…A United Voice for the Santa Ana River Watershed

OWOW Steering Committee Members

Gil Botello, Convener | SAWPA Commissioner
Philip E. Paule, SAWPA Commissioner
Vicente Sarmiento, Orange County Supervisor
Amanda Carr, Orange County Supervisor Representative (Alt.)
Karen Spiegel, Riverside County Supervisor
Jesse Armendarez, San Bernardino County Supervisor
James Hessler, Altman Plants
Garry W. Brown, Orange County Coastkeeper
William Ruh, Regional Water Quality Control Board
John Scandura, Regional Water Quality Control Board (Alt.)
Vacant, San Bernardino County Municipal Representative
Wes Speake, Councilmember, City of Corona
Vacant, Orange County Municipal Representative

THIS MEETING WILL BE CONDUCTED IN A HYBRID FORMAT, OFFERING BOTH VIRTUAL PARTICIPATION AND IN-PERSON ATTENDANCE, PROVIDING AN OPPORTUNITY FOR PUBLIC COMMENT. ALL VOTES TAKEN WILL BE CONDUCTED BY ORAL ROLL CALL.

Meeting Access Via Computer (Zoom):	Meeting Access Via Telephone:
• https://sawpa.zoom.us/j/89633802942	• 1 (669) 900-6833
• Meeting ID: 896 3380 2942	• Meeting ID: 896 3380 2942

REGULAR MEETING OF THE OWOW STEERING COMMITTEE

SAWPA, 11615 STERLING AVENUE, RIVERSIDE, CA 92503

THURSDAY, FEBRUARY 27, 2025 – 11:00 A.M.

AGENDA

1. CALL TO ORDER | PLEDGE OF ALLEGIANCE (Gil Botello, Convener)

2. ROLL CALL

3. PUBLIC COMMENTS

Members of the public may address the Committee on items within the jurisdiction of the Committee; however, no action may be taken on an item not appearing on the agenda unless the action is otherwise authorized by Government Code §54954.2(b).

Members of the public may make comments in-person or electronically for the Committees' consideration by sending them to publiccomment@sawpa.gov with the subject line "Public Comment". Submit your electronic comments by 5:00 p.m. on Wednesday, February 26, 2025. All public comments will be provided to the Chair and may be read into the record or compiled as part of the record. Individuals have a limit of three (3) minutes to make comments and will have the opportunity when called upon by the Committee.

4. ITEMS TO BE ADDED OR DELETED

Pursuant to Government Code §54954.2(b), items may be added on which there is a need to take immediate action and the need for action came to the attention of the Santa Ana Watershed Project Authority subsequent to the posting of the agenda.

5. CONSENT CALENDAR

All matters listed on the Consent Calendar are considered routine and non-controversial and will be acted upon by the Committee by one motion as listed below.

A. APPROVAL OF MEETING MINUTES: NOVEMBER 21, 2024 3
Recommendation: Approve as posted.

6. INFORMATIONAL REPORTS

Recommendation: Receive for information.

A. PROPOSITION 1 ROUND 1 PROJECT HIGHLIGHT: RAITT AND MYRTLE PARK PROJECT (SC#2025.1) 7
Presenter: Rachel Gray and Craig Foster, City of Santa Ana

B. SANTA ANA RIVER WATERSHED CLIMATE ADAPTATION AND RESILIENCE PLAN ENGAGEMENT (SC#2025.2) 31
Presenter: Rachel Gray

C. SANTA ANA RIVER WATERSHED CLOUD SEEDING PILOT PROGRAM: YEAR 1 VALIDATION APPROACH (SC#2025.3) 49
Presenter: Rachel Gray

7. GENERAL MANAGER REPORT

8. CHAIR'S COMMENTS/REPORT

9. COMMITTEE MEMBERS' COMMENTS

10. REQUEST FOR FUTURE AGENDA ITEMS

11. ADJOURNMENT

PLEASE NOTE:
Americans with Disabilities Act: Meeting rooms are wheelchair accessible. If you require any special disability related accommodations to participate in this meeting, please contact (951) 354-4220 or zramirez@sawpa.gov. Notification at least 48 hours prior to the meeting will enable staff to make reasonable arrangements to ensure accessibility for this meeting. Requests should specify the nature of the disability and the type of accommodation requested.

Materials related to an item on this agenda submitted to the Committee after distribution of the agenda packet are available for public inspection during normal business hours at the SAWPA office, 11615 Sterling Avenue, Riverside, and available at www.sawpa.org, subject to staff's ability to post documents prior to the meeting.

Declaration of Posting

I, Zyanya Ramirez, Executive Assistant II for the Santa Ana Watershed Project Authority declare that on Thursday, February 20, 2025 a copy of this agenda has been uploaded to the SAWPA website at www.sawpa.gov and posted at the SAWPA office, 11615 Sterling Avenue, Riverside, California.

2025 OWOW Steering Committee Regular Meetings
Fourth Thursday of February, May, September, and November
(Note: All meetings begin at 11:00 a.m., unless otherwise noticed, and are held at SAWPA.)

February 2/27/2025 Regular Committee Meeting	**May** 5/22/2025 Regular Committee Meeting
September 9/25/2025 Regular Committee Meeting	**November** 11/20/2025 Regular Committee Meeting *

*Meeting date adjusted due to conflicting holiday.

…A United Voice for the Santa Ana River Watershed

OWOW STEERING COMMITTEE

REGULAR MEETING MINUTES
November 21, 2024

Committee Members	
Santa Ana Watershed Project Authority Representatives	
Brenda Dennstedt, Convener, Western Municipal Water District	Present
T. Milford Harrison, San Bernardino Valley Municipal Water District	Present
County Supervisor Representatives	
Vicente Sarmiento, Orange County Board of Supervisors	Absent
Karen Spiegel, Riverside County Board of Supervisors	Absent
Jesse Armendarez, San Bernardino County Board of Supervisors	Present
County Municipal Representatives	
Deborah Robertson, Mayor, City of Rialto	Absent
Wes Speake, Councilmember, City of Corona	Present
Nicholas Dunlap, Mayor Pro Tem, City of Fullerton	Absent
Business Community Representative	
James Hessler, Director of West Coast Operations, Altman Plants	Present
Environmental Community Representative	
Garry W. Brown, President, Orange County Coastkeeper	Present
Regional Water Quality Control Board Representative	
William Ruh, Regional Water Quality Control Board	Present

Others Present	
SAWPA COMMISSIONERS:	Bruce Whitaker, Gil Botello, and Jasmin Hall
SAWPA STAFF:	Ian Achimore, Jeff Mosher, Marie Jauregui, Pete Vitt, Rachel Gray, Rick Whetsel, Sara Villa, Zyanya Ramirez
OTHERS PRESENT:	Aaron Echols, IERCD; Amber Smalley, Riverside County; Andrew D. Turner, Lagerlof LLP; Christy Suppes, Orange County Public Works; Cyrus Galvan, US Forest Service; Kevin O'Toole, OCWD.

The OWOW Steering Committee meeting was called to order at 11:05 a.m. by Brenda Dennstedt, Convener, at the Santa Ana Watershed Project Authority, 11615 Sterling Avenue, Riverside, CA 92503.

1. CALL TO ORDER | PLEDGE OF ALLEGIANCE

2. ROLL CALL

3. PUBLIC COMMENTS

There were no public comments; there were no public comments received via email.

4. ITEMS TO BE ADDED OR DELETED

5. CONSENT CALENDAR

A. APPROVAL OF MEETING MINUTES: MARCH 28, 2024, MAY 23, 2024, and SEPTEMBER 26, 2024

B. PROPOSITION 1 ROUND 2 REPLACEMENT PROJECT (SC#2024.14)

MOVED, approve the Consent Calendar.

Result:	**Adopted by Roll Call Vote**
Motion/Second:	Milford/Ruh
Ayes:	Armendarez, Brown, Dennstedt, Harrison, Hessler, Speake, Ruh
Nays:	None
Abstentions:	None
Absent:	Dunlap, Sarmiento, Speake, Spiegel

6. NEW BUSINESS ITEMS

A. AMENDMENT TO THE OWOW STEERING COMMITTEE GOVERNANCE DOCUMENT - APPOINTMENT OF ALTERNATE REPRESENTATIVES (SC#2024.15)

Jeff Mosher referenced the memo and Amendment to the OWOW Steering Committee Governance Document, contained on pages 25-28 of the agenda packet.

The Santa Ana IRWMP "One Water One Watershed" Governance document dated January 15, 2013 (Governance Document), does not allow for alternate representatives to the OWOW Steering Committee. To ensure consistent representation, facilitate continuity, and enhance decision-making capabilities during times when primary members may be unavailable, it is recommended that the Governance Document be amended to allow for the appointment of alternate Committee members.

According to the Governance Document, the Steering Committee can recommend amendments to the SAWPA Commission. However, any proposed amendments to the Governance Document will require approval by the SAWPA Commission.

The Committee expressed approval and agreed that this is the right direction for future engagement. Committee Member Harrison recommended the appointment of a co-convener. It was clarified that the second SAWPA representative serves as the convener in the absence of the designated convener.

7. INFORMATIONAL REPORTS

Recommendation: Receive for information.

A. PROPOSITION 1 ROUND 1 PROJECT HIGHLIGHT: SANTA ANA MOUNTAINS WATERSHED PROTECTION PROJECT (SC#2024.16)

Rachel Gray presented Cyrus Galvan from the US Forest Service. Mr. Glavan provided a presentation titled Santa Ana Mountains Watershed Protection Project contained in the agenda packet on pages 31-60.

This item was for discussion purposes; no action was taken on Agenda Item No. 7.A.

B. QUARTERLY MEETING SCHEDULE FOR THE OWOW STEERING COMMITTEE (SC#2024.17)

Jeff Mosher referenced the memo number 2024.17, contained on page 73 of the agenda packet.

To enhance efficiency, the OWOW Steering Committee meetings will shift to a quarterly schedule starting in 2025. Meetings will take place on the fourth Thursday of February, May, September, and November at 11:00 AM, unless otherwise noted. They will continue to be held at SAWPA, with virtual participation available for Committee Members.

This item was for discussion purposes; no action was taken on Agenda Item No. 6.B.

C. SANTA ANA RIVER WATERSHED CLOUD SEEDING PILOT PROGRAM: YEAR 2 OPERATIONS (SC#2024.18)

Rachel Gray provided a presentation titled Santa Ana River Watershed Cloud Seeding Pilot Program: Year 2 Operations, contained in the agenda packet on pages 77-92.

SAWPA staff will be postponing Year 2 Operations (November 15, 2024 – April 15, 2025) of the Santa Ana River Watershed Cloud Seeding Pilot Program. This decision is based on the potential for debris flows from burn scars caused by recent wildfires and input received from the three Flood Control Districts.

Mrs. Gray provided background on the four-year pilot program, which began in 2023, and explained that seeding operations are designed to enhance precipitation in higher-elevation target areas. However, based on Seeding Suspension Criteria, which consider burn scar risks, SAWPA consulted with the Flood Control Districts, who recommended suspending operations for the upcoming season.

This item was for discussion purposes; no action was taken on Agenda Item No. 6.C.

D. ARUNDO DONAX REMOVAL IN THE SANTA ANA RIVER BASIN HEADWATERS PROJECT OVERVIEW (SC#2024.19)

Ian Achimore provided a presentation titled Arundo donax Removal in the SAR Basin Headwaters Project Overview, contained in the agenda packet on pages 77-92.

Mr. Achimore providing an update on the watershed-wide project focused on the headwaters of the Santa Ana River. He was joined by Aaron Echols, Restoration Ecologist at the Inland Empire Resource Conservation District (IECRD), who is partnering on the Arundo donax (Giant Reed) removal project. The presentation covered background information on the invasive species, its impact on the watershed, and ongoing efforts to manage its spread. Arundo donax grows rapidly, consumes large amounts of water, is highly flammable, and alters water flow, contributing to flooding. Its roots spread downstream, making management a challenge, as current efforts are limited to specific areas, leaving gaps where the plant can re-establish. SAWPA has been using deep learning software to map Arundo's presence across the watershed. The project, which started in 2022, focuses on the headwaters where IECRD conducts surveys, removes the species, and monitors progress for three years, followed by reapplication. The project is funded by a 5-year, $150,000 task order contract with SAWPA.

Aaron Echols, Restoration Ecologist at the Inland Empire Resource Conservation District (IECRD), provided an update on the Arundo donax removal project. IECRD, a local public agency, operates in the Upper Santa Ana River Watershed and is managing the project with a dedicated in-house team of nine staff trained in restoration and herbicide

applications. Mr. Echols shared that the scope of the project has expanded from four areas to 15 as more Arundo was identified. The work focuses on removing or treating Arundo in various tributaries of the Santa Ana River. The team uses a combination of herbicide treatments and plant removal, with some cases offering native plants to property owners as part of the restoration effort. He discussed lessons learned, including the increased use of foliar herbicide application for more effective plant control and the challenges of managing the plant's ability to propagate from small fragments. He also noted the importance of right-of-entry letters for gaining access to private properties and the need for strategic outreach efforts to engage landowners.

Committee Member Brown inquired about the potential adverse impacts of the herbicide used to control Arundo donax. Mr. Echols explained that the herbicides are low-risk, caution-level products with minimal impact on animals and insects, with the main concern being the surfactant, which can be toxic to aquatic organisms. As a precaution, applications are avoided near water. He also noted that Mazapyr, one of the herbicides used, can be absorbed by soil and affect nearby plants, so its use is limited to areas with native species. When asked about herbicide use near beehives, Mr. Echols responded that although beehives have not been encountered in the current project, they take care to avoid impacting honeybees. The amount of herbicide used is small compared to agricultural applications, and the likelihood of lethal effects on bees is low.

This item was for discussion purposes; no action was taken on Agenda Item No. 6.D.

8. GENERAL MANAGER REPORT

No additional comments.

9. CONVENER'S COMMENTS/REPORT

Convener Dennstedt shared plans for a field trip in 2025 to visit projects, review completed work, and assess the funds allocated to achieve the organization's goals and mission. Efforts will be made to coordinate with all stakeholders to ensure a successful event with strong attendance.

10. COMMITTEE MEMBERS' COMMENTS

There were no comments.

11. REQUEST FOR FUTURE AGENDA ITEMS

There were no comments.

12. ADJOURNMENT

The meeting ended at 12:12 p.m.

APPROVED: November 21, 2024

_____

Gil Botello, Convener

Attest:

_____

Zyanya Ramirez, Executive Assistant II

OWOW STEERING COMMITTEE MEMORANDUM NO. 2025.1

DATE: February 27, 2025

TO: OWOW Steering Committee

SUBJECT: Proposition 1 Round 1 Project Highlight: Raitt and Myrtle Park Project

PREPARED BY: Rachel Gray, Water Resources and Planning Manager

RECOMMENDATION
Receive and file.

DISCUSSION
The State provided funding from the Water Quality, Supply, and Infrastructure Improvement Act of 2014 (Proposition 1) to SAWPA to assist in financing the projects, which are included in and implemented in an adopted Integrated Regional Water Management Plan (IRWM Plan), pursuant to Chapter 7. Regional Water Security, Climate, and Drought Preparedness (Wat. Code, § 79740 et seq.).

This project features the construction of a 1,600-square-foot bioretention basin with no underdrain and a large subsurface infiltration gallery (Stormchamber) in a new 1.18-acre park. Combined, the Best Management Practices (BMPs) are designed to capture and infiltrate approximately 5.3 acre-feet per year of stormwater from the 9.87-acre drainage area. Per the North Orange County Municipal Separate Storm Sewer System (MS4) National Pollutant Discharge Elimination System (NPDES) Permit (Order No. R8-2009-0030 as amended by Order No. R8-2010-0062), it is a new development/significant redevelopment requirement to treat stormwater runoff from the 85th percentile, 24-hour storm generated on the park parcel. In this part of Santa Ana, the 85th percentile, 24-hour storm is 0.75 inches. This project far exceeds that standard, as the BMPs are designed for a 1.75-inch storm and will capture and infiltrate stormwater runoff from the park parcel itself and the surrounding residential drainage area. Overall, the North Orange County MS4 NPDES Permit requirement only accounts for approximately 2.5% of the total volume of stormwater capture.

This project is located in the Newport Bay Watershed. Newport Bay has multiple Total Maximum Daily Loads (TMDLs) in the implementation phase. Therefore, stormwater infiltration in the park will assist with TMDL compliance, improve water quality, and increase regional water self-reliance. This project also includes drought-tolerant landscaping, walkways, drinking water fountains, and interpretive signage promoting watershed, water quality, and drought-tolerant landscaping education. Additional park elements and recreational components, outside the scope of work of this grant project, will also be constructed at the park during the construction phase. These components are not included in this work plan or grant application.

This multi-benefit project addresses all of the goals in the Integrated Regional Water Management Plan for North and Central Orange County - the OC Plan - which includes providing adequate and reliable water supplies, protecting and enhancing water quality, restoring ecosystems and improving native habitat, integrating flood management, improving quality of life in Orange County, and addressing climate change.

Attachments:
1. PowerPoint Presentation

Page Intentionally Blank

RAITT & MYRTLE PARK PROJECT

PROPOSITION 1 IRWM (2019)

CRAIG FOSTER, EIT, CPSWQ, QSD/P

NPDES MANAGER

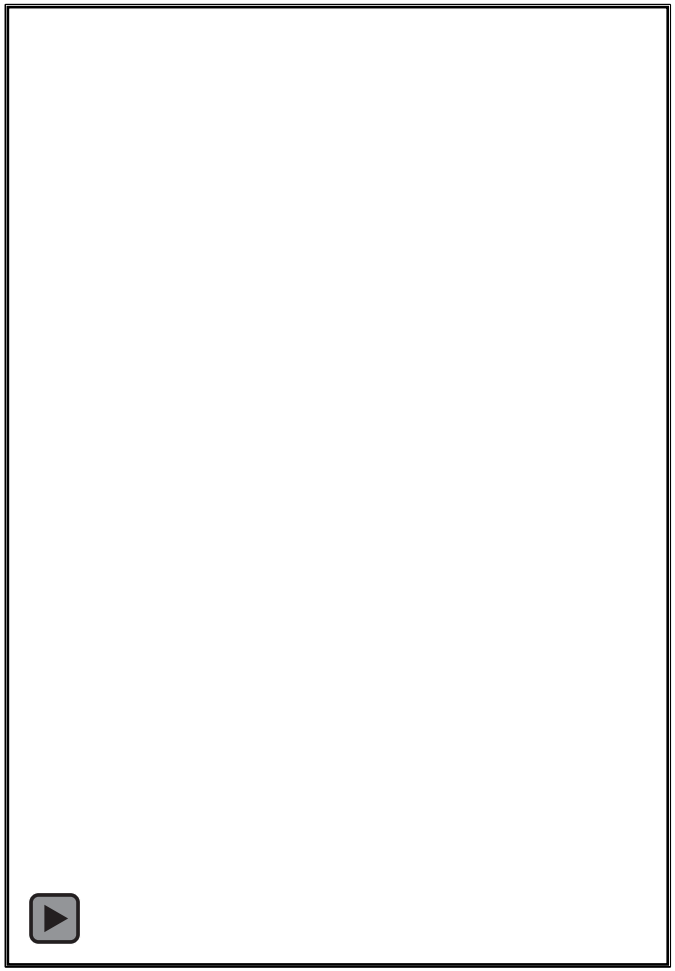
CITY OF SANTA ANA

PUBLIC WORKS AGENCY

FEBRUARY 27, 2025

PRESENTATION OVERVIEW

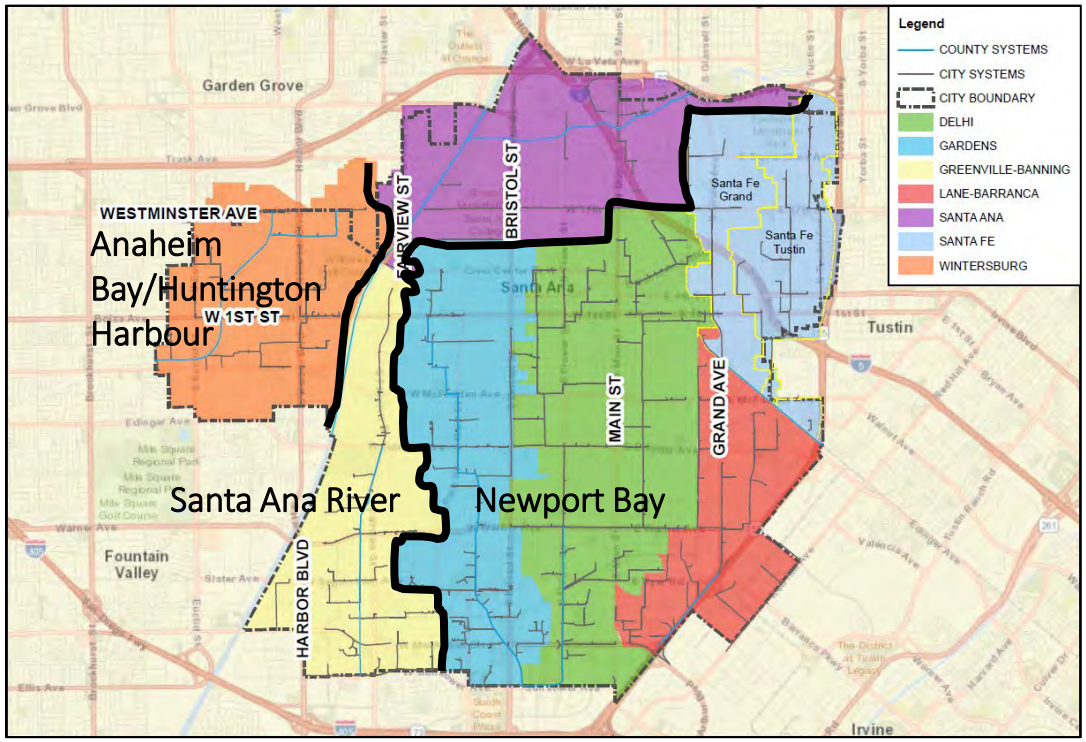
- City of Santa Ana Watersheds
- Benefits of Stormwater Capture
  - The OC Plan
  - 2022 CA Water Supply Strategy
  - Socioeconomic Value of Urban Stormwater Capture (CASQA)
  - Drought
- Raitt & Myrtle Park Project
  - Final Design
  - Construction
  - Post-Construction Monitoring
- Questions



View Stormwater is a Resource!

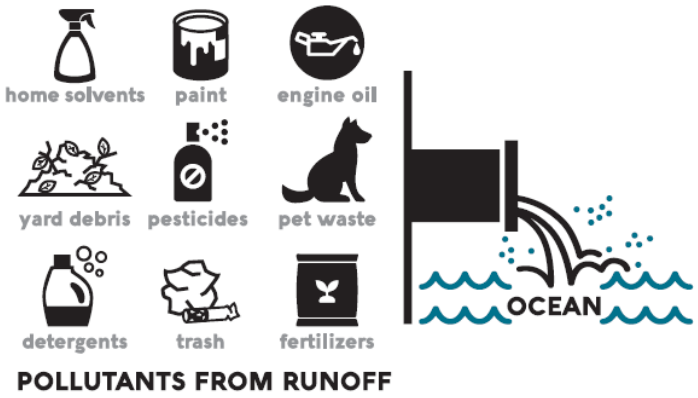
CITY OF SANTA ANA WATERSHEDS

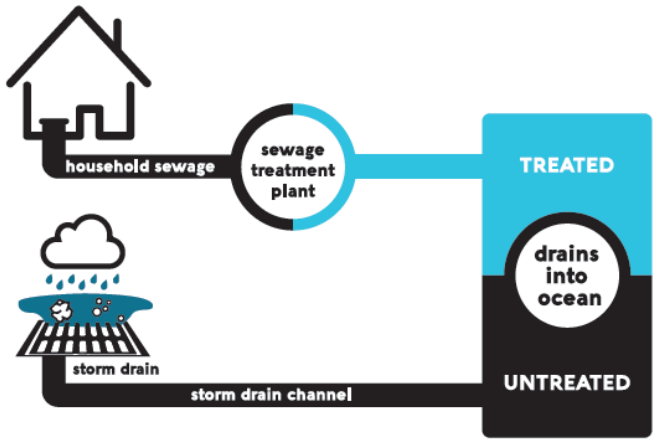
- Santa Ana is 27.5 sq-mi and is one of the most densely populated cities within the County
- Santa Ana is located within three watersheds:
  - Anaheim Bay/Huntington Harbour (orange)
  - Santa Ana River (yellow & purple)
  - Newport Bay (16.47 sq-mi / 59.8% of City)
    - 303(d) list and TMDLs for several pollutants, including: sediment, nutrients, fecal coliform bacteria, organochlorines, and copper
    - High priority area for stormwater capture projects due to WQ impairments



BENEFITS OF STORMWATER CAPTURE

- The Municipal NPDES Permit (R8-2009-0030) requires permittees to develop and implement programs and policies necessary to **reduce the discharge of pollutants in urban stormwater runoff to waters of the US to the maximum extent practicable**
- An effective method in reducing stormwater pollution is capturing stormwater runoff for treatment, infiltration, or reuse
- In addition to the typical water benefits, stormwater capture provides numerous community benefits as well
  - Enhanced aesthetics
  - Flood reduction
  - New recreational opportunities
  - Reducing urban heat island effect
  - Improving air quality





THE OC PLAN

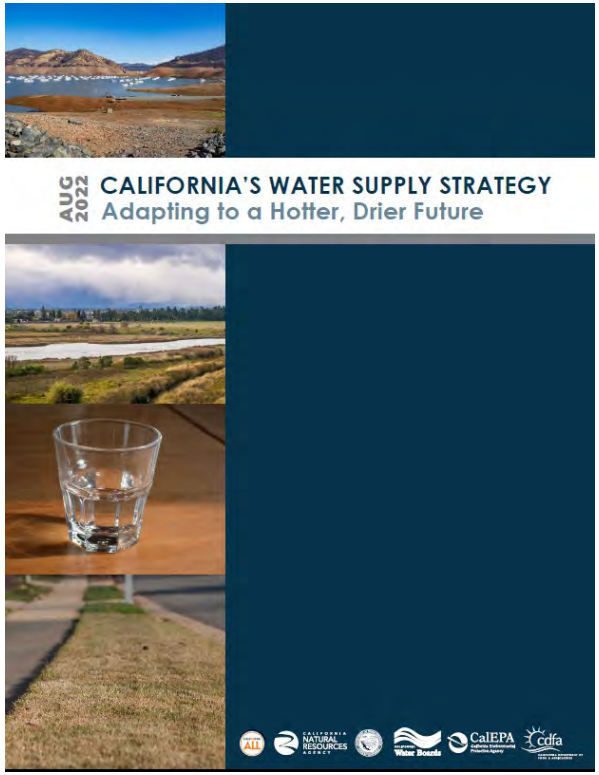
- The OC Plan was completed in 2018 and is the Integrated Regional Water Management (IRWM) Plan for North and Central Orange County
- The OC Plan outlines Statewide Priorities and goals, objectives, and strategies for IRWM projects in North and Central Orange County
- City designs its stormwater capture projects around the goals of The OC Plan

The OC Plan Goals	Implementation of Goals
1. Provide Adequate and Reliable Water Supplies	Stormwater infiltration. Stormwater eventually percolates down into the local groundwater basin, reducing reliance on imported water
2. Protect and Enhance Water Quality	Stormwater treatment or infiltration. Reduction of pollutant load to receiving waters
3. Restore Ecosystems and Improve Native Habitat	Enhancement of existing green space or installation of a new green space with drought-tolerant landscaping, trees, etc.
4. Integrate Flood Management	Increase capacity of stormdrain infrastructure and/or stormwater infiltration (removal of flows from stormdrain system)
5. Improve the Quality of Life in Orange County	Installation of recreational features, pedestrian pathways, bicycle lanes, educational signage, and community art features
6. Address Climate Change	Reducing reliance on imported water via stormwater infiltration. Installation of new green space in dense urban environment to increase photosynthesis (Carbon sequestration) and reduce urban heat island effect

The OC Plan, 2018

2022 CA WATER SUPPLY STRATEGY

- In August 2022, the state issued California's Water Supply Strategy. Capturing stormwater is one of the strategies



2.5 Support local stormwater capture projects in cities and towns with the goal to increase annual supply capacity by at least 250,000 acre-feet by 2030 and 500,000 acre-feet by 2040.

Over the last 30 years, an average of approximately 324,000 acre-feet of stormwater a year has been captured and recharged in communities in the South Coast alone. While this value varies from year to year, during the exceptionally wet winter of 2004-05 over 900,000 acre-feet of runoff was captured and infiltrated into the local groundwater basins.

The size, cost, and feasibility of stormwater capture projects vary greatly by location. It is extremely difficult for stormwater agencies to accurately measure stormwater capture volume and to predict potential due to uncertainties with annual precipitation.

Implementation Steps:

- Through permitting and funding, the State will incentivize local agencies to develop stormwater capture projects and help offset the cost of completing these projects, including through stormwater crediting systems to encourage public-private partnerships.

To ensure California has the water needed for generations to come, this Strategy includes:

- **Create storage space for up to 4 million acre-feet of water**, allowing us to capitalize on big storms when they do occur and store water for dry periods
- **Recycle and reuse at least 800,000 acre-feet of water per year by 2030**, enabling better and safer use of wastewater currently discharged to the ocean
- **Free up 500,000 acre-feet of water** through more efficient water use and conservation, helping make up for water lost due to climate change
- Make new water available for use by **capturing stormwater and desalinating ocean water and salty water in groundwater basins**, diversifying supplies and making the most of high flows during storm events

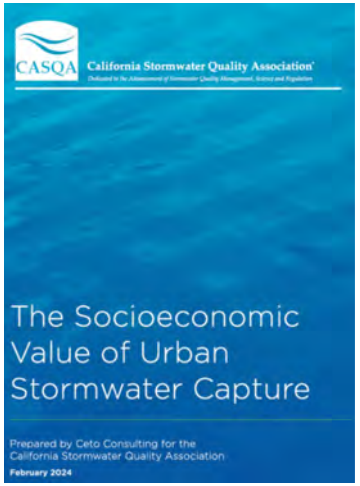
CA Water Supply Strategy, 2022

CASQA REPORT

- In February 2024, the California Stormwater Quality Association (CASQA) issued a report titled "The Socioeconomic Value of Urban Stormwater Capture"
- Report studied the benefits of stormwater capture not previously estimated:
  - ✓ Community Health
  - ✓ Water Quality
  - ✓ Green Space
  - ✓ Wetlands
  - ✓ Recreation
- All projects have a one-year payoff (Benefit/Cost Ratio >1). The annual value of benefits exceeded the total cost of the projects
- Typical cost/benefits analyses include multi-year periods, such as 20-years. Highly unusual to find a one-year return
- Indicates underinvestment in stormwater capture. Public investment may yield high returns in terms of community benefits

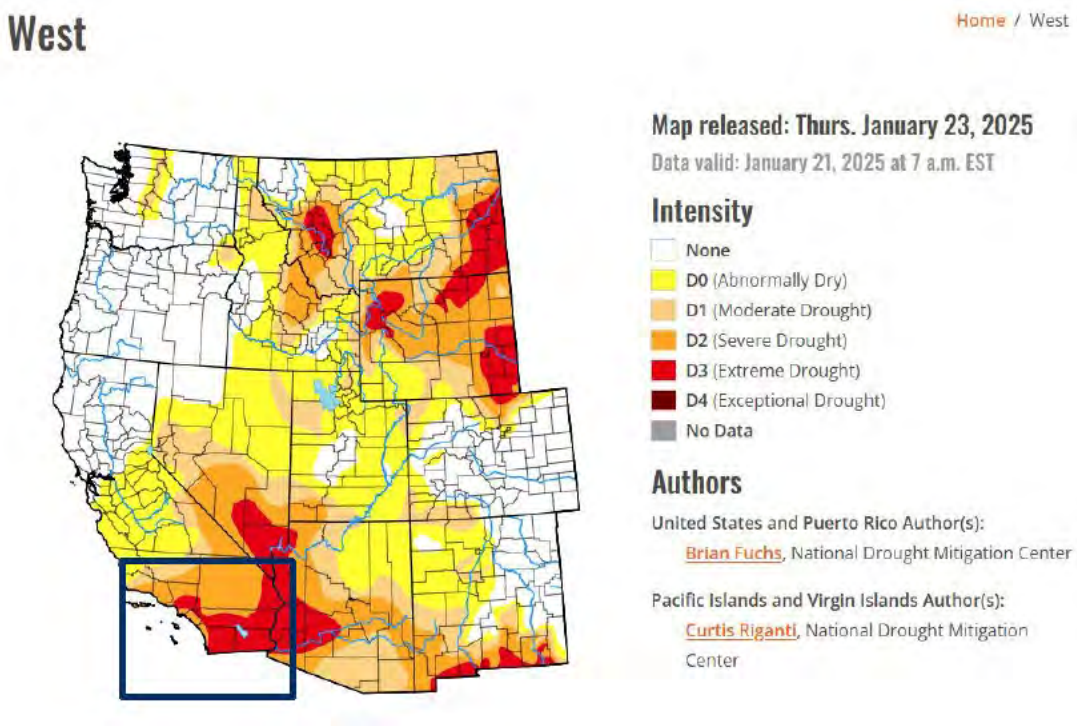
Table E2: Stated costs of each urban stormwater capture project selected as a case study in this analysis, annual socioeconomic benefits, and cost/benefit ratio comparison.

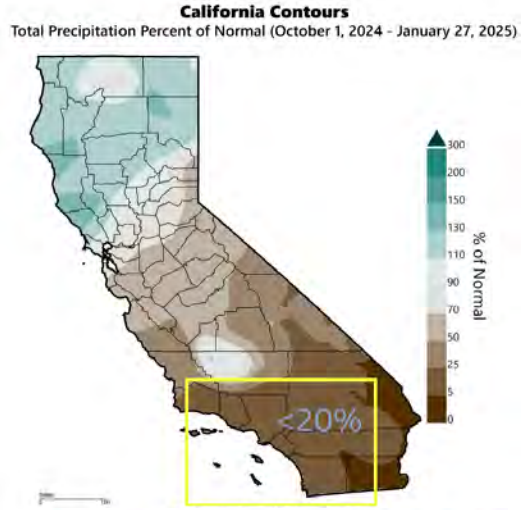
Project	Cost Per Project	Non-Market Value of Socioeconomic Benefits (annually)	Benefit/Cost Ratio
Earvin "Magic" Johnson Park	$83 Million	$88 Million	1.06
San Mateo Sustainable Streets - Average Project	$1.5 Million	$3.2 Million	2.13
Orange Memorial Park	$27.4 Million	$47.0 Million	1.72
Fresno Recreation Basins – Average Project	$5.8 Million	$12.1 Million	2.09



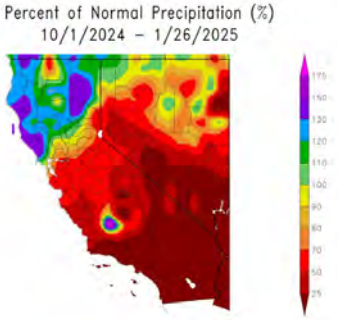
CASQA, The Socioeconomic Value of Urban Stormwater Capture, 2024

DROUGHT





- Most of Socal under 20 percent of 30 year average
- Record driest start to water year (October 1) for most areas

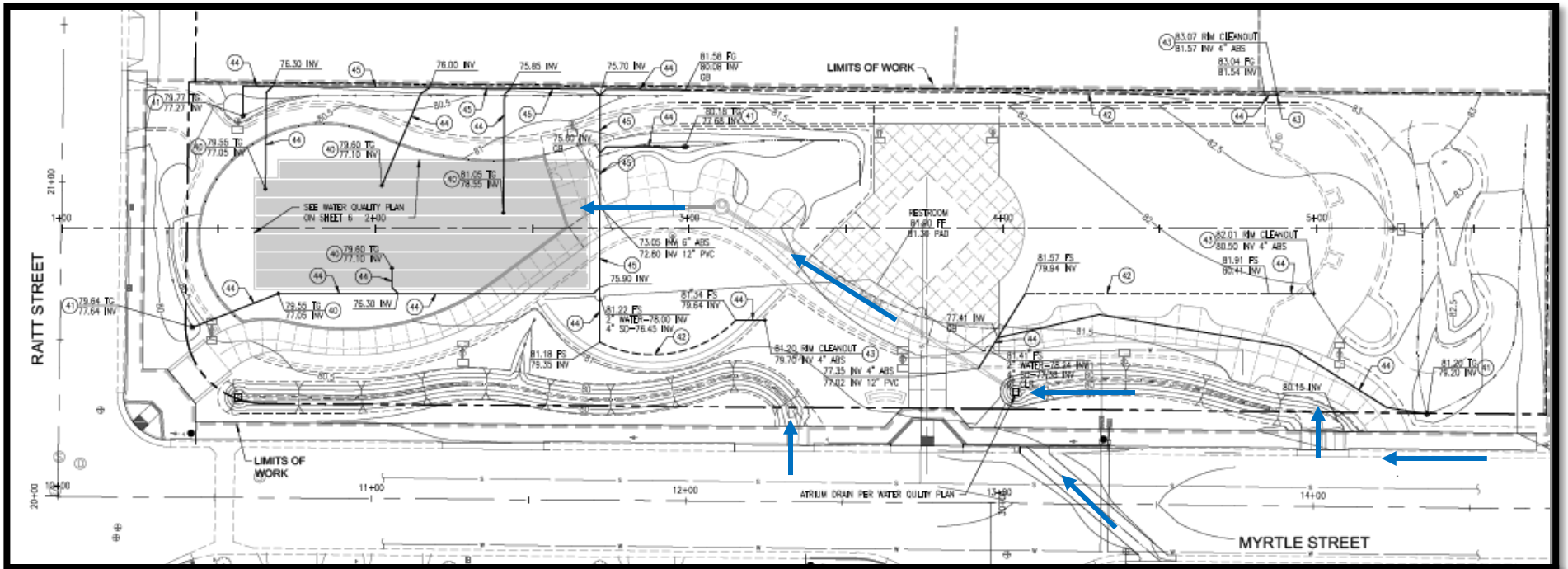


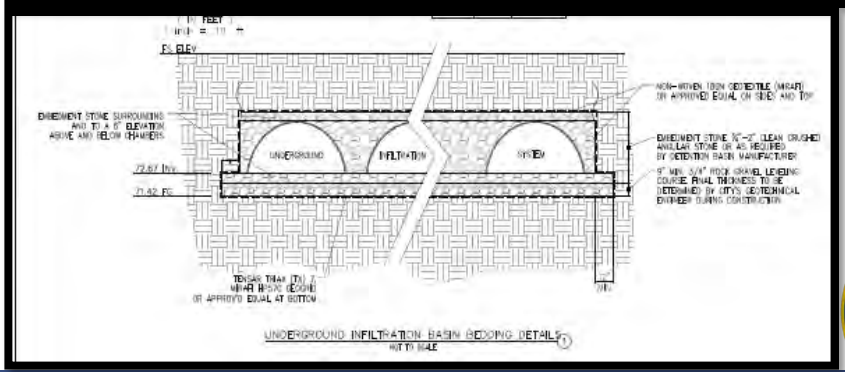
National Weather Service, San Diego (January 25, 2025)

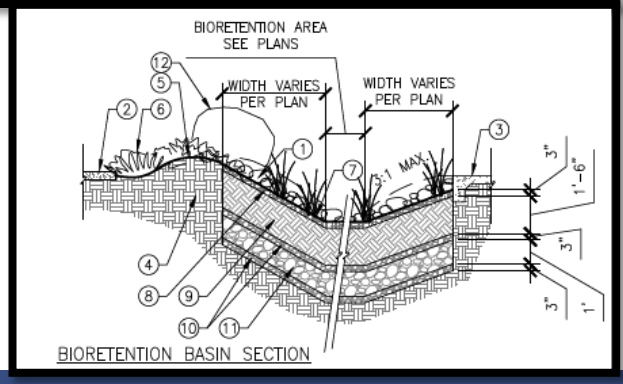
RAITT & MYRTLE PARK PROJECT

- Current project status – construction complete, ongoing monitoring
- New 1.18-acre park that features a subsurface stormwater infiltration system, two bioretention basins, drought tolerant landscaping, interpretive signage, pedestrian pathways, and recreational features
- Stormwater BMPs are designed to capture and infiltrate runoff from the park and surrounding neighborhood (total drainage area of approximately 10 acres)
- Approximately 5.3 acre-feet (1.73 million gallons) per year of stormwater capture
- **$1,675,000** Proposition 1 Integrated Regional Water Management Grant (2019 – Round 1) from the Department of Water Resources

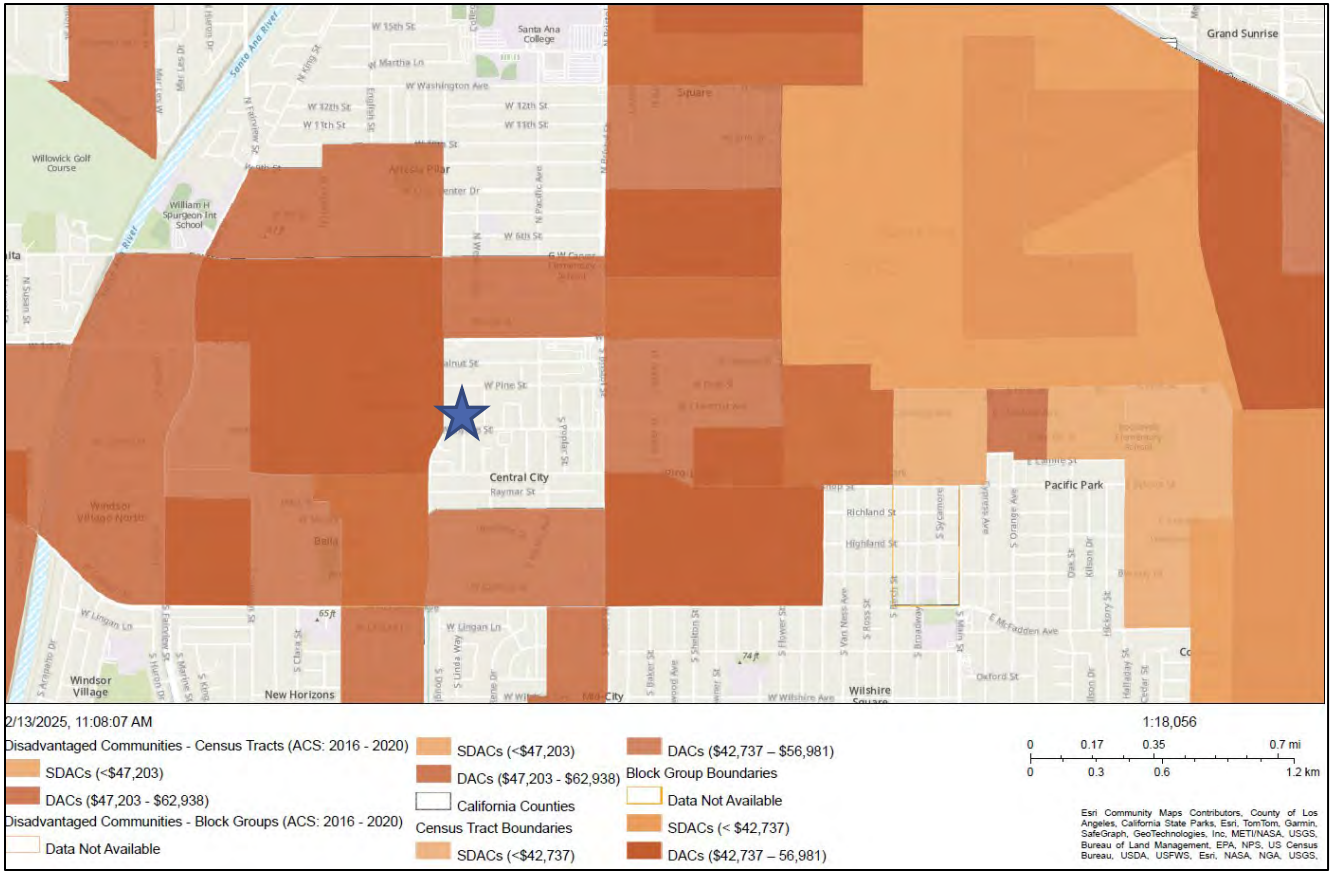
RAITT & MYRTLE PARK PROJECT
FINAL DESIGN







RAITT & MYRTLE PARK PROJECT
FINAL DESIGN



DWR DAC Mapping Tool

RAITT & MYRTLE PARK PROJECT
CONSTRUCTION

Subsurface infiltration system

Bioretention Basin #2

RAITT & MYRTLE PARK PROJECT
CONSTRUCTION

Subsurface infiltration system

RAITT & MYRTLE PARK PROJECT
CONSTRUCTION

Bioretention Basin #1

Bioretention Basin #2

RAITT & MYRTLE PARK PROJECT
CONSTRUCTION

Park Amenities

10/17/23 Ribbon-Cutting

RAITT & MYRTLE PARK PROJECT
CONSTRUCTION

Project Overview

RAITT & MYRTLE PARK PROJECT
POST-CONSTRUCTION MONITORING

Bioretention Basin #2 (During Storm)

Bioretention Basin #2 (Post-Storm)

RAITT & MYRTLE PARK PROJECT
POST-CONSTRUCTION MONITORING

RAITT & MYRTLE PARK PROJECT
POST-CONSTRUCTION MONITORING

2024 Post-Performance Report

- Precipitation data from the Santa Ana Fire Station rain gauge used to calculate the total treated volume and pollutant load reductions (https://www.ncdc.noaa.gov/cdo-web/datasets/GHCND/stations/GHCND:USC00047888/detail)

Project Drainage Area (A)	9.87	ac
Runoff Coefficient (C)	71.41%	
Design Storm Depth (d)	1.75	in
Total Design Capture Volume per Design Storm Event (V)	1.03	ac-ft

V (ac-ft) = C * d * A * 1/12 in/ft

2024 Total Precipitation	11.95	in.
2024 Total Treated Volume	**5.69**	**ac-ft**
2024 Total Overflow Volume	1.33	ac-ft

- Original grant application estimated 5.3 AFY average stormwater capture. **2024 capture volume exceeded this by 7.4%!**

RAITT & MYRTLE PARK PROJECT
POST-CONSTRUCTION MONITORING

2024 Post-Performance Report

2024 Pollutant Load Calculation (lb)						
Analyte	**Concentration Units**	**Concentration Value (C)**	**Pollutant Generated (lb)**	**Pollutant Treated (lb)**	**Pollutant Overflowed (lb)**	**Pollutant Reduction**
Ammonia (as N)	mg/L	3.400	64.90	**52.57**	12.33	81%
Copper, Dissolved	mg/L	0.01020	0.19	**0.16**	0.036982026	81%
Lead, Dissolved	mg/L	0.00037	0.01	**0.01**	0.001352382	81%
Nitrate as N	mg/L	0.91	17.37	**14.07**	3.299376789	81%
Nitrite as N	mg/L	0.07	1.26	**1.02**	0.239295459	81%
Phosphorus, Total	mg/L	0.183	3.49	**2.83**	0.663501047	81%
Total Kjeldahl Nitrogen	mg/L	8.56	163.38	**132.35**	31.03589595	81%
Total Suspended Solids	mg/L	226.00	4313.61	**3494.21**	819.405664	81%
Zinc, Dissolved	mg/L	0.06290	1.20	**0.97**	0.228055824	81%
2024 Pollutant Load Calculation (MPN)						
Analyte	**Concentration Units**	**Concentration Value (C)**	**Pollutant Generated (MPN)**	**Pollutant Treated (MPN)**	**Pollutant Overflowed (MPN)**	**Pollutant Reduction**
Enterococcus	MPN/100mL	9800.00	8.48E+11	**6.87E+11**	1.61E+11	81%
Fecal Coliform	MPN/100mL	350.00	3.03E+10	**2.45E+10**	5.76E+09	81%
Total Coliform	MPN/100mL	5400.00	4.68E+11	**3.79E+11**	8.88E+10	81%

QUESTIONS?

Craig Foster, EIT, CPSWQ, QSD/P
cfoster@santa-ana.org
(714) 647-5659

https://www.santa-ana.org/stormwater-management/

https://h2oc.org/

Page Intentionally Blank

OWOW STEERING COMMITTEE MEMORANDUM NO. 2025.2

DATE: February 27, 2025

TO: OWOW Steering Committee

SUBJECT: Santa Ana River Watershed Climate Adaptation and Resilience Plan – Engagement

PREPARED BY: Rachel Gray, Water Resources and Planning Manager

RECOMMENDATION
Receive and file.

DISCUSSION
Staff developed a strategy to supplement the One Water One Watershed (OWOW) Plan with a Regional Climate Adaptation and Resilience Plan (Plan). The Plan would define watershed-scale climate risks and vulnerabilities, develop climate adaptation strategies, develop a portfolio of planned and potential resiliency projects, connect the equity outcomes for underrepresented communities, and strengthen broad-based partnerships that advance shared interests across the watershed.

The Plan would advance multi-beneficial projects with a diverse range of stakeholders with a common goal to increase resilience in the watershed. The regional Plan would daylight the interconnectivity of individual and regional projects and demonstrate the upstream/downstream benefits while building on types of stakeholders engaged in the plan development. The regional Plan would also consider affordability risks and underrepresented communities related to climate vulnerabilities and establish a clear connection between resilience initiatives and equitable outcomes. This effort would provide benefits to a wide array of stakeholders (member agencies, utilities, cities, communities) and provide a mechanism for future funding from a variety of funding sources for implementation of projects that advance watershed resilience.

The roles of each entity are described below:

- SAWPA (lead applicant) brings a proven track record of working with public agencies in the region; developing, tracking and implementing large-scale grant programs; and supporting integrated water resources management in the SARW. SAWPA will provide administrative and technical oversight of the project.
- ISC3 (co-applicant) brings a proven track record of connecting and building the capacity of local government, utilities, and CBOs across the region. ISC3 is responsible for managing CBOs and soliciting community feedback in the watershed.
- Soboba (co-applicant) brings a proven track record supporting integrated water resources management planning and engaging with tribal communities. Soboba will provide the tribal perspective on climate vulnerabilities, underlying risk factors, and identifying adaptation strategies in support of tribal communities.
- Consultant: facilitate public agency engagement and provide support to co-applicants, develop plan by performing a data request and implementing an engagement strategy.

The purpose of the request for proposals (RFP) was to seek a climate-resilience experienced consultant whose approach is efficient, organized, and appropriately scaled to the planning-level analysis needed to develop the Santa Ana River Watershed CARP. The Consultant is expected to assemble a dedicated team that possesses communication skills and expertise in climate

resilience planning. SAWPA expects all analyses, data, original graphics, and editable copies of all written reports to be turned over to the SAWPA at the completion of the project; no portion of the CARP will be proprietary.

On December 3, 2024, the SAWPA Commission approved the issuance of a request for proposals to engage a consultant for the Development of a Climate Adaptation and Resilience Plan for the Santa Ana River Watershed. Proposals were received by the amended deadline of January 23, 2025, from AtkinsRealis, CDM Smith, Dudek, Somos Group, Woodard & Curran, Rincon Consultants, Inc., Brendle Group, SWCA Environmental Consultants, Geosyntec Consultants, Tetra Tech, and Water System Consulting. SAWPA and its co-applicants, Soboba and ISC3, consisted of the selection committee, reviewed and rated the 11 proposals. The proposals were rated based on the following criteria and their weights are:

- Experience on similar projects and project team (20%)
- Demonstrated ability to perform the tasks outlined in this RFP (20%)
- Project Understanding and Approach (40%)
- Quality and completeness of proposal (15%)
- Timeline (5%)

Each proposal was given a score based on how their proposal performed based on the scoring criteria. Woodard & Curran provided the proposal that received the highest-ranking score. SAWPA staff and its co-applicants recommended approval of the Task Order and General Services Agreement with Woodard & Curran to the SAWPA Commission. The SAWPA Commission approved the recommendation to select Woodard & Curran. Their role in the grant program is to:

- Project Administration
- Reference Materials Review
- Public Agency Engagement Plan
- Implementation of Public Agency Engagement Plan
- Developing Watershed Resiliency Metrics/Indicators
- Supporting Community and Tribal Engagement
- Developing a Digital Presence for CARP, and,
- Final CARP Development.

Woodard & Curran have developed a thorough proposal that describes effective ways of conducting engagement through workshops, surveys, and utilizing the digital platform as a tool throughout the planning process. Their proposal captured the essence of the grant program and it’s aims for the funding to support the region in evaluating experienced climate risks and vulnerabilities, identifying adaptation strategies locally and regionally, incorporating metrics and a framework that measures the success of the program through implementation and finally a digital tool that communicates, to stakeholders and the public, the impacts of climate risks and how the watershed is coming together to address those challenges.

Next steps, as we begin the planning process, will include developing work plans, community and tribal engagement plans, and setting up the various methods of engagement to ensure a community-informed planning process.

Examples of engagement methods include:

- Surveys
- Online Discussion Boards
- Virtual Exercises
- Virtual Workshops
- Social Media Engagement
- Engagement via Digital Presence.

CRITICAL SUCCESS FACTORS

- Leverage existing information for the benefit of SAWPA, its members, and other stakeholders.

- Active participation of a diverse group of stakeholders representing counties, cities, and water districts, as well as the tribal communities and the regulatory, community-based, and environmental justice communities who integrate the different interests in the watershed beyond political boundaries. Ensuring all perspectives are heard and valued during the development of the regional climate adaptation and resilience plan.

- SAWPA has a strong reputation and sufficient capacity within SAWPA staff for strategic facilitation, planning, communication, leadership, and community engagement.

RESOURCE IMPACTS

The Santa Ana River Watershed Project Authority has been selected as a Round 1 Grantee for the Regional Resilience Grant Program (RRGP) award of $644,190 for the Santa Ana River Watershed Climate Adaptation and Resilience Plan of which $330,000 will be allocated to this project. Up to $290,000 is available from unused Prop 84 project funding in Fund 504. Funding for consultant cost is included in the FYE 2026 and FYE 2027 budgets.

Attachments:

1. PowerPoint Presentation
2. Woodard & Curran Proposal

Page Intentionally Blank

SANTA ANA WATERSHED PROJECT AUTHORITY

Santa Ana River Watershed Climate Adaptation and Resilience Plan – Engagement

OWOW Steering Committee Meeting

Item No. 6.B.

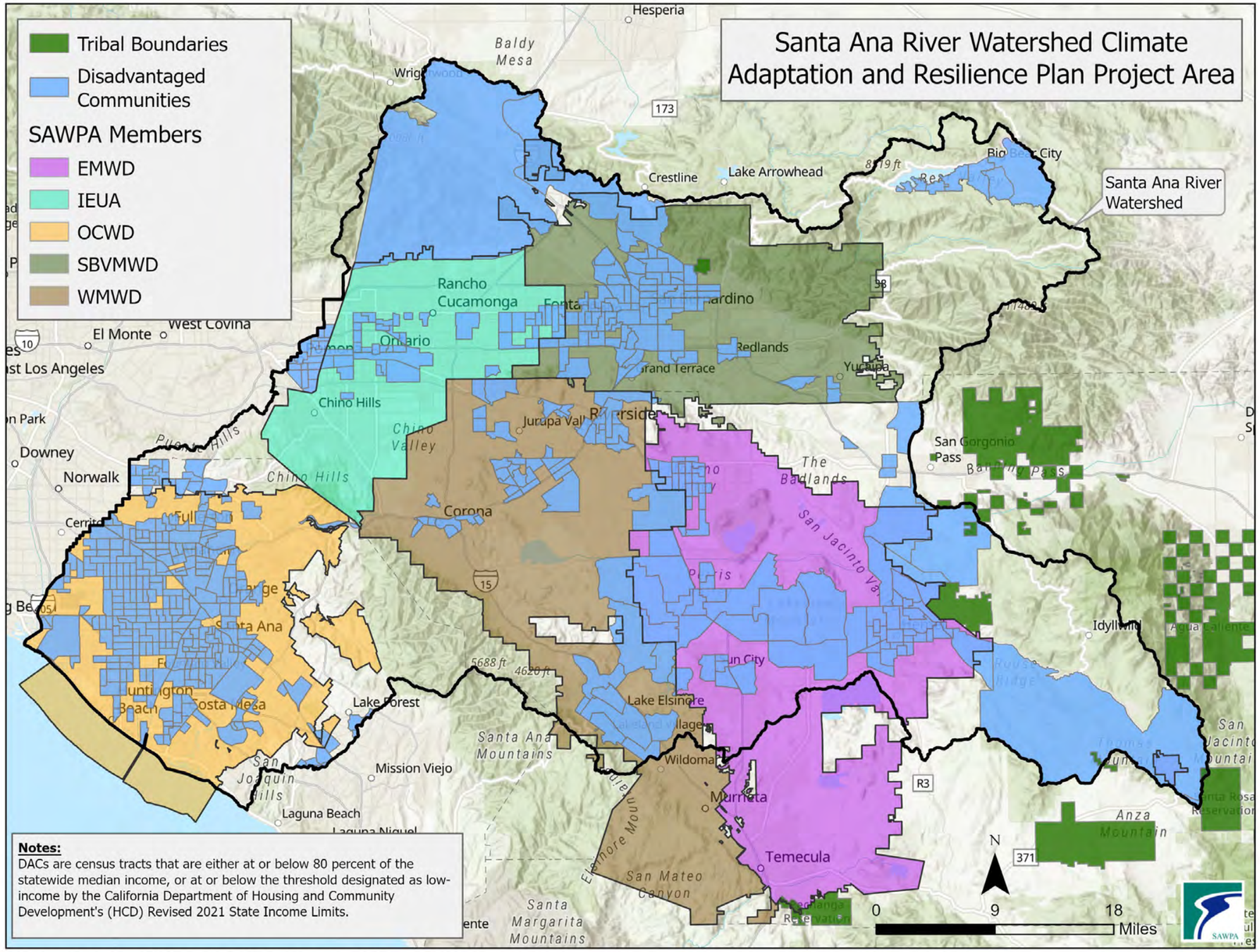
Rachel Gray

Water Resources and Planning Manager

February 27, 2025

Agenda

- CARP Background
  - Grant
  - Purpose
  - Benefits
  - Organizational Structure
- Public Agency Engagement
  - Consultant Selection
- Engagement Strategy:
  - Tribal
  - Community
- Next Steps



Santa Ana River Watershed Climate Adaptation and Resilience Plan (CARP)

CARP Grant:

- **$644,190 grant** under the Governor's Office of Land Use and Climate Innovation

CARP

- Strategic Framework
- Outlines actions and measures to enhance the climate resilience of a watershed
- Address the climate risks and vulnerabilities
  - Water resources, ecosystems, and communities
  - Integrating adaptive management practices

Regional CARP

- Community informed
- Stakeholder driven
- Implementation focused

Advance watershed resiliency

Define watershed-wide climate risks and vulnerabilities

Develop local and regional climate adaptation strategies

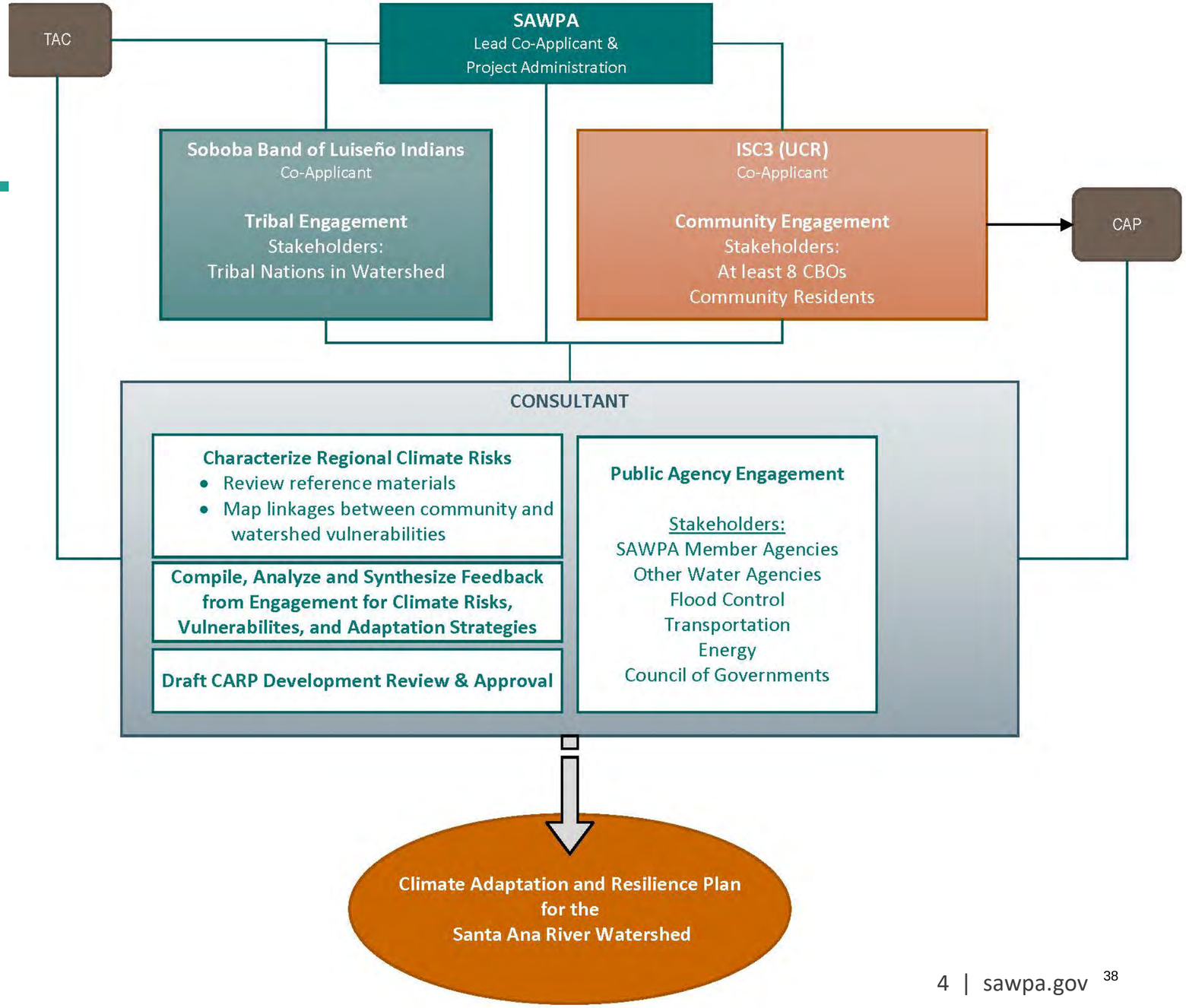
Enhance multi-jurisdictional collaboration

Support future funding of member agency projects, other stakeholder projects, and regional projects

Organizational Structure

- Public Agency Engagement
- Workplan
- Data Request
- Climate Risks
- Climate Vulnerabilities
- Adaptation Analysis
- Resilience Portfolios
- Funding Strategies
- Implementation Plan
- CARP and Geospatial Database

Synthesize Input from Community, Tribal and, Agency Stakeholders



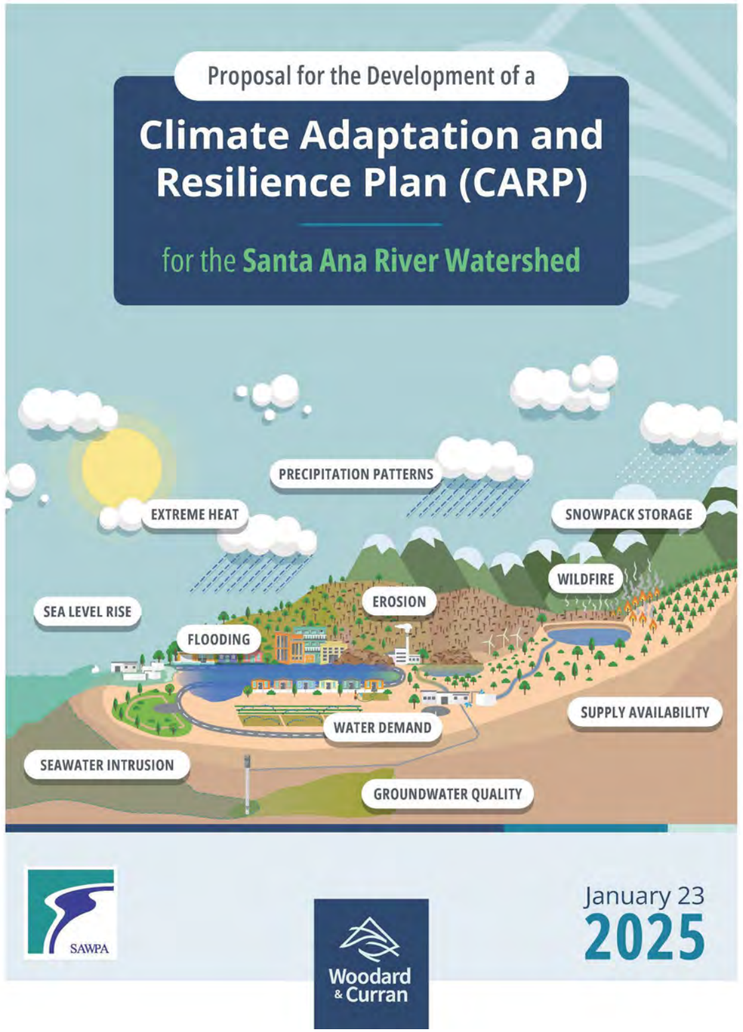
Consultant Selection

Proposal Selection Committee:

- SAWPA
- Soboba Band of Luiseño Indians
- Inland Southern California Climate Collaborative / University of California Riverside

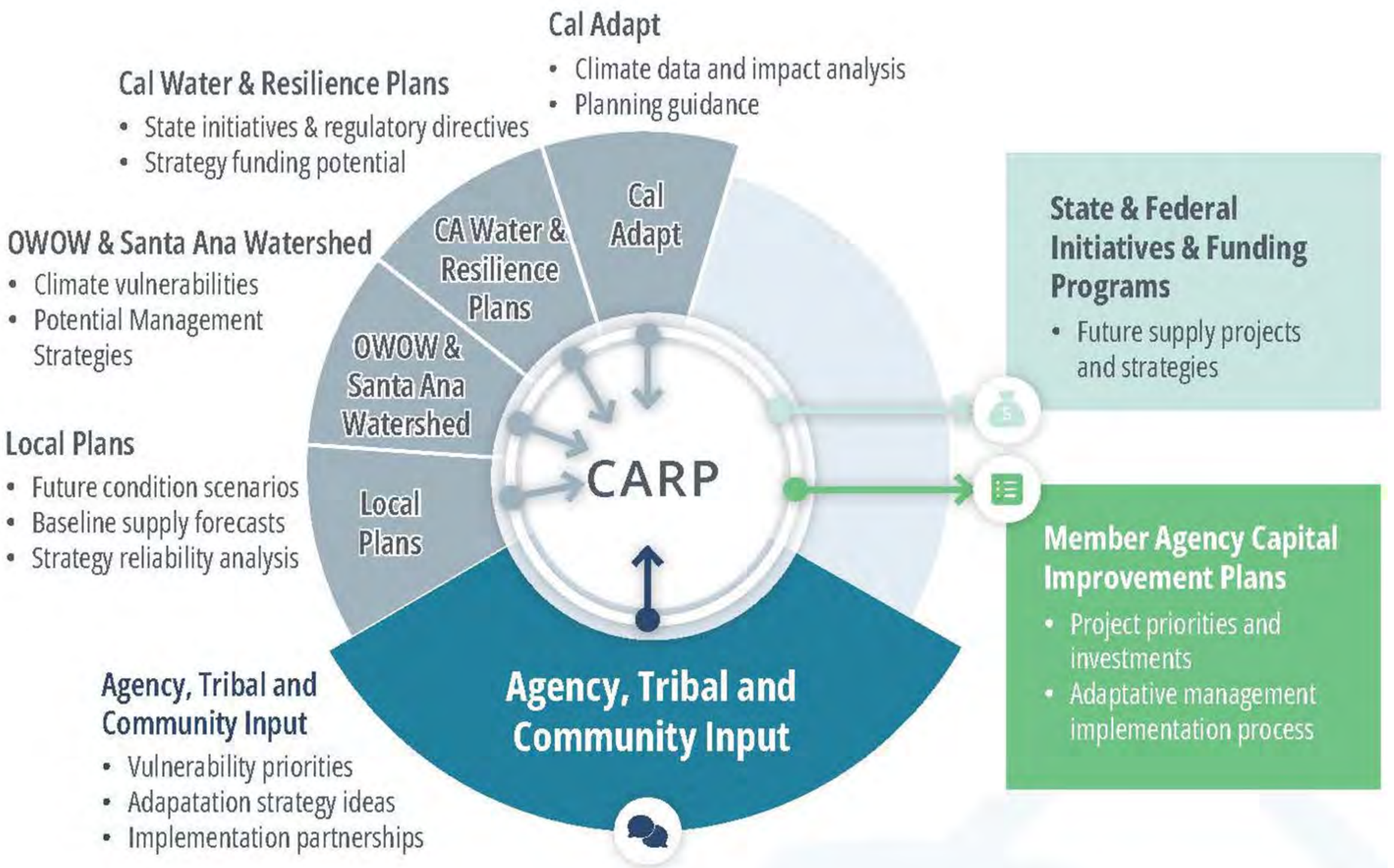
Consultant Selection: Woodard & Curran

Scoring Criteria
Experience on similar projects and project team
Demonstrate ability to perform the tasks outlined in RFP
Project Understanding and approach
Quality and completeness of proposal
Timeline



Proposal Highlights

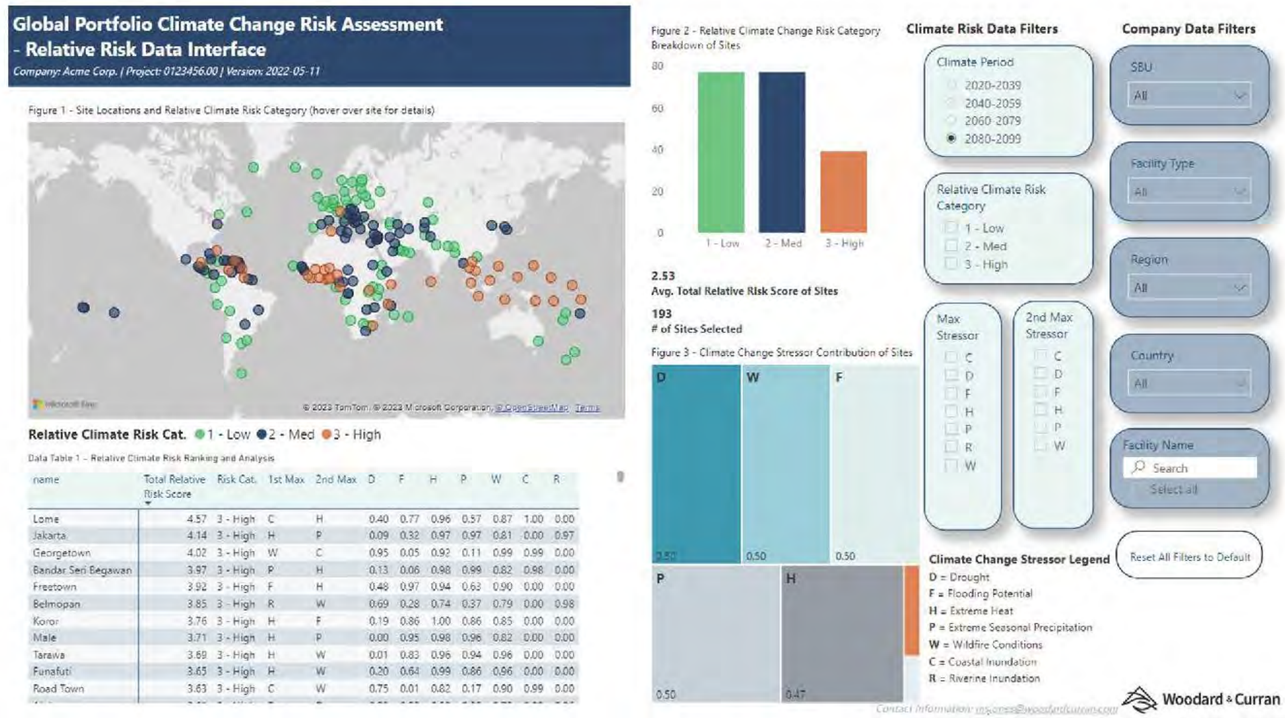
- Integrating existing data and new input
- Use of State resources
- Local climate adaptation and vulnerabilities project experience



Source: Woodard & Curran CARP Proposal (2025)

Regional CARP Outputs

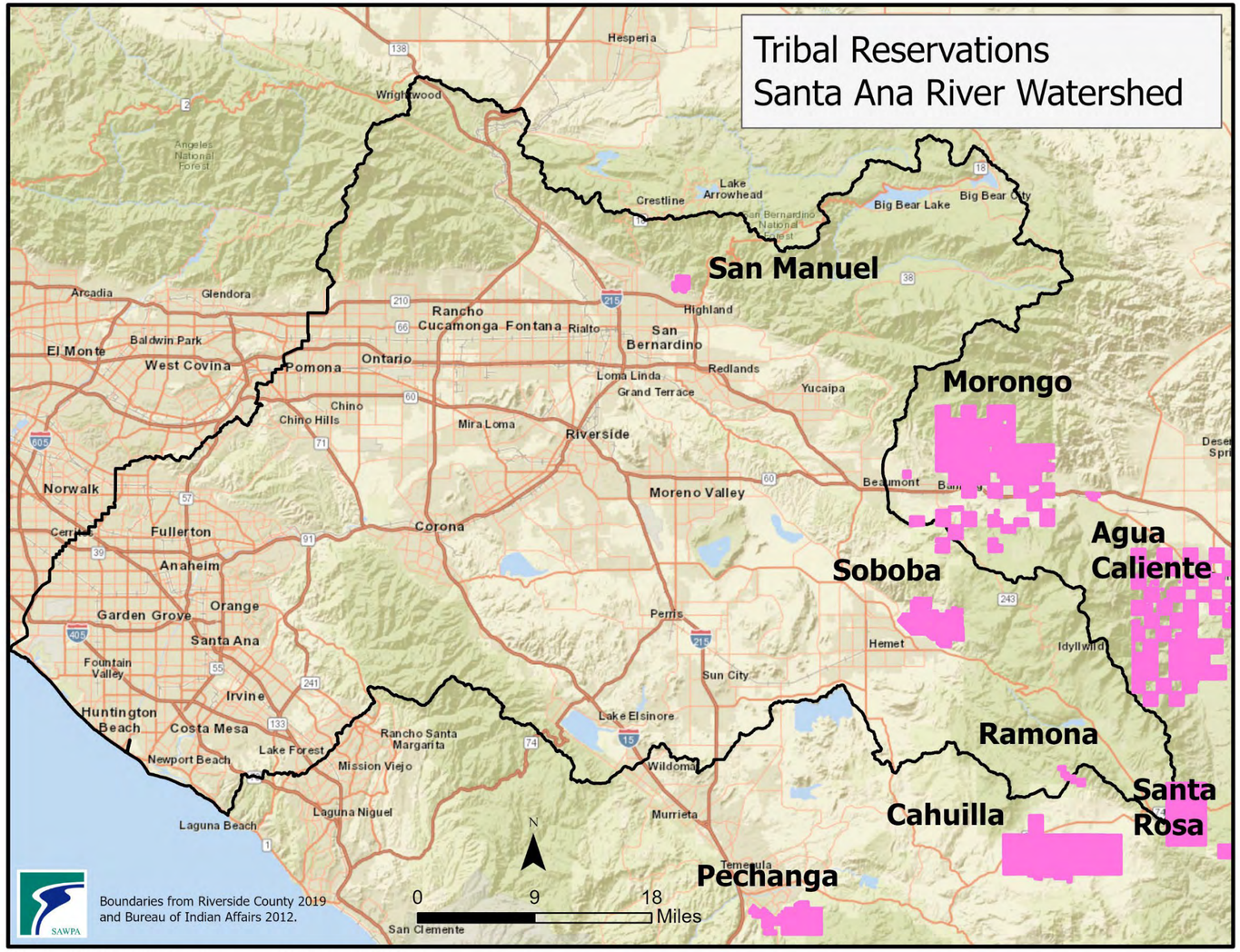
- **Regional Projects and Approaches:**
  - Stormwater management (green infrastructure, capture and use)
  - Groundwater recharge
  - Water use efficiency
  - Nature-based solutions
  - Urban solutions (urban forestry)
  - Multi-benefit approaches
  - Regional solutions
- **Funding Strategies** to ensure Programmatic and Collaborative Approaches for Resilience Portfolios
- **Performance Metrics** to Achieve Measurable Outcomes
- Enhanced optional tasks



name	Total Relative Risk Score	Risk Cat.	1st Max	2nd Max	D	F	H	P	W	C	R
Lome	4.57	3 - High	C	H	0.40	0.77	0.96	0.57	0.87	1.00	0.00
Jakarta	4.14	3 - High	H	P	0.09	0.32	0.97	0.97	0.81	0.00	0.97
Georgetown	4.02	3 - High	W	C	0.95	0.05	0.92	0.11	0.99	0.99	0.00
Bandar Seri Begawan	3.97	3 - High	P	H	0.13	0.06	0.98	0.99	0.82	0.98	0.00
Freetown	3.92	3 - High	F	H	0.48	0.97	0.94	0.63	0.90	0.00	0.00
Belmopan	3.85	3 - High	R	W	0.69	0.28	0.74	0.37	0.79	0.00	0.98
Koror	3.76	3 - High	H	F	0.19	0.86	1.00	0.86	0.85	0.00	0.00
Male	3.71	3 - High	H	P	0.00	0.95	0.98	0.96	0.82	0.00	0.00
Tarawa	3.69	3 - High	H	W	0.01	0.83	0.96	0.94	0.96	0.00	0.00
Funafuti	3.65	3 - High	H	W	0.20	0.64	0.99	0.86	0.96	0.00	0.00
Road Town	3.63	3 - High	C	W	0.75	0.01	0.82	0.17	0.90	0.99	0.00

Tribal Engagement (Soboba)

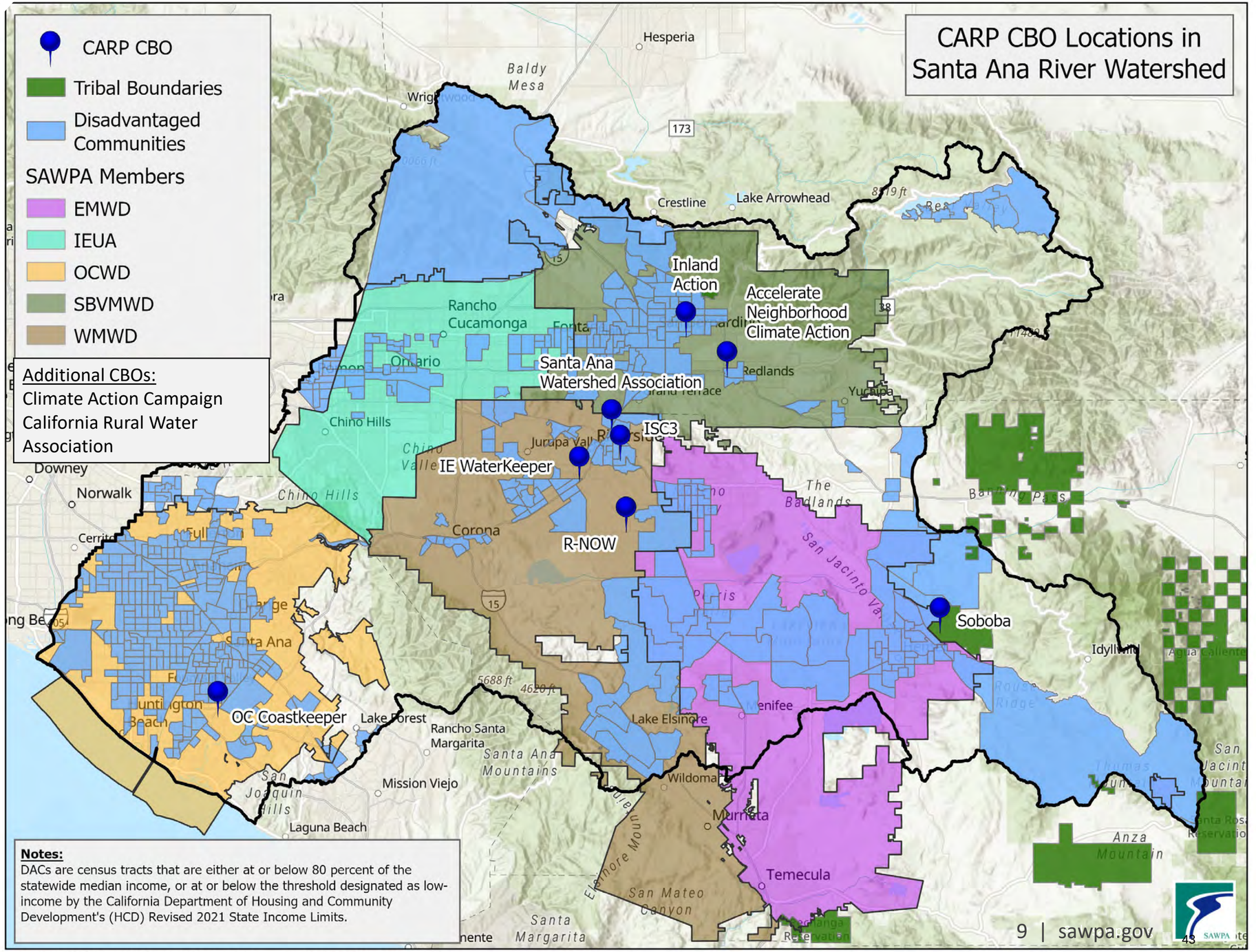
- Approach: Tribal Engagement Plan
  - Tribal Elders
  - Talking Circles
  - Tribal Conferences
- Specific Need:
  - Enhance Soboba's Vulnerability Assessment and Climate Adaptation Analysis
- Outcome:
  - Project builds capacity for tribal engagement



P:\projects\DCI\TribalLands\TribalLands.aprx LO_TribalLands SW-2919

Community Engagement (ISC3/UCR)

- Identify Stakeholders
- Determine Timeline and Deliverables for each CBO partner
- Determine Engagement Method and Frequency:
  - CBO Hosted Events
  - Community Events
  - Listening Sessions and Community Workshops



P:\Projects\Haley\ICARPCBO\ICARP_CBO.aprx LoCARP_CBO SW-3385

Community Engagement Methods

- Digital Presence
  - Host engagement tools:
    - Surveys
    - Online Discussion Forums
    - Virtual Exercises
    - Education Materials and Content
    - Social Media Engagement: Polls and Sharing Content
  - Compile Engagement Outcomes/Feedback (Graphs, Maps)
  - Optional Tasks would add more interactive elements, heat maps, and many other visualization tools for community members to understand historic trends and future variance of identified hazards

Engagement Experience

What are effective ways in which you communicate with your constituents?

What are the most productive methods of engagement in your experience?

- **Work Plans:**
  - SAWPA (Overall program management)
  - Consultant (Agency Engagement)
- **Develop Engagement Plans:**
  - Community Engagement Plan (ISC3/UCR)
  - Support Soboba to develop Tribal Engagement approach
- **Begin References Materials Review**
  - Consultant

Questions

Rachel Gray
Santa Ana Watershed Project Authority
Office (951) 354-4250
rgray@sawpa.gov
sawpa.gov

@sawpa_water

@sawpatube

Page Intentionally Blank

OWOW STEERING COMMITTEE MEMORANDUM NO. 2025.3

DATE: February 27, 2025

TO: OWOW Steering Committee

SUBJECT: Santa Ana River Watershed Cloud Seeding Pilot Program: Year 1 Validation Approach

PREPARED BY: Rachel Gray, Water Resources and Planning Manager

RECOMMENDATION
Receive and file.

DISCUSSION
On July 19, 2022, the SAWPA Commission authorized an award of contract with North American Weather Consultants, Inc. (NAWC) to conduct the Santa Ana River Watershed Cloud Seeding Pilot Program operations. Subsequently, the SAWPA Commission authorized an award to the Board of Regents of the Nevada System of Higher Education on behalf of the Desert Research Institute (DRI) for the independent validation of the Santa Ana River Watershed Cloud Seeding Pilot Project.

The Pilot Program is a four-year project spanning the four winter seasons starting in 2023 and running between November 15 and April 15 for each season. The operations are based on past work described in the SAWPA feasibility study published in 2020, updated seeding site analysis, and reflects requirements from CEQA, and comments from SAWPA member agency staff and other stakeholders. The focus of the Pilot Program will be on seeding the four higher elevation target areas identified in the feasibility study surrounding the watershed with an emphasis on increasing precipitation in the form of snow.

SAWPA is coordinating the Pilot Program planning with Desert Research Institute (DRI) on the validation component of the project. DRI is conducting an independent review of the cloud seeding pilot operations and validating the increases in precipitation and stream flows. Validation approach and preliminary results are being presented, and the results and additional evaluation are still ongoing. Validation tasks include the following:

1. Task 1: Evaluate NAWC Operations
2. Task 2: Snow Chemistry
3. Task 3: Calculating the Seeding Snow-Water Equivalent:
4. Task 4: Target/Control Statistical Analysis
5. Task 5: Stream Flow Analysis

CRITICAL SUCCESS FACTORS
- Successful implementation of an integrated regional water resource plan that reflects the watershed management needs of the public and the environment.
- Data and information needed for decision-making is available to all.

RESOURCE IMPACTS
In April 2023, SAWPA was notified by the Department of Water Resources (DWR) that the SAWPA Santa Ana River Weather Modification Pilot Program will receive a grant valued at $861,400 under the Proposition 1 Round 2 funding program. Local funding has been secured totaling $94,000. Project operations and validation study costs are budgeted and reflected in the FYE 23-24, FYE 24-25, FYE 25-26 and FYE 26-27 SAWPA Budgets.

Attachments:
1. PowerPoint Presentation

Santa Ana River Cloud Seeding Pilot Program Validation Approach

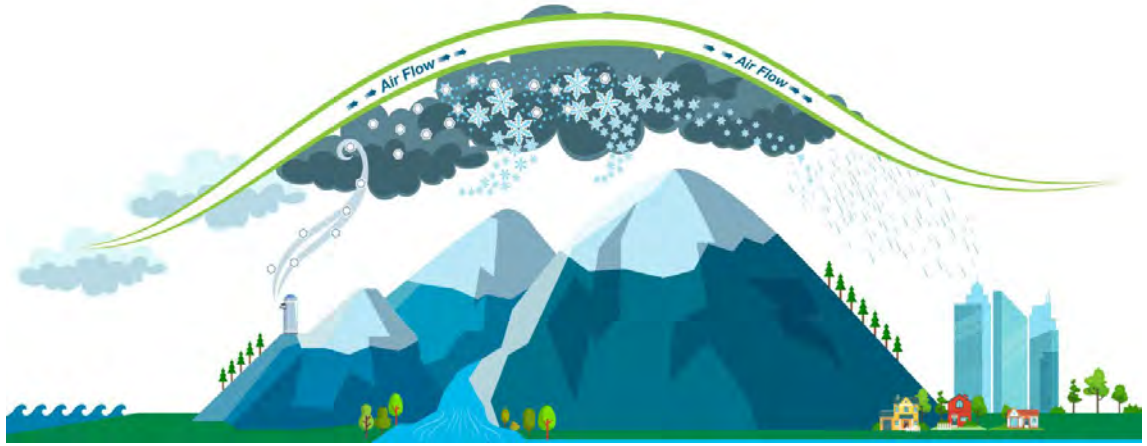
Agenda Item No. 6.C.

Rachel Gray
Water Resources and Planning Manager

February 27, 2025

Presentation Overview

- Background Information
  - Pilot Program Overview
  - Funding
- Operations Status
- Validation (Year 1) – Preliminary Results



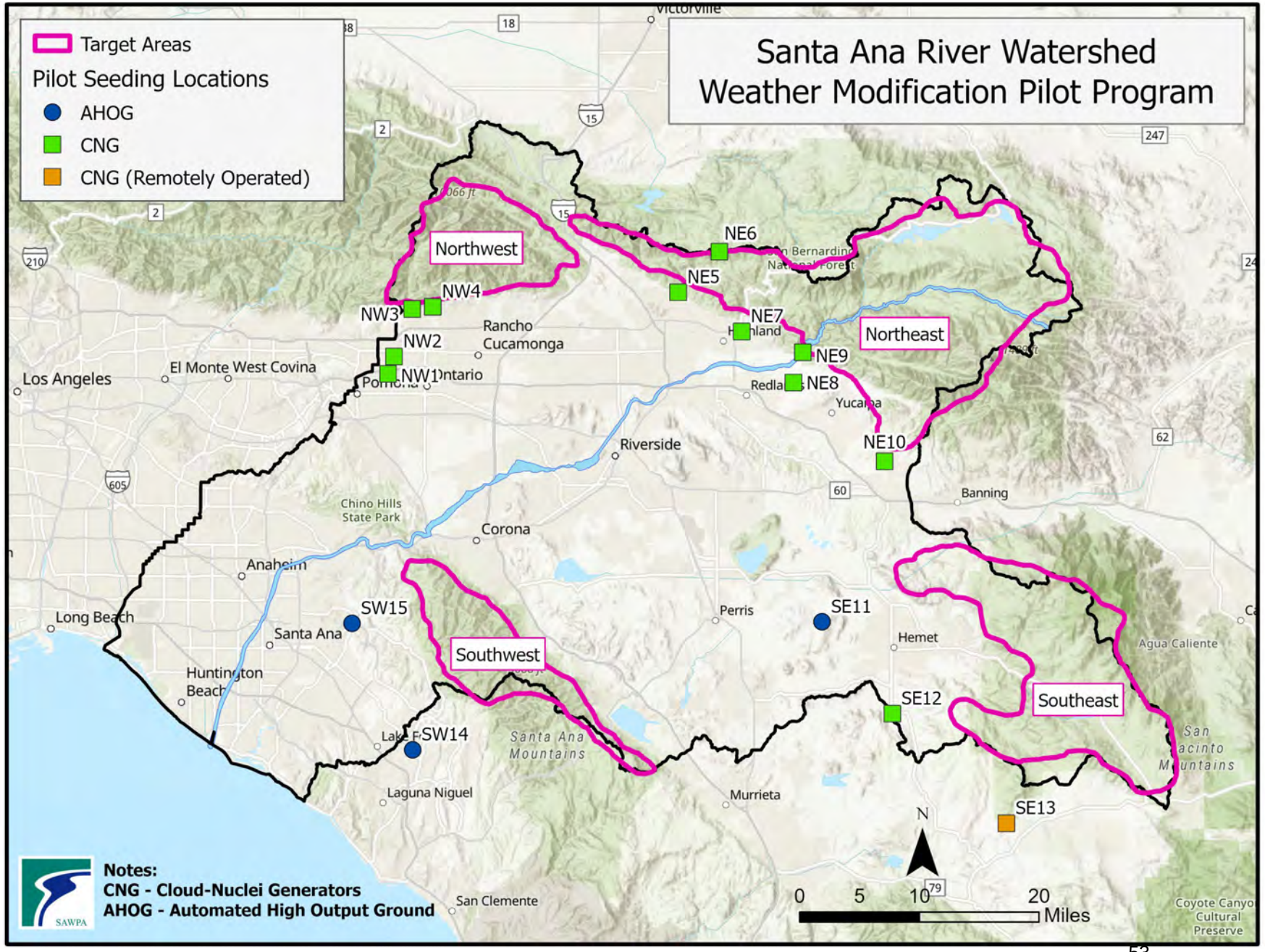
Pilot Program Overview

Pilot Program:

- 4-year study
- 4 Target Areas (NW, NE, SW, SE)
- Use of ground-seeding units (15)
- Use of Validation Study to assess increases in precipitation
- Communications Plan

Pilot Program Operator:

- North American Weather Consultants (NAWC)



Funding

SAWPA Member Agencies	Big Bear City Community Services District	Big Bear Lake Department of Water & Power
Chino Basin Water Conservation District	City of Corona Utilities Department	City of Santa Ana Municipal Utility Services
Lake Elsinore and San Jacinto Watersheds Authority	San Antonio Water Company	San Gorgonio Pass Water Agency

ONE WATER ONE WATERSHED

DEPARTMENT OF WATER RESOURCES • STATE OF CALIFORNIA •

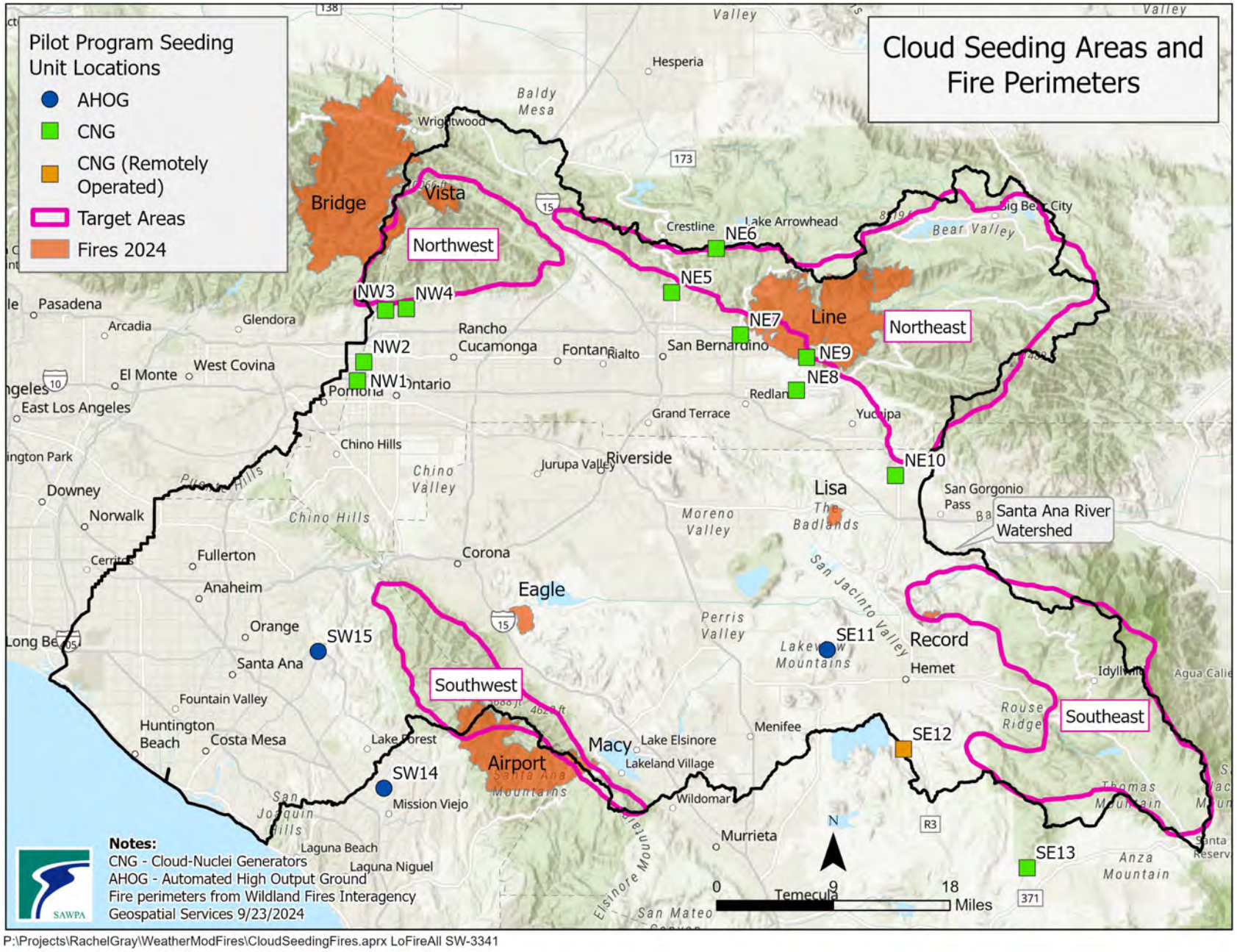
PROP 1
GOVERNOR GAVIN NEWSOM
WATER BOND 2014
RELIABILITY | RESTORATION | RESILIENCE

Pilot Funding

Source	Amount
Prop 1 Round 2 Grant (DWR)	$861,400
SAWPA (IEUA, WMWD, EMWD, SBVMWD, OCWD)	$691,000
Local Funding Partners: • Big Bear City Community Services District • Big Bear Lake Department of Water & Power • Chino Basin Water Conservation District • City of Corona Utilities Department • City of Santa Ana Municipal Utility Services • Lake Elsinore and San Jacinto Watersheds Authority • San Antonio Water Company • San Gorgonio Pass Water Agency	$94,000
Total (4 years)	$1,646,400

Cloud Seeding: Operations

- Year 1 Operations:
  - Nov. 15, 2023 - Apr 15, 2024
- Year 2 Operations:
  - Suspended due to burn scars
- Revised Year 2 Operations Expected:
  - Nov. 15, 2025 – Apr. 15, 2026



Validation

Cloud Seeding Validation

- Key component of program:
  - Validate the “additional precipitation” from cloud seeding
- Perform independent review:
  - Desert Research Institute
    - Addresses pressing scientific questions
    - Part of the Nevada System of Higher Education

- Task 1: Review of operations
- Task 2: Snow chemistry
- Task 4: Target and Control – **precipitation gauges**
- Task 5: Target and Control – **stream gauge**

Task 1: Year 1 – Review of Operations

- November 15, 2023 through April 15, 2024.
- 12 storms were seeded
- Seeded storms contained seedable clouds at or below 11,000’ MSL.
- No seedable storms were missed.
- Generator Hours:
  - Total hours = 2,165
  - Hours during potential seeding conditions = 1,703

Seeding Units

Task 2: Snow Chemistry – Control

Approach:

- Sample **elemental silver** in snow

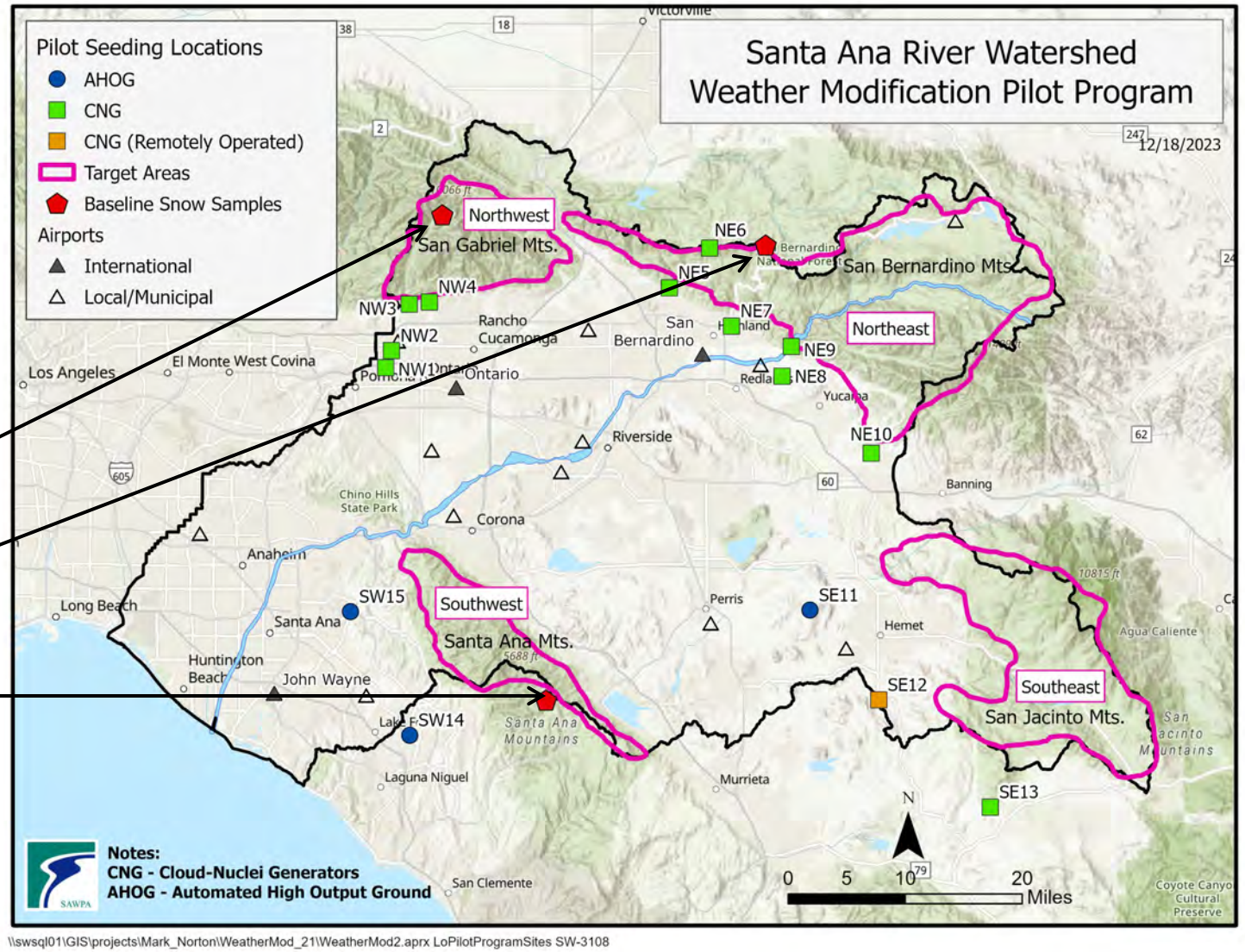
Control Results

(Concentrations of silver in **non-seeded** snow samples)

8.0 ppt

9.1 ppt

1.8 ppt

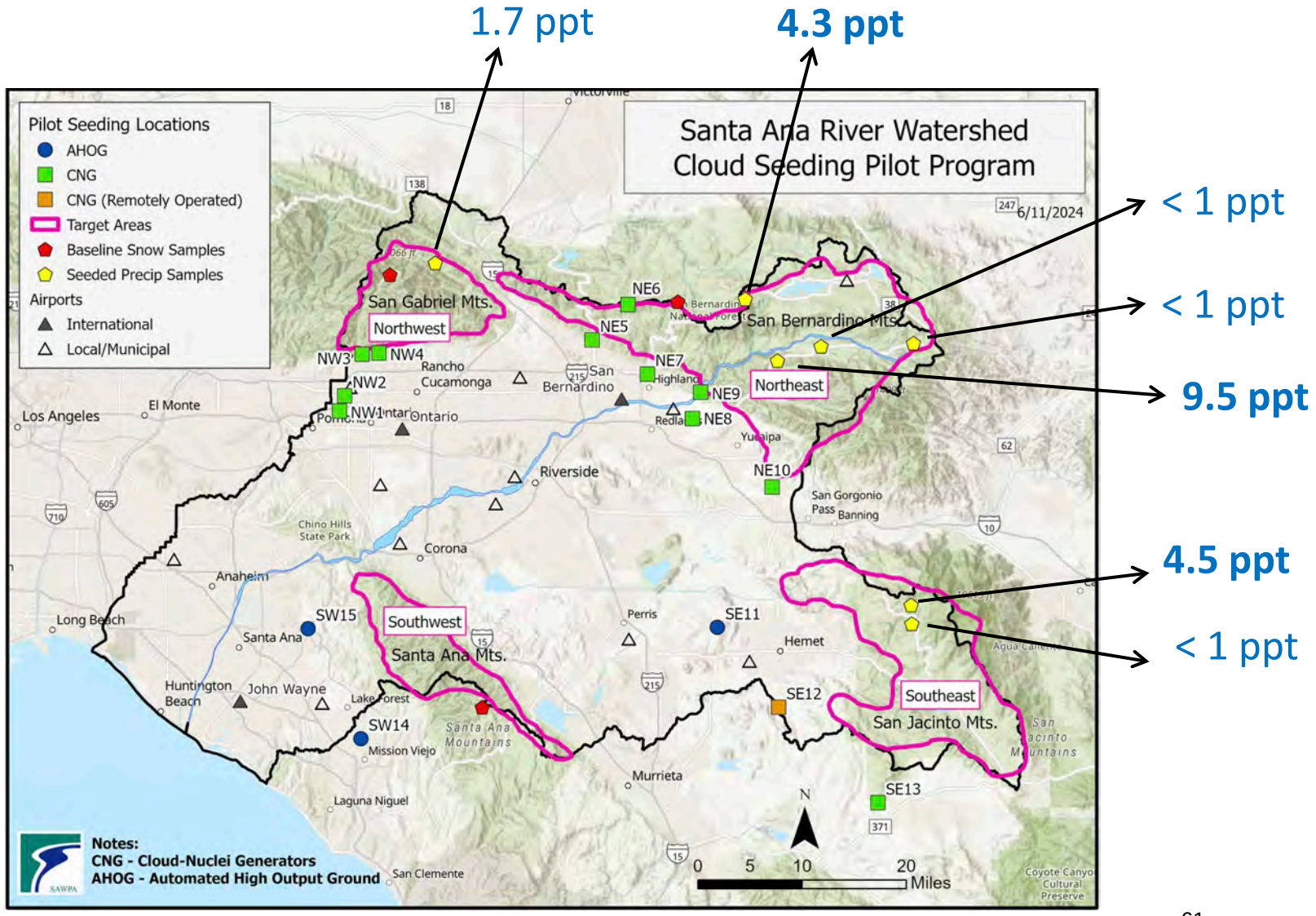


Task 2: Snow Chemistry – Seeded

Seeded Results

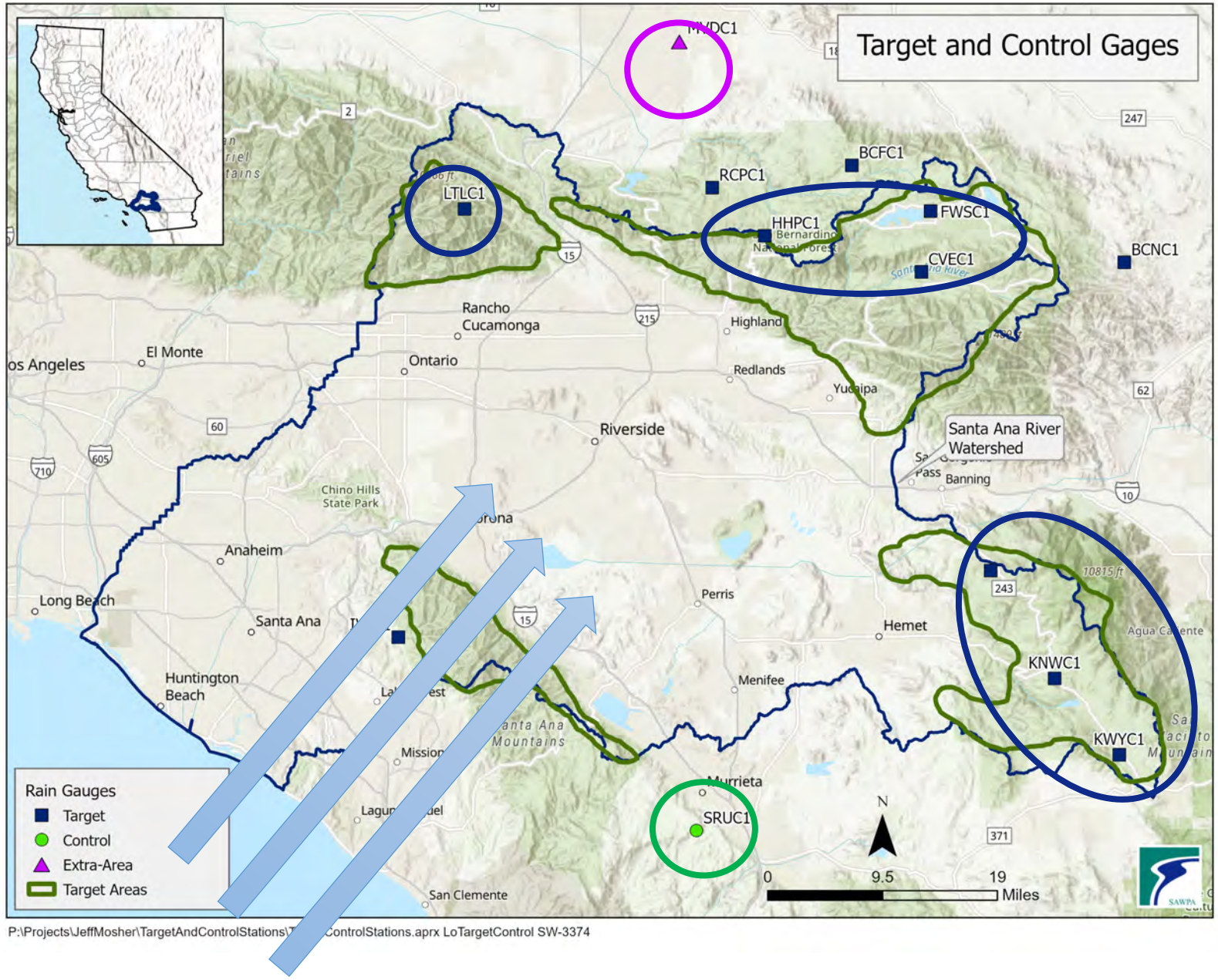
(concentrations of silver in **seeded** snow samples)

- The snow chemistry results were inconclusive.
- More sampling is needed.



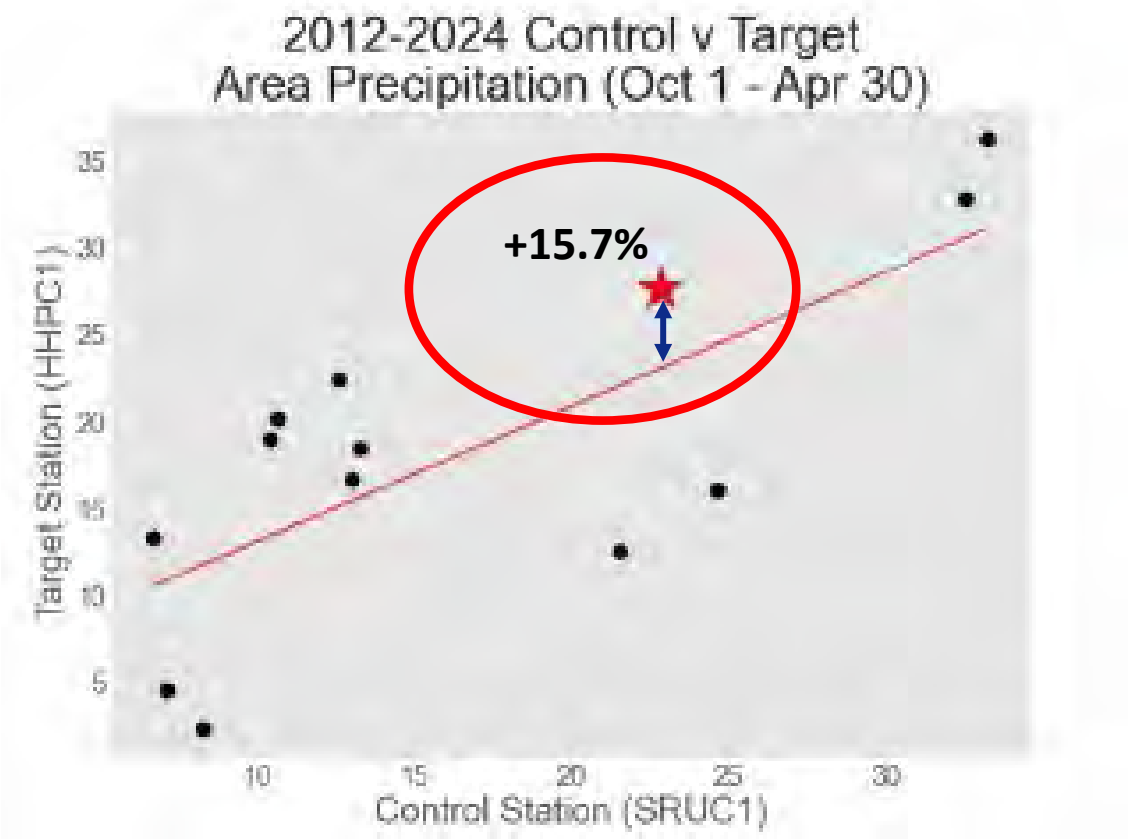
Task 4: Target-Control **Precipitation**

- Green circle:
  - Upstream control site (Santa Rosa Plateau)
- Other circles:
  - Target sites
- Relationship between control and target sites were computed

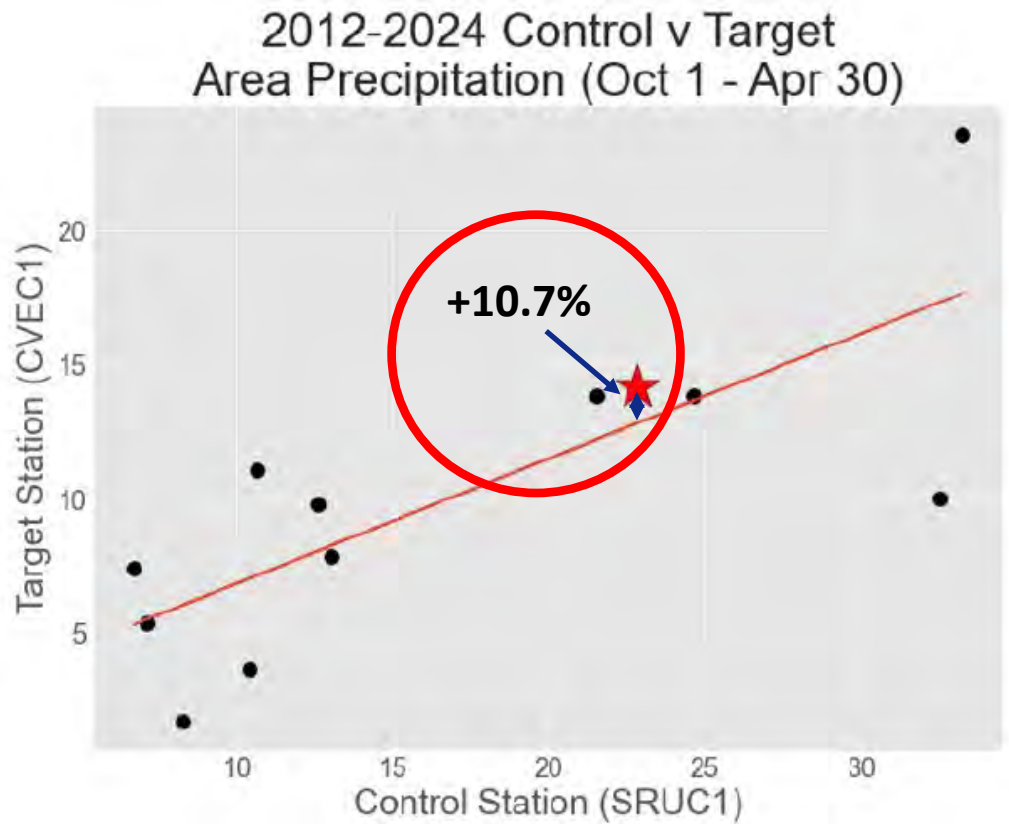


Task 4: Target-Control for NW Target Area
(Individual Snow Gauges – Year 1 All Storms)

Preliminary Results



Heaps Peak (SB Mountains) – **Target**
vs Santa Rosa Plateau (San Ana Mountains) – **Control**
Expected Precip: **23.5 in**
Observed Precip: **27.2 in**
+15.7%



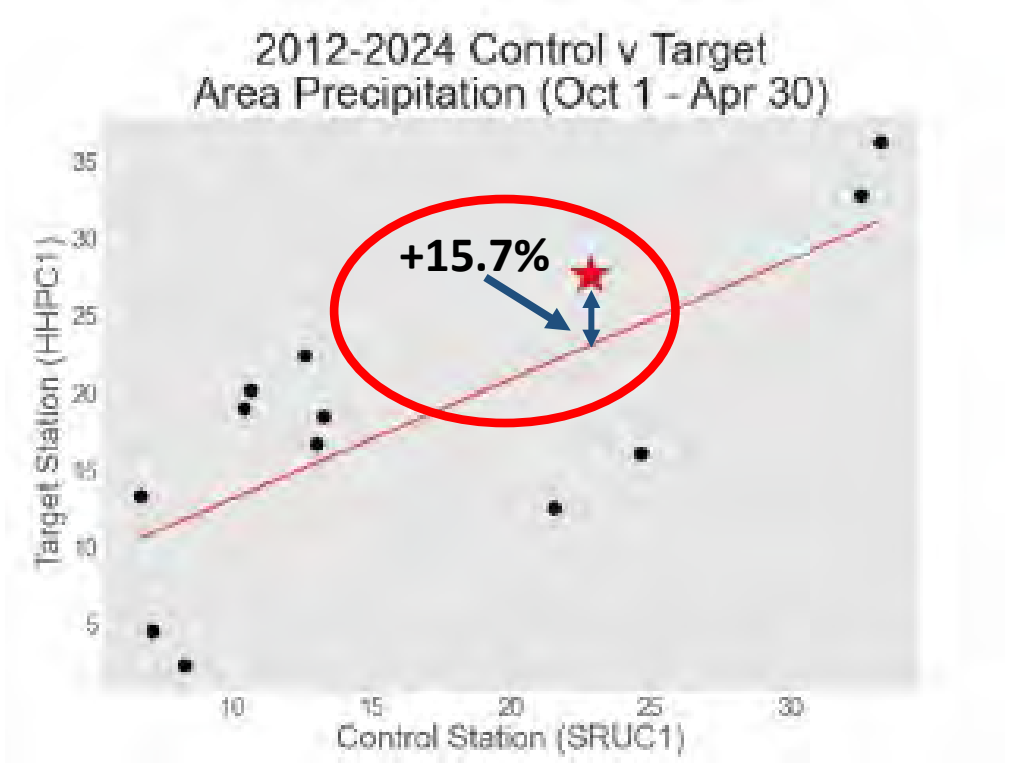
Converse (SB Mountains) – **Target**
vs Santa Rosa Plateau (San Ana Mountains) – **Control**
Expected Precip: **13.0 in**
Observed Precip: **14.4 in**
+10.7%

Northeast Target Area

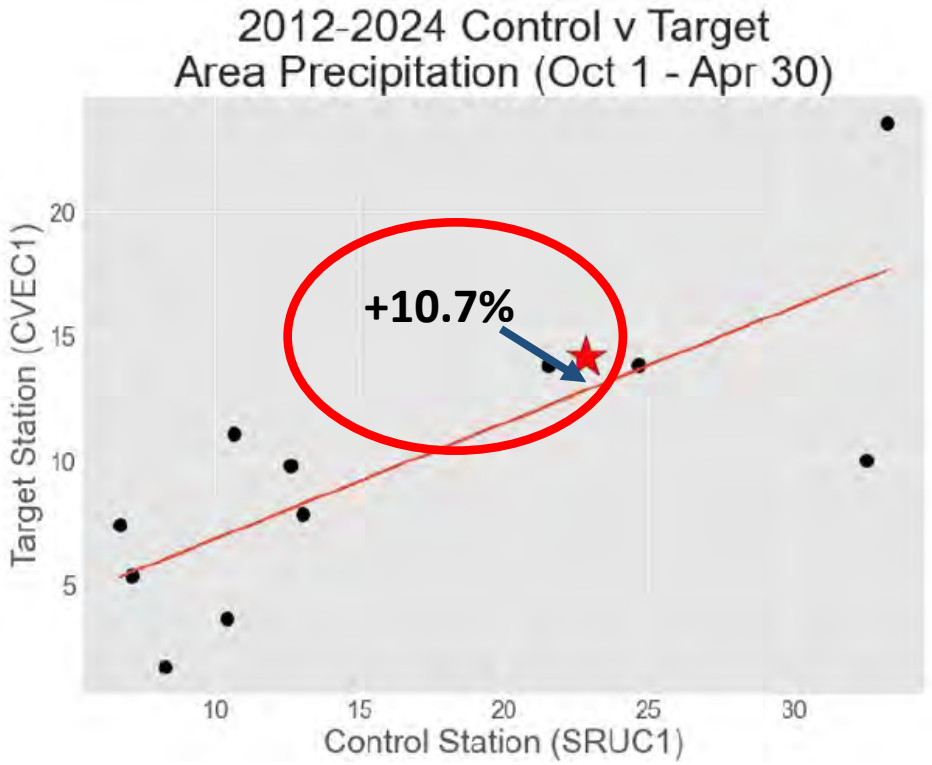
Preliminary Results

Desert Research Institute

Individual Snow Gauges (Year 1 – All Storms)



Heaps Peak (SB Mountains) – **Target**
vs Santa Rosa Plateau (San Ana Mountains) – **Control**
Expected Precip: **23.5 in**
Observed Precip: **27.2 in**
+15.7%



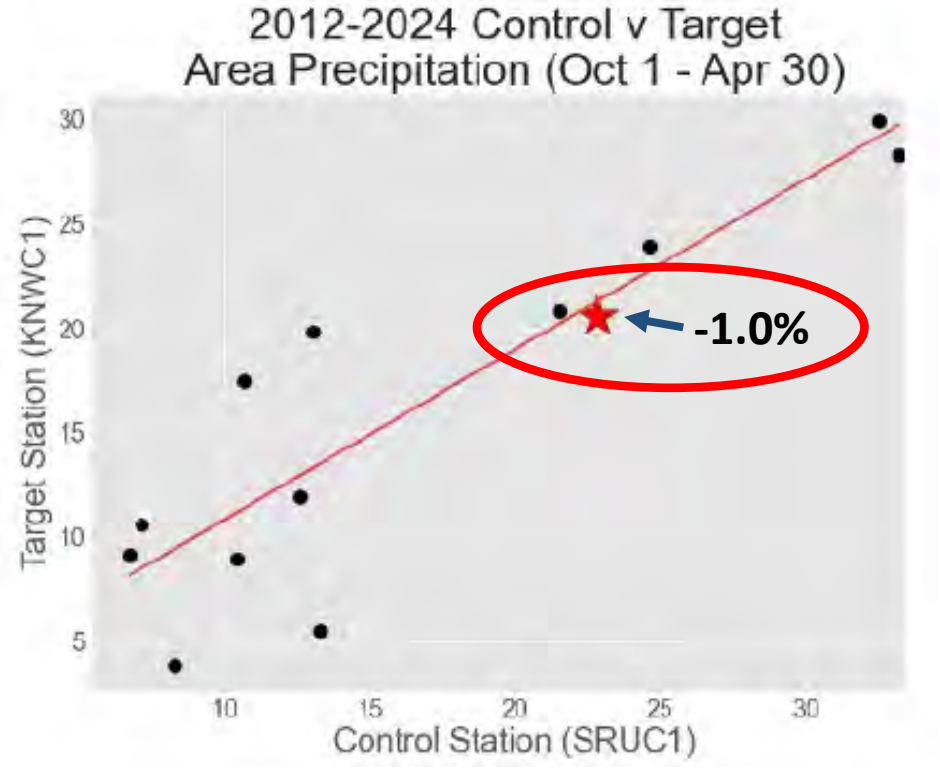
Converse (SB Mountains) – **Target**
vs Santa Rosa Plateau (San Ana Mountains) – **Control**
Expected Precip: **13.0 in**
Observed Precip: **14.4 in**
+10.7%

Southeast Target Area

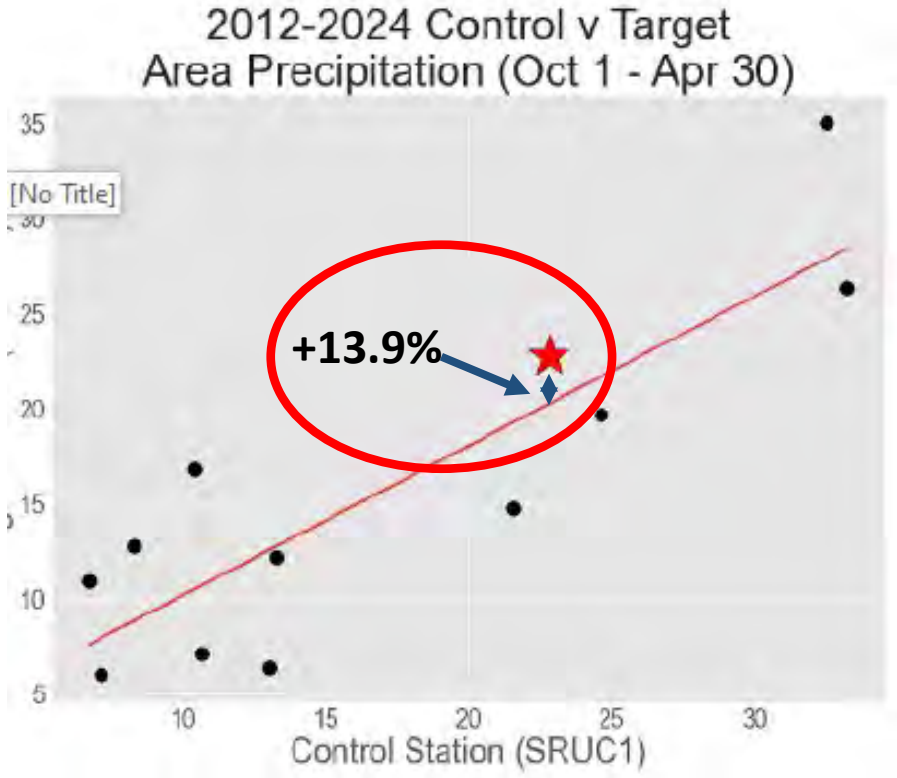
Preliminary Results

Desert Research Institute

Individual Snow Gauges (Year 1 – All Storms)



Keenwild (San Jacinto Mountains) – **Target**
vs Santa Rosa Plateau (San Ana Mountains) – **Control**
Expected Precip: **20.3 in**
Observed Precip: **20.1 in**
-1.0%



Vista Grande (San Jacinto Mountains) – **Target**
vs Santa Rosa Plateau (San Ana Mountains) – **Control**
Expected Precip: **20.1 in**
Observed Precip: **22.9 in**
+13.9%

+10.7 %

Target-Control Increases by Target Area

Preliminary Results

- Calculate **increases** by the four target areas:

Total increase = Number of Generators x Increase in Precip x Footprint (of Generators)

	Year 1 (2023-2024)	Year 2	Year 3	Year 4
Northeast (San Bernardino Mts)	16,320 AF (10% increase in precip)			
Southeast (San Jacinto Mts)	3,974 AF (4.1% increase in precip)			
Northwest (San Gabriel Mts)	0 AF			
Southwest (San Ana Mts)	0 AF			
Total	**20,294 AF**			

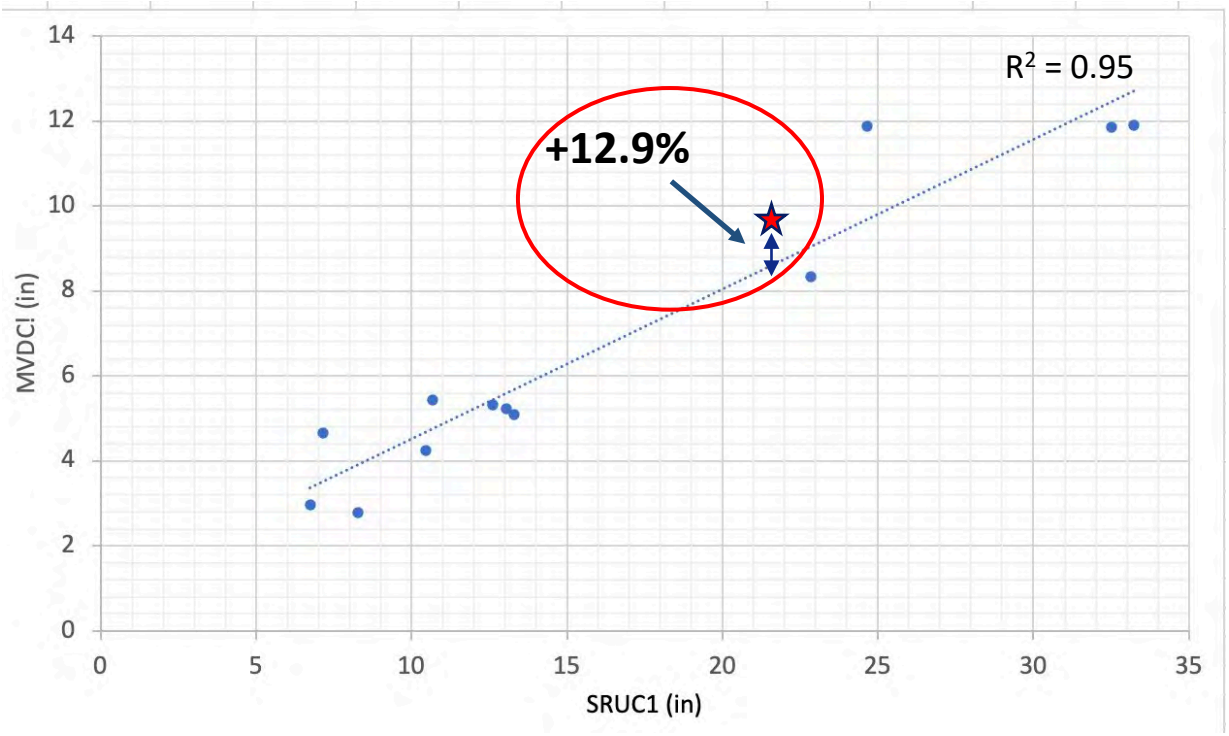
Cost per Acre-Foot:

~$400,000 / 20,294 AF =

~$20 per AF

Preliminary Results

Task 4: Extra Area Effect Analysis



Mojave Dam (3,134') – **Target**

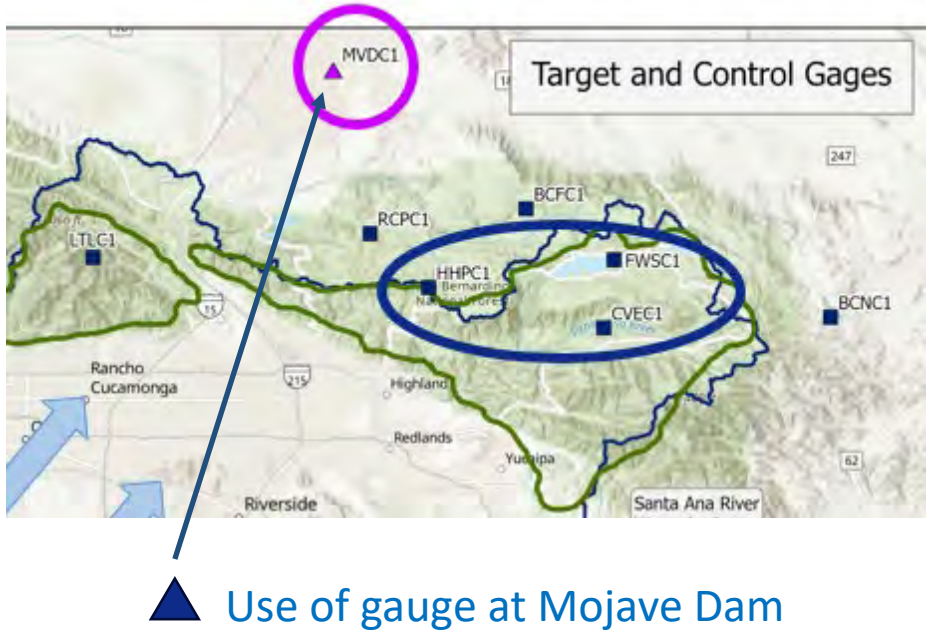
Santa Rosa Plateau (1,105') – **Control**

Expected precip: **8.5 in**

Observed precip: **9.6 in**

+12.9%

Extra Area Effect: What is the effect outside of the watershed

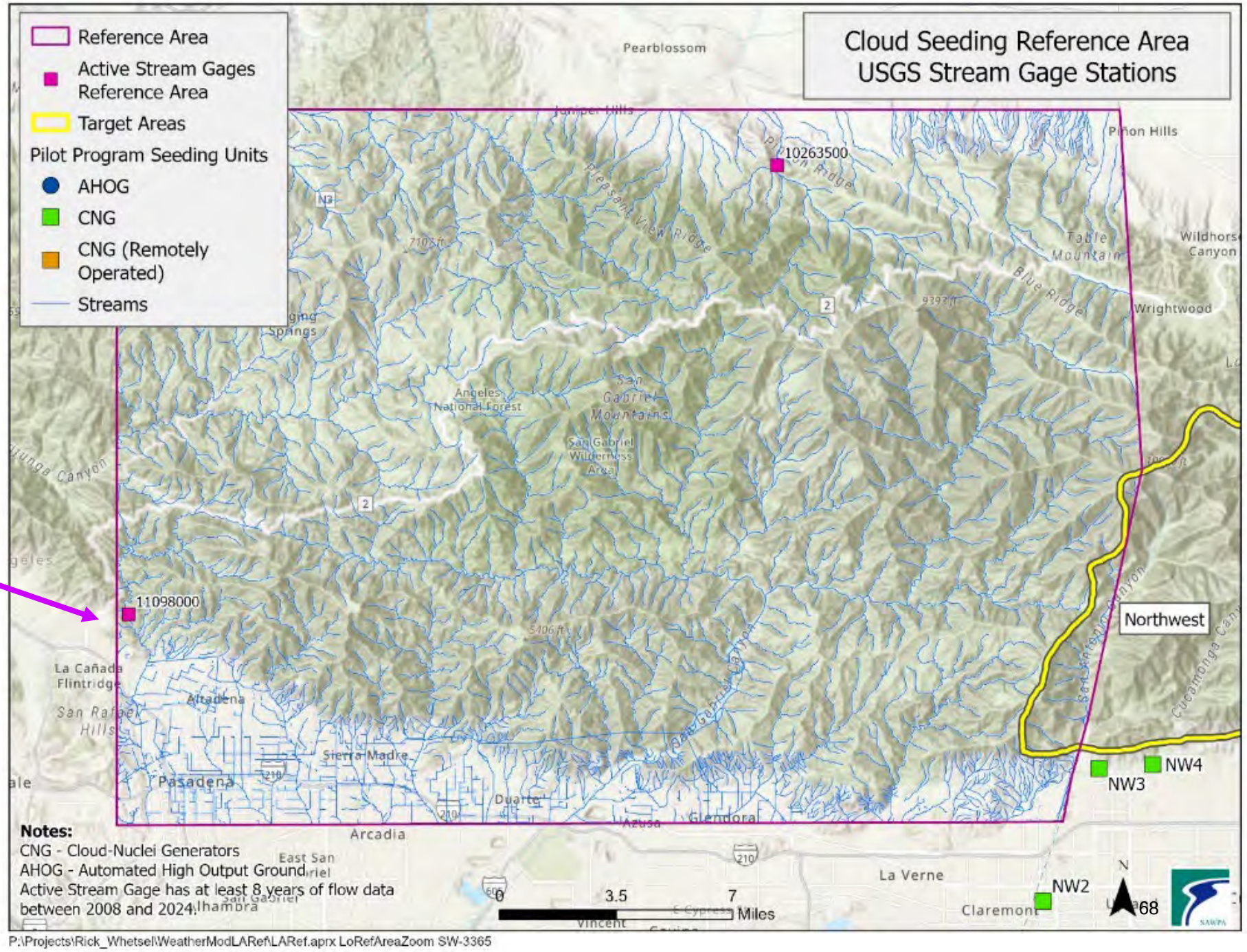


Use of gauge at Mojave Dam

Task 5: Target-Control **Stream Guage**

Control Site

Arroyo Seco River



Task 5: Target and Control – **Stream Guage** Target Site

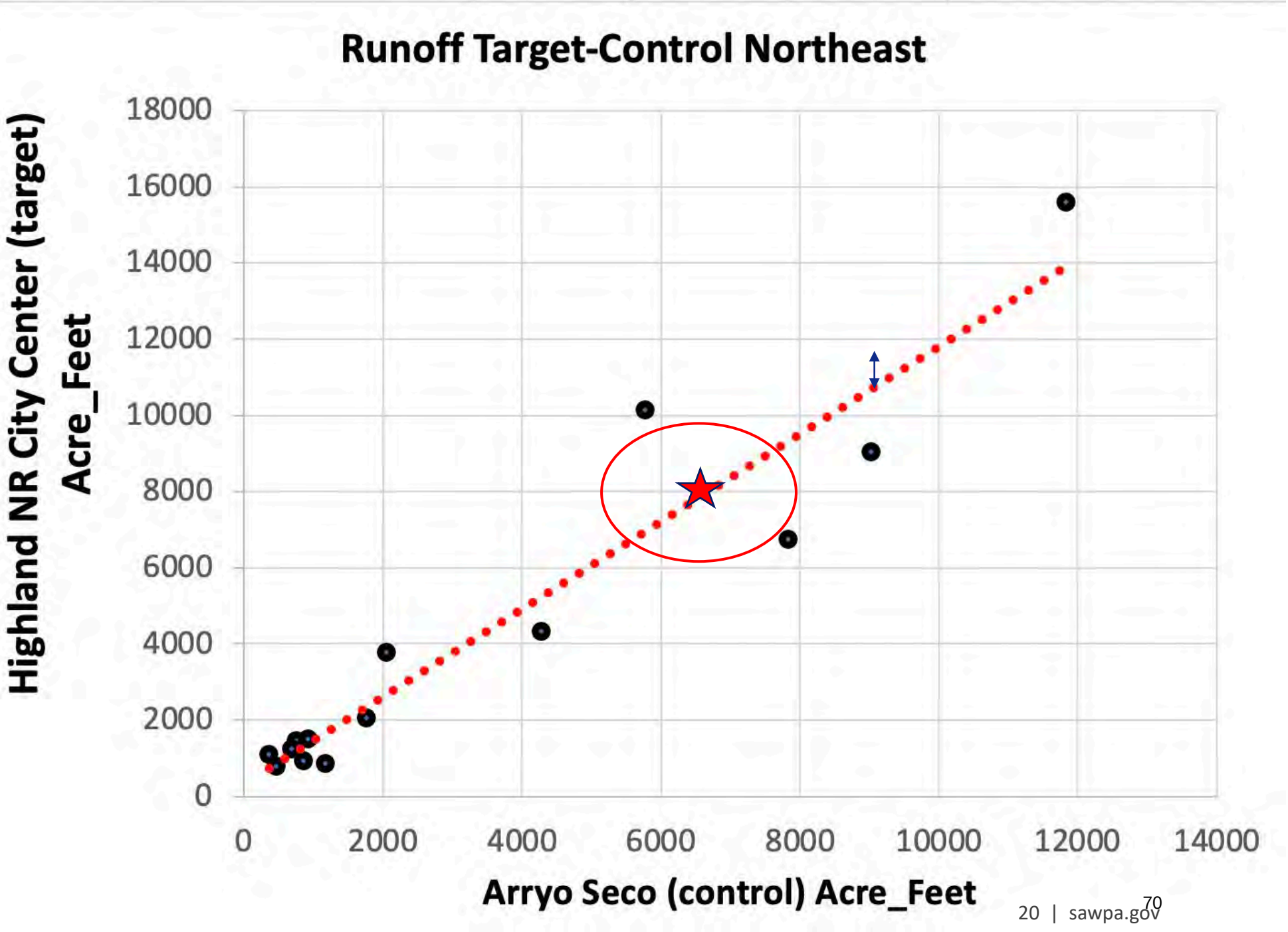
Northeast

Stream Guage - Target

Highland NR City Center

Task 5: Preliminary Results for Northeast Target Area:

Stream Gauge



Desert Research Institute

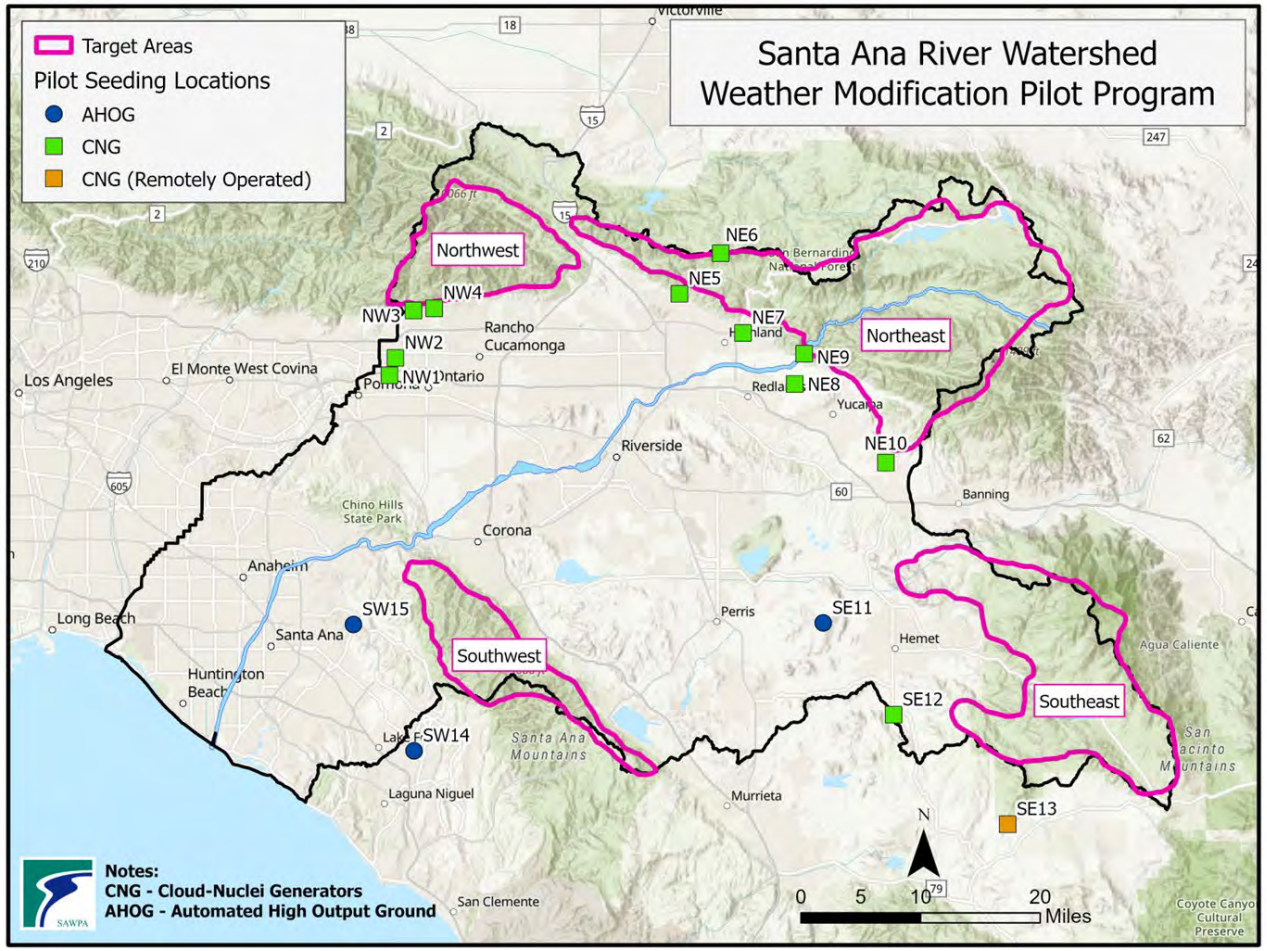
Task 4: Year 1 Preliminary Validation Results Summary

Snow Gauges

- Potential **positive** seeding precipitation increases:
  - Northeast target area
  - Southeast target area
- **No increases** for:
  - Northwest target area
  - Southeast target area
- Extra-area gauge:
  - Potential precipitation **increase**

Stream Guage (Northeast Target Area)

- Results of one stream gauge analysis:
  - **No increase**
- Analysis of more sites needed



Next Steps

Finalize Year 1 Validation Analyses: March 2025

Finalize Year 1 Validation Report: April 2025

Review Recommendations for Validation Tasks: May 2025

Questions