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>

April 1, 2019

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.

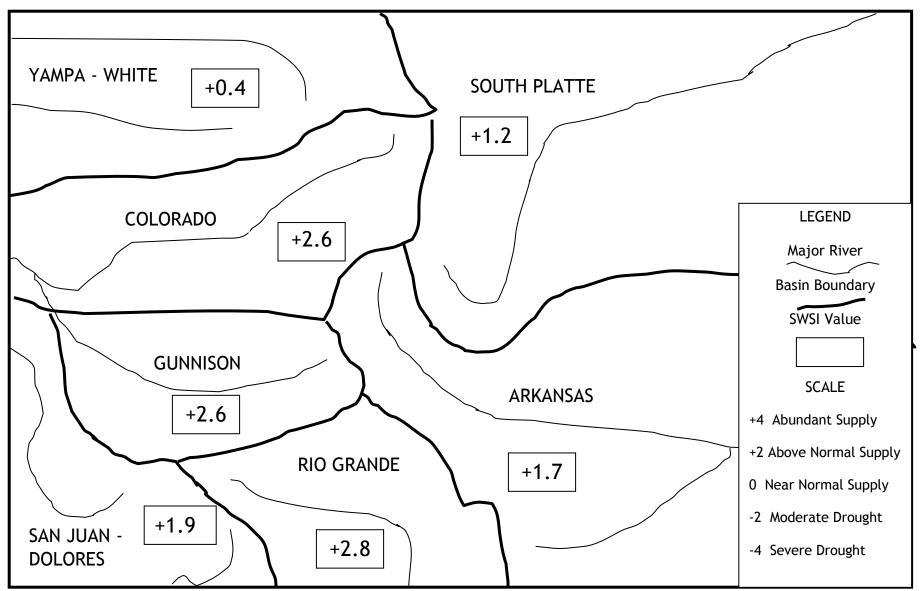
Time Period	riod SWSI Components	
February 1 - June 1	Forecasted Runoff + Reservoir Storage	
July 1 - September 1	Previous Month's Streamflow + Reservoir Storage	
October 1 - January 1	Reservoir Storage	

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 (February 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 March 31. The statewide SWSI values for April 1 are close to average to above average. The SWSI values range from a low of +0.4 in the Yampa Basin and a high of +2.8 in the Rio Grande Basin, forecasted runoff is predicated to be above average, however many reservoir levels are below normal.

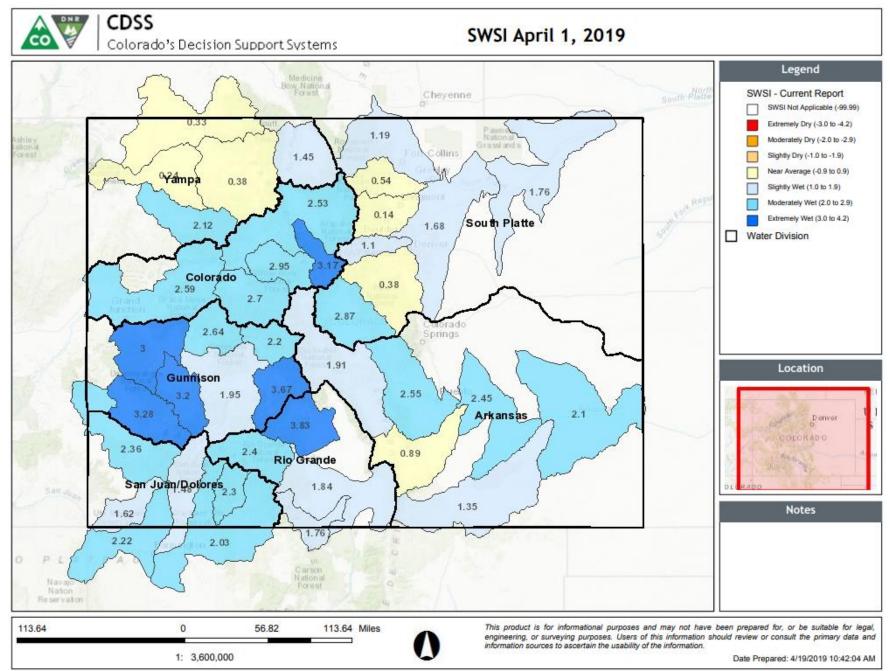
Basin	April 1 SWSI	Change from Previous Month	Change from Previous Year
Arkansas	1.7	0.3	0.1
Colorado	2.6	2.1	5.5
Gunnison	2.6	2.7	6.1
Rio Grande	2.8	2.2	6.0
San Juan-Dolores	1.9	1.3	5.0
South Platte	1.2	0.8	0.1
Yampa-White	0.4	0.8	2.5

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



SURFACE WATER SUPPLY INDEX FOR COLORADO BY MAJOR RIVER BASIN

SURFACE WATER SUPPLY INDEX FOR COLORADO BY HUC



Basin	HUC ID	HUC Name	SWSI	Reservoir Storage NEP	Forecast Flow NEP	Total Vol (AF)
	11020006	Huerfano	0.90	17	74	30,500
Þ	11020010	Purgatoire	1.36	70	78	83,890
rka	11020001	Arkansas Headwaters	1.92	61	83	429,087
Arkansas	11020005	Upper Arkansas-Lake Meredith	2.45	14	80	554,800
SI	11020002	Upper Arkansas	2.55	72	79	720,600
	11020009	Upper Arkansas-John Martin Reservoir	2.11	57	81	761,300
	14010002	Blue	3.17	73	90	442,648
Co	14010003	Eagle	2.95	6	85	455,000
Colorado	14010004	Roaring Fork	2.70	N/A	83	1,000,793
opt	14010001	Colorado Headwaters	2.54	16	80	1,917,720
	14010005	Colorado Headwaters-Plateau	2.59	14	82	3,206,958
	14020003	Tomichi	3.67	39	94	140,200
	14030003	San Miguel	3.29	3	89	190,000
Gu	14020006	Uncompahgre	3.21	49	89	250,007
Gunnison	14020004	North Fork Gunnison	2.65	67	82	423,824
sor	14020001	East-Taylor	2.20	N/A	78	435,411
2	14020002	Upper Gunnison	1.95	46	90	1,561,548
	14020005	Lower Gunnison	3.01	N/A	86	2,230,000
R.	13010004	Saguache	3.84	, 79	96	59,000
ဝ ရ 13010	13010002	Alamosa-Trinchera	1.85	15	75	174,675
	13010005	Conejos	1.77	N/A	73	269,000
۱de	13010001	Rio Grande Headwaters	2.41	52	78	762,400
S	14080105	Middle San Juan	2.23	39	73	34,857
an J	14080107	Mancos	1.62	14	74	46,992
uar	14080102	Piedra	2.30	N/A	78	310,000
San Juan-Dolores	14030002	Upper Dolores	2.37	8	80	623,475
olo	14080104	Animas	1.49	50	70	632,311
res	14080101	Upper San Juan	2.04	4	76	810,269
	10190004	Clear	1.11	80	63	114,000
	10190001	South Platte Headwater	2.87	13	78	225,700
So	10190005	St. Vrain	0.15	14	58	230,055
South Platte	10190007	Cache La Poudre	1.20	N/A	63	408,613
n Pl	10190002	Upper South Platte	0.39	36	73	451,800
atte	10190006	Big Thompson	0.55	54	57	518,487
(D	10190003	Middle South Platte-Cherry Creek	1.69	28	72	954,300
	10190012	Middle South Platte-Sterling	1.77	61	72	1,089,700
~	10180001	North Platte Headwaters	1.46	N/A	67	290,000
ām	14050005	Upper White	2.12	73	75	350,000
pa-	14050003	Little Snake	0.34	N/A	54	390,000
Yampa-White	14050001	Upper Yampa	0.34	N/A	50	780,900
<u> </u>	14050001	Lower Yampa	0.25	N/A	53	1,050,000

April 1, 2019 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)

April 1, 2019 SWSI Component Informa	ation - Streamflow Forecast &	Reservoir Storage - By HUC
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HUC ID	HUC Name	Component Name	Component Volume (AF)	Component NEP for Month
		CLEAR CREEK RESERVOIR	7,600	54
		HOMESTAKE RESERVOIR	18,300	31
11020001	Arkansas Headwaters	TWIN LAKES RESERVOIR	32,008	39
	neudwaters	TURQUOISE LAKE	46,179	9
		ARKANSAS RIVER AT SALIDA	325,000	83
		CUCHARAS RESERVOIR*	0	14
11020006	Huerfano	HUERFANO RIVER NEAR REDWING	14,500	73
		CUCHARAS RIVER AT BOYD RANCH NR LA VETA	16,000	78
11020010	Purgatoire	TRINIDAD LAKE	22,890	57
11020010	Fulgatolle	PURGATOIRE RIVER AT TRINIDAD	61,000	78
11020002	Lippor Arkansas	PUEBLO RESERVOIR	235,600	70
11020002	Upper Arkansas	PUEBLO RESERVOIR INFLOW	485,000	79
		ADOBE CREEK RESERVOIR	8,900	20
		HUERFANO RIVER NEAR REDWING	14,500	73
11020009	Upper Arkansas-	CUCHARAS RIVER AT BOYD RANCH NR LA VETA	16,000	78
11020009	John Martin Reservoir	PURGATOIRE RIVER AT TRINIDAD	61,000	78
		JOHN MARTIN RESERVOIR	175,900	76
		PUEBLO RESERVOIR INFLOW	485,000	79
	Upper Arkansas- Lake Meredith	LAKE HENRY	7,200	56
		HUERFANO RIVER NEAR REDWING	14,500	73
11020005		CUCHARAS RIVER AT BOYD RANCH NR LA VETA	16,000	78
		MEREDITH RESERVOIR	32,100	61
		PUEBLO RESERVOIR INFLOW	485,000	79
14010002	Blue	GREEN MOUNTAIN RESERVOIR	42,648	6
14010002	Blue	BLUE RIVER INFLOW TO GREEN MOUNTAIN RES	400,000	90
		WOLFORD MOUNTAIN RESERVOIR	33,520	70
14010001	Colorado Headwaters	WILLIAMS FORK RESERVOIR	64,200	61
	neudwaters	COLORADO RIVER NEAR DOTSERO	1,820,000	80
14010005	Colorado	VEGA RESERVOIR	6,958	14
14010005	Headwaters-	COLORADO RIVER NEAR CAMEO	3,200,000	82
14010003	Eagle	EAGLE RIVER BELOW GYPSUM	455,000	85
14010004	Roaring Fork	RUEDI RESERVOIR	55,793	16
14010004	Roaring Fork	ROARING FORK AT GLENWOOD SPRINGS	945,000	83
		TAYLOR PARK RESERVOIR	60,411	39
14020001	East-Taylor	TAYLOR R INF TO TAYLOR PARK RESERVOIR	130,000	80
		EAST RIVER AT ALMONT	245,000	78
14020005	Lower Gunnison	GUNNISON RIVER NR GRAND JUNCTION	2,230,000	86
14020004	North Fork	PAONIA RESERVOIR	3,824	67
14020004	Gunnison	NORTH FORK GUNNISON R NR SOMERSET	420,000	82
14030003	San Miguel	SAN MIGUEL RIVER NEAR PLACERVILLE	190,000	89
14020003	Tomichi	VOUGA RESERVOIR NEAR DOYLEVILLE	200	49
14020003	Tomichi	TOMICHI CREEK AT GUNNISON, CO	140,000	94

HUC ID	HUC Name	Component Name	Component Volume (AF)	Component NEP for Month
14020006	Uncompahgre	RIDGEWAY RESERVOIR	50,007	46
14020000	oncompanyic	UNCOMPAHGRE RIVER AT COLONA	200,000	89
		FRUITLAND RESERVOIR	460	2
		SILVER JACK RESERVOIR	1,304	3
		CRAWFORD RESERVOIR	3,362	1
14020002	Upper Gunnison	MORROW POINT RESERVOIR	106,686	4
		LAKE FORK AT GATEVIEW, CO	190,000	96
		BLUE MESA RESERVOIR	249,736	7
		GUNNISON R INF TO BLUE MESA RESERVOIR	1,010,000	87
		MOUNTAIN HOME**	675	1
		TERRACE RESERVOIR	5,500	23
		TRINCHERA CK	15,000	69
13010002	Alamosa-Trinchera	UTE CREEK	16,500	76
		SANGRE DE CRISTO	20,000	62
		CULEBRA CREEK AT SAN LUIS	27,000	71
		ALAMOSA CREEK ABOVE TERRACE RESERVOIR	90,000	82
12010005	Conejos	PLATORO RESERVOIR	19,000	52
13010005	Conejos	CONEJOS RIVER NEAR MOGOTE	250,000	73
	Rio Grande Headwaters	RIO GRANDE RESERVOIR**	2,200	3
12010001		CONTINENTAL RESERVOIR	16,500	99
13010001		SANTA MARIA RESERVOIR	23,700	94
		RIO GRANDE NEAR DEL NORTE	720,000	78
13010004	Saguache	SAGUACHE CREEK NEAR SAGUACHE, CO	59,000	96
		LEMON RESERVOIR	7,311	8
14080104	Animas	FLORIDA RIVER INFLOW TO LEMON RESERVOIR	75,000	74
		ANIMAS RIVER AT DURANGO	550,000	68
1 1000107	Managa	JACKSON GULCH RESERVOIR	1,992	4
14080107	Mancos	MANCOS RIVER NEAR MANCOS	45,000	74
4 4000405		LONG HOLLOW RESERVOIR	1,857	50
14080105	Middle San Juan	LA PLATA RIVER AT HESPERUS	33,000	73
14080102	Piedra	PIEDRA RIVER NEAR ARBOLES	310,000	78
		GROUNDHOG RESERVOIR	300	2
14030002	Upper Dolores	MCPHEE RESERVOIR	168,175	39
		DOLORES RIVER BELOW MCPHEE RESERVOIR	455,000	80
		VALLECITO RESERVOIR	40,269	14
14080101	Upper San Juan	LOS PINOS RIVER NEAR BAYFIELD	270,000	75
		SAN JUAN RIVER NEAR CARRACAS	500,000	73
		LAKE LOVELAND RESERVOIR	0	5
		MARIANO RESERVOIR	4,000	38
		LONE TREE RESERVOIR	7,100	34
10100		WILLOW CREEK RESERVOIR	7,474	72
10190006	Big Thompson	BOYD LAKE	31,400	46
		BIG THOMPSON R AT MOUTH, NR DRAKE, CO	93,000	57
		CARTER LAKE	105,400	71
		LAKE GRANBY	270,113	54

HUC ID	HUC Name	Component Name	Component Volume (AF)	Component NEP for Month
		CHAMBERS LAKE	2,126	25
		BLACK HOLLOW RESERVOIR	3,982	92
		HALLIGAN RESERVOIR	6,428	95
		WINDSOR RESERVOIR	8,700	10
10190007	Cache La Poudre	FOSSIL CREEK RESERVOIR	10,015	87
		CACHE LA POUDRE	10,552	99
		COBB LAKE	15,910	64
		HORSETOOTH RESERVOIR	95,900	21
		CACHE LA POUDRE R AT CANYON MOUTH	255,000	63
10190004	Clear Creek	CLEAR CREEK AT GOLDEN	114,000	63
		HORSECREEK RESERVOIR	8,800	4
		MILTON RESERVOIR	21,700	92
		BARR LAKE	28,800	61
		STANDLEY RESERVOIR	29,000	13
	Middle South	SOUTH BOULDER CK NR ELDORADO SPRINGS, CO	39,000	59
10190003	Platte-Cherry	BOULDER CREEK NEAR ORODELL	57,000	57
	Creek	SAINT VRAIN CREEK AT LYONS	93,000	59
		BIG THOMPSON R AT MOUTH, NR DRAKE, CO	93,000	57
		CLEAR CREEK AT GOLDEN	114,000	63
		SOUTH PLATTE RIVER AT SOUTH PLATTE	215,000	73
		CACHE LA POUDRE R AT CANYON MOUTH	255,000	63
		JULESBURG RESERVOIR	17,400	15
		PREWITT RESERVOIR	22,300	39
		JACKSON LAKE RESERVOIR	26,100	42
		EMPIRE RESERVOIR	32,800	69
		SOUTH BOULDER CK NR ELDORADO SPRINGS, CO	39,000	59
		RIVERSIDE RESERVOIR	55,800	91
10190012	Middle South Platte-Sterling	BOULDER CREEK NEAR ORODELL	57,000	57
	Flatte-Sterting	POINT OF ROCKS RESERVOIR	69,300	83
		SAINT VRAIN CREEK AT LYONS	93,000	59
		BIG THOMPSON R AT MOUTH, NR DRAKE, CO	93,000	57
		CLEAR CREEK AT GOLDEN	114,000	63
		SOUTH PLATTE RIVER AT SOUTH PLATTE	215,000	73
		CACHE LA POUDRE R AT CANYON MOUTH	255,000	63
		ANTERO RESERVOIR	19,600	61
40400004	South Platte	SPINNEY MOUNTAIN RESERVOIR	33,800	79
10190001	Headwater	ELEVENMILE CANYON RESV INFLOW	73,000	78
		ELEVENMILE CANYON RESERVOIR	99,300	43
		TERRY RESERVOIR	5,455	66
		MARSHALL RESERVOIR	6,800	58
		GROSS RESERVOIR	7,400	32
10100000	CL Mart	UNION RESERVOIR	10,500	33
10190005	St. Vrain	BUTTONROCK (RALPH PRICE) RESERVOIR	10,900	21
		SOUTH BOULDER CK NR ELDORADO SPRINGS, CO	39,000	59
		BOULDER CREEK NEAR ORODELL	57,000	57
		SAINT VRAIN CREEK AT LYONS	93,000	59

HUC ID	HUC Name	Component Name	Component Volume (AF)	Component NEP for Month
		CHEESMAN LAKE	62,700	46
10190002	Upper South Platte	DILLON RESERVOIR	174,100	11
		SOUTH PLATTE RIVER AT SOUTH PLATTE	215,000	73
14050003	Little Snake	LITTLE SNAKE RIVER NEAR LILY	390,000	54
14050002	Lower Yampa	YAMPA RIVER NEAR MAYBELL	1,050,000	53
10180001	North Platte Headwaters	NORTH PLATTE R NR NORTHGATE	290,000	67
14050005	Upper White	WHITE RIVER NEAR MEEKER	350,000	75
		YAMCOLO RESERVOIR	3,700	25
		STAGECOACH RESERVOIR NR OAK CREEK	31,200	97
14050001	Upper Yampa	ELKHEAD CREEK ABOVE LONG GULCH	81,000	57
		YAMPA RIVER AT STEAMBOAT SPRINGS	290,000	55
		ELK RIVER NEAR MILNER, CO	375,000	49

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

*No longer exists **Empty for repairs

Water Volume NEP Color Scale:

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

Basinwide Conditions Assessment

The SWSI value for the month was +1.2.

The South Platte Basin in northeastern Colorado experienced above average precipitation during the month of March throughout much of the basin. Temperatures were below the long term mean for much of the basin overall for the month, however mountainous areas were slightly below average. As a result, basin wide precipitation was 155% of the historic average during the month of March, resulting in water year to date precipitation in the South Platte River basin above average at 120% of average for the year heading into April. The South Platte River basin snowpack index gages show the month of March continuing to hold above average, ending the month of March at 118% of average.

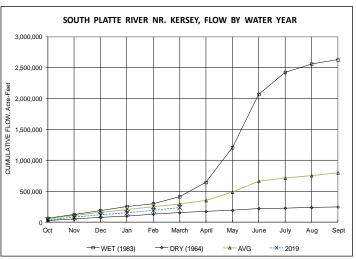
Widespread above average precipitation throughout the basin helped the entire basin widespread drought conditions in February improve to almost no drought conditions throughout the South Platte River basin. The USDA Drought Monitor rating for northeast Colorado of Moderate Drought (D1 rating) in the mountainous areas and areas encompassing most of the foothills onto the eastern plains of Abnormally Dry (D0 rating) in February, improved to no areas of drought except for a portion of Park and Teller Counties with a rating of Abnormally Dry (D0 rating) by the end of March.

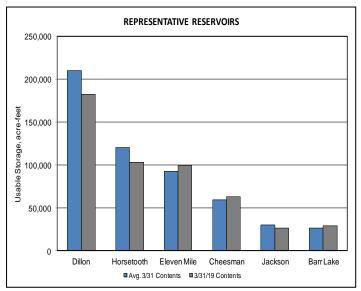
The overall basin slightly below average temperatures and above average precipitation during the month of March resulted in above average flows at the Kersey gage downstream of the City of Greeley, with the average daily flows for the average table 212 of

flows for the month of March approximately 813 cfs, 116% of the historic mean value of 698 cfs. The average daily flows at the Julesburg gage for the month of March was 594 cfs, 117% of the historic mean value of 508 cfs.

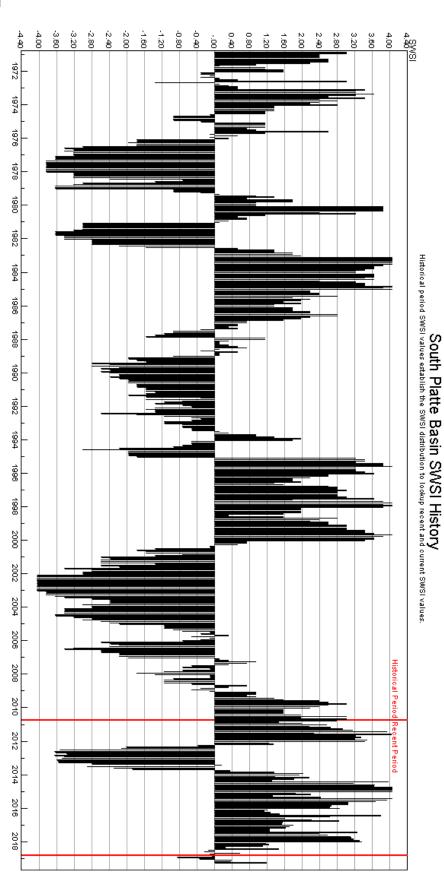
The reservoir fill season began November 1st, with reservoir storage throughout the South Platte River Basin continuing through the month of March. Reservoirs storage levels throughout the South Platte ended the month of March at River mainstem approximately 85% of reservoir capacity and 102% of average for this time of year. Reservoir calls from the first portion of February throughout the month of March have been controlled by the Burlington Canal Barr Lake 1910 Prospect Reservoir call controlling the upper portion of the mainstem, except for a period of no call from March 13 through March 18. There has been no call controlling the lower portion of the South Platte River below the Burlington Canal call during the month of March, but expected to begin in the first part of April.

The temperature and precipitation outlook into April, May and June 2019, prepared by the National Weather Service, in northeastern Colorado indicates a trend toward slightly above average temperatures and average precipitation in the South Platte River Basin. Streamflow forecasts for the South Platte basin range from 150% on the upper portion of the basin to near average of 105% to slightly above in the tributaries in the central portion of the basin.





South Platte-DataComposite-SWSI



Basinwide Conditions Assessment

The SWSI value for the month was +1.7.

<u>Outlook</u>

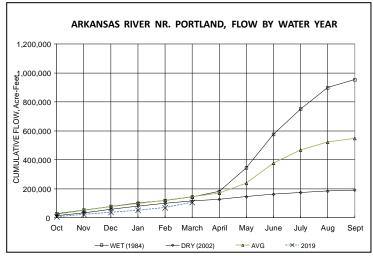
Total distributed reservoir storage following the Pueblo Winter Water Program was 100,072 acrefeet, including 42,323 acre-feet in Pueblo Reservoir, 47,173 acre-feet in diversions to off-channel reservoirs, and 10,312 acre-feet in John Martin Reservoir (after distribution to accounts). Conservation Storage in John Martin Reservoir through March 14, 2019 totaled 28,424 acre-feet. Storage values were considerably below the 20-year average of 132, 259 ac-ft for the Pueblo Winter Water Program and just above the 1950-1975 pre-Winter Water Storage average of 23,024 ac-ft for Conservation Storage in John Martin Reservoir.

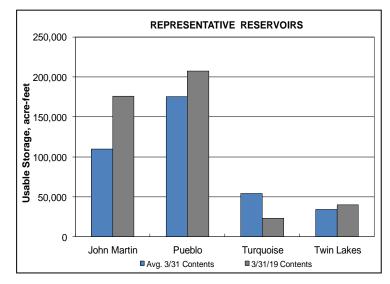
Administrative/Management Concerns

In anticipation of higher than normal imports into Twin Lakes and Turquoise Reservoir due to above average snow pack on the Western Slope, the US Bureau of Reclamation began moving up to 1,000

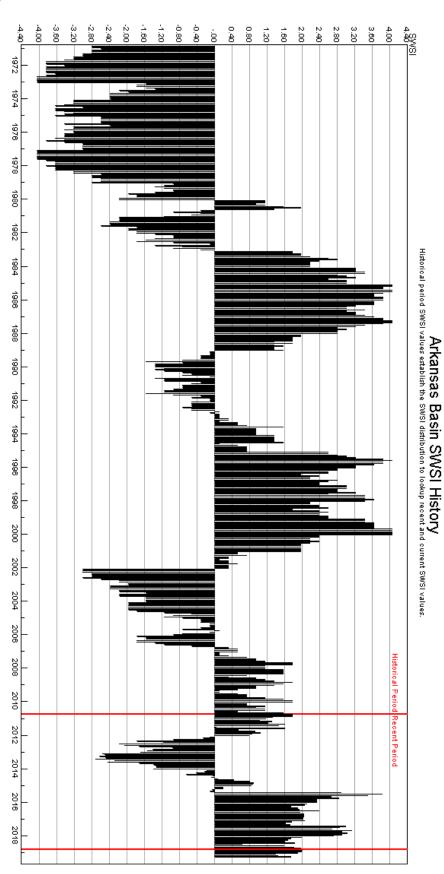
ac-ft of water into Pueblo Reservoir. This nearly resulted in an account spill from the Joint-Use Pool. Flows out of the mountain reservoirs were reduced to a sustainable amount.

Construction on the Stilling Pool at John Martin Reservoir was completed by the April 1st deadline and regular operations began as planned.





Arkansas-DataComposite-SWSI



Basinwide Conditions Assessment

The SWSI value for the month was +2.8.

Flow at the gaging station Rio Grande near Del Norte averaged 229 cfs (83% of normal). The Conejos River near Mogote had a mean flow of 80 cfs (91% of normal). Streamflow in the upper Rio Grande basin was generally below average during March as cool temperatures slowed the onset of snowmelt runoff.

Fresh snowfall in the San Luis Valley and the surrounding mountains was common and abundant during the first two weeks of March. And although the snowfall slowed during the second half of the month, all areas of the upper Rio Grande basin currently have above average snowpack.

<u>Outlook</u>

NOAA weather forecasts for the next three months call for above normal precipitation and near normal temperatures.

The recent coordinated forecast by the NRCS and NWS predicts above average runoff conditions throughout the upper Rio Grande basin. The best forecast within the basin is Saguache Creek at 184% of average. The Rio Grande at Del Norte is projected for 140%, the Conejos near Mogote at 129%, the Alamosa River at 132% and Culebra Creek at 117%.

Administrative/Management Concerns

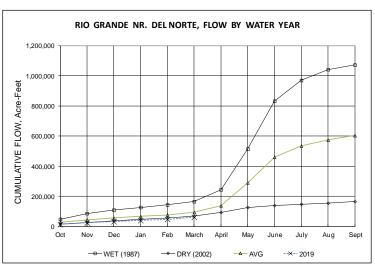
Really Big News: On March 15, 2019, Water Court Judge Pattie P. Swift entered her Judgment and Decree in Case No. 15CW3024 - The Rules Governing the Withdrawal of Groundwater in Water Division 3 and Establishing Criteria for the Beginning and End of the Irrigation Season in Water Division No. 3 for All Irrigation Water Rights. This decree culminates decades of efforts to establish Rules for non-exempt groundwater use. With these Rules, administrators can enforce the requirement for non-exempt groundwater users to replace injurious depletions and maintain sustainable aquifers.

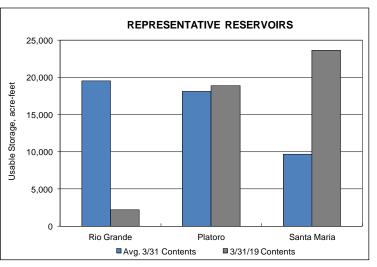
Water users and administrators are preparing for an irrigation season with the likelihood of excellent surface water supplies. This is a boon for the San Luis Valley that experienced a very dry 2018 season. The Valley's strained aquifers have a chance at some recovery.

Reservoir storage benefits a minority of water users in this basin, but there will be an opportunity for storage of high runoff and some flood protection. Most reservoirs in the basin have quite a bit of unused storage space.

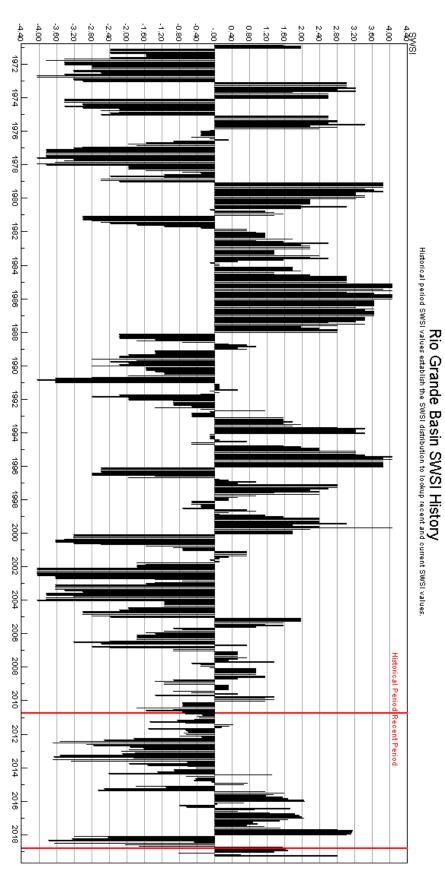
Public Use Impact

Due to the generally wet conditions, all drainages in Water Division No. 3 began irrigation season diversions on April 1 or April 8.





Rio Grande-DataComposite-SWSI



Basinwide Conditions Assessment The SWSI value for the month was +2.6.

The entire Gunnison basin received greater than average precipitation in March, however, it varied greatly from north to south. Drainages in the south, such as the headwaters of the Lake Fork and the Uncompanyer, received greater than 200% of average precipitation while northern basins, such as the East River, ranged from 110-130% of average. Much of this precipitation fell in the first two weeks of the month. March precipitation brought the Gunnison to 145% of the median for the date and 138% of the median peak. It is interesting that while past good water years in the drainage above Blue Mesa Reservoir contained less than ideal conditions in other areas, this years snow water equivalent (SWE) within one week of the average peak is much greater than average basin wide. March temperatures stayed below average at 1-3 degrees cooler than average. This has resulted in very little runoff from high elevations yet.

<u>Outlook</u>

April to July runoff forecasts prepared by the CBRFC on April 1st increased again. In fact, the April 1st forecast for April to July inflow into Blue Mesa Reservoir was 925,000 acre-feet, which was a 175,000 acre-feet increase from March 1st.

Climate forecasts for the next 30 and 90 day period now place the Gunnison in an area expected to receive greater than average precipitation.

Administrative/Management Concerns

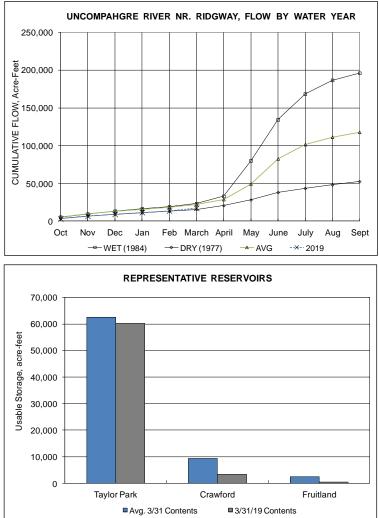
Blue Mesa Reservoir levels have begun to rise with the melting of low snow. The above mentioned CBRFC inflow forecast for Blue Mesa falls in the moderately wet year category, which results in a 24 hour peak flow target in the Black Canyon of 6,513 cfs. Target flows specified in the Record of Decision (ROD) for reoperations of the Aspinall Unit, including provisions that cut the duration in half for years following an extreme drought, are 14,350 cfs for 10 days followed by another 10 days at 8,070

cfs. As a result of the projected releases to meet these flow targets. Blue Mesa will not fill. However, it is projected to rise to a peak content of 660,000 acre-feet, which is 80% of capacity and above the elevation that Reclamation reduces the reservoir to by December 31st in order to prevent icing impacts upstream anyway. Reaching these targets for the intended durations will present an operating challenge for the Bureau of Reclamation because the water level is currently well below the spillway at Blue Mesa. In order to maintain large flows to meet those targets the spillways at all three Aspinall Unit reservoirs must be used. Reclamation will attempt to reduce the need for Aspinall storage to meet these targets by timing the releases with peak flows on the North Fork, but this is difficult due to the unpredictably of forecasts on the North Fork.

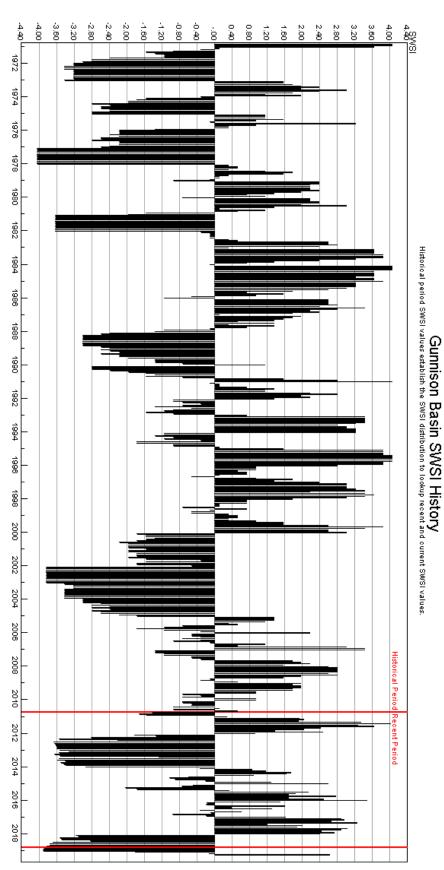
Due to the amazing snowpack that resulted in over 35 inches of snow water equivalent at Park Reservoir, it is now probable that most Grand Mesa Reservoirs will fill this summer. In addition, the melting of low snowpack will continue to satisfy irrigators during the early season and prevent a call from curtailing reservoir filling.

Public Use Impacts

Public concerns have now shifted from drought to potential flooding in some areas. Ditches on tributaries impacted by the Bull Draw Fire have already seen significant debris clog their headgates from the melting of low snow. Although Reclamation attempts to time the large Aspinall ROD releases to be as low impact as possible, they may have an impact on the peak boating season in the Gunnison Gorge depending on when the North Fork peak occurs. Final timing and amounts for these releases likely won't be determined until within a week of the peak.



Gunnison-DataComposite-SWSI



Basinwide Conditions Assessment The SWSI value for the month was +2.6.

<u>Outlook</u>

Colorado River flows are currently running around average to slightly below average although forecast to run above average through April with tributary flows also running above average throughout April. As of April 18th, Upper Colorado River Basin snowpack was 140 percent of median snow water equivalent and 119 percent of average precipitation. Below average temperatures and above average precipitation are forecast for April.

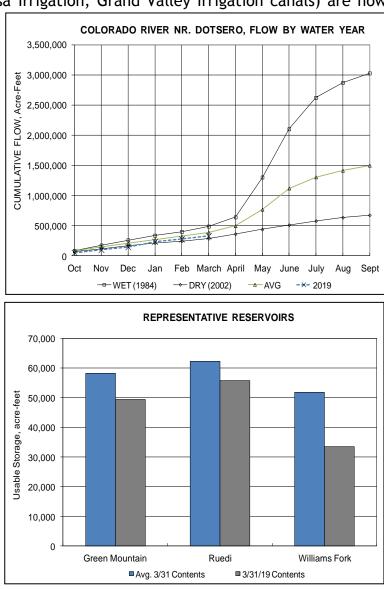
Administrative/Management Concerns

As of April 17, the call on the Colorado main stem is the Junior Shoshone Hydro Power right for 158 cfs for a total of 1408 cfs at the Shoshone Power Plant. Green Mountain is releasing to bypass inflows, provide contract and HUP obligations and make C-BT replacements. Grand Valley Irrigation diversions (Government Highline/Orchard Mesa Irrigation, Grand Valley Irrigation canals) are now

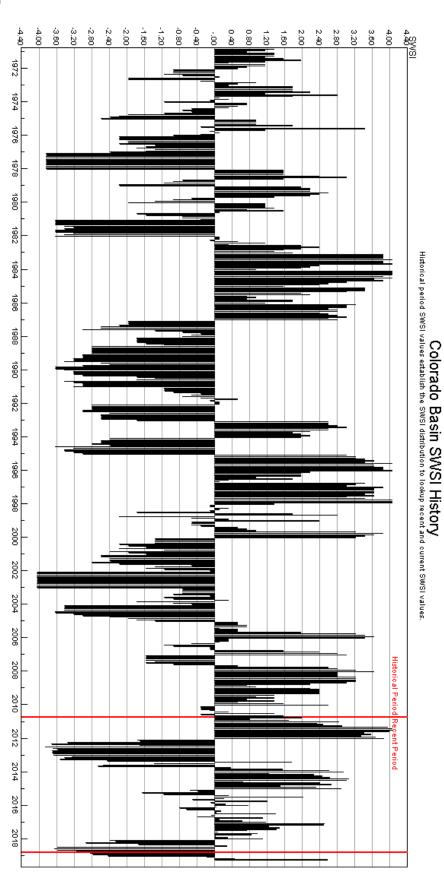
running and are at or near full capacity.

Public Use Impacts

The Shoshone hydropower plant in Glenwood Canyon did not produce power for about a week due to a leak in a diversion tunnel, but due to the 'outage protocol', the plant's senior water rights were honored. The 'protocol' grew out of the Colorado River Cooperative Agreement and then its own agreement in 2016. This protocol allowed water to remain in the river at Shoshone's senior water right amount of 1,250 cfs.



Colorado-DataComposite-SWSI



The SWSI value for the month was +0.4.

Total March precipitation in the combined; Yampa, White, and North Platte River basins, as measured at the SNOTEL sites operated by NRCS, was reported at 151% of average. Reservoir storage for the combined basins at the end of March was 103% of average compared to 129% last year.

Snowpack for the combined basins as of April 1, 2019 was at 120% of the median and 139% of last year. The snow water equivalent (SWE) as of March 31, 2019 was 116% of median for the Yampa River basin, 126% of median in the White River basin, 117% of median in the Little Snake River basin, 120% of median in the North Platte River basin, and 129% in the Laramie River basin. From the 36 SNOTEL sites within the Yampa, White, North Platte, and Laramie River basins. The highest SWE is in the Laramie River basin at 129% of median and lowest SWE is in the Elk River basin at 101% of median.

3/15/11 = 137%

3/15/18 = 77%

3/15/19 = 129%

NRCS predicted average spring and summer streamflow's in the Yampa, White, and North Platte River basins. NRCS runoff forecasts have increased from last month; the NRCS for the April through July period are 129% of average for the North Platte River at Northgate, 112% of average for the Yampa River near Maybell, 107% of average for the Little Snake River near Lily, and 125% of average for the White River near Meeker.

Division 6 stream gages were not functioning, in March, due to ice/snow-affected winter conditions. Gages will be to operate in April weather provided.

Reservoir Outlook

As of March 31, 2019:

- Fish Creek Reservoir was storing approximately 1969 AF, 47.3% of capacity. The capacity of Fish Creek Reservoir is 4,167 AF.
- Yamcolo Reservoir was storing 4,744 AF at the end of March 2019. The capacity of Yamcolo Reservoir is 9,621 AF.
- Elkhead Creek Reservoir was storing 16,950 AF. The capacity of Elkhead Creek Reservoir is 24,778 AF.
- Stagecoach Reservoir was storing 31,288 AF, 85% of capacity. The capacity of Stagecoach Reservoir is 36,439 AF

Water stored in Fish Creek Reservoir primary use is for municipal purposes, Yamcolo Reservoir for irrigation purposes, Elkhead Creek Reservoir for municipal, industrial, recreational, and fish recovery releases. Stagecoach Reservoir, primarily used for recreation, but has a significant amount of stored water allocated for agriculture,

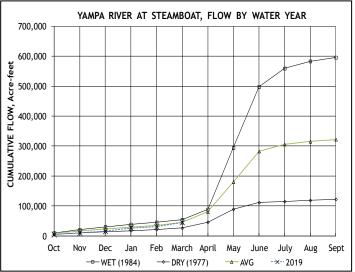
municipal, industrial and augmentation uses. Larger reservoir operators are making space for the runoff that is yet to come.

Public Use Impacts

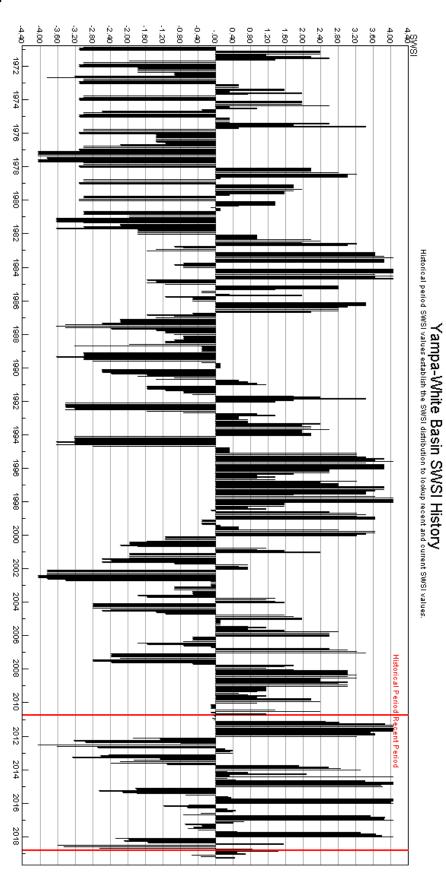
Steamboat Ski Resort was approaching a summit snow depth of 400 inches plus...at the end of March and the base area was approaching a seasonal record as well...

River and stream channels are beginning to melt out and open up for angles above Stagecoach Reservoir, however the lake surface is still predominately ice covered. Check the CPW website for updated local fishing conditions.

In addition, local Emergency Managers are taking steps to prepare for the possibility of localized flooding due to the potential for higher runoff as conditions fluctuate.



Yampa-White-DataComposite-SWSI



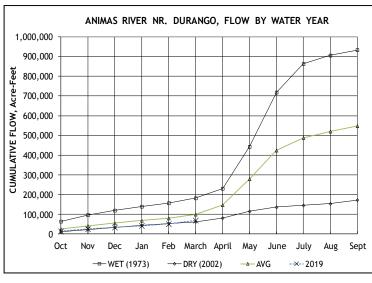
Basinwide Conditions Assessment

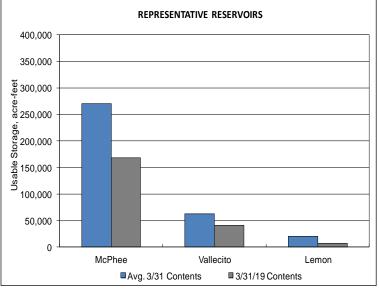
The SWSI value for the month was +1.9.

Flow at the Animas River at Durango averaged 305 cfs (100% of average). The flow at the Dolores River at Dolores estimated average is 138 cfs (100% of average). The La Plata River at Hesperus averaged 6.3 cfs (37% of average). Precipitation in Durango was 2.82 inches for the month, 231% of the 30-year average of 1.22 inches. Precipitation to date in Durango, for the water year is 15.47 inches, 157% of the 30-year average of 9.87 inches. End of last month precipitation to date, for the water year was 153% of average. The average high and low temperatures for the month of March in Durango were 53° and 28°. In comparison, the 30-year average high and low for the month is 56° and 26°. At the end of the month Vallecito Reservoir contained 41,132 acre-feet compared to its average content of 58,462 acre-feet (70% of average). McPhee Reservoir was up to 168,127 acre-feet compared to its average content of 274,418 (61% of average), while Lemon Reservoir was up to 7,663 acre-feet as compared to its average content of 20,612 acre-feet (37% of average).

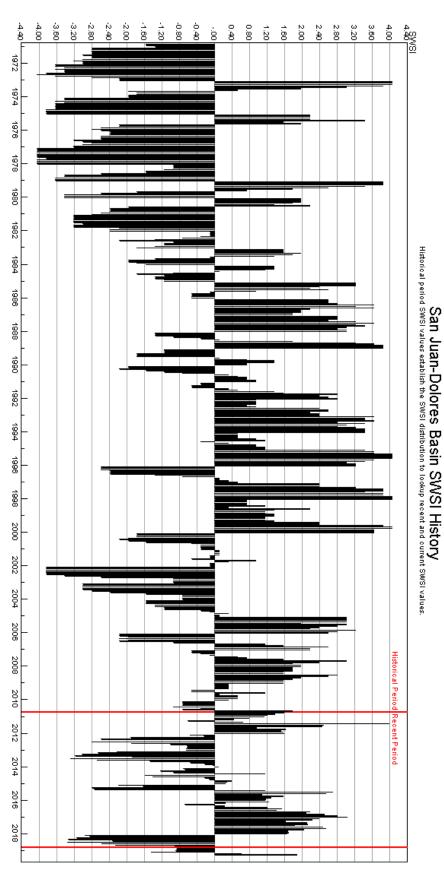
<u>Outlook</u>

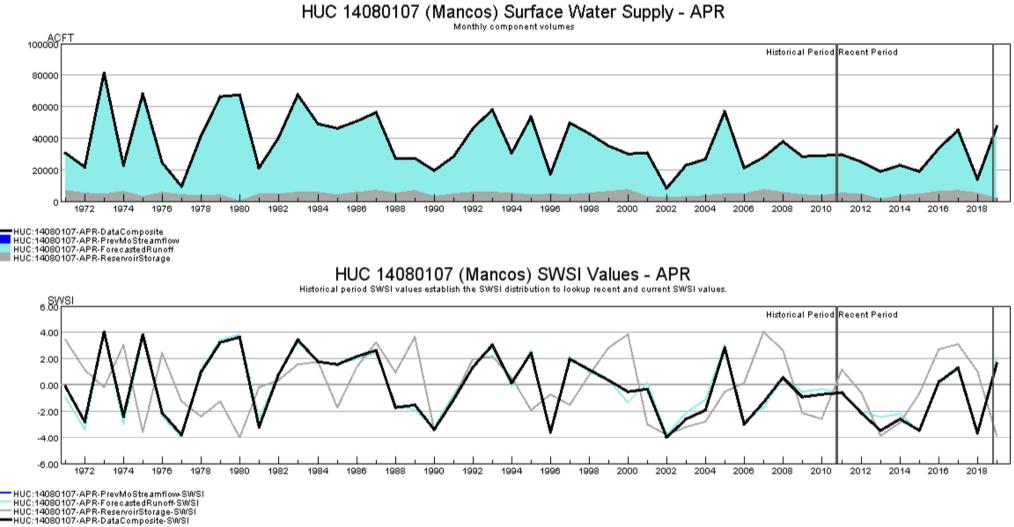
Precipitation (2.82 inches) was well above average for March in Durango. There were only 25 years out of 124 years of record where there was more precipitation than this year. The flows in the rivers within the basin were about average for this time of the year with the exception of the La Plata River where it remained well below average. There are 42 out of 109 years of record where the total flow past the Animas River at Durango stream gauge was more than this year. There were 41 out of 108 years of record where the total flow past the Dolores stream gauge was more than this year and 90 out of 102 years of record where the total flow past the La Plata River at Hesperus gauge was more than this year. Most of the reservoirs within the basin are expected to fill. Vallecito began releasing excess water on March 21 to prepare for the expected spring runoff with in that basin. On March 31, the NRCS SNOTEL sites reported an average snow-water-equivalent within the basin at 155%. Last month the average snow-water-equivalent at the end of the month was 123%.

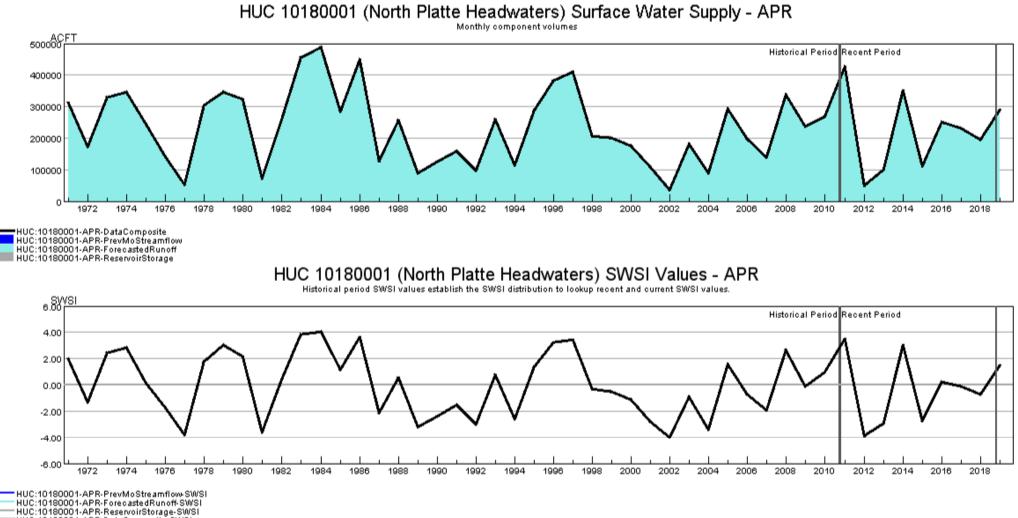




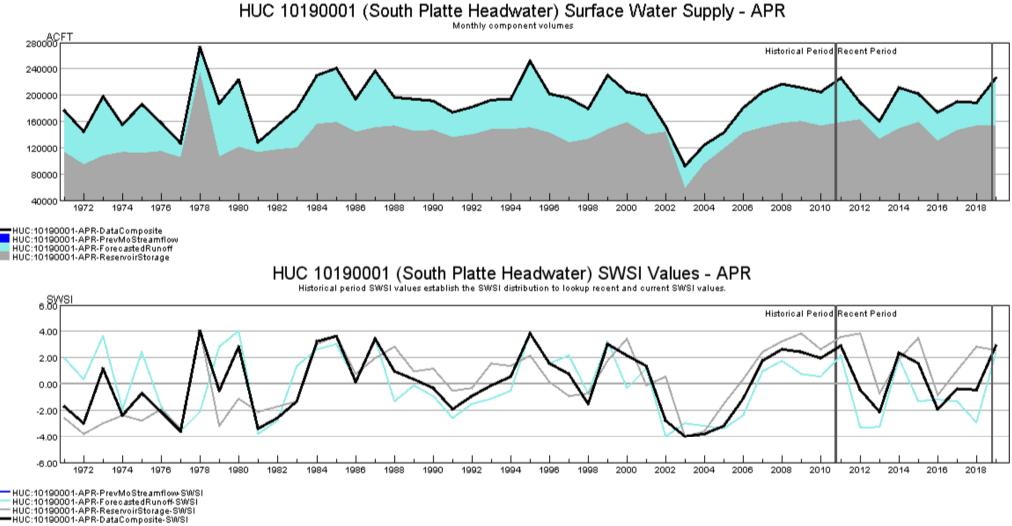


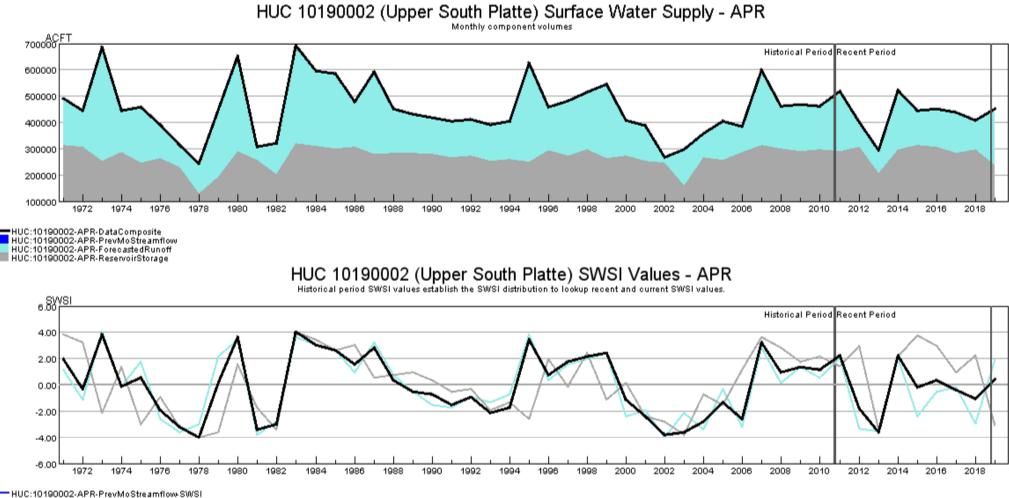




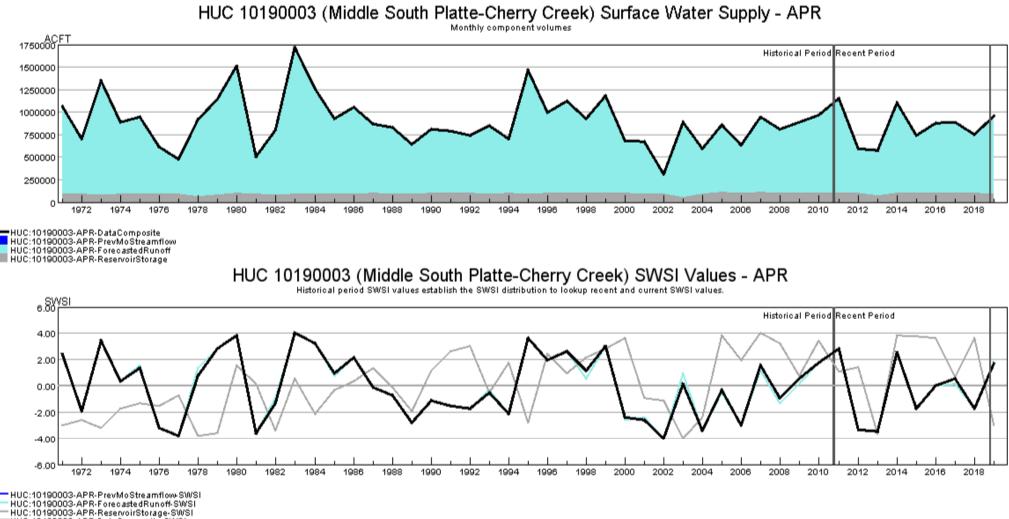


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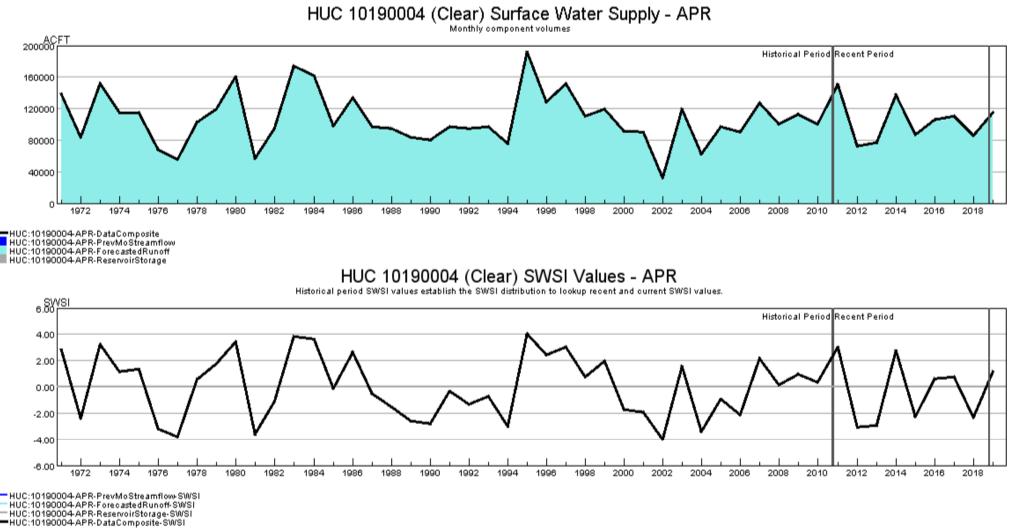


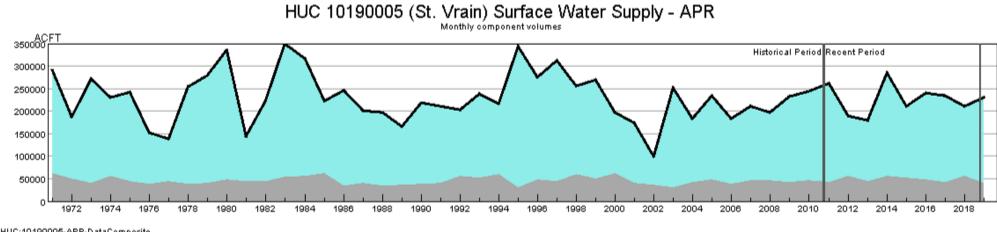


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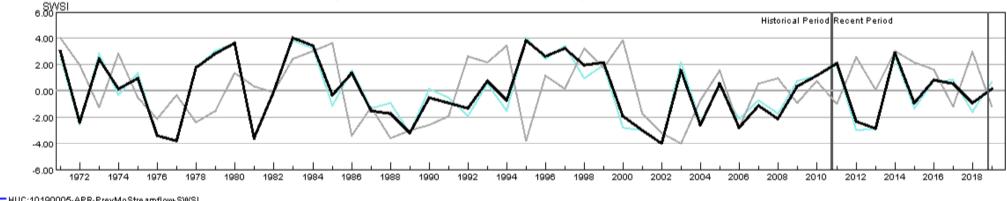




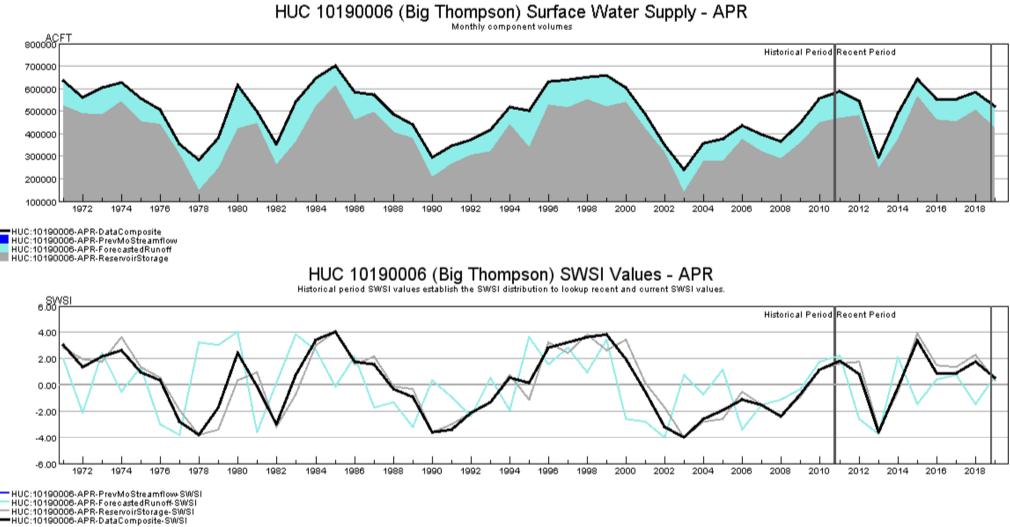
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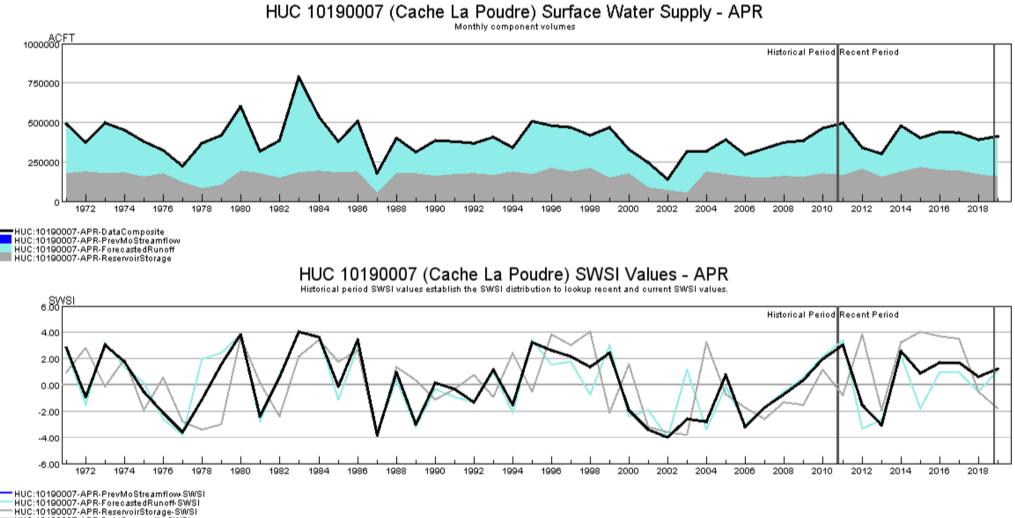
HUC 10190005 (St. Vrain) SWSI Values - APR



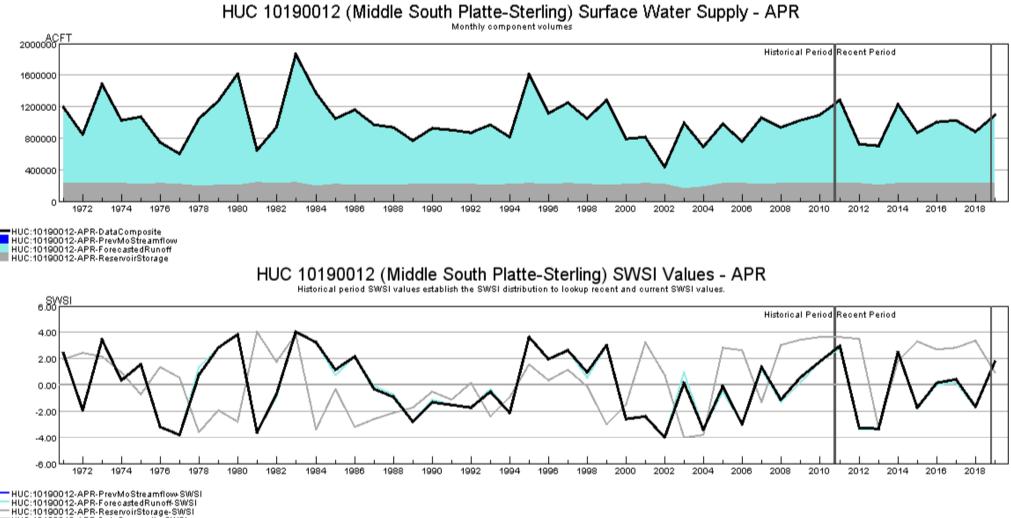


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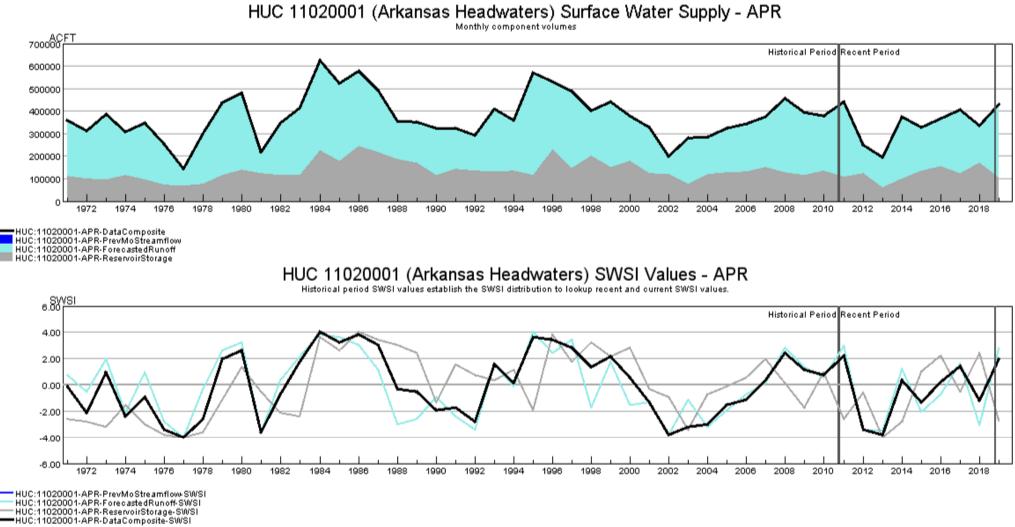


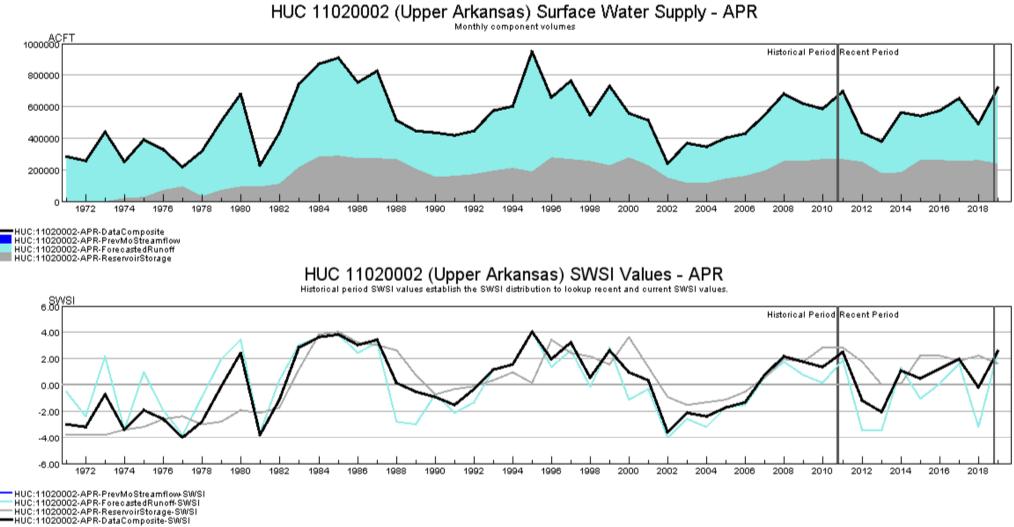


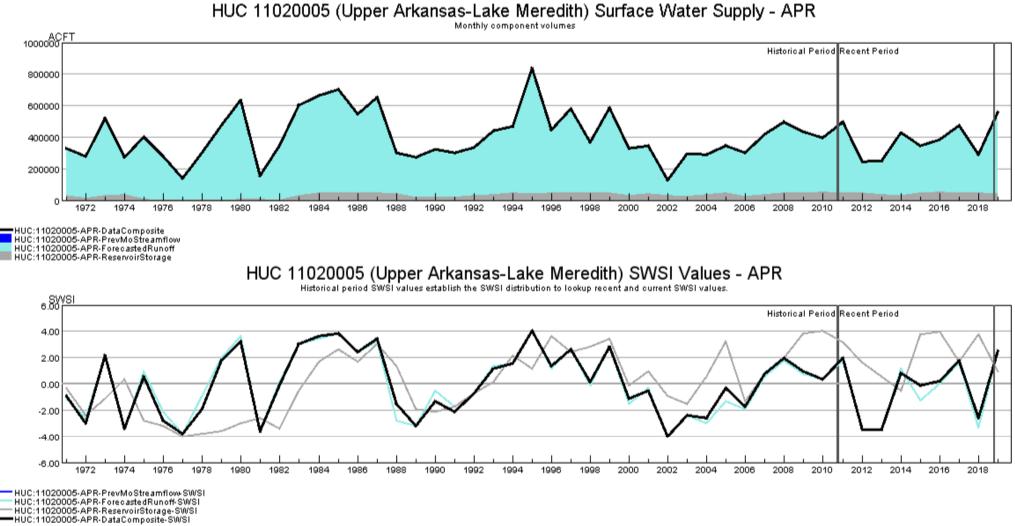
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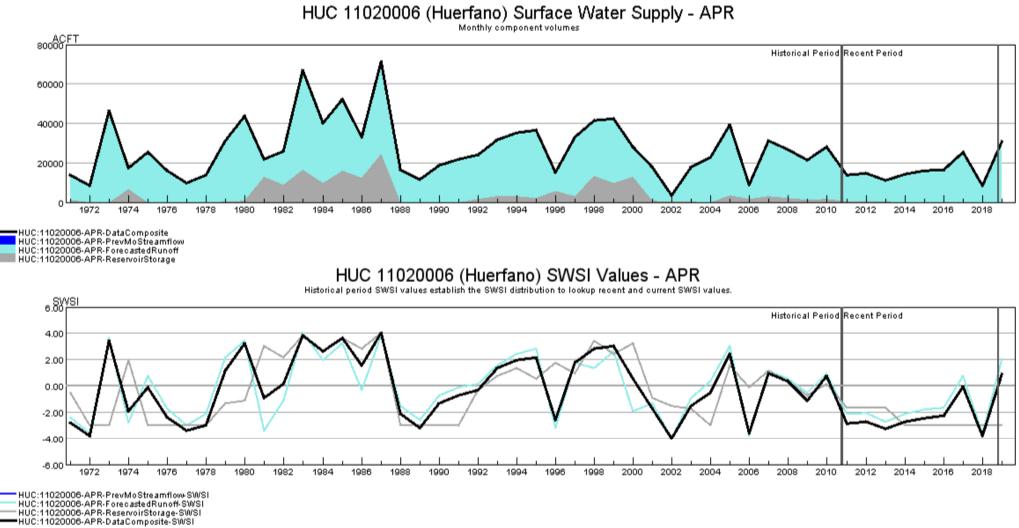


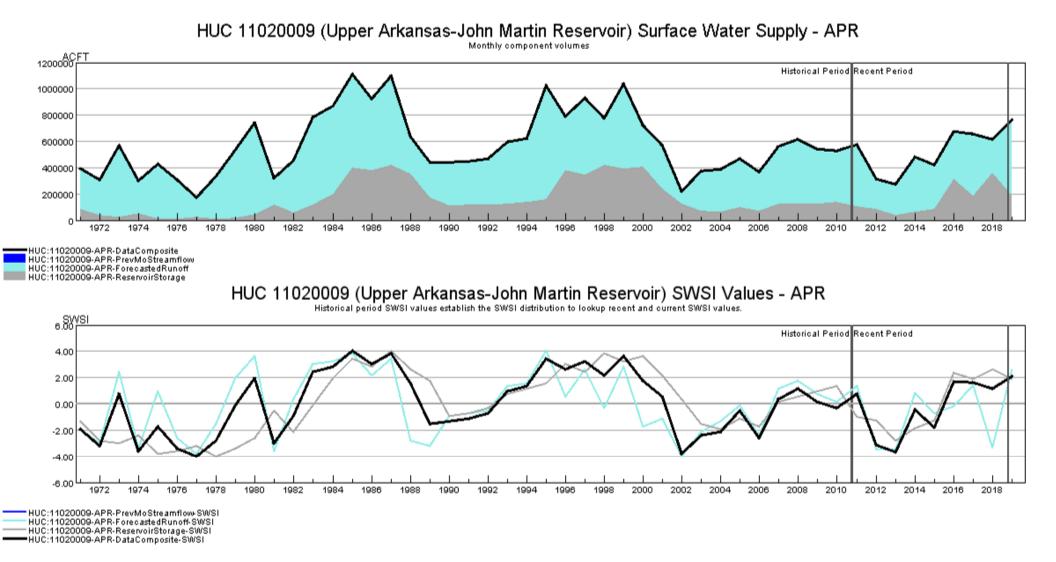
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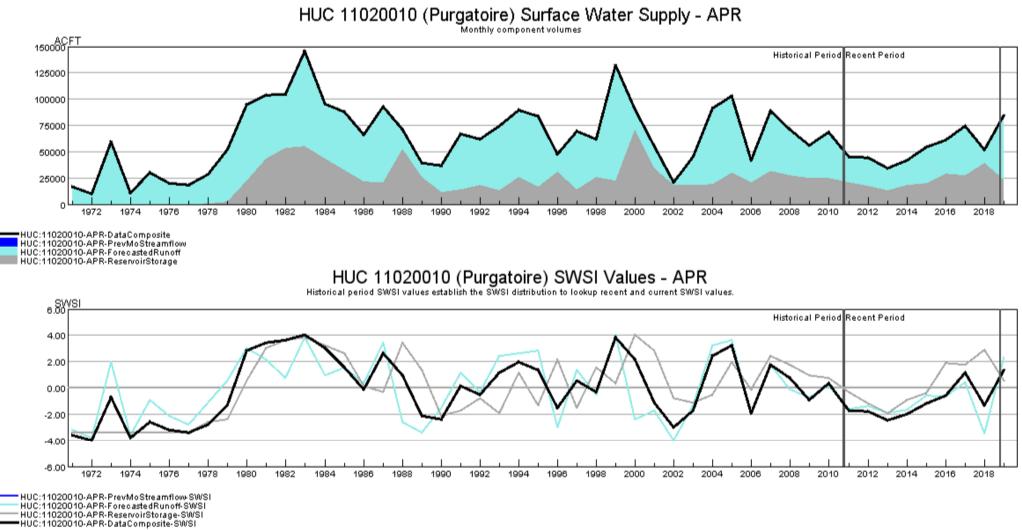


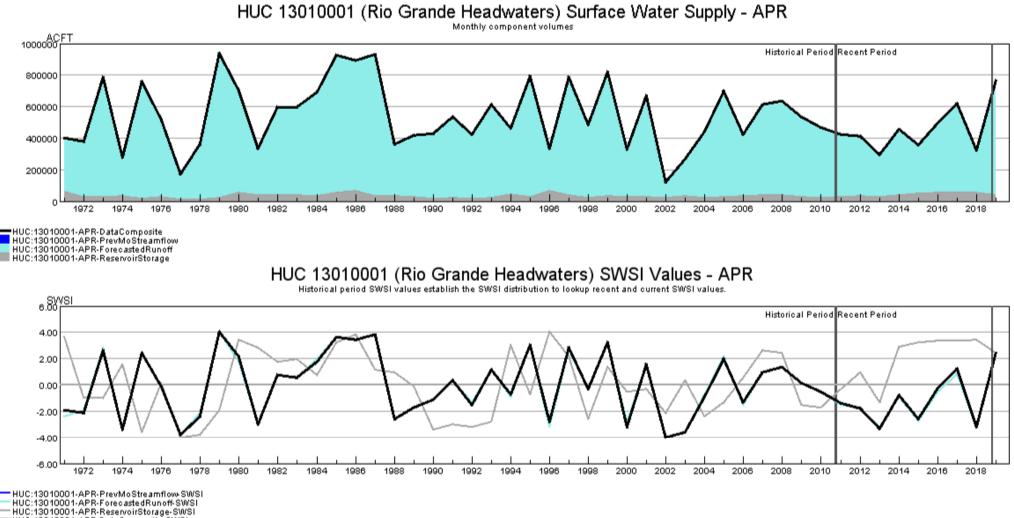




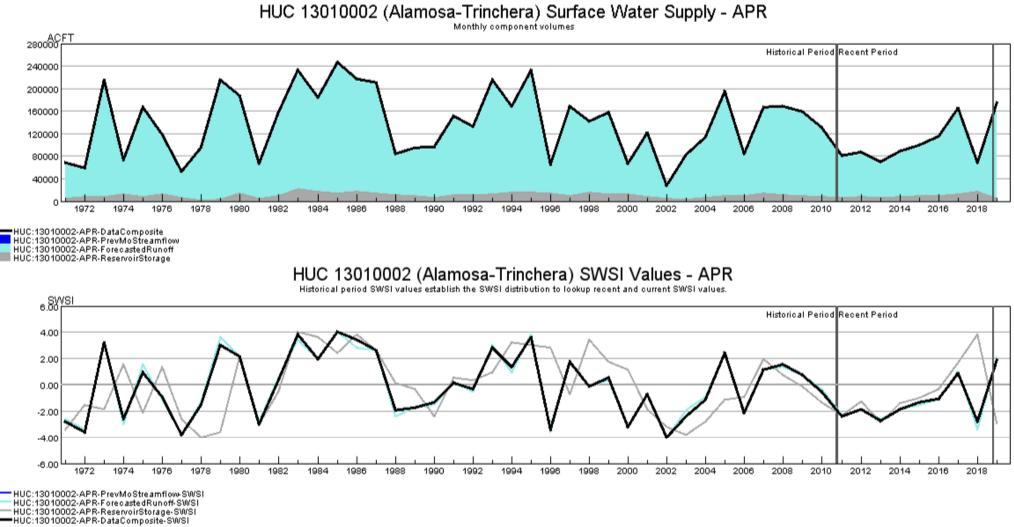


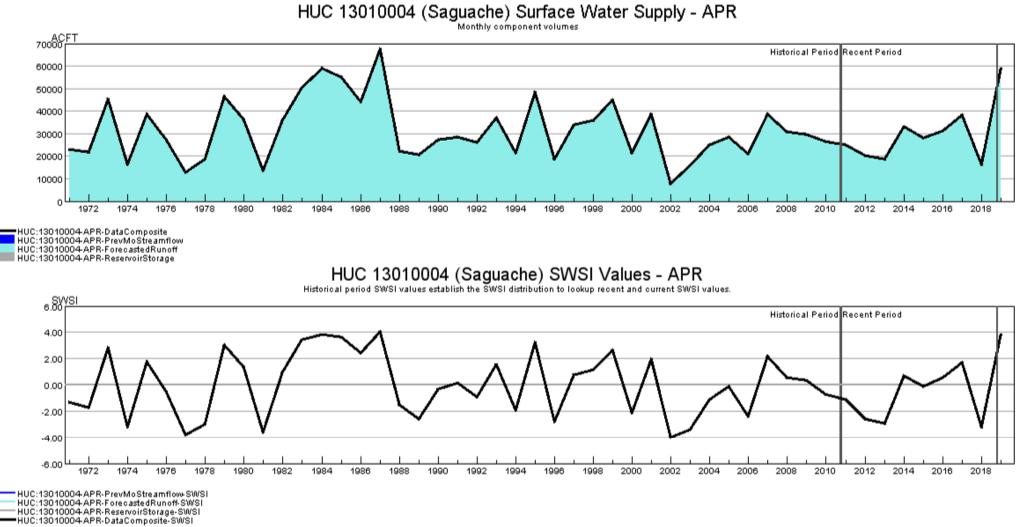


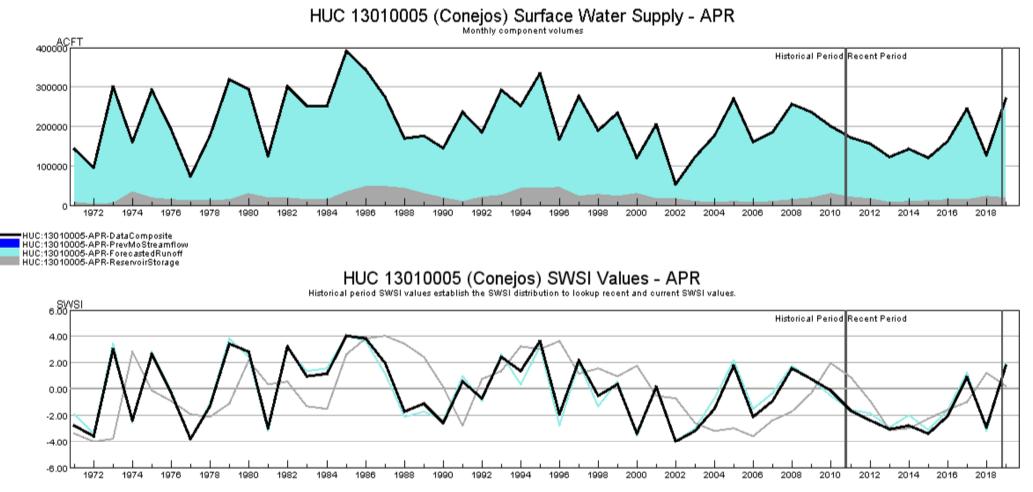




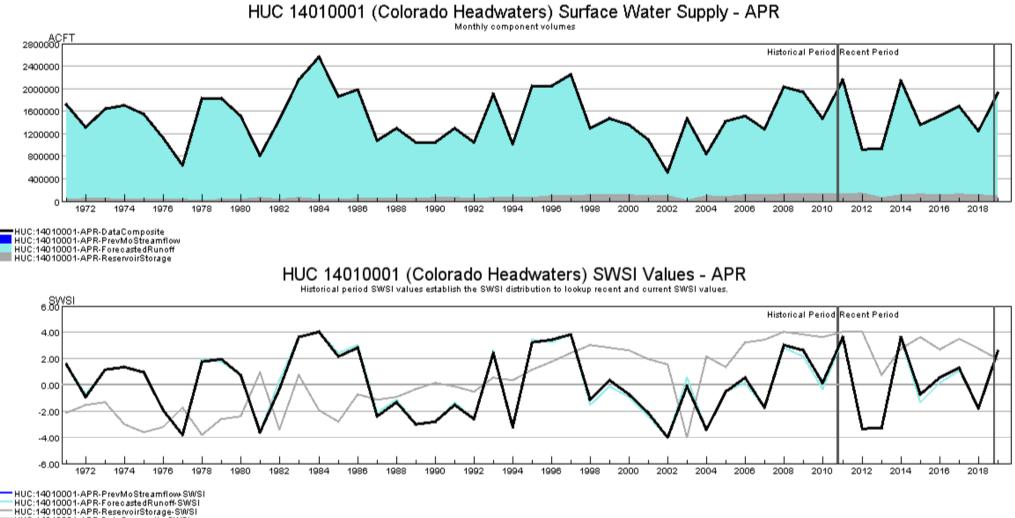
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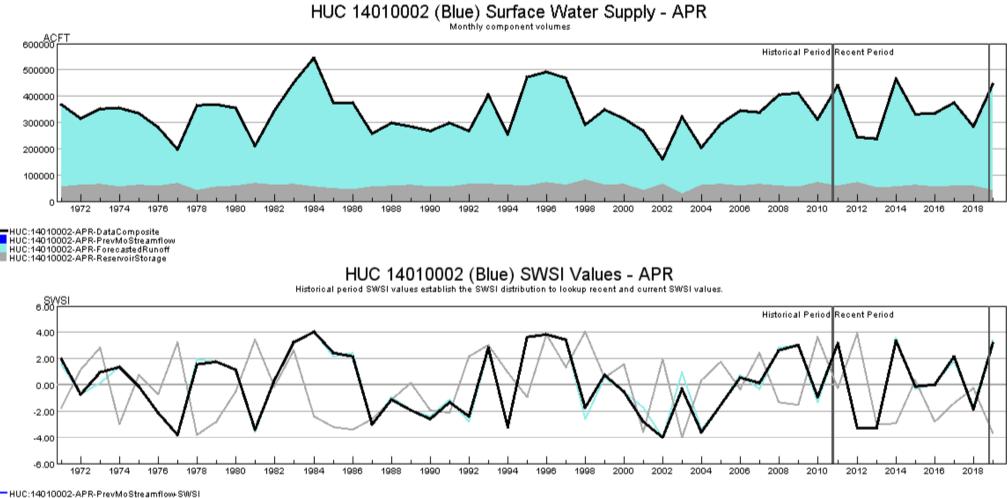




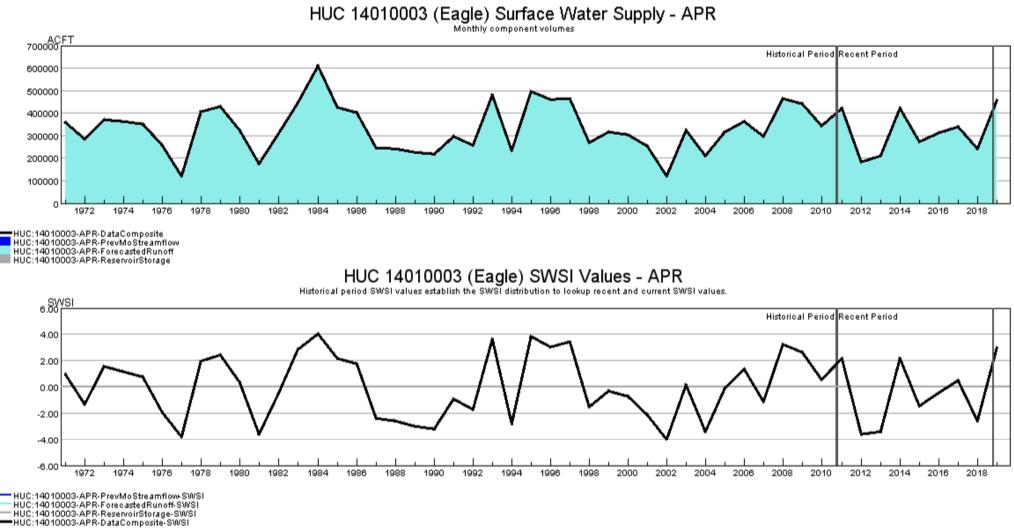
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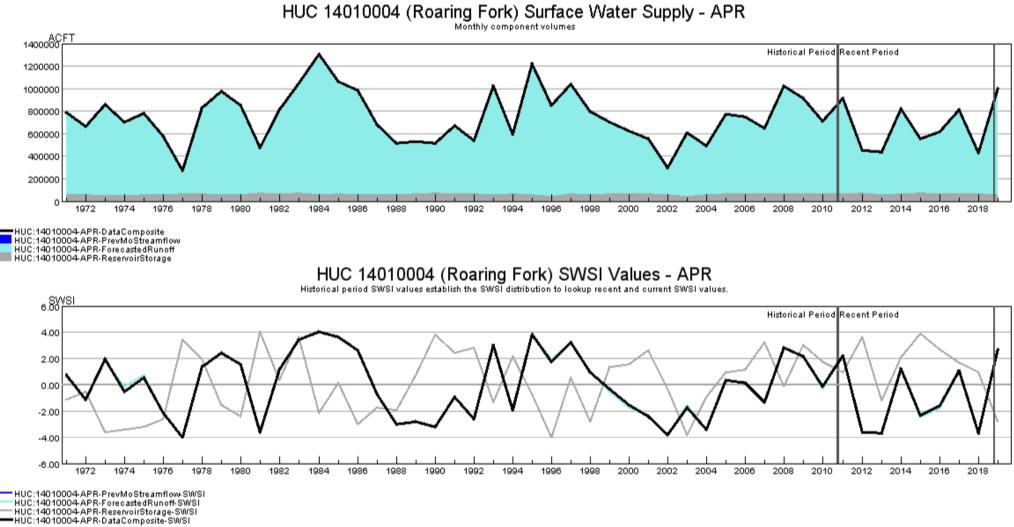


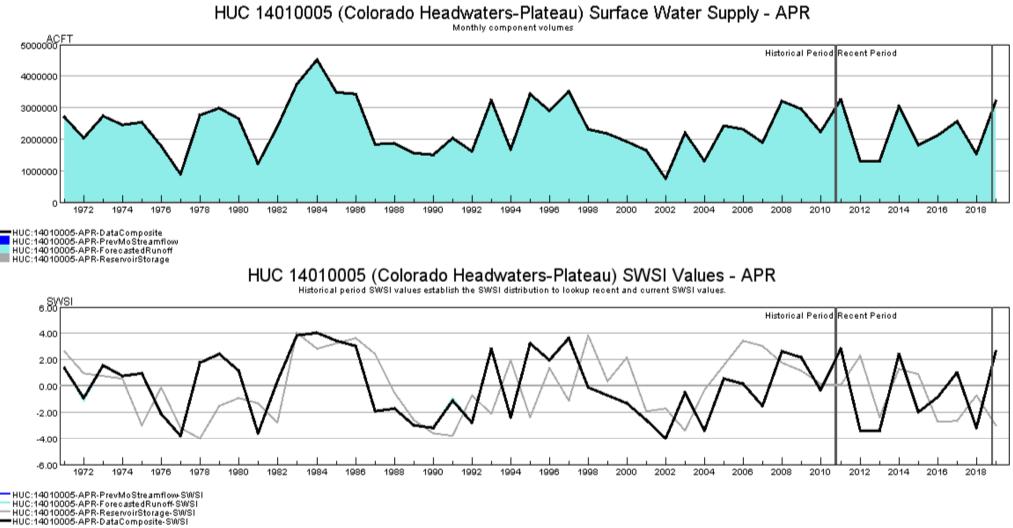
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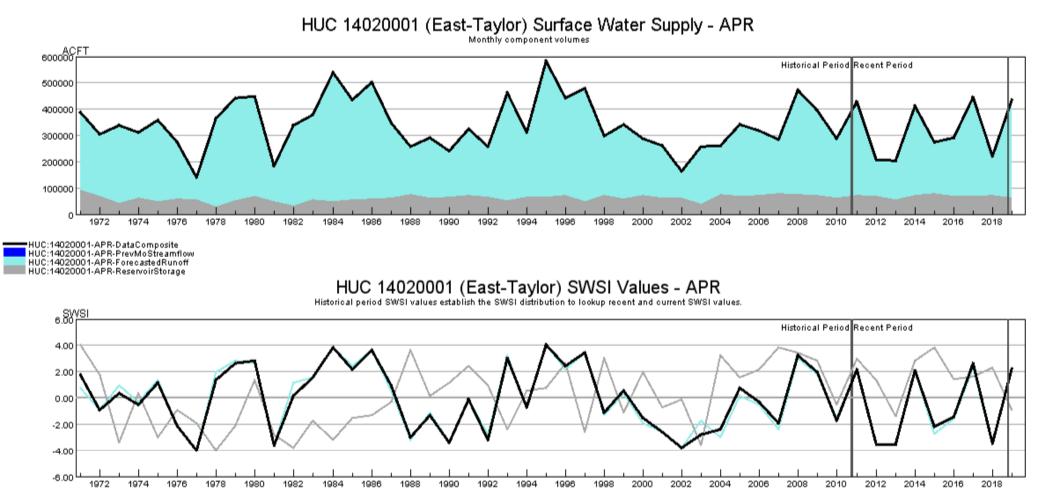


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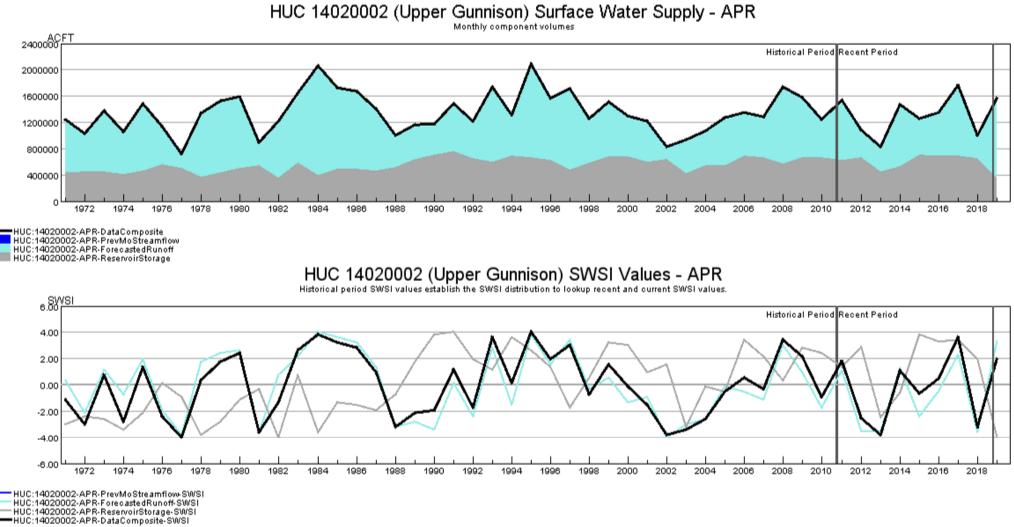


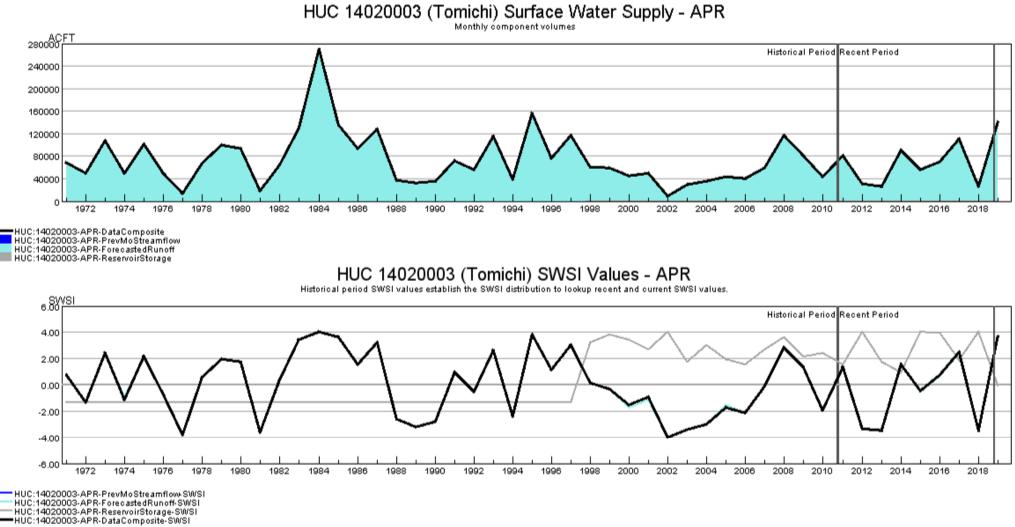


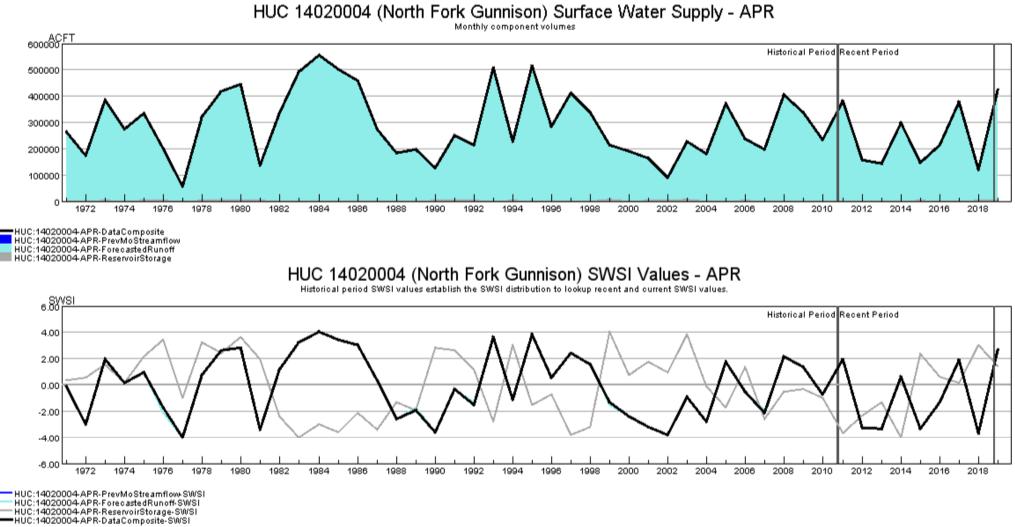


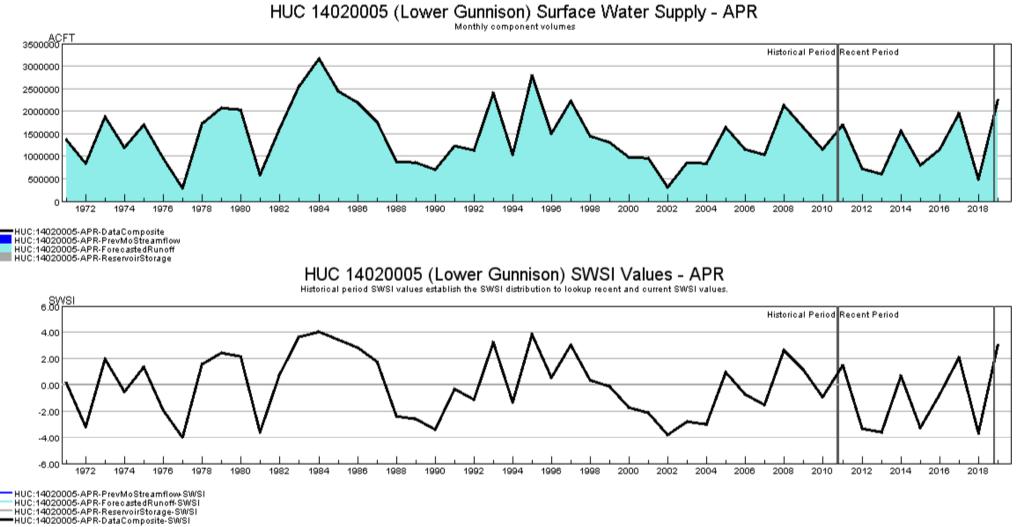


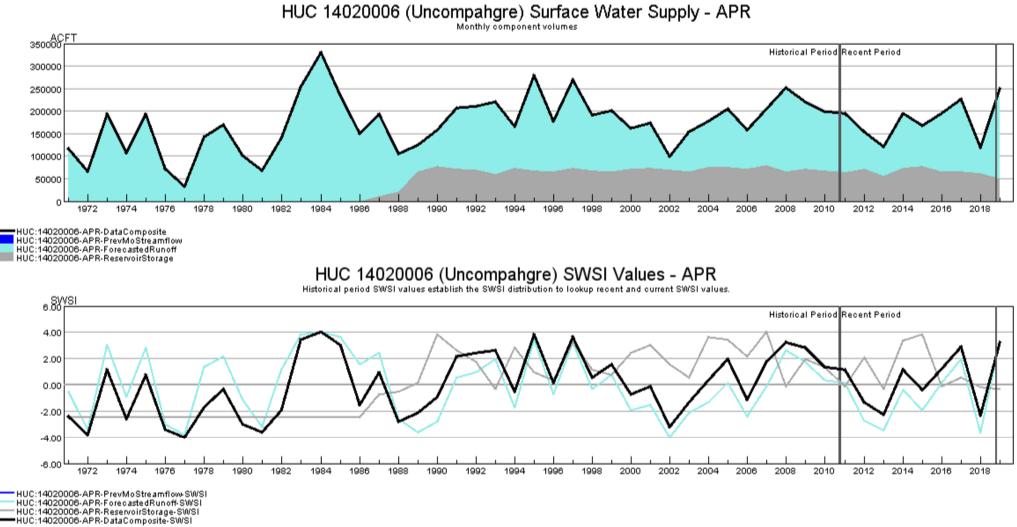
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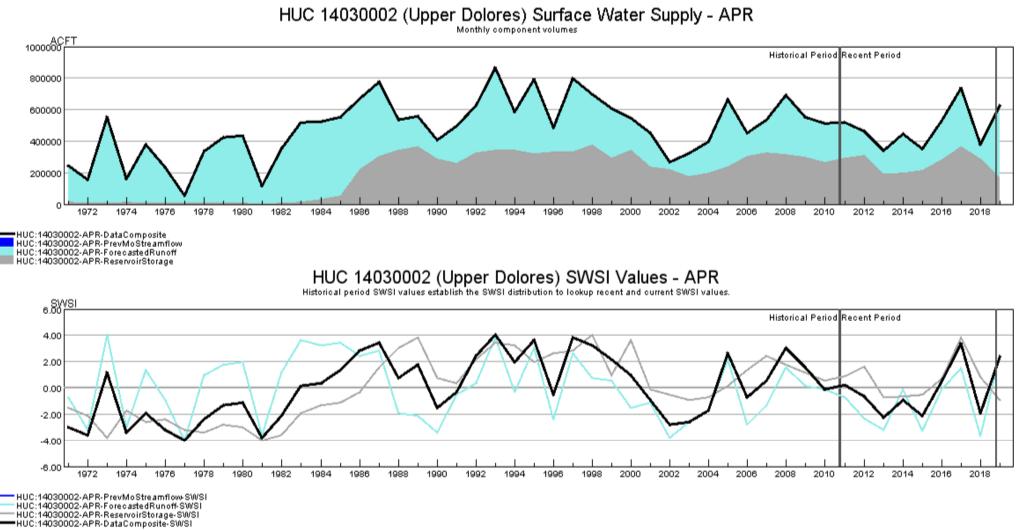


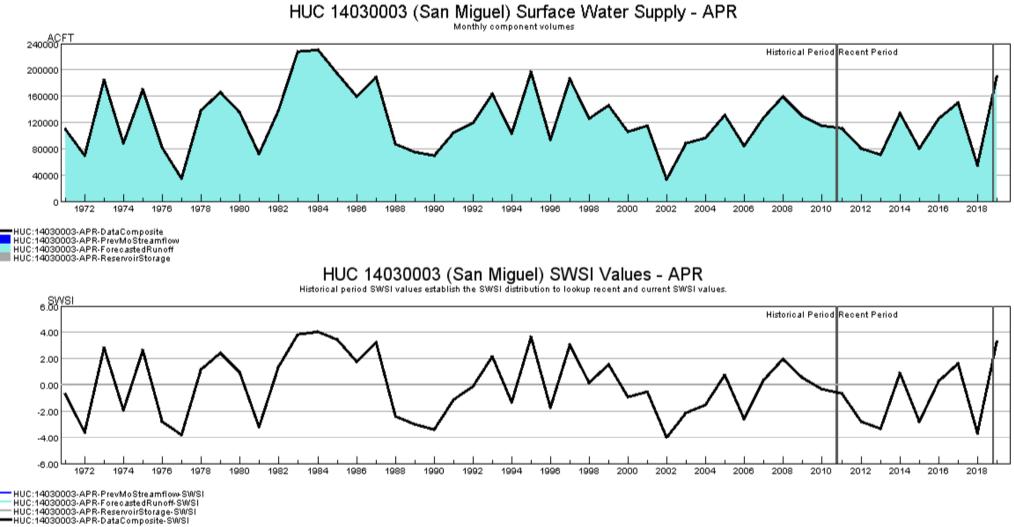


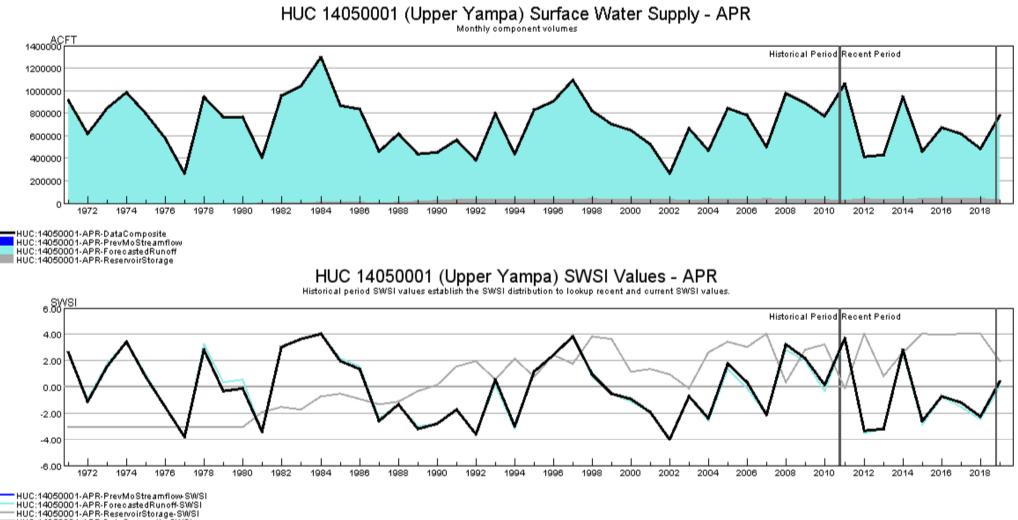




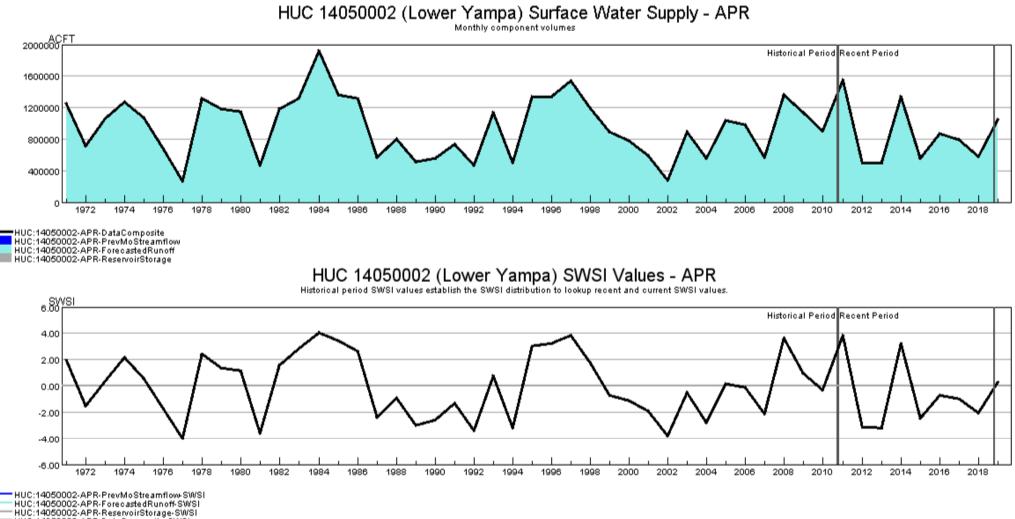




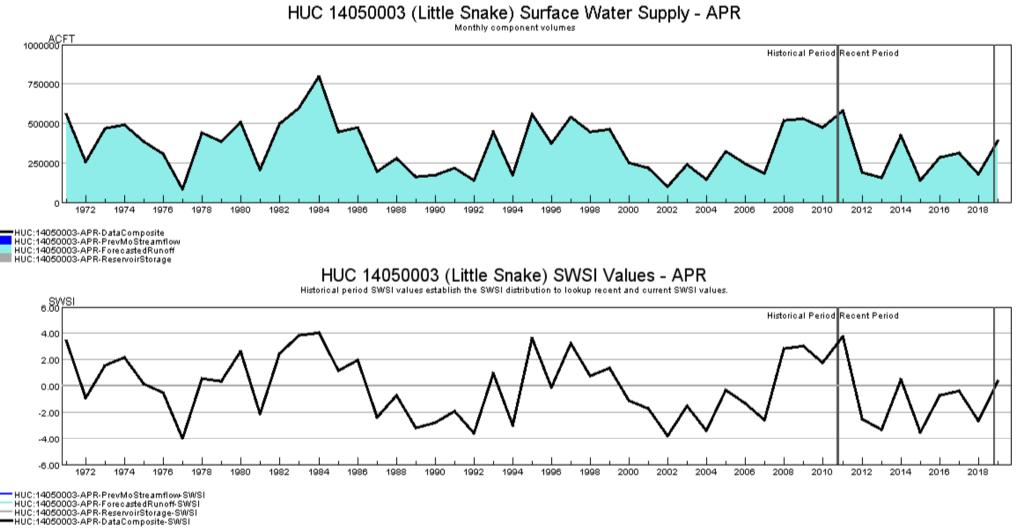


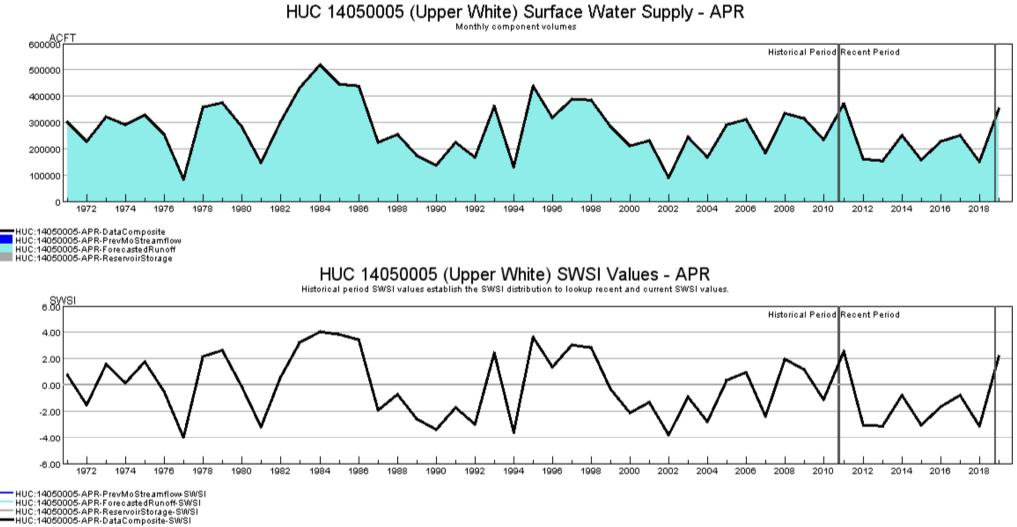


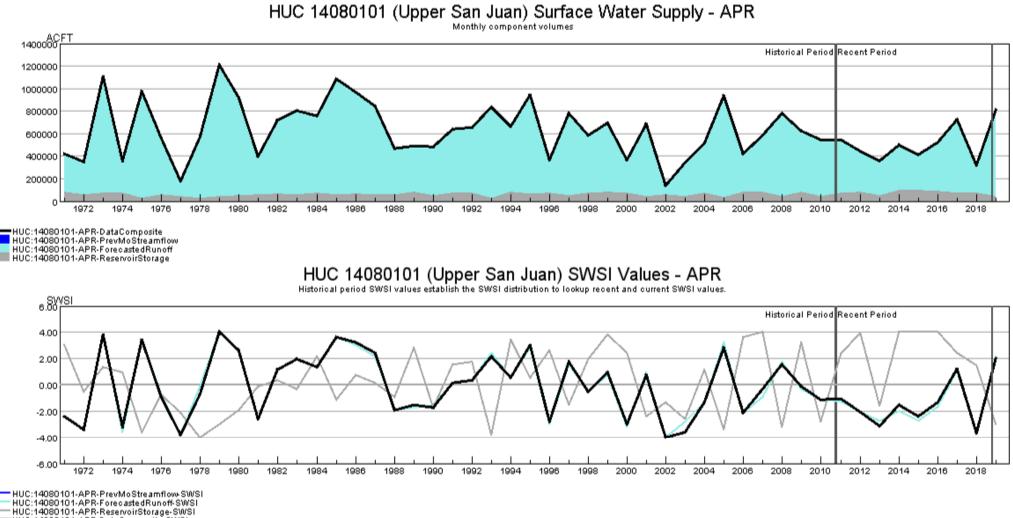
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