# 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>

March 1, 2017

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.

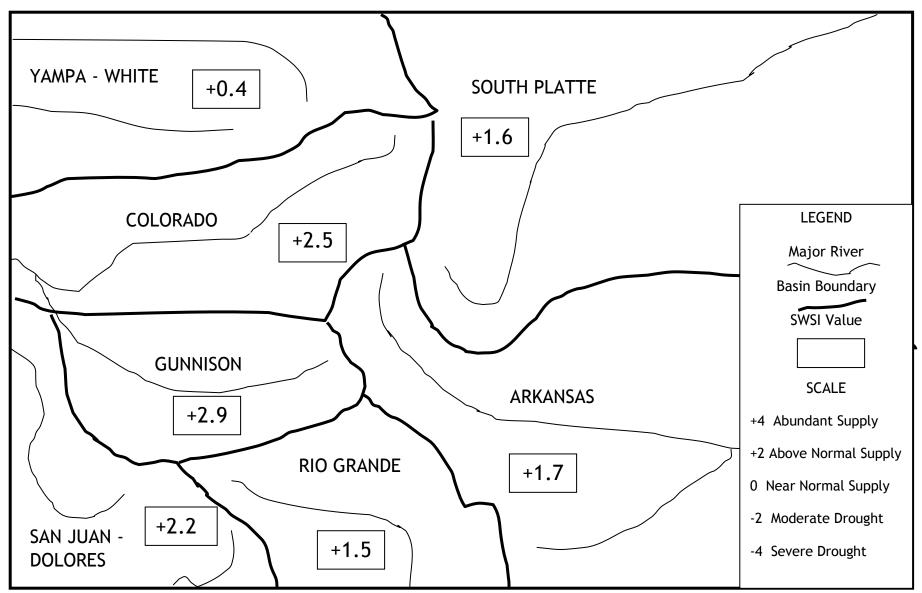
Time Period SWSI Components	
January 1 - June 1	Forecasted Runoff + Reservoir Storage
July 1 - September 1	Previous Month's Streamflow + Reservoir Storage
October 1 - December 1	Reservoir Storage

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>http://water.state.co.us/DWRDocs/Reports/Pages/SWSIReport.aspx</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 season (January 1 to June 1) is based on forecasted runoff (total volume for runoff season) combined with reservoir storage at the end of last month, in this case February 28. The statewide SWSI values for March 1 are all above normal with most basins showing abundant supply. There has been a slight decrease in the SWSI in several basins since last month. The SWSI values range from a low of +0.4 in the Yampa-White Basin a high of +2.9 in the Gunnison Basin. The following SWSI values were computed for each of the seven major basins for March 1, 2017. The results for each HUC are summarized on the following pages.

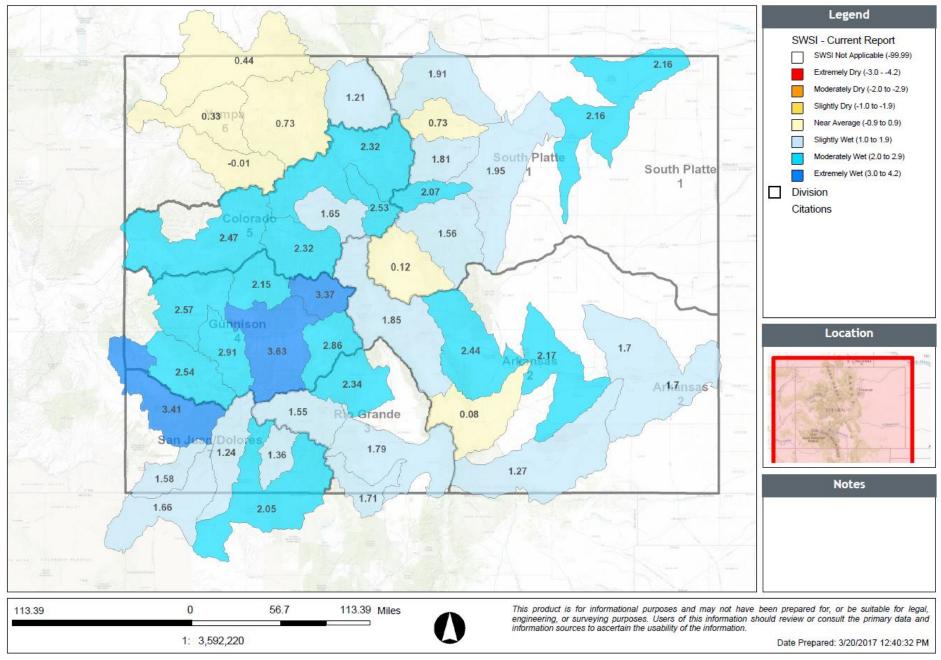
Basin	March 1 SWSI	Change from Previous Month	Change from Previous Year
Arkansas	1.7	-0.3	-0.3
Colorado	2.5	0.0	2.7
Gunnison	2.9	0.1	2.9
Rio Grande	1.5	-0.2	1.1
San Juan-Dolores	2.2	-0.1	2.7
South Platte	1.6	-0.1	-0.2
Yampa-White	0.4	-0.2	0.0

				SWSI Scale				
-4	-3	-2	-1	0	1	2	3	4
Severe		Moderate		Near Normal		Above Normal	Ab	undant
Drought		Drought		Supply		Supply		Supply



SURFACE WATER SUPPLY INDEX FOR COLORADO BY MAJOR RIVER BASIN

# SURFACE WATER SUPPLY INDEX FOR COLORADO BY HUC



Basin	HUC ID	March 1, 2017 SWSI Values by HUC and HUC Name	SWSI	Reservoir Storage NEP	Streamflow Forecast NEP	Total Vol (AF)
	11020001	Arkansas Headwaters	1.9	42	76	441,400
⊳	11020002	Upper Arkansas	2.4	76	76	687,900
rka	11020005	Upper Arkansas-Lake Meredith	2.2	93	73	513,600
Arkansas	11020006	Huerfano River	0.1	14	60	25,900
S	11020009	Upper Arkansas-John Martin Reservoir	1.7	74	74	701,300
	11020010	Purgatoire River	1.3	71	65	79,100
	14010001	Colorado Headwaters	2.3	88	71	1,883,800
Co	14010002	Blue River	2.5	19	83	404,000
Colorado	14010003	Eagle River	1.7	NA	70	385,000
ado	14010004	Roaring Fork	2.3	33	78	966,000
	14010005	Colorado Headwaters-Plateau	2.5	48	80	3,071,900
	14020001	East-Taylor	3.4	62	89	479,000
	14020002	Upper Gunnison	3.6	83	86	1,840,500
Gu	14020003	Tomichi Creek	2.9	99	84	115,900
Gunnison	14020004	North Fork Gunnison	2.2	26	76	402,400
son	14020005	Lower Gunnison	2.6	NA	81	2,110,000
	14020006	Uncompahgre River	2.9	57	75	229,000
	14030003	San Miguel	2.5	NA	81	169,000
	13010001	Rio Grande Headwaters	1.6	88	67	663,200
Gra	13010002	Alamosa-Trinchera	1.8	48	71	168,320
Rio Grande	13010004	Saguache Creek	2.3	NA	78	43,000
CD	13010005	Conejos River	1.7	39	73	265,500
	14030002	Upper Dolores	3.4	81	73	737,200
Š	14080101	Upper San Juan	2.1	79	74	815,800
San J 14080101   Dolores 14080102   14080104 14080104		Piedra River	1.4	NA	66	240,000
Jua ore	14080104	Animas River	1.2	54	65	584,400
s n-	14080105	Middle San Juan	1.7	50	69	31,062
	14080107	Mancos River	1.6	64	67	46,100
	10190001	South Platte Headwaters	0.1	58	54	193,200
	10190002	Upper South Platte	1.6	65	67	489,000
Sol	10190003	Middle South Platte-Cherry Creek	2.0	34	74	999,700
South Platte	10190004	Clear Creek	2.1	NA	75	123,000
Pla	10190005	St. Vrain River	1.8	19	71	255,400
itte	10190006	Big Thompson River	0.7	57	71	562,500
	10190007	Cache La Poudre	1.9	94	65	447,500
	10190012	Middle South Platte-Sterling	2.2	90	74	1,124,400
	10180001	North Platte Headwaters	1.2	NA	65	285,000
< X	14050001	Upper Yampa	0.7	99	50	791,000
Yampa- White	14050002	Lower Yampa	0.3	NA	54	1,060,000
)а- Ге	14050003	Little Snake	0.4	NA	55	420,000
	14050005	Upper White	0.0	NA	50	285,000

March 1, 2017 SWSI Values by HUC and Non Exceedance Probabilities (NEP)

NEP is non exceedance percentage for total reservoir storage and streamflow forecast in each HUC. NEP is calculated compared to either the actual volumes in storage historically occurring this month or streamflow during the runoff period for the years 1970-2010. Some HUCs do not have any reservoirs considered in the SWSI. Total Vol is the volume of reservoir storage and streamflow forecast in the HUC. The following table lists each component considered in each HUC.

SWSI Color Scale:	-4.0 (Severe Drought)	0 (Normal)	4.0 (Abundant Supply)	
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HUC ID	HUC Name	Component Name	Component Volume (AF)	Component NEP for Month
		CLEAR CREEK RESERVOIR	7,900	56
	Arkansas	HOMESTAKE RESERVOIR	42,100	85
11020001	Headwaters	TWIN LAKES RESERVOIR	43,200	48
		TURQUOISE LAKE	48,200	12
		ARKANSAS RIVER AT SALIDA	300,000	76
11020002	Upper Arkansas	PUEBLO RESERVOIR	247,900	76
11020002	оррег Агканзаз	PUEBLO RESERVOIR INFLOW	440,000	76
		LAKE HENRY	8,200	90
		HUERFANO RIVER NEAR REDWING	12,100	48
11020005	Upper Arkansas- Lake Meredith	CUCHARAS RIVER AT BOYD RANCH NR LA VETA	13,800	71
		MEREDITH RESERVOIR	39,500	88
		PUEBLO RESERVOIR INFLOW	440,000	76
		CUCHARAS RESERVOIR*	0	14
11020006	Huerfano River	HUERFANO RIVER NEAR REDWING	12,100	48
		CUCHARAS RIVER AT BOYD RANCH NR LA VETA	13,800	71
		HUERFANO RIVER NEAR REDWING	12,100	48
		CUCHARAS RIVER AT BOYD RANCH NR LA VETA	13,800	71
44020000	Upper Arkansas-	PURGATOIRE RIVER AT TRINIDAD	54,000	65
11020009	John Martin Reservoir	ADOBE CREEK RESERVOIR	54,600	76
	Reservoir	JOHN MARTIN RESERVOIR	126,800	74
		PUEBLO RESERVOIR INFLOW	440,000	76
44020240		TRINIDAD LAKE	25,100	71
11020010	Purgatoire River	PURGATOIRE RIVER AT TRINIDAD	54,000	65
		WOLFORD MOUNTAIN RESERVOIR	50,600	88
14010001	Colorado	WILLIAMS FORK RESERVOIR	73,200	84
	Headwaters	COLORADO RIVER NEAR DOTSERO	1,760,000	71
		GREEN MOUNTAIN RESERVOIR	59,000	19
14010002	Blue River	BLUE RIVER INFLOW TO GREEN MOUNTAIN RES	345,000	83
14010003	Eagle River	EAGLE RIVER BELOW GYPSUM	385,000	70
		RUEDI RESERVOIR	66,000	33
14010004	Roaring Fork	ROARING FORK AT GLENWOOD SPRINGS	900,000	78
	Colorado	VEGA RESERVOIR	11,900	48
14010005	Headwaters-Plateau	COLORADO RIVER NEAR CAMEO	3,060,000	80
		TAYLOR PARK RESERVOIR	69,000	62
14020001	East-Taylor	TAYLOR R INF TO TAYLOR PARK RESERVOIR	140,000	90
		EAST RIVER AT ALMONT	270,000	88
		FRUITLAND RESERVOIR	1,600	56
		SILVER JACK RESERVOIR	2,400	19
		CRAWFORD RESERVOIR	7,500	35
14020002	Upper Gunnison	MORROW POINT RESERVOIR	101,600	1
		LAKE FORK AT GATEVIEW, CO	157,000	84
		BLUE MESA RESERVOIR	570,400	94
		GUNNISON R INF TO BLUE MESA RESERVOIR	1,000,000	86
		VOUGA RESERVOIR NEAR DOYLEVILLE	900	99
14020003	Tomichi Creek			
		TOMICHI CREEK AT GUNNISON, CO	115,000	84

# March 1, 2017 SWSI Component Information By HUC

HUC ID	HUC Name	Component Name	Component Volume (AF)	Component NEP for Month
14020004	North Fork Gunnison	PAONIA RESERVOIR	2,400	26
14020004	NOTULI FORK GUILLISOL	NORTH FORK GUNNISON R NR SOMERSET	400,000	76
14020005	Lower Gunnison	GUNNISON RIVER NR GRAND JUNCTION	2,110,000	81
1 4020004	Uncompositore Divor	RIDGEWAY RESERVOIR	65,000	57
14020006	Uncompahgre River	UNCOMPAHGRE RIVER AT COLONA	164,000	75
14030003	San Miguel	SAN MIGUEL RIVER NEAR PLACERVILLE	169,000	81
		CONTINENTAL RESERVOIR	9,700	92
13010001	Rio Grande	SANTA MARIA RESERVOIR	16,700	89
13010001	Headwaters	RIO GRANDE RESERVOIR	26,800	81
		RIO GRANDE NEAR DEL NORTE	610,000	67
		MOUNTAIN HOME	3,720	69
		TERRACE RESERVOIR	5,900	36
		UTE CREEK	16,000	74
13010002	Alamosa-Trinchera	TRINCHERA CK	16,700	71
		SANGRE DE CRISTO	21,000	63
		CULEBRA CREEK AT SAN LUIS	30,000	74
		ALAMOSA CREEK ABOVE TERRACE RESERVOIR	75,000	57
13010004	Saguache Creek	SAGUACHE CREEK NEAR SAGUACHE, CO	43,000	78
12010005	Conejos River	PLATORO RESERVOIR	15,500	39
13010005		CONEJOS RIVER NEAR MOGOTE	250,000	73
	Upper Dolores	GROUNDHOG RESERVOIR	18,400	99
14030002		MCPHEE RESERVOIR	298,800	81
		DOLORES RIVER BELOW MCPHEE RESERVOIR	420,000	73
	Upper San Juan	VALLECITO RESERVOIR	75,800	79
14080101		LOS PINOS RIVER NEAR BAYFIELD	215,000	60
		SAN JUAN RIVER NEAR CARRACAS	525,000	77
14080102	Piedra River	PIEDRA RIVER NEAR ARBOLES	240,000	66
		LEMON RESERVOIR	21,400	54
14080104	Animas River	FLORIDA RIVER INFLOW TO LEMON RESERVOIR	63,000	65
		ANIMAS RIVER AT DURANGO	500,000	65
14090405	Middle Can Juan	LONG HOLLOW RESERVOIR	1,062	50
14080105	Middle San Juan	LA PLATA RIVER AT HESPERUS	30,000	69
1 4090407	Managa Divar	JACKSON GULCH RESERVOIR	5,100	64
14080107	Mancos River	MANCOS RIVER NEAR MANCOS	41,000	67
		ANTERO RESERVOIR	14,900	20
10100004	South Platte	SPINNEY MOUNTAIN RESERVOIR	29,000	64
10190001	Headwaters	ELEVENMILE CANYON RESV INFLOW	50,000	54
		ELEVENMILE CANYON RESERVOIR	99,300	63
		BEAR CREEK ABV EVERGREEN	16,200	55
10100002	Upper Couth Diatta	CHEESMAN LAKE	72,200	81
10190002	Upper South Platte	SOUTH PLATTE RIVER AT SOUTH PLATTE	187,000	67
		DILLON RESERVOIR	213,600	45

HUC ID	HUC Name	Component Name	Component Volume (AF)	Component NEP for Month
		HORSECREEK RESERVOIR	11,000	20
		BEAR CREEK ABV EVERGREEN	16,200	55
		MILTON RESERVOIR	19,400	90
		BARR LAKE	26,000	36
		STANDLEY RESERVOIR	31,100	30
10190003	Middle South Platte-	SOUTH BOULDER CK NR ELDORADO SPRINGS, CO	43,000	68
10190003	Cherry Creek	BOULDER CREEK NEAR ORODELL	62,000	70
		BIG THOMPSON R AT MOUTH, NR DRAKE, CO	106,000	71
		SAINT VRAIN CREEK AT LYONS	110,000	77
		CLEAR CREEK AT GOLDEN	123,000	75
		SOUTH PLATTE RIVER AT SOUTH PLATTE	187,000	67
		CACHE LA POUDRE R AT CANYON MOUTH	265,000	65
10190004	Clear Creek	CLEAR CREEK AT GOLDEN	123,000	75
		TERRY RESERVOIR	4,600	26
		MARSHALL RESERVOIR	6,500	64
		UNION RESERVOIR	9,000	17
10190005	St. Vrain River	GROSS RESERVOIR	9,400	26
10190005		BUTTONROCK (RALPH PRICE) RESERVOIR	10,900	11
		SOUTH BOULDER CK NR ELDORADO SPRINGS, CO	43,000	68
		BOULDER CREEK NEAR ORODELL	62,000	70
		SAINT VRAIN CREEK AT LYONS	110,000	77
		MARIANO RESERVOIR	1,000	10
		LAKE LOVELAND RESERVOIR	3,600	10
		LONE TREE RESERVOIR	6,400	35
10190006	Dig Thempson Diver	WILLOW CREEK RESERVOIR	7,100	54
10190000	Big Thompson River	BOYD LAKE	27,700	35
		CARTER LAKE	86,300	26
		BIG THOMPSON R AT MOUTH, NR DRAKE, CO	106,000	71
		LAKE GRANBY	324,400	63
		CHAMBERS LAKE	2,300	29
		BLACK HOLLOW RESERVOIR	3,300	69
		HALLIGAN RESERVOIR	6,400	94
		FOSSIL CREEK RESERVOIR	9,300	79
10190007	Cache La Poudre	CACHE LA POUDRE	9,900	96
		WINDSOR RESERVOIR	11,200	85
		COBB LAKE	17,000	68
		HORSETOOTH RESERVOIR	123,100	84
		CACHE LA POUDRE R AT CANYON MOUTH	265,000	65

HUC ID	HUC Name	Component Name	Component Volume (AF)	Component NEP for Month
		JULESBURG RESERVOIR	14,100	3
		BEAR CREEK ABV EVERGREEN	16,200	55
		PREWITT RESERVOIR	22,700	93
		JACKSON LAKE RESERVOIR	26,000	59
		EMPIRE RESERVOIR	29,700	71
		SOUTH BOULDER CK NR ELDORADO SPRINGS, CO	43,000	68
10190012	Middle South Platte-	RIVERSIDE RESERVOIR	50,400	86
10190012	Sterling	BOULDER CREEK NEAR ORODELL	62,000	70
		POINT OF ROCKS RESERVOIR	69,300	94
		BIG THOMPSON R AT MOUTH, NR DRAKE, CO	106,000	71
		SAINT VRAIN CREEK AT LYONS	110,000	77
		CLEAR CREEK AT GOLDEN	123,000	75
		SOUTH PLATTE RIVER AT SOUTH PLATTE	187,000	67
		CACHE LA POUDRE R AT CANYON MOUTH	265,000	65
10180001	North Platte Headwaters	NORTH PLATTE R NR NORTHGATE	285,000	65
		YAMCOLO RESERVOIR	7,600	88
		STAGECOACH RESERVOIR NR OAK CREEK	34,400	99
14050001	Upper Yampa	ELKHEAD CREEK ABOVE LONG GULCH	84,000	62
		YAMPA RIVER AT STEAMBOAT SPRINGS	285,000	53
		ELK RIVER NEAR MILNER, CO	380,000	54
14050002	Lower Yampa	YAMPA RIVER NEAR MAYBELL	1,060,000	54
14050003	Little Snake	LITTLE SNAKE RIVER NEAR LILY	420,000	55
14050005	Upper White	WHITE RIVER NEAR MEEKER	285,000	50
NEP is non	exceedance percentage	e (percentile) for volume of the component compared	d to this month d	uring the historical

age (perce nponent np ne) ig ۶P period 1970-2010. \*Empty, filling restriction

Water Volume NEP Color Scale: 0 (Well Below Normal) 100 (Well Above Normal) 50 (Normal)

#### SOUTH PLATTE BASIN

#### **Basinwide Conditions Assessment**

The SWSI value for the month was +1.7. February 2017 displayed a fairly uniform temperature "personality" but a very split "personality" in terms of precipitation, depending almost entirely on elevation. All of northeastern Colorado was significantly warmer than normal - in fact Denver recorded the 6<sup>th</sup> warmest February on record. Precipitation was fairly close to normal in the mountain areas of northeast Colorado, but very much below normal at the lower elevations (some areas received no measureable precipitation at all).

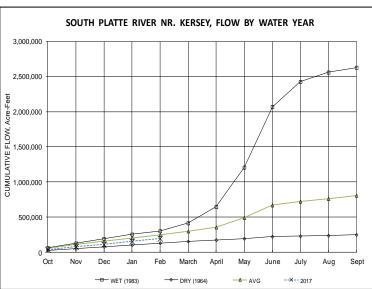
The snow water equivalent (SWE) reflected the better precipitation conditions at the higher elevations. The SWE was 156% of normal on February 1. Though the SWE decreased as a percentage to "only" 140% above normal on March 1, the actual overall South Platte basin SWE increased from about 11 inches on February 1 to about 13.5 inches on March 1. The normal South Platte basin peak SWE is about 15 inches and generally happens near the end of April.

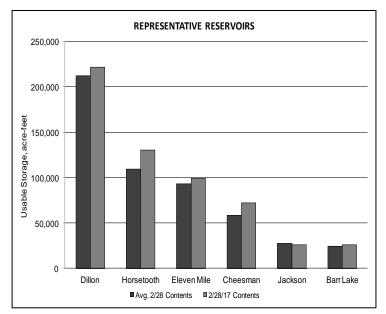
In February the USDA Drought Monitor remained essentially unchanged in northeast Colorado. The only surprising thing about this is that the ratings did not get worse because of the generally low precipitation numbers. The areas in the D1 "Moderate Drought" and the D0 "Abnormally Dry" categories remained pretty much unchanged during the month of February.

The flows in the South Platte River at the Julesburg and Kersey index gages were also split on both sides (above and below) of the February long term average. The overall February mean flow at the Julesburg gage was about 535 cfs or approximately 93% of the period of record mean flow of 578 cfs. The overall February mean flow at the Kersey gage was approximately 736 cfs. This represents a flow of approximately 110% of the period of record mean flow of 671 cfs.

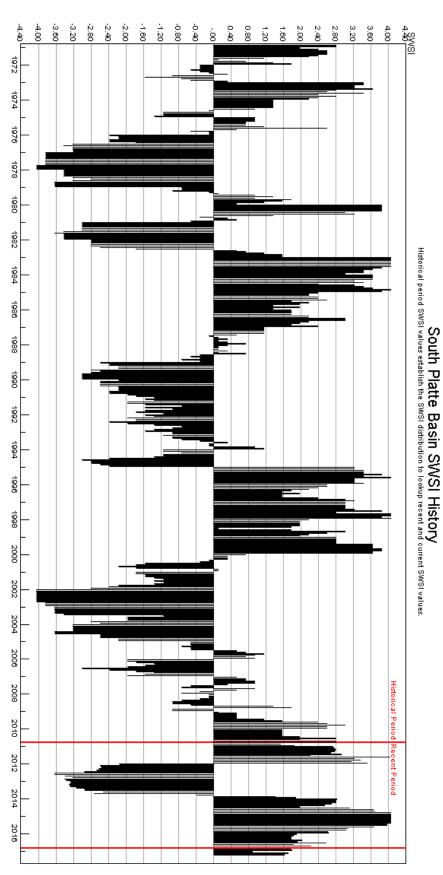
The February calls on the South Platte mainstem were only slightly more junior than normal for February. There were free river conditions on the mainstem below the metro Denver area except for February 20-27, when there was a reservoir fill call on from near Brush. The major South Platte tributaries were generally internally controlled in February with calls, like the mainstem, only slightly more junior than normal for February.

Overall storage in the South Platte continued the good, but not great trend established in late 2016. The end of February 2017 storage was at 80% of capacity, as compared to the long term average end of February storage of 74% of capacity.





South Platte-DataComposite-SWSI



The SWSI value for the month was +1.7.

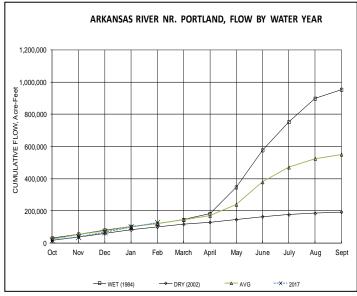
# <u>Outlook</u>

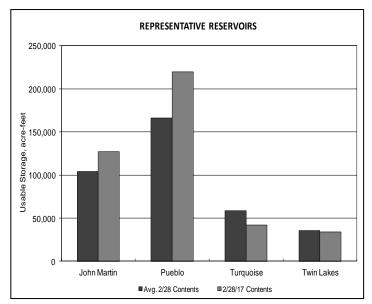
Reservoir storage in the Pueblo Winter Water Program totaled 119,857 acre-feet as of the end of February. This storage amount is lower than last year's storage to date (86% of last year) but represents 106% of the past five-year average. Conservation storage in John Martin Reservoir has accumulated 21,545 acre-feet representing a decrease from last year when storage reached 28,282 acre-feet for the same time period. Conservation storage remained well above the 1950 to 1975 pre-Winter Water Storage Period average of 17,810 acre-feet.

# Administrative/Management Concerns

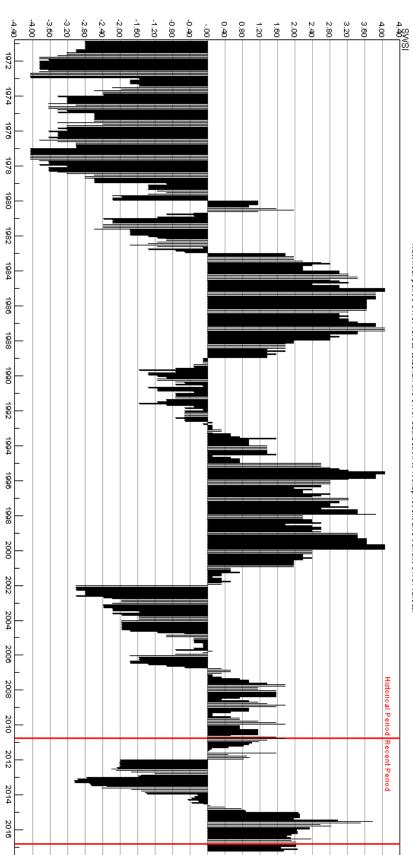
There is some risk of spill from accounts in Pueblo Reservoir, however so far that risk appears to be relatively small.

The Colorado State Engineer and Kansas Chief Engineer continued discussions in February with meetings in Burlington, Colorado on February 13th and 14th to attempt to investigate the possibility of gaining approval for an additional source of water for the Permanent Pool in John Martin Reservoir and to attempt to resolve some issues Kansas had previously raised about water right change decrees approved by the Colorado Water Court for the Lower Arkansas Water Management Association.









Arkansas Basin SWSI History Historical period SWSI values establish the SWSI distribution to lookup recent and current SWSI values.

The SWSI value for the month was +1.5. Flow at the gaging station Rio Grande near Del Norte averaged 218 cfs (121% of normal). The Conejos River near Mogote had a mean flow of 67 cfs (123% of normal). Flow to the state line was 141% of normal.

Temperatures were nearly seven degrees above normal in the Alamosa area during February. Alamosa received 0.29 inches of precipitation during the month, 0.03 inches above normal.

#### Outlook

When compared to historic levels, snowpack conditions remained above average throughout the upper Rio Grande basin during February. Snowpack accumulation during the past 40 days was not as dramatic as the mid-December through end of January period, but very encouraging as another significant snowstorm hit the upper Rio Grande basin February 28 - March 1.

National Weather Service forecasts predict warm and dry conditions for the basin through the Spring and Summer of 2017. However, with the two snowiest months of March and April yet to come, there's hope the snowpack can stay above average levels.

Recent NRCS stream flow forecasts are calling for above average conditions in the entire upper Rio Grande basin this year. The expected April through September runoff is 118% of normal for the Rio Grande near Del Norte and 129% for the Conejos River near Mogote. Very good snowpack exists on the Sangre de Cristo range where runoff forecasts predict 125 to 133% of average runoff. The best predicted runoff in the basin is the Rio San Antonio near the New Mexico state line at 160% of the long-term average. The low is the Alamosa River at 110%.

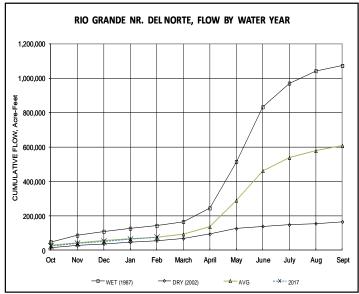
#### Administrative/Management Concerns

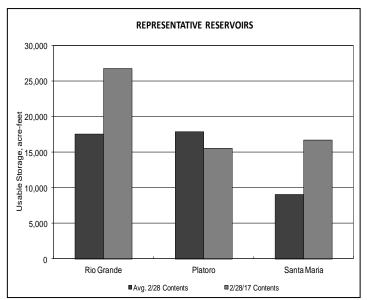
The 78<sup>th</sup> annual meeting of the Rio Grande Compact Commission will be held in Santa Fe, NM at Apodaca Hall, 1120 Paseo De Peralta on Wednesday, April 5, 2017. The public is invited to attend. The meeting is scheduled to start at 9:00 a.m. The meeting should provide interesting updates on 2016 water operations, the forecast for 2017, and endangered species within the Rio Grande corridor.

The Division Engineer expects early calls for irrigation water this year if warm and dry conditions occur. The presumptive irrigation season within Division 3 is April 1 through November 1, but can be adjusted year to year based on several climatic factors.

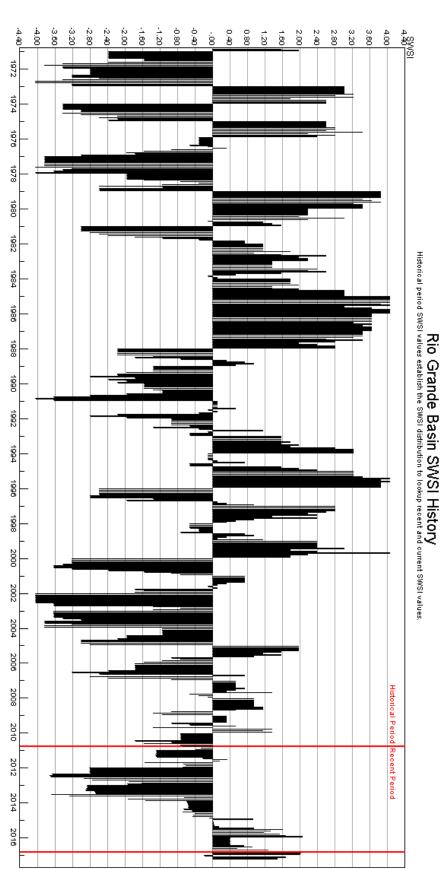
#### Administrative/Management Concerns

Much of the snow cover on the Valley floor has melted. Mud season arrived with the temperature increase. Signs are pointing to a real Spring this year.









The SWSI value for the month was +2.9. February returned to a drier weather pattern in central Colorado, including the Gunnison River basin. The lower basin, including the North Fork Gunnison River and lower Uncompany River basins generally received between 70% and 90% of average precipitation, while the upper basin, including the East River and Tomichi Creek, received in the range of 130% to 150% of average. It is not surprising then that the upper basin streams contain the highest snowpack with the basin above Taylor Park and Blue Mesa Reservoirs containing 152% and 157% of the 30-year median for March 1st, respectively. Areas above Ridgway and Paonia Reservoirs have good snowpack as well, but contain 137% and 136% of the median for March 1st, respectively. Even better news is that the sub-basin with the lowest snowpack, the upper Uncompany River, already contains 100% of the seasonal peak snowpack while the Snotel station with the greatest amount as measured against the median is at Park Cone, which contains 166% of the seasonal peak on March 1st. Temperatures across the basin during December were quite warm at 3 to 5 degrees above the average.

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

The NWS precipitation forecast for April through June puts the Gunnison basin in an area with equal chances of below or above average precipitation, but greater chances of above average temperatures.

#### Administrative/Management Concerns

Preparations have already begun to open the Gunnison Tunnel by mid-March as the warm weather in lower basin areas in February and the first two weeks of March has irrigators looking to turn on early. Winter wheat is appearing and apricot trees in the Paonia to Delta area have already blossomed prior to the official start of spring on March 21st. Hopefully we will avoid

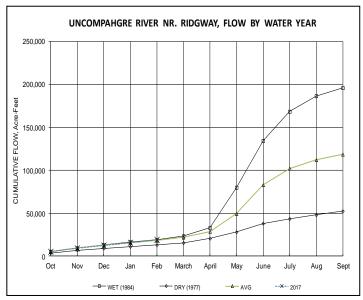
a late freeze that could significantly damage the fruit crop because unless the weather changes, it looks like we may be in for an early bloom for all fruit varieties.

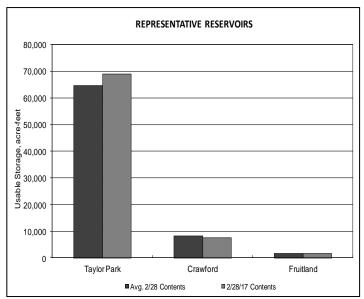
The March 1st inflow forecast for Blue Mesa Reservoir is for 970,000 acre-feet of runoff, which is 144% of the 30-year average. Target flows in the Record of Decision for the Aspinall Unit Operations EIS (to benefit four endangered fish species) are set by the inflow forecast on May 1st. Although we are not there yet, if the forecast remains at its current level, the spring target flows on the Gunnison River, as measured at Whitewater, would be 8,070 cfs for 40 days. The target for 10 of those 40 days would be a peak flow of 14,310 cfs. This will require large releases from the Aspinall Unit. As is typical, the USBR will attempt to time those releases with flows on the Uncompander and North Fork Gunnison Rivers in order to meet the target flows. As a result, timing for when these peak releases will be made cannot be determined until closer to a forecast peak runoff.

As of March 1st, Taylor Park Reservoir contained 49,718 acrefeet stored under it's first fill right and 19,268 acre-feet stored under it's second fill right. The first fill account in the Aspinall Unit contains 56,137 acre-feet. The USBR has begun releasing additional water from Taylor Park and Blue Mesa Reservoirs, which sit 68,975 acre-feet at 570,204 acre-feet in content, respectively, to make room for the large spring runoff.

#### Public Use Impacts

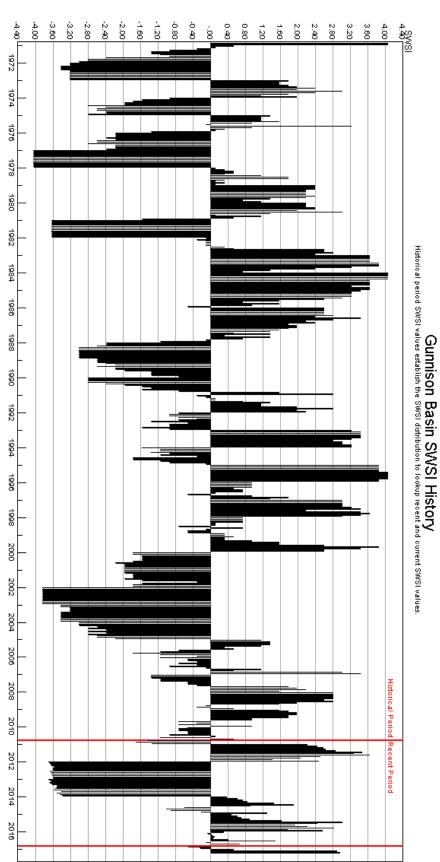
Most public use impact concerns at this time of year revolve around what the peak flows will be in the Gunnison Gorge during peak fly fishing periods as large flows have a detrimental effect on fishing conditions and by association, the river guide businesses. Unfortunately, as mentioned previously, the timing of peak releases will not be known until later.





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The SWSI value for the month was +2.5.

# <u>Outlook</u>

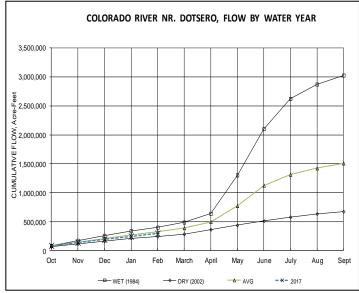
Colorado River flows are running about average with tributary flows running from below to above average throughout March. As of March 15, the Upper Colorado River Basin snowpack was 140 percent of median snow water equivalent and 126 percent of average precipitation. Forecasts call for above average precipitation and above average temperatures for western Colorado through March.

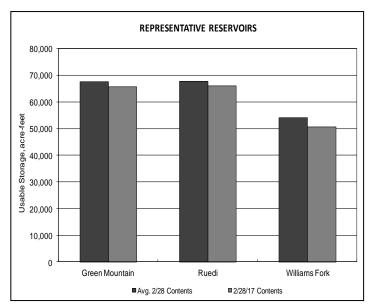
# Administrative/Management Concerns

The call on the Colorado River main stem remains the Shoshone Hydro Power right for 1250 cfs. Accordingly, Green Mountain Reservoir is releasing to pass inflows, provide contract and HUP obligations and make C-BT replacements. Wolford Reservoir is bypassing inflows and releasing for contracts. Inflows and therefore outflows have been generally holding steady with a tendency toward slight increases with increased precipitation.

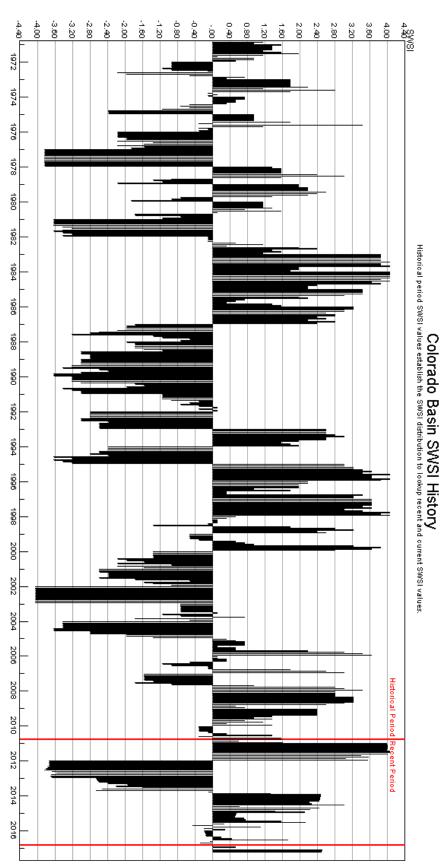
# Public Use Impacts

The Division 5 Water Court has determined that a water right for growing cannabis is lawful even though it's still illegal to grow pot under federal law. "Establishing a valid appropriation does not require an analysis of the legality of the subsequent use of the water right" wrote Susan Ryan, the water referee in her 12 page order.





Colorado-DataComposite-SWSI



The SWSI value for the month was +0.4. February precipitation was above average in the Yampa, White, and North Platte River basins. Precipitation for the month, as measured at the SNOTEL sites operated by NRCS, was reported at 105% of average for the Yampa, White, and North Platte River basins. Total precipitation for the water year as a percent of average to date in the combined basins at the end of February was 121%.

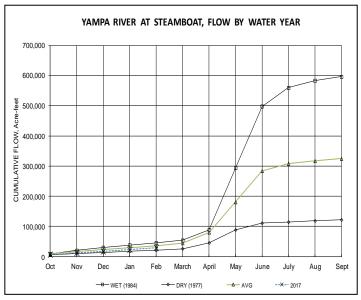
Snowpack for the combined basins as of March 1st, 2017 was at 126% of average. The snow water equivalent (SWE) as of February 28, 2017 was 120% of average for the North Platte River basin and 116% of average for the Yampa River basin and White River basin.

NRCS predicts above average spring and summer streamflows in the Yampa, White, and North Platte River basins. The latest runoff forecasts from the NRCS for the April through July period are 127% of average for the North Platte River at Northgate, 113% of average for the Yampa River near Maybell, 122% of average for the Little Snake River near Lily, and 102% of average for the White River near Meeker.

All Division 6 stream gages were either closed for the winter season or ice/snow-affected as of March 15th, 2017. Gages will be opened during April.

# <u>Outlook</u>

As of February 28th Fish Creek Reservoir was storing approximately 3,334 AF, 80% of capacity. The capacity of Fish Creek Reservoir is 4,167 AF. Yamcolo Reservoir was storing 7,600 AF at the end of February 2017. The capacity of Yamcolo Reservoir is 8,700 AF. On February 28th Elkhead Creek Reservoir was storing 24,062 AF. The capacity of Elkhead Creek Reservoir is 24,778 AF. On February 28, 2017, Stagecoach Reservoir was storing 34,400 AF, 94% of capacity.



Water stored in Fish Creek Reservoir is used

primarily for municipal purposes, Yamcolo Reservoir for irrigation purposes, and Elkhead Creek Reservoir for municipal, industrial, recreational, and fish recovery releases. Stagecoach Reservoir is primarily used for recreation though a significant amount of stored water is allocated for municipal, industrial, irrigation and augmentation uses.

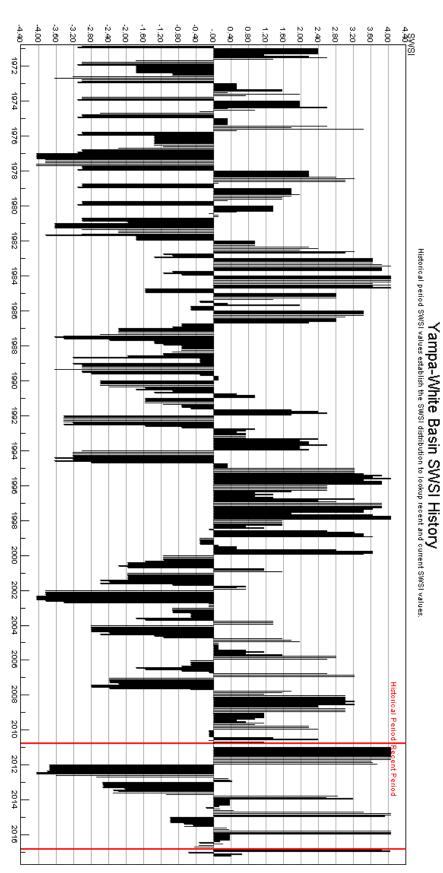
# Public Use Impacts

Steamboat Ski Resort currently enjoys spring conditions with a 59 inch base and 275 inches of snowfall since early November.

Please check the Stagecoach Reservoir State Park website for the fishing report. Park conditions have not been updated since January 18, 2017.

Steamboat Lake is reporting that ice is holding up on the reservoir however with the recent warm days, caution is advised. Please call the park for updated ice conditions on the reservoir. Fishermen around the marina are reporting bigger fish being caught (17-19 inches). Roads are all closed in the park except for the Marina access.

Yampa-White-DataComposite-SWSI



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#### SAN JUAN-DOLORES BASIN

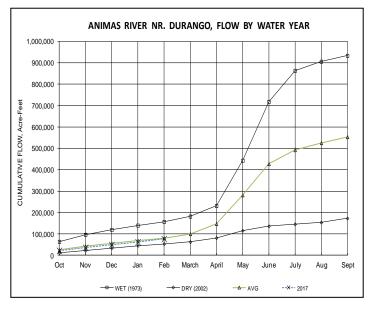
### **Basinwide Conditions Assessment**

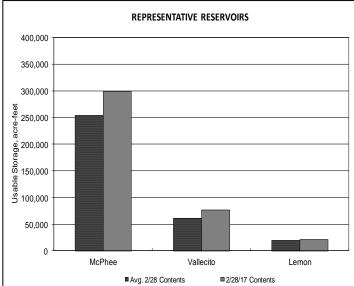
The SWSI value for the month was +2.2. Flow at the Animas River at Durango averaged 214 cfs (128% of average). The flow at the Dolores River at Dolores was estimated to average 48 cfs (85% of average). The La Plata River at Hesperus averaged 11.8 cfs (159% of average). Precipitation in Durango was 1.20 inches for the month, 74% of the 30-year average of 1.62 inches. Precipitation was the 67th highest amount recorded in February, in Durango, out of 123 years of record. Precipitation to date in Durango, for the water year, is 12.04 inches, 145% of the 30-year average of 8.30 inches. End of last month precipitation to date, for the water year was 160% of average. The average high and low temperatures for the month of February in Durango were 500 and 260. In comparison, the 30-year average high and low for the month is 460 and 190. At the end of the month Vallecito Reservoir contained 76,925 acre-feet compared to its average content of 56,769 acre-feet (136% of average). McPhee Reservoir was up to 298,801 acre-feet compared to its average content of 19,918 acre-feet (107% of average).

### Outlook

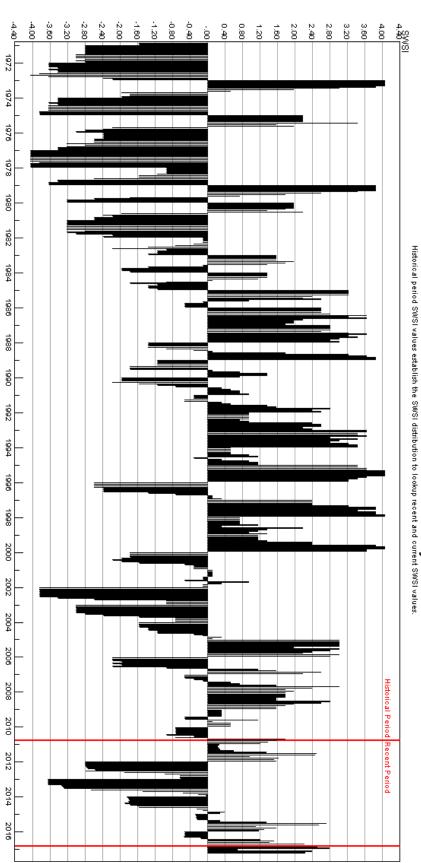
Precipitation (1.20 inches) was below average for February in Durango. There were 67 years out of 123 years of record where there was more precipitation than this year. With the warmer weather, flows in the rivers within the basin climbed to above average. There were 18 out of 107 years of record where the total flow past the Animas River at Durango stream gauge was more than this year. There were 64 out of 106 years of record where the total flow past the Dolores stream gauge was more than this year and 11out of 100 years of record where the total flow past the La Plata River at Hesperus gauge was more than this year. On February 28, the NRCS SNOTEL sites reported an average snow-water-equivalent within the basin at 152%. End of last month the

snow-water-equivalent was 170%.

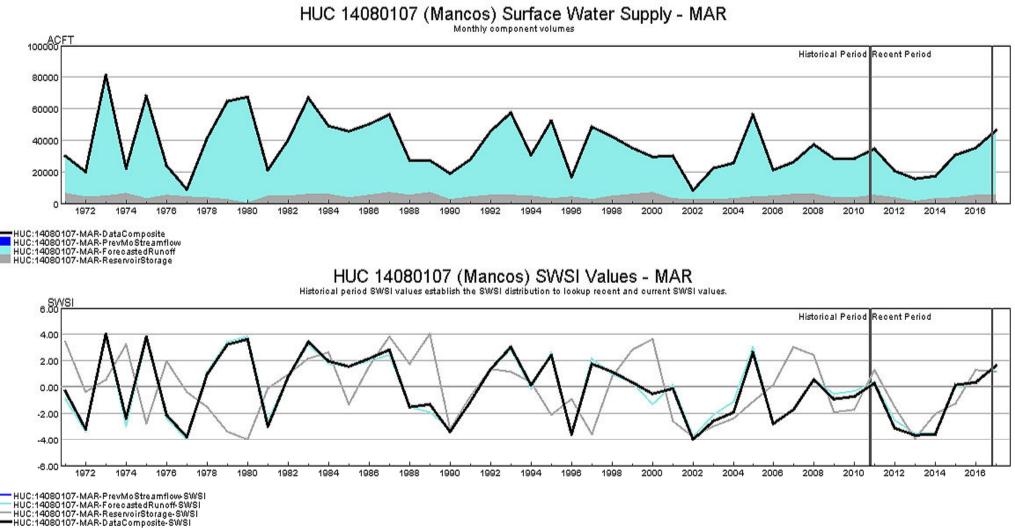


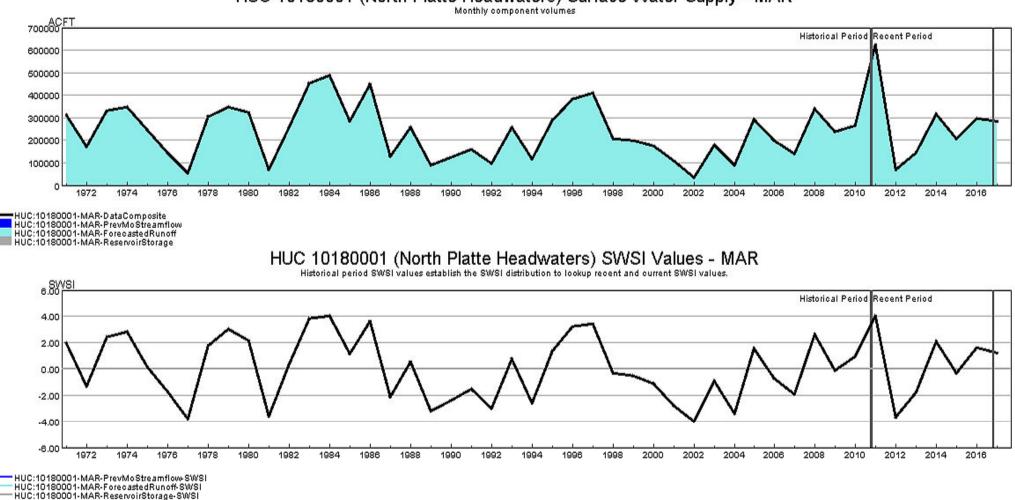






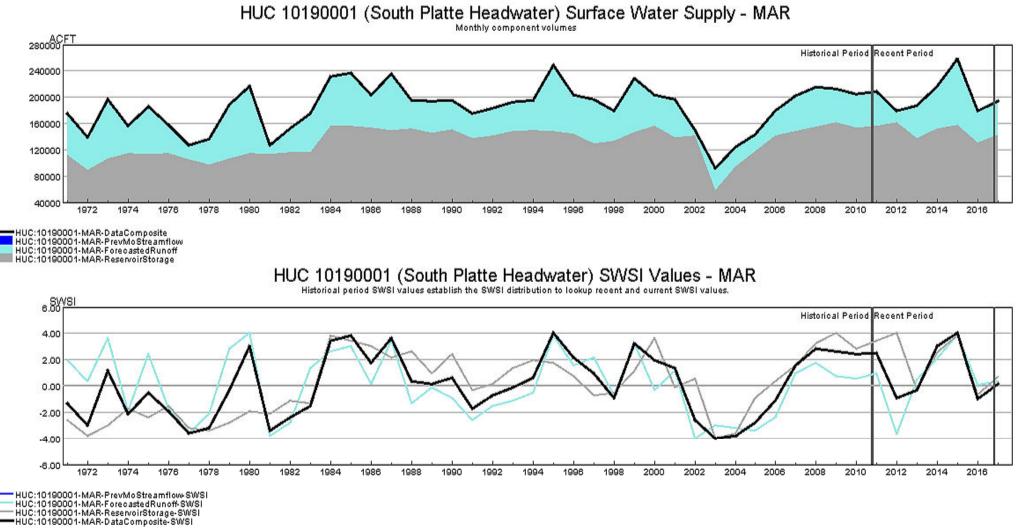
San Juan-Dolores Basin SWSI History Historical period SWSI values establish the SWSI distribution to lookup recent and current SWSI values.

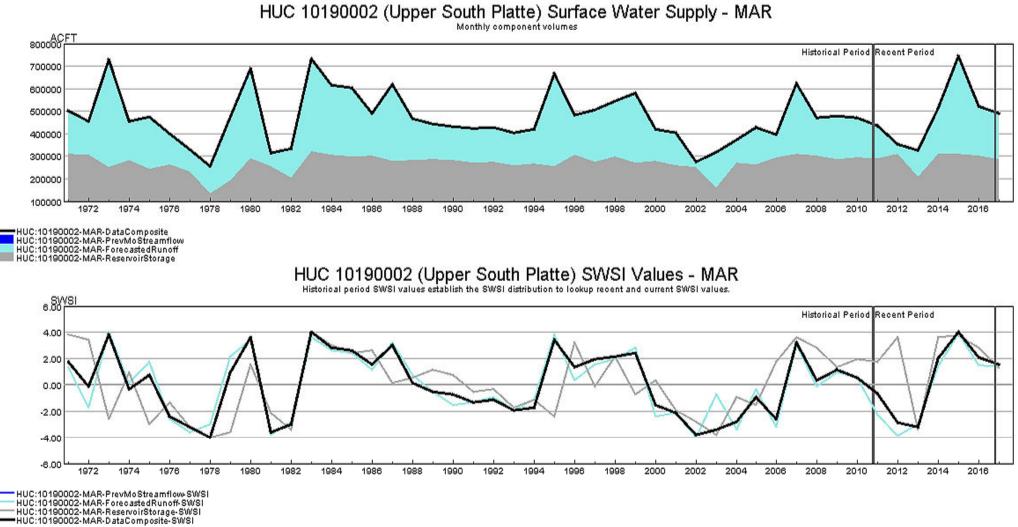


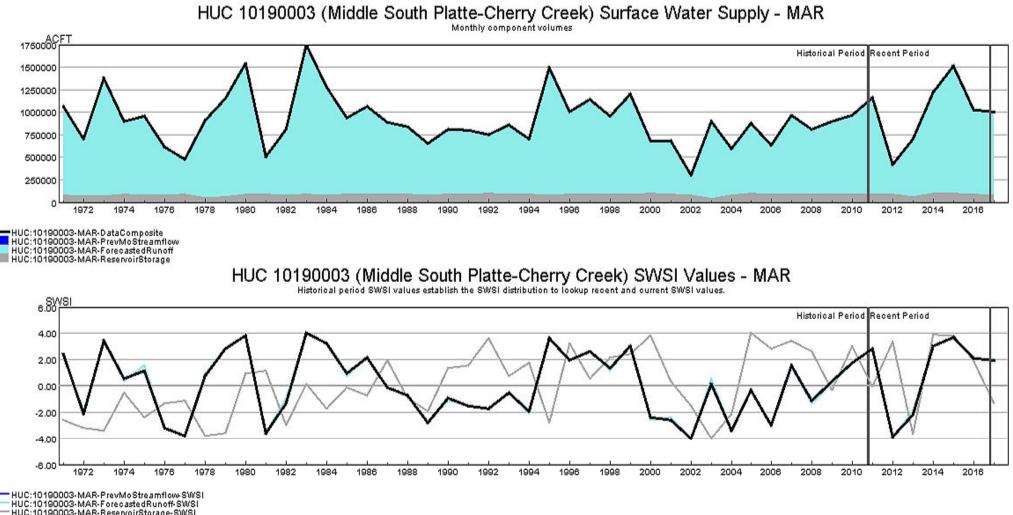


# HUC 10180001 (North Platte Headwaters) Surface Water Supply - MAR

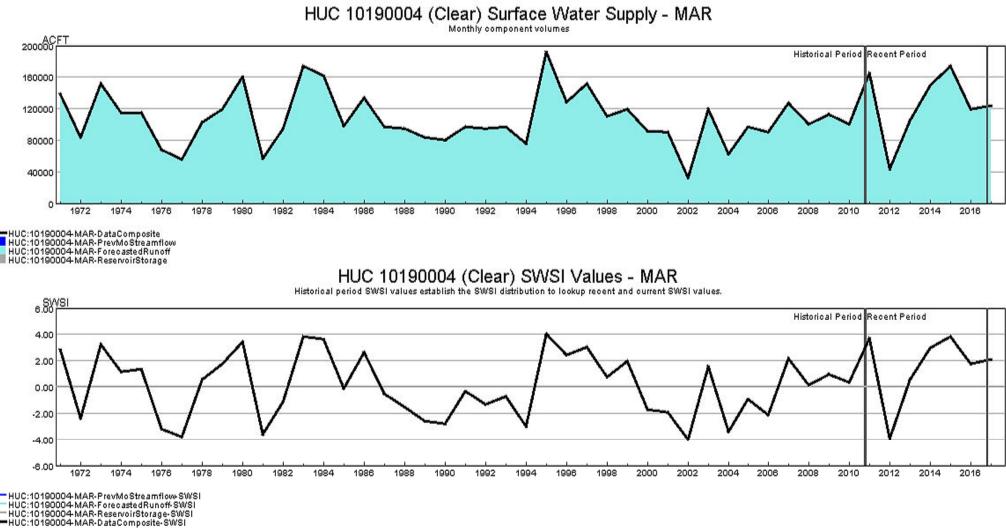
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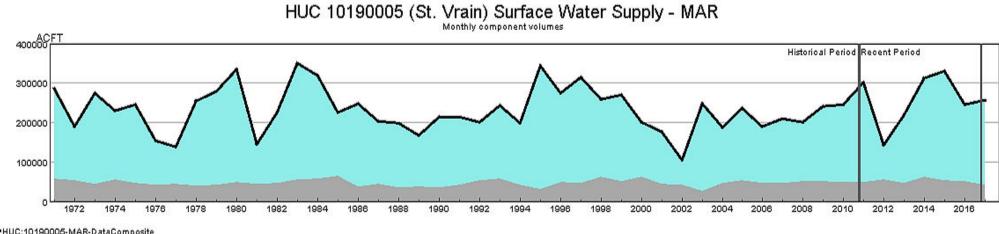






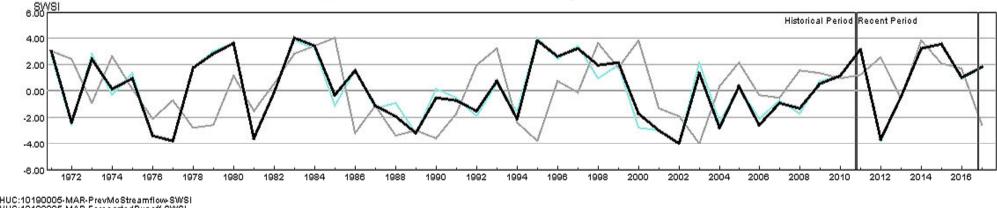
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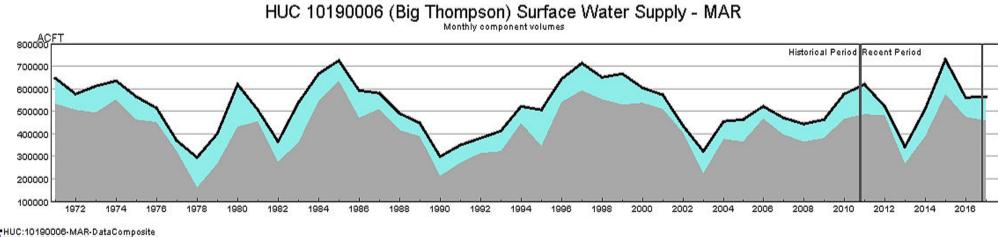


HUC:10190005-MAR-DataComposite HUC:10190005-MAR-PrevMoStreamflow HUC:10190005-MAR-ForeoastedRunoff HUC:10190005-MAR-ReservoirStorage

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

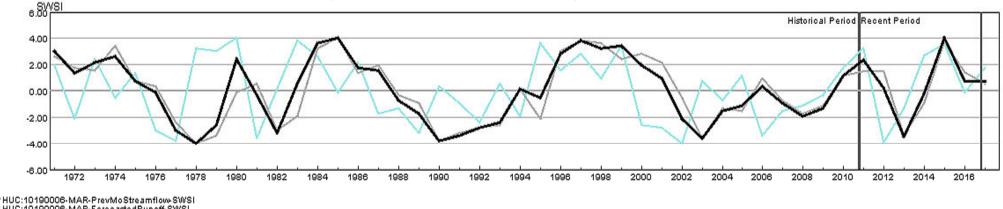


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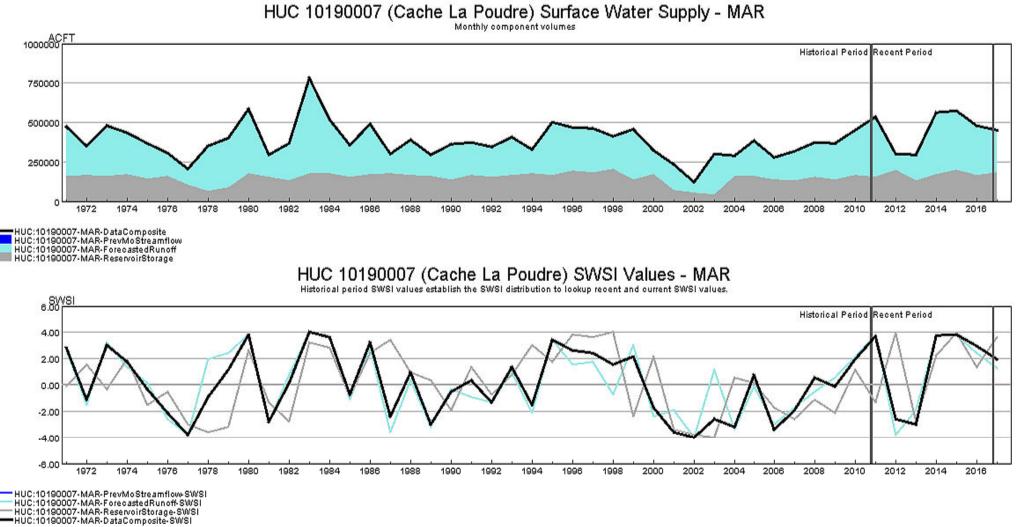


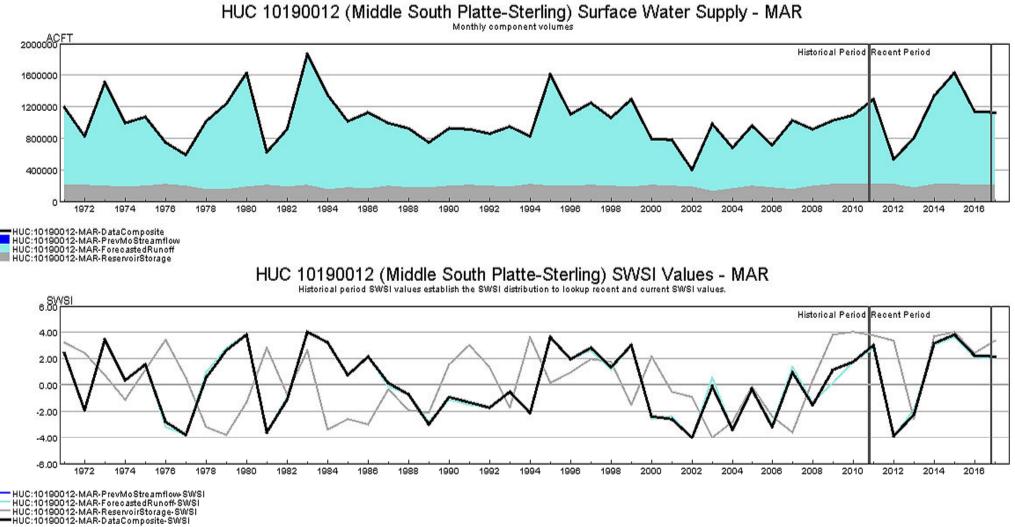
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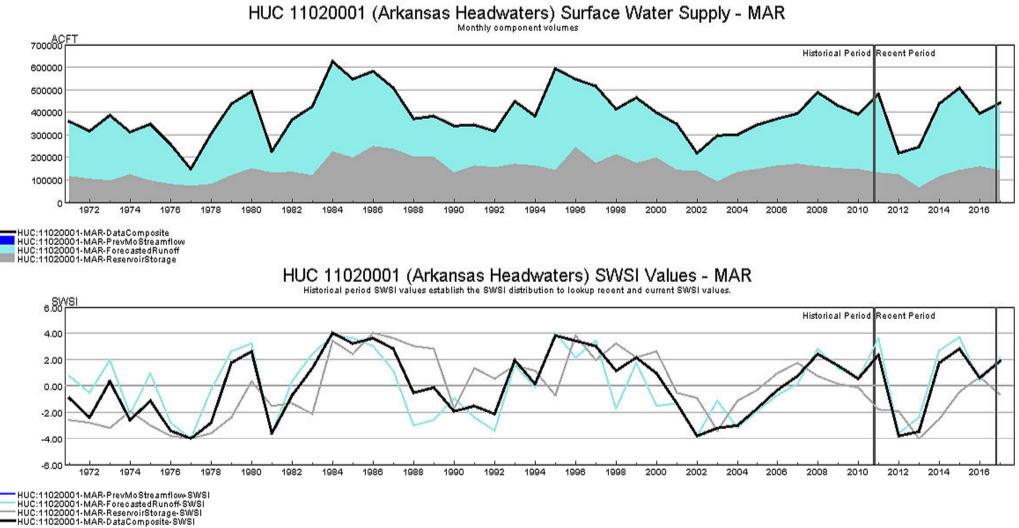
HUC 10190006 (Big Thompson) SWSI Values - MAR Historical period SWSI values establish the SWSI distribution to lookup recent and current SWSI values.

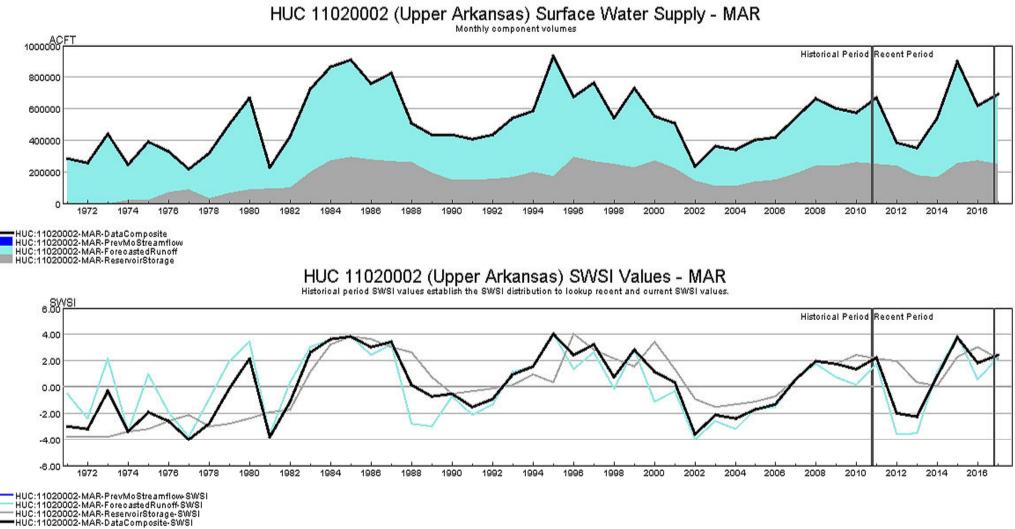


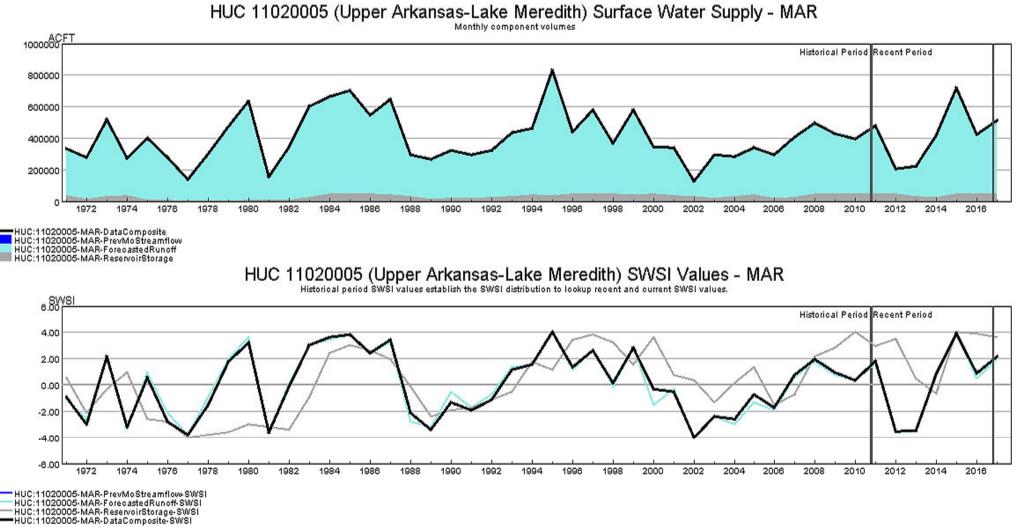
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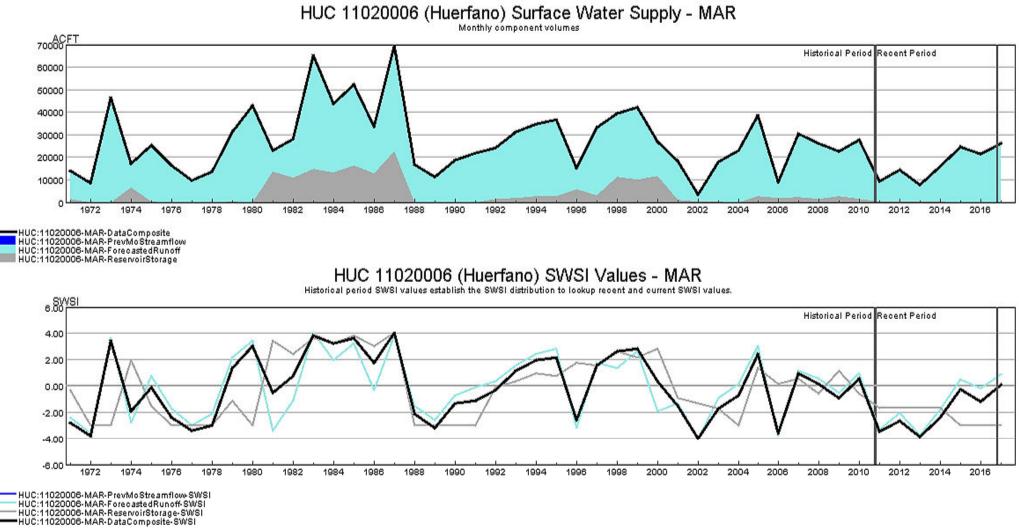


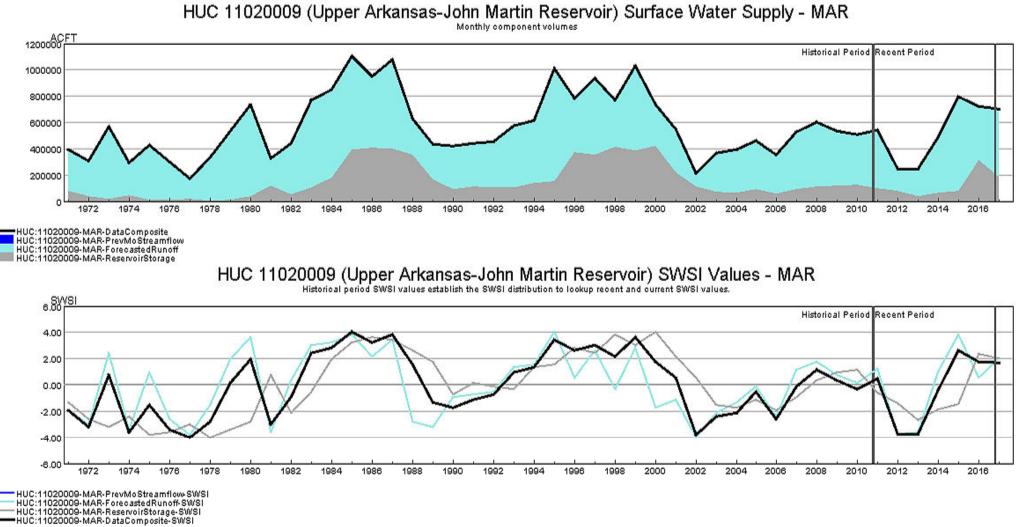


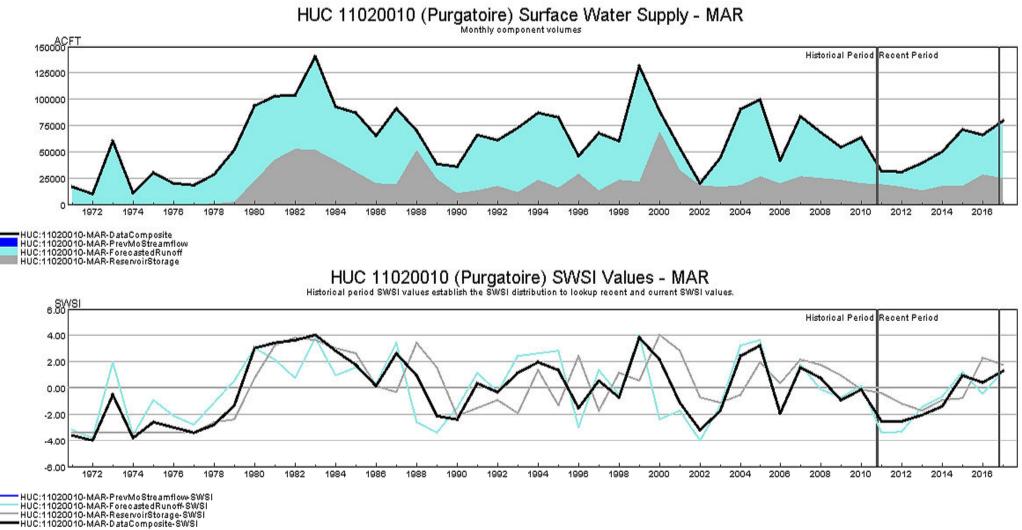


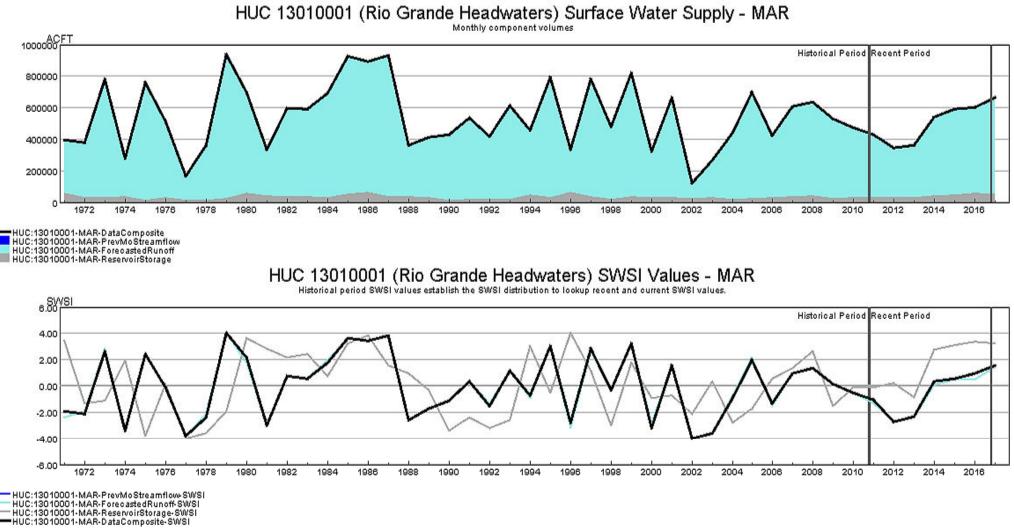


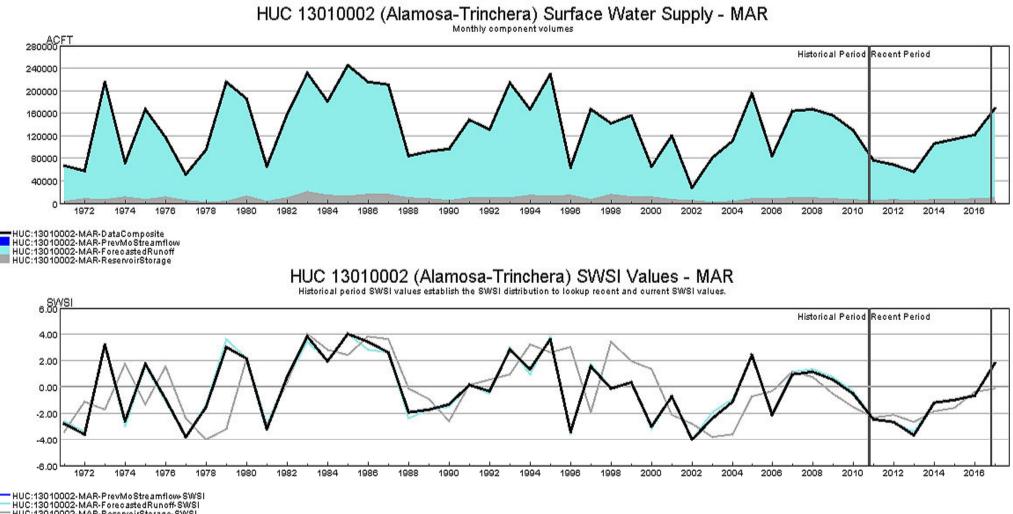




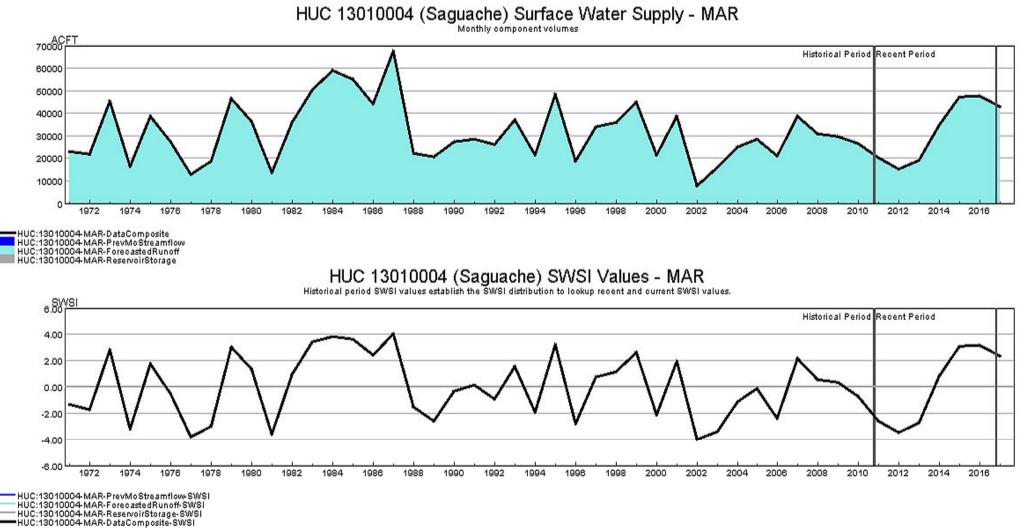


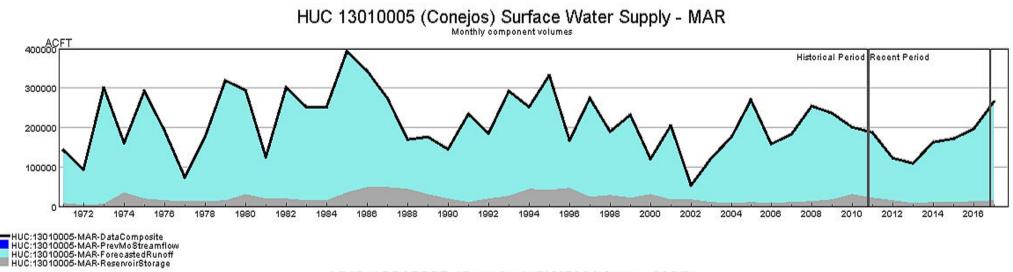




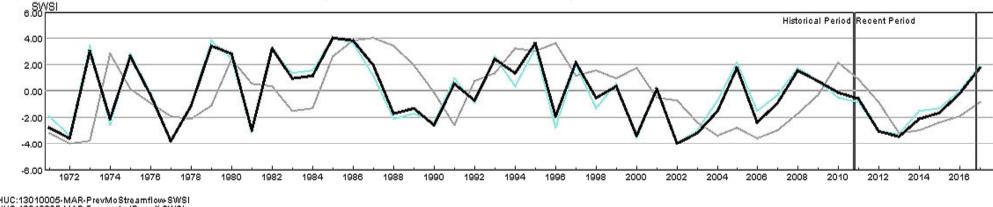


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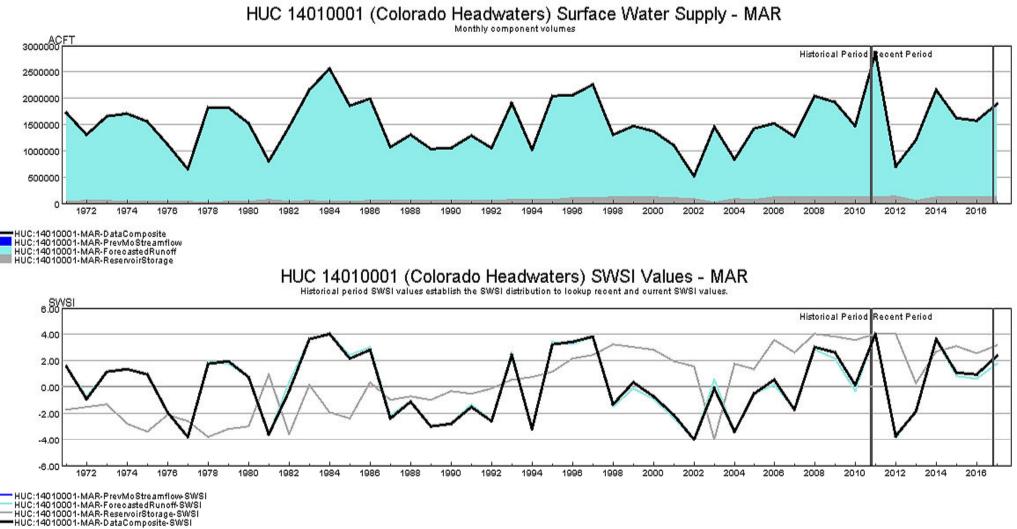


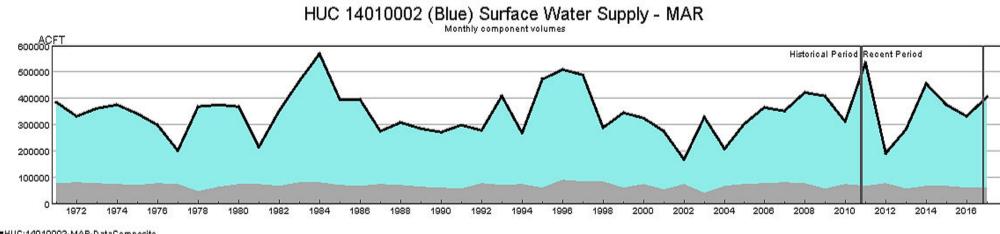


HUC 13010005 (Conejos) SWSI Values - MAR Historical period SWSI values establish the SWSI distribution to lookup recent and current SWSI values.



= HUC:13010005-MAR-PrevMoStreamflow-SWSI = HUC:13010005-MAR-ForecastedRunoff-SWSI = HUC:13010005-MAR-ReservoirStorage-SWSI = HUC:13010005-MAR-DataComposite-SWSI

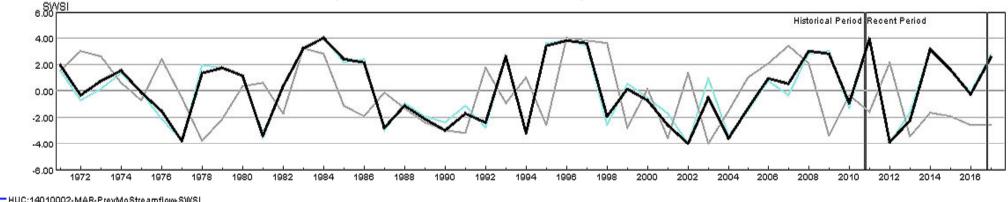




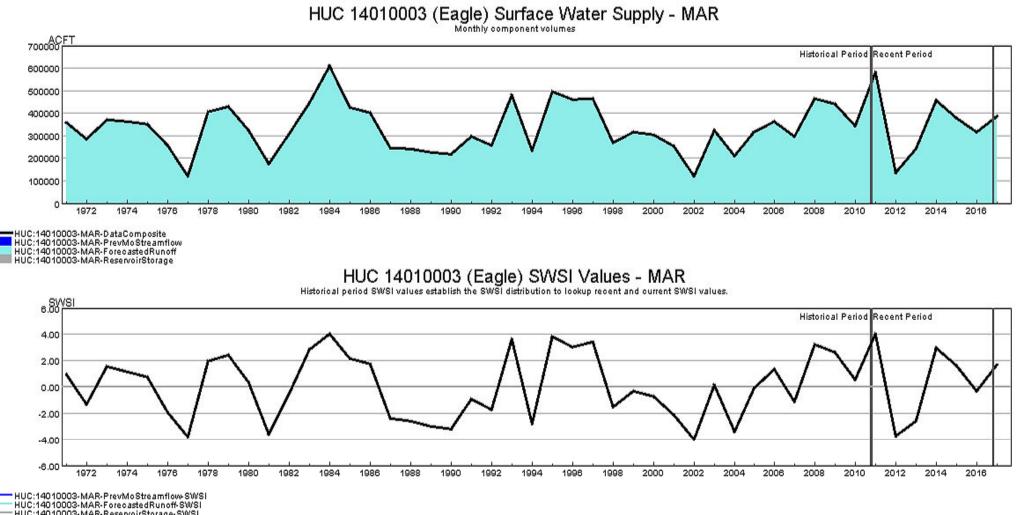
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HUC 14010002 (Blue) SWSI Values - MAR Historical period SWSI values establish the SWSI distribution to lookup recent and current SWSI values.

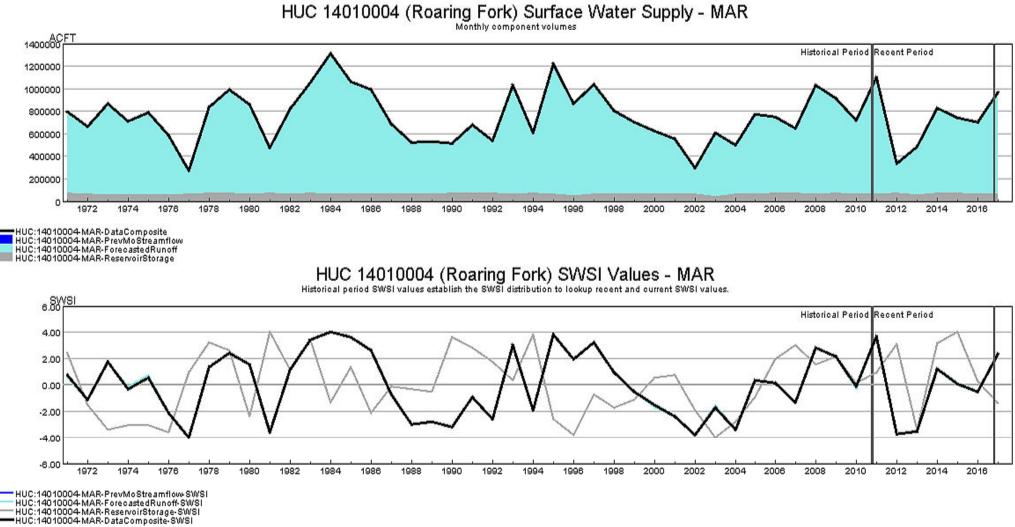


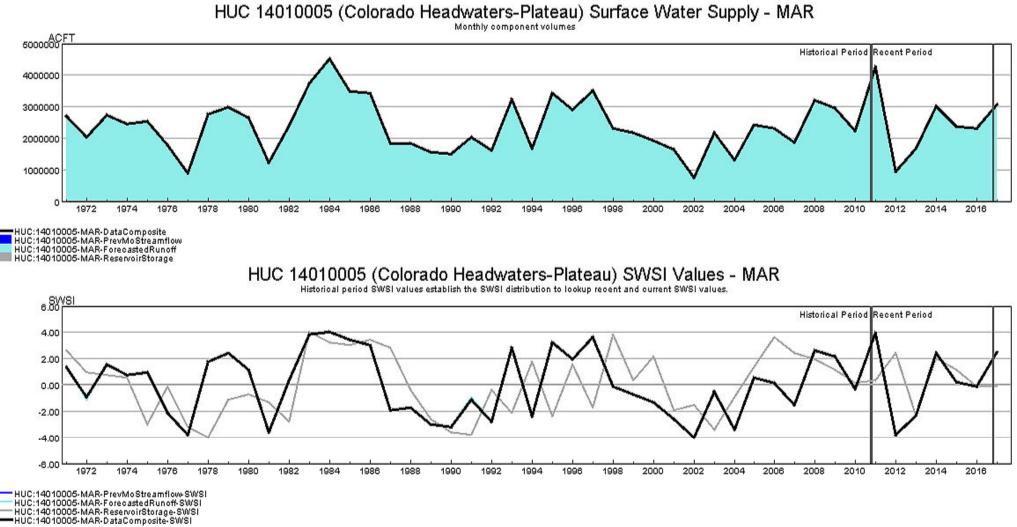


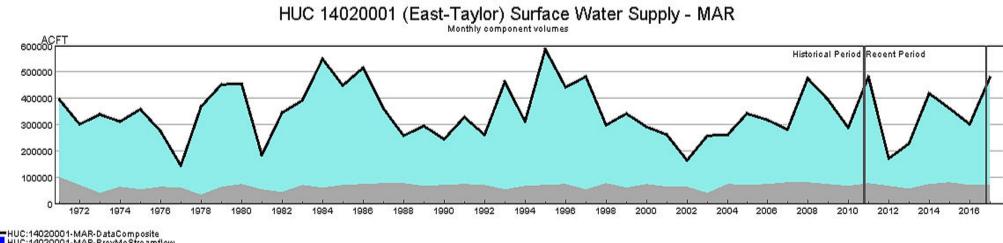
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- HUC:14010003-MAR-ReservoirStorage-SWSI = HUC:14010003-MAR-DataComposite-SWSI



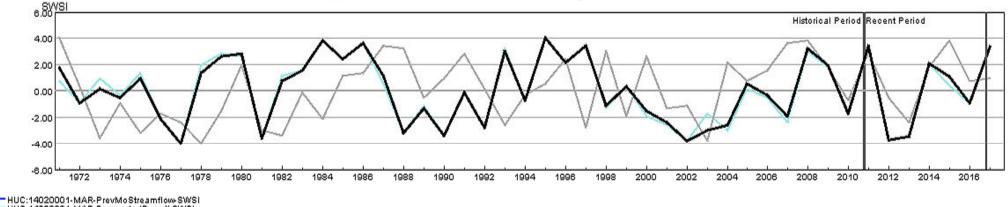




HUC:14020001-MAR-DataComposite HUC:14020001-MAR-PrevMoStreamflow HUC:14020001-MAR-ForeoastedRunoff HUC:14020001-MAR-ReservoirStorage

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





= HUC:14020001-MAR-PrevMoStreamflow-SWSI = HUC:14020001-MAR-ForeoastedRunoff-SWSI = HUC:14020001-MAR-ReservoirStorage-SWSI = HUC:14020001-MAR-DataComposite-SWSI

