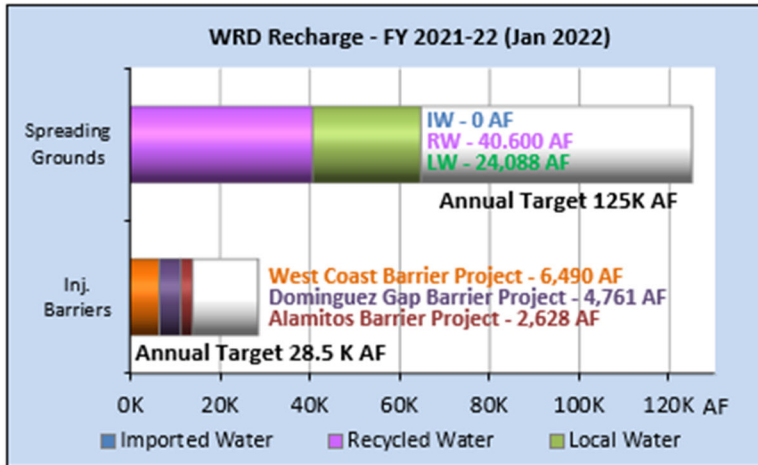
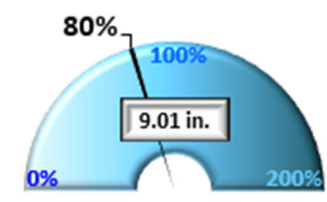


# GROUNDWATER BASIN UPDATE FOR MARCH 2022

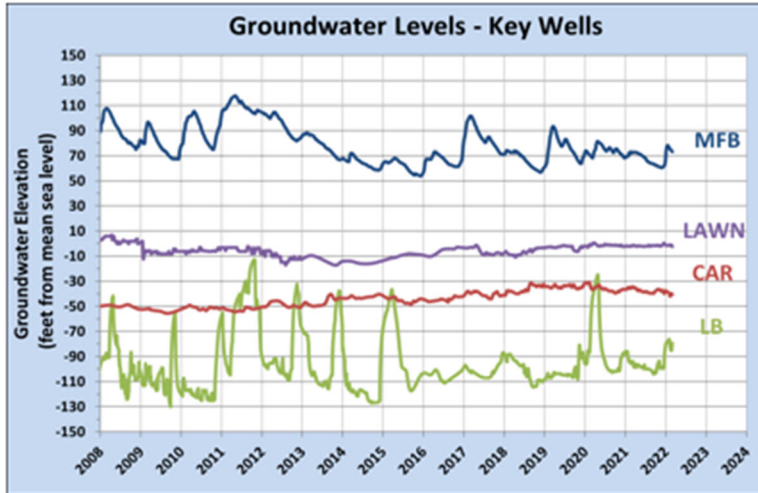
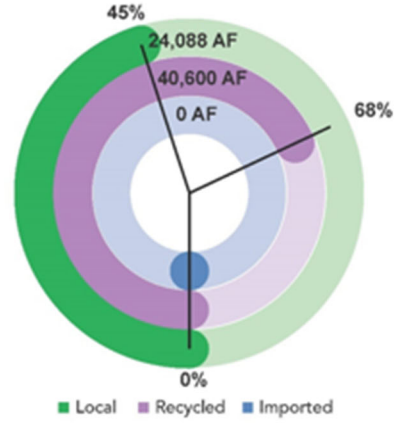
## GROUNDWATER BASINS AT A GLANCE\*



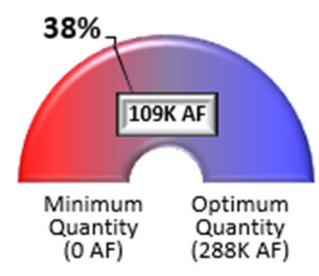
Precipitation % of Normal to Date  
Oct. 1 - Mar. 1



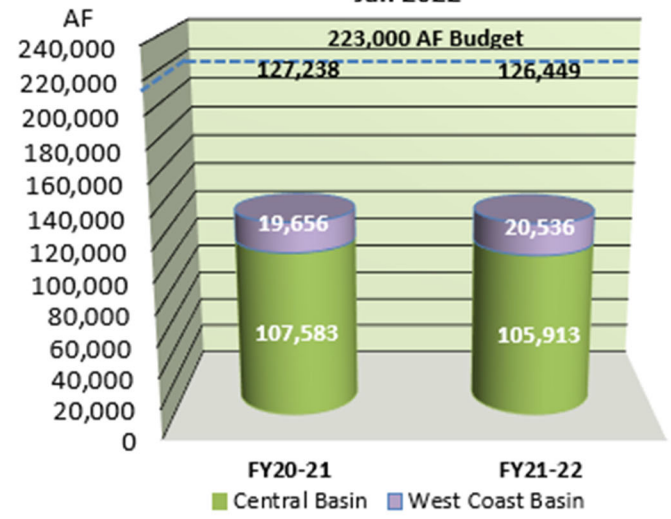
Spreading Grounds Recharge  
Jul 2021 - Jan 2022



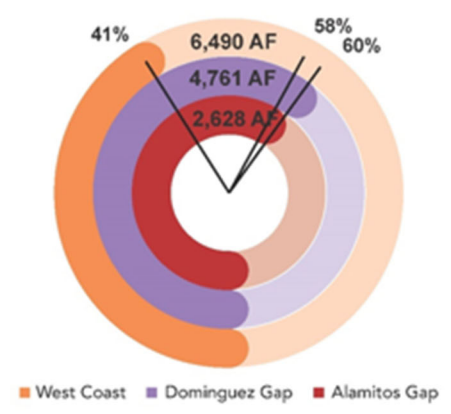
GW Basin Operating Range



Basin Pumping (Q)  
Jan 2022



Seawater Barrier Recharge  
Jul 2021 - Jan 2022



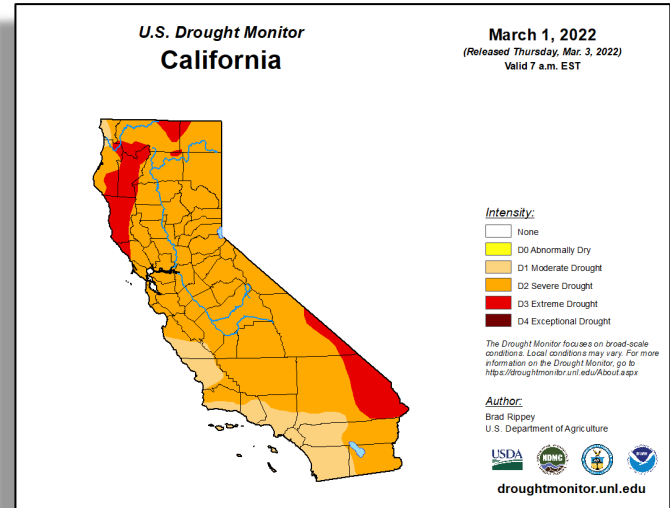
\* - Preliminary numbers, subject to change.

## SUMMARY

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

### Precipitation (Oct. 1, 2021 – Mar. 1, 2022)

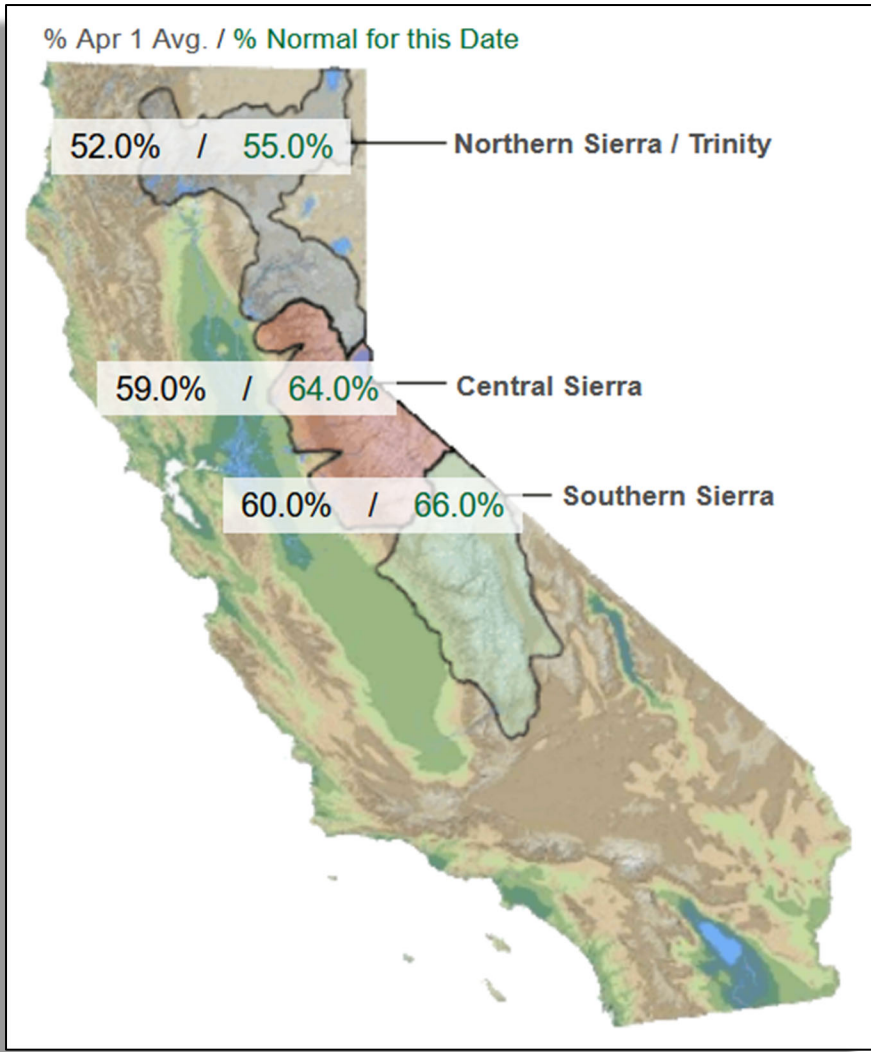
The WRD precipitation index reports that for the 2021-22 Water Year, there has been above average rainfall (9.01 inches) through March 1, 2022. The normal rainfall for this time period is 11.24 inches, so the District is 80% of normal. As of March 1, 2022, the U.S. Drought Monitor is reporting 100% of the State is abnormally dry, 100% under moderate (-1%), 87% under severe (+79%), 13% under extreme (+12%), and 0% exceptional 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 significant loss of the December snowpack in the Sierra Nevada and Cascade Ranges (see below).



### Snowpack (Snow Water Content [SWE] as of March 8, 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.



<b>NORTH</b>	
Data For: 08-Mar-2022	
Number of Stations Reporting	31
Average snow water equivalent	15.0"
Percent of April 1 Average	52%
Percent of normal for this date	55%

<b>CENTRAL</b>	
Data For: 08-Mar-2022	
Number of Stations Reporting	43
Average snow water equivalent	17.4"
Percent of April 1 Average	59%
Percent of normal for this date	64%

<b>SOUTH</b>	
Data For: 08-Mar-2022	
Number of Stations Reporting	29
Average snow water equivalent	15.2"
Percent of April 1 Average	60%
Percent of normal for this date	66%

<b>STATEWIDE SUMMARY</b>	
Data For: 08-Mar-2022	
Number of Stations Reporting	103
Average snow water equivalent	16.1"
Percent of April 1 Average	57%
Percent of normal for this date	61%

***Why Is the April 1 Snowpack Important?***

The April 1 snow survey is the most important measuring time of the year because on average after April 1, most of the big storms don't come into the region and the Sierra doesn't see much more snowfall.



Snow Water Equivalent (SWE):

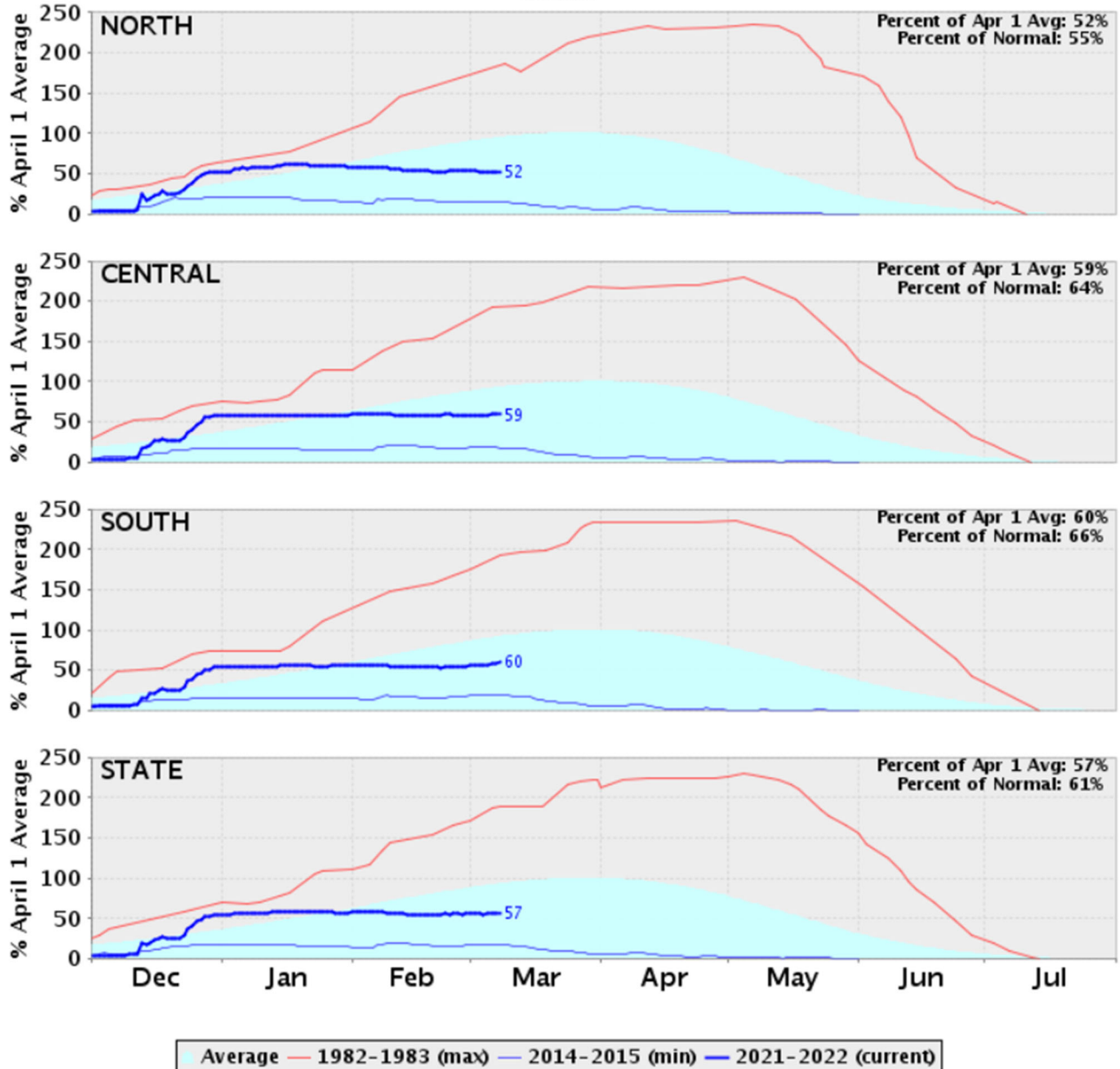
**Northern Sierra Nevada** – 15.0 in., 55% of normal to date and 52% of April 1<sup>st</sup> average

**Central Sierra Nevada** – 17.4 in., 64% of normal to date and 59% of April 1<sup>st</sup> average

**Southern Sierra Nevada** – 15.2 in., 66% of normal to date and 60% of April 1<sup>st</sup> average

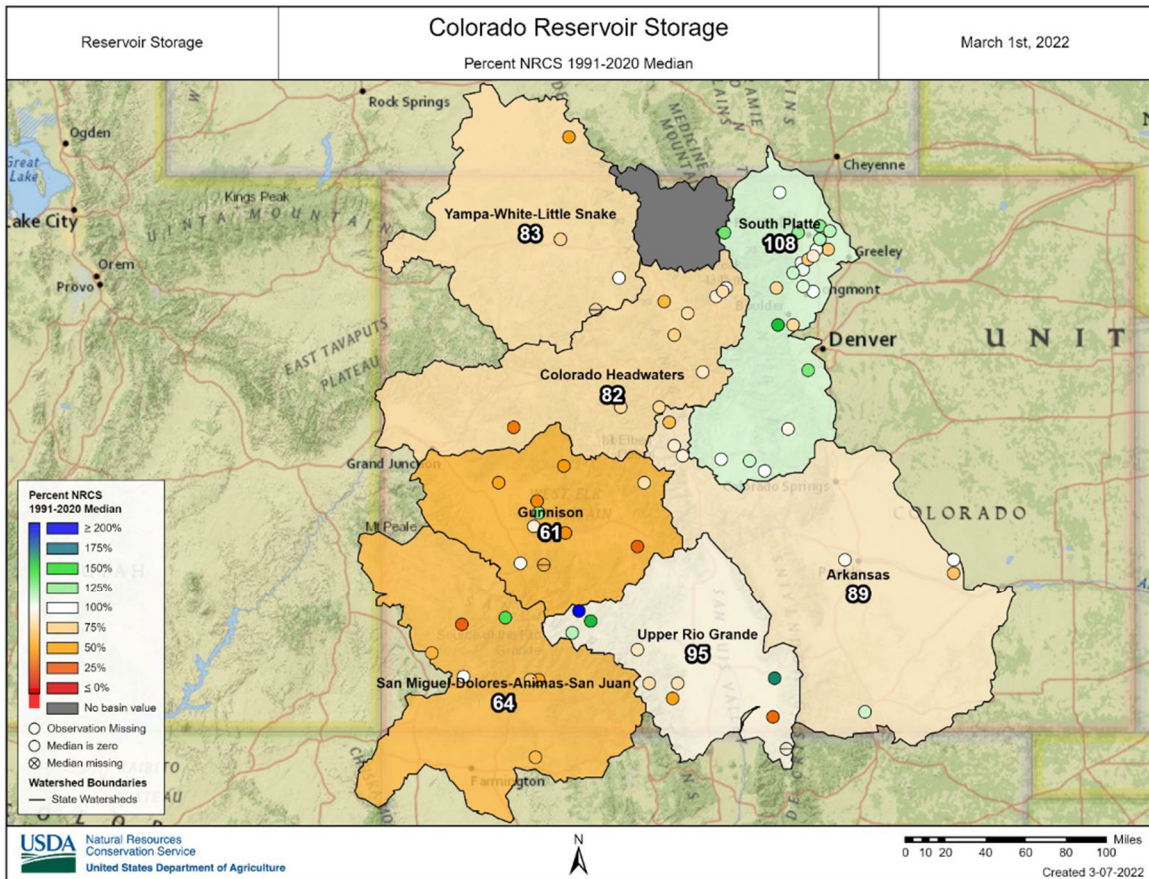
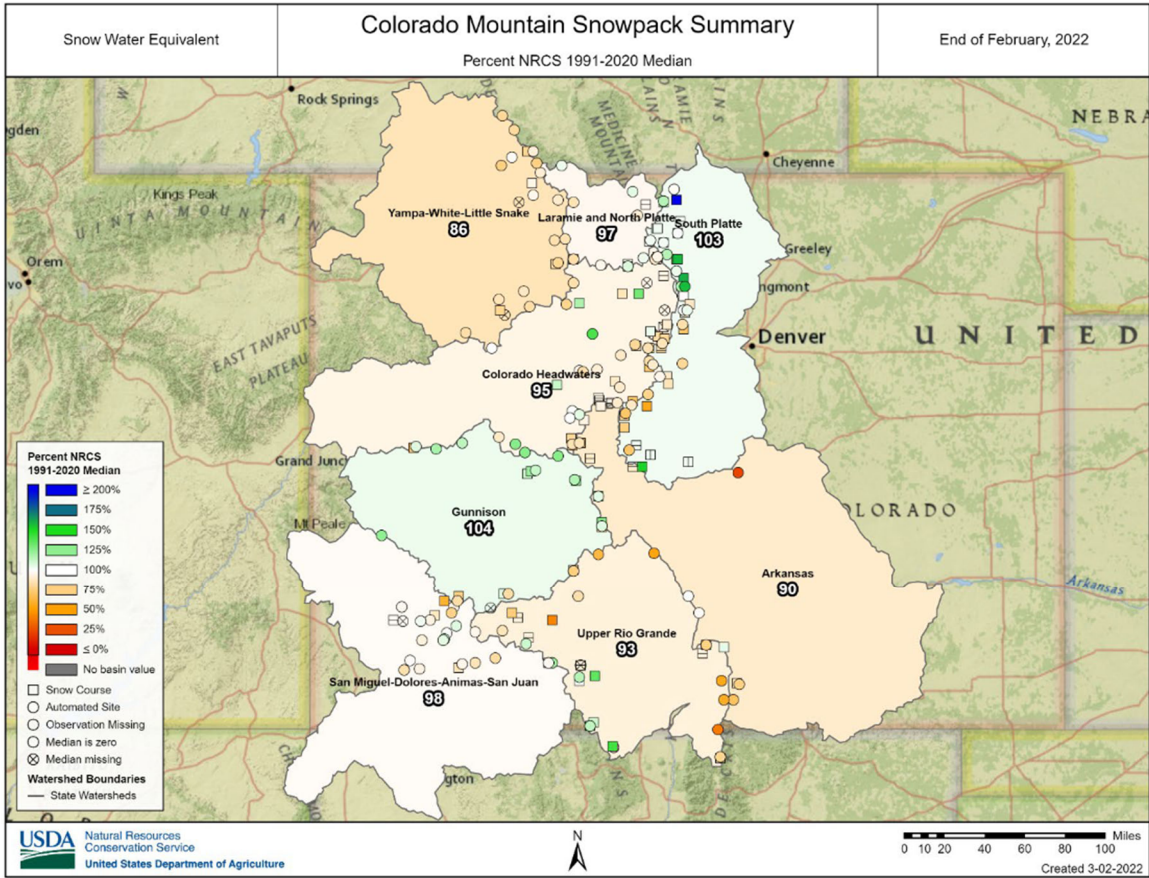
**Statewide Summary** – 16.1 in., 61% of normal to date and 57% of April 1<sup>st</sup> average

**California Snow Water Content - Percent of April 1 Average For: 08-Mar-2022**



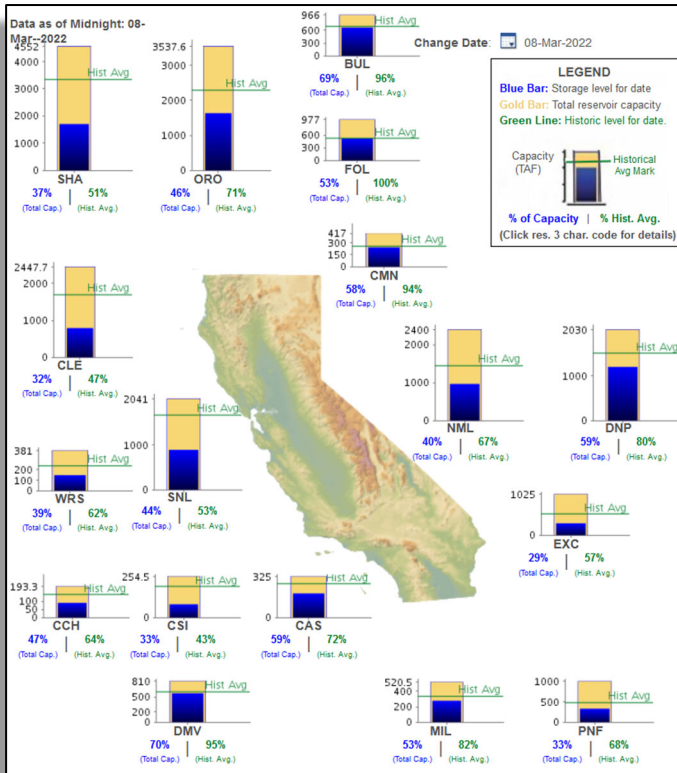
Statewide Percent of average to date

61.0%



## Reservoirs (as of March 8, 2022)

For the 20 reservoirs reported monthly to the committee, water levels have increased in 11 of 20 reservoirs. The largest increase occurred at Lake Casitas (0.08 million acre feet, MAF) and the smallest increase occurred at Millerton, Castaic, and Silverwood Lakes (<0.01 MAF). The largest decrease (-0.28 MAF) occurred at Lake Powell. The smallest decrease (<0.0 MAF) occurred at Sonoma and Cachuma Lakes.



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

Reservoir	Capacity	Storage	% Full	Change
Trinity Lake (CLE)	2.45	0.79	32%	0.03
Lake Shasta (SHA)	4.55	1.70	37%	0.06
Lake Oroville (ORO)	3.54	1.63	46%	-0.01
New Bullards Bar (BUL)	0.97	0.67	69%	0.04
Folsom Lake (FOL)	0.98	0.52	53%	-0.01
Camanche Lake (CMN)	0.42	0.24	58%	0.02
New Melones L. (NML)	2.40	0.97	40%	-0.02
Don Pedro Res (DNP)	2.03	1.20	59%	0.05
Lake McClure (EXC)	1.02	0.30	29%	0.02
Lake Sonoma (WRS)	0.38	0.15	39%	0.00
San Luis Res (SNL)	2.04	0.90	44%	-0.02
Millerton Lake (MIL)	0.52	0.28	53%	0.00
Pine Flat Res. (PNF)	1.00	0.33	33%	0.03
Cachuma Lake (CCH)	0.19	0.09	47%	0.00
Castaic Lake (CAS)	0.33	0.19	59%	0.00
Casitas Lake (CSI)	0.25	0.08	33%	0.08
L. Silverwood (SLW)	0.08	0.07	87%	0.00

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

Reservoir	Capacity	Storage	% Full	Change
Lake Powell	24.32	5.99	25%	-0.28
Lake Mead	26.12	8.89	34%	-0.08
Diamond Valley L (DVL)	0.81	0.57	71%	-0.02

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

These 20 reservoirs are at 34% capacity (25.56 MAF) which is down 0.2 MAF from the prior month (0.28 MAF State Water Project [SWP] and -0.38 MAF Colorado River Aqueduct [CRA]).

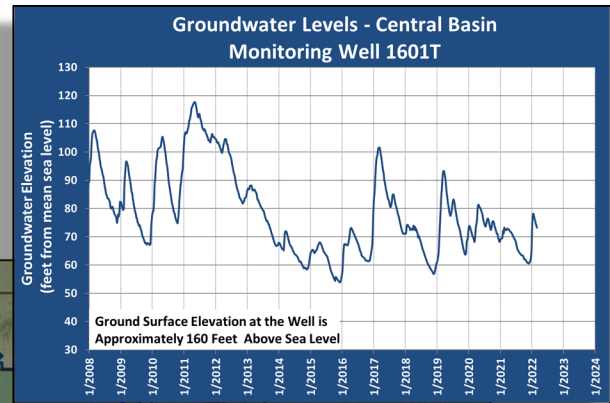
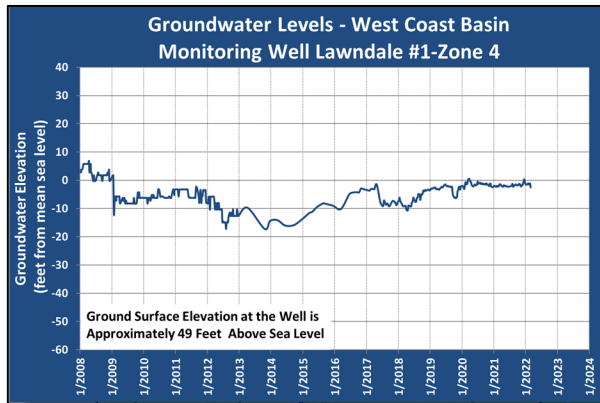


## Did you know?

The Ogallala Aquifer underlies about 175,000 square miles from Texas to South Dakota. It would take about 6,000 years to naturally refill the Ogallala Aquifer if it was ever completely depleted.

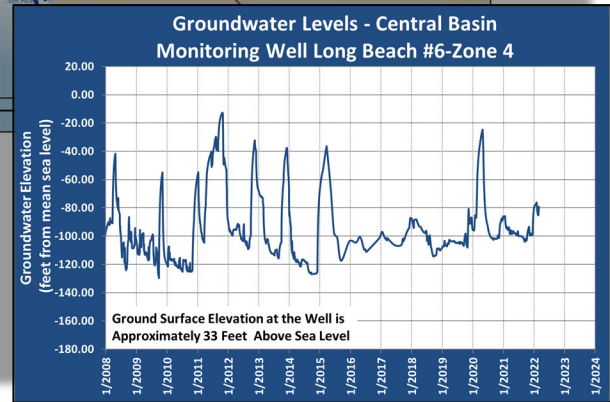
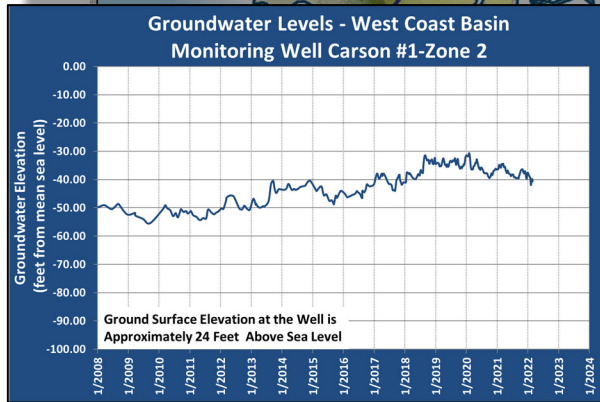
## Groundwater Levels (through March 3, 2022)

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	Decreased 4.2 feet	Increased 0.7 foot
Central Basin Key Well Long Beach #6_4	Decreased 1.8 feet	Increased 15.4 feet
West Coast Basin Key Well Lawndale #1_4	Decreased 1.2 feet	<b>Decreased 0.4 foot</b>
West Coast Basin Key Well Carson #1_2	Decreased 1.69 feet	Decreased 6.2 feet

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

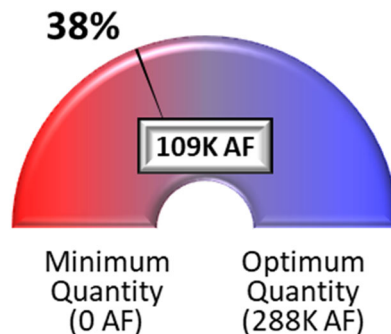
## Optimum and Minimum Groundwater Quantity

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 March 3, 2022, has been estimated at 790,837 acre feet (subject to change), which is 109,163 acre feet above the Minimum Quantity and 178,837 acre feet below the Optimum Quantity. The Basin is at 38% of Optimum Quantity which is 6% lower than what was reported last month (~16,000 AF lower).

### GW Basin Operating Range



### FACT:

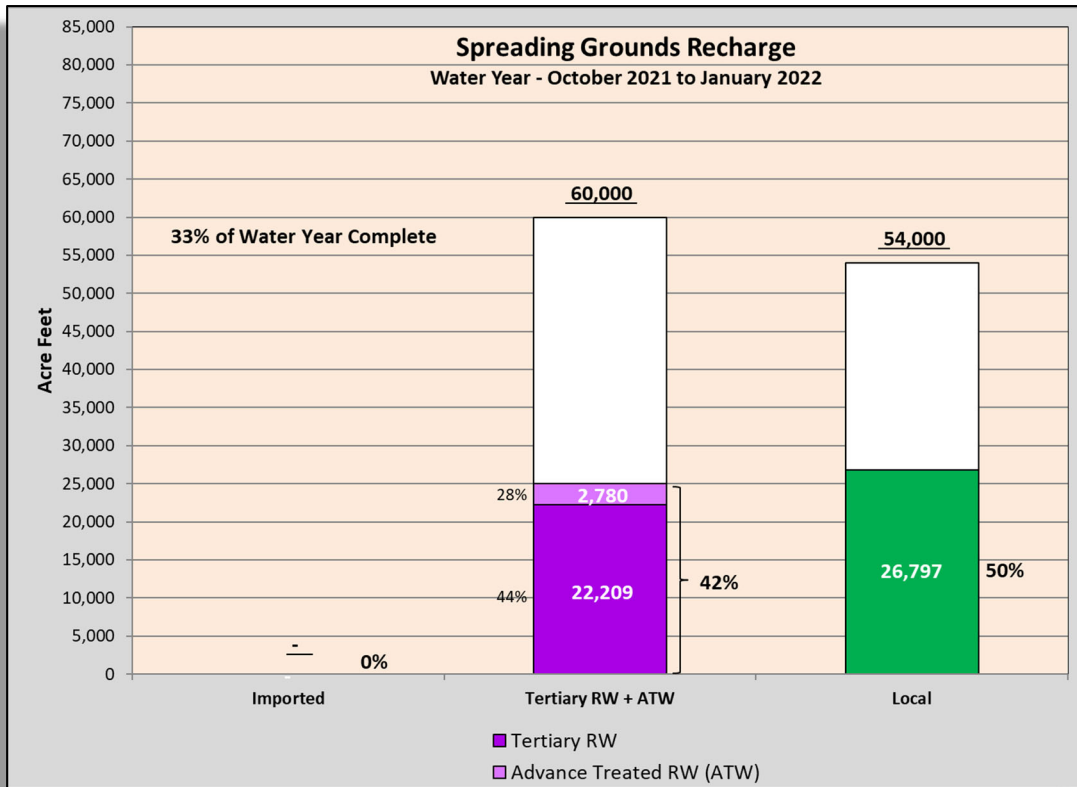
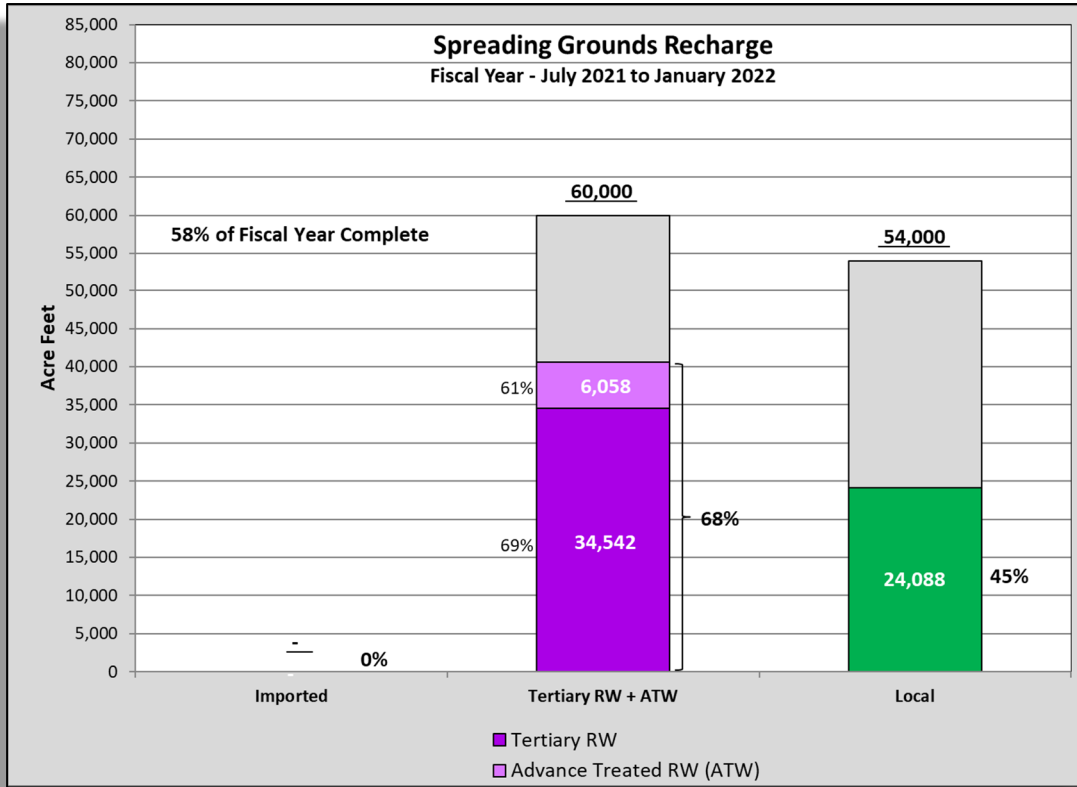
*If spread across the entire U.S., the groundwater in the Ogallala Aquifer would cover all 50 states with 1.5 feet of water. Talk about your giant wading pool!*





Montebello Forebay Spreading Grounds (July 2021 - January 2022)

The following Charts shows the preliminary spreading grounds replenishment water for the current Fiscal Year (2021-22; 7 months) and Water Year (2020-21; 4 months):

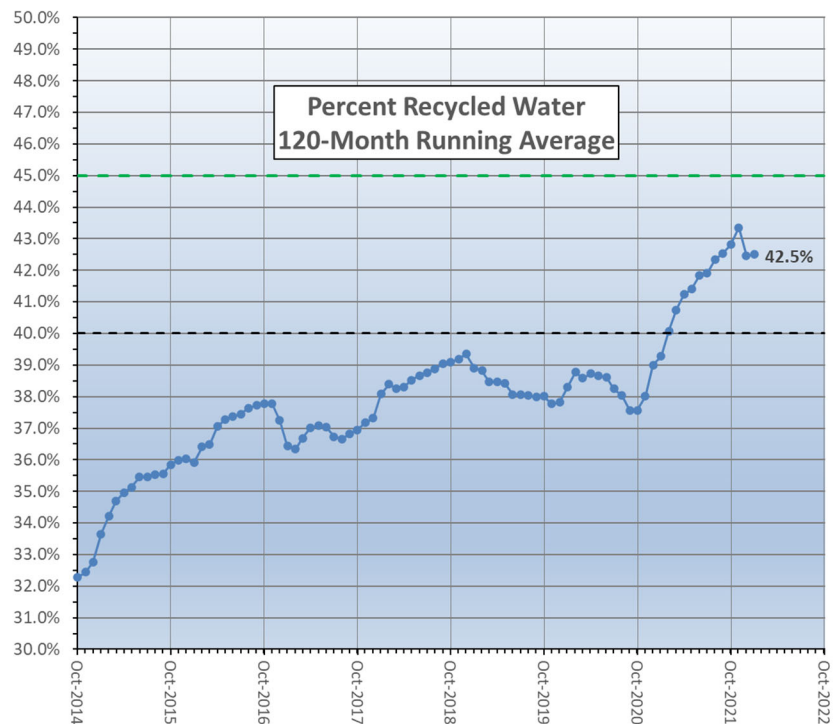
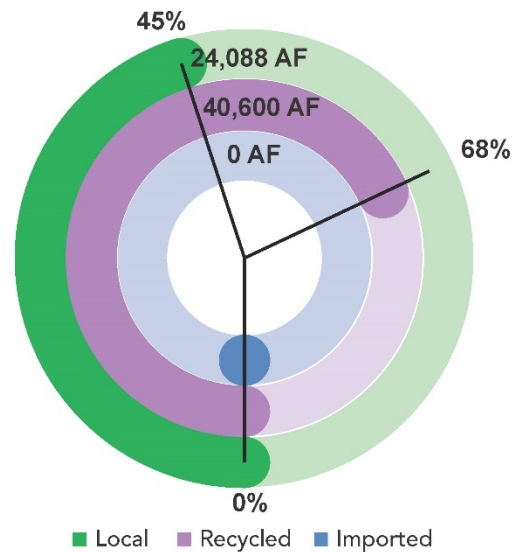


No imported water purchases are planned for Fiscal Year 2021-22.

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 24,088 acre feet of local water capture has been reported by the LACDPW.

Preliminary numbers for the 2021-22 Fiscal Year show that approximately 40,600 acre feet of recycled water has been recharged with 6,058 acre feet consisting of advanced treat water from the ARC AWTF and 34,542 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 42.5% 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 Jul 2021 - Jan 2022

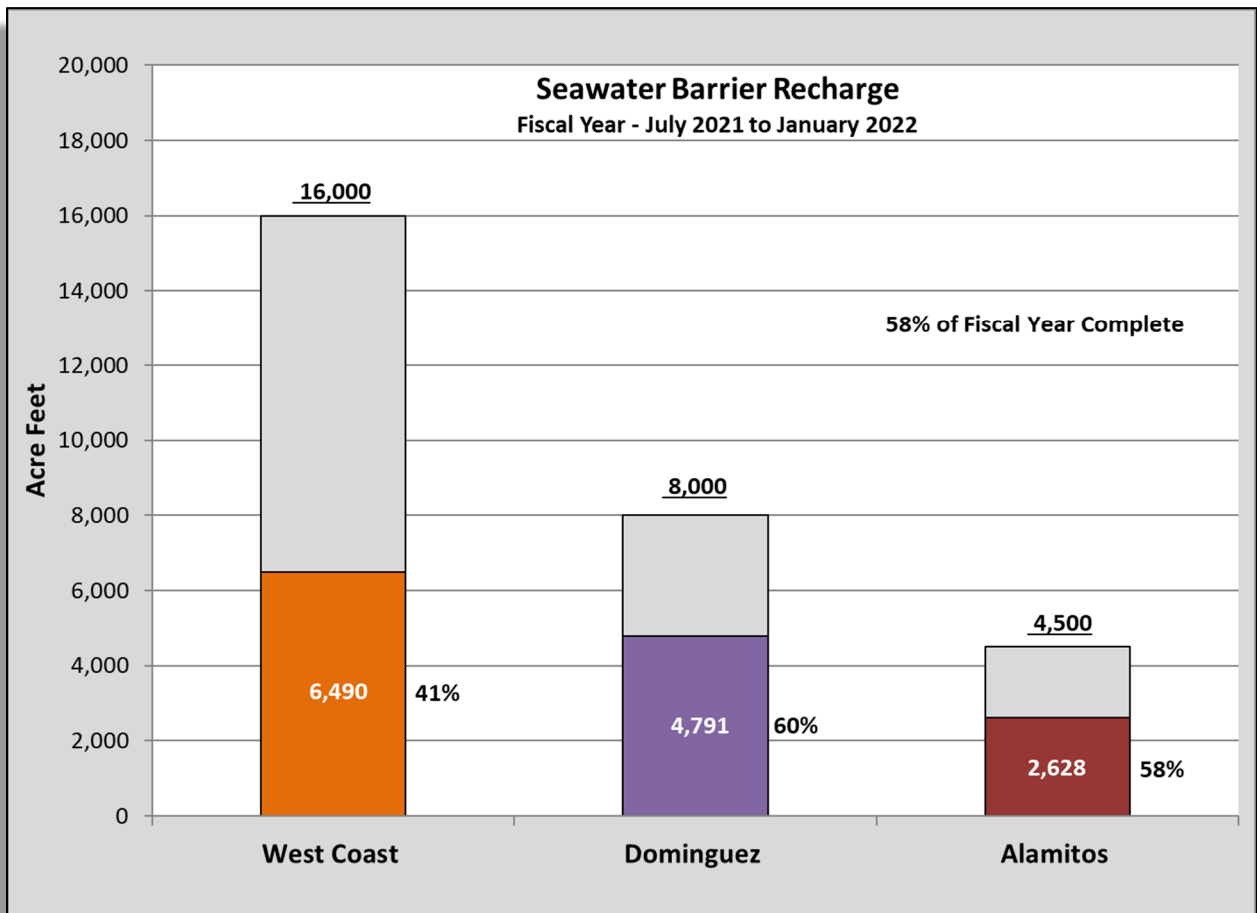


### Tertiary Recycle Water Permit Update

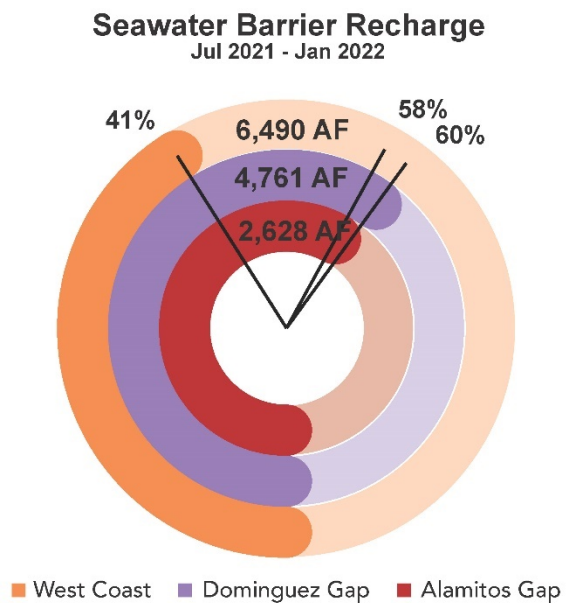
The permit is progressing with LACSD and WRD staff working with both LARWQCB and CA-DDW regulators to respond the questions and update pertinent sections of the new Title 22 Engineering Report. LACSD continues to work on two major studies needed for the new Title 22 Engineering Report – Biodegradable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

Seawater Barrier Well Injection and Replenishment (July 2021 - January 2022)

The following Chart shows the barrier water injection:

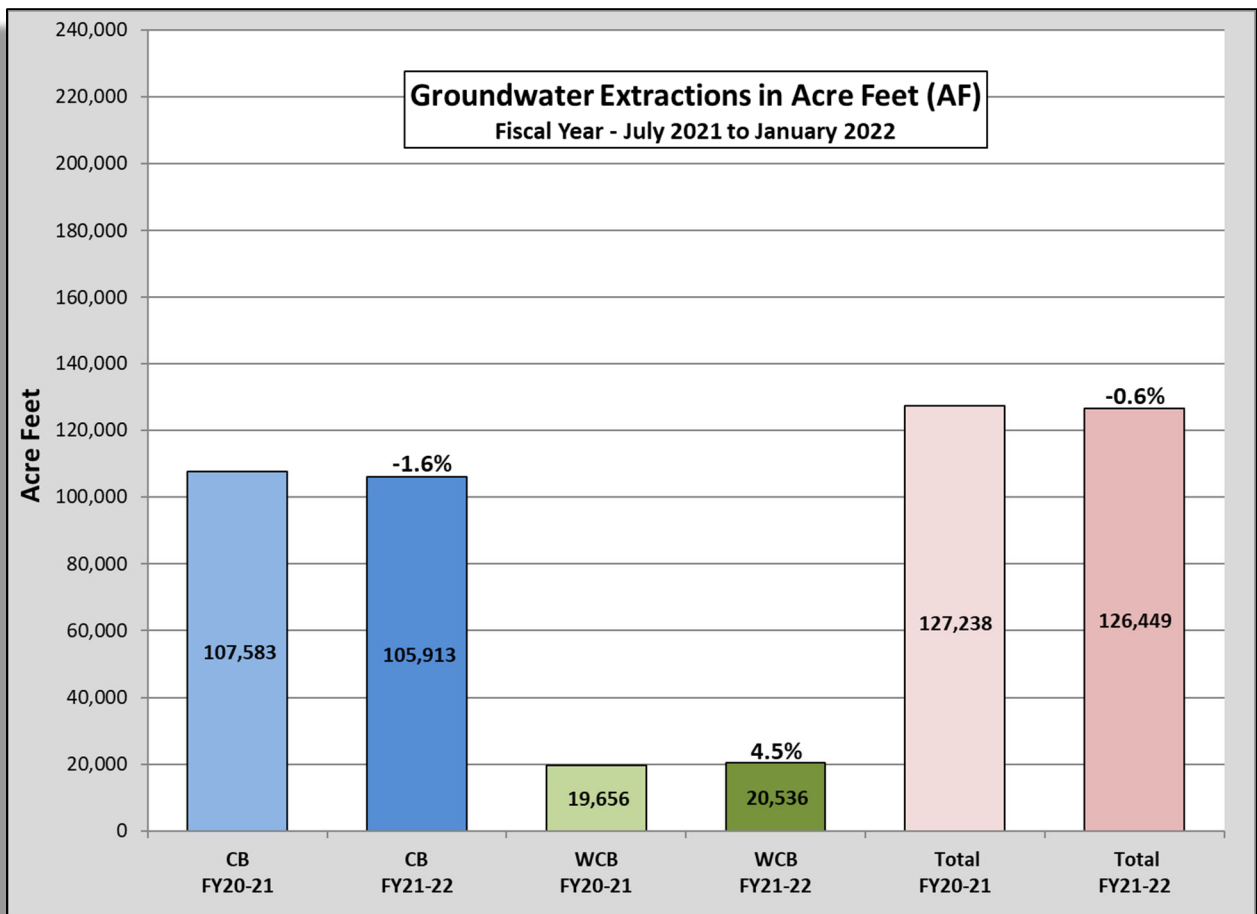


Preliminary numbers for the 2021-22 Fiscal Year show that the West Coast Barrier has used 6,460 acre feet of the total 16,000 acre feet planned for injection, 41% of total for the Fiscal Year. The Dominguez Gap Barrier used 4,791 acre feet of the total 8,000 acre feet planned for injection, 60% of the total for the Fiscal Year. The Alamitos Barrier, on the WRD side, used 2,628 acre feet of the total 4,500 acre feet planned for injection, 58% of the total for the Fiscal Year.



### Total Pumping (Fiscal Year July 2021 – January 2022)

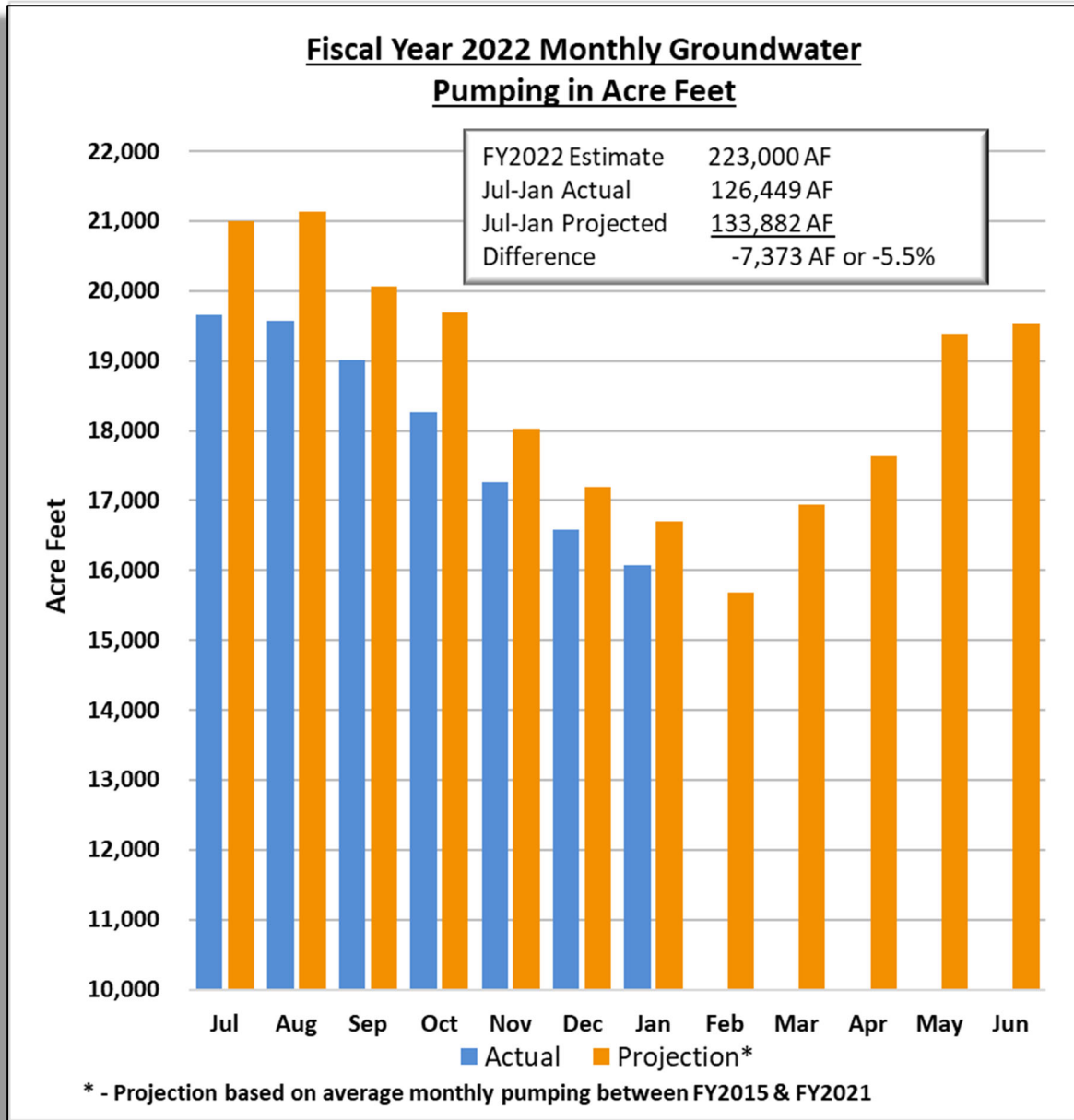
Preliminary numbers for groundwater production in the District for the Fiscal Year 2021-22 (July 2022 - January 2022) indicate total pumping in the Central Basin was down 1,670 acre feet from the same time of the previous fiscal year (-1.6%) and the West Coast Basin total pumping was 881 acre feet higher than the previous fiscal year (+4.5%). The total pumping is 126,449 acre feet compared to 127,238 acre feet during the same time the previous year for a decrease of 789 acre feet, or -0.6%. The current pumping data do not include three (3) Central Basin pumpers and one (1) West Coast Basin pumper who have not yet reported for an estimated 5 additional acre feet.



### Interesting...

90% of the groundwater from the Ogallala Aquifer is used for agricultural irrigation, which constitutes one-third of U.S. irrigated agriculture.

Preliminary numbers indicate 126,449 acre feet have been pumped this fiscal year and is 5.5% below the projected goal of 133,882 acre feet (or -7,373 acre feet). Monthly actual production versus the 7-year average monthly production projections (FY 2015 through 2021) are included in the chart below.



"A man of wisdom delights in water. - Confucius"



For the Fiscal Year 2021-22 (July 2021 - January 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 2020-Jan 2021	Jul 2021-Jan 2022	Difference	% Change
Los Angeles, City - CB	676.09	2,375.10	1699.01	71.53
San Gabriel Valley Water Co.	38.33	1,524.54	1486.21	97.49
Santa Fe Springs, City	1,011.54	1,402.06	390.52	27.85
Vernon, City	3,630.56	3,859.91	229.35	5.94
Downey, City	8,353.83	8,566.63	212.80	2.48
<b>Bottom 5 Producing by Volume (AF)</b>	Jul 2020-Jan 2021	Jul 2021-Jan 2022	Difference	% Change
Golden State Water Co. - CB	12,588.08	10,937.03	-1651.05	-15.10
Signal Hill, City	1,116.36	480.88	-635.48	-132.15
Cal. Water Service Co. (East LA)	6,373.97	5,833.39	-540.58	-9.27
Bell Gardens, City	614.19	202.17	-412.02	-203.80
Paramount, City	1,994.90	1,631.31	-363.59	-22.29

<b>Production Trends – West Coast Basin</b>				
<b>Top 5 Producing by Volume (AF)</b>	Jul 2020-Jan 2021	Jul 2021-Jan 2022	Difference	% Change
Tesoro Refining & Marketing Co., LLC	4,637.32	5,500.70	863.38	15.70
Phillips 66 Co. - Alpha 7093	3,000.95	3,684.86	683.91	18.56
Golden State Water Co. - WB	2,493.93	2,865.08	371.15	12.95
Cal. Water Service Co. Alpha 7050	559.63	911.04	351.41	38.57
Torrance Refining & Marketing Co.	385.88	555.59	169.71	30.55
<b>Bottom 5 Producing by Volume (AF)</b>	Jul 2020-Jan 2021	Jul 2021-Jan 2022	Difference	% Change
Inglewood, City	1,856.38	1,255.27	-601.11	-47.89
Cal. Water Service Co. Dominguez - WB	1,576.69	1,144.74	-431.95	-37.73
Cal. Water Service Co./Hawthorne Lease	271.63	15.21	-256.42	-1,685.86
Rolling Hills Country Club	201.00	132.00	-69.00	-52.27
L.A. County Department of Parks & Rec - WB	246.03	184.03	-62.00	-33.69

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).