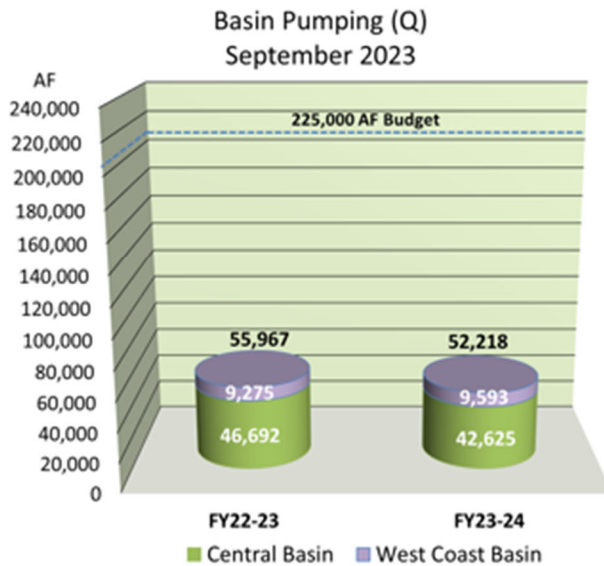
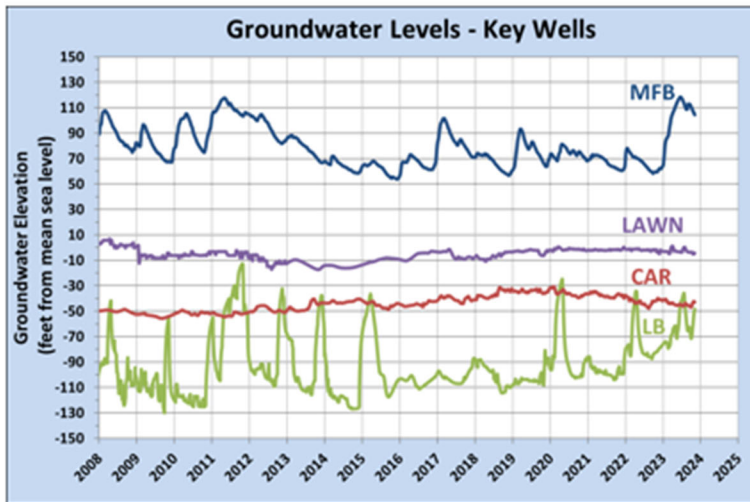
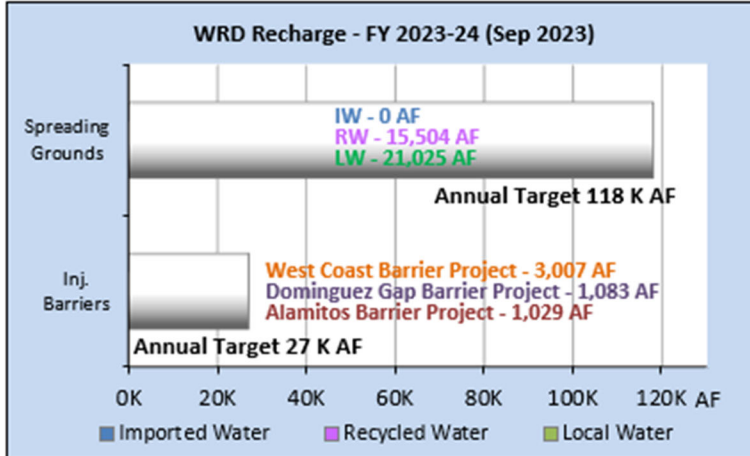
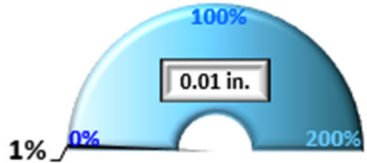


# GROUNDWATER BASIN UPDATE FOR NOVEMBER 2023

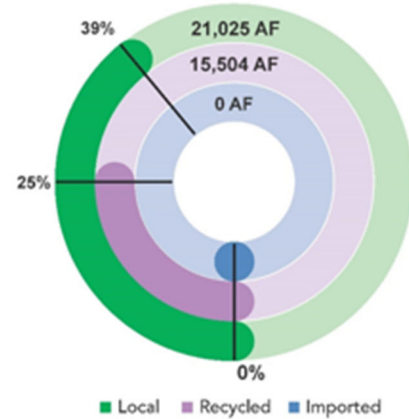
## GROUNDWATER BASINS AT A GLANCE\*



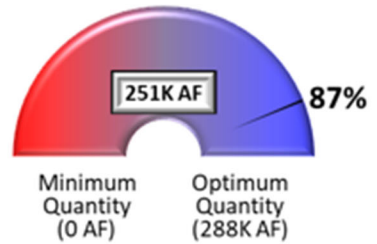
Precipitation % of Normal to Date  
Oct 1, 2023 - Nov 9, 2023



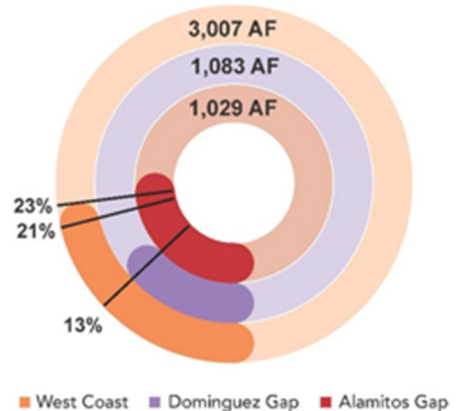
Spreading Grounds Recharge  
Jul - Sep 2023



GW Basin Operating Range  
November 8, 2023



Seawater Barrier Recharge  
Jul - Sep 2023



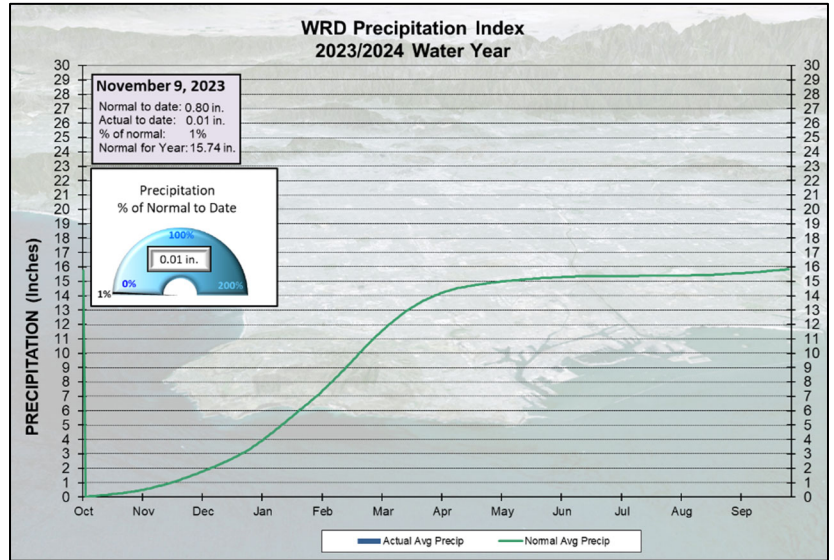
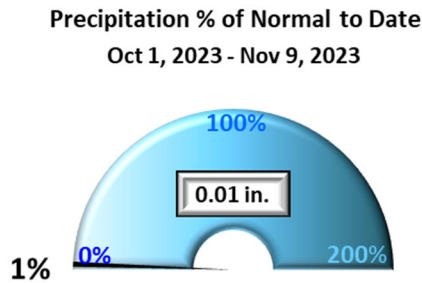
\* - Preliminary numbers, subject to change.

**SUMMARY**

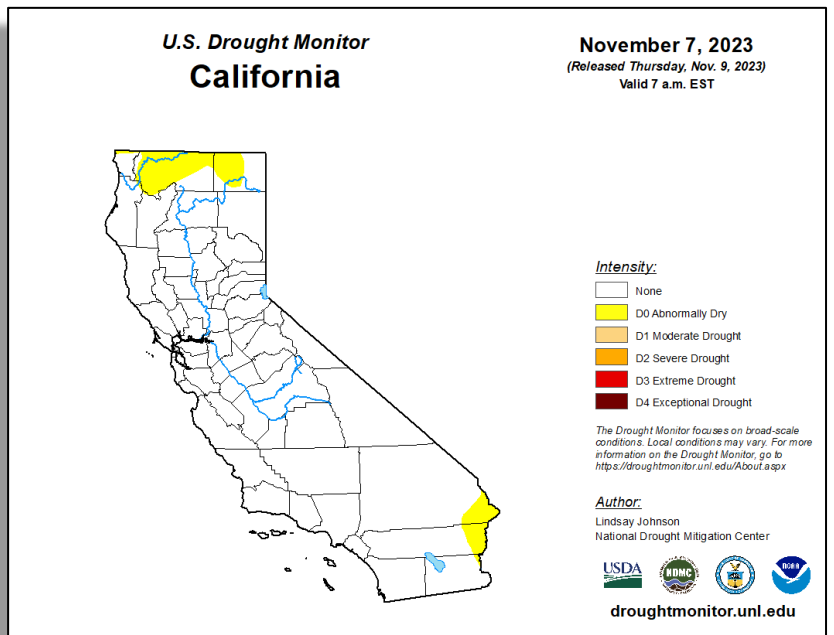
Staff monitors groundwater conditions in the District’s service area throughout the year. A summary of the latest information is presented below.

**Precipitation (October 1, 2023 – November 9, 2023)**

The WRD precipitation index reports that for the 2023-24 Water Year, there has been below average rainfall (0.01 inch) through November 9, 2023. The normal rainfall for this time period is 0.8 inch, so the District is 1% of normal.

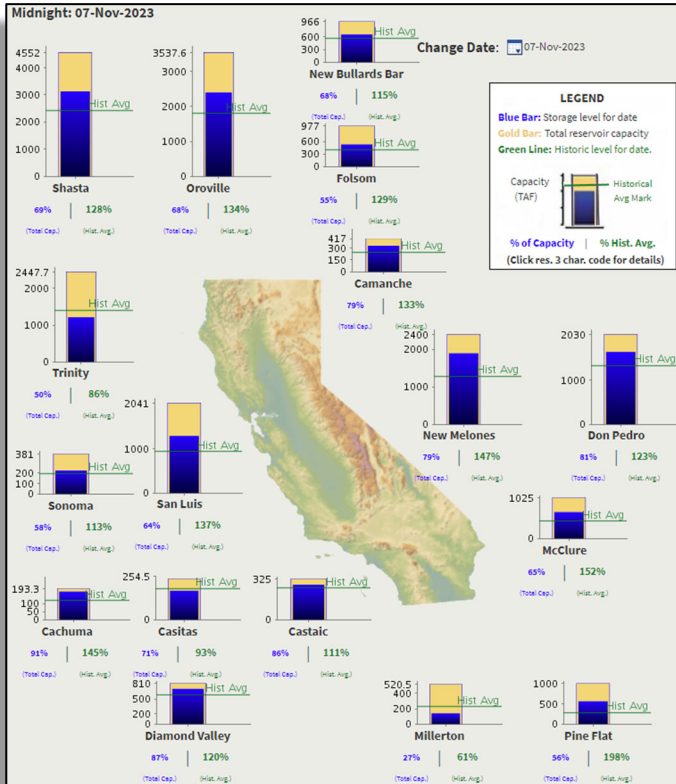


As of November 7, 2023, the U.S. Drought Monitor is reporting 6% of the State is abnormally dry (same), 0% under moderate (same), 0% under severe (same), 0% under extreme (same), and 0% exceptional (same) drought conditions. According to the U.S. Drought Monitor, Los Angeles County is currently not in a drought.



## Reservoirs (as of November 7, 2023)

For the 21 reservoirs reported monthly to the committee, water levels have increased in 2 of 21 reservoirs. The largest increase occurred at Diamond Valley Lake (0.02 million acre feet, MAF). The smallest increase occurred at Perris Lake (<0.01 MAF). The largest decrease (-0.34 MAF) occurred at San Luis Reservoir. The smallest decrease (<-0.01 MAF) occurred at New Melones, Cachuma, and Casitas Lakes.



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

Reservoir	Capacity	Storage	% Full	Change
Trinity Lake (CLE)	2.45	1.22	50%	-0.04
Lake Shasta (SHA)	4.55	3.13	69%	-0.15
Lake Oroville (ORO)	3.54	2.39	68%	-0.14
New Bullards Bar (BUL)	0.97	0.66	68%	-0.03
Folsom Lake (FOL)	0.98	0.53	54%	-0.10
Camanche Lake (CMN)	0.42	0.33	79%	-0.02
New Melones L. (NML)	2.40	1.89	79%	0.00
Don Pedro Res (DNP)	2.03	1.63	80%	-0.07
Lake McClure (EXC)	1.02	0.66	65%	-0.07
Lake Sonoma (WRS)	0.38	0.22	58%	-0.01
San Luis Res (SNL)	2.04	1.29	63%	-0.34
Millerton Lake (MIL)	0.52	0.14	27%	-0.04
Pine Flat Res. (PNF)	1.00	0.56	56%	-0.07
Cachuma Lake (CCH)	0.19	0.18	91%	0.00
Castaic Lake (CAS)	0.33	0.28	85%	-0.02
Casitas Lake (CSI)	0.25	0.17	71%	0.00
Perris Lake (PRR)	0.13	0.08	59%	0.00
L. Silverwood (SLW)	0.08	0.05	66%	-0.01

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

Reservoir	Capacity	Storage	% Full	Change
Lake Powell	24.32	8.73	36%	-0.06
Lake Mead	26.12	8.85	34%	-0.02
Diamond Valley L (DVL)	0.81	0.69	86%	0.02

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 45% capacity (33.68 MAF) which is down 1.18 MAF (-1.6%) from the prior month (-1.12 MAF State Water Project [SWP] and -0.06 MAF Colorado River Aqueduct [CRA]).

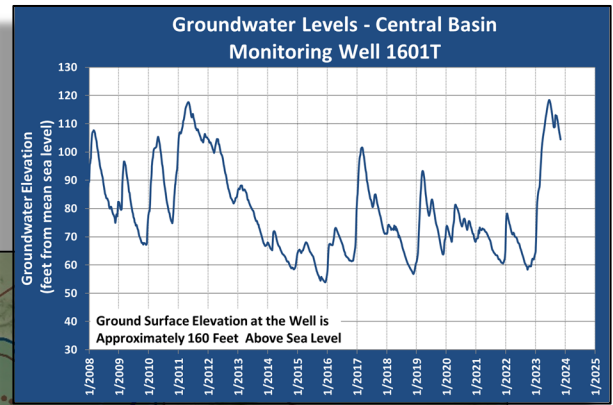
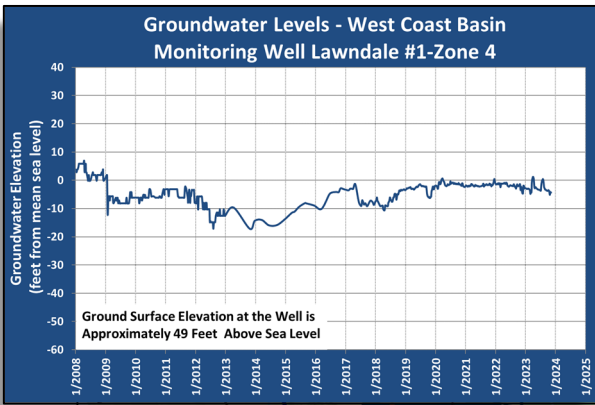


**Did you know?**  
The U.S. uses 79.6 billion gallons per day of fresh groundwater for public supply, irrigation, livestock, manufacturing, mining, thermoelectric power, and other purposes.



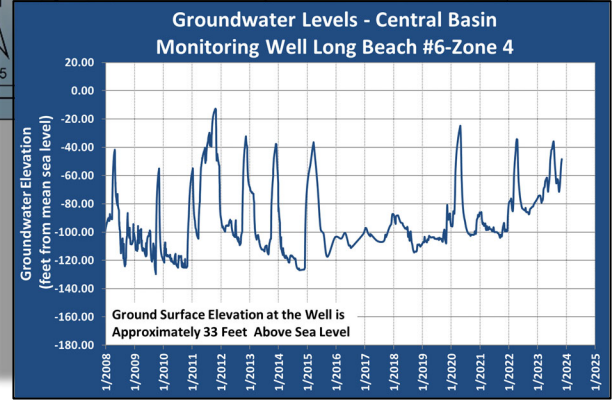
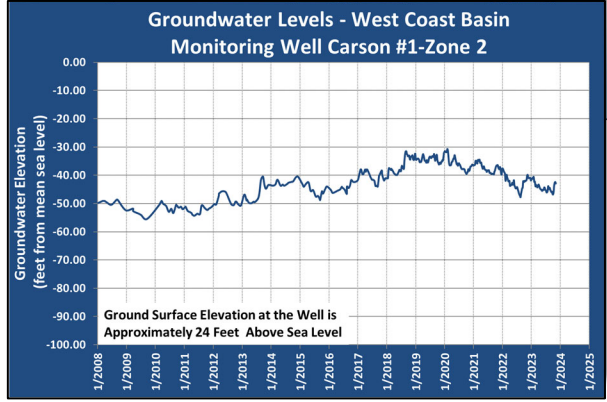
Groundwater Levels (through November 8, 2023)

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	<b>Decreased 6.5 feet</b>	Increased 45.0 feet
Central Basin Key Well Long Beach #6 4	<b>Increased 23.1 feet</b>	Increased 33.3 feet
West Coast Basin Key Well Lawndale #1 4	Decreased 0.8.2 foot	Decreased 2.1 feet
West Coast Basin Key Well Carson #1 2	<b>Increased 3.9 feet</b>	Decreased 2.7 feet

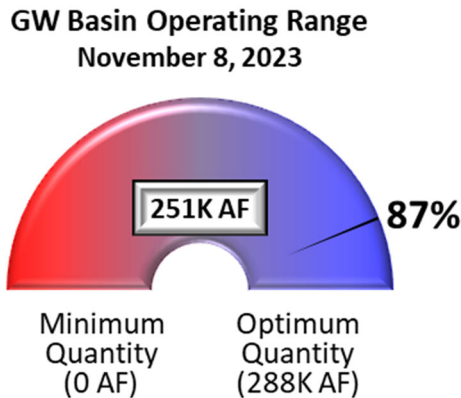
**Bold** indicates a change in direction (decreasing or increasing) since the last report.

Optimum and Minimum Groundwater Quantity (November 8, 2023)

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 8, 2023, has been estimated at 649,159 acre feet (subject to change), which is 250,841 acre feet above the Minimum Quantity and 37,159 acre feet below Optimum Quantity. The Basin is at 87% of Optimum Quantity which is 8% lower than what was reported last month (~23,000 AF lower).



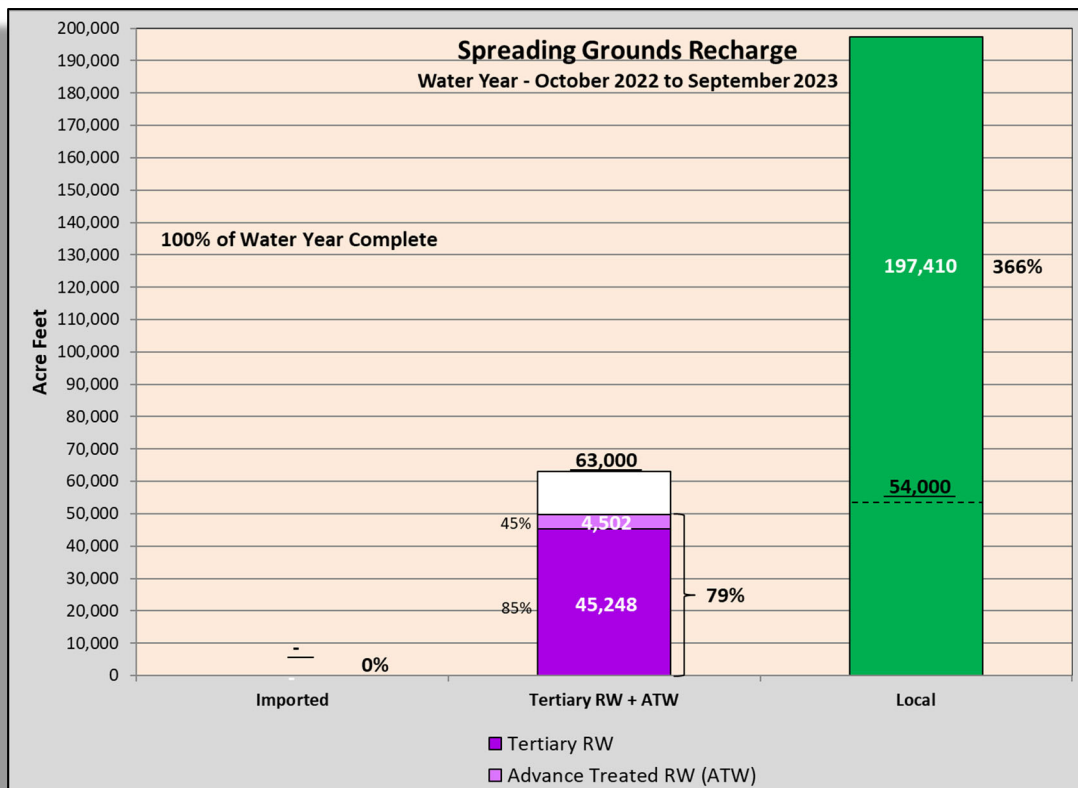
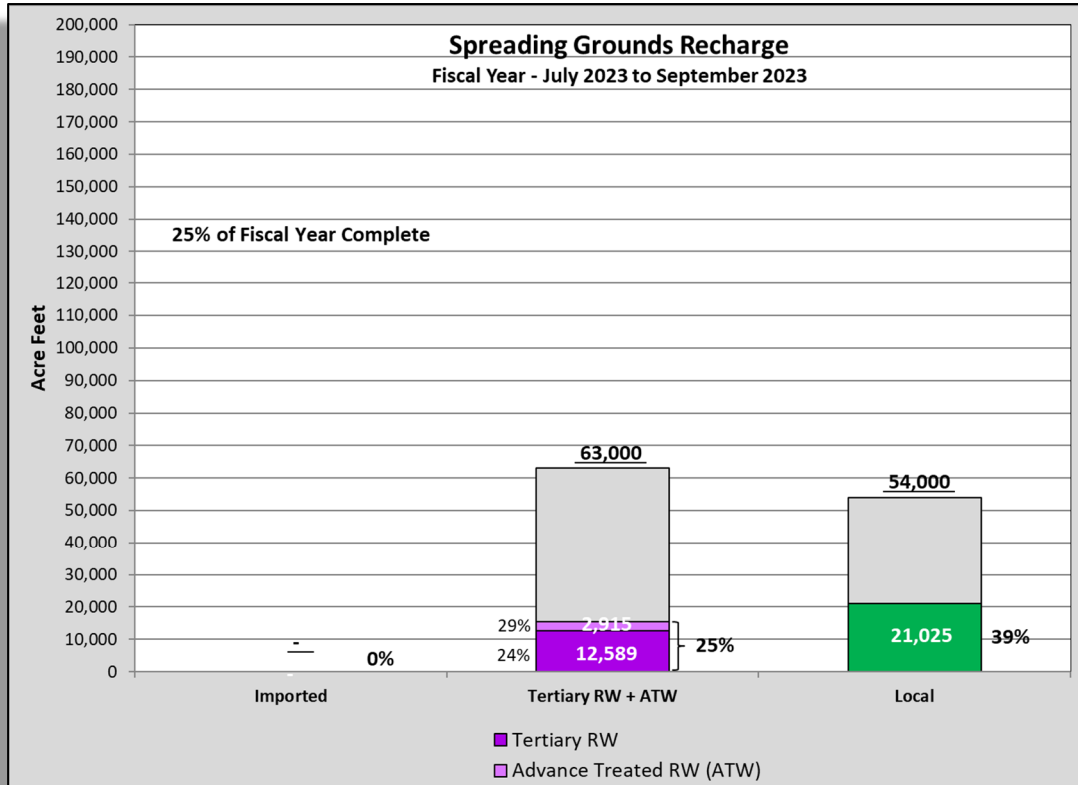
**FACT:**

Groundwater provides much of the flow of many streams; many lakes and streams are "windows" to the water table groundwater.



Montebello Forebay Spreading Grounds (July 2023 – September 2023)

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



No imported water purchases were planned for Fiscal Year 2023-24.

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 2023-24 Fiscal Year, 21,025 acre foot of local water capture have been reported by the LACPW.

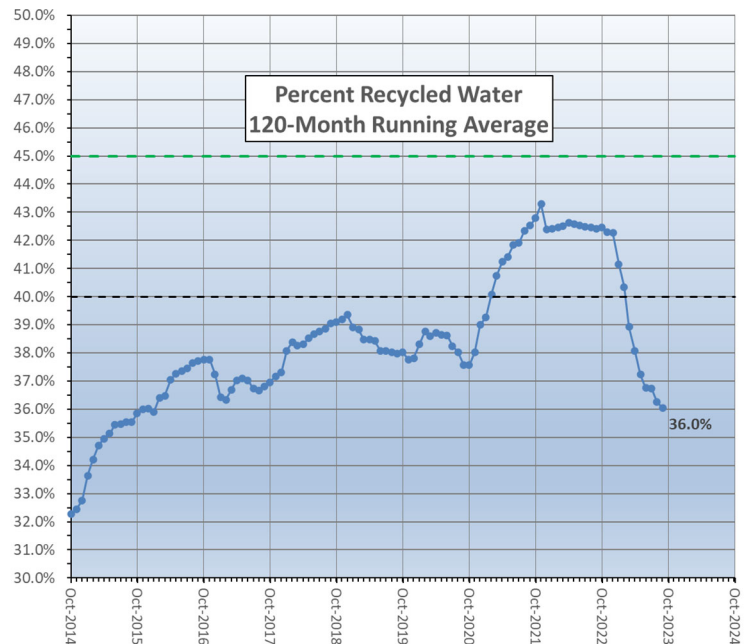
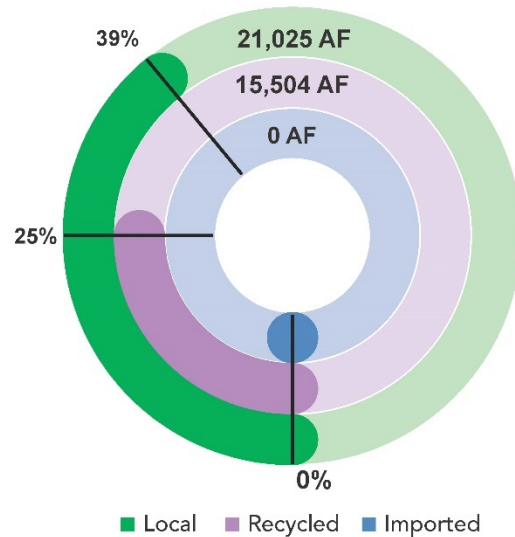
Preliminary numbers for the 2023-24 Fiscal Year show that approximately 15,504 acre feet of recycled water has been recharged with 2,915 acre feet consisting of advanced treat water from the ARC AWTF and 12,589 acre feet of tertiary recycled water. Presuming the advanced treated water as “Null Water”, the 120-month running average of the recycled water contribution in the Montebello Forebay is 36.0% and the regulatory maximum is 45%, with additional monitoring being required once 40% is reached.

Tertiary Recycle Water Permit Update

The permit is continuing to progress with LACSD and WRD staff working to update pertinent sections of the new Title 22 Engineering Report. Due to the persistent drought conditions over the past few decades and associated 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. LACSD and WRD staff are targeting the end of 2023 to have the new Title 22 Engineering Report submitted, including the requests the increase the recycled water contribution percentage to 50% and reclassify the advanced treated water as diluent.

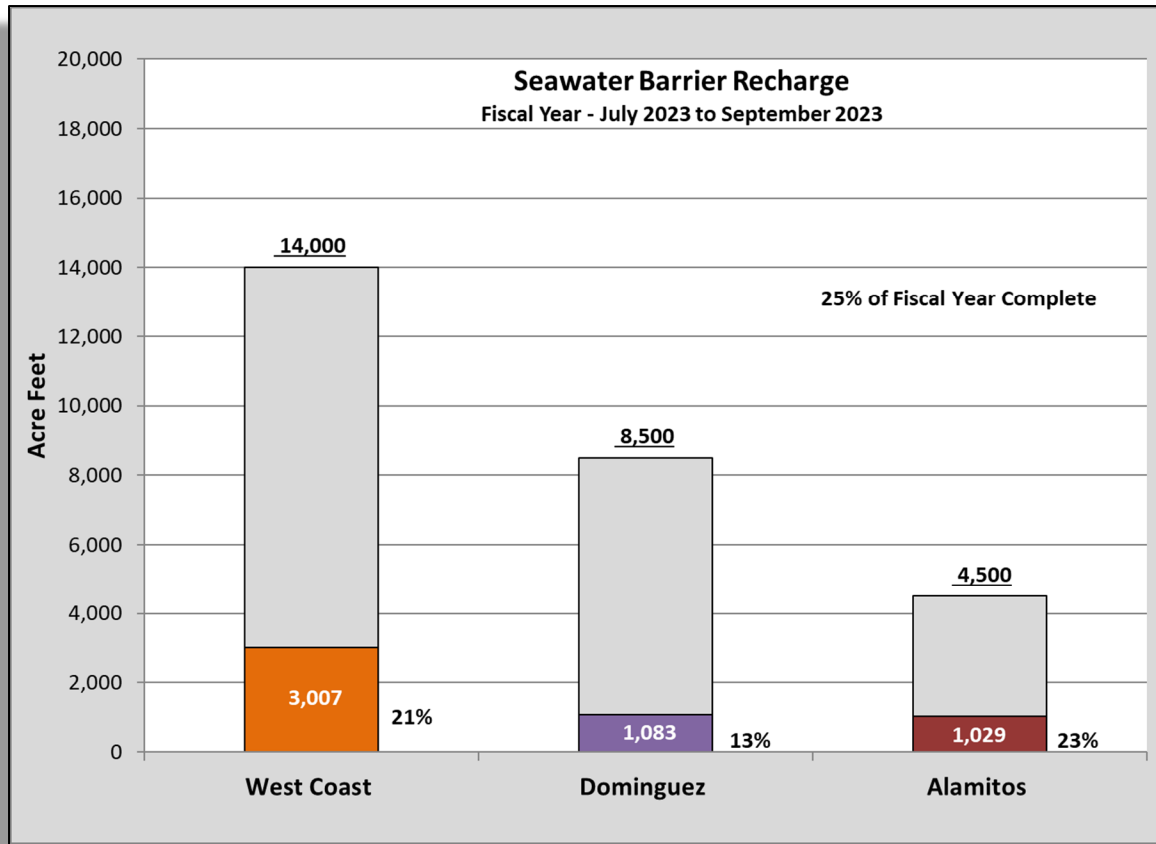
**Spreading Grounds Recharge**

Jul - Sep 2023



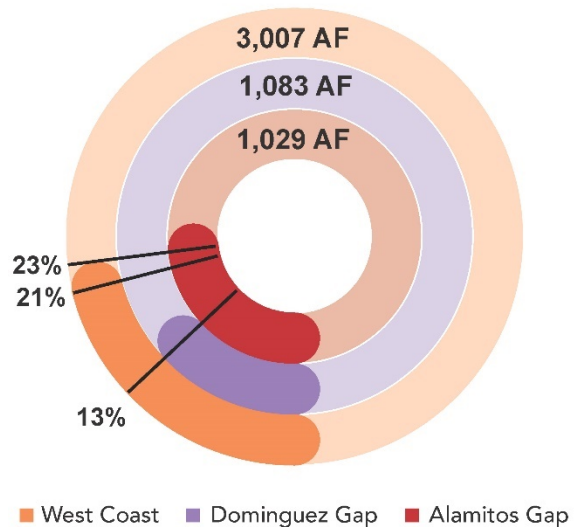
Seawater Barrier Well Injection and Replenishment (July 2023 – September 2023)

The following Chart shows the barrier water injection:



Preliminary numbers for the 2023-24 Fiscal Year show that the West Coast Barrier has used 3,007 acre feet of the total 14,000 acre feet planned for injection, 21% of total for the Fiscal Year. The Dominguez Gap Barrier used 1,083 acre feet of the total 8,500 acre feet planned for injection, 13% of the total for the Fiscal Year. The Alamitos Barrier, on the WRD side, used 1,029 acre feet of the total 4,500 acre feet planned for injection, 23% of the total for the Fiscal Year.

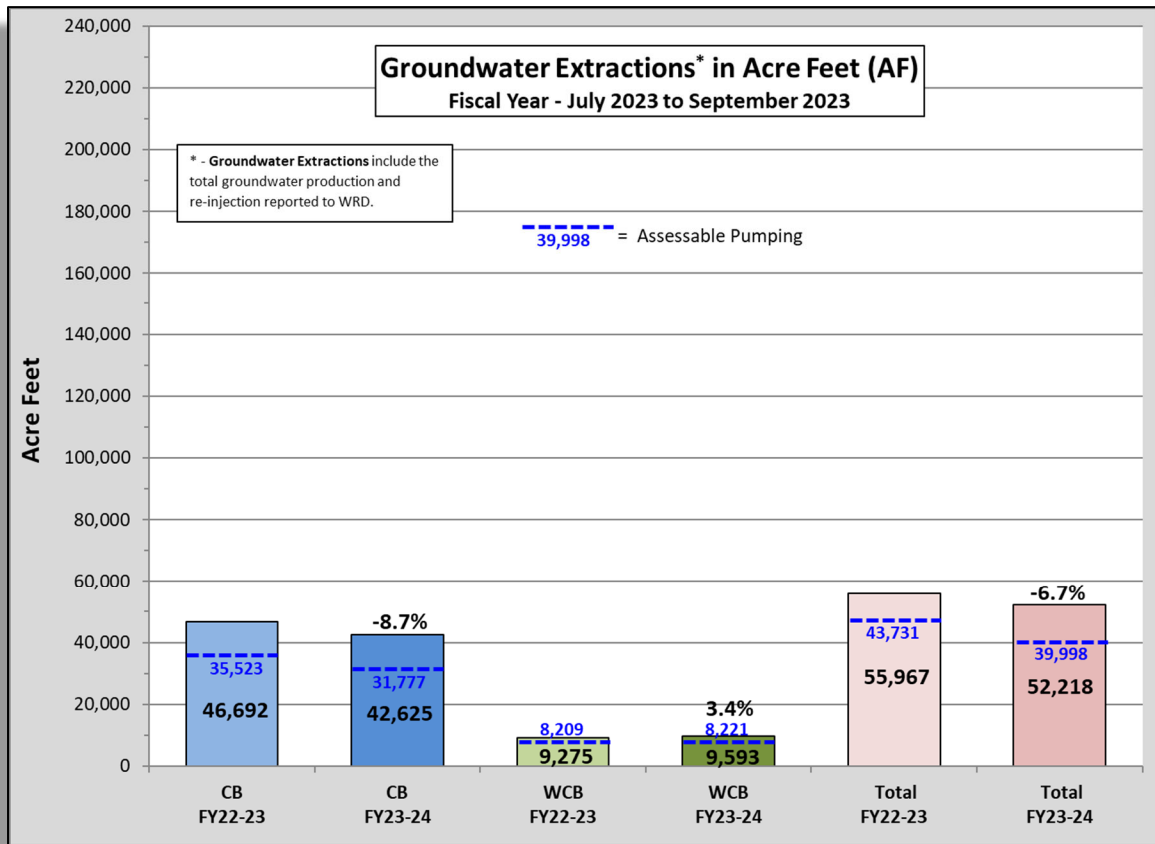
**Seawater Barrier Recharge**  
Jul - Sep 2023





Total Pumping (Fiscal Year 2023-24, July 2023 – September 2023)

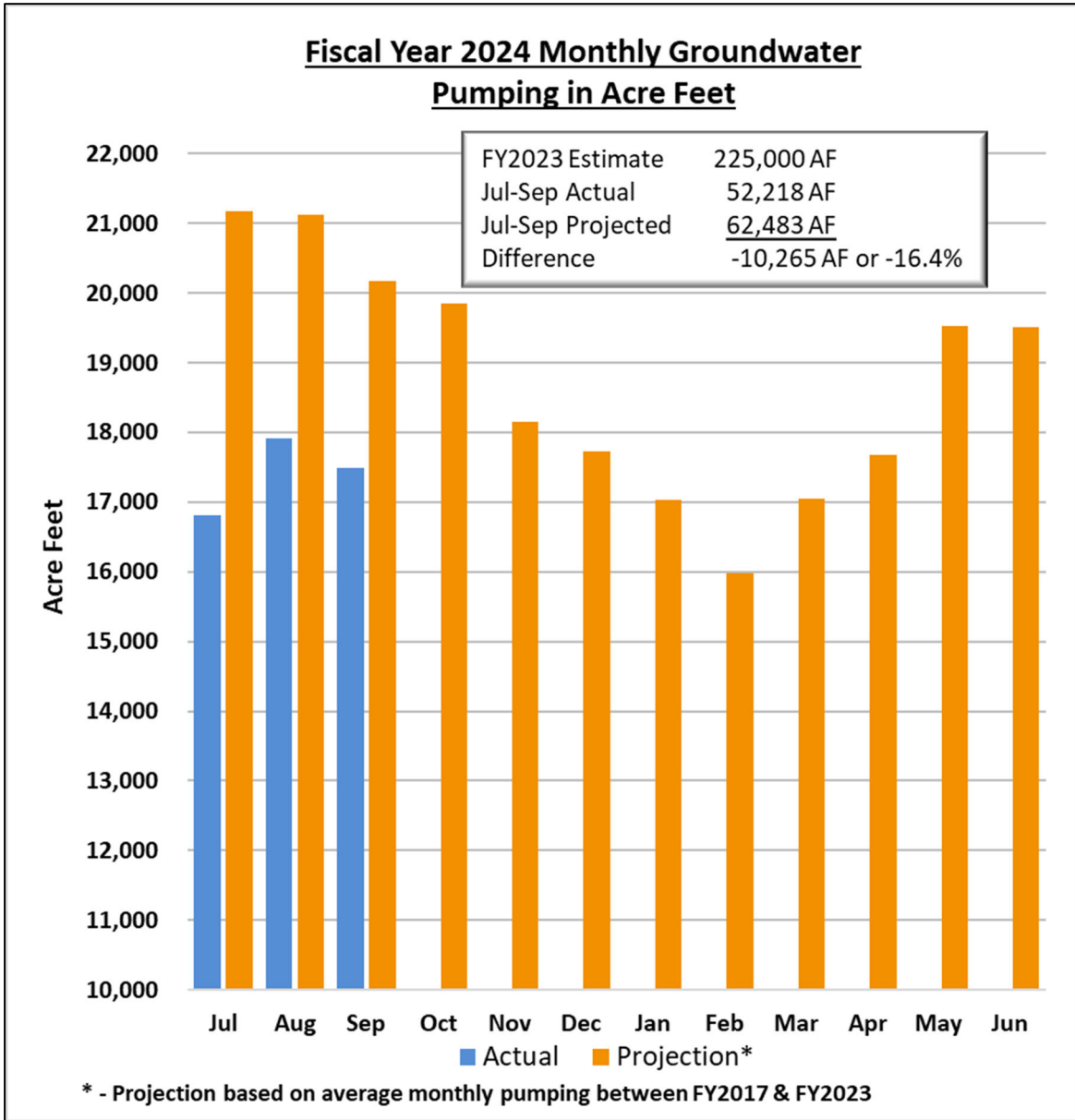
Preliminary numbers for groundwater production in the District for the Fiscal Year 2023-24 (July - September) indicate total pumping in the Central Basin was down 4,067 acre feet from the same time of the previous fiscal year (-8.7%) and the West Coast Basin total pumping was 318 acre feet higher than the previous fiscal year (+3.4%). The total pumping is 52,218 acre feet compared to 55,967 acre feet during the same time the previous year for a decrease of 3,748.6 acre feet, or -6.7%. The current pumping data do not include seven (7) Central Basin pumpers and two (2) West Coast Basin Pumpers who have not yet reported for an estimated 555 additional acre feet.



Interesting...

Groundwater's age (or time since recharge) in shallow, local systems can vary from less than a day to a few hundred years. In deep, regional systems with long flow paths (tens of miles), the age of groundwater may reach thousands or tens of thousands of years.

Preliminary numbers indicate 52,218 acre feet have been pumped this fiscal year and is 16.4% below the projected fiscal year to date goal of 62,483 acre feet (or -10,265 acre feet). Monthly actual production versus the 7-year average monthly production projections (FY 2017 through 2023) are included in the chart below.



*"You never miss the water,  
'til it's gone." - Gerry Deveau*



For the Fiscal Year 2023-24 (July 2023 – September 2023), 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. Production data for all the pumpers can be found in the attached Exhibit A (Central Basin) and Exhibit B (West Coast Basin).

<b>Production Trends - Central Basin</b>				
<b>Top 5 Producing <u>by Volume</u> (AF)</b>	Jul 2023 - Sep 2023	Jul 2023 - Sep 2023	Difference	% Change
Whittier, City	1,314.48	1,775.65	461.17	25.97
Commerce, City	58.47	421.45	362.98	86.13
Cal. Water Service Co. (East LA)	2,496.54	2,670.97	174.43	6.53
San Gabriel Valley Water Co.	674.27	813.90	139.63	17.16
Cal. American Water Co. Alpha 0679	400.68	535.40	134.72	25.16
<b>Bottom 5 Producing <u>by Volume</u> (AF)</b>	Jul 2023 - Sep 2023	Jul 2023 - Sep 2023	Difference	% Change
Los Angeles, City - CB	1,721.31	4.21	-1717.10	-40,786.2
Long Beach, City - CB	7,525.54	6,170.02	-1355.52	-21.97
Santa Fe Springs, City	601.88	13.70	-588.18	-4,293.28
Vernon, City	1,617.39	1,272.60	-344.79	-27.09
Golden State Water Co. - CB	5,013.20	4,722.86	-290.34	-6.15

<b>Production Trends – West Coast Basin</b>				
<b>Top 5 Producing <u>by Volume</u> (AF)</b>	Jul 2023 - Sep 2023	Jul 2023 - Sep 2023	Difference	% Change
Golden State Water Co. - WB	1,120.85	2,137.08	1016.23	47.55
Cal. Water Service Co. Dominguez - WB	1,014.31	1,552.08	537.77	34.65
Cal. Water Service Co./Hawthorne Lease	158.07	248.62	90.55	36.42
Inglewood, City	432.23	469.61	37.38	7.96
Tesoro Refining	2,493.26	2,528.31	35.05	1.39
<b>Bottom 5 Producing <u>by Volume</u> (AF)</b>	Jul 2023 - Sep 2023	Jul 2023 - Sep 2023	Difference	% Change
Phillips 66 Co. - Alpha 7093	1,406.95	416.53	-990.42	-237.78
Torrance, City	446.02	12.00	-434.02	-3,616.83
L.A. County Depart. of Parks & Rec - WB	147.86	18.41	-129.45	-703.15
Manhattan Beach, City	147.12	46.13	-100.99	-218.92
Rolling Hills Country Club	124.00	92.00	-32.00	-34.78

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@wrd.org](mailto:eferguson@wrd.org).

**Central Basin Production Trends**

Central Basin	July 2022 - September 2022	July 2023 - September 2023	Difference	%Change
ABC USD	7.93	2.35	-5.58	-237.45
American Text. M.	13.13	15.65	2.52	16.10
Artesia, City	7.22	0.78	-6.44	-825.64
Atlas Iron and Metal Co.	0.09	0.09	.00	0.00
Bell Gardens, City	0.00	0.00	.00	0.00
Bellflower Home Garden	0.00	0.00	.00	0.00
Bellflower, City	177.21	0.00	-177.21	-100.00
Bellflower-Somerset MWC	1,342.89	1,269.21	-73.68	-5.81
Boeing Co.	10.59	25.93	15.34	59.16
Boeing, Compton Site	8.51	17.34	8.83	50.92
Cal. American Water Co. Alpha 0679	400.68	535.40	134.72	25.16
Cal. Water Service Co. (East LA)	2,496.54	2,670.97	174.43	6.53
Cal. Water Service Co. Dominguez - CB	266.85	209.07	-57.78	-27.64
Caltrans	0.62	7.17	6.55	91.35
Central Basin MWD	0.00	0.00	.00	0.00
Cerritos, City	2,027.33	2,035.16	7.83	0.38
Coast Packing Co.	35.03	33.50	-1.53	-4.57
Commerce, City	58.47	421.45	362.98	86.13
Compton, City	1,921.85	1,848.06	-73.79	-3.99
Darling-Delaware Co.	0.00	0.00	.00	0.00
Defense Logistic Agency	0.18	1.01	.83	82.18
Demunno Kerdoon	0.37	0.60	.23	38.33
Downey, City	3,945.69	3,878.43	-67.26	-1.73
El Rancho Unified School District	0.00	0.00	.00	0.00
Furr, Nancy J.	0.02	0.00	-.02	-100.00
Golden State Water Co. - CB	5,013.20	4,722.86	-290.34	-6.15
Huntington Park, City - Alpha 2378	769.70	714.05	-55.65	-7.79
L.A. County Department of Parks & Rec - CB	0.00	0.00	.00	0.00
LA County Rancho Los Amigos	62.63	61.31	-1.32	-2.15
La Habra Heights County WD	858.66	734.49	-124.17	-16.91
Lakewood - City	1,892.53	2,002.64	110.11	5.50
Liberty Utilities - CB	1,280.07	1,165.17	-114.90	-9.86



Central Basin	July 2022 - September 2022	July 2023 - September 2023	Difference	%Change
Lincoln Memorial Park	4.06	0.00	-4.06	-100.00
Little Lake Cemetery District	1.36	0.00	-1.36	-100.00
Long Beach, City - CB	7,525.54	6,170.02	-1355.52	-21.97
Los Angeles, City - CB	1,721.31	4.21	-1717.10	-40,786.22
Lunday-Thagard	0.00	0.00	.00	0.00
Lynwood Park Mutual Water Co.	24.03	7.07	-16.96	-239.89
Lynwood, City	1,164.68	1,257.68	93.00	7.39
Maywood Mutual No. 1	168.72	168.22	-.50	-0.30
Maywood Mutual No. 2	254.91	249.31	-5.60	-2.25
Maywood Mutual No. 3	380.12	384.54	4.42	1.15
Montebello Land and Water Co.	799.15	792.92	-6.23	-0.79
Montebello, City	0.00	0.00	.00	0.00
Newark Group, Inc.	41.60	39.76	-1.84	-4.63
Northrop Grumman	0.91	0.00	-.91	-100.00
Norwalk, City	200.59	102.16	-98.43	-96.35
Omega OU1/OU3 LLC	0.00	1.35	1.35	100.00
Orchard Dale Water District	552.07	507.74	-44.33	-8.73
PABCO Building Products	0.00	0.00	.00	0.00
Paradise Memorial Park	3.95	3.26	-.69	-21.17
Paramount USD	1.53	0.41	-1.12	-273.17
Paramount, City	670.59	710.14	39.55	5.57
Pico Rivera, City	1,218.78	1,148.33	-70.45	-6.13
Pico Water District	740.40	727.53	-12.87	-1.77
Rockview Dairies	44.64	0.00	-44.64	-100.00
Roman Catholic Archbishop - CB	33.99	92.59	58.60	63.29
Rowland Water District	0.00	0.00	.00	0.00
San Gabriel Valley Water Co.	674.27	813.90	139.63	17.16
Santa Fe Springs, City	601.88	13.70	-588.18	-4,293.28
Sativa Water District	0.73	0.00	-.73	-100.00
Scantlebury, Robert P.	0.25	0.12	-.13	-108.33
SFPP L.P.	0.00	0.00	.00	0.00
Signal Hill, City	321.96	238.50	-83.46	-34.99
South Gate, City	2,271.02	2,102.31	-168.71	-8.02
South Montebello Irrigation Dist	493.84	438.33	-55.51	-12.66
Southern California Edison Co. - CB	1.75	0.53	-1.22	-230.19
St John Bosco School	19.30	0.00	-19.30	-100.00

Central Basin	July 2022 - September 2022	July 2023 - September 2023	Difference	%Change
Suburban Water Systems	270.47	328.14	57.67	17.57
Tract 180 Water Co.	327.25	326.22	-1.03	-0.32
Tract 349 Mutual Water Co.	167.29	161.46	-5.83	-3.61
Tucker, William M.	0.08	0.02	-.06	-300.00
Vernon, City	1,617.39	1,272.60	-344.79	-27.09
Virginia Country Club	163.44	119.54	-43.90	-36.72
Walnut Park Mutual	286.21	284.70	-1.51	-0.53
Whittier Union HSD	9.10	9.16	.06	0.66
Whittier, City	1,314.48	1,775.65	461.17	25.97
WRD	0.00	0.00	.00	0.00
Yamamoto, Alice	0.07	0.00	-.07	-100.00

**West Coast Basin Production Trends**

West Basin	July 2022 - September 2022	July 2023 - September 2023	Difference	%Change
ABC Nursery	6.00	0.00	-6.00	-100.00
Cal. Water Service Co. Alpha 7050	233.64	262.35	28.71	10.94
Cal. Water Service Co. Dominguez - WB	1,014.31	1,552.08	537.77	34.65
Cal. Water Service Co./Hawthorne Lease	158.07	248.62	90.55	36.42
Eco Services Operations	102.54	83.14	-19.40	-23.33
Golden State Water Co. - WB	1,120.85	2,137.08	1016.23	47.55
Hillside Memorial Park	51.76	37.07	-14.69	-39.63
Honeywell International	0.00	0.00	.00	0.00
Inglewood, City	432.23	469.61	37.38	7.96
Kinder Morgan Liquids Terminals	8.93	11.02	2.09	18.97
L.A. County Department of Parks & Rec - WB	147.86	18.41	-129.45	-703.15
L.A. County Sanitation Districts-JWPCP	0.00	0.00	.00	0.00
Lomita, City	0.00	0.00	.00	0.00
Long Beach, City - WB	0.00	0.41	.41	100.00
Manhattan Beach, City	147.12	46.13	-100.99	-218.92
Montrose Chemical Corp.	-0.51	-0.08	.43	-537.50
Myron Z. Chalavin & Nettie Dresser Trust & JHD Pr.	0.00	0.00	.00	0.00
Pacific Crest Cemetery Co.	17.56	14.62	-2.94	-20.11
Phillips 66 Co. - Alpha 7093	1,406.95	416.53	-990.42	-237.78
Rolling Hills Country Club	124.00	92.00	-32.00	-34.78
Roman Catholic Archbishop - WB	59.30	67.06	7.76	11.57
Shell Oil Co NCWUP	36.03	11.51	-24.52	-213.03
Southern California Edison Co. - WB	6.93	8.74	1.81	20.71
Tesoro Refining	2,493.26	2,528.31	35.05	1.39
Torrance Refining & Marketing Co.	263.13	296.08	32.95	11.13
Torrance, City	446.02	12.00	-434.02	-3,616.83
West Basin Brewer Desalter	0.00	0.00	.00	0.00