water District and uses the resulting supplies for groundwater recharge at the Whitewater River and Mission Creek recharge facilities. Imported supplies are conveyed to four groundwater replenishment facilities within the Valley, where water is recharged into the aquifer and later recovered through municipal production wells.

Recycled water is another important component of the regional water portfolio. In 2025, CVWD delivered approximately 3,463 AF of recycled water, primarily for golf course and landscape irrigation, helping reduce groundwater pumping and support long-term aquifer sustainability (CVWD 2026). Advanced-treated recycled water produced by Valley Sanitary District and distributed by the Indio Water Authority is not currently used for groundwater recharge, but East Valley Reclamation Authority (EVRA) plans to add tertiary treatment to the VSD WRF to allow for recycled water deliveries.[2] By 2035, the plant will be capable of producing up to 1,120 AFY of recycled water suitable for beneficial use from 2035 through 2050.

Water conservation and demand management programs implemented by regional water agencies also play an important role in maintaining water supply reliability and reducing groundwater demand. Water resources are managed collaboratively by CVWD, CWA, DWA, IWA, MSWD and Myoma Dunes Mutual Water Company. Water supply reliability is closely linked to climate variability, groundwater conditions, and the availability of imported water for recharge and direct use, particularly during drought periods.

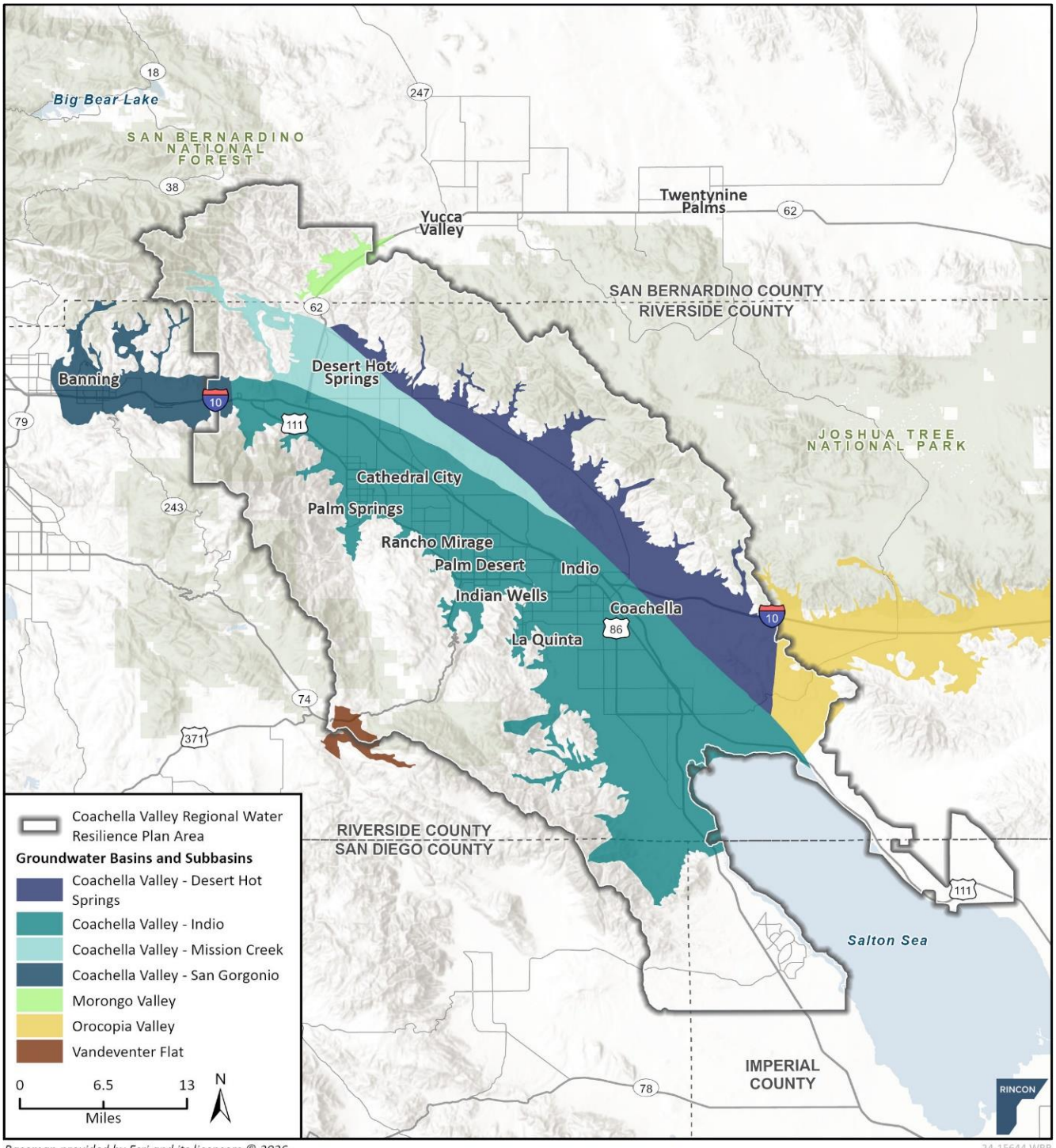
[2] See *Project Management Action 18: EVRA Recycled Water Delivery* in the Indio Subbasin 2027 Alternative Plan

3.1.2 Groundwater

Bordered by the San Bernardino mountains to the north and the Salton Sea to the south, the Coachella Valley is underlain by the Coachella Valley Groundwater Basin. The Coachella Valley Groundwater Basin is divided by local geologic faults into four distinct subbasins, including the Indio Subbasin, Mission Creek Subbasin, Desert Hot Springs Subbasin, and San Gorgonio Pass Subbasin. See Figure 3. Groundwater management addresses a large system of aquifers, natural infiltration processes, groundwater recharge and extraction infrastructure, and sustainability management actions.

In 1964, the California Department of Water Resources (DWR) estimated that the Coachella Valley Groundwater Basin contained approximately 39.2 million AF of groundwater within the upper 1,000 feet of the Basin, much of which originated as runoff from the surrounding mountain watersheds. Approximately 29.8 million AF was stored within the Indio Subbasin alone. Over subsequent decades, groundwater levels declined as pumping to support urban growth, agriculture, and rural development exceeded the Basin's natural recharge capacity. While general groundwater levels in the Valley reached historic lows in 2009, overdraft of the Mission Creek and Indio Subbasins has stopped due to adaptive management practices (Indio, Mission Creek GSAs 2022). As a result of monitoring, source substitution, recharge efforts and other planning and management actions, the region is moving toward achieving long-term groundwater sustainability. (Indio, Mission Creek GSAs 2022)

Figure 3 Coachella Valley Groundwater Subbasins



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Additional data provided by CPAD, 2025; NHD, 2024; DWR, 2024. CA State Geoportal, 2023.

24-15644 WRP
Fig 2 Groundwater Basins

These improvements are largely attributable to significant investments in groundwater replenishment programs, including the direct recharge of imported water at groundwater replenishment facilities, expanded water conservation and efficiency measures, and projects that utilize imported water supplies for irrigation to reduce groundwater pumping demands. These long-term investments have strengthened regional water supply reliability, and demonstrate the critical role of recharge, conservation, and water supply diversification.

Building on decades of groundwater management efforts and further accelerated by the passage of SGMA in 2014, regional water agencies have invested in a diverse portfolio of projects and programs to improve basin conditions, reduce overdraft, enhance water quality, and increase water supply resilience. These efforts include imported water conveyance and recharge infrastructure, managed aquifer recharge facilities, recycled water systems, water conservation programs, and source-substitution projects that reduce dependence on groundwater pumping (Indio GSA, Mission Creek GSA 2022).

Groundwater conditions are actively monitored and managed through a network of local, Tribal, regional, and state programs designed to support long-term groundwater sustainability. Management responsibilities are shared among the Groundwater Sustainability Agencies and partner agencies, in coordination with Tribal governments and Tribal water resource departments that manage groundwater resources within their respective jurisdictions. Groundwater conditions are tracked through the Indio and Mission Creek groundwater monitoring networks, the Coachella Valley Salt and Nutrient Management Plan monitoring program, and the Replenishment Assessment Charge metering and groundwater accounting system. These programs collect information on groundwater levels, water quality, pumping, recharge, and overall basin conditions and are used to evaluate progress toward sustainability goals. While groundwater conditions in the Coachella Valley have improved substantially through decades of proactive management, climate change is expected to increase long-term pressures on the basin by reducing the reliability of imported water supplies, altering runoff patterns that contribute to natural recharge, increasing evapotranspiration, and increasing water demands during hotter and drier conditions.

3.1.3 Flood Management

The Coachella Valley is characterized by a highly variable hydrologic system. Annual precipitation ranges from more than 40 inches in the San Bernardino Mountains to less than 3 inches near the Salton Sea, creating a mountain to desert drainage system (CVIRWM 2018). Stormwater originates from snow melt or precipitation events in the surrounding San Bernardino, Little San Bernardino, San Jacinto, and Santa Rosa Mountains, which then travels down the Whitewater River, Mission Creek, and other tributaries to flow toward the valley floor and ultimately southeast toward the Salton Sea. While surface waterways throughout much of the valley floor are typically dry, seasonal storm events can produce significant runoff and flash flooding. Flooding in the Coachella Valley is often associated with alluvial fans and wash systems where floodwater can carry significant sediment and debris and may shift flow paths during storm events.

Flood risk management in the Coachella Valley is led by CVWD and supported by the Riverside County Flood Control and Water Conservation District, while cities lead localized flood management within municipal boundaries. Flood risk reduction is achieved through regional stormwater channels, washes, levees, debris basins, alluvial fans, and mountain-front recharge areas that help spread and infiltrate flood flows while reducing downstream flood hazards (CVRWMG 2018, CVWD 2026). Major washes and stormwater corridors also provide important groundwater recharge benefits, linking flood management with long-term water supply resilience.

CVWD protects approximately 596 square miles through a regional network of 19 stormwater protection channels and approximately 173 miles of flood-control infrastructure (CVWD 2026). The backbone of this system is the approximately 49-mile Whitewater River/Coachella Valley Stormwater Channel, which conveys runoff from the Whitewater area north of Palm Springs southeast toward the Salton Sea. Together with levees, dikes, and debris-control facilities, this system protects communities,

transportation corridors, agricultural lands, and critical infrastructure from periodic flash flooding and debris flows.

While significant planning efforts have taken place to mitigate flood risk, floodwaters still pose a significant risk to various communities throughout the greater Coachella Valley. To address these risks, CVWD has conducted regional stormwater planning efforts, including the Coachella Valley Stormwater Master Plan (CVWD 2018) and focused studies in North Cathedral City and Thousand Palms, to identify future drainage facilities, reduce flood depths, protect developing areas, and improve connections to the regional flood-control network. As growth continues and climate change increases the likelihood of more intense storm events, coordinated flood management, land-use planning, and strategic infrastructure investment will remain critical to protecting communities and supporting regional resilience.

3.1.4 Ecosystems

Although the region is characterized by an arid climate, water plays a critical role in sustaining desert ecosystems, including desert fan palm oases, mesquite woodlands, sandy dry washes, and dunes. The diversity of ecosystems can be attributed to the large range of elevation, temperature, and precipitation patterns that exist across the Coachella Valley. These habitats provide important ecological functions including groundwater recharge, flood attenuation, water quality protection, carbon storage, and habitat for native wildlife. Mountain canyons and riparian washes create interconnected ecological corridors that bridge the mountains to the valley floor. These landscape features support the movement of wildlife, transport water and sediment, replenish groundwater, and provide habitat for sensitive and endemic species. Groundwater dependent ecosystems have also become a hotspot for biodiversity. Natural springs, seeps and palm oases along with mountain front provide refuge, food, water, and breeding habitat in an otherwise harsh environment. (CVRWMG 2018, Coachella Valley Conservation Commission [CVCC] 2016)

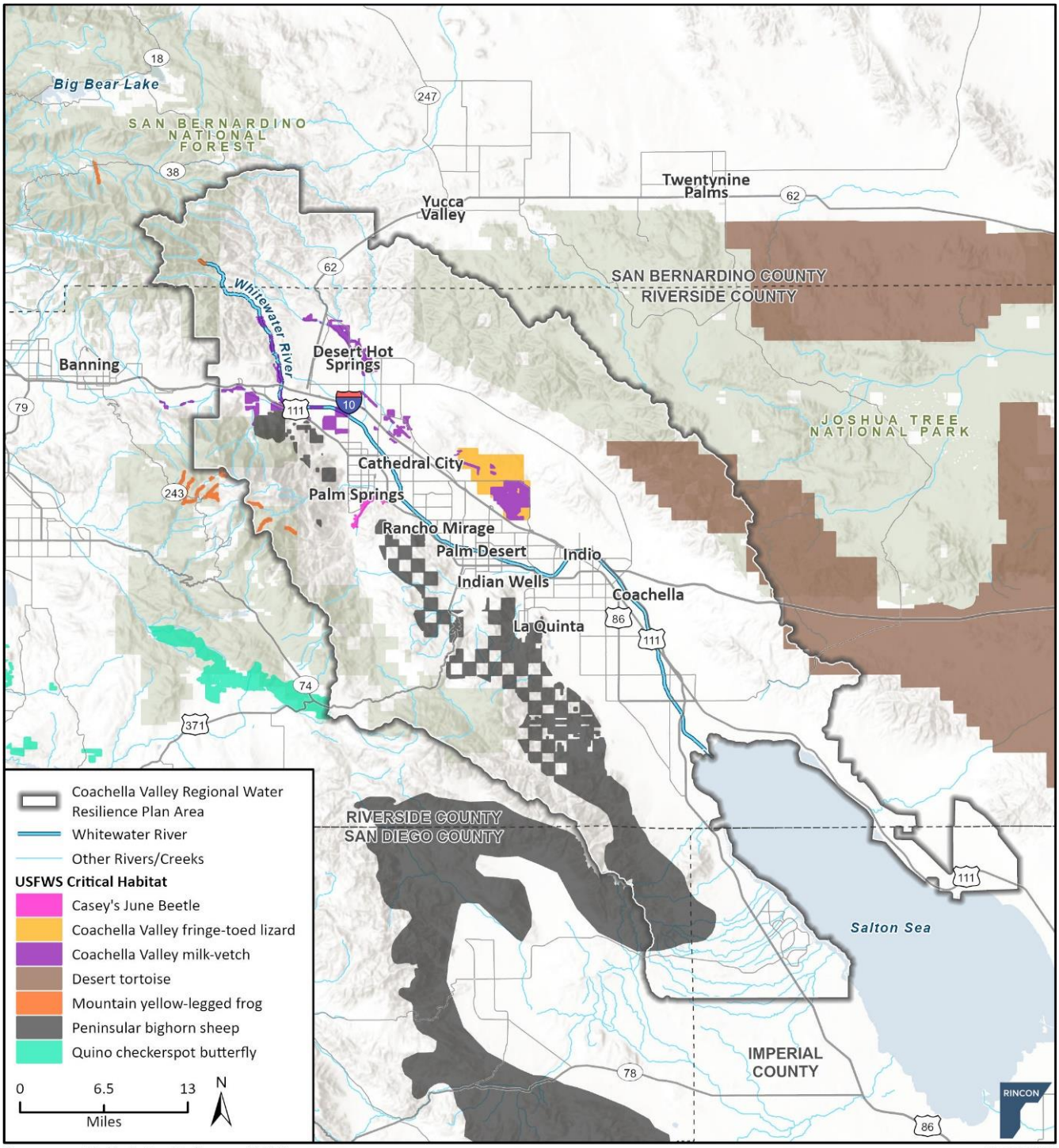
In addition to supporting diverse desert ecosystems, the planning area contains extensive areas designated as critical habitat by the U.S. Fish and Wildlife Service (USFWS) for several federally listed species. Critical habitat occurs throughout the region, including areas associated with the Whitewater River corridor, alluvial fans, desert washes, dune systems, and the foothills surrounding the Coachella Valley. Designated habitats support species such as the Coachella Valley fringe-toed lizard, Casey's June beetle, Coachella Valley milk-vetch, desert tortoise, mountain yellow-legged frog, and Peninsular bighorn sheep, many of which depend on the hydrologic functions and ecological connectivity provided by desert wash systems. See Figure 4.

UCR PARC Toolkit

The University of California, Riverside's Prioritization, Adaptation, and Resilience for Communities (PARC) Toolkit is an online mapping tool that helps identify areas where climate adaptation investments, like carbon sequestration initiatives, can provide multiple benefits for both communities and natural systems. The Toolkit can help prioritize projects that enhance groundwater dependent ecosystems, desert washes, riparian corridors, and wildlife movement pathways. More information can be found here: https://www.resilientcoachella.ucr.edu/web-tool

The Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP), administered by the Coachella Valley Conservation Commission, represents one of the region's most significant long-term conservation initiatives (CVCC, 2026). The plan provides a framework for balancing continued economic growth with protection of the Coachella Valley's unique natural resources by conserving approximately 240,000 acres of open space and protecting 27 plant and animal species. The CVMSHCP focuses on preserving and managing critical habitats, ecological processes, wildlife movement corridors, and sensitive desert ecosystems while providing a streamlined approach to environmental compliance for infrastructure and development projects. Many of these habitats are directly or indirectly influenced by water availability, groundwater conditions, sediment transport processes, and floodplain dynamics. As a result, changes in groundwater levels, altered runoff patterns, increasing temperatures, habitat fragmentation, and more frequent climate extremes have the potential to impact both habitat quality and species movement throughout the region.

Figure 4 Ecologically Sensitive Areas and Habitats



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Additional data provided by CPAD, 2025; NHD, 2024; DWR, 2024. USFWS, 2026.

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Fig 3 Sensitive Habitat and Ecologically Sensitive Areas

3.1.5 Tribal and Cultural Resources

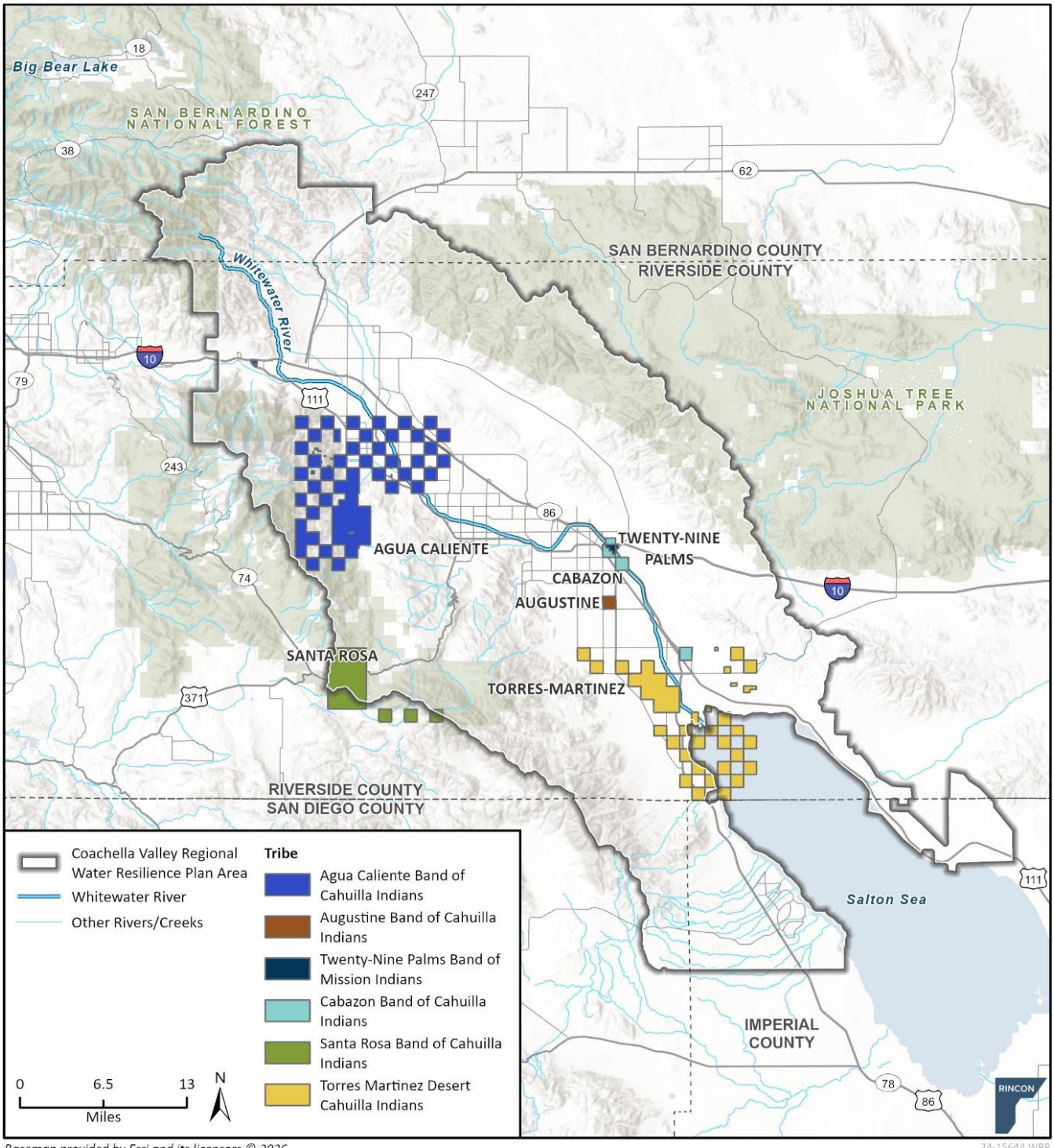
Indigenous cultural resources include the lands, waters, springs, flora, fauna, and cultural practices that support traditional and contemporary Tribal way of life. The Whitewater River watershed lies within the traditional homeland of the Cahuilla people. Present day Tribal Governments with ancestral, cultural, or geographic ties to the region include the Agua Caliente Band of Cahuilla Indians, Augustine Band of Cahuilla Indians, Santa Rosa Band of Cahuilla Indians, TMDCI, Cabazon Band of Cahuilla Indians, Morongo Band of Mission Indians, and Twenty-Nine Palms Band of Mission Indians. See Figure 6. For thousands of years, Indigenous peoples established villages, ceremonial areas, travel routes, resource gathering areas, and seasonal settlements throughout the mountains, canyons, alluvial fans, springs, and valley floor. Lifeways were closely connected to water resources, including natural springs, seeps, creeks, and groundwater-fed oases that supported agriculture, food gathering, trade, ceremony, and community life. Springs, palm oases, mountain canyons, and riparian corridors, including places such as Tahquitz Canyon and Andreas Canyon, among others, have supported Indigenous communities for millennia. See Figure 5. Historical records and Tribal histories describe sophisticated stewardship practices including the construction of irrigation ditches, use of seasonal water sources, cultivation of crops, and harvesting of mesquite, acorns, agave, yucca and pinyon pine nuts. These practices helped sustain communities while maintaining reciprocal relationships with the surrounding environment. (Agua Caliente Band of Cahuilla Indians 2026, Cahuilla Band of Indians 2026, Cabazon Band of Mission Indians n.d., Twenty-Nine Palms Band of Mission Indians 2026)

Figure 5 Andreas Canyon



Despite centuries of displacement, colonization, and attempted cultural suppression, Tribal Nations continue to serve as active stewards of the lands and waters of the Coachella Valley. Tribal governments and their environmental departments, along with the Tribal Historic Preservation Offices, play an important role in protecting cultural resources, restoring habitat, managing water resources, and advancing climate resilience initiatives in the Coachella Valley.

Figure 6 Federally Recognized Tribes in the Coachella Valley



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Additional data provided by CPAD, 2025; NHD, 2024; DWR, 2024.

24-15644 WRP
Fig 4 Tribal Territories

3.1.6 Water Quality

Water quality must be considered for surface water, stormwater, groundwater, wastewater and recycled water resources, along with the associated infrastructure and monitoring programs. Water quality management supports drinking water reliability, groundwater sustainability, ecosystem health, agricultural productivity, and regulatory compliance.

Water quality conditions across the Coachella Valley are influenced by groundwater management, agricultural activities, urban runoff, wastewater management, imported water recharge, and naturally occurring geologic conditions. While groundwater from the Coachella Valley Groundwater Basin is generally of high quality and serves as the region's primary source of potable water, constituents of concern including nitrate, arsenic, and chromium-6 pose a challenge to some areas in the Coachella Valley, particularly for domestic well users. See Figure 7 for an overview of areas designated as having high amounts of constituents of concern, based on the EPA's contaminant level categories.

Leadership Council on Justice and Accountability

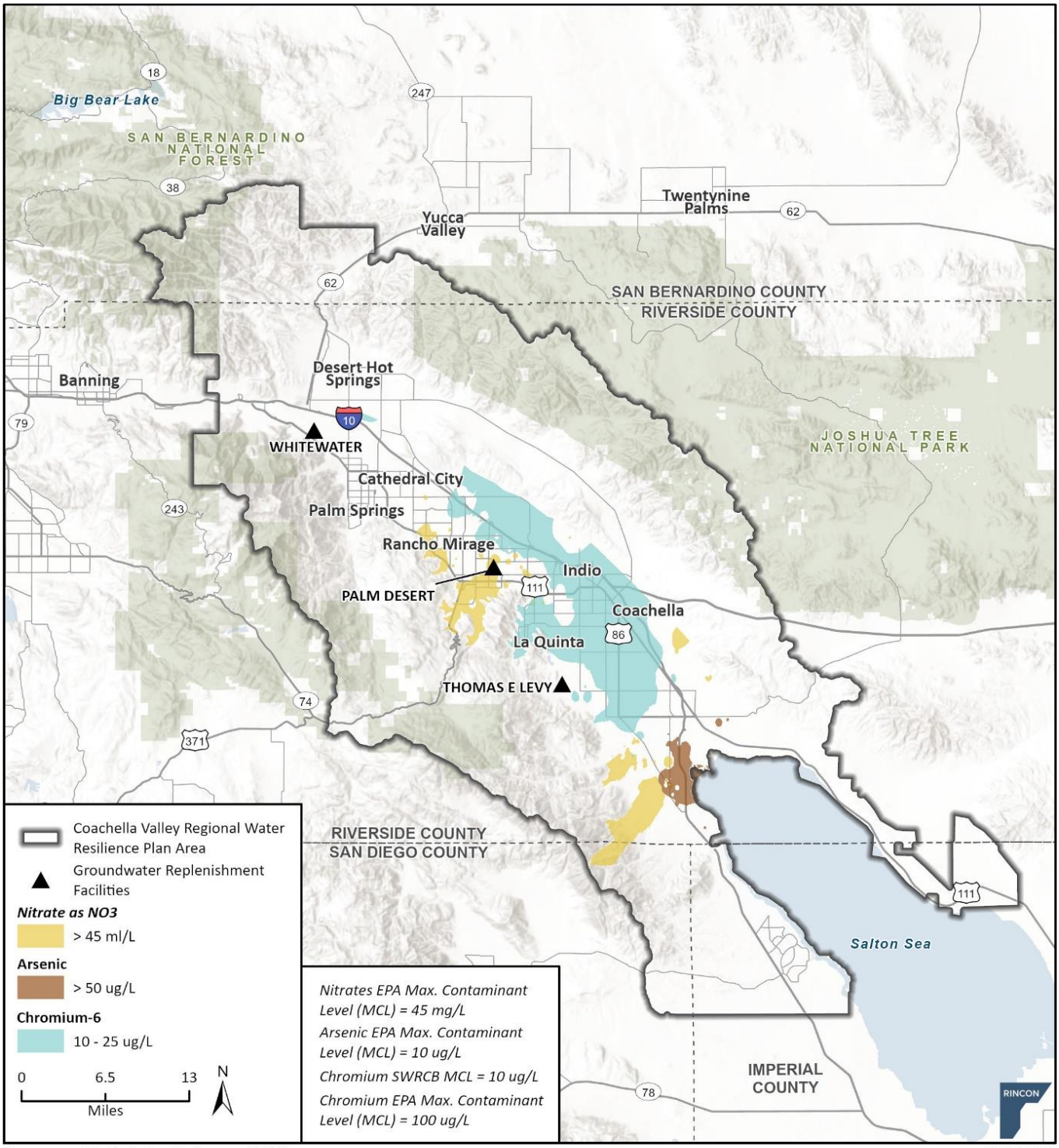
Through its community organizing, technical assistance, and policy advocacy efforts, LCJA has helped disadvantaged communities identify drinking water and wastewater challenges, connect residents with funding and technical resources, and advocate for infrastructure improvements that protect public health. LCJA has been particularly active in supporting communities facing challenges related to failing septic systems, drinking water contamination, inadequate drainage, and limited access to safe and reliable water services.

Groundwater levels and water quality are closely linked in the Indio and Mission Creek Subbasins. Higher groundwater levels help protect deeper drinking water aquifers by limiting the movement of contaminants and saline water. Conversely, groundwater pumping and declining water levels can alter groundwater flow patterns, allowing nitrate-contaminated water to migrate deeper into the aquifer and increasing the potential for saline water intrusion near the Salton Sea. Because groundwater depletion, salt accumulation, and water quality degradation are interconnected, declines in groundwater conditions can create additional water treatment challenges and increase risks to drinking water supplies. (Indio and Mission Creek Subbasin Groundwater Sustainability Agencies 2026)[3]. Recent changes to California's chromium-6 drinking water standard have further heightened regional concerns about water quality standards, with approximately half of municipal wells potentially requiring additional treatment to comply with the new 10 µg/L maximum contaminant level.

To protect water quality and maintain reliable drinking supplies, Coachella Valley's water purveyors have built a comprehensive network of monitoring, management, and infrastructure programs. Key initiatives include implementation of the Coachella Valley Salt and Nutrient Management Plan (CV-SNMP), septic to sewer conversion programs, groundwater monitoring through regional well networks and the Replenishment Assessment Charge (RAC), public education and outreach efforts, and stormwater quality protections implemented through the Whitewater River MS4 Permit program.

[3] Indio Subbasin Alternative Plan: www.IndioSubbasinSGMA.org
Mission Creek Subbasin Alternative Plan: www.MissionCreekSubbasinSGMA.org

Figure 7 Water Quality Challenges in the Coachella Valley



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Additional data provided by CPAD, 2025; NHD, 2024; DWR, 2024; TODD Groundwater, 2026.

24-15644 WRP
Fig 5 Water Quality - Overview

3.1.7 Domestic Wells and Small Water Systems

Independent well systems provide water to a large population within the Whitewater River watershed. Domestic wells and small water systems provide drinking water to rural residences, mobile home parks, Polanco parks, Tribal communities, and other areas not served by public water systems. These systems generally rely on self-supplied groundwater to serve a limited number of households. Unlike larger municipal systems, many domestic and small water systems depend on a single well and have limited redundancy, technical capacity, and financial resources. Domestic wells and small water systems are considered more vulnerable to changing groundwater conditions because many rely on a single water source and may lack backup wells, storage and pumping facilities, or emergency response resources. Concerns for small water systems include drinking water quality, flooding, water shortages, aging infrastructure, and power outages. These challenges may be compounded by climate-related changes in groundwater conditions, flooding, and extreme weather events.

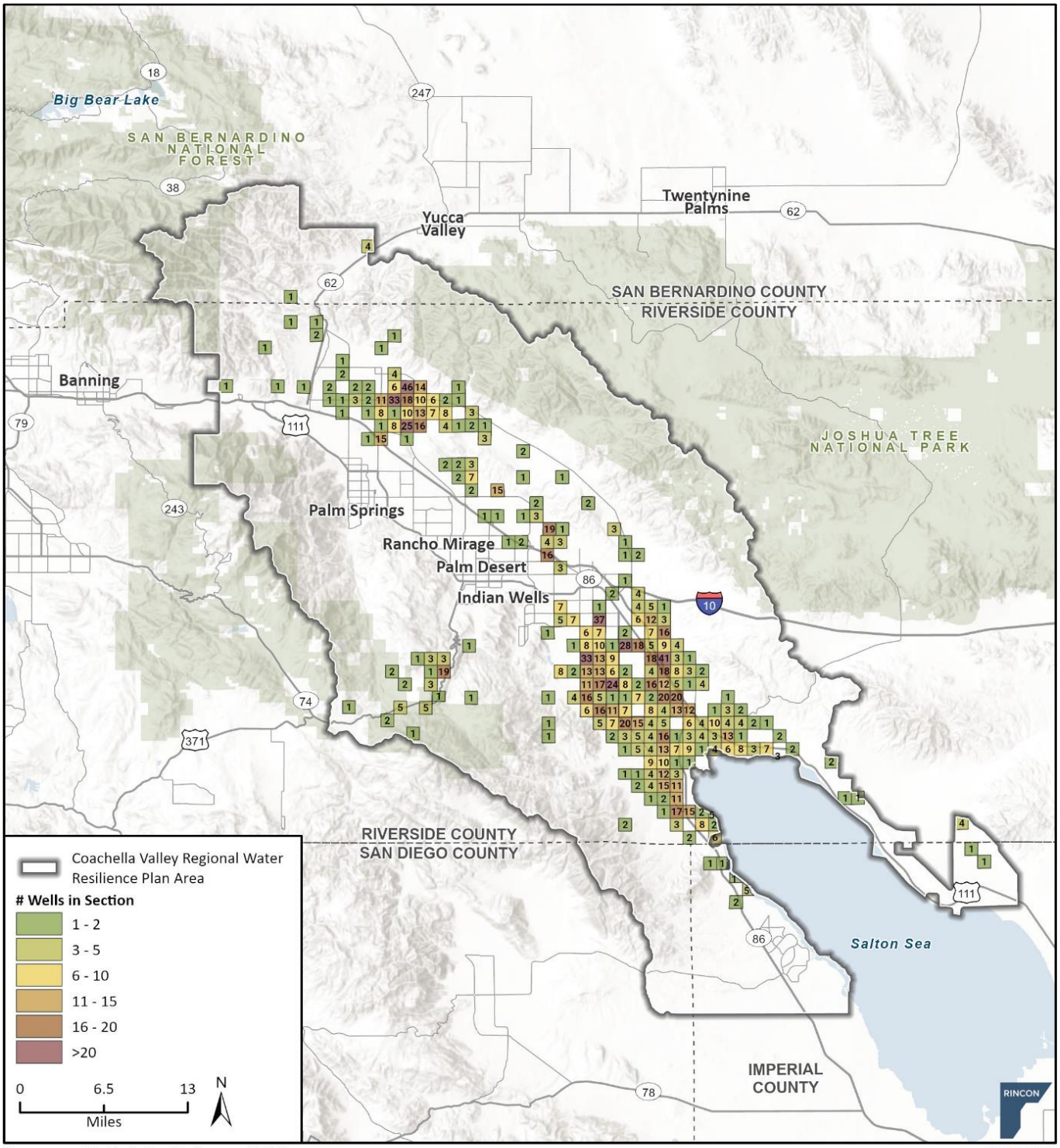
PUCDC and Community-Based Partnerships

PUCDC, in partnership with Riverside County Department of Environmental Health has helped connect residents to water, wastewater, drinking water quality, and domestic well assistance programs. PUCDC has supported efforts to identify vulnerable domestic well users, install water quality treatment systems, improve access to critical information, and inform regional planning and infrastructure investments.

Domestic wells and small water systems benefit from regional groundwater monitoring and management conducted by the region's water agencies through the Indio and Mission Creek Subbasin Alternative Plans and the CV-SNMP, including groundwater level monitoring networks and water quality monitoring programs. These monitoring efforts help identify changing groundwater conditions and inform basin management actions intended to protect groundwater users. **Error! Reference source not found.** shows t he concentration and location of domestic wells in the CVRWRP planning area.

Planning efforts such as the Eastern Coachella Valley Water Supply Plan and related consolidation studies have evaluated opportunities to improve long-term water reliability for groundwater-dependent communities. Strategies include connecting small systems to larger public water suppliers where feasible, consolidating neighboring systems, developing redundant or shared infrastructure, and implementing treatment technologies for communities where physical consolidation is not practical. These efforts seek to improve water quality, increase system reliability, and strengthen climate resilience while reducing disparities in access to safe and affordable drinking water.

Figure 8 Concentration of Domestic and Small Water System Wells in the Coachella Valley



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Additional data provided by CPAD, 2025; NHD, 2024; DWR, 2024.

24-15644 WRP
Fig 7 Well Grid

ROLE OF SMALLER WATER SYSTEMS in Regional Water Security



Domestic and small water system well infrastructure



Domestic and small water system well infrastructure

Domestic wells and small water systems (SWS) play a critical role in the Coachella Valley's water landscape, providing the primary source of drinking water for many residents outside municipal service boundaries, including Tribal communities, mobile home parks, Polanco parks, and rural households.

Domestic and Small Water System Inventory

The CVWRP Domestic and Small Water System Well Inventory identified 1,184 known domestic and small water system wells and estimated that approximately 1,500 sites throughout the Valley depend on groundwater, with the highest concentrations occurring in the Eastern Coachella Valley.

Aging Infrastructure and Vulnerability

Many of these systems rely on aging infrastructure—75% of wells with available construction records were drilled more than 20 years ago—and often lack the redundancy, monitoring, technical support, and treatment capabilities available to larger municipal systems

As a result, groundwater-dependent communities are particularly vulnerable to:

- Groundwater level declines
- Water quality contamination
- Flooding
- Power outages
- Other climate-related hazards

These challenges can directly impact drinking water reliability. Small water systems are important to community resilience.

Building Resilience Through Action Targeted Investments

Invest in infrastructure upgrades and system improvements for small water systems.

Technical Assistance

Provide training, resources, and capacity-building support for operators and communities.

Long-Term Planning

Develop and implement sustainable plans that address current needs and future challenges.

Safe & Reliable Supplies

Ensure vulnerable populations have consistent access to safe, clean drinking water.

Stronger Communities

Strengthen community resilience now and for generations to come.

By the Numbers

Small Water Systems. Big Impact.
Stronger Regional Water Security.

1,184

Known domestic and small water system wells identified by CVWRP inventory

~1,500

Estimated systems throughout the Valley dependent on groundwater

75%

Wells with available construction records dated more than 20 years ago

174

Estimated # of households served by domestic wells and small water systems

3.1.8 Governance of Regional Water Management

Water resilience in the Coachella Valley is supported through a complex governance structure that spans federal, state, Tribal, regional, and local institutions. Responsibilities for water supply, groundwater sustainability, flood management, water quality, ecosystem stewardship, and community health are shared among numerous agencies and organizations, reflecting the interconnected nature of the Valley's water resources as well as the complexity in effective governance. Local suppliers, including CVWD, DWA, MSWD, IWA, and CWA manage water supply, treatment, distribution, and investment of infrastructure to meet the growing needs of the region. Groundwater sustainability is coordinated through these agencies who also manage basin recharge, source substitution, and management projects and monitor conditions to maintain long-term reliability of the Coachella Valley Groundwater Basin. Domestic well owners are primarily responsible for maintaining and testing their own drinking water quality, while Riverside County Department of Environmental Health (DEH) oversees well permitting, collects and reports available water quality data, and supports local drinking water programs. The U.S. Environmental Protection Agency (EPA) establishes national drinking water standards and groundwater protection regulations, while the California State Water Resources Control Board (SWRCB) and Riverside County (County) use monitoring data to identify contamination risks and support programs that improve drinking water reliability for domestic well users and small water systems. The Bureau of Indian Affairs also supports Tribal water management, supported by the newly founded Agua Caliente Water Authority, which manages and regulates groundwater within the Agua Caliente Indian Reservation.[4]

Water quality protection, flood management, and regional planning are similarly coordinated across multiple levels of government. The SWRCB and Colorado River Basin Regional Water Quality Control Board (RWQCB) provide water quality regulatory oversight, while flood risk management is led by CVWD and the Riverside County Flood Control and Water Conservation District. Tribal governments, community-based organizations, conservation groups, and technical assistance providers play an important role in advancing water resilience throughout the Valley. Tribal Nations manage water resources, environmental programs, infrastructure, and cultural resources within their jurisdictions while participating in regional planning and groundwater management efforts. Organizations such as the Coachella Valley Conservation Commission, PUCDC, LCJA, Rural Community Assistance Corporation, and the Coachella Valley DACs Infrastructure Task Force help connect residents to planning processes, funding opportunities, technical assistance, and infrastructure improvements.

Historically, regional water planning and project implementation have been coordinated through the Coachella Valley Regional Water Management Group (CVRWMG), which provides a framework for collaboration among agencies, Tribes, and community organizations through the Coachella Valley Integrated Regional Water Management (IRWM) Program. As climate change, population growth, and aging infrastructure continue to place new pressures on the region, successful water resilience will depend on continued coordination across agencies, governments, Tribal Nations, and community partners to support integrated and equitable water management solutions.

3.2 Overview of Climate Hazards and Water Resource Systems

The climate hazards most likely to affect water systems, ecosystems, and communities throughout the Coachella Valley include drought, extreme heat, extreme precipitation, wildfire, and extreme wind. These hazards are expected to intensify under future climate conditions and can have compounding impacts on water supply reliability, groundwater resources, water quality, infrastructure performance, public health, and ecosystem function. While the Coachella Valley has long adapted to living in an arid environment, increasing temperatures, more variable precipitation patterns, prolonged droughts, severe wind events, and wildfire-related impacts present new challenges for communities, particularly those that rely on domestic wells, small water systems, and aging infrastructure. As a result, understanding how these

[4] Agua Caliente Water Authority: https://acwaterauthority.org/

hazards may affect both people and water resources is critical to developing effective resilience strategies and prioritizing investments that strengthen the region's ability to withstand, adapt to, and recover from future climate stresses.

3.3 History of Climate Impacts in the Region

The Coachella Valley has long experienced climate extremes characteristic of the California desert, including prolonged droughts, extreme heat, high winds, and episodic flooding. Over the past several decades, recurring drought conditions have reduced natural groundwater replenishment and increased reliance on imported supplies for recharge, while record-breaking temperatures have placed additional stress on water systems, infrastructure, ecosystems, and public health. The region has also experienced significant flood events associated with intense rainfall and tropical storm remnants, most notably Tropical Storm Hilary in August 2023, which caused widespread flooding, road closures, infrastructure damage, and service disruptions throughout Riverside County and the eastern Coachella Valley. High wind events regularly generate dust storms, reduce visibility, degrade air quality, and contribute to infrastructure disruptions. Wildfire impacts, although often originating outside the Valley itself, can affect water quality, ecosystem health, and transportation corridors through ash deposition, debris flows, and regional service disruptions. In addition, ongoing exposure of the Salton Sea playa has increased the potential for windblown dust and particulate matter emissions, contributing to air quality concerns across the eastern Coachella Valley and creating disproportionate health risks for DACs, farmworker populations, children, older adults, and residents with asthma, cardiovascular disease, and other underlying health conditions.

Flooding Impacts in the Pierce Community

The Pierce community in the eastern Coachella Valley has experienced recurring flooding challenges associated with intense rainfall, limited drainage infrastructure, and localized stormwater accumulation. During major storm events, including recent extreme precipitation events, floodwaters have affected roads, access routes, residential areas, and nearby domestic well and wastewater infrastructure, highlighting the community's vulnerability to increasingly intense rainfall and runoff. Based on community input gathered through the CVRWRP, flooding remains one of the most significant climate-related concerns affecting residents in the area.

The impacts of these climate hazards are not experienced equally across the region. DACs, Tribal communities, domestic well users, farmworker communities, and residents of mobile home parks often have fewer resources available to prepare for, respond to, and recover from extreme events. During periods of extreme heat, these households may face higher energy costs and limited access to cooling resources. Flooding can disproportionately affect communities with aging drainage infrastructure, unpaved roads, or limited emergency response capacity. Similarly, drought and groundwater quality concerns can be particularly challenging for residents who rely on domestic wells or small water systems that lack alternative water supplies, backup infrastructure, or operational redundancy.

Findings from the CVRWRP Domestic Well and Small Water System Inventory and community engagement process further illustrate these vulnerabilities. Residents reported concerns related to declining well performance, deteriorating water quality, low water pressure, and increasing reliance on bottled water because of concerns about drinking water safety.

3.4 Vulnerability Assessment Methodology

The CVRWRP vulnerability assessment applies a structured, state-aligned approach consistent with the California Adaptation Planning Guide (CalOES 2026), integrating climate modeling, community input, and field-based information on domestic wells and small water systems, community vulnerability data, and existing water supply planning information. This approach was designed to evaluate not only how climate hazards may change conditions, but also where those hazards intersect with infrastructure limitations, water quality concerns, reliance on domestic wells, and limited capacity to respond to emergencies.

3.4.1 CMIP6 Climate Data and Downscaling

Climate projections used in the CVRWRP were obtained from the Cal-Adapt Analytics Engine, which provides climate data developed for California's Fifth Climate Change Assessment (Governor's Office of Land Use and Climate Innovation [LCI] 2026a).[5] These datasets are derived from the Coupled Model Intercomparison Project Phase 6 (CMIP6), the latest generation of global climate models used to evaluate historical and potential future climate conditions. CMIP6 incorporates updated greenhouse gas pathways, known as Shared Socioeconomic Pathways, as well as improvements in climate-model physics and representation of global climate processes. For this assessment, the Shared Socioeconomic Pathways (SSP) SSP3-7.0 scenario was selected because it aligns with California's Fifth Climate Change Assessment, public utility planning standards, and the State Office of Land Use and Climate Innovation's recommended approach for regional planning. SSP3-7.0 represents a future with relatively high greenhouse gas emissions and limited progress on global climate mitigation, resulting in substantial warming and more pronounced changes in water resources and extreme weather patterns. (LCI 2026)

Because global climate models operate at spatial scales too coarse to fully represent the Coachella Valley's complex topography and localized climate patterns, the CVRWRP used downscaled climate projections. Downscaling translates global model results into finer-resolution information suitable for regional and local vulnerability analysis. The assessment used the LOCA2-Hybrid dataset and the five representative general-use CMIP6 models recommended for California's Fifth Climate Change Assessment (LCI 2026). Climate indicators were evaluated for the hazards most relevant to the Coachella Valley's water systems and communities, including drought, extreme heat, extreme precipitation and flooding, wildfire and fire weather, and extreme wind.

Additional projections were derived from CMIP6 datasets accessed through the Climate Metrics tools on Cal-Adapt, which is hosted by LCI (2026). Similar to the approach used in the Fifth Climate Change Assessment, this analysis uses a Global Warming Level (GWL) approach, which evaluates climate conditions at specific increments of global average temperature increases (rather than fixed calendar years). A GWL represents the point in time when the Earth reaches a defined level of warming relative to a historical baseline. Historical baseline was set at 0.8 degrees of warming by LCI, which is consistent with baseline conditions selected for climate planning globally. For this assessment, two thresholds were selected: 1.5°celsius (C) and 3.0°C of warming, which correspond approximately to mid- to late-century conditions (around 2024-2041 and 2060-2100, respectively, based on model averages) (LCI 2026).

Data Limitations

This assessment is informed by downscaled climate projections obtained from the Cal-Adapt Analytics Engine. While these datasets represent best-available science, limitations should be noted. Cal-Adapt Analytics Engine climate projections are based on global climate models that are statistically downscaled to better represent regional conditions. As with all climate modeling, results are subject to uncertainty related to future greenhouse gas emissions pathways, model structure, and natural climate variability. Downscaled outputs are most reliable for identifying trends and relative changes over time rather than

[5] Learn more here: https://lci.ca.gov/climate/icarp/climate-assessment/

predicting precise conditions at specific locations or dates. In addition, some operationally relevant variables (e.g., short-duration extremes or compound events) may not be fully captured at the temporal or spatial resolution required to assess local impacts.

3.4.2 Domestic Well and Small Water System Inventory

The climate analysis was paired with a detailed inventory and vulnerability assessment of domestic wells and small water systems (Appendix A). The inventory was developed to improve understanding of where vulnerable groundwater users are located, the types of systems on which they rely, and the groundwater level, water quality, infrastructure, and management challenges those systems may face. The process combined existing information from water agencies, community organizations, regulatory programs, and state well completion records with local knowledge and field surveys used to confirm well locations and fill identified data gaps.

The resulting inventory estimated that approximately 1,500 locations within the study area rely on self-supplied groundwater. Inventory findings were evaluated alongside information on groundwater levels and water quality. This allowed the assessment to identify locations where climate-related changes could compound existing vulnerabilities, including declining well performance, increased pumping or treatment needs, exposure to flooding, power-related service disruptions, and challenges responding to water quality contaminants.

3.4.3 Vulnerable Communities Platform

LCI's Vulnerable Communities Platform (VCP)[6] is a statewide tool designed to identify climate vulnerable communities for specific climate hazards (LCI 2026b). The VCP identifies social vulnerability by compiling a broad set of social, economic, and demographic indicators that reflect a community's ability to prepare for, respond to, and recover from climate hazards. The VCP evaluates vulnerability at the community scale (e.g., Census block groups, tracts, places, and ZIP codes) using percentile-based scoring. Each indicator (e.g., income, housing insecurity, disability, language barriers) is ranked relative to the rest of the state, and communities are assigned low, medium, or high vulnerability categories based on where they fall within statewide distributions. Indicators are grouped into thematic clusters such as basic needs (e.g., food, housing, transportation, utilities), social isolation, health risk, and demographic sensitivity (e.g., children, seniors, disability status). Scores are aggregated to produce an overall social vulnerability classification, which are then paired with climate hazard exposure consistent with CMIP6 models.

3.4.4 Imported Water Supply Impacts from Climate Change

The vulnerability assessment also considered the potential effects of climate change on imported water supplies. Imported water supports the Coachella Valley's sustainability strategy of reducing groundwater pumping, replenishing the groundwater basin, maintaining water supply reliability, and serving agricultural and urban demands. Potential reductions or increased variability in imported supplies could therefore affect both direct water deliveries and the region's ability to sustain groundwater recharge programs.

The methodology included review of DWR's State Water Project Delivery Capability Report and United States Bureau of Reclamation (USBR) 24-Month Study of the Colorado River Supplies, which projects future conditions based on historical conditions, to understand how changing precipitation patterns, more variable runoff, altered seasonal flows, sea-level rise, and operational constraints may affect future delivery capability (DWR 2025, USBR 2026). Rather than treating imported water projections as a precise forecast, the CVRWRP used this information to characterize a range of potential future supply conditions and assess their implications for regional resilience. The evaluation considered how reduced or more variable imported water availability could increase reliance on groundwater, constrain replenishment,

[6] Learn More here: https://vcp.lci.ca.gov/

heighten drought vulnerability, and increase the importance of conservation, recycled water, recharge, storage, demand management, and other supply diversification strategies.

3.5 Existing Local Planning Efforts

The Coachella Valley has a long history of water resources planning focused on maintaining water supply reliability and addressing groundwater overdraft. Regional concerns regarding declining groundwater levels emerged in the late 1900's as population growth, agricultural production, and urban development increased demands on local water resources. This prompted regional management by multiple agencies. In 2002, local water agencies adopted the Coachella Valley Water Management Plan (CVWMP), followed by a major update in 2010, to establish a coordinated framework for groundwater management, imported water use, groundwater replenishment, and water conservation. These efforts laid the foundation for subsequent groundwater sustainability planning under SGMA culminating in the development and ongoing implementation of the Mission Creek and Indio Subbasin Alternative Plans. Together, these planning efforts established a comprehensive approach to monitoring groundwater conditions, reducing overdraft, improving water supply reliability, and sustaining the Coachella Valley Groundwater Basin for future generations.

As regional water supply developed, planning efforts expanded beyond water supply reliability to address water quality, flood management, climate resilience, and regional coordination. The CVRWMG advanced the Coachella Valley IRWM Program to better coordinate projects and investments across jurisdictions, while the Stormwater Resource Plan and regional stormwater master planning efforts identified opportunities to reduce flood risk, improve stormwater capture, enhance groundwater recharge, and protect water quality. Additional initiatives such as groundwater monitoring programs, hazard mitigation planning, drought preparedness efforts, and regional climate adaptation initiatives further broadened the region's approach to resilience. See Table 1 for a summary of existing regional planning efforts.

While groundwater monitoring, basin management, and regional water planning have been active for decades, comparatively little information existed regarding the location, condition, and vulnerabilities of domestic wells and small groundwater dependent systems. To address these critical data gaps, CVWD partnered with PUCDC and the TMDCI to complete the Domestic Well and Small Water System Inventory and Vulnerability Assessment (see Appendix A). The inventory represents a significant advancement in understanding groundwater dependent communities throughout the Valley and provides the foundation for many of the vulnerability findings, adaptation strategies, and implementation actions identified in the CVRWRP.

Table 1 Summary of Regional Planning Efforts

Published Date	Plan/Program Name	Lead Agency	Water Resilience Focus Area	Primary Purpose
2026	CVAG Comprehensive Climate Action Plan	CVAG	Regional Climate Planning	Greenhouse gas reduction and climate resilience
2024	CVWD Hazard Mitigation Plan	CVWD	Hazard Resilience	Reduce risks to CVWD infrastructure and operations
2020s (Ongoing)	Eastern Coachella Valley Shade Master Plan	Riverside County/CVAG Partners	Extreme Heat Resilience	Address urban heat and public health vulnerabilities
2020s (Ongoing)	Eastern Coachella Valley Water Supply Plan & Consolidation Planning Project	CVWD and Partners	Drinking Water Reliability	Improve drinking water access and evaluate consolidation opportunities
2022 (Ongoing)	Mission Creek Subbasin Alternative Plan Update	Mission Creek GSAs	Groundwater Sustainability	SGMA Alternative Plan implementation and groundwater management
2022 (Ongoing)	Indio Subbasin Alternative Plan Update	Indio GSAs	Groundwater Sustainability	SGMA Alternative Plan implementation and overdraft reduction
2026	Coachella Valley Regional Urban Water Management Plan	CVRWMG	Regional Water Supply Planning	Coordinate regional water supply and reliability strategies
2020s (Ongoing)	Coachella Valley Salt and Nutrient Management Plan Update	Regional Water Agencies	Groundwater Quality	Protect groundwater quality and manage salts and nutrients
2018	Coachella Valley IRWM & Stormwater Resource Plan Update	CVRWMG	Regional Water & Stormwater Planning	Regional project prioritization and funding framework
2015 (Ongoing)	County of Riverside General Plan	Riverside County	Land Use Planning	Guide land use in Riverside County with updated policy goals
2015, 2018	Coachella Valley Stormwater Master Plan (Mecca-Northshore; Oasis Valley Floor)	CVWD	Flood Management	Identify regional drainage facilities and flood-control improvements
2008	Coachella Valley Multiple Species Habitat Conservation Plan	CVCC	Habitat & Ecosystem Resilience	Protect species, habitats, and ecological connectivity
Ongoing	SNMP Monitoring Program / Monitoring Plan	Regional Water Agencies	Groundwater Monitoring	Track groundwater quality trends and compliance
Ongoing	Riverside County Multi-Jurisdictional Hazard Mitigation Plan	Riverside County	Multi-Hazard Resilience	Countywide hazard mitigation and emergency preparedness
Ongoing	Salton Sea Management Program	State of California	Ecosystem Restoration	Improve habitat and environmental conditions at the Salton Sea
Ongoing	TMDCI Wetland & Restoration Projects	Torres Martinez Desert Cahuilla Indians	Tribal Stewardship & Restoration	Restore culturally and ecologically important habitats
Ongoing	Resilience Coachella Valley PARC Toolkit	UC Riverside	Community Climate Resilience	Climate vulnerability assessment and adaptation planning
Ongoing	Coachella Valley Disadvantaged Communities Infrastructure Task Force	Regional Partners	Community Resilience	Improve infrastructure access and funding coordination
Ongoing	Coachella Valley Climate Action and Adaptation Plan – Implementation Update	CVWD	Climate Action and Adaptation	Develop implementation actions to help achieve CVWD's climate action and adaptation goals.

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4 Future Climate Change Hazards

To understand how climate change may affect the region, watershed-specific climate projections were used to evaluate exposure to key hazards, including extreme heat and extreme precipitation. These projections are based on widely used climate models that simulate future conditions under different greenhouse gas emissions scenarios, known as SSPs. SSPs represent a range of possible futures based on factors such as population growth, economic development, technological change, energy use, and climate policy. Each scenario produces a different emissions trajectory that is used to model future temperature, precipitation, and other climate conditions.

Projections show that extreme hot days and warm nights are expected to become much more common, particularly across the central Coachella Valley floor and southeastern portions of the planning area. Extreme precipitation trends are less straightforward. Although the region is expected to remain relatively dry overall, a greater share of annual rainfall is projected to occur during intense storm events. By mid-century, much of the planning area, especially the western and central Coachella Valley, is expected to experience more rainfall concentrated in short-duration, high-intensity storms. This pattern suggests a future with longer dry periods interrupted by more extreme precipitation events, increasing the risk of flash flooding, debris flows in foothill areas, and stormwater management challenges throughout the Valley floor.

4.1 Drought

4.1.1 Drought and Imported Water

In December 2025, DWR released the Draft 2025 State Water Project Delivery Capability Report (DWR 2025), which evaluates how SWP performance may change under three future climate scenarios representing a range of likely conditions. The report finds that rising temperatures are expected to shift precipitation from snow to rain, resulting in more winter runoff, but less snowpack and reduced water availability later in the year. These changes alter both the timing and reliability of SWP deliveries. To evaluate potential impacts, DWR modeled future hydrologic conditions and estimated how SWP deliveries could change under representative wet and dry conditions. The results indicate that SWP deliveries are likely to decrease compared to current conditions, even during wetter years. For CVWD and DWA, which use SWP supplies to replenish groundwater and strengthen long-term drought resilience, reduced deliveries could limit replenishment opportunities and increase reliance on stored groundwater supplies during future droughts.

Across all future climate scenarios, long-term average SWP deliveries are projected to decline from the current average of 54% of Table A amounts to approximately 43% to 48% by 2043. Impacts are expected to be even greater during extended droughts. For example, a historical six-year drought that would have resulted in deliveries of 15% to 22% of Table A supplies is projected to provide only 13% to 15% under future climate conditions. For the Coachella Valley, these changes mean SWP supplies may become less reliable and available at different times of the year. Reduced deliveries will limit groundwater recharge opportunities, constrain CVWD's ability to offset Colorado River shortages, and make it more difficult to rebuild groundwater storage following prolonged droughts.

Water supplies delivered through the Colorado River Aqueduct have remained below historical levels, reflecting more than two decades of drought and a long-term decline in Colorado River flows. Water Year 2026 was one of the lowest runoff years on record. The June 2026 USBR 24-Month Study (USBR 2026), highlights continued hydrologic stress across the Colorado River Basin, with Water Year 2026 inflows to Lake Powell projected at only 35% of average. In response to declining reservoir conditions, USBR reduced releases from Lake Powell and implemented drought response operations to help stabilize storage, while Lake Mead continues to operate under shortage conditions. These actions underscore the

ongoing imbalance between water supply and demand in the Lower Colorado Basin and the increasing need for long-term conservation, storage, and drought resilience measures throughout the Southwest. As a result, deliveries available to Metropolitan Water District, and ultimately to Coachella Valley water agencies, could face some constraints.

In August 2026, the U.S. Department of the Interior finalized new operating guidelines for the Colorado River for 2027-2028 in response to continued drought, historically low reservoir levels, and declining snowpack across the Basin. The new framework includes reductions of 1.25 million AF per year in Lower Basin Colorado River deliveries, additional voluntary conservation commitments, and new operating rules designed to protect critical infrastructure at Lake Powell and Lake Mead while providing flexibility to respond to changing hydrologic conditions (Department of the Interior 2026). The guidelines also establish a broader 10-year decision framework that emphasizes conservation, storage, operational flexibility, and development of new water supply projects. These actions reflect growing recognition that Colorado River supplies may become increasingly constrained under future climate conditions. For the Coachella Valley, these conditions increase uncertainty surrounding Colorado River supplies and underscore the importance of groundwater storage, conservation, and other strategies that improve drought resilience.

4.2 Extreme Heat

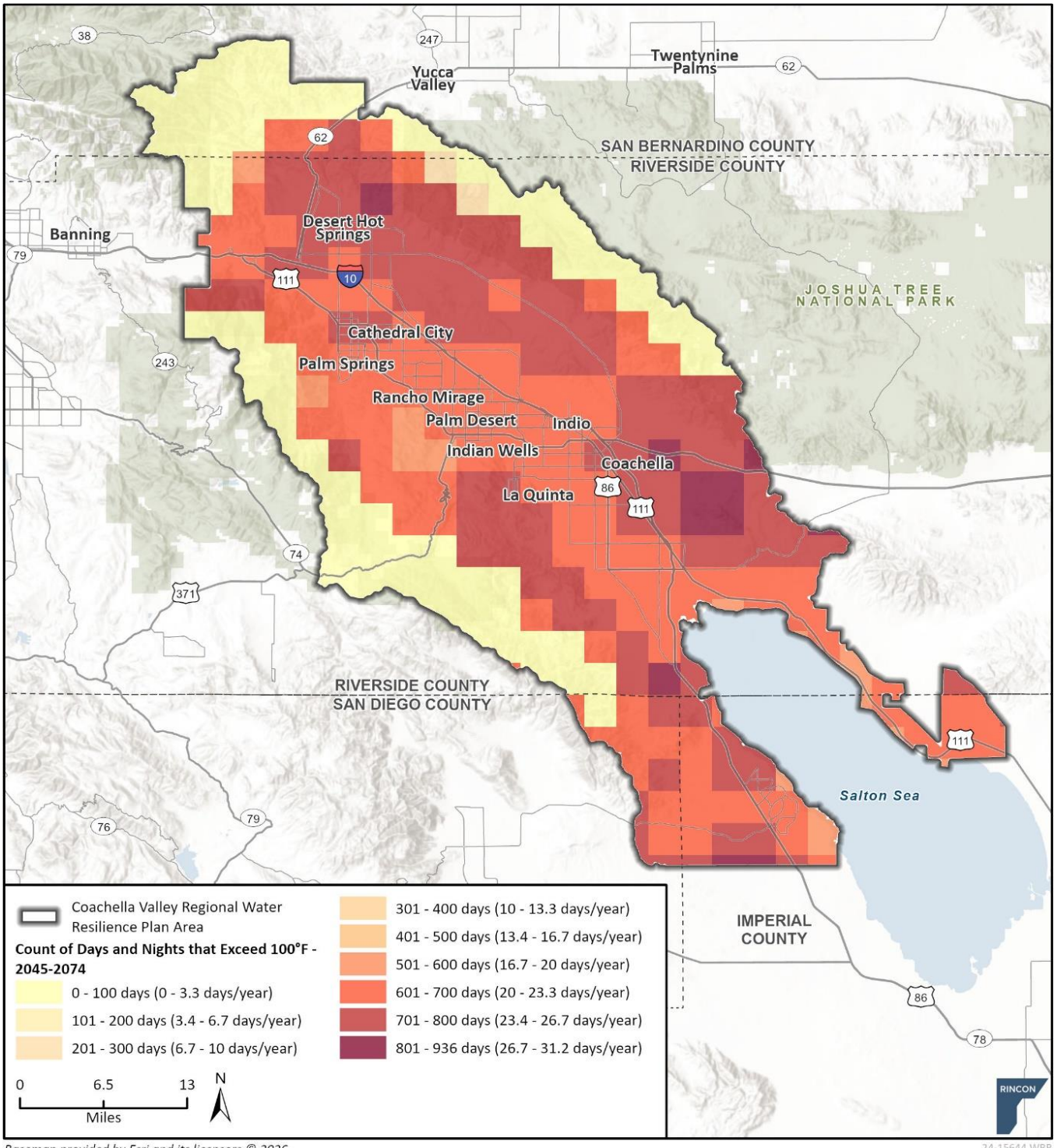
The greatest increase in heat exceedance days is expected to occur in the eastern and central portions of the Valley, including communities near Coachella, Indio, La Quinta, and the Salton Sea, Figure 9 and Figure 10 depict the projected number of future warm days and warm nights that exceed historical percentile thresholds between 2045 and 2074, providing an indication of how often temperatures may surpass conditions that were historically considered unusually warm. Figure 9 shows days and nights exceeding the historical 100°F threshold, while Figure 10 uses a 114°F threshold, illustrating the frequency of heat extremes. These results were modeled using data and coding methodology provided by LCI.

Climate projections indicate that extreme heat is expected to become one of the most significant climate risks facing the Coachella Valley. By 2075, much of the region is predicted to experience 20+ additional extreme heat days per year than have occurred historically, with some locations experiencing even greater increases.

In several locations, warm days and nights exceed historical thresholds on 700 to more than 900 days over the 30-year analysis period, equivalent to roughly 25 to 30 days per year on average. The spatial pattern indicates that the eastern Coachella Valley may experience the most persistent increases in extreme heat, while portions of the western Valley and higher-elevation areas near the San Bernardino Mountains show comparatively fewer exceedance days.

From a water resources perspective, these projections have important implications beyond temperature alone. Higher temperatures increase evapotranspiration, the combined process of evaporation from soils and water bodies and transpiration from vegetation. As evapotranspiration increases, landscapes, agricultural lands, urban vegetation, and natural ecosystems require more water to maintain current conditions. This can increase irrigation demand, reduce soil moisture, place additional stress on groundwater dependent ecosystems, and increase pressure on water supplies during drought periods. Even in years when average annual precipitation remains similar to historical conditions, higher evapotranspiration across a longer timeframe can result in effectively drier conditions because more water is lost from the landscape. Additionally, communities rely on water for cooling purposes, increasing demand in some cases. As a result, projected increases in heat are closely linked to drought vulnerability, groundwater demand, ecosystem stress, and water supply reliability throughout the Coachella Valley. Importantly, the maps do not indicate that all parts of the Valley will experience the same level of change. The concentration of higher exceedance counts in the eastern Valley suggests that communities already experiencing some of the region's hottest conditions may see the largest increases in cumulative heat exposure.

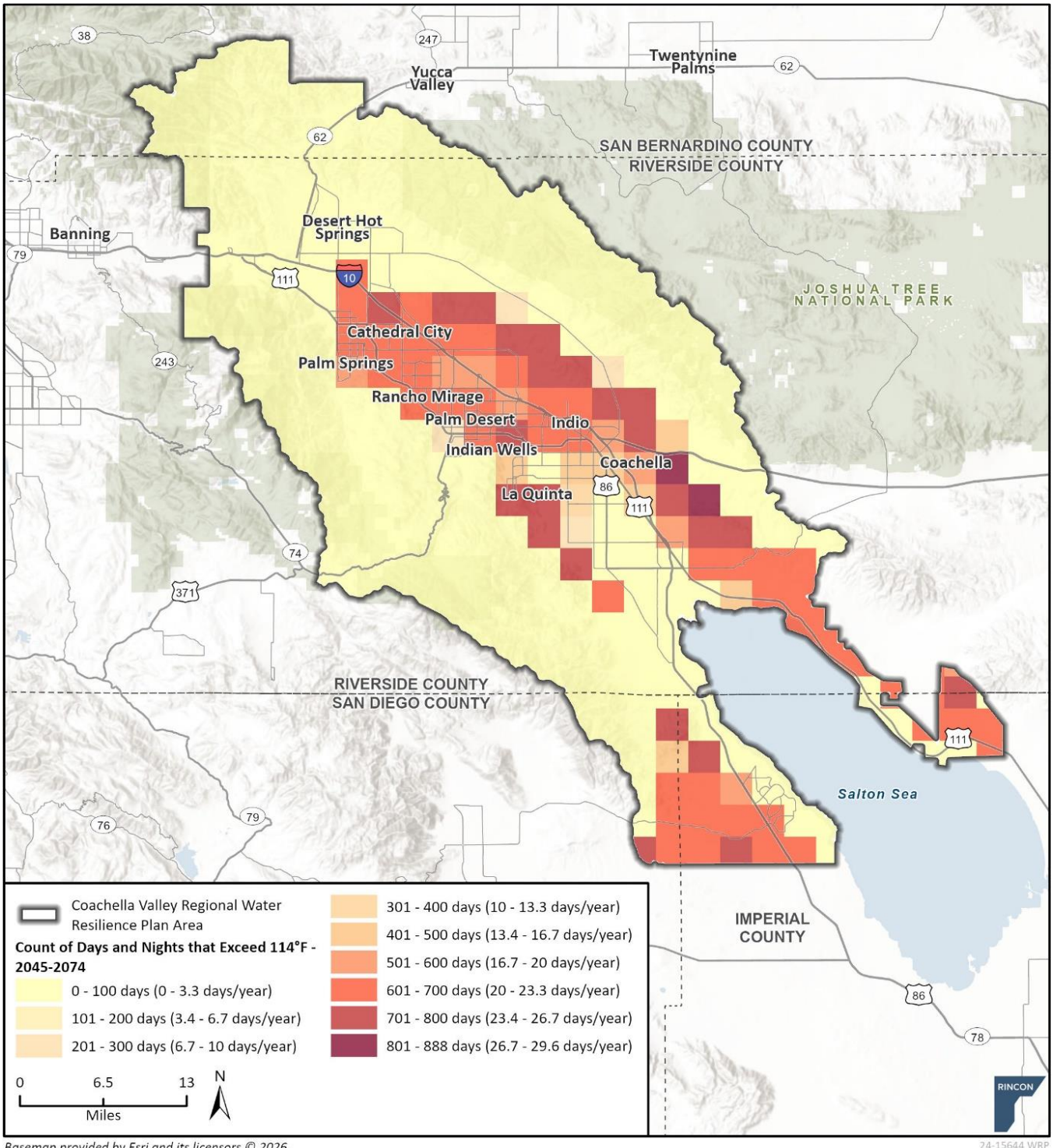
Figure 9 Extreme Heat Projections (Total Count of Days Between 2045 and 2074 that are Projected to Exceed 100 Degrees Fahrenheit)



Basemap provided by Esri and its licensors © 2026.
Additional data provided by CPAD, 2025; NHD, 2024; DWR, 2024; Governors Office of Land Use and Climate Innovation, 2025.

24-15644 WRP
Fig X Extreme Heat Exceed 100 F - 2045-2074

Figure 10 Extreme Heat Projections (Total Count of Days Between 2045 and 2074 that are Projected to Exceed 114 Degrees Fahrenheit)



Basemap provided by Esri and its licensors © 2026.
Additional data provided by CPAD, 2025; NHD, 2024; DWR, 2024; Governors Office of Land Use and Climate Innovation, 2025.

24-15644 WRP
Fig X Extreme Heat Exceed 114 F - 2045-2074

4.3 Extreme Precipitation and Flooding

Extreme precipitation and flooding has historically caused significant issues in Coachella Valley, driven by intense storm events, runoff from surrounding mountains, and localized drainage constraints. While annual precipitation is relatively low, the region is vulnerable to episodic storm events that can generate substantial runoff in washes and alluvial fan systems. For the purposes of the CVRWRP, extreme precipitation is defined as a rainfall event that exceeds the 95th percentile of historical precipitation totals, representing the most intense precipitation events historically experienced in the region.[7] The climate projections suggest that although total precipitation may not increase substantially, a greater proportion of annual precipitation may occur during these extreme events, increasing the potential for flooding, erosion, infrastructure damage, and water quality impacts.

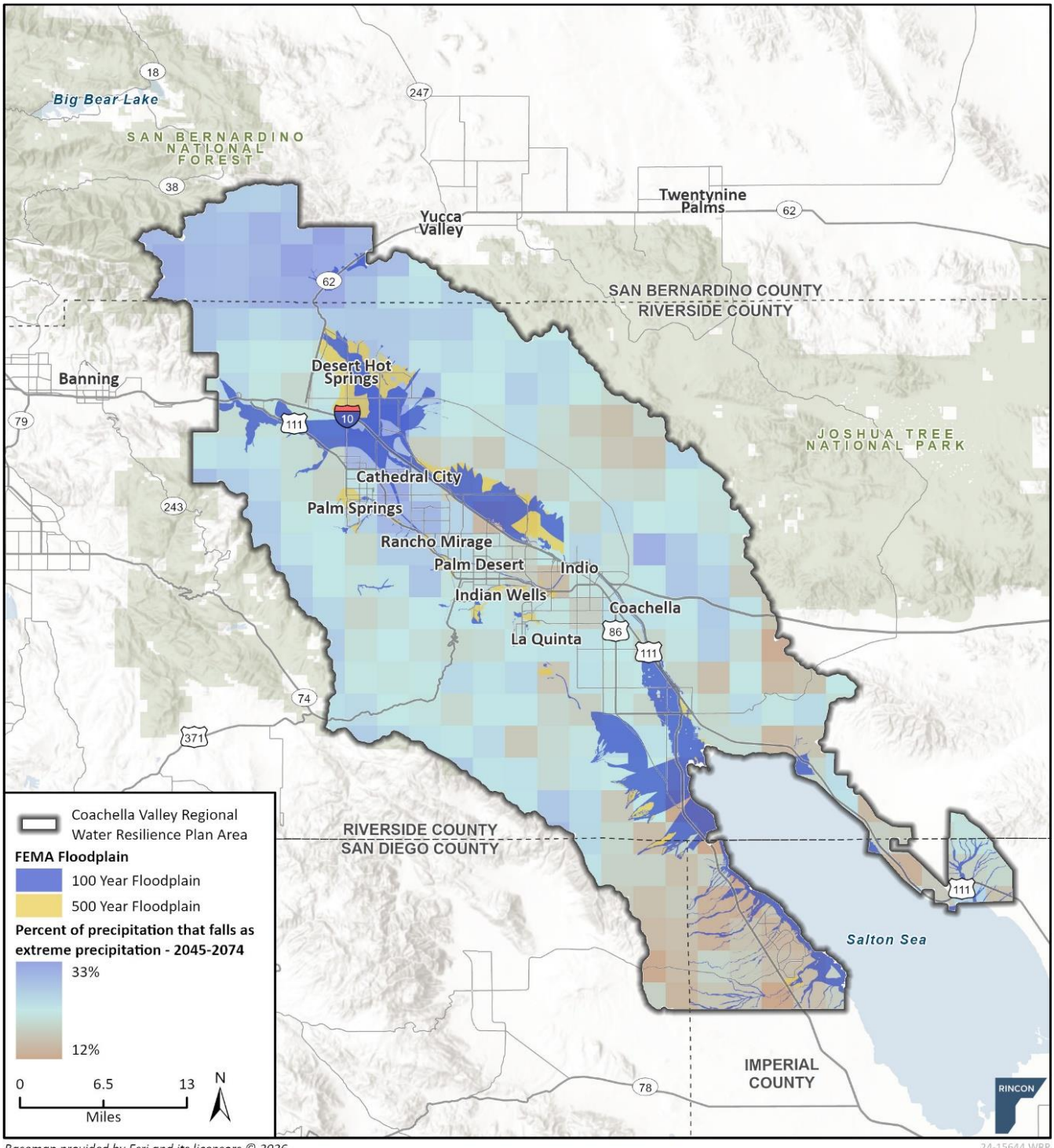
4.3.1 Future Changes in Extreme Precipitation

By 2100, the average change in rainfall during extreme events is approximately-0.7 mm, meaning a net reduction in rainfall, although the dataset shows substantial spatial variability, with some areas projected to experience decreases in extreme precipitation intensity and others experiencing notable increases.

Future flood hazards will likely continue to be driven by short-duration, high-intensity storm events rather than gradual increases in average annual rainfall. Figure 11 shows the extent of FEMA-designated floodplains, in addition to the geographic distribution of projected future extreme precipitation. The analysis indicates that between approximately 12% and 33% of annual precipitation may occur during extreme precipitation events across portions of the planning area by the mid-century period (2045-2074). The highest percentages generally occur along portions of the valley floor and eastern Coachella Valley, where concentrated storm runoff intersects with extensive wash systems and flood-prone areas. Many of the areas projected to experience higher frequencies of extreme precipitation overlap with existing FEMA 100-year and 500-year floodplains, particularly along the Whitewater River corridor, the Coachella Valley Stormwater Channel system, and areas adjacent to the Salton Sea. Communities located near major washes and flood conveyance corridors, including portions of Desert Hot Springs, Cathedral City, Indio, Coachella, North Shore, Oasis, Thermal, and Mecca, may therefore remain especially vulnerable to future flood impacts.

[7] For the purposes of the CVRWRP, extreme precipitation refers to the most intense rainfall events historically experienced in the region. Specifically, it includes storms that are larger than about 95% of all historical rainfall events, meaning they occur relatively infrequently but have the greatest potential to cause flooding, erosion, and infrastructure damage.

Figure 11 FEMA Floodplains and Extreme Precipitation Projections



Basemap provided by Esri and its licensors © 2026.
Additional data provided by CPAD, 2025; NHD, 2024; DWR, 2024; FEMA, 2025; Governors Office of Land Use and Climate Innovation, 2025.

4.4 Wildfire

Although the Coachella Valley is not traditionally viewed as a high wildfire landscape compared to California's forested regions, the vulnerability assessment demonstrate that wildfire remains an important climate resilience consideration for the CVRWRP, particularly where development interfaces with natural vegetation, mountain foothills, wash systems, and unmanaged landscape areas.

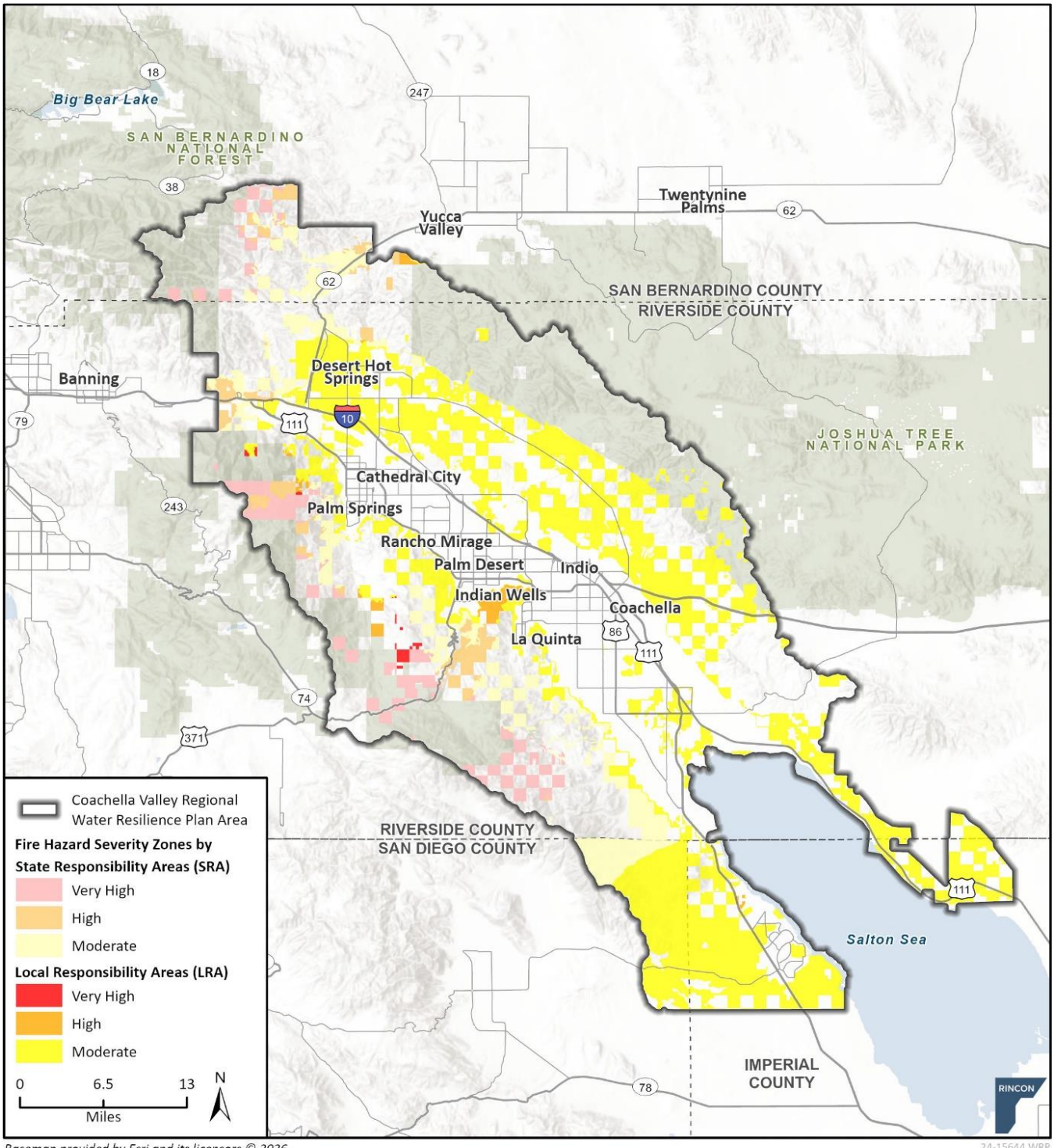
Community engagement identified concerns regarding illegal dumping, unmanaged vegetation, tamarisk growth, palm fronds, agricultural debris, and other combustible materials that can increase localized fire risk, particularly in disadvantaged communities and unincorporated areas.

Figure 12 illustrates State and Local Responsibility Area Fire Hazard Severity Zones. The highest concentrations of Very High and High Fire Hazard Severity Zones occur primarily along the foothill and mountain-front communities extending from Desert Hot Springs through Palm Springs, Cathedral City, Rancho Mirage, Palm Desert, Indian Wells, La Quinta, and into the Santa Rosa and San Jacinto Mountain foothills. Additional concentrations occur near the northwestern portion of the planning area along Highway 62 and in localized areas surrounding the Salton Sea shoreline. While direct wildfire impacts may be localized, these areas can still experience operational disruptions, roadway closures, public safety impacts, smoke exposure, utility outages, and post-fire erosion or debris flow hazards. For water systems, wildfire exposure may affect transmission facilities, pumping infrastructure, communications systems, and access routes needed for maintenance and emergency response.

Figure 13 evaluates projected future fire-weather conditions using changes in the number of days with a Fosberg Fire Weather Index (FFWI) value greater than 50 under a GWL of 3.0°C. The FFWI is an indicator of fire-conducive weather conditions that incorporates temperature, relative humidity, and wind speed. Higher values generally indicate conditions that may support increased wildfire ignition and spread potential. Much of the Coachella Valley is shown in shades of blue and purple, indicating projected decreases in the number of days with FFWI values above 50. However, several distinct corridors show projected increases in fire-weather conditions, displayed in yellow, orange, and red. These increases are concentrated along the northern mountain front near Desert Hot Springs and Highway 62, portions of the foothills northeast of Palm Springs, Cathedral City, Rancho Mirage, Palm Desert, and La Quinta, and localized areas surrounding the Salton Sea shoreline.

From a watershed resilience perspective, the most important wildfire-related vulnerabilities may not be direct fire impacts, but rather the consequences of unmanaged vegetation, debris accumulation, and landscape maintenance challenges.

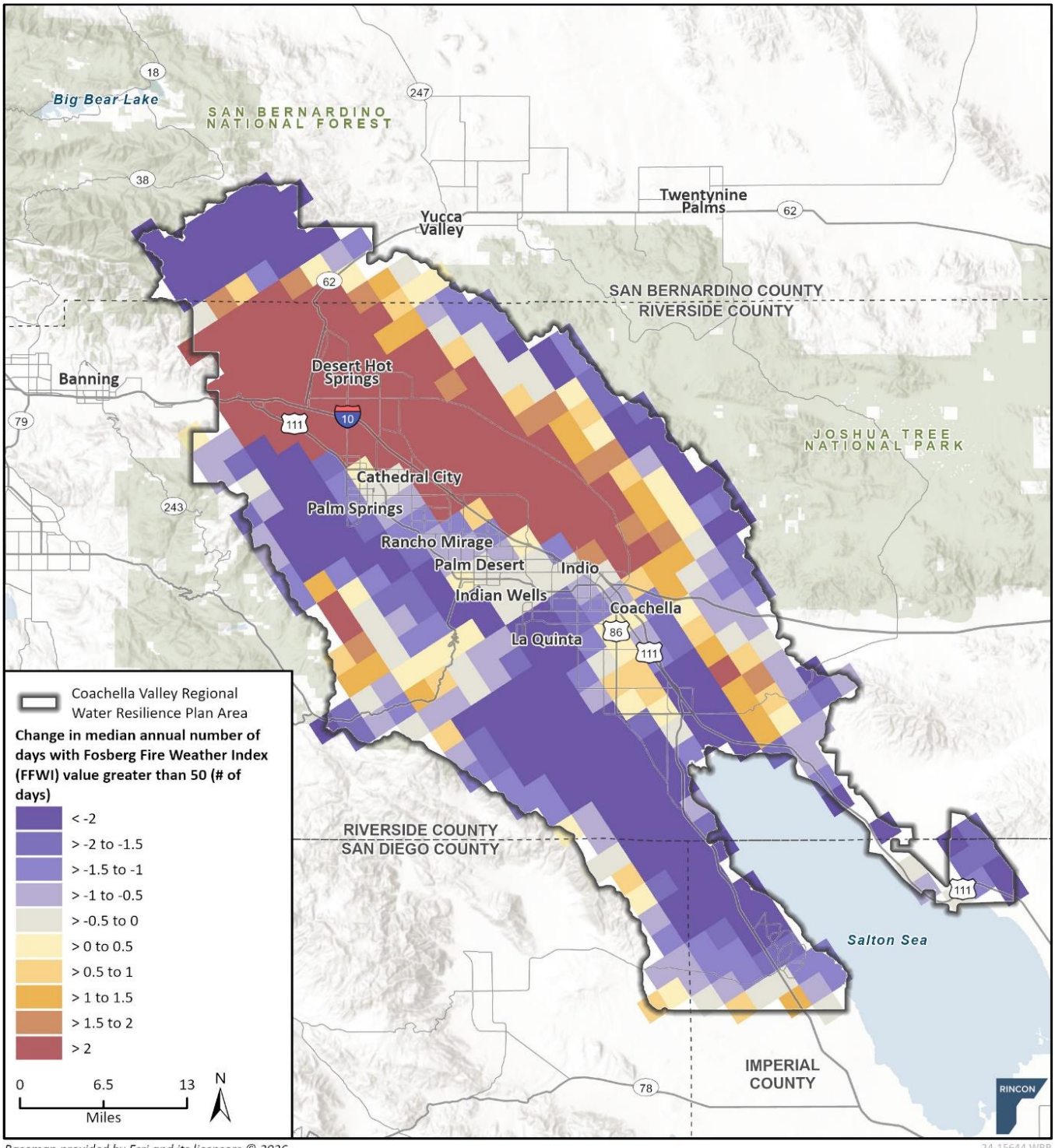
Figure 12 CAL FIRE Hazard Severity Zones



Basemap provided by Esri and its licensors © 2026.
Additional data provided by CPAD, 2025; NHD, 2024; DWR, 2024; CAL FIRE, SRA 2024/LRA 2025.

24-15644 WRP
Fig X Fire Hazard Severity Zones

Figure 13 Projected Wildfire Conditions at Global Warming Level 3.0



Basemap provided by Esri and its licensors © 2026.
Additional data provided by CPAD, 2025; NHD, 2024; DWR, 2024; Governors Office of Land Use and Climate Innovation, 2026.

24-15644 WRP
Fig 14 Fire Conditions GWL 3

4.5 Wind

Strong wind is a defining feature of the Coachella Valley climate and has long shaped the region's natural systems, infrastructure, and water management challenges. Seasonal Santa Ana winds, localized desert wind events, and strong pressure gradients through the San Gorgonio Pass can generate sustained high winds, blowing dust, reduced visibility, infrastructure disruptions, and air quality impacts throughout the Valley, particularly due to particulate matter from the Salton Sea playa. Although CMIP6 climate projections do not provide a reliable basis for projecting future wind conditions at the local scale, wind remains an important climate resilience consideration because of its close relationship to drought, wildfire, dust generation, infrastructure reliability, and power outages.

The FFWI, shown in Figure 13, incorporates wind speed, temperature, and relative humidity to characterize weather conditions favorable to wildfire ignition and spread. While the FFWI is primarily a fire-weather metric, it provides useful insight into how changing climate conditions may influence periods characterized by hot, dry, and windy conditions. Figure 13 illustrates projected changes in the annual number of days with an FFWI value greater than 50 under a GWL of 3.0°C. Areas shown in yellow, orange, and red represent locations with projected increases in fire-weather days, while blue and purple areas indicate projected decreases. The largest increases occur along portions of the northern mountain front near Desert Hot Springs, the foothills extending through Cathedral City, Rancho Mirage, Palm Desert, Indian Wells, and La Quinta, and localized areas surrounding the Salton Sea shoreline.

From a water resources perspective, wind can have significant indirect impacts. Strong winds increase evaporative losses from soils, reservoirs, canals, and irrigated landscapes and can contribute to increased water demand during prolonged dry periods. Wind-blown dust can also affect water quality by transporting fine sediments and contaminants into water conveyance systems, recharge facilities, and surface waters. In the eastern Coachella Valley and around the Salton Sea, exposed soils and sparsely vegetated landscapes may be particularly susceptible to dust generation during drought conditions, especially when coupled with high wind events. Wind-driven dust can create public health concerns, reduce visibility, and increase maintenance needs for water infrastructure and treatment facilities.

Wind also has important implications for landscape and debris management. Community outreach conducted as part of the CVRWRP identified concerns related to accumulated green waste, palm fronds, tamarisk, agricultural debris, and illegal dumping. During high-wind events, these materials can become airborne, obstruct drainage facilities, damage infrastructure, increase fire risk, and contribute to localized flooding when debris accumulates in stormwater conveyance systems. Wind therefore creates a direct connection between landscape maintenance, emergency preparedness, flood management, and wildfire resilience. Proactive vegetation management, debris removal, invasive species control, and proper disposal of green waste can help reduce multiple climate-related risks simultaneously.

5 Key Climate Vulnerabilities in the Coachella Valley

5.1 Water Supply

Water supply vulnerabilities are particularly pronounced for communities that do not benefit from redundant infrastructure or multiple sources of supply. While larger municipal systems often have access to interconnected facilities, imported water supplies, recharge and storage infrastructure, and backup sources, many domestic well users and small water systems rely on a single groundwater source. As a result, climate-driven changes in groundwater availability, water quality, power reliability, or infrastructure performance may have more immediate consequences for water service continuity and public health.

5.1.1 Future Drought Exposure and Community Vulnerability

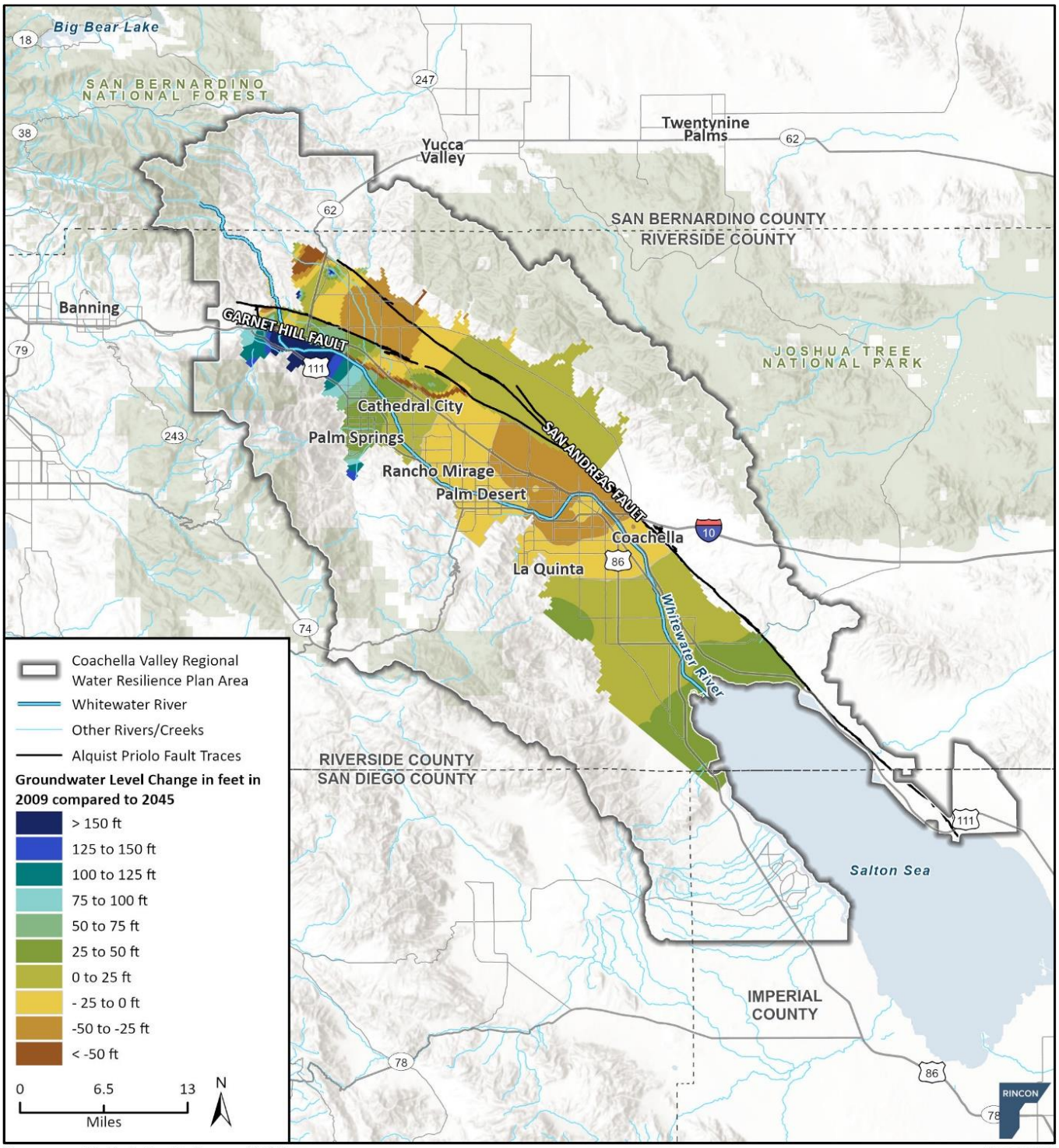
Future drought conditions may also affect the reliability of imported water supplies that support groundwater replenishment throughout the Coachella Valley. Reduced snowpack, shifting runoff timing, and increasing competition for water supplies across California are expected to place additional pressure on deliveries from the State Water Project and Colorado River systems, both of which play important roles in supporting long-term groundwater sustainability and replenishment efforts in portions of the Valley. Future drought conditions may have disproportionate impacts on vulnerable communities, domestic well users, and small water systems throughout the Coachella Valley. As groundwater recharge opportunities become more constrained and imported water supplies become less reliable, communities that depend on a limited number of water sources may face greater risks associated with declining groundwater levels, reduced well yields, deteriorating water quality, and increasing costs to secure and treat water supplies. These challenges may be particularly significant to smaller systems with limited financial and technical resources to respond to changing conditions. For domestic well users, prolonged drought and groundwater declines could increase the likelihood of well outages or the need for costly well deepening and replacement. Small water systems may face similar challenges maintaining reliable service, meeting regulatory requirements, and funding necessary infrastructure improvements.

As imported water reliability becomes more uncertain, water purveyors in the area may increasingly need to pursue source diversification and source substitution strategies to maintain water supply reliability and reduce vulnerability to drought. Examples include expanding recycled water production and reuse, advancing indirect and direct potable reuse opportunities, increasing stormwater capture and managed aquifer recharge, and developing local groundwater and conjunctive use projects. These strategies can help offset potential reductions in imported supplies while improving overall system resilience and reducing dependence on a single water source. Expanding regional water supply resilience through groundwater replenishment, recycled water projects, source substitution strategies, interconnections, and emergency drought response planning can help reduce these vulnerabilities while improving long-term water security for communities that are often least able to absorb the impacts of future drought.

5.2 Groundwater

Figure 14 illustrates projected groundwater level changes in 2045 resulting from climate change assuming no action is taken in the interim to mitigate the effects of drought (Baseline with Climate Change). The analysis, based on the 2022 Indio and Mission Creek Subbasin Alternative Plan analysis, highlights areas where climate change could increase stress on groundwater resources and potentially affect domestic wells and small water systems. The climate change scenario assumes future conditions will more closely resemble the prolonged drought cycles, below-average precipitation, and reduced water availability observed during recent decades.

Figure 14 Change in Future Groundwater Levels



Basemap provided by Esri and its licensors © 2026.
Additional data provided by CPAD, 2025; NHD, 2024; DWR, 2024; CGS, 2021; TODD Groundwater, 2026.

24-15644 WRP
Fig 6 Groundwater Level Change

In the Indio Subbasin, the largest projected groundwater level declines occur in the central Coachella Valley, including areas near Coachella, Indio, Bermuda Dunes, and surrounding mid-valley communities, where groundwater levels could decline by as much as 50 feet relative to baseline conditions. In the Mission Creek Subbasin, hydrograph projections indicate that groundwater levels at key monitoring wells could decline by 30 feet or more under future climate change conditions, particularly near the community of Garnet and adjacent areas, where domestic wells and small water systems are concentrated. These areas are of particular concern because projected groundwater declines overlap with communities that depend on groundwater, increasing the risk of reduced well performance and limited groundwater access. In the Indio Subbasin, more than 60 inventoried domestic wells fall within the area of projected decline and are potentially vulnerable. Because the Mission Creek Subbasin was assessed using hydrographs at key monitoring wells rather than groundwater level change contours, the number of affected wells there cannot be directly quantified. However, given the concentration of domestic wells and small water systems near Garnet, dozens of additional wells are likely to be vulnerable.

While these results do not represent expected future conditions under active basin management, they help illustrate how climate change could affect groundwater-dependent users in the absence of continued replenishment, conservation, and groundwater management programs. The findings underscore the importance of continued implementation of the Alternative Plans, groundwater monitoring, and technical assistance efforts alongside the need for additional adaptive strategies to ensure domestic well users and small water systems remain protected from undesirable groundwater level impacts under future climate conditions.

5.3 Flood Management

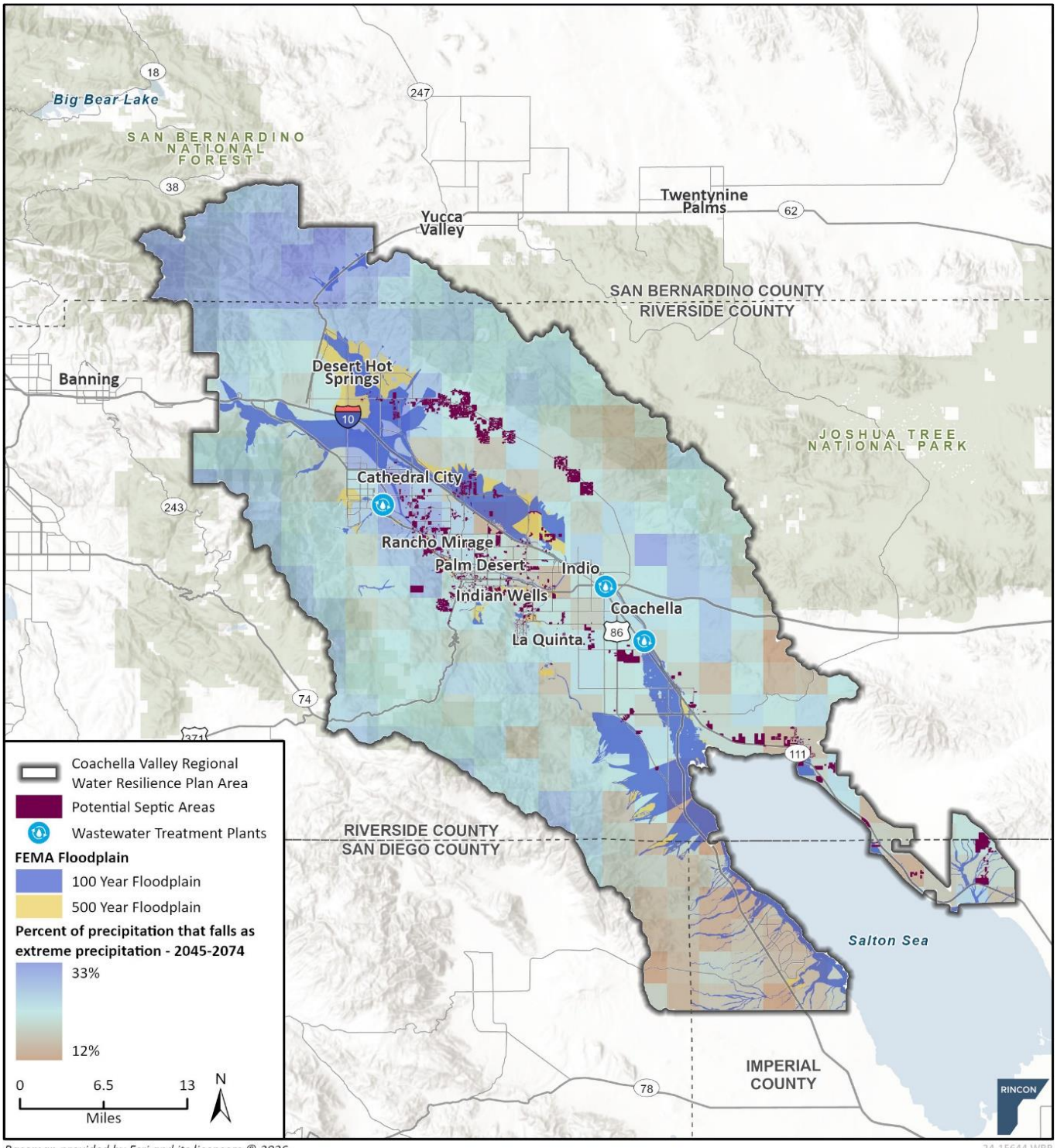
Flood risks are particularly significant for DACs and domestic well users. Many domestic wells are located within FEMA-designated floodplains or areas identified as having elevated future flood exposure. Floodwaters can submerge wellheads, damage pumps and electrical equipment, introduce sediment and contaminants into drinking water supplies, and interrupt water service. Community outreach conducted as part of the CVRWRP identified numerous examples of flood-related impacts, including properties that experienced flooding despite being located outside mapped FEMA floodplains. These findings suggest that localized drainage constraints and future extreme rainfall may create flood vulnerabilities that are not fully captured by existing flood hazard mapping.

5.3.1 Flooding, Septic Systems, and Water Quality

Figure 15 highlights the interaction between flooding, septic systems, and water quality. The map shows that many areas identified as potential septic-dependent communities occur near mapped floodplains or areas projected to experience increases in extreme precipitation. This pattern is especially evident in portions of the eastern Coachella Valley, where clusters of septic systems, domestic wells, and flood-prone corridors occur in close proximity.

Flooding can affect septic systems by saturating soils, reducing treatment effectiveness, damaging infrastructure, and increasing the potential for contaminants to migrate into surface water or shallow groundwater. Because many domestic wells are also located within these same areas, flood events have the potential to create water quality concerns in addition to physical infrastructure impacts. Wastewater treatment facilities themselves are generally located outside the most extensive flood-prone areas, but localized drainage challenges and increasing storm intensity may still affect facility access, operations, and associated collection systems. These findings underscore the importance of continued coordination between entities involved in flood management, and land use and wastewater planning. Overall, the flood vulnerability assessment suggests that future resilience efforts should prioritize locations where extreme precipitation, floodplain exposure, domestic wells, septic infrastructure, and social vulnerability intersect, particularly in Desert Hot Springs and the eastern Coachella Valley. These areas represent opportunities for targeted investments that can simultaneously reduce flood risk, protect water quality, improve public health, and strengthen long-term community resilience.

Figure 15 Septic Areas, Wastewater Treatment Plants, Floodplains and Extreme Rain Events



Basemap provided by Esri and its licensors © 2026.
Additional data provided by CPAD, 2025; NHD, 2024; DWR, 2024; FEMA, 2025; Governors Office of Land Use and Climate Innovation, 2026.

24-15644 WRP
Fig 9 Potential Septic Areas and Extreme Precipitation

5.4 Ecosystems

Increasing temperatures, prolonged drought, altered runoff timing, invasive species, habitat fragmentation, and groundwater level changes may affect ecosystem function throughout the region. Groundwater dependent ecosystems, including springs, seeps, wetlands, and palm oases, may be particularly sensitive to changes in water availability. Climate change may also affect wildlife corridors and critical habitat areas by increasing heat stress, reducing habitat quality, and altering ecological processes that support federally and state-listed species. Protecting groundwater-dependent habitats and maintaining ecological connectivity will be important components of long-term climate resilience.

5.5 Indigenous Cultural Resources

Changes in groundwater levels, increasing temperatures, altered runoff patterns, flooding, and degradation of groundwater-dependent ecosystems may affect the health and accessibility of these culturally significant resources. Climate-related changes to desert wetlands, palm oases, native vegetation communities, and wildlife habitat therefore have implications that extend beyond ecological impacts and may affect cultural practices, traditional knowledge, and Tribal stewardship of the landscape. In addition to these ecosystem vulnerabilities, many Tribal members rely on small water systems and decentralized drinking water infrastructure that may face the same climate-related challenges identified throughout the CVRWRP. Small water systems serving Tribal communities can be vulnerable to water quality concerns, aging infrastructure, limited operational capacity, flooding, power outages, and changing groundwater conditions. These systems often have fewer backup supply options and less redundancy than larger municipal systems, making them more sensitive to disruptions caused by drought, extreme heat, flooding, or emergency events. During development of the CVRWRP, the TMDCI emphasized the importance of improving drinking water reliability and protecting groundwater resources that support both ecosystem health and community resilience. As a result, strengthening the long-term resilience of small water systems that serve Tribal communities is an important component of protecting Indigenous cultural resources, community well-being, and Tribal self-determination in the face of a changing climate.

5.6 Water Quality

Water quality emerged as one of the most significant concerns identified through the Domestic Well and Small Water System Inventory, community surveys, and workshops. Multiple constituents of concern are present within portions of the planning area, including arsenic, chromium-6, nitrate, total dissolved solids, and other naturally occurring or anthropogenic contaminants. Climate change has the potential to exacerbate existing water quality challenges by increasing groundwater reliance during droughts, concentrating contaminants under drier conditions, and increasing runoff-related contamination during flood events. Domestic well users are particularly vulnerable to water quality challenges because private wells are generally not subject to the same monitoring and treatment requirements as public water systems.

Many residents reported concerns regarding drinking water quality, odors, discoloration, taste, and potential health impacts. Community surveys indicated that some households routinely purchase bottled water for drinking while relying on well water for bathing, cleaning, and other household uses. In some areas, water quality concerns may also be influenced by nearby agricultural activities, septic systems, stormwater runoff, aging infrastructure, or well construction limitations.

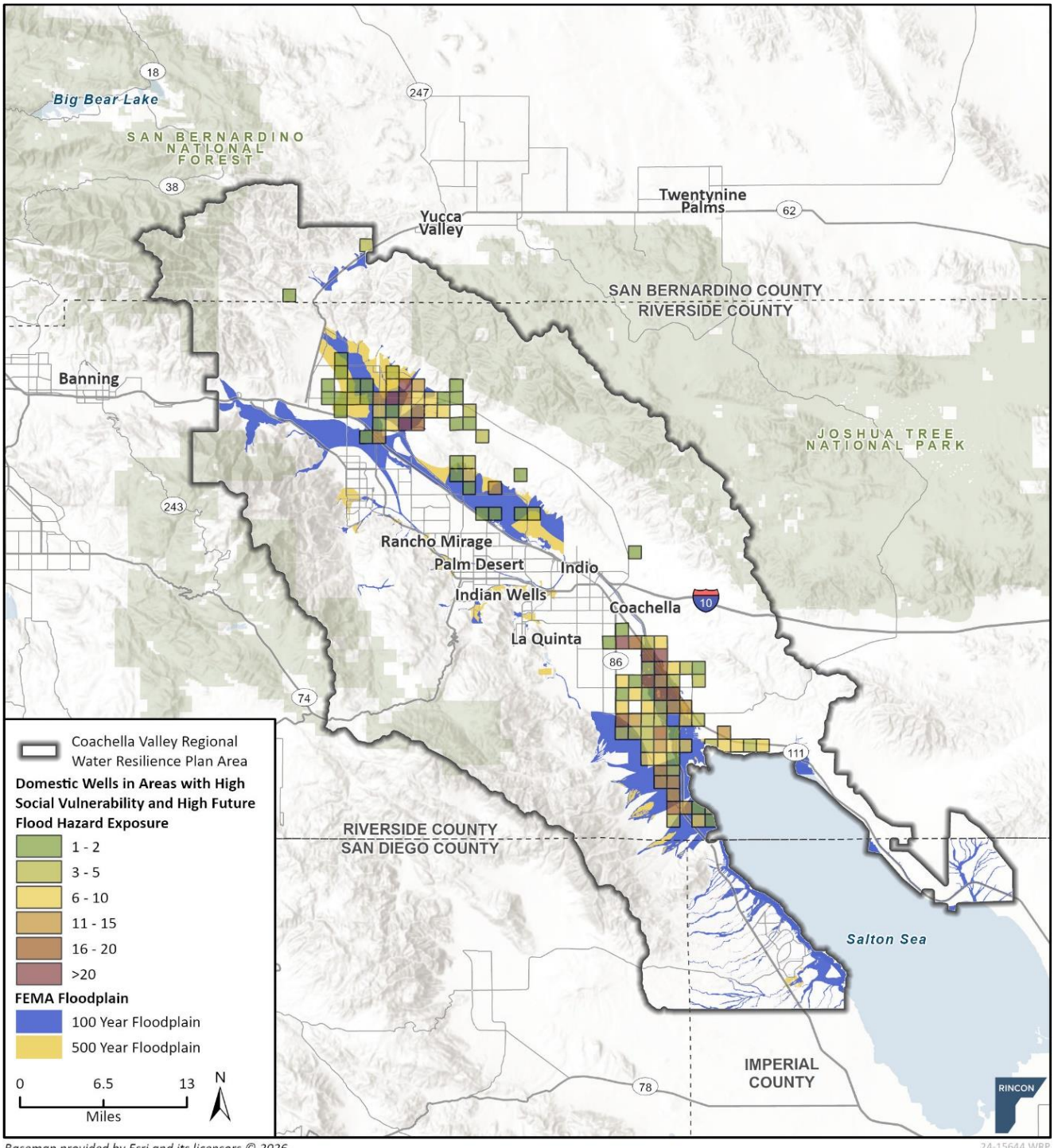
5.7 Domestic Wells and Small Water Systems

The Domestic Well and Small Water System Inventory identified approximately 1,500 locations that rely on self-supplied groundwater within the planning area. These systems frequently operate with limited technical, financial, and operational capacity compared to larger municipal utilities. Many domestic wells and small water systems lack redundant supplies, backup infrastructure, emergency storage, dedicated staff, or long-term funding sources. As a result, climate-related disruptions can have immediate consequences for water service reliability.

Many systems rely on aging infrastructure that may not meet modern construction standards. Older wells may lack sanitary seals, concrete pads, appropriate setbacks from contamination sources, or modern casing materials designed to reduce contamination risks. Small water systems also face challenges associated with operations and maintenance, treatment compliance, water quality monitoring, and emergency preparedness. Power outages can be particularly disruptive because many systems rely entirely on electrically powered pumps and lack backup generators or alternative power supplies.

Figure 16 identifies locations where domestic wells coincide with both high social vulnerability and elevated future flood hazard exposure, informed by LCI's Vulnerable Communities Platform. Several notable clusters emerge from the analysis. The largest concentration occurs in the eastern Coachella Valley between Coachella and the Salton Sea, including areas near Oasis and Thermal. In these locations, numerous domestic wells are situated within or adjacent to FEMA floodplain areas and occur in communities that also demonstrate elevated social vulnerability. Additional concentrations occur in the Desert Hot Springs area, where domestic wells intersect with mapped flood-prone areas along alluvial fan and wash systems. These overlapping conditions indicate that flood events may affect not only transportation and property, but also drinking water infrastructure relied upon by residents who may have fewer financial or institutional resources available for recovery. Flooding can damage wellheads, reduce access to properties, introduce contaminants into drinking water systems, and complicate emergency response efforts.

Figure 16 FEMA Floodplains and Domestic and Small Water System Wells in Areas with High Social Vulnerability and High Future Flood Hazard Exposure



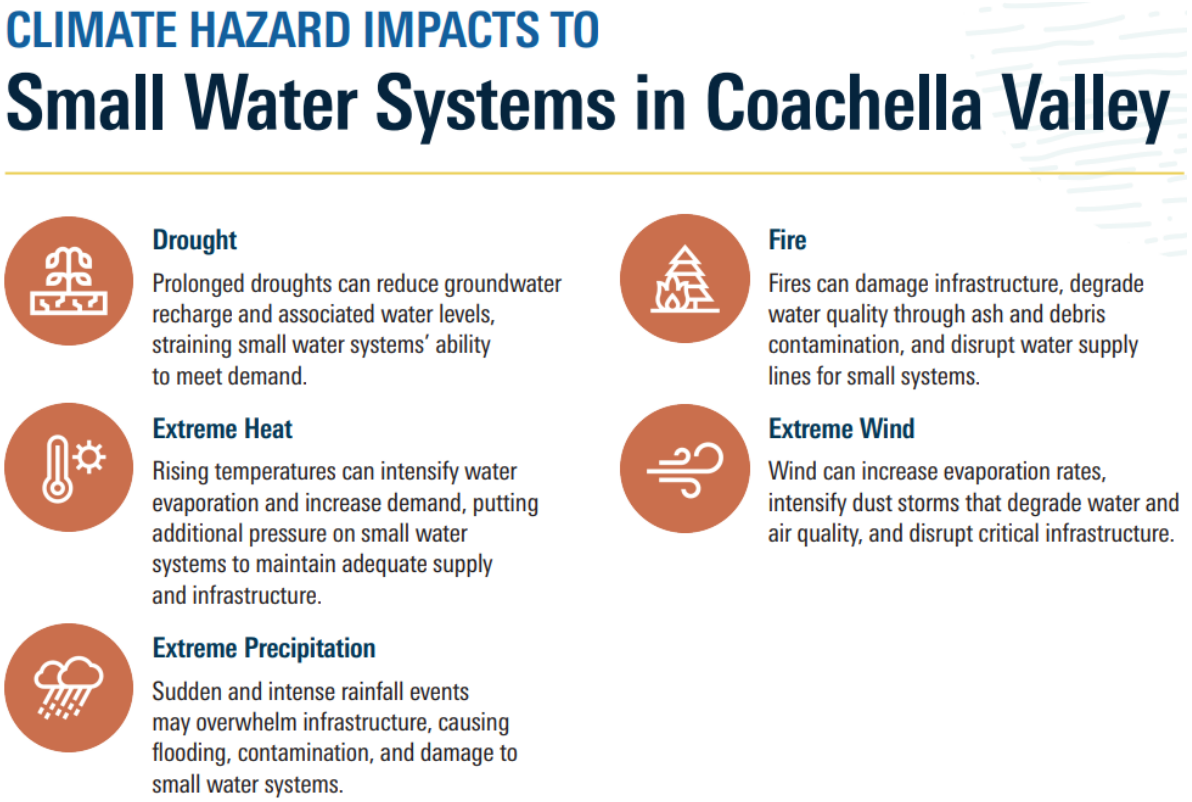
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Additional data provided by CPAD, 2025; NHD, 2024; DWR, 2024, TODD Groundwater, 2026; FEMA, 2025; Vulnerable Communities Platforms, 2026.

24-15644 WRP
Fig 8 Domestic Wells and Future Flood Risk

5.7.1 Findings from the CVRWRP Domestic and Small Water System Well Inventory and Vulnerability Assessment

Domestic wells and small water systems are a vital part of this groundwater ecosystem of the Coachella Valley region, as they are often the sole source of drinking water for residents outside of municipal service areas, including mobile home parks, Polanco parks, Tribal communities, and rural residents. These systems face unique challenges. Key climate hazard impacts noted for Small Water Systems are shown in Figure 17.

Figure 17 Climate Hazard Impacts to Small water Systems in Coachella Valley



Historically, efforts have focused primarily on large municipal and agricultural production wells, so less is known about smaller well systems, leading them to be underrepresented in regional inventories and groundwater planning efforts. To address this critical information gap, the CVRWRP Domestic and Small Water System Well Inventory and Vulnerability Assessment compiled and evaluated information from local, regional, Tribal, and agency data sources to identify known and potential domestic well and small water systems throughout the Valley. The study sought to identify households and communities that depend on self-supplied groundwater systems and to evaluate their potential exposure to groundwater level declines, water quality concerns, flooding, infrastructure failures, and other climate-related risks.

The effort combined desktop analysis, field verification, and community engagement to develop a comprehensive inventory of groundwater-reliant communities in the region. The Domestic Well and Small Water System Inventory gathered well information from multiple sources, including Riverside County records, the CVWD well registry and database, Indian Health Service records, and data provided by the TMDCI, in addition to mobile home park and Polanco Park records, EPA and Riverside County

small system records, and aerial imagery analysis. Field surveys were conducted between July and September 2025 and collected information on well characteristics, flooding impacts, water quality concerns, and operational challenges. The final Domestic Well and Small Water Systems Inventory found:

- 1,184 known domestic and small water system wells.
- An estimated 1,500 groundwater-dependent sites throughout the Coachella Valley.
- Small water systems and wells are widely distributed but concentrated in areas outside municipal service boundaries. Heaviest concentrations were found in eastern Coachella Valley, where more than 700 known wells were reported.
- Domestic well infrastructure is generally older and less documented than municipal systems. Of the wells with available construction data:
- 75% of wells were drilled more than 20 years ago
- Depth varies between 200 and 600 feet deep, with an average depth of approximately 450 ft.

Beyond documenting groundwater reliance, the inventory was used to assess risks facing groundwater dependent communities. The assessment identified several key vulnerabilities, including:

Groundwater Supply

Future climate scenarios indicate that localized groundwater declines may occur without continued management actions. Areas near Coachella and Bermuda Dunes may experience groundwater level declines of up to 50 feet under modeled climate conditions, potentially impacting more than 60 domestic wells. Domestic wells are particularly vulnerable because they often lack backup supply options available to municipal systems.

Water Quality

Water quality concerns include both naturally occurring and human-caused contaminants. Constituents of concern include nitrate, arsenic, chromium-6, among other contaminants. Domestic wells may be susceptible to localized contamination from nearby agricultural operations, septic systems, stormwater runoff, and aging well infrastructure. Unlike municipal water systems, private wells often lack routine monitoring and treatment. Additional community outreach revealed that many residents reported concerns about drinking water quality and indicated that they purchase bottled water for drinking while using well water only for washing and household purposes, disproportionately impacting low-income households.

Flooding

Many domestic wells are located within FEMA-designated floodplains. Floodwaters can submerge wellheads, damage electrical equipment, introduce pathogens or sediment into drinking water supplies, and interrupt water service. Several surveyed properties reported flooding impacts during Tropical Storm Hilary in 2023, including some locations outside mapped FEMA floodplains, suggesting that localized flood risks may be greater than currently documented.

Infrastructure and Capacity Limitation

Many domestic wells and small water systems rely on aging infrastructure that may not meet modern construction standards. Older wells may lack sanitary seals, concrete pads, proper setbacks from contamination sources, or modern casing materials. Small systems often have limited financial resources, technical expertise, and operational capacity to address emerging issues. Power outages can also disrupt water service because many systems rely entirely on electrically powered pumps and lack backup generators. The vulnerabilities identified through the Domestic Well and Small Water

System Inventory are influenced not only by groundwater conditions and infrastructure constraints, but also by longstanding data gaps, limited financial and technical capacity, and the increasing pressures of climate change. Many domestic wells and small water systems lack the monitoring, redundancy, and technical support available to larger municipal systems, making it difficult to proactively address emerging risks. The inventory highlights several opportunities to strengthen resilience and improve long-term water reliability for groundwater-dependent communities throughout the Coachella Valley.

Need for Small Water System Investment

Where feasible, consolidating or connecting smaller systems to larger municipal water systems can improve reliability, increase operational capacity, and reduce vulnerability to water quality and infrastructure challenges. In locations where system consolidation is not practical, alternative drinking water solutions can help address water quality concerns and improve access to safe drinking water. These include point-of-use and point-of-entry treatment systems, which can provide near-term benefits while longer-term infrastructure solutions are pursued. Shared water systems could also be considered.

Improving resilience will also require sustained funding, technical assistance, and community support. Expanding access to water quality testing, infrastructure rehabilitation programs, well inspections, and climate adaptation funding can help address vulnerabilities before they become emergencies. Additional outreach and education can support well owners and small system operators with routine maintenance, groundwater protection, emergency preparedness, and understanding available assistance programs. Finally, targeted investments in aging infrastructure can reduce long-term risks. Priorities include rehabilitating or replacing wells that do not meet modern construction standards, are located in flood-prone areas, or face elevated contamination risks.

5.8 Key Climate Change Vulnerabilities

The climate vulnerability assessment identified eight key vulnerabilities that collectively represent the most significant climate-related challenges facing water systems, infrastructure, and communities across the Coachella Valley. These vulnerabilities were identified through an integrated analysis of climate hazard projections, the Domestic Well and Small Water System Inventory, existing planning documents, technical studies, and extensive community engagement, including workshops, surveys, interviews, and planning input sessions. These vulnerabilities are highly interconnected and often reinforce one another. For example, extreme heat can increase energy demands and water use, drought can exacerbate groundwater quality concerns and water supply reliability challenges, and flooding can affect both drinking water and wastewater infrastructure.

8 Key Climate Change Vulnerabilities

Key vulnerabilities for the CVRWRP were identified through an integrated assessment of climate hazard projections, existing plans and studies, and extensive stakeholder engagement. Input from the CVRWRP Core Team, Advisory Committee, surveys, interviews, and community workshops was used to validate and refine vulnerabilities based on local conditions, community concerns, and regional resilience priorities.

01

Water Reliability Concerns Under a Changing Climate: Rising temperatures are increasing urban, agricultural, and outdoor water demand while variability in State Water Project and Colorado River deliveries and a shift from snowpack-dominated runoff to rainfall reduces supply reliability.

02

Regional Groundwater Quality Degradation: Elevated nitrate, total dissolved solids (TDS), Chromium 6, Arsenic and emerging contaminants threaten groundwater quality and increase treatment costs, particularly for small systems, domestic wells, and Tribal communities.

03

Flooding Risk to System Infrastructure and Access Issues: Many communities rely on aging infrastructure prone to flooding-induced mechanical failure, reduced drainage capacity, and overflows. Flooding can damage onsite well and water distribution systems and facilities and damage mobile homes, further risking access. Road closures and poor conditions can delay maintenance and emergency repairs, prolong outages, and limit response. Lack of system redundancy increases risk of disruption.

04

Septic System Vulnerability and Water Quality Impacts: Hotter, drier conditions reduce soil infiltration, increasing flash-flood risk and mobilizing contaminants from septic systems into surface and groundwater supplies. Intense rainfall events overwhelm stormwater and wastewater systems, with recent flooding and sediment transport in Polanco parks highlighting ongoing compliance, water quality, and public health concerns.









> “With rising ambient temperatures, system demand naturally increases, reducing our ability to fill storage tanks before peak energy hours. To manage this, we must start our pumps earlier than usual to meet demand while minimizing operations during peak periods. The goal is to limit energy usage during these high-demand times to reduce electrical costs and help prevent strain on the power grid that can lead to brownouts or blackouts for residential customers—events that can be dangerous, especially when air conditioning is essential for public safety.”
>
> **– Levi Anderson, CVWD**

05

Drought, Fire, and Wind Interactions: Fire risk, driven by ongoing drought and persistent wind conditions, can strain water supplies and impact water quality, as demonstrated by recent fires that disrupted schools and communities, including on Tribal lands. Lack of planning capacity for fire restricts mobilization and proactive action. Inadequate property maintenance and debris clearing, in conjunction with inconsistent booster pump testing, can increase risk.

06

Energy Constraints and Water Infrastructure Vulnerability: Extreme heat drives higher electricity demand, stressing the regional power grid and increasing the risk of Public Safety Power Shutoffs that can disrupt water pumping, treatment, and emergency response. Lack of redundant power sources at onsite water distribution makes small water systems and Polanco parks more vulnerable.

07

Capacity, Trust, and Data Limitations for Small Water Systems: Limited capacity, fragmented responsibility for well oversight, limited capacity for water quality treatment, and insufficient coordination among agencies (including Tribal and federal entities) constrain effective water management.

08

Groundwater Level Decline and Reliability Risk: Local water levels could decline due to changes in groundwater replenishment and/or increased pumping. These water level declines could result in domestic well pumping issues, loss of storage, and potentially land subsidence or dry wells.









6 Adaptation Strategies and Implementation Roadmaps

The CVRWRP adaptation strategies were intentionally developed to address vulnerabilities at multiple scales, recognizing that climate resilience cannot be achieved through a single project, agency, or jurisdiction alone. As illustrated below, the strategies span a continuum from home and individual asset-scale actions to local community initiatives, water agency and municipal investments, and ultimately regional, valley-wide coordination efforts. This nested approach reflects the reality that many climate challenges originate at one scale but are best addressed through coordinated actions at several scales simultaneously. For example, improving household drinking water reliability through point-of-entry treatment systems may address immediate risks for a domestic well user, while larger regional efforts focused on groundwater management, water supply diversification, and consolidation help address the underlying drivers of vulnerability.

The figure below demonstrates how individual strategies are linked to the scale at which implementation is likely to be most effective. The strategies address immediate community needs while also advancing long-term investments in water reliability, groundwater sustainability, flood resilience, emergency preparedness, and institutional capacity. By linking actions across multiple scales, the CVRWRP seeks to create a more resilient Coachella Valley where local projects contribute to regional outcomes, and regional planning efforts support the needs of individual communities, households, and water systems.

Each resilience strategy presented below contains a nested portfolio of actions operating at multiple scales. These actions illustrate how complementary actions can work together to address specific climate vulnerabilities across the Coachella Valley.

Through collaboration with the CVRWRP Core Team, Advisory Group, Tribal partners, community organizations, and water agencies, a subset of priority actions was identified based on their potential to reduce climate risk, advance equity, improve water system resilience, and support implementation readiness.

These priority actions are explored in greater detail through the Implementation Roadmaps in Section 5, which identify key partners, funding opportunities, barriers, implementation steps, and near-term actions needed to advance each strategy from planning to implementation.

6.1 Gaps in Adaptation Planning

Despite decades of investment in groundwater management, water supply, water quality protection, and flood control, several challenges continue to affect water resilience in Coachella Valley. Remaining gaps that the CVRWRP aims to address include the following:

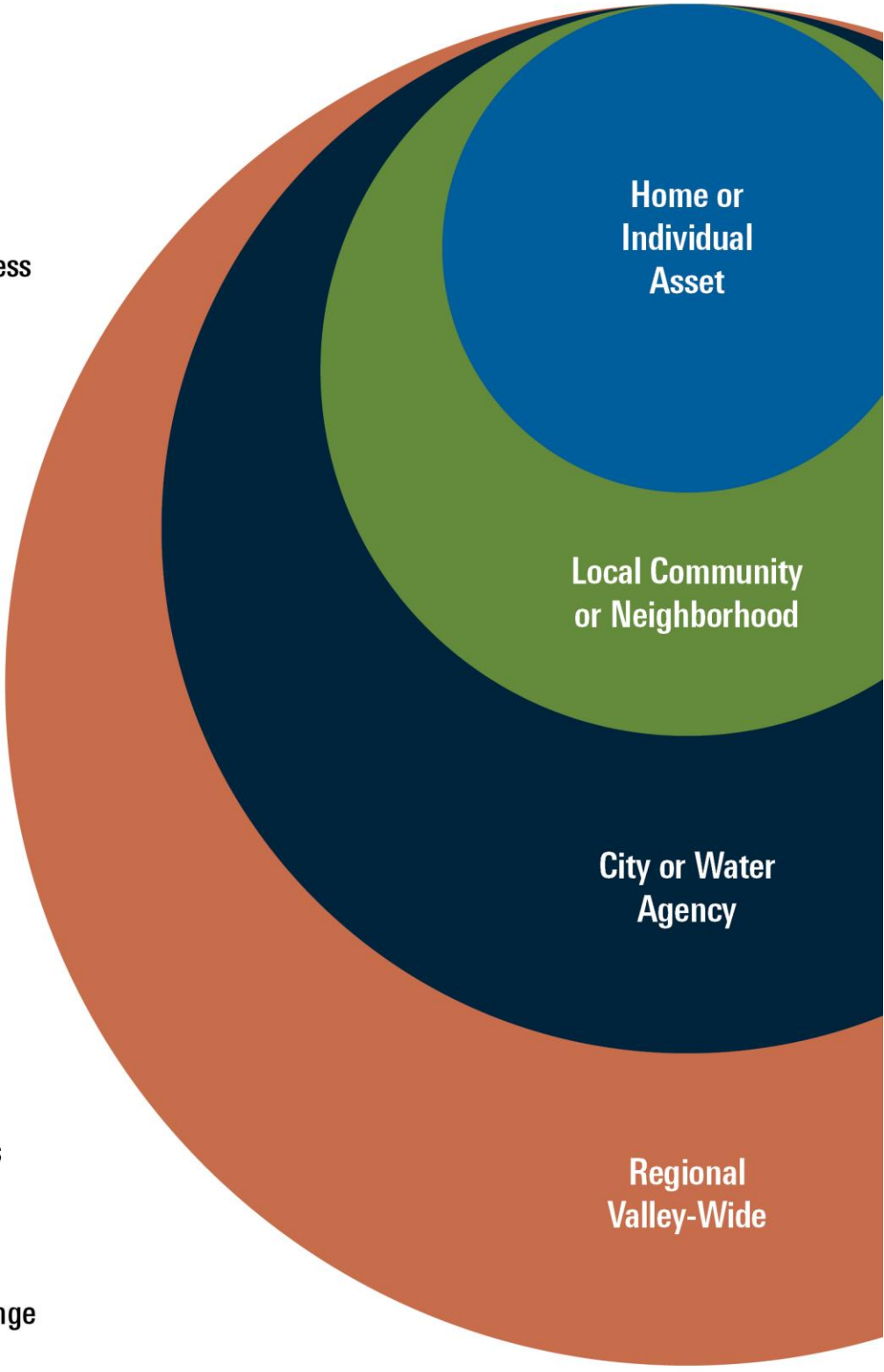
- Many domestic wells and small water systems lack emergency interties, backup supplies, storage, and system redundancy, increasing vulnerability to flooding, drought, power outages, and infrastructure failures.
- Naturally occurring contaminants, together with human-introduced constituents, degrade groundwater quality and render groundwater unsafe for potable use, while financial limitations constrain the ability of domestic wells and small water systems to add on-site treatment.
- Aging septic systems continue to threaten groundwater quality and public health, while limited funding constrains rehabilitation efforts and sewer system expansion.
- Climate adaptation is not consistently integrated into land use planning and development decisions, particularly in allowing Polanco parks or mobile home parks in areas vulnerable to flooding and extreme heat.
- Regional stormwater and flood control investments collect and transport large volume flood flows from development areas, but localized and on-site flooding in vulnerable communities can cause significant property and infrastructure damage.
- Funding limitations hinder implementation of resilience solutions, including system consolidations, domestic well assistance programs, and water quality improvement projects.
- Regulatory and funding constraints can limit agency action, particularly where ratepayer funds cannot be used to support non-customers.
- Long-term uncertainty surrounding key funding and assistance programs, including SAFER beyond 2030, creates challenges for long-range planning and implementation.
- Fragmented regulatory processes can delay or complicate resilience projects for small water systems and groundwater dependent communities.

6.2 Actions to Advance

Adaptation strategies presented herein were evaluated using a set of criteria developed through the coordination with the CVRWRP Core Team, community partners, and participating agencies. This section identifies the adaptation strategies and specific actions recommended for advancement through the CVRWRP. The actions are intended to address the key vulnerabilities identified in the previous chapters and reflect priorities surfaced through technical analysis, partner coordination, and community input. Actions shown in **bold blue text** represent near-term priority actions that are further developed in Section 5.4, where implementation roadmaps provide additional detail on lead partners, sequencing, funding opportunities, and next steps. Adaptation strategies presented herein were evaluated using a set of criteria developed through the coordination with the CVRWRP Core Team, community partners, and participating agencies. Inclusion as a lead or supporting partner for implementation actions does not obligate participants to provide funding, staffing, or undertake projects without separate approval. Any future project participation, matching funds, or operational commitments would be subject to each agency's approval and available funding.

KEY RESILIENCE STRATEGIES
for the Coachella Valley

1. Target Technical Assistance and System Upgrades for Small Water Systems
2. Improve Emergency Preparedness and Community Support
3. Strengthen Energy Resilience for Water Infrastructure
4. Develop Decentralized Flood Management and Stormwater Capture
5. Integrate Land Use, Flood Risk, and Climate-Informed Planning
6. Build Regional Support to Adapt Small Water Systems
7. Advance Water Supply Projects and Facility Expansions
8. Engage in Strategic Policy Change and Regulatory Streamlining



EVALUATION CRITERIA FOR Adaptation Planning

The CVRWRP evaluation criteria were developed through collaboration with the Core Team to identify adaptation actions that best address the region's climate vulnerabilities and resilience goals. These criteria provide a transparent and consistent framework for prioritizing actions based on their ability to reduce risk, advance equity, improve water system resilience, deliver multiple benefits, and support long-term implementation success.

Does the action…



Reduce Risk to Communities?

Prioritizes actions that directly reduce exposure of vulnerable communities to climate risk.



Achieve Equitable Outcomes?

Elevates actions that address long-standing disparities in access to safe, reliable water



Improve Performance of Water Resource System Infrastructure?

Focuses on actions that strengthen the reliability, resilience, and operational performance of drinking water, wastewater, groundwater, and stormwater systems



Have Potential Leadership in Place?

Accounts for whether projects can realistically be implemented using available capacity and anticipated state, federal, or regional funding programs



Achieve Multiple Benefits?

Prioritizes actions that deliver co-benefits across water supply reliability, public health, flood protection, heat mitigation, habitat, and community well-being.



Adaptable to Climate Uncertainty?

Favors flexible, scalable solutions that perform across a range of future climate conditions, including more intense heat, flooding, drought, and power outages.

Strategy 1 Target Technical Assistance and System Upgrades for Small Water Systems

Key Leadership Partners	Key Co-Benefits
• Pueblo Unido Community Development Corporation (PUCDC) • Leadership Counsel for Justice and Accountability (LCJA) • DAC Infrastructure Task Force • Riverside County Department of Environmental Health • Coachella Valley Regional Water Management Group • CV-SNMP partners • Small water system operators • Mobile home park owners/operators • Domestic well communities; Tribal partners • Community-based organizations • Technical assistance providers • State Water Board/SAFER program	• Public health and community well-being • Safer drinking water and more reliable household water service • Direct support for small systems, mobile home parks, domestic well users, and disadvantaged communities • Coordinated testing, shared data, O&M support • Funding readiness, and reduced long-term system burden • Improved groundwater quality monitoring and contaminant identification.

Actions to Advance

- **Address ongoing operations and maintenance needs for point-of-entry POE/point-of-use (POU) systems to ensure treatment remains functional after installation.**
- Expand technical assistance for mobile home parks where regulated systems have existing water quality data but may need additional support.
- Expand technical support for water quality testing before and during construction to identify constituents of concern before project completion.
- Provide small water systems with clearer information about CVWD water quality testing resources and available technician support.
- **Develop a standardized regional database for water quality results and regional inventory of domestic wells and small water systems across EPA, Riverside County, and water agency programs. Regionalize testing and data management for mobile home parks, small systems, and domestic well communities. Leverage existing groundwater monitoring networks from Alternative Plans and CV-SNMP.**
- Expand water quality monitoring for arsenic, chromium 6, nitrates, and other emerging contaminants and constituents of concern in domestic well areas, such as Avenue 76 and Pierce Street.
- **Continue advancing support for installation of and maintenance of wellhead treatment, POE, and POU systems.**

- Evaluate managerial consolidation options for clusters of small systems that could be remotely managed without system consolidation.
- Identify funding for ongoing operations and maintenance needs of POE/POU systems, and small water systems generally.

Strategy 2 Improve Emergency Preparedness and Community Support

Key Leadership Partners	Key Co-Benefits
• Coachella Valley Regional Water Management Group • Riverside County Emergency Management • Riverside County Fire Department/CAL FIRE • Imperial Irrigation District (IID) • Small water system operators • Mobile home park owners/operators • Domestic well communities; Tribal partners	• Public health and community well-being • Improved emergency water access during outages and disasters • Stronger emergency response and operational continuity • Reduced wildfire, debris, illegal dumping, and localized flood risks • Shade, cooling, and habitat benefits near vulnerable communities • Workforce training and local capacity-building opportunities • Direct support for disadvantaged communities and small water systems

Actions to Advance

- Develop mutual aid agreements between larger and smaller water systems to support emergency response and operational continuity.
- **Expand water storage tanks to support both emergency response and domestic water supply needs. Coordinate dual-purpose storage requirements with fire departments so storage can support both fire flows and domestic water systems.**
- Retrofit fire protection storage tanks with circulation and re-piping so stored water can also protect families during outages.
- Develop vegetation management incentives for debris clearing, tamarisk removal, and palm tree management in high fire-risk areas.
- Coordinate with County on solid waste and landscape debris management to reduce fire and dumping risks. Address illegal dumping of landscape waste that increase localized fire hazards.
- Support seasonal debris-clearing efforts targeting agricultural and flammable materials that increase emergency response risks.
- Coordinate with workforce development programs to support debris removal and vegetation management.
- Increase distribution of sandbags and hand-held pumps to improve community preparedness for areas lacking critical infrastructure, particularly in the eastern Coachella Valley and Desert Hot Springs.
- **Improve emergency water reliability through deployment of temporary water storage, emergency water supplies, mobile tanks, and other contingency measures for vulnerable communities and small water systems.**

Strategy 3 Strengthen Energy Resilience for Water Infrastructure

Key Leadership Partners	Key Co-Benefits
• Coachella Valley Regional Water Management Group (CVRWMG) • Imperial Irrigation District (IID) • Riverside County Emergency Management Department • Riverside County Planning Department • Small water system operators • Mobile home park owners/operators • Domestic well communities; Tribal partners • Community-based organizations • Solar and battery storage providers	• Public health and community well-being • More reliable water service during power outages • Backup power for wells, pumps, and critical water facilities • Reduced outage-related disruptions for vulnerable communities • Economic resilience through lower operational and emergency response costs • Equity benefits for small systems and under-resourced communities

Actions to Advance

- Coordinate with local agencies on battery storage and solar policies that support water infrastructure resilience.
- Deploy mobile charging units to support critical operations and community needs during extended outages.
- Identify feasible locations for solar and battery backup at wells, pumps, and operations facilities serving vulnerable communities.
- **Install solar systems capable of operating during outages rather than only offsetting grid electricity use. Pilot solar power systems at wells to operate during outages. Pair solar power with battery storage for wells, pumps, treatment units, and critical small water system facilities.**

Riverside County Draft Drought Resilience Plan

The Riverside County Draft Drought Resilience Plan identifies actions to improve water reliability, drought preparedness, groundwater sustainability, and resilience for vulnerable communities throughout the County. Many CVRWRP strategies align closely with the plan's focus on water supply diversification, small water systems, domestic well users, and long-term drought adaptation.

Strategy 4 Integrate Land Use, Flood Risk, and Climate-Informed Planning

Key Leadership Partners	Key Co-Benefits
• Riverside County Planning Department • Riverside County Flood Control and Water Conservation District Desert Recreation District • Cities and local land use authorities • Coachella Valley Regional Water Management Group (CVRWMG) • Leadership Council for Justice and Accountability (LCJA) • Pueblo Unido Community Development Corporation (PUCDC) • Mobile home park owners/operators	• Public health and community well-being • Reduced flooding impacts to homes and critical facilities • Improved groundwater recharge and water quality protection • Cooling and neighborhood-scale resilience benefits • Better alignment of land use, flood risk, and groundwater planning • Equity benefits for flood-prone manufactured housing and DAC areas

Actions to Advance

- Coordinate with GSAs on general plan amendments to ensure adequate water supply for new land uses and annexations.
- Advance climate-informed well permitting so County decisions reflect current groundwater, flood, and water quality information. Advocate for County analysts to utilize updated climate, groundwater, and small water system vulnerability information to improve well-permitting decisions.
- **Address unserved or under-addressed flood infrastructure needs, prioritizing manufactured housing and critical infrastructure in flood-risk areas, particularly those in the eastern Coachella Valley areas such as 70th Street and Pierce Street.**
- Inventory existing Capital Improvement Projects and develop criteria for evaluating whether existing proposed projects are appropriate for inclusion of nature-based features.
- Integrate green infrastructure into stormwater management, including green streets, bioswales, vegetated stormwater basins, curb cuts, infiltration areas, and other distributed runoff-capture features that slow, capture, filter, and infiltrate stormwater while reducing localized flooding, supporting groundwater recharge, and providing neighborhood cooling and habitat benefits.

DWR Bulletin 74 Well Standards

California DWR is updating Bulletin 74, the statewide framework governing well siting, design, construction, maintenance, and destruction. Updated standards may provide opportunities to improve long-term resilience of domestic wells and small water systems by incorporating current groundwater conditions, water quality considerations, and climate-related risks into future well permitting and management decisions. Aligning CVRWRP implementation efforts with the revised framework could help improve drinking water reliability and protect groundwater dependent communities. Learn more here: https://water.ca.gov/well-standards

Strategy 5 Build Regional Support to Adapt Small Water Systems

Key Leadership Partners	Key Co-Benefits
• CVRWMG • State Water Board/SAFER program • Riverside County Department of Environmental Health • DAC Infrastructure Task Force • Small water system operators • Mobile home park owners/operators • Domestic well communities; Tribal partners • Community-based organizations including PUCDC • Workforce development and conservation corps partners • Groundwater Sustainability Agencies	• Public health and community well-being • Safer drinking water and wastewater service in vulnerable communities • Increased technical capacity for small system operations and maintenance • Groundwater quality protection through septic-to-sewer and consolidation efforts • Funding readiness and leveraged groundwater/resilience investments • Equity benefits for DACs, mobile home parks, and domestic well users

Actions to Advance

- Invest in workforce training for small water system operations, maintenance, and long-term technical capacity. Build local capacity through California Conservation Corps, Urban Conservation Corps, Center for Employment Training, and other workforce development programs.
- **Expand septic-to-sewer conversion and wastewater infrastructure programs in vulnerable communities to reduce groundwater contamination, protect drinking water supplies, and improve long-term public health outcomes. Prioritize successful implementation of water and sewer consolidation projects and identify lessons learned.**
- Evaluate and pursue managerial consolidation, shared operations, technical assistance agreements, and other regional service-sharing arrangements among small and disadvantaged water systems.
- **Advance priority drinking water system consolidation and interconnection projects identified through the East Coachella Valley Water Supply Project, including Saint Anthony, Avenue 66, Valley View, and other nearby mobile home park systems.**
- Track SAFER program extension opportunities and funding eligibility for small water systems serving vulnerable communities. Advocate for continued SAFER support and backfill funding where Tier 3 systems are not prioritized.
- Combine resilience funding with groundwater funding to support multi-benefit projects for disadvantaged and vulnerable communities. Coordinate CVRWRP strategies with SGMA and Proposition 4 funding opportunities for vulnerable populations.
- Highlight and expand existing conservation measures being led by water agencies and CV Water Counts as part of regional resilience efforts.

CVWD Sewer and Small Water System Consolidation Efforts

CVWD has played a leading role in advancing water and wastewater consolidation projects in the eastern Coachella Valley through the East Coachella Valley Water Supply Project and the DAC Infrastructure Task Force. These efforts seek to improve drinking water quality, system reliability, operational capacity, and long-term affordability for disadvantaged communities currently served by small water systems and septic systems. Learn more here: https://www.cvwd.org/365/Disadvantaged-Communities-Task-Force

Strategy 6 Develop Decentralized Flood Management and Stormwater Capture

Key Leadership Partners	Key Co-Benefits
• Riverside County Flood Control and Water Conservation District • Coachella Valley Mountain Conservancy • Regional Water Quality Control Board • Cities and local drainage authorities • Coachella Valley Regional Water Management Group (CVRWMG) • Mobile home park owners/operators • Tribal partners Stormwater design and green infrastructure practitioners	• Public health and community well-being • Reduced localized flooding and infrastructure exposure • Improved stormwater capture, filtration, and groundwater recharge • Cooling, habitat, and vegetated barrier benefits • Reduced septic and onsite wastewater impacts during flooding • Equity benefits for communities lacking adequate drainage infrastructure

Actions to Advance

- **Construct decentralized stormwater capture and debris basin projects that reduce localized flooding in the western Coachella Valley.**
- Promote domestic onsite stormwater capture practices that allow individual properties to manage runoff and reduce flood impacts. Coordinate decentralized stormwater projects with city drainage responsibilities and water agency resilience objectives.
- Integrate vegetation into rain capture basins to provide flood management, filtration, cooling, and habitat co-benefits. Develop vegetated barriers around water infrastructure to reduce flood exposure and protect critical facilities.
- Coordinate stormwater projects with upcoming RWQCB guidance emphasizing multi-benefit projects and multiple partners. Integrate stormwater capture with septic protection in areas where flooding may affect onsite wastewater systems.
- Evaluate distributed retention and infiltration opportunities near communities lacking adequate drainage and flood infrastructure.
- Support efforts to implement stormwater capture and infiltration in the western Coachella Valley, including rainwater and greywater use at individual sites.
- **Add green infrastructure approaches such as curb cuts, vegetated barriers, and distributed runoff capture in flood-prone neighborhoods in the Coachella Valley.**

- Incorporate vegetated filtration downstream of septic areas to reduce water quality impacts where flooding affects onsite systems.

Strategy 7 Advance Water Supply Projects and Facility Expansions

Key Leadership Partners[8]	Key Co-Benefits
• Coachella Valley Regional Water Management Group (CVRWMG) • GSAs • Regional wastewater and recycled water agencies • Agricultural and land repurposing partners • State and federal funding agencies • Tribal partners and disadvantaged community representatives	• Public health and community well-being • Improved long-term water supply reliability and drought resilience • Expanded recycled water, recharge, and non-potable reuse opportunities • Groundwater sustainability and reduced dependence on imported supplies • Economic resilience through diversified supplies and infrastructure investments • Environmental benefits from recharge, Flood-MAR, and land repurposing

Actions to Advance

- **Increase beneficial reuse of recycled water through treatment upgrades, distribution system expansions, and groundwater recharge projects that reduce dependence on imported and groundwater supplies. Advance expansion of WRP-4, WRP-7, WRP-10, Regional WRF, Palm Desert Groundwater Replenishment Facility, and other associated recharge and non-potable distribution systems.**
- Advance Flood-Managed Aquifer Recharge and multi-benefit recharge projects that integrate flood reduction, groundwater replenishment, habitat enhancement, and agricultural land repurposing, including opportunities along Mission Creek and other in western Coachella Valley recharge areas.
- Advance multi-benefit agricultural land repurposing programs that support recharge, Flood-Managed Aquifer Recharge (MAR), and regional supply reliability. Explore opportunities for more than GSAs to participate in future land repurposing funding rounds.
- Improve conveyance flexibility by identifying alternate water storage infrastructure opportunities. Advance the Oasis Distribution System Project to offset agricultural pumping.
- Reduce evaporation from regional water supply and storage facilities using covers, floating solar, or canal-mounted solar panels.
- Support implementation of regional water conservation, demand management, and drought contingency measures that reduce groundwater pumping, improve supply reliability, and prepare communities for prolonged drought conditions. Expand demand management and conservation measures as part of water supply resilience and regional reliability planning.

[8] Inclusion as a lead or supporting partner for implementation actions does not obligate participants to provide funding, staffing, or undertake projects without separate approval. Any future project participation, matching funds, or operational commitments would be subject to each agency's approval and available funding.

- Implement groundwater management and supply acquisition projects to maintain basin sustainability, as proposed in the Mission Creek and Indio Subbasin Alternative Plans.

State Water Planning Initiatives

Several major state planning efforts—including the State Water Project (SWP) Delivery Capability Report, SWP Adaptation Strategy, and Delta Conveyance Project—are evaluating how California can maintain long-term water supply reliability under changing climate conditions. These initiatives support the broader resilience objectives of the CVRWRP by addressing drought risk, supply reliability, infrastructure adaptation, and long-term water system resilience across California. Learn more about the California Water Plan here: https://www.californiawaterplan.com/

Strategy 8 Engage in Strategic Policy Change and Regulatory Streamlining

Key Leadership Partners	Key Co-Benefits
• Riverside County Planning Department • Riverside County Department of Environmental Health (DEH) • Riverside County Emergency Management Department • Coachella Valley Regional Water Management Group (CVRWMG) • RWQCB and permitting agencies • Tribal partners • EPA • DAC Infrastructure Task Force • Community-based organizations • Landowners and local jurisdictions	• Public health and community well-being • Clearer permitting pathways for water, septic, and resilience projects • Stronger coordination across fragmented oversight authorities • Better alignment with hazard mitigation and funding eligibility requirements • Reduced implementation barriers and administrative costs • Equity benefits through improved project pathways for disadvantaged communities

Actions to Advance

- **Align CVRWRP actions with Riverside County Ordinance 348 to reduce permitting barriers and clarify project pathways for rural resilience projects that benefit small water systems.**
- Address disparate oversight of water and septic systems, including coordination with the County DEH. Improve coordination between agencies and County DEH on septic, well permitting, and water quality oversight.
- Integrate the CVRWRP actions with the Riverside County Hazard Mitigation Plan implementation to strengthen eligibility and implementation pathways.
- Articulate policy updates needed to address green waste, fire hazards, palm tree management, and native habitat protection. Document regulatory complexity caused by variable landowners and authorities, including Tribal, EPA, County, and local agencies.

Riverside County Ordinance 348

Riverside County Ordinance 348 establishes requirements for grading, drainage, flood protection, and development within unincorporated areas of Riverside County. Aligning CVRWRP implementation actions with Ordinance 348 can help reduce permitting uncertainty, improve project readiness, and support incorporation of resilience measures such as flood management, stormwater capture, groundwater recharge, and green infrastructure into future development and infrastructure projects. Learn more here: https://planning.rctlma.org/sites/g/files/aldnop416/files/2023-06/Ord348-04-28-2023-FINAL.pdf

6.3 Equity Guardrails

Communities expected to experience the greatest climate-related risks, including disadvantaged communities, Tribal communities, domestic well users, residents served by small water systems, farmworker communities, mobile home park residents, and other groundwater dependent populations, were intentionally engaged at the outset of the planning process to help define resilience priorities. The CVRWRP incorporated community perspectives from the beginning through surveys, workshops, site visits, input sessions, community events, and ongoing collaboration with trusted community-based organizations and Tribal partners. To support equitable implementation, the CVRWRP proposes a set of Equity Guardrails intended to guide future investments, partnerships, and project development. These guardrails are designed to ensure that resilience actions do not inadvertently increase financial, regulatory, operational, or environmental burdens for communities that already face disproportionate climate and water-related challenges. Project proponents should evaluate potential unintended consequences, distribution of benefits and burdens, affordability considerations, and opportunities to advance community priorities before implementation.

- **Reduce Risk**: Avoid actions that increase costs, reduce water affordability, transfer risks, or create new burdens for vulnerable populations.
- **Center Community Priorities**: Continue engaging affected communities and Tribal governments throughout project design, implementation, and monitoring.
- **Promote Affordable and Reliable Water Access**: Support solutions that improve drinking water quality, reliability, and affordability for disadvantaged and groundwater dependent communities.
- **Respect Tribal Sovereignty and Knowledge**: Recognize Tribal governments as partners in implementation and incorporate Tribal priorities, stewardship practices, and cultural values into resilience actions.
- **Ensure Equitable Distribution of Benefits**: Consider who benefits from investments and ensure that disadvantaged communities receive meaningful and measurable outcomes.
- **Build Long-Term Capacity**: Support local workforce development, technical assistance, community organizations, and partnerships that strengthen long-term resilience beyond individual projects.

6.4 Implementation Roadmaps

Actions that received community support from listed actions above were built into Implementation Roadmaps that include the following elements:-

- Step-by-step implementation (Near-term vs long-term actions)
- Funding Strategy & Prop 4 Competitiveness
- Regulatory, Reporting and Permitting Needs
- Milestones and Metrics
- Implementation Leadership & Important Partnerships[9]
- Resources to Build Upon
- Hurdles to Overcome

[9] Inclusion as a lead or supporting partner for implementation actions does not obligate participants to provide funding, staffing, or undertake projects without separate approval. Any future project participation, matching funds, or operational commitments would be subject to each agency's approval and available funding.

ELEMENTS OF
Successful Implementation



Implementation Leadership and Partnerships

Who should lead implementation of this action, and what agencies, organizations, Tribal partners, or interested parties should be involved in supporting its success?

What partnerships need to be in place for implementation to be successful?

Key Barriers to Overcome

What regulatory, financial, technical, institutional, or capacity-related barriers could impede implementation, and how might they be addressed?

Tracking Metrics

How will progress and success be measured, and what indicators should be monitored to support adaptive management over time?

Funding Strategy

What grant programs, funding sources, financing mechanisms, or partnership opportunities could support implementation?

Implementation Steps

What key steps are needed to move this action from planning to implementation, including feasibility analysis, design, permitting, construction, operation, and long-term maintenance?

Regulatory and Policy Needs

What permits, policy changes, governance structures, or interagency coordination efforts are needed to enable implementation?

Resources and Efforts to Leverage

What existing plans, programs, studies, projects, partnerships, funding sources, or technical resources can be leveraged to advance this action?

7 Implementation Action 1 - Target Technical Assistance and System Upgrades to Improve Water Quality for Small Water Systems

Translate regional water quality monitoring and domestic well/small water system inventory data into a targeted treatment implementation program for groundwater dependent communities. The program should consolidate available EPA, Riverside County, water agency, and CV-SNMP monitoring data into a publicly accessible database. Identify priority water quality gaps and direct funding toward the installation, routine testing, filter replacement, operator support, and long-term maintenance of wellhead, POE, and POU treatment systems in **Disadvantaged and Vulnerable communities** affected by arsenic, nitrate, chromium-6, and other contaminants.

7.1 Priority Next Steps

Implementation of the proposed action could follow the following steps to achieve meaningful progress. Interim progress reviews and adjustments will be necessary to adapt to changing conditions and community needs.

1. Establish a regional treatment implementation working group led by community-based organizations, Tribal partners, water agencies, Riverside County, EPA Tribal Drinking Water Programs, CV-SNMP partners, and technical assistance providers to guide program design, clarify roles, coordinate data sharing, and oversee installation and long-term maintenance priorities.
2. Compile water quality data from EPA, Riverside County, water agency, Geo-datatracker, California Electronic Data Exchange Framework[10], and CV-SNMP into a regional water quality and small system database that can be used to identify groundwater-dependent households and small systems with known or suspected contaminant concerns.
3. Develop a treatment implementation framework that identifies treatment type and location based on contaminant type, household or system needs, cost, maintenance requirements, regulatory considerations, and community preference.
4. Secure dedicated funding for equipment purchase, installation, routine water quality testing, filter replacement, operator training, emergency repairs, and long-term operations and maintenance so treatment systems remain effective after installation and do not create new financial burdens for residents or small system operators.
5. Implement prioritized treatment projects in communities affected by arsenic, nitrate, chromium-6, and other naturally occurring or human-caused constituents identified through regional or site-specific monitoring, beginning with locations where monitoring data, community input, or field assessments indicate immediate exposure reduction needs.
6. Develop a plain-language small water system preventive-maintenance guide and technical-assistance program addressing tank inspection and recoating, pump and pressure-tank maintenance, booster-pump testing, shade and heat protection, fencing and site security, concrete pads and foundations, electrical equipment protection, leak detection, water-quality sampling, recordkeeping, and emergency contacts.

[10] Learn more here: https://dxf.chhs.ca.gov/

7. Maintain a publicly accessible water quality information platform and community outreach process that provides residents, small system operators, agencies, and decision-makers with understandable information on water quality conditions, available assistance, treatment system status, and progress toward reducing contaminant exposure.
8. Use implementation results and gaps analysis to inform implementation of water and wastewater consolidation projects in the eastern Coachella Valley.

7.2 Funding Strategy

Position the database, monitoring, treatment, and consolidation activities as a phased regional implementation program rather than a collection of independent projects. Initial investments in data integration, monitoring, and community prioritization can support subsequent funding requests for infrastructure, treatment implementation, and long-term operations.

- **Proposition 4 Funding Opportunities** including the following. See Table 2 for more detail.
    - Section 91011 Drinking Water
    - Section 91031 Watershed Resilience
    - Section 93040 Tribal Nature-Based Solutions (for Tribal drinking water components)
- **DWR Technical Support Services:** Use DWR Technical Support Services to implement a targeted technical assistance strategy that installs monitoring wells and telemetry, conducts groundwater quality sampling, completes mapping and technical investigations, and expands the regional monitoring network.
- **State Revolving Fund Programs**: Position State Revolving Fund Programs to finance a drinking water and sanitation infrastructure strategy that delivers treatment facilities, consolidation projects, system improvements, and long-term compliance solutions for drinking water quality.

7.3 Regulatory, Reporting, and Permitting Needs

Advancing this action could require various permitting and environmental reviews, including the following:

Coordination and Reporting

- Integrate project outcomes into SGMA annual reports and five-year updates.
- Coordinate monitoring objectives with Alternative Plans and CV-SNMP efforts.
- Support drinking water regulatory compliance for participating domestic wells and small water systems.
- Prioritization of vulnerable communities should be incorporated early in planning and permitting processes.

Environmental Review

- CEQA compliance for well monitoring infrastructure and treatment projects.
- Adherence to potable water quality requirements.
- Local agency permits for facilities, well improvements, and interties.
- Tribal consultation where projects affect Tribal communities or resources.

7.4 Measures of Success

The following milestones and performance indicators indicate interim goals that, when achieved, will demonstrate progress toward achieving the proposed action:

Milestone	Performance Indicator
Regional working group established	Partnership agreements executed
Regional database developed	Number of datasets integrated
Priority communities identified	Communities mapped and ranked
Monitoring network expanded	Additional wells sampled annually
Public database launched	Number of users and data requests
Treatment projects installed	Households and systems served
Consolidation studies completed	Number of systems evaluated
Long-term O&M program established	Number of new POU/POE Systems installed
Regional planning integration completed	Monitoring incorporated into SGMA and water quality planning
Resident communication protocol established	Number of participating systems adopting and testing protocol
Infrastructure condition deficiencies documented	Number of systems receiving structural and site-protection assessments
Priority stabilization retrofits completed	Number of pads, foundations, tanks, pumps, or associated facilities repaired, elevated, stabilized, or replaced

7.5 Implementation Roles and Important Partnerships

Implementation of this action will require leadership and support from the following entities:

Lead

- Pueblo Unido Community Development Corporation (PUCDC)

Supporting Partners

- Coachella Valley Regional Water Management Group (CVRWMG)
- CV-SNMP agencies
- Local jurisdictions
- Self-Help Enterprises[11]

[11] Self-Help Enterprises (SHE): A nonprofit that provides technical and financial assistance to disadvantaged communities and small water systems, and could support this action through water quality investigations, system needs assessments, development of drinking water improvement projects, and assistance securing and administering funding for system upgrades.

- Community Water Center[12]
- University of California Cooperative Extension[13]
- EPA Tribal Drinking Water Programs
- Riverside County Department of Environmental Health

7.6 Resources to Build Upon

The following are existing planning efforts and projects that can be leveraged and built upon to successfully implement the action.

- CVRWRP Small Water System and Domestic Well Inventory
- CV-SNMP Monitoring Workplan and Development Workplan
- Existing CV-SNMP groundwater monitoring network
- California Electronic Data Exchange Network
- Existing PUCDC-led POE and POU pilot projects
- Small Water System Consolidation Planning efforts, including East Coachella Valley Water Supply - Valley View Mobile Home Park Water Consolidation Project
- SGMA annual reporting framework
- USEPA annual reporting framework

7.7 Cobenefits and Multibenefit Outcomes

Implementing the proposed action will provide a range of additional benefits communities and ecosystems throughout the Coachella Valley.

- ✓ Increases public health by reducing exposure to drinking water contaminants and improving regional knowledge of safe drinking water access needs.
- ✓ Improves understanding of changing groundwater conditions and supports long-term adaptation to drought and increased groundwater reliance.
- ✓ Advances environmental justice by prioritizing historically underserved communities and expanding access to water quality information and funding opportunities.
- ✓ Improves operational reliability by strengthening the long-term viability of small water systems and reducing costs through shared services and consolidation opportunities.

[12] Community Water Center (CWC): A California nonprofit focused on ensuring access to safe drinking water in underserved communities, and could support this action through community outreach, well testing, connecting residents with safe drinking water resources, and helping communities identify and advance solutions to drinking water contamination.

[13] University of California Cooperative Extension (UCCE): The University of California's research and extension network provides science-based expertise and education on groundwater and water quality, and could support this action through technical expertise, groundwater and drinking-water education, workshops, and information to help communities understand water quality risks and potential solutions.

7.8 Hurdles to Overcome

Implementation of the proposed action could face various political, operational and financial hurdles which will need to be anticipated and overcome. These include but are not limited to the following:

- Inconsistent data formats across agencies and programs.
- Limited monitoring data in some domestic well and Tribal community areas.
- Sustaining funding and technical delivery for long-term operations and maintenance.
- Inability to fund wellhead treatment in domestic and small water system wells.
- Physical capacity (pumping, piping, storage) constraints among small water systems.
- Data-sharing and privacy considerations for domestic well information.
- Community outreach and trust-building between agencies, regulators, and system operators.
- Maintaining long-term monitoring beyond initial grant funding cycles.
- Long-term operations and maintenance of treatment systems.

8 Implementation Action 2 - Improve Emergency Preparedness and Redundancy of Critical Services

Expand water storage capacity to support emergency response, fire protection, and domestic water supply needs. Coordinate storage planning with fire departments, water systems, and energy resilience efforts to ensure tanks provide sufficient capacity for both fire-flow requirements and reliable domestic supply. Prioritize storage improvements for vulnerable communities and small water systems, supplemented by temporary storage, mobile tanks, emergency water supplies, sandbags, and other contingency measures during emergencies or service disruptions.

8.1 Priority Next Steps

Implementation of the proposed action could follow the following steps to achieve meaningful progress. Interim progress reviews and adjustment will be necessary to adapt to changing conditions and community needs.

1. Conduct a countywide assessment of existing water storage infrastructure, fire flow requirements, emergency response needs, domestic water system deficiencies, and regulatory constraints to identify opportunities for dual-purpose storage that supports both emergency response and community water supply reliability. Evaluate whether pumps, pressure tanks, storage, and distribution infrastructure can sustain domestic demand and applicable emergency fire-flow requirements without equipment damage, service interruption, or unacceptable loss of pressure.
2. Advance coordination between Riverside County Fire Department/CAL FIRE, Riverside County Emergency Management Department, local water agencies, Tribal communities, IID, and small water system operators to develop flexible storage design criteria and operational protocols that maximize emergency response capacity while supporting domestic water supply needs. Leverage DWA's 2020 General Plan, which incorporates fire storage into our system storage requirements (Tables III-6A and III-6B).
3. Identify new priority storage projects in vulnerable communities, Tribal communities, small water systems, mobile home parks, and areas with limited emergency water supply capacity, inadequate fire flow infrastructure, or documented water reliability challenges. Identify existing storage that should be prioritized for retrofits and flexible use.
4. Complete feasibility studies and conceptual designs for new or expanded water storage facilities, including evaluation of tank sizing, locations, emergency interties, backup power, operational flexibility, and opportunities to support multiple emergency and domestic water supply functions.
5. Develop memoranda of understanding, reimbursement protocols, and communication procedures between emergency response agencies, water providers, and private property owners to address potential impacts to private water infrastructure and strengthen trust during emergency response activities.
6. Design and construct priority storage projects that increase emergency reserve capacity, improve fire suppression capabilities, enhance domestic water supply reliability, and provide operational flexibility during outages, emergencies, droughts, and peak demand periods.
7. Incorporate new storage facilities into emergency response plans, water shortage contingency plans, asset management programs, and long-term capital improvement planning while establishing clear communication protocols, operational agreements, and maintenance responsibilities among emergency responders, water providers, and property owners.

8. Develop a model emergency communication protocol for small water systems and manufactured housing communities that identifies who must notify residents during emergencies. The protocol should include multilingual notification methods, regular status updates, a designated resident contact, information on available emergency water, and follow-up notice when service is restored.
9. Establish or expand an emergency small-system response program to improve emergency water reliability and flood damage reductions. Deploy temporary water storage, emergency water supplies, mobile tanks, sand bags, and other contingency measures for vulnerable communities and small water systems.

8.2 Funding Strategy

Position water storage expansion projects as multi-benefit resilience investments that improve emergency preparedness, fire protection capacity, domestic water reliability, climate adaptation, and public safety while supporting disadvantaged communities and small water systems. Early funding efforts should focus on feasibility analysis, engineering, and project development activities that create a pipeline of construction-ready projects eligible for state and federal infrastructure funding.

- **Proposition 4 Funding Opportunities** including the following. See Table 2 for more detail.
    - Section 91011 Drinking Water
    - Section 91021(c) Small Communities Flood Risk Reduction (where storage improves emergency resilience)
    - Section 91510 Wildfire Mitigation
    - Section 91520(d) Fire Prevention
- **Emergency Community Water Assistance Grants (USDA Rural Development):** Pursue Emergency Community Water Assistance Grants to support water system improvements that increase storage capacity, improve drinking water reliability, expand emergency response capabilities, and strengthen rural community resilience during emergencies and natural disasters.
- **State Revolving Fund Programs:** Position State Revolving Fund financing to support design and construction of water storage facilities, system upgrades, emergency interties, and infrastructure improvements that improve long-term water system reliability and emergency preparedness.
- **Replacing, Removing, or Upgrading Underground Storage Tanks Program:** Utilize funding where applicable to replace, remove, or improve aging storage infrastructure, reduce groundwater contamination risks, support permitting and corrective actions, and improve long-term protection of drinking water resources.

8.3 Regulatory, Reporting, and Permitting Needs

Advancing this action could require various permitting and environmental review, including the following:

Coordination and Reporting

- Coordinate storage planning with Riverside County Fire Department/CAL FIRE and Riverside County Emergency Management Department.
- Incorporate storage improvements into emergency response plans, hazard mitigation plans, and water shortage contingency plans.
- Coordinate project development with utility agencies and participating small water systems.
- Support reporting requirements associated with state and federal grant-funded infrastructure projects.

Environmental Review and Permitting

- CEQA review for new storage facilities and associated infrastructure improvements.
- Local land use approvals, grading permits, and building permits.
- Drinking water system approvals for new storage facilities and operational modifications.
- Utility easements, right-of-way approvals, and interconnection agreements where required.
- Cultural resource review and Tribal consultation where required.

8.4 Measures of Success

The following milestones and performance indicators indicate interim goals that, when achieved, will demonstrate progress toward achieving the proposed action:

Milestone	Performance Indicator
Regional storage assessment completed	Storage gap analysis completed
Dual-purpose storage criteria developed	Design standards adopted
Priority storage projects identified	Number of projects prioritized
Feasibility studies completed	Number of projects advanced to design
Communication and reimbursement protocols established	Agreements executed between partners
Storage facilities designed	Number of projects receiving permits
Storage facilities constructed	Additional storage capacity added
Emergency planning integration completed	Storage facilities incorporated into emergency plans
Long-term O&M program established	Facilities maintained under active asset management programs

8.5 Implementation Roles and Important Partnerships

Implementation of this action will require leadership and support from the following entities:

Lead

- Riverside County Fire Department

Supporting Partners

- Leadership Council for Justice and Accountability (LCJA)
- Pueblo Unido Community Development Corporation (PUCDC)
- Riverside County Emergency Management Department
- Riverside County Environmental Health
- Imperial Irrigation District (IID)
- DAC Infrastructure Task Force

- Coachella Valley Regional Water Management Group (CVRWMG)
- Tribal governments and environmental departments
- Local jurisdictions
- USDA Rural Development
- California State Water Resources Control Board
- California Department of Water Resources
- Small water system operators and domestic well owners

8.6 Resources to Build Upon

The following are existing planning efforts and projects that can be leveraged and built upon to successfully implement the action.

- Desert Water Agency Emergency Storage Requirements (2020 General Plan, Tables III-6A and III-6B).
- Existing water storage facilities and distribution infrastructure
- Riverside County emergency response planning efforts
- Local fire flow standards and fire protection infrastructure assessments
- DAC Infrastructure Task Force coordination initiatives
- Existing IID infrastructure and emergency water delivery coordination programs
- Water shortage contingency plans
- Urban Water Management Plans
- Small water system infrastructure improvement programs
- Local Hazard Mitigation Plans and Emergency Operations Plans
- Existing capital improvement planning efforts
- Existing grant-funded drinking water infrastructure projects

8.7 Cobenefits and Multibenefit Outcomes

Implementation of the proposed action will help advance various additional benefits that could benefit the Coachella Valley's communities and ecosystems.

- ✓ Improves emergency response capacity by ensuring adequate water supplies are available for fire suppression, disaster response, and public safety operations.
- ✓ Increases drinking water reliability by providing additional reserve storage during outages, droughts, peak demand conditions, and infrastructure failures.
- ✓ Creates more versatile water storage infrastructure capable of supporting fire protection, emergency response, drought resilience, and domestic water supply needs through a single integrated investment.
- ✓ Improves operational flexibility by providing system redundancy, emergency reserves, and additional options for managing planned and unplanned service disruptions.
- ✓ Strengthens climate resilience by increasing community capacity to withstand drought, wildfire, extreme heat, and other climate-related hazards.
- ✓ Advances environmental justice by improving emergency preparedness and water infrastructure reliability in disadvantaged communities, Tribal communities, and small water systems.

- ✓ Strengthens coordination and trust between emergency responders, regulatory agencies, and residents through clearer communication protocols, defined responsibilities, and collaborative emergency planning.
- ✓ Supports long-term infrastructure resilience by modernizing aging storage facilities and integrating water storage investments with broader emergency preparedness efforts.

8.8 Hurdles to Overcome

Implementation of the proposed action could face various political, operational and financial hurdles which will need to be anticipated and overcome. These include but are not limited to the following:

- Existing fire and emergency management requirements may prioritize dedicated emergency storage capacity, creating challenges for developing dual-purpose facilities.
- Current codes, design standards, and operational requirements may limit flexibility in how water storage infrastructure can be used during both emergency and routine operating conditions.
- Past incidents have created concerns among residents regarding liability, compensation, and the impacts of emergency response actions on private water systems.
- Limited communication and coordination between emergency responders and private well owners may reduce trust and hinder implementation of shared emergency water supply solutions.
- High capital costs associated with storage tank construction, retrofits, and system upgrades.
- Identifying suitable sites for new storage facilities while balancing community concerns regarding aesthetics, land use compatibility, and environmental impacts.
- Securing sustainable funding for long-term operations, maintenance, inspection, and replacement of storage infrastructure.
- Integrating new storage facilities into existing water distribution systems while maintaining service reliability and operational efficiency.

9 Implementation Action 3 - Strengthen Energy Resilience for Water Infrastructure

Deploy solar-powered backup systems with battery storage, black-start capabilities[14], and pump-compatible controls to maintain operation of wells, booster pumps, and critical small water system facilities during grid outages. Prioritize collaborative pilot projects at Tribal and small water system sites, leveraging available battery incentives, direct-pay financing opportunities for Tribes, and lessons learned from existing backup power installations to overcome the technical and financial barriers associated with powering submersible groundwater pumps. For each priority system, compare appropriately sized generators, solar-plus-storage, mobile backup power, controls, and operational changes based on technical feasibility, outage duration, initial cost, fuel availability, maintenance capacity, replacement needs, and lifecycle cost.

9.1 Priority Next Steps

Implementation of the proposed action could follow the following steps to achieve meaningful progress. Interim progress reviews and adjustments will be necessary to adapt to changing conditions and community needs.

1. Identify Tribal communities, domestic well clusters, small water systems, groundwater monitoring sites, and critical water infrastructure facilities that experience the greatest operational risks during power outages and would benefit most from resilient backup power systems.
2. Conduct technical assessments of priority wells, booster pumps, treatment facilities, telemetry systems, and monitoring infrastructure to determine electrical loads, startup requirements, battery sizing needs, and the feasibility of integrating solar-powered systems with black-start capabilities.
3. Develop collaborative pilot projects with Tribal communities and small water systems to demonstrate solar-plus-storage solutions capable of powering groundwater infrastructure, treatment systems, and monitoring equipment during grid disruptions and emergency events.
4. Evaluate and deploy pump-compatible controls, inverters, battery systems, and black-start technologies that can address the high startup energy demands associated with submersible groundwater pumps and other critical water system infrastructure.
5. Leverage Tribal direct-pay financing opportunities, battery tax incentives, grants, and low-interest financing programs to reduce project costs and improve the economic feasibility of resilient backup power investments.
6. Coordinate with IID, Southern California Edison, Riverside County Emergency Management, and participating water providers to integrate resilient energy systems into emergency preparedness, continuity of operations, and water supply reliability planning efforts.
7. Install and commission priority solar-plus-storage systems at Tribal facilities, small water systems, groundwater monitoring locations, and drinking water infrastructure sites to maintain critical operations during power outages and extreme weather events.

[14] Black-start capability means that a power source can start up and begin supplying electricity without needing power from the external electric grid first.

8. Monitor system performance, document lessons learned, evaluate cost-effectiveness, and expand successful pilot projects into a broader regional energy resilience program supporting groundwater monitoring, treatment operations, and water supply reliability.

9.2 Funding Strategy

Position backup power investments as energy resilience for groundwater infrastructure and monitoring systems, emphasizing their role in maintaining groundwater monitoring networks, treatment systems, pumping operations, telemetry equipment, and drinking water services during outages.

- **Proposition 4 Funding Opportunities** including the following. See Table 2 for more detail.
    - Section 91510 Wildfire Mitigation
    - Section 91520(d) Fire Prevention
    - Section 93020(a)(3) Climate Risk Reduction
- **California Energy Commission Electric Program Investment Charge Program:** Pursue program funding to demonstrate innovative solar-plus-storage, black-start, and resilient energy technologies at Tribal facilities, groundwater wells, booster stations, and small water systems. This funding is particularly well suited for pilot and demonstration projects that advance grid resiliency, critical infrastructure reliability, and deployment of emerging energy technologies in underserved communities.
- **California Energy Commission Community Energy Resilience Funding:** Position solar-plus-storage installations as critical infrastructure resilience investments that maintain drinking water production, treatment, telemetry, groundwater monitoring, and emergency response capabilities during grid outages, extreme heat events, and wildfire-related disruptions.
- **U.S. Department of Energy Tribal Energy Program**: Leverage Tribal Energy Program grants and technical assistance to install renewable energy and battery storage systems that improve the resiliency of Tribal water infrastructure, reduce long-term operating costs, and maintain critical water services during power disruptions.
- **Tribal Direct Pay, Grants, and Financing Programs:** Leverage Tribal Direct Pay provisions to reduce project costs and improve financial feasibility for backup power installations on Tribal lands and facilities.

9.3 Regulatory, Reporting, and Permitting Needs

Advancing this action could require various permitting and environmental review, including the following:

Coordination and Reporting

- Coordinate project development with Tribal governments, IID, Southern California Edison, and Riverside County Emergency Management.
- Integrate backup power investments into emergency response plans and continuity of operations planning.

Environmental Review and Permitting

- CEQA review for facility upgrades and associated infrastructure improvements, as applicable.
- Electrical permitting and building permits for solar and battery installations.
- Utility interconnection requirements and coordination with IID or Southern California Edison.
- Tribal review and permitting requirements where projects occur on Tribal lands.

9.4 Measures of Success

The following milestones and performance indicators indicate interim goals and that, when achieved, will demonstrate progress toward achieving the proposed action:

Milestone	Performance Indicator
Priority facilities identified	Number of sites evaluated
Technical assessments completed	Number of facilities assessed
Pilot projects developed	Number of pilot projects advanced to design
Funding secured	Grant and financing dollars awarded
Solar-plus-storage systems designed	Number of projects receiving permits
Backup power systems installed	Number of facilities equipped with resilient power systems
Monitoring and telemetry resiliency improved	Percentage of critical systems operational during outages
Groundwater infrastructure protected	Number of wells, pumps, and facilities served
Pilot program evaluation completed	Lessons learned documented and shared
Regional deployment expanded	Number of additional facilities incorporated into the program

9.5 Implementation Roles and Important Partnerships

Implementation of this action will require leadership and support from the following entities:

Lead

- Torres Martinez Desert Cahuilla Indians (TMDCI)
- Pueblo Unido Community Development Corporation (PUCDC)

Supporting Partners

- Riverside County Office of Economic Development
- Riverside County Emergency Management Department
- Imperial Irrigation District (IID)
- Southern California Edison
- Coachella Valley Regional Water Management Group (CVRWMG)
- Small water system operators

9.6 Resources to Build Upon

The following are existing planning efforts and projects that can be leveraged and built upon to successfully implement the action.

- TMDCI solar and renewable energy initiatives
- Existing backup power installations and pilot projects

- Existing solar energy infrastructure at water system facilities
- Battery storage incentives and Tribal Direct Pay financing opportunities

9.7 Cobenefits and Multibenefit Outcomes

Implementation of the proposed action will help advance various additional benefits that could benefit the Coachella Valley's communities and ecosystems.

- ✓ Maintains operation of groundwater wells, booster pumps, treatment systems, and critical water infrastructure during power outages and emergency events.
- ✓ Improves drinking water reliability and public health protection by reducing service interruptions that can affect water production, treatment, and distribution.
- ✓ Supports Tribal sovereignty and self-sufficiency by expanding access to locally controlled resilient energy infrastructure.
- ✓ Advances environmental justice by improving service reliability for disadvantaged communities, Tribal communities, and small water systems that often face disproportionate infrastructure challenges.
- ✓ Reduces dependence on diesel generators and other fossil fuel-powered backup systems while supporting cleaner energy solutions.
- ✓ Creates a scalable model for integrating renewable energy and water infrastructure resilience across the Coachella Valley region.

9.8 Hurdles to Overcome

Implementation of the proposed action could face various political, operational and financial hurdles which will need to be anticipated and overcome. These include but are not limited to the following:

- Financing challenges remain significant because many traditional solar tax incentives are not directly accessible to all project sponsors, resulting in long payback periods, although Tribal Direct Pay opportunities and battery incentives can substantially improve project economics.
- Powering submersible groundwater pumps with solar and battery systems can be technically challenging because pumps often require large startup energy surges that may necessitate specialized controls, larger batteries, inverters, or black-start equipment.
- Coordination among Tribes, utilities and small system operators may be required to successfully implement pilot projects and develop scalable regional deployment strategies.
- Long-term maintenance, replacement, and operational responsibilities for battery storage systems must be clearly defined to ensure reliable performance over time.

10 Implementation Action 4 – Develop Decentralized Flood Management and Stormwater Capture

Coordinate with Riverside County, CVWD's stormwater program, Coachella Valley Mountain Conservancy and local Recreation Districts to **identify and implement flood mitigation projects in underserved communities, manufactured housing areas, and critical infrastructure corridors with documented flooding concerns, including locations such as 70th Street, Pierce Street, and communities throughout the eastern Coachella Valley. Incorporate multi-benefit centralized and decentralized stormwater catchment features into flood management approaches, where feasible,** to slow, capture, store, infiltrate, and beneficially use stormwater closer to where runoff is generated while complementing regional flood control infrastructure. Integrate future flood risk projections into capital improvement planning, development review, infrastructure design standards, and groundwater sustainability planning to support flood-risk reduction, groundwater quality protection, and aquifer replenishment.

10.1 Priority Next Steps

Implementation of the proposed action could follow the following steps to achieve meaningful progress. Interim progress reviews and adjustment will be necessary to adapt to changing conditions and community needs.

1. Review the Riverside County Flood Management Plan, regional Stormwater Master Plans, local drainage master plans, hazard mitigation plans, and documented flooding concerns to identify priority flood-prone communities, transportation corridors, and critical infrastructure locations throughout the eastern Coachella Valley. As part of this review, identify locations where centralized or decentralized stormwater catchment features could supplement existing or planned flood-control systems. Priority areas include but are not limited to:
    1. Avenue 70
    2. Pierce Street
    3. Communities throughout the eastern Coachella Valley.
2. Coordinate with Riverside County Flood Control, CVWD's stormwater program, local jurisdictions, Tribal communities, and community-based organizations to develop a regional project list focused on underserved communities, manufactured housing communities, and recurring flooding hotspots such as 70th Street and Pierce Street. Include both regional-scale flood management projects and distributed stormwater catchment opportunities that can be incorporated into community, transportation, public facility, and development projects.
3. Leverage Stormwater Master Plans to identify opportunities for flood reduction, groundwater recharge, source water protection, and water quality improvements, including opportunities to use networks of centralized and decentralized catchment features to reduce runoff volumes and peak flows while retaining stormwater as a local water resource.
4. Assess flood exposure at small water systems, Polanco parks, manufactured housing communities, and septic-dependent areas, including risks to wellheads, pumps, electrical equipment, storage tanks, fire-suppression equipment, septic systems, and access routes. Use the assessment to identify site-specific protection, drainage, stabilization, elevation, retention, and emergency pumping needs.
5. Evaluate and prioritize multi-benefit infrastructure projects such as detention basins, stormwater capture facilities, green infrastructure, channel improvements, low-impact development features, and recharge projects as well as decentralized catchment features such as bioretention areas, vegetated swales, infiltration areas, permeable surfaces, and other distributed capture and infiltration practices,

as appropriate to site conditions, that reduce flooding while increasing local groundwater replenishment.

6. Develop standards and policies that incorporate future flood risk projections into capital improvement planning, development review processes, infrastructure design criteria, and land use planning to reduce future flood vulnerability. Evaluate opportunities for these standards and policies to encourage or require stormwater catchment and retention features in public improvements, redevelopment, new development, streetscapes, parking areas, and other appropriate sites.
7. Integrate flood management, stormwater capture, centralized and decentralized stormwater catchment, and groundwater recharge objectives into SGMA implementation, groundwater quality protection efforts, annual reporting processes, and future five-year Alternative Plan updates.
8. Secure funding and technical support to advance feasibility studies, engineering design, land acquisition, environmental review, and construction of priority flood mitigation and stormwater recharge projects, including distributed stormwater catchment projects that can be implemented individually or as part of larger capital improvement projects.

   Construct priority projects and establish long-term monitoring programs that evaluate flood risk reduction, groundwater recharge performance, water quality benefits, stormwater captured or retained, and community resilience outcomes.

10.2 Funding Strategy

Position flood mitigation projects as multi-benefit resilience investments that reduce flood risk, protect groundwater quality, recharge local aquifers, improve climate adaptation, and provide direct benefits to disadvantaged communities. Package centralized flood-control improvements and decentralized stormwater catchment features as complementary components of an integrated flood management strategy, where appropriate, emphasizing opportunities for distributed projects to be incorporated into planned transportation, public facility, park, streetscape, and development investments.

- **Proposition 4 Funding Opportunities** including the following. See Table 2 for more detail.
  - Section 91021(b) Flood Control Subventions
  - Section 91023 Storm Water Grant Program
  - Section 91031 Watershed Resilience
  - Section 93010 Fish & Wildlife
- **FEMA Building Resilient Infrastructure and Communities**: Pursue program funding to support flood-risk reduction projects, stormwater infrastructure improvements, hazard mitigation planning, resilience studies, engineering design, and construction of projects that reduce long-term community vulnerability to flooding.
- **FEMA Flood Mitigation Assistance**: Leverage funding to support flood mitigation planning, drainage improvements, flood infrastructure projects, and vulnerability reduction efforts in communities experiencing recurring flooding impacts.
- **Safeguarding Tomorrow Revolving Loan Fund**: Pursue revolving loan funding opportunities that can support local implementation of flood mitigation infrastructure, stormwater improvements, and resilience projects that may not be immediately competitive for grant funding.

10.3 Regulatory, Reporting, and Permitting Needs

Advancing this action could require various permitting and environmental review, including the following:

Coordination and Reporting

- Coordinate planning efforts with Recreation Districts, Riverside County Flood Control and Water Conservation District, CVWD, , Cities, and community partners.
- Coordinate flood planning efforts with groundwater quality protection and source water protection initiatives supported through regional planning efforts.
- Incorporate climate-informed flood risk information into capital improvement planning and development review processes.
- Coordinate with local planning, public works, transportation, and stormwater programs to identify opportunities to incorporate decentralized stormwater catchment features into public and private projects.

Environmental Review and Permitting

- CEQA compliance for flood mitigation and stormwater capture projects, including applicable centralized and decentralized catchment facilities.
- Clean Water Act permitting requirements, as applicable.
- RWQCB coordination for stormwater infiltration and groundwater recharge projects.
- Floodplain development permits, where applicable.
- Right-of-way, easement, and land acquisition approvals, where required.
- Tribal consultation and cultural resource review where projects may affect Tribal resources.

10.4 Measures of Success

The following milestones and performance indicators indicate interim goals and that, when achieved, will demonstrate progress toward achieving the proposed action:

Milestone	Performance Indicator
Flood vulnerability assessment completed	Priority flood-prone areas identified
Regional project list developed	Number of projects prioritized
Climate-informed design standards developed	Standards adopted by participating agencies
Funding secured	Grant and financing dollars awarded
Feasibility studies completed	Number of projects advanced to design
Flood mitigation projects permitted	Number of projects receiving approvals
Stormwater capture expanded	Additional stormwater capture capacity created
Groundwater recharge enhanced	Estimated AF of recharge supported annually
SGMA integration completed	Flood planning incorporated into reporting and plan updates

10.5 Implementation Roles and Important Partnerships

Implementation of this action will require leadership and support from the following entities:

Lead

- Coachella Valley Water District (CVWD)

Supporting Partners

- Riverside County Flood Control and Water Conservation District
- Riverside County Transportation Department
- Riverside County Planning Department
- Cities and local jurisdictions throughout the eastern Coachella Valley
- Recreation Districts
- Coachella Valley Mountain Conservancy
- California Department of Water Resources
- Leadership Council for Justice and Accountability (LCJA)
- Pueblo Unido Community Development Corporation (PUCDC)
- Torres Martinez Desert Cahuilla Indians (TMDCI)
- Imperial Irrigation District (IID)
- Federal Emergency Management Agency (FEMA)
- Groundwater Sustainability Agencies (GSAs)

10.6 Resources to Build Upon

The following are existing planning efforts and projects that can be leveraged and built upon to successfully implement the action.

- Riverside County Flood Management Plan
- CVWD Stormwater Program and Master Plans
- Existing storm drain and flood control infrastructure
- SGMA annual reporting
- Groundwater recharge planning efforts and recharge infrastructure identified through regional groundwater management planning.
- Local hazard mitigation and emergency preparedness planning efforts
- Existing and planned public facilities, transportation improvements, parks, streetscapes, and development projects that could provide opportunities to integrate decentralized stormwater catchment features.
- Local Low Impact Development requirements and ordinances, design guidance, and stormwater management standards applicable to distributed capture, retention, and infiltration.

10.7 Cobenefits and Multibenefit Outcomes

- ✓ Reduces flood risk for disadvantaged communities, manufactured housing communities, and critical infrastructure corridors vulnerable to recurring flooding.
- ✓ Improves public safety, transportation reliability, and emergency access during storm events.
- ✓ Implementation of the proposed action will expand stormwater capture and groundwater replenishment opportunities to augment local water supplies and reduce reliance on imported water,

while advancing groundwater sustainability objectives through recharge, and aquifer replenishment strategies identified in regional groundwater planning efforts.

- ✓ Protects groundwater quality by integrating flood management with source water protection and water quality planning initiatives.
- ✓ Advances environmental justice by directing investments toward underserved communities that face disproportionate flood risks.

10.8 Hurdles to Overcome

Implementation of the proposed action could face various political, operational and financial hurdles which will need to be anticipated and overcome. These include but are not limited to the following:

- Limited funding is available for construction of large-scale flood mitigation projects, making phased implementation and multi-benefit funding strategies critical.
- Flood management, groundwater recharge, transportation, and land use planning are often administered by different agencies, requiring substantial interagency coordination.
- Suitable land for stormwater capture and infiltration projects may be limited in some priority areas. A distributed catchment approach can broaden the range of potential sites, but implementation will need to account for site-specific infiltration conditions, groundwater quality protection, available right-of-way, utility conflicts, maintenance responsibilities, and compatibility with existing land uses.
- Future flood risk projections are not consistently incorporated into local development review, capital planning, and infrastructure design processes, requiring updates to existing planning frameworks.
- Decentralized features may involve multiple property owners and implementing agencies and require clear standards and long-term operations and maintenance responsibilities.
- Flood-management planning has historically emphasized regional conveyance and storage infrastructure; integrating distributed catchment features will require coordination across flood control, stormwater, transportation, land use, development review, and groundwater planning

11 Implementation Action 5 - Build Regional Support to Adapt Small Water Systems

Expand septic-to-sewer conversion, wastewater consolidation, and wastewater infrastructure improvement programs throughout vulnerable communities to reduce groundwater contamination, protect drinking water supplies, improve public health outcomes, and support long-term groundwater sustainability. Building upon CVWD's Sanitation Master Plan, the ongoing Consolidation Master Plan update, and work led through the DAC Infrastructure Task Force, this action prioritizes extending centralized wastewater collection and treatment infrastructure to communities currently reliant on aging or failing septic systems.

11.1 Priority Next Steps

Implementation of the proposed action could follow the following steps to achieve meaningful progress. Interim progress reviews and adjustment will be necessary to adapt to changing conditions and community needs.

1. Complete the ongoing Consolidation Master Plan update and incorporate new groundwater quality data, community needs assessments, growth projections, infrastructure conditions, and lessons learned from completed and ongoing consolidation projects, including Monroe Street, Avenue 66, El Mesquite, Sunbird, and Airport Boulevard.

- Update and refine the prioritization framework developed through the East Coachella Valley sanitation planning effort[15] and septic conversion program to identify the next generation of septic-to-sewer conversion projects based on groundwater quality risk, public health concerns, project feasibility, disadvantaged community status, and proximity to existing wastewater infrastructure.

2. Expand small water system condition assessments to document the structural condition and flood exposure of well pads, tank foundations, pump supports, fire-suppression infrastructure, electrical equipment, fencing, shade structures, and associated piping. Prioritize systems with ground-level slabs, deteriorated or shifting foundations, unsupported equipment, or other conditions that increase the risk of failure during flooding, high winds, extreme heat, or seismic movement.
3. Coordinate through the DAC Infrastructure Task Force to engage vulnerable communities, mobile home parks, Tribal communities, Riverside County Environmental Health, and local service providers to identify wastewater infrastructure needs and implementation barriers.
4. Evaluate opportunities to expand wastewater service areas in coordination with planned wastewater treatment facility improvements, recycled water initiatives, and groundwater protection objectives.
5. Develop a septic system management and education program for areas that will remain unsewered in the near term, including:
    1. Septic maintenance education.
    2. Inspection and pumping best practices.
    3. Vegetation management guidance to reduce damage to septic infrastructure.
    4. Outreach regarding drought-tolerant landscaping and appropriate plant selection near septic systems.

[15] Learn more here: https://ceqanet.lci.ca.gov/2024121127

5. Financial assistance and incentive opportunities for property owners.

6. Advance feasibility studies, environmental review, easement acquisition, engineering design, and permitting for priority septic-to-sewer conversion projects identified through the updated Consolidation Master Plan.
7. In septic-dependent communities that are not scheduled for near-term sewer connection, provide flood-preparedness guidance addressing inspection after inundation, safe system shutdown and restart, warning signs of backups, emergency contacts, and available financial assistance
8. Pursue construction funding for priority projects and bundle projects where feasible to improve cost effectiveness and grant competitiveness.
9. Construct priority wastewater infrastructure projects and complete customer connections to centralized sewer systems.

- Establish long-term groundwater quality and program performance monitoring to evaluate nitrate reduction, customer connections, and wastewater system performance.

11.2 Funding Strategy

Position septic-to-sewer conversion projects as multi-benefit groundwater quality, public health, environmental justice, and climate resilience investments. Funding applications should emphasize nitrate reduction, protection of drinking water supplies, compliance with groundwater quality objectives, improved sanitation services, and direct benefits to disadvantaged communities. Projects identified through the Consolidation Master Plan update and coordinated through the DAC Infrastructure Task Force should be packaged into phased implementation programs that combine planning, design, land acquisition, and construction activities to improve competitiveness for State and federal funding opportunities. Existing success securing funding for water and wastewater consolidations should be leveraged to support future phases.

- **Proposition 4 Funding Opportunities** including the following. See Table 2 for more detail.
    - Section 91011 Drinking Water/Clean Water State Revolving Fund (CWSRF)
    - Section 91014 WRFP (where recycled water components are bundled)
    - Section 91018 Regional Conveyance
- **State Water Resources Control Board SAFER Program**: Pursue SAFER funding for planning, design, technical assistance, and construction of wastewater consolidation projects that improve drinking water reliability and address failing wastewater infrastructure in disadvantaged communities.
- **Clean Water State Revolving Fund**: Leverage low-interest financing, principal forgiveness opportunities, and supplemental grants for sewer system expansion, wastewater infrastructure construction, and septic-to-sewer conversion projects. CWSRF funding has already been identified as a potential source for consolidation efforts.
- **U.S. Department of Agriculture Rural Development Water and Waste Disposal Program**: Pursue grants and loans to support wastewater infrastructure expansion, sewer service extensions, and community sanitation improvements serving disadvantaged and rural communities.
- **EPA WIIN and Community Infrastructure Funding Programs**: Seek funding opportunities that support consolidation projects, disadvantaged community infrastructure improvements, groundwater protection, and public health objectives. WIIN funding has previously been identified as a strong fit for septic-to-sewer conversion projects.

11.3 Regulatory, Reporting, and Permitting Needs

Advancing this action could require various permitting and environmental review, including the following:

Coordination and Reporting

- Coordinate implementation through the DAC Infrastructure Task Force and CVWD wastewater planning efforts.
- Coordinate with Riverside County Department of Environmental Health regarding septic system abandonment, public health compliance, and wastewater service transitions.
- Integrate consolidation progress into Alternative Plan Projects and Management Action implementation, groundwater quality protection initiatives, and CV-SNMP implementation activities.
- Track wastewater infrastructure expansion and groundwater quality outcomes through annual reporting and program performance evaluations.

Environmental Review and Permitting

- CEQA compliance for sewer extension and consolidation projects.
- Local encroachment permits and right-of-way approvals.
- Easement acquisition and utility crossing agreements where necessary.
- Waste Discharge Requirement modifications, if applicable.
- RWQCB coordination regarding groundwater quality protection objectives.
- Septic system abandonment permits and inspections.
- Tribal consultation and cultural resources review where projects may affect Tribal resources.

11.4 Measures of Success

The following milestones and performance indicators indicate interim goals and that, when achieved, will demonstrate progress toward achieving the proposed action:

Milestone	Performance Indicator
Consolidation Master Plan update completed	Grant and financing dollars awarded
Priority project list developed	Number of projects advanced to construction readiness
Community engagement completed	Linear feet of sewer pipe installed
Funding secured	Number of septic systems abandoned
Engineering and environmental review completed	Number of residential, Tribal, mobile home park, and community connections completed
Sewer infrastructure constructed	Reduction in nitrate loading and groundwater quality trends evaluated
Septic systems eliminated	Grant and financing dollars awarded
Properties connected to sewer service	

11.5 Implementation Roles and Important Partnerships

Implementation of this action will require leadership and support from the following entities:

Lead

- Coachella Valley Water District (CVWD)

Supporting Partners

- DAC Infrastructure Task Force
- Riverside County Department of Environmental Health
- Colorado River Basin RWQCB
- Leadership Council for Justice and Accountability (LCJA)
- Pueblo Unido Community Development Corporation (PUCDC)
- Torres Martinez Desert Cahuilla Indians (TMDCI)

11.6 Resources to Build Upon

The following are existing planning efforts and projects that can be leveraged and built upon to successfully implement the action.

- CVWD Consolidation Master Plan and ongoing planning and prioritization efforts that identified approximately 18 sanitation consolidation projects, including those in eastern Coachella valley.
- DAC Infrastructure Task Force planning, funding, outreach, and coordination network.
- Existing trunk sewer infrastructure including Monroe Street, Avenue 66, and related expansion projects.
- Existing CVWD wastewater collection, treatment, and recycled water infrastructure.
- CV-SNMP implementation and groundwater quality monitoring efforts.
- Groundwater sustainability planning and annual reporting programs.
- Lessons learned from completed and ongoing consolidation projects.

11.7 Cobenefits and Multibenefit Outcomes

Implementation of the proposed action will help advance various additional benefits that could benefit the Coachella Valley's communities and ecosystems.

- ✓ Reduces nitrate loading and other groundwater contamination risks associated with septic systems.
- ✓ Improves drinking water quality and protects groundwater resources that support domestic, municipal, Tribal, and agricultural water users.
- ✓ Improves public health outcomes through access to reliable wastewater collection and treatment services.
- ✓ Advances environmental justice by directing infrastructure investments toward disadvantaged communities and mobile home parks.
- ✓ Reduces long-term costs associated with individual septic system failures and emergency wastewater repairs.
- ✓ Improves reliability and efficiency of wastewater service delivery throughout the eastern Coachella Valley.

11.8 Hurdles to Overcome

Implementation of the proposed action could face various political, operational and financial hurdles which will need to be anticipated and overcome. These include but are not limited to the following:

- Extending sewer infrastructure to dispersed and rural communities can be extremely costly, particularly where backbone infrastructure does not yet exist.
- Long-term operation, maintenance, and customer affordability considerations can create implementation challenges.
- Many vulnerable communities face financial barriers associated with connection fees, lateral improvements, and ongoing service costs.
- Easement acquisition, right-of-way constraints, permitting, and existing utility conflicts can delay implementation.

12 Implementation Action 6 - Advance Water Supply Projects and Facility Expansions

Advance implementation of recycled water, groundwater replenishment, and water reuse projects identified in the Indio and Mission Creek Alternative Plans, including expansions of WRP-4, WRP-7, WRP-10, Regional WRF, Horton Wastewater Treatment Plant (WWTP), EVRA, groundwater recharge facilities, and non-potable distribution systems. Prioritize SGMA-benefit and source substitution projects that reduce groundwater pumping through the expansion of recycled water, blended recycled water with Colorado River supplies, and groundwater replenishment projects to improve basin sustainability.

12.1 Priority Next Steps

Implementation of the proposed action could follow the following steps to achieve meaningful progress. Interim progress reviews and adjustment will be necessary to adapt to changing conditions and community needs.

1. Leverage modeled benefits of Projects and Management Actions in the Indio and Mission Creek Subbasin Alternative Plans to advance design and construction of planned expansions at WRP-4, WRP-7, WRP-10, Regional WRF, Horton WWTP, and EVRA to increase recycled water production and delivery.
2. Advance design and construction of planned expansion of Palm Desert Groundwater Replenishment Facility to increase recharge capacity.
3. Continue development of Regional WRF potable reuse facilities to diversify regional water supplies and provide long-term drought-resilient water replenishment in Mission Creek Subbasin.
4. Expand non-potable recycled water distribution systems to increase recycled water deliveries to golf courses, agricultural users, municipal irrigation customers, public facilities, and other appropriate end users, reducing reliance on groundwater supplies.

- Evaluate additional opportunities to blend recycled water and Colorado River supplies where appropriate to support source substitution and groundwater sustainability objectives.

5. Identify opportunities to improve conveyance, interconnections, storage, recharge basin operations, and regional system integration to maximize groundwater replenishment and recycled water utilization.
6. Secure funding for design, construction, and long-term operation of priority facilities through coordinated grant, financing, and regional funding strategies.

12.2 Funding Strategy

Position recycled water, potable reuse, and groundwater replenishment projects as multi-benefit investments that improve water supply reliability, advance groundwater sustainability, increase drought resilience, support climate adaptation, reduce dependence on imported water supplies, and provide long-term operational flexibility. Funding applications should emphasize measurable groundwater benefits, recharge volumes, source substitution outcomes, climate resilience benefits, and consistency with SGMA implementation objectives. Project development should be organized into phased planning, design, permitting, and construction packages to improve grant competitiveness and maximize leverage of State and federal funding sources. Coordinated funding applications that bundle recharge, recycled water, conveyance, and potable reuse infrastructure may improve competitiveness by demonstrating multiple regional benefits and broad support.

- **Proposition 4 Funding Opportunities** including the following. See Table 2 for more detail.
    - Section 91014 Water Recycling Funding Program
    - Section 91012 Sustainable Groundwater Management
    - Section 91011 Drinking Water / SRF
    - Section 91018 Regional Conveyance
- **Bureau of Reclamation WaterSMART Program**: Pursue grants for water recycling, groundwater replenishment, water reuse, system efficiency improvements, and climate resilience projects that reduce water supply vulnerability.
- **SWRCB Clean Water State Revolving Fund**: Leverage low-interest financing and available subsidy opportunities for wastewater treatment, recycled water production facilities, potable reuse infrastructure, conveyance systems, and groundwater recharge projects.

  WIFIA and Infrastructure Financing Programs: Evaluate opportunities for large-scale financing of major treatment, recharge, conveyance, and potable reuse facilities that require significant capital investment.

12.3 Regulatory, Reporting, and Permitting Needs

Advancing this action could require various permitting and environmental review, including the following:

Coordination and Reporting

- Coordinate project implementation with groundwater sustainability reporting requirements associated with the Indio and Mission Creek Subbasin Alternative Plans.
- Coordinate implementation among wastewater agencies, GSAs, recycled water operators, and regional water supply agencies.
- Document recharge benefits, source substitution benefits, recycled water use, and groundwater sustainability outcomes through ongoing monitoring and operational reporting.

Environmental Review and Permitting

- CEQA compliance for recycled water, potable reuse, recharge, treatment, storage, and conveyance facilities.
- RWQCB approvals associated with recharge and recycled water projects, as applicable.
- SWRCB permitting requirements for potable reuse projects, where applicable.
- Water recycling requirements and recycled water use authorizations consistent with California recycled water regulations.
- Rights-of-way, easement acquisition, and land use approvals for conveyance, treatment, and recharge infrastructure.
- Air quality, construction, and local agency permits associated with facility expansion projects, as applicable.
- Tribal consultation and cultural resource review where projects may affect Tribal resources.

12.4 Measures of Success

The following milestones and performance indicators indicate interim goals and that, when achieved, will demonstrate progress toward achieving the proposed action:

Milestone	Performance Indicator

Project funding secured	Grant and financing dollars awarded
Preliminary engineering completed	Number of projects advanced to final design
Environmental review completed	Number of projects receiving environmental clearance
Facilities permitted	Number of permits obtained
Recycled water production expanded	Additional AF per year produced
Groundwater recharge facilities expanded	Additional recharge capacity created
Non-potable distribution systems expanded	Additional service area and customers served
Source substitution increased	Groundwater pumping reduced annually
Basin sustainability improved	Groundwater sustainability indicators achieved
Project construction completed	Number of facilities brought online

12.5 Implementation Roles and Important Partnerships

Implementation of this action will require leadership and support from the following entities:

Lead

- Coachella Valley Regional Water Management Group (CVRWMG)

Supporting Partners

- East Valley Reclamation Authority
- Wastewater agencies
- Colorado River Basin RWQCB
- Local cities and land use agencies

12.6 Resources to Build Upon

The following are existing planning efforts and projects that can be leveraged and built upon to successfully implement the action.

- Projects and Management Actions included in the Indio Subbasin Alternative Plan, including *PMA 18: EVRA Recycled Water Delivery.*
- Projects and Management Actions included in the Mission Creek Subbasin Alternative Plan.
- Existing groundwater replenishment facilities and recharge basin infrastructure.
- Existing recycled water treatment, conveyance, and distribution systems.
- WRP-4, WRP-7, WRP-10, Horton WWTP, and EVRA planning and expansion efforts.
- Regional WRF planning for future groundwater replenishment.
- Colorado River and Coachella Canal supply infrastructure.
- Existing non-potable recycled water delivery systems.
- Groundwater sustainability monitoring programs and annual reporting processes.

12.7 Cobenefits and Multibenefit Outcomes

Implementation of the proposed action will help advance various additional benefits that could benefit the Coachella Valley's communities and ecosystems.

- ✓ Expanded recycled water and potable reuse supplies will improve long-term water supply reliability by creating drought-resilient local water sources that are less vulnerable to imported water supply reductions.
- ✓ Groundwater replenishment projects will help maintain groundwater levels, support basin sustainability objectives, and reduce long-term risks associated with groundwater overdraft.
- ✓ Source substitution projects will reduce dependence on groundwater pumping while improving operational flexibility during droughts, emergencies, and future water supply disruptions.
- ✓ Expanded recycled water use will reduce demand on potable water supplies, allowing higher quality water resources to be reserved for drinking water and other essential uses.
- ✓ Potable reuse and groundwater replenishment projects will strengthen climate resilience by diversifying regional water portfolios and reducing vulnerability to changing hydrologic conditions.
- ✓ Regional implementation of these projects will create long-term infrastructure efficiencies while supporting compliance with groundwater sustainability requirements and water supply reliability objectives.

12.8 Hurdles to Overcome

Implementation of the proposed action could face various political, operational and financial hurdles which will need to be anticipated and overcome. These include but are not limited to the following:

- Large-scale recycled water, potable reuse, and recharge projects require significant capital investment for planning, permitting, treatment, conveyance, and long-term operations.
- Potable reuse projects face complex regulatory requirements, permitting processes, and public outreach needs, along with substantial costs, that may extend project development timelines.
- Securing long-term funding for both capital improvements and ongoing operations remains a significant challenge, particularly for large regional and/or potable reuse projects.
- Expansion of recycled water use may require substantial investment in distribution infrastructure and customer conversion programs before full project benefits can be realized.
- Groundwater recharge projects may require additional land acquisition, facility expansion, operational coordination, and environmental review to achieve planned recharge objectives.
- Coordinating implementation across multiple agencies, treatment facilities, recharge facilities, water suppliers, and regulatory agencies will require sustained regional collaboration and long-term program management.
- Changing regulatory requirements, construction cost escalation, and supply chain challenges may increase project costs and lengthen implementation schedules for major infrastructure improvements.

13 Implementation Action 7 - Advance Outdoor Water Use Efficiency Priorities

Coordinate with CVWD, local water suppliers, jurisdictions, agricultural operators, golf courses, HOAs, businesses, institutions, and community partners to **build upon CV Water Counts as the regional platform for coordinated water-use efficiency implementation. Expand existing education, outreach, rebate, turf-conversion, and irrigation-efficiency efforts while using regional conservation data** to identify underserved customer segments, target the highest-value conservation opportunities, and improve measurement of resulting water savings. Use the existing CV Water Counts framework to test, coordinate, evaluate, and scale water-efficiency strategies across participating agencies.

13.1 Priority Next Steps

Implementation of the proposed action could follow the following steps to achieve meaningful progress. Interim progress reviews and adjustments will be necessary to adapt to changing conditions and community needs.

1. Complete a regional inventory of existing CV Water Counts and participating-agency conservation programs, incentives, outreach, eligibility requirements, participation, and available performance data to identify program overlaps and gaps.
2. Use findings from the Regional Water Conservation Study and participating-agency water-use data to develop a regional conservation targeting framework that identifies customer classes, geographic areas, and water uses with the greatest remaining conservation potential. The completed study provides a foundation for this because it evaluated program saturation, targeting strategies, incentive levels, and observed water savings.
3. Expand CV Water Counts from primarily regional education and program information toward a common entry point for customers to identify applicable incentives, technical assistance, and conservation opportunities offered by participating agencies. This builds directly on the existing website's educational resources and rebate information.
4. Develop targeted conservation strategies for customer sectors that may not be fully addressed through residential turf replacement alone, including large landscapes, HOAs, commercial and institutional properties, golf courses, and agricultural users.
5. Use the Regional Water Conservation Study methodology as a starting point for evaluating additional conservation measures beyond turf conversion, prioritizing measures for which participating agencies can establish defensible baseline use and post-implementation savings. The regional planning documents identify a similar review of water-efficient devices as an area considered in the conservation-study work.
6. Standardize a core set of regional performance measures across participating agencies, including participation, area of turf converted, irrigation devices installed or upgraded, estimated or measured annual water savings, incentive expenditures, and cost per acre-foot conserved, where data are available.
7. Pilot incentive structures across participating agencies while allowing individual agencies to retain programs appropriate to their service areas and customers. Use measured program performance to periodically reassess incentive amounts and targeting.
8. Develop targeted outreach campaigns through CV Water Counts using customer and program-performance information to reach customer classes with significant remaining conservation opportunities. Continue using locally informed messaging and the existing Water Counts Academy

and educational framework. CV Water Counts already uses resident survey data to inform messaging.

9. Prepare a recurring regional water-use efficiency summary that tracks participation, measurable water savings, program cost-effectiveness, remaining opportunities, and recommended adjustments to regional conservation priorities.

13.2 Funding Strategy

Use CV Water Counts and the Regional Water Conservation Study to develop implementation-ready packages of proven or promising conservation measures. Funding applications should document baseline conditions, expected water savings, customer participation, cost-effectiveness, and the ability to scale existing regional programs. Where appropriate, participating agencies could bundle similar conservation activities into regional applications while maintaining agency-specific implementation.

- **Proposition 4 Funding Opportunities** including the following. See Table 2 for more detail.
    - Section 91013 Multibenefit Land Repurposing Program
    - Section 91023 Storm Water Grant Program
    - Section 91031 Watershed Resilience (Conservation Implementation)
    - Section 91012 Sustainable Groundwater Management
    - Section 93010 Fish & Wildlife
    - Section 93020(a)(5) Nature-Based Solutions
    - USBR WaterSMART Water and Energy Efficiency Grants

13.3 Regulatory, Reporting, and Permitting Needs

Advancing this action could require various permitting and environmental review, including the following:

Coordination and Reporting

- Coordinate implementation with Regional Water Board stormwater and groundwater protection initiatives.
- Coordinate with Alternative Plan and Regional Urban Water Management Plan implementation to regionally track water conservation reporting, stormwater management programs, and recharge facility performance monitoring.
- Coordinate project development among flood management agencies, water agencies, local jurisdictions, private landowners, agricultural operators, and community organizations.
- Track performance indicators related to water quality improvements, flood reduction benefits, groundwater recharge performance, and landscape water savings.

Environmental Review and Permitting

- CEQA compliance for green infrastructure, stormwater, recharge, and flood management projects.
- RWQCB coordination regarding stormwater infiltration, recharge operations, and water quality protection measures.
- Clean Water Act permitting requirements, where applicable.
- Local grading, encroachment, and construction permits.
- Right-of-way, easement, and land use approvals as necessary.
- Tribal consultation and cultural resource review where projects may affect Tribal resources.

13.4 Measures of Success

The following milestones and performance indicators indicate interim goals and that, when achieved, will demonstrate progress toward achieving the proposed action:

Milestone	Performance Indicator
Regional conservation program inventory completed	Participating-agency programs, incentives, customer sectors, and identified gaps documented
Priority conservation opportunities identified	Customer sectors and measures prioritized using available regional data
CV Water Counts coordination expanded	Participating programs incorporated into coordinated regional outreach and implementation
Turf replacement expanded	Acres or square feet converted
Irrigation efficiency expanded	Number of irrigation upgrades or audits completed
Water savings documented	Estimated or measured annual water savings by conservation measure
Program effectiveness evaluated	Cost per acre-foot conserved, where sufficient data are available
Participation broadened	Participation by customer sector and participating water agency

13.5 Implementation Roles and Important Partnerships

Implementation of this action will require leadership and support from the following entities:

Lead

- Coachella Valley Regional Water Management Group (CVRWMG)

Supporting Partners

- Colorado River Basin RWQCB
- Riverside County Flood Control and Water Conservation District
- Local jurisdictions throughout the Coachella Valley
- GSAs
- Golf course operators and golf industry partners
- Agricultural landowners and agricultural organizations
- Private developers and commercial property owners
- DAC Infrastructure Task Force
- Community-based organizations
- Tribal governments and Tribal environmental programs
- UC Riverside

13.6 Resources to Build Upon

The following are existing planning efforts and projects that can be leveraged and built upon to successfully implement the action.

- CV Water Counts regional conservation platform, including its existing education and outreach, rebate information, customer messaging, and Water Counts Academy.
- 2024 CVRWMG Regional Water Conservation Study, including its analysis of turf-conversion savings, program saturation, customer targeting, incentive levels, and conservation cost-effectiveness.
- Existing participating-agency conservation programs, including landscape incentives, irrigation upgrades, water audits, conservation education, water-waste programs, and high-efficiency-device rebates.
- Coachella Valley Regional Urban Water Management Plan and Alternative Plan conservation program tracking and demand projections.

13.7 Cobenefits and Multibenefit Outcomes

Implementation of the proposed action will help advance various additional benefits that could benefit the Coachella Valley's communities and ecosystems.

- ✓ Reduces potable water demand and groundwater pumping by expanding participation in effective water-use efficiency programs.
- ✓ Strengthens CV Water Counts as a regional platform for coordinated conservation outreach, incentives, and education, building on existing agency programs.
- ✓ Improves conservation investments by using water-use and program data to better target customers, incentives, and efficiency measures.
- ✓ Expands outdoor water savings through turf conversion, climate-appropriate landscaping, efficient irrigation, and water-use audits.
- ✓ Broadens conservation efforts to HOAs, commercial and institutional properties, golf courses, agricultural users, and other high-water-use sectors.
- ✓ Supports adaptive management by tracking participation, water savings, and cost-effectiveness to refine future investments.

13.8 Hurdles to Overcome

Implementation of the proposed action could face various political, operational and financial hurdles which will need to be anticipated and overcome. These include but are not limited to the following:

- Differences among water suppliers, customers, incentives, and available data may make regional coordination and performance comparisons challenging.
- Actual water savings can vary with weather, customer behavior, landscapes, and irrigation practices, requiring consistent methods for evaluating program performance.
- Participation may be limited by up-front costs, awareness, or other customer barriers, requiring targeted outreach, incentives, and technical assistance.
- As existing turf-conversion programs mature, additional conservation measures and customer sectors may need to be targeted. The Regional Water Conservation Study already assessed program saturation and opportunities for additional turf replacement.
- Expanding CV Water Counts will require coordination on which activities are best implemented regionally versus by individual water suppliers.

- Long-term savings depend on proper operation and maintenance of efficient irrigation systems and converted landscapes.

14 Implementation Action 8 - Engage in Strategic Policy Change and Regulatory Streamlining

Align CVRWRP implementation actions with Riverside County Ordinance 348 and related land use, landscaping, floodplain management, environmental health, and development review requirements. Identify opportunities to develop clear permitting pathways, interagency coordination procedures, and project review guidance that support implementation of stormwater capture, groundwater recharge, flood mitigation, decentralized water infrastructure, habitat restoration, and other resilience projects for domestic wells and small water systems. Incorporate future climate conditions, flood risk projections, groundwater sustainability objectives, and water quality considerations into project planning and design standards to reduce regulatory uncertainty and help priority projects move more efficiently from planning to implementation.

14.1 Priority Next Steps

Implementation of the proposed action could follow the following steps to achieve meaningful progress. Interim progress reviews and adjustment will be necessary to adapt to changing conditions and community needs.

1. Review Riverside County Ordinance 348, County and local municipality development review processes, landscaping and floodplain management ordinances, environmental health requirements, and permitting procedures to identify potential barriers affecting implementation of CVRWRP projects.
2. Develop an interagency working group consisting of Riverside County Planning, Public Works, Environmental Health, Emergency Management, Flood Control, water agencies, Tribes, and community organizations to coordinate implementation of resilience projects.
3. Create a permitting and regulatory matrix that identifies permitting requirements, responsible agencies, review timelines, and approval pathways for priority project types, including:
    1. Stormwater capture and infiltration projects.
    2. Groundwater recharge facilities.
    3. Flood mitigation projects.
    4. Habitat restoration projects.
    5. Decentralized water infrastructure projects.
    6. Nature-based and green infrastructure projects.
4. Develop standardized project review guidance that incorporates climate adaptation, future flood risk, groundwater sustainability, water quality protection, and multi-benefit project objectives into project evaluation processes.
5. Identify opportunities to streamline review and permitting processes for projects that advance flood protection, groundwater recharge, water quality improvements, habitat restoration, and disadvantaged community resilience objectives.

- Coordinate with the Regional Water Board and EPA to ensure local guidance aligns with applicable water quality, stormwater management, and groundwater protection requirements.
- Develop guidance for project proponents that outlines project development steps, permitting requirements, funding opportunities, and implementation considerations.

6. Pilot the interagency review process using one or more priority CVRWRP projects to identify improvements and lessons learned.

7. Incorporate resilience project review procedures into County planning, capital improvement, hazard mitigation, flood management, and climate adaptation efforts where appropriate.
8. Establish ongoing coordination, monitoring, and periodic updates to ensure guidance remains consistent with evolving regulations, climate science, and regional resilience priorities.

14.2 Funding Strategy

Position this effort as a regional capacity-building and resilience implementation initiative that improves project delivery, reduces permitting barriers, strengthens interagency collaboration, and accelerates implementation of multi-benefit resilience projects. Funding proposals should emphasize long-term cost savings, improved regulatory coordination, climate adaptation benefits, and increased project readiness for future infrastructure investment.

- **Proposition 4 Funding Opportunities** including the following. See Table 2 for more detail.
    - Section 91031 Watershed Resilience
    - Section 93020(a)(3) Climate Risk Reduction
    - Section 93020(a)(5) Nature-Based Solutions
    - Section 94050 Education/Capacity Building
- **California Strategic Growth Council Community Resilience Programs**: Pursue funding for planning, climate adaptation, interagency coordination, and implementation frameworks that support community resilience, environmental justice, and multi-benefit infrastructure development.
- **FEMA Building Resilient Infrastructure and Communities**: Seek funding to support resilience planning, vulnerability assessments, project development, and implementation strategies that reduce long-term flood and climate risks.
- **EPA Environmental Justice and Community Capacity Programs**: Pursue opportunities that support community engagement, environmental justice planning, technical assistance, and implementation of resilience projects in disadvantaged communities.

14.3 Regulatory, Reporting, and Permitting Needs

Advancing this action could require various permitting and environmental review, including the following:

Coordination and Reporting

- Coordinate implementation with Riverside County Planning Department, Public Works Department, Flood Control, Environmental Health, and Emergency Management programs.
- Ensure consistency with Riverside County Ordinance 348 and applicable development review requirements.
- Coordinate with water agencies, Tribal governments, local jurisdictions, and community organizations during project development and review.
- Incorporate implementation outcomes into relevant watershed planning, groundwater sustainability, flood management, and climate adaptation efforts.
- Prioritization of vulnerable communities should be incorporated early in permitting process.

Environmental Review and Permitting

- CEQA compliance for applicable resilience projects.
- Floodplain development permits and flood management approvals where required.

- RWQCB coordination for groundwater recharge, stormwater infiltration, and water quality protection projects.
- Clean Water Act permitting requirements, where applicable.
  Land use approvals, conditional use permits, and zoning-related reviews, where applicable.

14.4 Measures of Success

The following milestones and performance indicators indicate interim goals and that, when achieved, will demonstrate progress toward achieving the proposed action:

Milestone	Performance Indicator
Regulatory review completed	Barriers and opportunities identified
Interagency working group established	Number of participating agencies and partners
Permitting matrix developed	Guidance document completed
Project review guidance adopted	Agencies utilizing guidance
Climate-informed review procedures established	Review procedures updated
Regulatory coordination improved	Reduction in project review challenges identified
Project readiness enhanced	Number of projects advanced toward implementation
Long-term coordination maintained	Periodic updates completed

14.5 Implementation Roles and Important Partnerships

Lead

- Leadership Counsel for Justice and Accountability (LCJA)
- Riverside County Planning Department
- Riverside County Public Works Department

Supporting Partners

- Riverside County Department of Environmental Health
- Riverside County Emergency Management Department
- Riverside County Flood Control and Water Conservation District
- Colorado River Basin RWQCB
- Coachella Valley Regional Water Management Group (CVRWMG)
- Local cities and jurisdictions
- DAC Infrastructure Task Force
- Pueblo Unido Community Development Corporation (PUCDC)

14.6 Resources to Build Upon

The following are existing planning efforts and projects that can be leveraged and built upon to successfully implement the action.

- Riverside County Ordinance 348 and associated development review procedures.
- Riverside County General Plan, Safety Element, and climate adaptation planning efforts.
- Riverside County floodplain management and hazard mitigation programs.
- Riverside County Flood Control and Water Conservation District planning documents and capital improvement programs.
- Colorado River Basin RWQCB stormwater, groundwater recharge, and water quality guidance.
- Groundwater sustainability planning and Alternative Plan implementation efforts.
- DAC Infrastructure Task Force coordination network and community engagement processes.
- Existing interagency coordination efforts among County departments, water agencies, Tribal governments, and community organizations.

14.7 Cobenefits and Multibenefit Outcomes

Implementation of the proposed action will help advance various additional benefits that could benefit the Coachella Valley's communities and ecosystems.

- ✓ Accelerates implementation of stormwater capture, groundwater recharge, flood mitigation, habitat restoration, and water resilience projects.
- ✓ Reduces administrative and permitting barriers that can delay project delivery and increase implementation costs.
- ✓ Improves coordination among agencies, Tribes, utilities, and community organizations.
- ✓ Incorporates climate adaptation and future flood risk considerations into project planning and development processes.
- ✓ Supports groundwater sustainability, water quality protection, and flood resilience objectives.
- ✓ Improves access to funding by increasing project readiness and demonstrating regional coordination.
- ✓ Helps disadvantaged communities and community organizations navigate project development and permitting processes more effectively.

14.8 Hurdles to Overcome

Implementation of the proposed action could face various political, operational and financial hurdles which will need to be anticipated and overcome. These include but are not limited to the following:

- Multiple agencies have overlapping regulatory responsibilities that can create permitting complexity and implementation delays.
- Existing regulations and review processes were not always developed with multi-benefit resilience projects in mind.
- Staff capacity limitations may constrain interagency coordination and long-term program maintenance.
- Climate adaptation considerations are not consistently integrated across all development review and permitting processes.
- Regulatory requirements can change over time, requiring periodic updates to guidance and coordination procedures.

15 From Planning to Action

The CVRWRP's primary contribution is translating climate vulnerability information and community priorities into implementable projects, partnerships, and funding opportunities. Through resilience portfolios, implementation roadmaps, and priority actions, the plan provides a pathway for advancing projects that improve drinking water quality, protect groundwater resources, reduce flood risk, enhance ecosystem health, and strengthen the resilience of communities throughout the Coachella Valley.

15.1 Align and Amplify Existing Regional Efforts

The Coachella Valley already benefits from extensive regional planning, coordination, and investment in innovative water supply projects and Tribal and community-led initiatives that are actively improving water quality for vulnerable communities. Aligning priorities, bundling projects, and pursuing coordinated implementation can maximize resilience benefits and improve competitiveness for funding.

15.2 Build Capacity to Operate and Maintain Resilience Infrastructure

Many of the resilience investments identified through the CVRWRP require long-term operations and maintenance to deliver lasting benefits. Long-term resilience will depend on a skilled workforce capable of operating, maintaining, and upgrading domestic wells, small water systems, decentralized treatment systems, and resilience infrastructure.

15.3 Build Redundancy into Critical Water and Power Systems

Many domestic wells, small water systems, and Tribal water systems rely on a single well, pump, power source, or treatment system, leaving communities vulnerable to outages, equipment failures, flooding, and extreme weather events. Expanding backup water supplies, emergency storage, interconnections, alternative power sources, and redundant treatment and pumping infrastructure can improve system reliability and help ensure continued access to safe drinking water during emergencies and prolonged disruptions.

15.4 Prioritize Multibenefit Solutions

Projects that address multiple challenges simultaneously, such as groundwater recharge, stormwater capture, water reuse, habitat restoration, flood management, and water quality improvements, provide the greatest return on investment and resilience benefits.

15.5 Streamline Policies and Permitting

Many resilience projects face complex permitting and regulatory requirements. Improving interagency coordination, integrating climate considerations into planning and permitting, and reducing implementation barriers can accelerate delivery of priority projects.

15.6 Pilot Project: Installation of Point-of-Entry Water Treatment Systems

With support from LCI, the CVRWRP is already advancing on-the-ground resilience projects that directly benefit communities served by small water systems and Tribal water systems. Through this implementation effort, PUCDC is installing nine POE treatment systems to improve drinking water quality for households in eastern Coachella Valley facing groundwater contamination concerns, while TMDCI is upgrading a critical groundwater well by installing a new air compressor system to improve reliability and long-term water access. These projects demonstrate how targeted technical assistance and relatively small capital investments can provide immediate benefits for communities that rely on domestic wells and small water systems. By addressing site-specific water quality and reliability challenges, these efforts help build resilience while providing practical examples that can be replicated in other underserved communities throughout the Coachella Valley.

15.7 Funding Strategy

Because the identified actions span water quality, groundwater sustainability, flood management, energy resilience, emergency preparedness, recycled water, and community resilience, no single funding source will be sufficient. Instead, implementation should focus on bundling projects, sequencing investments, and aligning projects with multiple state, federal, Tribal, and private sector funding opportunities to maximize competitiveness and long-term impact.

15.7.1 Leverage Proposition 4, WaterSMART, and Regional Funding Opportunities

Several priority actions align closely with California's Proposition 4 funding programs expected to be released between 2027 and 2030, including the Watershed Resilience Program and Sustainable Groundwater Management programs administered by DWR. Groundwater recharge, domestic well protection, water reuse, flood management, nature-based solutions, Tribal resilience projects, and drinking water quality improvements are all likely to align strongly with Proposition 4 priorities. At the federal level, USBR's WaterSMART program continues to provide funding for drought resilience, water reuse, water use efficiency, groundwater recharge, and climate adaptation projects. Many CVRWRP actions, including recycled water expansions, groundwater recharge, source substitution projects, and domestic well resilience efforts, are strong candidates for future WaterSMART funding opportunities. Table 2 includes relevant Proposition 4 Funding opportunities, and most competitive implementation actions to secure funding. Table 3 includes relevant federal funding opportunities. State and federal funding opportunities are subject to change.

15.7.2 Bundle Projects Into Regional Resilience Portfolios

Using the implementation roadmaps in this CVRWRP, agencies and partners should package related investments into multi-benefit resilience portfolios. For example, stormwater capture, groundwater recharge, flood mitigation, septic protection, and habitat restoration projects can be combined into a single regional funding package. Similarly, domestic well monitoring, water quality testing, POE/POU treatment, and technical assistance programs can be advanced together under a drinking water resilience initiative. Bundling projects increases funding competitiveness, demonstrates regional coordination, and allows partners to leverage multiple funding sources simultaneously.

15.7.3 Expand Public-Private and Tribal Partnerships

Many CVRWRP actions can be strengthened through partnerships with agricultural operators, developers, utilities, Tribal governments, community organizations, and philanthropic partners. Public-private partnerships may be particularly effective for stormwater infiltration, agricultural return flow management, distributed energy systems, water use efficiency programs, and habitat restoration projects. Tribal partners may also benefit from direct-pay provisions, battery incentives, and other federal financing opportunities that can support resilient water and energy infrastructure. Supporting Tribal entities in applying for funding can help strengthen existing partnerships and implement impactful projects.

Table 2 Proposition 4 Funding Opportunities

Code Section	Agency	Program/Allocation	Amount ($) (in millions)	Most Competitive Implementation Actions (Ranked)
Ch. 2 Safe Drinking Water, Drought, Flood, and Water Resilience				
Section 91011	SWRCB	DWSRF, CWSRF and WQ and Clean, Safe Reliable Drinking Water	$610	1, 5, 6, 2, 3
Section 91012	DWR	Sustainable Groundwater Management Grant Program	$386.25	6, 4, 7, 1, 3
Section 91013	DOC	Multi-benefit Land Repurposing Program	$200	7, 4, 6, 8, 5
Section 91014	SWRCB	Water Recycling Funding Program	$386.25	6, 5, 7, 1
Section 91017	DWR	California Stream Gaging Improvement Program	$10	4, 7, 1, 6
Section 91018	DWR	Regional Conveyance Grant Program	$2.67	6, 5, 2, 4
Section 91021(b)	DWR	Flood Control Subventions Program	$150	4, 7, 2, 8
Section 91021(c)	DWR	Small Communities Flood Risk Reduction Program	$250	4, 7, 2, 8, 1
Section 91022	DWR	Dam Safety and Climate Resilience Local Assistance	$480	2, 4, 6
Section 91023	SWRCB	Storm Water Grant Program	$110	4, 7, 6, 1, 8
Section 91031	DWR	Watershed Resilience Program	$100	4, 7, 1, 8, 6
Section 91032(c)	DWR	Riverine Stewardship Program	$1.1	7, 4, 8
Section 91032(e)	DWR	Urban Streams Restoration Program	$25	7, 4, 8
Section 91032(f)	CNRA	Wildlife Refuges & Wetland Improvement Program	$25	7, 4, 6
Ch. 3 Wildfire and Forest Resilience				
Section 91510	Cal OES	Wildfire Mitigation Grant Program	$135	2, 3, 7, 4
Section 91520(d)	CAL FIRE	Local Fire Prevention and Workforce Development	$185	2, 3, 7
Section 91520(g)	CAL FIRE	Wildfire Prevention, Forest Legacy, and Wildfire Resilience	$50	7, 4, 2, 3
Section 91520(o)	CAL FIRE	California Fire Foundation	$15	2
Ch. 6 Biodiversity and Nature-Based Climate Solutions				
Section 93010	WCB	Protect and Enhance Fish and Wildlife	$668	7, 4, 6, 8

Code Section	Agency	Program/Allocation	Amount ($) (in millions)	Most Competitive Implementation Actions (Ranked)
Section 93020(a)(3)	CVMC	Reduce the Risks of Climate Change Impacts	$11	4, 7, 3, 1, 8
Section 93020(a)(5)	SDRC	Conservation, Nature Based Solutions, and Public Access	$48	7, 4, 8, 6
Section 93040	CNRA	Tribal Nature-Based Solutions Program	$10	7, 4, 3, 1
Ch. 7 Climate-Smart, Sustainable, and Resilient Farms, Ranches, and Working Lands				
Section 93510(a)	CDFA	Healthy Soils	$65	7, 4, 6
Section 93530	DOC	Working Lands Conservation, Restoration, and Enhancement	$15	7, 4, 6
Ch. 8 Park Creation and Outdoor Access				
Section 94010	Parks	Outdoor Recreation	$200	7, 4
Section 94020	CDFW	CDFW Lands Program	$200	7, 4, 6
Section 94050	CNRA	Nature and Climate Education Facilities Program	$25	7, 8, 1

Table 3 Federal Funding Opportunities

Funding Agency	Funding Program	Most Competitive Implementation Actions (Ranked)
USBR	WaterSMART	6, 4, 7, 1, 5
USBR	Central Valley Project Conservation Program & CVPIA Habitat Restoration	7, 4, 6
USBR	Bipartisan Infrastructure Law Funding	6, 5, 1, 4, 2
FEMA	Building Resilient Infrastructure and Communities	4, 2, 7, 8, 3
FEMA	Flood Mitigation Assistance	4, 7, 8, 2
FEMA	Hazard Mitigation Assistance	4, 2, 3, 7, 8
USACE	Flood Risk Management Program	4, 7, 2, 6
USACE	Environmental Infrastructure	5, 1, 6, 2, 4
USEPA	National Estuary Watershed Grants	7, 4, 6
USEPA	Environmental & Climate Justice Community Change Grants	1, 5, 4, 7, 3
USEPA	Environmental Justice Thriving Communities Grantmaking	1, 8, 5, 7, 4
USEPA	Environmental Justice Small Grants	1, 8, 5, 7
USEPA	Drinking Water System Infrastructure Resilience & Sustainability Grants	1, 2, 3, 5, 6
USEPA	Clean Water & Drinking Water State Revolving Funds	5, 1, 6, 2, 4
USDA NRCS	Environmental Quality Incentives Program	7, 4, 6, 5
USDA NRCS	Conservation Stewardship Program	7, 4, 6
USDA	Rural Development Programs	5, 1, 2, 3, 6
NOAA	Transformational Habitat Restoration & Coastal Resilience	7, 4, 6
Local Measures	Local Measures	4, 2, 7, 5, 1

Funding Agency	Funding Program	Most Competitive Implementation Actions (Ranked)
Local Funding	Agency/District Revenue	6, 5, 2, 1, 4
Local Funding	County & City General Funds	4, 2, 8, 7, 1
Local Funding	Cost-Sharing/In-Kind Contributions	8, 4, 7, 1, 5
Local Funding	Regional Pooled Funding	6, 4, 1, 5, 7
Local Funding	Public-Private Partnerships	7, 3, 2, 6, 4
Local Funding	Philanthropy & Nonprofit Foundations	1, 5, 8, 7, 3

15.8 Measuring Success Toward Water Resilience

The CVRWRP is intended to advance implementation and deliver measurable improvements in water resilience for communities throughout the Coachella Valley. As projects move forward, partners may consider tracking the following indicators to evaluate progress and inform future investment decisions:

- ✓ **Households and water systems receiving assistance** through water quality testing, technical assistance programs, treatment system installation, or funding support.
- ✓ **Domestic wells and small water systems assessed,** monitored, or added to regional databases to improve understanding of water quality, infrastructure conditions, and climate vulnerability.
- ✓ **Treatment, backup power, and resilience systems installed,** including point-of-entry (POE) and point-of-use (POU) treatment systems, shade trees, emergency generators, solar-plus-storage systems, and other reliability improvements.
- ✓ **Additional emergency water storage and system redundancy** created through expanded storage capacity, interconnections, backup supplies, and other emergency preparedness measures.
- ✓ **Supplemental water supply, recycled water, replenishment, and source substitution projects** that enhance supply reliability and groundwater sustainability across the region.
- ✓ **Flood and stormwater mitigation projects advanced**, including projects that reduce community flood risk, improve groundwater recharge, and provide multiple environmental and community benefits.
- ✓ **Grant funding and implementation resources secured** from local, state, federal, Tribal, and private sector funding programs.
- ✓ **Workforce, operator, and technical capacity** expanded through training, technical assistance, partnerships, and programs that support long-term operation and maintenance of water infrastructure.

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Appendix A

Small Water System and Domestic Well Inventory