



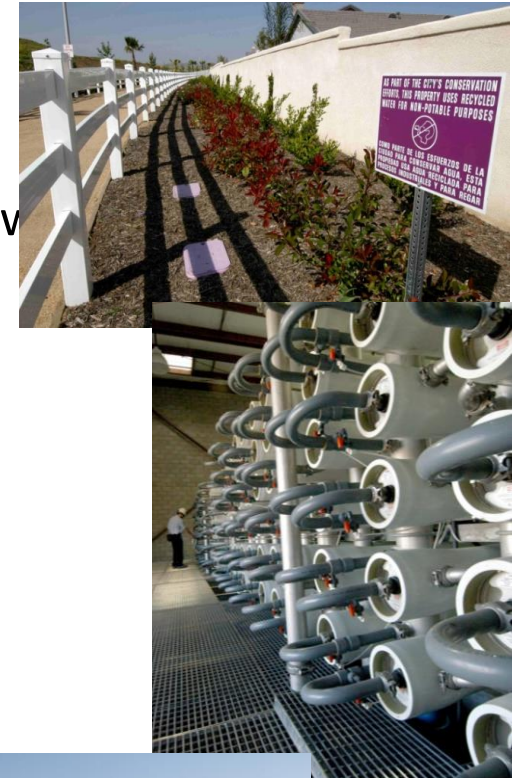
Groundwater Reliability Plus Program

Purified Water Replenishment Project

Dave Ahles, P.E.
Principal Civil Engineer – Recycled Water
May 18, 2021

Agenda

- EMWD Overview
- Groundwater Reliability Plus Overview
- Purified Water Replenishment (PWR) Project Overview
- Regulatory Compliance Approach
 - Groundwater Replenishment Reuse Project
 - Environmental (CEQA)
- Brine Management Alternatives
- Community Outreach Update
- Schedule





EMWD Overview

EMWD “By the Numbers”

ESTABLISHED IN

1950



SERVES:



WATER / WASTEWATER / RECYCLED



WHOLESALE



RETAIL



POPULATION:

839,000+



555

SQUARE MILE
SERVICE AREA

ALMOST

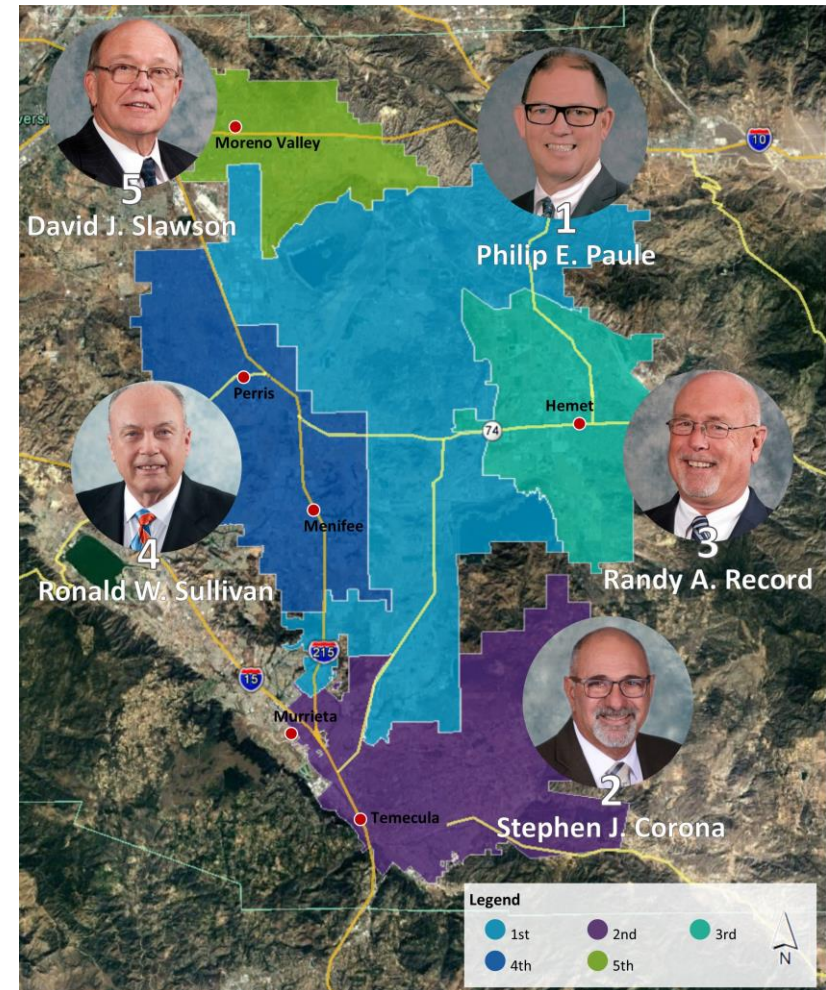


38%

CURRENTLY
BUILT OUT

About EMWD

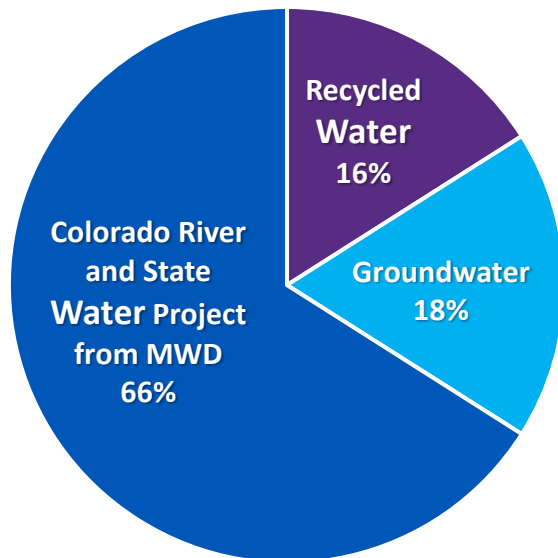
- Five district-elected board members
- More than 600 employees
- Annual operating budget of \$324 million for FY 2020-21
- Five year capital program of \$450 million
- Sixth largest public water utility in California
- EMWD's GM: Joe Mouawad
- One of 26 member agencies of The Metropolitan Water District of Southern California (MWD)
- EMWD Representative to MWD:
 - Randy Record



Water Supply Portfolio – 1990 and 2019

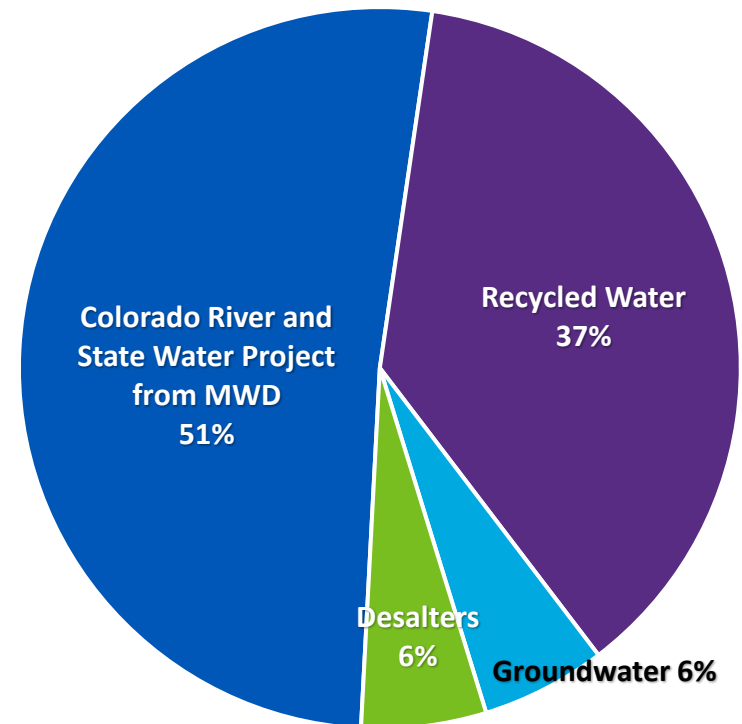
1990

Population served: 358,000

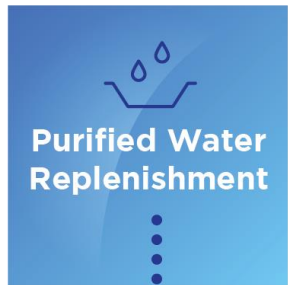
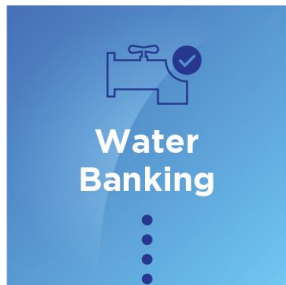


2020*

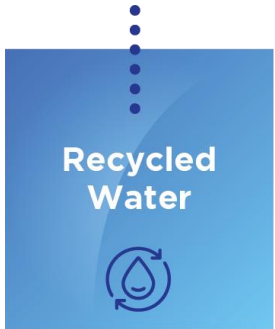
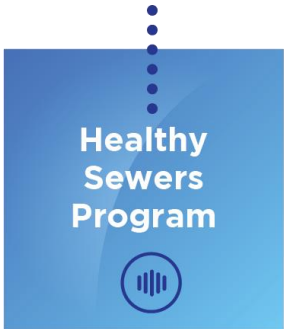
Population served: 850,000



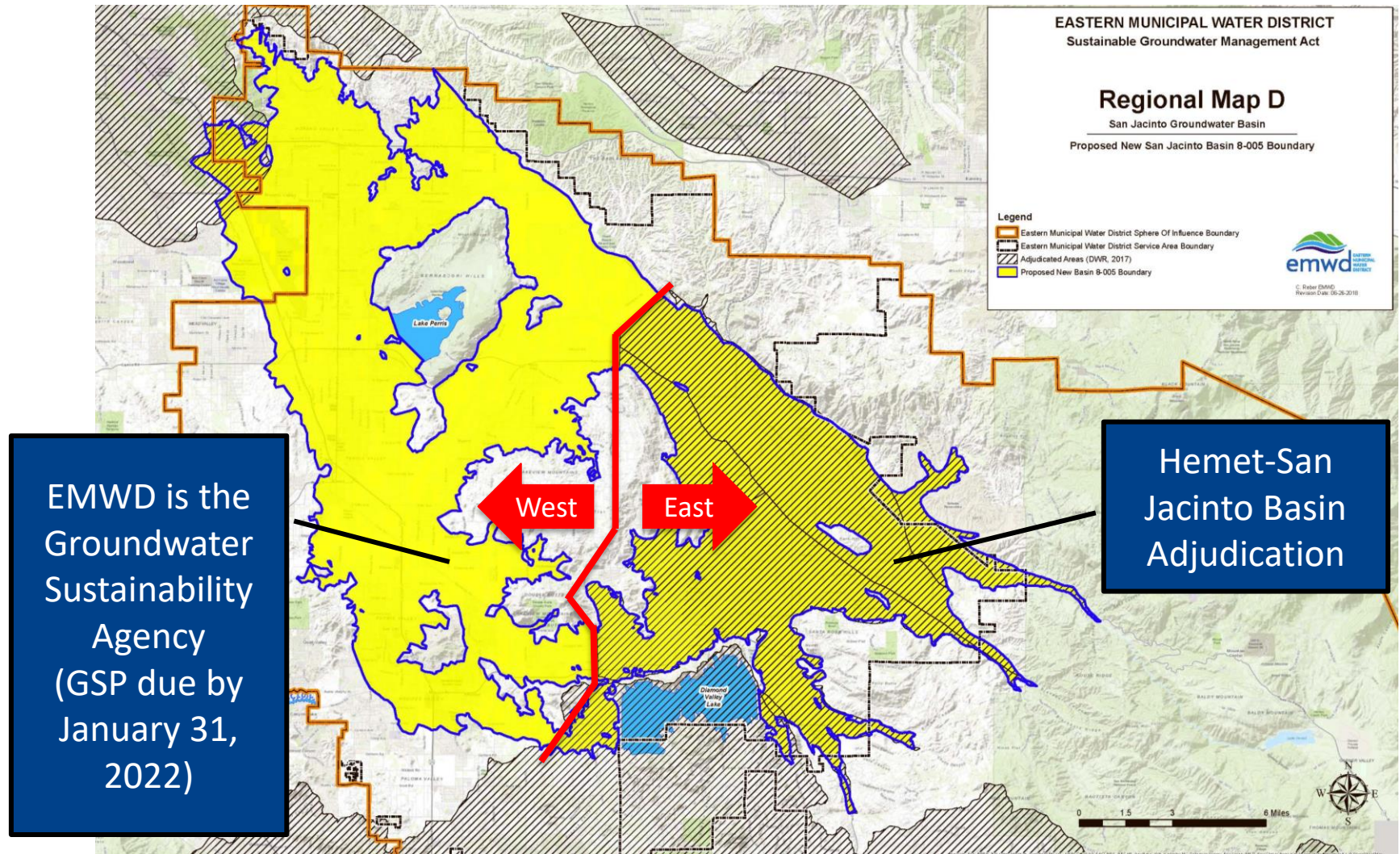
*Total Water Supply: 135,008 AF per *EMWD Comprehensive Annual Financial Report, FYE 2020*



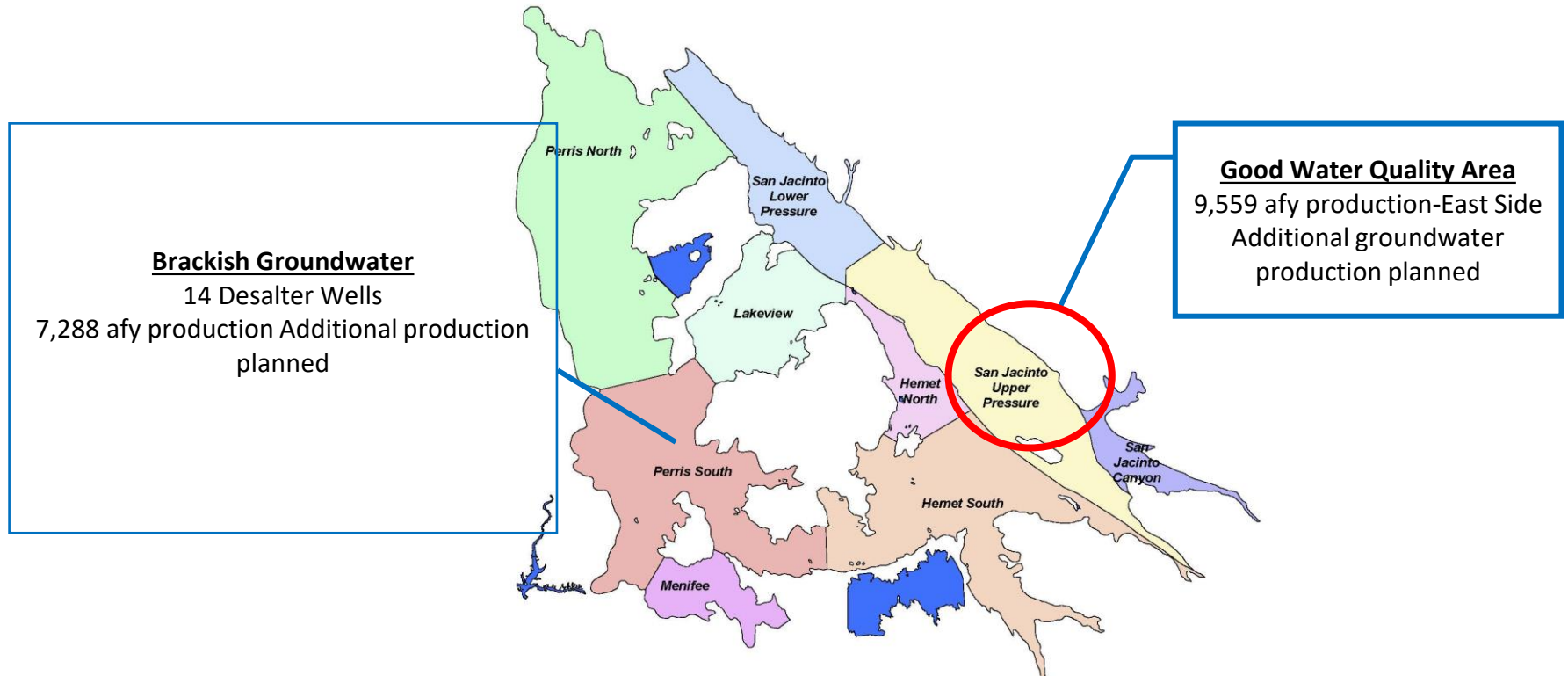
Groundwater Reliability Plus



San Jacinto Groundwater Basin

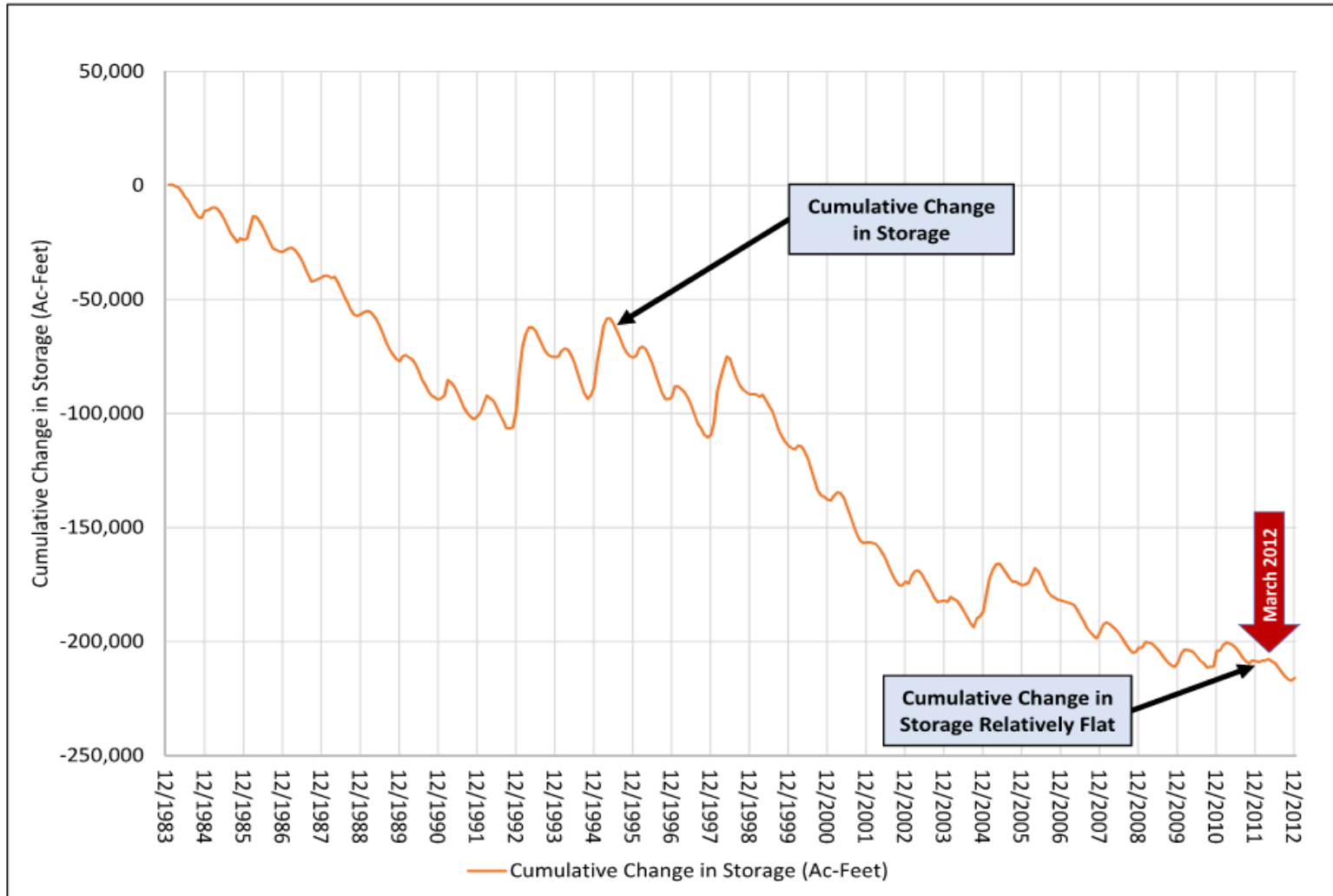


San Jacinto River Watershed - Groundwater Management Zones

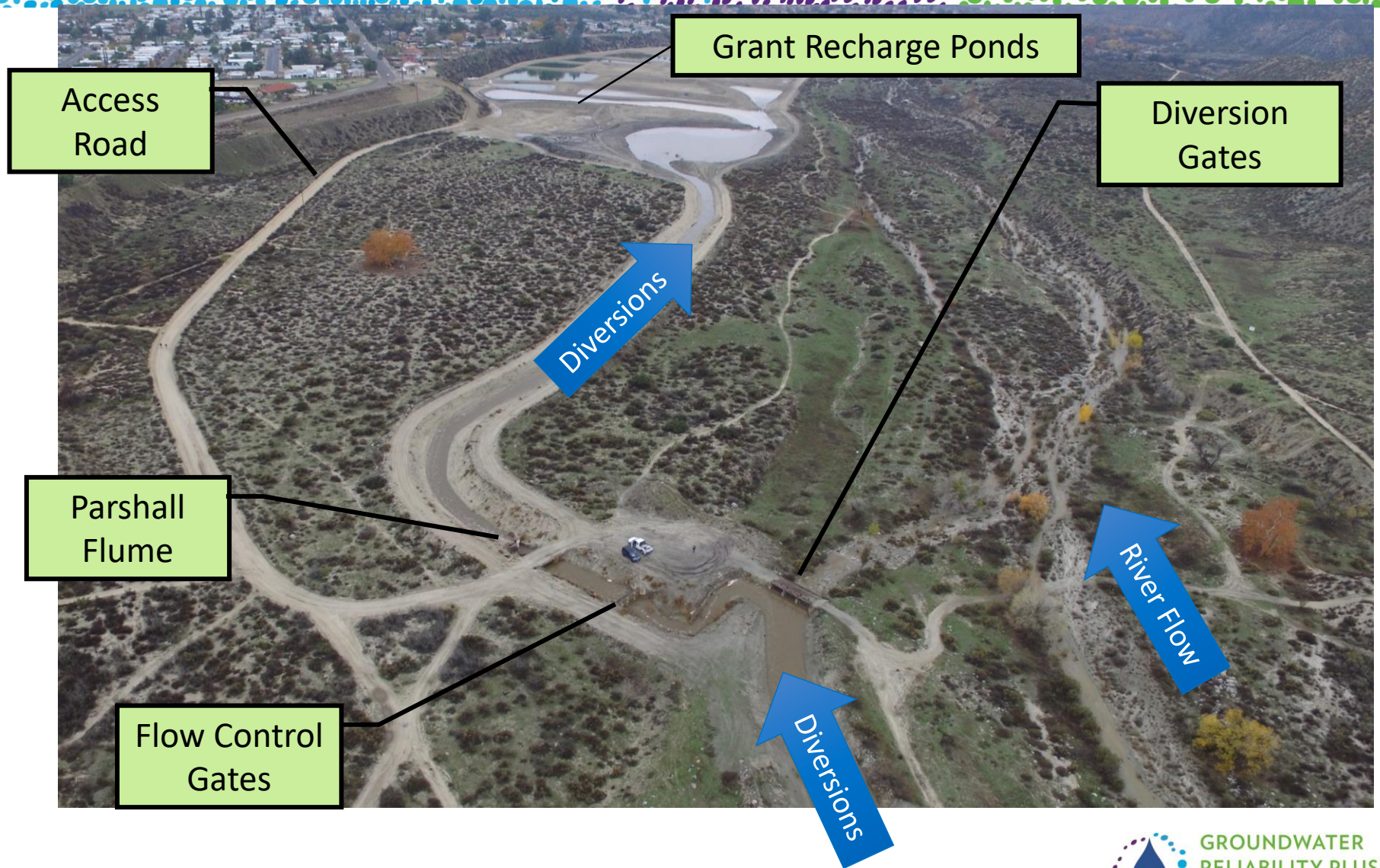


BASIN PLAN OBJECTIVES	PERRIS NORTH	SAN JACINTO LOWER PRESSURE	LAKEVIEW HEMET NORTH	PERRIS SOUTH	SAN JACINTO UPPER PRESSURE*	HEMET SOUTH	MENIFEE
TDS (mg/L)	570	520	520	1260	320 (500)	730	1020
TIN (mg/L)	4.1	1.0	1.8	2.5	1.4 (7.0)	4.1	2.8

Upper Pressure Zone Change in Storage



Stormwater Capture and Recharge - San Jacinto River

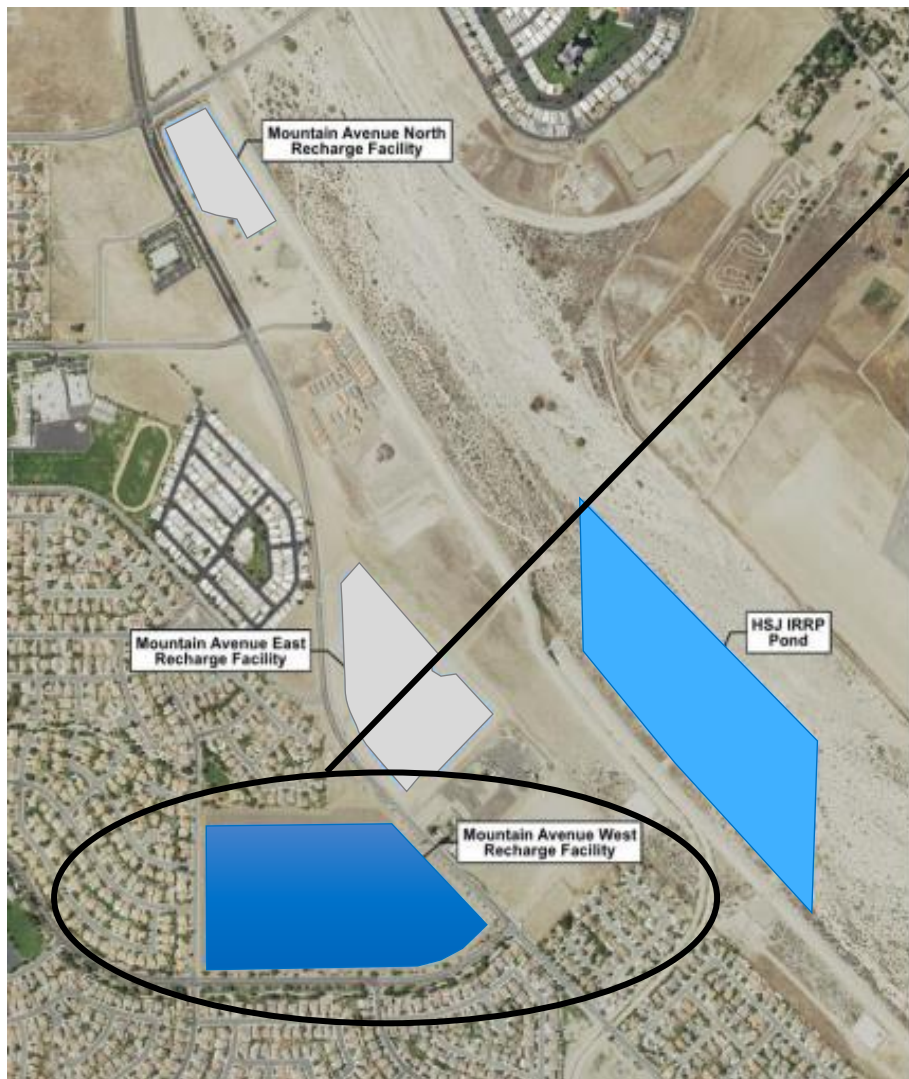


Current Groundwater Replenishment Program

- Existing Facilities
 - Raw Water Supply Pipeline
 - Recharge Ponds
 - Monitoring Wells
 - Annual Recharge:
 - 7,500 acre-feet per year (AFY) on average basis
 - 2016 Recharge: 12,656 AFY
 - 2017 Recharge: 19,686 AFY
 - 2018 Recharge: 4,782 AFY
 - 2019 Recharge: 16,045 AFY
 - 2020 Recharge: 4,450 AFY (3/30/2020)
- * Excludes recharge of storm water captured in San Jacinto River, Soboba Pit and Grant Avenue Recharge ponds



Mountain Ave. West Recharge Facility



Construction Contract:

- Start Date: Sept. 16, 2019
- Completion: May. 2021
- Cost: \$13,857,059

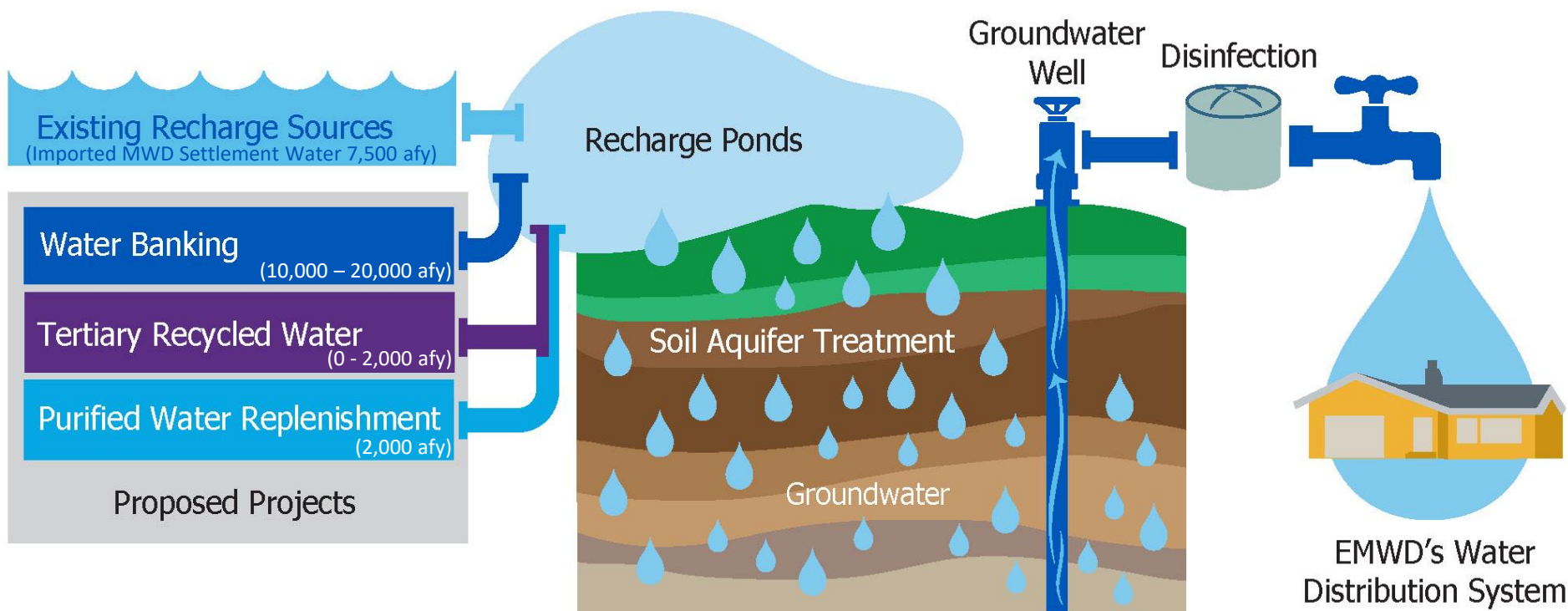
Proposed Recharge:

7,000 AFY Conjunctive Use
21,000 AFY Water Bank

Recharge Capacity:

30,000 AFY

Current and Proposed Operations



Future recycled water supplies are sufficient to meet
current and future demands
EMWD's service area is only 38 percent built out

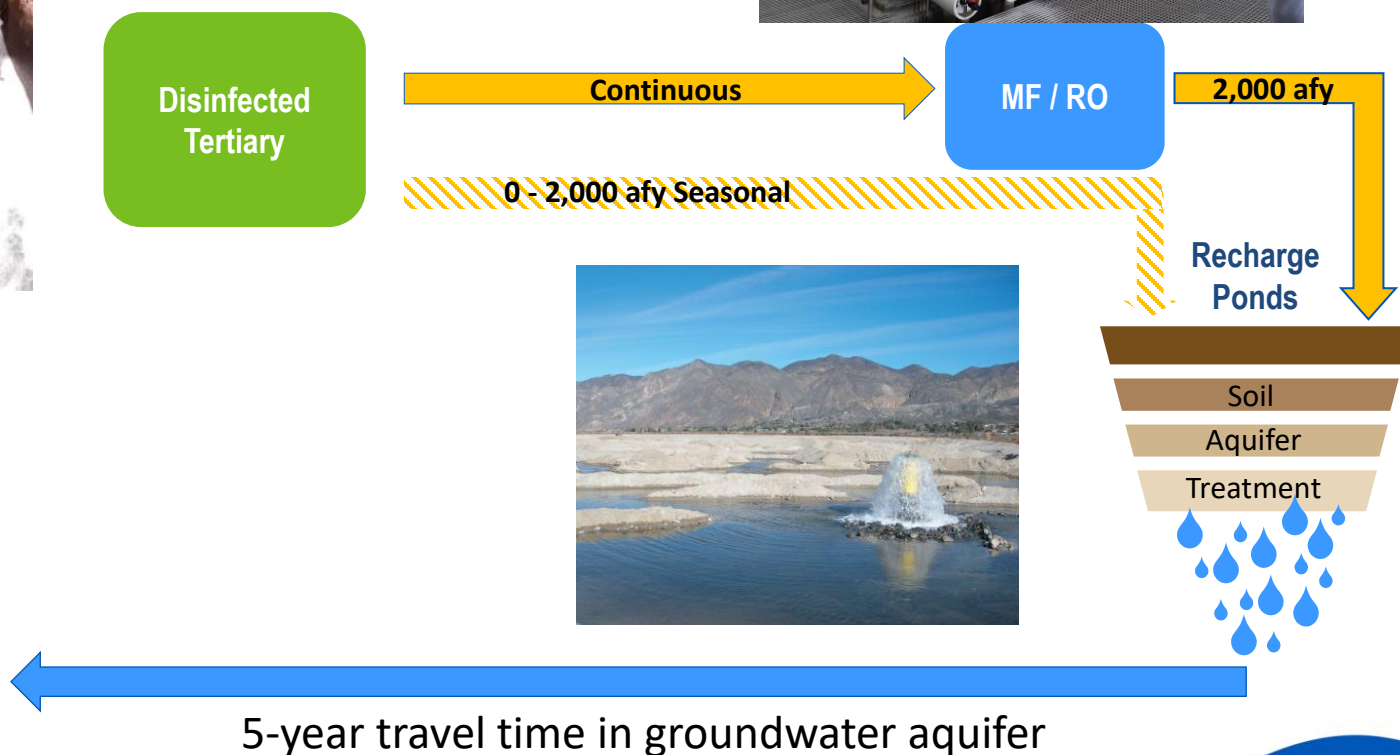
Purified Water Replenishment Project Overview



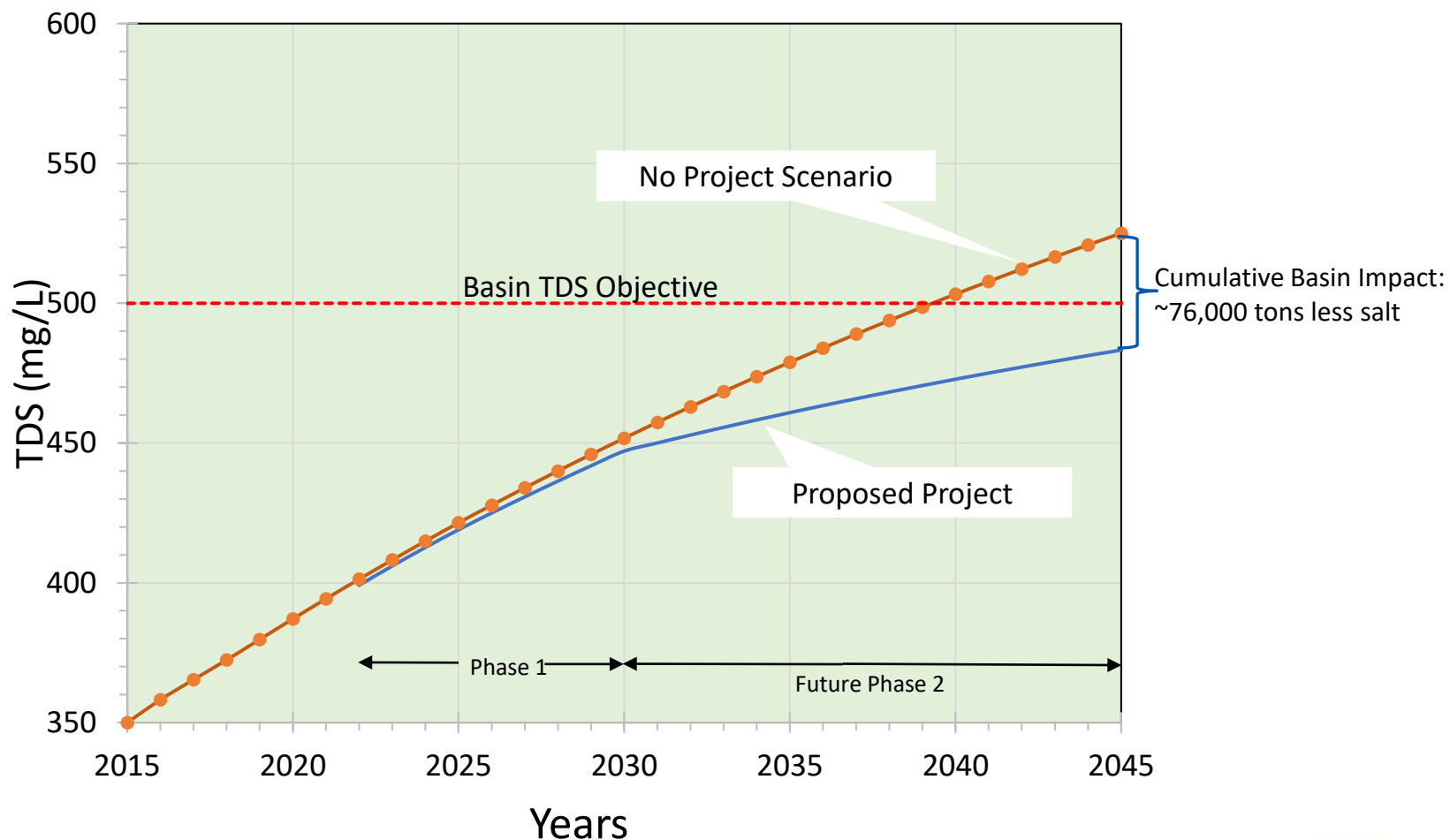
**GROUNDWATER
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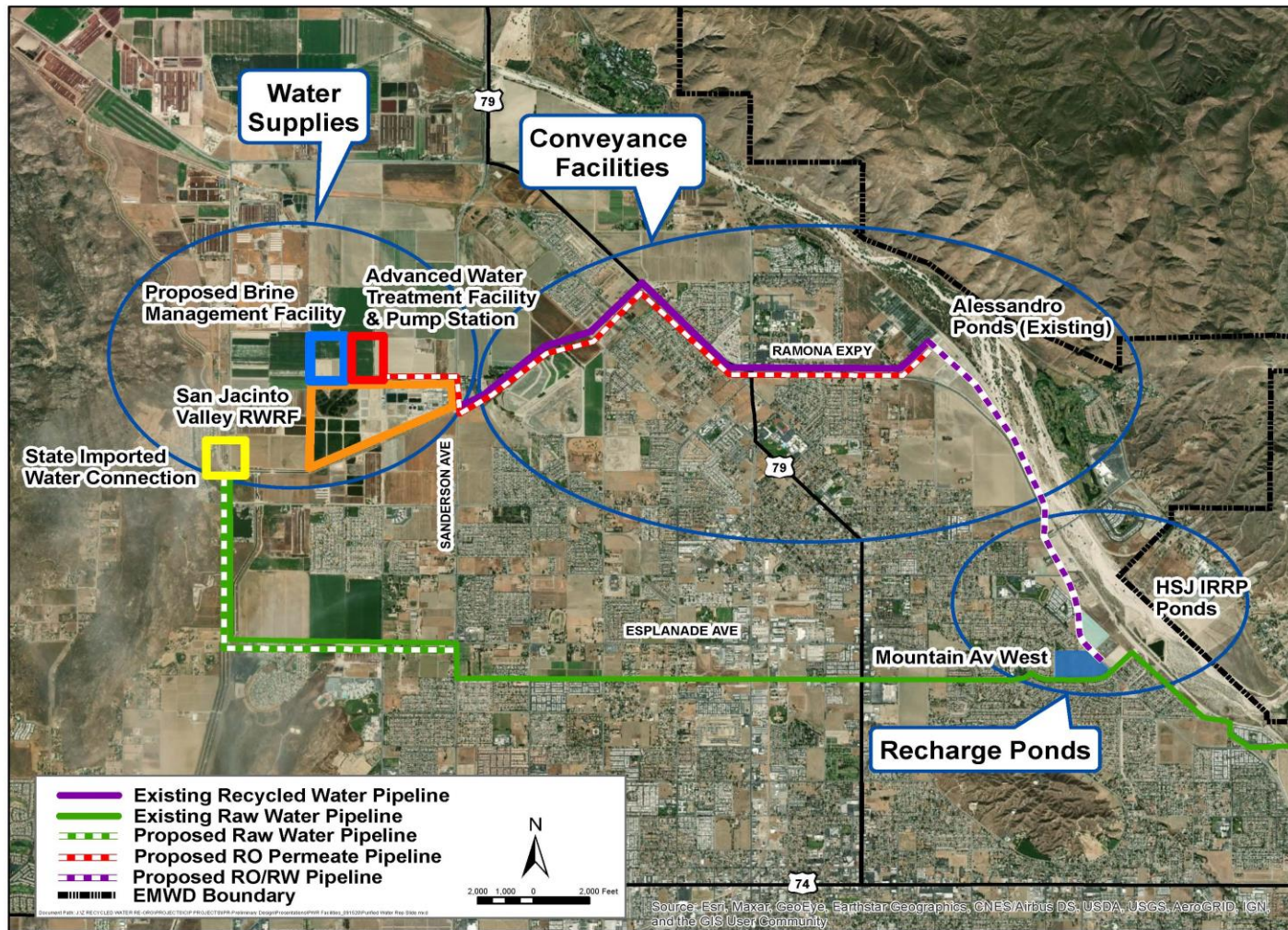
Proposed Purified Water Replenishment



Groundwater Quality – San Jacinto Upper Pressure Management Zone

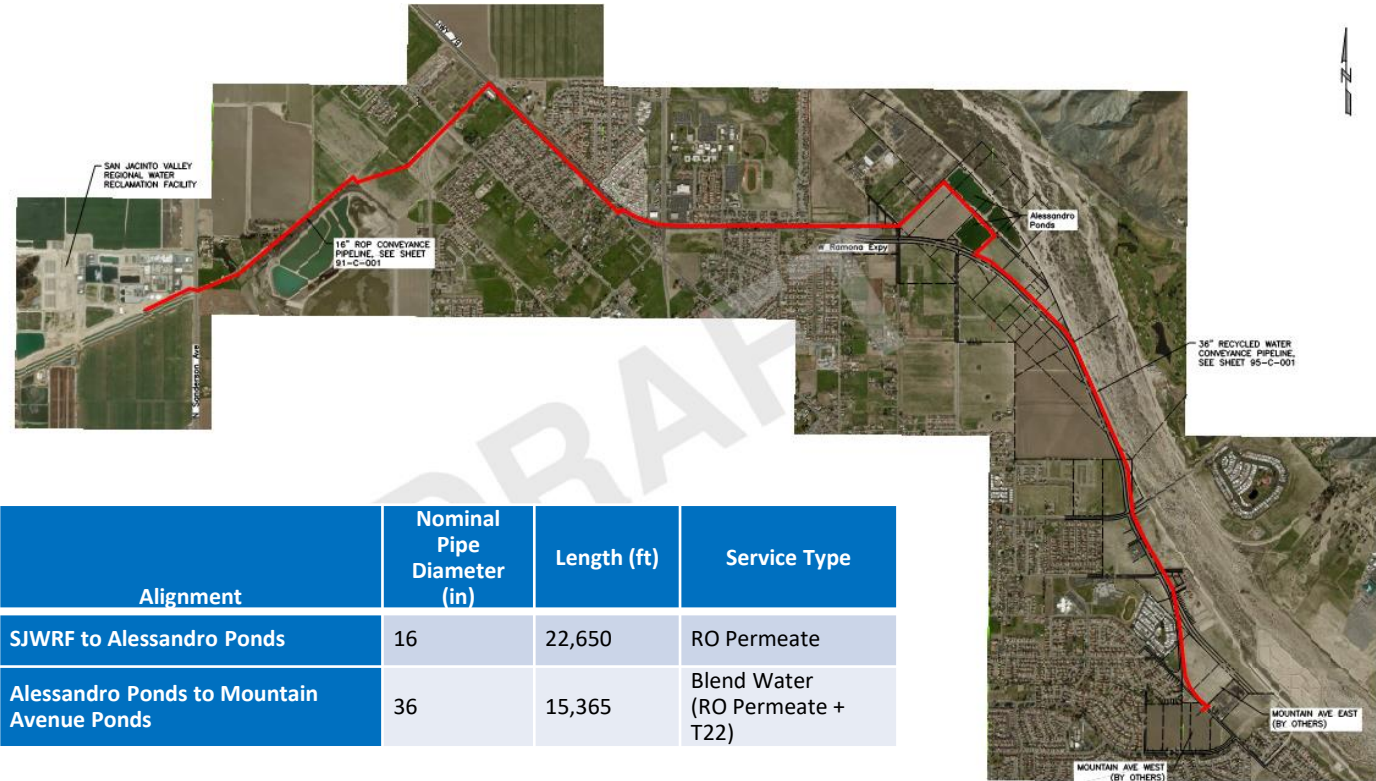


Proposed Purified Water Replenishment Facilities

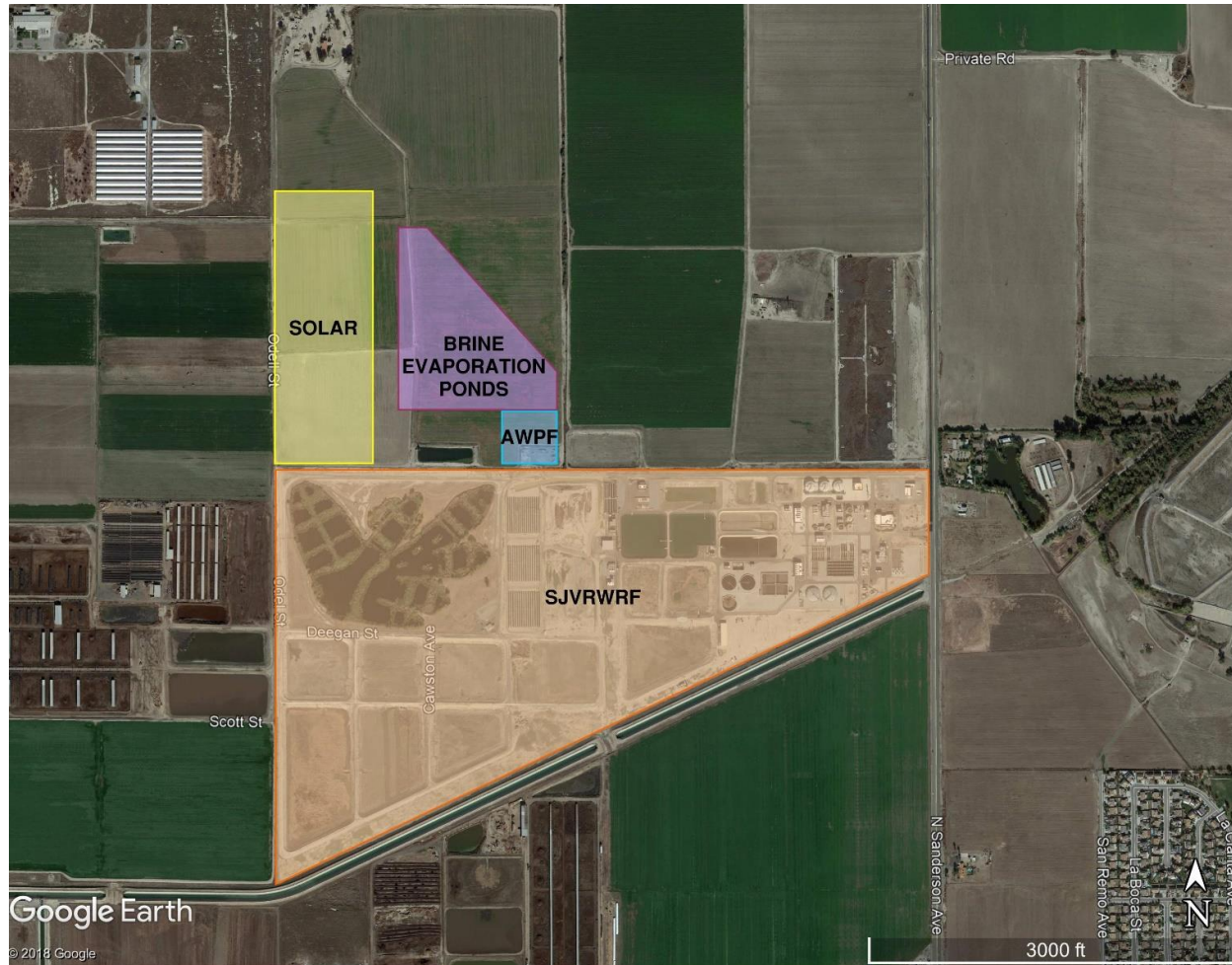


PWR Preliminary Design Update

Conveyance Pipelines - Alignments

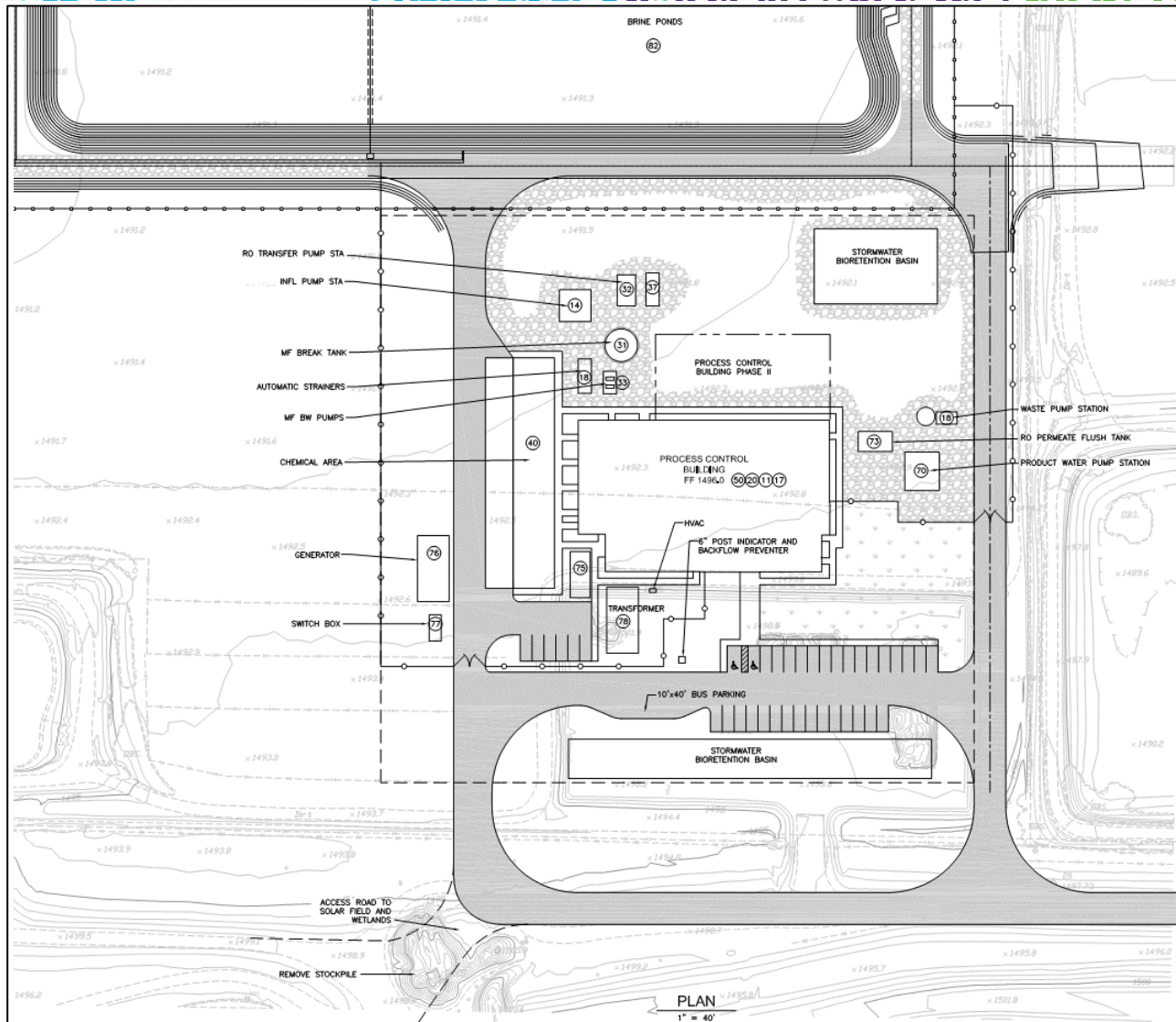


Treatment Facilities Location



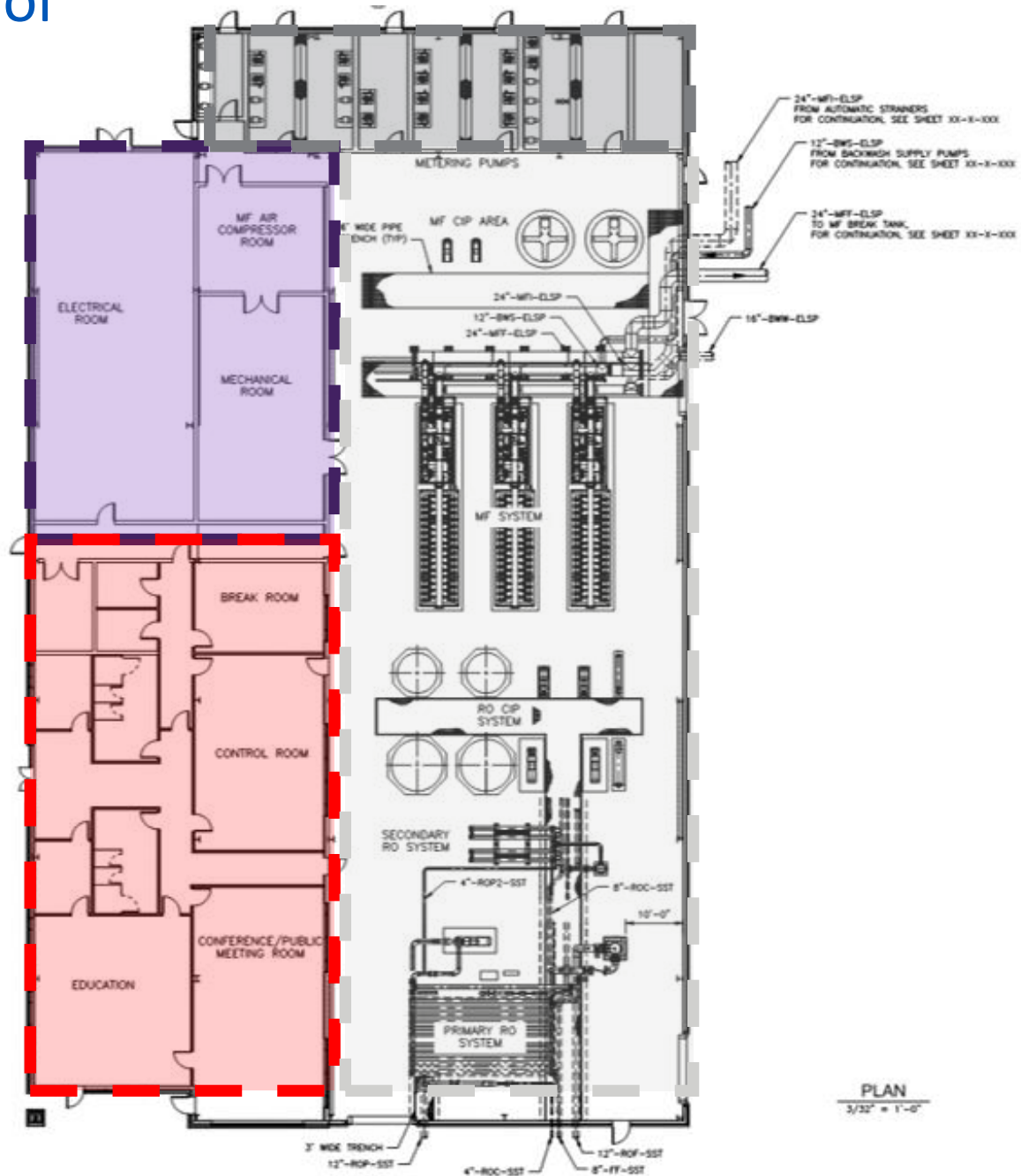
Section 3 – Project Facilities

AWPF Site Plan

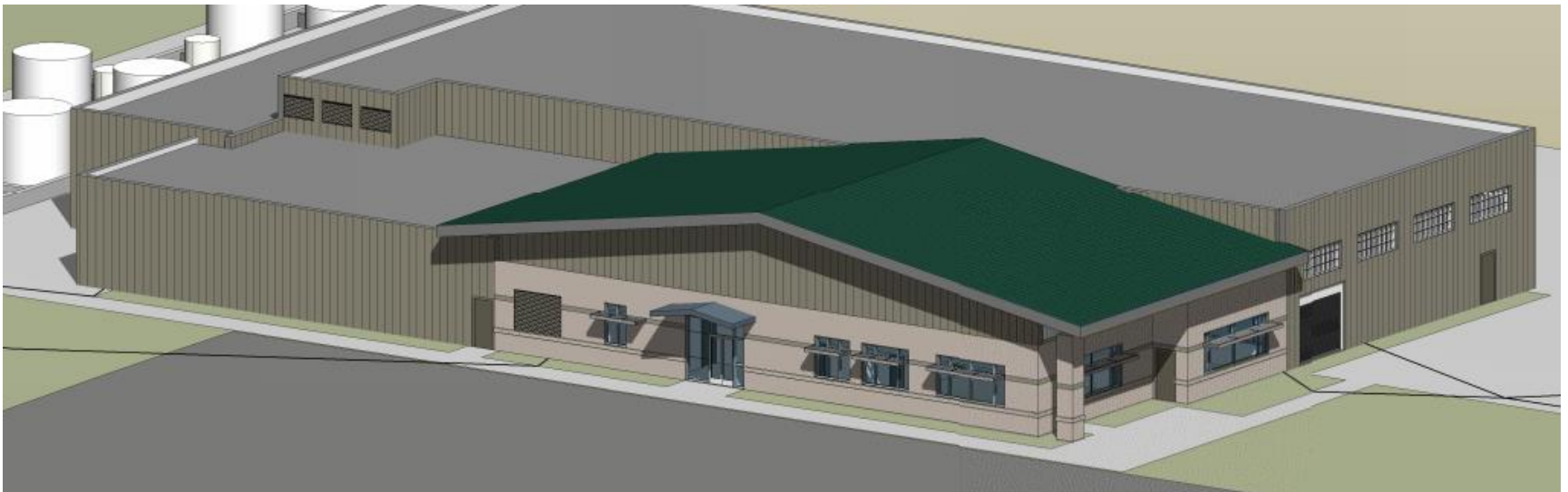


PWR Update – Control and Process Building

- Control and Process Building
 - Administration Area
 - Process Area
 - Ancillary Facilities Area
 - Chemical Pumping Area



Advanced Water Purification Facility Control and Process Building



Groundwater Replenishment Reuse Project Regulatory Compliance Approach



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Regulatory Compliance Approach – 2 Steps

- Title 22 Engineering Report and Public Hearing for DDW's review and conditional approval
- Permit Application / Report of Waste Discharge for RWQCB's review to prepare and issue the permit

**Permitting is consistent
with State guidelines**

Pathogenic Microorganism Control

Pathogen Reduction Credits Summary

Tertiary Recycled Water (50%) + Advanced Treated Water (50%)

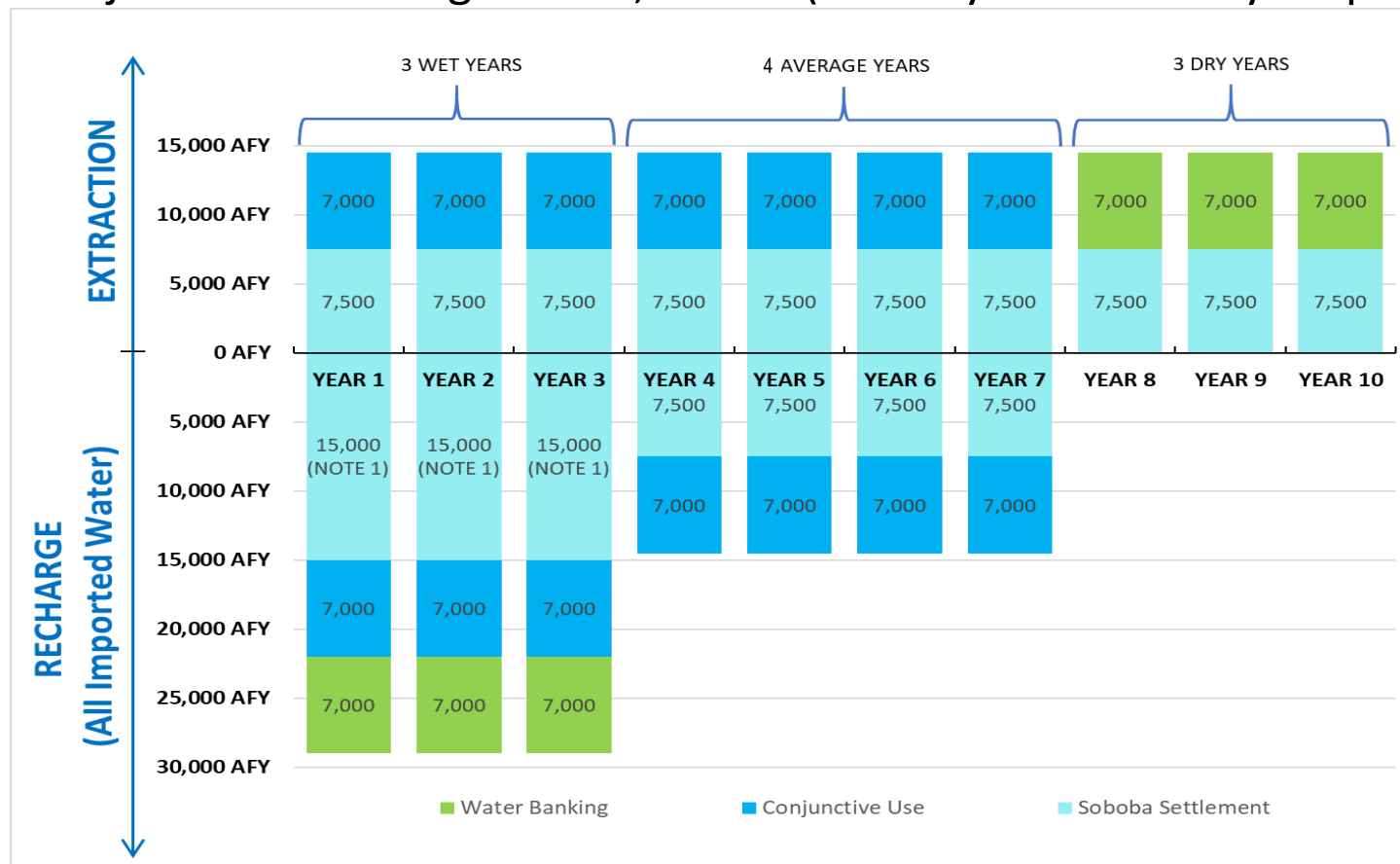
Pathogen	Minimum DDW Requirements (LRV)	Minimum Expected LRV Credits			
		SJVRWRF	AWPF	Underground Retention ³	Total
		Disinfected Tertiary Effluent with Underground Retention ^{1, 2}	Partial RO Product ²		
Virus	12	4	0	>8	>12
Giardia cyst	10	10	0	0	10
Cryptosporidium oocyst	10	10	0	0	10

1. Per Title 22 Section 60320.108 (c): filtration in compliance with Title 22 Section 60301.320, plus disinfection in compliance with Title 22 Section 60301.230, plus at least 6 months underground retention time. Virus LRV credits for disinfected tertiary RW shown are conservative and based on Title 22 Section 60301.230.
2. No credit for MF-RO treatment is shown because the AWPF treats only a portion of the recycled water.
3. Numerical modeling will serve as the basis for pathogen LRV credits per Title 22 Section 60320.108 (f), based on 0.5-log/month and 62 months modeled underground retention time to the nearest downgradient well (EMWD-90).

(See Tables 5-3 of Title 22 ER)

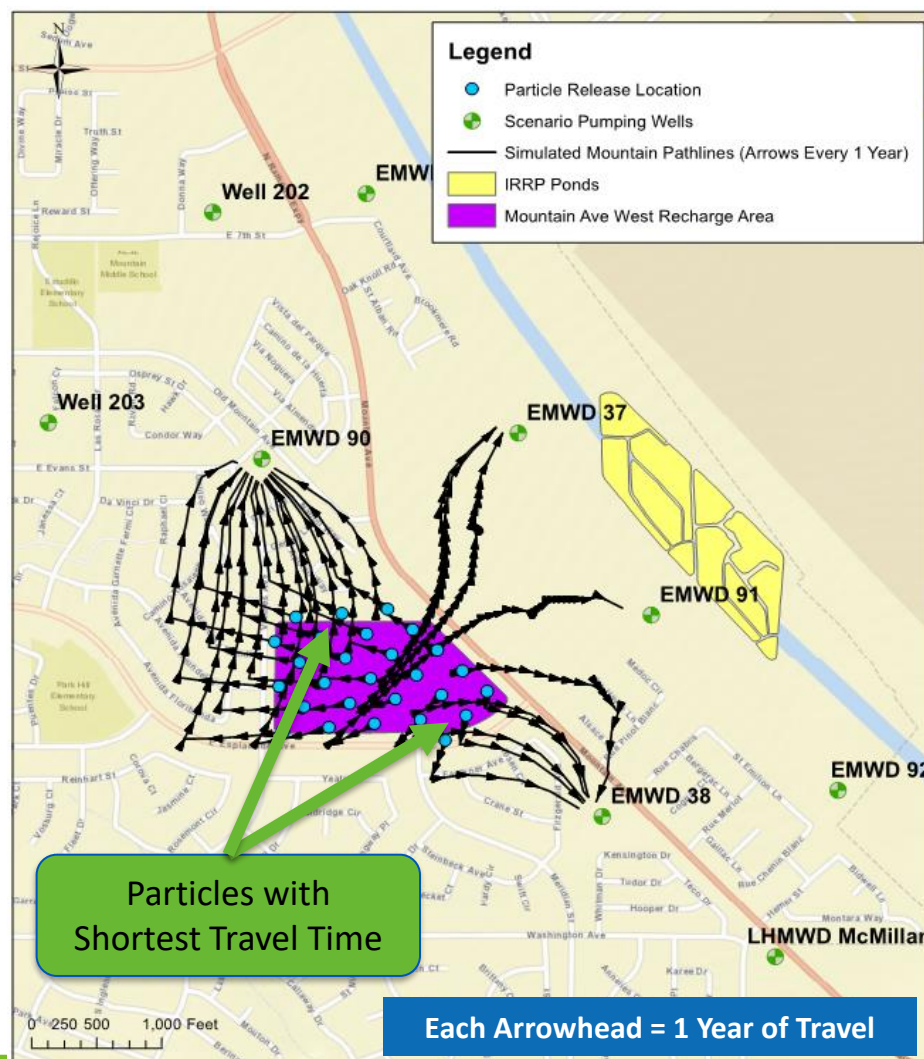
Sources of Diluent Water – Imported Water

- Water Banking Program: 21,000 AF (over 3 years in a 10-year period)
- Conjunctive Use Program: 49,000 AF (over 7 years in a 10-year period)



Scenario Results: Mountain Avenue West

- Mounding = 215 feet
 - Above March 2012 water table
- Minimum travel time
 - EMWD 90 = 5.2 years
 - EMWD 38 = 5.8 years
- Pathlines represent combined recycled and imported water



Monitoring Wells



Estimated Water Quality through SAT for First Year of Operation at 20% Recycled Water Contribution

Parameter	Blended Recycled Water (Pre-SAT)	Imported Water (Pre-SAT)	Soil Treatment Factor (STF)	Diluted Water (Post-SAT)
TOC	3.5 mg/L	3.1 mg/L	75%	0.80 mg/L
TDS	300 mg/L	262 mg/L	0%	270 mg/L
Total Nitrogen	6.3 mg/L	0.8 mg/L	60%	0.8 mg/L
Nitrate as N	6.3 mg/L	0.4 mg/L	60%	0.6 mg/L (2.8 mg/L as NO ₃)

- Complies with Basin Plan “Maximum Benefit” objectives (500 mg/L TDS, 7 mg/L Nitrate)

Environmental (CEQA) Regulatory Compliance Approach



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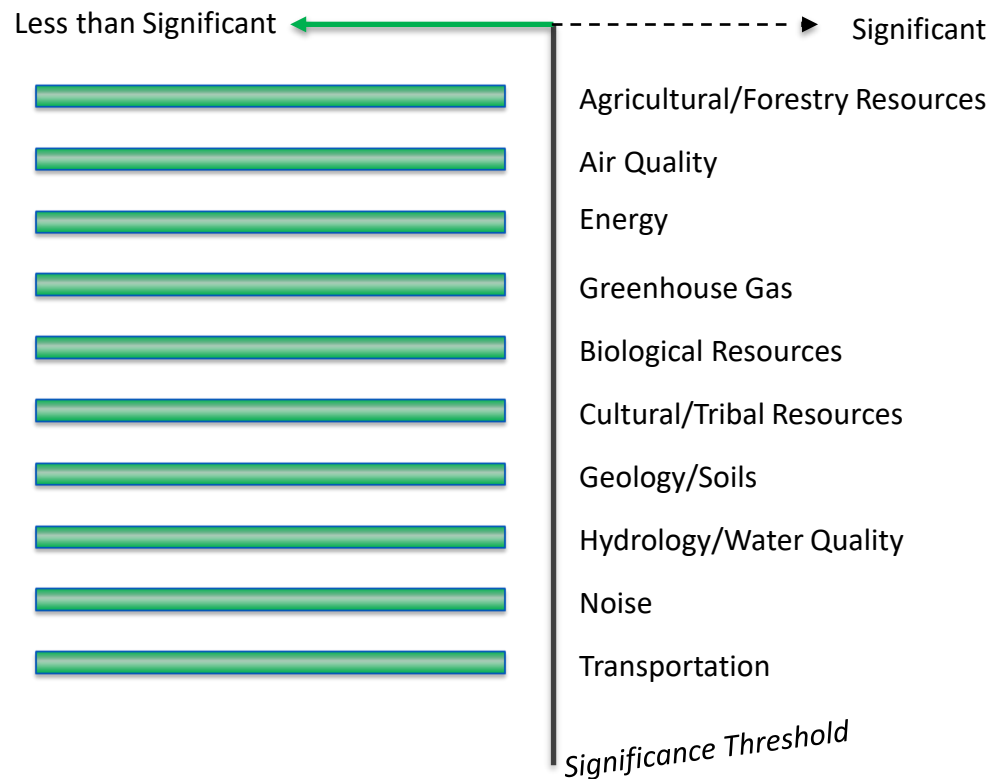
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CEQA Process

- Notice of Preparation of Environmental Impact Report (EIR)
 - 60-day Public Review due to COVID (typically 30-days)
 - NOP sent through State Clearinghouse to State Agencies, and to adjacent landowners
 - Comments received from:
 - California Department of Fish and Wildlife
 - Riverside County Flood Control District
 - Department of Water Resources
 - Native American Heritage Commission
 - AB52 Consulting Tribes:
 - Soboba Band of Luiseno Indians
 - Agua Caliente Band of Cahuilla Indians
 - Rincon Band of Luiseno Indians
- Purified Water Replenishment EIR Public Review Period is closed
- Mountain Avenue West Basin analyzed in the Enhanced Recharge and Recovery Program (ERRP) EIR – not included in PWR EIR

Key Draft Environmental Impact Report Findings

- All impacts identified were reduced to a less than significant level with mitigation measures
- Potential community impacts identified included traffic and noise
- No significant unavoidable construction or operational impacts would result from implementation of the PWR Project
- Public hearing anticipated early 2021



Brine Management



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Project Facilities

Project Design Flows

Stream	Flow (mgd)
AWPF Feed	2.3
Primary RO Feed	2.2
Secondary RO Feed	0.32
AWPF Product	2.0
Secondary RO Concentrate	0.16 (110gpm)

System	Recovery
Automatic Strainer	98%
MF	94%
Primary RO	85%
Secondary RO	50%
Overall RO	92.5%



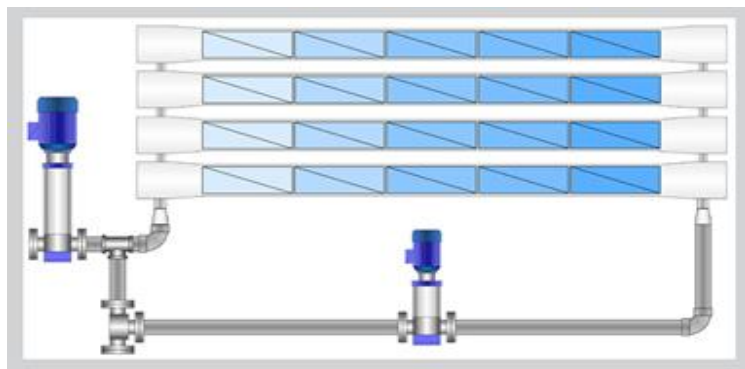
Brine Management Alternatives

Brine Evaporation Pond

- Evaporation Surface Area – 20 acres
- Pond depth – 11 feet
- Maximum Storage Capacity – ~58 MG

Brine Concentration Pilot Project

- Test Closed Circuit Reverse Osmosis
- Viable option to replace a conventional RO and reduce brine volume produced



*Desalitech has estimated up to 95% recovery, compared to PWR PDR estimate of 92.5%
First Stage 85%, second stage 50%*

CCRO Pilot Project



Purified Water Replenishment Community Outreach Update



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Community Outreach

On-Going

- Continue Healthy Sewers Campaign Outreach
- Increase Latino Outreach
- Continue internal Outreach
- MSJC Curriculum Partnership
- EMWD K-12 Education Field Trips
- One-on-One Stakeholder Meetings

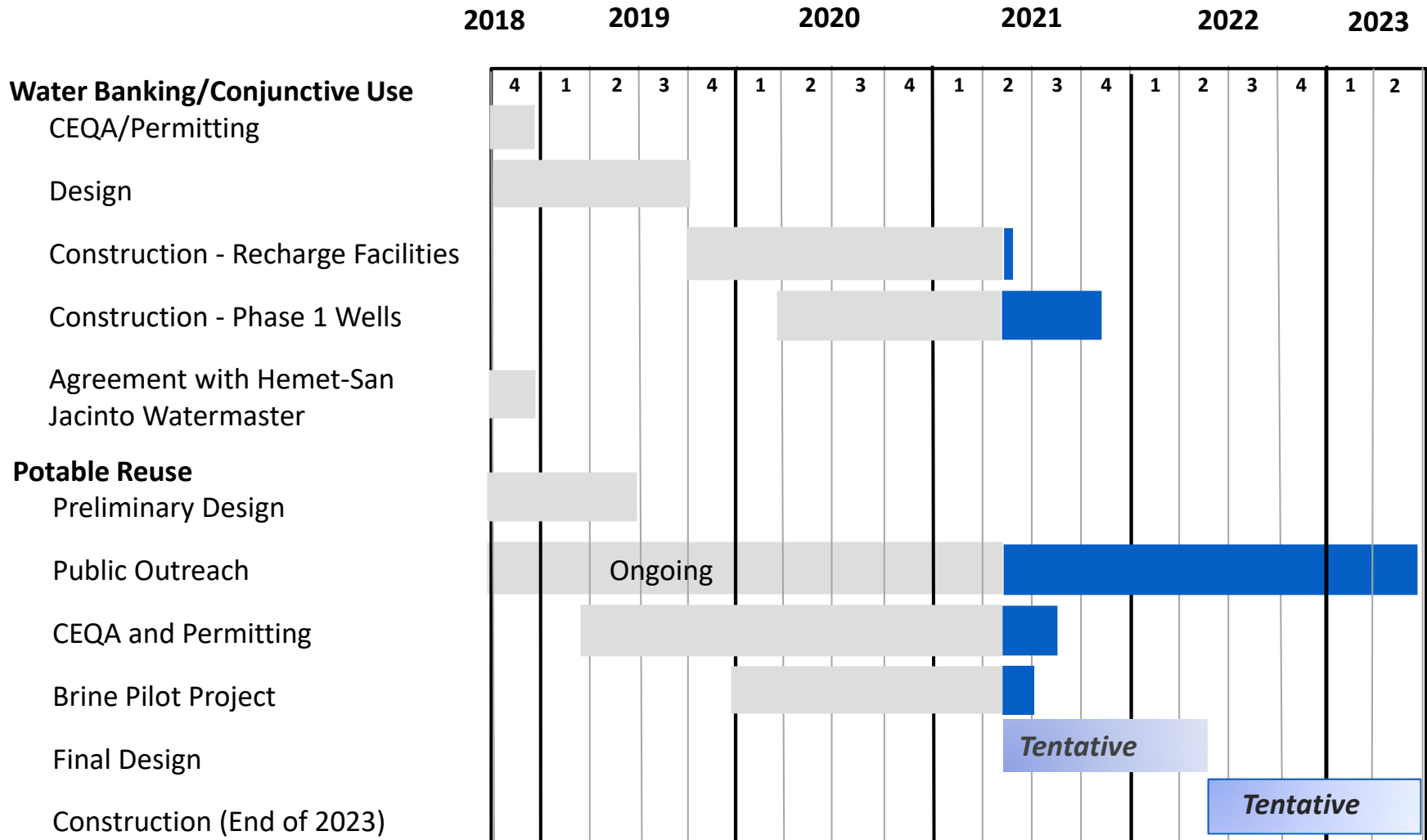


Approach

- Stakeholder Presentations
- Community Presentations
- Newsletters
- Micro-Website
- Social Media
- Email Updates
- Facility Tours
- Video Engagement



Enhanced Groundwater Replenishment Program Schedule





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Thank you

Contact Information

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