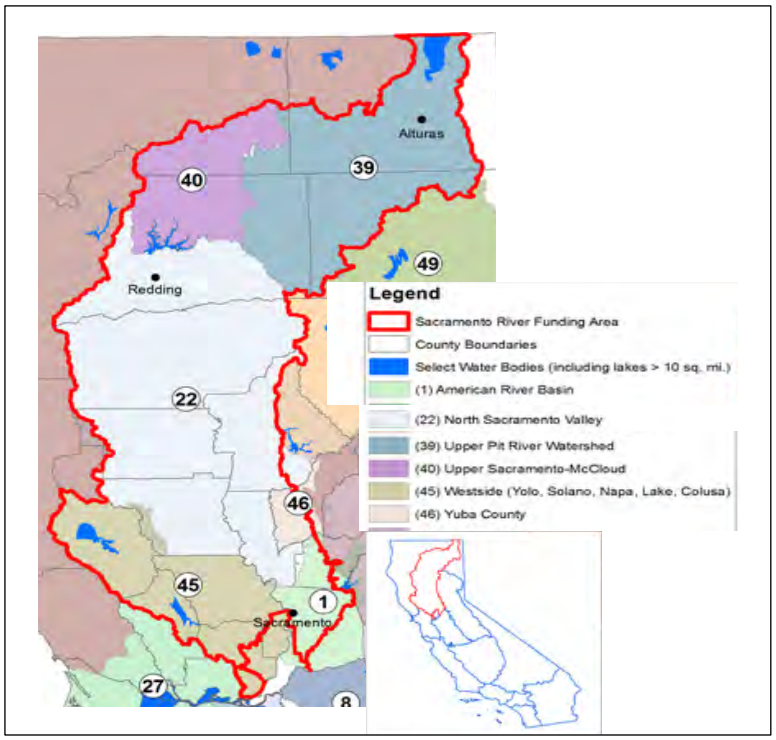
SACRAMENTO RIVER FUNDING AREA

PROPOSITION 1 DISADVANTAGED COMMUNITY INVOLVEMENT PROGRAM

FINAL GRANT REPORT

APRIL 8, 2024



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Upper Sacramento-McCloud, Upper Pit River Watershed,
North Sacramento Valley, Yuba County, Westside, and American River Basin

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ACRONYMS LIST

Acronym	Meaning
ADA	Americans with Disabilities Act
ARB	American River Basin
CBNA	Community-based Needs Assessment
CDP	Census-Designated Place
CIEA	California Indian Environmental Alliance
CIP	Capital Improvement Plan
CRWA	California Rural Water Association
DAC	Disadvantaged Community
DACIP	Disadvantaged Community Involvement Program
DWR	Department of Water Resources
EDA	Economically Distressed Area
EJCW	Environmental Justice Coalition for Water
EOC	Emergency Operations Center
FAQ	Frequently Asked Questions
GIS	Geographic Information System
IRWM	Integrated Regional Water Management
NA	Needs Assessments
NSV	North Sacramento Valley
O&M	Operation and Management
OPUD	Olivehurst Public Utilities District
RCAC	Rural Community Assistance Corporation
SCWA	Solano County Water Agency
SRFA	Sacramento River Funding Area
SURGE	Small Utility Regional Group Exchange
SWRCB	State Water Resources Control Board
SWS	Small Water System(s)
SYRCL	South Yuba River Citizens League
TA	Technical Assistance
TMF	Technical, Managerial, and Financial
UPR	Upper Pit River Watershed IRWM Region
USR	Upper Sacramento, McCloud, and Lower Pit IRWM Region
URC	Underrepresented Communities
WASH	Water, Sanitation, and Hygiene (pilot project)

EXECUTIVE SUMMARY

Overview

This report provides a summary of the activities and outcomes conducted for the Sacramento River Funding Area (SRFA) Proposition 1 Disadvantaged Community Involvement Program (DACIP). The SRFA comprises six Integrated Regional Water Management (IRWM) Regions: Upper Pit River Watershed (UPR); Upper Sacramento, McCloud, and Lower Pit (USR); North Sacramento Valley (NSV); a portion of Westside Sacramento IRWM; a portion of Yuba County; and a portion of the American River Basin (ARB). A map of the SRFA is provided on the following page.

Work supported by the DACIP grant occurred from January 2017 through March 2024 in two phases, with Phase 2 occurring over two separate periods:

- Phase 1: January 2017 – September 2018
- Phase 2.1: October 2018 – September 2019
- Phase 2.2: October 2019 – March 2024

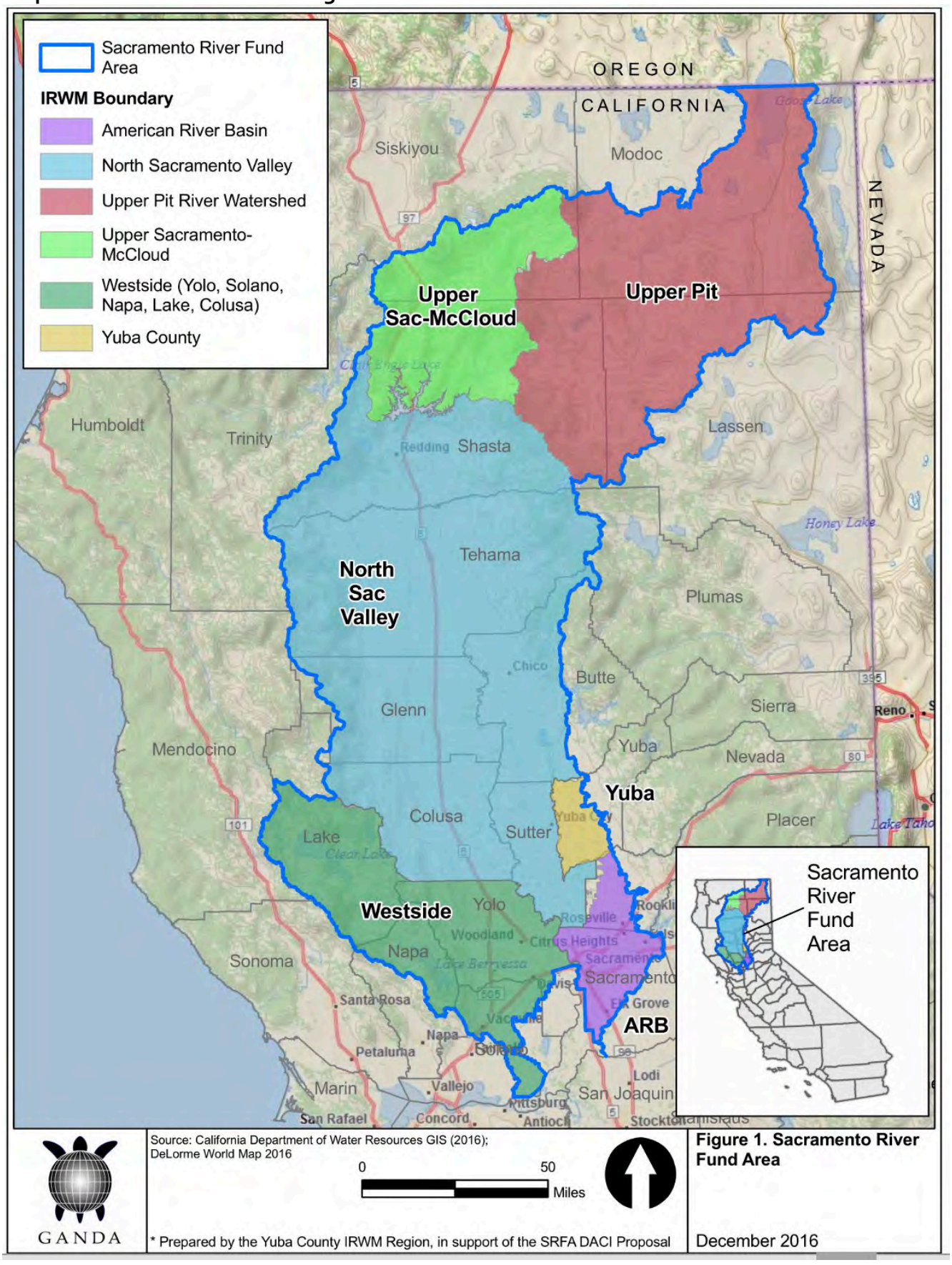
Phase 1 of the DACIP grant was focused solely on Outreach and Needs Assessments. The results of Phase 1 directly informed the development of the Phase 2 activities. Phase 2 in all years was focused on meeting the needs identified during Phase 1 to the extent possible, given the extensive geographic scope of the SRFA, ranges of needs across this diverse funding area, schedule, and available funding.

The primary outcomes of the earlier phases of this grant were described previously in the Phase 1 and Phase 2 (Year 2) Reports. This Final Grant Report briefly summarizes activities from Phase 1 and Phase 2 to support a broad understanding of the program that was developed, with more detail provided on the outcomes and deliverables for the Phase 2.2 activities that have not yet been comprehensively reported. Please also see the appended Project Summary Reports for more information on each of the Phase 2.2 activities.

The large geographic area included in the SRFA, in combination with the high level of engagement of the SRFA IRWM groups and ambitious nature of the Work Plan, required a significant amount of coordination and communication. The Project Team convened an SRFA Subcommittee made up of representatives from each of the six IRWM Regions to facilitate input into the DACIP process. The SRFA Subcommittee established program components, strategies, and approaches, and determined locations for targeted activities, ensuring that activities were spread across the SRFA and that urban and rural areas were supported in strategically different ways. The Project Team continued to coordinate with the SRFA Subcommittee, DACIP Coordinators (where placed), Project Partners, and local disadvantaged community (DAC) representatives throughout the duration of the DACIP grant, refining tasks and troubleshooting as needed.

Note that the COVID-19 pandemic created significant obstacles for DAC outreach and engagement during Phase 2.2, which translated into delays for the DACIP timeline and modification (or elimination) of certain tasks and deliverables. For example, the Olivehurst Education pilot project, originally designed as an in-classroom program, had to be quickly re-designed to support remote online learning. Some of the components were readily adaptable for online learning while others—whose effectiveness depended on in-person interactions and context—had to be eliminated. Another example was the Small Utility

Map 1. Sacramento River Funding Area



Regional Group Exchange (SURGE) program in the Upper Pit and Upper Sacramento IRWM Regions. Face-to-face meetings proved integral to achieving project goals, and the switch to online-only interactions resulted in diminished participation and communication challenges that lessened the impact of the project.

The following provides a brief overview of the primary activities conducted in Phase 1 and Phase 2.

Summary of Phase 1 Activities

The primary objective of SRFA DACIP Phase 1 Work Plan was to gather information regarding drinking water and wastewater needs of DACs across the SRFA by conducting Place-based Needs Assessments, which were conducted in US Census Designated Places that met the DAC definition. Substantial effort in Phase 1 was devoted to conducting full Technical, Managerial, and Financial (TMF) Needs Assessments (NAs) for as many DAC Place water purveyors as practical.

DAC identification and Mapping: The Project Team used DWR's mapping tool during the 2016 proposal development to identify DAC focus areas, including DAC places, census tracts, and census block groups. This information allowed the team to define the geography for SRFA DACIP Phase 1 activities (see Map 2 in the Stakeholder Summary section below). The team also created maps to show the distribution and coverage of economically distressed areas (EDAs) in the SRFA (see Map 3 in the Stakeholder Summary section). In addition, the Technical Team identified and mapped all of the small water systems (SWSs) located within SRFA DAC tracts and block groups.

Needs Assessments in DAC Places: After identifying DAC and EDA areas, the Rural Community Assistance Corporation (RCAC) and California Rural Water Association (CRWA) conducted detailed Needs Assessments for 67 water and wastewater purveyors, including TMF information. (See Phase 1 Final Report for a summary of this information.)

Community-based Needs Assessments: In a parallel effort, the DACIP Technical Team conducted Community-based Needs Assessments to identify customer perceptions of water supply needs. These assessments were conducted in the communities of Linda (Yuba IRWM), Olivehurst (Yuba IRWM), Kelseyville (Westside Sacramento IRWM), Grimes (North Sacramento Valley IRWM), and Bieber (Upper Pit River IRWM). The assessments identified several needs that led to the development of activities in Phase 2, including the Tu Agua pilot project.

Tribal Engagement: In April 2018, the California Indian Environmental Alliance (CIEA) organized an SRFA Tribal conference in Lower Lake with attendance primarily from Westside IRWM Region Tribes. A second meeting was held in August 2018 in Chico.

Summary of Phase 2 Activities

The Phase 2 effort was oriented primarily toward providing DAC water systems and communities with technical assistance, training, project development and other direct follow-up on the most critical water and wastewater needs identified in Phase 1. This phase included the following activities:

Targeted Project Development

Fire Outreach and Post-Fire Recovery Lessons Learned: The catastrophic fires that plagued several areas of the SRFA in recent years created emergency needs for several DACs in our funding area. SRFA DACIP Project Team member Susan Robinson conducted in-depth interviews with agencies and organizations in three SRFA counties that were most heavily impacted by wildfires to help DAC communities better prepare for the next disaster. These interviews were conducted in Butte County (Camp Fire), Shasta County (Carr Fire), and Lake County (Valley Fire). The outcome of this activity was a Lessons Learned summary document included in the Phase 2.1 Final Report.

Case Study Emergency Operations Center Workshop: As a first step toward providing support and guidance to DAC communities around the topic of emergency planning, the SRFA DAC Project Team developed a targeted training opportunity on Emergency Operations Centers (EOC). California Water Service hosted two EOC Trainings for the SRFA DACIP Program, in the DAC communities of Lucerne and Marysville in Phase 2.1.

Project Development: In Phase 2.1, RCAC conducted 22 technical assistance (TA) projects, and over a dozen projects were leveraged into other State of California funding programs, resulting in grant and loan contracts to support these projects. SRFA Project Team Member Paul Rose (Rose Water System Management) provided additional in-field TA to another 18 DAC water systems in the Upper Sacramento, McCloud, and Lower Pit (USR), and the Upper Pit River (UPR) IRWM regions, and provided referral for follow-up by RCAC.

Technical Workshops

RCAC Workshops: RCAC's team of water system experts reviewed the outcomes of the SRFA DACIP Phase 1 TMF Needs Assessments to develop Technical Workshops for each IRWM Region in order to address the most consistent critical needs by IRWM Region. RCAC conducted a total of 16 Technical Training Workshops, including: Capital Improvement Planning, Emergency Response Planning, Drought Contingency and Water Loss, Onsite Septic Operation & Management (O&M) and Private Well Maintenance, Wellhead Source Water Protection, Financial Planning, Improving Managerial Capacity, Wastewater Lagoon Treatment, Operator Distribution and Treatment Math, and Regionalization.

Targeted TA and Phase 1 Follow-up

Community-based Needs Assessments Technical Follow-up: The Community-based Needs Assessments (CBNAs) in Phase 1 highlighted key technical issues that both the water purveyors and community members identified as key water needs. During Phase 2, the Technical Team worked with two of the communities targeted during the CBNA to provide direct technical assistance: Grimes and Bieber.

OPUD Case Study: In-depth Community Based Needs Assessment Response: The Olivehurst Public Utilities District (OPUD) CBNA revealed two key needs: 1) outreach and education to the monolingual Spanish-speaking community on their water and watershed, and 2) education for the broader community of Olivehurst on water and water conservation. These two needs were addressed in Year 2 via two different strategies: 1) The monolingual Spanish-speaking community needs were targeted via a public education campaign called *Tu Agua*, which included the development of communication and educational materials in Spanish, creation of a social media page, and participation in several public events to interact with people and distribute materials. 2) The broader educational needs were

addressed via partnership with the OPUD public schools and the South Yuba River Citizens League (SYRCL) to bolster 4th grade science curriculum with in-school lessons, experiment boxes, and a field trip on the Yuba River. This program was a key regional catalyst for Yuba County and was incorporated directly into a County-wide water education initiative led and funded by Yuba Water Agency to expand this pilot project to the broader county area.

Yuba DAC Racial Equity Pilot: The Yuba DAC Racial Equity Pilot built on the *Tu Agua* task from previous years. The original outreach efforts relied heavily on in-person communication; however, due to the pandemic, the Technical Team shifted its strategic approach from community events and social media to implementing a pilot project with an SRFA DAC water purveyor. This effort was implemented specifically with OPUD, with the goal to enhance the district's in-house capabilities to build equity and better meet the needs of their diverse community. Activities consisted of: 1) Board training and education, including development of organizational policies; 2) an audit of existing communications materials (e.g., brochures, flyers, newsletters, website) to assess their effectiveness in reaching non-English speakers; and 3) development of a DACIP Outreach Manual for other communities in the SRFA to use as a guide to replicate and adapt the strategies developed as part of this pilot project.

Small Water System Repair and Maintenance SWAT Team and SURGE (Small Utility Regionalization Group Exchange): This case study was developed to test the concept of organizing group purchasing and coordinated O&M at a regional-scale across two largely rural and disadvantaged IRWM regions, the Upper Pit and Upper Sac-River regions. DACIP Team Member Paul Rose visited 17 small systems across the Upper Pit and Upper Sac-McCloud IRWM Regions and interviewed managers and operators about key gaps in ongoing O&M. The recommended solution, based on these interviews, was the development and funding of a mobile team of skilled, trained, and experienced licensed water and wastewater operators with tools and equipment available to use in the region—a water/wastewater "SWAT Team." The SWAT implementation planning was intended to include convening quarterly Small Utility Regionalization Group Exchange (SURGE) meetings of the water systems in the Upper Pit and Upper Sac Regions to build relationships, discuss shared problems, and identify opportunities to collaborate. The pandemic, however, greatly reduced the ability to continue onsite work and disrupted work schedules of all involved. Efforts to build relationships, inter-district cooperation, and discussion of areas of O&M collaboration were not fully realized.

Small Water System and Municipal Capital Needs Assessment and Planning: This activity grew out of the SWAT/SURGE pilot to address a perceived need for assistance in capital improvement planning. Although offered broadly across the SRFA, three municipalities and three districts accepted the invitation to participate: the cities of Lakeport (Westside Sacramento), Tehama (North Sac Valley), and Alturas (Upper Pit), as well as OPUD (Yuba), the Yolo County Housing Authority for El Rio Villa low-income housing complex (Westside Sacramento), and Colusa County Waterworks District #1 for the community of Grimes (North Sac Valley). The Technical Team provided one-on-one assistance to each participating water system, which included 1) an asset inventory and condition assessment, 2) evaluation of needed replacement/repair and cost estimates, 3) prioritization of capital needs, 4) identification of funding sources, 5) development of a short-term planning budget, and 6) development of a Capital Improvement Plan (CIP) document. Since each system was unique in terms of level and type of planning assistance required, the CIP planning process was adjusted to suit each system's individual needs. The final CIP document (or equivalent) was sent to staff for presentation to the district board or city council for approval and/or adoption, as appropriate.

Innovative Finance Training: The purpose of this task was to collate information on new and innovative funding strategies for capital projects and export that information to the SRFA DAC communities. The DACIP Technical Team developed a comprehensive report entitled, "Because It's Worth It," detailing the most relevant financing strategies, providing case studies of their application to relevant water infrastructure projects around the country, and suggestions for applying these strategies to meet capital needs within SRFA DACIP communities. The DACIP Technical Team then initiated two pilot projects. These included: 1) collaboration with Solano County Water Agency (SCWA), which led to discussion about a potential Putah Watershed Salmon Fund; and 2) bi-weekly meetings over four months with a team convened by the Fall River Resource Conservation District/Burney-Hat Creek Community Forest and Watershed Group, culminating in the drafting of a conservation finance roadmap.

URC Case Study in American River Basin (ARB): The purpose of this Case Study was to provide access to water, sanitation, and hygiene (WASH) for people experiencing homelessness in the ARB IRWM Region. The project entailed purchase and operation of a fully contained, ADA accessible, mobile shower unit. The mobile shower unit was operated by SHOW-UP Sac, a 501(c)(3) organization with existing connections to the ARB unhoused population. As part of the regular hygiene program (funded separately), SHOW UP provided new under garments, socks, and a hygiene kit to each person who elected to take a shower. A brown bag lunch and clean clothes were also provided as additional wrap-around services provided by other programs. Though the project was successful during its implementation, operation of the WASH unit under the SRFA DACIP grant had to be discontinued in February 2023 when issues arose regarding site access and a means of transportation for the mobile unit.

Tools Development

Online Tools: The SRAF DACIP Technical Team created an SRFA DACIP website to make available program information, maps, key support contacts, report materials, pilot outcomes, and a series of videos covering key topics of interest. The website can be accessed at https://srfadacip.com/.

Technical Support Materials: Through implementation of the various activities in this grant, the SRFA DACIP Technical Team developed numerous technical support materials and made them available to water purveyors, municipalities, community members, and other participants. These materials were distributed through RCAC Workshops, capital improvement planning assistance, community outreach events (e.g., Tu Agua events), the OPUD pilot and other case studies described above, education curricula, and through one-on-one technical assistance.

Tribal Needs Assessment and Follow-up

A Tribal Needs Assessment was completed by the California Indian Environmental Alliance. CIEA prepared an SRFA Tribal Needs Assessment Summary that was reported in the Phase 2.1 Final Report. RCAC followed up on this needs assessment and undertook separate outreach to Tribes in order to determine which types of Tribal-only training workshops would be most beneficial. RCAC provided six virtual Tribal-only trainings via a web-based platform for SRFA Tribal members.

STAKEHOLDER SUMMARY

Summary of DACs, EDAs, and URCs

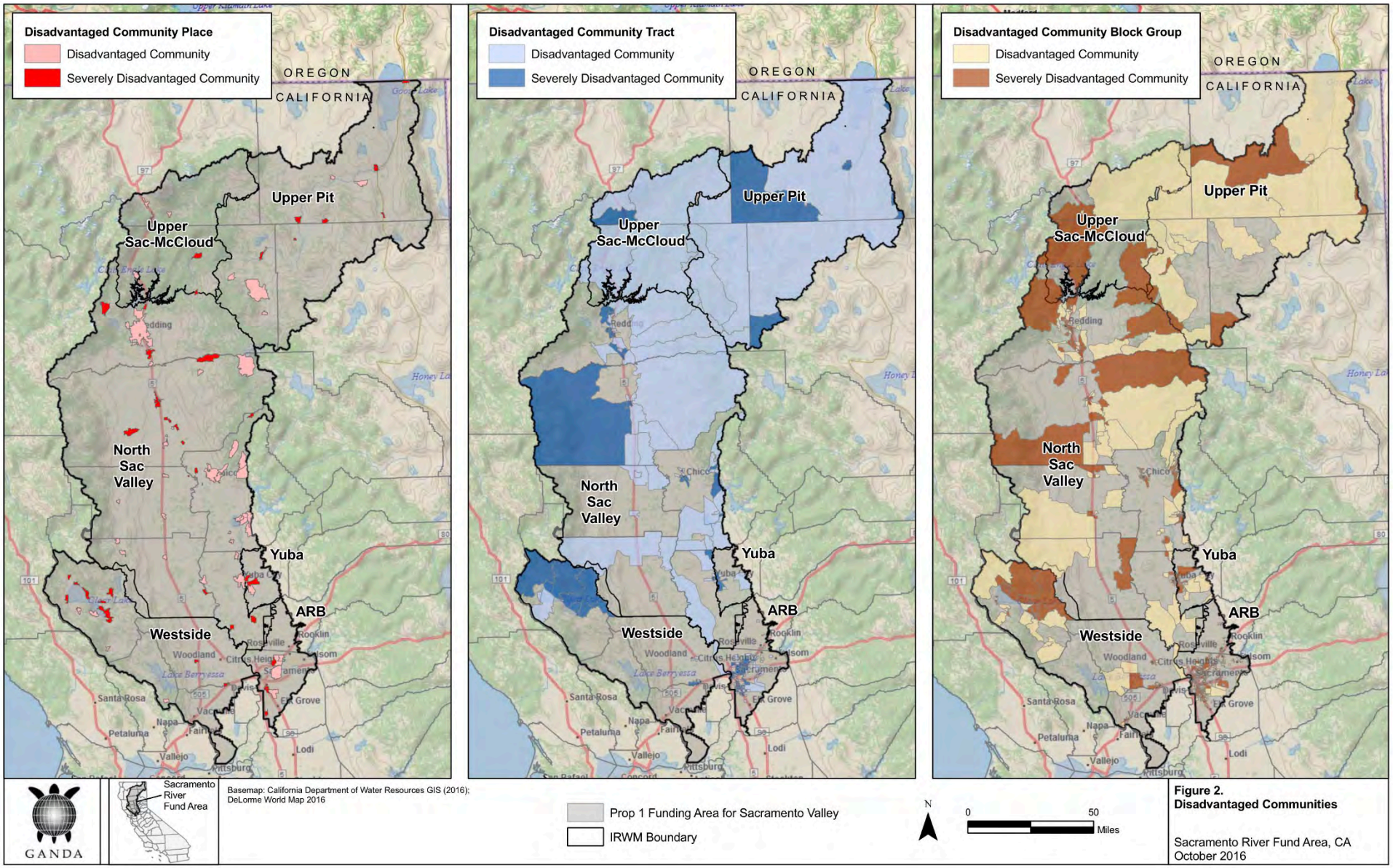
Disadvantaged communities (DACs), economically distressed areas (EDAs), and underrepresented communities (URCs) were identified during Phase 1 of the Sacramento River Funding Area (SRFA) Disadvantaged Community Involvement Program (DACIP) work plan and summarized in the Phase 1 Report. DACs and EDAs were identified using the Department of Water Resources (DWR) DAC Mapping Tool, based on 2010-2014 American Community Survey five-year data. Map 2 on the following page illustrates the geographic extent of DACs in the SRFA based on US Census places, tracts, and block groups. Map 3 illustrates the geographic extent of EDAs in the SRFA based also on US Census places, tracts, and block groups.

The SRFA is a large and varied geographic region characterized primarily by small, rural unincorporated communities and geographically dispersed medium-sized and small municipalities. The largest DAC cities are Chico (population 102,000) and Redding (96,500). Smaller DAC municipalities and census-designated places (CDPs) with populations of about 15,000 - 20,000 include such areas as Linda, Oroville, Olivehurst, and Red Bluff. The majority of DAC cities and CDPs have populations less than 10,000 (including, for example, the cities of Live Oak, Colusa, Willows, Lakeport, Alturas, and the mighty small city of Tehama with a population of about 400).

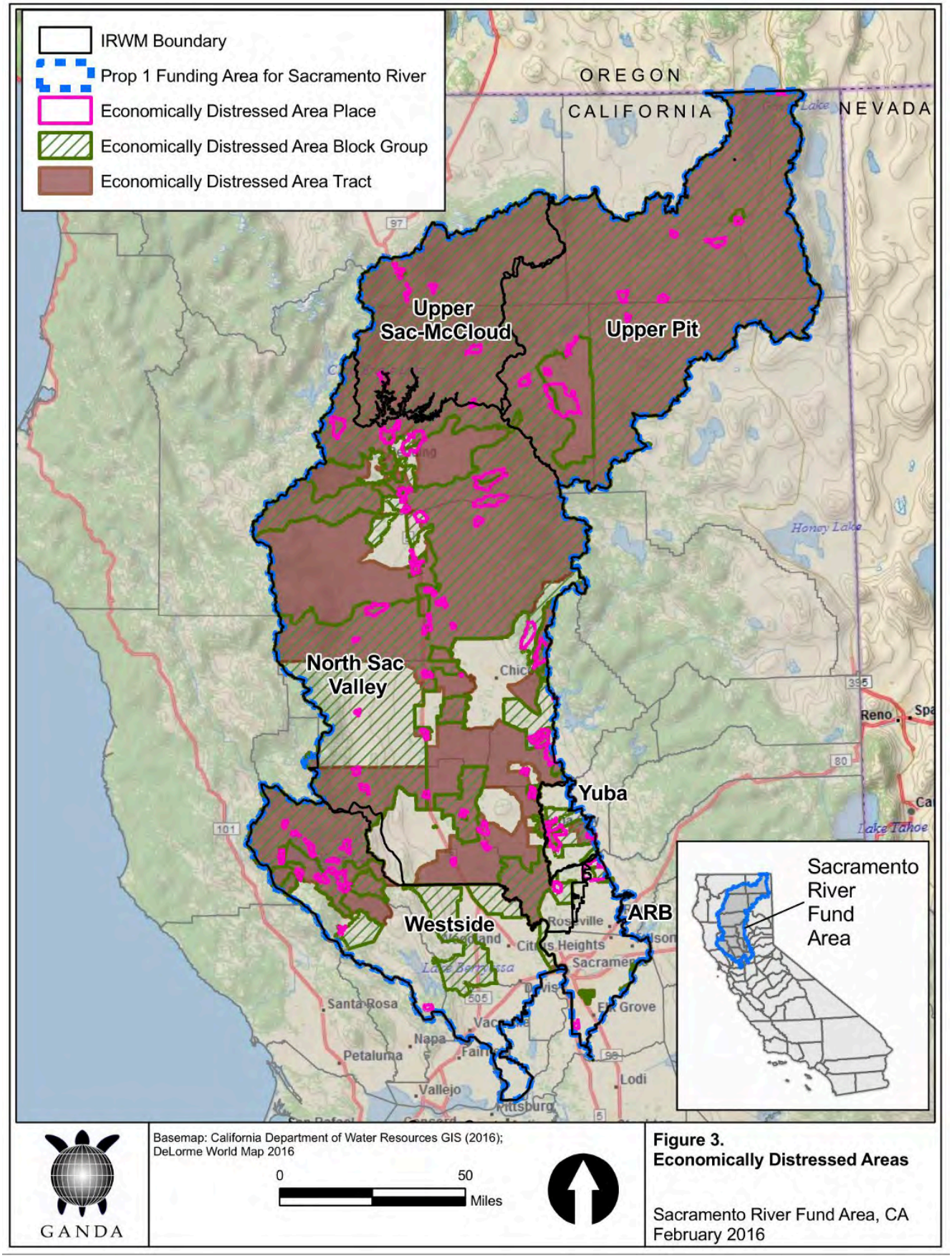
In addition to the DAC Places (incorporated areas and CDPs), there are significant DAC populations served by small water systems (5 - 3,299 service connections) in unincorporated areas throughout the SRFA. The Project Team identified and mapped the water purveyors serving these DAC areas, many of whom are located in rural, geographically isolated areas. The Project Team obtained water system and service boundary information primarily from the State Water Resources Control Board and from “Local Primacy Agency” counties. The Project Team identified approximately 429 small water systems that specifically serve DAC areas of the SRFA (with 245 of those located within the North Sacramento Valley IRWM Region). These systems serve an estimated DAC population of 195,485 residents. The systems that provide water to DAC communities are residential areas, mobile home parks, RV parks, schools, parks, and churches. Transient small water systems also serve community employees and customers including gas stations, food markets, and businesses. The Phase 1 Report includes maps of DAC Small Water Systems for each of the SRFA IRWM Regions.

URCs were not specifically identified in the SRFA. However, URCs are known to exist throughout the SRFA, in ethnically diverse populations, non-English speaking individuals, those who may have barriers to access due to age or disability, and others. People experiencing homelessness were also identified as a URC. The American River Basin (ARB) IRWM Region implemented a URC Case Study in Phase 2 focused on people experiencing homelessness in the Sacramento area. Please see Appendix E for a Project Summary Report for this Case Study.

Map 2. Disadvantaged Community Places, Tracts, and Block Groups in the Sacramento River Funding Area



Map 3. Economically Distressed Areas in the Sacramento River Funding Area



Water Management Needs of DACs

The Phase 1 Needs Assessments for DAC Places consisted of one-on-one interviews with water purveyors in 91 DAC US Census "Places" (cities and CDPs). These interviews, conducted by the Rural Community Assistance Corporation (RCAC) and California Rural Water Association (CRWA, or Cal Rural Water), resulted in detailed technical, managerial, and financial (TMF)-type information for each system. This effort produced a significant amount of information on the water and wastewater needs of DACs across the SRFA. These detailed TMF reports and a summary of results was submitted with the Phase 1 Final Report, including a table summarizing the DAC place-based needs.

A parallel effort conducted in Phase 1 by the Project Team, led by Carlos Quiroz (Quiroz Communications), was a Community-based Needs Assessment (CBNA). While the Place-based Needs Assessments were developed to focus on infrastructure-related needs, issues, and opportunities identified by water purveyors, the CBNAs were conducted in a subset of communities served by those purveyors to identify customer perceptions of their water needs, concerns, and opportunities. Participating communities included: Linda, Olivehurst, Kelseyville, Grimes, and Bieber. The Phase 1 Final Report summarizes the results of these in-depth surveys.

While it is difficult to comprehensively list all of the water management needs of DACs, EDAs, and URCs across such a large and diverse geographic area, some generalized needs can be described based on the Place-based Needs Assessments, Community-based Needs Assessments, and subsequent engagement and activities performed during Phase 2 of this grant.

Common water resource management issues faced by water supply and wastewater managers and operators across the SRFA include:

- water quality contamination, often due to intrusion from failing infrastructure
- aging infrastructure
- rising costs beyond the budget capacity of the system and customer base
- dependence on a single source of water
- lack of system redundancy
- lack of water supply reliability/resiliency
- lack of capacity at each level of assessment (Technical, Managerial and Financial)
- inadequate wildfire resilience (e.g., wooden tanks and sheds, lack of water supply for fire needs)

Beyond maintaining water infrastructure for current operations, there is the additional need to improve water system resiliency to adapt to climate change. This is challenging even for large water utilities that have healthy financial reserves, let alone for small systems in economically disadvantaged communities.

While many water resource management issues are similar in nature across the SRFA, the needs of water/wastewater system managers differ according to the size of the system. Larger municipalities and districts, even in DAC/EDA areas, typically have certified operators and trained management staff/boards, and tend to have greater financial resources (on account of a larger ratepayer base, as well as increased capability to access state and federal grant funds). Small water systems, especially those in DACs and those located in rural, isolated areas, face the greatest challenges.

State Water Resources Control Board data show that small water systems (15 to 200 connections) serving DACs have the highest rates of non-compliance.[1] The smaller rate-payer base and lack of economy of scale are major impediments to funding ongoing operation and maintenance (O&M) and needed capital improvements. Though state grants may be available to fund major improvements, small DAC systems rarely have the staff capacity to access those grants or to appropriately manage them as a fiscal agent if awarded. Additionally, state funds are often not be sufficient to cover the entire cost.

Without economies of scale, smaller systems also face the greatest affordability challenges. As noted above, small systems are less able to spread out the costs of running and improving the system. The cost of constructing an arsenic treatment system, for example, may be largely the same whether that system serves 100 connections or 1,000 connections. The smaller base of ratepayers supporting O&M and capital improvements can make household rates prohibitively expensive. These systems more frequently experience low revenues and high customer delinquency rates – further exacerbating the systems' overall lack of financial capacity.

It is no surprise, therefore, that TMF capacity is a major challenge for many small water systems. Many of these systems are unable to afford operators, and are often run by untrained volunteer board and community members. There is an ongoing need for better TMF support for smaller water and wastewater utilities, particularly in rural and unincorporated areas serving DACs. Many small systems are so burdened by their day-to-day responsibilities, however, that they are often unwilling to accept TMF assistance. RCAC provides excellent workshops, including board training, capital improvement planning, and basic water system math, to name just a few; but many small water system managers and operators are too overwhelmed to take advantage of these free services.

Also, many small systems require much more TMF assistance than can be provided through workshops alone; they require dedicated staff assistance and ongoing, long-term support. Ideally, these systems would be consolidated with other small systems or consolidated into a larger utility, which would provide greater economies of scale and consequently, better staffing and financial resources. Consolidation in these circumstances is a solution strongly supported by the State Water Board. This solution, however, is not always feasible, particularly for rural and remote communities where the distance and topography make physical consolidation impractical or too costly.

Another need identified through the Community-based Needs Assessments is improved racial equity in water resource management. This includes, for example, the availability of flyers/brochures and customer forms in languages other than English, targeted outreach to URC populations (in their preferred languages), and the establishment of board policies and management policies to ensure racial equity within the operations of water and wastewater systems.

The SRFA DACIP Phase 2 activities were developed to address some of these needs identified through the Phase 1 Needs Assessments. Activities included one-on-one technical assistance for DAC water systems, project development support, targeted training workshops (convened locally in the SRFA to increase participation and reduce travel), Tribal-only workshops, capital improvement planning assistance, and efforts to improve racial equity for water systems, among other activities. Phase 2 activities were developed to creatively target specific needs and provide guidance to the SRFA IRWM regions on the lessons learned from these activities.

[1] State Water Resources Control Board (SWRCB). 2015. Safe Drinking Water Plan for California Report to the Legislature. https://www.waterboards.ca.gov/publications_forms/publications/legislative/docs/2015/sdwp.pdf

One of the Phase 2 activities intended to address the obstacle of geographic isolation was the Small Utility Regionalization Group Exchange (SURGE) pilot project, led by Paul Rose (Rose Water System Management). The SRFA DACIP Project Team noted that if these small systems could not physically consolidate, they could operationally consolidate by sharing staff that could move between systems. This case study was developed to test the concept of organizing group purchasing and coordinated O&M at a regional-scale across two largely rural and DAC IRWM regions, the Upper Pit and Upper Sacramento River regions. Please see the Involvement Activity Summary section below for details related to the SURGE pilot and the other Phase 2 follow-up activities intended to address a range of the water resource management needs identified for SRFA DAC water and wastewater systems.

INVOLVEMENT ACTIVITY SUMMARY

Overview

This report provides a summary of the outcomes and work conducted for the SRFA Proposition 1 DACI Program. The SRFA comprises six Integrated Regional Water Management (IRWM) Regions (see Map 1 in the Executive Summary): Upper Pit River Watershed (UPR, or Upper Pit); Upper Sacramento-McCloud (USR, or Upper Sac); North Sacramento Valley (NSV, or North Sac Valley); a portion of Westside Sacramento; a portion of Yuba County; and a portion of the American River Basin (ARB).

Work supported by the DACIP grant occurred in two phases, from January 2017 through March 2024. Phase 2 occurred over two periods, and are referred to here as Phases 1.1 and 1.2:

- Phase 1: January 2017 – September 2018
- Phase 2.1: October 2018 – September 2019
- Phase 2.2: October 2019 – March 2024

Phase 1 of the DACIP grant focused on Needs Assessments. The results of Phase 1 directly informed the development of the Phase 2 activities. Phase 2 in all years was focused on working to meet the needs identified during Phase 1 to the extent possible, given time and funding.

The primary outcomes of the earlier phases of this grant were described previously in the Phase 1 and Phase 2 (Year 2) Reports, which were submitted to DWR with deliverables in September 2018 and February 2020, respectively. This SRFA DACIP Final Report briefly summarizes all activities from Phase 1 and Phase 2, with greater emphasis on the outcomes and deliverables for the Phase 2.2 activities not comprehensively reported on to date (noting that all work has been reported and described within quarterly reporting periods). Please also see the appended Project Summary Reports for more details related to each of the Phase 2.2 follow-up activities.

Note that the COVID-19 pandemic created significant obstacles for DAC outreach and engagement, which translated into substantial delays for the DACIP timeline and modification (or elimination) of certain tasks and deliverables, as noted in this report.

Summary of Phase 1 Activities

The primary aim of SRFA DACIP Phase 1 Work Plan was to gather information regarding drinking water and wastewater needs of DACs across the SRFA by conducting focused DAC Place Needs Assessments. A substantial level of effort in Phase 1 was devoted to conducting full TMF-type Needs Assessments (NAs) for as many DAC Place water purveyors as practical. The NA results formed the basis for all subsequent work in Phase 2. The Project Team conducted a Phase 1 work effort that included the following Activities:

1. Regional Coordination and DAC Documentation
2. Regional Engagement and Assessment and Synthesis of Needs and Phase 1 Reporting
3. Phase 2 Strategy Development
4. Grant Administration

The following briefly describes the primary outcomes of the Phase 1 activities.

Activity 1. Regional Coordination and DAC Documentation

DAC identification and Mapping: The DWR mapping tool was used during the 2016 proposal development process to investigate the distribution and coverage of DAC mapping units used to analyze DAC focus areas including: DAC Places, Community Tracts, and Community Block Groups. These DAC units were used to define and focus the geographic effort for SRFA DACIP Phase 1 activities (see Map 2 SRFA DAC Maps). Maps were also created to show the distribution and coverage of economically distressed areas (EDAs) in the SRFA (see Map 3 SRFA EDAs).

In addition, the Project Team identified and mapped all of the small water systems (SWSs) located within SRFA DAC Tracts and Block Groups. "Small water systems" were defined as serving between 5 – 3,299 connections. The Project Team identified approximately 429 small water systems serving an estimated 195,500 residents in DAC areas of the SRFA. Assistance was obtained from the State Water Resources Control Board to map the small water systems; combining map layers allowed users to view, all on one platform: the locations of drinking water providers, IRWM regions, and DAC areas, along with pertinent data for each water system including compliance, populations served, and number of connections. The Project Team provided the IRWM specific data and maps to each SRFA IRWM and then used that information to develop the Phase 2 (Year 2) Work Plan to outreach to that population of water purveyors to offer Needs Assessments and other technical services through the SRFA DACIP program.

Activity 2. Regional Engagement and Assessment of Needs

This Activity consisted of the following work efforts:

a) Needs Assessments for water/wastewater purveyors in DAC Places
b) Community-based Needs Assessments for community members in DAC Places
c) Tribal Engagement
d) Underrepresented Communities in American River Basin IRWM Region

Needs Assessments in DAC Places: After identifying DAC and EDA areas, the Project Team identified the water/wastewater purveyors serving each of the DAC Places. RCAC and Cal Rural Water divided up the resulting list of water/wastewater purveyors in DAC Places and conducted outreach to 91 service providers, following up with detailed Needs Assessments for the 67 utilities that agreed to participate. These assessments included TMF information as well as general information about the water systems. Please refer to the Phase 1 Final Report to see the summary results of the water purveyor Needs Assessments.

Community-based Needs Assessments: In a parallel effort, a Technical Team led by Carlos Quiroz of Quiroz Communications conducted Community-based Needs Assessments to identify customer perceptions of water supply needs. These assessments were conducted in five communities:

- Linda (Yuba)
- Olivehurst (Yuba)
- Kelseyville (Westside Sacramento)
- Grimes (North Sacramento Valley)
- Bieber (Upper Pit)

The CBNAs were intended to support the utility-based Needs Assessments and to provide the Project Team and the relevant SRFA IRWM-Regional Water Management Groups with a broader picture of the

water needs in each community. The goal was to identify communities most likely to be marginalized and/or disengaged from their water supply/purveyor, in order to both document community perceptions and to identify potential areas for increased communications. Responses varied widely between the different communities. Key recommendations for Phase 2 follow-up that resulted from the CBNAs included:

- Development of communication templates and notices in English and Spanish
- Staffing customer service desks with bilingual (English and Spanish) staff
- Improving water agency communications with both property owners and renters, particularly regarding water quality

Please refer to the Phase 1 Final Report to see the summary results of the CBNAs.

Tribal Engagement: California Indian Environmental Alliance (CIEA) was contracted to coordinate and develop a Tribal DAC Engagement Committee that would develop a Tribal Work Plan. In April 2018, an SRFA Tribal conference was organized by CIEA in Lower Lake with attendance primarily from Westside Sacramento IRWM Region Tribes. A second meeting was held in August 2018 in Chico. Some key recommendations from the Lower Lake meeting included:

- Development of a Tribal Advisory Committee to help guide the DACIP Program, to include six members from each IRWM or, at minimum, a member from each watershed
- Application support for Tribes
- Overlay the Cal EPA document of self-identified Tribal territories with IRWM data layers
- Provide stipends for Tribes to participate in the DACIP program and in the IRWM Program

Development of an SRFA-wide approach for Tribal engagement or a Tribal committee was still under development at the conclusion of Phase 1. The strategy for Phase 2 included: 1) continued development of Tribal engagement; and 2) identify Tribally operated water or wastewater systems and invite them to participate in Needs Assessment in Phase 2. As Phase 2 continued it became clear that there was not consistent interest across Tribes in participating in an SRFA DACIP Tribal committee because the Funding Area boundaries and Tribal boundaries would have resulted in Tribes having to participate in several meetings and different processes across multiple IRWM regions and Funding Areas to cover their ancestral lands, and this was not of interest to Tribal leaders. In addition, many Tribes in the SRFA are not federally or State recognized and so the value of their participation regarding eventual project funding could not be promised to support their participation. Due to these issues, it was determined that the development of Tribal-only training workshops to address the key water and wastewater needs of Tribal water systems, where those occur, would be the best way to use this funding to provide Tribal services consistent with the DWR DACIP program goals. RCAC developed and carried out these Tribal workshops during Phase 2.

Underrepresented Communities in American River Basin Region (ARB): The Work Plan for Phase 1 included outreach to underrepresented communities in the ARB IRWM Region, to be conducted by the Environmental Justice Coalition for Water (EJCW). That effort was postponed in Phase 2 due to staffing issues at EJCW. The staffing issues at EJCW were never sufficiently resolved to allow that work to proceed, and the URC task within ARB was modified to be a targeted pilot project called “WASH,” which is described further below.

Activity 3. Phase 2 Strategy Development

The results of the water purveyor Needs Assessments and the CBNAs were used to determine follow-up

activities for Phase 2 (Year 2). The information collected for small water systems was used to develop a Phase 2 (Year 2) work plan to more thoroughly outreach to that population of water purveyors. The GIS database was used to target clusters of small water systems within each IRWM region for workshops to provide key technical assistance in region, on critical needs identified during Phase 1, as well as one-on-one project development support.

There were several key lessons learned in Phase 1 that directly informed the work plan approach for Phase 2. These were:

- Water purveyors across the funding area have needs that RCAC and CRWA already routinely address via technical support workshops and trainings within California; however, small DAC water purveyors often do not have staff able to travel to take advantage of this help.
- Remote and rural water purveyors often share the key need for capacity-building of their board members and staff and have difficulty in retaining these staff once they are adequately trained. In addition, the operating budgets of numerous small water systems do not allow for adequate funding to pay staff for key monitoring, maintenance, and other ongoing operational tasks that would allow them to remain in State compliance. And, finally, these same remote and/or small water systems have logistical barriers (i.e., mountainous terrain) that preclude their physical consolidation with other systems.

The Phase 2.1 work plan focused on Technical Assistance and Needs Follow-up in response to these observations and results of the Place-based and Community-based NAs.

Activity 4. Phase 1 Grant Administration

Grant administration activities included DWR contracting, reporting, invoicing, and other activities as needed to ensure compliance with the Grant Agreement.

Summary of Phase 2 Activities

The primary outcomes of Phase 1 were evaluated by the Technical and Management Teams and then discussed and formally approved by representatives from each of the six RWMGs within the Funding Area that we termed the SRFA Subcommittee. The results of Phase 1 directly informed the development of the Phase 2.1 activities; and the results of both Phase 1 and Phase 2.1 informed the work plan and implementation effort for the final phase of the grant (Phase 2.2, from October 2019 through March 2024).

The Phase 2 effort was oriented primarily toward providing DAC water systems and communities with technical assistance, training, project development and other direct follow-up on the most critical water and wastewater needs identified in Phase 1. This phase of work effort included the following Activities:

1. Project Management and SRFA-wide IRWM Coordination and DACIP Grant Communications
2. Technical Assistance, Phase 1 Follow-up and On-going Outreach
3. Phase 2 Year 3 Strategy Development
4. Grant Administration

Activity 1. Project Management and SRFA-wide IRWM Coordination and DACIP Communications

Project Coordination, SRFA-wide IRWM coordination, and DACIP grant communications continued across the six IRWM Regions and with the DACIP Coordinators throughout this phase. This activity facilitated two-way communication between the Project Team and local DAC representatives, IRWM representatives, DACIP Coordinators and Project Partners, as well as ongoing task troubleshooting and refinement. The large geographic area included in the SRFA, in combination with the high level of engagement of the SRFA IRWM groups and ambitious nature of the Work Plan, required a significant amount of coordination and communication. Additionally, because the SRFA DACIP Program was the only existing program that overlapped with the geographic scope of the DWR Round 1 IRWM Implementation funding program, the SRFA DACIP project managers also supported the coordination efforts required ahead of the Proposition 1 Implementation Grant Application Submittals.

Activity 2. Technical Assistance, Phase 1 Follow-up and On-going Outreach

Key activities for the Activity 2 Technical Assistance task included:

2.1 Targeted Project Development (using results from Phase I DAC Place Needs Assessments)

Fire Outreach and Post-Fire Recovery Lessons Learned – *Task completed in Phase 2.1:* The catastrophic fires that plagued several areas of the SRFA in recent years created additional, emergency needs for several DAC communities in our funding area. Therefore, part of this activity was spent gathering lessons learned from these fires to try to develop support materials to help DAC communities better prepare for the next disaster. This work effort involved in-depth interviews with agencies and organizations in three counties within the SRFA that were most heavily impacted in recent years: Butte County (Camp Fire), Shasta County (Carr Fire), and Lake County (Valley Fire). Initially, we had planned to develop an inter-IRWM workshop to focus on the nexus between fuel load reduction, risk to DACs and Project Development in the rural far north of the SRFA. However, in conducting the post-fire interviews, the team quickly learned that these communities were either suffering from meeting fatigue due to the huge state and local-level response to the recent fires and/or had adequate support by fire experts in the short run and there was not a need for the workshop as initially envisioned, nor interest in participating. For this reason, we altered the approach and developed a summary document of the Fire Lessons obtained during these interviews and conversations across the SRFA (submitted with the Phase 2 Final Report).

Case Study Emergency Operations Center Workshop – *Task completed in Phase 2.1:* The Lessons Learned summary provides many useful recommendations that DAC communities and water systems could follow-up on. However, as is often the case in DAC communities, the capacity of local leadership is often overwhelmed by daily tasks and compliance standards, making it difficult for them to implement additional preventive or protective measures to prepare for an emergency. As a first step toward providing support and guidance to DAC communities around the topic of emergency planning, we developed a targeted training opportunity on Emergency Operations Centers (EOC). EOC trainings are an opportunity for anyone involved in water distribution operations, communications, financing, public safety and emergency response to get together in a room to talk through the appropriate preparation steps that their Agency should take ahead of an emergency, and then to talk through an actual mock-emergency in real-time to practice the steps that each person's "role" should take in an emergency. California Water Service (Cal Water) hosted two EOC Trainings for the SRFA DACIP Program in the DAC

communities of Lucerne and Marysville.

Project Development – *Task completed in Phase 2.1:* The Phase 1 Needs Assessments and other regional efforts increased the awareness across the SRFA of the Technical Assistance for Project Development being offered through the SRFA DACIP Program as well as the broader range of services that RCAC provides as support to rural communities. This outreach led to several requests for one-on-one technical assistance (TA). In Phase 2.1, RCAC conducted 22 TA projects that were supported by the SRFA DACIP Program and over a dozen projects were leveraged into other State of California contracts by way of contact through the SRFA DACIP Program. Paul Rose (Rose Water System Management) provided additional in-field TA to another 18 DAC water systems in the Upper Sacramento, McCloud, and Lower Pit (USR), and the Upper Pit River (UPR) IRWM regions and provided referral for follow-up by RCAC during his work on the O&M SWAT Team Case study (see below).

2.2 Technical Workshops – *Task completed in Phase 2.1*

The primary goal of the Phase 2 Technical Workshops was to provide technical assistance addressing SRFA DAC water systems' most urgent needs, as identified in the Phase I Needs Assessments, in each IRWM Region (within DAC Places as well as small water systems). RCAC's team of water system experts reviewed the outcomes of the SRFA DACIP Phase 1 TMF Needs Assessments to develop the content to be covered in these workshops for each IRWM region in order to address the most consistent critical needs by region. RCAC conducted a total of 16 Technical Training Workshops. Workshops included: Capital Improvement Planning, Emergency Response Planning, Drought Contingency and Water Loss, Onsite Septic O&M and Private Well Maintenance, Wellhead Source Water Protection, Financial Planning, Improving Managerial Capacity, Wastewater Lagoon Treatment, Operator Distribution and Treatment Math, and Regionalization. For many regions, this was the first time that trainings of this caliber and offering such key training opportunities were offered in their vicinity.

Additionally, RCAC conducted Tribal-only technical workshops in each IRWM region to address Tribal-specific needs. The COVID-19 pandemic restricted the staff's ability to make in-person contact or to provide trainings in classroom settings. Despite the challenges, RCAC provided six virtual trainings via a web-based platform.

2.3 Targeted TA and Phase 1 Follow-up

Community-based Needs Assessments Technical Follow-up – *Task completed in Phase 2.1:*
The CBNAs in Phase 1 highlighted key technical issues that both the water purveyors and community members identified as key water needs. During Phase 2, the Technical Team worked with two of the communities targeted during the CBNA for direct technical assistance, Grimes and Bieber. RCAC directly engaged with Grimes under this task in Year 3 while Paul Rose (Rose Water System Management) continued to engage with Bieber.

OPUD Case Study: In-depth Community Based Needs Assessment Response Program – *Task completed in Phase 2.1:* The Olivehurst Public Utilities District (OPUD) CBNA revealed two key needs: 1) outreach and education to the monolingual Spanish-speaking community on their water and watershed, and 2) education for the broader community of Olivehurst on water and water conservation. These two needs were addressed in Year 2 via two different strategies: 1) The monolingual Spanish-speaking community needs were targeted via a public education campaign called *Tu Aqua*, which included the development of communication and educational materials in Spanish, creation of a social media page and

participation in several public events to interact with people and distribute materials. The response was extremely positive. The Project Team observed increased awareness of and engagement in water issues in the target audiences even after this short pilot program. 2) The broader educational needs were addressed via partnership with the OPUD public schools and the South Yuba River Citizens League (SYRCL) to bolster 4th grade science curriculum with in-school lessons, experiment boxes, and a field trip on the Yuba River. This program was a key regional catalyst for Yuba County and was incorporated directly into a County-wide water education initiative led by Yuba Water Agency to leverage the advances made in this Case Study and extend them out to all grades and schools in Yuba County.

Yuba DAC Racial Equity Pilot: The Yuba DAC Racial Equity Pilot was led by Carlos Quiroz (Quiroz Communications), in collaboration with Katie Burdick (Burdick & Associates). This task built on the *Tu Agua* task from previous years. The original outreach efforts relied heavily on in-person communication, including participation in community events, presentations at schools, and social media engagement. Most of those in-person social opportunities, however, disappeared during the pandemic. The Project Team therefore shifted its strategic approach from community events and social media to implementing a pilot project with SRFA's DAC water purveyors.

The original intention was to pilot the Yuba DAC Racial Equity project in the DAC communities of Olivehurst, Linda, and Marysville. However, at the time of Phase 2 implementation, senior staff at the City of Linda indicated that the board had competing priorities and were unable to allocate sufficient time to fully address the *Tu Agua* process and activities; and in Marysville, a change in city manager resulted in a change in priorities both for staff time allocations and interactions with external programs due to budgetary and capacity issues. Therefore, the effort was implemented solely with OPUD. The goal of this pilot was to enhance OPUD's in-house capabilities to build equity and better meet the needs of their diverse community.

The program consisted of the following components:

1. Agency Board Training and Education: The Project Team worked closely with the OPUD Board, committees, and staff to design board development and training opportunities. These included a series of presentations to the board detailing demographic shifts, language needs, and the organization's strengths and weaknesses in adapting to those changes. Based on those sessions, with the Board's direction, the Project Team set out to develop a series of organizational policies to guide the agency in its efforts to better communicate with and serve their diverse customer base. Policies were created in collaboration with board members and staff around threshold languages, translation and interpretation standards, and hiring practices.

2. Communications Audit: Carlos Quiroz reviewed existing communications materials such as brochures, flyers, newsletters, website, posters, etc. to assess their effectiveness in reaching non-English speakers. He identified materials that needed to be created in or converted into other languages, and developed a variety of materials to address those needs. These included, in Spanish: a document to help readers understand the technical Consumer Confidence Report, water and wastewater FAQ, burn permit, service shutoff doorhangers, and miscellaneous other customer forms (e.g., water system complaint, change of address, cancelation of services, etc.). Carlos also created content for a Spanish-language web page to be hosted within the OPUD website, providing general information and access to the materials listed above.

3. Disadvantaged Community Involvement Outreach Manual: The results of this pilot effort were compiled into a DACIP Outreach Manual for distribution to other communities in the SRFA to use as a guide to replicate and adapt the strategies developed as part of this pilot project for

their own communities. The guide is intended to help small water agencies better understand the needs of their communities and develop strategies to address them.

One component of the Tu Agua pilot project that did not get implemented was the Latino Advisory Committee. The original idea was to develop a committee of Spanish-speaking Latino community members to serve as a connection between the Latino community and water agency board members. The Latino Advisory Committee would have been comprised of up to 12 members, divided equally among residents from Olivehurst, Linda and Marysville. However, due to the lack of participation from Linda and Marysville, this component did not gain traction.

Despite the obstacles caused by the pandemic, the Yuba DAC Racial Equity Pilot effort overall was very successful. The DACIP Project Team received positive feedback from the community and people engaging in the water education activities, and the few community events that we were able to participate in prior to the pandemic, such as the Ampla Community Health Fair and presentations to non-English-speaking parents of students at Ella Elementary and Johnson Park Elementary in Olivehurst, were highly effective.

The outcomes of the pilot project in OPUD were also positive, though there were some challenges. While the district was very supportive of the external community engagement activities, receptiveness to the DACIP Team's internal efforts was somewhat more complex. Board members were almost uniformly very supportive of the DACIP Team's efforts; staff, however, were more resistant to change, creating various barriers to the implementation of the program. The DACIP Project Team was able to build and maintain Board and management support throughout the process while navigating through the various challenges posed by staff. At the end of the process, the DACIP Team produced a set of guidelines that received uniform praise and adoption by the Board and will help lay the foundation for organizational changes that will enhance communication, engagement, and representation between the agency and the community it serves. Please see the Project Summary Report (Appendix A) for more details about this Phase 2 pilot.

Small Water System Repair and Maintenance SWAT Team and SURGE (Small Utility Regionalization Group Exchange): The Phase 1 TMF Needs Assessments highlighted the nearly universal situation of water systems serving small disadvantaged communities struggling with on-going and routine day-to-day O&M tasks. Lack of the sufficient funding, lack of qualified operators, and other factors can generate ever-growing operational deficits. A solution that the State Water Resources Control Board often supports for DAC water systems that are struggling to maintain the ongoing O&M is consolidation into a larger utility. This solution is not always feasible, particularly for highly rural and remote communities where the distance and topography make consolidation impractical or too costly. The SRFA DACIP Technical Team noted that if these systems could not physically unite, they could operationally unite by sharing staff that could move between systems, providing the needed expertise and reducing the salary costs for any one system and providing opportunities for bulk purchasing of materials needed by all systems to reduce the per unit cost.

This case study was developed to test the concept of organizing group purchasing and coordinated O&M at a regional-scale across two largely rural and DAC IRWM regions, the Upper Pit and Upper Sac regions. Paul Rose visited 17 small systems across the Upper Pit and Upper Sac-McCloud IRWM Regions and interviewed managers and operators about their key gaps in ongoing O&M. The recommended solution, based on these interviews, was the development and funding of a mobile team of skilled, trained, and experienced licensed water and wastewater operators with tools and equipment available to use in

region – a water/wastewater SWAT Team that could move into a system with the necessary materials, and work in conjunction with local system operators on a variety of small tasks and projects.

The SWAT implementation planning was intended to include convening quarterly SURGE meetings of the water systems in the Upper Pit and Upper Sac Regions to build relationships, discuss shared problems and identify opportunities to collaborate. However, the pandemic greatly reduced the ability to continue onsite work and disrupted work schedules of all involved. Efforts to build relationships, inter-district cooperation, and discussion of areas of O&M collaboration were not fully realized. The Technical Assistance Project Summary Report (Appendix B) describes assistance provided to small water systems in the Upper Pit and Upper Sac IRWM Regions during Phase 2.2, including a summary of efforts to launch SURGE and recommendations for next steps.

Small Water System and Municipal Capital Needs Assessment and Planning: This activity grew out of the SWAT/SURGE pilot to address a perceived need for assistance in capital improvement planning. This effort was intended to build from capital improvement planning trainings provided by RCAC to support DAC municipalities and small water systems that lack the experience and capacity to complete a Capital Improvement Plan (CIP) and strategize its implementation. The activity was led by Burdick & Associates, consisting of Katie Burdick (principal), Susan Robinson, and Paul Rose (Rose Water System Management).

In collaboration with the IRWM DACIP Coordinators and Regional Water Management Groups, the project team reached out to numerous municipalities and small water systems in the Upper Sacramento-McCloud, Upper Pit River Watershed, Northern Sacramento Valley, Westside Sacramento, and Yuba IRWM regions. Three municipalities and three districts accepted the invitation to participate: the cities of Lakeport (Westside Sacramento), Tehama (North Sac Valley), and Alturas (Upper Pit), and the Olivehurst Public Utility District (Yuba), the Yolo County Housing Authority for El Rio Villa low-income housing complex (Westside Sacramento), and Colusa County Waterworks District #1 for the community of Grimes (North Sac Valley).

One-on-one technical assistance was provided to each participating water system, including: 1) an asset inventory and condition assessment, 2) evaluation of needed replacement/repair and cost estimates, 3) prioritization of capital needs, 4) identification of funding sources, 5) development of a short-term planning budget, and 6) development of the CIP document. Since each system was unique in terms of level and type of planning assistance required, the CIP planning process was adjusted to suit each system's individual needs. For some systems, a reserve budget was calculated to support creation of a Capital Reserve account. The final CIP document (or equivalent) was then sent to staff for presentation to the district board or city council for approval and/or adoption, as appropriate.

Lack of staff capacity (mainly, time) was the primary reason for an entity's failure to have performed capital improvement planning up until this point. The assistance provided via the SRFA DACIP grant provided water system staff with an understanding of the process and a framework for future planning efforts – including the necessary steps to develop a CIP, an annual (or biennial) timeline, the asset inventory and condition assessment templates, and the CIP budget template (along with a "head start"). All of the entities with whom the project team worked commented on how beneficial the CIP planning process had been, and expressed appreciation for the assistance. Please see the Project Summary Report (Appendix C) for more details.

Innovative Finance Training: The purpose of this task was to collate and summarize information on new and innovative funding strategies for capital projects and export that information to the SRFA DAC communities. This project spanned a period of over two years and was dramatically impacted by the workforce challenges created by the emergence of the COVID-19 pandemic in early 2020. The project team adapted by modifying the initial workplan to suit emerging circumstances, needs and opportunities.

The financing technical assistance project began in July 2020 with the goal of providing information, trainings, and networking support to DAC community leaders. Initially, the technical assistance providers developed a comprehensive report entitled, "Because It's Worth It," detailing the most relevant financing strategies, providing case studies of their application to relevant water infrastructure projects around the country, and suggestions for applying these strategies to meet capital needs within SRFA DACIP communities. The team followed the release of this report with group presentations, including to IRWM members, and small groups or individual follow-up conversations. The team also developed a series of short "issue briefs" to simplify access to knowledge about conservation finance.

In addition to the project team's outreach to water agencies, resource managers, and other IRWM participants, the team undertook a comprehensive effort to build relationships with conservation finance providers and experts, including among others: California iBank and GOBiz, Blue Forest Conservation, Impact Finance Center, US Forest Service, and iBank.

Finally, the team initiated two pilot projects, working individually with SRFA IRWM stakeholders to develop site-specific financing "roadmaps" for watershed health, water supply protection, fire risk mitigation, and flood control enhancement projects:

1. Collaboration with Solano County Water Agency (SCWA) led to an initial discussion about a potential Putah Watershed Salmon Fund and other project finance needs. This discussion was informed by a fieldtrip exchange between SCWA, Blue Forest and Yuba Water Agency in the Yuba Watershed.
2. Collaborative Forest Restoration for Water, Community and Bioenergy Benefits in conjunction with a team convened by the Fall River Resource Conservation District / Burney-Hat Creek Community Forest and Watershed Group. This work featured biweekly committee meetings over four months, two presentations from outside finance platform developers, and the drafting of a conservation finance roadmap. Participants from both pilots are interested in continuing work and securing funding to support ongoing assistance.

Despite the promise of blended finance approaches to water and watershed conservation projects in the SRFA, there are numerous challenges that frustrate uptake of this model. These challenges include:

- Immaturity in the development of appropriate financing structures;
- Lack of familiarity with financing principals in many DAC water agencies and municipal governments;
- Insufficient staff capacity or budget to engage in the discovery of blended finance models and to develop appropriate strategies;
- Challenges inherent to the development of blended finance strategies, including inadequate connections between private investors and public water agencies and unclear pathways for leveraging state and federal grants and loans.

Despite these challenges, the market is maturing and interest within the water infrastructure and watershed management sectors is increasing. DWR and other State agencies, and partners within the public, private and non-profit sectors have meaningful opportunities to assist with the uptake of private investment models that support resilient communities and watersheds. Please see the Project Summary Report (Appendix D) for more details.

URC Case Study in American River Basin (ARB): The Project Management Team worked with the ARB Regional Water Management Group to develop a case study work plan to address the issue of access to water and wastewater services for the unhoused in the ARB region. The unhoused population in the ARB IRWM Region was identified during Phase 1 as a key underrepresented community with significant water and wastewater needs.

The purpose of this Case Study was to provide access to water, sanitation, and hygiene (WASH) for people experiencing homelessness via a fully contained, ADA accessible, mobile shower unit. The goal was to improve public health and minimize the environmental impacts of camping near California waterways in Sacramento County. The project was implemented in Year 3 of the grant and included coordination of known entities already working with the issue in ARB.

The mobile shower unit was operated by SHOW-UP Sac, a 501(c)(3) organization with existing connections to the ARB unhoused population and experience running mobile units like this one. The mobile unit consisted of two stalls with a shower, sink and toilet, with one being ADA accessible. SHOW UP/Be Encouraged Inc. managed the project implementation, including transporting the unit to and from scheduled locations with their organization's truck, setup, take down, and staffing. Staff were hired through job postings, with preference for candidates experiencing or who have formerly experienced homelessness. Two full-time service staff and one full-time manager were hired for: 6.5 hours/day for running the unit, and 1.5 hours/day for driving, setup and breakdown.

SHOW UP/Be Encouraged Inc. began running the WASH Program on August 24, 2022. The unit operated on Mondays and Wednesdays from 10am to 2pm at 116 N. 16th Street in the River District of Sacramento. As part of the regular hygiene program, SHOW UP provided new undergarments, socks, and a hygiene kit to each person who elected to take a shower (provided by other funding described above). Additionally, a brown bag lunch and clean clothes were provided as additional wrap-around services.

Though the project was successful during its implementation, unfortunately, operation of the WASH unit under the SRFA DACIP grant had to be discontinued in February 2023 when issues arose regarding site access, as well as transportation of the unit. As soon as a more durable site is identified, the unit will continue to be used within the ARB and Sacramento area to provide WASH services through the typical life of the unit, which is expected to be 6-8 years. Please see the Project Summary (Appendix E) for more details.

2.4 Tools Development

Online Tools: The Technical Team created an SRFA DACIP website to make available program information, maps, key support contacts, report materials, pilot outcomes, and a series of videos covering key topics of interest. The contents of these videos focused on common issues identified during Phase 1 Needs Assessments, and topics covered in the Workshops. The website can be accessed at https://srfadacip.com/.

Technical Support Materials: Through implementation of the various activities in this grant, the SRFA Technical Team developed numerous technical support materials which were made available to water purveyors, municipalities, community members, and other participants. These materials were distributed through RCAC Workshops, capital improvement planning assistance, community outreach events (e.g., Tu Agua events), the OPUD pilot and other case studies described above, education curricula, and through one-on-one technical assistance. Many of these technical support materials are available on the SRFA DACIP website, including:

- RCAC Technical Workshop materials
- Spanish-language flyers, notices, and brochures for water system customers
- Capital Improvement Planning: Asset Inventory and Condition Assessment Template
- Innovative Finance Task Issue Briefs and report, "Because It's Worth It"
- Funding Opportunities grants database

2.5 Tribal Needs Assessment and Follow-up – *Task completed in Phase 2.1:*

A Tribal Needs Assessment was completed by CIEA. RCAC also completed its own outreach to Tribes in order to determine which types of workshops would be most beneficial. The COVID-19 pandemic restricted the staff's ability to make in-person contact or to provide trainings in a classroom setting. RCAC provided six virtual Tribal-only trainings via a web-based platform, covering the following topics:

- COVID-19 Pandemic in CA Tribal Response Workshop
- Drinking Water Math for Tribal Systems
- Wastewater Math for Tribal Systems
- Private Well and Septic Maintenance
- Operations Basics and Operations Plans

2.6 Develop and Adopt Phase 2 Final Report

This document fulfills this task. This document has been reviewed and approved by the SRFA DACIP Subcommittee representing the six SRFA Regional Water Management Groups.

DELIVERABLES: Deliverables for tasks completed in Phase 2.1 were submitted previously to DWR with the Phase 2.1 Final Report. Deliverables for tasks completed in this final phase of the grant were submitted to DWR over the course of this phase. Please see the appendices for Project Summary Reports for the following case studies:

- Appendix A: Yuba DAC Racial Equity Pilot
- Appendix B: Small Water System Repair and Maintenance SWAT Team and SURGE
- Appendix C: Small Water System and Municipal Capital Needs Assessment and Planning
- Appendix D: Innovative Finance Training
- Appendix E: URC Case Study in ARB

Activity 3. Phase 2.2 Strategy Development

Strategy development for the final phase of the grant (Phase 2.2) was based on the combined outcomes and lessons learned from Phases 1 and 2.1, resulting in the tasks described above.

Activity 4. Phase 2 Grant Administration

Grant administration activities included DWR contract amendments, reporting, invoicing, and other activities as needed to ensure compliance with the Grant Agreement.

FINDINGS

Needs Assessment

Results of the Place-based and Community-based Needs Assessments, along with the identification of small water systems throughout the SRFA, were fully reported on in the Phase 1 Final Report. Please refer to that report for these details.

Identification of Ongoing Barriers for DAC involvement

The greatest barrier for DAC involvement in IRWM efforts per se is the lack of continued state funding support for the IRWM Program. Given the uncertain future of IRWM, this section is intended to characterize ongoing barriers for DAC involvement with regard to assistance from state and federal funding programs more broadly. The primary barriers include:

Lack of Funding: Lack of funding is the most obvious and immediate barrier to DACs meeting their water and wastewater management needs. Water and wastewater infrastructure is expensive for any district, but for a small economically disadvantaged district, the cost of ongoing O&M and capital improvements can be out of reach. Grants are an important source of funding for most water and wastewater systems, and many small entities depend almost entirely on state and federal grants to fund their capital needs. Unfortunately, this is not a reliable strategy. Grants are never guaranteed, are often capped, are sometimes not sufficient to cover the entire cost of a project, and often retention requirements and the timing of reimbursement make grants untenable for small entities.

Lack of Capacity: This category encompasses many facets, including lack of staff and operator expertise, lack of board knowledge/training, and other TMF basic capacity needs. It is not uncommon for DAC water agencies and districts to operate on shoestring budgets and with minimal staff capacity. Some DAC water agencies in the SRFA are staffed by part-time or volunteer personnel, many of whom lack sufficient training. Many small water/wastewater systems have no administrative staff, making it difficult or impossible for them to pursue, or manage if won, external grant funding. Some of the small systems most in need are so overburdened that they don't have the time or capacity to accept free technical assistance from organizations such as RCAC or Cal Rural Water. These systems often adopt a "fix it when it breaks" approach, resulting in unreliable systems that ultimately cost more to run. Many systems find it difficult to escape this cycle.

Lack of board training, board expertise, and board consistency/sustainability is also a problem for many small systems. Board members may come and go. There may be a lack of formal orientation for new board members, and/or a lack of succession planning. All of this may lead to a lack of reliable recordkeeping and/or institutional memory, and poor decision making.

Isolation: Many small systems in the SRFA are located in rural, geographically isolated areas. While consolidation is generally the preferred solution for small systems that struggle with TMF capacity and basic infrastructure needs, geographic isolation can make physical consolidation impossible. Similarly, interactive isolation (lack of good internet, travel distance) can make other types of regionalization, such as sharing staff and administrative web-based resources, similarly challenging.

Entrenched Lack of Trust: One barrier to providing assistance to some small water/wastewater districts is their suspicion of government agencies, and occasionally of government-funded assistance providers (such as RCAC). These systems are often reluctant to accept help. Some may view the government as an intervention rather than a support, and may be hesitant to provide details about their system that they perceive may make them vulnerable to unarticulated harm. Additionally, a system that is out of compliance for the reasons already described may not be willing to be honest about their system deficiencies out of concern about enforcement actions. This entrenched lack of trust can be an ongoing barrier even for systems that have been awarded and have accepted, without negative consequences, millions of dollars in state or federal support in previous years.

Recommendations

Below are some general recommendations that have arisen directly out of the pilot projects and case studies conducted through this SRFA DACIP grant.

Small Utility Regionalization Group Exchange (SURGE): The SRFA DACIP Technical Team noted that if systems could not physically unite, they could operationally unite by sharing staff who could move between systems, providing the needed expertise and reducing the salary costs for any one system, and providing opportunities for bulk purchasing of materials needed by all systems to reduce the per unit cost. The concept of "SURGE" broadly encompasses this regionalization of several small utilities within a defined geographic area, combining resources to share costs, expertise, and to achieve economies of scale. The establishment of SURGE entails a great deal of organization, cooperation, and potentially external funding to get it off the ground. The SRFA DACIP Technical Team observed that establishing SURGE in any one region will take time, and noted the importance of in-person versus virtual meetings for establishing trust and relationships. The Technical Team recommended identifying an individual or system "champion" who has the ability and aspiration to continue the effort, and provide support to develop a framework to achieve established goals.

Small Water System Repair and Maintenance SWAT Team: The SWAT Team model consists of the development and funding of a mobile team of skilled, trained, and experienced licensed water and wastewater operators with tools and equipment available to use in region – a water/wastewater SWAT Team that could move into a system with the necessary materials, and work in conjunction with local system operators on a variety of small tasks and projects. The SWAT Team concept can be a component of SURGE, or can exist as a stand-alone approach.

As envisioned, SWAT Teams would consist of circuit-riding Water and Wastewater Task Forces that serve specific geographic regions throughout the state—ideally with ongoing support from the State—and that dedicate their time fully to checking in with certain systems within their defined regions on a regular, ongoing basis to help with financial and administrative needs, such as operating budgets and capital improvement planning. Such SWAT Teams would be invaluable for supporting the TMF capacity of small systems, assisting them with O&M needs and capital improvement planning, training local operators, and generally shoring up system capacity for better self-management in the long run – potentially reducing the need for State "rescue" funding.

One important service that the SWAT Team concept could provide is targeted, sustained support. While RCAC and Cal Rural Water provide important assistance to small disadvantaged water/wastewater systems throughout the state through workshops, technical assistance, and other programs, the SRFA DACIP Project Team has noted a need for longer-term, more sustained, dedicated support for certain

DAC systems. A small system operator may gain helpful knowledge from a one-day workshop, but may not have the capacity or ability to follow through (for example, with developing a capital improvement plan). Also, the support needs to come *to* the system in order for DAC water system operators to be able to fully engage. Travel time and funding to attend trainings is very limited and system-specific questions and needs, combined with operators with limited training, often results in reduced uptake of content provided in workshop-style assistance. Establishing a team of dedicated assistance providers who can focus exclusively on specific DAC systems on-site, in an ongoing one-on-one, consistent, prolonged manner, would provide invaluable support for small systems.

Increasing Equity in Water Management: The Tu Agua pilot proved to be very successful in educating diverse communities and increasing DAC involvement in water management. The SRFA DACIP Project Team recommends this model for other communities throughout the state. Of particular value were: 1) the communications audit of customer informational materials to increase equity and improve communications with a system's diverse customer base, and 2) the development of board policies to improve equity in water/wastewater system operations. The Project Team noted that resistance to internal change within an agency can be considerable; when working to effect internal change, it is beneficial to identify key champions in strategic positions both on the board and at the staff level.

Developing a Representative Workforce: The Tu Agua pilot identified the need for water agencies' workforce to better reflect the linguistic and cultural makeup of the communities they serve. By recruiting and hiring more employees with the necessary language, cultural, and community knowledge and skill sets, an agency can more easily and cost-effectively navigate the translation, communications, and representation challenges a diverse community presents. Working with education systems and community-based organizations to introduce target communities to careers in water while providing them the support and guidance needed to succeed, an agency can develop a labor force with closer ties with the community it serves and start to prepare capable individuals for future positions as decision-makers.

Creative Finance: The Innovative Finance Training pilot project provided several useful recommendations, including among others:

- There is widespread reluctance on the part of State water agencies to deviate from familiar grant and loan sources. DWR, SWRCB and other California funding agencies can collaborate with information providers from the financial services sector to learn about and leverage public funding and financing with capital from private investors.
- DWR, SWRCB, other California funding agencies and federal partners have an opportunity to update their own funding practices to emphasize the considerable potential for leveraging public and private investment created by conservation finance strategies. Only California's iBank and GoBiz programs seek to promote access to private finance. Individual agencies within the Natural Resource Agency should increase their collaboration with iBank and its programs to better promote the accessibility and advantages of conservation finance.

LOOKING INTO THE FUTURE

A wealth of information about DAC water and wastewater systems in the SRFA has been collected, important assistance has been provided, significant on-the-ground achievements have been made, and valuable lessons have been learned over the course of this SRFA DACIP grant. The SRFA Regional Water Management Groups and the SRFA DACIP Project Team are grateful for the support that DWR has provided. This grant opportunity has brought together water resource managers, Tribal leaders, and interested stakeholders from our six IRWM regions in a truly collaborative and positive effort. The SRFA Regional Water Management Groups and the DACIP Project Team are hopeful that the successes gained through this effort will reverberate well into the future in the form of new knowledge, new programs, and heightened awareness of equity in water management.

Without continued State funding support for the IRWM Program, however, opportunities for continued DAC involvement efforts within the IRWM regions, per se, will be limited. Without continued State funding support, the future outlook for continued IRWM activity in the SRFA is uncertain. IRWM Regions that have identified non-State sources of funding for IRWM coordination (for example, the Yuba and Westside Sacramento Regions) continue to meet and collaborate on a regular basis, while some others have all but ceased activity. One thing learned through this DACIP effort is that meaningful engagement with disadvantaged communities and Tribes takes a great deal of time and resources. It simply won't happen without dedicated funding. Without continued State funding support, the momentum of collaboration achieved over the past 15+ years through IRWM and the potential for building upon the considerable gains made through this DAC Involvement Grant will be an opportunity missed.

That said, Regional Water Management Group members within the SRFA IRWM Regions continue to work together on projects under various local efforts as well as state and federal programs that require robust DAC engagement. These include, for example, the California Governor's Office of Planning and Research (OPR) Community Economic Resilience Fund (CERF) grant program, integration of the Yuba IRWM project development and funding strategy program with the Yuba Water Agency's Community Impact Grant and Loan Program, watershed groups formed to address wildfire risks (such as SCALE, Hat-Creek Burney Bioenergy Project, Cal FRAME, Tahoe-Central Sierra Initiative, North Yuba Forest Partnership), and implementation of the Sustainable Groundwater Management Act and groundwater sustainability planning efforts. As with IRWM, engagement and consideration of issues of importance to DACs is critical in these planning efforts. Lessons learned and programs initiated through the SRFA DACIP grant may carry on through these other efforts.

Meanwhile, the SWRCB continues to provide substantial funding support and technical assistance on an annual basis for DAC water and wastewater infrastructure needs, groundwater cleanup, bottled water, and other important needs. SWRCB support is critical to meeting drinking water and public health goals for DACs throughout the state. Ideally, the lessons learned and strategies developed through the SRFA DACIP effort can also be used to support and supplement SWRCB's direct assistance to DACs.

APPENDICES

Appendix A. Yuba DAC Racial Equity Pilot: *Tu Agua*

Appendix B. 2020/2021 Technical Assistance Efforts in the Upper Sacramento, McCloud, and Lower Pit and Upper Pit River Watershed IRWM Regions

Appendix C. Capital Improvement Planning for Economically Disadvantaged Water Systems

Appendix D. Innovative Finance Task Group - Technical Assistance

Appendix E. URC Case Study in the American River Basin: Homeless Access to Water, Sanitation, and Hygiene (WASH)

APPENDIX A

Phase 2 Project Summary Report:

Yuba DAC Racial Equity Pilot: *Tu Agua*

Tu Agua Phase 2
Project Summary Report

The *Tu Agua* Spanish-language community engagement program was developed to assist water agencies in disadvantaged communities, primarily those with large Spanish-speaking communities, to better engage and communicate with their customers, while increasing the level of awareness among the non-English-speaking community about water issues relevant to them.

Phase 1 (2017-2018) focused on identifying the community's current awareness and knowledge level about water issues, where and how their water is procured and the agencies that provide the water. Information was generally gathered through interviews with community leaders, person-on-the-street interviews and conversations with community and parent groups. That information was used to develop key messages and supporting materials that were disseminated through community events, engagement with parents at schools, social media, and other direct outreach activities.

The Phases 2 (2019-2024) initiative were envisioned as a way to build on the foundation of Phase 1, continuing to expand on activities that promoted general awareness while creating a community advisory group that could support agency decisionmakers in better understanding the impact of their decisions on the Latino community. Phase 2 also began the process of helping partner agencies look inward through Diversity, Equity and Inclusion (DEI) Board training and development.

Phase 2 of the *Tu Agua* Spanish-language community engagement effort was unexpectedly and markedly impacted by the COVID-19 pandemic. The original outreach efforts relied heavily on in-person communication, including participation in community events, presentations at schools, social media engagement, and taking advantage of other in-person outreach opportunities. Most of those opportunities disappeared during the pandemic lockdown and lingering precautions and restrictions continued to affect their availability and the community's participation in them for a long time after. As a result, a strategic shift was implemented – prioritizing and enhancing work with the pilot partner agency, the Olivehurst Public Utility District (OPUD), to effect internal changes that would better position them to communicate with and serve their diverse customer community.

Community Events

At the beginning of Phase 2, and prior to the lockdown, the team was able to participate in community events, such as the AMPLA Community Health Fair and presentations to non-English-speaking parents of students at Ella Elementary and Johnson Park Elementary in Olivehurst. Following lockdown, schools restricted visitors on campus and moved the English Learner Advisory Committee (ELAC) meetings online, which led to a precipitous drop in participation. Community events took a while to return, as organizers wrestled with how to make participants feel safe and bring back audiences. The team participated in the Hispanic Heritage Festival and the Cinco de Mayo community event. Attendance at the first was lackluster, but by the second event the crowds were beginning to return. The events still proved to be great venues for educating the community about water issues and forming relationships with community-based organizations who could be supportive of our efforts.

Social Media

For our social media efforts, the team thought it appropriate to take a break during the lockdown, as people's focus was on receiving pandemic information and learning what to do. As the lockdowns continued, the quick rise of medical and political misinformation online led social media platforms to crack down on online advertising and sponsored posts dealing with health. Unfortunately, even though completely unrelated, the water education messaging got caught in the blanket crackdowns, making it harder to get the messages out to the community. Even so, the effort managed to garner more than 100,000 impressions on our *Tu Agua* Facebook page, posting water conservation and stewardship messages as well as infused water recipes encouraging viewers to drink tap water.

OPUD Pilot Project

Communications Audit: With the challenges and ensuing restrictions created by the pandemic lockdown and its aftermath, we shifted our strategic efforts to work within OPUD, our partner pilot agency, to enhance their in-house capabilities to better meet the needs of their diverse community. We began by conducting a communications audit, which inventoried currently available materials and identified what materials needed to be created in or converted into other languages. Since our in-person public participation activities were hindered by COVID and the ensuing lockdown, we shifted resources to develop a greater variety of materials than originally intended, including a document, in Spanish, helping readers understand the technical Consumer Confidence Report. Documents developed or translated into Spanish included:

- Service Application Form
- Change of Address or Name Form
- Cancelation of Services Form
- Water System Complaint Form
- Water and Wastewater FAQ
- Landowner Guarantee Form
- Burn Permit
- Consumer Confidence Report Guide
- Service Shutoff Doorhangers
- Posters announcing availability of materials in other languages

We also created content for a Spanish-language web page to be hosted on the OPUD website, providing general information and access to the materials listed above.

Board Development and Training: We worked closely with the OPUD Board, committees, and staff to design Board development and training opportunities. These included a series of presentations to the Board detailing demographic shifts, language needs, and the organization's strengths and weaknesses in adapting to those changes. Based on those sessions, with the Board's direction, the team developed a series of organizational policies to guide the agency in its efforts to better communicate with and serve their diverse customer base. Policies were created in collaboration with board members and staff with a topical focus on threshold languages, translation and interpretation standards, and hiring practices.

While the Board was very supportive of our efforts to develop these policies, ongoing challenges with staff emerged. We attempted to overcome resistance on the part of some staff members through active communication, finding common ground and leveraging the support of board members and key

management officials as champions of the initiative. Ultimately, the Board voted unanimously to adopt a set of guidelines with the stated intent of reviewing their effectiveness and adopting them as formal policies in the coming years.

***Disadvantaged Community Involvement Guide**:* Our work with OPUD was designed as a pilot study to identify strategies and best practices for other agencies to adopt. To that end, we developed a Disadvantaged Community Involvement (DACI) Guide to help small water agencies better understand the needs of their communities and develop strategies to address them. The guide was designed as a workbook that walks the user through a series of steps to gather data, engage community leaders and organizations, identify issues and build messaging and strategies around those issues. When used, the workbook can help develop information that can serve as a strong foundation for a small water system's effective community outreach and engagement approach.

Furthermore, the team shared findings and best practices with other water agencies by participating as a presenter at an IRWM Roundtable of Regions conference. We received positive feedback on the presentation and have been invited to present again at an upcoming conference.

Challenges

As noted above, we faced two main challenges: (1) the Covid pandemic and its impact on in-person communication and engagement, and (2) internal resistance to change within the OPUD organization – primarily at the staff level.

The first challenge, the global pandemic, led to a prolonged lockdown. Since many of the community engagement strategies were predicated on direct interaction with community members, the lockdown and its lingering effects had a significant impact on outreach and engagement efforts. The team was able to restart most of the activities, and while outcomes began improving, public participation never did reach pre-pandemic levels.

The second challenge we faced was internal resistance to change within our pilot partner agency, OPUD. While the district was very supportive of our external community engagement activities, receptiveness to our internal efforts was somewhat more complex and challenging.

In its Knowledge Exchange Blog titled, "Three Takeaways: Anticipating and Addressing DEI Change Resistance," Northwestern University states that "[r]esistance to DEI change can show up in a variety of ways, from team member discomfort and lack of engagement to hoarding of resources and avoiding accountability. It can come in the form of competing priorities, insufficient capacity or leadership attention, or lack of understanding."

The team definitely confronted all these types of resistance and more. While Board members were almost uniformly very supportive of our efforts, some staff created administrative barriers to delay or disrupt our work. Fortunately, we were able to build and maintain Board and management support throughout the process while navigating through the various challenges posed by staff. The team also took extra measures to engage discontented staff and hear and address their stated concerns. At the end of the process, the team produced a set of guidelines that received uniform praise and adoption by the Board and will help lay the foundation for organizational changes that will enhance communication, engagement, and representation between the agency and the community it serves.

Recommendations

Overall, we believe the activities and deliverables of Phase 2, including community events, communications audit and materials development, and Board/organizational training and development were very effective.

We continued to receive positive feedback from the community and from people engaging in the water education activities. Going forward, we recommend that other programs similar to this one should follow a similar strategy. The pandemic's effects on these events were real and impactful, but temporary, and should not impact the strategy's long-term effectiveness. We also encourage similar efforts to engage the schools and other community-based organizations (CBOs) and to leverage existing opportunities for engagement, such as ELAC meetings and CBO meetings and events.

Future attempts to work within an agency to effect internal change would benefit from identifying key champions in key positions. In this case, while the Board was supportive, they were not dealing with the day-to-day of staff responses, and engaged with the issue only every several months. Having one or two staff members to champion and vocally drive this effort would have been extremely valuable. Internal resistance on the part of staff to these policy changes underscores exactly why these policies are needed to begin with.

APPENDIX B

Phase 2 Project Summary Report:

2020/2021 Technical Assistance Efforts
in the Upper Sacramento, McCloud, and Lower Pit and
Upper Pit River Watershed IRWM Regions

Project Summary Report:
2020/2021 Technical Assistance Efforts
in the Upper Sacramento and Upper Pit IRWM Regions

This document summarizes the technical assistance provided by Rose Water System Management to small water systems in the Upper Sacramento, McCloud, and Lower Pit River (Upper Sac) and the Upper Pit River Watershed (Upper Pit) IRWM Regions during 2020 and 2021, with funding support through Sacramento River Funding Area (SRFA) Disadvantaged Community Involvement Program (DACIP) grant funding (Proposition 1 Integrated Regional Water Management Grant).

1) Lassen County Waterworks District #1 – Bieber

a) Technical Assistance: Draft a Cross-Connection Ordinance, conduct a cross-connection survey and report.

i) In August 2020 a Cross-Connection Ordinance was drafted and presented to the district. Besides containing language typical of an ordinance, it allowed the district to implement a "point-of-connection" program. The ordinance was adopted shortly thereafter by the board.

ii) In late January 2021 a district-wide onsite cross-connection survey was conducted with Bryan Hutchinson, District General Manager, of the commercial water system customers served by the district. Internal water uses were outlined by Bryan and determinations were made as to the need for a backflow device at the meter. Internal inspections were not performed as Bryan was reluctant to have us inspect inside the buildings.

iii) A survey summary and memo of recommendations was drafted and presented to Bryan for compliance follow up.

2) Juniper Acres Technical Assistance

a) Toured the water system with board members to gain knowledge of system operation.

b) Drafted a needs memo to submit as a project to the IRWM Plan. Assisted with preparation of IRWM submittals. A grant was awarded.

c) Developed a project budget and work plan.

d) Outreach to recruit an engineer for the pending project. There are a very limited number of available civil engineers in the greater Alturas area.

e) Conducted a subsequent meeting in Alturas in October 2021 with Juniper Acres board providing step-by-step approach to bring the project to construction.

f) Have had no communication from Modoc RCD or Juniper Acres board since construction planning steps meeting.

3) Regionalization efforts to cultivate operation & maintenance capacity building throughout the Upper Pit and Upper Sacramento IRWM regions using "SURGE meetings" (Small Utility Regional Group Exchange).

In early 2019 efforts were made to initiate contact with public water and wastewater systems within the Upper Pit and Upper Sacramento regions to create a relationship, discuss current operational, maintenance, and repair efforts, and propose the concept of ongoing inter-system operation and maintenance support and cooperation.

Calls or emails were made, appointments set with interested parties, and tours conducted in both regions to discuss regionalization concepts with operators, managers, and board members. Additional efforts in outreach were made through suggestions by the IRWM Region Coordinators and inquiries with drinking water governmental regulators. The concept of regional O&M capacity building was also presented at a CalWARN meeting in Redding giving larger entities the opportunity to make comments regarding the concept, and to suggest outreach to small systems who may not have been initially contacted.

Through consistent communication both in-person and, by phone and email, proved successful in planting the concept of attending regular regional meetings in rotating locations, within each region.

In early 2020 as preparations were made to schedule and host monthly onsite meetings the pandemic took hold, and ended any person-to-person contact. This reduced interaction to online only. Meetings were scheduled via Zoom. This proved unsuccessful. Not only were online meetings foreign to this audience, Zoom made the meetings impersonal, difficult to spontaneously interact, and in no way gave any feeling of connection with neighboring systems.

Online meetings did not generate consistent participation. Agendas were drafted and sent out, and follow-up emails and phone calls were made to generate attendance. Monthly meetings continued throughout 2020 via Zoom with only a small group of faithful participants regularly attending. In March of 2021 Zoom meetings were halted and regional operation and maintenance capacity building efforts concluded.

Observations from Regionalization Efforts

a) The complexity of new relationships between the utilities takes time to build. Participants must become comfortable with the concept of inter-district cooperation and visualize what that effort can become, especially in a region where the closest neighboring system could be a 90-minute drive away.
b) Reluctance, inability, or inconsistency of participation in the concept are likely due to:
    (1) The geographical distance between districts and the time commitment required to attend regional meetings.
    (2) Tight staff levels and its effect to schedules when sharing a staff member.

(3) A low level of interest from individuals to the concept of shared resources, usually because some systems run on a day-to-day reaction concept to operation and maintenance.
(4) The fear of scrutiny or personal judgement, or a perception of inadequacy by others when discussing the needs or shortcomings of their district.
(5) Lack of board level support.

Next Steps

Next steps for continuation/resumption of the SURGE model to realize the goal of O&M capacity building through shared resources include:

1. Hosting in-person regional meetings.
2. Provide board-level awareness of these efforts and solicit feedback from them.
3. Develop and present a plan for regional support tailored to the region from interviews with systems using statistical data of staffing, equipment, operational schedules, and maintenance needs.
4. Identify an individual or system "champion" that has the ability and aspiration to continue the effort, and provide support to develop a framework to achieve established goals.
5. Set reasonable goals and attend regular meetings to modify goals as needed.

Additional reading on this subject can be found in the Rose Water System Management 2019 report titled, "Case Study Summary: Regionalization of Small Utility System Operation & Maintenance" (submitted with the SRFA DACIP Phase 2 Report).

APPENDIX C

Phase 2 Project Summary Report:

Capital Improvement Planning for Economically Disadvantaged Water Systems

PROJECT SUMMARY REPORT

Capital Improvement Planning for Economically Disadvantaged Water Systems in the Sacramento River Funding Area

SACRAMENTO RIVER FUNDING AREA

Disadvantaged Community Involvement Program

Capital Improvement Planning Work Summary

A capital improvement planning process for economically disadvantaged water and wastewater systems in the Sacramento River Funding Area (SRFA) was led by Burdick & Company, with team members Katie Burdick, Paul Rose (Rose Water System Management), and Susan Robinson. Capital improvement planning was identified as a need for economically disadvantaged water systems during the earlier Phase 2 DACIP effort. The capital improvement planning process was initiated in February 2021, with technical assistance occurring through March 2023.

A capital improvement plan (CIP) is a short-range plan, usually five to ten years, that identifies capital projects and infrastructure/equipment purchases needing repair or replacement, or completely new improvements. The CIP provides a planning schedule and budget, matching projected revenues and other funding sources with the major capital needs identified, and identifying potential funding options.

Identification of Water Systems and Outreach

The very first step in this process was to identify water systems that could potentially benefit from capital improvement planning, and to invite them to participate. Potential candidates were identified through the following sources:

- The Phase 1 DAC Place Needs Assessment performed by Rural Community Assistance Corporation (RCAC) and California Rural Water Association
- Lists of small water systems developed through Phase I Needs Assessment
- DAC places updated from 2019 US Census data (American Community Survey 5-year data)
- Discussions with SRFA DACI Advisors and IRWM groups (local knowledge)
- Discussions with RCAC staff (local knowledge)
- Factors such as: geographic isolation, known contamination (from State databases), population served

The initial intention was to develop CIPs for up to five municipalities and six small water systems. Due to various factors – including lack of capacity on the part of many small systems to undergo a capital improvement planning process, lack of time on the part of busy staff, lack of need (i.e., already had a CIP or equivalent), and in a few cases, lack of interest – the project team ultimately conducted the CIP process for a total of six water/wastewater systems, including three municipalities, two districts, and one low-income housing complex:

Table 1. Participating Systems

Water/Wastewater System	County	IRWM Region
City of Alturas	Modoc County	Upper Pit River
City of Lakeport	Lake County	Westside
City of Tehama	Tehama County	North Sacramento Valley
Colusa County Waterworks District #1 (Grimes)	Colusa County	North Sacramento Valley
Olivehurst Public Utility District	Yuba County	Yuba
El Rio Villa Housing Complex (owned and managed by Yolo County Housing Authority)	Yolo County	Westside

Below is a list of entities that were invited to participate in the program and either declined or did not respond.

Table 2. Additional Outreach

Water/Wastewater System	County	IRWM Region
Burney C.S.D.	Shasta County	Upper Sacramento-McCloud
Lakeside Woods Mutual Water	Shasta County	Upper Sacramento-McCloud
McCloud C.S.D.	Siskiyou County	Upper Sacramento-McCloud
City of Dunsmuir	Siskiyou County	Upper Sacramento-McCloud
Lakehead Subdivision Mutual (Lakehead)	Shasta County	Upper Sacramento-McCloud
Lassen Co. W.W.D. #1 - Bieber	Lassen County	Upper Pit River
Clearlake Oaks Co. Water Dist.	Lake County	Westside
Highlands Mutual Water Co. (Clearlake)	Lake County	Westside
Skyview Co. Water Dist. (Paynes Creek)	Tehama County	North Sacramento Valley
Paskenta C.S.D.	Tehama County	North Sacramento Valley
City of Orland	Glenn County	North Sacramento Valley
City of Live Oak	Sutter County	North Sacramento Valley
City of Gridley	Butte County	North Sacramento Valley
Butte City	Glenn County	North Sacramento Valley
City of Corning	Tehama County	North Sacramento Valley
Gerber-Las Flores C.S.D.	Tehama County	North Sacramento Valley
Los Molinos Mutual Water	Tehama County	North Sacramento Valley
City of Colusa	Colusa County	North Sacramento Valley
City of Willows	Glenn County	North Sacramento Valley
City of Biggs	Butte County	North Sacramento Valley

Steps to Capital Improvement Planning

The basic steps for developing a CIP include:

- **Step 1:** Perform an inventory of existing infrastructure components (or assets); assess the condition of those assets, based on actual condition as well as projected life; and develop a repair/replacement schedule and cost estimate.
- **Step 2:** Prioritize project needs.
- **Step 3:** Identify possible sources of funding for the improvements (e.g., capital reserves, loans, grants, revised rates).
- **Step 4:** Develop the short-term funding plan (CIP), including a funding analysis and recommended timeline for future CIP planning processes.

The project team generally followed these steps for the water systems assisted through the DACIP grant, with Paul Rose taking the lead in the asset inventory and condition assessment, Susan Robinson taking the lead in the funding analyses and CIP development, and Katie Burdick contributing in all phases. Since

each system was unique in terms of level and type of planning assistance required, the CIP planning process was adjusted to suit each system's individual needs.

The CIP planning process steps are further described as follows:

Step 1: Asset Inventory and Condition Assessment
Asset management is an important first step in capital improvement planning. It also serves as a tool for tracking maintenance and repair schedules. However, it is often overlooked as a planning tool in smaller water and wastewater systems, typically because of lack of a supporting budget or staffing resources, or because it poses a daunting and time-consuming process.

Asset inventory and condition assessment for the SRFA DACI CIP planning effort was led by project team member Paul Rose, of Rose Water System Management, with participation from Katie Burdick, principal of Burdick & Associates.

City of Lakeport water system - online chlorine analyzers and turbidimeters

Specific Outreach, Asset Identification, and Replacement Cost Estimates: Beginning with the direct engagement of agency staff or board members (via onsite field visits), Paul familiarized himself with the specific operational components of the individual water/wastewater systems. He then drafted a comprehensive list of identified assets followed by a cost estimate for each of the identified components, then assigned a useful life estimate and replacement date to each asset. Finally, a comprehensive asset list was prepared that reflected an accurate age and cost of the system components.

Asset Aggregation Strategy: As stated above, in each case the task kicked off with a site visit with staff/board to view the system from source to distribution, or collection to treatment. However, it soon became clear that identifying each small individual component resulted in a very long, unnecessarily complex, and lengthy list. As a result, the system components were aggregated into their primary functional component, rather than an exhaustive list of every small detail or piece of the system.

Step 2: Prioritize Project Needs
System assets were aggregated into descriptions which were useful to staff for budgetary purposes, but also understandable to those unfamiliar with the intricacies of the water or wastewater systems. This identification of system components was done to facilitate discussion of the capital improvement planning process with decision makers and operational staff collectively. The approach allowed a better understanding of the importance of each primary asset, and how it interrelated to the overall working of the system, in the hopes that decision makers would correlate system health to sustainability of service to its customers. The aggregated "projects" were prioritized according to such factors as age, condition, urgency of need, redundancy or lack thereof, or relationship to other projects (e.g., timing the replacement of pipeline to coincide with anticipated road improvements).

Step 3: Identify Potential Funding Sources
Once the asset inventory and condition assessment phase was completed, project team member Susan Robinson researched and identified potential funding/financing sources to support the capital improvements for each water system. At this stage, Susan began working with the water system staff, typically the public works directors and financial officers, to identify internal sources of funding (e.g., a district's Water Fund), while also researching grant and loan resources relevant to the different capital improvement needs (e.g., water, wastewater, drought-related) and water system attributes (based on, for example, population size and community household income status). Funding resources were discussed with staff. The potential funding resources are listed in each CIP document (or equivalent final report) for reference.

Step 4: Develop the CIP
The final step was to develop and write the final CIPs or equivalent documents for each water system. Susan Robinson worked with staff from each water system to determine the type of final written product that would be most useful for their purposes, whether it be a formal 5-year or 10-year CIP, a simple funding analysis, or a general summary report or tech memo. Susan worked with the water managers and financial officers to develop the CIP budgets for each water system, including deciding upon variables such as the threshold demarcating a "capital improvement" vs. operation and maintenance, and general preferences for utilizing various funding mechanisms (e.g., internal funding vs. grants vs. external loans).

Susan then drafted the CIP reports (or equivalent) and sent the documents to staff for review in an iterative process to ensure active participation of the staff in CIP development. Most CIPs included: overview and description of the water and/or wastewater system; prioritized list of project needs; CIP 5-year or 10-year budget; a recommended annual or biennial CIP Calendar as guidance for CIP planning going forward; and a funding analysis summary. For some systems, Susan calculated a reserve budget to support creation of a Capital Reserve account. The final CIP document (or equivalent) was then sent to staff for presentation to the district board or city council for approval and/or adoption, as appropriate.

Overview of CIP Process by Water System

Each entity decided what type of final document would be most useful for their needs, whether it be a 5-year CIP, 10-year CIP, Tech Memo, Funding Analysis, or other type of document. The final products developed for each of the participating systems were as follows:

- City of Tehama: 10-year CIP for Water System
- Olivehurst Public Utility District: 5-year CIP for Water and Wastewater Systems
- El Rio Villa: Tech Memo for Water System and Sewer Collection System
- City of Alturas: 5-year CIP for Water and Wastewater Collection System
- City of Lakeport: Project Summary Report and Funding Analysis
- Colusa County Waterworks District No. 1 (Grimes): 5-Year Water System Funding Plan

Below is a brief summary of the assistance provided to each system.

City of Tehama Well 4 wellhead

City of Tehama – 10-year CIP for Water System

The City of Tehama, located in Tehama County along the Sacramento River, serves a population of 435 via 195 customer connections. In February 2023, Burdick & Company staff began working with the Tehama City Clerk, who also serves as their licensed water operator, to inventory existing water system infrastructure, perform a condition assessment, and identify infrastructure and planning needs. Paul Rose provided a detailed water system asset list. Based on the condition and urgency of need, the year for needed replacement/repair of each asset component was determined, along with an estimated cost. The resulting information was then used as a basis for developing a 10-year CIP. This CIP recommended the creation of a separate Water System Capital Reserve. Susan Robinson calculated the annual contribution that would be needed in order to cover the costs of anticipated capital improvement needs into the future. The final CIP was submitted to the City of Tehama City Clerk in early September 2023 and adopted by their City Council on September 12, 2023.

OPUD UV disinfection bank

Olivehurst Public Utility District – 5-year CIP for Water and Wastewater Systems

The Olivehurst Public Utility District (OPUD) provides water, wastewater, and parks service to the communities of Olivehurst and Plumas Lake in Yuba County, serving a population of approximately 26,290. OPUD provides water to 7,540 customer connections. Paul Rose began working with the engineering staff in January 2022 to develop detailed asset inventory and condition assessment worksheets. This ultimately resulted in the development of water and wastewater project lists by priority and cost. Susan Robinson then worked closely with the public works engineer and financial manager to research potential funding sources (OPUD staff were particularly interested in grants), and to develop the 5-year CIP budgets. Development of the CIP planning budgets was an iterative process that took several months. The final 5-year CIP was submitted to district staff in July 2023, and was adopted by their board on September 21, 2023.

El Rio Villa – Tech Memo for Water System and Sewer Collection System

El Rio Villa is a low-income public housing development located near Winters, CA, in Yolo County, owned and operated by the Yolo County Housing Authority. The El Rio Villa housing complex contains 124 units plus a childcare center and main office, and houses approximately 578 residents. Yolo County Housing receives Section 9 federal funding from the US Department of Housing and Urban Development to help maintain El Rio Villa's infrastructure. The El Rio Villa housing complex had been underfunded for many years, resulting in a significant degree of deferred maintenance and capital improvement needs.

In early 2022, Paul Rose performed an inventory assessment that listed the major components of El Rio Villa's existing water system and sewer collection infrastructure, and provided a recommendation regarding the prioritization of projects. While this inventory assessment provided a useful snapshot, it became clear that a more in-depth system-wide inspection and analysis would be needed in order to answer key questions (such as whether to repair the storage tanks or replace them) and to determine more accurate cost estimates. All agreed that a Preliminary Engineering Report (PER) should be performed prior to developing the Capital Improvement Plan. In the absence of a PER, Susan Robinson developed a "notional" (conceptual) CIP in order to provide Yolo County Housing staff with a general sense of capital improvement cost needs and to lay the groundwork for future CIPs. This notional CIP was submitted to Yolo County Housing Authority in October 2023 in the form of a Tech Memo, which included a funding analysis.

El Rio Villa System storage tank, pressure pumps, and pressure tank at West Well

City of Alturas – 5-year CIP for Water and Wastewater Collection System

City of Alturas North Tank

The City of Alturas, located in Modoc County, operates a public water system and wastewater system. The system serves a population of about 2,500, providing wastewater services and drinking water through approximately 1,200 connections. Paul Rose and Katie Burdick launched the asset inventory and condition assessment phase with an on-site meeting with the City public works director and engineering staff in October 2021. The wastewater treatment plant was not considered in this CIP planning process since the plant is planned for decommissioning in 2026; the wastewater CIP covered only components critical to plant operation. Paul Rose also provided short-term S.C.A.D.A. option and cost to the public works director as requested. Once the asset inventory phase was completed, Susan Robinson performed a funding analysis and worked closely with the public works director and financer officer to develop the 5-year planning budgets. Delays occurred during this process due to staff changes at the City. The final 5-year CIP was submitted to the City (and new public works director) in September 2023.

City of Lakeport – Project Summary Report and Funding Analysis

The City of Lakeport is located in Lake County. The City's water system provides water to a population of approximately 4,762 through 1,818 residential and 496 commercial connections. In 2021, the City of Lakeport conducted a water and wastewater rate study in compliance with Proposition 218. To support the 2021 utility rate study, the City developed a 10-year CIP. The City's public works director was interested in going through the exercise of conducting a full asset inventory and condition assessment

City of Lakeport: lake intake pumps

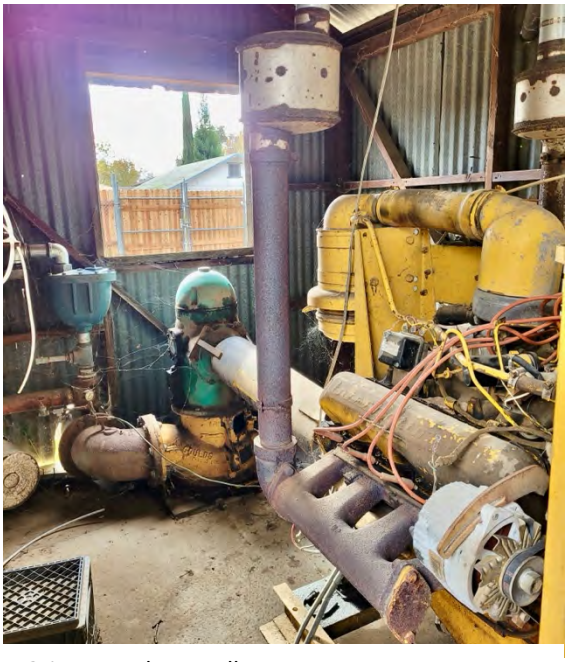
with the Burdick & Company team, since the 10-year CIP had been developed based on known needs. The public works director was also very interested in having a funding analysis performed.

City staff, with guidance from Paul Rose, initiated the asset inventory and condition assessment in December 2021. This involved cataloguing every major and minor component of the City's water system and notating each component's purchase date, the manufacturer's estimated useful life for the component, its current condition, estimated cost of replacement, and assigning each component an impact of failure score and a priority score. Ultimately this process proved too cumbersome, and city staff decided to group the components into projects. Paul Rose conducted an onsite discussion with staff to prioritize their project lists for water and wastewater, with an emphasis on water conservation and environmental protection. In the end, the asset inventory and condition assessment table looked very similar to the original 10-year CIP in terms of describing project needs. But while the City's original 10-year CIP included only the critical, near-term project needs, the asset inventory and condition assessment table showed all water system project needs, regardless of timing. Susan Robinson then performed a funding analysis and submitted that to the public works director in the form of a Funding Memo in October 2022. A follow-up Project Summary Report was provided to the City in September 2023, with an updated funding analysis.

Colusa County Waterworks District No. 1 (Grimes) – 5-Year Water System Funding Plan

The District provides water to the rural community of Grimes in Colusa County, serving a population of 442 through 104 service connections. The District is currently working to address arsenic contamination issues with their sole water source. As a consequence of the arsenic contamination, several other external assistance efforts were being provided at the same time as this CIP planning effort, including:

- The engineering firm Kennedy Jenks was working with Grimes to complete 60% Design plans for a new arsenic treatment facility, with funding support provided from a Drinking Water State Revolving Fund (DWSRF) Planning grant.
- The State Water Resources Control Board (SWRCB) was meeting regularly with the District board (and other interested parties) to determine how to move forward with DWSRF Construction funds to construct the new treatment facility.



Grimes Backup Well 1

- Rural Community Assistance Corporation (RCAC) was guiding the District through a Proposition 218 rate study to help increase the District's financial stability, and to support the DWSRF Construction application process.

Given these parallel and complementary efforts, the Burdick & Company project team focused its work on developing a financial plan for the interim water system needs (a near-term "interim" CIP) – i.e., the infrastructure improvements needed to keep the water system functioning until an arsenic treatment system could be brought online – while also considering other longer-term capital needs (e.g., pipeline and hydrant replacement). Additional work was focused on supporting SWRCB's and RCAC's complementary efforts as requested. The final product was a Tech Memo submitted to the Grimes District Board in November 2023, and including: a general water system assessment, 5-year Interim Needs Funding Plan, a summary of assistance provided by the project team over the course of the project, and a list of grant and loan resources. Additional assistance provided by the Burdick & Company team included:

Grimes Primary Well site

- General Support for DWSRF Construction Application: The Burdick & Company team participated in regularly scheduled meetings with the SWRCB, the District Board, RCAC, Kennedy Jenks, and others to support the DWSRF Construction application process.
- Funding Research: Susan Robinson met with USDA and SWRCB staff to further explore specific grant and loan funding opportunities to fund Grimes's new well, storage tank, and arsenic treatment facility.
- Support for Proposition 218 Rate Study: The Burdick & Company team provided general support to RCAC for the Proposition 218 rate study process.

- Conservation and Cross Connection Ordinances: Paul Rose drafted language for two ordinances – a Conservation Ordinance and a Cross Connection Ordinance – and assisted the District Board in the adoption of both. The Board adopted the Conservation Ordinance in August 2023 and the Cross Connection Ordinance in September 2023. The Conservation Ordinance is particularly important because of the substantial number and volume of customer-side leaks currently experienced within the water system. As the District had charged a flat water rate up until that point, customers had had little incentive to address leaks. The ordinance will provide the District with enforcement power. Paul also advised the board on implementation of annual backflow program.
- Leak Detection: Paul Rose performed onsite customer leak detection for conservation and in order to more truly quantify production numbers for the upcoming arsenic treatment facility DWSRF Construction grant.

- Reconciling Meters: Paul Rose conducted field investigation of household meters, confirming meter serial numbers with endpoint numbers, and physical addresses in anticipation of moving to a metered rate billing.
- Budget Support: Katie Burdick helped Grimes develop and finalize the water district's FY2022-23 budget.

General Outcomes

The outcomes from our involvement with field staff and management were valuable to them by providing a sustainable capital planning tool and allowing them to actually understand the cost of maintenance, repair, and replacement, and how it strengthens their ability to provide crucial services to their customers. The final written CIPs were useful as a tool for explaining and legitimizing infrastructure needs and justifying costs/expenditures to boards, city councils, and the public. This exercise encouraged and facilitated discussion among board members, management staff, and/or city councils, and provided valuable data that will be carried forward in future planning processes.

Insights and Challenges

Each community posed a unique set of challenges to the capital improvement planning process. For example, the City of Lakeport had adequate staff to grasp the process, create asset lists, draft capital improvement plans, and provide budgets. Conversely, some entities did not have asset lists or budgets to support any substantive capital projects, and generally lacked staff capacity. In these situations especially, the entity also may not have had the capacity to finance capital projects, instead being directed to a "fix it when it breaks" approach.

Our research typically consisted of a combination of on-site tours, review of maps and manuals, staff interviews, and some assumptions. This, in itself, highlighted the need for them to keep robust, accurate, and accessible records of their systems.

Lack of staff capacity (mainly, time) was the primary reason for an entity's failure to have performed capital improvement planning up until this point. The assistance provided via the SRFA DACIP grant provided water system staff with an understanding of the process and a framework for future planning efforts – including the necessary steps to develop a CIP, an annual (or biennial) timeline, the asset inventory and condition assessment templates, and the CIP budget template (along with a "head start"). All of the entities with whom the project team worked commented on how beneficial the CIP planning process had been, and expressed appreciation for the assistance. Whether or not these entities follow through in the future – given ongoing demands on staff resources – cannot be known.

Recommendations for Future Efforts

Providing technical assistance to small economically disadvantaged water and wastewater systems to develop capital improvement plans is clearly needed and worthwhile. Some small systems that are most in need of this type of assistance are unable to accept the help, as they don't have the staff or time to dedicate to any purpose outside of keeping the system going. Perhaps a special effort could be spent in outreach to these systems to help them understand how capital improvement planning will save them time and money in the long run.

RCAC currently provides capital improvement planning assistance for disadvantaged communities in the SRFA, including workshops and written guides that explain the CIP process. This service is extremely beneficial. However, the project team noted that many systems – particularly the most under-resourced systems (such as Grimes) – require much more assistance than RCAC is likely able to provide. What would be most beneficial is ongoing support for these especially under-resourced systems. We envision, for example, circuit-riding Water and Wastewater Task Forces that serve specific geographic regions throughout the state, and that dedicate their time fully to checking in with certain systems within their defined regions on a regular, ongoing basis to help with financial and administrative needs, such as operating budgets and capital improvement planning. These Water and Wastewater Task Forces would help ensure strong technical, managerial, and financial (TMF) capacity on the part of these struggling water and wastewater systems.

APPENDIX D

Phase 2 Project Summary Report:

Innovative Finance Task Group – Technical Assistance

Sacramento River Funding Area Disadvantaged Community Involvement Program (DACI)

Innovative Finance Task Group Technical Assistance

Final Report

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VR Conservation Collaborative

June 30, 2022

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Executive Summary

The Sacramento River Funding Area Disadvantaged Community Involvement financing technical assistance project began in July 2020 with the goal of providing information, trainings, and networking support to DAC community leaders and officials from water, flood control, and stormwater departments throughout the Sacramento River Financing Area (SRFA). The focus of this project was enhancing the ability of these local leaders and department staff to integrate emerging conservation finance approaches into their water infrastructure capital planning and financing.

Assistance was provided through several pathways. Initially, the technical assistance providers developed a comprehensive report, detailing the most relevant financing strategies, providing case studies of their application to relevant water infrastructure projects around the country, and suggestions for applying these strategies to meet capital needs within SRFA DACI communities. The team followed the release of this report with group presentations, including to IRWM members, and small groups or individual follow-up conversations to deepen familiarity with conservation finance strategies within the target audience. The team also developed a series of short "issue briefs" to simplify access to knowledge about conservation finance. Finally, the team initiated a small set of pilot projects, working individually with SRFA IRWM stakeholders to develop site-specific financing "roadmaps" for watershed health, water supply protection, fire risk mitigation, and flood control enhancement projects.

The initial collaboration with Solano County Water Agency (SCWA) led to an initial discussion about a potential Putah Watershed Salmon Fund and other project finance needs. This discussion was informed by a fieldtrip exchange between SCWA, Blue Forest and Yuba Water Agency in the Yuba Watershed. The Burney Hat Creek Collaborative work featured biweekly committee meetings over four months, two presentations from outside finance platform developers, and the drafting of a conservation finance roadmap. Participants from both pilots are interested in continuing work and securing funding to support ongoing assistance.

The team was successful in engaging over three dozen individuals at over twenty entities during this project. While there was substantial interest in the conservation finance strategies promoted by the team, by the end of the project (except for the pilot projects described above) there was limited near-term commitment to pursue these approaches to financing and implementing resilient water infrastructure. Key factors in this limited uptake included

1. Culture of reliance on state grants diminishes interest in incurring debt to finance water infrastructure.
2. Where agencies or municipalities had experience with debt financing, traditional municipal bond issuances appear easier and more attractive.
3. Lack of capacity within water, flood control, and other agencies limits staff ability to engage in creative, strategic planning around capital investments.
4. Absence of state agency support for or leadership on conservation finance solutions results in unclear support or path forward.

Key Takeaways

Despite the promise of blended finance approaches to water and watershed conservation projects in the SRFA, there are numerous challenges that frustrate uptake of this model. These challenges include: immaturity in the development of appropriate financing structures

- Immaturity in the development of appropriate financing structures
- Lack of familiarity with financing principals in many DAC water agencies and municipal governments
- Insufficient staff capacity or budget to engage in the discovery of blended finance models and develop appropriate strategies
- Challenges inherent to the development of blended finance strategies, including inadequate connections between private investors and public water agencies and unclear pathways for leveraging state and federal grants and loans

Despite these challenges, the market is maturing and interest within the water infrastructure and watershed management sectors is increasing. The Department of Water Resources, its sister state agencies, and partners within the public, private and non-profit sectors have meaningful opportunities to assist with the uptake of private investment models that support resilient communities and watersheds.

Context

The project focused on the Disadvantaged Communities throughout the Sacramento River Fund Area (Figure 1).

Problem statement

California's economically challenged small communities suffer from insufficient tax and service-based revenues, low capital bases and limited staff capacity capable of keeping their aging infrastructure fully maintained. These challenges are pitted against an increasing need for environmentally resilient infrastructure that can meet the demands of rising populations and uncertainty due to climate change. Water infrastructure maintenance and modernization needs are often paramount to any water system's capital improvement planning yet are typically far out of reach for the budgets of economically challenged small systems, districts and cities.

Unmet system needs include outdated drinking water treatment facilities, incorrectly sized and leaking distribution pipes, low quality groundwater sources, crumbling wastewater collection systems, failing wastewater treatment plants, stormwater management systems that fail to meet changing weather and regulatory conditions and localized flood mitigation hazards. Concurrently, decades of fire suppression have left many northern California regions and/or their vital water supplying watersheds at risk of catastrophic wildfire damage.

California's DACs suffer from insufficient tax and service revenues (e.g., drinking and wastewater services, capital base), staff capacity and often a lack of technical expertise capable of keeping their aging infrastructure and related systems fully maintained. These challenges are pitted against an increasing need for environmentally resilient water infrastructure that can meet the demands of rising populations and uncertainty in the water supply due to climate change. Water system needs often include outdated drinking water treatment facilities, incorrectly sized and leaking distribution pipes, low quality groundwater sources, crumbling wastewater collection systems, failing wastewater treatment plants, stormwater management systems that fail to meet current weather and regulatory conditions and localized flood mitigation hazards. Concurrently, decades of outmoded forest management strategies have left many northern California DACs and/or their vital water supplying watersheds at risk of catastrophic wildfire damage.

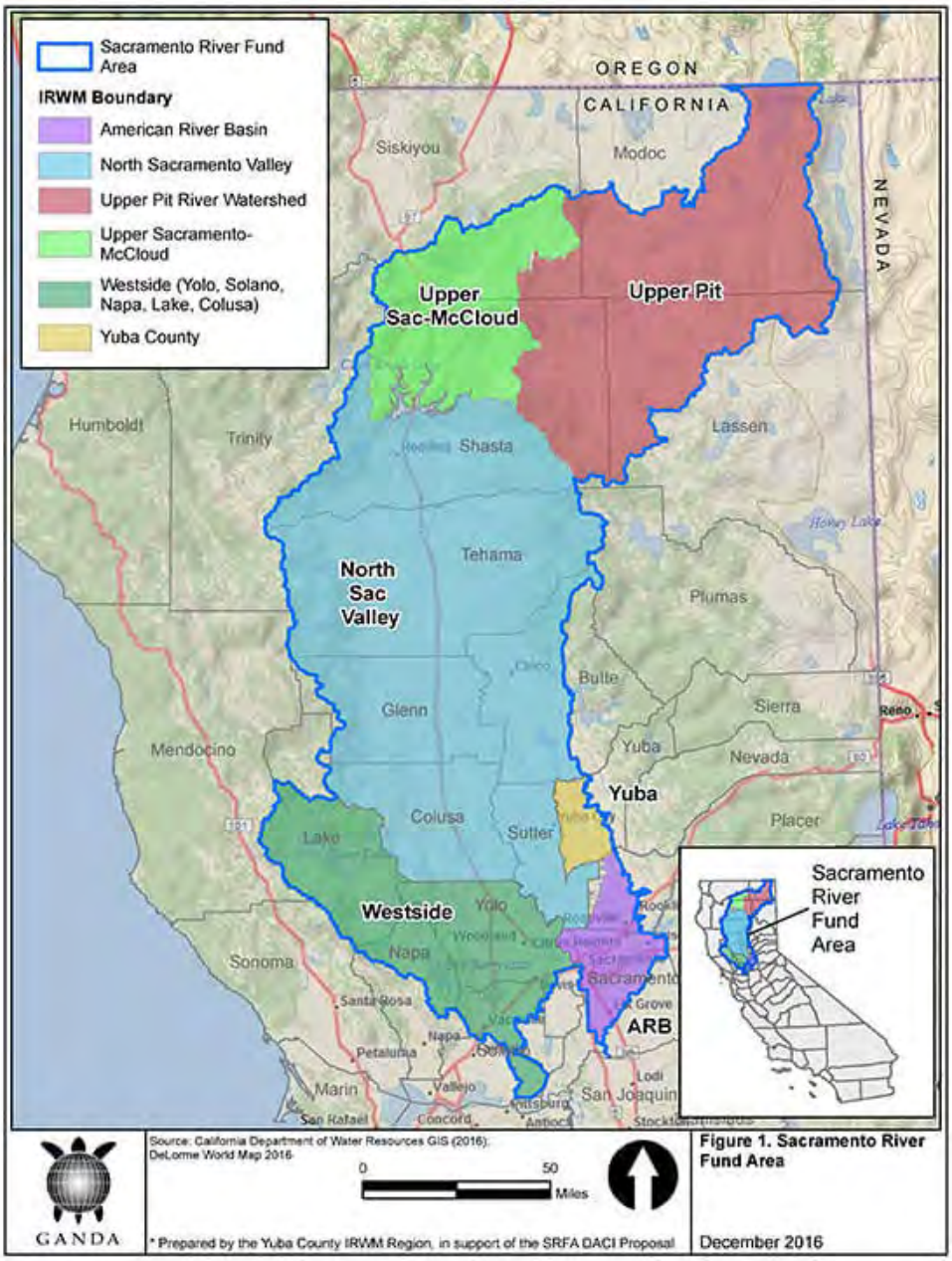


Figure 1. Sacramento River Fund Area by IRWM boundaries.

At the same time, available funding via state and federal grant programs is insufficient to meet the needs of California's DAC water resilience needs. While these programs are invaluable, their resources are overstretched while application and grant/loan management processes are unduly burdensome and create financial risks for DACs. In addition, these public funding sources are usually targeted toward final planning and/or implementation of discrete projects, limiting their applicability to multi-phase,

comprehensive projects such as large-scale watershed restoration. Privately sourced financing, as part of a composite portfolio that leverages both public and private investments, can provide much needed flexibility, scale, and acceleration of water infrastructure projects. However, few California water agencies[1] have basic knowledge of the conservation finance strategies, let alone experience developing this type of investment. This lack of awareness and expertise limits deployment of conservation strategies to complement and leverage public funding in California's water future.

Blended finance's relevance to SRFA IRWM members

Traditionally, investments in California community water infrastructure have been funded in two ways: water utility debt financing through issuance of municipal-grade bonds or through grants and loans provided by state agencies, particularly the Clean Water and Drinking Water State Revolving Loan Funds managed by the State Water Resources Control Board. These sources of capital are typically matched or repaid from water service rate revenue or property tax revenues. While these traditional public funding approaches have enabled the construction of considerable water infrastructure across the state, DACs face challenges in accessing these limited funds. In 2019, for example, the Clean Water State Revolving Loan Fund received applications for $7 billion worth of projects but was able to provide only $600 million in funding. A recent report suggests that nationally a disproportionately small amount of SRF financing has been made available to DACs relative to more financially capable municipalities and water agencies.[2]

Unlike state and federal grant programs, conservation finance strategies can be flexibly structured to combine public, private and philanthropic funding sources to support the design, construction and operation of water and watershed infrastructure. Various foundations have made program related investments to support the development of environmental impact bonds and to fund competitions that attracted pilot environmental impact bond projects. The report prepared at the outset of this project provided a basic summary of a selection of conservation finance approaches, including the following:

Environmental Impact Bonds

Environmental impact bonds are a cost-share model that are specifically tailored to attract private investors who are motivated by the social and environmental effects of their investments. This newly emerging model may involve pay-for-success repayment structures that can increase the accountability and effectiveness of private funds dedicated to public infrastructure and natural resource management projects.

Community-based Public Private Partnerships

A particularly interesting model in the stormwater management and stream restoration arena is a community-based public-private partnership (CBP3). While environmental impact bonds focus solely on providing financing for projects, private public partnerships can be structured to bring financing, project design and implementation together as a single package. Community-based public-private partnerships take the well-established public-private partnerships model and modify it by tying payment to

[1] The authors of this report use the term water agencies as a catch-all to embrace water supply, wastewater treatment, stormwater management, flood control and watershed protection agencies or departments of municipal and county governments.

[2] See Katy Hansen, Sara Hughes, Andrea Paine, and James Polidori. (2021). "Drinking Water Equity: Analysis and Recommendations for the Allocation of the State Revolving Funds." Environmental Policy Innovation Center, available at https://www.policyinnovation.org/s/SRFs_Drinking-Water-Analysis-5kbt.pdf.

achievement of environmental and social outcomes that benefit the community and increase stakeholder engagement in project delivery (Adaptation Clearinghouse, 2020). Public-private partnerships have the potential to help many communities optimize their limited resources through agreements with private parties to help build and maintain their public infrastructure (EPA, 2015).

Enhanced Infrastructure Financing Districts

Enhanced Infrastructure Financing Districts are a recent evolution of the tax increment financing tools previously developed in California and support financing infrastructure projects with anticipated increased property tax revenues associated with the future benefits of the projects (Lefcoe, 2014). Revenues from Enhanced Infrastructure Financing Districts can be used for public works, transportation, parks, libraries and water and sewer facilities—with an emphasis on sustainable community goals under California's landmark climate legislation (Flint, 2018). Recent revisions to the Enhanced Infrastructure Financing District law reduced some of the challenges to adoption; for example, no public vote is required to establish a District. If the District opts to forego financing options such as a public-private partnership or performance-based financing; a 55 percent vote is required to issue bonds. Unlike earlier tax increment finance restrictions, Enhanced Infrastructure Financing Districts impose no geographic limitations on where revenue funds can be used, and a blight finding is not required. With this new flexibility available, developing an Enhanced Infrastructure Financing District may be a particularly useful tool for funding regional projects that benefit multiple agencies or jurisdictions (CSDA, 2019). Indeed, revenues gathered through an Enhanced Infrastructure Financing District may be one option for repaying the investment used to secure an environmental impact bond.

Activities

This project spanned a period of over two years, was dramatically impacted by the workforce challenges created by the emergence of the COVID-19 pandemic in early 2020. The project team adapted by modifying the initial workplan to suit emerging circumstances, needs and opportunities

Initial Discussions and Scope of Work

The SRFA DACI financial project began with an initial focus on providing technical assistance to the City of Marysville in Yuba County. The assistance was intended to provide city staff with an introduction to conservation finance strategies, leading to the development of an environmental impact bond (or similar instrument) to finance upgrades to the city's stormwater management system. The goal of this effort was to develop a case study in Marysville that could lead to pilot projects with other DACs in the SRFA.

The project team provided initial information about conservation finance and arranged a series of meetings with a well-known EIB developer. However, this effort came to a halt with the departure of key staff within the City administrator's office and ensuing lack of political support for conservation finance.

After conversations between the project team, project manager and other entities working to promote economic development and environmental sustainability in Yuba County, the team adapted its focus to provide technical assistance more broadly throughout the SRFA for the final year of the SRFA DACI grant term.

Under the revised approach, the team committed to developing a research paper to convey core conservation finance principles and case studies. This paper was intended to be the basis for a series of

presentations to the six SRFA IRWMs. In turn, these presentations were expected to generate sufficient interest in conservation finance to support attendance in a multi-session academy in which participants would have the opportunity to learn more deeply about conservation finance concepts and develop locally relevant financing roadmaps.[3]

White Paper and Issue Briefs

In summer 2020, the project team produced a comprehensive research paper entitle "Because It's Worth It," which provided a detailed discussion of conservation finance strategies, rationale, case studies and a related logic model. This last feature was intended to provide process guidance to readers, directing them through the stages of identifying needs for and implementation of a conservation finance strategy. This paper was distributed broadly through SRFA IRWM email lists, individualized delivery to select individuals in the water and infrastructure finance circles, and via American Rivers' websites.

Presentations and Initial Outreach

The release of the research paper provided an opportunity to deliver presentations to core members of the intended audience. These presentations were hosted virtually due to COVID-19 related gathering restrictions. Following is a partial list of presentations:

- IRWM/RWMGs within the SRFA
- Sacramento Area Council of Governments
- Lon Hatamiya, Hatamiya and Associates
- Jeannette Wrysinksi and Kate Reza, Yolo County Resource Conservation District
- Blue Forest Conservation
- Quantified Ventures
- Jamie Wimberly, Distributed Energy Finance Group

Generally, each of these group presentations created an opportunity for closer follow up with interested individuals and entities. In February and March 2021, the project team held a series of conversations with SACOG (Sacramento Area Council of Governments) staff. These conversations not only afforded time to introduce the fundamentals of conservation finance strategies but also explore the potential role that these strategies could play in support of regional transportation and economic development programs. While these conversations ultimately did not lead to more tangible, project-level collaboration, the team succeeded in pressing the case for a multi-disciplinary financing approach to the inclusion of green stormwater infrastructure and other resilience strategies within SACOG's programming.

In addition to the project team's outreach to water agencies, resource managers and other IRWM participants, the team undertook a comprehensive effort to build relationships with conservation finance providers and experts. The goal of this effort was twofold: (1) to expand upon the team's expertise with latest best practices, updates and developments, and (2) to create a network of finance service providers who could support our engagement within the SRFA. As the team moved into its pilot project development phase (described in the following section) this network gained importance as dialogue partners with pilot project partners. To date, this network includes:

[3] Prior to the project, American Rivers produced a "Green Infrastructure Funding Academy" with a similar structure and emphasis.

- Biomass Finance Workgroup
- Blue Forest Conservation
- California iBank and GOBiz
- Climate Adaptive Infrastructure
- Distributed Energy Finance Group
- Impact Finance Center
- Joint Institute for Wood Products Innovation
- Quantified Ventures
- Janet Clements (Corona Environmental Consulting)
- Matt Lucas (insurance investor),
- Nathalie Woolworth (USFS)
- Julia Levin (Biomass Assn)
- Impact Finance Center
- Dan Adler, iBank
- Jonathan Edwards (Government Finance Strategies)

As a side note, while not part of this project (and not funded by this grant), the project team took advantage of the research report and the work that went into its drafting to deliver presentations to water agency leads and community watershed programs outside of the SRFA. Notably, the team provided the report and briefing to Lahontan Regional Water Quality Control Board staff and participated in several working sessions of the Greater Monterrey County IRWM.

Refinement of Scope and Approach

The large group format presentations to regional IRWM participants and workgroups were successful in generating interest in conservation finance strategies. However, they were less successful in generating follow on interest among individual water agencies, watershed managers and community partners. In part, this outcome may have been a result of the necessity of giving virtual presentations. Experience during the COVID pandemic has shown that large group webinars are less than ideal replacements for in-person trainings and workshops. Other factors limiting uptake through these virtual sessions likely included workforces under stress by COVID, wildfire, and drought and with limited bandwidth for consideration of non-emergency concepts; institutional preference for state funding agency grant programs and related reluctance to experiment with other finance strategies; and intrinsic unfamiliarity and complexity of conservation finance strategies.

Recognizing that further group workshops were unlikely to generate sufficient interest in a conservation finance academy, the project team pivoted once again. A second refined scope focused on tailored, individual outreach to water agencies and resource managers in the SRFA who the team believed would likely have interest in conservation finance approaches. Recognizing that the original research paper, while comprehensive, was likely too long for ease of access, the team committed to producing a series of short issue briefs that summarized key conservation finance concepts for a California audience. Finally, the team determined that the best pathway to proving the applicability of conservation finance strategies for a SRFA audience would be to develop a pair of pilot projects that initiated financing development in different water-related contexts.

One-on-One Outreach

During the winter of 2021/2022 the project team identified a short list of water agencies, resource managers, and IRWM community partners who could be amenable to further discussions about conservation finance strategies. This list was drawn from participants in the previous group IRWM presentations and from the project team's local knowledge. The team contacted: Yolo County Resource Conservation District, Lake County Departments of Public Works and Water Resources, Fall River Resource Conservation District/Burney Hat Creek Community Forest and Watershed Group.

The team also continued to build connections within the conservation finance community, connecting resources and individuals to the pilot project participants and informing the issue briefs published by the team. Connections additional to those in the list provided above included the Joint Institute Wood Products, Merritt Jenkins (Kodama), Bill Pazos (ACX), Katie Harrell (Joint Institute), John McCarthy (CAL FIRE), and Jonathan Kusel (Sierra Institute for Community and Environment).

The team also conducted general microgrid and biomass research to see how these sectors complemented activities within the SRFA, connected to restoration and other projects with a water focus, and created potential opportunities within an SRFA conservation finance context.

Issue Briefs

During the fall/winter of 2021, the project team produced a set of six issue briefs, each treating a specific issue or concept related to the uptake of conservation finance strategies for SRFA water-related issues. These issue briefs were distributed to contacts within our finance expert network, to support our one-on-one outreach, and via social media platforms (LinkedIn and Twitter). They are also available on American Rivers website and the SRFA DACI website.

The intention behind the development of these issue briefs was to create a portfolio of easily understood, easily accessed explanatory resources that DWR and SRFA IRWM stakeholders can utilize after the close of this grant.

Pilot Projects

As a result of our one-on-one outreach, the project team developed opportunities to pursue two "pilot projects." The goals of these projects are slightly different, but linked by a common approach to:

- Encourage partners to consider conservation finance strategies to support a bundle of multi-benefit projects tied to water and watershed restoration;
- Model a collaborative process to develop a conservation finance strategy tailored to local needs;
- Develop a financing roadmap that documents potential conservation finance strategies to support local projects and programs.

The expected outcome of these pilots is not the launch of a conservation finance strategy but instead the accomplishment of behavior change to favor such a strategy and the provision of resources that can enable and support the future development of a strategy.

The two pilot projects undertaken by the team are:

- Collaborative Forest Restoration for Water, Community and Bioenergy Benefits in conjunction with a team convened by the Fall River RCD / Burney-Hat Creek Community Forest and Watershed Group.
- Multi-benefit Restoration and Resilience Planning with the Solano County Water District.

Results

The two pilot projects had different expected outcomes and timelines. An earlier start with the Fall River RCD allowed for development of a more detailed financing roadmap over the course of approximately five months. Engagement with the Solano County Water Agency coalesced later (March 2022), providing an opportunity to model initial consideration of a conservation finance approach within the development of a broader integrated watershed management strategy. The differences between these two projects also demonstrate the value of continued technical support for funding and financing alternatives; both project partners progressed from early interest to deeper engagement because they had access to external subject matter experts, networks, and facilitation.

Burney Hat Creek Collaborative

The team's engagement with the Fall River Resource Conservation District grew out of a September 2021 presentation to the Upper Pit River Watershed IRWM. The RCD plays a pivotal role within this IRWM and has an established track record of both facilitating community coordination and leading multi-benefit forest restoration/watershed health projects across the Upper Pit River watershed. RCD - led efforts include the development of bioenergy, forest landscape restoration, creek and meadow restoration, and support for development of local wood products industry to support landscape-scale restoration. This work gained importance in the wake of the 2021 Dixie Fire which affected significant acreage within the watershed.

- Initial conversations

In November 2021 the Project Team initiated discussions with Fall River RCD staff about the potential outline of a pilot project. RCD staff expressed deep interest in learning more about opportunities to leverage blended finance strategies in support of projects that combined watershed/forest restoration, wood products utilization, biomass/bioenergy, and local economic development. RCD staff suggested aligning a pilot project with Burney Hat Creek Community Forest and Watershed Group (BHCCFWG) as well as an additional collaborative effort that had recently received funding support from the Office of Planning and Research Wood Products Aggregation Grant program. These discussions led to an agreement to partner on the development of a finance roadmap for the BHCCFWG in February 2022.

- Workgroup development and scope of work

After participating in meeting with BHCCFWG members, the Project Team recognized the need to streamline the collaborative development of a finance roadmap. The Team and RCD staff formed a small workgroup drawn from BHCCFWG members and other individuals working on the parallel OPR funded project. With this group, the Project Team developed a scope of work, see Appendix B, focused on the delivery of a financing roadmap and list of associated priority projects.

- Process

With the support of an outside consultant retained by the RCD, the Project Team convened biweekly meetings with the workgroup. These work sessions lead the workgroup members through an introduction to conservation finance strategies, approaches to prioritizing multi-benefit projects, associating these benefits with potential payors and investors, and understanding various conservation finance strategies. Project Team members arranged guest presentations from carbon credit market facilitators, developers of avoided wildfire emission credit protocols, and biomass/wood products industry peers.

The Team and the workgroup collaboratively developed a list of priority projects which was then translated into a graphic, map-based form to enable rapid and effective communication with potential investors and funders. Simultaneously, workgroup members and Project Team collaboratively outlined a range of potential finance strategies that were geographically and project type appropriate. The conclusion of this process was the iterative development of a conservation finance roadmap which can be further developed and eventually implemented by the RCD and BHCCFWG.

- Areas of focus (forest, bioenergy, carbon)

The workgroup's discussions focused on strategies that would take advantage of the multiple outcomes of forest and watershed health projects within the RCD's area. These outcomes include not only watershed and forest related benefits but bioenergy production, carbon capture, biomass/forest products utilization, workforce and economic development and regional climate change resilience.

The goal (and output) of the workgroup was the development of a blended finance strategy that leveraged some or all of these outcomes to attract a portfolio of public funding and private investment.

Solano County Water Agency

The Team's connection to the Solano County Water Agency (SCWA) came about with the assistance of staff at the Yolo County RCD. In July 2021, RCD staff had scheduled a virtual presentation by the project team to the Westside IRWM Coordinating Committee. SCWA staff attended this presentation. After some months of missed connections, Project Team members and SCWA staff met for a follow up discussion in November 2021. Discussions with SCWA about a potential pilot project began in earnest in January 2022, with broad conversations about the nature and benefits of conservation finance strategies. During these conversations, SCWA staff expressed interest in innovative finance approaches to support a regional approach to salmon habitat restoration in Lower Putah Creek and the Yolo Bypass as well as groundwater recharge/SGMA compliance and other benefits.

- Initial conversations

In January 2022, the project team connected with senior SCWA staff and introduced this project and the associated model financing strategies. SCWA staff indicated an interest in these strategies, and we began a series of conversations exploring the fundamentals of blended finance, potentially relevant models for SCWA priorities, and potential applications. During these conversations, interest coalesced around a financing strategy that could support a multi-faceted salmonid habitat connectivity project linking Putah Creek to the Yolo Bypass and Sacramento-San Joaquin Delta while also improving watershed health for resilient surface and groundwater supplies.

- Process

SCWA staff and the project team scheduled a regular series of meetings to refine project concepts, discuss financing pathways and identify resource and information needs. During this time SCWA staff invited input from finance and restoration project implementation experts. To meet this need, the project team connected SCWA staff to additional American Rivers staff and arranged a visit to a Yuba River restoration project undertaken by Yuba Water Agency. The site visit with YWA occurred on May 26, 2022, and also included staff from Blue Forest. Presentations and discussion fostered a half-day

conversation about the intricacies of blended finance for restoration projects and exploration of the Forest Resilience Bond model to salmonid habitat/water supply projects.

- Outcomes

While the discussions with SCWA illuminated opportunities to develop a blended finance strategy to support relevant projects, the end date for this grant limited the project team's ability to further engage with the agency. At the time of this report, the team is searching for new funding to continue this effort. The shared expectations are that this support would enable SCWA and project team members to:

- Deepen coordination between SCWA and local American Rivers floodplain restoration staff
- Continue to explore financing strategies that could deliver combined private and public funds for a multi-faceted salmon habitat / water security portfolio of projects within the Putah Creek watershed and Yolo Bypass
- Introduce funders, investors, and project partners to a process leading to project design and implementation.

Challenges Encountered and Recommendations for Future Actions

A general experience throughout this project was a recurring lack of traction with DAC municipal and water agency leaders. Over the course of the grant, the project team approached multiple IRWMs, entities or counties within the SRFA, and in some cases, had more than one meeting or call with them. In several cases, the team had repeated calls with municipal, county and local agency staff who were interested but ultimately said the financing was outside their remit and capacity. In some instances, progress was limited simply by lack of leadership and openness to innovation. Given the resource and political constraints that regularly affect public institutions in DACs, these limitations are understandable, if frustrating.

More specifically, the project team describes the following challenges and suggests potential measures to address them.

- Overcoming cultural and institutional inertia

This challenge is related to the following topic; however, it reflects a broadly held reluctance by many water agencies to engage in innovative practices or projects. There is some merit to this reluctance, particularly within DAC water agencies that: have insufficient institutional support from potential resource providers; tend to rely on for-profit consultants with established business models and risk-averse project perspectives; and lack of opportunities for agency staff to participate in statewide or national conferences or conversations that inspire innovation.

Suggested Response: DWR and SWRCB (and Regional Water Boards) could independently or collaboratively develop programs to support DAC water agency capacity through conference and educational scholarships or targeted training resources.

- Preference for traditional funding and financing sources

Conservation finance represents a methodological departure from well-established preferences for State grant and loan programs. California funding agencies (Department of Water Resources, State Water Resources Control Board, and others) manage a generous portfolio of grant programs funded by

recent ballot initiatives and (in the case of the SWRCB) federal budget allocations. The Clean Water and Drinking Water State Revolving Funds and funds disbursed through the IRWMs have traditionally supported many community water infrastructure investments. Even though many conservation finance strategies are able to leverage support from these programs, there is widespread reluctance on the part of water agencies to deviate from these familiar sources.

Suggested Response: DWR, SWRCB and other California funding agencies can collaborate with information providers from the financial services sector to provide information about leveraging public funding and financing with capital from private investors.

- Staff capacity in DAC water agencies and municipal governments

As mentioned above, it is far from uncommon for DAC water agencies and municipal government departments to operate on shoestring budgets and with minimal staff capacity. At least some DAC water agencies in the SRFA are staffed by part-time or even volunteer personnel. It is impossible for these community resources to manage applications to state funding programs or to consider conservation finance strategies. Conversely, these communities and their water systems suffer from historic underinvestment (from local and state sources) and inequities in the distribution of available financial support. These conditions raise significant concerns about environmental equity and justice throughout the SRFA and adjoining regions.

Suggested response: DWR and other relevant state agencies can, and should, continue to provide technical assistance targeted toward reduced-capacity DAC water agencies. This assistance should go beyond provision of pro bono engineering and systems expertise to include assistance with state grant / loan applications and management. Importantly, state agencies can, and should, adjust their funding programs to provide up-front funding for DAC water projects.

- Perceived lack of adequate repayment revenues

Conservation finance strategies, by their nature, rely on "financing," that is, access to capital to invest in water systems that comes with a cost. Typically, this cost manifests as interest on the principal repaid to investors. Municipal bond issuance is a traditional route for well-established water agencies to access water system financing. Bond principal and interest is repaid with water rate revenues or local tax revenues. Conservation finance strategies, on the other hand, provide an opportunity to supplant or complement these repayment streams with payments from other beneficiaries.

However, many DACs perceive (perhaps correctly) that they lack adequate rate or tax revenues to support repayment of private investment. They also struggle to envision pathways that monetize the benefits of water system investments (e.g., capture of avoided costs for O&M or unneeded infrastructure.)

Suggested response: In line with the educational recommendations suggested above, DAC water systems could benefit from tailored trainings that focus on optimizing financing strategies within existing rate revenues, crafting updated water service rates that account for affordability and local demographic constraints, and pathways to monetizing benefits to expand a water revenue base.

- Inadequate partnership base for most DAC water providers

Conservation finance strategies tend to succeed where there is meaningful engagement of, and participation from, a strong network of partnering individuals and institutions. Partners can help map financing and project strategies, identify complementary revenues and other financial support, provide in-kind or expert services, and strengthen community support for water service investments. However, cultivating and managing partnership takes time and, occasionally, money. DAC water agencies and municipal governments may not be able to support staff time devoted to partnerships. Also, many SRFA DAC water agencies serve rural or semi-rural communities without the population base or engagement to support effective partnerships. The absence of strong support networks limits their ability to develop and pursue conservation finance alternatives.

Suggested response:

- COVID interruptions and other stressors on water service providers

Much of the work supported by this grant occurred during the disruptions to work routines, office staffing, and personal health caused by the COVID-19 pandemic. Water agencies and municipal governments struggled to maintain levels of service during this time, often with remote work requirements and staffing shortages. These factors added considerable difficulty in gaining traction with information and support about novel financing strategies.

In addition, these past two years have been marked by deepening drought and the attendant additional stress and demands upon water agencies, particularly wholesale and retail water providers. Declines in available surface water and groundwater supplies have impacted water agency budgets, and drought response has drawn considerable staff energy and attention. At least two SRFA water agencies were unable to act on their initial interest in conservation finance support due to drought pressures.

Suggested response: Looking toward a future when these disruptions are less forceful, DWR should consider future support to replicate (and iterate) the conservation finance outreach and education undertaken during this grant period.

- Impact of California and Federal budgets and financial assistance

A more positive development during the grant period was the increased availability of both state and federal funding for water infrastructure. California's budget surpluses in 2021 and 2022 spurred dramatic increases in funding available through several water-relevant agencies. Likewise, Congress' passage of the ARPA and Bipartisan Infrastructure Laws significantly expanded the amount of federal funds available through programs administered by California agencies and directly to DAC water service providers. The availability of these funds, or expected availability, has encouraged DAC water agencies (including our pilot project partners) to seek financial support for water infrastructure improvements and related projects. However, the allocations from these public sources have also perpetuated the challenge described above – preference for well-known, traditional funding sources over innovative conservation finance strategies. This is a missed opportunity, as public funding/financing made possible by budget surpluses and federal allocations could, in many cases, be multiplied by strategies that leverage complementary private investment.

Suggested response: DWR, SWRCB, other California funding agencies and federal partners have an opportunity to update their own funding practices to emphasize the considerable potential for leveraging public and private investment created by conservation finance strategies. To the best of the author's knowledge, only California's iBank and GoBiz programs seek to promote access to private finance. Individual agencies within the Natural Resource Agency should increase their collaboration with iBank and its programs to better promote the accessibility and advantages of conservation finance.

Conclusion

The work undertaken by the project team during the period 2019-2022 demonstrated the applicability of blended finance strategies to water system projects throughout the SRFA. These strategies have tremendous potential to accelerate the delivery of watershed health and water system improvements throughout the region by leveraging public funding to secure private investments. As the conservation finance sector matures, DWR and other California state agencies can increase their coordination and their support for local applications of these strategies.

While DACs throughout the SRFA may stand to benefit from blended finance strategies, significant challenges impede uptake at this time. Resolving these challenges will require committed engagement by DWR, other state and federal agencies, and local partners. Collaboration with technical assistance providers capable of educating DAC water leaders and facilitating the exploration of relevant financing strategies will be essential.

Appendix A: Project Background

Purpose of Technical Assistance/Grant History

The technical assistance provided by the project team was intended to bridge a knowledge and experience gap that prevents water agencies (and related infrastructure managers / resource providers) from accessing conservation finance models in support of capital projects and other infrastructure investments. Partnerships with private investors and other finance providers are a key component of a successful conservation finance strategy. Yet, for most of the target audience, aside from public agency bond issuance, private investors remain an unexplored, unexploited source of financial support for water and watershed service projects. By sharing information, conducting individualized outreach and support, and assembling a portfolio of supporting resources, the project team aspired to demystify this potentially important source of project finance. Through two in-depth pilot projects, the team both advanced local progress toward conservation finance strategies and created case studies to share with other SRFA DACI communities.

Early activities were focused on building a foundation for in-depth collaboration with the City of Marysville and other Yuba County communities as pilot projects for the development of conservation finance strategies. As described later in this document, that focus shifted by December 2020 to a broader effort targeted at providing information and assistance more directly to all SRFA DACI communities. Throughout the remainder of the grant period, the project team provided briefings to SRFA IRWM participants, individual water agencies and related entities, and one-on-one assistance to a small number of agencies and partners within the SRFA. The conclusion of the grant project was direct technical assistance to two local entities (Solano County Water Agency and Fall River Resource Conservation District) with interest and capacity to engage more fully in these discussions.

Assistance Providers

This project was initiated by JoAnna Lessard, formerly associated with Cramer Fish Sciences, currently Projects Manager at Yuba Water Agency. Dr. Lessard assembled the team and provided overall project management during the duration of the grant period.

Technical assistance was provided by the following team (referred to as “the project team” throughout):

Jeffrey Odefey, Director, Clean Water Supply Program / American Rivers. Mr. Odefey is a Director in the Clean Water Supply Program at American Rivers. His work focuses primarily on developing policies and programs that increase resilience in urban water systems. These efforts tend to involve partnerships with municipal and other agencies in efforts to promote green infrastructure, water conservation, and integrated water management as pathways to preserve and protect healthy waters and communities. Jeff directs American Rivers’ *Stormwater* Currency initiative, in partnership with Corona Environmental Consulting and others, which is developing stormwater credit trading and other incentive programs to incentive investment in green infrastructure. His past experiences include stints as a staff attorney for Waterkeeper Alliance and for Hudson Riverkeeper. A native of Colorado, Mr. Odefey holds a B.A. in English and Art History from the University of Colorado, an M.A. from the University of Montana, and is a *magna cum laude* graduate of the Pace University School of Law

Vance Russell, Independent Consultant / Vance Russell Conservation Collaborative. Mr. Russell has 35 years of experience working in forest science & management, rewilding, biodiversity conservation,

agricultural landscapes, restoration, and natural resources management. He is a conservation consultant and works for various non-profit, state/federal agencies, and private businesses. Vance was the California Director for the National Forest Foundation, where he managed, led, and funded community forestry projects. Before joining the National Forest Foundation, he was director of Audubon California's Landowner Stewardship Program, working with farmers and ranchers to restore habitat compatible and managed Bobcat Ranch and the Mayacamas Mountains Reserve. Vance is the former Board Chair of Groundswell International, is a trustee for the South Downs National Park Trust, and serves on the Rewilding Leadership Council for the Rewilding Institute. Vance received his M.S. degree in Forest Science and Natural Resources Management from Cornell University and a B.A. in Biology from the College of Wooster.

JoAnna Lessard / Project Manager, Yuba Water Agency

How's this: Joanna Lessard is a Project Manager at the Yuba Water Agency and leads the Agency's Watershed Resilience Program and the Yuba Integrated Regional Water Management Program. Through these roles she works to develop collaborative projects to increase the pace, scale and multiple benefits of a variety of watershed-based projects. Ms. Lessard has been the technical lead and manager for the Sacramento River Funding Area Disadvantaged Community Involvement Program Grant since its inception and has worked with a large team to provide needed technical assistance to DAC water systems and communities across the SRFA. She brings a broad background in technical natural resource research and management, funding strategy development, and project coordination to these and other key Agency programs.

Appendix B: Burney Hat Creek Collaborative Finance Subcommittee Scope of Work

Leveraging Fall/Pit Finance

SCOPE | Connecting water, forests, and microgrids | Nov 5, 2021

SUMMARY

Overgrown, unhealthy forests threaten communities, water, and biodiversity throughout California. The northern California Sierra is home to extensive public and private forest lands and important headwaters for California's water supply system. Improving forest conditions by reducing tree density, restoring meadows, and protecting headwaters can decrease catastrophic fire risk and increase watershed resilience to drought and flooding. However, accessible public funding for forest health projects is insufficient for the identified needs of the region. As a result, private capital is needed to complement existing state and federal funds to accelerate and scale project delivery. Creating a collaborative finance approach to develop a diversified public and private funding portfolio will help to alleviate some of these challenges.

Forest health projects can create economic development and employment opportunities and distributed energy generation for local consumption. Integrating restoration with the development of fuels processing facilities to utilize wood biomass into useful and carbon sequestering products can create a model for other forested rural regions of the Sierra and beyond. We will explore these possibilities, develop and test proven and new ideas to create a bespoke model for the Fall and Pit River watersheds that seek to maximize funding and delivery of projects on the ground. Increased local capacity and job creation will play a central role in the project.

The project will have two overall goals: 1) create a finance collaborative to leverage public funds with private capital to fund forest health, bioenergy, and microgrid projects in the Fall/Pit River region; and 2) Secure funding for and develop a financial feasibility study for 1-2 projects in the Fall/Pit River basins.

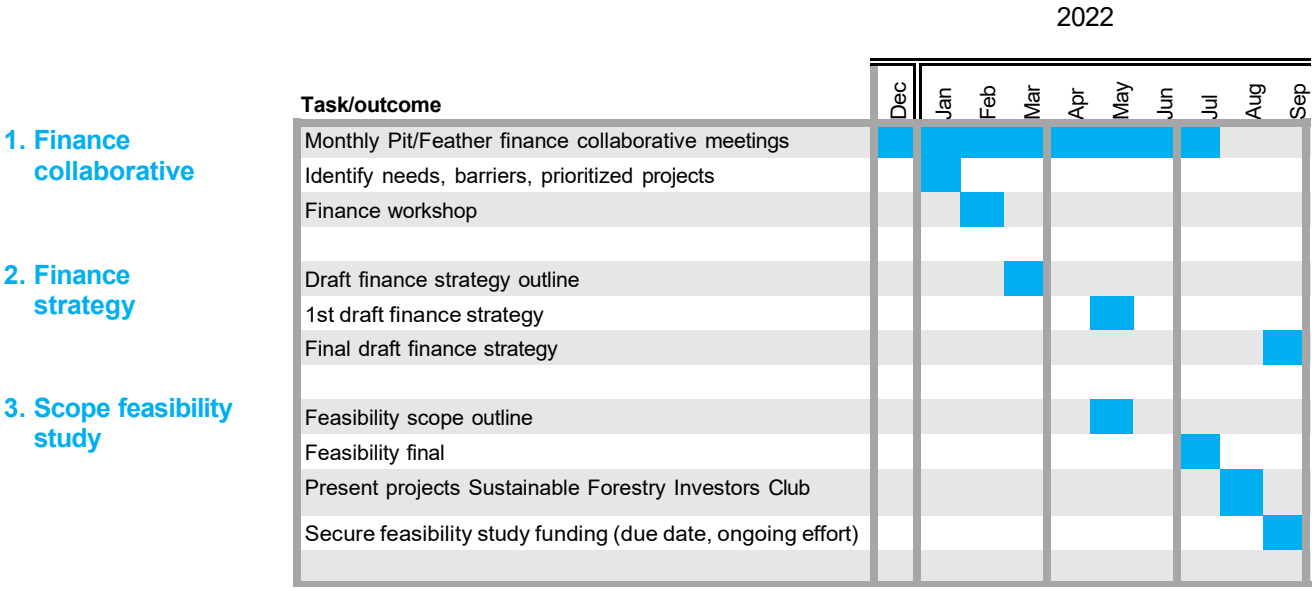
DELIVERABLES

Activity 1: Organize and convene finance collaborative with local players and finance experts/providers. Convene regular workgroup meetings, either independently or as part of an existing stakeholder process. The workgroup will be the primary forum for collaboratively identifying relevant project and financing strategies.

Activity 2: Draft a Fall/Pit regional restoration finance strategy based on workgroup discussions. This strategy will form the basis for outreach to potential payors, investors, and stakeholders.

Activity 3: Scope RFP for the feasibility study. Tie into Quantified Ventures and secure funding.

TIMELINE



ROLES

The following roles are suggested for the scope

- Sharmie Stevenson–On ground RCD director
- Todd Sloat–Project implementation
- Jeff Odefey–Connection to non-traditional finance and convening conversations around this. Taking the Kresge framework and testing the process, building connectivity to additional monies.
- Vance Russell–Collaborative finance and community forestry and strategically integrating funding and program work that connects water, forests, and communities.

Vance Russell has 35 years of experience working in forest science & management, rewilding, biodiversity conservation, agricultural landscapes, restoration, and natural resources management. He is a conservation consultant and works for various non-profit, state/federal agencies, and private businesses. Vance was the California Director of Programs for the National Forest Foundation, where he managed, led, and funded community forestry projects. Before joining the National Forest Foundation, he was director of Audubon California's Landowner Stewardship Program, working with farmers and ranchers to restore habitat compatible with existing agricultural operations. He managed the 7,800-acre Bobcat Ranch and 3,000-acre Mayacamas Mountains Reserve in Yolo and Sonoma Counties, California. Vance is the former Board Chair of Groundswell International, serves on Groundswell's board of directors, is a trustee for the South Downs National Park Trust, and serves on the Rewilding Leadership Council for the Rewilding Institute. Vance received his M.S. degree in Forest Science and Natural Resources Management from Cornell University and a B.A. in Biology from the College of Wooster.

Jeff Odefey is a Director within American Rivers' Clean Water Supply Program. He coordinates a broad effort to improve the health and vitality of our communities through better regulation and management of stormwater and other water resources. Jeff joined American Rivers in 2011. For the previous eight years, he was a staff attorney for Waterkeeper Alliance, directing programs to solve water quality problems caused by runoff and factory farms. He has also been a staff attorney with Hudson Riverkeeper and a curator of public arts programs. Jeff has a B.A. in Art History & English from the University of Colorado, an M.A. in English from the University of Montana, and a J.D. from Pace University School of Law. He lives in Grass Valley, CA, with his wife and daughter.

Appendix C: Burney Hat Creek Collaborative Conservation Finance Roadmap

Financing for Forest Health

A Roadmap for Accessing Private Investment to Support Fire Risk Reduction and Recovery, Forest Health and Watershed Restoration in Northern California.

Jeff Odefey / American Rivers

Vance Russell / vrconservationcollective.com

June 2022

This paper and the underlying pilot project were supported by a California Department of Water Resources Integrated Regional Water Management Disadvantaged Community Involvement, Technical Assistance grant provided to the Yuba Water Agency.

EXECUTIVE SUMMARY

The Burney-Hat Creek Community Forest and Watershed Group is a collaborative forestry and watershed restoration effort dedicated to improving social, environmental, and economic conditions in the Burney Creek and Hat Creek watersheds. The Fall and Pit River Resource Conservation Districts are working on the California Forest Residual Aggregation and Market Enhancement (CalFRAME) Pilot Project to aggregate feedstock so that existing and emerging businesses can secure long-term contracts for forest wood products. That project area will cover northeastern CA, including Shasta, Lassen, Modoc, and Siskiyou, Counties. A sub-committee of the Collaborative convened to create a finance roadmap to outline the paths that leverage public and private funds to meet priority project needs for both the Collaborative and the CalFRAME pilot. This document proposes a Conservation Finance Roadmap to support the eventual delivery of public and private finance to support multi-benefit forestry, watershed, and economic development projects. The Roadmap describes the processes linked to creating conservation finance strategies, barriers to arranging private finance, potential solutions to these challenges, resources, recommendations, and next steps for the subcommittee.

Key takeaways gleaned during the process include

- A **blend of public and private funding** is needed to accomplish the projects identified in the region at the scale and pace that best responds to emerging risks and opportunities.
- **Identifying payors** willing to invest in projects based on the value of avoided costs continues to be a challenge for conservation finance development.
- Tried and tested experience with **wood products operations AND finance** are critical to success for forest management and wood utilization infrastructure operations.

Figure 2. Office of Planning and Research CalFRAME feedstock pilot area of interest. County boundaries are truncated by the area of interest border.

Recommendations include

- **The region's recommended model for conservation finance includes funding from private investors, foundations, state, and federal sources**. The model includes consideration of additional funding through forms of public and private investment.
- **An alternative to the full model** would be to complement state and federal funding sources with revenue from payments for the benefits of restoration, forest health management, or mitigation projects, such as the Avoided Wildfire Emissions Protocol.
- **A centralized administration entity** could play a critical role in managing public grants, contracts, environmental compliance, and private funds. This entity could be housed at one of the RCDs, a local nonprofit, or be created as a new entity to manage funds and administration for any entity, private, public, or individual landowner, implementing forest practices.

BACKGROUND

This Roadmap is intended to provide support to the Fall River RCD and its partners as they plan, secure financial support for, and implement forest health and watershed restoration projects in northern California. This report and the conversations that informed it "nest" against several ongoing planning and implementation efforts in the region, including the Burney Hat Creek Community Forest and Watershed Group, the California Office of Planning and Research Forest Residuals Aggregation Market Expansion (CalFRAME), and individual projects planned by the Fall and Pit River RCDs. To develop this Roadmap, the authors worked with Fall River RCD staff to form a finance subcommittee of the Burney Hat Creek Collaborative. The Collaborative, FRAME feedstock pilot, Burney-Hat Creek Finance sub-committee purpose, and roadmap development process are described in the following paragraphs.

Burney-Hat Creek Collaborative

In recent decades, local northeast California communities have experienced high rates of unemployment and increased risks of high-severity wildfires, issues the Collaborative actively works to mitigate. The Burney Hat Creek Community Forest and Watershed Group (BHC), founded in 2009, is a collaborative forestry effort dedicated to improving social, environmental, and economic conditions in the Burney Creek and Hat Creek watersheds. The Collaborative footprint encompasses 364,250 acres of public, private, and Tribal lands and the communities of Burney, Johnson Park, Hat Creek, Cassel, and Old Station (Figure 1). The Lassen National Forest manages approximately 58 percent of the collaborative footprint, 29 percent is owned by large private forestland owners, seven percent is managed by Lassen Volcanic National Park, and four percent by large ranches, Tribal trust, and allotment lands.

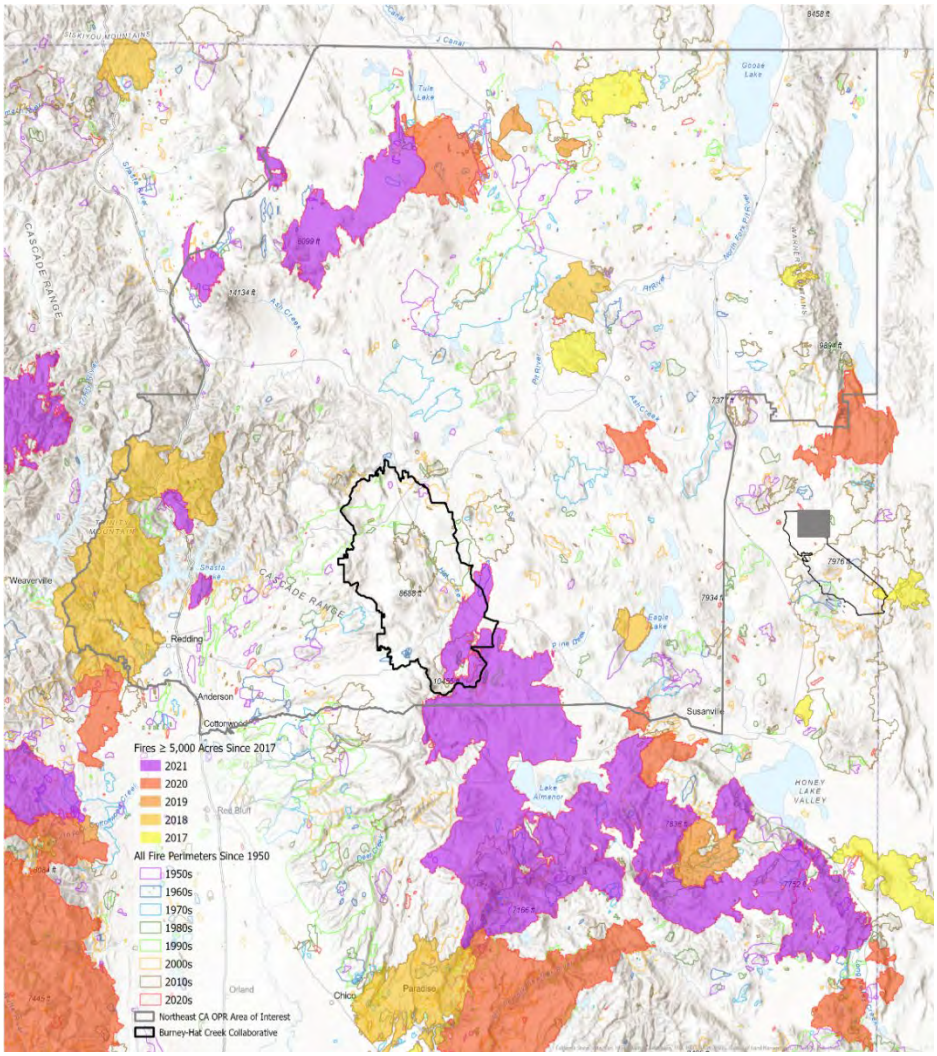


Figure 3. Large, recent fires in the Northeast California region and all fires since 1950 within the NE CA area of interest. The 2021 Dixie Fire is the large purple fire perimeter at the southern border of the pilot landscape that overlaps the Burney-Hat Creek Collaborative boundary.

The group's vision is to create a fire-resilient forest ecosystem with sustainable populations of wildlife, fisheries, and habitat, functioning and restored watersheds and water quality, protected cultural resources, and appropriate recreational opportunities while also helping to support quality of life, jobs for diverse community members, and economic benefits in local communities. Post-fire recovery following large wildfires, such as the 2021 Dixie Fire, shows the challenges of protecting forests, water supplies, and communities and the need for increased investment to reduce fire risk and create healthier, more resilient forests and watersheds.

OPR Feedstock Pilot Project

The Fall River Resource Conservation District, working with grant funding from the Office of Planning and Research (OPR), is initiating a Pilot Project known as the California Forest Residual Aggregation and Market Enhancement (CalFRAME) Pilot Project to aggregate feedstock so that existing and emerging businesses can secure long-term contracts for forest wood products. The project area will cover northeastern CA, including Shasta, Lassen, Modoc, and Siskiyou Counties (Figure 1). Numerous small and industrial businesses are working to sustainably manage California forests in the Wildland Urban Interface (WUI) and wildlands within this geography. The goal is to develop community and ecological resilience, particularly considering California's trending increase in high-intensity catastrophic wildfires (Figure 2). The Dixie Fire in 2021 burned nearly one million acres and was the largest single, non-complex fire

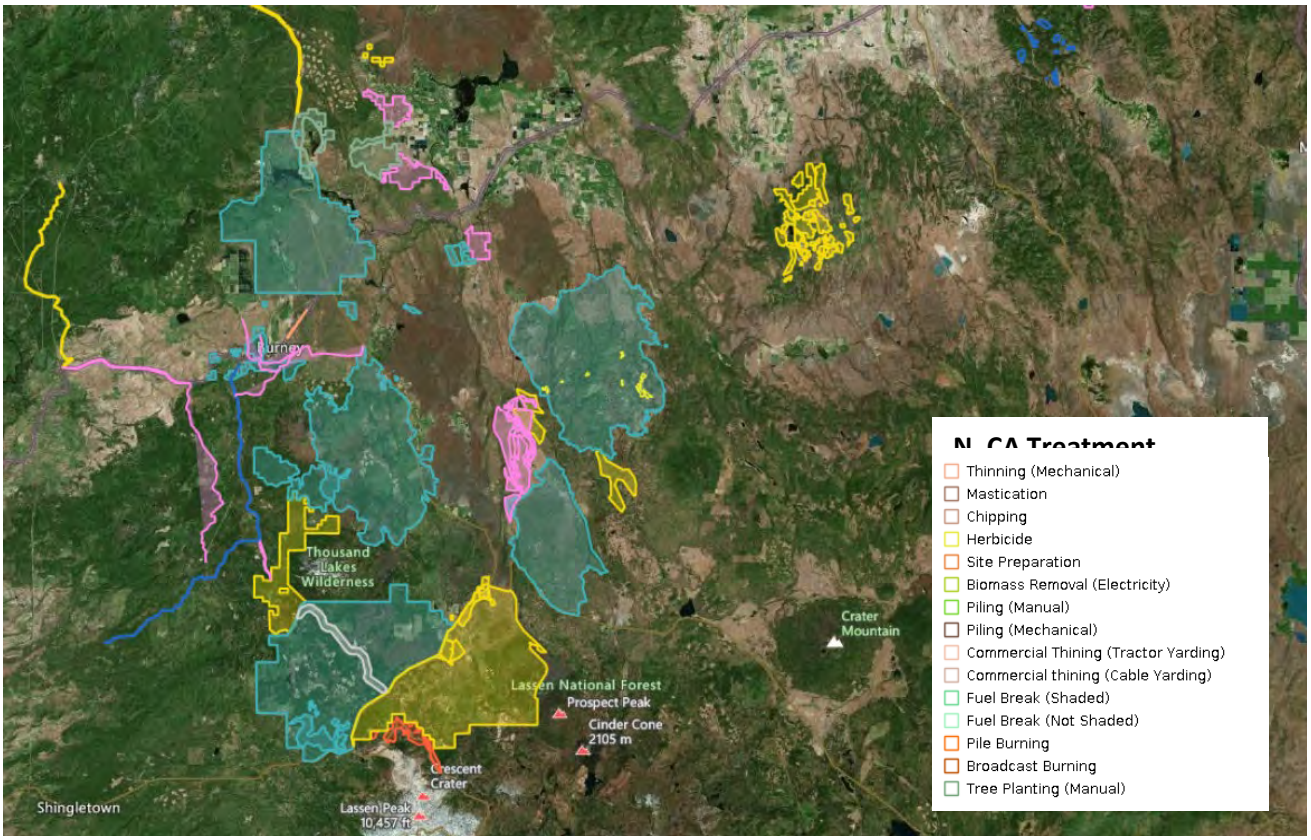


Figure 4. Sample map of treatment projects in Northern California.

recorded in California history (Figure 2). Large quantities of forest residuals from current management activities are piled and burned

or left in the woods to decay. A sample map showing several projects in the CalFRAME project are shown in Figure 3.

BHC Finance Committee

In February 2022, the authors of this report coordinated with Fall River RCD staff to create and convene a subgroup of the BHCC referred to as the finance subcommittee. The purpose of the finance subcommittee is to **create a conservation finance roadmap that outlines a path that leverages public and private funds to meet priority project needs.** The project will be drawn from those considered by the FRAME pilot.

The sub-committee is composed of the following members:

- Christiana Darlington, CLERE, Inc.
- Clarke Stevenson, CLERE, Inc.
- Jason Moghaddas, Spatial Informatics Group
- Jeff Odefey, American Rivers
- Michael Hall, Feather River RCD
- Regine Miller, Headwaters Environmental
- Ryan Tompkins, UC Cooperative Extension
- Sharmie Stevenson, Fall River RCD
- Todd Sloat, Fall River RCD
- Vance Russell, VR Conservation Collective
- Zane Peterson, Peterson Timber

Jeff Odefey, Vance Russell, and Regine Miller led the group through the process and meetings.

Pathway Process

The sub-committee met biweekly from February through June 2022 to develop this Roadmap. The general process we followed was

1. Defined scope and purpose focused on the OPR pilot woody biomass utilization assessment project
2. Developed funding roster
3. Drafted finance roadmap outline
4. Compiled project inventory
5. Overviewed finance models
6. Produced the roadmap report and next steps

PROBLEM STATEMENT

One of the key limitations to developing and implementing large-scale forest and watershed restoration projects is the difficulty in arranging appropriate amounts and types of financial support. Limited financial resources impede the implementation of large-scale forest restoration projects, particularly as the economy waxes and wanes. However, a large pool of untapped sustainable private investment capital could be deployed to help close the gap between natural resource management needs and available financial support. For example, impact, or outcome-based private investment, which pairs water and resource agencies with community partners and private capital investors in an outcomes or

performance-driven partnership, is a promising approach that connects public water agencies to a new, non-traditional source of project financing.

Nevertheless, many water agencies and communities lack familiarity with these concepts, and the novel financing structures translate into a perception of elevated risk. Coupled with high start-up costs, often limited staff capacity, and other institutional or socioeconomic constraints, the barriers to successfully implementing these vital projects can be too significant for agencies to overcome independently (Macejko, Russell, and Odefey, 2021).

Members of the BHC face several challenges in developing a conservation finance strategy to support their forest and watershed restoration projects:

1. Lack of internal staff capacity and expertise
2. Uncertainty about the process for developing a conservation finance strategy
3. Poor connectivity to private finance options
4. Uncertain public agency response or support

This paper is intended to address at least the first two of those challenges and has implications for improving the second two.

Barriers

Northeast California is renowned for its natural beauty and recreational opportunities, from high mountains to world-class streams and lakes. Sparsely populated and rural, many towns are economically disadvantaged. They face an acute lack of capacity and limited access to funding to address natural resource challenges faced by fire, restoration, and associated infrastructure.

A California-wide study on forest restoration and wood utilization found barriers to private financial investment include heightened risk for investors given unpredictable supplies, increasing costs, lack of markets for low-value biomass and lack of local infrastructure and capacity (Elkind et al., 2022). When identifying their biggest obstacles in preparing for and responding to wildfires, 38% of respondents cited barriers related to inadequate funding to cover base program operations, administrative time, and costs (Davis et al., 2020).

Additional barriers to forest restoration, rural development, and infrastructure include

- Decreased private investment in local business and economic development. With limited local economic capacity, local businesses and community organizations are constrained in their ability to attract and manage investment in natural-resource-related enterprises. Without addressing the gap in sustainable and stable funding for local community organizations, the disparity in state and federal funding allocations to vulnerable communities will continue to grow.
- Across the nation, private investment in water and forest infrastructure and restoration barriers include securing project payors, understanding and allocating acceptable risk, and quantifying and measuring outcomes (Odefey and Russell, 2022).
- Episodic, short grant funding periods and fragmented funding for projects undermine organizational momentum of plans and projects, organizational capacity, and the ability to develop innovations and achieve impact at scale.
- Private landowner assistance is underfunded; at the same time, it is becoming increasingly important. These properties make up the heart of the wildland urban interface, particularly in

rural areas such as NE California, and are at significant risk of catastrophic wildfire (Tompkins personal communication, 2022).

FUNDING SOURCES

Funding is a partial solution to several barriers to implementing forest restoration projects. However, rather than focusing on individual funding sources and types, developing strong financial mechanisms that collate a portfolio of funding for any project, program, or landscape may be a higher priority. We have organized this section to be brief and organized to flow from the more traditional funding types to non-traditional and less well-established. The Roadmap is not meant to be a definitive funding guide source; rather, we describe funding and investment resources, including the grant roster developed by project proponents, that may be considered, along with descriptions of non-tradition funding sources.

Grants

As part of the Burney-Hat Creek Collaborative roadmap development, partners created a Grant Program Roster. The roster is designed to sort funding opportunities by agency, grant focus, and type of organization using filters to narrow the funding opportunities. Currently, the list is comprehensive for state and federal resources. Philanthropic sources will be added in the future. The roster is complementary to the larger but more general state funding database. This tool has proven to be a useful shortcut through the maze of public agency funding programs.

Loans

Loans are often used by public, private, and nonprofit entities to cover the initial costs of projects, payroll, or material costs when awaiting reimbursement from state and federal grants or investing in or augmenting a business. The pluses of loans are availability, rapid deployment, and low-interest rates. The minuses are debt servicing, the ability to pay back when returns are low, do not exist or are not possible for certain projects, and inaccessibility for entities without an established track record. Loan programs that can be subsidized and managed by public agencies (e.g., GoBiz) have a role in easing access to capital for equipment and infrastructure purchase. A zero- to low-interest loan program could be instrumental in delivering forestry and wood products utilization machinery to the Burney – Hat Creek communities.

Taxes/fees

Taxes, measures, and fees can effectively raise consistent revenue over longer periods. In 2020, for example, Marin County approved Measure C to fund wildfire prevention and preparedness efforts. The resulting 10-year parcel tax levies \$0.10/building ft^2 providing nearly \$20 mn/yr to prevent and mitigate wildfires in Marin County managed through the Marin Wildfire Prevention Authority Joint Powers Agreement. Raising taxes can be challenging for rural communities without a strong commercial and private housing real estate market. California law requires voter approval of new or increased taxes. However, when tied to re-investment in the community, tax proponents may succeed in making a case for a temporary assessment.

Payments for Ecosystem Services

State and federal grants for conservation, wildfire mitigation, and restoration are indirect payments from the public for ecosystem services and biodiversity conservation. In any given region, however, the public's willingness to pay for additional benefits may often be voluntary, e.g., a GoFundMe campaign or

a specialized nonprofit that funds and works to protect a local trail system, a charismatic local species, or a historical monument. However, more organized campaigns may be structured or codified into local or regional policies based on voluntary contributions (e.g., dollar check-off programs). These are often successful in areas that have tourism without entrance fees. One example is the National Forest Foundation's Ski Conservation and Forest Stewardship Fund. Funds come from voluntary guest contributions at ski areas or lodges operating on National Forest System Lands. They must go to restoration projects in the forest where the ski area is located. An opt-out approach works best in these scenarios, e.g., a contributor must uncheck a box to indicate they do not want to contribute.

Larger watershed contribution programs throughout the west combine public and private funds to protect water resources and fund restoration or fire mitigation projects. Typically, these funds are more successful when close to larger urban areas, such as the Salt River Project and the Northern Arizona Forest Fund. A similar approach could be taken in the Burney-Hat Creek through a regional fund that adds $1 to room nights in all hotels, Airbnb rentals, and outdoor recreation businesses. Another approach would be to connect hunters and anglers who regularly visit the region and are interested in restoring forest, riparian, and other associated habitats.

Corporate Sustainability

Corporate contributions to environmental sustainability are increasing to respond to United Nations Sustainable Development Goals, increased corporate responsibility focus, and links to dependence on natural resources. Funding from corporations can often be a long haul, is heavily dependent on connections within corporate sustainability offices or executive suite officers and may not be similar in size to grants to foundations and public funding sources. However, corporations often offer additional resources in addition to funding. Patagonia, for instance, offers modest grants of approximately $30,000 but also gives access to their communications and media departments to grantees. Corporations are highly interested in payments for ecosystem services and quantifiable outcomes. The parametric insurance example mentioned below is an example where corporate entities have been involved in funding restoration projects that also protect business assets and may offer avoided cost savings or a return on investment.

Philanthropic Foundations

Philanthropic foundations can play key roles in the development of conservation finance strategies for forest and watershed restoration by providing grants or other investments in the projects or in the organizations that undertake them. Foundations can operate at regional and national levels; across these sectors there is considerable interest in supporting projects that increase climate resilience, boost workforce and economic development, and sustain rural communities. Foundation support may come in the form of grants to cover operating expenses and project development activities by the RCD or a similar project administrator. Some foundations also provide investments, known as Program Related Investments (PRIs) or Mission Related Investments (MRIs) for which they generally expect a below market rate or nominal interest return.

It's notable that the RCD has experience with support from the McConnell Foundation which made a $300,000 grant to support a high priority WUI restoration project. Grants of this nature can provide initial funding which can be leveraged to obtain additional investments in projects or programs.

FINANCING STRATEGIES

Blended financing strategies that assemble a diverse portfolio of funds from public grants and add private resources can be key to creating a locally appropriate and collaborative finance portfolio. We believe these strategies may support forest and watershed restoration projects undertaken by BHC and economic or community development efforts that can support those restoration projects.

Collaborative Finance

Collaborative finance is a conservation finance strategy that involves cooperative interaction between individual project developers, stakeholders, and finance providers. This process may or may not include traditional financial institutions (collaborativefinance.org). We broaden the term to include finance developed by fair and equitable participation of stakeholders in a region, landscape, or watershed to address natural resource and infrastructure management needs, utilizing multiple forms of funding from public grants to private investment. Finance approaches may include outcomes-based finance models such as environmental impact bonds. For a deeper discussion of collaborative finance approaches to financing water infrastructure in California, see American Rivers' Because It's Worth It white paper. The BHC workgroup, and potentially the FRAME project, have many aspects of collaboration that can be directed to developing suitable public-private financing for restoration projects.

Environmental Impact Bonds

One outcome of a collaborative finance strategy may be the development of an environmental impact bond. In 2017, Quantified Ventures and the District of Columbia's Department of Water and Sewer (DC Water) launched the nation's first environmental impact bond focused on implementing green infrastructure to reduce sewage overflows and flooding (Martin and Appelbaum, 2021). This outcomes-based investment package tied the rate investors earned to achieving specified environmental performance goals. The investment package structure linked DC Water to private bond buyers. The structure used by Quantified Ventures, DC Water, and their investors follow the track illustrated below. Noteworthy in this outcomes-based repayment scheme is the role of the third-party evaluator. Five years after launching the project, the evaluator confirmed that stormwater runoff had been reduced by nearly 20%, a level that met the Bond's base-level repayment criteria (Lindsay et al., 2021).

Blue Forest Conservation's Forest Resilience Bond adopts a different approach. The Bond, more of a revolving loan instrument, is not, strictly speaking, an outcomes-based financing strategy. The payor for the project, Yuba Water Agency, makes payments to investors that are not linked to achieving any of the project's many benefits. The structure adopted by Blue Forest enables the creation of a portfolio of investors and funders who repay and complement the agency's funding.

Enhanced Infrastructure Financing Districts

Enhanced Infrastructure Financing Districts are a recent evolution of the tax increment financing tools previously developed in California and support financing infrastructure projects with anticipated increased property tax revenues associated with the future benefits of the projects (Lefcoe, 2014). Revenues from Enhanced Infrastructure Financing Districts can be used for public works, transportation, parks, libraries, and water and sewer facilities, emphasizing sustainable community goals under California's landmark climate legislation (Flint, 2018). Recent revisions to the Enhanced Infrastructure Financing District law reduced some of the challenges to adoption; for example, no public vote is

required to establish a District. In 2017 the City of West Sacramento created a new Enhanced Infrastructure Financing District that is expected to raise $1.1 billion for parks, stormwater, sewage, and other infrastructure improvements. While a more appropriate vehicle for cities and urban populations due to the housing density, it is possible that broad landscape-scape districts could be adapted to more rural areas such as northeast California.

However, EIFDs are heavily reliant on anticipated increases in property tax revenues. Given the lack of urban populations in NE California and an immediately apparent connection between restoration projects and increase private property values in the WUI, it is not immediately apparent whether this approach can benefit the region.

Revolving Loan Funds

Pooled funding sources such as impact bonds or revolving loan funds can help end the project->project funding cycle with greater funding available and at larger scales. Typically offered at lower than market interest rates, revolving loan funds are self-replenishing pools of money utilizing principal and interest payments on existing loans to issue new loans. They have been used effectively from small to large-scale to develop businesses, assist healthcare, and improve environmental outcomes. They are flexible and can be used with more conventional funds such as grants and loans and have been used for decades in developing and developed countries.

For example, through a coalition of public and private partners, the Southwest Wildfire Impact Fund intends to utilize resources from private investors and revenues from biomass generated from forest thinning to offset the financial burden for wildfire mitigation in the San Juan National Forest wildland-urban interface. The project fosters regional collaboration through shared project financing and implementation. It also creates the opportunity for scaling up forest treatments and fire reduction by creating a revolving loan fund that reinvests proceeds into additional projects ensuring that capital is available for long-term re-treatment and expansion of forest health interventions.

Because of its revolving loan nature, the impact of the fund will continue to grow over time as capital is redeployed for forest health treatments in new areas beyond this initial plan. The Environmental Impact Fund will deploy financing for an initial proposed plan to reduce wildfire risk over 64,871 acres in Southwest Colorado, encompassing private, federal, state, local, and tribal lands. An analysis of three representative parcels within the larger proposed geography demonstrated a benefit-cost ratio of nearly 300% based on avoided risk and damage to properties, infrastructure, and water resources if a wildfire were to occur. In addition, an estimated 287,708 green tons of biomass would be made available through the treatments, which can be converted to electricity or other commercial uses if biomass plants can be built to consume the woody by-products of forest restoration projects.

Blue Forest Conservation's Forest Resilience Bond adopts a different approach. The Bond, more of a revolving loan instrument, is not, strictly speaking, an outcomes-based financing strategy. The structure adopted by Blue Forest enables the creation of a portfolio of investors and funders who repay and

"The future possibility of creating a Blue Forest Revolving Fund that supports multiple projects could be a major source of funding for BHC without the RCD having to develop a tailored finance project for the region."

complement the agency's funding. The payor for the project, Yuba Water Agency, makes payments to investors that are not linked to achieving any of the project's many benefits. Blue Forest is also developing a larger Revolving Fund that would be capable of supporting multiple projects, scaling up the Forest Resilience Bond without custom tailoring investment packages for each project. This emerging fund could be a major source of funding for BHC without requiring as much pre-development work by the RCD or partner. Such a multi-project fund could greatly ease the burden and cost of conducting a feasibility study and greatly increase funds available for forest restoration and wood utilization projects.

Avoided Wildfire Emissions Protocol

Spatial Informatics Group and Element Markets are developing a forecast methodology under the Climate Forward program to recognize the climate benefits associated with fuel treatment activities that lower the risk of catastrophic forest fires and their emissions. Known as the Avoided Wildfire Emissions Forecast Methodology, the final product is expected by June 2022 and could provide complementary funding for thinning and prescribed fire projects to grants and private investments. The Protocol differs from carbon offsets in that forecasted mitigation units, known as FMUs, are issued for forecasted greenhouse gas reductions or removals. FMUs are used to mitigate anticipated future emissions, such as wildfires. FMU credits were created today to address future impacts and equal one metric ton of CO_2e. Thomas Buccholz of the Spatial Informatics Group gave the committee an overview of the Protocol on May 17, 2022.

Parametric insurance

Parametric or index-based insurance covers the probability of a predefined event instead of indemnifying actual loss incurred (Swissre, 2018). These so-called trigger events are typically disaster (e.g., wildfire, flooding, hurricane, earthquake) related and measured through triggers such as wind speed, quake magnitude, or rainfall amount. Insurable triggers must happen by chance and are modeled. When the triggers are reached, a predetermined pay-out is made regardless of the sustained physical losses. Parametric insurance is meant to complement existing indemnity insurance but is increasingly used for post-disaster restoration funding in the natural world. One of the earliest examples of its use for nature recovery is the Mesoamerican Reef parametric insurance that provided $800,000 for reef restoration following Hurricane Delta. The trigger was windspeed with a parameter greater than 100 knots. The funds came from the Coastal Zone Management Trust (Winters, 2020). Using insurance to protect natural areas and their communities may be a unique way to connect public and private finance at an ecosystem scale.

California Sustainable Forestry Investor Club

Other burgeoning private finance opportunities have been developing in the past year, such as the California Sustainable Forestry Investor Club promoted by the Impact Finance Center. The Club invites developers of promising projects to present to institutional and private investors, particularly from the impact investment sector. As of the date of this paper, it does not appear that any financing arrangements have been secured through the Club. However, similar clubs across the country have met with success.

Climate Catalyst Fund

The California Infrastructure and Economic Development Bank, known as IBank, has a Climate Catalyst Revolving Loan Fund designed to jumpstart critical climate solutions through flexible, low-cost credit and

credit support; bridge the financing gap that currently prevents these advanced technologies from scaling into the marketplace; mobilize public and private finance for shovel-ready projects that are stuck in the deployment phase; and accelerate the speed and scale at which technologically proven, critical climate solutions are deployed. On the forestry side, the focus has been on forestry practices, wood products, and biomass utilization, focusing on initial projects that can reduce wildfire threats. Financing zero or low-interest loans for biomass infrastructure is a distinct possibility. Recent calls with these entities indicate there is high interest for IBank and GoBiz to become more involved in the region, particularly to support finance related to equipment and infrastructure.

Fintech & Blockchain

Technology in the financial realm is already revolutionizing the investment world. Blockchain [4] technology could help finance projects, connect payors to them, and provide collaborative digital platforms that connect funders to implementers and hastens pace and scale. With rapid iteration from finance to project and a community that governs and builds a permissionless system through open, collaborative, and equity-based protocols, the forest restoration blockchain system could rapidly evolve if the technology can be deployed, tested, and widely adopted. In other words, this is an unproven resource but rapidly changing and worth watching. It has mostly been applied to reforestation and carbon sequestration projects. Let's look at how it might work.

The Open Forest Protocol has a five-step approach for reforestation (adapted from Kelly, 2022):

1. Forested land plots are registered at an online protocol.
2. Remote sensing and ground-truthed data are gathered, recorded, and analyzed in an online map portal. Spatial and monitoring project data is stored permanently in an open distributed blockchain ledger, which is merely a shared database spread across multiple sites, regions, or participants.
3. Independent validators use remote-sensed data, ground surveys/monitoring, or drones to ensure data legitimacy.
4. Forestation projects gain transparency and trust through monitoring and validation.
5. Operators have access to carbon, reforestation, and restoration financing when projects meet outcomes and are successful.

Blockchain can be utilized further through smart contracts, an automated contract that executes when specified events, actions, deliverables, or other terms are met. Some of these concepts get applied to planning and permitting in a centralized one-stop shop, but that is outside the scope of this Roadmap.

How does this work for funding, however? Let's examine a hypothetical case based on platforms we know are currently being developed (Figure 3). In this case, the following steps are taken for listing a project that will create carbon credits:

1. A project implementer designs a project that a neutral third party or agency vets. The project proponent is given access to the listing engine and generates a project file.
2. A carbon rating company accesses the project file. The company then issues an investment recommendation.

[4] See the handy Latecomers Guide to Crypto for an explanation of blockchain, cryptocurrency, and decentralized finance.

3. If approved, the project file goes to the investor pool. A limited review period, e.g., 30 days, ensues
4. After the investor review, an auction for a portion of the carbon credits occurs among pool investors.
5. The project is listed on the exchange if the auction clears the reserve price. Successful bidders get tradable carbon credits, and the project proponents receive upfront funds from the portion of the carbon credits to initiate the project.
6. Project reporting ensures quality, transparency, and successful projects.

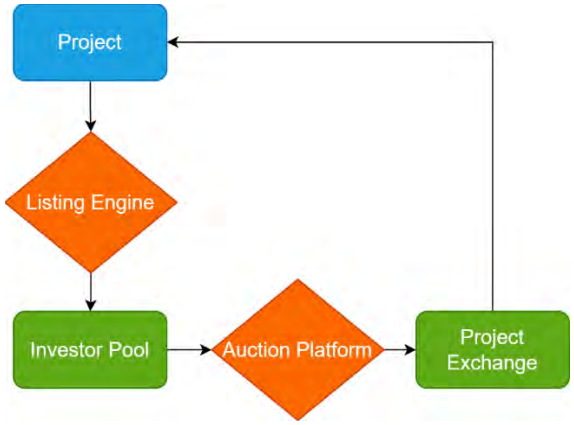


Figure 5. Hypothetical project funding engine platform.

RECOMMENDATIONS

While the influx of funding from state and federal sources is welcome and more is needed, current federal and state funding levels are temporary, with a five-year closeout of most Bipartisan Infrastructure Law allocations and (likely) state budget shortfalls in coming years. As such, there is a continuing imperative to leverage those funds with private capital. Public funds may not last, may change focus, and are historically cyclical. Private investment strategies can complement public grant/loan funding to create composite portfolios of financial support for the accelerated implementation of landscape-scale restoration and mitigation projects. Despite this opportunity, private capital investment in forest and watershed restoration is negligible to non-existent in many regions. Yet, because private businesses are impacted by fire and drought or other natural resource disasters, there is increasing recognition across the corporate and investment sectors that they can play a role in supporting forest and watershed health projects.

Creating clear, quantified metrics, feasibility studies, and the business case written in a business language is one critical key to connecting the private sector. Another may be state agencies acting as a broker for supply, such as the OPR feedstock pilot or GoBiz connecting private investment at scale to local efforts. Overcoming the challenge of connecting implementers with investors is a key challenge. This relationship-building challenge may be partially overcome with investment platforms, securing public funding, and creating better markets for wood products. The recommendations section offers a model and options for a way forward conceptually that will need boots on the ground and additional funding to solve.

The following broad recommendations are offered, followed by a more specific model description of what a forest health fund could look like for the region.

- Prioritize and bundle projects to create funding economies of scale and specific project funding that match the multiple benefits of forest health and fire mitigation.
- Take a blended finance approach to fund projects. The blended approach includes matching public grants with private funds and adding marketable forest product sales, carbon credits, and forecasted mitigation units created through thinning and prescribed fire projects enrolled in the future Avoided Wildfire Emissions Protocol.
- Raise funds for a feasibility study. Studies cost approximately $100,000 but are a central document for stakeholders and investors to secure project funding needs.

Prioritized Pathways

The Collaborative could pursue three predominant pathways, with the third (full model) being the preferred pathway (Figure 4):

1. **Grants**. Pursue business as usual with loans complementing existing grant funds. Although large amounts of grant funding are becoming increasingly available through block grants and new programs, this model will likely change with changing state and federal funding over time. A grants-only approach does not leverage private funds or smooth the peaks and valleys of funding availability over time.
2. **Grants Plus**. The Avoided Wildfire Emissions Protocol and potential carbon offset sales could create meaningful but small funding availability that could complement grant funding sources.
3. **Full Finance Model**. The full model would complement public funds with private investments, the emissions protocol, and a project platform connecting funders and investors to project implementers (Figure 5, Figure 6). This option is the highest priority pathway to pursue, but given its complexity, need to connect to investors, and size, it will take much more time and effort to develop.

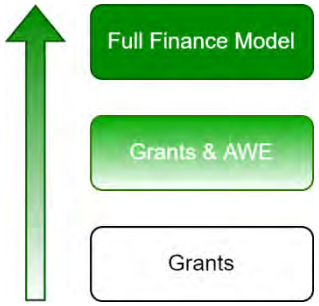


Figure 6. Possible pathways showing increasing priority and funding availability.

The restoration and forest/watershed health projects contemplated by the BHC could be effectively advanced through a blended finance strategy that builds on the Forest Resilience Bond model developed by Blue Forest for public lands in the North Yuba River watershed. This project-focused investment may also complement additional financing and grant funding that supports purchasing forestry and mill equipment, job training, and administrative capacity to manage the overall financing strategy. We will take each of these resources in turn.

Forest Health Fund

To visually capture the Burney-Hat Creek roadmap and based on feedback from multiple committee members and colleagues, we developed a Burney-Hat Creek Forest Health Fund model based on a fund that reaches $20 million in capitalization (Figure 5). The figure is read from left to right, starting with a feasibility study and project proposals to private and public funding sources. Initially, the Fund is capitalized by private investment and is small but grows over time as additional investments and grants are secured.

A key component of the administration of the fund is the Program Administrator. The Administrator would be a regional entity, possibly a nonprofit or Resource Conservation District, that oversees fiduciary management of the fund and contracts and acts as the liaison with private entities and public agencies. The Administrator could hire in-house staff as grant writers, mostly specialists in navigating state grants but capable of assembling applications to federal agencies and foundations.

Another key factor in the model is the verification of outcomes. Metrics need to be broadly applicable across projects and not wholly dedicated to a single investor to increase administrative efficiency and establish success measures to compare metrics and outcomes across projects at multiple scales. The project outcomes would be developed together with funding agencies and investors. Once projects near completion, an independent verifier would evaluate the projects, and if outcomes are reached, payments would be triggered and made by the Fund payors. Ideally Payors have a vested interest in the outcomes that are avoided costs related to their operations. For example, they could be an insurance company interested in reducing the risk of wildfire to homes and keeping home insurance rates low or a private timber company interested in protecting their timber from a wildfire initiated on public lands.

We envision the following steps in capitalizing and implementing the fund over time:

1. Collaborative works identify the existing funding situation and solution process, culminating in a feasibility study with predetermined outcome metrics.
2. Initial funding comes from state and federal grants ($10.2 million, 20% covers administrative costs).
3. Additional funding comes from private sources ($5M private investors, $3m concessionary grants, and gifts).
4. The Project Futures Platform provides a steady, up-front source of income through auctions of carbon credits or other marketable ecosystem services.
5. The Avoided Wildfire Emissions Protocol creates forecasted mitigation units (FMUs) based on each planned project or grouping of projects.
6. When state grant expenses are reimbursed, the invoiced funds are returned to the fund by the program administrator (minus 20% overhead)
7. When project outcomes are met and verified, an outcome trigger creates a payment return to investors from the project payors. It generates payments for mitigation units from the Avoided Wildfire Emissions protocol.

It is often difficult to follow how the money flows in a fund. We added a finance ledger to show the hypothetical movement of funds through a 3-year cycle (Figure 6). The ledger demonstrates how initial capitalization from private sources can launch the fund and leverage funds from public sources. The start-up funds from private resources allow the expenditures proposed for public funds and cover the delay in the time it takes from expenses to reimbursement from state and federal sources.

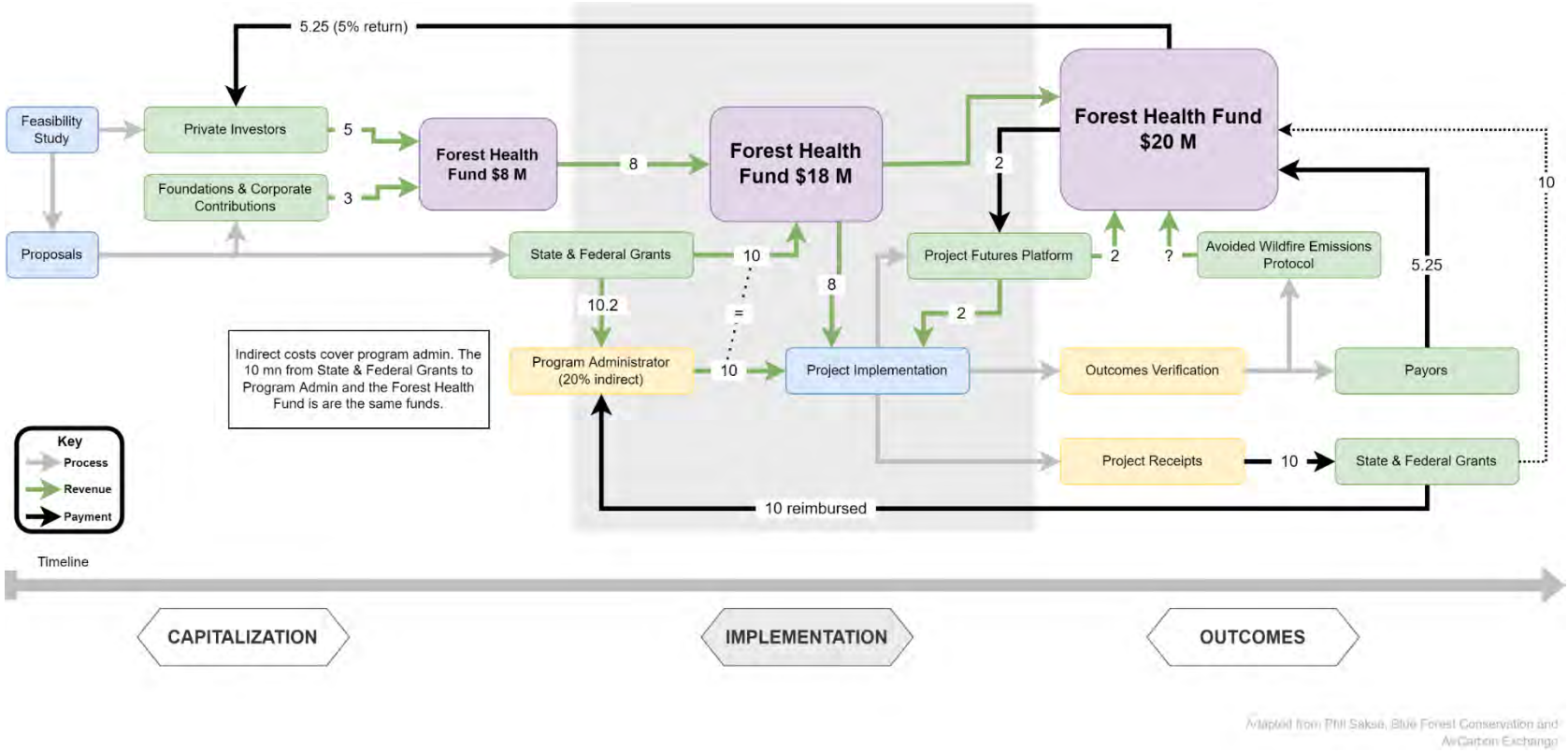


Figure 7. Forest Health fund showing capitalization and funding over time.

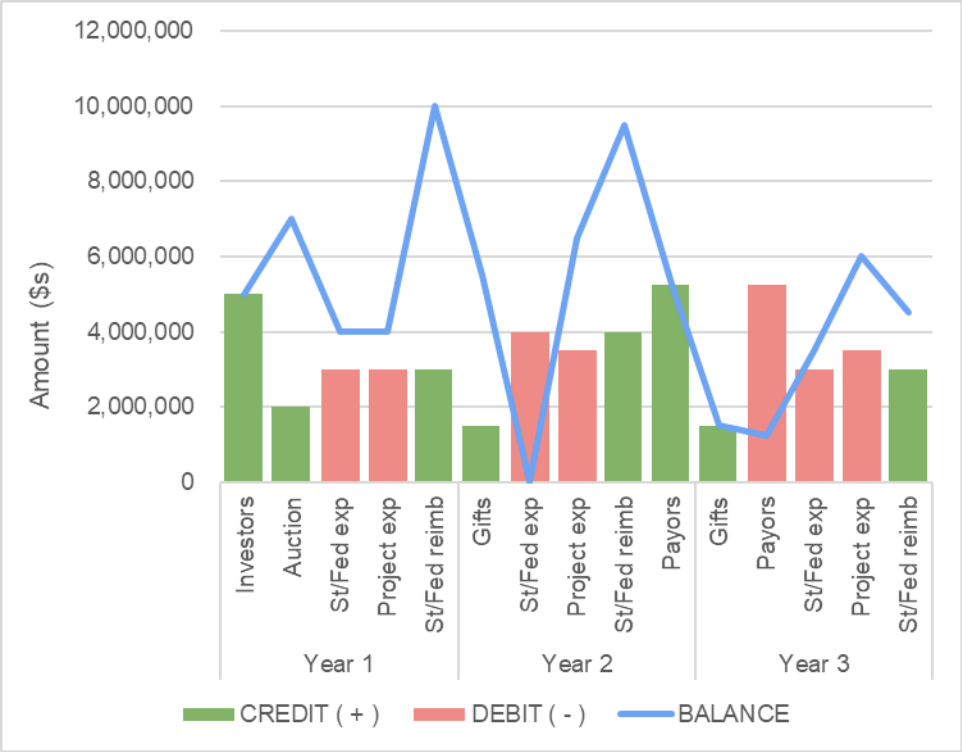


Figure 8. Forest Health Fund ledger during a 3-year project cycle.

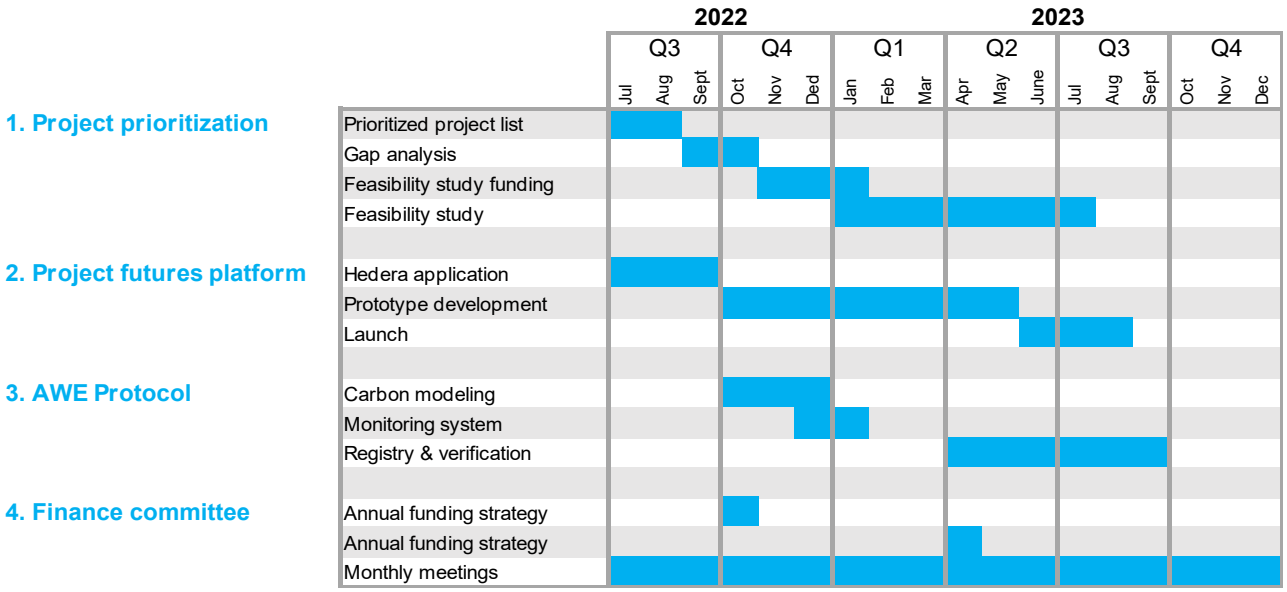
NEXT STEPS

The Burney-Hat Creek finance roadmap is the initial step in creating a funding portfolio for projects identified in the CalFRAME pilot for NE California and/or the BHC collaborative forest plan. A clearer picture will develop as the pilot's project list is refined and the funding needs are identified. At the same time, the finance subcommittee must continue contacting funders, private and public, and funding processes, such as the project futures platform, that could make a critical difference in funding projects as time progresses. These steps will be instrumental in taking the Forest Health Fund Model from theory to practice. The following next steps could include

- Create a full, prioritized projects list with accurate planning and implementation costs and secured funding. Project prioritization could include raising funds to conduct a Burney-Hat Creek Forest Health Forest Fund. The estimated cost of a study is approximately $100,000.
    - Continue efforts to obtain grant support from state and federal funding agencies for projects, program administration, and equipment purchase.
    - Undertake outreach to potential financial service providers, e.g., Blue Forest, Corvias, Environmental Impact Partners. This may include co-developing a blended finance strategy.
- Develop funding for and implement a project futures platform.
- Participate in the avoided wildfire emissions protocol
- Continue regular meetings of the finance work group to progress the funding narrative and needs and connect to private investors. Revise and update an annual funding strategy according to project needs and funding gaps.

An actionable timeline to complete these steps is shown in Table 1.

Table 1. BHC Finance Committee proposed workplan.



APPENDIX E

Phase 2 Project Summary Report:

URC Case Study in the American River Basin:
Homeless Access to Water, Sanitation, and Hygiene (WASH)

URC Case Study in the American River Basin: Homeless Access to Water, Sanitation, and Hygiene (WASH)

Sacramento River Funding Area
DACIP Underrepresented Community Pilot Project

SHOW UP Sacramento

URC Case Study in the American River Basin:
Homeless Access to Water, Sanitation, and Hygiene (WASH)

Summary
The Project Management Team worked with the American River Basin (ARB) Regional Water Management Group to develop a Case Study work plan and budget to specifically address the issue of homeless access to water and wastewater services in the ARB region in Phase 2.1 (Year 2). The homeless population in the ARB Integrated Regional Water Management (IRWM) Region is a key underrepresented community (URC) that was identified as a focus group with significant water and wastewater needs during Phase 1 (year 1) of the Sacramento River Funding Area (SRFA) Disadvantaged Community Involvement Program (DACIP). This case study was implemented in Phase 2.2 (years 3+) and included coordination of known entities already working with the homeless issue in ARB. This Case Study provided access to water, sanitation, and hygiene (WASH) for people experiencing homelessness via a fully contained, ADA accessible, mobile shower unit from August 2022 through February 2023. The project was highly successful while in operation, but was discontinued in February 2023 due to issues regarding site access as well as transportation for the unit, due to losing access to the truck that had been volunteered for this purpose.

Goal
The goal of this pilot project was to provide sanitation and shower facilities to people experiencing homelessness in order to improve public health and minimize the environmental impacts of camping near California waterways in Sacramento County.

Indirect benefits/objectives of this project include:

1. improvement to water quality in the lower American River;
2. recruitment of homeless people in the vicinity of the project unit into other support programs and shelters and;
3. the creation of an enduring local agency WASH Working Group to collaborate on addressing homeless water and wastewater needs as well as their impacts to ecosystems.

Project Overview
The project consisted of the purchase and mobilization of a mobile shower and sanitation facility that was intended to travel primarily to camps along the American River Parkway (ARP). The project would be implemented for at least 6.5 hours/day from Monday through Friday, providing about 24 showers per day (at about 10 minutes, 3 gallons per shower). Two attendants would be present during project implementation to clean the shower after each person and ensure an adequate supply of soap and other hygiene materials are available. The Unit was purchased by SHOW-UP Sac, a 501(c)(3) organization with existing connections to the ARB homeless population and experience running mobile units like this one.

The approach consisted of the following:

1. Recruit members for the WASH Working Group (WWG) and understand the specific interests and concerns of member Agencies.
2. Implement and monitor a pilot project under collaboration with the WWG.
3. Convene additional resource and advocacy stakeholders to refine or add to the pilot project.

Mobile Unit: The mobile unit consists of two stalls with a shower, sink and toilet, with one being ADA accessible. The unit includes two 125-gallon tanks (one waste, one fresh) for use when a source hook-up

is not available. A propane water heater is used for hot water. Electricity is provided by a generator. The generator is a small, quiet unit that does not require any special permits to use since it is for small application and not for commercial use. Safety equipment such as fire extinguishers and fuel spill kits are on site. The life expectancy of the mobile unit is 6 to 8 years.

Owners, Fiscal Sponsor, and Partners: The partners participating in this pilot project:

- ARB IRWM lead.
- Shower on Wheels for Unhoused Patrons (SHOW UP) of Be Encouraged, Inc., a 501(c)(3) organization. SHOW UP owns, operates, and insures the unit.
- Limited coordination support came from Sacramento County Department of Health Services (DHS).

Staffing and Training: SHOW UP/Be Encouraged Inc. managed the project implementation, including transporting the unit to and from scheduled locations with their organization's truck, setup, take down, and staffing. SHOW UP/Be Encouraged Inc. was responsible for training and supporting two staff with the day-to-day implementation during the grant period, and for fundraising to sustain the project beyond the grant period. Staff were hired through job postings, with preference for candidates experiencing or who have formerly experienced homelessness. Two full-time service staff and one full-time manager were hired for: 6.5 hours/day for running the unit, and 1.5 hours/day for driving, setup and breakdown.

Additional Funding/In-kind Support was provided from UC Davis for $100,000 in funding to support implementation for two years, and likely beyond. Many in-kind donations from wrap-around service providers (for clothing items etc.) and volunteer services for river clean-ups and medical clinics were also identified.

Outreach

The team completed approximately 4 hours of outreach prior to initiating operation of the WASH unit in August 2022. The outreach efforts were mostly confined to three different areas along the American River Complex: The Snake Pit, the area between D Street (Blue Diamond Almonds) and Northgate Boulevard, and The Island. The team also walked the surface streets surrounding the outreach location. Although most of the streets had been swept by the police just before this project started, a few people remained sleeping on the streets.

The outreach efforts included handing out snacks, hygiene items and engaging in conversation to build trust and recruit people to use the WASH unit.

- We asked: Have you heard of ShowUP Showers?
- Have you ever utilized ShowUP Showers?
- Would you utilize ShowUP Showers?
- Is hygiene important to you? Rank its importance.
- What is the biggest issue for you?
- How do you currently wash yourself?
- Are toilets important to you?
- If you could shower two times per week, would you?

Staff spoke for up to 10 minutes to approximately 40 individuals. They handed out snacks and hygiene items to approximately 60 individuals. The answers to the survey questions varied greatly but there are obvious similarities in what is important to the unhoused in American River Camps.

- Most individuals have heard of ShowUp or have someone in their social network who utilize these services.
- Toilets are a huge factor for the unhoused.Many individuals described it as a matter of dignity. There is a great concern regarding unsanitary conditions of defecating in the open near where they sleep.
- The camps are not transitory, meaning many people have been in the same spot for up to two years. There is a discernible sentiment of community—taking care of each other and sharing resources.
- Many individuals use wipes as their primary source of hygiene. Wipes are expensive and difficult to come by.
- Several individuals said they would utilize WASH showers if they were closer.
- Some people don't want to socialize outside of their immediate camp.

There are a few significant beneficial factors about the location on North 16th Street. First Step Communities is located on the same block. First Steps is a common touchpoint for the unhoused in Sacramento, coordinating services and housing options. This site is also across the street from The Quinn Cottages which is a subsidized community of former and historically unhoused individuals. Women's Empowerment is also on the same street. The Women's Empowerment program is an excellent job and healthy lifestyle training program for former and current unhoused women.

Outcomes

SHOW UP/Be Encouraged Inc. began running the WASH Program on August 24, 2022. The unit operated on Mondays and Wednesdays from 10am to 2pm at 116 N. 16th Street in the River District of Sacramento. As part of the regular hygiene program, SHOW UP provided new under garments, socks, and a hygiene kit to each person who elected to take a shower (provided by other funding described above). Additionally, a brown bag lunch (both days) and clean clothes (Wednesdays only) were provided as additional wrap-around services.

It was discovered during the first week of the WASH Program that 25% to 30% of the existing guests lived within 1.5 miles of the site in the American River Corridor. The breakdown was as follows: 30% ARC, 30% Midtown/Downtown (2-mile radius of ARC), 20% transient and 20% some type of temporary shelter. Guests were predominantly male of which 60% were African American. The team also initiated outreach focusing on attracting women to the site. The message for women was, "Bring a friend or neighbor." One of the regular guests told our staff that she had brought her neighbor (who had never been to our site) with her. It was a reminder that connection is so vital to the success of these types of programs.

Though the project was successful during its implementation, unfortunately, operation of the WASH unit had to be discontinued in February 2023 when issues arose regarding site access as well as transportation issues for the unit due to losing access to the truck that had been volunteered for this purpose.

Challenges

A major challenge for ongoing support of this project is the lack of local Agency support. None of the City and County organizations that are focused on the homeless issue within ARB ended up providing support for siting the unit, coordination in support of this project or any other project support once the unit was the agreed best next step. This was partly political and partly due to major staffing issues and Agency focus changes associated with the Covid-19 pandemic.

Changes to ARB IRWM lead staffing during this time also led to reduced communication across organizations and no enduring WASH Work Group emerged. The political pressure to not serve the homeless population and thereby make it easier to remain in an area appears to be the driving factor in limiting this interagency support for this and other similar projects.

The outreach efforts have exposed other challenges inherent to the unhoused who reside in the various American River Homeless Camps, including:

- Weather: Challenges of extreme weather in Sacramento included several days in a row of temperatures above 100 degrees.
- Transportation: Even though the project is less than a ½ mile from the Snake Pit and approximately ¾ mile from D Street/Northgate Camps, many of the residents are older (over 50 years old) with diminished physical and mental capability to walk this distance for this service.
- Safety: Many people were reluctant to leave their belongings for too long to come to the unit because there are real criminal elements in the American River Camps.
- Distrust: There is a perceivable and general distrust of outsiders. There is an element of pride for individuals who intentionally live off the gird.
- Addiction: Many unhoused individuals in the American River Camps are afraid to be away from their drug of choice for a prolonged period and so are reluctant to go into shelters or accept other services.

Mobile Trailer Specifications and Photo

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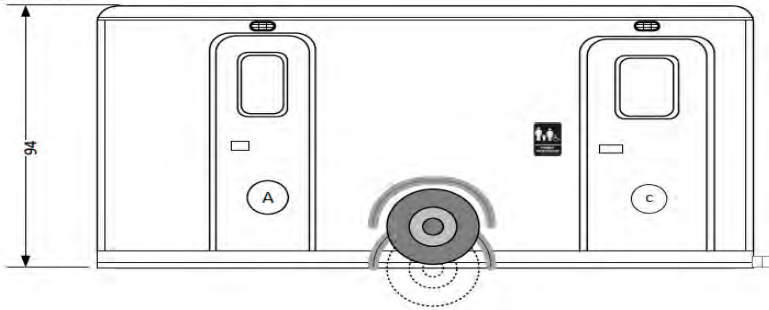
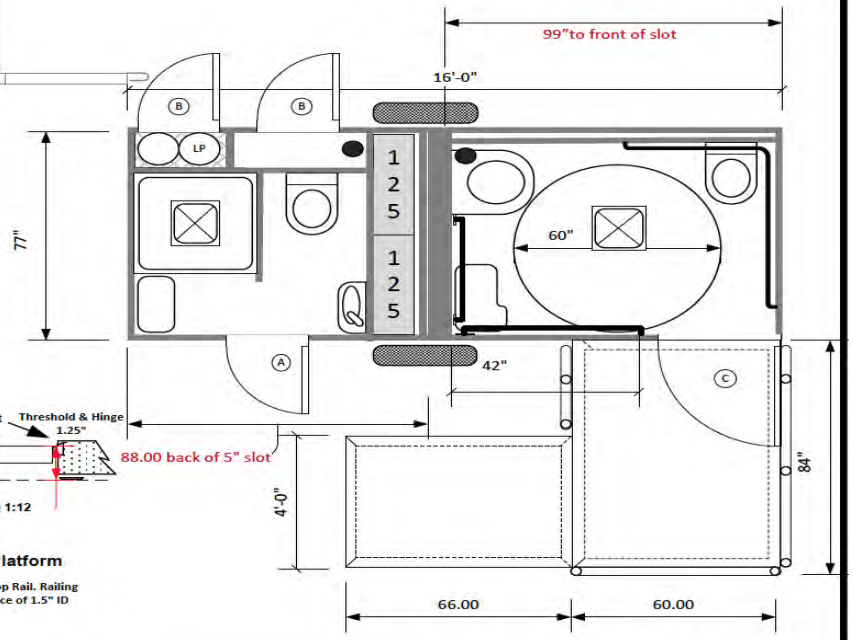
10.09.18



Ⓐ 78"x24" radius RH
Ⓑ 48"x24" radius LH
Ⓒ 80"x 36" radius RH

AMS GLOBAL

Omega Lite 16 ADA 2STS



Handrails
Top Height 36" above Platform

Top of Cross Bars 14"below bottom of Top Rail. Railing 1.5" OD Diameter and slides into 4" piece of 1.5" ID pipe welded to landing.

ADA compliant to 2010 ADA Guidelines
Lowers to ground
Removeable trailer tongue
Porcelain wall hung fixtures
250 gl tank storage Custom to your specifications
Rotationally molded vertical tanks
Stainless Steel Towel, tissue and soap dispensers
Rubber coin over steel flooring Electric Brakes
Obscure skylights in radius doors
Vandal resistant pebble finished wall panels
Double foil radiant barrier insulation
Retractable TorFlex suspension
16 x 6.75 14 ply Radial Tires & Easy-Lube bearings
All metal and composite construction
LED 50,000 hour burn automatic lighting and trailer lighting
Dawn to dusk LED porch lighting
One 20 amp 120 ac power inlet
Aluminum ADA ramp w/Stainless steel railing
2 Turbo Vent Fans Two 40# LP Tanks
LP on demand water heater

These restrooms are designed to be compliant with all current guidelines as we are aware of . Many guidelines have gray areas and points open to interpretation. Different entities may have differed interpretations or local differences. We suggest getting approvals of final plans from the authorities in the local the unit will be placed

JETS

Approved by

Mobile Trailer Specifications and Photo

Example of the trailer design. Note, the ADA unit is not pictured.