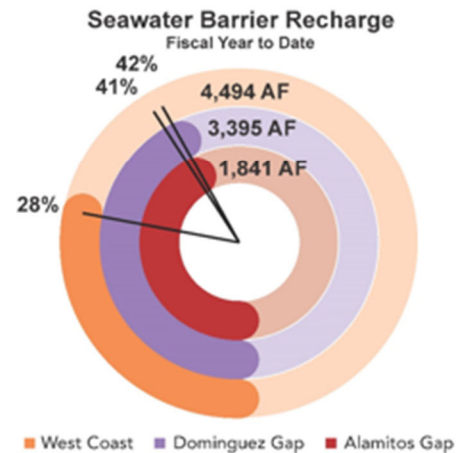
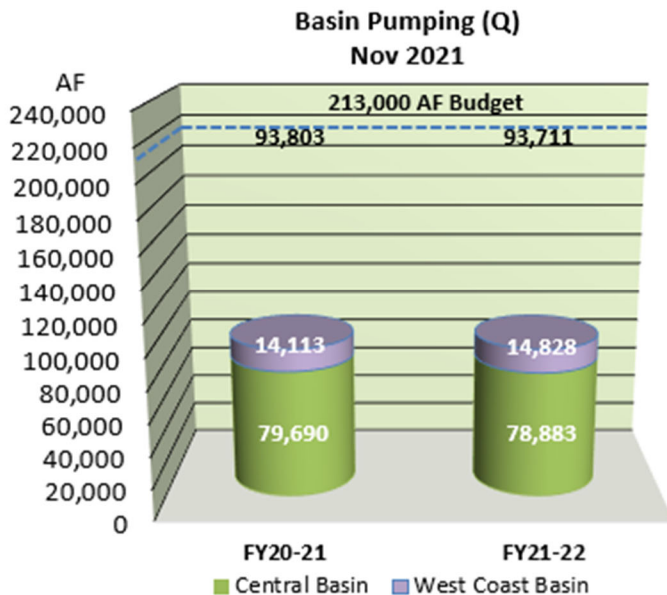
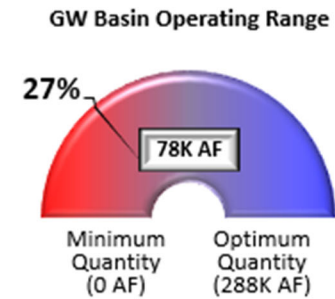
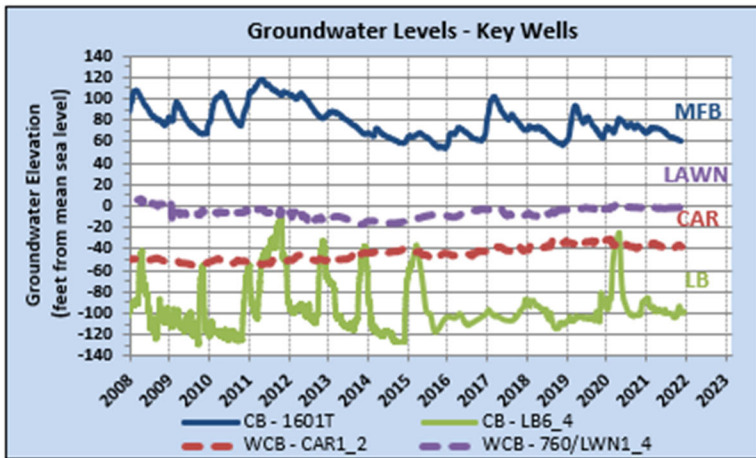
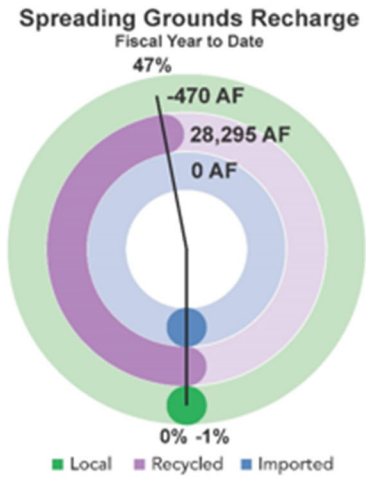
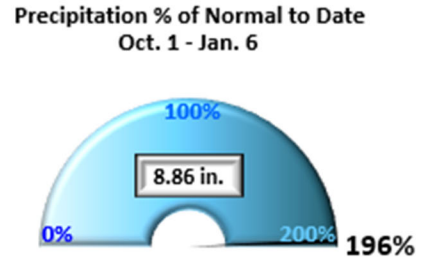
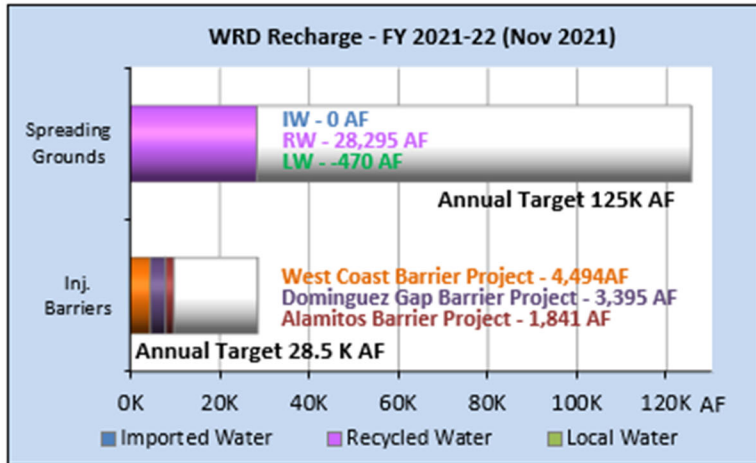


GROUNDWATER BASIN UPDATE FOR JANUARY 2022

GROUNDWATER BASINS AT A GLANCE*



* - Preliminary numbers, subject to change.

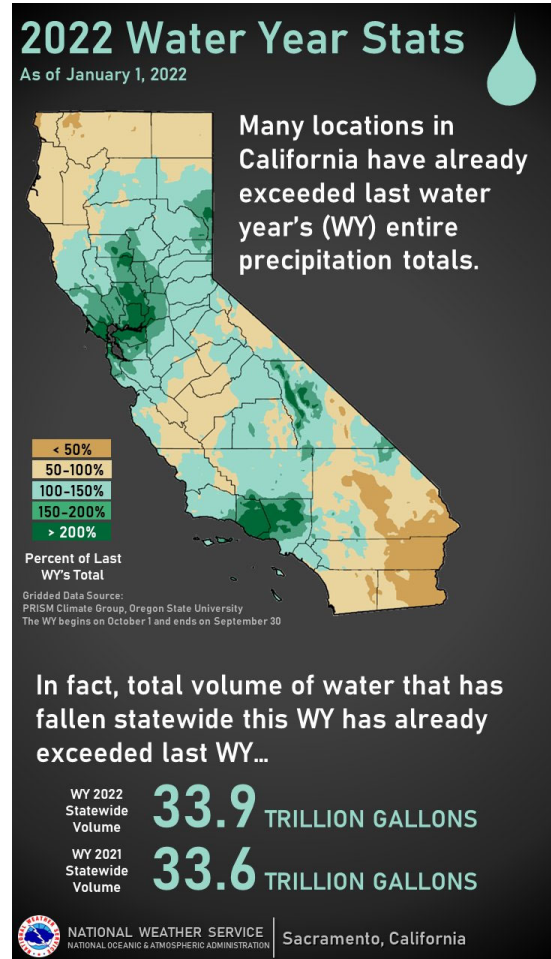
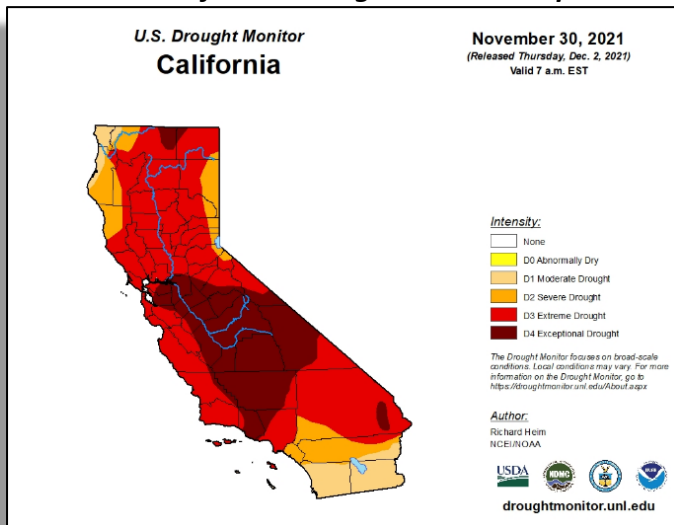
SUMMARY

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

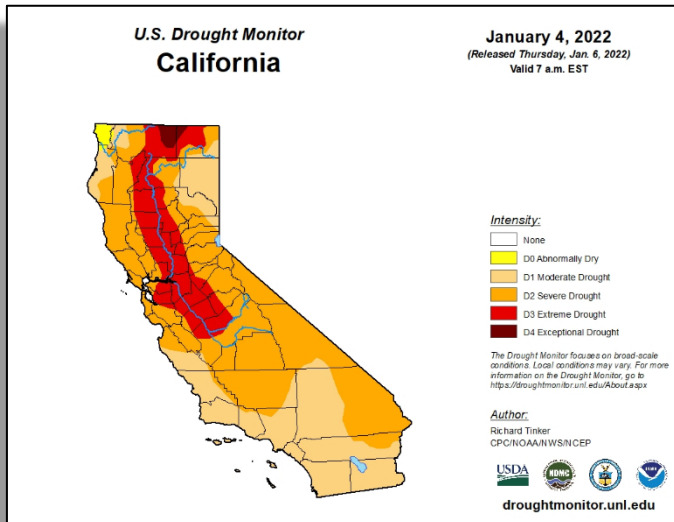
Precipitation (Oct. 1, 2021 – Jan. 6, 2022)

The WRD precipitation index reports that for the 2021-22 Water Year, there has been slightly above average rainfall (8.86 inches) through January 6, 2022. The normal rainfall for this time period is 4.51 inches, so the District is 196% of normal. As of January 4, 2022, the U.S. Drought Monitor is reporting 100% of the State is abnormally dry, 99% under moderate (-1%), 68% under severe (-24%), 17% under extreme (-63%), and 1% exceptional (-27%) drought conditions.

November California Drought Monitor Report



December California Drought Monitor Report



Snowpack (Snow Water Content [SWE] as of January 5, 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.

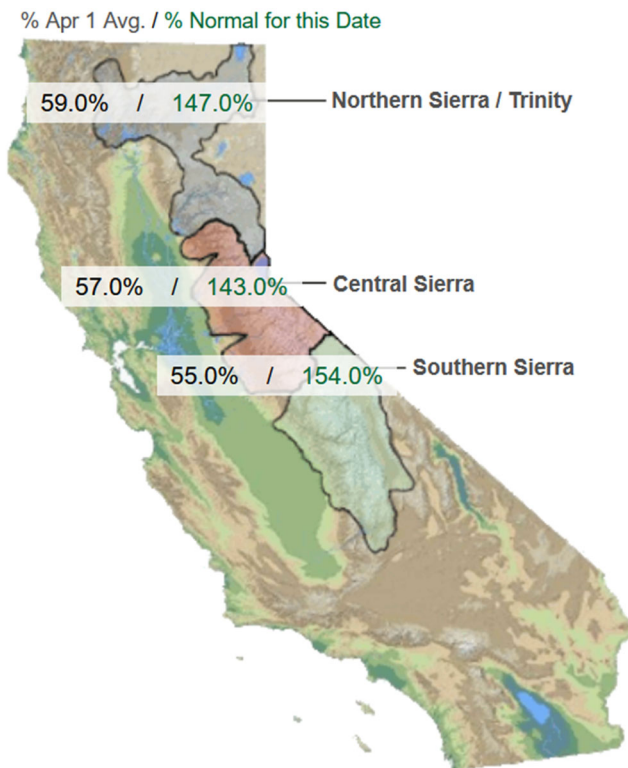
The snow survey is completed using a snow sampling tube equipped with a cutter on the end that is driven through the snow measuring the depth and obtaining a snow core. The snow core is then weighed and the snow water content (or snow water equivalent) calculated. The surveys are completed throughout 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: 05-Jan-2022	
Number of Stations Reporting	28
Average snow water equivalent	16.8"
Percent of April 1 Average	59%
Percent of normal for this date	147%

CENTRAL	
Data For: 05-Jan-2022	
Number of Stations Reporting	42
Average snow water equivalent	16.8"
Percent of April 1 Average	57%
Percent of normal for this date	143%

SOUTH	
Data For: 05-Jan-2022	
Number of Stations Reporting	29
Average snow water equivalent	14.2"
Percent of April 1 Average	55%
Percent of normal for this date	154%

STATEWIDE SUMMARY	
Data For: 05-Jan-2022	
Number of Stations Reporting	99
Average snow water equivalent	16.0"
Percent of April 1 Average	57%
Percent of normal for this date	147%



UC Berkeley Central Sierra Snow Lab in Soda Springs surpassed the previous December record by over a foot (179 inches in 1970) with a new total of 194 inches.

Snow Water Equivalent (SWE):

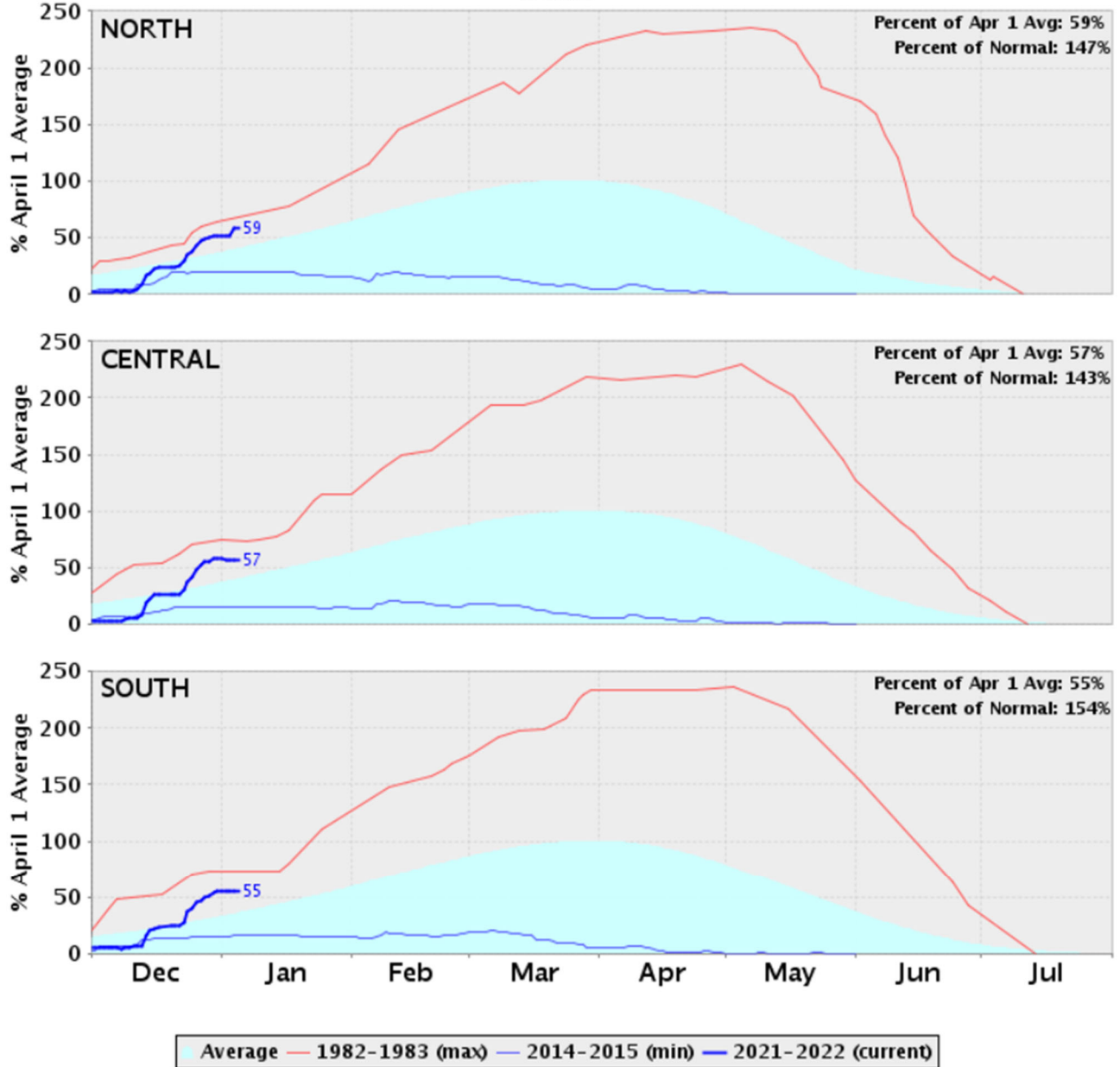
Northern Sierra Nevada – 16.8 in., 147% of normal to date and 59% of April 1st average

Central Sierra Nevada – 16.8 in., 143% of normal to date and 57% of April 1st average

Southern Sierra Nevada – 14.2 in., 154% of normal to date and 55% of April 1st average

Statewide Summary – 16.0 in., 147% of normal to date and 57% of April 1st average

California Snow Water Content – Percent of April 1 Average For: 05-Jan-2022

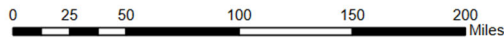
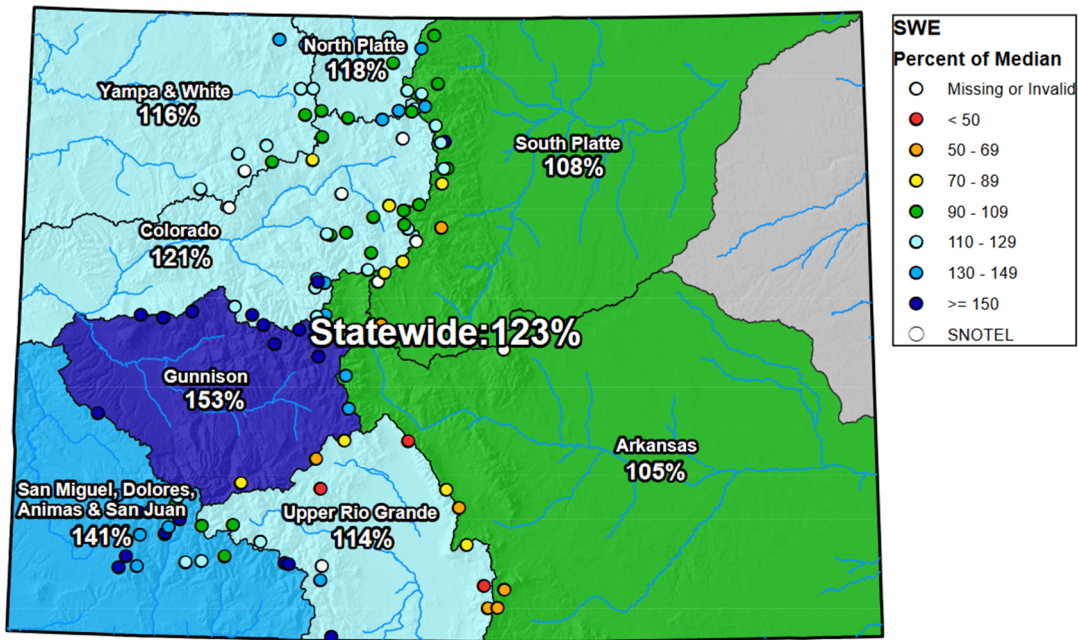


Statewide Percent of average to date

147.0%

Colorado SNOTEL Snow Water Equivalent (SWE) Update Map with Site Data

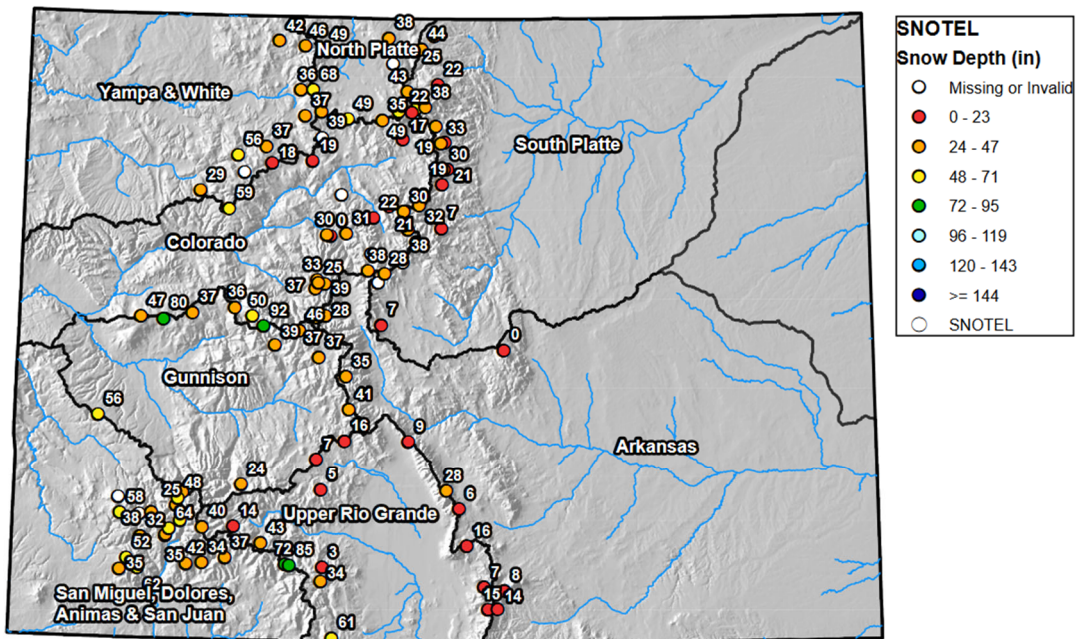
Current as of Jan 04, 2022



USDA
United States Department of Agriculture
Natural Resources Conservation Service

Colorado SNOTEL Snow Depth

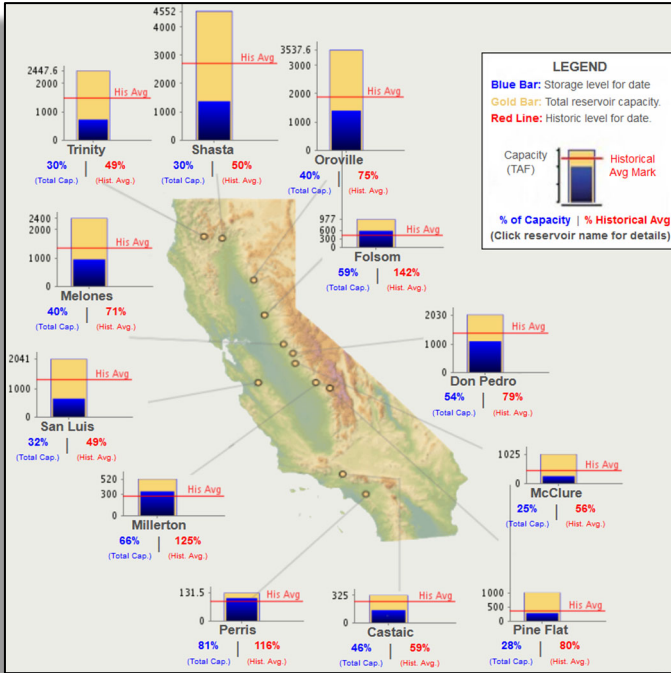
Current as of Jan 04, 2022



USDA
United States Department of Agriculture
Natural Resources Conservation Service

Reservoirs (as of January 4, 2022)

For the 16 reservoirs reported monthly to the committee, water levels have increased in 13 of 16 reservoirs. The largest increase occurred at Lake Oroville (0.35 million acre feet, MAF) and the smallest increase occurred at Lake Silverwood (<0.01 MAF). The largest decrease (-0.34 MAF) occurred at Lake Powell. The smallest decrease (<0.0 MAF) occurred at Perris and Diamond Valley Lakes.



MWD Reservoirs (SWP) Storage in Million Acre Feet

Reservoir	Capacity	Storage	% Full	Change
Trinity Lake	2.45	0.72	30%	0.02
Lake Shasta	4.55	1.37	30%	0.25
Lake Oroville	3.54	1.40	40%	0.35
Folsom Lake	0.98	0.58	59%	0.22
New Melones L.	2.40	0.95	40%	0.09
Don Pedro Res	2.03	1.10	54%	0.08
Lake McClure	1.02	0.25	25%	0.04
San Luis Res	2.04	0.64	32%	0.16
Millerton Lake	0.52	0.34	66%	0.02
Pine Flat	1.00	0.28	28%	0.05
Castaic Lake	0.33	0.15	46%	0.04
Lake Perris	0.13	0.11	81%	0.00
L. Silverwood	0.08	0.07	88%	0.00

MWD Reservoirs (CRA) Storage in Million Acre Feet

Reservoir	Capacity	Storage	% Full	Change
Powell	24.32	6.69	28%	-0.34
Mead	26.12	8.92	34%	0.10
DVL	0.81	0.60	74%	0.00

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 33% capacity (24.2MAF) which is up 1.07 MAF from the prior month (1.31 MAF State Water Project [SWP] and -0.24 MAF Colorado River Aqueduct [CRA]).

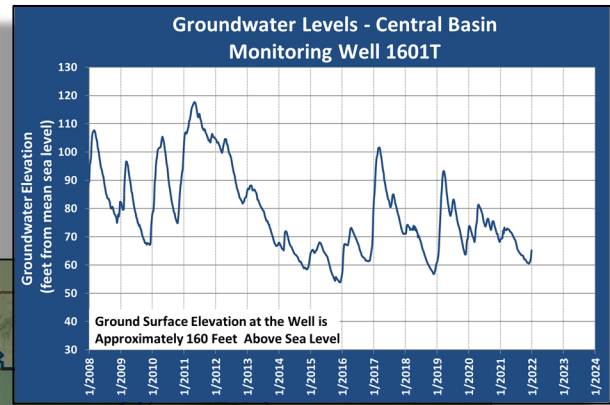
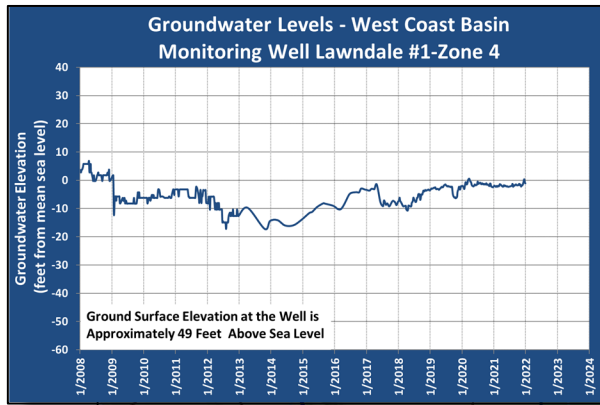


Did you know?

In the United States, approximately 500,000 new residential wells are constructed annually, according to NQWA estimates. The construction of these vitally needed water supply systems involves the use of more than 18,460 drilling machines by an estimated 8,085 groundwater contracting firms.

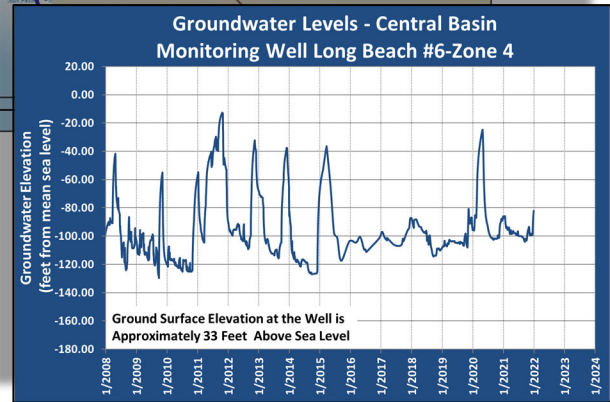
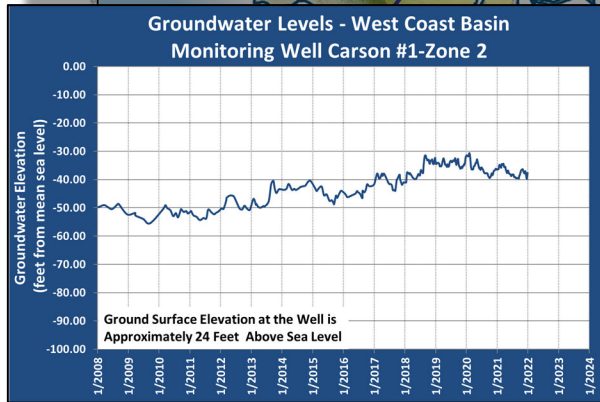
Groundwater Levels (through December 31, 2021)

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 4.7 feet	Decreased 3.0 feet
Central Basin Key Well Long Beach #6_4	Increased 17.3 feet	Increased 3.8 feet
West Coast Basin Key Well Lawndale #1_4	Increased 0.3 foot	Increased 1.2 feet
West Coast Basin Key Well Carson #1_2	Increased 0.2 foot	Decreased 1.1 feet

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

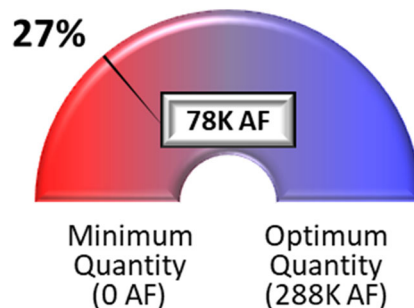
Optimum and Minimum Groundwater Quantity

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 December 31, 2021, has been estimated at 821,677 acre feet (subject to change), which is 78,323 acre feet above the Minimum Quantity and 209,677 acre feet below the Optimum Quantity. The Basin is at 27% of Optimum Quantity which is 6% higher than what was reported last month (~18,000 AF higher).

GW Basin Operating Range



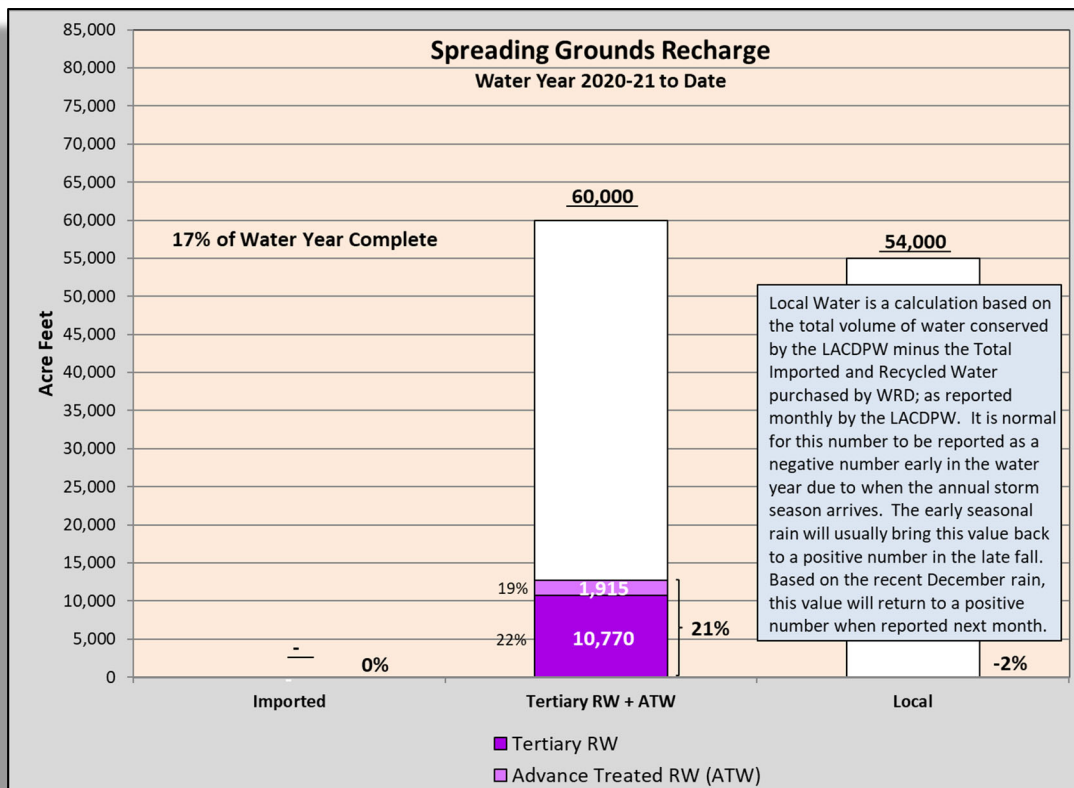
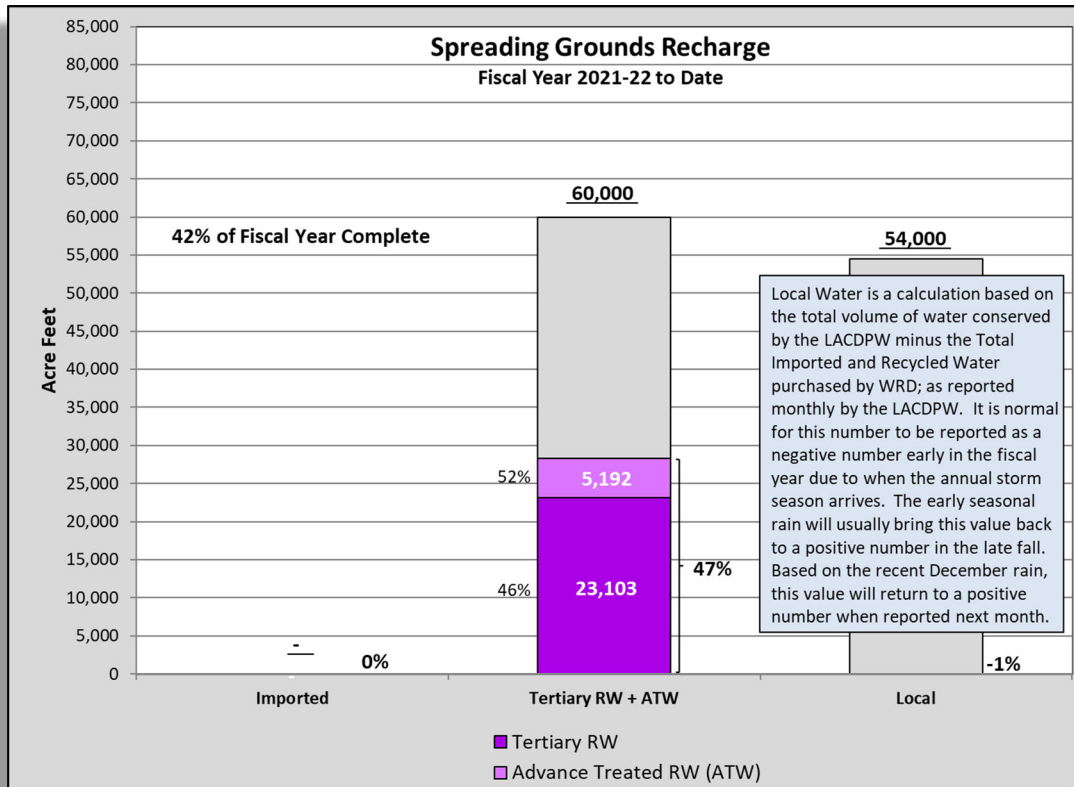
FACT:

Private household wells constitute the largest share of all water wells in the United States — more than 13,135 million year-round occupied households have their own well.



Montebello Forebay Spreading Grounds (July - November 2021)

The following Charts shows the preliminary spreading grounds replenishment water for the current Fiscal Year (2021-22; 5 months) and Water Year (2020-21; 2 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 0 acre feet of local water capture has been reported by the LACDPW (see notes in above charts).

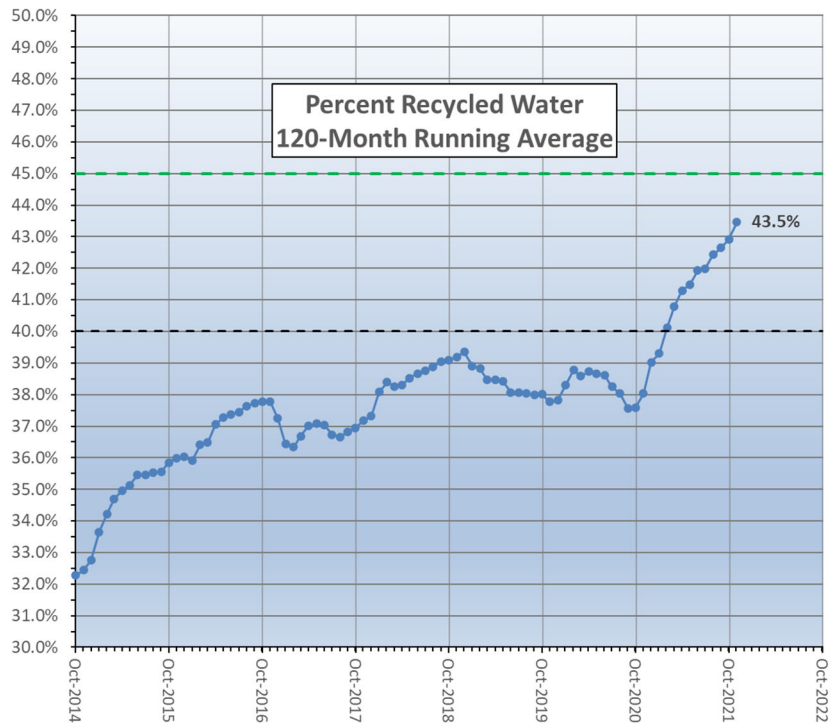
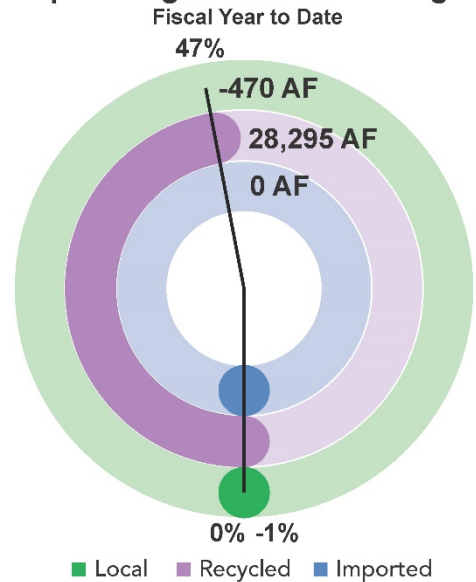
Preliminary numbers for the 2021-22 Fiscal Year show that approximately 28,295 acre feet of recycled water has been recharged with 5,192 acre feet consisting of advanced treat water from the ARC

AWTF and 23,103 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 43.5% 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.

Tertiary Recycle Water Permit Update

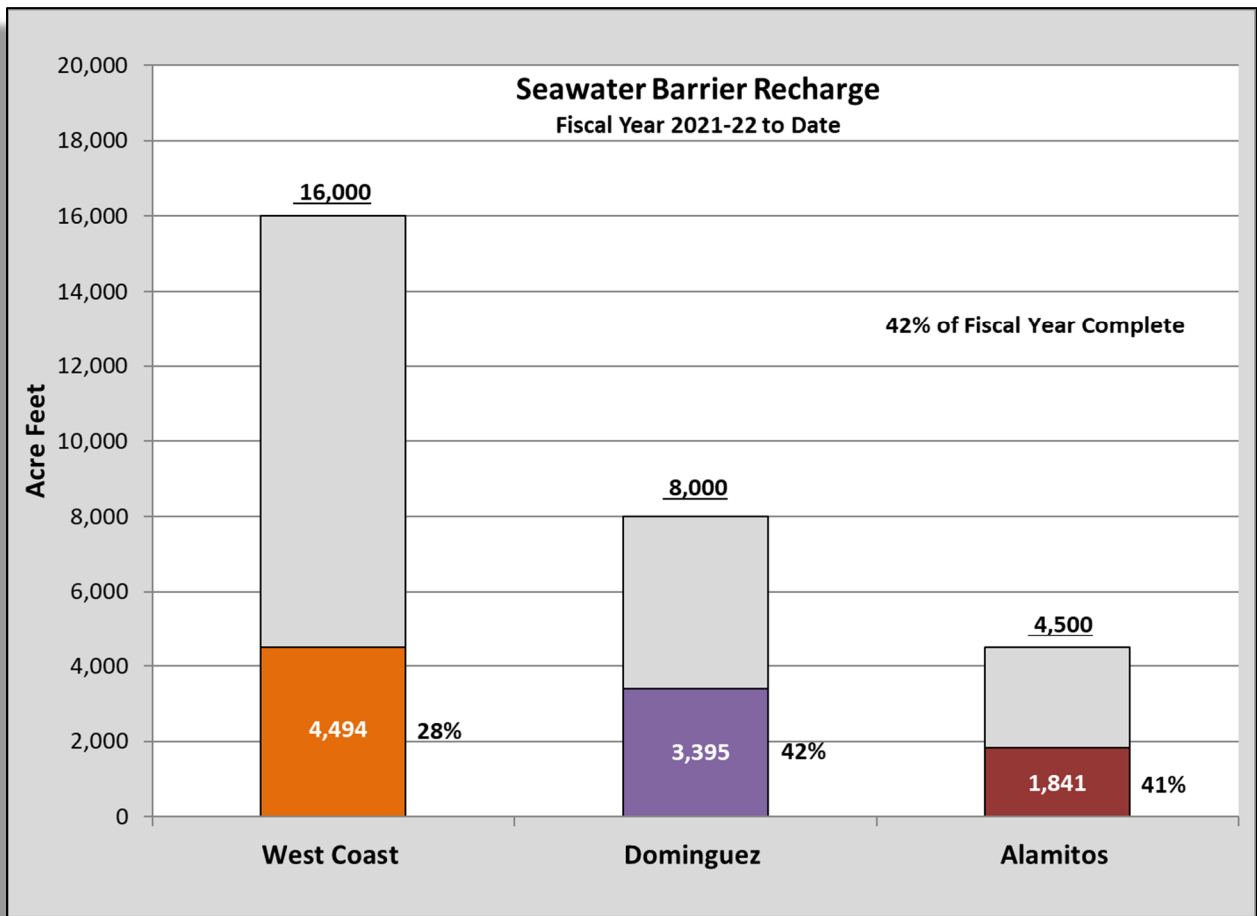
The permit is progressing with LACSD and WRD staff working with both LARWQCB and CA-DDW regulators to respond the questions and update pertinent sections of the new Title 22 Engineering Report. LACSD continues to work on two major studies needed for the new Title 22 Engineering Report – Biodegradable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

Spreading Grounds Recharge

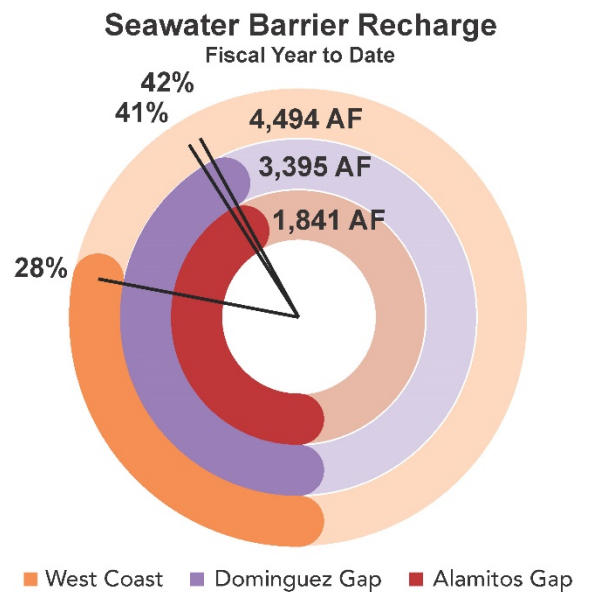


Seawater Barrier Well Injection and Replenishment (July - November 2021)

The following Chart shows the barrier water injection:

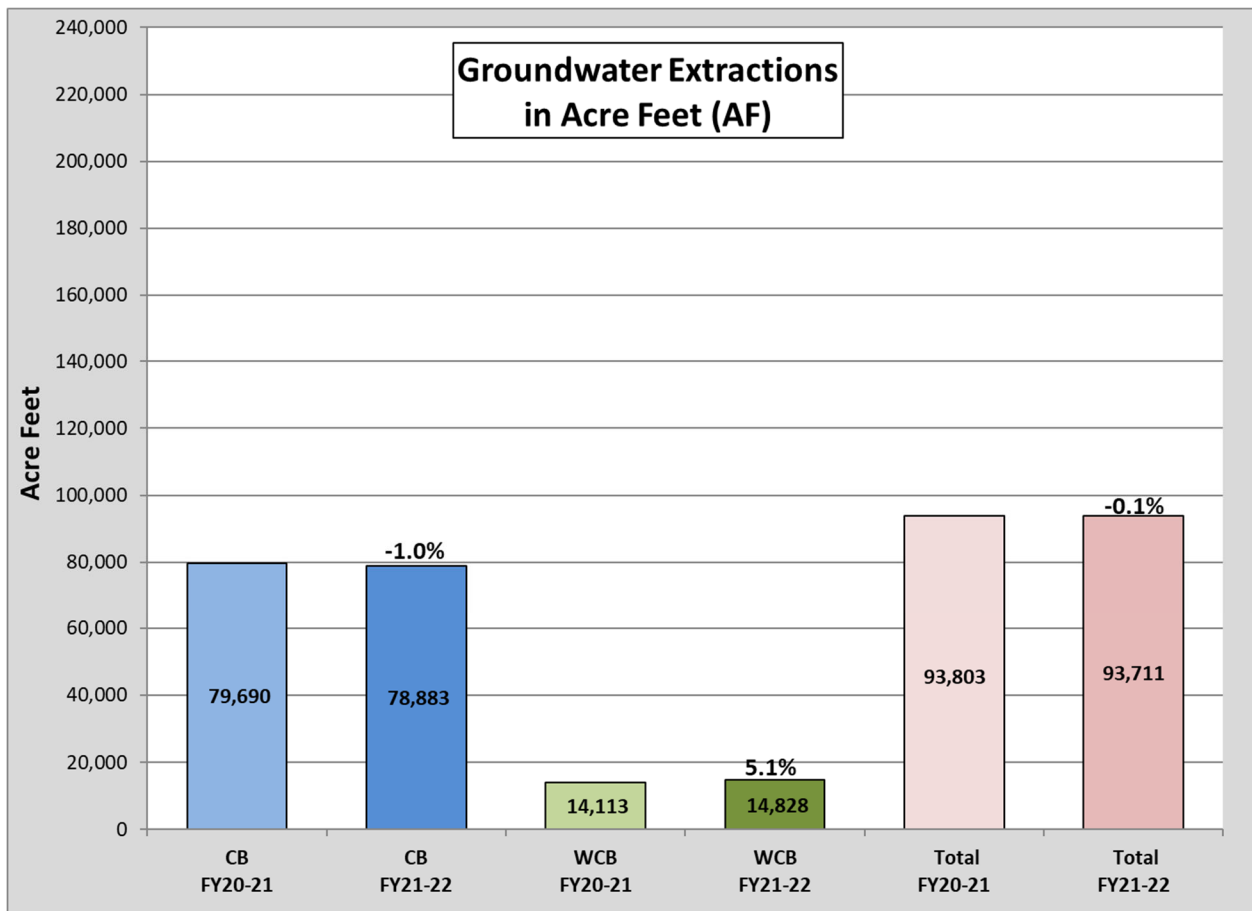


Preliminary numbers for the 2021-22 Fiscal Year show that the West Coast Barrier has used 4,494 acre feet of the total 16,000 acre feet planned for injection, 28% of total for the Fiscal Year. The Dominguez Gap Barrier used 3,395 acre feet of the total 8,000 acre feet planned for injection, 42% of the total for the Fiscal Year. The Alamitos Barrier, on the WRD side, used 1,841 acre feet of the total 4,500 acre feet planned for injection, 41% of the total for the Fiscal Year.



Assessable Pumping (Fiscal Year 2021-2022)

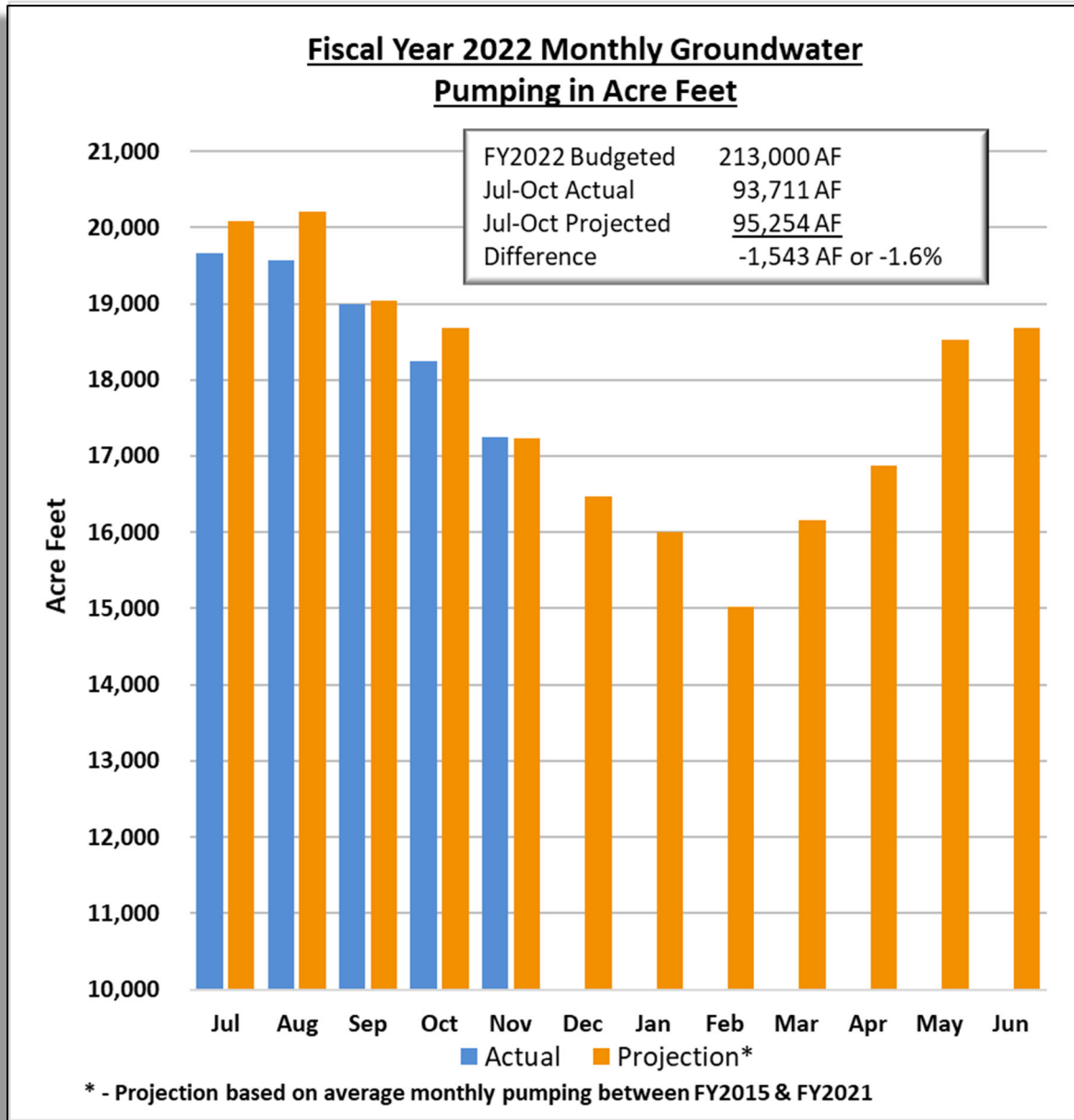
Preliminary numbers for groundwater production in the District for the Fiscal Year 2021-22 (July-November 2021) indicate pumping in the Central Basin was down 807 acre feet from the same time of the previous fiscal year (-1.0%) and the West Coast Basin pumping was 715 acre feet higher than the previous fiscal year (+5.1%). The total pumping is 93,711 acre feet compared to 93,803 acre feet during the same time the previous year for an decrease of 92 acre feet, or -0.1%. The current pumping data do not include six (6) Central Basin pumpers and three (3) West Coast Basin pumper who have not yet reported for an estimated 4 additional acre feet.



Interesting...

...other kinds of wells are used for municipal systems, industry, agriculture, and quality monitoring. Groundwater accounts for 39 percent of all the water used by U.S. municipalities.

Preliminary numbers indicate 93,711 acre feet have been pumped this fiscal year and is 1.6% below the projected goal of 95,254 acre feet (or -1,543 acre feet). Monthly actual production versus the 7-year average monthly production projections (FY 2015 through 2021) are included in the chart below.



“Water can do without fish; fish cannot do without water.” - *Chinese Proverb*



For the Fiscal Year 2021-22 (July-Nov 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.

Production Trends - Central Basin				
Top 5 Producing <u>by Volume</u> (AF)	Jul-Nov 2020	Jul-Nov 2021	Difference	% Change
San Gabriel Valley Water Co.	23.65	1,145.30	1121.65	97.94
Los Angeles, City - CB	332.12	1,367.45	1035.33	75.71
Downey, City	6,198.48	6,527.34	328.86	5.04
Vernon, City	2,574.69	2,870.18	295.49	10.30
Santa Fe Springs, City	781.48	1,019.24	237.76	23.33
Bottom 5 Producing <u>by Volume</u> (AF)	Jul-Nov 2020	Jul-Nov 2021	Difference	% Change
Golden State Water Co. - CB	9,382.02	8,153.27	-1228.75	-15.07
Paramount, City	1,747.83	1,169.85	-577.98	-49.41
Signal Hill, City	829.22	333.23	-495.99	-148.84
Cal. Water Service Co. (East LA)	4,537.67	4,069.38	-468.29	-11.51
Bell Gardens, City	466.93	202.17	-264.76	-130.96

Production Trends – West Coast Basin				
Top 5 Producing <u>by Volume</u> (AF)	Jul-Nov 2020	Jul-Nov 2021	Difference	% Change
Phillips 66 Co. - Alpha 7093	2,160.09	2,625.81	465.72	17.74
Tesoro Refining & Marketing Co., LLC	3,418.46	3,820.40	401.94	10.52
Cal. Water Service Co. Alpha 7050	387.52	720.55	333.03	46.22
Golden State Water Co. - WB	1,706.00	1,992.85	286.85	14.39
Torrance Refining & Marketing Co.	188.14	400.64	212.50	53.04
Bottom 5 Producing <u>by Volume</u> (AF)	Jul-Nov 2020	Jul-Nov 2021	Difference	% Change
Inglewood, City	1,340.29	932.49	-407.80	-43.73
West Basin Brewer Desalter	349.55	0.00	-349.55	-100.00
Cal. Water Service Co. Dominguez - WB	1,096.27	822.67	-273.60	-33.26
Cal. Water Service Co./Hawthorne Lease	105.72	14.61	-91.11	-623.61
Rolling Hills Country Club	177.00	127.00	-50.00	-39.37

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.