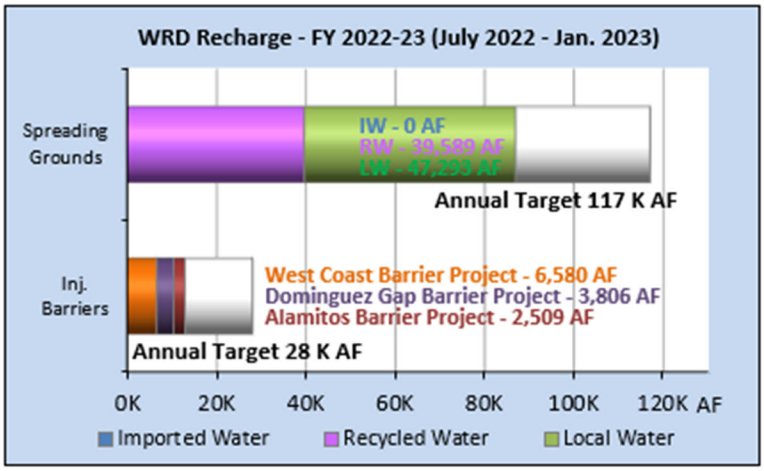
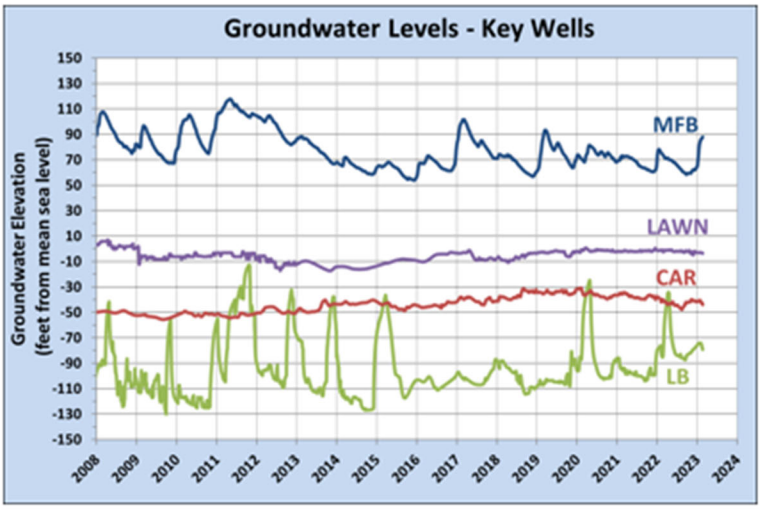
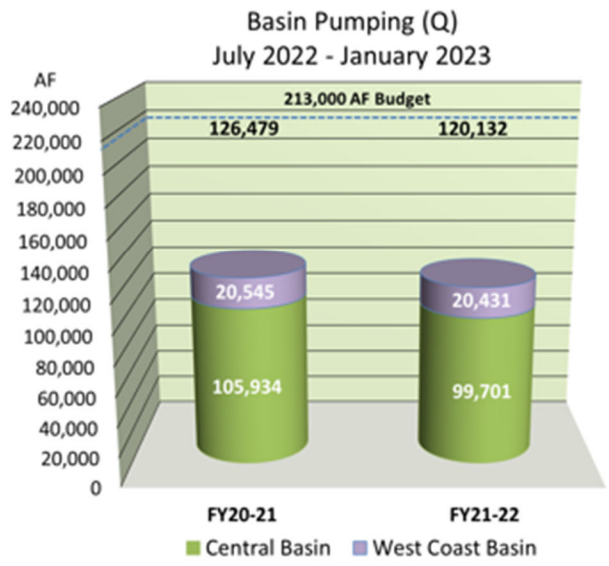
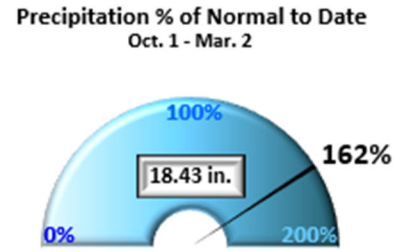
GROUNDWATER BASIN UPDATE
FOR MARCH 2023

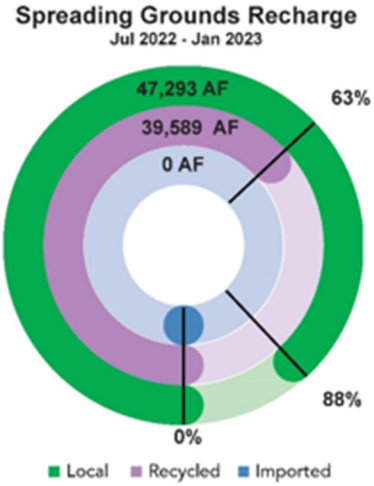
GROUNDWATER BASINS *AT A GLANCE**

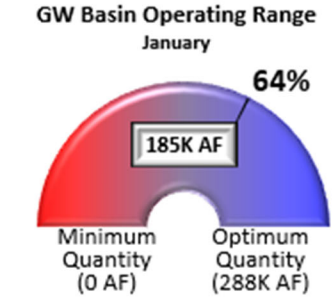


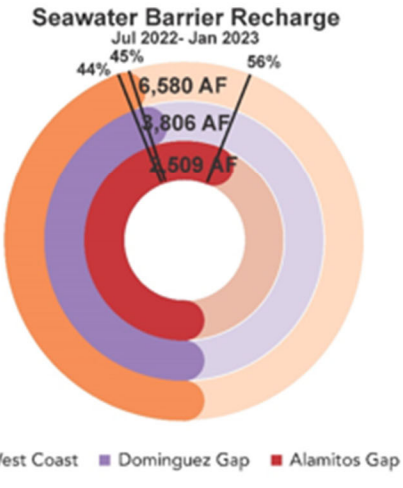












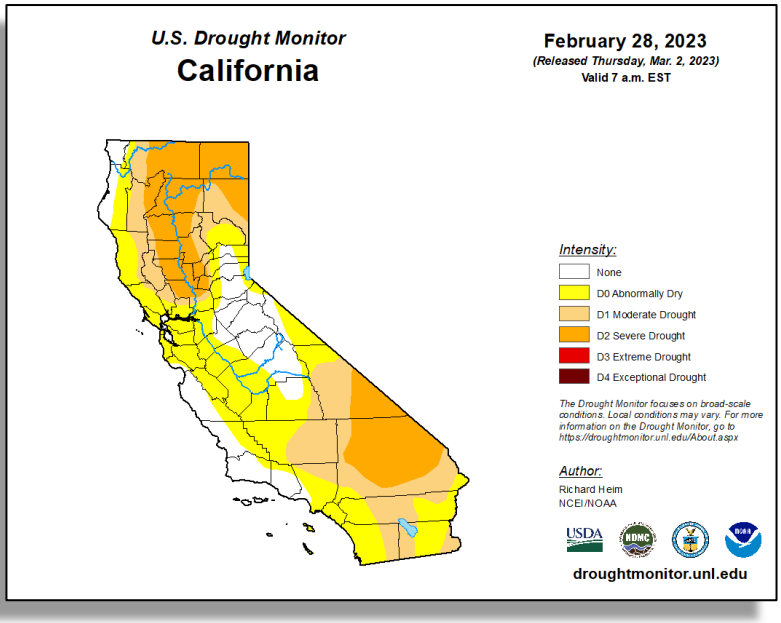
* - Preliminary numbers, subject to change.

SUMMARY

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

Precipitation (October 1, 2022 – March 2, 2023)

The WRD precipitation index reports that for the 2022-23 Water Year, there has been above average rainfall (18.43 inches) through March 2, 2023. The normal rainfall for this time period is 11.36 inches, so the District is 162% of normal. As of February 28, 2023, the U.S. Drought Monitor is reporting 83% of the State is abnormally dry (-16%), 49% under moderate (-36%), 25% under severe (-8%), 0% under extreme (same), and 0% exceptional (same) drought conditions.



Snowpack (Snow Water Content [SWE] as of March 2, 2023)

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: 02-Mar-2023	
Number of Stations Reporting	29
Average snow water equivalent	39.5"
Percent of April 1 Average	135%
Percent of normal for this date	152%

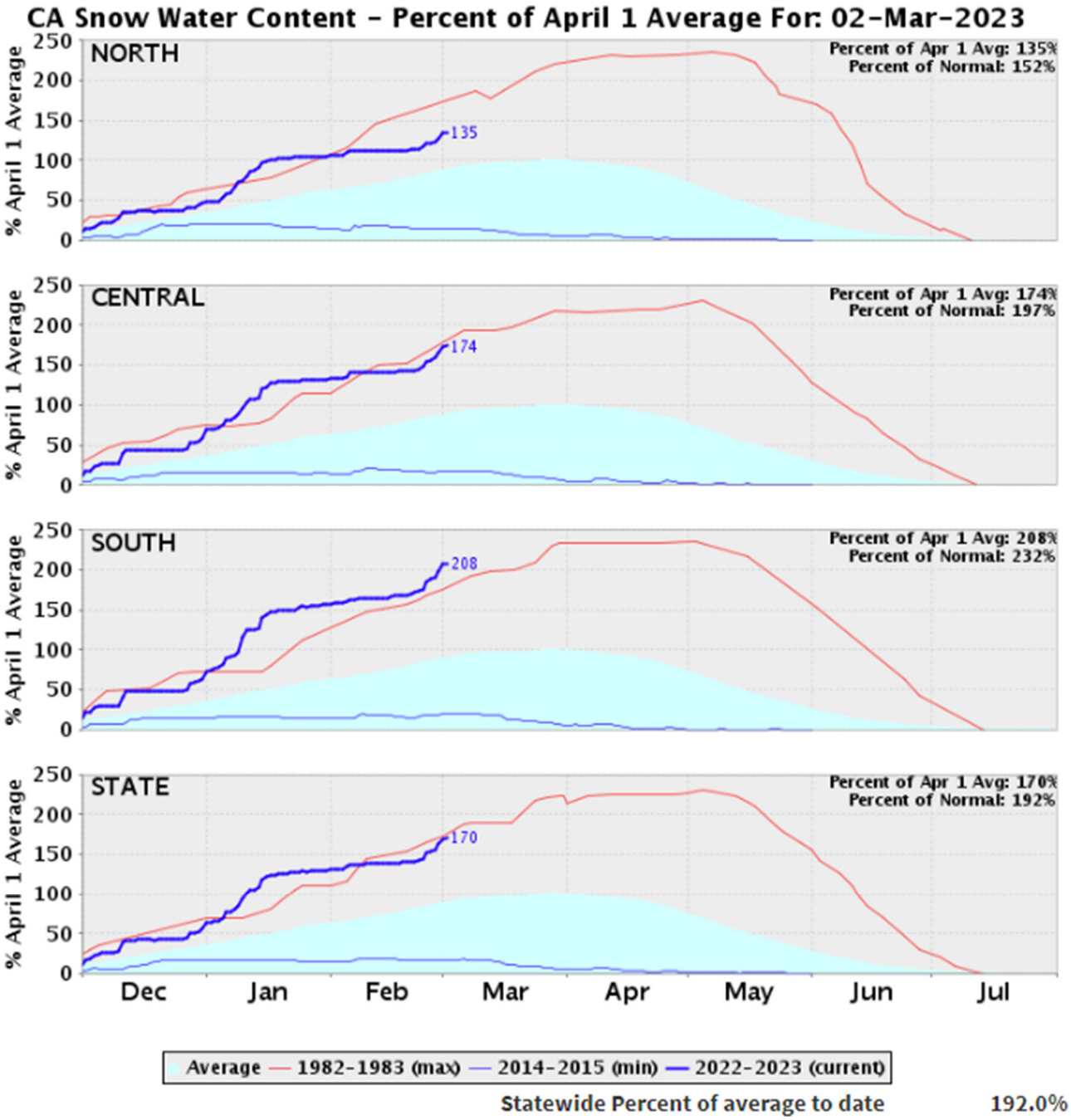
CENTRAL	
Data For: 02-Mar-2023	
Number of Stations Reporting	49
Average snow water equivalent	46.4"
Percent of April 1 Average	174%
Percent of normal for this date	197%

SOUTH	
Data For: 02-Mar-2023	
Number of Stations Reporting	29
Average snow water equivalent	45.5"
Percent of April 1 Average	208%
Percent of normal for this date	232%

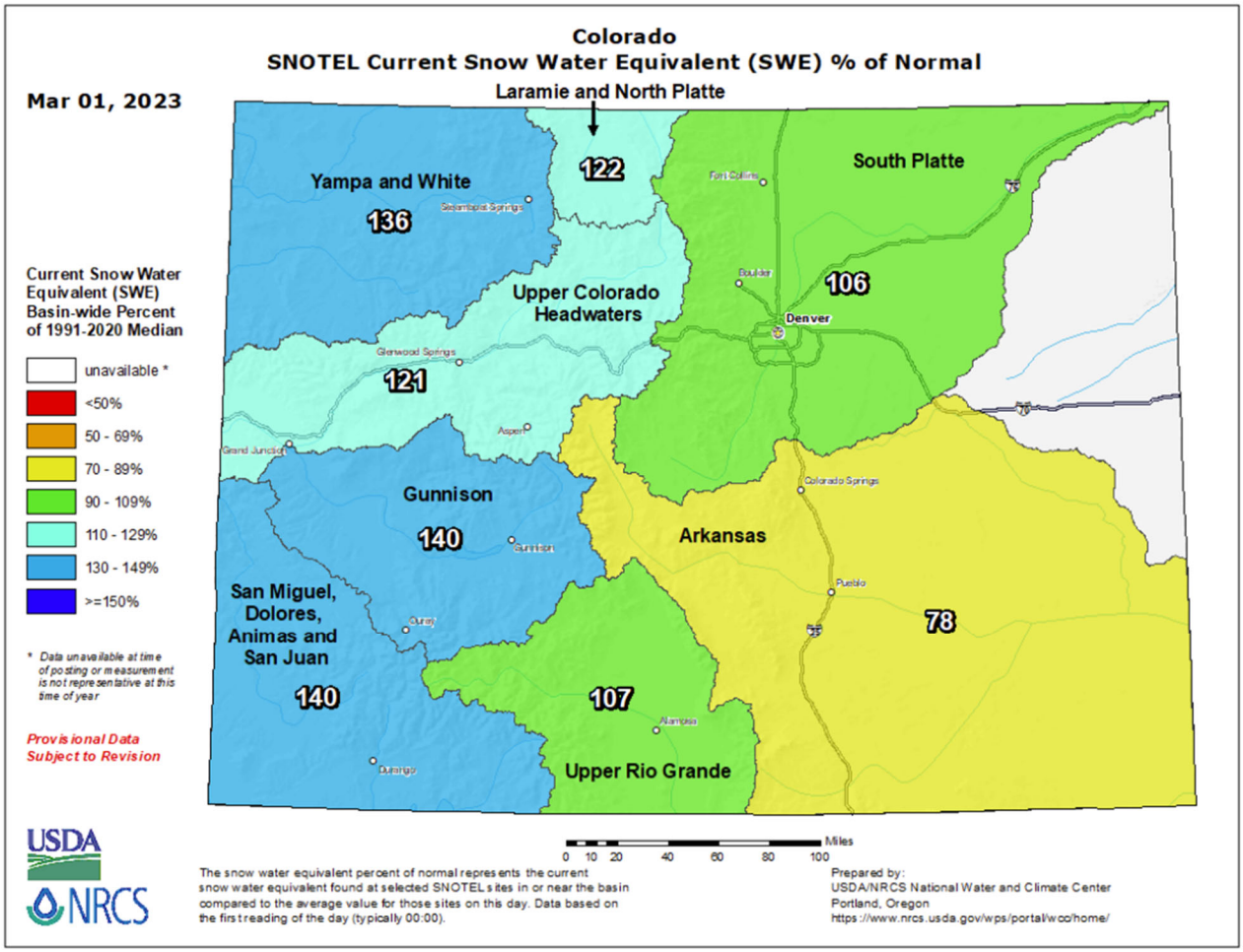
STATEWIDE SUMMARY	
Data For: 02-Mar-2023	
Number of Stations Reporting	107
Average snow water equivalent	44.3"
Percent of April 1 Average	170%
Percent of normal for this date	192%

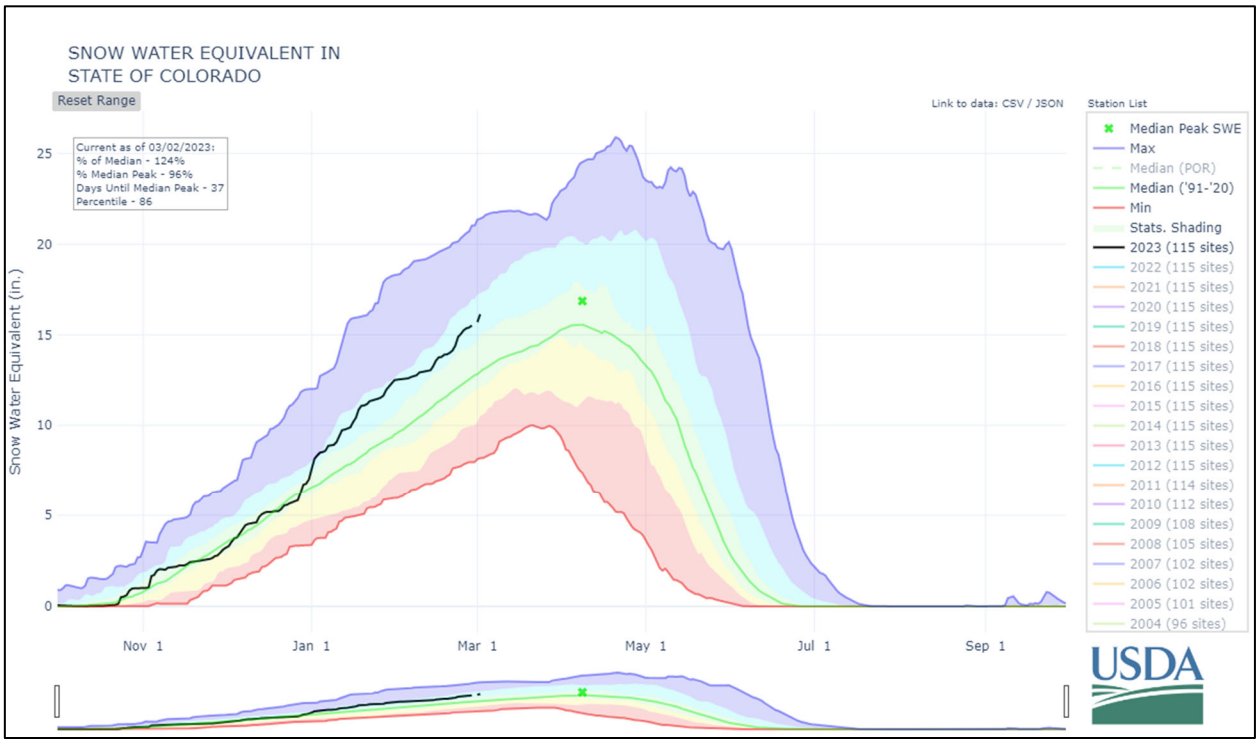
Snow Water Equivalent (SWE):

Northern Sierra Nevada – 39.5 in., 135% of April 1st average and 152% of normal to date
Central Sierra Nevada – 46.4 in., 174% of April 1st average and 197% of normal to date
Southern Sierra Nevada – 45.5 in., 208% of April 1st average and 232% of normal to date
Statewide Summary *– 44.3 in., 170% of April 1st average and 192% of normal to date*



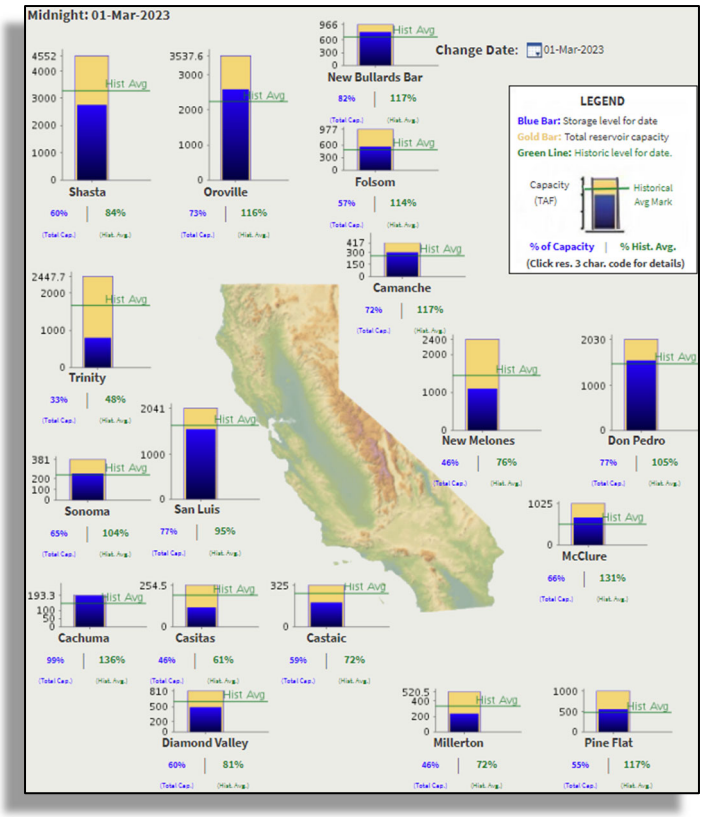
Colorado Snowpack Data





Reservoirs (as of March 1, 2023)

For the 21 reservoirs reported monthly to the committee, water levels have increased in 16 of 21 reservoirs. The largest increase occurred at Lake Silverwood (0.62 million acre feet, MAF). The smallest increase occurred at New Bullards Bar Reservoir (<0.01 MAF). The largest decrease (-0.82 MAF) occurred at Perris Lake. The smallest decrease (<0.01 MAF) occurred at Diamond Valley Lake.



MWD Reservoirs (SWP)
Storage in Million Acre Feet

Reservoir	Capacity	Storage	% Full	Change
Trinity Lake (CLE)	2.45	0.80	33%	0.03
Lake Shasta (SHA)	4.55	2.75	60%	0.15
Lake Oroville (ORO)	3.54	2.59	73%	0.23
New Bullards Bar (BUL)	0.97	0.79	82%	0.00
Folsom Lake (FOL)	0.98	0.56	57%	0.06
Camanche Lake (CMN)	0.42	0.30	72%	0.02
New Melones L. (NML)	2.40	1.10	46%	0.09
Don Pedro Res (DNP)	2.03	1.56	77%	0.06
Lake McClure (EXC)	1.02	0.68	66%	0.04
Lake Sonoma (WRS)	0.38	0.25	65%	0.01
San Luis Res (SNL)	2.04	1.57	77%	0.54
Millerton Lake (MIL)	0.52	0.24	46%	-0.10
Pine Flat Res. (PNF)	1.00	0.55	55%	0.02
Cachuma Lake (CCH)	0.19	0.14	73%	-0.05
Castaic Lake (CAS)	0.33	0.19	59%	0.01
Casitas Lake (CSI)	0.25	0.12	46%	0.01
Perris Lake (PRR)	0.13	0.09	72%	-0.82
L. Silverwood (SLW)	0.08	0.69	882%	0.62

MWD Reservoirs (CRA)
Storage in Million Acre Feet

Reservoir	Capacity	Storage	% Full	Change
Lake Powell	24.32	5.33	22%	-0.14
Lake Mead	26.12	7.48	29%	0.03
Diamond Valley L (DVL)	0.81	0.49	60%	0.00

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

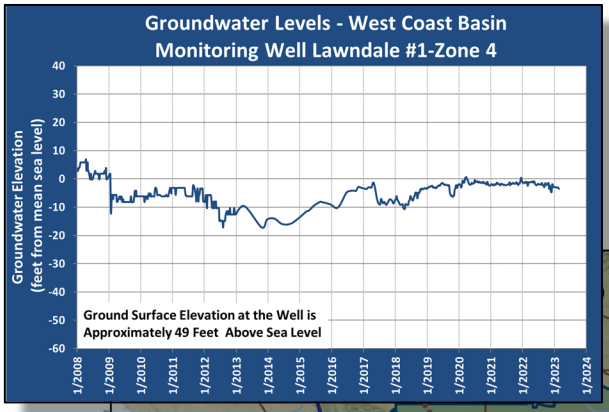
These 21 reservoirs are at 38% capacity (28.27 MAF) which is up 0.82 MAF from the prior month (+0.93 MAF State Water Project [SWP] and -0.11 MAF Colorado River Aqueduct [CRA]).

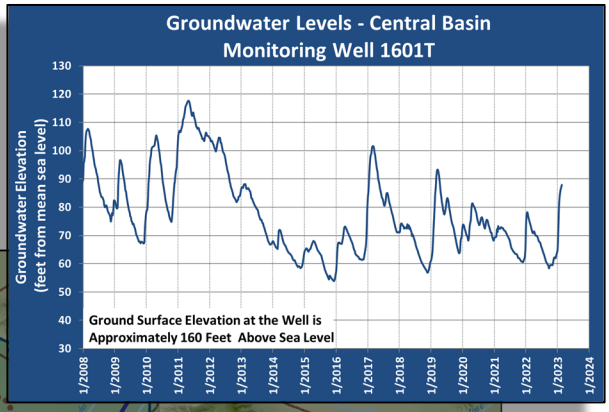
Did you know?

Water (H2O) exists in three physical states – solid (ice), liquid (water), and vapor water.

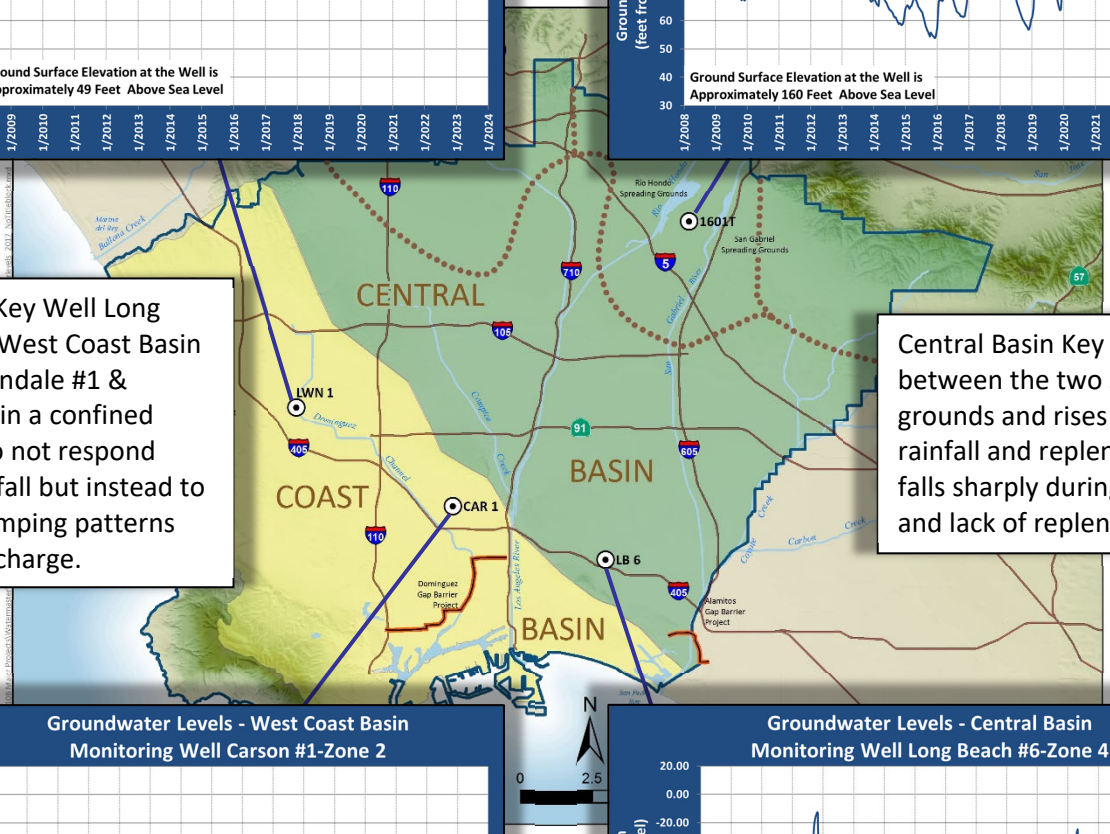
Groundwater Levels (through February 24, 2023)

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

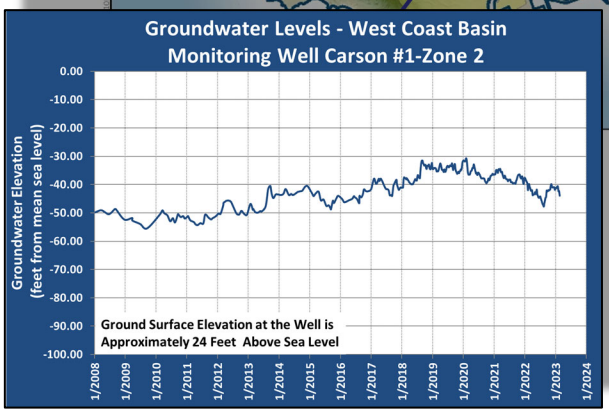


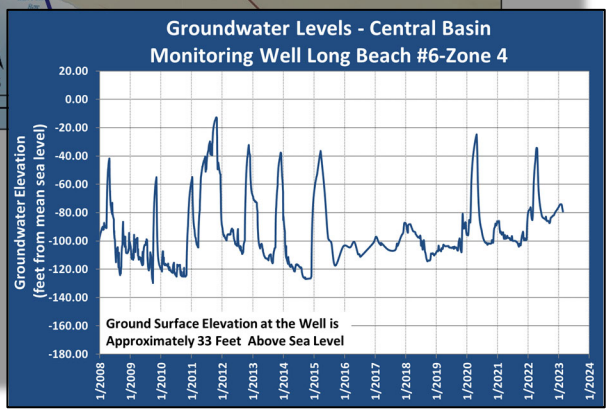


Central Basin Key Well Long Beach #6 and West Coast Basin Key Wells Lawndale #1 & Carson #1 are in a confined aquifer and do not respond readily to rainfall but instead to changes in pumping patterns and barrier recharge.



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	Increased 3.62 feet	Increased 13.9 feet
Central Basin Key Well Long Beach #6_4	**Decreased 5.2 feet**	Increased 5.6 feet
West Coast Basin Key Well Lawndale #1_4	Decreased 0.5 feet	Decreased 2.4 feet
West Coast Basin Key Well Carson #1_2	**Decreased 3.4 feet**	Decreased 4.1 feet

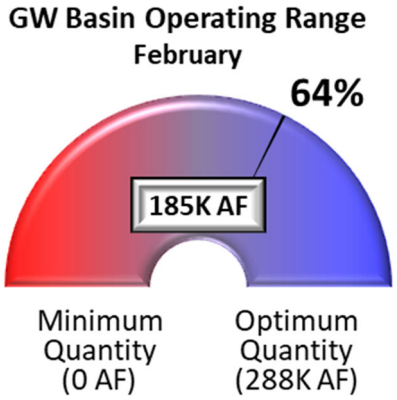
Bold indicates a change in direction (decreasing or increasing) since the last report.

Optimum and Minimum Groundwater Quantity (February 1, 2023)

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 February 24, 2023, has been estimated at 715,186 acre feet (subject to change), which is 184,814 acre feet above the Minimum Quantity and 103,186 acre feet below the Optimum Quantity. The Basin is at 64% of Optimum Quantity which is 5% higher than what was reported last month (~14,000 AF higher).

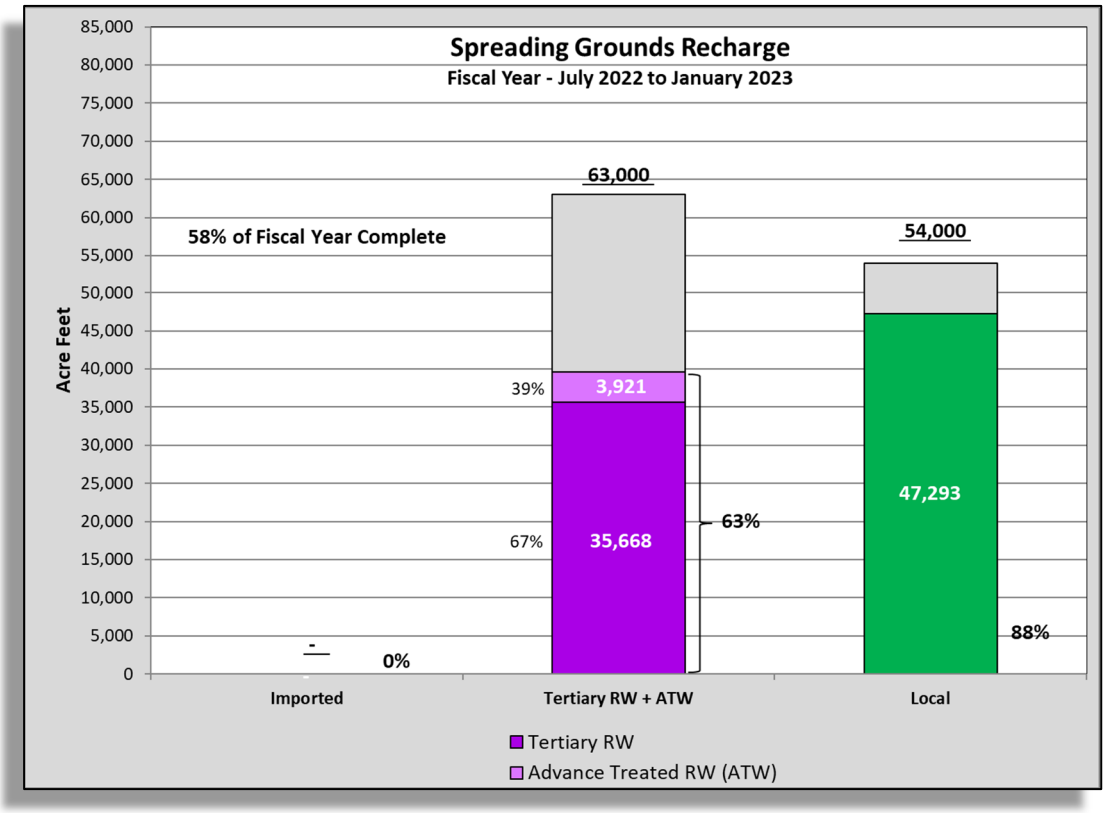


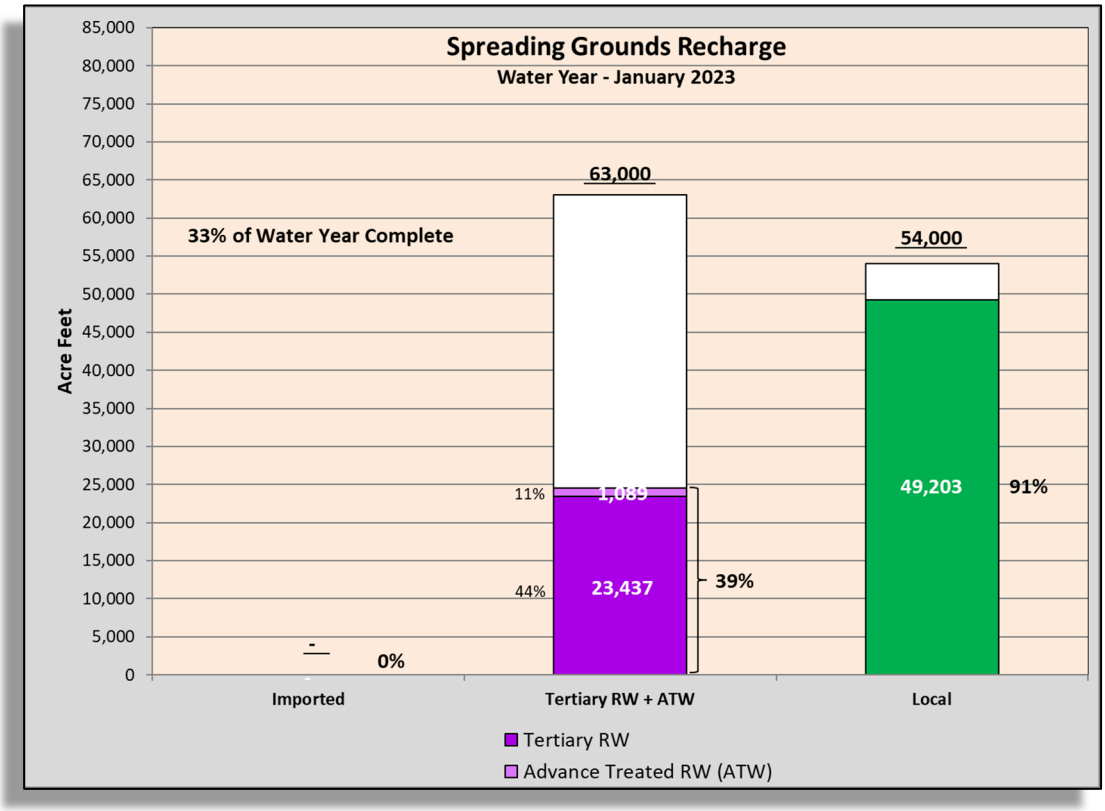
FACT:

Liquid water gathers the individual molecules in the closest spacing possible (i.e. tightly packed). As a result, water is not compressible since the molecules are already as close to each other as possible.

Montebello Forebay Spreading Grounds (July 2022 – January 2023)

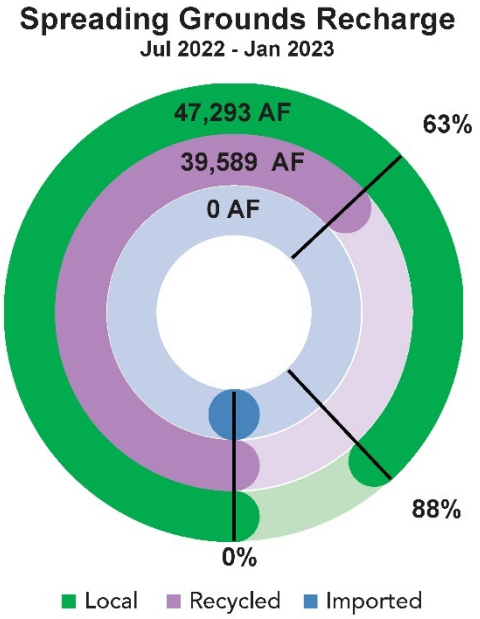
The following Charts shows the preliminary spreading grounds replenishment water for the current Fiscal Year (2022-23; 6 months) and Water Year (2022-23; 3 months):



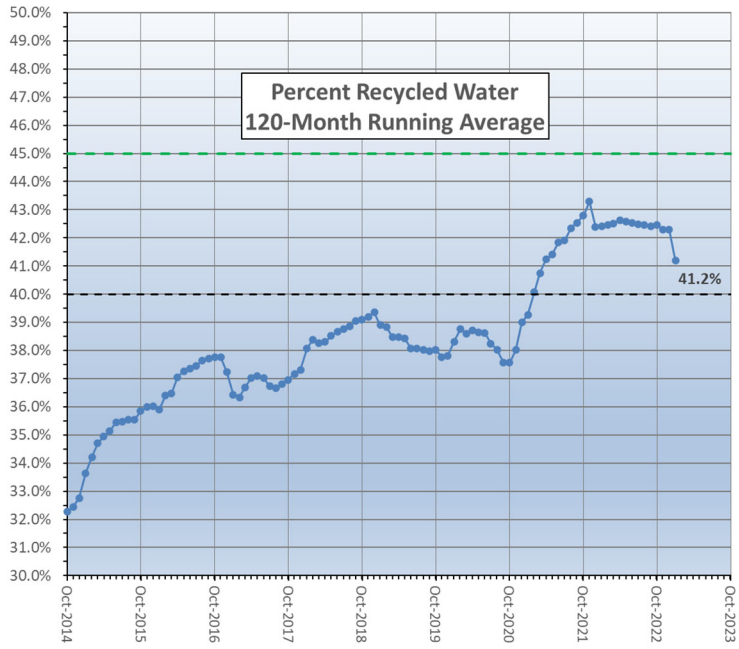


No imported water purchases are planned for Fiscal Year 2022-23.

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, 47,293 acre feet of local water capture has been reported by the LACPW.



Preliminary numbers for the 2022-23 Fiscal Year show that approximately 39,589 acre feet of recycled water has been recharged with 3,921 acre feet consisting of advanced treat water from the ARC AWTF and 35,668 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 41.2% 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.

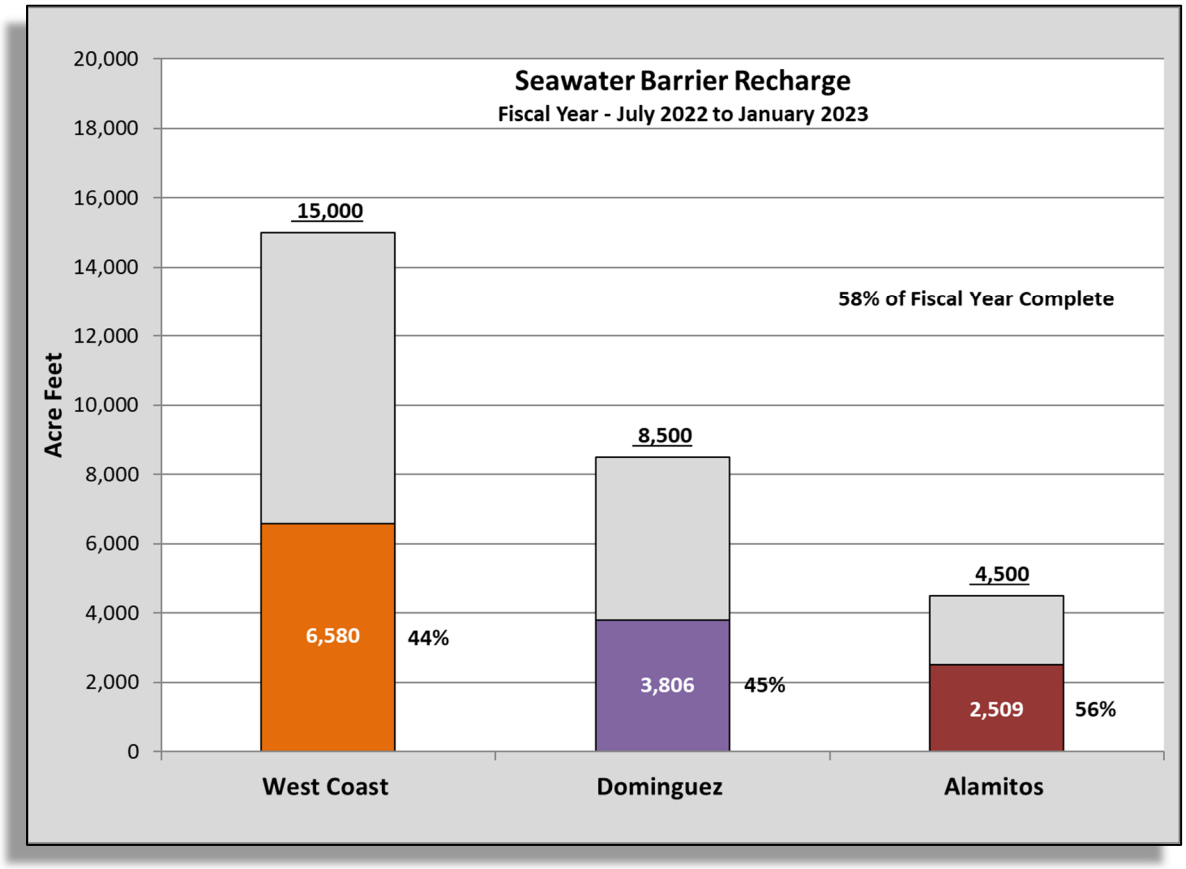


<u>Tertiary Recycle Water Permit Update</u>

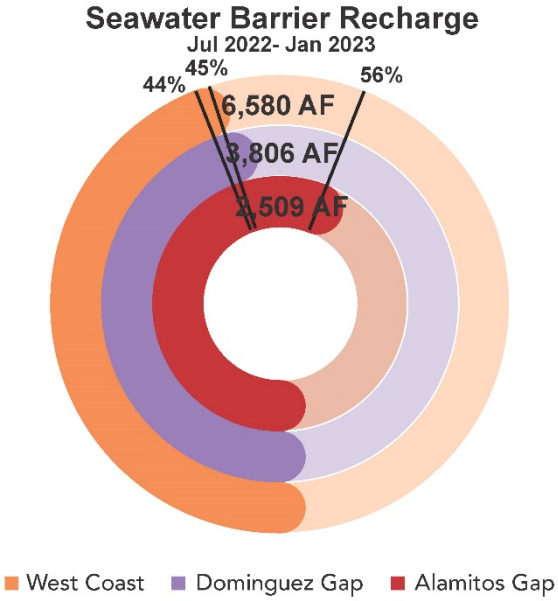
The permit is continuing to progress with LACSD and WRD staff working to update pertinent sections of the new Title 22 Engineering Report. Due to the continued mega drought and recent emergency drought proclamation by Governor Newsom, LACSD and WRD submitted a request to modify the recycled water contribution percentage to 50% and the advanced treated water classification to diluent in a letter to the LARWQCB and CA-DDW dated July 8, 2022. LACSD and WRD staff are targeting the end 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.

Seawater Barrier Well Injection and Replenishment (July 2022 – January 2023)

The following Chart shows the barrier water injection:

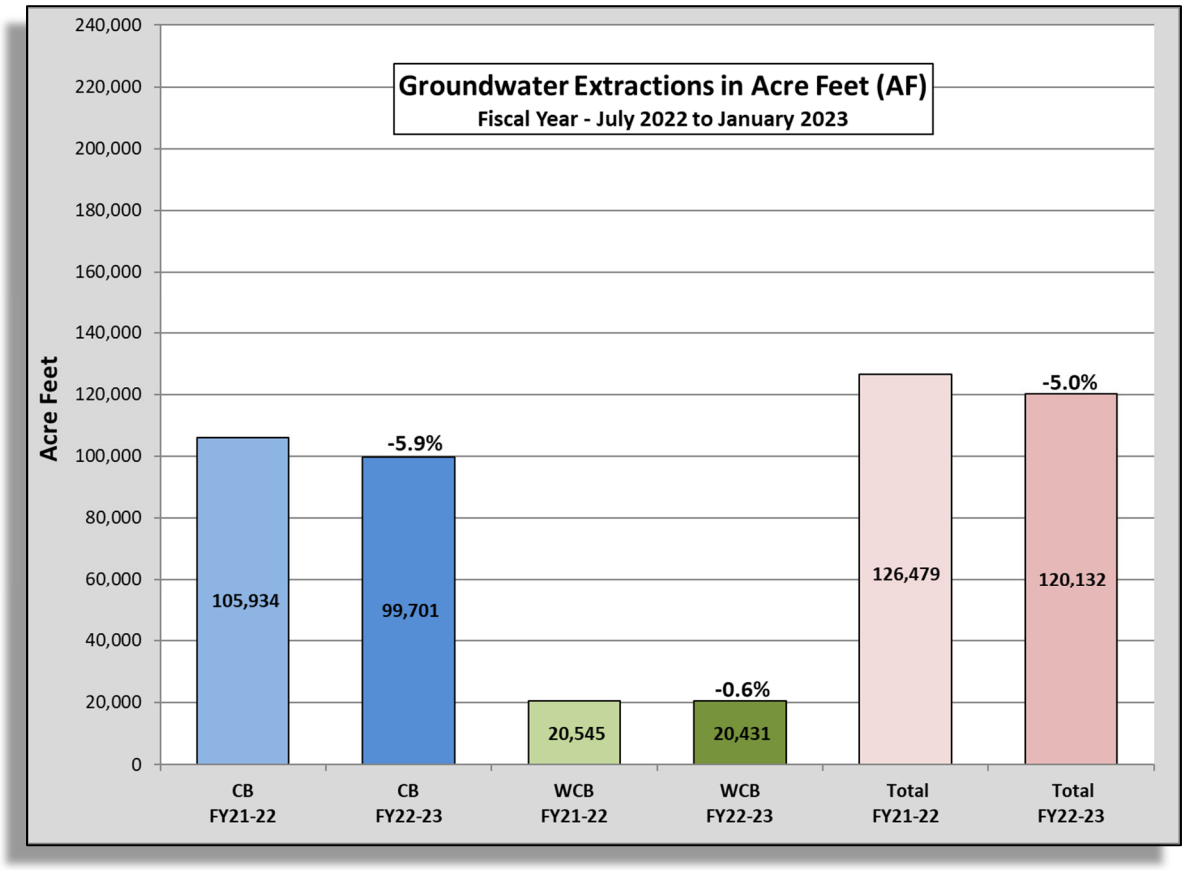


Preliminary numbers for the 2022-23 Fiscal Year show that the West Coast Barrier has used 6,580 acre feet of the total 15,000 acre feet planned for injection, 44% of total for the Fiscal Year. The Dominguez Gap Barrier used 3,806 acre feet of the total 8,500 acre feet planned for injection, 45% of the total for the Fiscal Year. The Alamitos Barrier, on the WRD side, used 2,509 acre feet of the total 4,500 acre feet planned for injection, 56% of the total for the Fiscal Year.



Total Pumping (Fiscal Year 2022-23, July 2022 – January 2023)

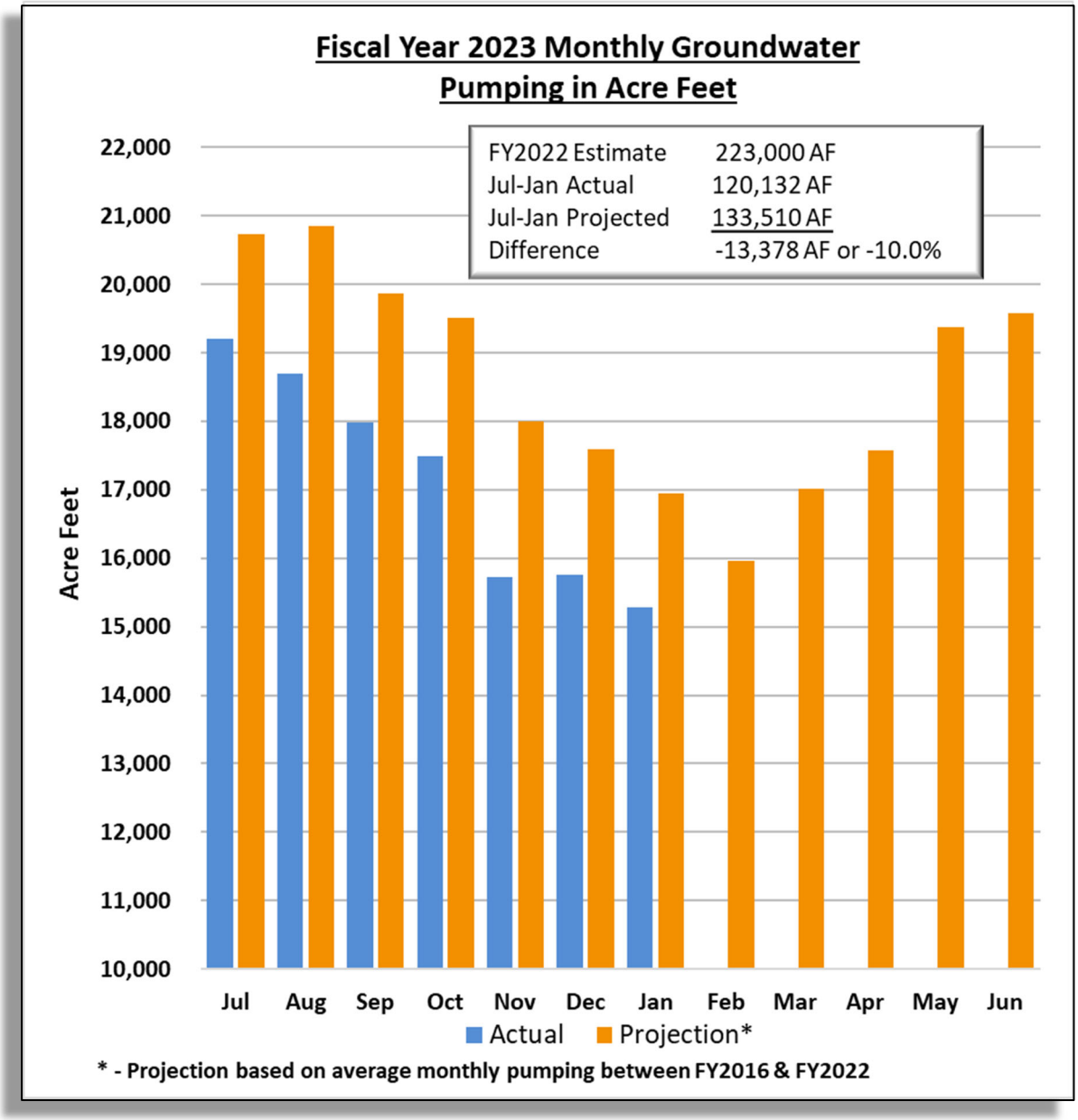
Preliminary numbers for groundwater production in the District for the Fiscal Year 2022-23 (July-January) indicate total pumping in the Central Basin was down 6,233 acre feet from the same time of the previous fiscal year (-5.9%) and the West Coast Basin total pumping was 113.5 acre feet lower than the previous fiscal year (-0.6%). The total pumping is 120,132 acre feet compared to 126,479 acre feet during the same time the previous year for a decrease of 6,347 acre feet, or -5.0%. The current pumping data do not include four (4) Central Basin pumpers and three (3) West Coast Basin pumpers who have not yet reported for an estimated 4 additional acre feet.



Interesting…

When water freezes the molecules algin themselves in a highly organized spacing and forms ice. As a result, ice occupies a larger physical space than the same amount of water (i.e. ice expands). This extra spacing allows ice to have a lower density that water, hence ice floats.

Preliminary numbers indicate 120,132 acre feet have been pumped this fiscal year and is 10.0% below the projected fiscal year to date goal of 133,510 acre feet (or -13,378 acre feet). Monthly actual production versus the 7-year average monthly production projections (FY 2016 through 2022) are included in the chart below.



"Water has more properties that are beneficial to human beings than any other substance. Also, it can drown you."

– Author Katheryn Davis

For the Fiscal Year 2022-23 (July 2022 - January 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 Trends - Central Basin				
Top 5 Producing by Volume (AF)	Jul 2021-Nov 2021	Jul 2022-Nov 2022	Difference	% Change
Los Angeles, City - CB	2,375.10	3,289.48	914.38	27.80
Cal. Water Service Co. (East LA)	5,833.39	6,229.15	395.76	6.35
South Gate, City	4,768.65	4,895.84	127.19	2.60
Golden State Water Co. - CB	10,937.03	10,980.42	43.39	0.40
American Text. M.	3.23	31.27	28.04	89.67
Bottom 5 Producing by Volume (AF)	Jul 2021-Nov 2021	Jul 2022-Nov 2022	Difference	% Change
Long Beach, City - CB	18,512.02	17,255.19	-1256.83	-7.28
Santa Fe Springs, City	1,402.06	768.72	-633.34	-82.39
Whittier, City	3,425.87	2,871.97	-553.90	-19.29
Downey, City	8,566.63	8,149.37	-417.26	-5.12
Cal. Water Service Co. Dominguez - CB	844.68	473.12	-371.56	-78.53

Production Trends – West Coast Basin				
Top 5 Producing by Volume (AF)	Jul 2021-Nov 2021	Jul 2022-Nov 2022	Difference	% Change
Tesoro Refining	5,500.70	6,173.71	673.01	10.90
Cal. Water Service Co. Dominguez - WB	1,144.74	1,694.61	549.87	32.45
Golden State Water Co. - WB	2,865.08	3,222.61	357.53	11.09
Cal. Water Service Co./Hawthorne Lease	15.21	233.11	217.90	93.48
Manhattan Beach, City	91.18	247.41	156.23	63.15
Bottom 5 Producing by Volume (AF)	Jul 2021-Nov 2021	Jul 2022-Nov 2022	Difference	% Change
Phillips 66 Co. - Alpha 7093	3,684.86	3,169.76	-515.10	-16.25
Cal. Water Service Co. Alpha 7050	911.04	478.45	-432.59	-90.41
Torrance, City	1,042.89	807.30	-235.59	-29.18
Inglewood, City	1,255.27	1,095.02	-160.25	-14.63
Roman Catholic Archbishop - WB	145.81	101.49	-44.32	-43.67