Water COUNTS ACADEMY

WELCOME

Water COUNTS ACADEMY

WATER QUALITY
INTRODUCTIONS

Marion Champion

GOVERNMENT AND PUBLIC AFFAIRS MANAGER,
MISSION SPRINGS WATER DISTRICT

Water COUNTS ACADEMY

WATER QUALITY

WATER QUALITY & REGULATIONS

Joanne Le

DIRECTOR OF ENVIRONMENTAL SERVICES,
COACHELLA VALLEY WATER DISTRICT

Providing Safe Drinking Water

Coachella Valley Water Counts Academy

February 13, 2024

Our Mission
To meet the water-related needs of the people through dedicated employees, providing high quality water at a reasonable cost.

2022 By the Numbers (Fact Sheet)

DOMESTIC (DRINKING) WATER

SERVICE INFORMATION

Population Served	270,000
Active Accounts[1]	113,481
Average Daily Demand	81.4 MGD
Total Water Delivered	91,230 AF

SYSTEM INFORMATION

Active Wells	94
Total Daily Well Pumping Capacity	237 MGD
Distribution Reservoirs	67
Storage Capacity	171.7 MG
Distribution Piping System	2,043 Miles

BLENDED, MVP, RECYCLED WATER[2]

SERVICE INFORMATION

Active Accounts	24
Average Daily Flow	18 MGD
Total Blended & MVP Water Supplied:	22 MGD

SYSTEM INFORMATION

Wastewater Reclamation Plants	2
Total Daily Tertiary Capacity	17.5 MGD
Distribution Piping System	37 Miles

CANAL WATER

SERVICE INFORMATION

Irrigable Acres for Service	77,121
Active Accounts	1,348
Total Water Delivered	314,978 AF
Average Daily Demand	863 AF
Maximum Daily Demand	1,470 AF

SYSTEM INFORMATION

Reservoirs	2
Storage Capacity	1,361 AF
Distribution System	485 Miles
Pumping Plants	16
Length of Canal	123 Miles

AGRICULTURAL DRAINAGE

Total on-farm drains	2,298 Miles
Acreage with farm drains	37,425 Acres
District open drains	21 Miles
District pipe drains	166 Miles

GROUNDWATER MANAGEMENT

In cooperation with Desert Water Agency

Replenishment facilities	4
Replenishment from imported water	53,953 AF
Imported supply since 1973 through 2022	4,562,483 AF

STORMWATER PROTECTION

SERVICE INFORMATION

Service Area	381,479 acres

SYSTEM INFORMATION

Stormwater Channels	18
Length of Whitewater River/ Coachella Stormwater Channel	50 Miles
Length of all Regional Flood Protection Facilities	169 Miles

WASTEWATER

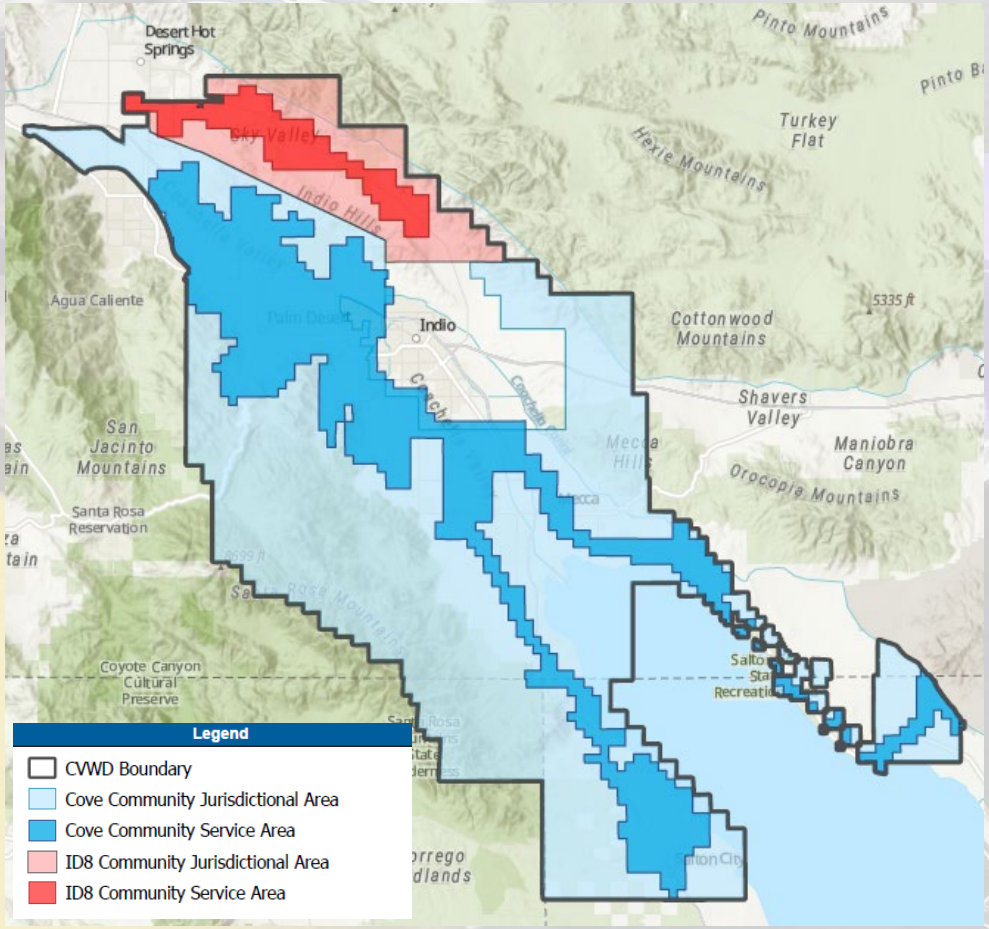
SERVICE INFORMATION

Population Served	245,000
Active Accounts	103,616
Average Daily Flow	17.05 MGD

SYSTEM INFORMATION

Wastewater Reclamation Plants	5
Total Daily Plant Capacity	33.1 MGD
Collection Piping System	1,170 Miles

CVWD Domestic Water Service Area



Compliance Monitoring and Reporting

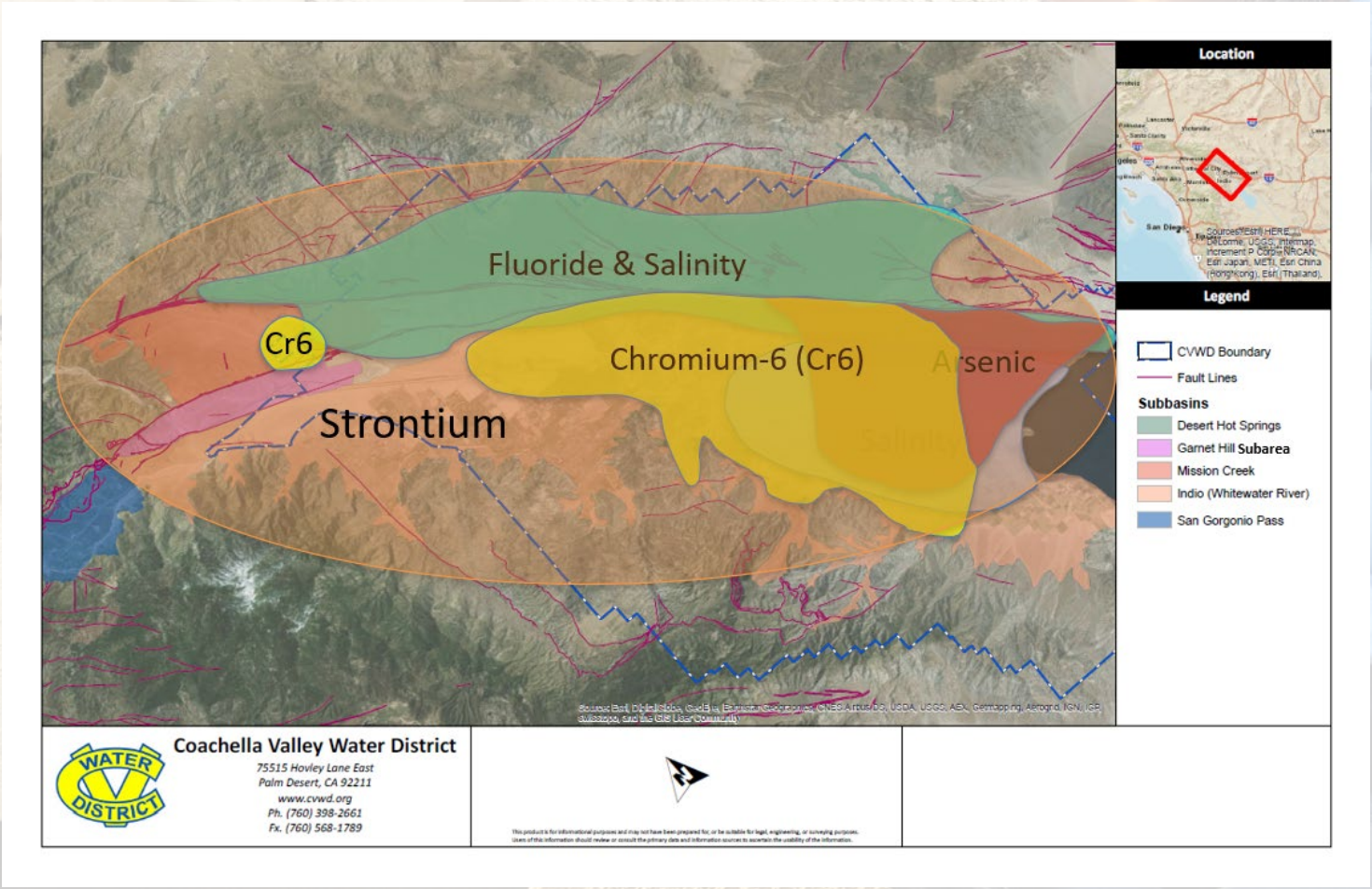
Domestic Water [Safe Drinking Water Act (SDWA) 1974, SDWA Amendment 1996],
- Wells, Treatment Plants, Distribution System, Customer Taps

Sanitation [Clean Water Act (CWA) 1972, CWA Amendment 1977, Water Quality Act 1987]
- Water Reclamation Plant
- Coachella Valley Storm Chanel (CVSC) near WRP 4
- Sanitary Sewer Overflow

Stormwater
- Portola Outfall
- Coachella Valley Storm Channel at Avenue 52 Bridge

Report results to SWRCB and RWQCB

Coachella Valley Groundwater Basin



Coachella Valley Groundwater Basin Arsenic Challenge

Arsenic Background

Abundant in earth's crust

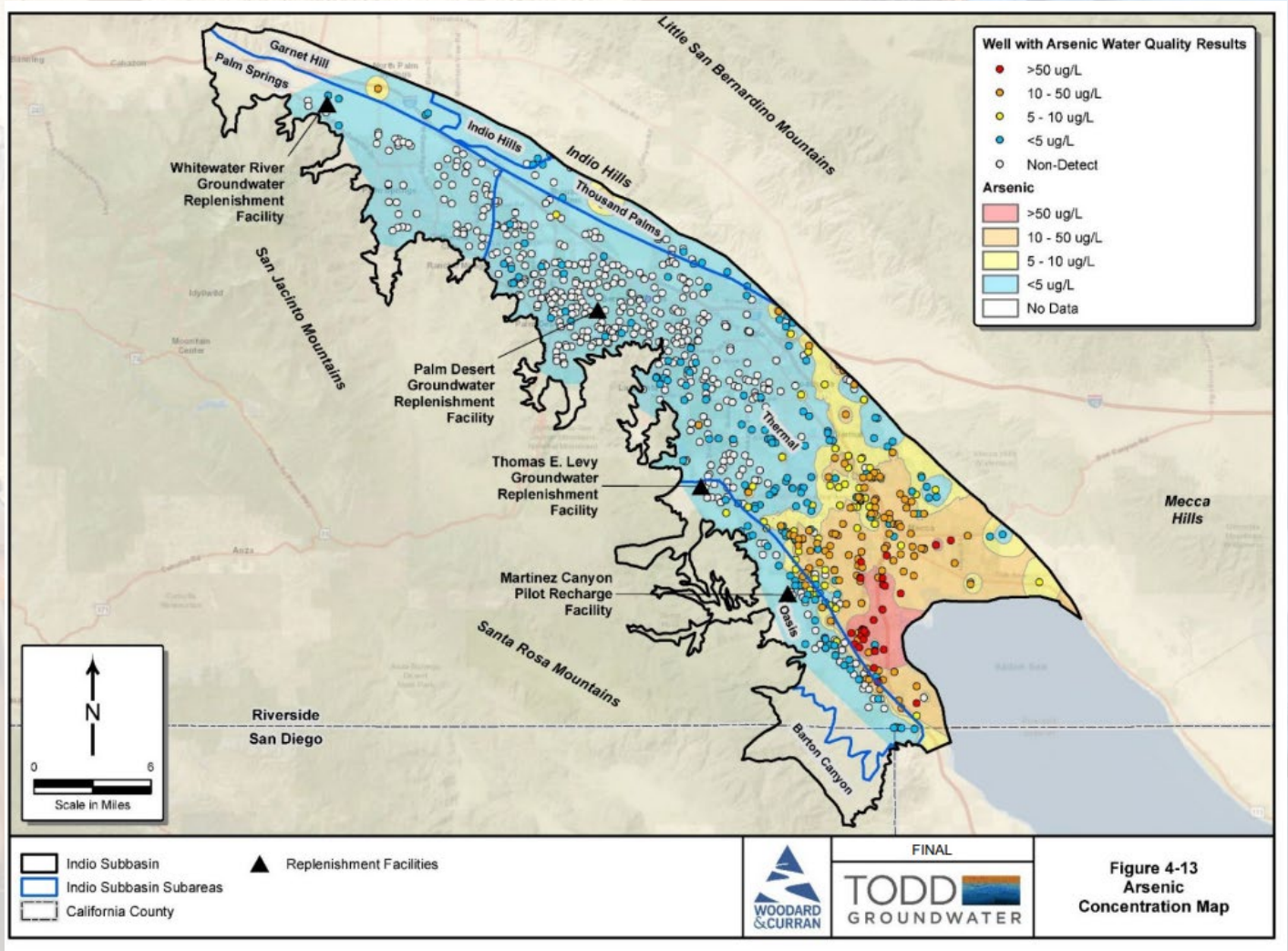
Arsenic Sources in Water

Erosion of natural sediments

Arsenic Health Concerns

Carcinogenic risk

State & Federal MCL of 10 milligrams per liter (mg/L)



Water System Activity

- Impacted areas Mecca, Oasis, Valerie Jean and North Shore maintain existing Ion Exchange Systems IXTP 6806 & IXTP 7802.
- IXTP 7991 under construction to replace adsorption media. Construction completion by May 2025.

Coachella Valley Groundwater Basin
Arsenic Treatment Plant

Well Site 6806 Ion Exchange Treatment Plant (IXTP)

Arsenic Monitoring Summary

(Arsenic Results are in micrograms per liter, ppb, and preliminary data is shaded)

Analytical Method: Arsenic by AAS/ GF (SM3113B)

Collection Date	IXTP Influent (Well 6806) Arsenic (ppb)	IXTP Influent (Well 6807) Arsenic (ppb)	For CVWD Only: Inlet to PRS Arsenic (ppb)	For CVWD Only: Distribution Sample Station Arsenic (ppb)	For CVWD Only: Influent Process Site (pre-filter) Arsenic (ppb)	Longest Service Vessel No.	Bed Volumes for Longest Service Vessel (BV)	Longest Service Vessel Arsenic (ppb)	Lowest Service Vessel No.	Bed Volumes for Lowest Service Vessel (BV)	Lowest Service Vessel Arsenic (ppb)	Train in Service	WS 6806 IXTP Effluent Arsenic (ppb)
	Influent monitoring commenced 9/21/09 - data showing prior to this date comes from source monitoring (wells)												
12/5/2023			N.S.	2.7	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.
12/14/2023			2.6	<2.0	13	2	1045	<2.0	10	35	<2.0	A	<2.0
12/19/2023			3.0	<2.0	8.9	12	939	<2.0	15	45	<2.0	B	<2.0
12/26/2023			3.0	<2.0	13	14	1061	<2.0	15	82	<2.0	B	<2.0

Coachella Valley Groundwater Basin: Hexavalent Chromium Challenges

Chromium Background:

- Abundant in earth's crust
- Chromium-3 (Cr+3) or

Chromium-6 (Cr+6) in water

Mostly Cr6 in groundwater

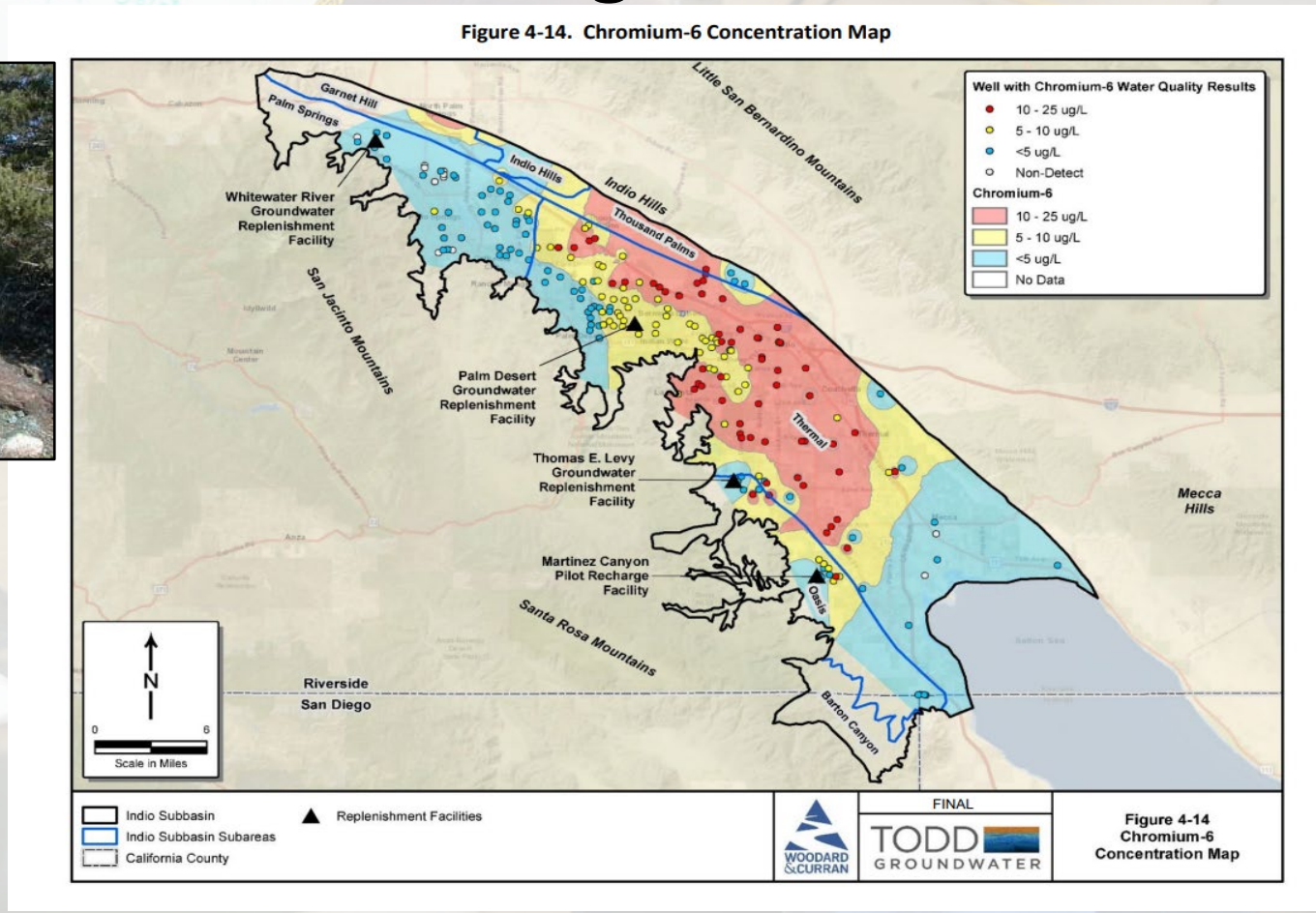
- Need Cr3 to regulate blood sugar (nutrient in vitamins)

Cr6 Sources in Water:

- Erosion of natural sediments
- Isolated industrial sources

Cr6 Health Concerns:

- Occupational carcinogen when inhaled
- Possible carcinogen when ingested (rodent studies)



Total Cr MCL: 50 µg/L (State); 100 µg/L (Federal)

Cr6 Timeline

July 1, 2014 – State adopts Cr6 standard 10 micrograms per liter (ug/L)

September 2015 – SB 385 authorizes compliance plans to meet Cr6 no later than January 1, 2020.

July 2016 – CVWD approves construction of Cr6 Treatment Project

May 2017 – Alternative treatment technology identified Stannous Chloride

May 2017 – Judge withdraws 10 ug/L with requisite to perform economic analysis

February 2018 – CVWD concludes full-scale demonstration project

August 2018 – Reports with results for full-scale demonstrating project

April 2020 –DDW White Paper Discussion on Economic Feasibility for Cr6 MCL

April 2021 – Draft EIR for Cr6 MCL and CEQA Scoping Meeting

April 2022 – Administrative Draft

January 2023 – CVWD submits PA for Implementation of Stannous Chloride in ID 8

April 2023 – Formal Rulemaking for Cr6 MCL

September 2023 – DDW extends Stannous Chloride pilot testing in ID 8 with focus on accumulation in the distribution system and premise plumbing.

January 2024 - CVWD Board of Directors awarded contract to West Yost & Associates to evaluate feasible and economical options to comply with the proposed Cr6 MCL.

Thank you

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Water COUNTS ACADEMY

WATER QUALITY

CVWD RECYCLED WATER PROGRAM

Olivia Bennett

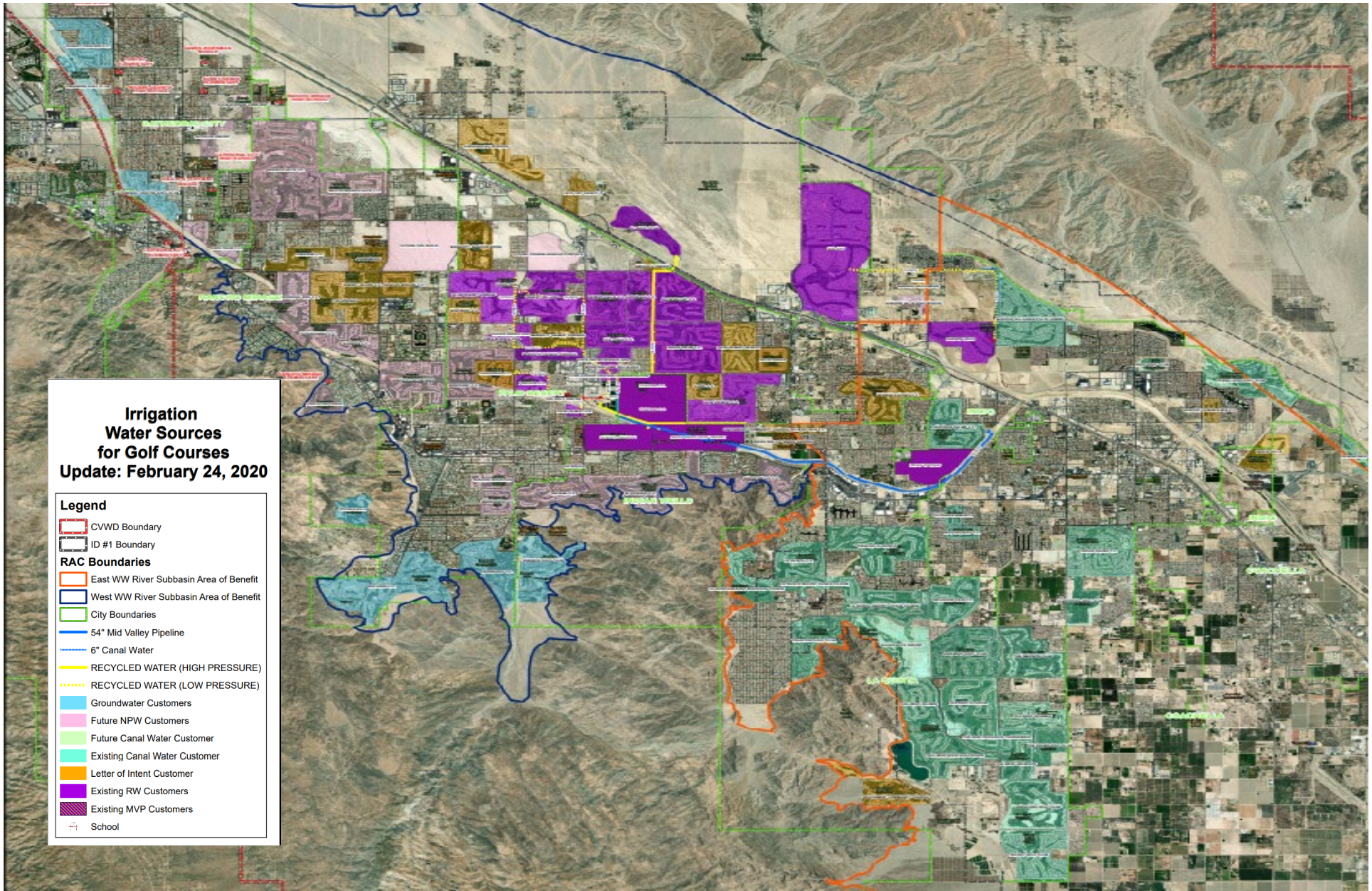
NONPOTABLE WATER OPERATIONS MANAGER,
COACHELLA VALLEY WATER DISTRICT

Golf and Nonpotable Water in the Coachella Valley

First golf course in the valley…

…was the O’Donnell in 1926, second was Indian Palms (used to be Cochran-Odlum) in 1947, third Thunderbird 1951…

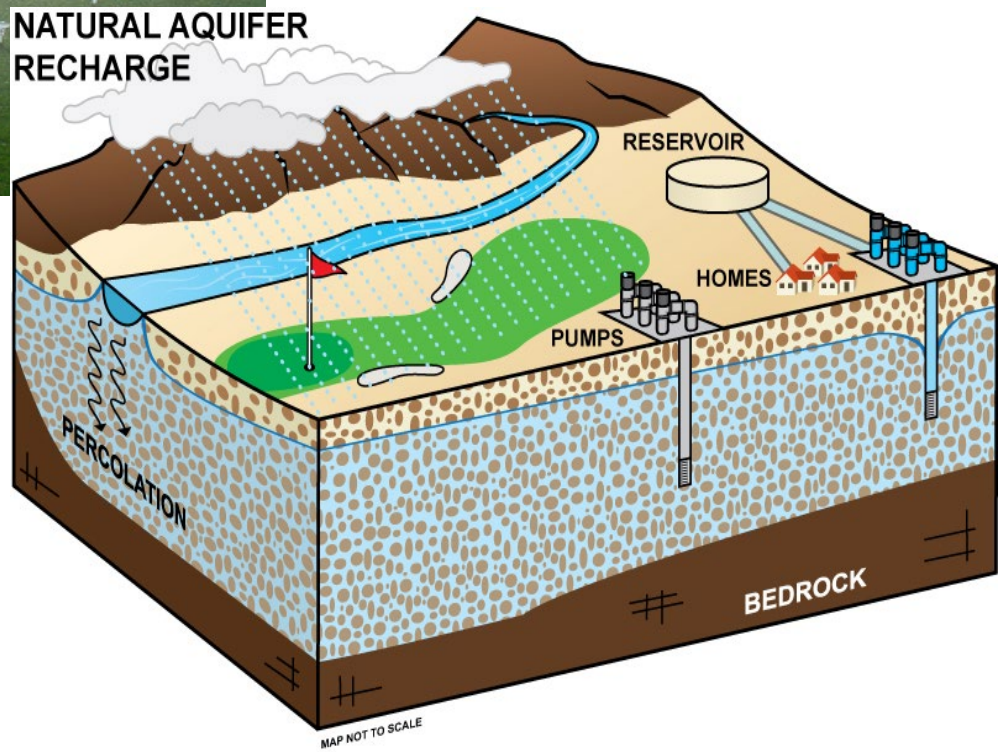
Now, there are 120 golf courses in the valley!



105 of the golf courses are within CVWD's boundaries.

Canal via Canal distribution system	30.5
Future Canal via Canal distribution system	3.0
Canal via Mid Valley Pipeline	6
Future Canal via Mid Valley Pipeline	17
Recycled water/canal	17.5
Future Recycled water/canal	21
Not planned for an Alternate Water Supply	10
Total Golf Courses:	105
Nonpotable Water Source:	54
Per Cent Using Nonpotable Water Source:	51%

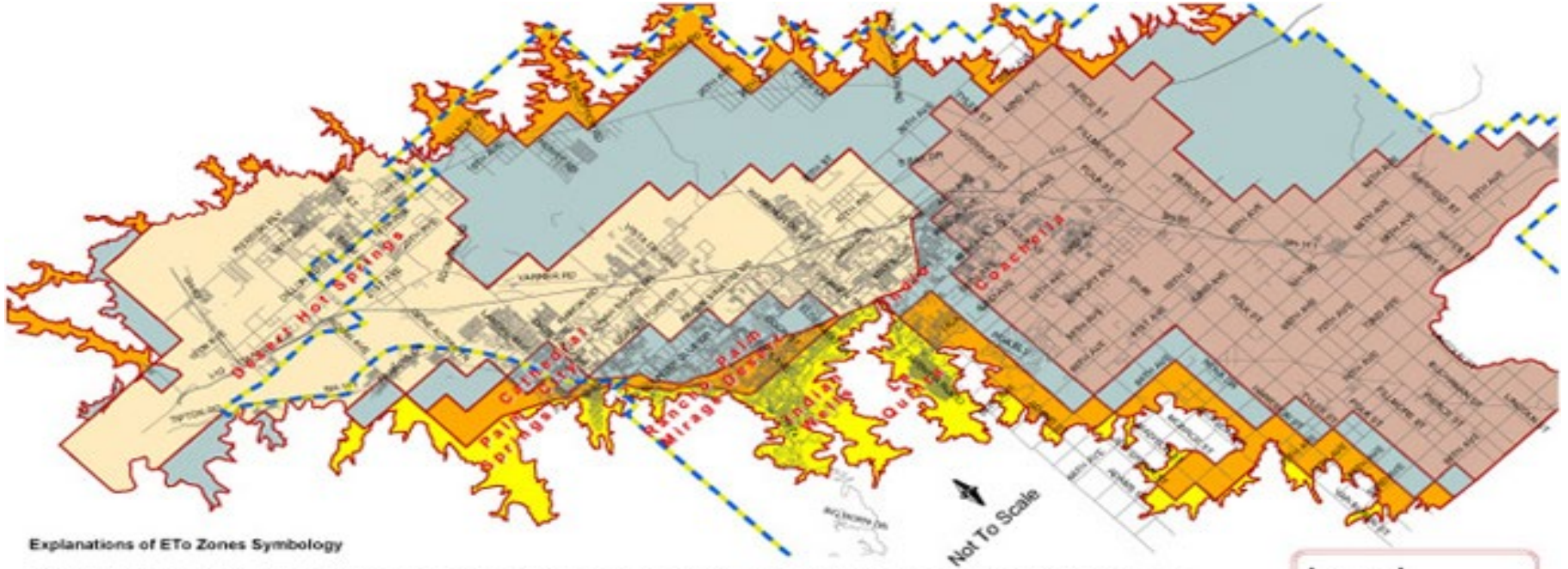
Sources of golf course irrigation water:



- Storm water
- Ground water
- Nonpotable Water

How much water is used by a golf course annually?

It depends primarily on the ETo zone, irrigated acreage and lake area. Anywhere from about 300 AF/Yr for our smaller courses in a protected area to about 1400 AF/Yr for our large courses in the windy areas. **Average of 940 AF/Yr**.



Explanations of ETo Zones Symbology

1. Zone #1: North-facing cove areas: Mountain shaded, sheltered from prevailing winds and higher elevations means lowest water consumption. Annual water consumption(ETo) = 57.01"

2. Zone #2: Transition zone area between the north-facing coves and the open desert or the south-facing cove areas of the north valley: The transition zones are somewhat sheltered from prevailing winds and with exposure to higher local humidity from irrigated landscapes means low water consumption. North valley coves are mountain shaded, sheltered from prevailing winds and higher elevations, but are south-facing and heat absorbing. Annual water consumption(ETo) = 66.82"

3. Zone #3: Upper valley open desert border zone, lower valley upper elevation zone or lower valley afternoon mountain shade zones with moderate prevailing winds and blowing sand. Annual water consumption(ETo) = 75.00"

4. Zone #4: Lower valley open desert agricultural zone with moderate prevailing winds and below sea level elevations. Annual water consumption(ETo) = 88.00"

5. Zone #5: Upper valley high wind and blowing sand zone. Annual water consumption = 93.90"

Average water use for a golf course

The average water use on a golf course is around 940 acft/yr.

To make it easy, we round up to say that “a typical golf course uses 1,000 acft per year”.

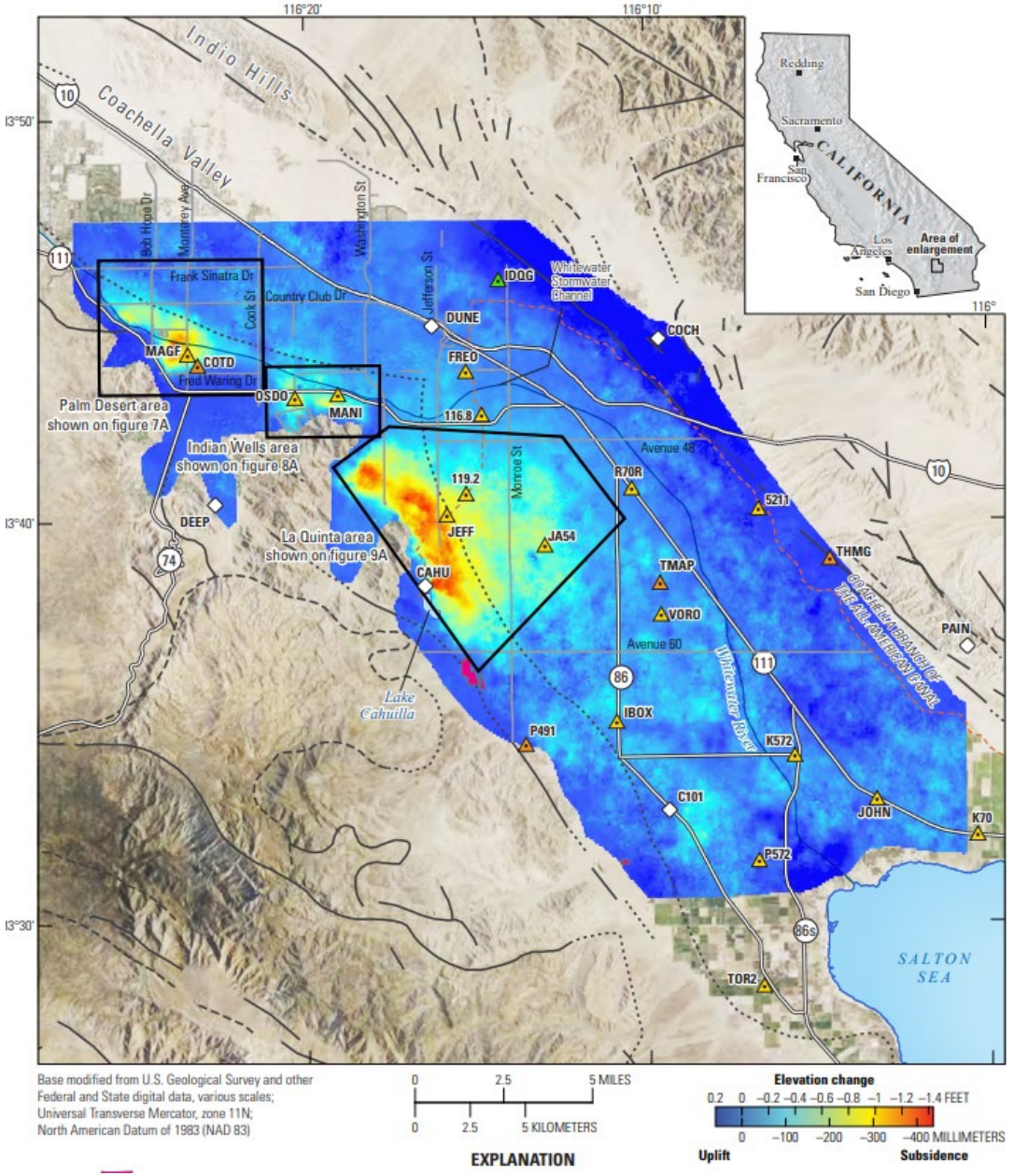
Golf Courses in the valley use up to 120,000 acft of water per year.

What's the big deal?

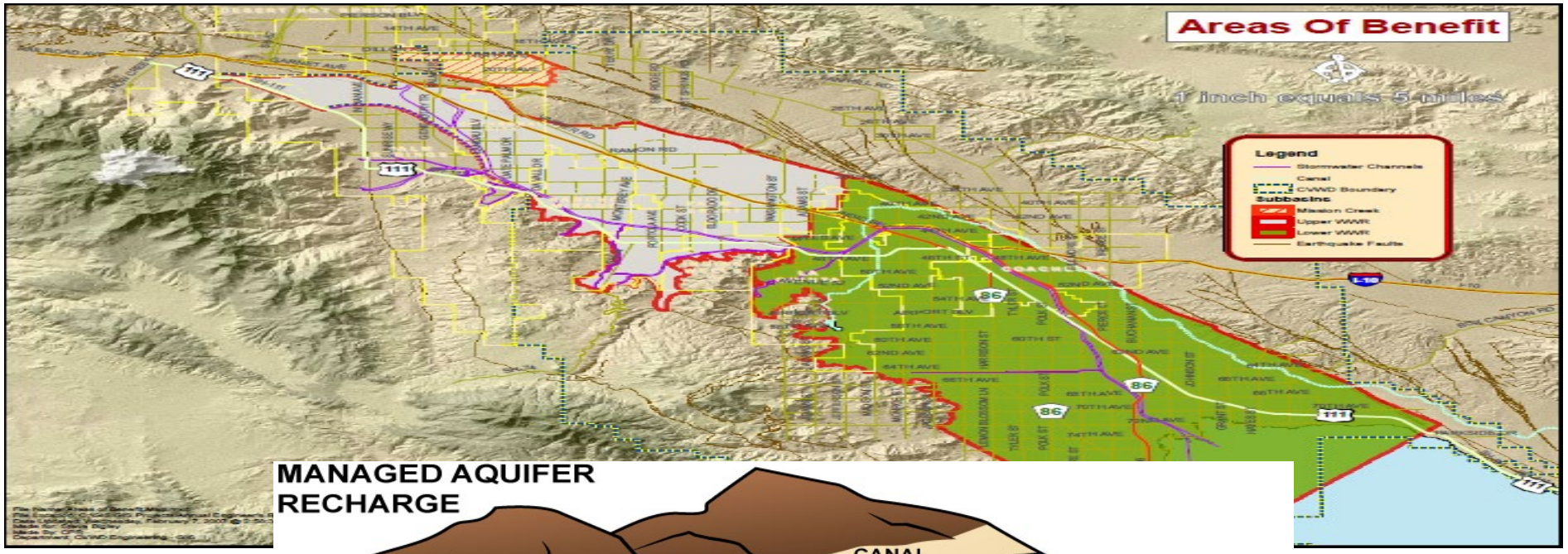
USGS report published in 2020.

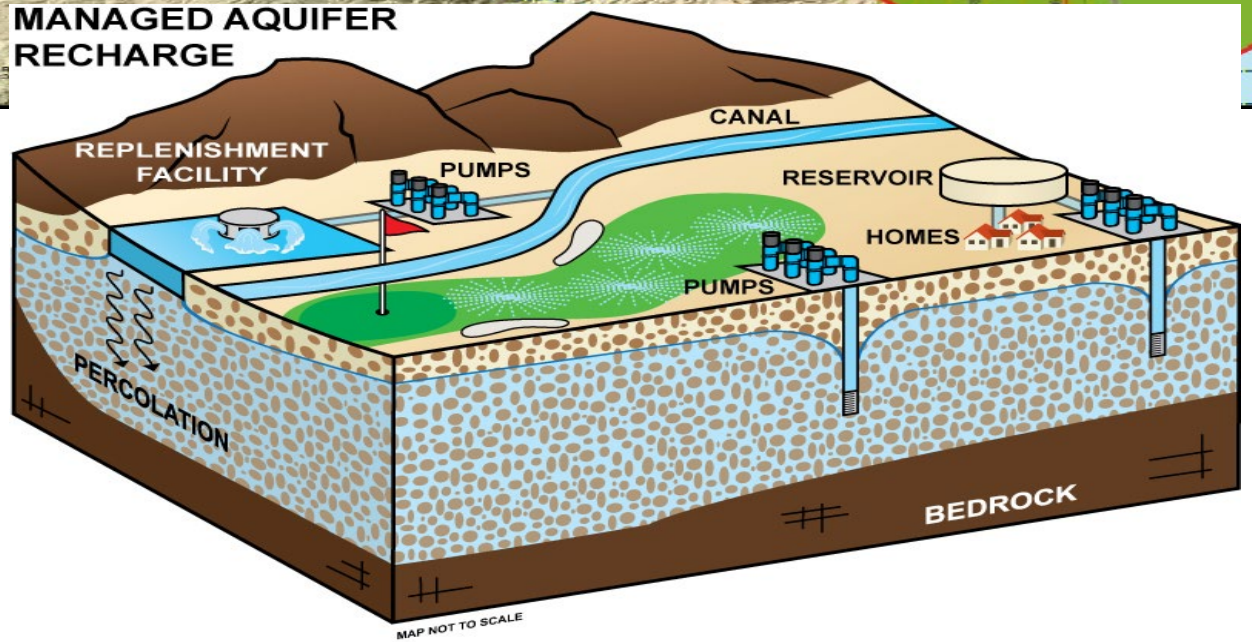
- CVWD and USGS study since 1996.
- Detection and measurement of land subsidence and uplift from 2010-2017.
- Yellow and red show areas of subsidence.
  - Up to 1.4ft

Overdraft and subsidence.

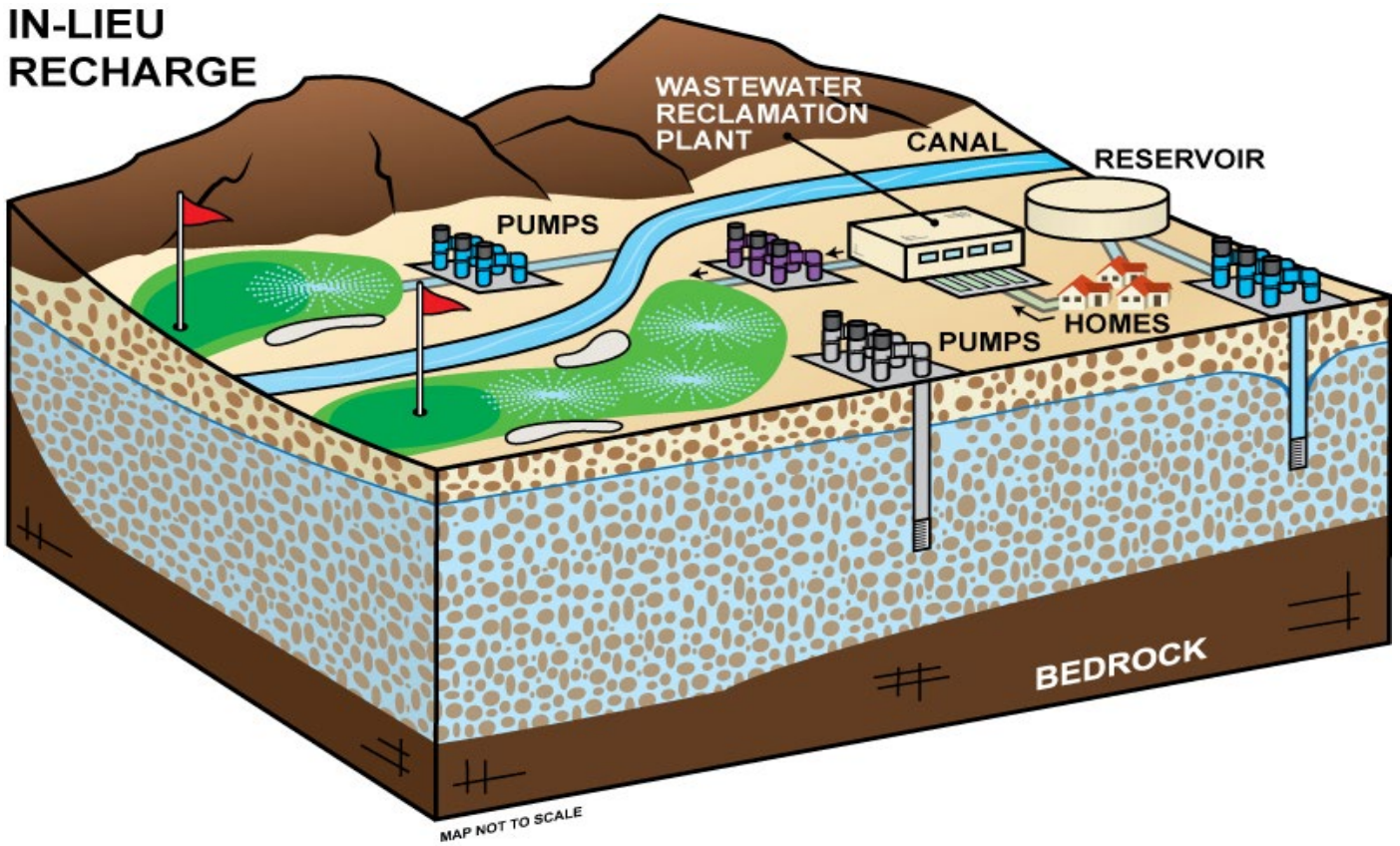


To minimize and eliminate further overdraft, the aquifer has been replenished with imported



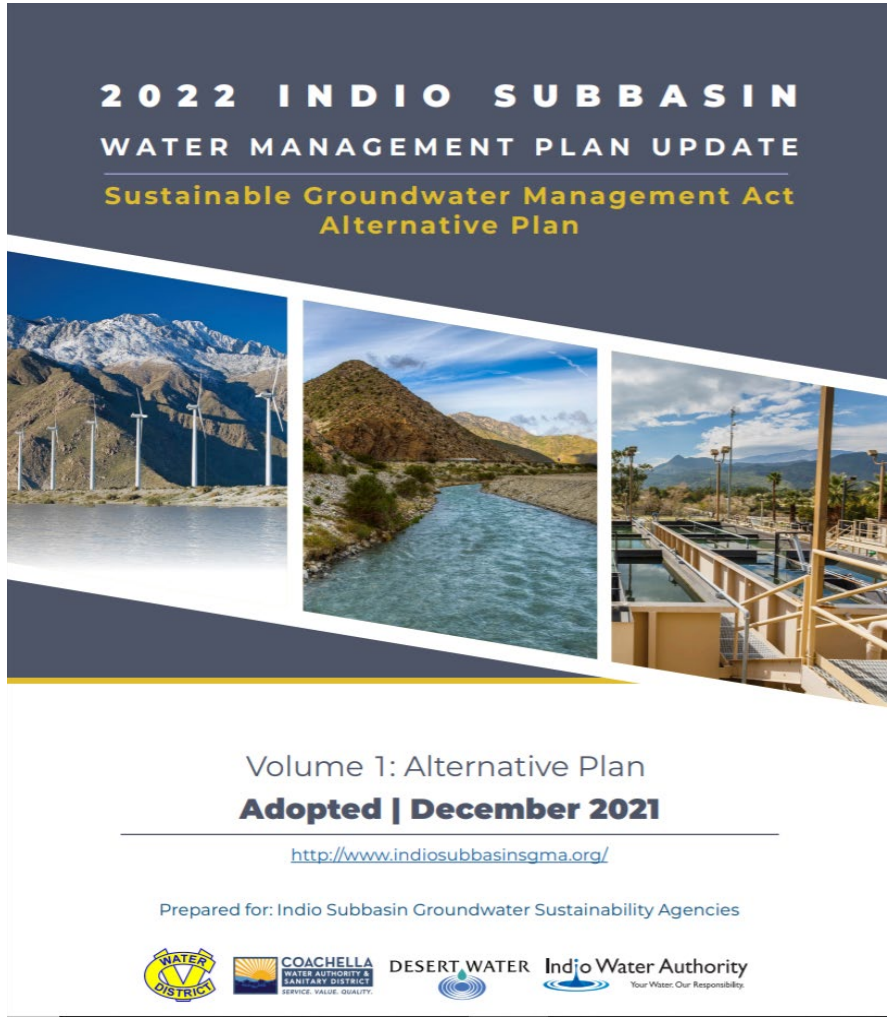


In the mid-valley, mostly West, there are 38 golf courses available for in-lieu recharge opportunities.



In-lieu of delivering imported water to percolation ponds to replenish the aquifer, a nonpotable water source is delivered to golf courses for irrigation, leaving groundwater in the ground.

2022 Indio Sub-basin Water Management Plan Update



The goal of the ISWMP is to reliably meet current and future water demands in a cost effective and sustainable manner.

Per the ISWMP…

In order to maintain water reliability and resilience, the following priorities are used when selecting Projects and Management Actions:

- Fully use available Colorado River water supplies.
- Continue developing recycled water as a reliable local water supply.
- Implement source substitution and replenishment.
- Increase water-use efficiency across all sectors.

ISWMP objectives for golf courses:

- Conservation
- Utilize nonpotable water sources for golf courses.

Golf and Water Task Force

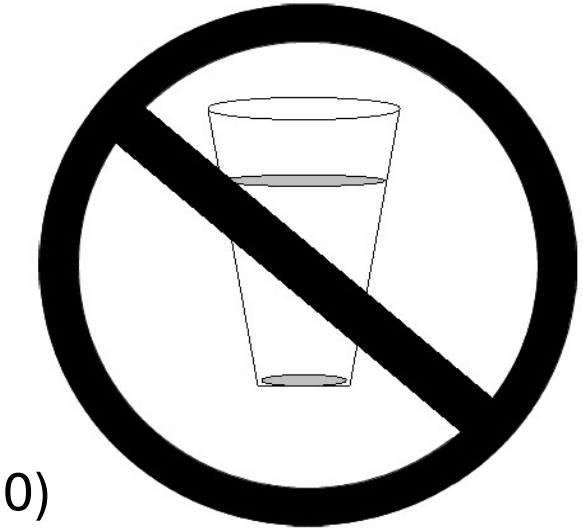
Mission Statement

To ensure a sustainable water supply for future generations, to meet if not exceed the goals of the Coachella Valley Water Management Plan, **to pursue all feasible water conservation measures, to promote and expedite the use of nonpotable water,** and to educate Valley residents regarding the importance of pursuing these goals for the environmental and economic quality of life in the Coachella Valley.

Nonpotable Water for In-Lieu Recharge

Types of nonpotable water source for golf courses:

1. Canal Water (Colorado River Water)
   - Mid-Valley Pipeline
   - Coachella Branch of All American Canal
   - Canal water distribution system.



2. Recycled Water
   - Water Reclamation Plant (WRP7 or WRP10)
   - Tertiary Disinfected Recycled Water

✓Nonpotable Water for nonpotable purposes.

- ✓Nonpotable customers irrigate with a water source that is not deemed safe for drinking.
- ✓Primary water source is no longer groundwater, our potable water source.

Nonpotable Water for golf courses

East Valley Canal water connections:

In 2023, 19,868, 74% of their total irrigation demand.

- Goal = up to 33,500 AFY
- 3 more golf courses to connect

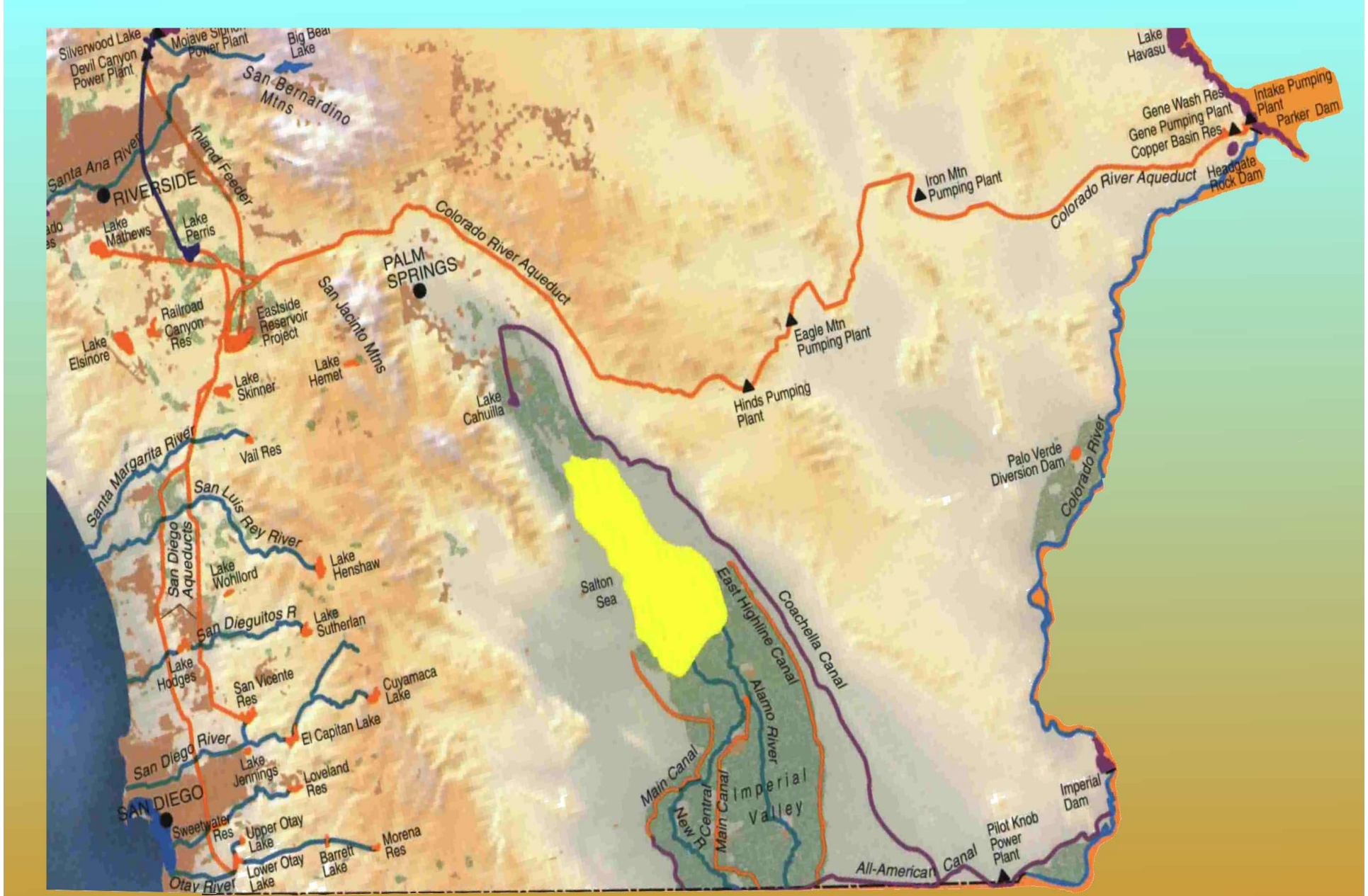
Mid Valley NPW connections:

In 2023, 22,362 AF, 92% of total irrigation demand.

- Goal = up to 61,500 AFY
- 38 more golf courses to connect

Goal = 80%

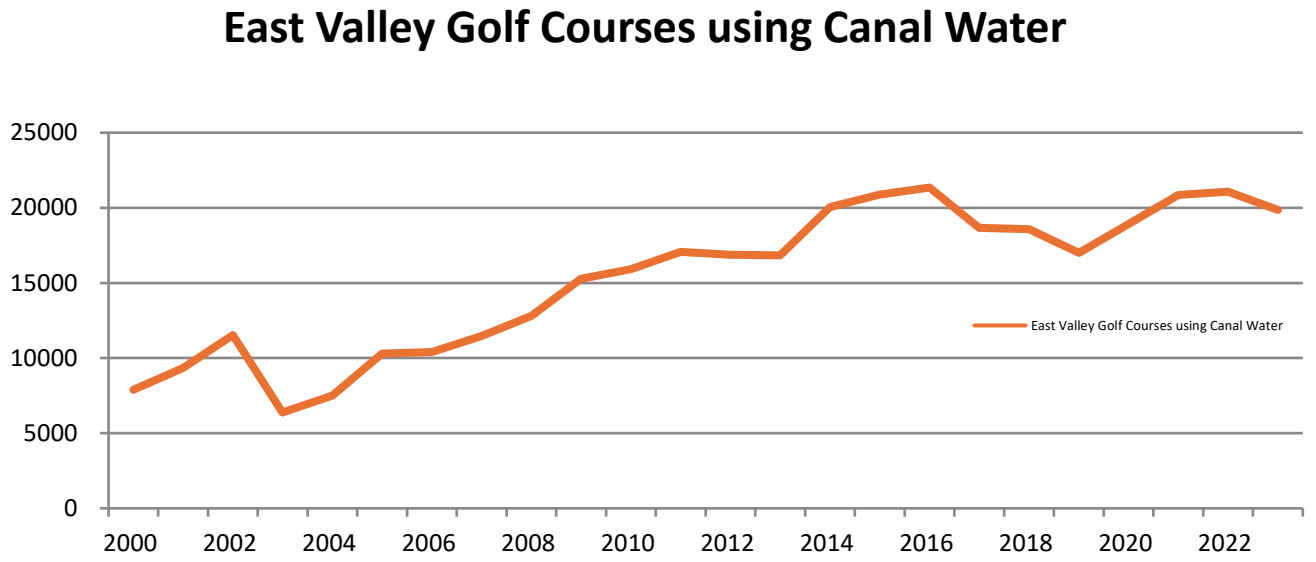
Source of Canal Water



Conversion of golf courses to canal water

The 3 remaining conversions are expected to be completed by 2025.

Year	East Valley
2000	7884.1
2001	9335.6
2002	11540.6
2003	6385.1
2004	7511.3
2005	10290.3
2006	10395.7
2007	11469.7
2008	12805.9
2009	15282.9
2010	15927.8
2011	17076.7
2012	16873.2
2013	16828.6
2014	20053.5
2015	20883.2
2016	21351.8
2017	18678
2018	18586
2019	17011
2020	18919.8
2021	20865
2022	21082.9
2023	19867.8



New Connections (see original connection dates tab):	
1988	PGA West
1994	Indio Muni
1996	Plantation
1997	Traditions
1998	The Hills (Terra Lago)
1999	Heritage Palms
2000	The Palms
2001	Hideaway
2002	Trilogy, PGA West Weiskopf
2005	Silver Rock
2006	Outdoor Resort, PGA-Norman, Ranch La Quinta, Shadow Hills (front nine)
2007	Mountain View, Vineyards, Andalusia, Shadow Hills (back nine), Madison Club.
2010	Indian Palms
2014	Indian Palms (2nd connection)
2016	La Quinta CC, La Quinta Resorts Dunes
2024	La Quinta Resorts Mountain

Recycled Water

- Recycled water has been a water supply source in the Valley since 1965 at Palm Desert Country Club. CVWD acquired this WRP in 1968.

- CVWD has 2 wastewater treatment plants that provide recycled water for golf course and landscape irrigation.

- CVWD delivers disinfected tertiary recycled water for golf course and landscape irrigation.

What is Recycled Water?

Municipal wastewater collected from homes and businesses that receives a high level of treatment at a water reclamation plant. It is monitored 24/7, water quality samples are collected and tested to ensure permit regulation limitations are met, so that it can safely be beneficially reused. It is no longer considered wastewater.

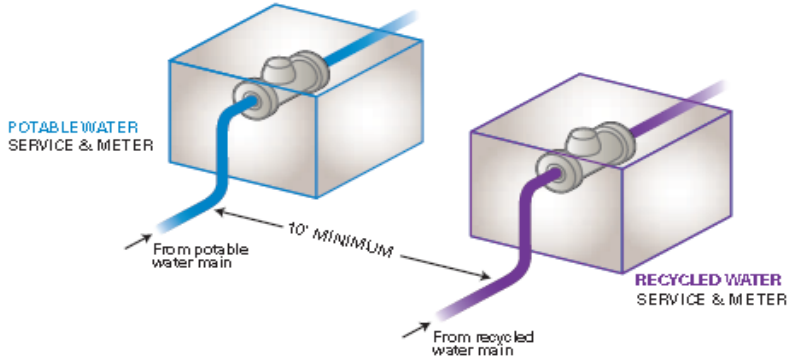

KIMAX
NO. 19000
1 LITER
KIMAX
NO. 19000
1 LITER
KIMAX
NO. 19000
1 LITER
INFLUENT EFFLUENT (RAW SEWAGE)
SECONDARY EFFLUENT
TERTIARY EFFLUENT (RECLAIM)
POTABLE WATER (DOMESTIC)


KROHNE

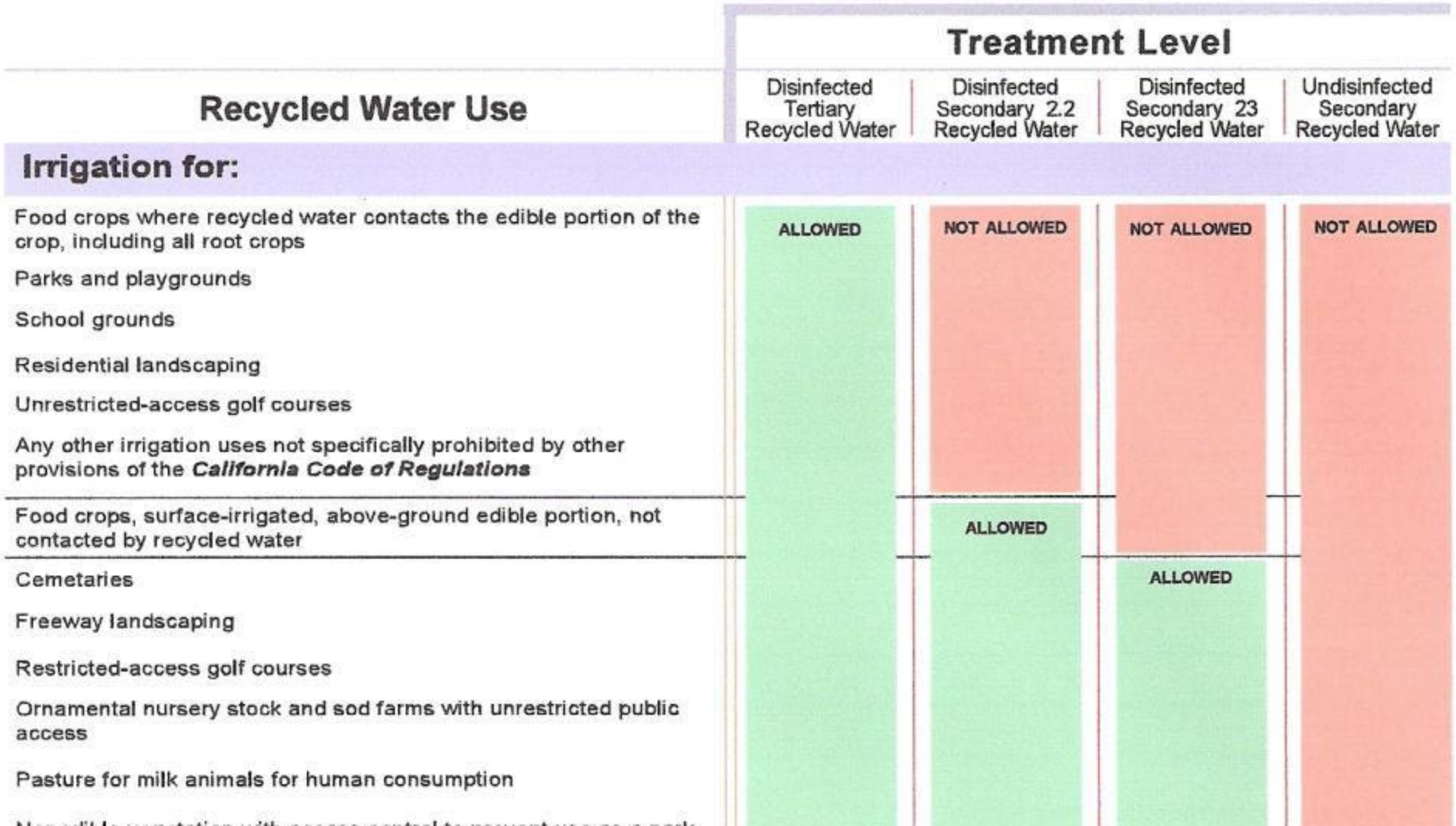
Rules and Regulations

- Dos and Don’ts
- Training
- Permit
- Agreement
- Purple
- Signs
- Public notification
- Cross-connection Test
- Quarterly Survey
- Monitoring and Reporting

WATER DISTRICT
Recycled Water Program

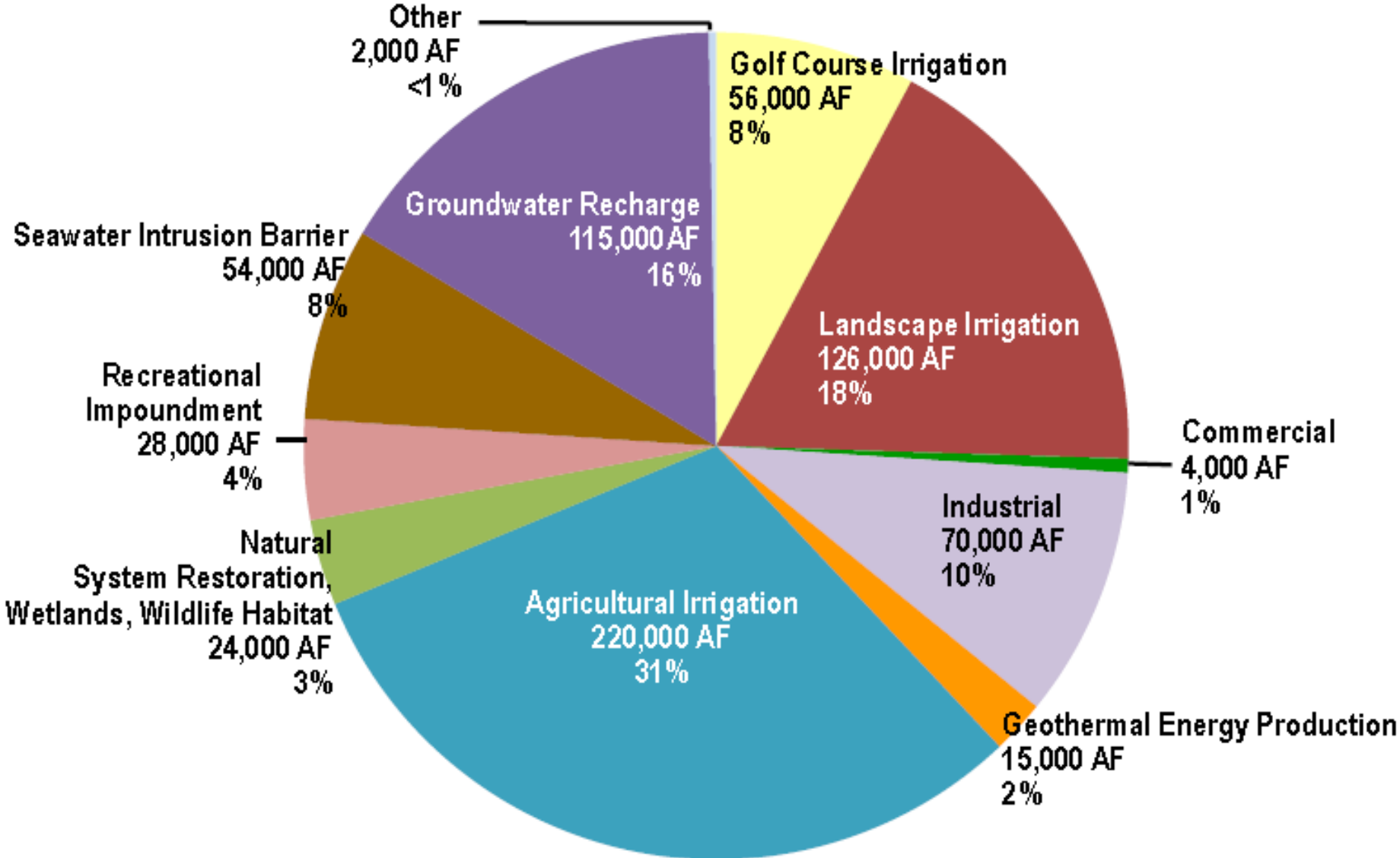


Allowed Uses of Recycled Water



Recycled Water Use	Treatment Level: Disinfected Tertiary Recycled Water	Disinfected Secondary 2.2 Recycled Water	Disinfected Secondary 23 Recycled Water	Undisinfected Secondary Recycled Water
Irrigation for:				
Food crops where recycled water contacts the edible portion of the crop, including all root crops	ALLOWED	NOT ALLOWED	NOT ALLOWED	NOT ALLOWED
Parks and playgrounds				
School grounds				
Residential landscaping				
Unrestricted-access golf courses				
Any other irrigation uses not specifically prohibited by other provisions of the ***California Code of Regulations***				
Food crops, surface-irrigated, above-ground edible portion, not contacted by recycled water		ALLOWED		
Cemetaries			ALLOWED	
Freeway landscaping				
Restricted-access golf courses				
Ornamental nursery stock and sod farms with unrestricted public access				
Pasture for milk animals for human consumption				

2015 Recycled Water Use:
714,000 acre-feet/881M cubic meters



Recycled Water Use in Coachella Valley

Golf Course and landscape irrigation:

- Golf Courses
- Home-Owner Associations (HOAs)
- High-School Athletic Fields
- Landscaped areas at CVWD's Palm Desert offices and WRPs.
- Agriculture (near future)

7 Reasons Why We Use Recycle Water in Coachella Valley

1. Department of Water Resources projects large statewide shortages.
2. Groundwater is our drinking water source (Potable/Domestic). Use potable water for potable purposes and non-potable for non-potable purposes.
3. CVWD adopted and is implementing the ISWMP to eliminate overdraft and is our Groundwater Sustainability Plan, which identifies recycled water as a reliable local water supply for irrigation.
4. Irrigating with Recycled Water Saves Groundwater and helps prevent future overdraft.

7 Reasons Why We Use Recycle Water in Coachella Valley

5. Treatment technology can produce a safe recycled water for any given use.
6. RW for irrigation more economical than advanced treatment for potable reuse.
7. More economical than buying additional imported water rights.

Not enough recycled water

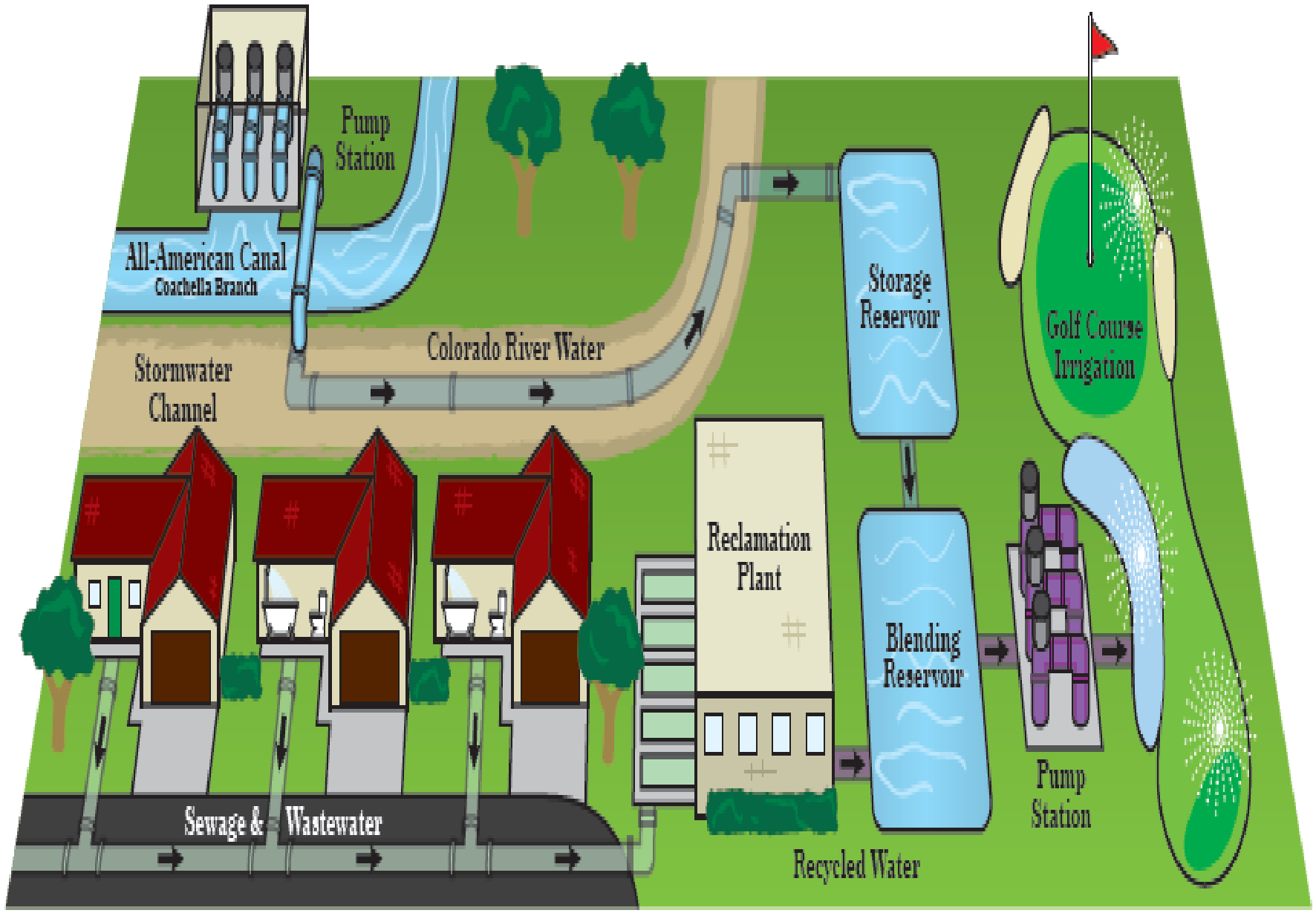
- Recycled water supply is not a sufficient water supply for all golf courses in the mid-valley area.
- Recycled water supply is limited in the summer and golf courses would supplement with groundwater.

Mid-Valley Pipeline In-Lieu Project

- The MVP delivers canal water to WRP10. Completed in 2009. 7 mile, 54” pipeline of welded steel with cement mortar lining in the wash.
- Canal water supplements the recycled water supply and provided to golf courses in lieu of their pumping groundwater.

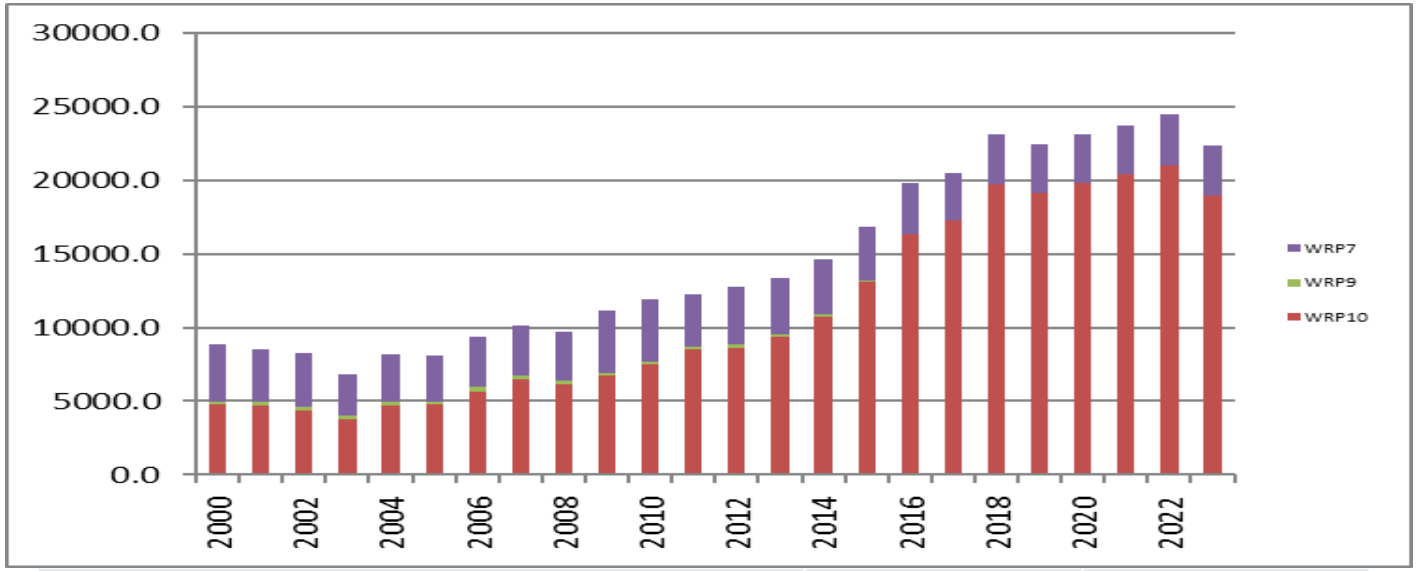
*In 2023, MVP provided 11,234 acft of canal water to golf courses in the mid-valley area.


Indio Hills
Coachella Branch of the All-American Canal
Mid-Valley Pipeline
Indio
111
111
San Jacinto Mountains
74
Santa Rosa Mountains
Coachella
Dike 4 Recharge Facility
EXPLANATION
GPS stations
Consolidated rock
0 1 2 Kilometers
0 1 2 Miles


Pump Station
All-American Canal
Coachella Branch
Colorado River Water
Stormwater Channel
Storage Reservoir
Golf Course Irrigation
Reclamation Plant
Blending Reservoir
Pump Station
Sewage & Wastewater
Recycled Water

Nonpotable Water use in Mid-Valley

Year	total
2000	8831.9
2001	8565.2
2002	8299.4
2003	6844.2
2004	8208.9
2005	8109.3
2006	9342.7
2007	10127.0
2008	9750.2
2009	11162.6
2010	11915.5
2011	12281.2
2012	12756
2013	13385
2014	14602
2015	16876
2016	19796
2017	20516
2018	23139
2019	22462
2020	23109
2021	23744
2022	24104
2023	22362



New Connections	
1968	Palm Desert Country Club
1987	Santa Rosa, Palm Desert Greens, Portola CC
1991	Golf Center, Marriott Desert Springs, Vista Del Montanas, Silver Sands, Casa Blanca
1992	West Coast Turf
1993	Sunrise
1994	Indian Ridge CC
1996	Palm Desert High School
1997	Sun City Palm Desert, Desert Willow
1998	Mountain View Falls
2006	Toscana, Shadow Hills
2012	CVWD's PDA & PDO, Indian Wells Golf Resort
2014	Classic Club, Palm Desert CC (remaining)
2016	Desert Horizons, Lakes CC, Avondale
2017	Desert Falls, Palm Valley Country Club,
2018	Indian Springs

NPW Connections

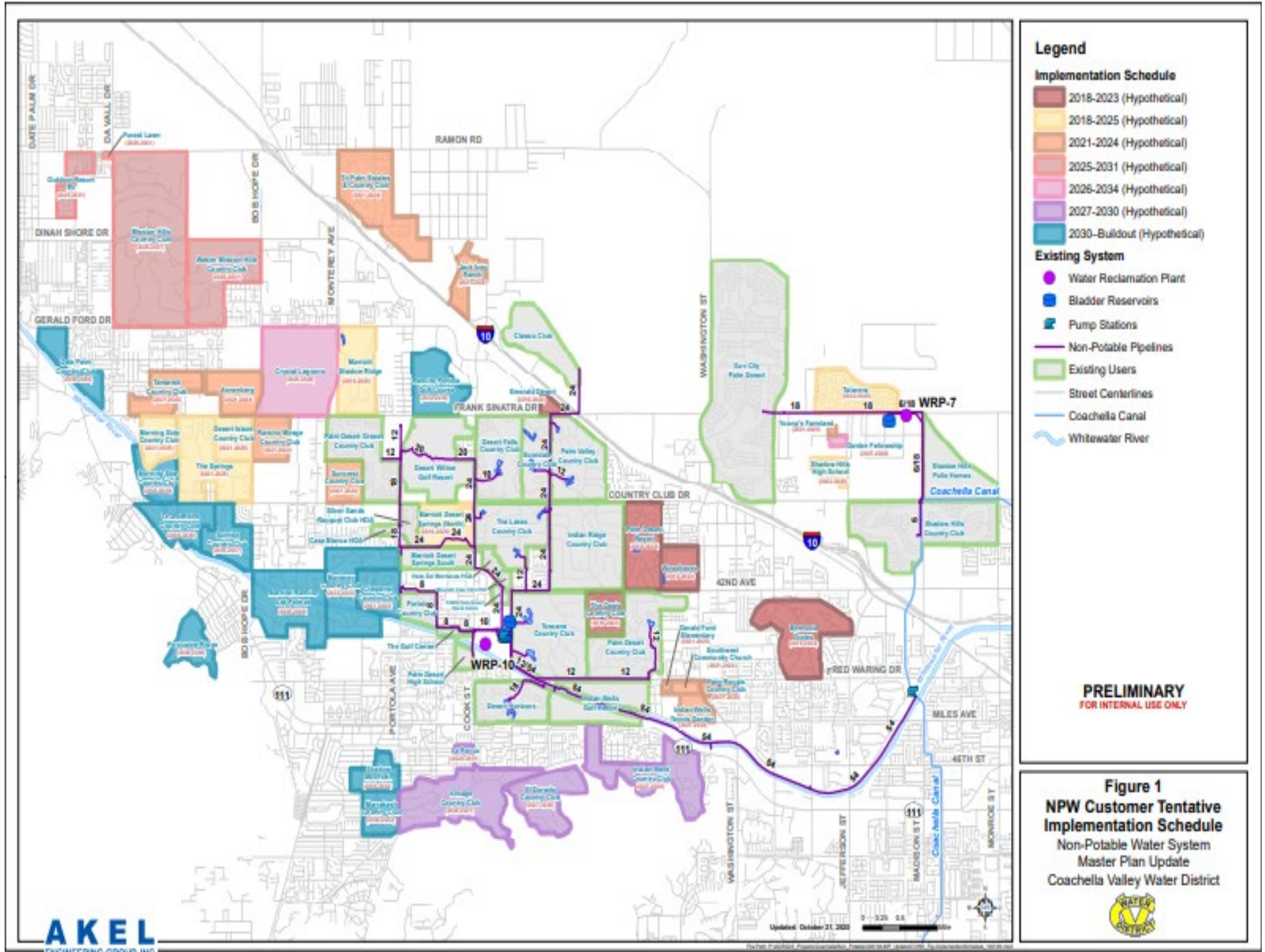
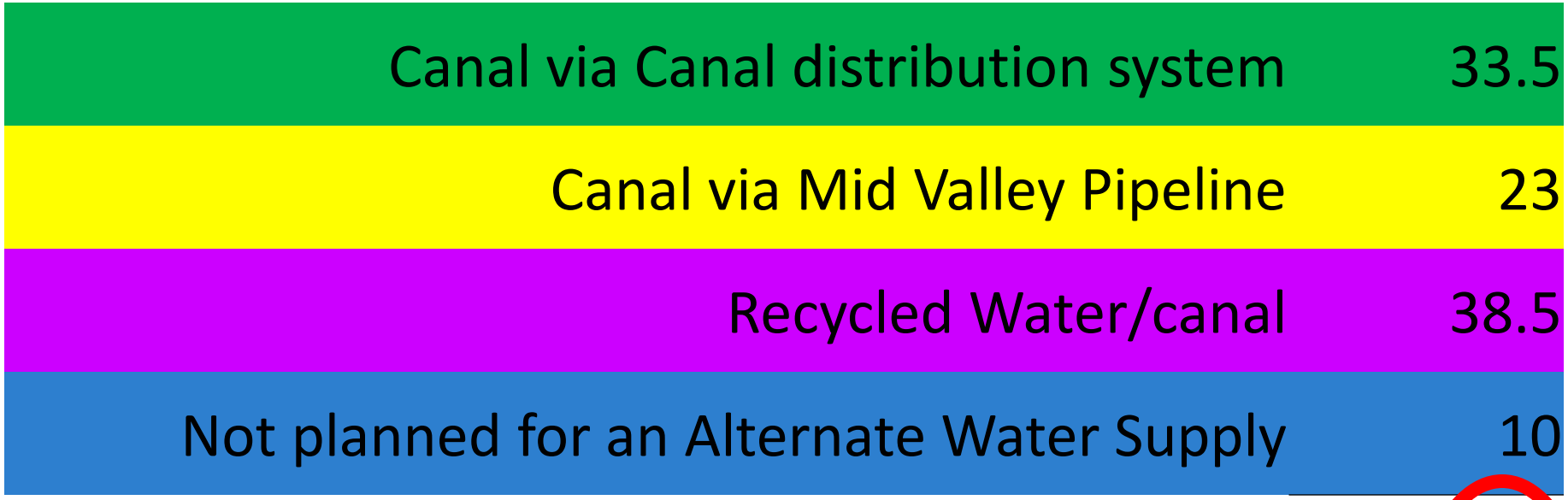


Figure 1
NPW Customer Tentative Implementation Schedule
Non-Potable Water System
Master Plan Update
Coachella Valley Water District

When NPW build out is complete…



Total Golf Courses:	105
Nonpotable Water Source:	95
Per Cent Using Nonpotable Water Source:	90%

Golf courses using nonpotable water will allow potable water to be available for potable uses.

Estimated annual use of water is 1000 acft / year per golf course

1000 AFY x 120 golf courses = 120,000 AFY

30.5 golf courses in the east valley have access to canal water and 3 are focused on for future canal water use.

1000 AFY x (30.5 golf courses + 3 golf courses) = 33,500 AFY

23.5 golf courses in the mid-valley use nonpotable w

1000 AFY x 23.5 golf courses = 23,500 AFY

6 golf courses in upper valley (DWA) use recycled wate

1000 AFY x 6 golf courses = 6,000 AFY

The future Mid-Valley Pipeline Project, includes 38 golf courses in mid-valley to use recycled/canal water blend

1000 AFY x 38 golf courses = 38,000 AFY

120,000 AFY – 33,500 AFY – 23,500 AFY - 6,000 AFY – 38,000 AFY = 19,000 AFY

Recycled Water Program

Thank you

Olivia Bennett

Nonpotable Water Operations Manager


Live Water Wise
It's easy. Water your yard during non-daylight hours. More water will reach the roots, and less water will evaporate.
CVWaterCounts.com.
EVERY DROP COUNTS!
Water COUNTS
WATER DISTRICT
INDIO water authority
COACHELLA WATER AUTHORITY & SANITARY DISTRICT
Myoma Dunes Water Co.
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