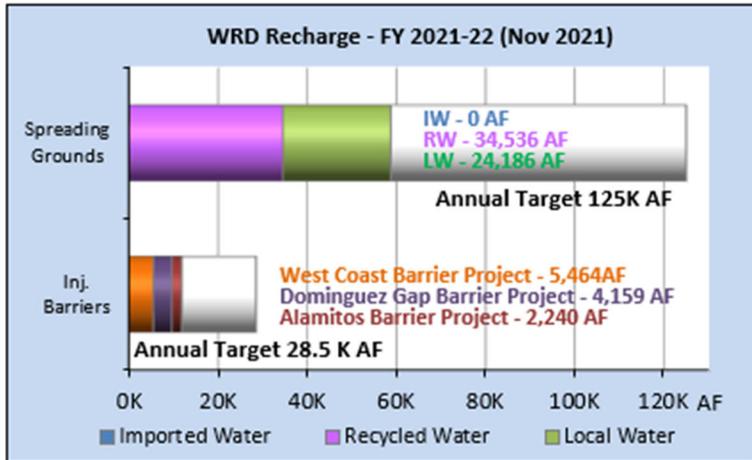
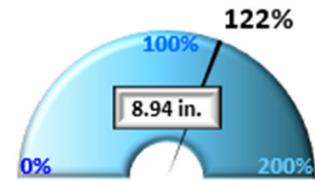


# GROUNDWATER BASIN UPDATE FOR FEBRUARY 2022

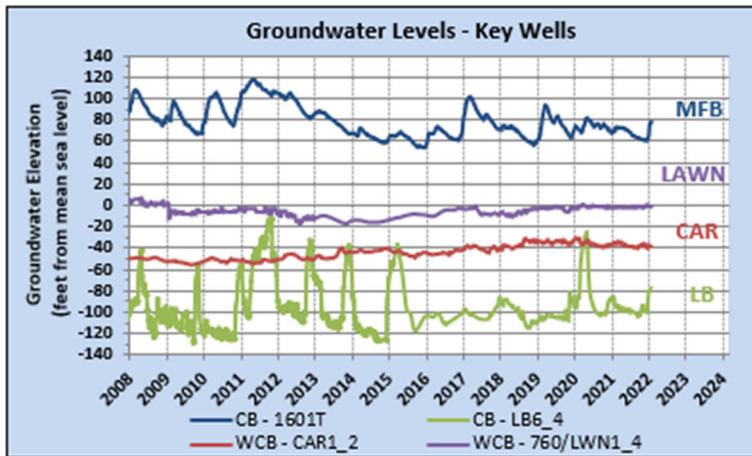
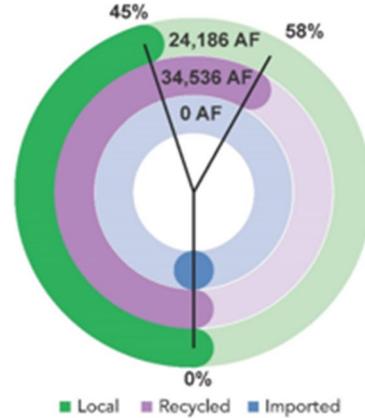
## GROUNDWATER BASINS AT A GLANCE\*



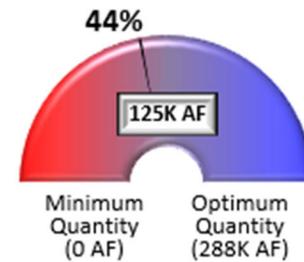
Precipitation % of Normal to Date  
Oct. 1 - Feb. 7



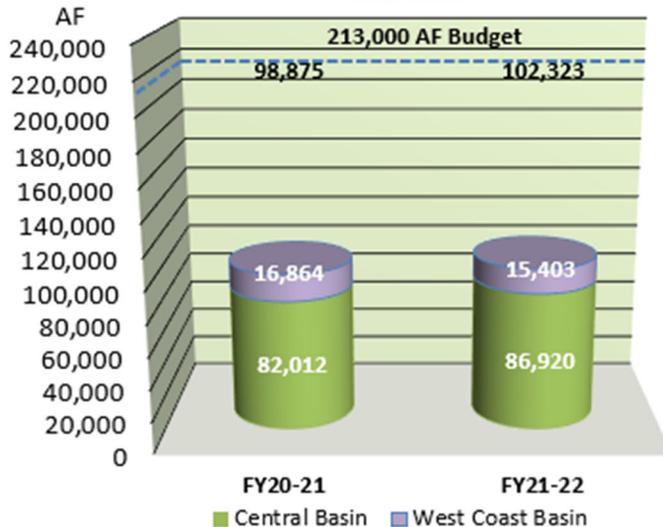
Spreading Grounds Recharge  
Fiscal Year to Date



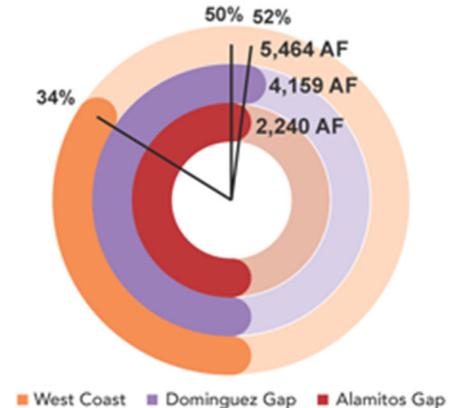
GW Basin Operating Range



Basin Pumping (Q)  
Nov 2021



Seawater Barrier Recharge  
Fiscal Year to Date



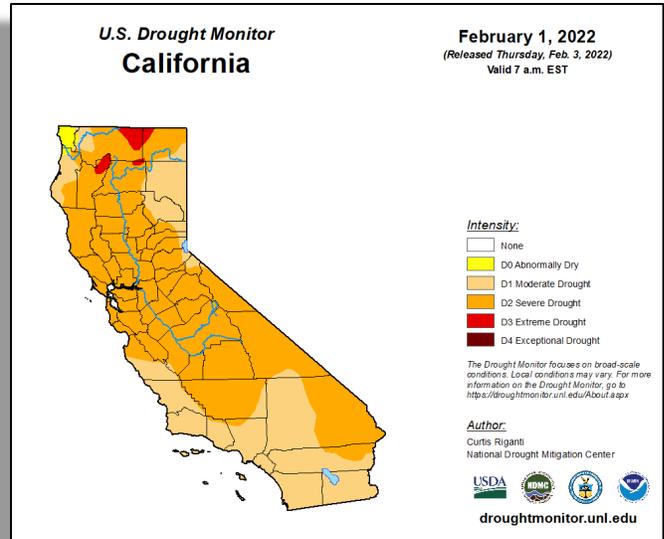
\* - Preliminary numbers, subject to change.

## SUMMARY

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

### Precipitation (Oct. 1, 2021 – Feb. 7, 2022)

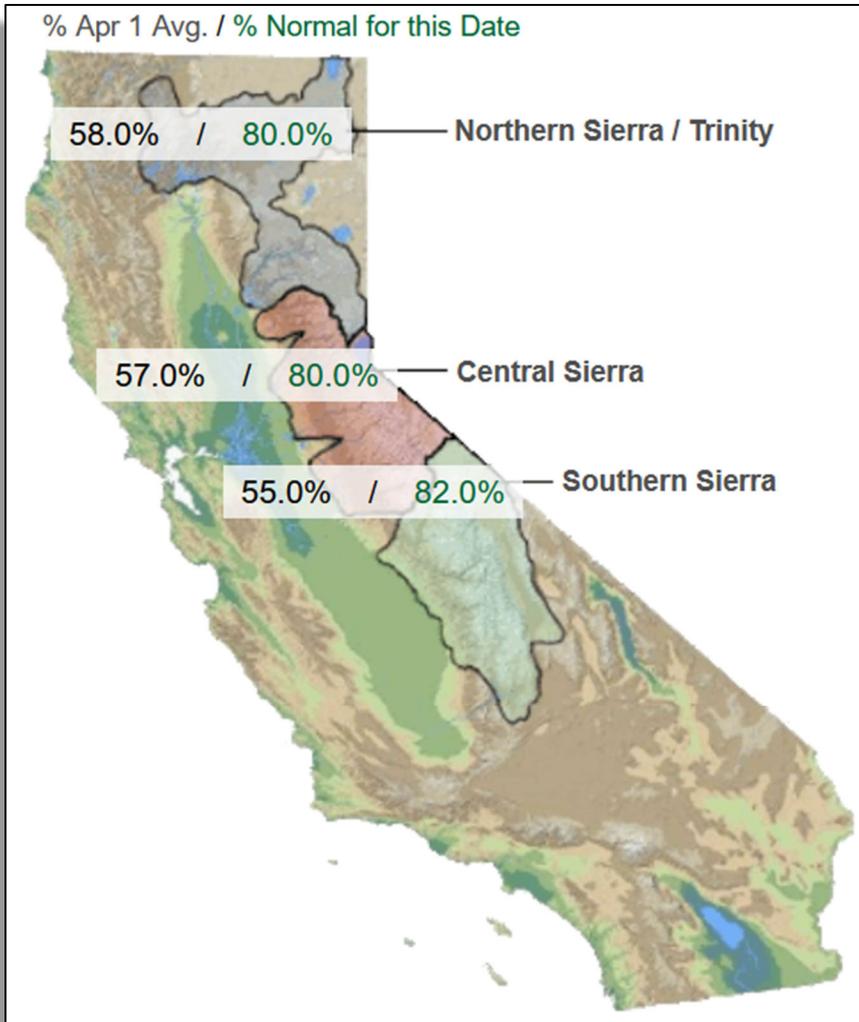
The WRD precipitation index reports that for the 2021-22 Water Year, there has been above average rainfall (8.94 inches) through February 7, 2022. The normal rainfall for this time period is 7.3 inches, so the District is 122% of normal. As of February 1, 2022, the U.S. Drought Monitor is reporting 100% of the State is abnormally dry, 99% under moderate, 6% under severe (-2%), 1% under extreme (-16%), and 0% exceptional (-1%) drought conditions. California is still in a state of drought exacerbated by the drier than normal January and unseasonably warm February across most of the State. This has resulted in a massive loss of the December snowpack in the Sierra Nevada and Cascade Ranges (see below).



### Snowpack (Snow Water Content [SWE] as of Feb. 9, 2022)

In 1929, the State established the California Cooperative Snow Surveys Program with the California Department of Water Resources as the coordinator. Today, over 50 state, national, and private agencies collaborate in collecting snow data from over 300 snow courses with more than 60 of the courses being the original courses established in the early 1900's. The average snow course is 1,000 feet long and consist of about 10 sample points. Anywhere from two to six courses are measured per day depending on weather and access method.

The snow survey is completed using a snow sampling tube equipped with a cutter on the end that is driven through the snow measuring the depth and obtaining a snow core. The snow core is then weighed and the snow water content (or snow water equivalent) calculated. The surveys are completed throughout the winter by returning to the same sample points throughout the season to observe the changing conditions. From February through May the data is used by the State to forecast snow melt runoff. Many snow courses are only measured on or around April 1st, and since it is presumed that the snow accumulates up to April 1st and melts thereafter, April 1st is the benchmark for historic data comparisons.



NORTH	
Data For: 09-Feb-2022	
Number of Stations Reporting	30
Average snow water equivalent	16.5"
Percent of April 1 Average	58%
Percent of normal for this date	80%

CENTRAL	
Data For: 09-Feb-2022	
Number of Stations Reporting	42
Average snow water equivalent	16.6"
Percent of April 1 Average	57%
Percent of normal for this date	80%

SOUTH	
Data For: 09-Feb-2022	
Number of Stations Reporting	30
Average snow water equivalent	13.7"
Percent of April 1 Average	55%
Percent of normal for this date	82%

STATEWIDE SUMMARY	
Data For: 09-Feb-2022	
Number of Stations Reporting	102
Average snow water equivalent	15.7"
Percent of April 1 Average	57%
Percent of normal for this date	81%



**Snow melts into a creek flowing into the South Fork American River, near the area where the California Department of Water Resources held the second snow survey of the season.**

(Kenneth James / California Department of Water Resources)



**DWR conducts the February 2021 manual snow survey at Phillips Station in the Sierra Nevada.**

(California Department of Water Resources, 2021)

Snow Water Equivalent (SWE):

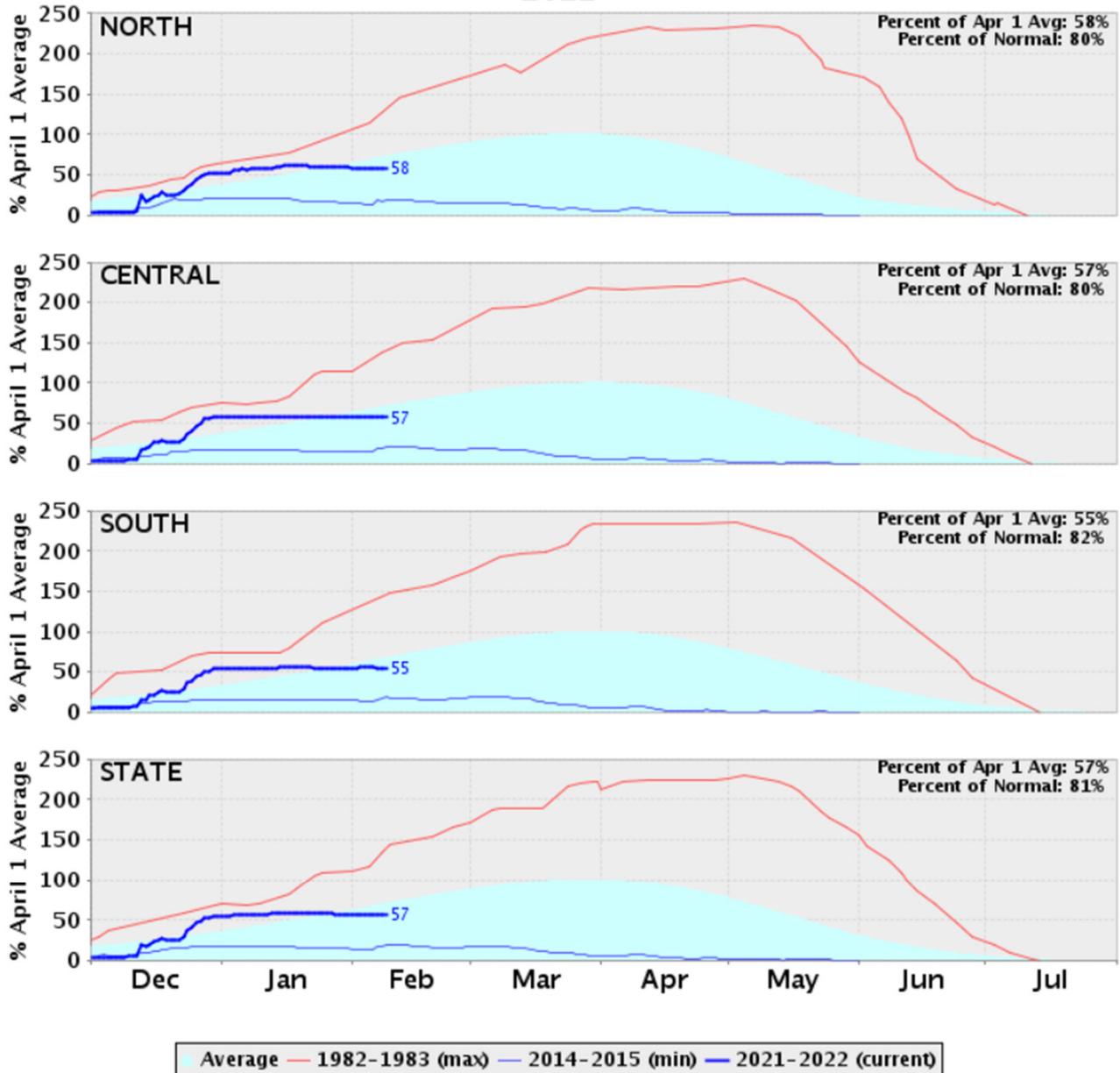
**Northern Sierra Nevada** – 16.5 in., 80% of normal to date and 58% of April 1<sup>st</sup> average

**Central Sierra Nevada** – 16.6 in., 80% of normal to date and 57% of April 1<sup>st</sup> average

**Southern Sierra Nevada** – 13.7 in., 82% of normal to date and 55% of April 1<sup>st</sup> average

**Statewide Summary** – 15.7 in., 81% of normal to date and 57% of April 1<sup>st</sup> average

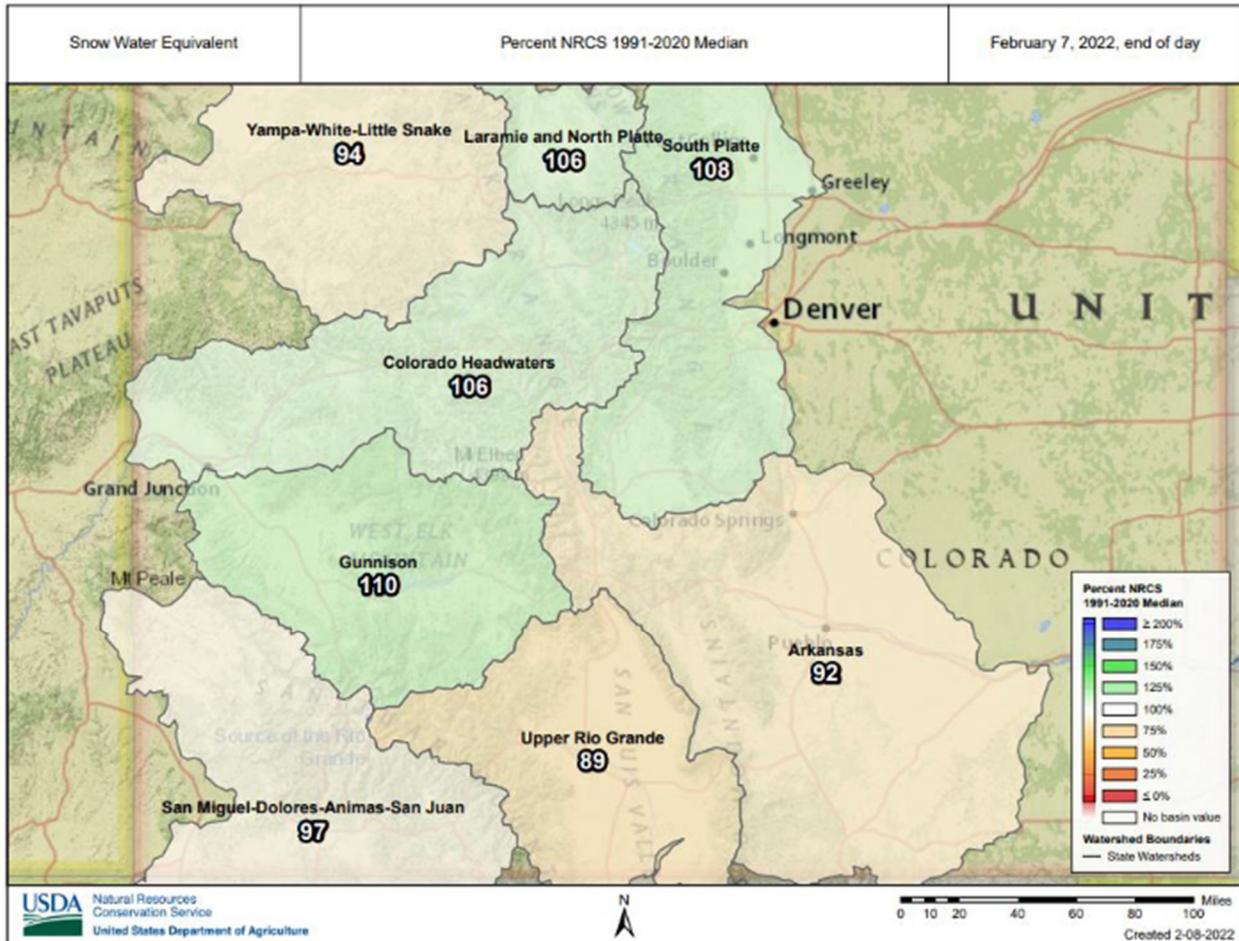
**California Snow Water Content - Percent of April 1 Average For: 09-Feb-2022**



Statewide Percent of average to date

81.0%

## Colorado Snow Water Equivalent



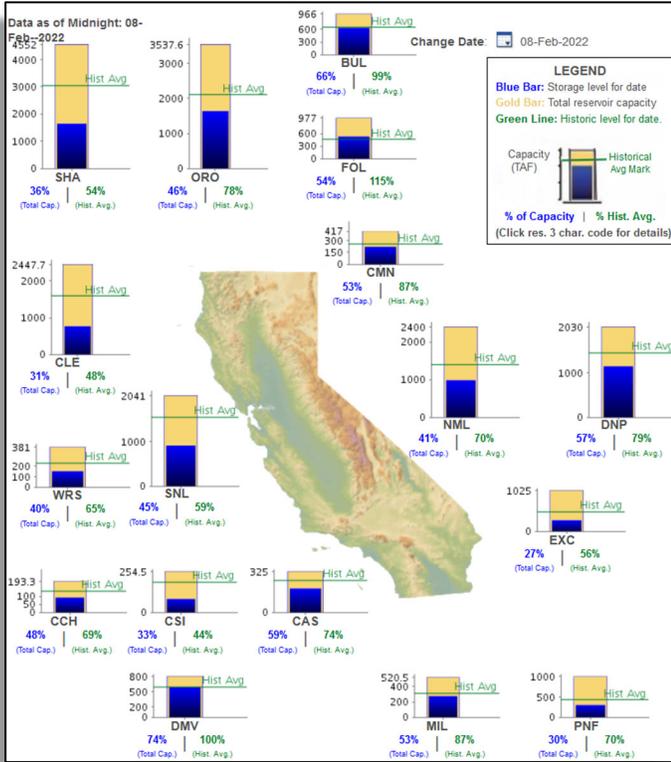
### Colorado's Snowpack and Reservoir Storage as of February 1<sup>st</sup>, 2021

Basin	% MEDIAN SNOWPACK	LAST YR.'S % MEDIAN SNOWPACK	% MEDIAN RESERVOIR STORAGE	LAST YEAR'S % MEDIAN RESERVOIR STORAGE
GUNNISON	117	154	59	80
COLORADO HEADWATERS	107	153	82	101
SOUTH PLATTE	114	158	107	93
LARAMIE-NORTH PLATTE	114	159	----	----
YAMPA-WHITE-LITTLE SNAKE	106	146	79	109
ARKANSAS	91	103	92	68
UPPER RIO GRANDE	89	78	96	73
SMDASJ*	101	121	64	60
STATEWIDE	106	135	78	84

\* San Miquel-Dolores-Animas-San Juan River basin

## Reservoirs (as of February 7, 2022)

For the 16 reservoirs reported monthly to the committee, water levels have increased in 10 of 16 reservoirs. The largest increase occurred at Lake Shasta (0.27 million acre feet, MAF) and the smallest increase occurred at Pine Flat Reservoir (0.02 MAF). The largest decrease (-0.43 MAF) occurred at Lake Powell. The smallest decrease (<0.0 MAF) occurred at Perris and Silverwood Lakes.



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

Reservoir	Capacity	Storage	% Full	Change
Trinity Lake	2.45	0.77	31%	0.04
Lake Shasta	4.55	1.64	36%	0.27
Lake Oroville	3.54	1.64	46%	0.24
Folsom Lake	0.98	0.53	54%	-0.05
New Melones L.	2.40	0.99	41%	0.04
Don Pedro Res	2.03	1.15	57%	0.05
Lake McClure	1.02	0.28	27%	0.03
San Luis Res	2.04	0.92	45%	0.27
Millerton Lake	0.52	0.28	53%	-0.07
Pine Flat	1.00	0.30	30%	0.02
Castaic Lake	0.33	0.19	58%	0.04
Lake Perris	0.13	0.11	80%	0.00
L. Silverwood	0.08	0.07	86%	0.00

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

Reservoir	Capacity	Storage	% Full	Change
Powell	24.32	6.27	26%	-0.43
Mead	26.12	8.96	34%	0.05
DVL	0.81	0.59	74%	-0.01

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

These 16 reservoirs are at 34% capacity (24.7MAF) which is up 0.5 MAF from the prior month (0.89 MAF State Water Project [SWP] and -0.39 MAF Colorado River Aqueduct [CRA]).



### Did you know?

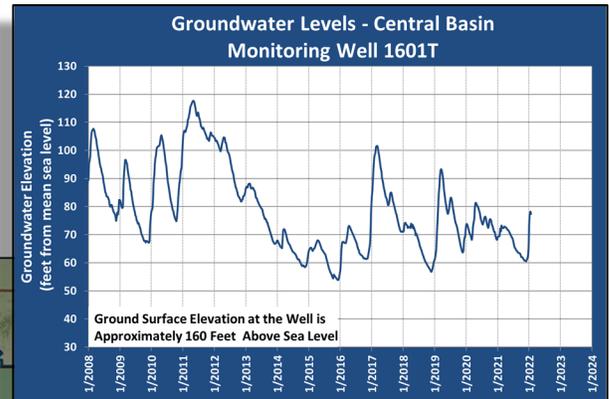
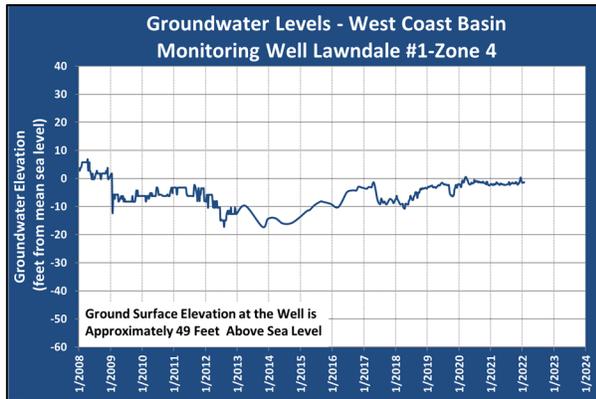
The u.s. uses about 349 billion gallons of water every day, and over one-fourth of that is groundwater.

Do the math: 349 billion gallons is about 1.1 million AF. So...over 275,000 AF of groundwater per day.

It's a thirsty nation!

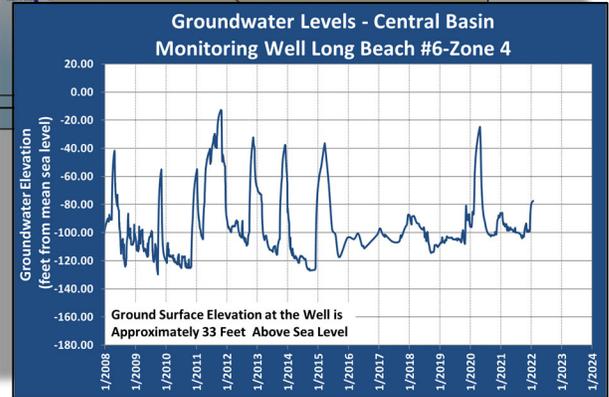
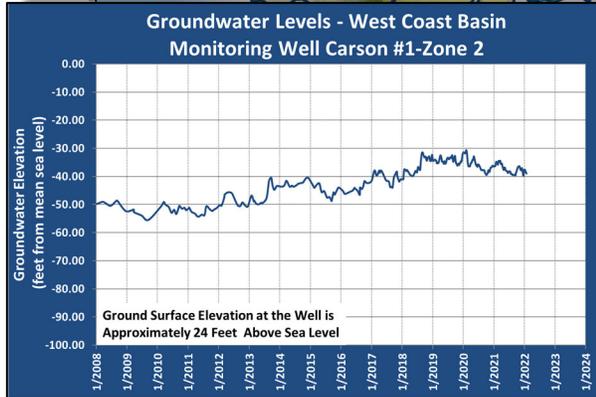
## Groundwater Levels (through January 28, 2022)

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 12.2 feet	<b>Increased 7.9 feet</b>
Central Basin Key Well Long Beach #6_4	Increased 4.7 feet	Increased 13.3 feet
West Coast Basin Key Well Lawndale #1_4	<b>Decreased 0.2 foot</b>	Increased 1.0 feet
West Coast Basin Key Well Carson #1_2	<b>Decreased 1.3 foot</b>	Decreased 4.1 feet

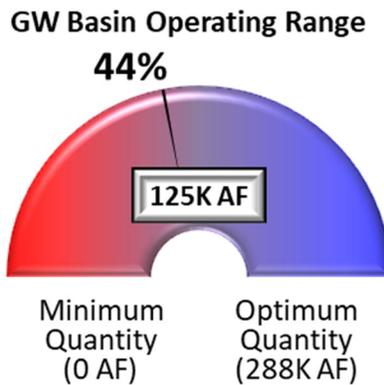
**Bold** indicates a change in direction (decreasing or increasing) since the last report.

## 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 January 28, 2022, has been estimated at 774,646 acre feet (subject to change), which is 125,354 acre feet above the Minimum Quantity and 162,646 acre feet below the Optimum Quantity. The Basin is at 44% of Optimum Quantity which is 17% higher than what was reported last month (~47,000 AF higher).



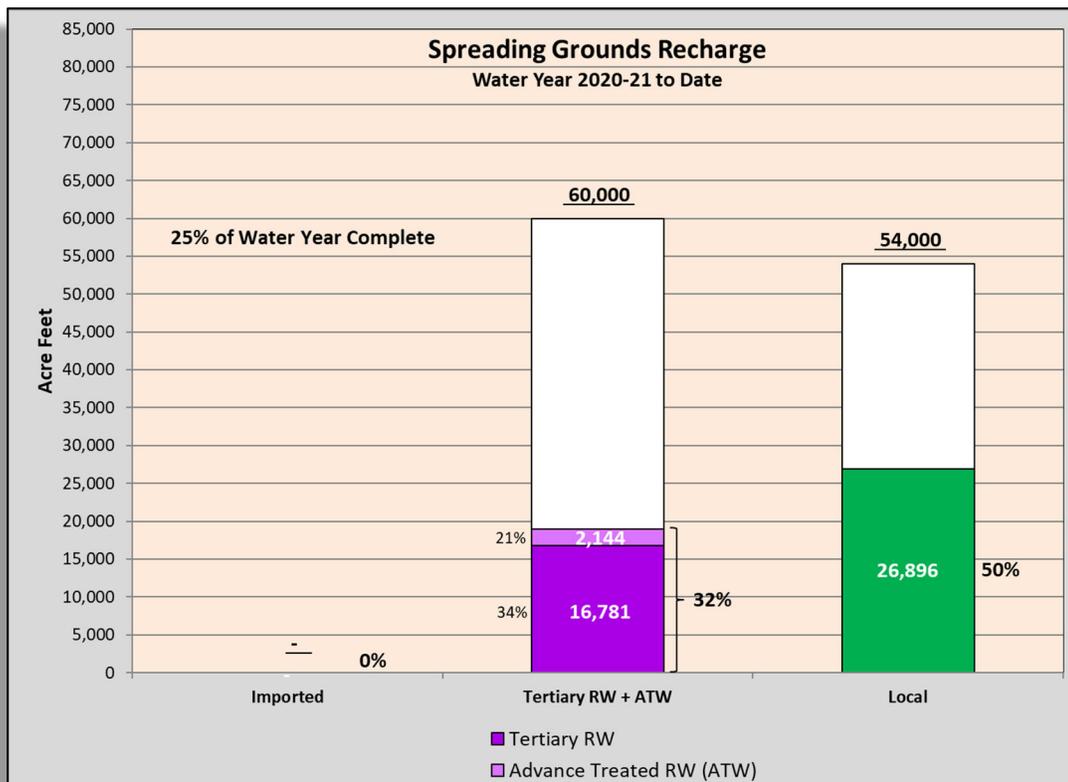
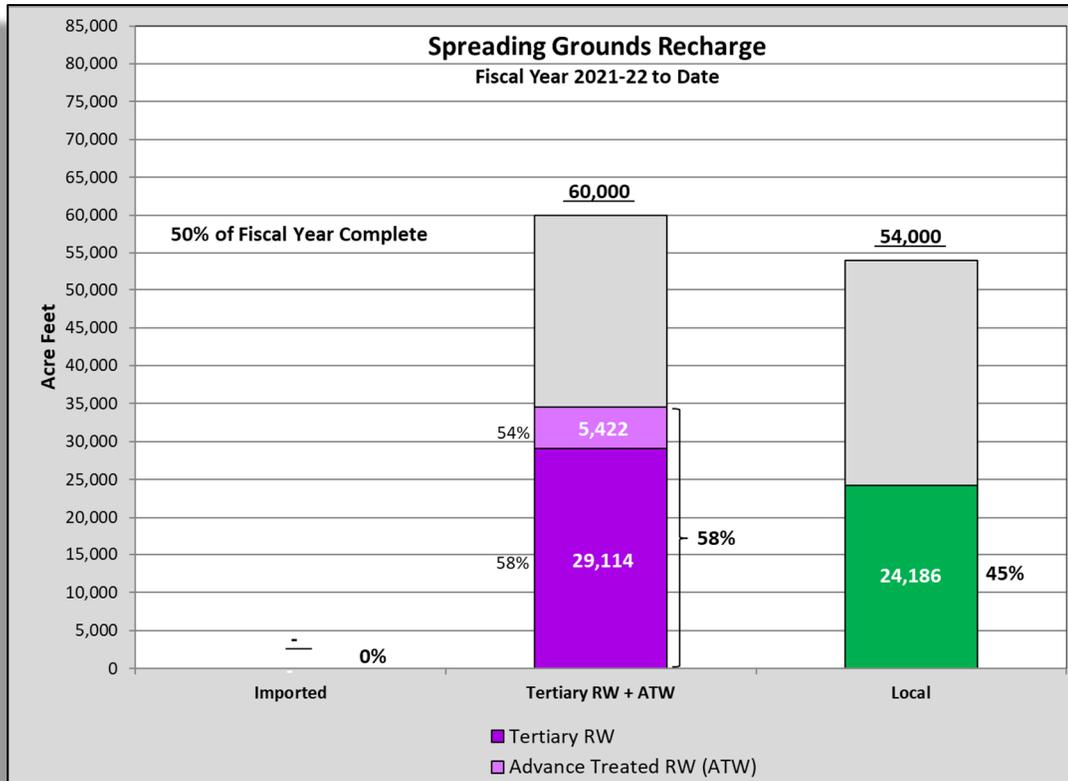
### **FACT:**

*Take a sip! About half of Americans use groundwater for drinking water, from both private and public drinking sources.*



Montebello Forebay Spreading Grounds (July - December 2021)

The following Charts shows the preliminary spreading grounds replenishment water for the current Fiscal Year (2021-22; 6 months) and Water Year (2020-21; 3 months):

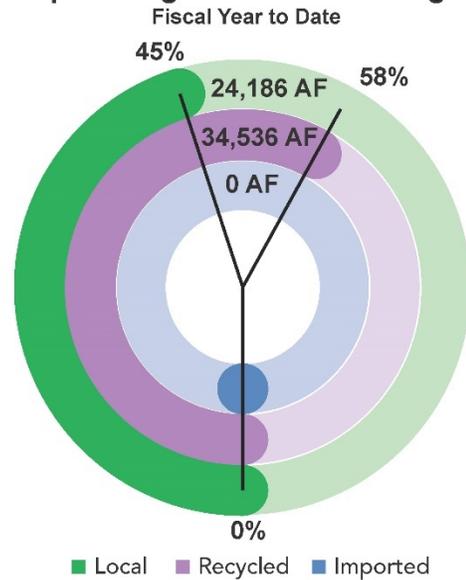


No imported water purchases are planned for Fiscal Year 2021-22.

Local water (stormwater plus dry weather urban runoff) is captured by the Los Angeles County Department of Public Works (LACDPW) 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 2021-22 Fiscal Year, approximately 24,186 acre feet of local water capture has been reported by the LACDPW.

Preliminary numbers for the 2021-22 Fiscal Year show that approximately 34,536 acre feet of recycled water has been recharged with 5,422 acre feet consisting of advanced treat water from the ARC AWTF and 29,114 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 42.4% 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.

### Spreading Grounds Recharge

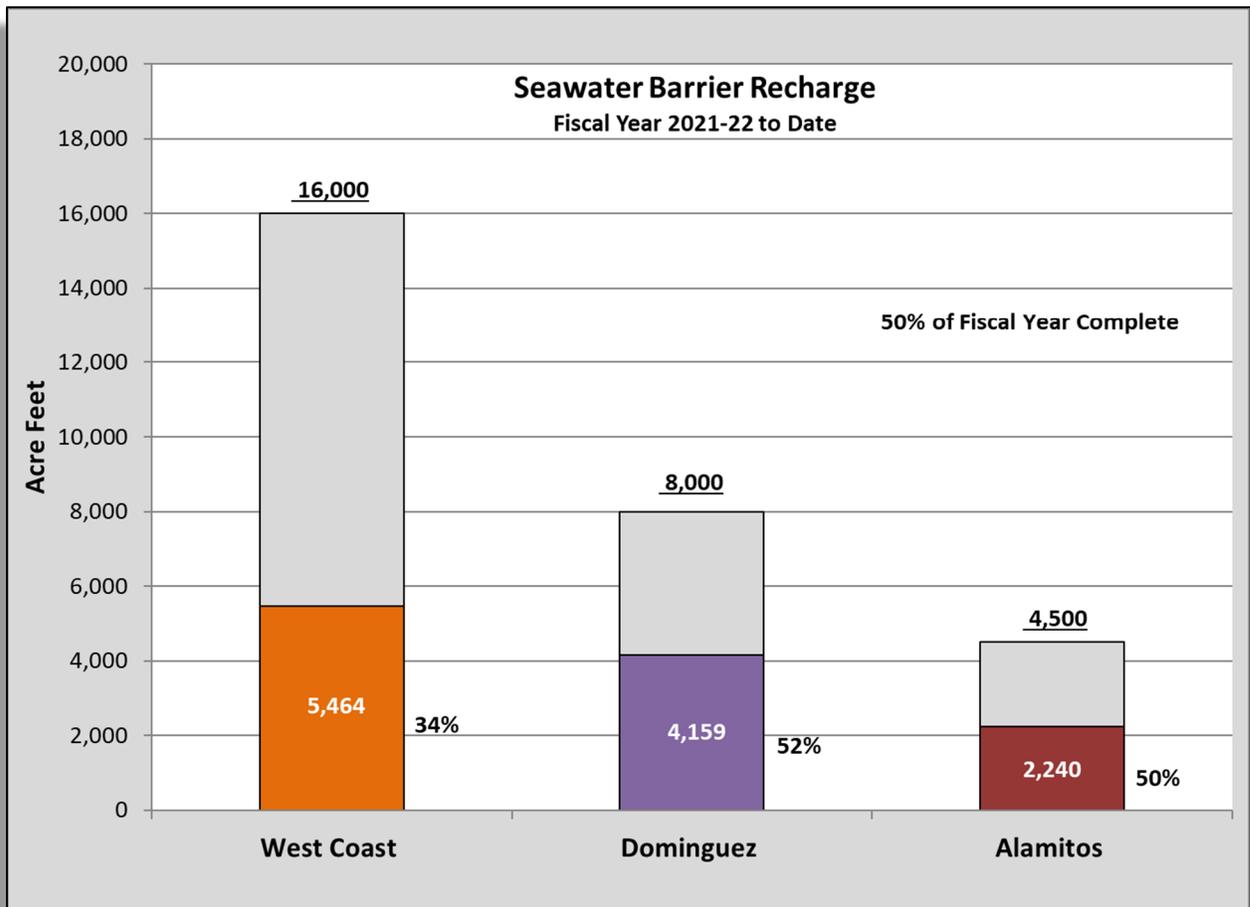


### Tertiary Recycle Water Permit Update

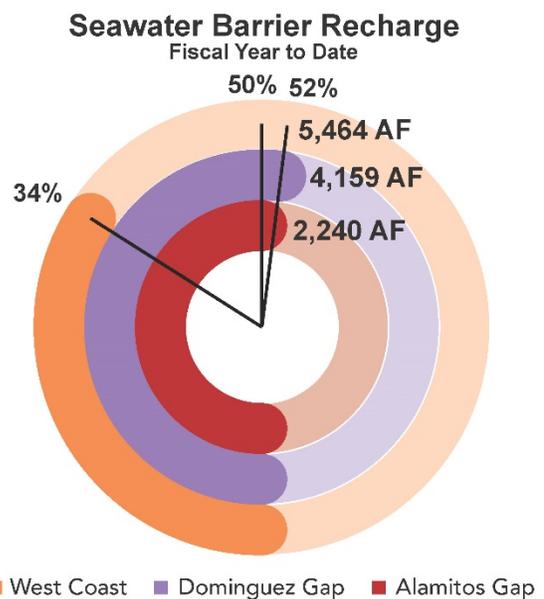
The permit is progressing with LACSD and WRD staff working with both LARWQCB and CA-DDW regulators to respond the questions and update pertinent sections of the new Title 22 Engineering Report. LACSD continues to work on two major studies needed for the new Title 22 Engineering Report – Biodegradable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

Seawater Barrier Well Injection and Replenishment (July - December 2021)

The following Chart shows the barrier water injection:

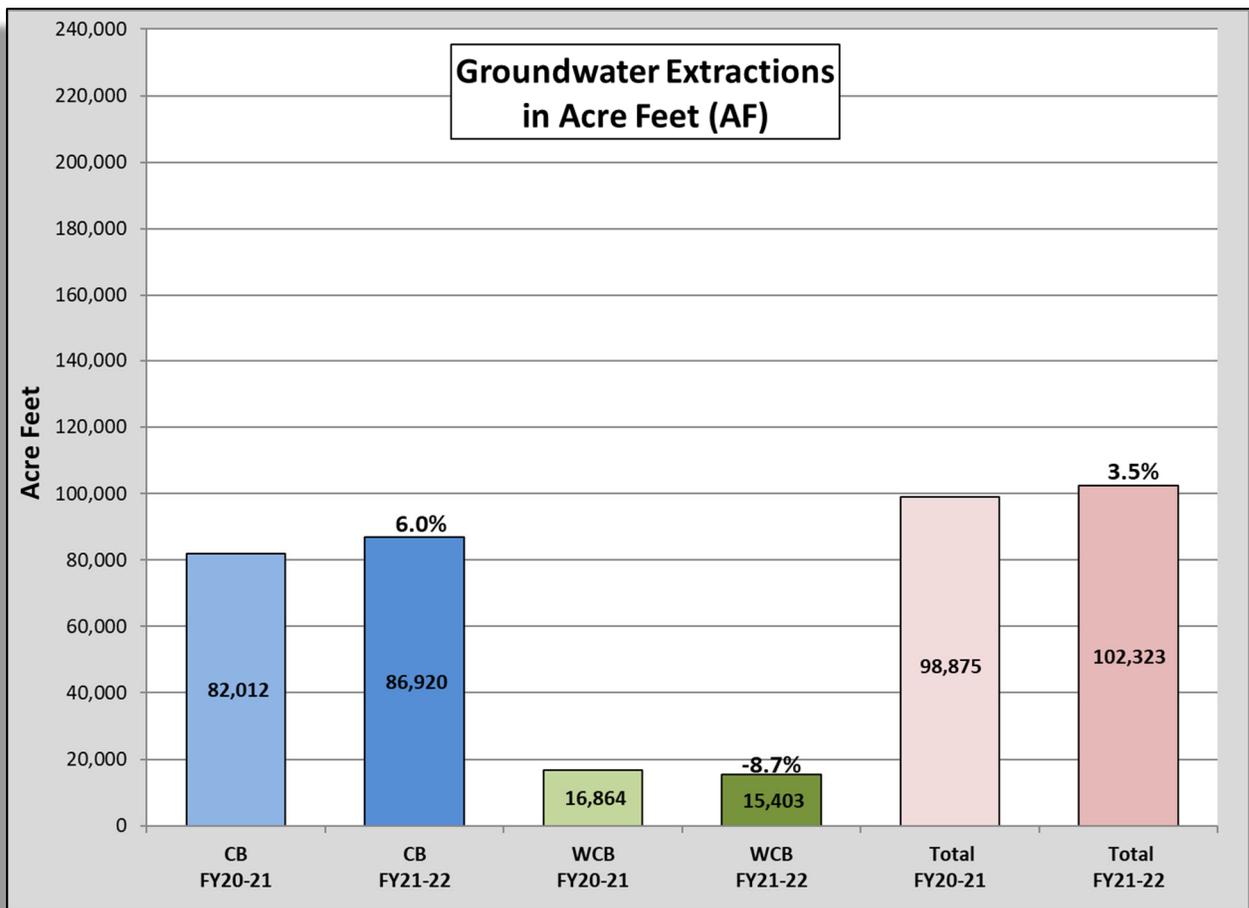


Preliminary numbers for the 2021-22 Fiscal Year show that the West Coast Barrier has used 5,464 acre feet of the total 16,000 acre feet planned for injection, 34% of total for the Fiscal Year. The Dominguez Gap Barrier used 4,159 acre feet of the total 8,000 acre feet planned for injection, 52% of the total for the Fiscal Year. The Alamitos Barrier, on the WRD side, used 2,240 acre feet of the total 4,500 acre feet planned for injection, 50% of the total for the Fiscal Year.



## Assessable Pumping (Fiscal Year 2021-2022)

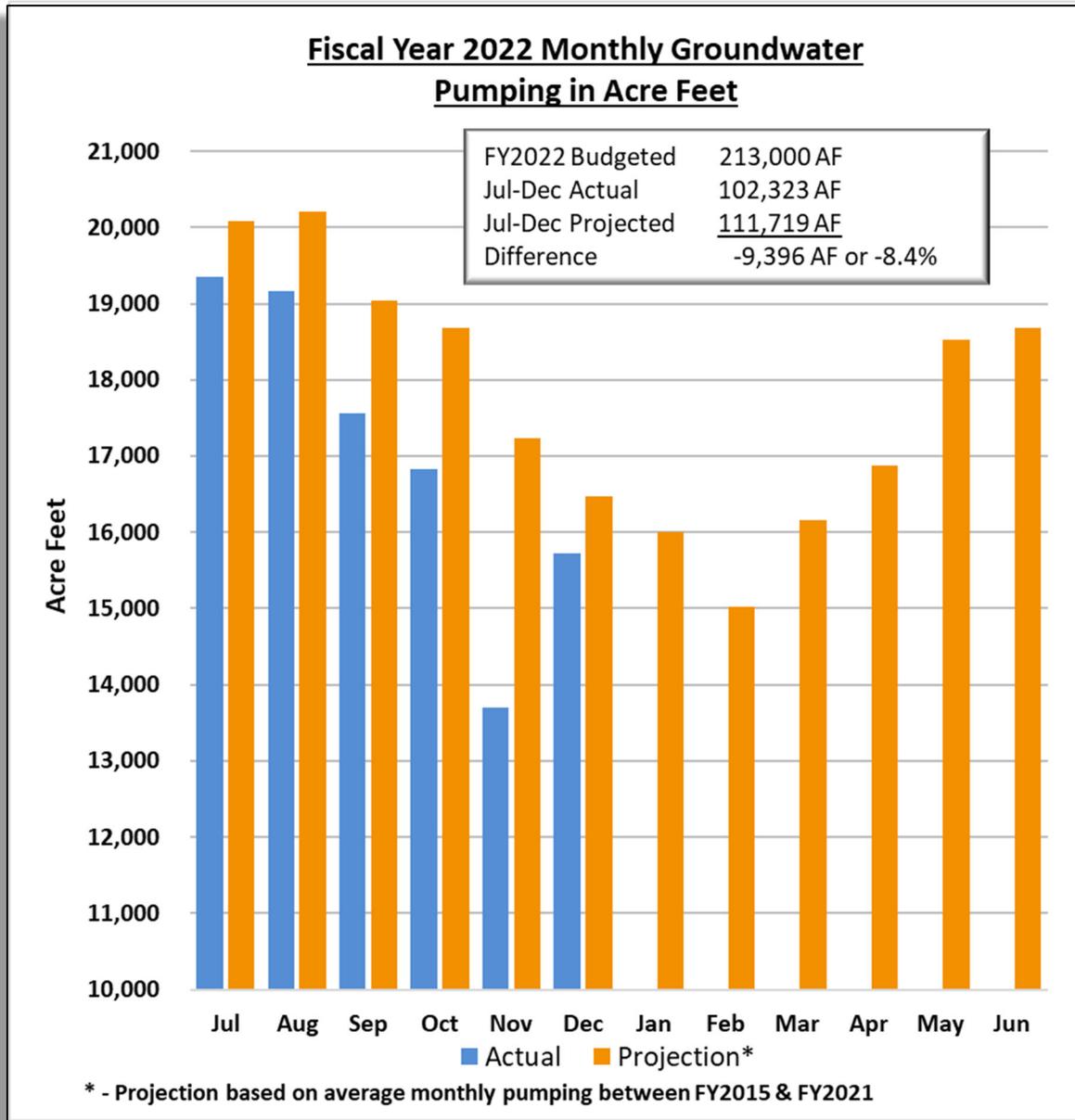
Preliminary numbers for groundwater production in the District for the Fiscal Year 2021-22 (July-December 2021) indicate pumping in the Central Basin was up 4,908 acre feet from the same time of the previous fiscal year (+6.0%) and the West Coast Basin pumping was 1,461 acre feet lower than the previous fiscal year (-8.7%). The total pumping is 102,323 acre feet compared to 98,785 acre feet during the same time the previous year for an increase of 3,448 acre feet, or +3.5%. The current pumping data do not include eight (8) Central Basin pumpers and two (2) West Coast Basin pumper who have not yet reported for an estimated 140 additional acre feet.



### Interesting...

...more than 15.9 million water wells for all purposes serve the U.S. To paraphrase Dorey (from *Finding Nemo* fame), "Just keep pumping."  
- Credit Disney/Pixar.

Preliminary numbers indicate 102,323 acre feet have been pumped this fiscal year and is 8.4% below the projected goal of 111,719 acre feet (or -9,396 acre feet). Monthly actual production versus the 7-year average monthly production projections (FY 2015 through 2021) are included in the chart below.



*"If there is magic on this planet, it is contained in water. - Loren Eiseley*



For the Fiscal Year 2021-22 (July-Dec 2021), 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 <u>by Volume</u> (AF)</b>	Jul-Dec 2020	Jul-Dec 2021	Difference	% Change
San Gabriel Valley Water Co.	37.94	1,343.55	1,305.61	97.18
Los Angeles, City - CB	673.01	1,862.49	1,189.48	63.87
Vernon, City	3,107.08	3,369.04	261.96	7.78
Long Beach, City - CB	16,005.47	16,181.74	176.27	1.09
Downey, City	7,346.49	7,520.81	174.32	2.32
<b>Bottom 5 Producing <u>by Volume</u> (AF)</b>	Jul-Dec 2020	Jul-Dec 2021	Difference	% Change
Golden State Water Co. - CB	11,029.27	9,648.64	-1,380.63	-14.31
Cal. Water Service Co. (East LA)	5,463.97	4,872.19	-591.78	-12.15
Signal Hill, City	979.61	388.13	-591.48	-152.39
Paramount, City	1,869.47	1,400.48	-468.99	-33.49
Bell Gardens, City	543.78	202.17	-341.61	-168.97

<b>Production Trends – West Coast Basin</b>				
<b>Top 5 Producing <u>by Volume</u> (AF)</b>	Jul-Dec 2020	Jul-Dec 2021	Difference	% Change
Tesoro Refining & Marketing Co., LLC	4,049.22	4,710.14	660.92	14.03
Phillips 66 Co. - Alpha 7093	2,568.32	3,150.29	581.97	18.47
Cal. Water Service Co. Alpha 7050	469.53	805.63	336.10	41.72
Golden State Water Co. - WB	2,100.88	2,387.11	286.23	11.99
Torrance Refining & Marketing Co.	282.27	485.06	202.79	41.81
<b>Bottom 5 Producing <u>by Volume</u> (AF)</b>	Jul-Dec 2020	Jul-Dec 2021	Difference	% Change
Inglewood, City	1,588.94	1,095.92	-493.02	-44.99
Cal. Water Service Co. Dominguez - WB	1,385.66	1,010.82	-374.84	-37.08
Cal. Water Service Co./Hawthorne Lease	192.20	14.61	-177.59	-1,215.54
Rolling Hills Country Club	198.00	127.00	-71.00	-55.91
L.A. County Department of Parks & Rec - WB	236.57	178.79	-57.78	-32.32

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).