# 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; www.water.state.co.us

October 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 | 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: http://water.state.co.us/DWRDocs/Reports/Pages/SWSIReport.aspx. This report also contains updates about current regional conditions and water matters prepared by each DWR Division Office.

The SWSI calculation for the fall season (October 1 to January 1) is based solely on reservoir storage at the end of last month, in this case September 30. The following SWSI values were computed for each of the seven major basins for October 1, 2019. Water supply conditions, as represented by water in storage, are above normal in all the river basins and well above normal in the Yampa-White, Colorado and South Platte River Basins.

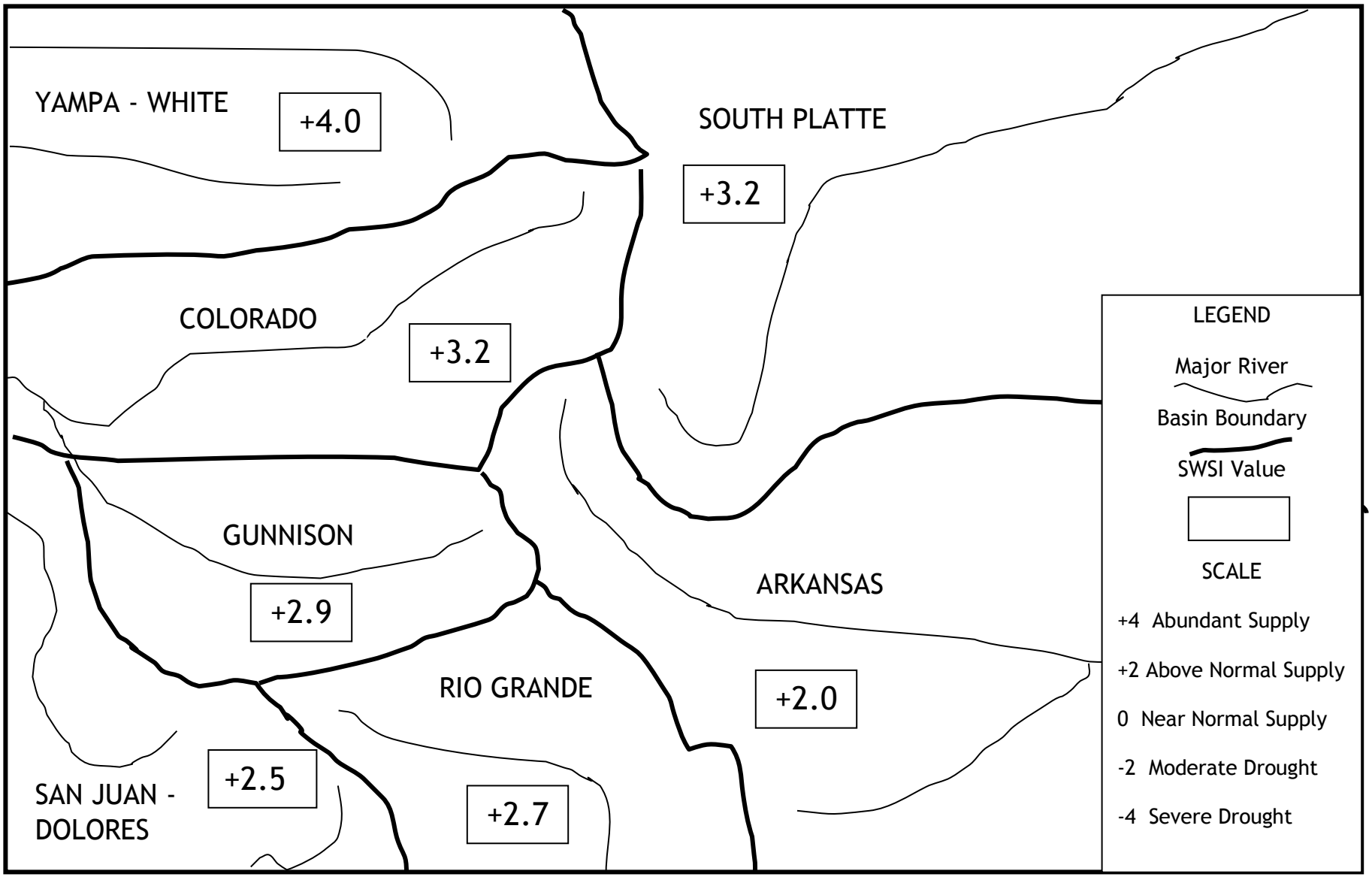
| Basin | October 1 SWSI | Change from Previous Month | Change from Previous Year |
|---|---|---|---|
| Arkansas | 2.0 | -0.1 | 0.0 |
| Colorado | 3.2 | 0.0 | 6.4 |
| Gunnison | 2.9 | -0.1 | 6.8 |
| Rio Grande | 2.7 | -0.1 | 1.2 |
| San Juan-Dolores | 2.5 | -0.9 | 3.4 |
| South Platte | 3.2 | 0.0 | 3.3 |
| Yampa-White | 4.0 | 1.0 | 3.2 |

*Last month's SWSI, September 1, 2019, is based on streamflow plus reservoir storage. This month's SWSI is based only on reservoir storage. Direct comparisons of the two should be made with caution since they are based on different metrics.

SWSI Scale

| -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|---|---|
| Severe Drought | | Moderate Drought | | Near Normal Supply | | Above Normal Supply | | Abundant Supply |

**SURFACE WATER SUPPLY INDEX FOR COLORADO BY MAJOR RIVER BASIN**

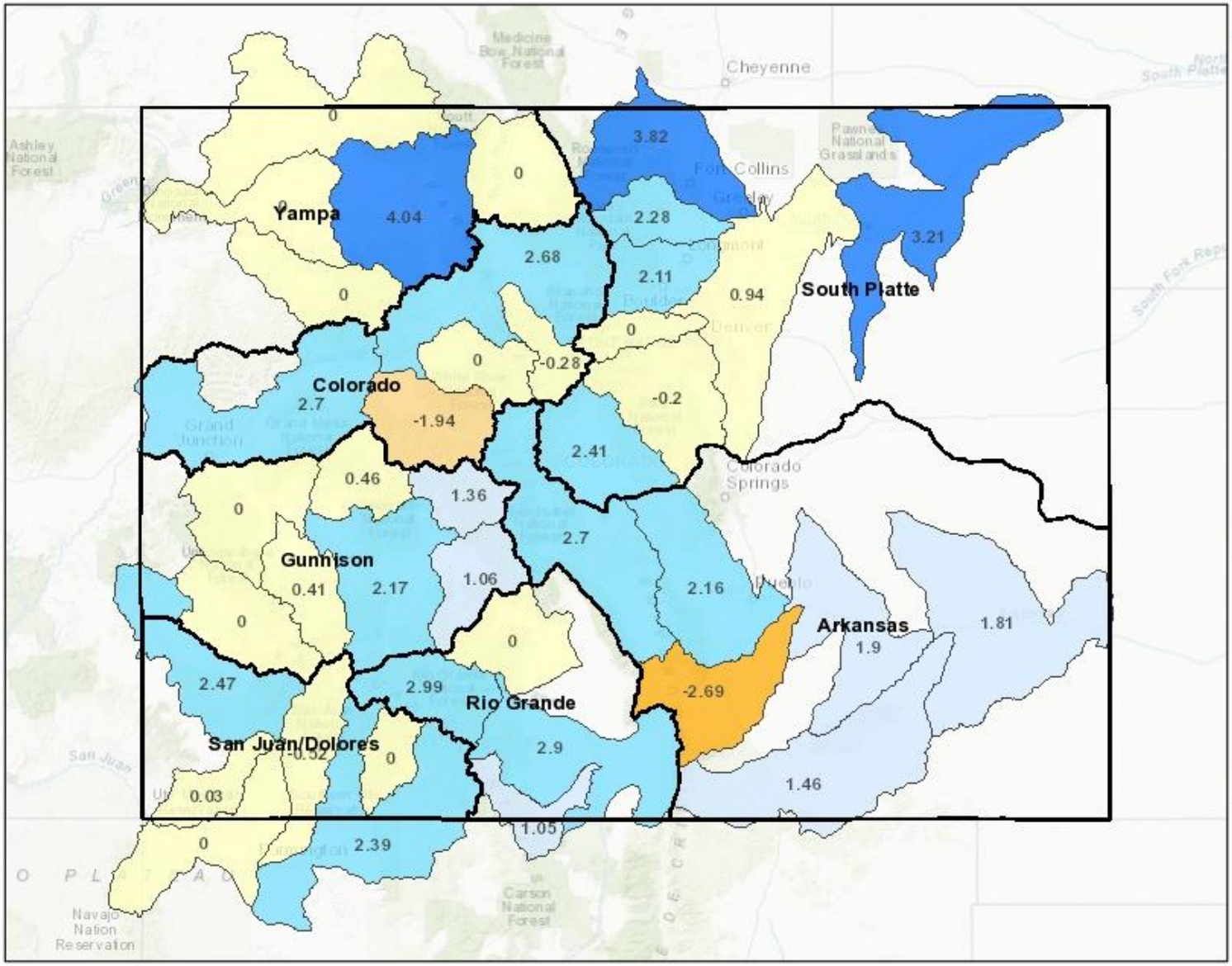



**October 1, 2019**

# SURFACE WATER SUPPLY INDEX FOR COLORADO BY HUC

COLORADO'S
Decision Support Systems
CWCB / DWR

## October 1, 2019 SWSI




### Legend

SWSI - Current Report

- SWSI Not Applicable (-99.99)
- Extremely Dry (-3.0 to -4.2)
- Moderately Dry (-2.0 to -2.9)
- Slightly Dry (-1.0 to -1.9)
- Near Average (-0.9 to 0.9)
- Slightly Wet (1.0 to 1.9)
- Moderately Wet (2.0 to 2.9)
- Extremely Wet (3.0 to 4.2)
- Water Division

### Location


### Notes

113.64 0 56.82 113.64 Miles

1: 3,600,000

*This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.*

Date Prepared: 10/18/2019 4:47:56 PM

**October 1, 2019 SWSI Values by HUC and Non Exceedance Probabilities (NEP)**

| Basin | HUC ID | HUC Name | SWSI | Reservoir Storage NEP | Total Vol (AF) |
|---|---|---|---|---|---|
| Arkansas | 11020006 | Huerfano | -2.69 | 18 | 0 |
| | 11020010 | Purgatoire | 1.47 | 68 | 18,700 |
| | 11020005 | Upper Arkansas-Lake Meredith | 1.91 | 73 | 33,475 |
| | 11020009 | Upper Arkansas-John Martin Reservoir | 1.81 | 72 | 90,367 |
| | 11020002 | Upper Arkansas | 2.16 | 76 | 192,000 |
| | 11020001 | Arkansas Headwaters | 2.71 | 82 | 229,711 |
| Colorado | 14010005 | Colorado Headwaters-Plateau | 2.71 | 83 | 12,647 |
| | 14010004 | Roaring Fork | -1.95 | 27 | 83,982 |
| | 14010002 | Blue | -0.29 | 47 | 110,945 |
| | 14010001 | Colorado Headwaters | 2.68 | 82 | 136,230 |
| | 14010003 | Eagle | N/A | | |
| Gunnison | 14020003 | Tomichi | 1.06 | 63 | 267 |
| | 14020004 | North Fork Gunnison | 0.46 | 56 | 2,591 |
| | 14020006 | Uncompahgre | 0.41 | 55 | 60,739 |
| | 14020001 | East-Taylor | 1.37 | 66 | 80,575 |
| | 14020002 | Upper Gunnison | 2.17 | 76 | 854,979 |
| | 14020005 | Lower Gunnison | N/A | | |
| | 14030003 | San Miguel | N/A | | |
| Rio Grande | 13010002 | Alamosa-Trinchera | 2.91 | 85 | 11,574 |
| | 13010005 | Conejos | 1.05 | 63 | 26,046 |
| | 13010001 | Rio Grande Headwaters | 2.99 | 86 | 38,184 |
| | 13010004 | Saguache | N/A | | |
| San Juan-Dolores | 14080105 | Middle San Juan | 0.00 | 50 | 3,076 |
| | 14080107 | Mancos | 0.04 | 50 | 4,326 |
| | 14080104 | Animas | -0.52 | 44 | 18,495 |
| | 14080101 | Upper San Juan | 2.40 | 79 | 79,456 |
| | 14030002 | Upper Dolores | 2.47 | 80 | 318,646 |
| | 14080102 | Piedra | 0.00 | | |
| South Platte | 10190003 | Middle South Platte-Cherry Creek | 0.95 | 61 | 59,200 |
| | 10190005 | St. Vrain | 2.12 | 75 | 61,671 |
| | 10190012 | Middle South Platte-Sterling | 3.21 | 89 | 94,600 |
| | 10190001 | South Platte Headwater | 2.41 | 79 | 159,100 |
| | 10190007 | Cache La Poudre | 3.82 | 96 | 164,639 |
| | 10190002 | Upper South Platte | -0.21 | 48 | 299,624 |
| | 10190006 | Big Thompson | 2.28 | 77 | 542,908 |
| | 10190004 | Clear | N/A | | |
| Yampa-White | 14050001 | Upper Yampa | 4.04 | 99 | 43,146 |
| | 10180001 | North Platte Headwaters | N/A | | |
| | 14050002 | Lower Yampa | N/A | | |
| | 14050003 | Little Snake | N/A | | |
| | 14050005 | Upper White | N/A | | |

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) |
|---|---|---|---|

**October 1, 2019 SWSI Component Information – Streamflow Forecast & Reservoir Storage - By HUC**

| HUC ID | HUC Name | Component Name | Component Volume (AF) | Component NEP for Month |
|---|---|---|---|---|
| 11020001 | Arkansas Headwaters | CLEAR CREEK RESERVOIR | 6,254 | 57 |
| | | HOMESTAKE RESERVOIR | 41,363 | 74 |
| | | TWIN LAKES RESERVOIR | 61,737 | 76 |
| | | TURQUOISE LAKE | 120,357 | 73 |
| 11020006 | Huerfano | CUCHARAS RESERVOIR* | 0 | 18 |
| 11020010 | Purgatoire | TRINIDAD LAKE | 18,700 | 68 |
| 11020002 | Upper Arkansas | PUEBLO RESERVOIR | 192,000 | 76 |
| 11020009 | Upper Arkansas-John Martin Reservoir | ADOBE CREEK RESERVOIR | 12,242 | 55 |
| | | JOHN MARTIN RESERVOIR | 78,125 | 70 |
| 11020005 | Upper Arkansas-Lake Meredith | LAKE HENRY | 6,871 | 99 |
| | | MEREDITH RESERVOIR | 26,604 | 69 |
| 14010002 | Blue | GREEN MOUNTAIN RESERVOIR | 110,945 | 47 |
| 14010001 | Colorado Headwaters | WOLFORD MOUNTAIN RESERVOIR | 54,330 | 88 |
| | | WILLIAMS FORK RESERVOIR | 81,900 | 66 |
| 14010005 | Colorado Headwaters-Plateau | VEGA RESERVOIR | 12,647 | 83 |
| 14010004 | Roaring Fork | RUEDI RESERVOIR | 83,982 | 27 |
| 14020001 | East-Taylor | TAYLOR PARK RESERVOIR | 80,575 | 66 |
| 14020004 | North Fork Gunnison | PAONIA RESERVOIR | 2,591 | 56 |
| 14020003 | Tomichi | VOUGA RESERVOIR NEAR DOYLEVILLE | 267 | 63 |
| 14020006 | Uncompahgre | RIDGEWAY RESERVOIR | 60,739 | 55 |
| 14020002 | Upper Gunnison | FRUITLAND RESERVOIR | 666 | 73 |
| | | SILVER JACK RESERVOIR | 2,449 | 11 |
| | | CRAWFORD RESERVOIR | 6,133 | 72 |
| | | MORROW POINT RESERVOIR | 109,924 | 14 |
| | | BLUE MESA RESERVOIR | 735,807 | 78 |
| 13010002 | Alamosa-Trinchera | MOUNTAIN HOME | 3,706 | 81 |
| | | TERRACE RESERVOIR | 7,868 | 89 |
| 13010005 | Conejos | PLATORO RESERVOIR | 26,046 | 63 |
| 13010001 | Rio Grande Headwaters | RIO GRANDE RESERVOIR | 3,971 | 33 |
| | | CONTINENTAL RESERVOIR | 12,989 | 99 |
| | | SANTA MARIA RESERVOIR | 21,224 | 93 |
| 14080104 | Animas | LEMON RESERVOIR | 18,495 | 44 |
| 14080107 | Mancos | JACKSON GULCH RESERVOIR | 4,326 | 50 |
| 14080105 | Middle San Juan | LONG HOLLOW RESERVOIR | 3,076 | 50 |
| 14030002 | Upper Dolores | GROUNDHOG RESERVOIR | 17,700 | 99 |
| | | MCPHEE RESERVOIR | 300,946 | 78 |
| 14080101 | Upper San Juan | VALLECITO RESERVOIR | 79,456 | 79 |
| 10190006 | Big Thompson | MARIANO RESERVOIR | 600 | 49 |
| | | LONE TREE RESERVOIR | 2,600 | 41 |
| | | LAKE LOVELAND RESERVOIR | 3,500 | 10 |
| | | WILLOW CREEK RESERVOIR | 7,900 | 71 |
| | | BOYD LAKE | 36,351 | 80 |
| | | CARTER LAKE | 80,445 | 96 |
| | | LAKE GRANBY | 411,512 | 64 |

| HUC ID | HUC Name | Component Name | Component Volume (AF) | Component NEP for Month |
|---|---|---|---|---|
| 10190007 | Cache La Poudre | HALLIGAN RESERVOIR | 1,000 | 55 |
| | | WINDSOR RESERVOIR | 2,800 | 13 |
| | | CACHE LA POUDRE | 4,000 | 69 |
| | | BLACK HOLLOW RESERVOIR | 4,100 | 99 |
| | | CHAMBERS LAKE | 5,700 | 92 |
| | | FOSSIL CREEK RESERVOIR | 6,900 | 91 |
| | | COBB LAKE | 18,600 | 84 |
| | | HORSETOOTH RESERVOIR | 121,539 | 99 |
| 10190003 | Middle South Platte-Cherry Creek | HORSECREEK RESERVOIR | 0 | 1 |
| | | MILTON RESERVOIR | 10,200 | 63 |
| | | BARR LAKE | 11,100 | 52 |
| | | STANDLEY RESERVOIR | 37,900 | 82 |
| 10190012 | Middle South Platte-Sterling | EMPIRE RESERVOIR | 8,600 | 57 |
| | | JULESBURG RESERVOIR | 10,500 | 73 |
| | | RIVERSIDE RESERVOIR | 14,700 | 82 |
| | | PREWITT RESERVOIR | 16,000 | 77 |
| | | JACKSON LAKE RESERVOIR | 20,300 | 98 |
| | | POINT OF ROCKS RESERVOIR | 24,500 | 98 |
| 10190001 | South Platte Headwater | ANTERO RESERVOIR | 19,400 | 59 |
| | | SPINNEY MOUNTAIN RESERVOIR | 40,000 | 71 |
| | | ELEVENMILE CANYON RESERVOIR | 99,700 | 69 |
| 10190005 | St. Vrain | TERRY RESERVOIR | 2,600 | 8 |
| | | MARSHALL RESERVOIR | 4,800 | 54 |
| | | UNION RESERVOIR | 10,559 | 57 |
| | | BUTTONROCK (RALPH PRICE) RESERVOIR | 16,200 | 78 |
| | | GROSS RESERVOIR | 27,512 | 94 |
| 10190002 | Upper South Platte | CHEESMAN LAKE | 62,924 | 45 |
| | | DILLON RESERVOIR | 236,700 | 51 |
| 14050001 | Upper Yampa | YAMCOLO RESERVOIR | 8,746 | 97 |
| | | STAGECOACH RESERVOIR NR OAK CREEK | 34,400 | 99 |

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 Above Normal)

Basinwide Conditions Assessment

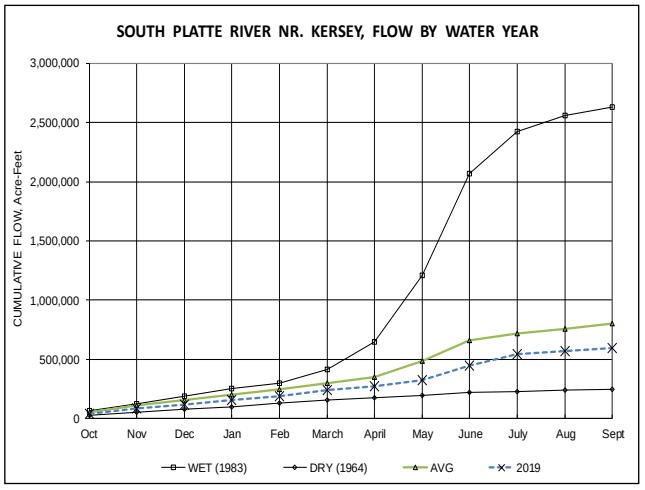
The SWSI value for the month was +3.2.

Northeastern Colorado experienced slightly above average temperatures and below average precipitation throughout the basin, with the eastern plains being the exception to this trend, during the month of September. Reservoir releases during September slowed from the higher releases in August due to several precipitation events throughout the eastern plains and dropping irrigation demands. However, several mountainous areas continue to experience well below average streamflows through the month of September, hopeful of much welcomed precipitation during the month of October.

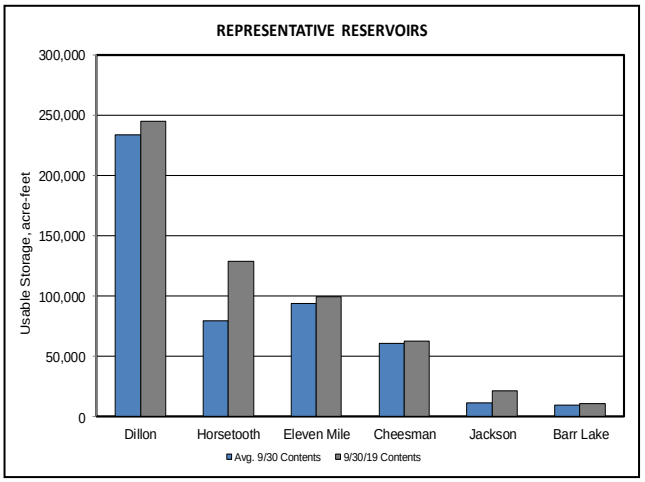
The drought conditions that appeared in northeastern Colorado for the first time in August continued into September with the USDA Drought Monitor rating for northeast Colorado identifying several counties with the majority or entire county with a rating of DO (abnormally dry) in the westerly (mountainous/foothill areas) areas including: Larimer, Boulder, Gilpin, Clear Creek, Park, Jefferson, Denver, and Broomfield Counties. A rating of DO began to appear at the end of August into early September in small portions of several more counties including: Douglas, Arapahoe, and Adams Counties. The middle of September brought some precipitation events, allowing some relief in the easterly portions of Gilpin and Jefferson Counties and all of Douglas County moving to no drought conditions. However, the month ended almost identical to the beginning of September with the exception of a large portion of El Paso County experiencing a rating of DO. The eastern plains in the South Platte and Republican River basins continue to receive average to above average precipitation and are not currently in a drought condition.

The slightly below average streamflows in the basin experienced in August, continued into September. The month of September, started the month with below average flows, switching to above average flows with some widespread precipitation events during the middle portion of the month, finally ending the month slightly below average. The flows at the Kersey gage downstream of the City of Greeley, experienced average daily flows for the month of September of approximately 465 cfs, 90% of the historic mean value of 516 cfs. The daily flows at the Julesburg gage for the month of September were slightly below average resulting in average flow of 257 cfs, 91% of the historic mean monthly value of 281 cfs. Several tributaries in higher elevations continue the pattern from August through September with below average streamflows during the month of September, several near 50% of average.

The Calls on the South Platte River found some relief moving from August into September with more junior calls, due to several widespread precipitation events in the lower foothills and eastern plains areas during the first part and middle of September and lessening irrigation demands towards the end of the month. Prior to the much needed precipitation events, the beginning third of September found the controlling calls on the river were an 1871 at the Western Ditch located downstream of Denver and an 1888 priority at the Sterling #1 Ditch located near Sterling, CO controlling the lower portion of the South Platte River mainstem. The South Platte River Compact Call was placed on September 4th continuing for 4 days until being removed on September 7th due to rain events. The much welcomed rain events and lessening irrigation demands resulted in the call going more junior on September 9th with the 1909 Burlington Ditch call being placed at the Sterling #1. The middle of the month found the mainstem of the South Platte River being controlled by a 1909 priority call at the Western Ditch with the direct irrigation or the 1909 Burlington Ditch bypassed to the Western Ditch downstream of Denver. The lower end of the river below the Western Ditch remained without a call or a very junior circa 2004 recharge call through much of September, with a 1936 direct flow or refill right being placed near Sterling after September 27th.



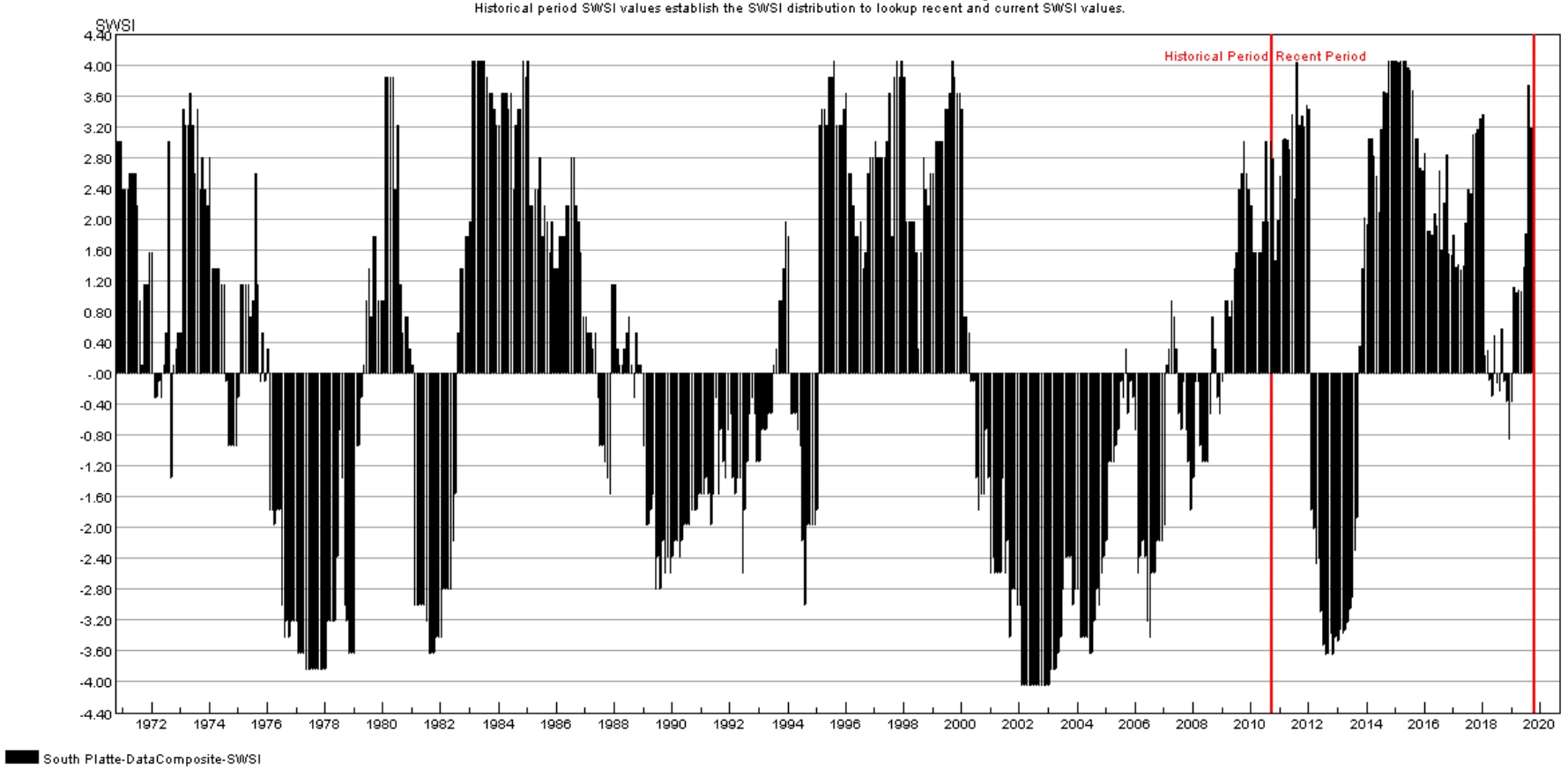

Reservoir releases continued in the month of September, however the welcomed precipitation events lessened demand and allowed some reservoirs to divert water to storage. Reservoir storage levels throughout the South Platte River mainstem ended the month of September above the average at the 6 SWSI Representative Reservoirs at 568,696 acre-feet volume, which is 116% of the long term average of 489,552 acre-feet. Additionally, 32 indexed reservoirs throughout Division 1 basin at 136% of the long term average (1981 - 2010) with a storage volume of 825,973 acre-feet at the end of September, representing approximately 73% of full capacity. This is ahead of the long term average of 52% for the end of August storage in the 32 indexed reservoirs throughout Division 1.




The temperature and precipitation outlook into November and December 2019, and January 2020 prepared by the National Weather Service, in northeastern Colorado indicates a trend toward slightly above average temperatures and above average precipitation in the South Platte River Basin.

# South Platte Basin SWSI History

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



Basinwide Conditions Assessment

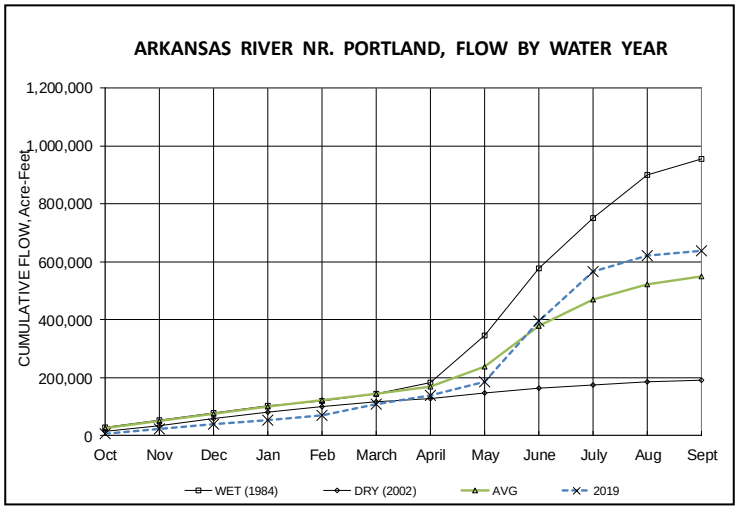
The SWSI value for the month was +2.0.

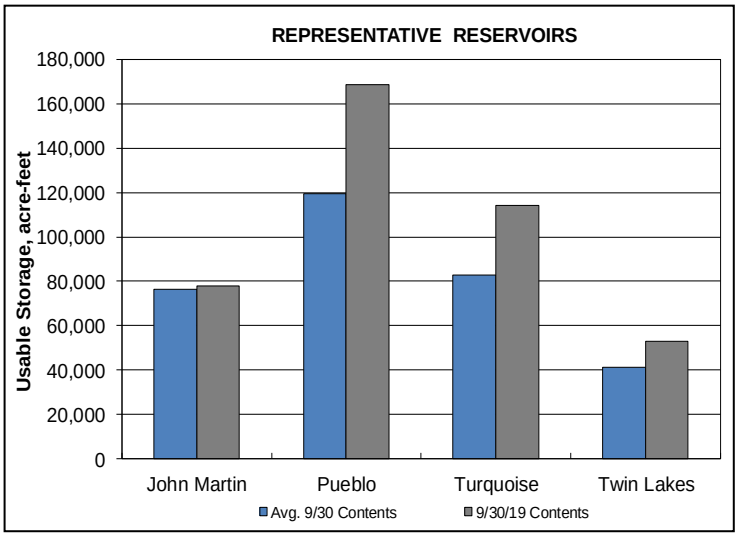
Outlook

River calls during September ranged from the junior Catlin Canal 12/3/1884 pass through call to the Fort Lyon Canal to the senior Fort Lyon Canal call of 4/15/1884 upstream of John Martin Reservoir. There was a short duration precipitation event in the basin towards the beginning of the month that allowed the junior right of the Amity Canal 2/21/1887 to take native water from September 9th through the 10th. Return flows above John Martin Reservoir allowed several junior calls in District 67 to come into priority during September. These ranged in dates from the Fort Bent Canal call of 4/1/1886 to the X-Y Irrigating Ditch Canal call of 7/22/1889.

Administrative/Management Concerns

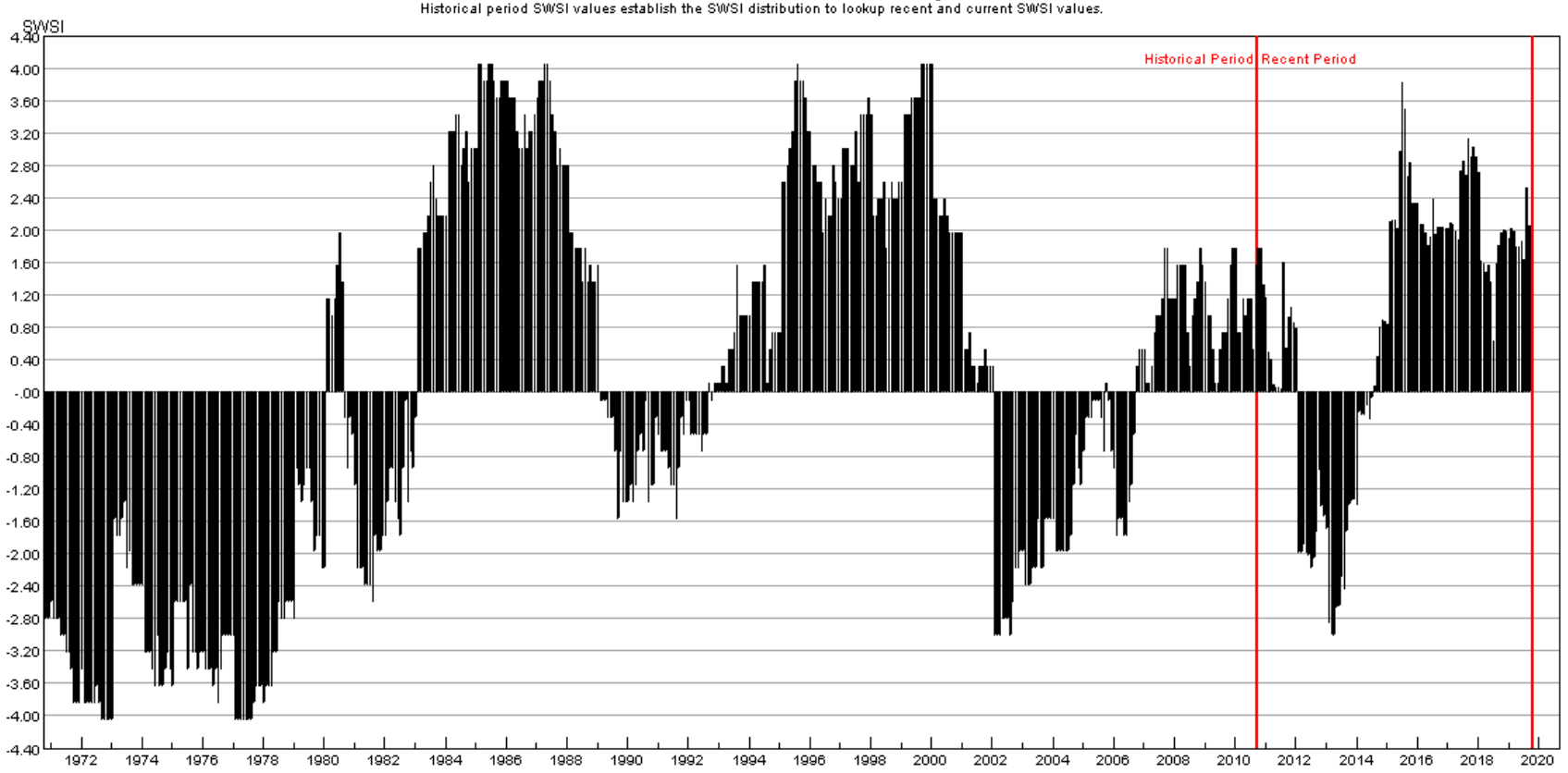
Forecasting out ahead, the Winter Water Storage program is predicting an average season. The National Weather Service has called for a warmer, drier winter in the Arkansas basin. However, with that being said, Pueblo Reservoir and John Martin Reservoir in danger of spilling account water. A major component to the spill threat is that larger municipal users are buying more storage space in Pueblo Reservoir, which puts pressure on other accounts to use or lose the water before March 1st. This will call for continued strategic management of stored water by entities who might have their account water spill. Of final note, the irrigation season of water year 2019 started with above average precipitation and a healthy run-off. By the end of the season, the basin had returned to drought-like conditions and a majority of flow lower in the basin was not from native or account water, but from farm return flows.



# Arkansas Basin SWSI History

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



## Basinwide Conditions Assessment

The SWSI value for the month was +2.7.

Flow at the gaging station Rio Grande near Del Norte averaged 389 cfs (76% of normal). The Conejos River near Mogote had a mean flow of 233 cfs (155% of normal). If on a stream without a reservoir making supplemental irrigation releases, streamflow in the upper Rio Grande basin was generally at or below long-term levels.

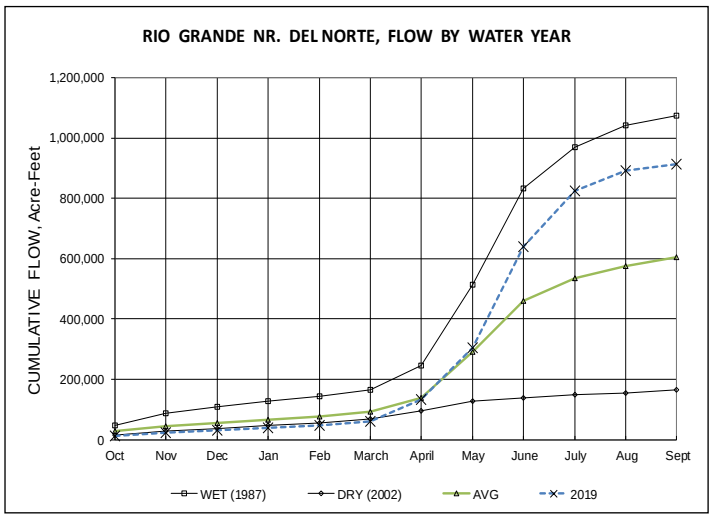
The month of September had generally warmer and drier conditions due to only sparse rainfall during the month. Year to date precipitation is still slightly above normal for the San Luis Valley, but the past four months have been very dry.

## Outlook

NOAA weather forecasts for the next month and beyond call for normal precipitation and warmer than normal temperatures.

## Administrative/Management Concerns

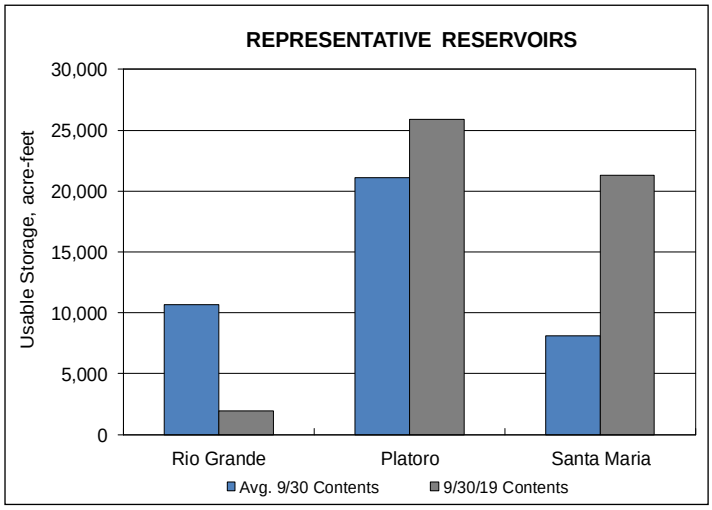
Lack of rainfall during July through September has resulted in streamflow conditions dropping to below average levels. A situation that is very surprising because of the huge snowpack and runoff that occurred earlier this year. This has caused senior water rights to be called out due to lack of native streamflow. Senior water right owners not accustomed to curtailment such as the No. 2 priority on the Conejos River, the Heads Mill and Irrigation Ditch, with an appropriation date of June 1, 1855. This water right has been not able to divert for several weeks due to limited streamflow.




The reduction of streamflow on the Compact streams forces the Division Engineer to adjust the expected index downward. This reduces the curtailment percentage and allows more of the native flow to be diverted by the senior water rights; but increases the chance of over-delivery.

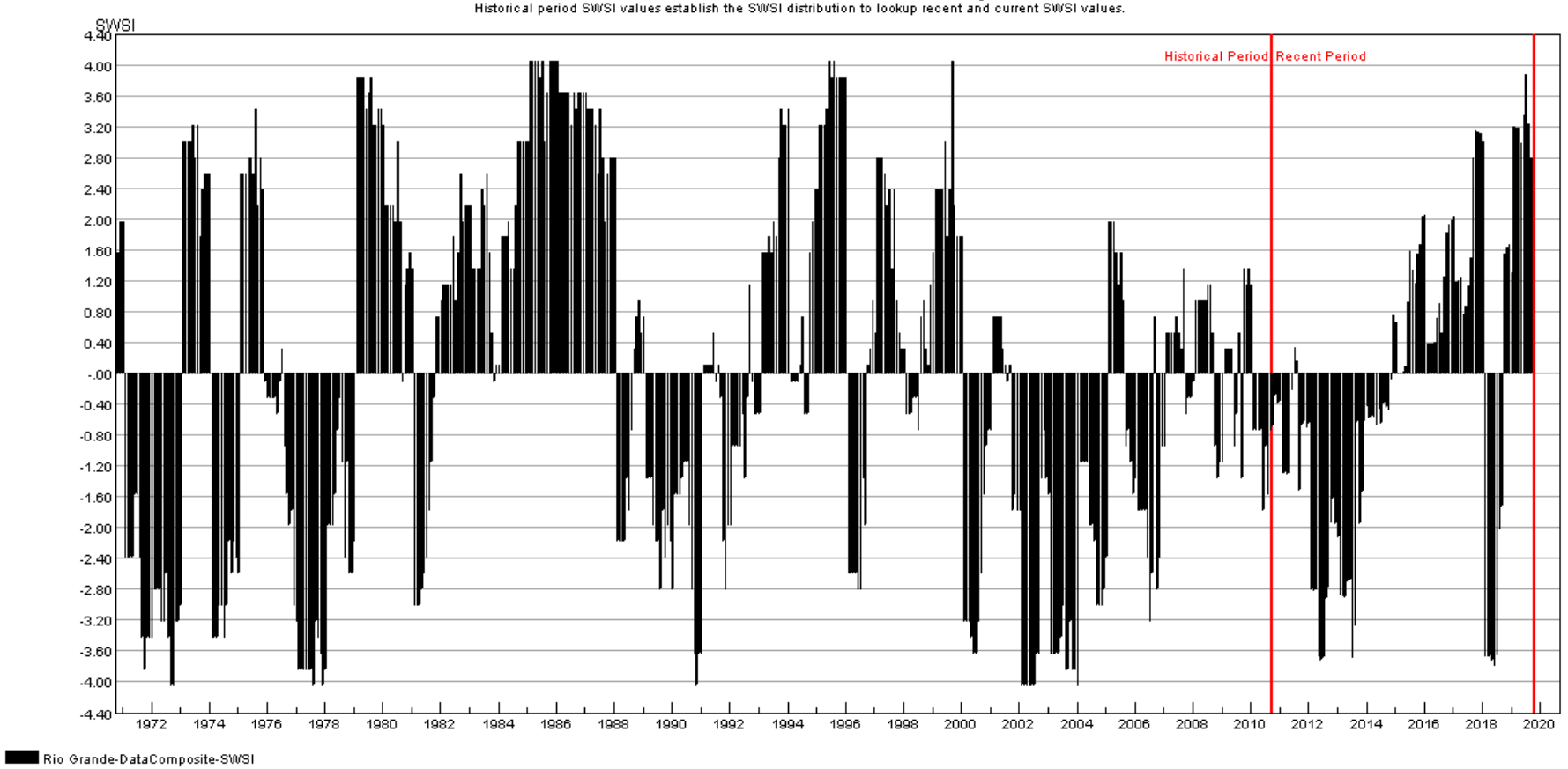
## Public Use Impact

2019 will go down as a year of variety: late snow, slow to arrive yet enormous runoff, then no support from rain to keep streamflow above the long-term averages as July progressed into August and September. Reservoir releases, if available, and well pumping helped meet the demand for irrigation supplies during the latter part of the irrigation season. October brings less irrigation demand as farmers finish their harvest. Although crop yields were down a bit in the San Luis Valley this year, crop quality continues to increase. Crop prices are good at this time for potatoes and alfalfa.



# Rio Grande Basin SWSI History

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



Basinwide Conditions Assessment

The SWSI value for the month was +2.9.

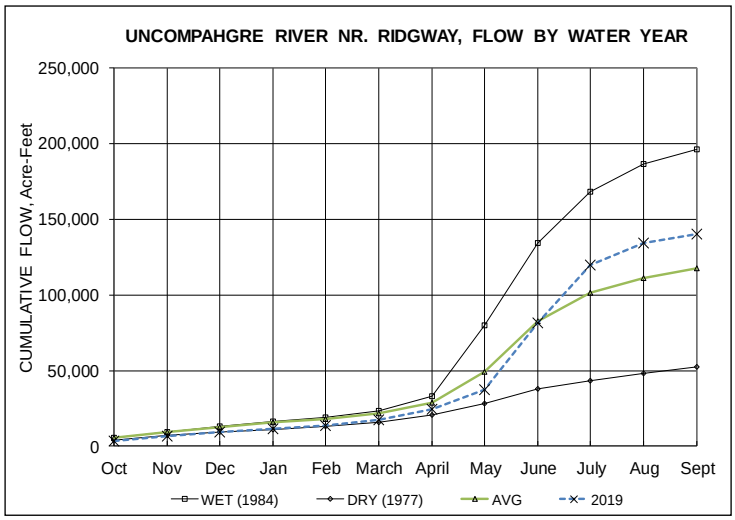
The Gunnison basin received little precipitation again in September, with most of the basin receiving 0 to 30% of the average for the month! No areas received greater than 50% of average. As a result, it appears that despite the great snowpack from last year, soil moisture conditions heading into winter in the high country will be very dry. Temperatures basin wide were again warm at 3 to 5 degrees above average as well.

Outlook

During the next 30 day period the NWS Climate Prediction Center is forecasting equal chances of above or below average precipitation, while during the 90 day period they are forecasting above average temperatures and slightly greater than a 50% chance of above average precipitation.

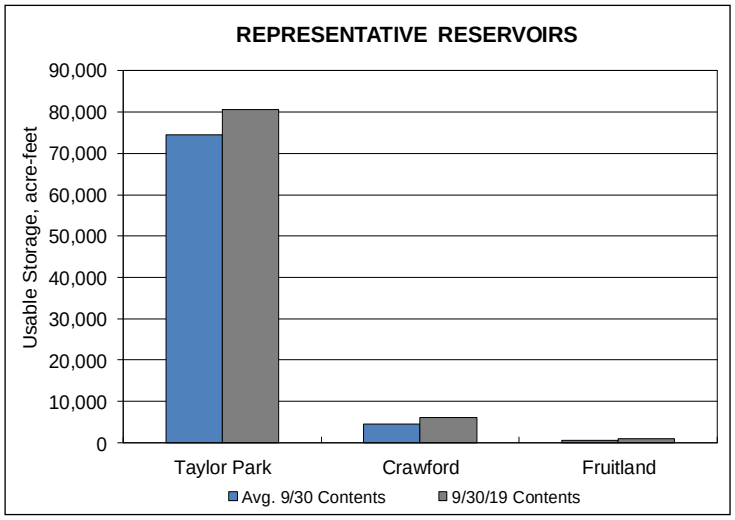
Administrative/Management Concerns

Streamflows, including inflow into the Aspinall Unit, plummeted in September, which caused Gunnison Tunnel demand to exceed inflows for all but three days during September. As a result, the Gunnison Tunnel used 11,381 acre-feet of second fill released from Taylor Park to augment natural flows between Taylor Park and Blue Mesa Reservoirs. In addition, 8,565 acre-feet of first fill account was released from the Aspinall Unit at Crystal Dam to fill Gunnison Tunnel demand. At the end of the month Blue Mesa Reservoir contains 735,609 acre-feet and is over 18 feet above the 7,490 feet water surface elevation December 31st target. The Bureau of Reclamation typically reduces it to this level, which is mentioned in the Record of Decision for Aspinall Unit Operations to prevent icing impacts to lands near the Gunnison River above the Reservoir. Taylor Park Reservoir should end the season on October 31st close to the target volume of 75,000 acre-feet agreed to with the Taylor Park Local Users Group.




Streamflows continued declining in September due to the lack of precipitation with most gauge locations dropping below their historical average for the date. In fact, streamflows dropped to levels that prompted calls from minimum instream flow water rights on Dallas Creek and the Slate River during September.

Administration of the Slate River instream flow call involved administration of a number of augmentation plans, including releases from Meridian Lake for the basin wide augmentation plan operated by the Upper Gunnison River Water Conservancy District (UGRWCD).

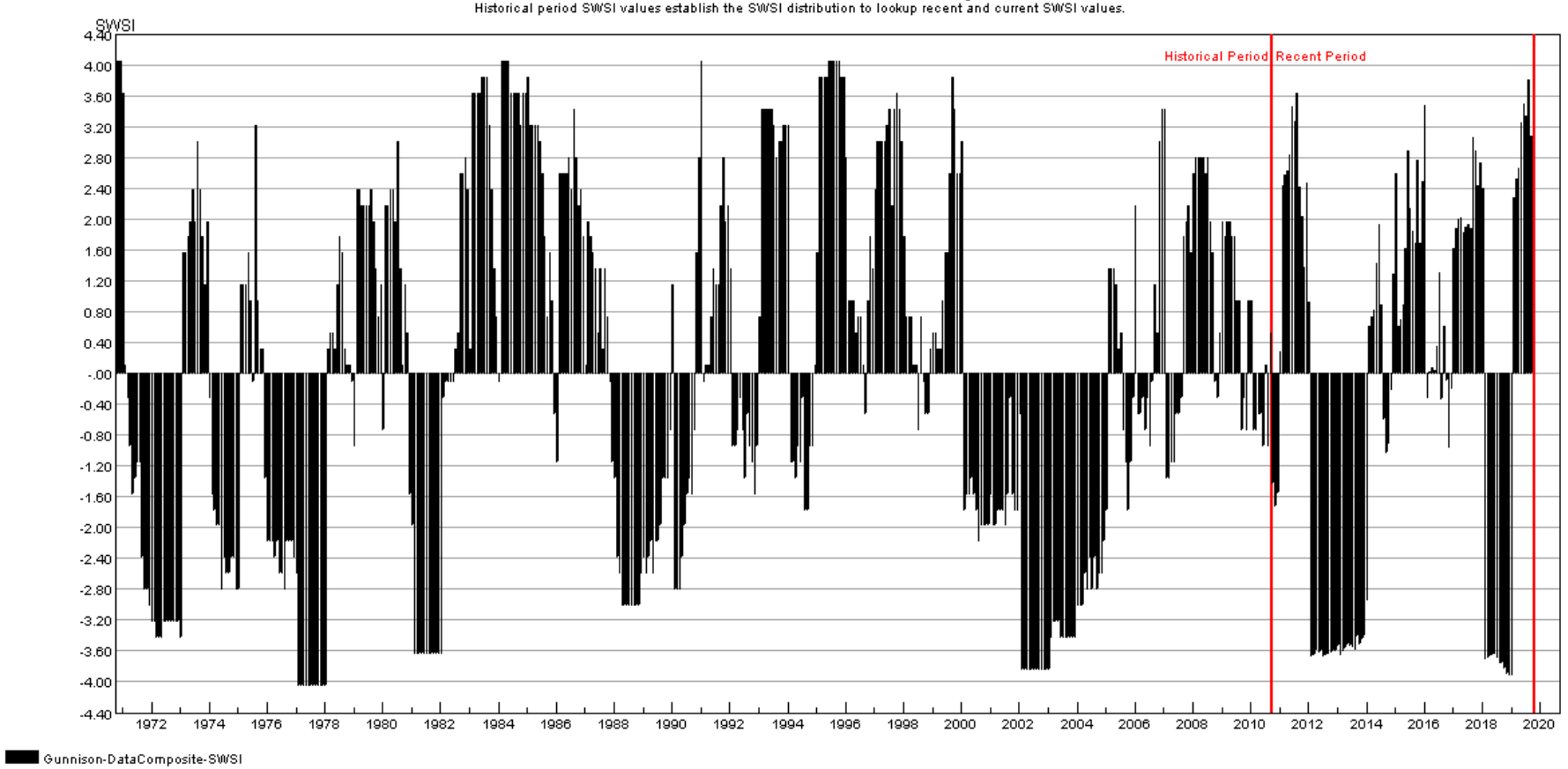



Public Use Impacts

Fishing conditions in the popular water below Taylor Park Dam was great in September with flows at 350 cfs for most of the month. Ski areas, such as Crested Butte, received light snow from an early season storm in late September, but are looking forward to a weather pattern change to begin bringing snow and colder temperatures to the region in October and November.

# Gunnison Basin SWSI History

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



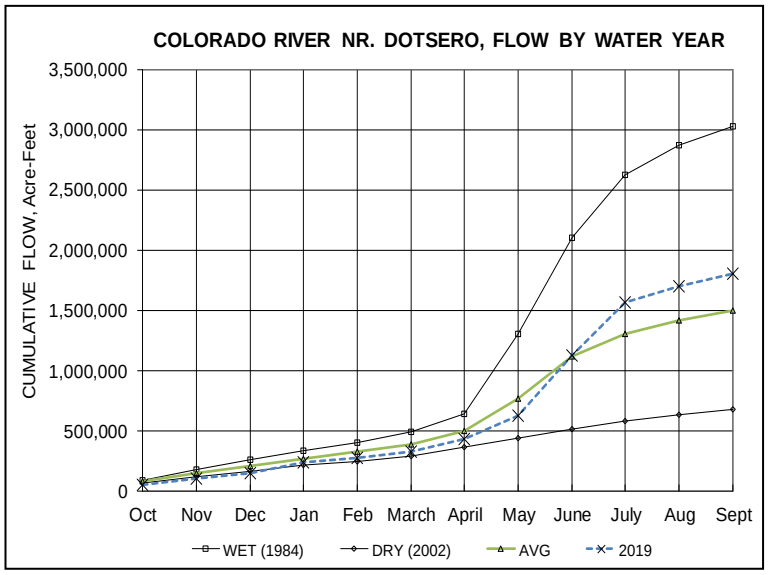
Basinwide Conditions Assessment
The SWSI value for the month was +3.2.

Outlook

Colorado River flows are running slightly above average and tributary flows are running below average. River flows are forecasted to continue at average or below average throughout October. Below average precipitation with below average temperature is forecast for western Colorado through October.

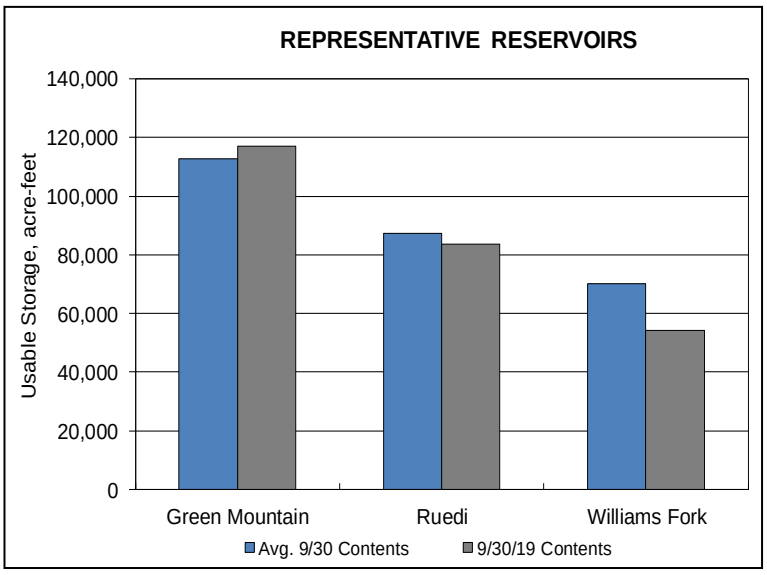
Administrative/Management Concerns

The call on the Colorado River mainstem is the Senior Shoshone (1250cfs) water right. Grand Valley Irrigation diversions (Government Highline/Orchard Mesa Irrigation, Grand Valley Irrigation canals) continue at or near full capacity. Green Mountain is releasing to pass inflows, release contract water, CB-T replacement water, HUP and HUP surplus water. Wolford Mountain is releasing inflows and contract water and water for the endangered fish in the 15 mile reach.



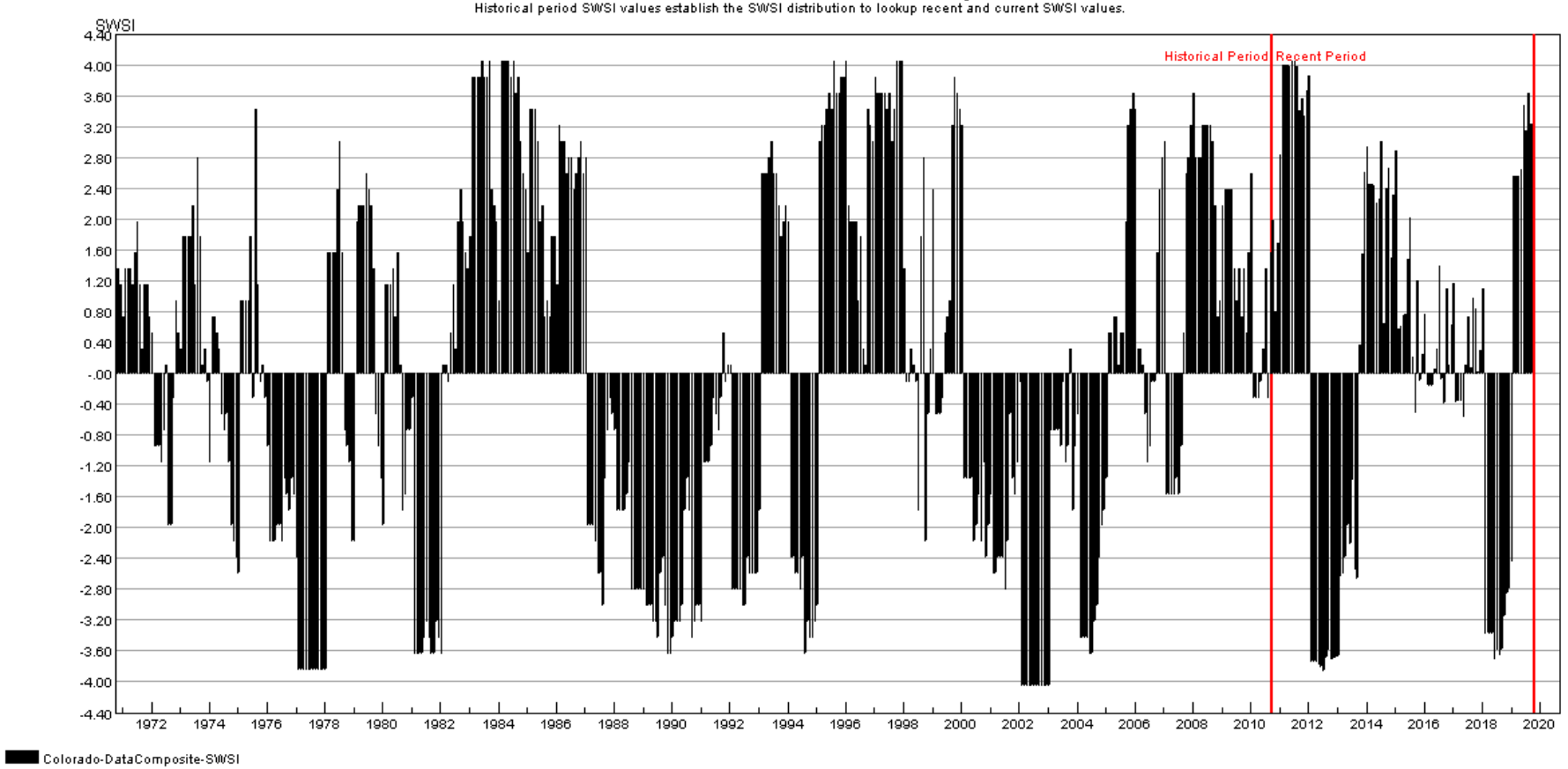

Public Use Impacts

During the month of October, Colorado Parks and Wildlife and Denver water are partnering to improve aquatic habitat on the Williams Fork River near Parshall in the Kemp-Breeze State Wildlife Area. The channel will be reshaped to enhance habitat diversity for trout in all life stages and address the pools that have filled in with sediment. This section of river will not close, but there will be periods of significant turbidity temporarily causing fishing in this stretch to be effected. In the end, these improvements will benefit the fish and anglers.



# Colorado Basin SWSI History

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



## Basinwide Conditions Assessment

The SWSI value for the month was +4.0.

*Precipitation* - Entire Yampa, White, and North Platte basins were 52% of the average, putting the basin at 111% of average for the water year to date. For the month, the lowest percent of average, at 27%, was the Rawah station approx. 15 miles east of Walden. The highest, at 83%, was Ripple Creek approx. 32 miles east of Meeker.

*Temperatures* – The average temperature for the Colorado Drainage Basin was 58.8F.

## Reservoir Outlook

Elkhead Reservoir – September 30th, 2019 at 72.3' and 19,604 AF of 25,550 AF – 76.7% capacity.

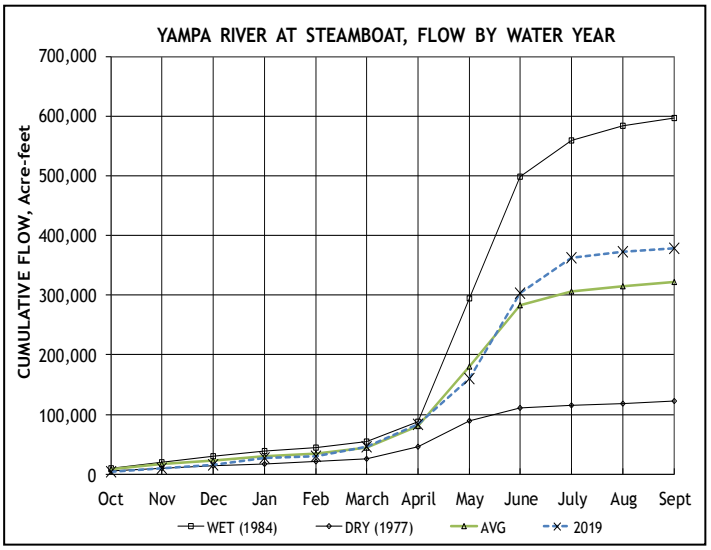
Fish Creek Reservoir - October 1, 2019 at 9878.30' and 3181 AF of 4170 AF - 76.3% capacity.

Stagecoach Reservoir – September 30th, 2019 at 7,201.58' and 34,400 AF of 36,500 AF - 94% capacity, 112% of average.

Yamcolo Reservoir – September 30th, 2019 at 72.12' and 8746 AF of 8700 AF - 101% capacity, 208% of average.

## Public Use Impacts

Most farmers have turned off their ditches after turning back on to increase soil moisture before the winter. Ranchers will continue to divert the amounts required for livestock. Fishing is still active on the Elk and Yampa rivers with clear and calm water conditions. Most tourist activity has dropped significantly from the summer months.

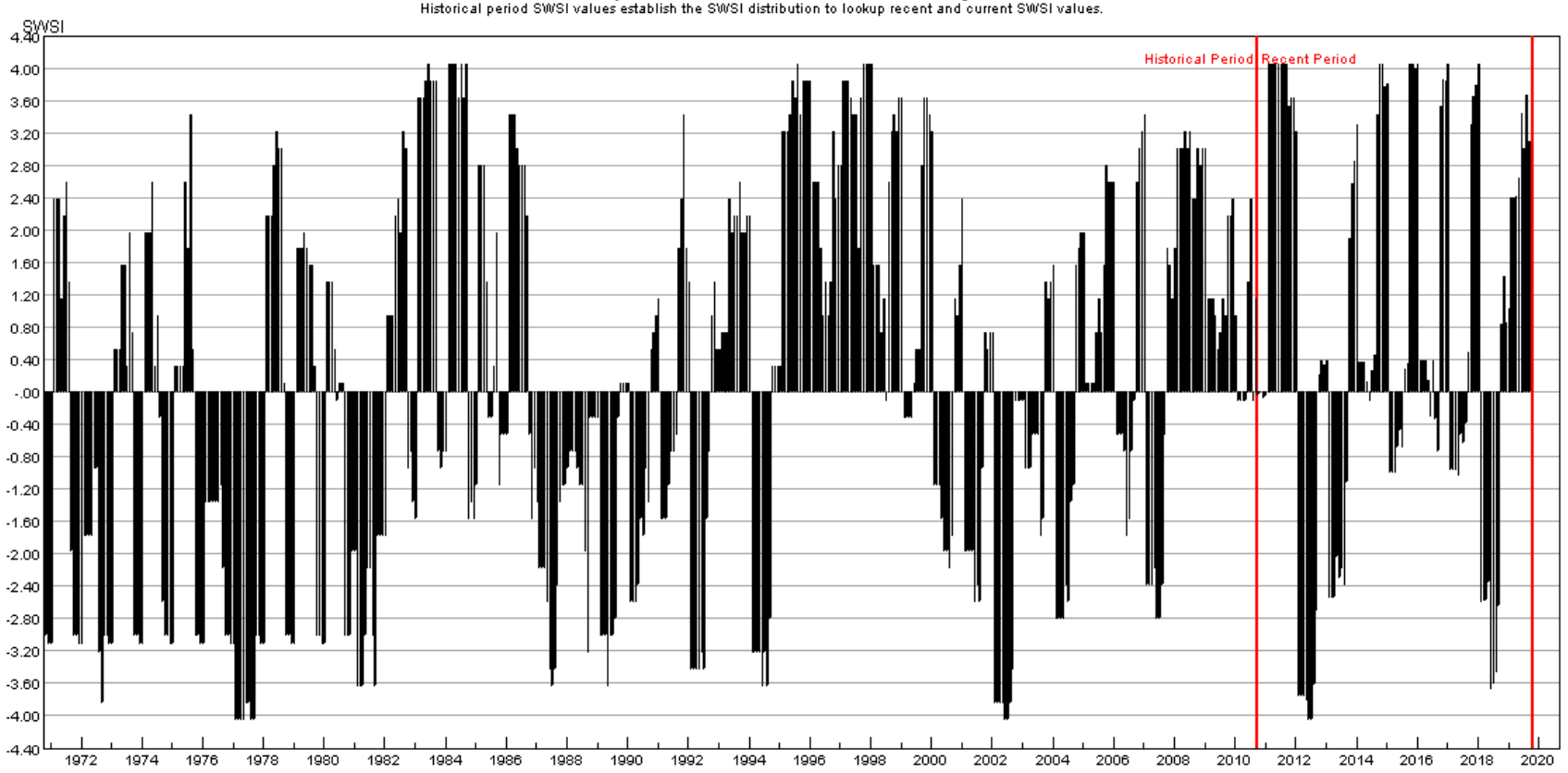



## Administrative Concerns

A call on the Elk River was placed on 9/4/2019 at 14:00 for the 'Elk River Minimum Streamflow, Lower' water right with a priority date of 9/23/1977. The call on the Talamantes Creek has been active since 8/7/2019 at 12:00 for the 'Prestopitz Ditch' water right with a priority date of 4/1/1882.

# Yampa-White Basin SWSI History

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



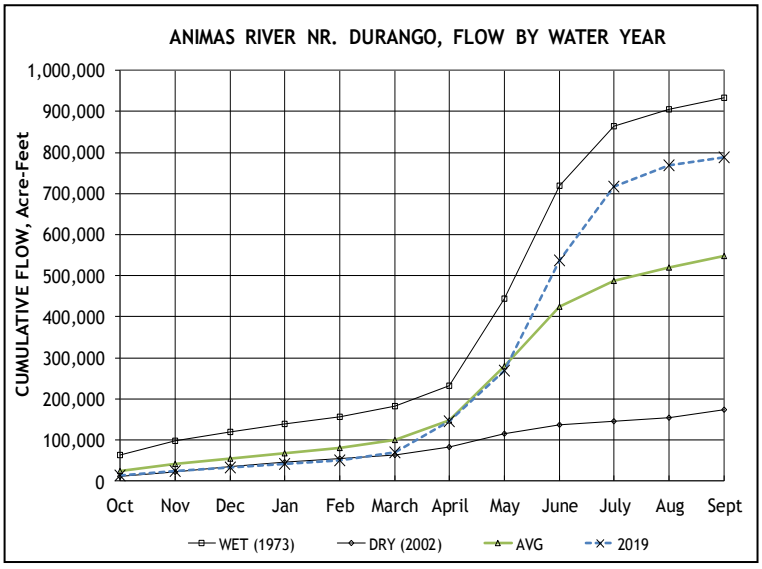
Basinwide Conditions Assessment

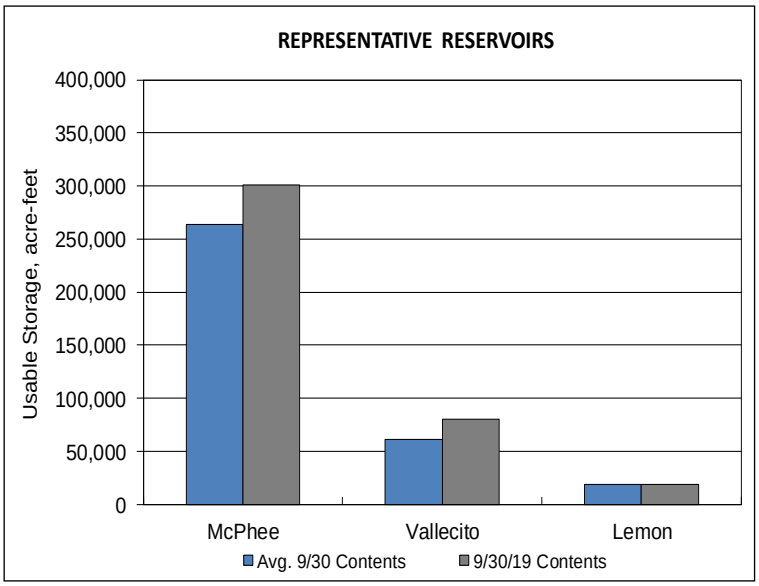
The SWSI value for the month was +2.5.

Flow at the Animas River at Durango averaged 334 cfs (74% of average). The flow at the Dolores River at Dolores averaged 127 cfs (71% of average). The La Plata River at Hesperus averaged 8 cfs (43% of average). Precipitation in Durango was 0.49 inches for the month, 20% of the 30-year average of 2.40 inches. Precipitation to date in Durango, for the water year is 21.31 inches, 110% of the 30-year average of 19.36 inches. End of last month precipitation to date, for the water year was 120% of average. The average high and low temperatures for the month of September in Durango were 81° and 45°. In comparison, the 30-year average high and low for the month is 77° and 45°. At the end of the month Vallecito Reservoir contained 80,286 acre-feet compared to its average content of 57,910 acre-feet (139% of average). McPhee Reservoir was up to 301,057 acre-feet compared to its average content of 266,779 (113% of average), while Lemon Reservoir was up to 18,840 acre-feet as compared to its average content of 18,492 acre-feet (102% of average).

Outlook

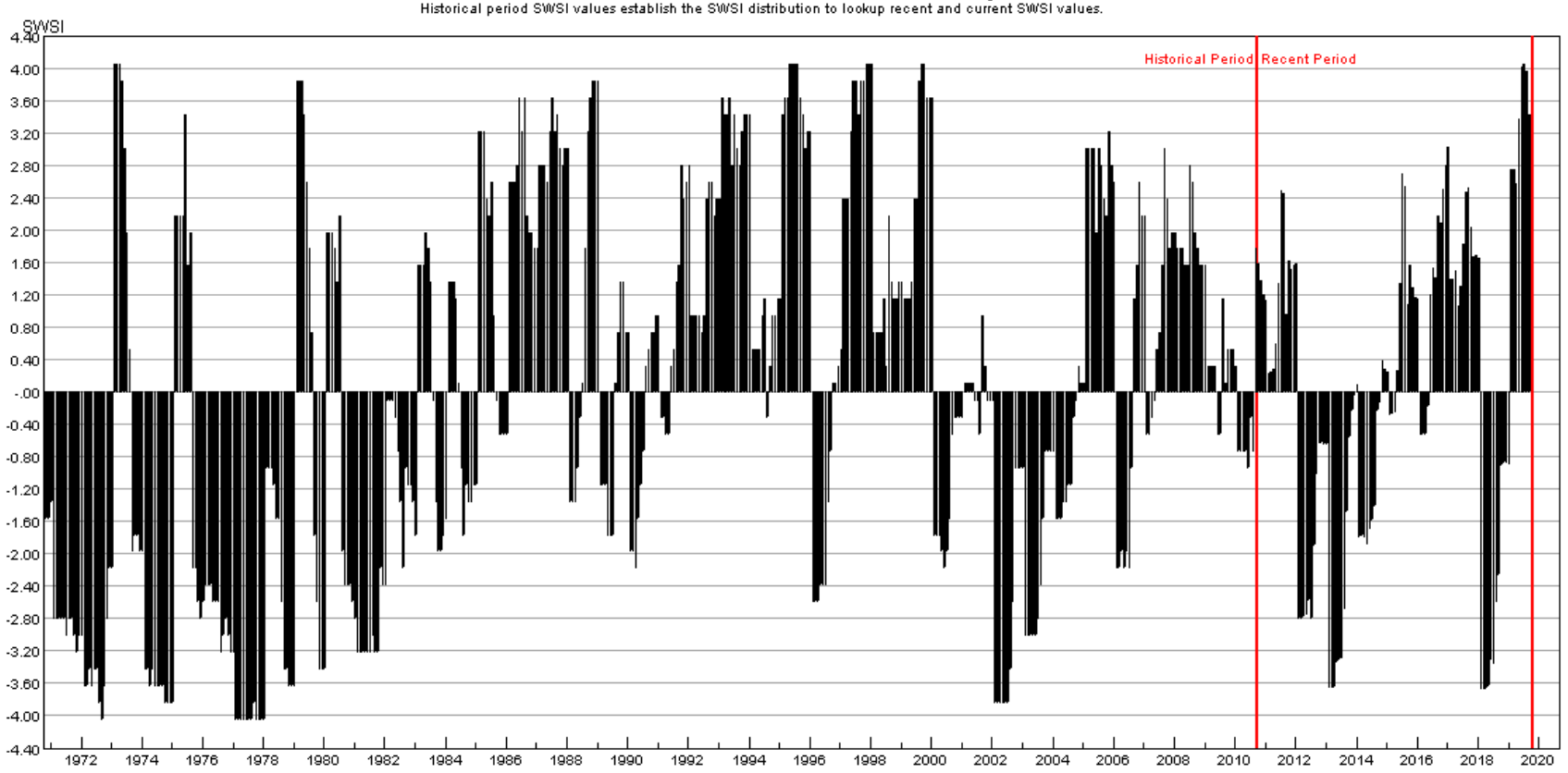
Precipitation (0.49 inches) was well below average for September in Durango. There were 109 years out of 124 years of record where there was more precipitation than this year. The monsoon rains usually start in July in Durango, but that is not the case this year. As of the end of September, very little monsoon rain has been recorded in the area. The flows in the rivers within the basin fell below average for this time of the year. There are 67 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 65 out of 110 years of record where the total flow past the Dolores stream gauge was more than this year and 77 out of 103 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 above average for this time of year.



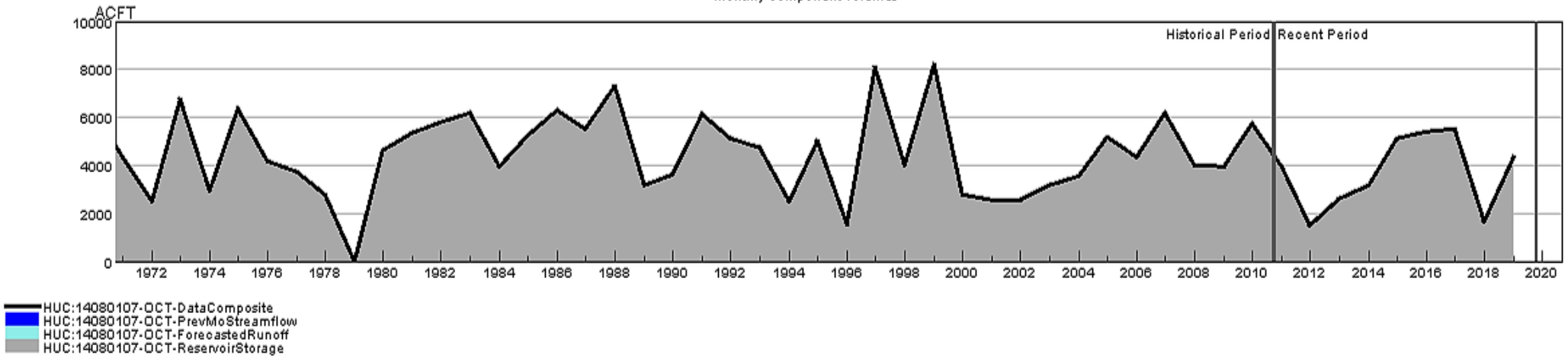
# San Juan-Dolores Basin SWSI History

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



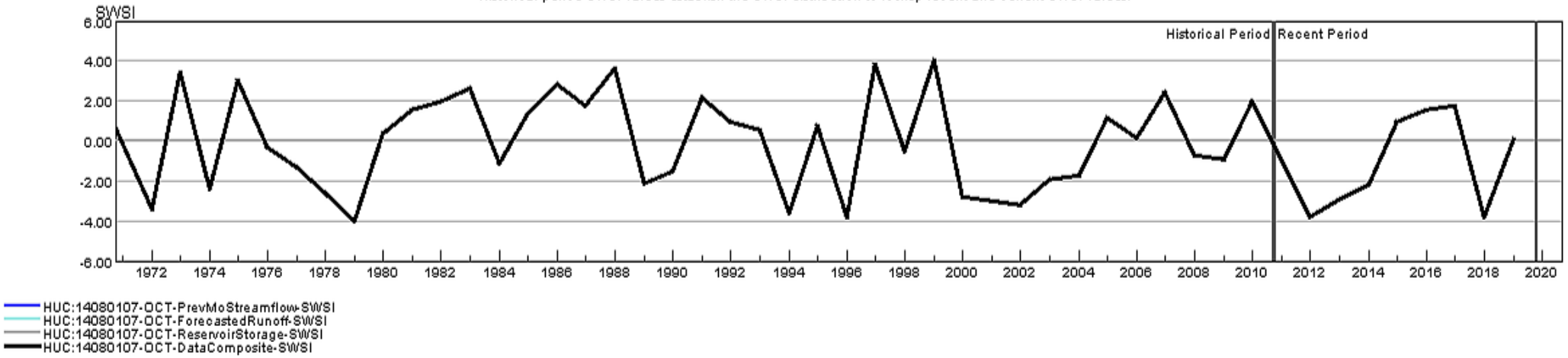
## HUC 14080107 (Mancos) Surface Water Supply - OCT

Monthly component volumes



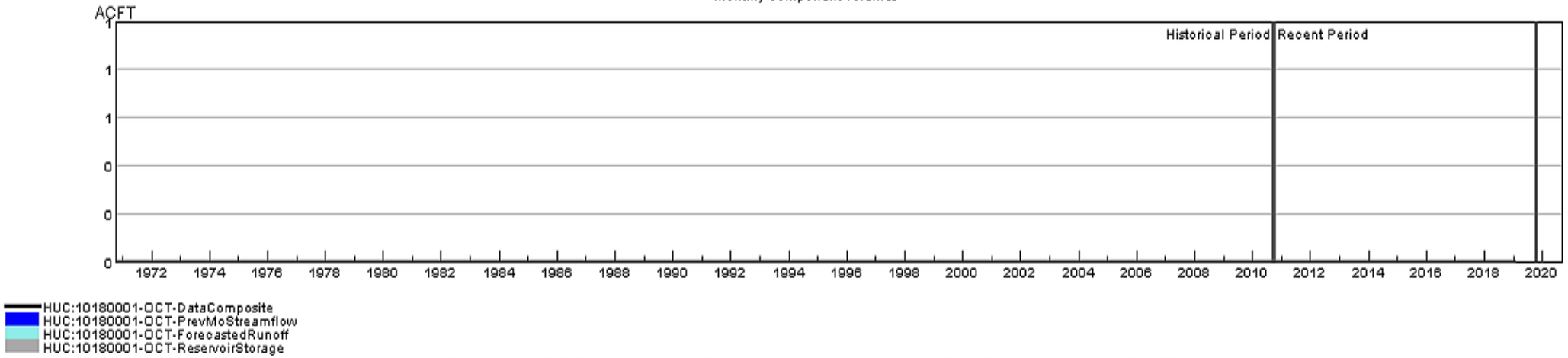

## HUC 14080107 (Mancos) SWSI Values - OCT

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



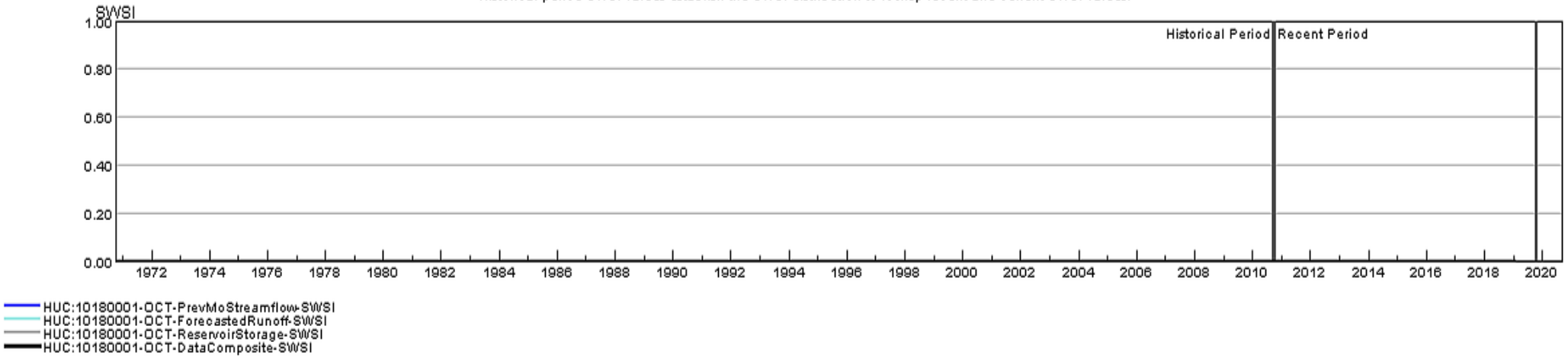
## HUC 10180001 (North Platte Headwaters) Surface Water Supply - OCT

Monthly component volumes



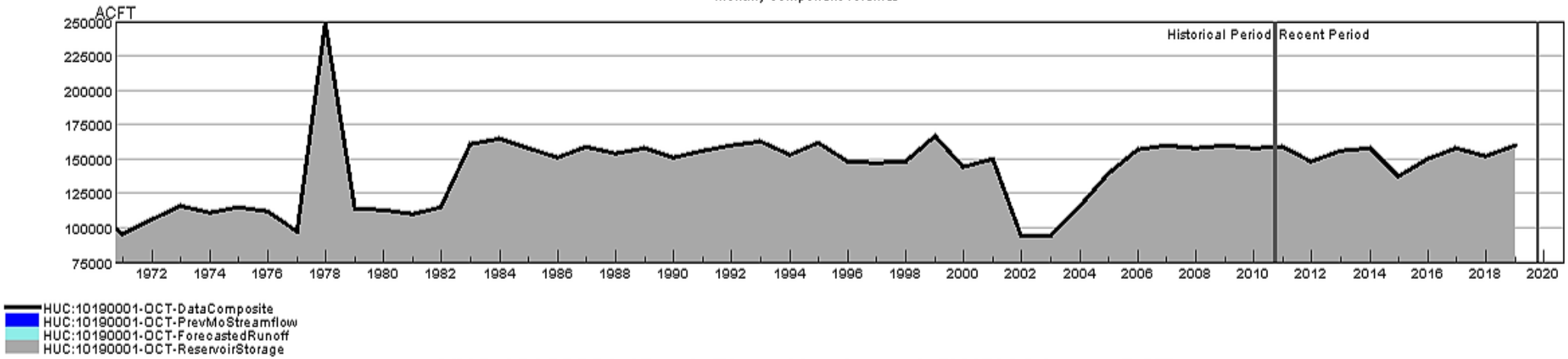

## HUC 10180001 (North Platte Headwaters) SWSI Values - OCT

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



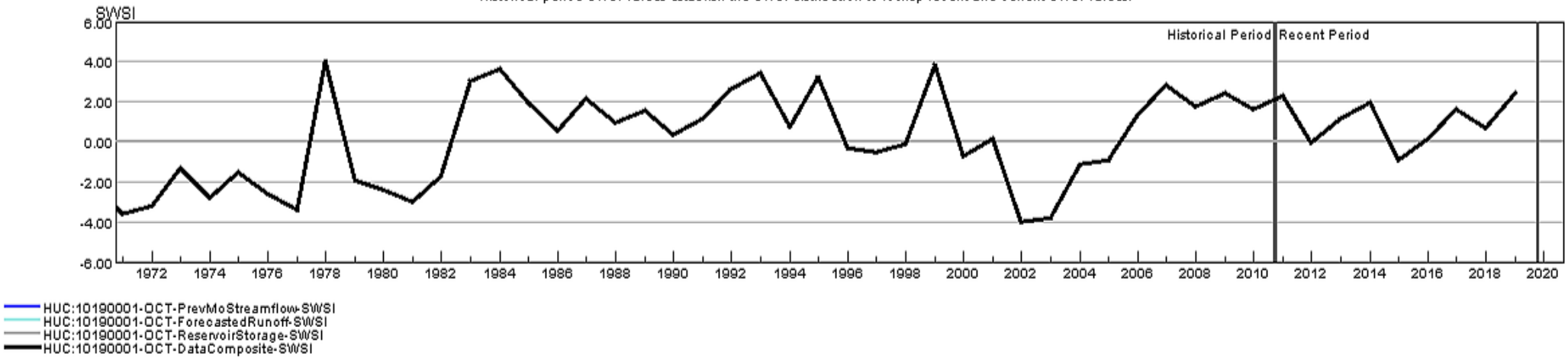
## HUC 10190001 (South Platte Headwater) Surface Water Supply - OCT

Monthly component volumes



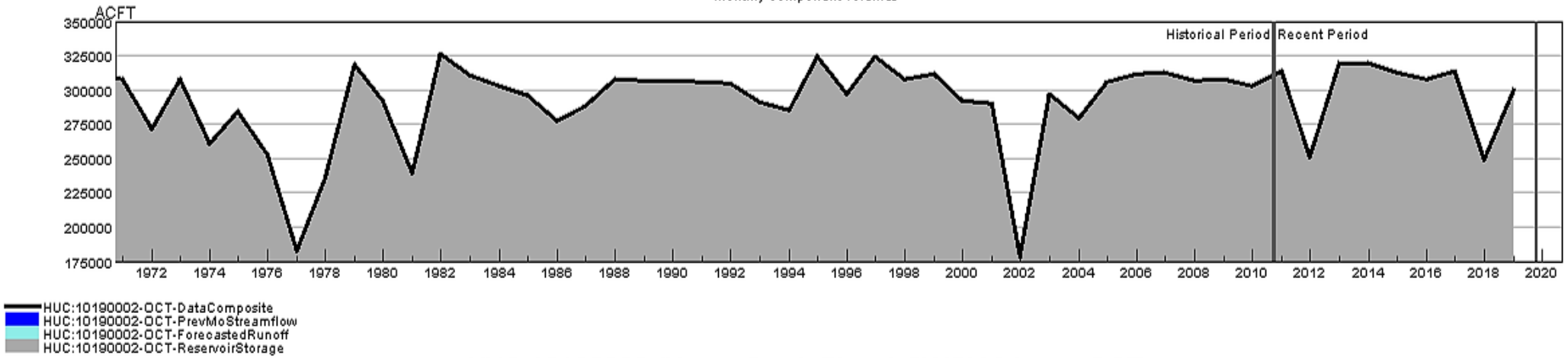

## HUC 10190001 (South Platte Headwater) SWSI Values - OCT

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



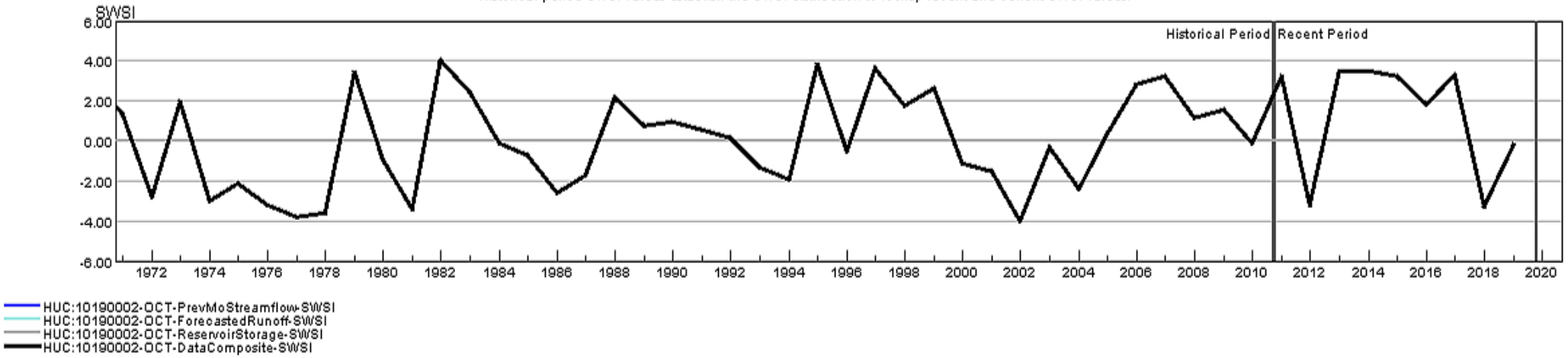
## HUC 10190002 (Upper South Platte) Surface Water Supply - OCT

Monthly component volumes



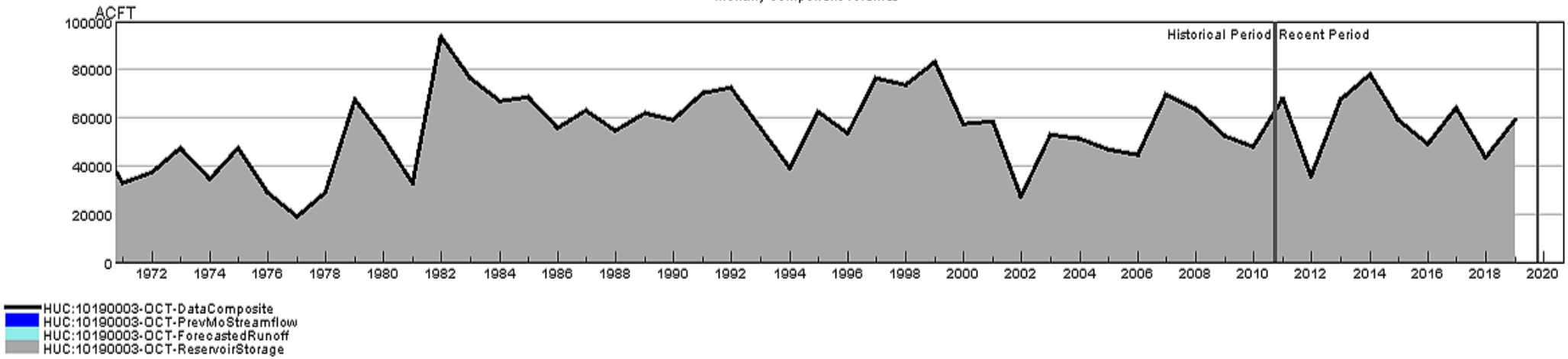

## HUC 10190002 (Upper South Platte) SWSI Values - OCT

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



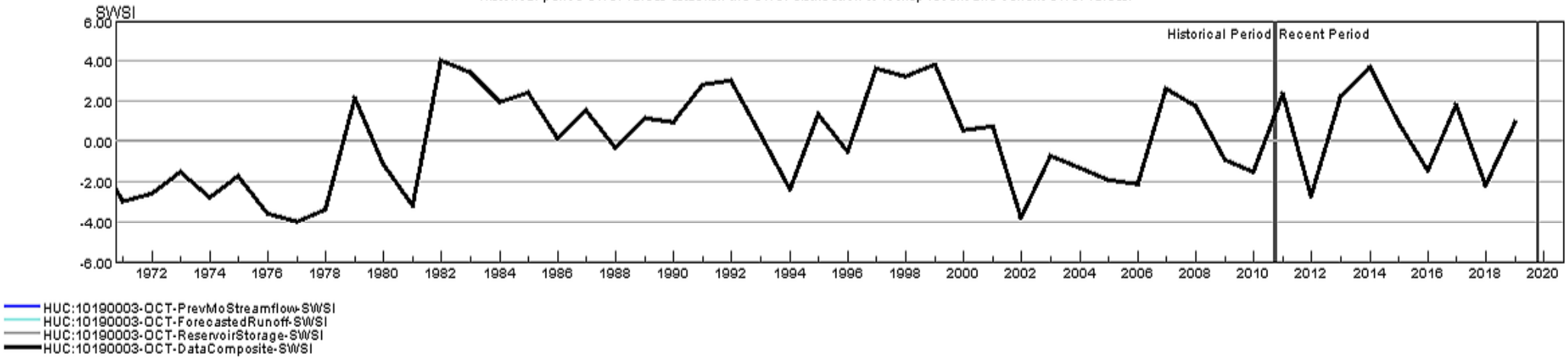
## HUC 10190003 (Middle South Platte-Cherry Creek) Surface Water Supply - OCT

Monthly component volumes



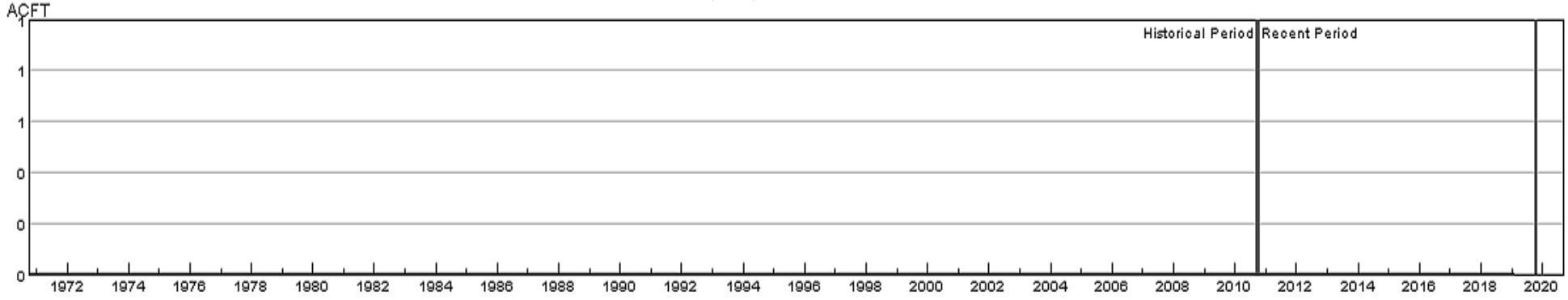

## HUC 10190003 (Middle South Platte-Cherry Creek) SWSI Values - OCT

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



# HUC 10190004 (Clear) Surface Water Supply - OCT

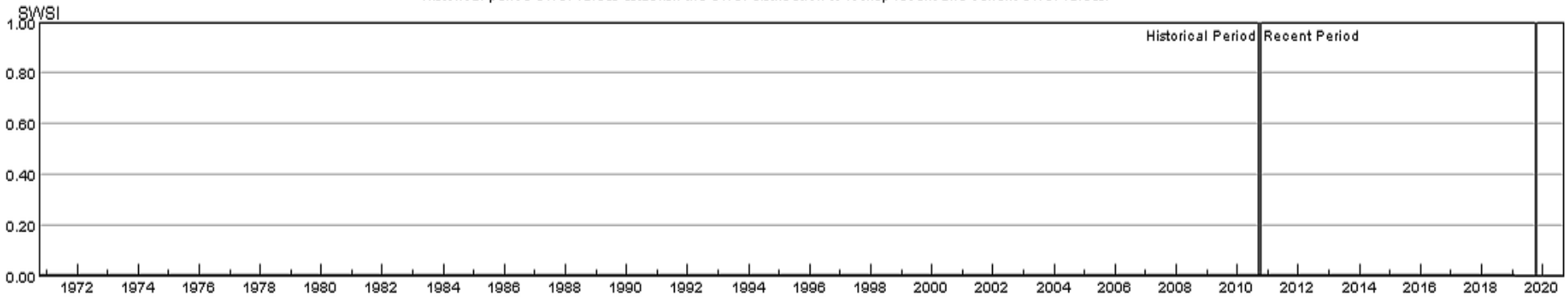
Monthly component volumes




HUC:10190004-OCT-DataComposite
HUC:10190004-OCT-PrevMoStreamflow
HUC:10190004-OCT-ForecastedRunoff
HUC:10190004-OCT-ReservoirStorage

# HUC 10190004 (Clear) SWSI Values - OCT

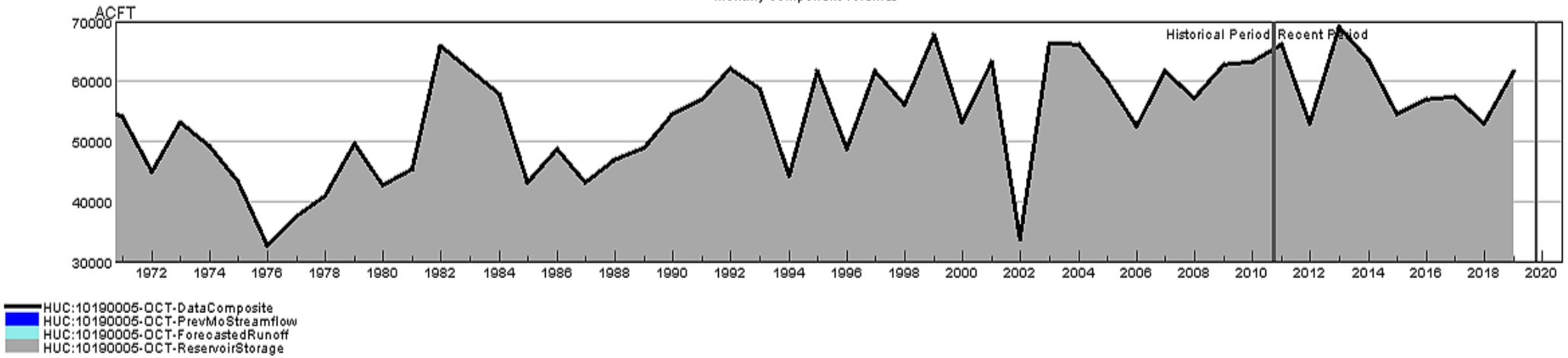
Historical period SWSI values establish the SWSI distribution to lookup recent and current SWSI values.




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

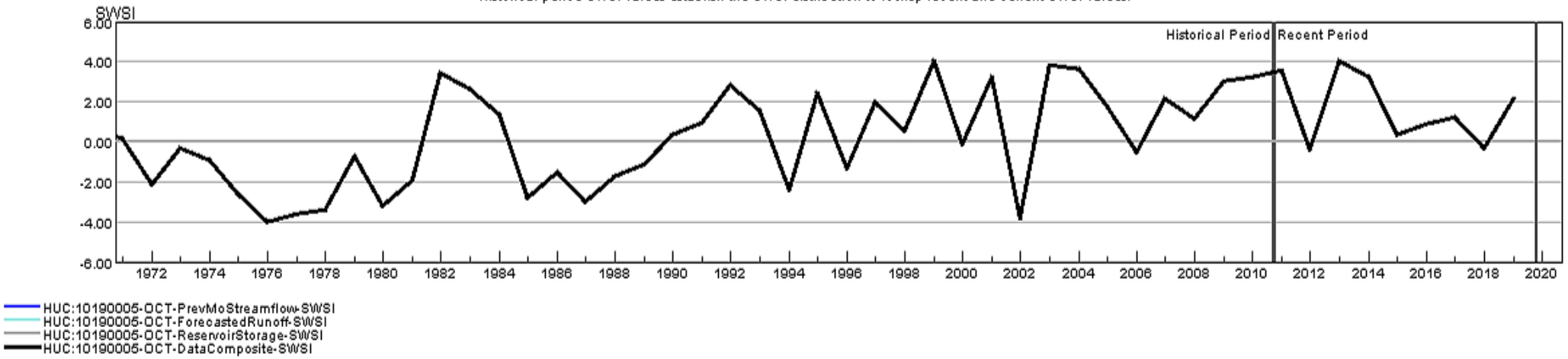
## HUC 10190005 (St. Vrain) Surface Water Supply - OCT

Monthly component volumes



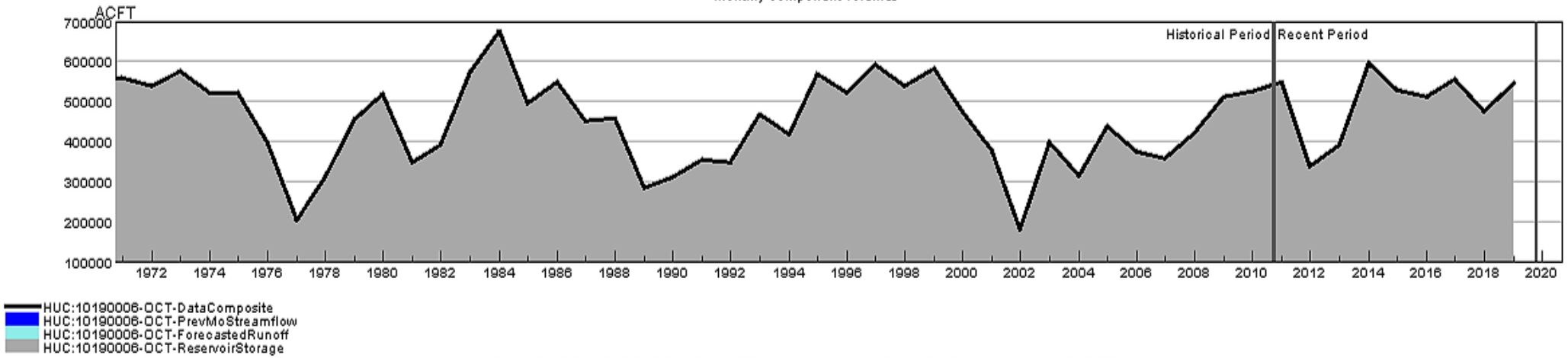

## HUC 10190005 (St. Vrain) SWSI Values - OCT

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



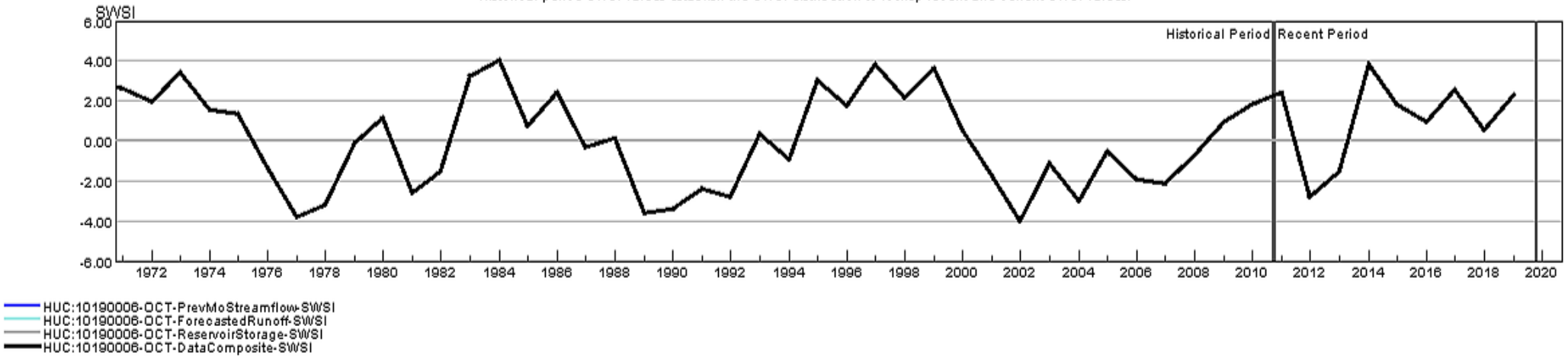
## HUC 10190006 (Big Thompson) Surface Water Supply - OCT

Monthly component volumes



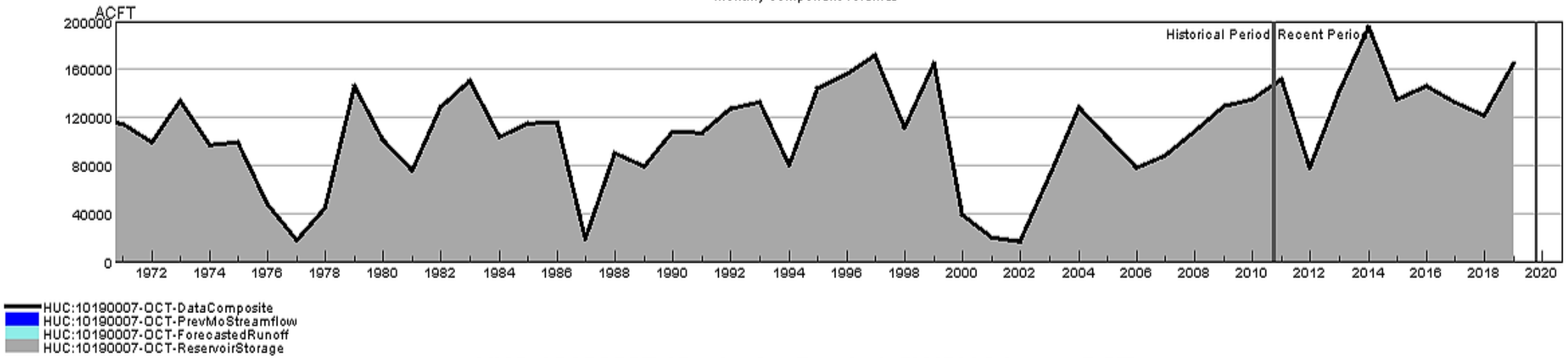

## HUC 10190006 (Big Thompson) SWSI Values - OCT

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



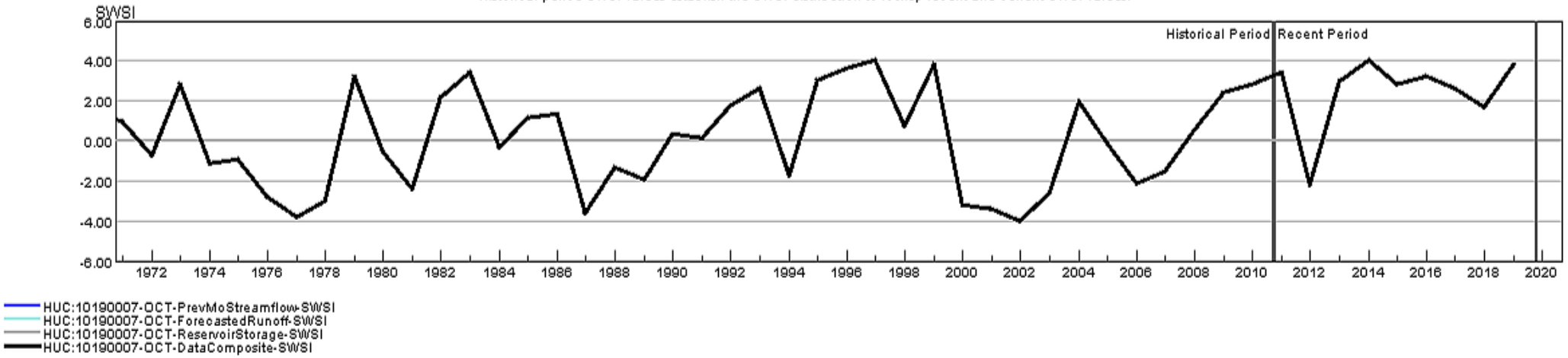
## HUC 10190007 (Cache La Poudre) Surface Water Supply - OCT

Monthly component volumes



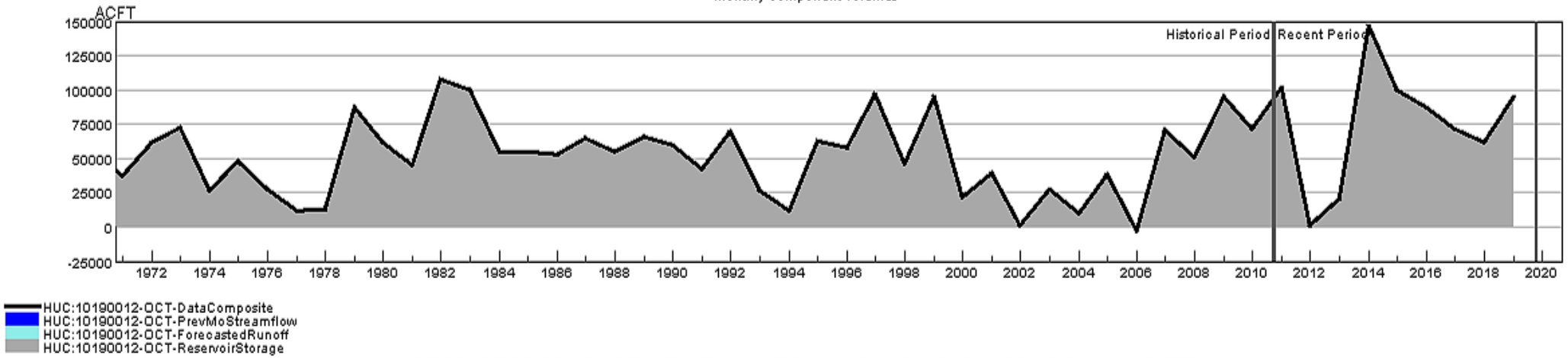

## HUC 10190007 (Cache La Poudre) SWSI Values - OCT

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



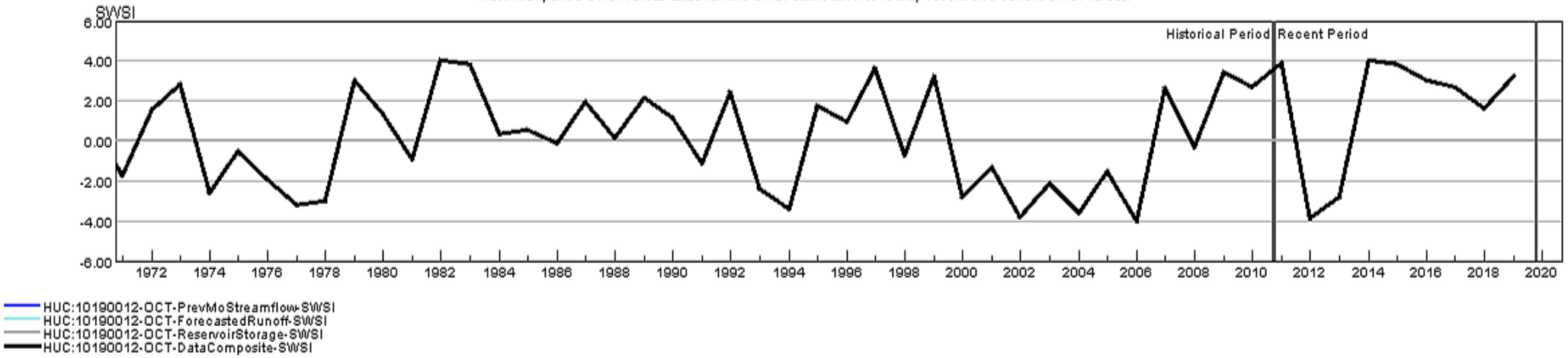
## HUC 10190012 (Middle South Platte-Sterling) Surface Water Supply - OCT

Monthly component volumes



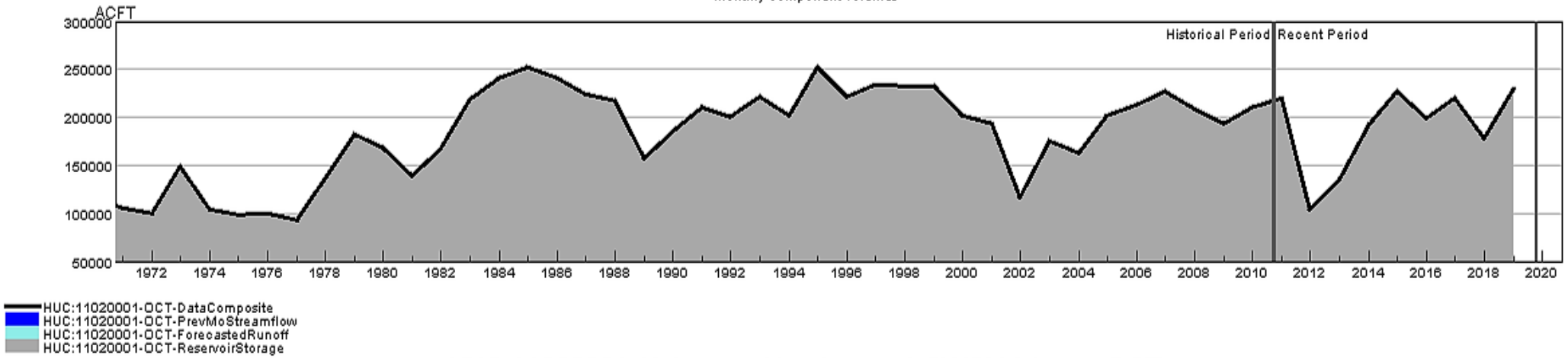

## HUC 10190012 (Middle South Platte-Sterling) SWSI Values - OCT

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



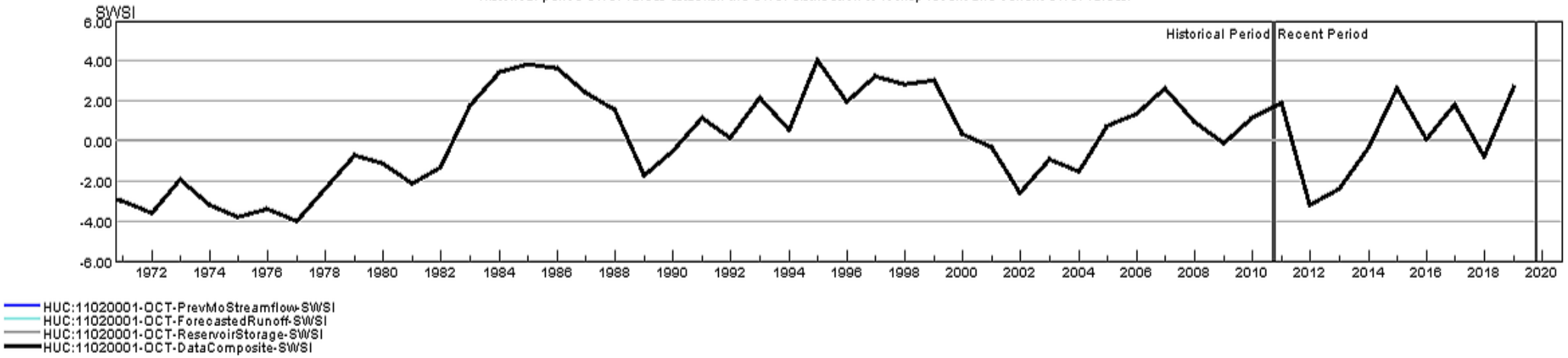
## HUC 11020001 (Arkansas Headwaters) Surface Water Supply - OCT

Monthly component volumes



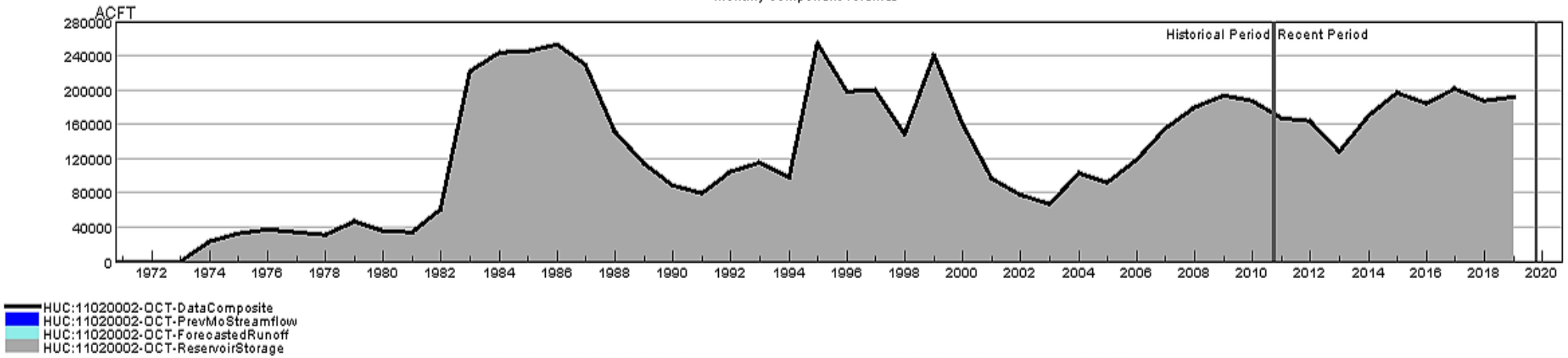

## HUC 11020001 (Arkansas Headwaters) SWSI Values - OCT

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



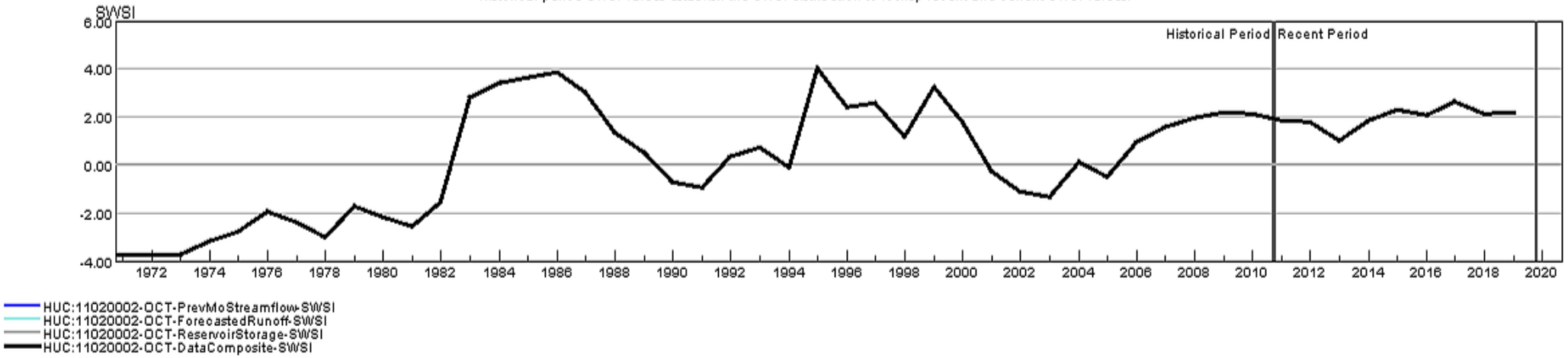
## HUC 11020002 (Upper Arkansas) Surface Water Supply - OCT

Monthly component volumes



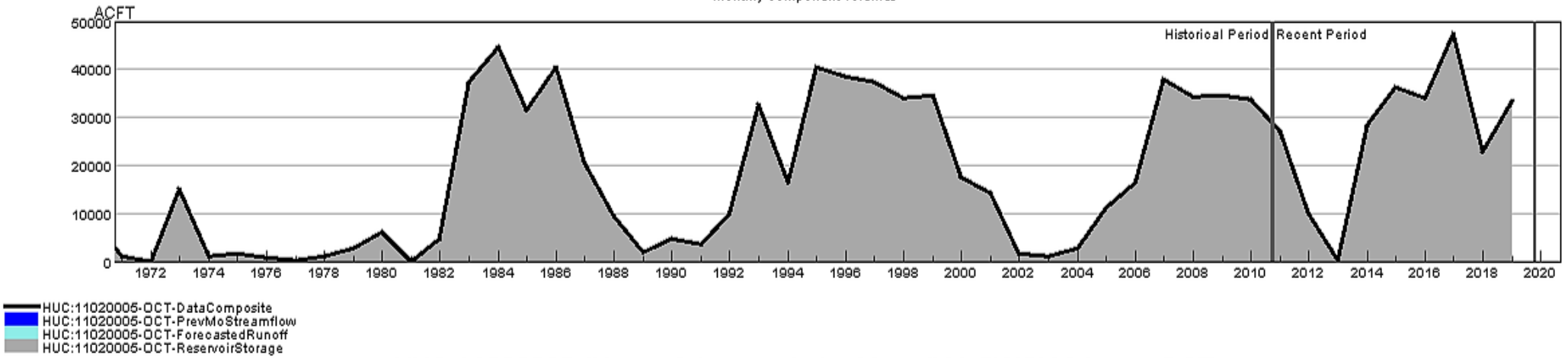

## HUC 11020002 (Upper Arkansas) SWSI Values - OCT

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



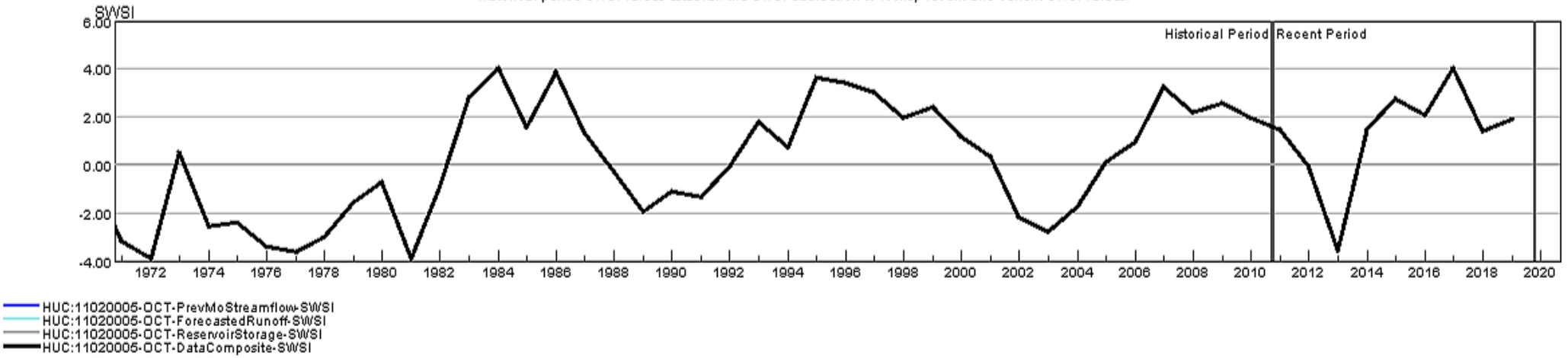
## HUC 11020005 (Upper Arkansas-Lake Meredith) Surface Water Supply - OCT

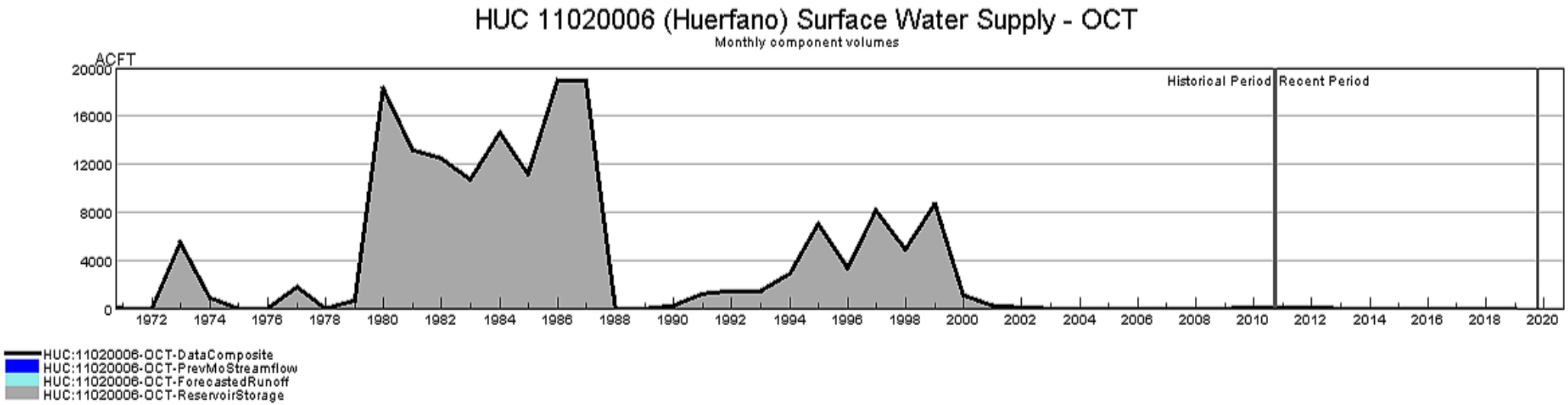
Monthly component volumes

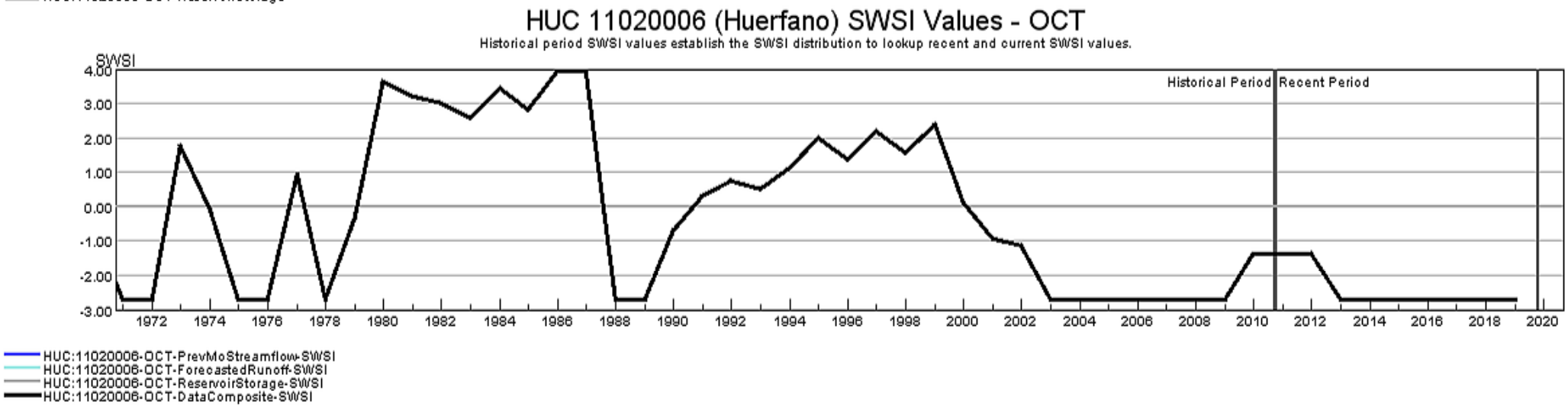



## HUC 11020005 (Upper Arkansas-Lake Meredith) SWSI Values - OCT

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

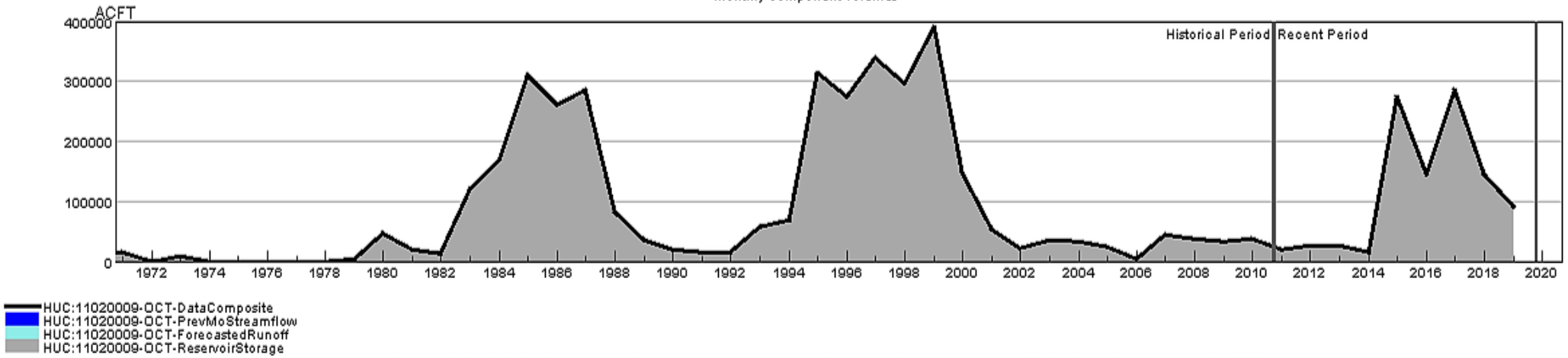



HUC 11020006 (Huerfano) Surface Water Supply - OCT
Monthly component volumes
ACFT
20000
16000
12000
8000
4000
0
Historical Period
Recent Period
1972 1974 1976 1978 1980 1982 1984 1986 1988 1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020
HUC:11020006-OCT-DataComposite
HUC:11020006-OCT-PrevMoStreamflow
HUC:11020006-OCT-ForecastedRunoff
HUC:11020006-OCT-ReservoirStorage


HUC 11020006 (Huerfano) SWSI Values - OCT
Historical period SWSI values establish the SWSI distribution to lookup recent and current SWSI values.
SWSI
4.00
3.00
2.00
1.00
0.00
-1.00
-2.00
-3.00
Historical Period
Recent Period
1972 1974 1976 1978 1980 1982 1984 1986 1988 1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020
HUC:11020006-OCT-PrevMoStreamflow-SWSI
HUC:11020006-OCT-ForecastedRunoff-SWSI
HUC:11020006-OCT-ReservoirStorage-SWSI
HUC:11020006-OCT-DataComposite-SWSI

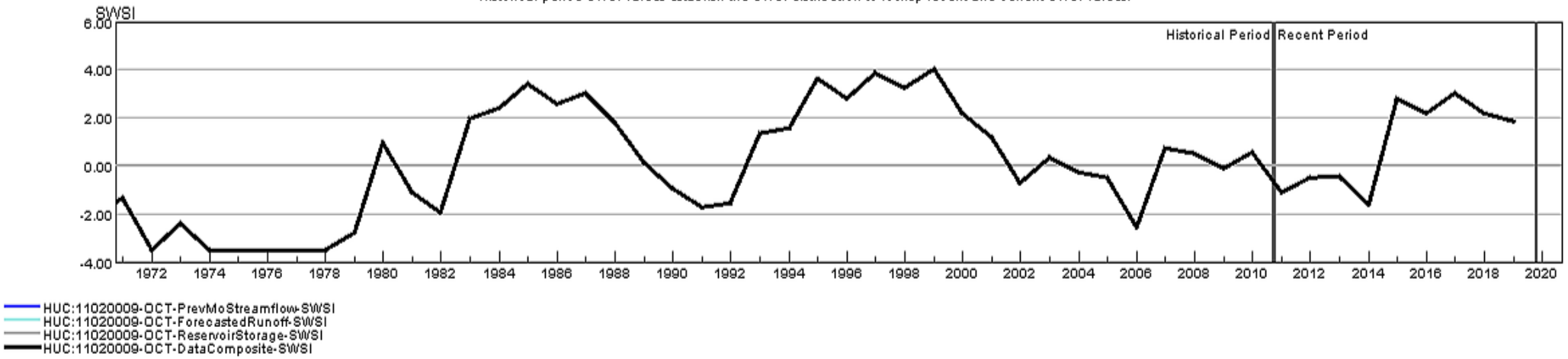
## HUC 11020009 (Upper Arkansas-John Martin Reservoir) Surface Water Supply - OCT

Monthly component volumes



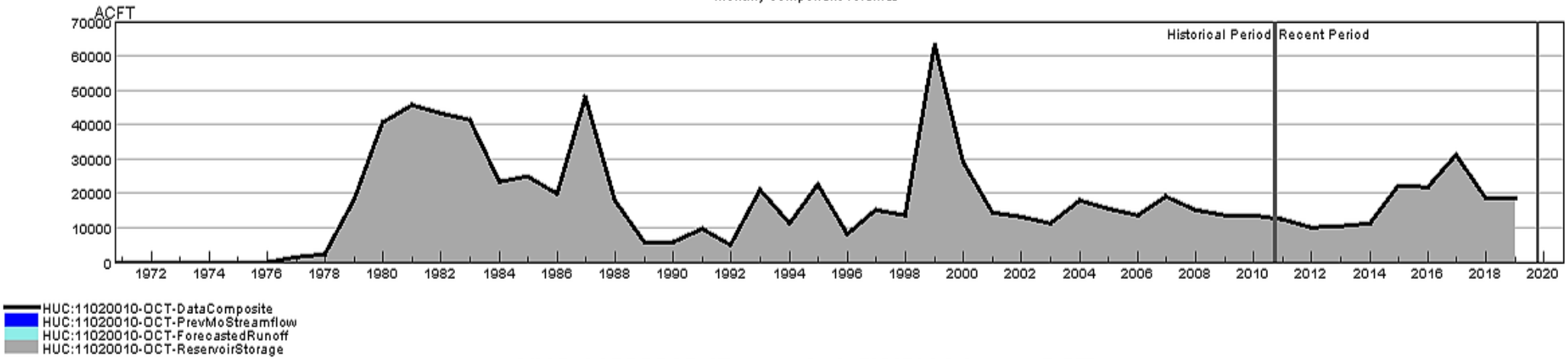

## HUC 11020009 (Upper Arkansas-John Martin Reservoir) SWSI Values - OCT

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



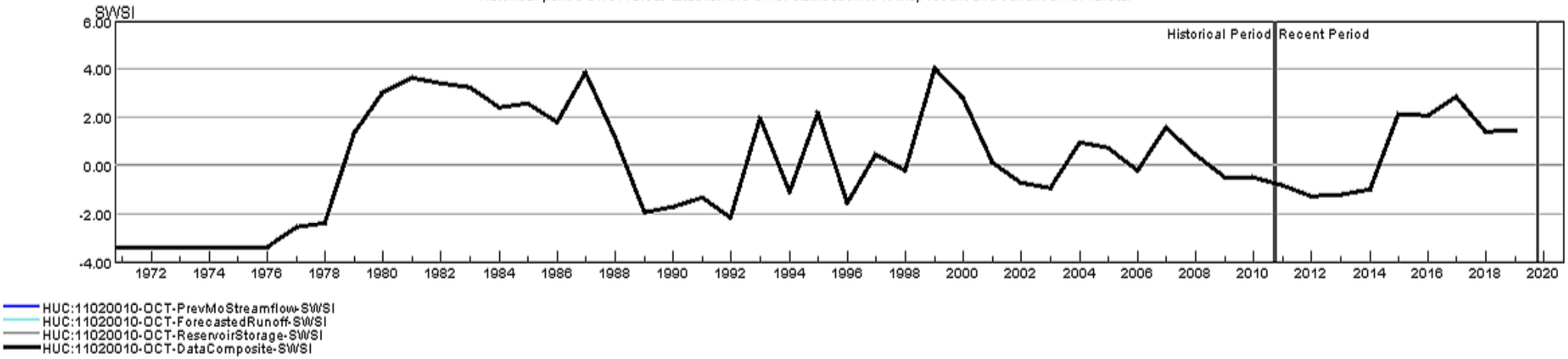
## HUC 11020010 (Purgatoire) Surface Water Supply - OCT

Monthly component volumes



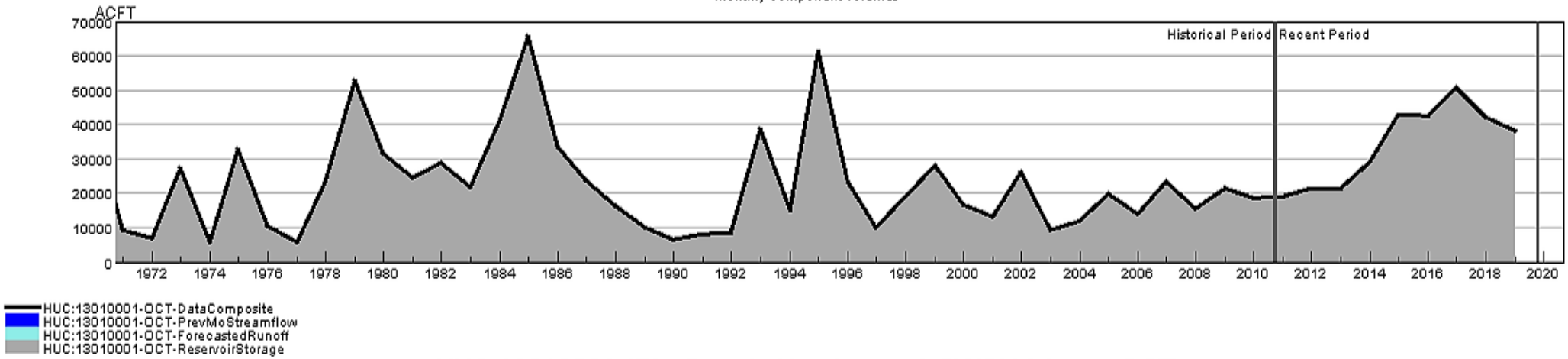

## HUC 11020010 (Purgatoire) SWSI Values - OCT

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



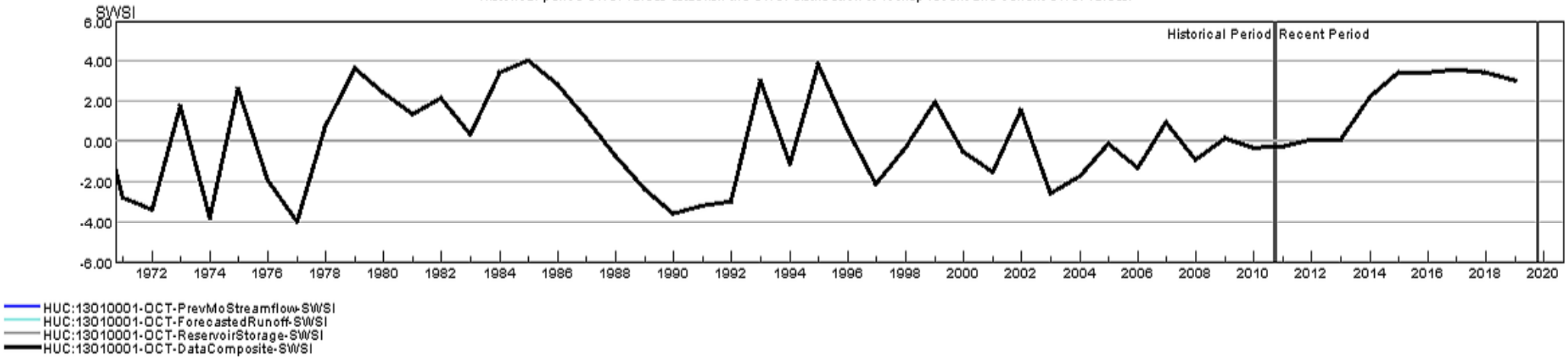
## HUC 13010001 (Rio Grande Headwaters) Surface Water Supply - OCT

Monthly component volumes



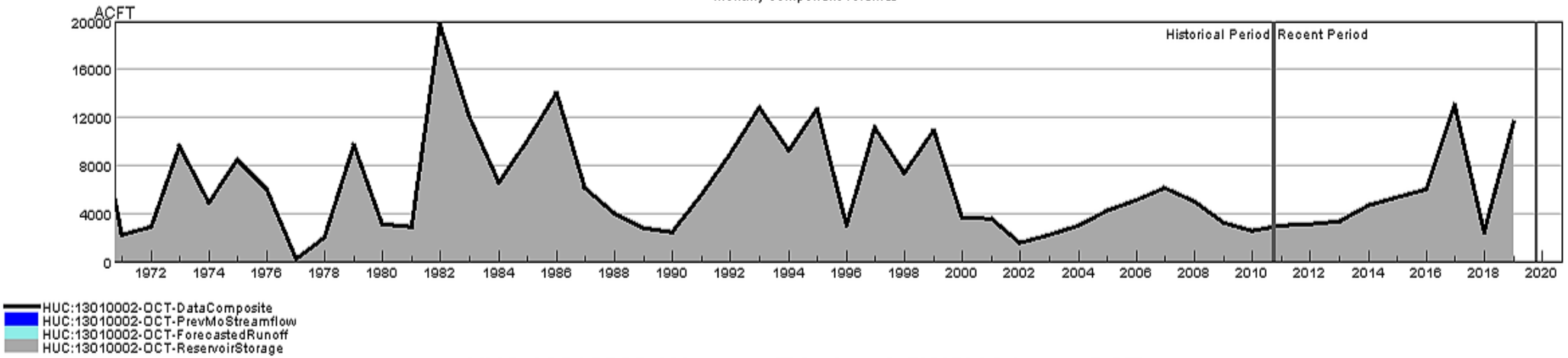

## HUC 13010001 (Rio Grande Headwaters) SWSI Values - OCT

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



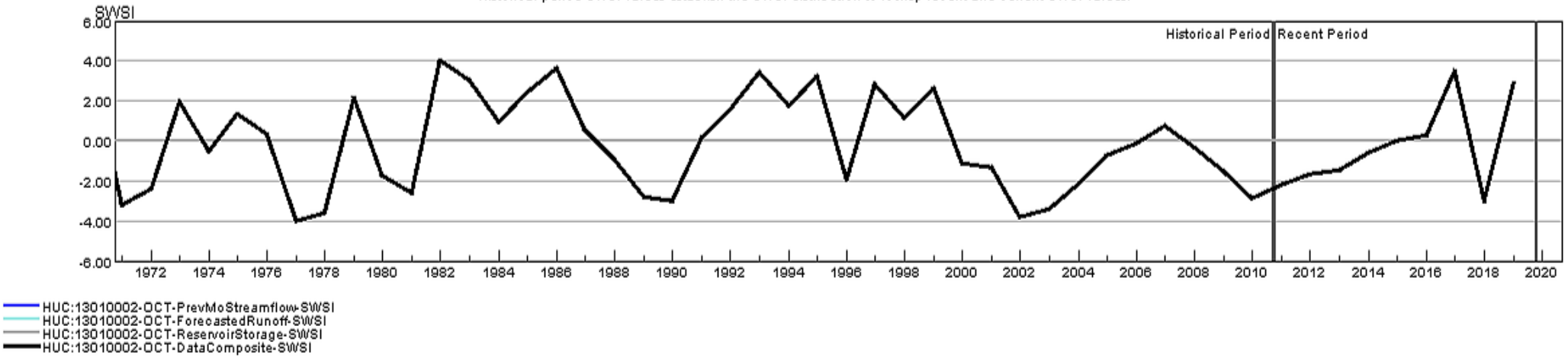
## HUC 13010002 (Alamosa-Trinchera) Surface Water Supply - OCT

Monthly component volumes



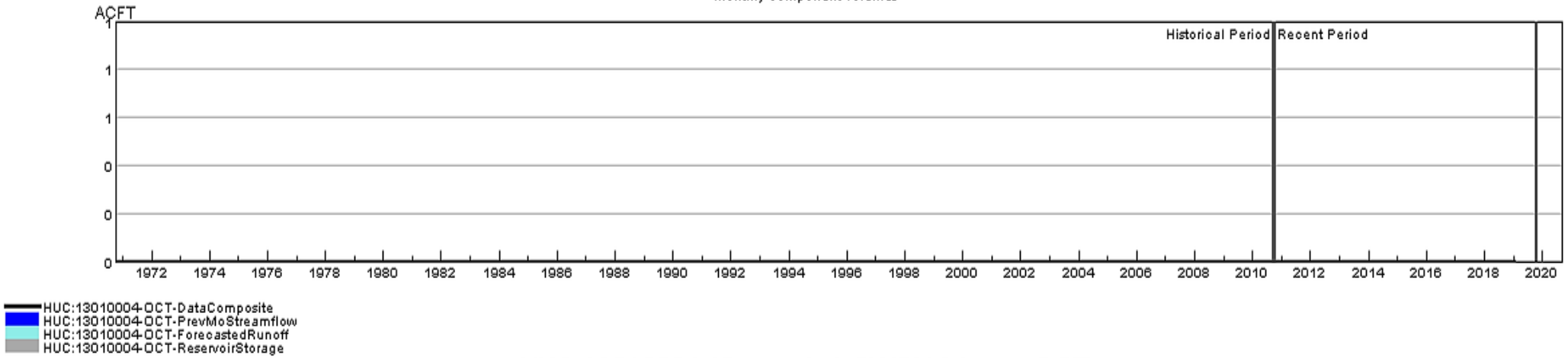

## HUC 13010002 (Alamosa-Trinchera) SWSI Values - OCT

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



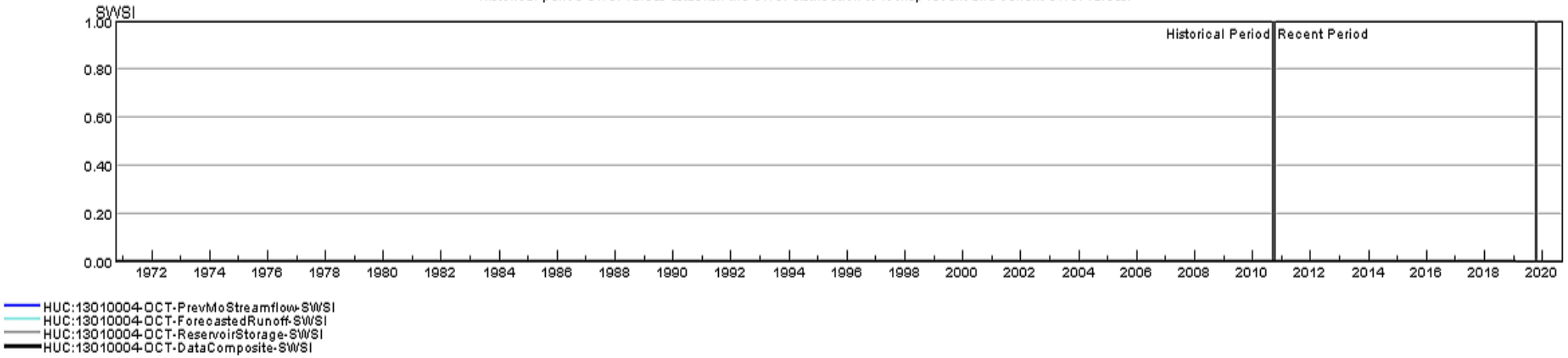
## HUC 13010004 (Saguache) Surface Water Supply - OCT

Monthly component volumes



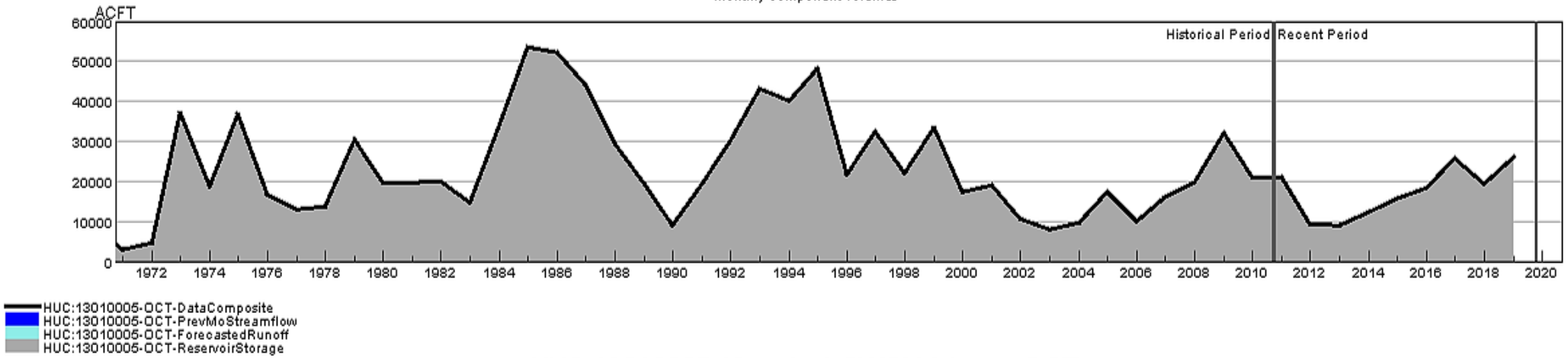

## HUC 13010004 (Saguache) SWSI Values - OCT

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



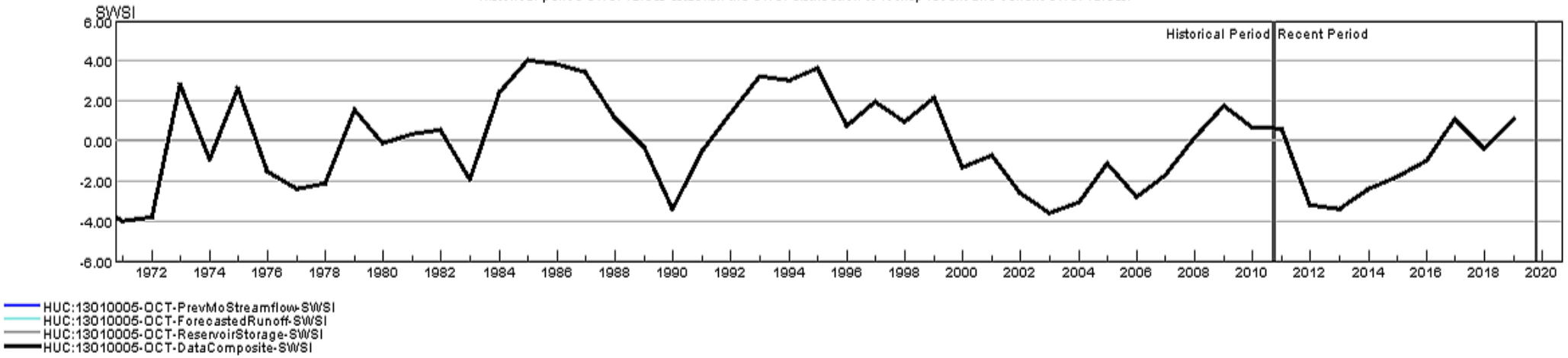
## HUC 13010005 (Conejos) Surface Water Supply - OCT

Monthly component volumes



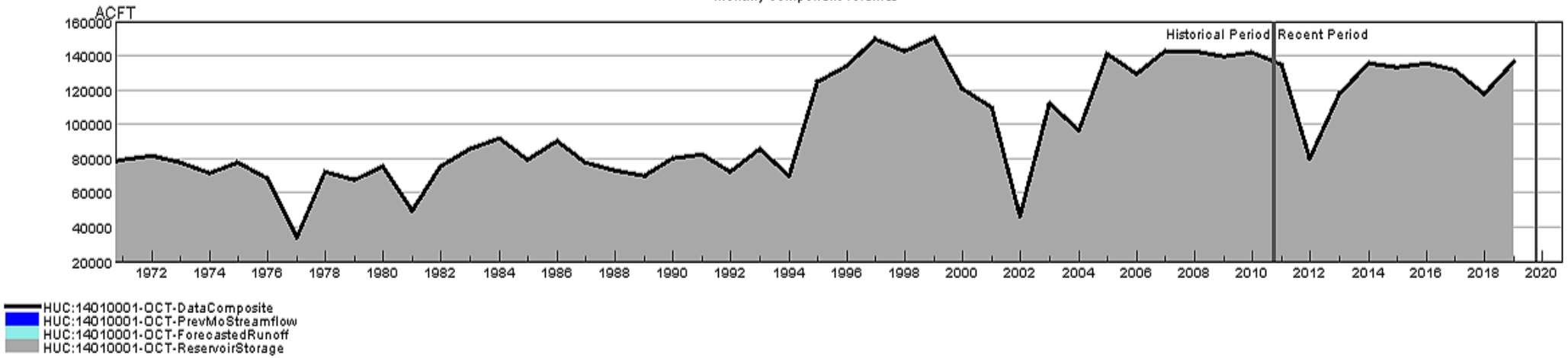

## HUC 13010005 (Conejos) SWSI Values - OCT

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



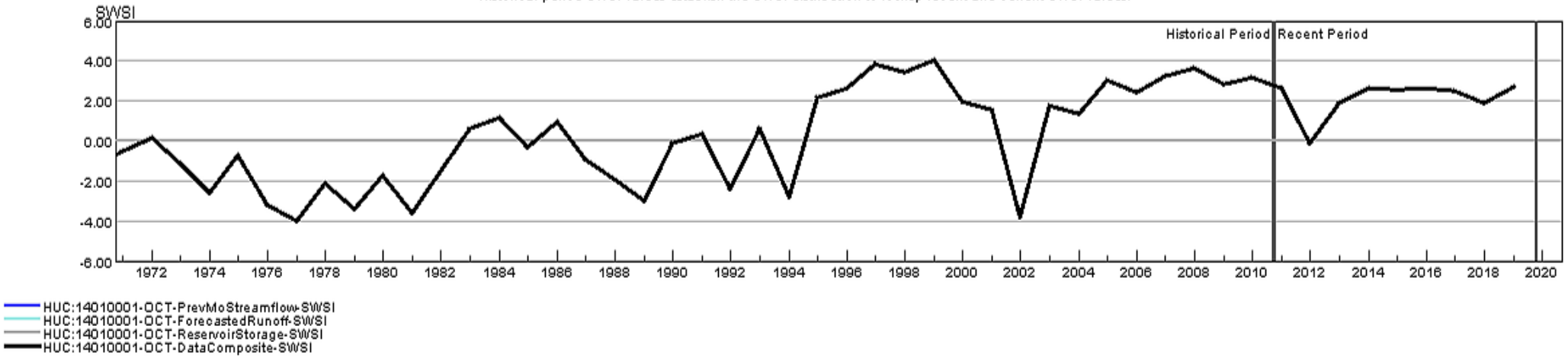
## HUC 14010001 (Colorado Headwaters) Surface Water Supply - OCT

Monthly component volumes



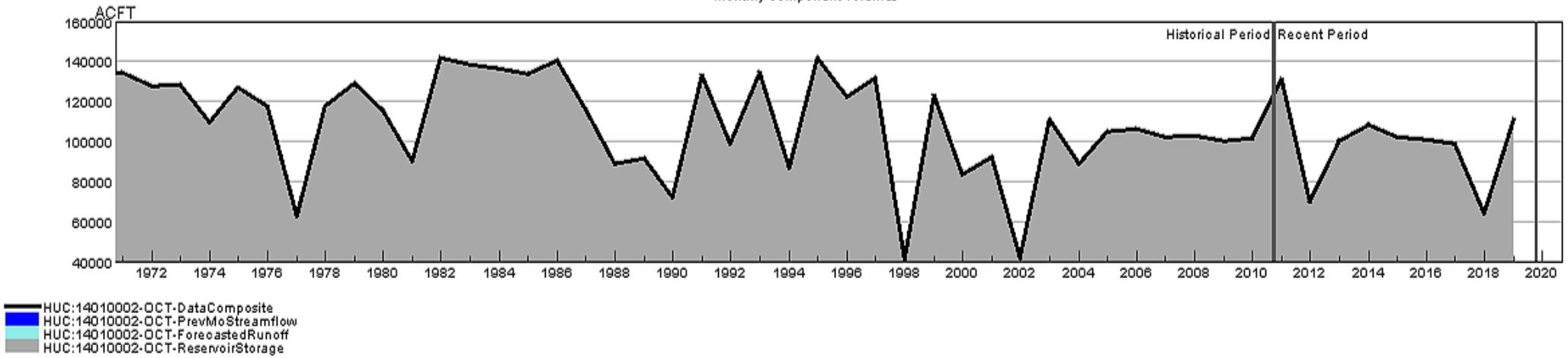

## HUC 14010001 (Colorado Headwaters) SWSI Values - OCT

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



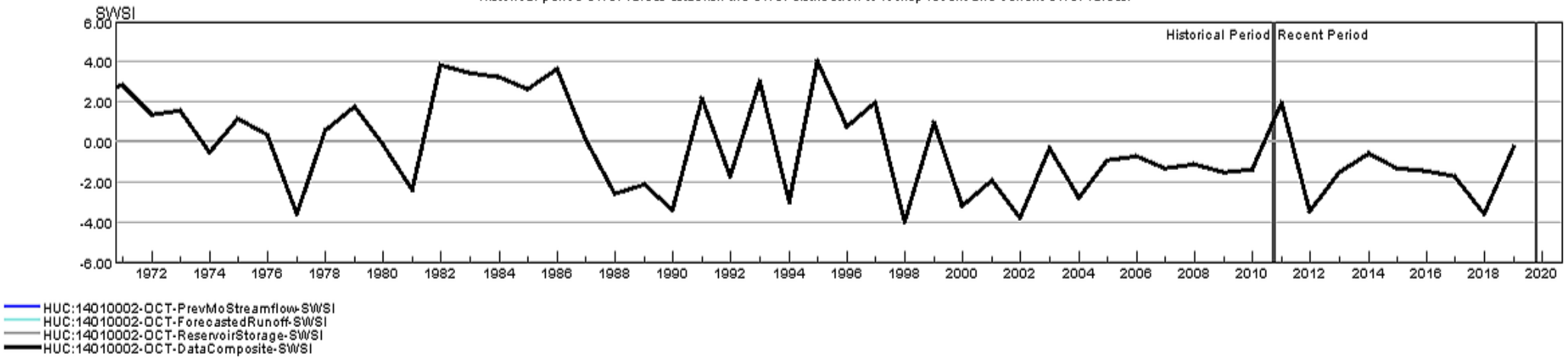
## HUC 14010002 (Blue) Surface Water Supply - OCT

Monthly component volumes



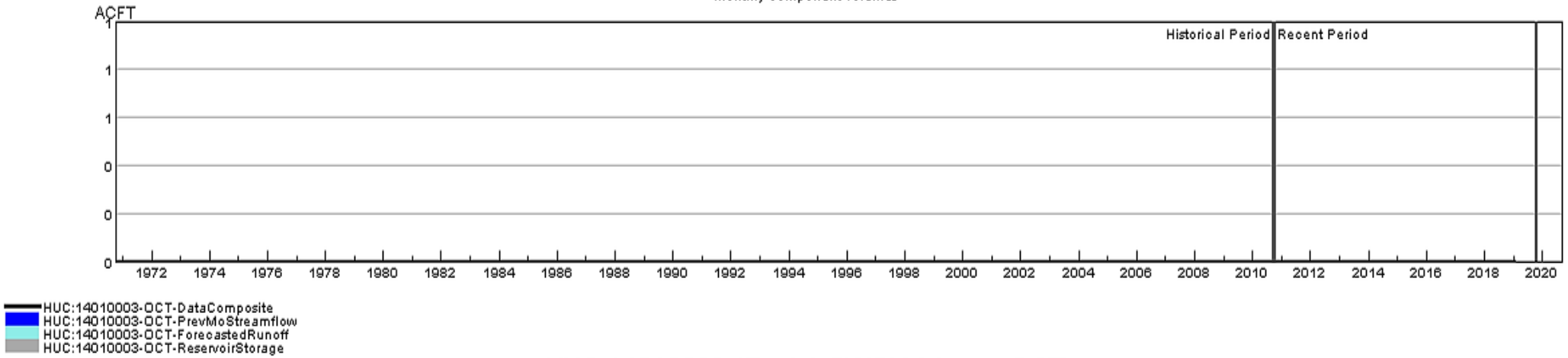

## HUC 14010002 (Blue) SWSI Values - OCT

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



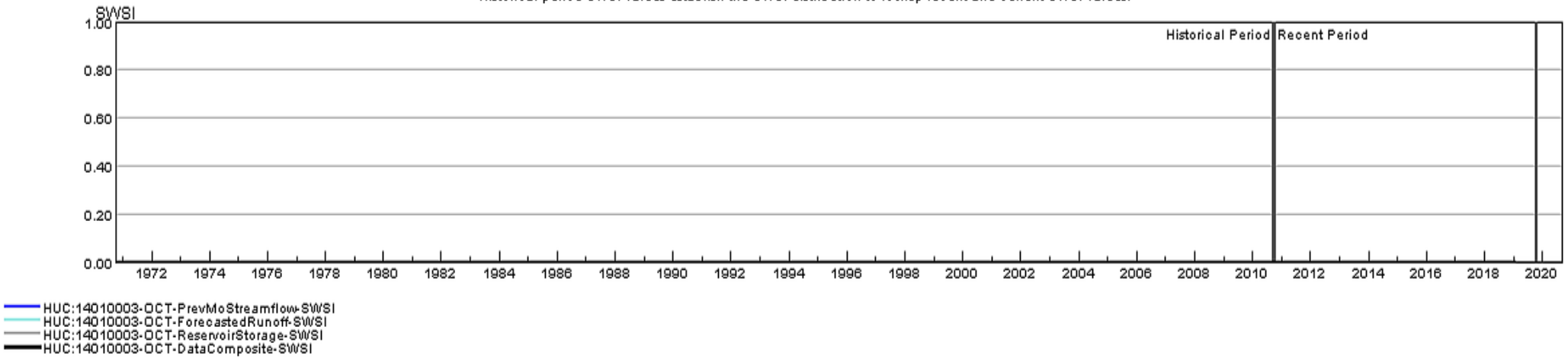
# HUC 14010003 (Eagle) Surface Water Supply - OCT

Monthly component volumes



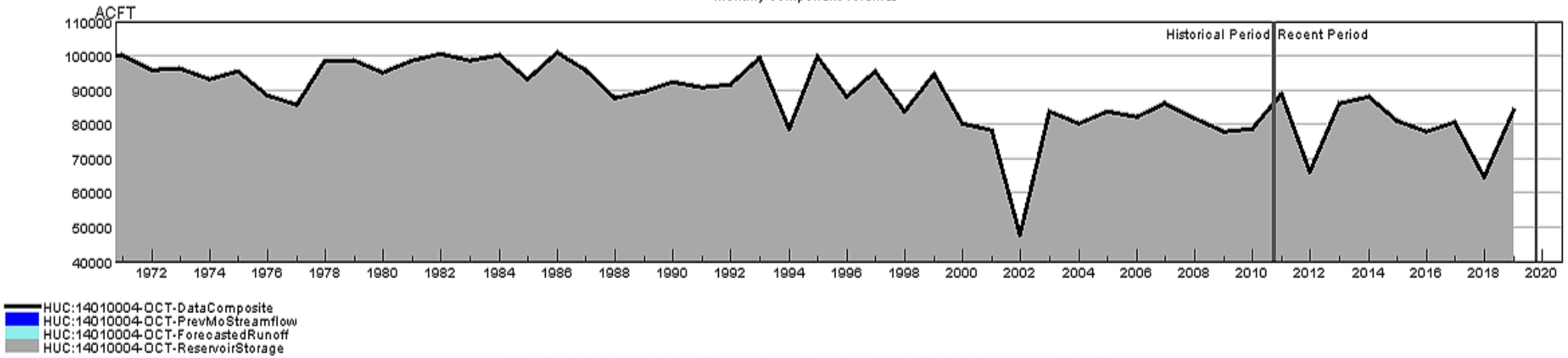

# HUC 14010003 (Eagle) SWSI Values - OCT

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



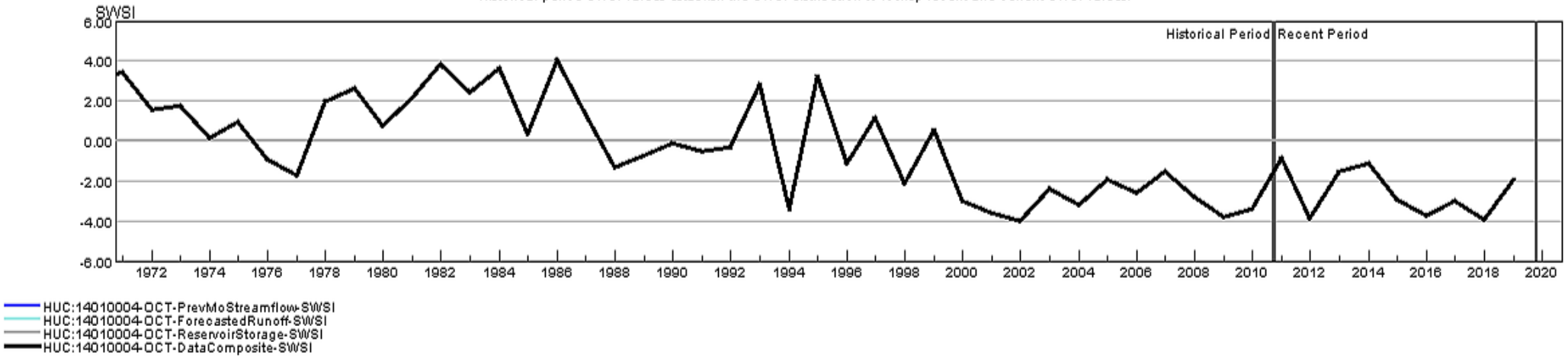
## HUC 14010004 (Roaring Fork) Surface Water Supply - OCT

Monthly component volumes



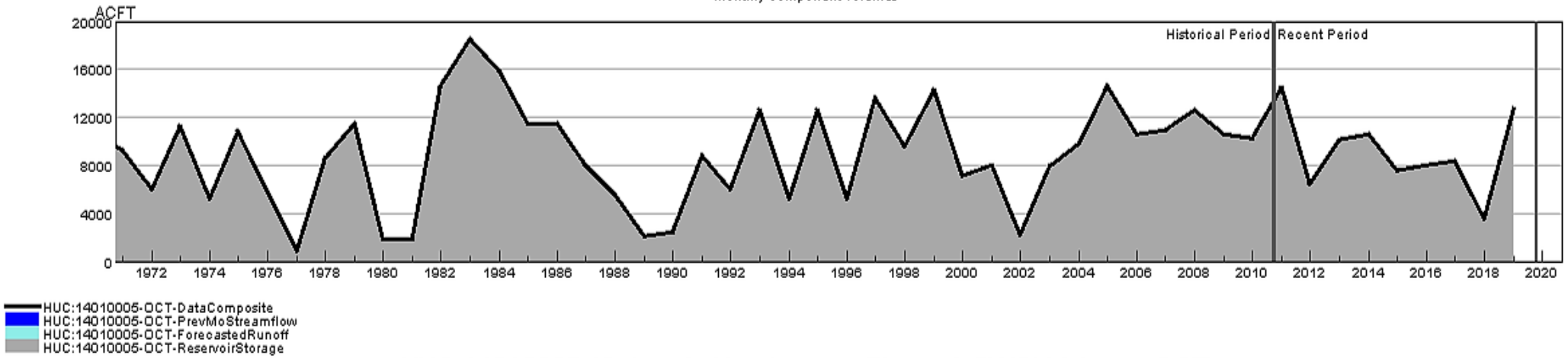

## HUC 14010004 (Roaring Fork) SWSI Values - OCT

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



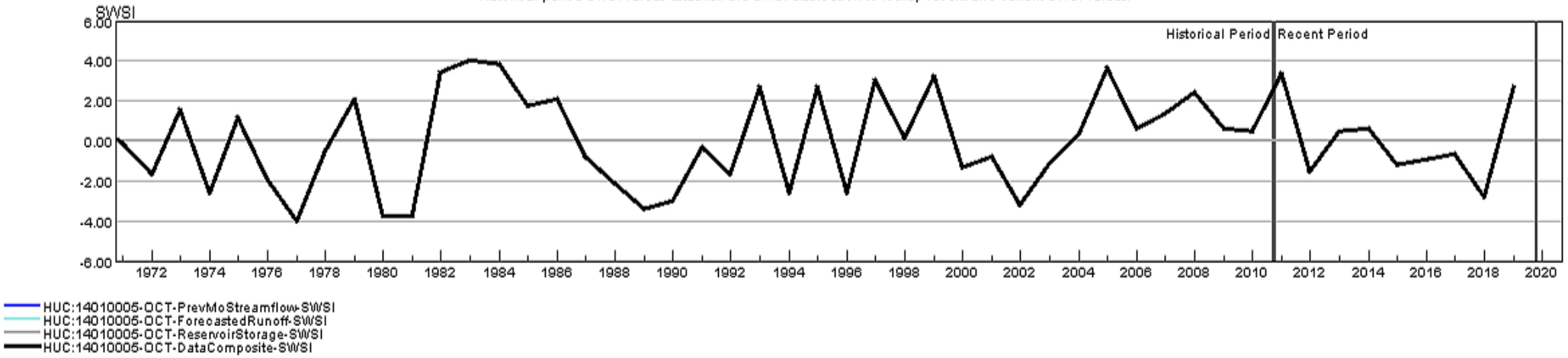
## HUC 14010005 (Colorado Headwaters-Plateau) Surface Water Supply - OCT

Monthly component volumes



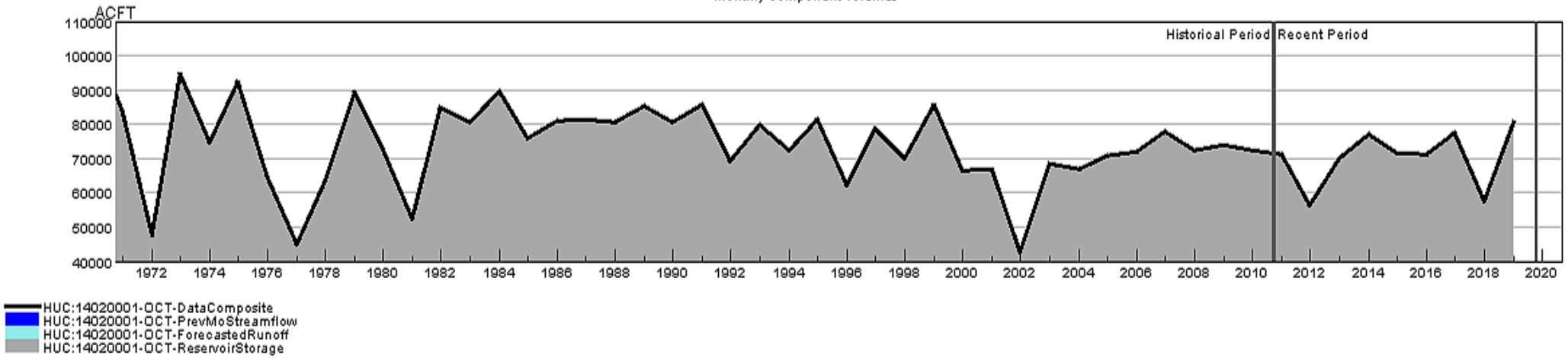

## HUC 14010005 (Colorado Headwaters-Plateau) SWSI Values - OCT

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



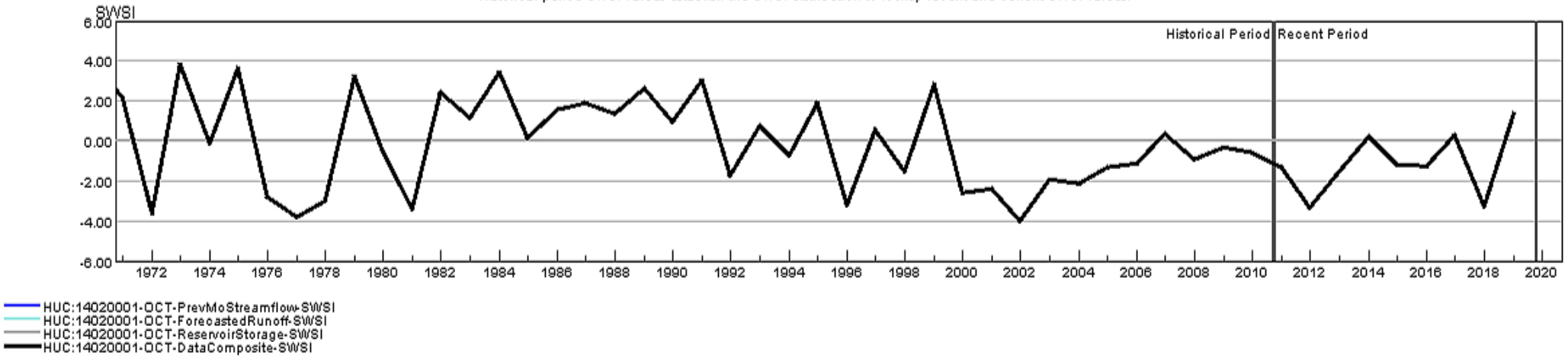
# HUC 14020001 (East-Taylor) Surface Water Supply - OCT

Monthly component volumes



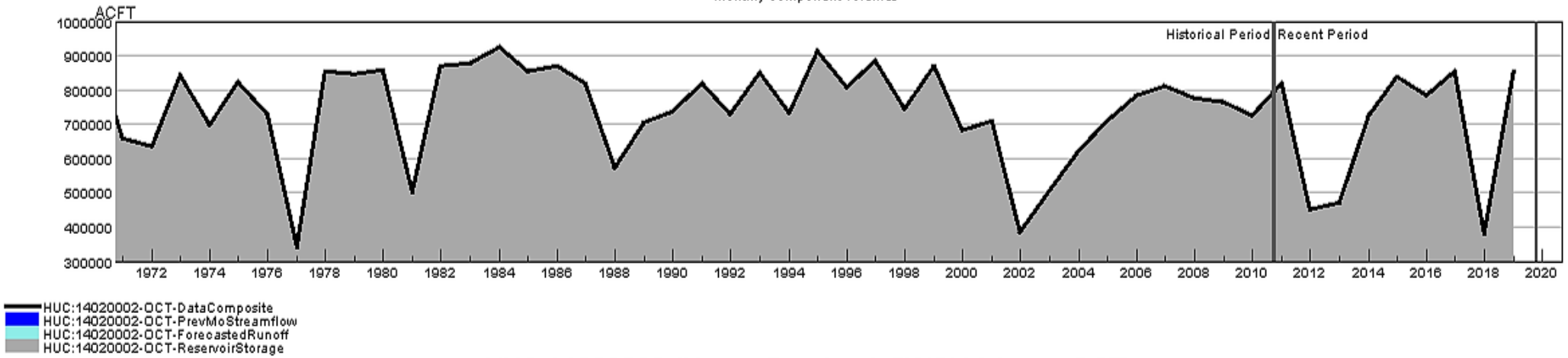

# HUC 14020001 (East-Taylor) SWSI Values - OCT

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



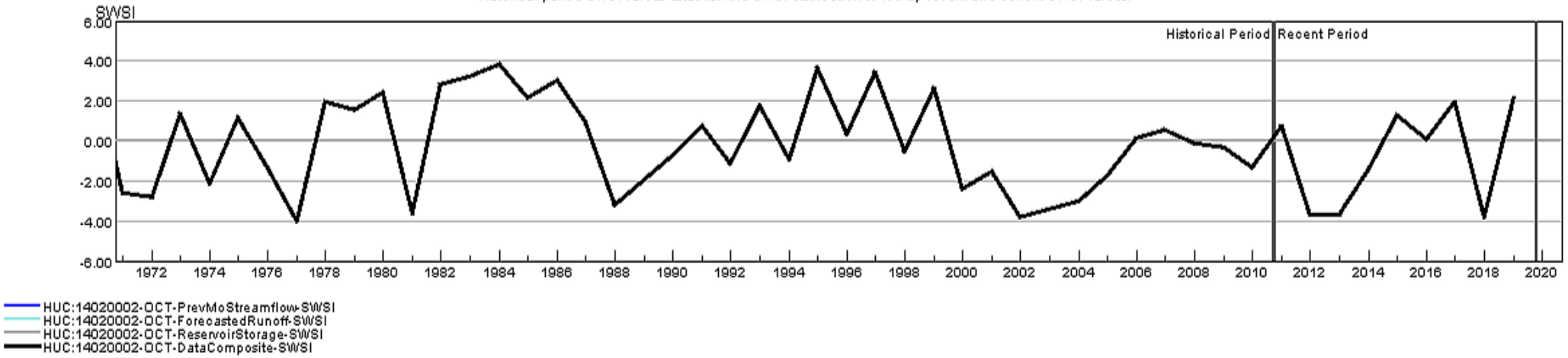
## HUC 14020002 (Upper Gunnison) Surface Water Supply - OCT

Monthly component volumes



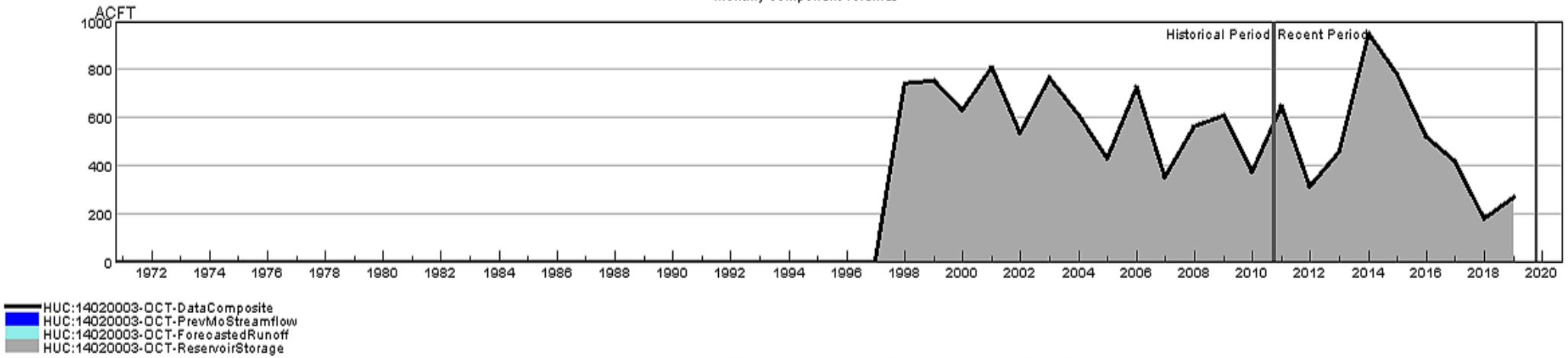

## HUC 14020002 (Upper Gunnison) SWSI Values - OCT

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



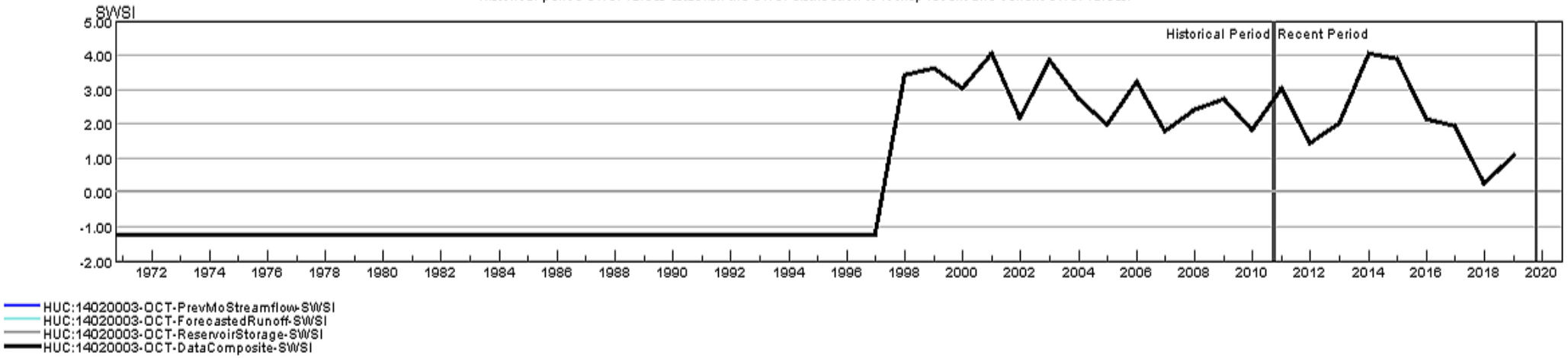
## HUC 14020003 (Tomichi) Surface Water Supply - OCT

Monthly component volumes



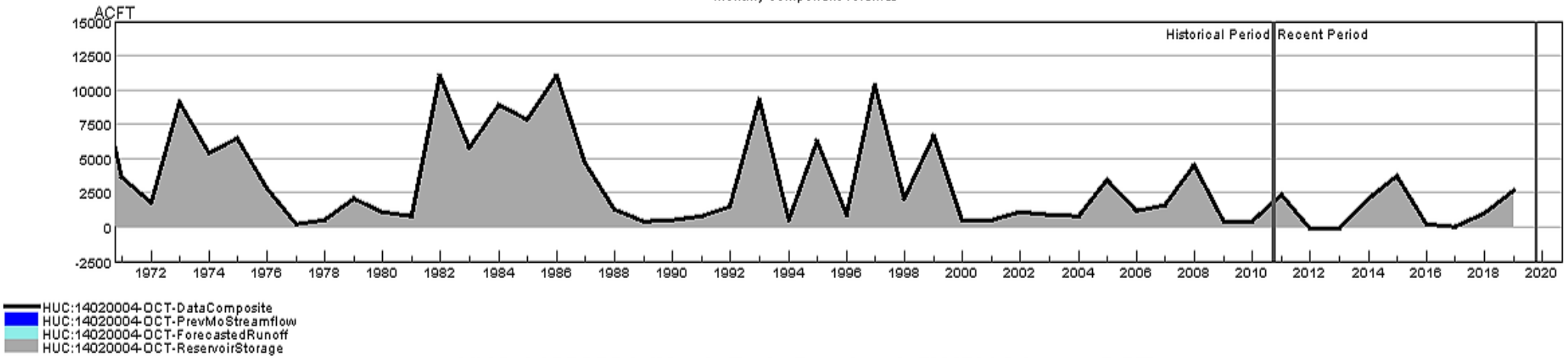

## HUC 14020003 (Tomichi) SWSI Values - OCT

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



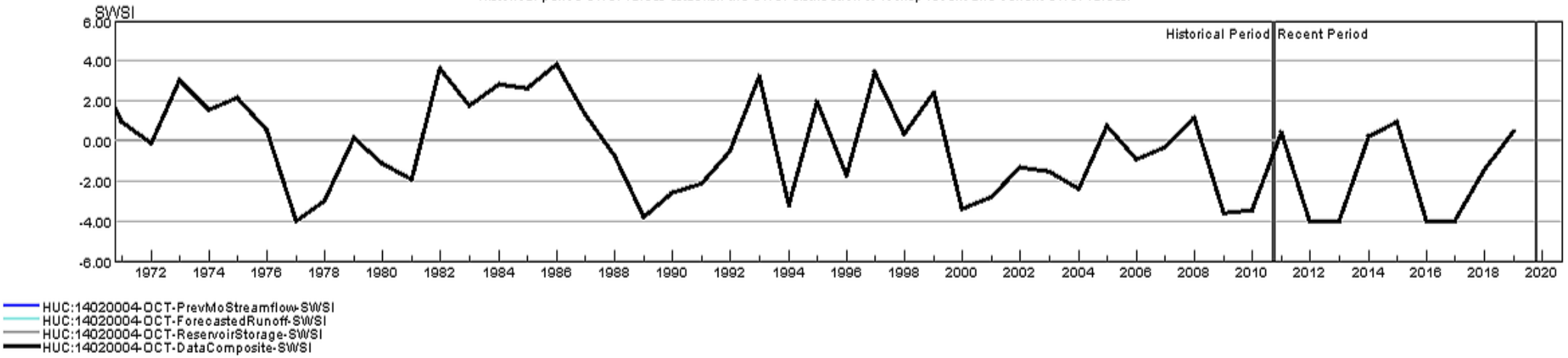
## HUC 14020004 (North Fork Gunnison) Surface Water Supply - OCT

Monthly component volumes



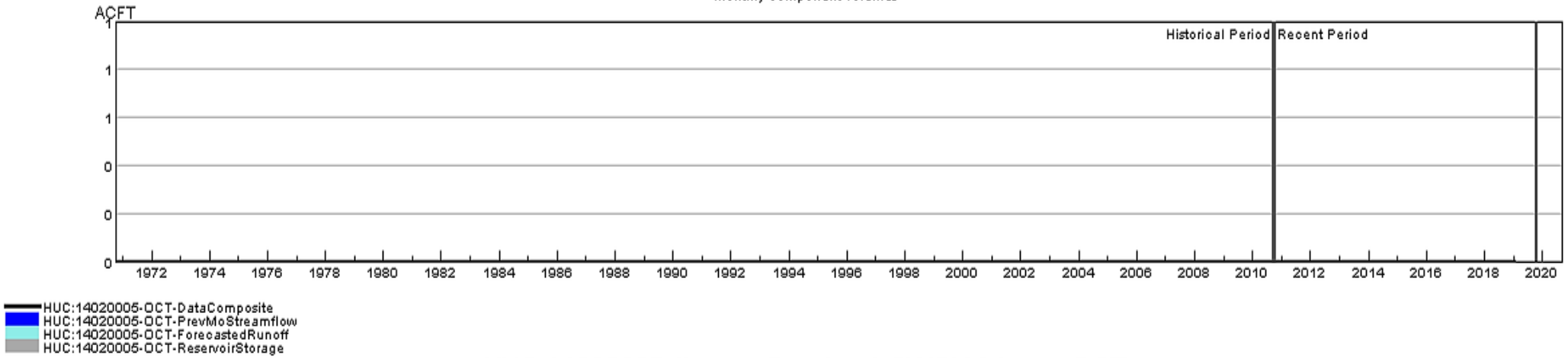

## HUC 14020004 (North Fork Gunnison) SWSI Values - OCT

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



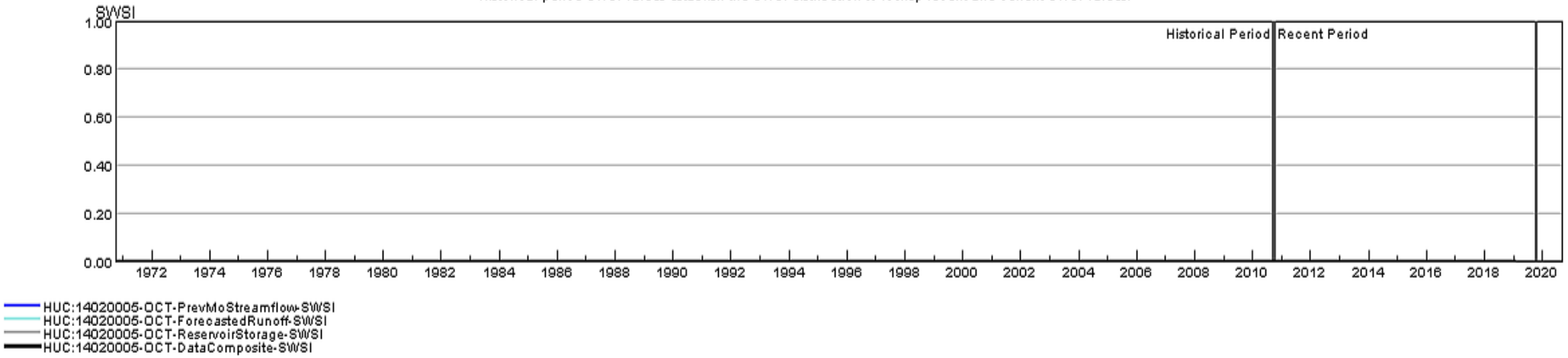
# HUC 14020005 (Lower Gunnison) Surface Water Supply - OCT

Monthly component volumes



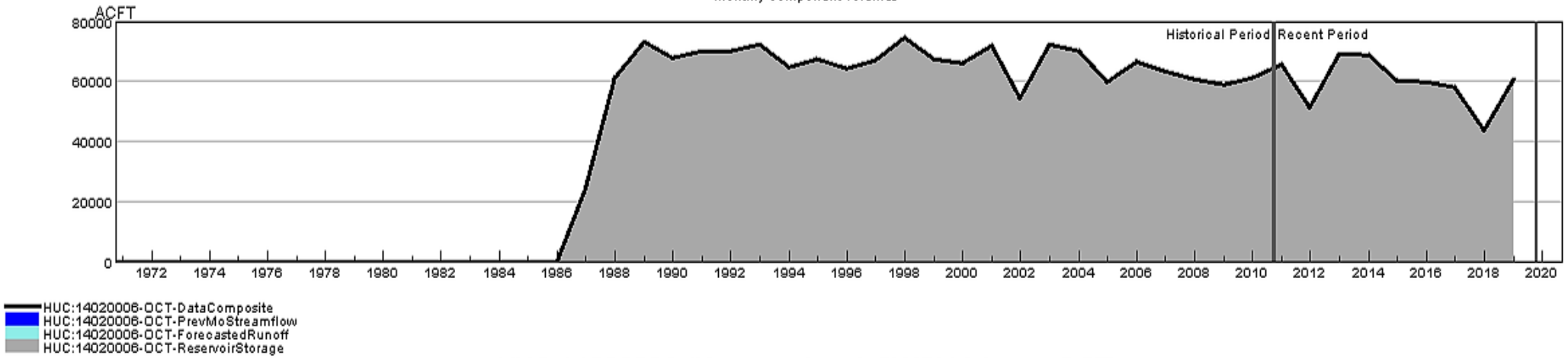

# HUC 14020005 (Lower Gunnison) SWSI Values - OCT

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



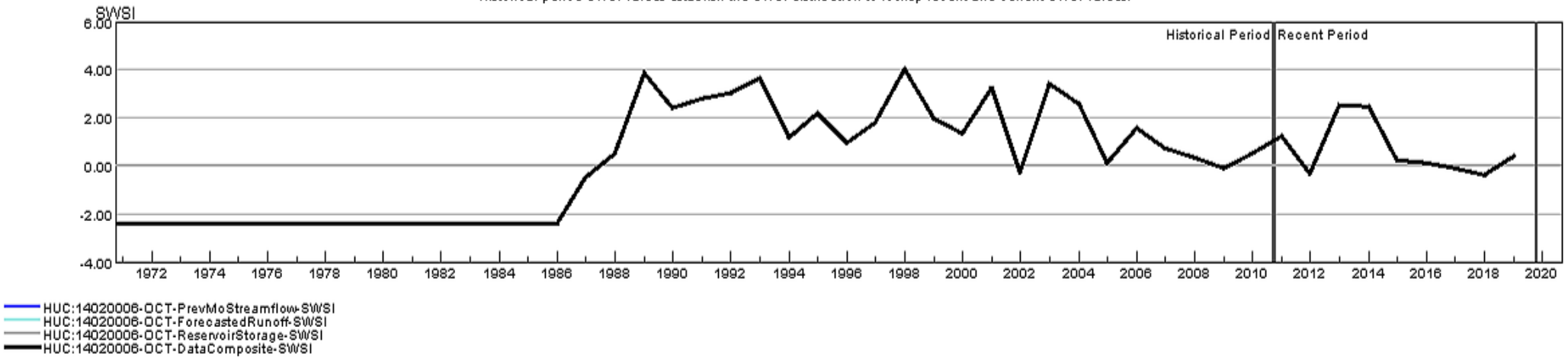
## HUC 14020006 (Uncompahgre) Surface Water Supply - OCT

Monthly component volumes



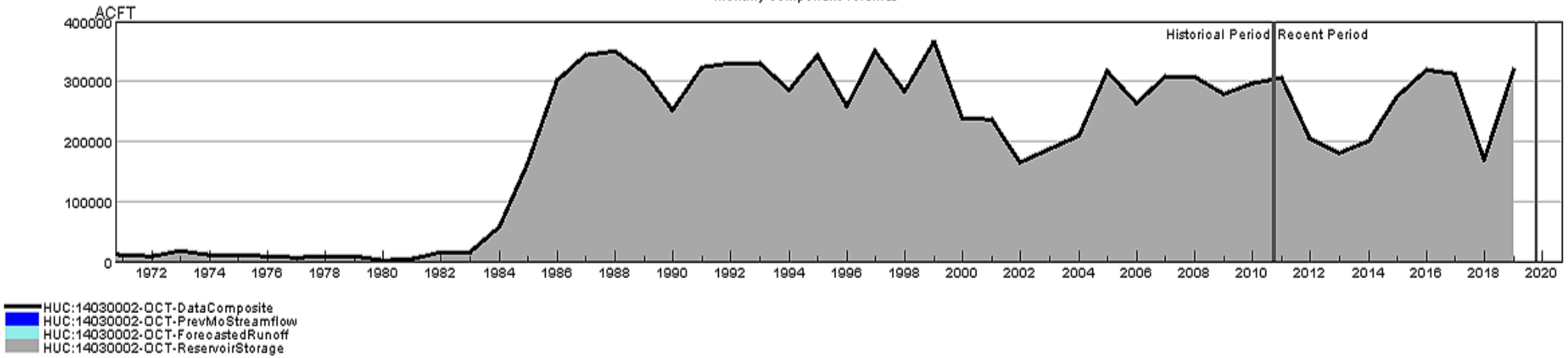

## HUC 14020006 (Uncompahgre) SWSI Values - OCT

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



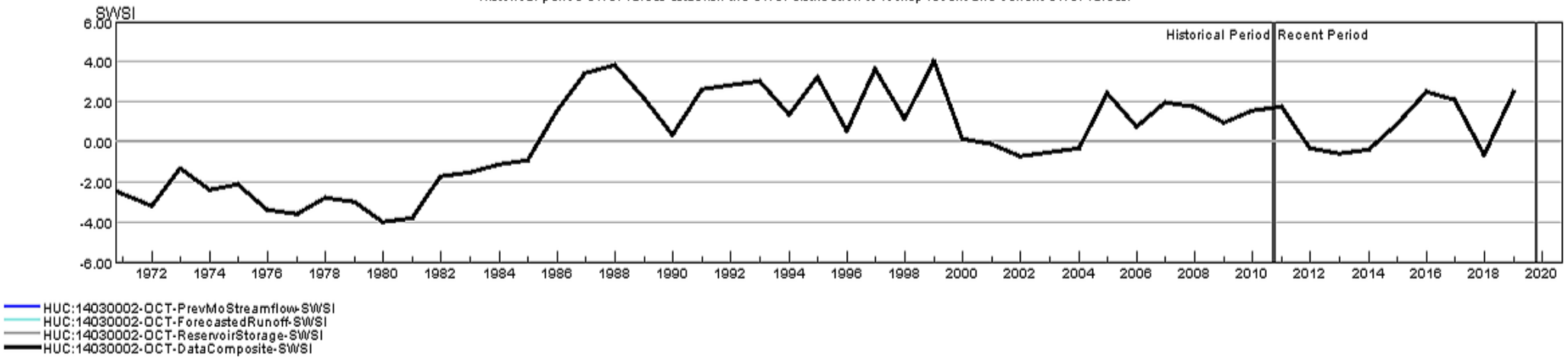
## HUC 14030002 (Upper Dolores) Surface Water Supply - OCT

Monthly component volumes



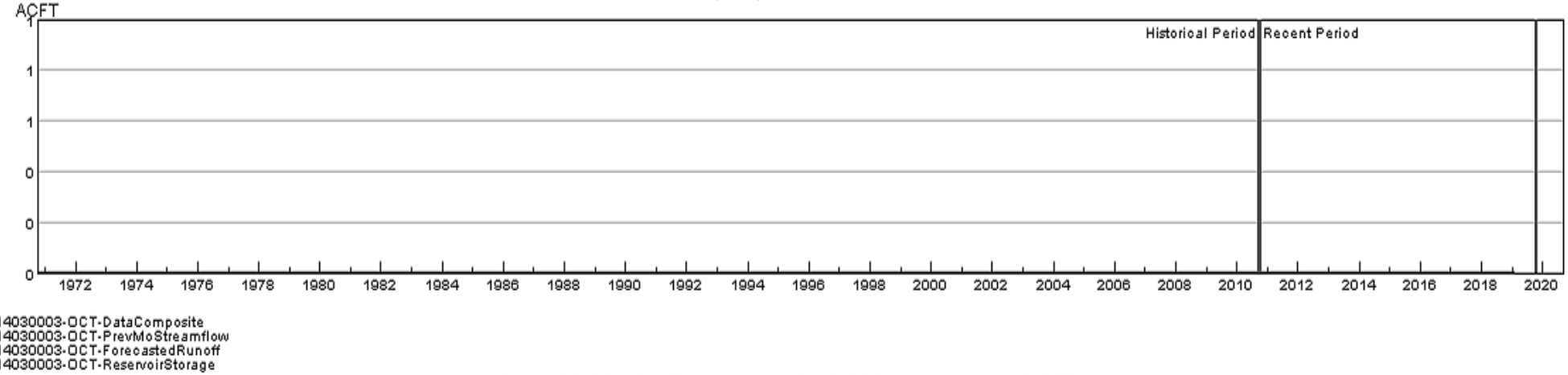

## HUC 14030002 (Upper Dolores) SWSI Values - OCT

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



# HUC 14030003 (San Miguel) Surface Water Supply - OCT

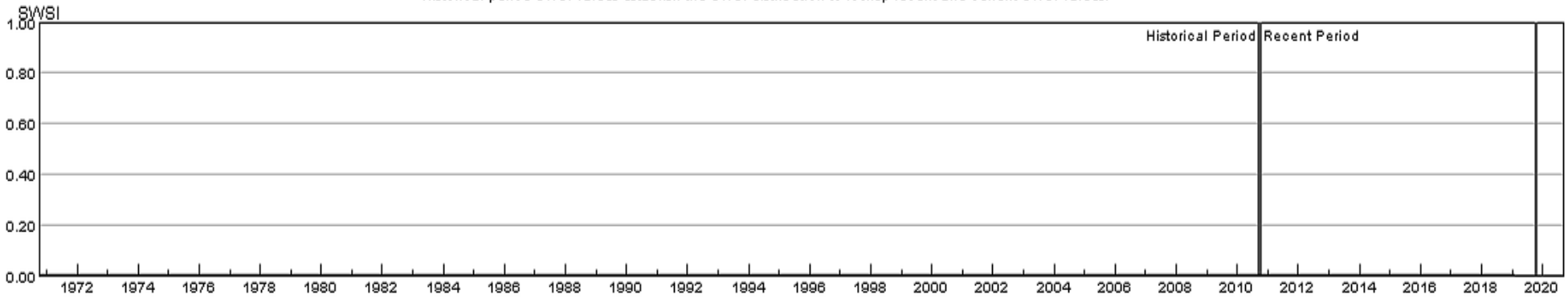
Monthly component volumes




HUC:14030003-OCT-DataComposite
HUC:14030003-OCT-PrevMoStreamflow
HUC:14030003-OCT-ForecastedRunoff
HUC:14030003-OCT-ReservoirStorage

# HUC 14030003 (San Miguel) SWSI Values - OCT

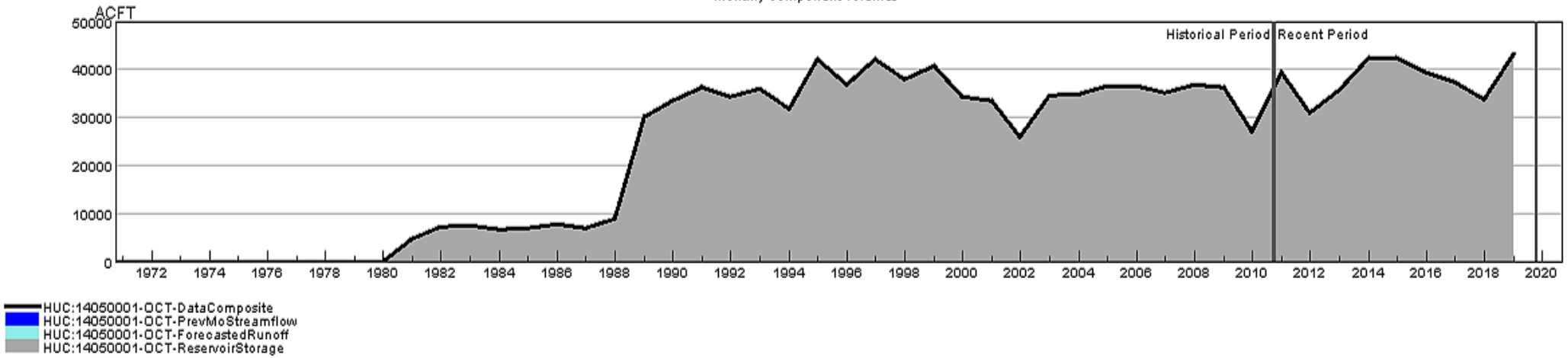
Historical period SWSI values establish the SWSI distribution to lookup recent and current SWSI values.




HUC:14030003-OCT-PrevMoStreamflow-SWSI
HUC:14030003-OCT-ForecastedRunoff-SWSI
HUC:14030003-OCT-ReservoirStorage-SWSI
HUC:14030003-OCT-DataComposite-SWSI

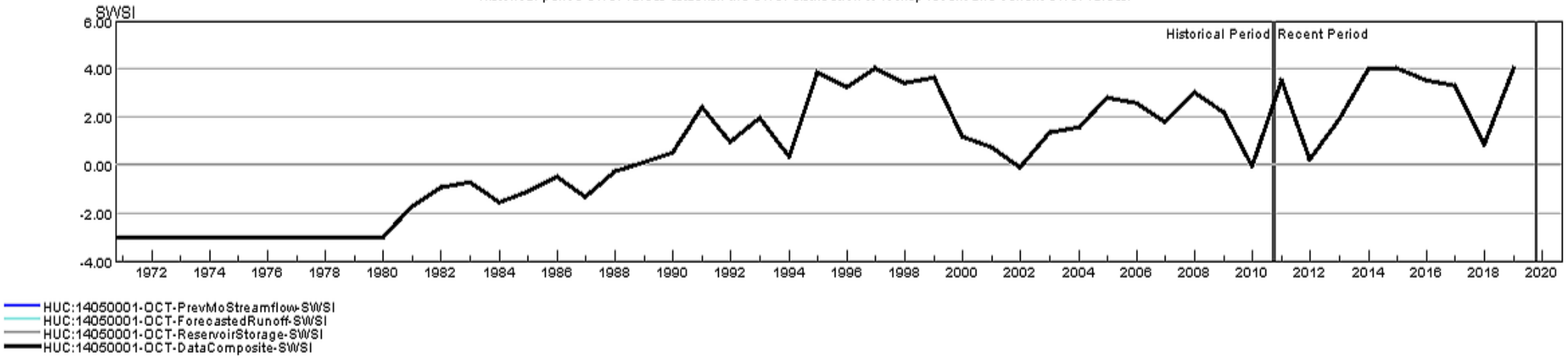
## HUC 14050001 (Upper Yampa) Surface Water Supply - OCT

Monthly component volumes



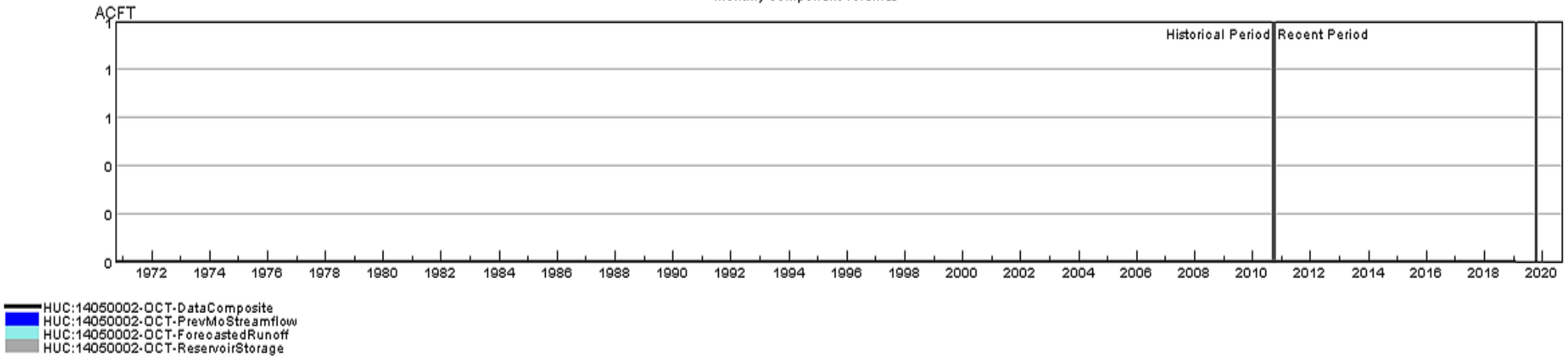

## HUC 14050001 (Upper Yampa) SWSI Values - OCT

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



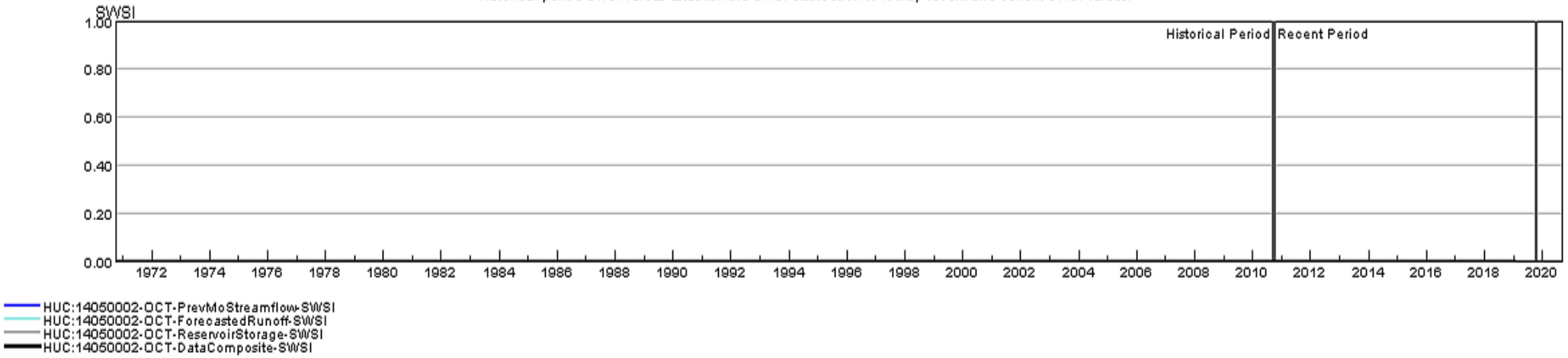
# HUC 14050002 (Lower Yampa) Surface Water Supply - OCT

Monthly component volumes



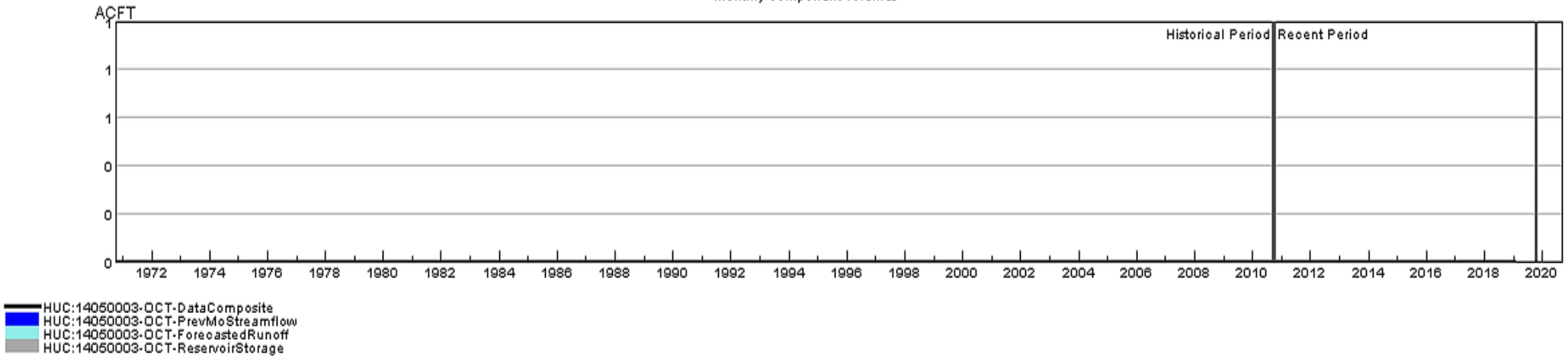

# HUC 14050002 (Lower Yampa) SWSI Values - OCT

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



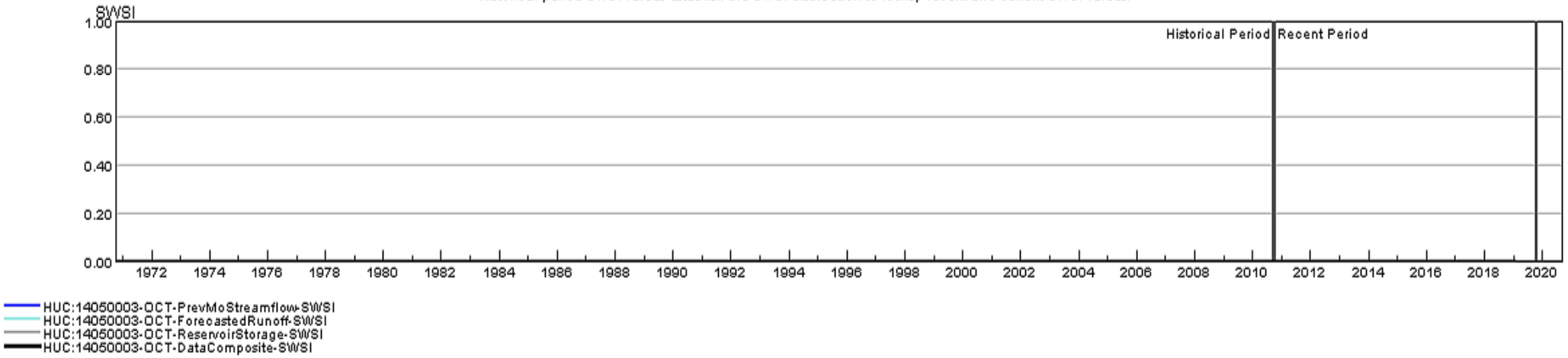
## HUC 14050003 (Little Snake) Surface Water Supply - OCT

Monthly component volumes



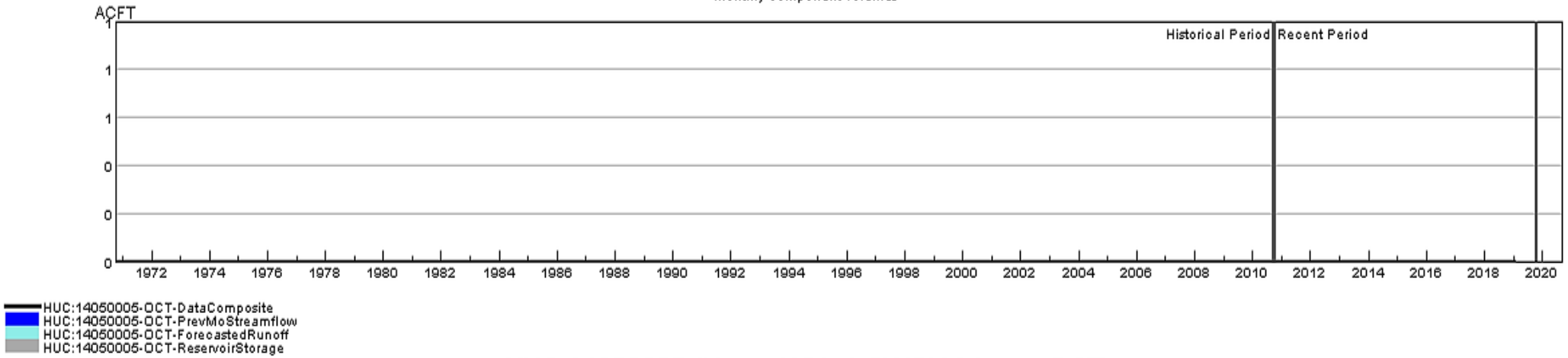

## HUC 14050003 (Little Snake) SWSI Values - OCT

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



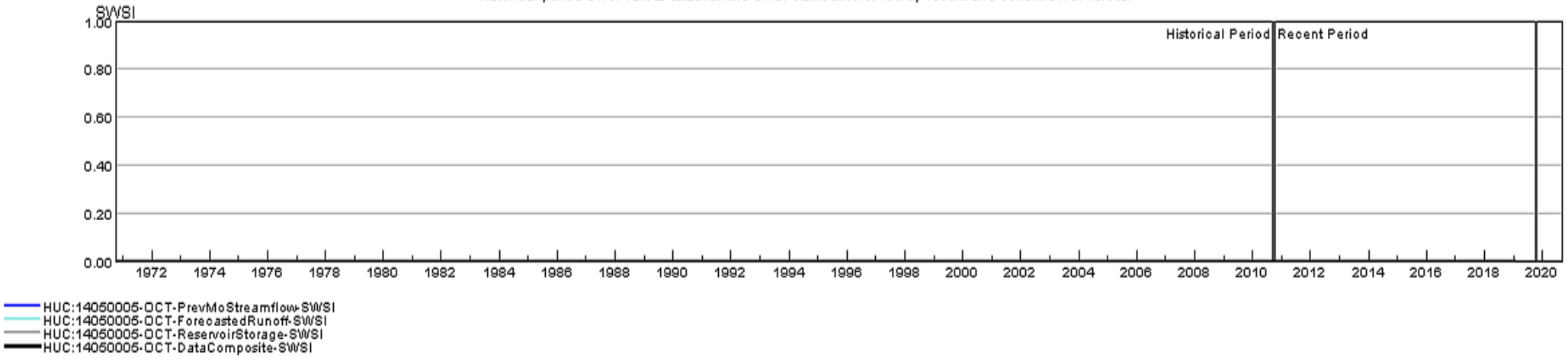
# HUC 14050005 (Upper White) Surface Water Supply - OCT

Monthly component volumes



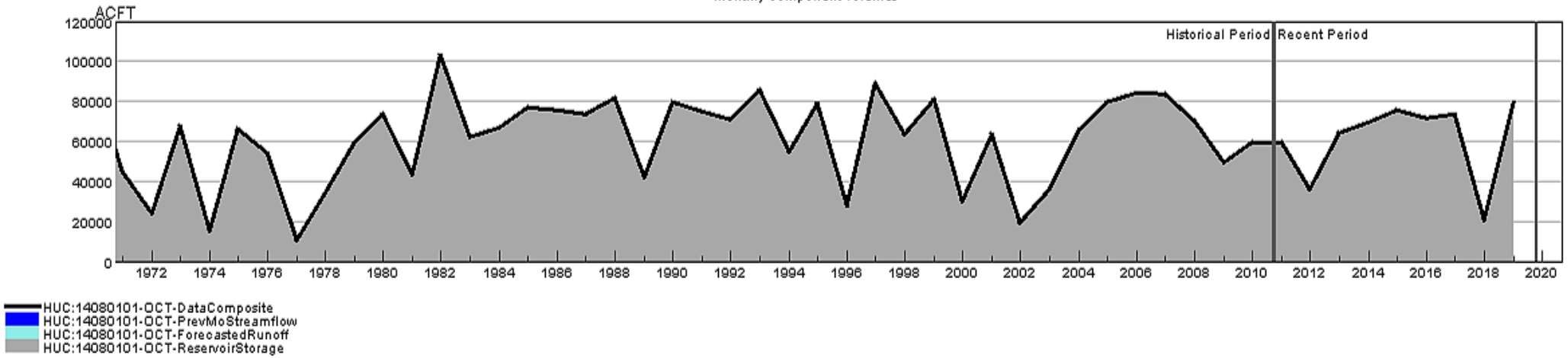

# HUC 14050005 (Upper White) SWSI Values - OCT

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



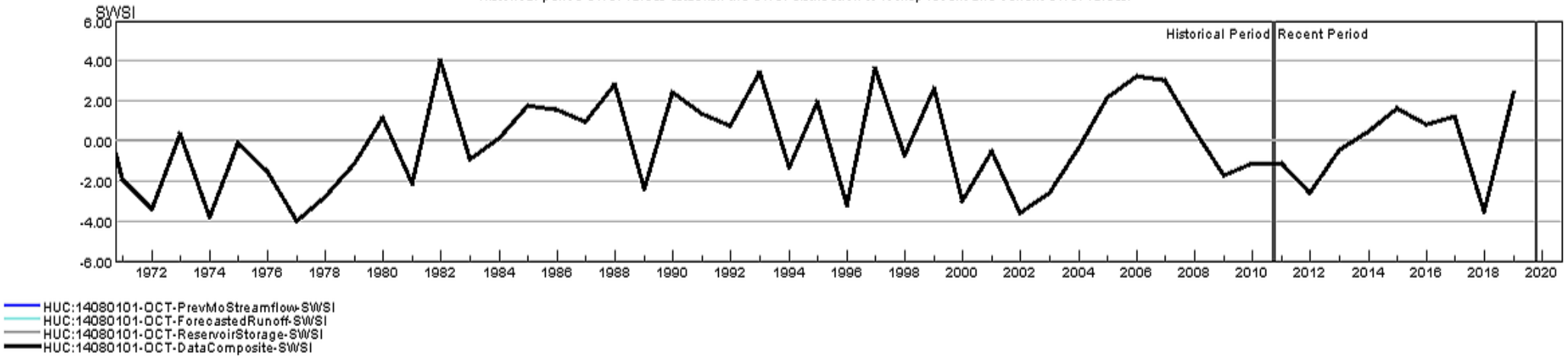
## HUC 14080101 (Upper San Juan) Surface Water Supply - OCT

Monthly component volumes



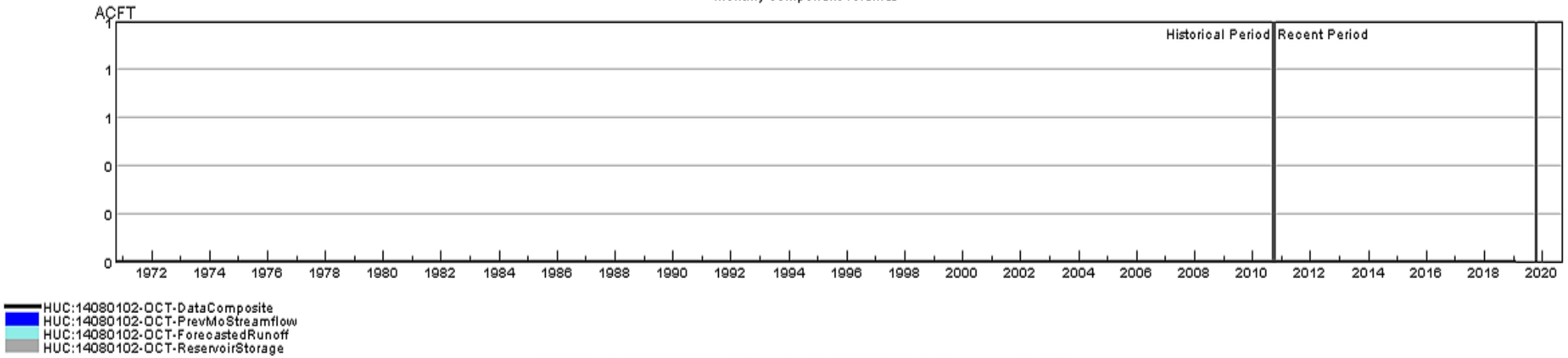

## HUC 14080101 (Upper San Juan) SWSI Values - OCT

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



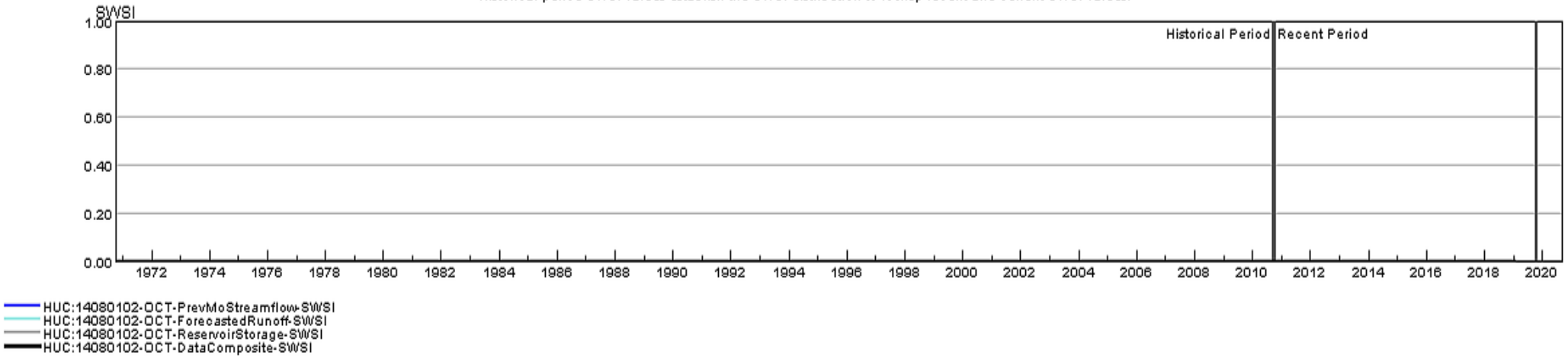
# HUC 14080102 (Piedra) Surface Water Supply - OCT

Monthly component volumes



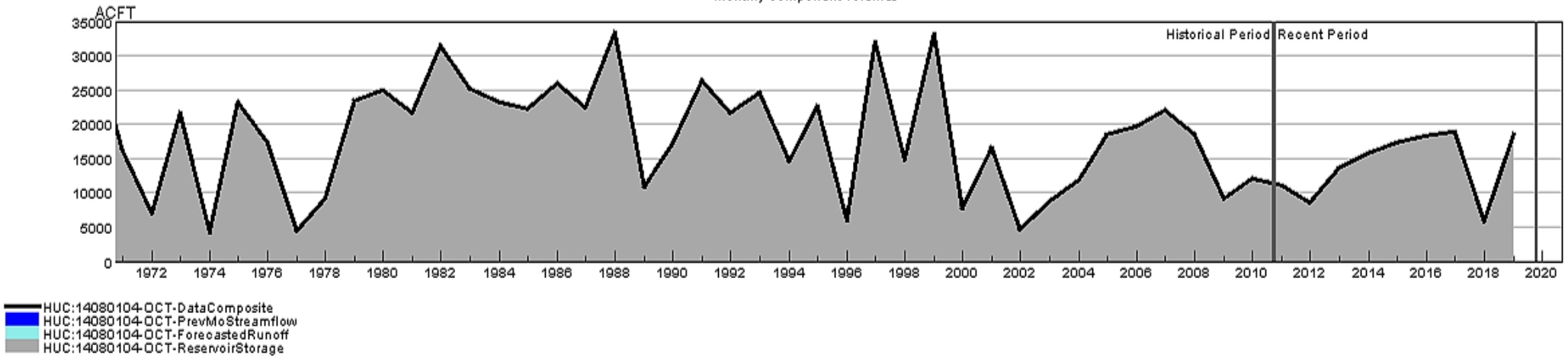

# HUC 14080102 (Piedra) SWSI Values - OCT

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



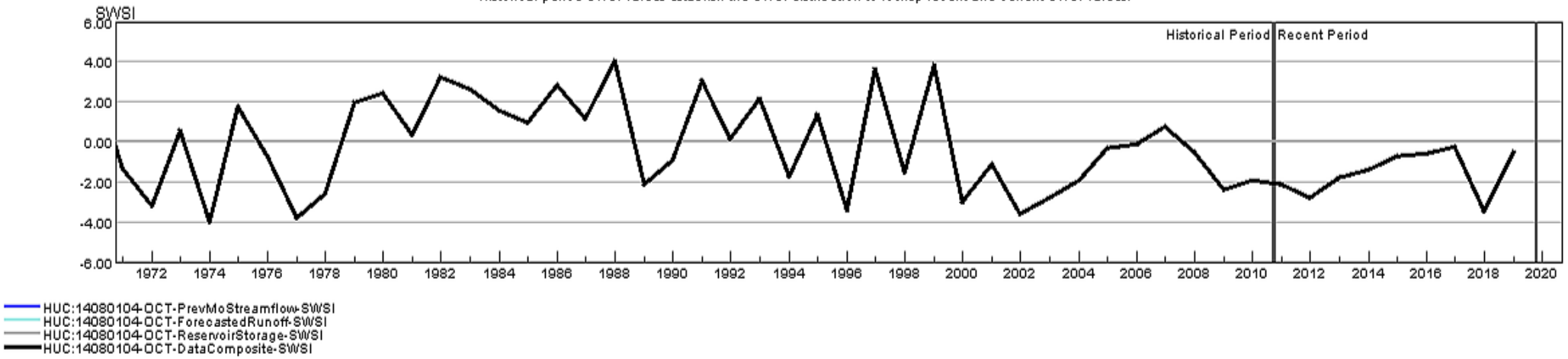
## HUC 14080104 (Animas) Surface Water Supply - OCT

Monthly component volumes



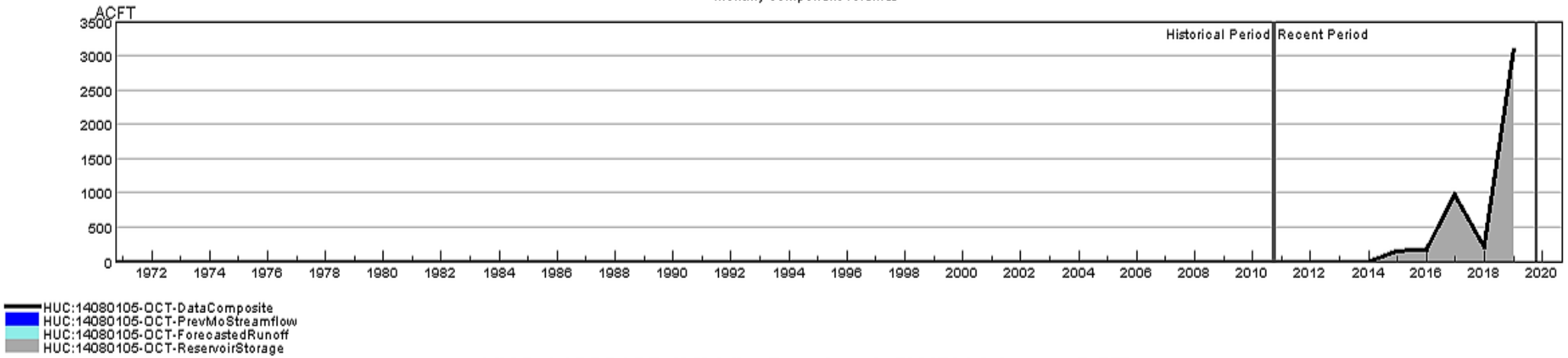

## HUC 14080104 (Animas) SWSI Values - OCT

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



## HUC 14080105 (Middle San Juan) Surface Water Supply - OCT

Monthly component volumes




## HUC 14080105 (Middle San Juan) SWSI Values - OCT

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