# COLORADO WATER SUPPLY CONDITIONS UPDATE

FROM THE OFFICE OF THE STATE ENGINEER: COLORADO DIVISION OF WATER RESOURCES ROOM 818, 1313 SHERMAN ST., DENVER, CO 80203 303-866-3581; <u>www.water.state.co.us</u>

January 1, 2021

The Surface Water Supply Index (SWSI) is used as an indicator of water supply conditions in the seven major river basins of the state and in each of the 41 smaller watersheds, or HUCs. The Colorado Water Conservation Board (CWCB) completed a major revision to the Colorado Drought Plan in 2010. At that time, Colorado adopted a revised SWSI analysis based on the components shown below, which vary depending on the time of year. The revised SWSI is based on a ranking of total volume in a HUC or major river basin ranked against similar volumes in historical years. For instance, in January, the total volume in a HUC is based on the forecasted runoff at specific locations plus the volume in storage in specific reservoirs, all within the HUC. That total volume is ranked against similar total volumes that occurred each January between 1970 and 2010.

Time Period SWSI Components	
January 1 - June 1	Forecasted Runoff + Reservoir Storage
July 1 - September 1	Previous Month's Streamflow + Reservoir Storage
October 1 - December 1	Reservoir Storage

In 2015, CWCB and the Division of Water Resources (DWR) (both Divisions of the Colorado Department of Natural Resources) completed a software project to implement an automated calculation of the SWSI and to document the underlying hydrologic data. July 1, 2015 was the first month that the automated DNR SWSI was published. The results of each month's analysis are summarized within this report and additional information, maps & data are available at: <u>https://dwr.colorado.gov/services/water-administration/drought-and-swsi</u>. This report also contains updates about current regional conditions and water matters prepared by each DWR Division Office.

The SWSI calculation for the winter/spring season (January 1 to June 1) is based on reservoir storage at the end of last month, in this case December 31, plus the forecasted streamflow runoff volume for the runoff season (April through September in most basins). The following SWSI values were computed for each of the seven major basins for January 1, 2021. The following SWSI values were computed for each of the seven major basins for January 1, 2021. Water supply conditions, as represented by water in storage, range from well below normal in the Gunnison River Basin to normal in the Arkansas River Basin.

Basin	January 1 SWSI	Change from Previous Month	Change from Previous Year
Arkansas	0.0	-0.8	-1.8
Colorado	-2.8	-2.8	-2.3
Gunnison	-3.1	0.3	-2.7
Rio Grande	-0.9	-2.0	-0.7
San Juan-Dolores	-2.7	-1.9	-2.7
South Platte	-1.7	-0.7	-3.2
Yampa-White	-2.1	-4.5	-1.5

\*Last month's SWSI was based only on reservoir storage volumes, this month is based on forecasted streamflow plus reservoir storage volumes. Therefore, the change from previous month is not a comparison of two "like" indices.

				SWSI Scale				
-4	-3	-2	-1	0	1	2	3	4
Severe		Moderate		Near Normal		Above Normal	At	oundant
Drought		Drought		Supply		Supply		Supply



SURFACE WATER SUPPLY INDEX FOR COLORADO BY MAJOR RIVER BASIN

January 1, 2020

# SURFACE WATER SUPPLY INDEX FOR COLORADO BY HUC



Date Prepared: 1/13/2021 4:56:59 PM

Basin	HUC ID	HUC Name	SWSI	Reservoir Storage NEP	Forecast Flow NEP	Total Vol (AF)
	11020006	Huerfano	-0.72	16	54	22,800
⊳	11020010	Purgatoire	-0.74	45	45	56,200
vrka	11020005	Upper Arkansas-Lake Meredith	-0.34	44	49	336,896
Insa	11020001	Arkansas Headwaters	-1.31	37	41	359,991
SI	11020009	Upper Arkansas-John Martin Reservoir	-0.50	53	48	432,270
	11020002	Upper Arkansas	0.27	71	50	491,626
	14010003	Eagle	-2.64	N/A	18	240,000
Co	14010002	Blue	-3.07	21	13	264,188
lora	14010004	Roaring Fork	-2.58	3	21	542,222
ldo	14010001	Colorado Headwaters	-2.41	83	12	1,081,572
	14010005	Colorado Headwaters-Plateau	-2.90	10	15	1,574,094
	14020003	Tomichi	-1.37	53	33	48,204
	14030003	San Miguel	-2.83	N/A	16	80,000
Gu	14020006	Uncompahgre	-1.99	46	20	137,852
nni	14020004	North Fork Gunnison	-3.13	5	13	166,159
son	14020001	East-Taylor	-2.30	43	22	271,347
	14020005	Lower Gunnison	-2.86	N/A	16	840,000
	14020002	Upper Gunnison	-3.03	9	29	1,093,632
Ri	13010004	Saguache	-1.12	N/A	37	25,000
o G	13010002	Alamosa-Trinchera	-0.53	22	45	126,758
ran	13010005	Conejos	-1.01	35	41	180,235
de	13010001	Rio Grande Headwaters	-0.86	84	34	438,440
Sa	14080105	Middle San Juan	-3.14	50	11	11,386
in J	14080107	Mancos	-3.60	18	8	16,746
uan	14080102	Piedra	-2.05	N/A	25	130,000
-Dc	14080104	Animas	-3.27	22	13	295,555
olor	14030002	Upper Dolores	-2.23	42	23	342,274
es	14080101	Upper San Juan	-2.01	10	29	450,805
	10190004	Clear	-2.33	N/A	22	85,000
	10190001	South Platte Headwater	-1.57	44	24	178,400
So	10190005	St. Vrain	-2.77	35	23	187,446
uth	10190007	Cache La Poudre	-2.04	29	28	288,973
Pla	10190002	Upper South Platte	-2.77	12	17	370,600
tte	10190006	Big Thompson	0.60	60	21	550,622
	10190003	Middle South Platte-Cherry Creek	-2.81	5	23	633,200
	10190012	Middle South Platte-Sterling	-2.60	32	23	727,000
۲a	10180001	North Platte Headwaters	-2.51	N/A	20	118,000
Jute	14050005	Upper White	-2.41	N/A	21	180,000
oa-\	14050003	Little Snake	-2.00	N/A	26	215,000
Nhi	14050001	Upper Yampa	-2.18	82	24	494,714
te	14050002	Lower Yampa	-1.94	N/A	27	600,000

January 1, 2020 SWSI Values by HUC and Non Exceedance Probabilities (NEP)

NEP is non exceedance percentage for total reservoir storage and streamflow forecast in HUC. Some HUCs do not have any reservoirs considered in the SWSI and are shown as "N/A". Total Vol is the volume of reservoir storage in the HUC plus the streamflow forecast. NEP is calculated compared to the volume historically occurring this month during the period 1970-2010. The following table lists each component considered in each HUC.

SWSI Color Scale:

4.0 (Severe Drought)	0.0 (Normal)	4.0 (Abundant Supply)

HUC ID	HUC Name	Component Name	Component Volume (AF)	Component NEP by Month
		CLEAR CREEK RESERVOIR	5,414	41
		TWIN LAKES RESERVOIR	31,338	22
11020001	Arkansas Headwaters	HOMESTAKE RESERVOIR	40,294	70
		TURQUOISE LAKE	72,945	34
		ARKANSAS RIVER AT SALIDA	210,000	41
		CUCHARAS RESERVOIR*	0	16
11020006	Huerfano	HUERFANO RIVER NEAR REDWING	10,900	41
		CUCHARAS RIVER AT BOYD RANCH NR LA VETA	11,900	64
11020010	Durgataira	TRINIDAD LAKE	16,200	45
11020010	Purgatoire	PURGATOIRE RIVER AT TRINIDAD	40,000	45
11020002	Lippor Arkonsos	PUEBLO RESERVOIR	191,626	71
11020002	upper Arkansas	PUEBLO RESERVOIR INFLOW	300,000	50
		HUERFANO RIVER NEAR REDWING	10,900	41
		CUCHARAS RIVER AT BOYD RANCH NR LA VETA	11,900	64
11020000	Upper Arkansas-John	ADOBE CREEK RESERVOIR	26,870	60
11020009	Martin Reservoir	PURGATOIRE RIVER AT TRINIDAD	40,000	45
		JOHN MARTIN RESERVOIR	42,600	53
		PUEBLO RESERVOIR INFLOW	300,000	50
	Upper Arkansas-Lake Meredith	LAKE HENRY	4,886	68
		MEREDITH RESERVOIR	9,210	45
11020005		HUERFANO RIVER NEAR REDWING	10,900	41
		CUCHARAS RIVER AT BOYD RANCH NR LA VETA	11,900	64
		PUEBLO RESERVOIR INFLOW	300,000	50
14010002	Plue	GREEN MOUNTAIN RESERVOIR	67,188	21
14010002	Dide	BLUE RIVER INFLOW TO GREEN MOUNTAIN RES	197,000	13
		WOLFORD MOUNTAIN RESERVOIR	54,372	98
14010001	Colorado Headwaters	WILLIAMS FORK RESERVOIR	72,200	74
		COLORADO RIVER NEAR DOTSERO	955,000	12
14010005	Colorado Headwaters-	VEGA RESERVOIR	4,094	10
14010005	Plateau	COLORADO RIVER NEAR CAMEO	1,570,000	15
14010003	Eagle	EAGLE RIVER BELOW GYPSUM	240,000	18
14010004	Popring Fork	RUEDI RESERVOIR	62,222	3
14010004	Kuaring Furk	ROARING FORK AT GLENWOOD SPRINGS	480,000	21
		TAYLOR PARK RESERVOIR	66,347	43
14020001	East-Taylor	TAYLOR R INF TO TAYLOR PARK RESERVOIR	75,000	25
		EAST RIVER AT ALMONT	130,000	24
14020005	Lower Gunnison	GUNNISON RIVER NR GRAND JUNCTION	840,000	16
14020004	North Fork Guppicon	PAONIA RESERVOIR	1,159	5
14020004		NORTH FORK GUNNISON R NR SOMERSET	165,000	13
14030003	San Miguel	SAN MIGUEL RIVER NEAR PLACERVILLE	80,000	16
14020002	Tomishi	VOUGA RESERVOIR NEAR DOYLEVILLE	204	53
14020003	romichi	TOMICHI CREEK AT GUNNISON, CO	48,000	33

HUC ID	HUC Name	Component Name	Component Volume (AF)	Component NEP by Month
14020006	Uncompaharo	RIDGEWAY RESERVOIR	52,852	46
14020000	Uncompangre	UNCOMPAHGRE RIVER AT COLONA	85,000	20
		FRUITLAND RESERVOIR	200	24
		SILVER JACK RESERVOIR	220	2
		CRAWFORD RESERVOIR	1,589	2
14020002	Upper Gunnison	LAKE FORK AT GATEVIEW, CO	97,000	31
		MORROW POINT RESERVOIR	107,822	7
		BLUE MESA RESERVOIR	396,801	10
		GUNNISON R INF TO BLUE MESA RESERVOIR	490,000	28
		MOUNTAIN HOME	1,154	4
		TERRACE RESERVOIR	4,304	43
		TRINCHERA CK	12,800	60
13010002	Alamosa-Trinchera	UTE CREEK	13,000	58
		SANGRE DE CRISTO	16,500	55
		CULEBRA CREEK AT SAN LUIS	23,000	55
		ALAMOSA CREEK ABOVE TERRACE RESERVOIR	56,000	37
12010005	Consist	PLATORO RESERVOIR	14,235	35
13010005	Conejos	CONEJOS RIVER NEAR MOGOTE	166,000	41
	Rio Grande Headwaters	CONTINENTAL RESERVOIR	8,025	91
12010001		SANTA MARIA RESERVOIR	13,576	84
13010001		RIO GRANDE RESERVOIR	16,839	62
		RIO GRANDE NEAR DEL NORTE	400,000	34
13010004	Saguache	SAGUACHE CREEK NEAR SAGUACHE, CO	25,000	37
	Animas	LEMON RESERVOIR	10,555	22
14080104		FLORIDA RIVER INFLOW TO LEMON RESERVOIR	35,000	19
		ANIMAS RIVER AT DURANGO	250,000	13
14090107	Mangag	JACKSON GULCH RESERVOIR	2,746	18
14060107	Mancos	MANCOS RIVER NEAR MANCOS	14,000	8
14080105	Middle San Juan	LONG HOLLOW RESERVOIR	386	50
14000105	Midule Sali Juan	LA PLATA RIVER AT HESPERUS	11,000	11
14080102	Piedra	PIEDRA RIVER NEAR ARBOLES	130,000	25
		GROUNDHOG RESERVOIR	4,500	8
14030002	Upper Dolores	MCPHEE RESERVOIR	167,774	43
		DOLORES RIVER BELOW MCPHEE RESERVOIR	170,000	23
		VALLECITO RESERVOIR	35,805	10
14080101	Upper San Juan	LOS PINOS RIVER NEAR BAYFIELD	130,000	16
		SAN JUAN RIVER NEAR CARRACAS	285,000	34
		LONE TREE RESERVOIR	1,900	6
		MARIANO RESERVOIR	2,100	20
		LAKE LOVELAND RESERVOIR	2,400	7
10190006	Big Thompson	WILLOW CREEK RESERVOIR	5,849	15
10170000	ווסניווואזיוו אים	BOYD LAKE	29,300	46
		BIG THOMPSON R AT MOUTH, NR DRAKE, CO	67,000	21
		CARTER LAKE	75,450	59
		LAKE GRANBY	366,623	67

HUC ID	HUC Name	Component Name	Component Volume (AF)	Component NEP by Month
		BLACK HOLLOW RESERVOIR	2,900	45
		CACHE LA POUDRE	3,000	15
		HALLIGAN RESERVOIR	3,000	34
		CHAMBERS LAKE	5,700	92
10190007	Cache La Poudre	FOSSIL CREEK RESERVOIR	5,900	38
		WINDSOR RESERVOIR	6,000	13
		COBB LAKE	15,500	59
		HORSETOOTH RESERVOIR	71,973	31
		CACHE LA POUDRE R AT CANYON MOUTH	175,000	28
10190004	Clear Creek	CLEAR CREEK AT GOLDEN	85,000	22
		HORSECREEK RESERVOIR	0	1
		MILTON RESERVOIR	2,500	4
		BARR LAKE	9,700	4
		SOUTH BOULDER CK NR ELDORADO SPRINGS, CO	31,000	28
	Middle Couth Diatte	STANDLEY RESERVOIR	31,000	32
10190003	Cherry Creek	BOULDER CREEK NEAR ORODELL	45,000	22
		SAINT VRAIN CREEK AT LYONS	66,000	17
		BIG THOMPSON R AT MOUTH, NR DRAKE, CO	67,000	21
		CLEAR CREEK AT GOLDEN	85,000	22
		SOUTH PLATTE RIVER AT SOUTH PLATTE	121,000	17
		CACHE LA POUDRE R AT CANYON MOUTH	175,000	28
	Middle South Platte- Sterling	PREWITT RESERVOIR	11,500	22
		JULESBURG RESERVOIR	14,800	8
		EMPIRE RESERVOIR	22,700	58
		JACKSON LAKE RESERVOIR	24,000	67
		SOUTH BOULDER CK NR ELDORADO SPRINGS, CO	31,000	28
		RIVERSIDE RESERVOIR	31,900	42
10190012		POINT OF ROCKS RESERVOIR	32,100	21
		BOULDER CREEK NEAR ORODELL	45,000	22
		SAINT VRAIN CREEK AT LYONS	66,000	17
		BIG THOMPSON R AT MOUTH, NR DRAKE, CO	67,000	21
		CLEAR CREEK AT GOLDEN	85,000	22
		SOUTH PLATTE RIVER AT SOUTH PLATTE	121,000	17
		CACHE LA POUDRE R AT CANYON MOUTH	175,000	28
		ANTERO RESERVOIR	19,500	60
10190001	South Platte	SPINNEY MOUNTAIN RESERVOIR	23,600	43
	Headwater	ELEVENMILE CANYON RESV INFLOW	39,000	24
		ELEVENMILE CANYON RESERVOIR	96,300	22
		MARSHALL RESERVOIR	4,800	37
		TERRY RESERVOIR	5,500	57
		UNION RESERVOIR	7,946	13
10190005	St. Vrain	GROSS RESERVOIR	11,000	34
		BUTTONROCK (RALPH PRICE) RESERVOIR	16,200	99
		SOUTH BOULDER CK NR ELDORADO SPRINGS, CO	31,000	28
		BOULDER CREEK NEAR ORODELL	45,000	22
		SAINT VRAIN CREEK AT LYONS	66,000	17

HUC ID	HUC Name	Component Name	Component Volume (AF)	Component NEP by Month
		CHEESMAN LAKE	36,800	4
10190002	Upper South Platte	SOUTH PLATTE RIVER AT SOUTH PLATTE	121,000	17
		DILLON RESERVOIR	212,800	28
14050003	Little Snake	LITTLE SNAKE RIVER NEAR LILY	215,000	26
14050002	Lower Yampa	YAMPA RIVER NEAR MAYBELL	600,000	27
10180001	North Platte Headwaters	NORTH PLATTE R NR NORTHGATE	118,000	20
14050005	Upper White	WHITE RIVER NEAR MEEKER	180,000	21
		YAMCOLO RESERVOIR	4,214	33
		STAGECOACH RESERVOIR NR OAK CREEK	32,500	99
14050001	Upper Yampa	ELKHEAD CREEK ABOVE LONG GULCH	45,000	25
		YAMPA RIVER AT STEAMBOAT SPRINGS	168,000	23
		ELK RIVER NEAR MILNER, CO	245,000	25

NEP is non exceedance percentage (percentile) for volume of the component compared to this month during the historical period 1970-2010.

\*No longer exists

Water Volume NEP Color Scale:

0 (Well Below Normal) 50 (Normal) 100 (Well Ab

100 (Well Above Normal)

<u>Basinwide Conditions Assessment</u> The SWSI value for the month was -1.7.

The South Platte basin experienced above average temperatures throughout the basin during the month of December, with the mountainous areas approximately 1-3 degrees Fahrenheit above average, and temperatures on the eastern plains greater than 3 to 7 degrees above average. The mountains and plains continued to receive precipitation in the form of snow during the month of December, with much of the northern and eastern plains receiving above average precipitation and the mountains, foothills and southern plains receiving approximately 70% of average precipitation for the month of December. The USDA South Platte Basin High/Low Snowpack Summary indicates that the basin snowpack was near 80% of average at the end of December. The USDA NRCS Colorado Streamflow Forecasts Summary for January 1, 2021 indicates 70-89% of Average for much of the basin based upon current conditions.

The trend of above average temperatures and below average precipitation throughout the basin resulted in continued widespread drought throughout. The month of December ended almost identical to the months of October and November with the USDA Drought Monitor rating for the mountainous and foothill areas with a rating of D3 (Extreme drought), with the exception of portions of Larimer, Weld and Morgan Counties remaining at a rating of D2 (Severe Drought). Drought conditions in portions of Jefferson and Douglas Counties ended the month of December with a rating of D4 (Exceptional Drought).

The above conditions along with high demand for the filling of storage reservoirs throughout the basin, resulted in flows on the mainstem of the South Platte River basin near normal below Greeley at the Kersey streamgage and well below normal at the Julesburg streamgage during the month of December. Flows at the Kersey gage downstream of the City of Greeley, were slightly above average with average daily flows for the month of December approximately 712 cfs, 102% of the historic mean value of 694 cfs. The average daily flow at the Julesburg gage for the month of December was 76 cfs, only 18% of the historic mean value of 414 cfs. The demand for filling of depleted reservoirs throughout Division 1 and below average flows of native water in the rivers will continue the trend of below average flows throughout the Winter into Spring, especially at the Julesburg gage near the state line.

With the continued trend of below average precipitation and below average streamflows, many reservoirs on the eastern

plains are empty or near empty resulting in senior calling water rights on the mainstem of the South Platte River and tributaries by reservoirs. The month of December was controlled by a Jackson Reservoir 1907 storage right call on the upper end of the South Platte River Basin. The lower end of the basin was controlled for the first  $\frac{1}{2}$  of the month by a North Sterling 1922 call, going more senior in the second ½ of the month with a Prewitt Reservoir 1910 call during the month of December. The lowest portion of the basin was controlled during the month of December with a call of 1995 Julesburg Reservoir (Harmony #1 Ditch) on the lower end of the South Platte River near the state line. With many of the reservoirs below average and the reservoirs on the eastern plains empty to near empty at the start of November and slowly filling throughout December, it is anticipated that the calls on the South Platte will be controlled by senior reservoir calls until they reach winter fill, into the Spring of 2021 snowmelt runoff season.

Reservoir storage levels throughout the South Platte River mainstem ended the month of December below the historical average at the 6 SWSI Representative Reservoirs (Dillon, Horsetooth, Eleven Mile, Cheeseman, Jackson, and Barr Lake) at 502,188 acre-feet volume, which is 93% of the long term average (1961-current). Additionally, 32 indexed reservoirs throughout Division 1 basin ended the month of December at 90% of the long term average with a storage volume of 663,157, representing 58% of total full capacity for the reservoirs. This is below the long term average of 65% of total full capacity for the end of December storage in the 32 indexed reservoirs throughout Division 1. Many lower elevation reservoirs, primarily irrigation reservoirs, are at much lower storage volumes than the overall





combined average, many of which were near empty or empty at the start of November. Given the current below average precipitation and native flows in the rivers and streams, it is expected much competition by reservoir priorities to fill in priority will be experienced throughout the winter and spring.

The temperature and precipitation outlook into January, February, and March prepared by the National Weather Service, in northeastern Colorado indicates an 33-40% probability of above average temperatures and a 33-40% probability of below precipitation throughout the South Platte River Basin and Republican River Basin.



10

## Basinwide Conditions Assessment

The SWSI value for the month was +0.0.

## <u>Outlook</u>

The Pueblo Winter Water system grand total was 37,615 acre-feet at the end of December representing a large decrease over last year's storage to date, which was 50,489 acre-feet. The previous five-year average for this period is 57,237 acre-feet and the 20-year average for this period has been 55,704 acre-feet, indicating below average storage so far this year. Both the five-year average and the 20-year average dropped about 2,000 ac-ft.

Conservation storage in John Martin Reservoir is about 70% *less* than last year's storage at the end of December. Storage since November 1, 2019 has been 4,286 acre-feet while storage a year ago for the same period was 13,741 acre-feet.

Snowpack for the basin is down to 89% of average compared to 114% last year. This is comparable at the moment to the snowpack in 2012. The United State Drought Monitor is indicating that the Arkansas Basin will continue to be drought conditions for 2021.

## Administrative Concerns

Delegates from the states of Colorado and Kansas met virtually due to the COVID-19 pandemic on December 7-8, 2020 for the Arkansas River Compact Administration. Colorado and Kansas staff will continue to work together to resolve disputed issues primarily through the efforts of the Special Engineering Committee in 2021.

Ongoing concerns still relate to the spilling of account water from Pueblo Reservoir and the Division is working with the various water programs to help mitigate that possibility.





Jan-21

Arkansas-DataComposite-SWSI



## Basinwide Conditions Assessment

The SWSI value for the month was -0.9.

Flow at the gaging station Rio Grande near Del Norte averaged 152 cfs (79% of normal) during December. The Conejos River near Mogote had a mean flow of 60 cfs (115% of normal) during the month due to atypical releases from Platoro Reservoir. Generally, there wasn't enough late season rain or early season snowmelt to bring streamflow back up to average levels during December for streams within the San Luis Valley. Most streams in the upper Rio Grande basin produced about 60% of the historic average volume during 2020.

Alamosa received 0.36 inches of precipitation during December, very near normal. Alamosa's total precipitation of 6.13 inches during 2020 was 1.18 inches below the annual average. For the year, the average temperature was 2.7 degrees above normal.

## <u>Outlook</u>

Stream flow in the basin should be below average for the next few months as the basin recovers from the disappointing 2020 runoff. The initial Natural Resources Conservation Service (NRCS) forecasts for the 2021 runoff suggest most streams in the basin will produce in the 60% to 90% range.

Current snowpack in the upper Rio Grande basin is just below near the long-term average. This situation is buoyed by the very good current snowpack accumulation in the Sangre de Cristo Range along the east side of the San Luis Valley. Those stations are currently indicating from 100% - 150%. Recent National Weather Service climate forecasts call for warmer and drier than normal conditions in the San Luis Valley for the remainder of the winter with a very probable chance for scarce March and April snowstorms.

#### Administrative/Management Concerns

Pursuant to the provisions of the Rio Grande Compact, Colorado delivered approximately 110,000 acre-feet to New Mexico and Texas and easily met the delivery requirement for 2020. A small delivery credit will be available for the 2021 delivery requirement. Closed Basin Project delivery to the Rio Grande totaled about 6,200 acre-feet.

Preparation for implementation of the Case No. 15CW3024, Groundwater Use Rules for Water Division No. 3 was a major focus for water administrators during 2020. Three Groundwater Management Subdistricts of the Rio Grande Water Conservation District made well depletion replacement during 2020 with a mixture of reservoir releases, headgate bypasses, and Closed Basin Project production delivered to the Rio Grande. Formation of another four subdistricts occurred during 2020. This all points to the full Rules implementation date of March 15, 2021 per Court decree.

## Public Use Impacts

In summary, 2020 saw excellent snowpack accumulation during late 2019, followed by marginal gain during January and February, a promising March, but followed by a recorddry April and warming temperatures that forced early runoff. Lack of precipitation from April through August dried out the non-irrigated areas of the basin. There was very little monsoonal activity during July and August, exaggerating the low streamflow conditions throughout the basin. The lack of surface water availability and precipitation during the irrigation season increased the need for irrigation well pumping from the Valley's aquifers. These aquifers declined again in content and pressure during 2020. Reservoir storage is currently poor in the upper Rio Grande Basin.





Rio Grande-DataComposite-SWSI

•



<u>Basinwide Conditions Assessment</u> The SWSI value for the month was -3.1.

#### Basin Wide Conditions Outlook

Precipitation in the Gunnison basin was below average again in December with the western areas receiving as little as 50 percent of average and eastern areas faring better at near 90 percent of average. Precipitation since January 1st has been almost non-existent basin-wide. Snowpack conditions, as measured by the average snow water equivalent (SWE) at all Snotel stations throughout the Gunnison basin, stood at 76 percent on January 1st, but had dropped to 66 percent by January 14th. Snowpack is now below average at all sites except Cochetopa Pass. Only four years since 1980 contained similar of less basin-wide average SWE and those years were 1990, 2000, 2012, and 2018. Only one of those years (2000) ended with average peak SWE while the other three ended at 74 percent of the median peak or less. Snowpack above Paonia, Ridgway, Taylor Park and Blue Mesa Reservoirs was 58, 88, 89, and 83 percent of the median SWE for the date on January 1st, respectively. This declined, however, to 51, 82, 80, and 75 percent of the median SWE for the date, respectively, by January 14th due to the lack of snowfall.

#### <u>Outlook</u>

As mentioned previously, NOAA's El-Nino/Southern Oscillation (ENSO) forecast predicts that La Niña conditions will continue into early summer of 2021. Thankfully, the National Weather Service Climate Forecast predicts wetter than average conditions from January 21st to the 25th. However, the long term forecast for the period from January through March continues to predict below average precipitation and above average temperatures.

#### Administrative/Management Concerns

Taylor Park releases continue to move first fill account water into the Aspinall Unit at the rate of 160 ac-ft per day. However, physical storage in Taylor Park is declining by approximately 40 ac-ft per day as the releases are exceeding inflows. This has resulted in the total first fill account stored in both the Aspinall Unit and Taylor Park increasing by only 120 ac-ft per day. As of January 1st, the first fill account contained a total of 89,617 ac-ft. At the current rate of fill the account will not be full until near the end of April, meaning that no second fill storage will be accumulated until spring runoff season. Blue Mesa Reservoir storage has remained flat at only 48 percent of capacity.

Unfortunately, the areas hardest hit by the dry summer last year, the North Fork Gunnison River and Surface Creek Valley, are the areas that have the worst snowpack so far in 2021. The Park Reservoir Snotel, which is used to gauge how well the 108 reservoirs in the Grand Mesa Water Users Association system may fill, currently has only 55 percent of median SWE while the basin above Paonia Reservoir sits at only 51 percent of the median. This does not bode well for water sources that are the life blood for orchards and farms in the Cedaredge area, and only carried over a record low 14% of capacity into the 2021 season. Other reservoirs on the south side of the Grand Mesa, such as Overland Reservoir and Leroux Creek Water Users Association reservoirs were drained during the 2020 summer as well and the current snowpack level will not allow them to fill in 2021. In two of the past three years owners of Overland Reservoir storage have ran out in July, which was previously unheard of. If conditions don't improve it is possible that their storage water may be exhausted in June. As may be expected, there is significant concern that dry weather and low soil moisture conditions could result in record insufficient supply in 2021.

#### Public Use Impacts

Ski conditions at Telluride and Crested Butte are marginal with manmade snow keeping many runs open. Both resorts have a 30 inch base and have received a total of around 95 inches of snow this season. Reports are, however, that they have been busier than expected.

![](_page_14_Figure_11.jpeg)

Gunnison-DataComposite-SWSI

![](_page_15_Figure_1.jpeg)

# <u>Outlook</u>

Colorado River flows are running below average with tributary flows also running below average throughout January. As of January 15, the Upper Colorado River Basin snowpack was 69 percent of median snow water equivalent and 60 percent of average precipitation. Forecasts call for above average precipitation and below average temperatures for western Colorado through January.

# Administrative/Management Concerns

The call on the Colorado River main stem remains the Shoshone Hydro Power right for 1250cfs. Accordingly, Green Mountain Reservoir is releasing to pass inflows, provide contract and HUP obligations and make C-BT replacements.

# Public Use Impacts

For the 20<sup>th</sup> consecutive year, the ESPN Winter X-Games return to Aspen January 29-31. Buttermilk Ski Mountain, part of Aspen Snowmass, makes a significant amount of snow to accommodate the large jumps needed for the events and the super pipe. Due to the COVID pandemic, the games will be closed to the public although there will be a new virtual experience that will be immersive and interactive.

![](_page_16_Figure_8.jpeg)

Colorado-DataComposite-SWSI

![](_page_17_Figure_1.jpeg)

18

# **Basinwide Conditions Assessment**

The SWSI value for the month was -2.1.

Snowpack (25 sites) - Yampa and White River basins were 72% of the monthly median for SWE. This is down from last year's SWE median of 104%. The North Platte River basin was 77% of the monthly median for SWE and is down from last year's SWE median of 111%. For the entire Yampa, White and North Platte River basins the lowest percent of median was at the Rabbit Ears SNOTEL site at 57%. The highest percent of median was at the Sandstone RS SNOTEL station at 116%. \*Averages are from 1981-2010 records

Precipitation (24 sites) - Yampa and White River basins were **71%** of the monthly average, putting the basin at 61% of average for the water year to date. This is down from last year's monthly average of 100%, and down for last year's water year to date of 86%. North Platte River basin was **76%** of the monthly average, putting the basin at 71% for the water year to date. This is down from last year's monthly average of 106%, and down for last year's water year to date of 97%. For the entire Yampa, White and North Platte River basins the lowest percent of average, at 61%, was the Roach SNOTEL station. The highest, at 104%, was the Crosho SNOTEL station, with 2.4 inches. \*Averages are from 1981-2010 records

*Temperatures* - The average temperature for NOAA Colorado Climate Division 2: Colorado River Drainage was **31.0**° **F**. This is +1.4°F from the average of 29.6°F. This temperature ranks 81 for lowest of the previous 126 years of data. For the NOAA Colorado Climate Division 4: Platte Drainage, the average temperature was **27.8**°F, +2.2°F from the average of 25.6°F, ranking 86. \**Averages are from 1901-2000 records* 

Reservoir Outlook

Elkhead Reservoir - December 31, 2020 capacity level was 15,821 AF of 25,550 AF - 61.9% capacity.

Fish Creek Reservoir - December 31, 2020 elevation was 9863.5' at 1,649 AF of 4,160 AF - 39.6% capacity.

Stagecoach Reservoir - December 31, 2020 capacity level was 32,500 AF of 36,500 AF - 89% of capacity, 111% of average, 92% of last year.

Yamcolo Reservoir - December 31, 2020 capacity level was at 3800 AF of 8,700 AF -

44% of capacity, 80% of average, 48% of last year.

\*Averages are from 1901-2000 records

![](_page_18_Figure_13.jpeg)

Yampa-White-DataComposite-SWSI

![](_page_19_Figure_1.jpeg)

Basinwide Conditions Assessment The SWSI value for the month was -2.7.

Flow at the Animas River at Durango averaged 107 cfs (48% of average). The flow at the Dolores River at Dolores was estimated to average 26 cfs (45% of average). The La Plata River at Hesperus was estimated to average 3.5 cfs (43% of average). Precipitation in Durango was 0.89 inches for the month, 54% of the 30-year average of 1.64 inches. Precipitation to date in Durango, for the water year is 1.71 inches, 34% of the 30-year average of 5.09 inches. The average high and low temperatures for the month of December in Durango were 42° and 14°. In comparison, the 30-year average high and low for the month is 41° and 15°. At the end of the month Vallecito Reservoir contained 36,699 acre-feet compared to its average content of 55,417 acre-feet (66% of average). McPhee Reservoir was up to 167,770 acre-feet compared to its average content of 258,361 (65% of average), while Lemon Reservoir was up to 10,900 acre-feet as compared to its average content of 19,414 acre-feet (56% of average).

# **Outlook**

Precipitation (0.89 inches) was well below average for December in Durango. There were 86 years out of 126 years of record where there was more precipitation than this year. With the lack of moisture in the area, the flows in the rivers are well below average for the month. This is the worst period of record on the Animas River at Durango stream gauge out of 110 years of record. There were 105 out of 110 years of record where the total flow past the Dolores stream gauge was more than this year. There were 102 out of 104 vears of record where the total flow past the La Plata River at Hesperus gauge was more than this year. All of the reservoirs within the basin are well below average for this time of year. On December 31, the NRCS SNOTEL sites reported an average snow-waterequivalent within the basin at 80%. Last month the average snow-water-equivalent at the end of the month was 84%.

![](_page_20_Figure_5.jpeg)

San Juan-Dolores-DataComposite-SWSI

![](_page_21_Figure_1.jpeg)

![](_page_22_Figure_0.jpeg)

![](_page_23_Figure_0.jpeg)

HUC:10180001-JAN-DataComposite-SWSI

![](_page_24_Figure_0.jpeg)

HUC:10190001-JAN-DataComposite-SWSI

![](_page_25_Figure_0.jpeg)

HUC 10190002 (Upper South Platte) SWSI Values - JAN Historical period SWSI values establish the SWSI distribution to lookup recent and current SWSI values.

![](_page_25_Figure_4.jpeg)

HUC:10190002-JAN-PrevMoStreamflow-SWSI HUC:10190002-JAN-ForecastedRunoff-SWSI HUC:10190002-JAN-ReservoirStorage-SWSI HUC:10190002-JAN-DataComposite-SWSI

![](_page_26_Figure_0.jpeg)

HUC:10190003-JAN-DataComposite-SWSI

![](_page_27_Figure_0.jpeg)

HUC:10190004JAN-PrevMoStreamflow-SWSI HUC:10190004JAN-ForecastedRunoff-SWSI HUC:10190004JAN-ReservoirStorage-SWSI HUC:10190004JAN-DataComposite-SWSI

-4.00 -6.00

![](_page_28_Figure_0.jpeg)

HUC:10190005-JAN-DataComposite HUC:10190005-JAN-PrevMoStreamflow HUC:10190005-JAN-ForeoastedRunoff HUC:10190005-JAN-ReservoirStorage

HUC 10190005 (St. Vrain) SWSI Values - JAN Historical period SWSI values establish the SWSI distribution to lookup recent and current SWSI values.

![](_page_28_Figure_3.jpeg)

![](_page_28_Figure_4.jpeg)

HUC:10190005-JAN-PrevMoStreamflow-SWSI HUC:10190005-JAN-PrecastedRunoff-SWSI HUC:10190005-JAN-ReservoirStorage-SWSI HUC:10190005-JAN-DataComposite-SWSI

![](_page_29_Figure_0.jpeg)

![](_page_29_Figure_1.jpeg)

HUC:10190006-JAN-PrevMoStreamflow-SWSI HUC:10190006-JAN-ForecastedRunoff-SWSI HUC:10190006-JAN-ReservoirStorage-SWSI HUC:10190006-JAN-DataComposite-SWSI

![](_page_30_Figure_0.jpeg)

![](_page_31_Figure_0.jpeg)

HUC:10190012-JAN-DataComposite-SWSI

![](_page_32_Figure_0.jpeg)

HUC:11020001-JAN-DataComposite-SWSI

![](_page_33_Figure_0.jpeg)

![](_page_34_Figure_0.jpeg)

![](_page_35_Figure_0.jpeg)

HUC:11020006-JAN-PrevMoStreamflow-SWSI HUC:11020006-JAN-ForeoastedRunoff-SWSI HUC:11020006-JAN-ReservoirStorage-SWSI HUC:11020006-JAN-DataComposite-SWSI

![](_page_36_Figure_0.jpeg)

![](_page_37_Figure_0.jpeg)

![](_page_38_Figure_0.jpeg)

HUC:13010001-JAN-DataComposite-SWSI

![](_page_39_Figure_0.jpeg)

![](_page_40_Figure_0.jpeg)

![](_page_41_Figure_0.jpeg)

HUC:13010005-JAN-PrevMoStreamflow-SWSI HUC:13010005-JAN-ForeoastedRunoff-SWSI HUC:13010005-JAN-ReservoirStorage-SWSI HUC:13010005-JAN-DataComposite-SWSI

-2.00 -4.00 -6.00

![](_page_42_Figure_0.jpeg)

HUC:14010001-JAN-DataComposite-SWSI

![](_page_43_Figure_0.jpeg)

HUC:14010002-JAN-DataComposite HUC:14010002-JAN-PrevMoStreamflow HUC:14010002-JAN-ForeoastedRunoff HUC:14010002-JAN-ReservoirStorage

HUC 14010002 (Blue) SWSI Values - JAN Historical period SWSI values establish the SWSI distribution to lookup recent and current SWSI values.

![](_page_43_Figure_4.jpeg)

HUC:14010002-JAN-PrevMoStreamflow-SWSI HUC:14010002-JAN-ForeoastedRunoff-SWSI HUC:14010002-JAN-ReservoirStorage-SWSI HUC:14010002-JAN-DataComposite-SWSI

![](_page_44_Figure_0.jpeg)

![](_page_45_Figure_0.jpeg)

HUC:14010004-JAN-Foreoastedminou-SWS HUC:14010004-JAN-ForeoastedRunoff-SWSI HUC:14010004-JAN-ReservoirStorage-SWSI HUC:14010004-JAN-DataComposite-SWSI

![](_page_46_Figure_0.jpeg)

![](_page_47_Figure_0.jpeg)

HUC:14020001-JAN-DataComposite HUC:14020001-JAN-PrevMoStreamflow HUC:14020001-JAN-ForecastedRunoff HUC:14020001-JAN-ReservoirStorage

HUC 14020001 (East-Taylor) SWSI Values - JAN Historical period SWSI values establish the SWSI distribution to lookup recent and current SWSI values.

![](_page_47_Figure_3.jpeg)

![](_page_47_Figure_4.jpeg)

HUC:14020001-JAN-PrevMoStreamflow-SWSI HUC:14020001-JAN-ForeoastedRunoff-SWSI HUC:14020001-JAN-ReservoirStorage-SWSI HUC:14020001-JAN-DataComposite-SWSI

![](_page_48_Figure_0.jpeg)

HUC:14020002-JAN-DataComposite HUC:14020002-JAN-PrevMoStreamflow HUC:14020002-JAN-ForeoastedRunoff HUC:14020002-JAN-ReservoirStorage

HUC 14020002 (Upper Gunnison) SWSI Values - JAN Historical period SWSI values establish the SWSI distribution to lookup recent and current SWSI values.

![](_page_48_Figure_5.jpeg)

HUC:14020002-JAN-PrevMoStreamflow-SWSI HUC:14020002-JAN-ForeoastedRunoff-SWSI HUC:14020002-JAN-ReservoirStorage-SWSI HUC:14020002-JAN-DataComposite-SWSI

![](_page_49_Figure_0.jpeg)

![](_page_50_Figure_0.jpeg)

![](_page_51_Figure_0.jpeg)

![](_page_52_Figure_0.jpeg)

![](_page_53_Figure_0.jpeg)

![](_page_54_Figure_0.jpeg)

![](_page_55_Figure_0.jpeg)

![](_page_56_Figure_0.jpeg)

![](_page_57_Figure_0.jpeg)

![](_page_58_Figure_0.jpeg)

![](_page_59_Figure_0.jpeg)

![](_page_60_Figure_0.jpeg)

![](_page_61_Figure_0.jpeg)

![](_page_62_Figure_0.jpeg)