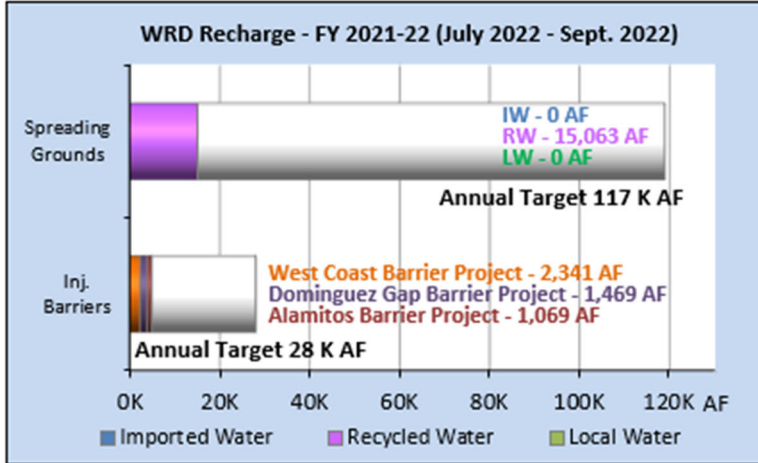
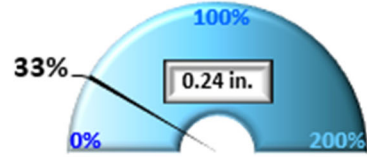


# GROUNDWATER BASIN UPDATE FOR NOVEMBER 2022

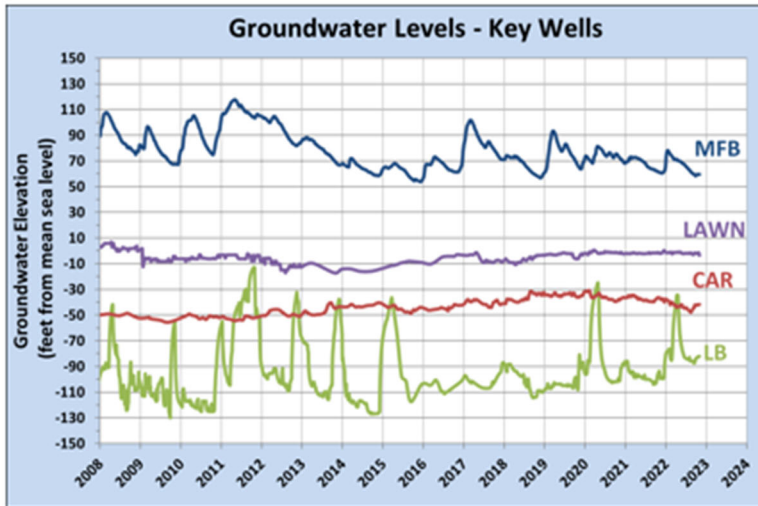
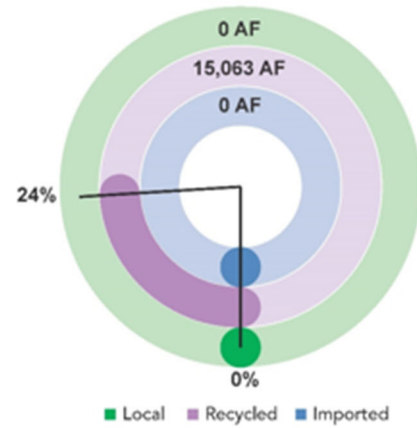
## GROUNDWATER BASINS AT A GLANCE\*



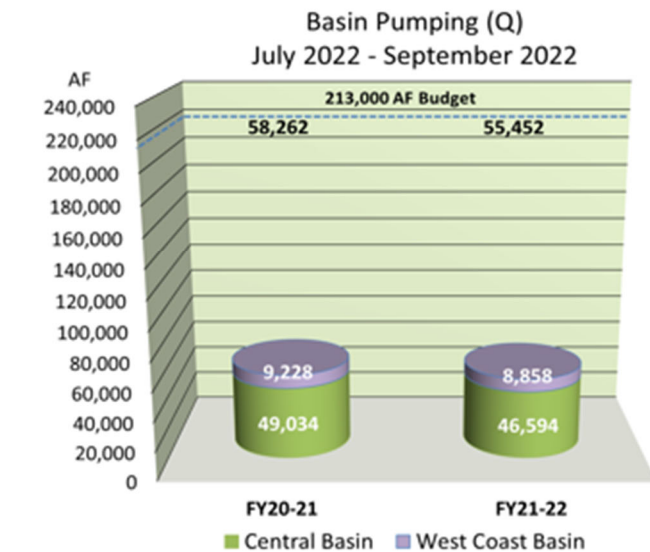
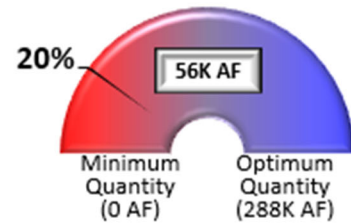
Precipitation % of Normal to Date  
Oct. 1 - Nov. 7



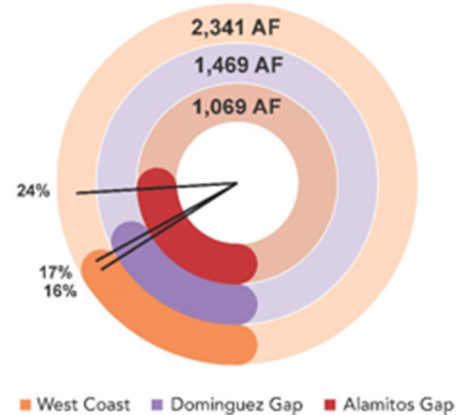
Spreading Grounds Recharge  
Jul 2022 - Sept 2022



GW Basin Operating Range  
October



Seawater Barrier Recharge  
Jul 2022 - Sept 2022



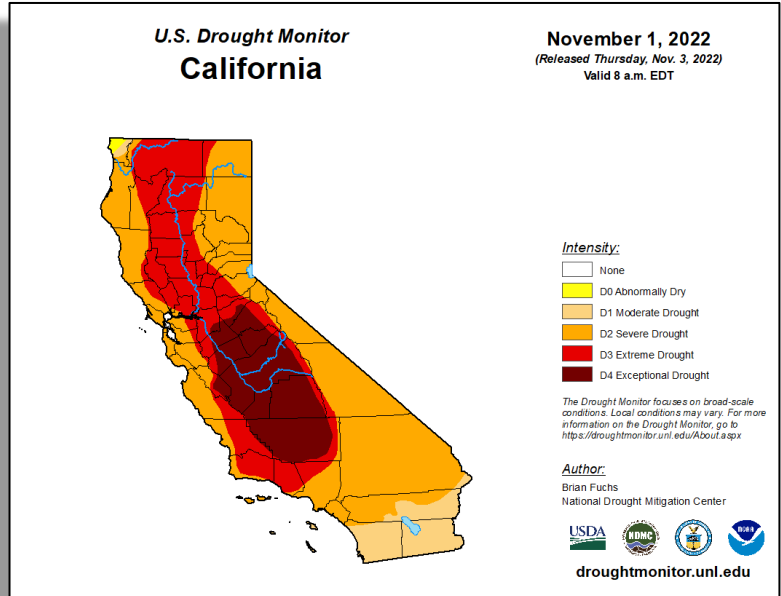
\* - Preliminary numbers, subject to change.

**SUMMARY**

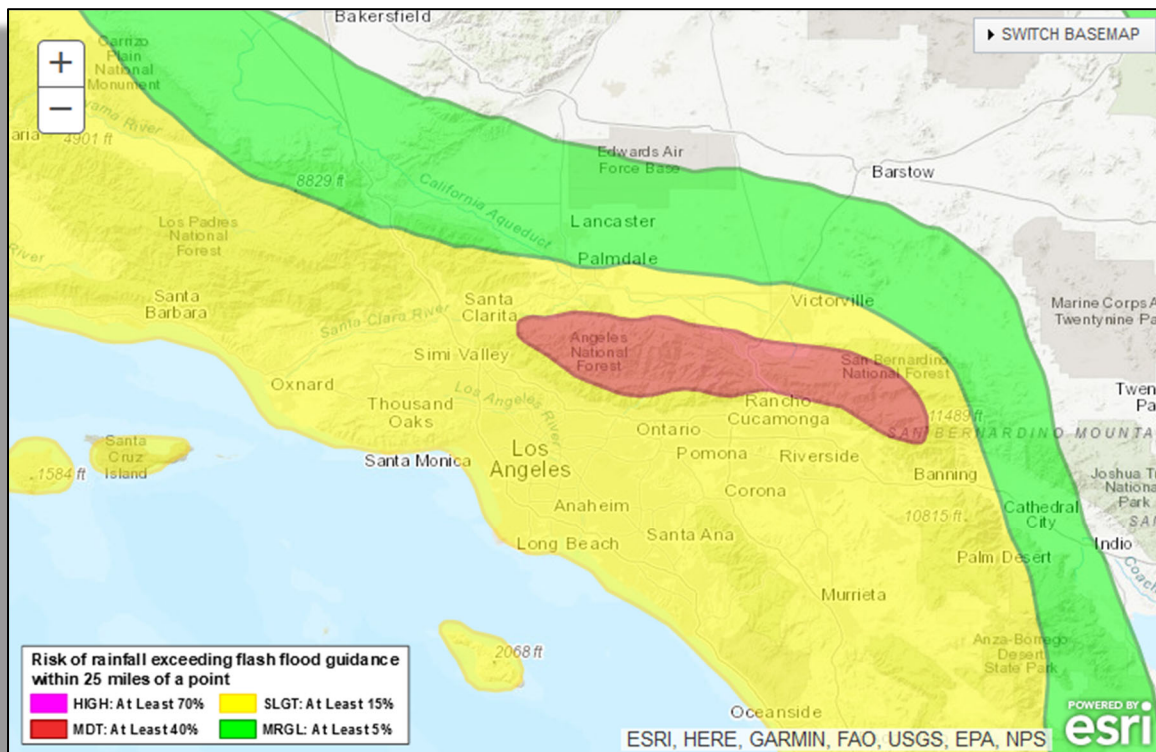
Staff monitors groundwater conditions in the District’s service area throughout the year. A summary of the latest information is presented below.

Precipitation (October 1, 2022 – November 7, 2022)

The WRD precipitation index reports that for the 2022-23 Water Year, there has been below average rainfall (0.24 inches) through November 7, 2022. The normal rainfall for this time period is 0.73 inches, so the District is 33% of normal. As of November 1, 2022, the U.S. Drought Monitor is reporting 100% of the State is abnormally dry, 100% under moderate, 92% under severe (-2%), 43% under extreme (+2%), and 17% exceptional (same) drought conditions.

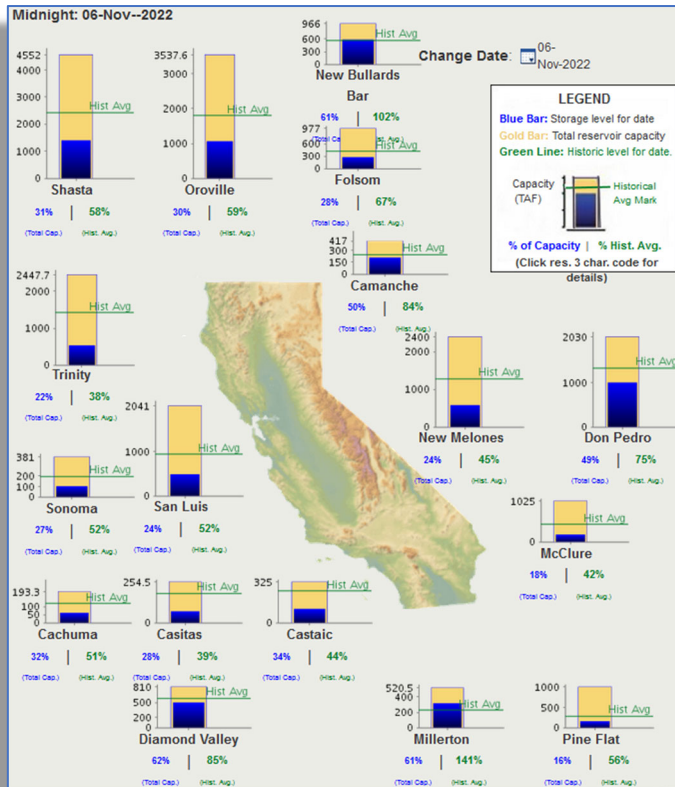


While La Nina conditions are expected to persist resulting in a rare third consecutive La Niña year, rain still came down fast and furious in two separate cells on Tuesday, November 8, 2022 (Election Day). Despite drier conditions being forecasted for southern California this winter and spring, mid-fall rain brought concerns of flash flooding throughout the region.



## Reservoirs (as of November 6, 2022)

For the 21 reservoirs reported monthly to the committee, water levels have increased in 3 of 21 reservoirs. The largest increase occurred at Comanche Lake (0.01 million acre feet, MAF). The smallest increase occurred at Pine Flat Reservoir and Castaic Lake (<0.01 MAF). The largest decrease (-0.29 MAF) occurred at Lake Mead. The smallest decrease (<0.0 MAF) occurred at Cachuma, Casitas, Perris, and Silverwood Lakes.



### MWD Reservoirs (SWP) Storage in Million Acre Feet

Reservoir	Capacity	Storage	% Full	Change
Trinity Lake (CLE)	2.45	0.53	22%	-0.01
Lake Shasta (SHA)	4.55	1.40	31%	-0.08
Lake Oroville (ORO)	3.54	1.06	30%	-0.13
New Bullards Bar (BUL)	0.97	0.59	61%	-0.04
Folsom Lake (FOL)	0.98	0.28	28%	-0.05
Comanche Lake (CMN)	0.42	0.21	50%	0.01
New Melones L. (NML)	2.40	0.58	24%	-0.03
Don Pedro Res (DNP)	2.03	1.00	49%	-0.03
Lake McClure (EXC)	1.02	0.18	18%	-0.03
Lake Sonoma (WRS)	0.38	0.10	27%	-0.01
San Luis Res (SNL)	2.04	0.49	24%	-0.06
Millerton Lake (MIL)	0.52	0.32	61%	-0.02
Pine Flat Res. (PNF)	1.00	0.16	16%	0.00
Cachuma Lake (CCH)	0.19	0.06	32%	0.00
Castaic Lake (CAS)	0.33	0.11	34%	0.00
Casitas Lake (CSI)	0.25	0.07	28%	0.00
Perris Lake (PRR)	0.13	0.09	71%	0.00
L. Silverwood (SLW)	0.08	0.06	83%	0.00

### MWD Reservoirs (CRA) Storage in Million Acre Feet

Reservoir	Capacity	Storage	% Full	Change
Lake Powell	24.32	5.82	24%	-0.04
Lake Mead	26.12	7.35	28%	-0.29
Diamond Valley L (DVL)	0.81	0.50	62%	-0.01

Black Text - Decrease or no change in storage since the last report.  
Green Text - Increase in storage since the last report.

These 21 reservoirs are at 28% capacity (20.99 MAF) which is down 0.80 MAF from the prior month (-0.46 MAF State Water Project [SWP] and -0.34 MAF Colorado River Aqueduct [CRA]).

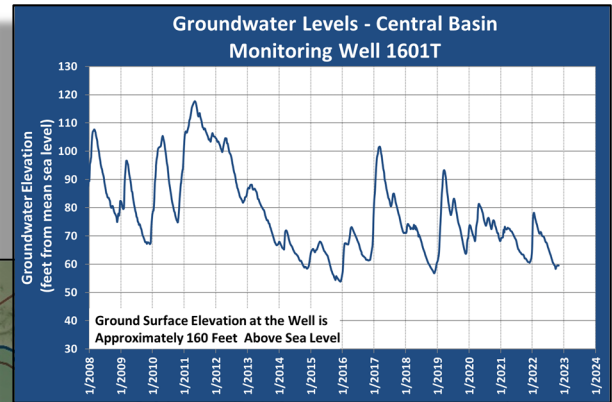
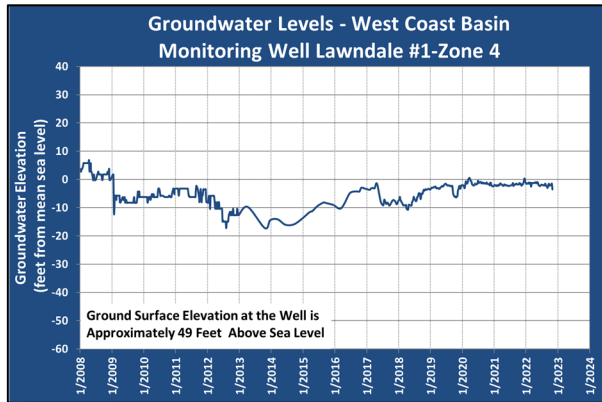


## Did you know?

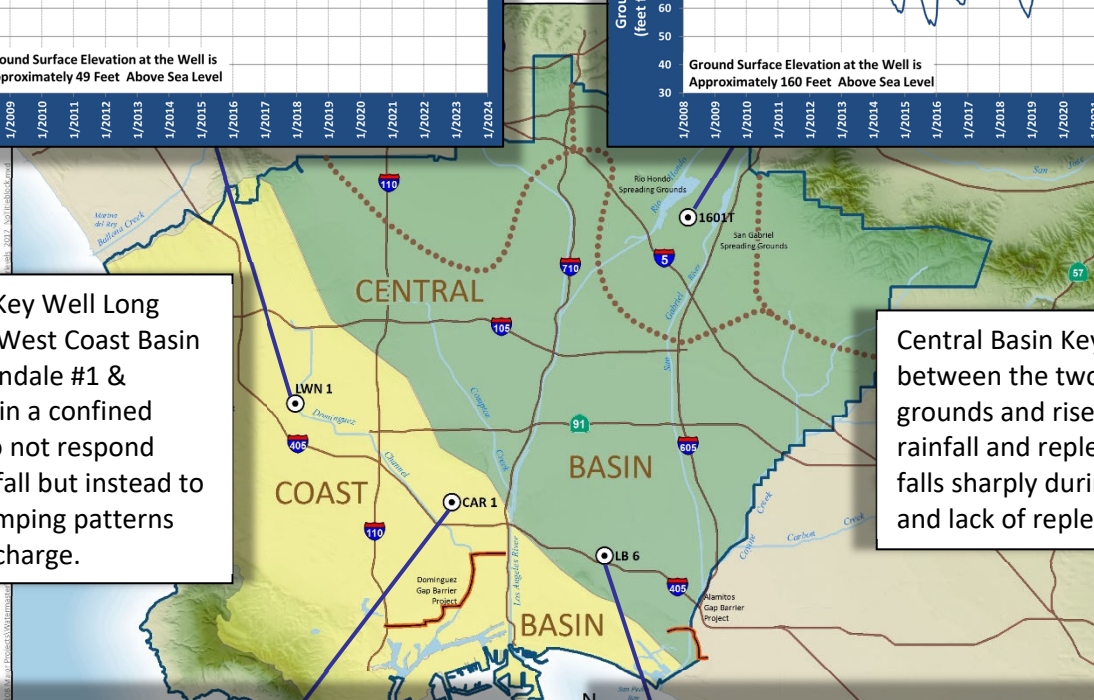
Imagine all the water discharged into the Gulf of Mexico by the Mississippi River in the past 200 years - that's about 33,000 trillion gallons, which is about the same amount as the groundwater reserves in the U.S.

## Groundwater Levels (through November 3, 2022)

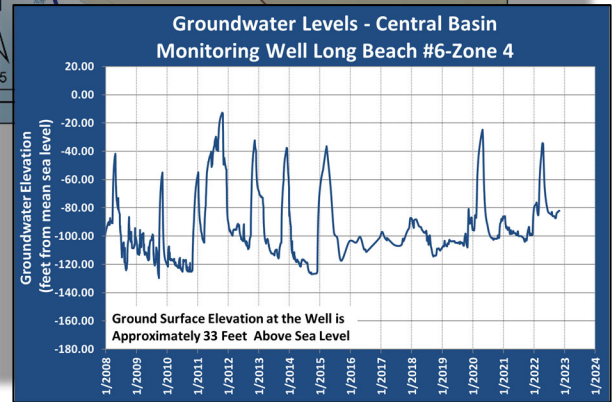
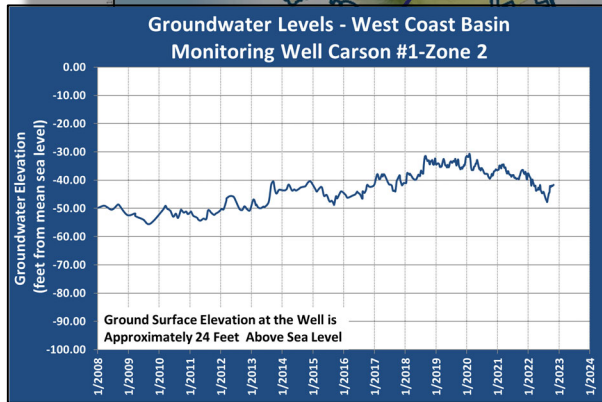
Groundwater levels in key monitoring wells are shown in the hydrographs below.



Central Basin Key Well Long Beach #6 and West Coast Basin Key Wells Lawndale #1 & Carson #1 are in a confined aquifer and do not respond readily to rainfall but instead to changes in pumping patterns and barrier recharge.



Central Basin Key Well 1601T is between the two spreading grounds and rises rapidly with rainfall and replenishment but falls sharply during dry spells and lack of replenishment.



### Groundwater Level Changes in Key Wells

Well Name	Since Last Report	Since Same Time the Previous Year
Central Basin Key Well 1601T	Increased 0.4 foot	Decreased 1.6 feet
Central Basin Key Well Long Beach #6 4	Increased 1.2 feet	Increased 11.5 feet
West Coast Basin Key Well Lawndale #1 4	<b>Decreased 1.3 feet</b>	Decreased 2.0 feet
West Coast Basin Key Well Carson #1 2	Increased 0.6 foot	Decreased 5.2 feet

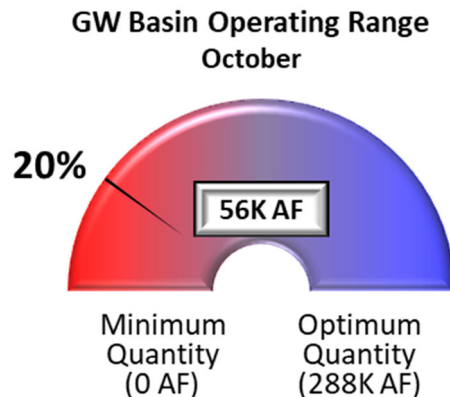
**Bold** indicates a change in direction (decreasing or increasing) since the last report.

## Optimum and Minimum Groundwater Quantity

In response to a 2002 State audit of the District's activities, the Board of Directors adopted an Optimum and Minimum Quantity for groundwater in the District to define an appropriate operating range that would sustain adjudicated pumping rights, leave room for future storage projects, and identify a lower limit. The amounts are based on the accumulated overdraft concept, which the District tracks year by year based on changes in groundwater storage.

After an extensive review of over 70 years of water level fluctuations and discussions with the Board and pumping community, Water Year 1999/2000 was recognized as a representative year for the Optimum Quantity, which equated to an accumulated overdraft of approximately 612,000 acre feet. The Minimum Quantity was defined as an accumulated overdraft of 900,000 acre feet, which allowed an operating range from 0 acre feet (minimum) to 288,000 acre feet (optimum). The Board also adopted a policy to make-up the groundwater deficit should the accumulated overdraft fall too far below the Optimum Quantity.

The Accumulated Overdraft as of November 3, 2022, has been estimated at 843,651 acre feet (subject to change), which is 56,349 acre feet above the Minimum Quantity and 231,651 acre feet below the Optimum Quantity. The Basin is at 20% of Optimum Quantity which is 1% higher than what was reported last month (~1,000 AF higher).



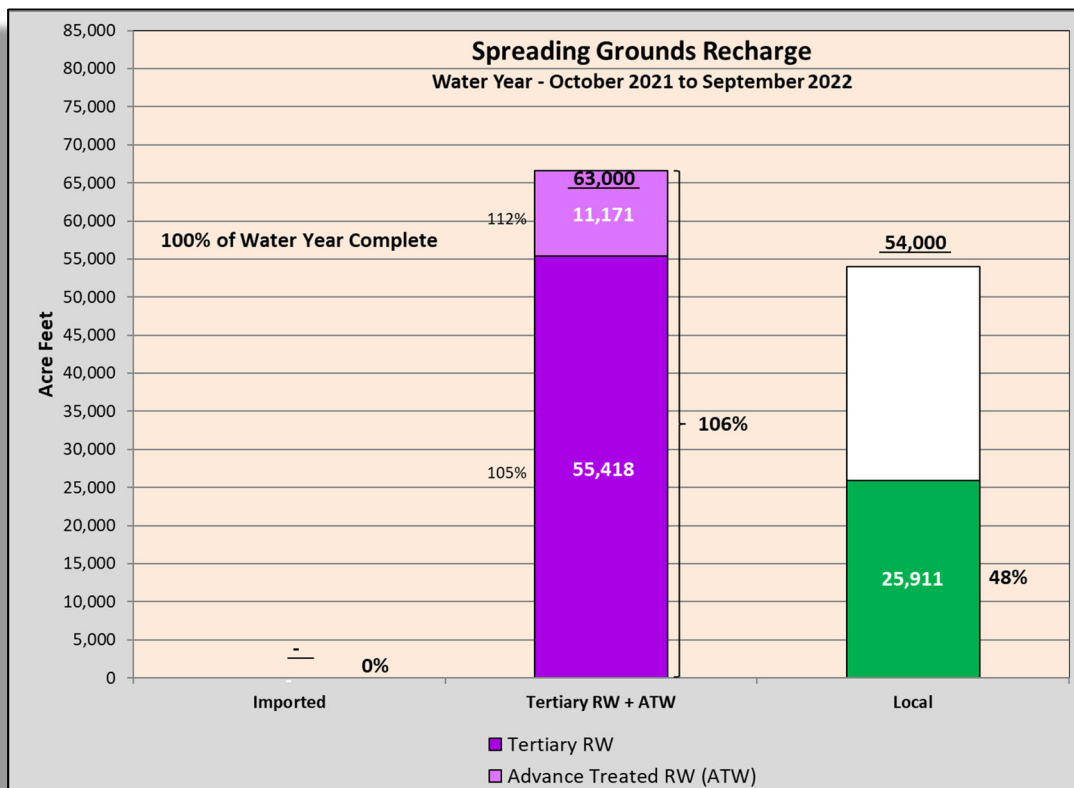
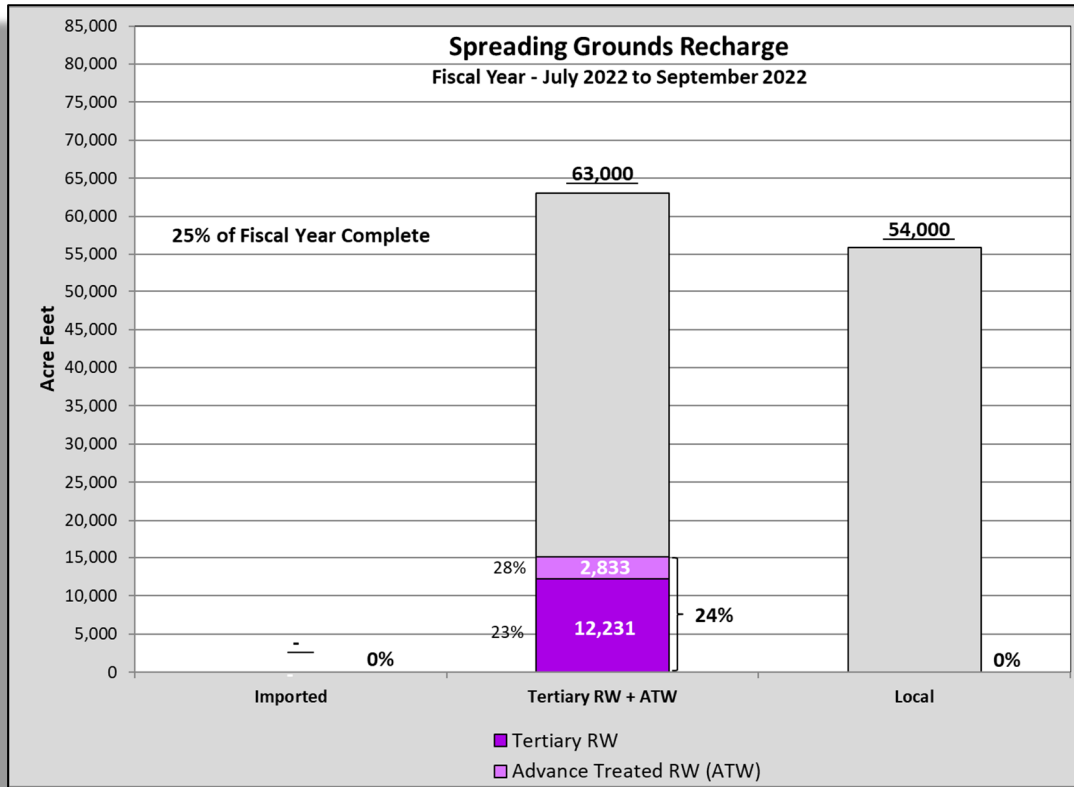
### FACT:

*It's not all coming from upstream – about 30% of U.S. streamflow is from groundwater, though that amount may be higher or lower in some areas.*



Montebello Forebay Spreading Grounds (July 2022 – September 2022)

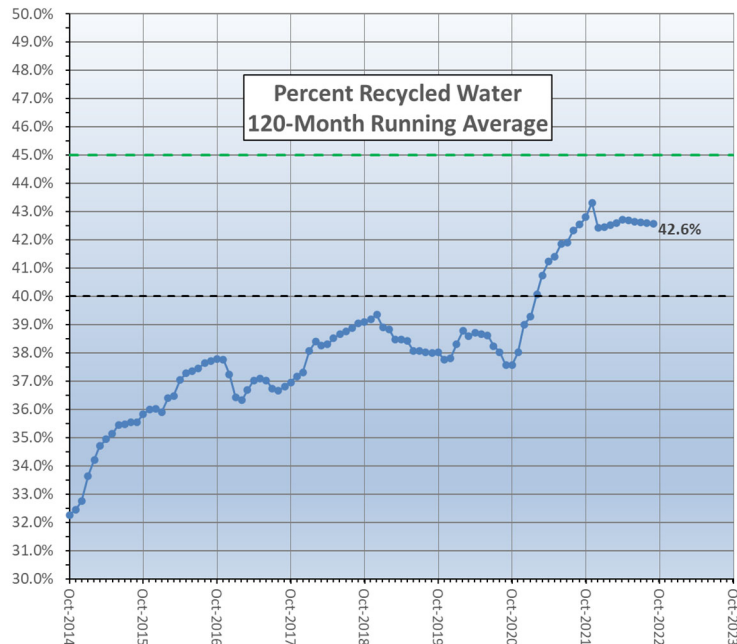
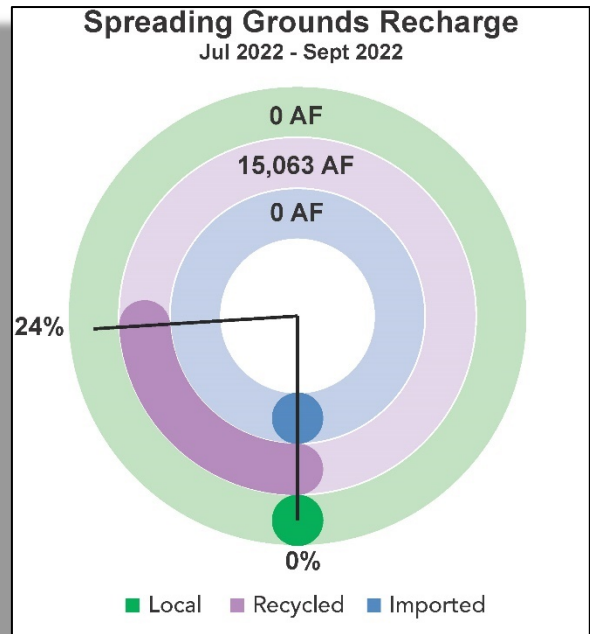
The following Charts shows the preliminary spreading grounds replenishment water for the current Fiscal Year (2022-23; 3 months) and Water Year (2021-22; 12 months):



No imported water purchases are planned for Fiscal Year 2022-23.

Local water (stormwater plus dry weather urban runoff) is captured by the Los Angeles County Department of Public Works (LACPW) at the spreading grounds for recharge. Local water amounts are determined as the sum of the total waters conserved at the spreading grounds less the imported and recycled water deliveries. For the 2022-23 Fiscal Year, no local water capture has been reported by the LACPW.

Preliminary numbers for the 2022-23 Fiscal Year show that approximately 15,063 acre feet of recycled water has been recharged with 2,833 acre feet consisting of advanced treat water from the ARC AWTF and 12,230 acre feet of tertiary recycled water. Presuming the advanced treated water as “Null Water”, the 120-month running average of the recycled water contribution in the Montebello Forebay is 42.6% and the regulatory maximum is 45%, with additional monitoring being required once 40% is reached. WRD and LACSD submitted the additional monitoring plan on May 26, 2021. Implementation of the plan will commence upon acceptance by the RWQCB.



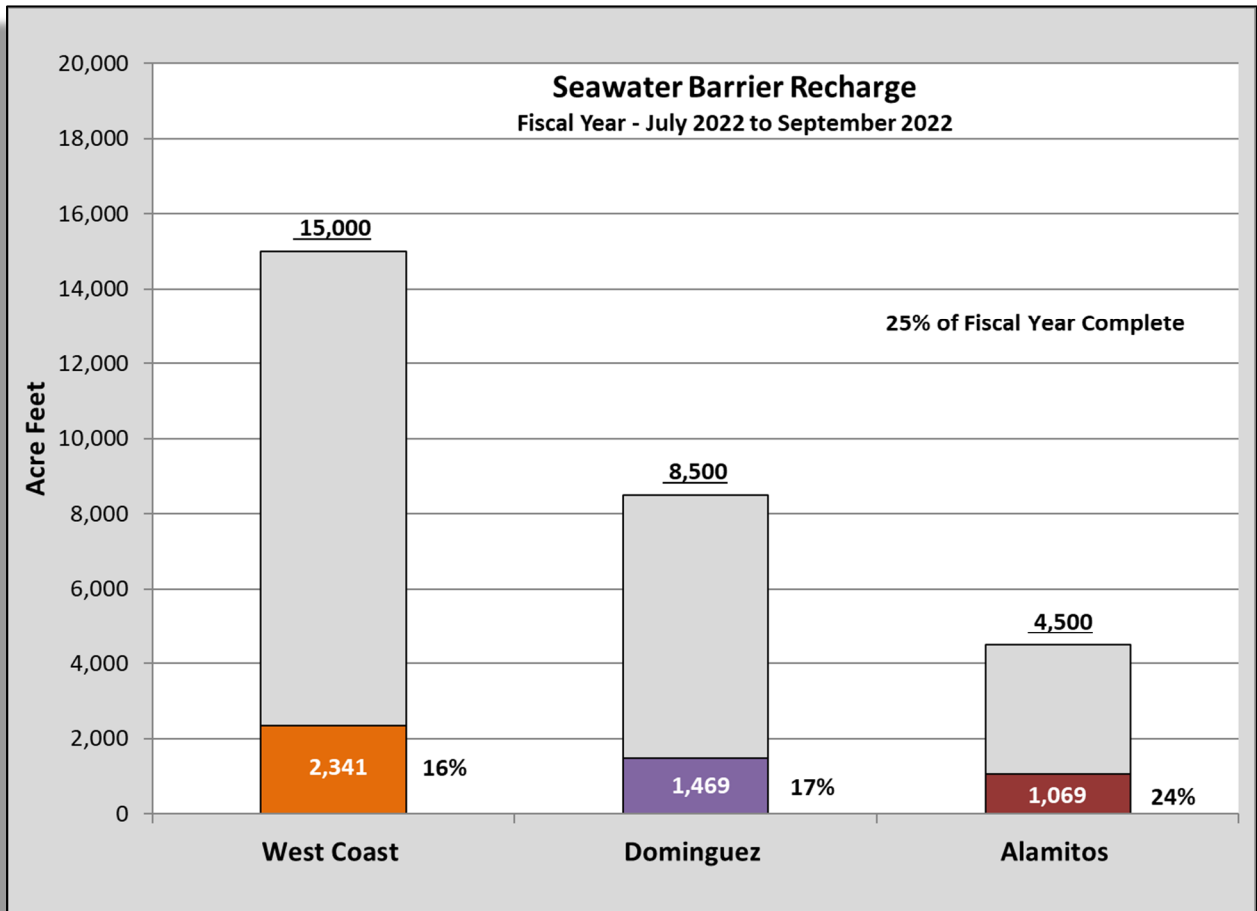
**Tertiary Recycle Water Permit Update**

The permit is progressing with LACSD and WRD staff working with both LARWQCB and CA-DDW regulators to respond the questions and update pertinent sections of the new Title 22 Engineering Report. LACSD continues to work on two major studies needed for the new Title 22 Engineering Report – Biodegradable Dissolve Organic Carbon (BDOC) Study and Virus Logarithmic Reduction Value (LRV) Study.

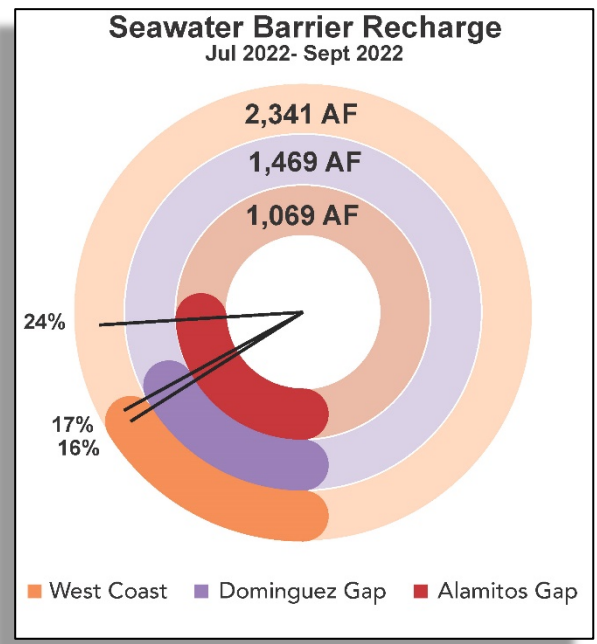
Due to the continued mega drought and recent emergency drought proclamation by Governor Newsom, LACSD and WRD submitted a request to modify the recycled water contribution percentage to 50% and the advanced treated water classification to diluent in a letter to the LARWQCB and CA-DDW dated July 8, 2022.

Seawater Barrier Well Injection and Replenishment (July 2022 – September 2022)

The following Chart shows the barrier water injection:



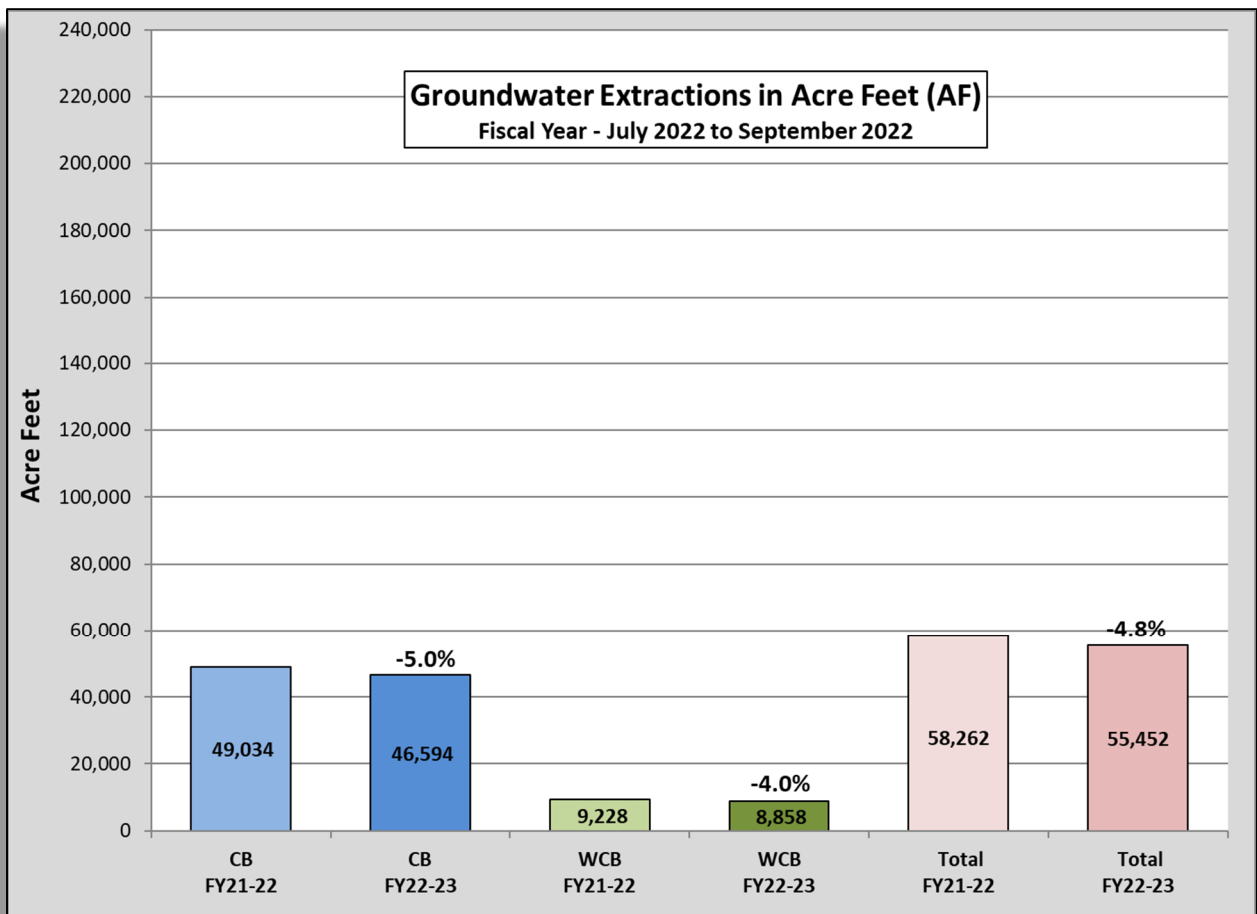
Preliminary numbers for the 2022-23 Fiscal Year show that the West Coast Barrier has used 2,341 acre feet of the total 15,000 acre feet planned for injection, 16% of total for the Fiscal Year. The Dominguez Gap Barrier used 1,469 acre feet of the total 8,500 acre feet planned for injection, 17% of the total for the Fiscal Year. The Alamitos Barrier, on the WRD side, used 1,069 acre feet of the total 4,500 acre feet planned for injection, 24% of the total for the Fiscal Year.





Total Pumping (Fiscal Year 2022-23, July 2022 – September 2022)

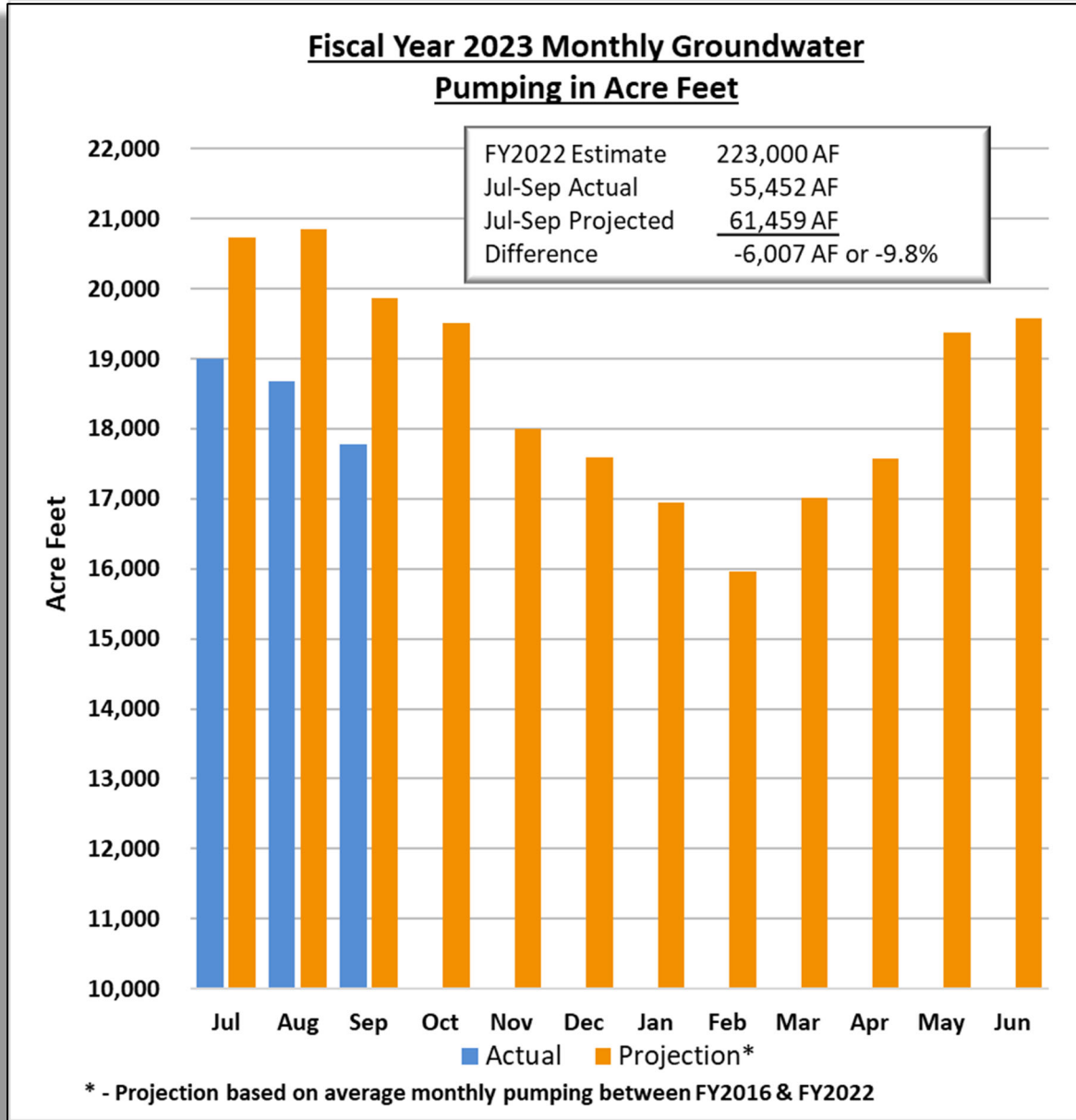
Preliminary numbers for groundwater production in the District for the Fiscal Year 2022-23 (July-September) indicate total pumping in the Central Basin was down 2,4400 acre feet from the same time of the previous fiscal year (-5.0%) and the West Coast Basin total pumping was 370 acre feet lower than the previous fiscal year (-4.0%). The total pumping is 55,452 acre feet compared to 58,262 acre feet during the same time the previous year for a decrease of 2,810 acre feet, or -4.8%. The current pumping data do not include seven (7) Central Basin pumpers and four (4) West Coast Basin pumpers who have not yet reported for an estimated 6 additional acre feet.



Interesting...

The average cost for water supplied to a home in the U.S. is about \$2.00 for 1,000 gallons, which equals about 5 gallons for a penny.

Preliminary numbers indicate 37,667 acre feet have been pumped this fiscal year and is 9.4% below the projected goal of 20,739 acre feet (or -3,923 acre feet). Monthly actual production versus the 7-year average monthly production projections (FY 2016 through 2022) are included in the chart below.



“There are three things in life that people like to stare at: a flowing stream, a crackling fire, and a Zamboni clearing the ice.” - *Charlie Brown (Charles Schultz)*



For the Fiscal Year 2022-23 (July 2022 - August 2022), staff has tracked the production trends of the top five (5) producing pumpers and the bottom five (5) producing pumpers in each basin. These pumpers are identified in the following tables and are based on the change in volume (in acre feet) compared to the same time period for the previous Fiscal Year.

<b>Production Trends - Central Basin</b>				
<b>Top 5 Producing by Volume (AF)</b>	Jul 2021-Aug 2021	Jul 2022-Aug 2022	Difference	% Change
Los Angeles, City - CB	381.13	1,721.31	1340.18	77.86
Cal. Water Service Co. (East LA)	2,287.26	2,496.54	209.28	8.38
Signal Hill, City	198.39	321.96	123.57	38.38
South Gate, City	2,254.72	2,271.02	16.30	0.72
Walnut Park Mutual	277.10	286.21	9.11	3.18
<b>Bottom 5 Producing by Volume (AF)</b>	Jul 2021-Aug 2021	Jul 2022-Aug 2022	Difference	% Change
Long Beach, City - CB	8,304.61	7,525.54	-779.07	-10.35
Lynwood, City	1,449.80	1,164.68	-285.12	-24.48
Whittier, City	1,689.55	1,427.38	-262.17	-18.37
Cerritos, City	2,280.07	2,027.33	-252.74	-12.47
Lakewood - City	2,142.56	1,892.53	-250.03	-13.21

<b>Production Trends – West Coast Basin</b>				
<b>Top 5 Producing by Volume (AF)</b>	Jul 2021-Aug 2021	Jul 2022-Aug 2022	Difference	% Change
Cal. Water Service Co. Dominguez - WB	447.79	600.23	152.44	25.40
Cal. Water Service Co./Hawthorne Lease	14.02	158.07	144.05	91.13
Manhattan Beach, City	48.42	147.12	98.70	67.09
Tesoro Refining	2,429.86	2,493.26	63.40	2.54
Torrance Refining & Marketing Co.	233.16	263.13	29.97	11.39
<b>Bottom 5 Producing by Volume (AF)</b>	Jul 2021-Aug 2021	Jul 2022-Aug 2022	Difference	% Change
Cal. Water Service Co. Alpha 7050	523.12	233.64	-289.48	-123.90
Phillips 66 Co. - Alpha 7093	1,617.25	1,406.95	-210.30	-14.95
Inglewood, City	588.18	432.23	-155.95	-36.08
Golden State Water Co. - WB	1,219.96	1,120.85	-99.11	-8.84
Pacific Crest Cemetery Co.	22.68	17.56	-5.12	-29.16

Water Replenishment District (WRD) publishes the Groundwater Basin Update (GWBU) monthly. All information contained herein is preliminary and is meant to be a snapshot the status of the basins at the time of publication and should not constitute an official WRD report. All the information presented in the GWBU utilizes the best available data at the time of publication. Data provided herein is a compilation of WRD data and publicly available information from several of our partners including, by not limited to, the Los Angeles County Department of Public Works - Stormwater Engineering Division, Metropolitan Water District of Southern California, California Department of Water Resources, US Bureau of Reclamation, University of Nebraska - Lincoln, and the US Department of Agriculture - Natural Resources Conservation Service. The GWBU is prepared by Senior Hydrogeologist, Everett Ferguson, who can be contacted directly with questions at [eferguson@wrdd.org](mailto:eferguson@wrdd.org).