



United States  
Department of  
Agriculture

Natural  
Resources  
Conservation  
Service

# New Mexico Basin Outlook Report April 1, 2016



Anna Bouchonville and Octaviano Velasquez cooperative snow surveyors from the Forest Service on their way to Tres Ritos SNOTEL site. Photo courtesy of: John Littlefield (FS)

# Basin Outlook Reports and Federal - State - Private Cooperative Snow Surveys

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*For more water supply and resource management information, contact:*

**Chris Romero**  
Snow Survey Hydrologic Technician  
Natural Resources Conservation Service  
6200 Jefferson, NE  
Albuquerque, NM 87109  
(505) 761-4431

**Rick Strait**  
State Soil Scientist  
Natural Resources Conservation Service  
6200 Jefferson, NE  
Albuquerque, NM 87109  
(505) 761-4431

<http://www.nrcs.usda.gov/wps/portal/nrcs/main/nm/snow/>

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## *How forecasts are made*

Most of the annual streamflow in the western United States originates as snowfall that has accumulated in the mountains during the winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Measurements of snow water equivalent at selected manual snow courses and automated SNOTEL sites, along with precipitation, antecedent streamflow, and indices of the El Niño / Southern Oscillation are used in computerized statistical and simulation models to prepare runoff forecasts. These forecasts are coordinated between hydrologists in the Natural Resources Conservation Service and the National Weather Service. Unless otherwise specified, all forecasts are for flows that would occur naturally without any upstream influences.

Forecasts of any kind, of course, are not perfect. Streamflow forecast uncertainty arises from three primary sources: (1) uncertain knowledge of future weather conditions, (2) uncertainty in the forecasting procedure, and (3) errors in the data. The forecast, therefore, must be interpreted not as a single value but rather as a range of values with specific probabilities of occurrence. The middle of the range is expressed by the 50% exceedance probability forecast, for which there is a 50% chance that the actual flow will be above, and a 50% chance that the actual flow will be below, this value. To describe the expected range around this 50% value, four other forecasts are provided, two smaller values (90% and 70% exceedance probability) and two larger values (30%, and 10% exceedance probability). For example, there is a 90% chance that the actual flow will be more than the 90% exceedance probability forecast. The others can be interpreted similarly.

The wider the spread among these values, the more uncertain the forecast. As the season progresses, forecasts become more accurate, primarily because a greater portion of the future weather conditions become known; this is reflected by a narrowing of the range around the 50% exceedance probability forecast. Users should take this uncertainty into consideration when making operational decisions by selecting forecasts corresponding to the level of risk they are willing to assume about the amount of water to be expected. If users anticipate receiving a lesser supply of water, or if they wish to increase their chances of having an adequate supply of water for their operations, they may want to base their decisions on the 90% or 70% exceedance probability forecasts, or something in between. On the other hand, if users are concerned about receiving too much water (for example, threat of flooding), they may want to base their decisions on the 30% or 10% exceedance probability forecasts, or something in between. Regardless of the forecast value users choose for operations, they should be prepared to deal with either more or less water. (Users should remember that even if the 90% exceedance probability forecast is used, there is still a 10% chance of receiving less than this amount.) By using the exceedance probability information, users can easily determine the chances of receiving more or less water.

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## Summary

Conditions have truly unraveled over the month of March for New Mexico. Warm, dry, and windy weather has dominated most of the state which increases concerns regarding early runoff, dust, and wildfire danger. Despite being early in the fire season, the Baker Canyon fire has already burned 8,000 acres of vegetation along the Arizona-New Mexico state line before being contained. Statewide snowpack has dropped another 35 percent throughout March, leaving four basins in the western and southern portions of the state bare. The northern mountains continue to cling on to their remaining snow, yet have been subjected to considerable melt off over the past two months. This now positions New Mexico 11 percent below 2015's median of 57 percent at the beginning of April. Additionally, March was an extremely dry month for the state. After receiving only 12 percent of the average rainfall for the month our water year-to-date total is now at 93 percent of average, a majority of which we received at the beginning of the water year. On the other hand, reservoir levels have increased marginally. Statewide we are at 69 percent of the average, as compared to 59 percent at this time last year. An El Nino advisory still remains in effect for New Mexico, however it is forecast to decline sharply and transition to neutral conditions as we move into summer. Models continue to support a good chance of increased precipitation over the next three months however it is unlikely that there will be much in the way of snow accumulation. I am still hopeful for precipitation in any form over the next few months, however I strongly encourage water users to closely monitor conditions throughout April.

## Snowpack

Following a very warm February the month of March did little to improve the state's snowpack conditions. After receiving only 12 percent of the average monthly rainfall and aided by warm temperatures every basin within the state saw a marked decrease in snowpack. As we move into spring this can be expected, however basins in the western and southern portions of the state have been bare for some time. This snow melt is reflected in April's streamflow forecasts. The northern mountains received a small dusting towards the end of the month yet not enough snow accumulation to have a large impact on forecasts. Unfavorable winds also plagued most of the state taking with them precious snow, and leaving behind dust which further aided snow melt. All of this has contributed to the statewide percent of median dropping from 80 to 45 percent over the past month. The northern half of the state's basins range from 21 percent to 78 percent of median with all others currently bare.

<b>NEW MEXICO STATEWIDE SNOWPACK</b>	Percent of Median	Last Year Percent of Median
CANADIAN RIVER BASIN	28	84
PECOS RIVER BASIN	70	70
RIO GRANDE BASIN	58	60
MIMBRES RIVER BASIN	0	0
SAN FRANCISCO-UPPER GILA RIVER BASIN	0	0
ZUNI-BLUEWATER BASINS	0	0
SAN JUAN RIVER BASIN	76	54
CHUSKA MOUNTAINS	21	22
RIO HONDO BASIN	0	8
<b>Statewide Snowpack Total</b>	<b>45</b>	<b>57</b>
# of sites	36	36

## Precipitation

One word can be used to describe the month of March; "dry". Having seen decreases in both precipitation and snowpack throughout February there was hope that El Nino would deliver during March as it transitioned to neutral conditions. This was not the case. March saw only 12 percent of the average precipitation for the month putting the state at 93 percent for the water year-to-date. This does currently put New Mexico above last year's cumulative statistics, however March is historically a much wetter month than was experienced this year. Water year-to-date averages range from 134 percent in the Rio Hondo Basin to 64 percent in the Zuni/Bluewater Basin. The excellent start early in the water year does however continue to sway the numbers having received a majority of our precipitation and snow in November, December, and January. The long range weather forecast continues to favor a wet weather pattern over the next three months, and I remain optimistic that we will receive more moisture in the form of rain before the water year comes to a close.

## Reservoirs

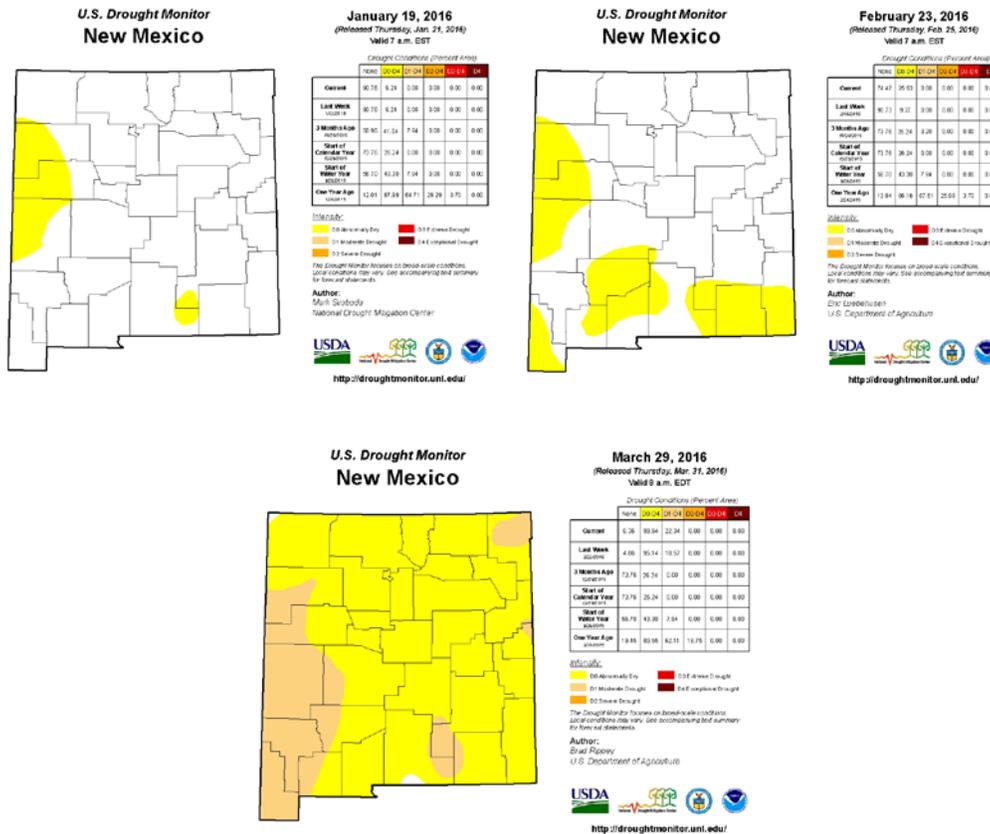
Storage levels across the state range from 3 to 85 percent of capacity. The statewide average is 30 percent of capacity as compared to 26 percent last year. The current percent of average statewide is 69 percent, as compared to 59 percent at this time last year. Storage levels are still below capacity at all reservoirs across the state. Navajo Reservoir located in the San Juan Basin is almost to capacity holding 1440 KAF which is 85 percent of capacity. With melt off occurring I would expect these numbers to improve but not drastically. Water users should closely monitor the runoff forecasts and reservoir levels through April.

NEW MEXICO STATEWIDE	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)	Current % Capacity	Last Year % Capacity	Average % Capacity	Current % Average	Last Year % Average
Abiquiu Reservoir	133.4	133.5	153.9	1192.8	11%	11%	13%	87%	87%
Bluewater Lake	2.1	2.4	9.7	38.5	5%	6%	25%	22%	25%
Brantley Lake nr Carlsbad	32.5	84.9	30.1	1008.2	3%	8%	3%	108%	282%
Caballo Reservoir	39.8	36.1	84.6	332.0	12%	11%	25%	47%	43%
Cochiti Lake	46.8	48.7	58.0	491.0	10%	10%	12%	81%	84%
Conchas Lake	137.0	84.4	202.7	254.2	54%	33%	80%	68%	42%
Costilla Reservoir	10.8	4.8	7.3	16.0	68%	30%	46%	148%	66%
Eagle Nest Lake nr Eagle Nest, NM	32.3	20.5	55.6	79.0	41%	26%	70%	58%	37%
El Vado Reservoir	48.3	37.3	113.0	190.3	25%	20%	59%	43%	33%
Elephant Butte Reservoir	407.3	368.5	1283.0	2195.0	19%	17%	58%	32%	29%
Heron Reservoir	73.4	67.6	287.7	400.0	18%	17%	72%	26%	23%
Lake Avalon	1.5	1.3	1.6	4.0	38%	33%	39%	96%	83%
Lake Sumner	42.8	45.6	29.7	102.0	42%	45%	29%	144%	154%
Navajo Reservoir	1440.6	1150.4	1310.0	1696.0	85%	68%	77%	110%	88%
Santa Rosa Reservoir	99.9	71.2	52.4	438.3	23%	16%	12%	191%	136%
Basin-wide Total	2548.5	2157.2	3679.3	8437.3	30%	26%	44%	69%	59%
# of reservoirs	15	15	15	15	15	15	15	15	15

## Streamflow

New Mexico can expect very different streamflow conditions depending on which part of the state you look at. Despite not receiving the El Nino type winter we expected the northern mountains received a good deal of snow early in the water year, and are aided by the slightly better conditions in southern Colorado. The southern portion of the state experienced a promising snowpack early in the water year, however has been subjected to well above average temperatures for several months now. In fact, the lack of precipitation and above average temperatures have impacted the entire state. Melt off has been occurring for some time now and all basins in the southern and western portions of the state have been bare for a month. Snow water equivalent values range from zero in the south to 75 percent of normal. Forecast points in the Canadian Basin are currently between 50 and 88 percent of average. The Pecos River ranges from 79 to 69 percent of the average, and the Rio Grande is also near average at the northern points at 84 percent and 31 percent in the south. The San Juan River reflects Colorado's decent snowpack to the north and ranges from 71 to 81 percent of average. The Zuni-Bluewater is slightly up from last year's forecasts and ranges from 49 to 64 percent of average. The Mimbres River is 73 percent of average, and the San Francisco/Upper Gila ranges from 66 to 54 percent of average. The Rio Hondo is between 40 and 54 percent. Overall, forecasts for New Mexico are only marginally better than last year at this point in the water year.

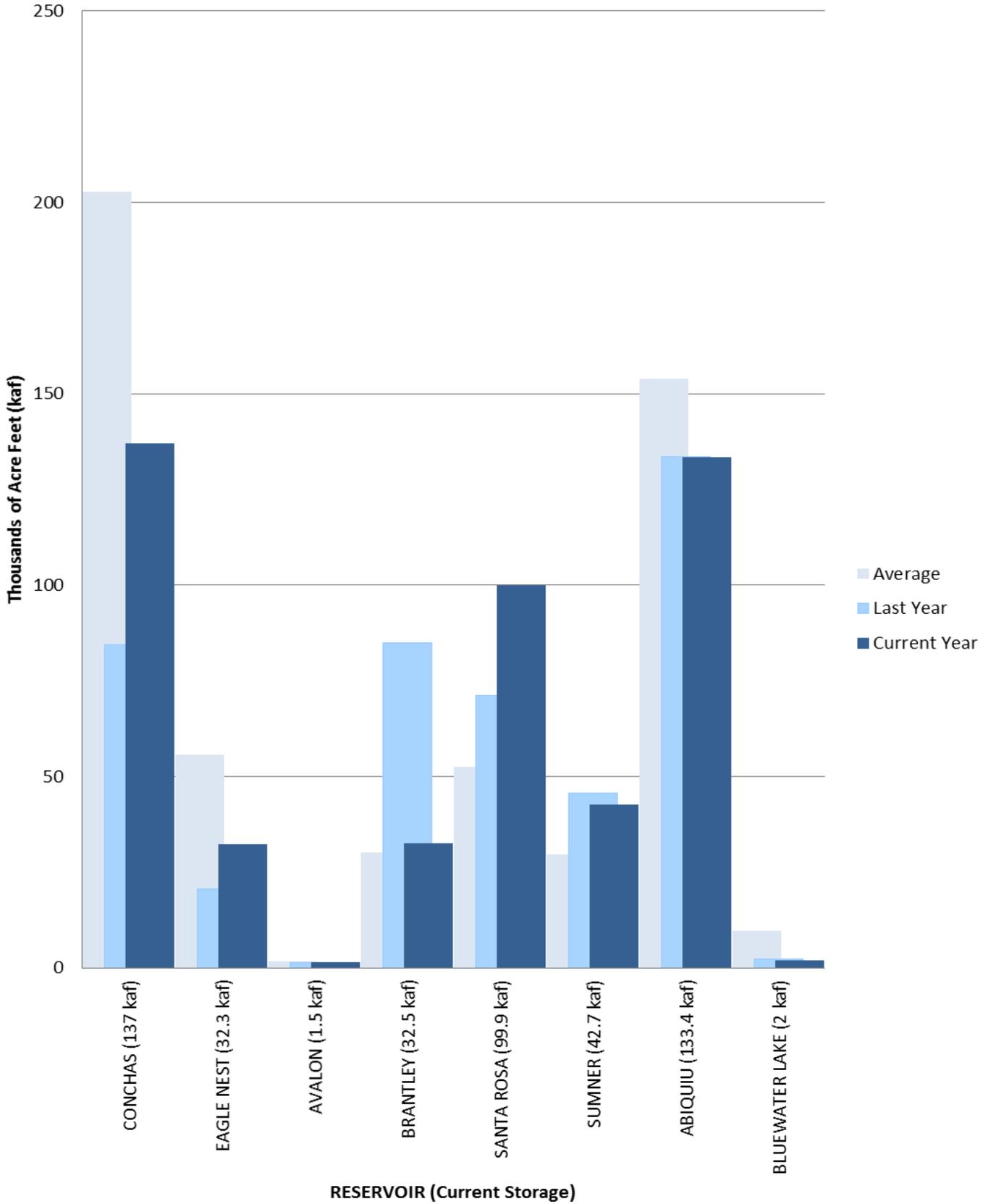
# New Mexico Drought Monitor, real versus perceived conditions?



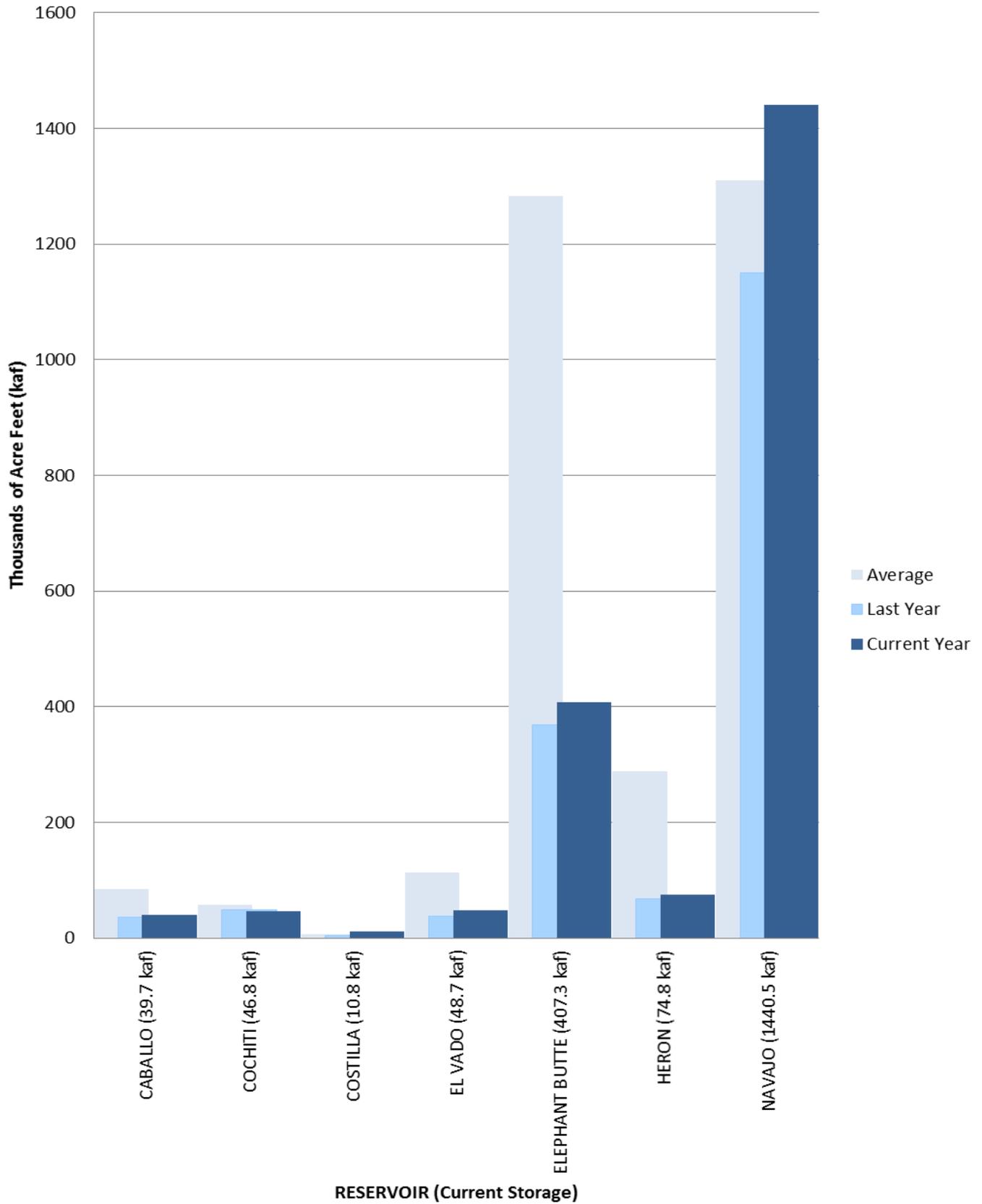
Every week, The U.S. Drought Monitor is produced in partnership between the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture, and the National Oceanic and Atmospheric Administration. This useful tool uses multiple inputs, including precipitation received, to give an indication of the extent and severity of drought conditions nationwide. During the first week of March water year-to-date (WYTD) basin average precipitation was near normal for western New Mexico, however the snow water content (SWC) has dropped to almost zero in some areas, and 10-25 percent elsewhere. In northern New Mexico WYTD basin average precipitation was above normal, and basin average SWCs were close to or above normal. As the month progressed precipitation amounts dropped off considerably, with little or no precipitation falling across much of the state. Mountain snowpack was dramatically effected across much of the state and in some cases has completely melted off. WYTD precipitation continued to remain below normal across western New Mexico and the state began drying out with back-to-back days of red flag fire warnings and wind advisories. This dryness and drought continued into the latter half of March ultimately resulting in D0 and D1 expanding across most of the state. Although dry weather dominated the last week of March some rain and snow showers did fall across the northern half of the state. Changes to drought status following this short period of precipitation were limited to a slight D0 expansion in the Four Corners region.

The El Nino advisory still remains in effect, however conditions are sharply weakening. Forecast models support neutral conditions in late spring and into early summer. The three month outlook (Apr-Jun) trends toward a 40 percent chance of above average precipitation for much of the state, with a 33 percent chance for the southwestern corner of New Mexico. Additionally, there is an equal chance for above or below normal temperatures except for the Four Corners area which has a 33 percent chance of above average temperatures. Water users should closely monitor snowpack, precipitation, reservoir, and forecast values as we move into spring.

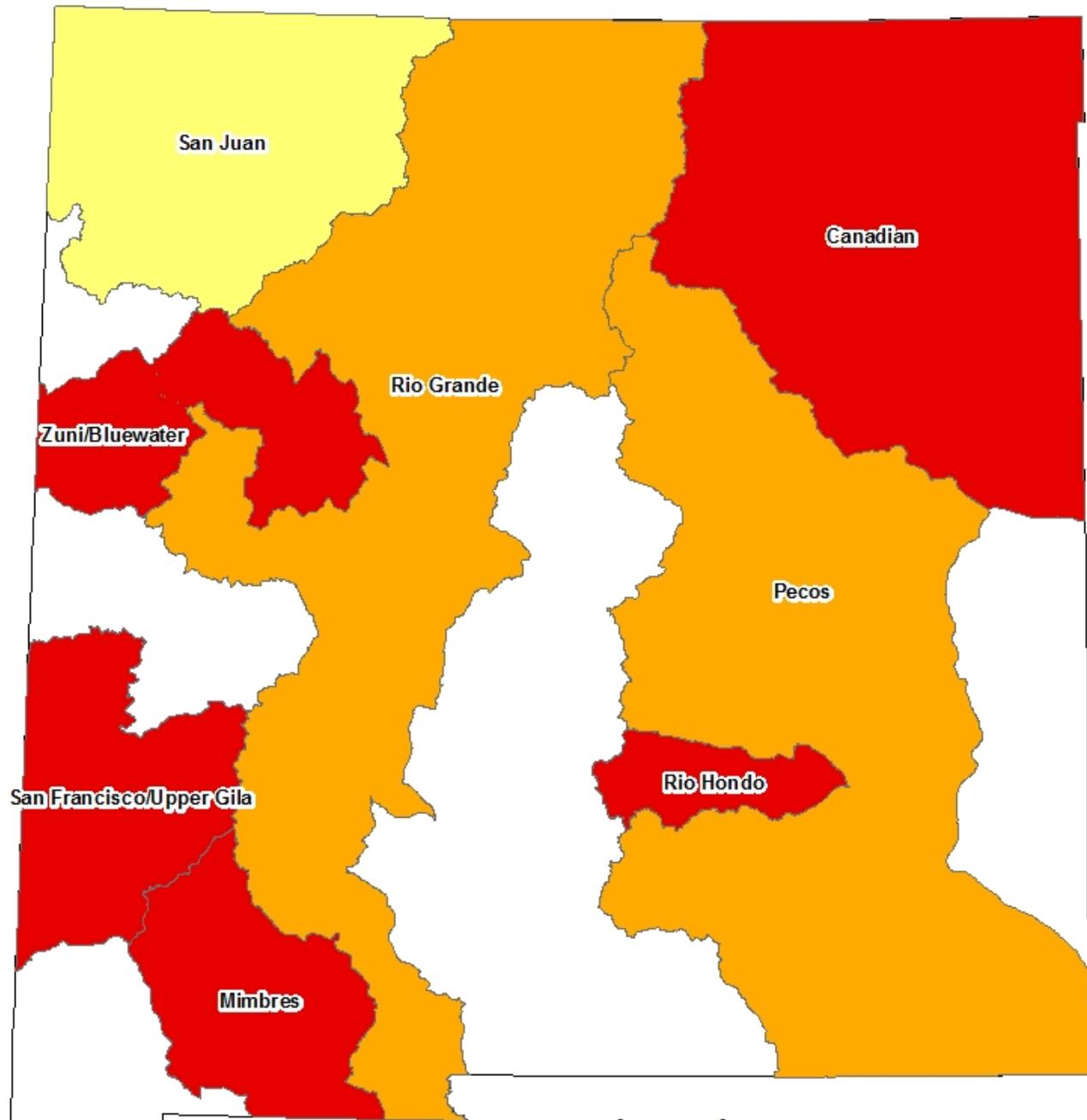
# Statewide Reservoir Storage



# Statewide Reservoir Storage



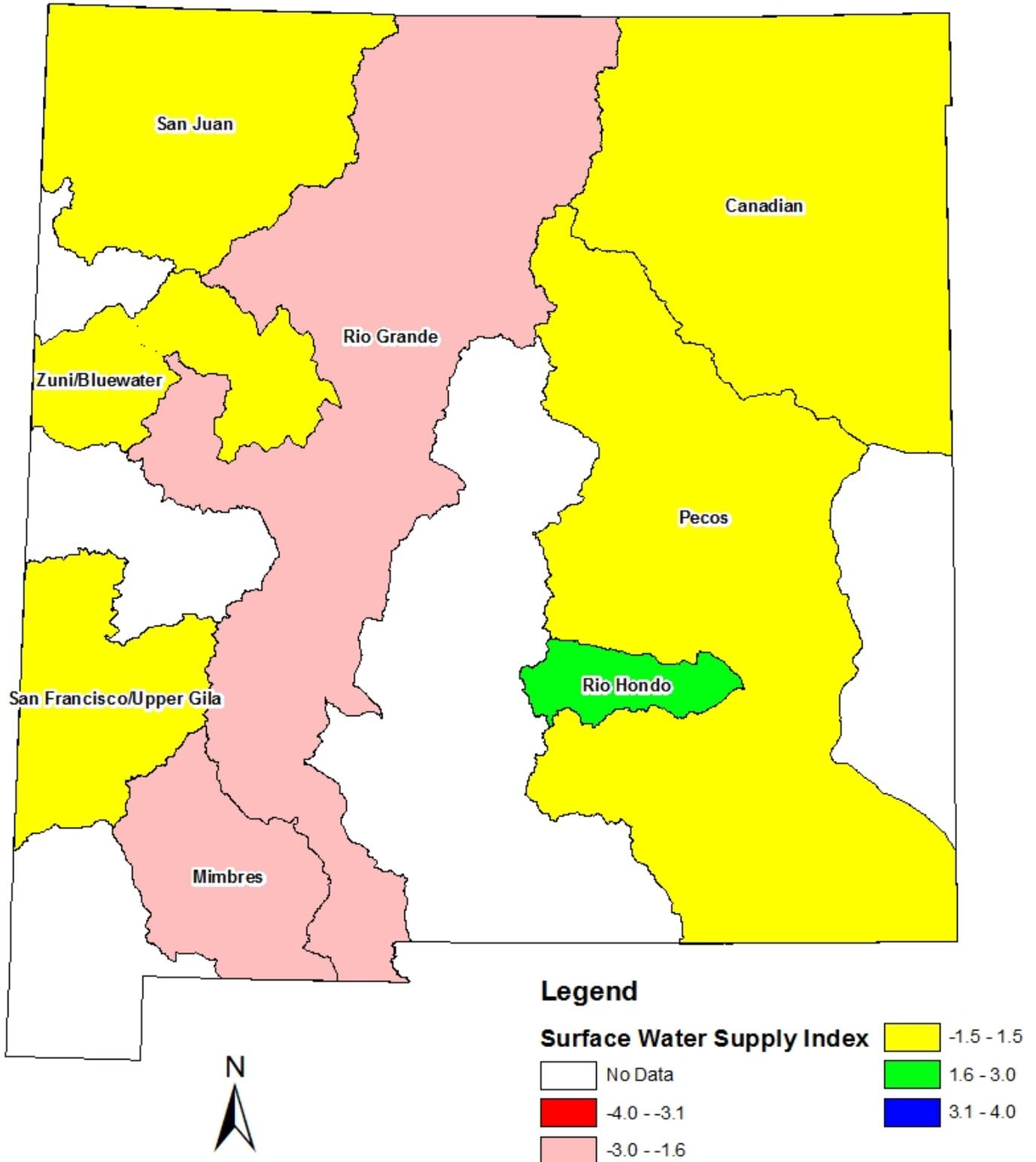
# New Mexico Percent of Median Snowpack as of April 1, 2016



## Legend

No Data	91 - 110
< 50	111 - 130
50 - 70	131 - 150
71 - 90	> 150

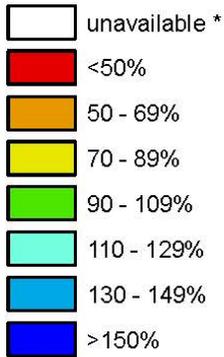
# New Mexico Surface Water Supply Index as of April 1, 2016



# New Mexico SNOTEL Current Snow Water Equivalent (SWE) % of Normal

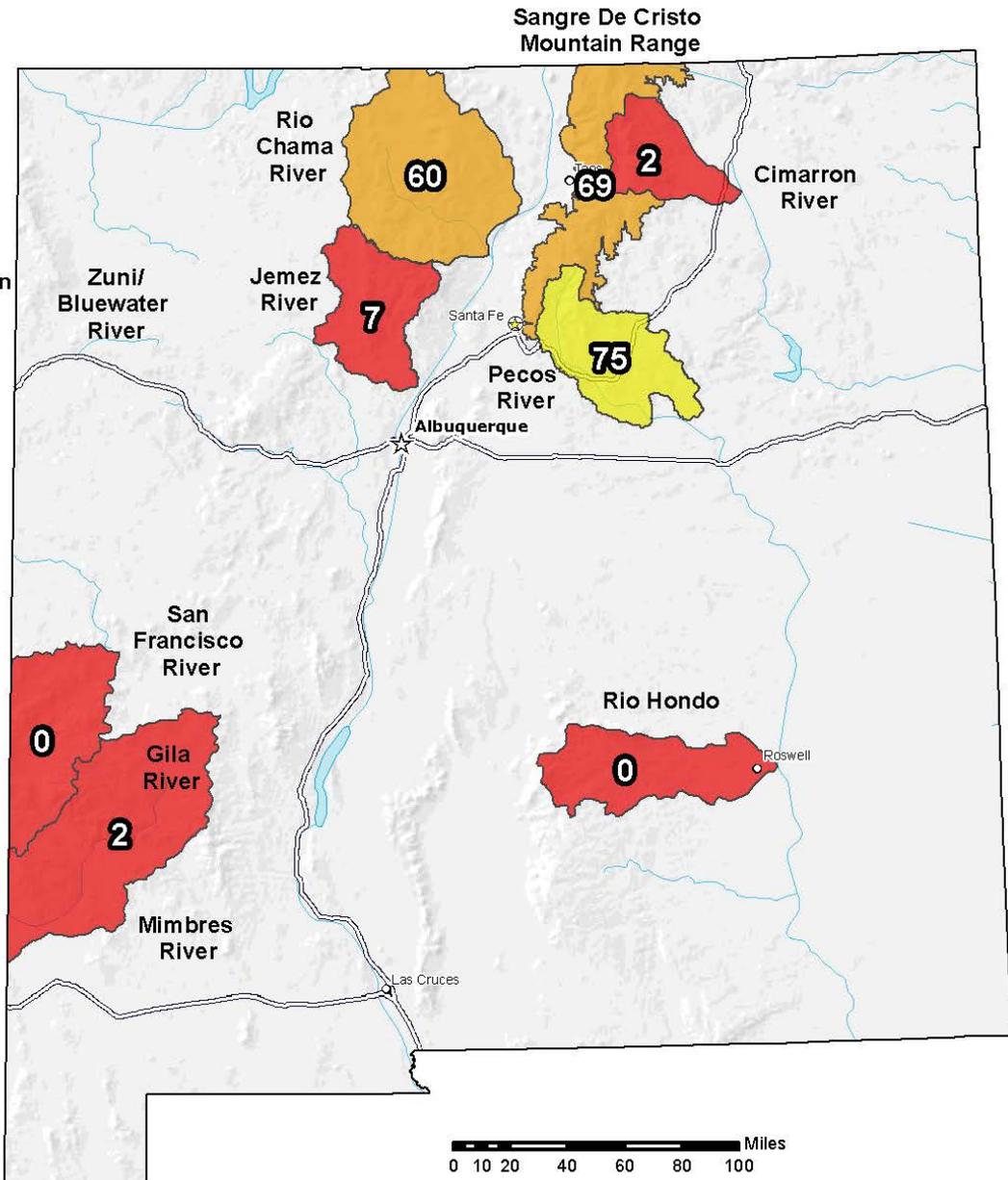
**Apr 07, 2016**

Current Snow Water Equivalent (SWE) Basin-wide Percent % of 1981-2010 Median



\* Data unavailable at time of posting or measurement is not representative at this time of year

**Provisional Data  
Subject to Revision**



The snow water equivalent percent of normal represents the current snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).

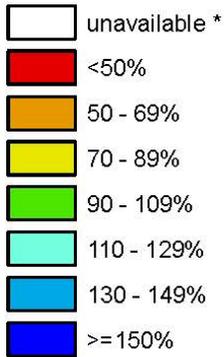
Prepared by:  
USDA/NRCS National Water and Climate Center  
Portland, Oregon  
<http://www.wcc.nrcs.usda.gov>

# New Mexico

## SNOTEL Water Year (Oct 1) to Date Precipitation % of Normal

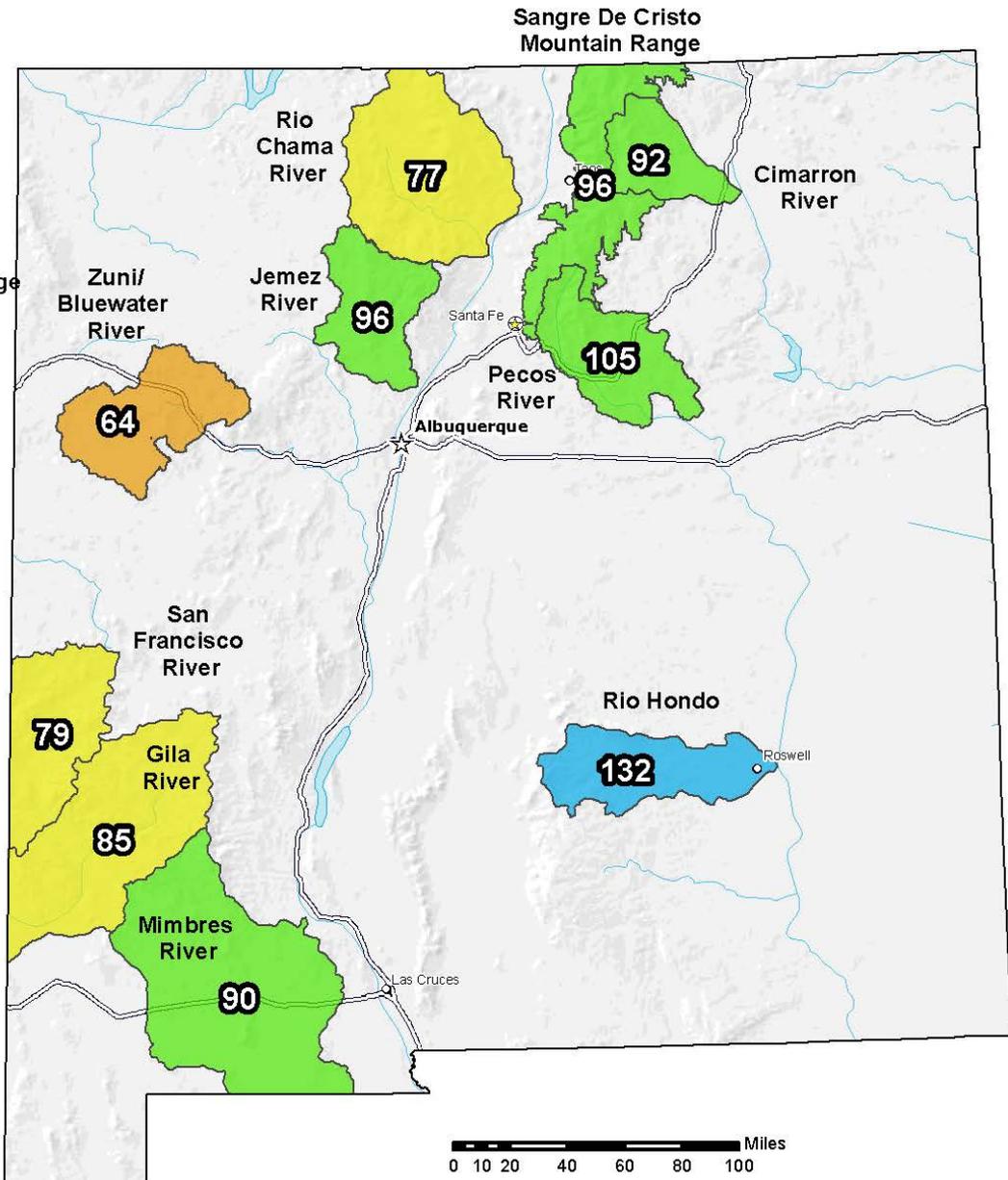
**Apr 06, 2016**

Water Year (Oct 1)  
to Date Precipitation  
Basin-wide Percent  
% of 1981-2010 Average



\* Data unavailable at time of posting or measurement is not representative at this time of year

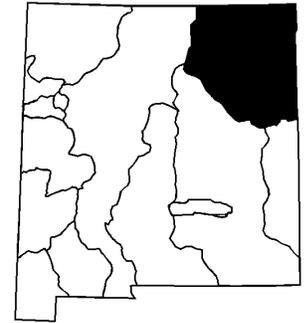
**Provisional Data  
Subject to Revision**



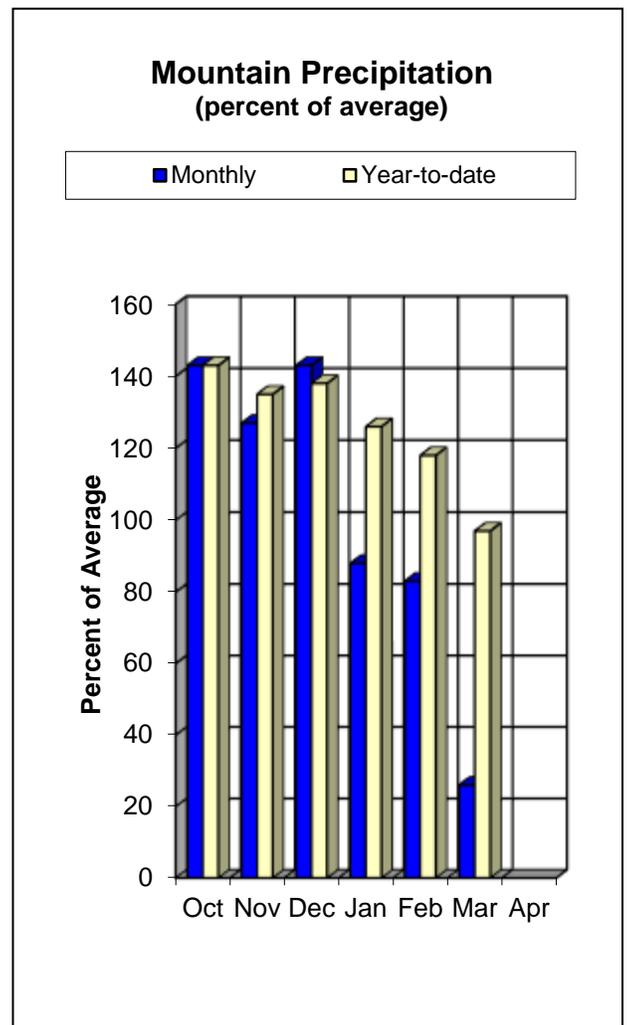
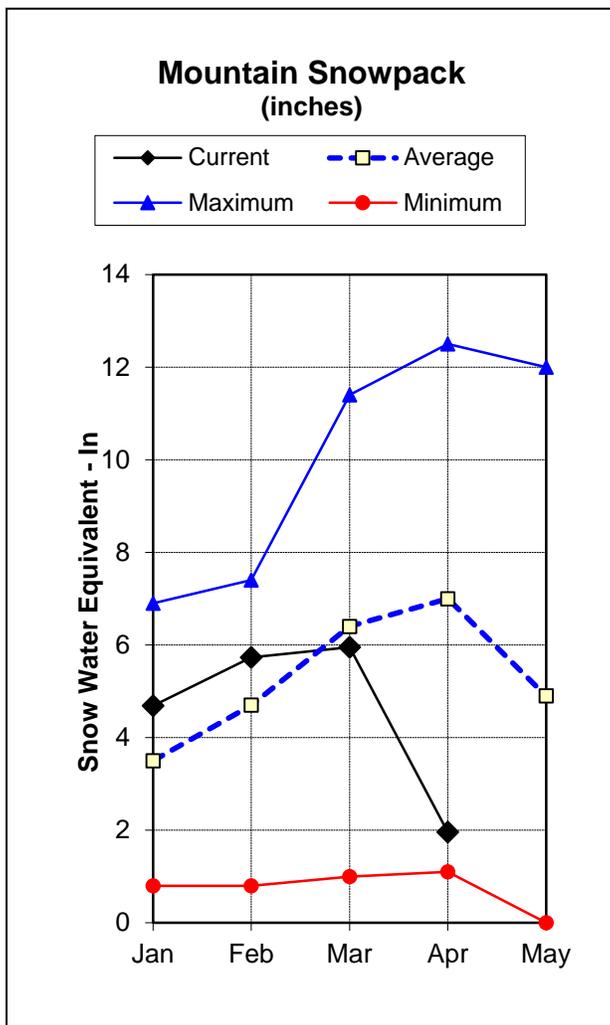
The water year to date precipitation percent of normal represents the accumulated precipitation found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).

Prepared by:  
USDA/NRCS National Water and Climate Center  
Portland, Oregon  
<http://www.wcc.nrcs.usda.gov>

# Canadian River Basin Water Supply Outlook Report as of April 1, 2016



The Canadian River Basin forecasts for the March to June time period have decreased on average by another 30 percent. They now range from 59 percent of average for the Cimarron River near Cimarron to 77 percent of average at the Conchas Reservoir inflow. The April to June forecasts range from 54 percent of average for the Cimarron River near Cimarron to 88 percent at the Conchas Reservoir inflow. Water year-to-date precipitation in the Canadian River Basin is at 97 percent of average which is a 21 percent decrease from March. Snowpack in the basin has decreased substantially from 93 percent of median to 28 percent. This is a big drop from the 84 percent the basin had at this time last year. Reservoirs are currently holding 169,300 acre-feet of storage which is an increase of 64,400 acre feet from last year at this time. Reservoir storage in the Canadian River Basin remains at 51 percent of capacity as compared to 31 percent last year at the end of March.



## Canadian River Basin Streamflow Forecasts - April 1, 2016

Forecast Exceedance Probabilities for Risk Assessment  
Chance that actual volume will exceed forecast

CANADIAN RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Vermejo R nr Dawson	MAR-JUN	2.1	3.4	4.6	59%	6.1	8.9	7.8
	APR-JUN	1.58	2.9	4.2	58%	5.6	8.4	7.2
Eagle Nest Reservoir Inflow	MAR-JUN	2.3	4.2	6	54%	8.2	12.5	11.2
	APR-JUN	1.22	3	4.9	55%	7.5	12.6	8.9
Cimarron R nr Cimarron <sup>2</sup>	MAR-JUN	0.5	3.3	8.5	54%	13.7	21	15.8
	APR-JUN	0	2.1	7.1	54%	12.1	19.6	13.2
Ponil Ck nr Cimarron	MAR-JUN	1.64	2.8	3.8	53%	5	7.3	7.2
	APR-JUN	1.34	2.4	3.4	51%	4.6	6.9	6.7
Rayado Ck nr Cimarron	MAR-JUN	1.32	2.8	4.2	60%	6.1	9.7	7
	APR-JUN	0.81	2.1	3.5	55%	5.4	9.3	6.4
Conchas Reservoir Inflow <sup>3</sup>	MAR-JUN	4.3	13	23	77%	37	67	30
	APR-JUN	3.3	11.3	21	88%	35	66	24

1) 90% and 10% exceedance probabilities are actually 95% and 5%

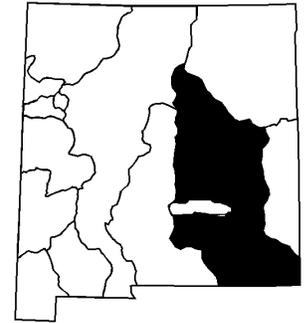
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

3) Median value used in place of average

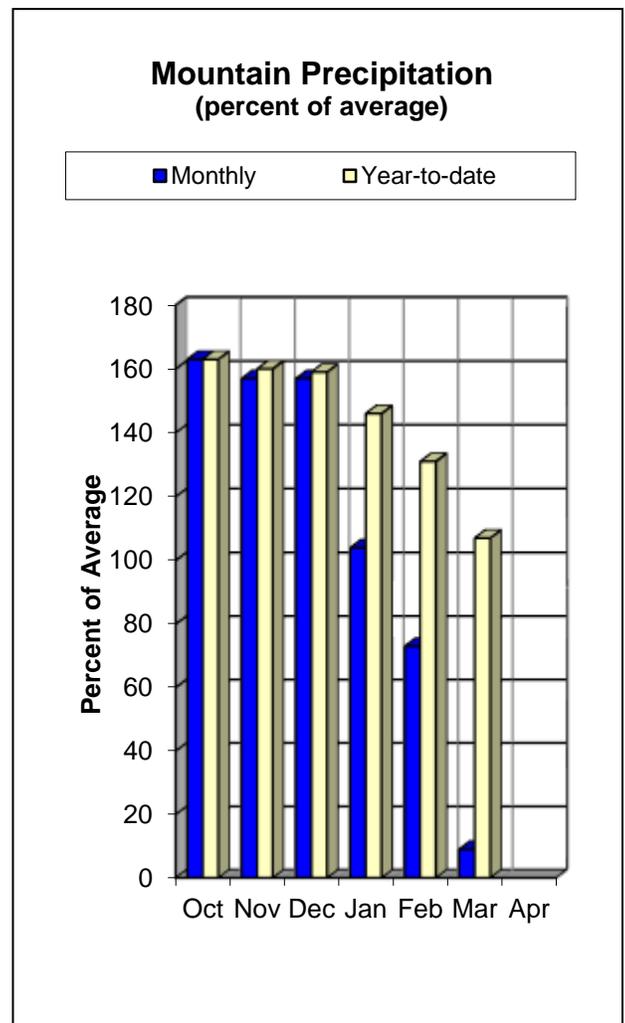
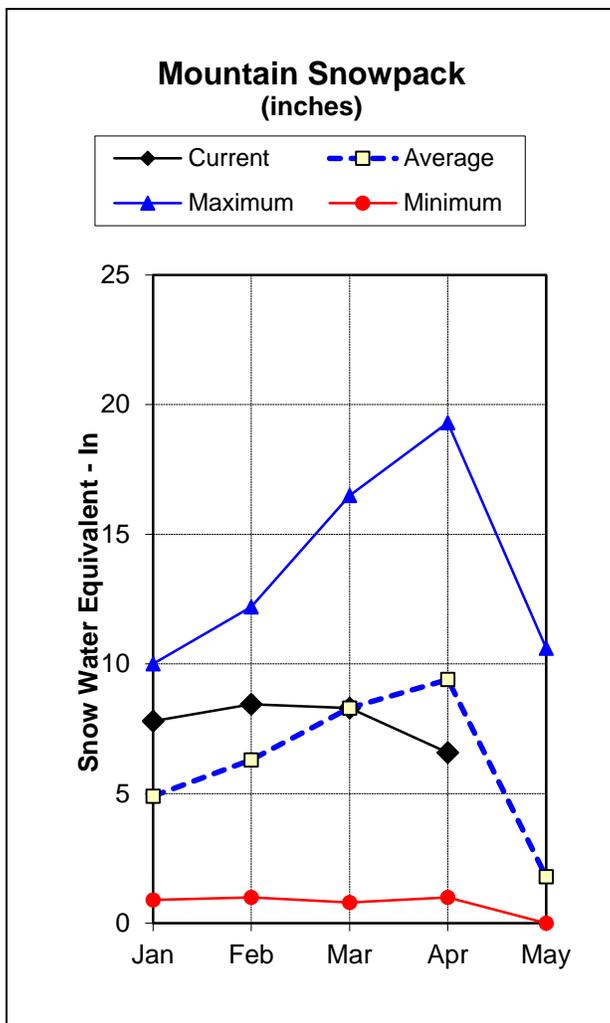
Reservoir Storage End of March, 2016	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Conchas Lake	137.0	84.4	202.7	254.2
Eagle Nest Lake nr Eagle Nest, NM	32.3	20.5	55.6	79.0
Basin-wide Total	169.3	104.9	258.3	333.2
# of reservoirs	2	2	2	2

Watershed Snowpack Analysis April 1, 2016	# of Sites	% Median	Last Year % Median
CANADIAN RIVER BASIN	10	28%	84%

# Pecos River Basin Water Supply Outlook Report as of April 1, 2016



Streamflow forecasts in the Pecos River Basin for the March to July timeframe have notably decreased. They are now at 71 percent of average for the Pecos River above Santa Rosa Lake and 77 percent of average for the Pecos River near Pecos. This is a 40 and 25 percent decrease from last month's forecast. The April to July forecasts are similar. They range from 69 percent of average for the Pecos River above Santa Rosa Lake and 75 percent of average for the Pecos River near Pecos. March was a very dry month for the basin only delivering 9 percent of the average precipitation. This puts the Pecos River Basin at 97 percent of average for the water year, which is a decrease of 34 percent. Due to the warm weather and lack of precipitation snowpack levels in the Pecos River Basin have decreased another 30 percent to 70 percent of median. The Pecos Basin has matched its snowpack from last year at this time. As of April 1<sup>st</sup> reservoir storage in the basin is at 176,700 acre-feet, which remains just 11 percent of capacity and 7 percent of the average. This is a decrease from the 203,000 acre-feet we had at this time last year.



## Pecos River Basin Streamflow Forecasts - April 1, 2016

 Forecast Exceedance Probabilities for Risk Assessment  
 Chance that actual volume will exceed forecast

PECOS RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Pecos R nr Pecos	MAR-JUL	24	35	44	77%	54	72	57
	APR-JUL	19.4	31	40	75%	50	68	53
Pecos R nr Anton Chico	MAR-JUL	19.6	34	48	76%	64	94	63
	APR-JUL	10.8	25	39	68%	55	85	57
Gallinas Ck nr Montezuma	MAR-JUL	3.2	5.6	7.7	79%	10.3	15	9.8
	APR-JUL	1.57	3.9	6	70%	8.6	13.3	8.6
Pecos R ab Santa Rosa Lk	MAR-JUL	14.3	28	40	71%	55	81	56
	APR-JUL	10.6	24	36	69%	51	77	52

1) 90% and 10% exceedance probabilities are actually 95% and 5%

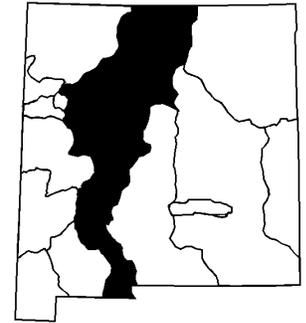
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

3) Median value used in place of average

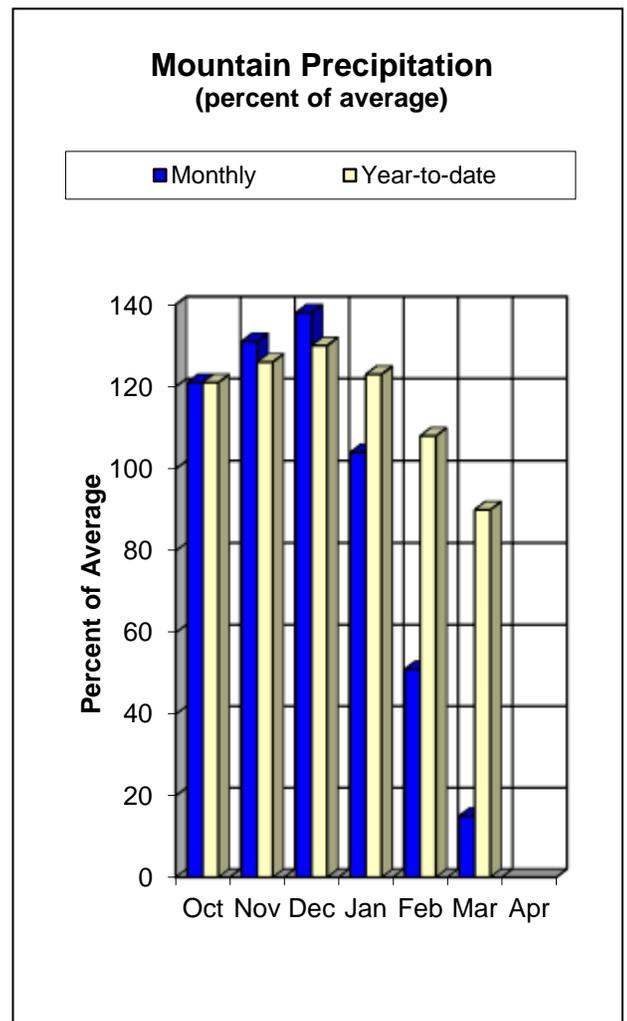
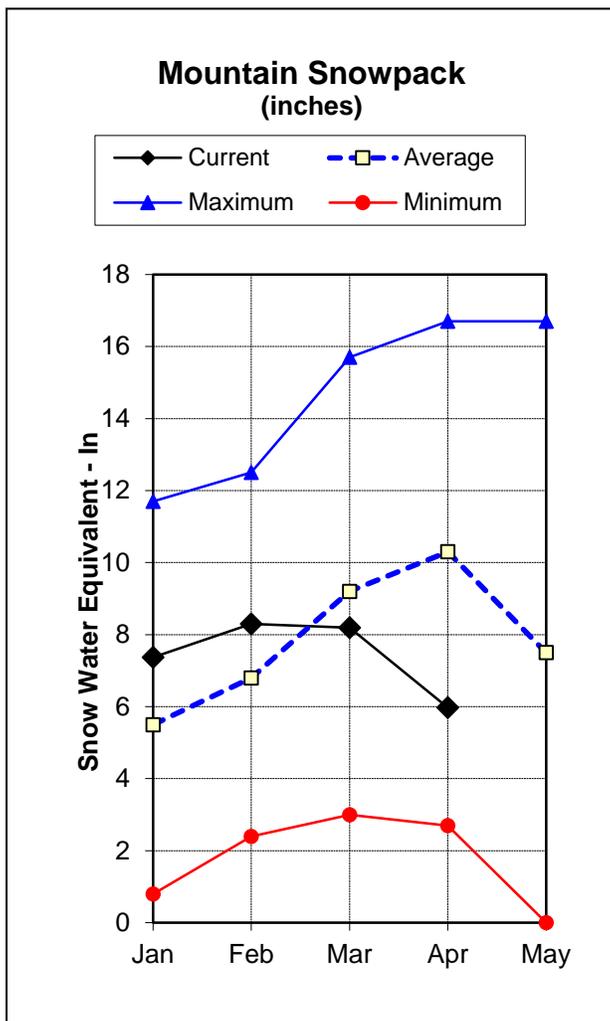
Reservoir Storage End of March, 2016	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Lake Avalon	1.5	1.3	1.6	4.0
Brantley Lake nr Carlsbad	32.5	84.9	30.1	1008.2
Santa Rosa Reservoir	99.9	71.2	52.4	438.3
Lake Sumner	42.8	45.6	29.7	102.0
Basin-wide Total	176.7	203.0	113.8	1552.5
# of reservoirs	4	4	4	4

Watershed Snowpack Analysis April 1, 2016	# of Sites	% Median	Last Year % Median
PECOS RIVER BASIN	5	70%	70%

# Rio Grande Basin Water Supply Outlook Report as of April 1, 2016



Streamflow forecasts for the Rio Grande Basin saw decreases across all forecast points. For the March to July time period the highest decrease of 45 percent can be seen at Embudo Creek at Dixon and the Santa Fe River near Santa Fe. The April to July and September forecasts range from 31 percent of average for the Jemez River below Jemez Canyon Dam to 84 percent at the Rio Grande near Del Norte. Year-to-date precipitation has decreased another 18 percent to 90 percent of average. This is only 3 percent above last year's total at the end of March. It was a very dry month in the Rio Grande Basin and the area only received 15 percent of the average precipitation as compared to 62 percent last year at this time. Temperatures have remained above normal and as a result snowpack has decreased another 31 percent to 58 percent of average. This is only 2 percent above last year's average. Snowpack in southern Colorado affecting the Rio Grande is now at 79 percent of average which is a decrease of 19 percent from last month. Southern Colorado's snowpack is up 20 percent from this time last year which will help to improve runoff forecasts for the Rio Grande. Current reservoir storage in the basin is 761,900 acre-feet, an increase of 63,000 acre-feet from last year at this time. As of April 1<sup>st</sup> this is only 16 percent of capacity and 38 percent of the average. This is an increase of 3 percent from last year.



### Rio Grande Basin Streamflow Forecasts - April 1, 2016

Forecast Exceedance Probabilities for Risk Assessment  
Chance that actual volume will exceed forecast

RIO GRANDE BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Rio Grande nr Del Norte <sup>2</sup>	APR-SEP	295	375	435	84%	500	600	515
Platoro Reservoir Inflow	APR-JUL	34	40	45	80%	50	58	56
	APR-SEP	37	44	50	81%	56	65	62
Conejos R nr Mogote <sup>2</sup>	APR-SEP	105	130	149	77%	169	200	194
Costilla Reservoir Inflow	MAR-JUL	4.2	6.2	7.8	70%	9.7	12.7	11.1
	APR-JUL	3.7	5.7	7.3	71%	9.2	12.2	10.3
Costilla Ck nr Costilla <sup>2</sup>	MAR-JUL	7.9	12.9	17.1	66%	22	30	26
	APR-JUL	6.8	11.8	16	67%	21	29	24
Red R bl Fish Hatchery nr Questa	MAR-JUL	15.3	20	24	71%	28	35	34
	APR-JUL	12.1	17.1	21	68%	25	32	31
Rio Hondo nr Valdez	MAR-JUL	8	10.5	12.4	67%	14.5	17.8	18.4
	APR-JUL	7.1	9.6	11.5	66%	13.6	16.9	17.4
Rio Pueblo de Taos nr Taos	MAR-JUL	6.7	9.5	11.8	69%	14.3	18.6	17
	APR-JUL	5.3	8.1	10.4	65%	12.9	17.2	15.9
Rio Lucero nr Arroyo Seco	MAR-JUL	4.6	6.3	7.6	70%	9	11.4	10.9
	APR-JUL	4	5.7	7	68%	8.4	10.8	10.3
Rio Pueblo de Taos bl Los Cordovas	MAR-JUL	8.6	14.3	19.4	54%	25	36	36
	APR-JUL	5.7	11.4	16.5	50%	22	33	33
Embudo Ck at Dixon	MAR-JUL	15.3	25	33	69%	42	59	48
	APR-JUL	11.9	22	30	68%	39	56	44
El Vado Reservoir Inflow <sup>2</sup>	MAR-JUL	88	114	134	60%	156	191	225
	APR-JUL	74	100	120	59%	142	177	205
Santa Cruz R at Cundiyo	MAR-JUL	7.9	11.2	13.9	76%	16.9	22	18.3
	APR-JUL	5.5	8.8	11.5	69%	14.5	19.6	16.7
Nambe Falls Reservoir Inflow	MAR-JUL	2.7	3.7	4.6	71%	5.6	7.2	6.5
	APR-JUL	1.97	3	3.9	64%	4.9	6.5	6.1
Tesuque Ck ab diversions	APR-JUL	0.29	0.59	0.85	71%	1.16	1.7	1.19
	MAR-JUL	275	365	435	60%	510	635	720
Rio Grande at Otowi Bridge <sup>2</sup>	APR-JUL	199	285	355	56%	430	555	635
	MAR-JUL	1.54	2.3	2.9	67%	3.5	4.6	4.3
Santa Fe R nr Santa Fe <sup>2</sup>	APR-JUL	1.42	2.2	2.8	74%	3.4	4.5	3.8
	MAR-JUL	13.8	17.4	20	48%	24	29	42
Jemez R nr Jemez	APR-JUL	6.5	10.1	13	37%	16.3	22	35
	MAR-JUL	8.8	12.1	15	44%	18.5	25	34
Jemez R bl Jemez Canyon Dam	APR-JUL	2.8	6.1	9	31%	12.5	18.7	29
	MAR-JUL	9.2	137	225	44%	315	440	510
Rio Grande at San Marcial <sup>2</sup>	APR-JUL	-49	79	166	38%	255	380	440

- 1) 90% and 10% exceedance probabilities are actually 95% and 5%
- 2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
- 3) Median value used in place of average

Reservoir Storage End of March, 2016	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Abiquiu Reservoir	133.4	133.5	153.9	1192.8
Bluewater Lake	2.1	2.4	9.7	38.5
Caballo Reservoir	39.8	36.1	84.6	332.0
Cochiti Lake	46.8	48.7	58.0	491.0
Costilla Reservoir	10.8	4.8	7.3	16.0
El Vado Reservoir	48.3	37.3	113.0	190.3
Elephant Butte Reservoir	407.3	368.5	1283.0	2195.0
Heron Reservoir	73.4	67.6	287.7	400.0
Basin-wide Total	761.9	698.9	1997.2	4855.6
# of reservoirs	8	8	8	8

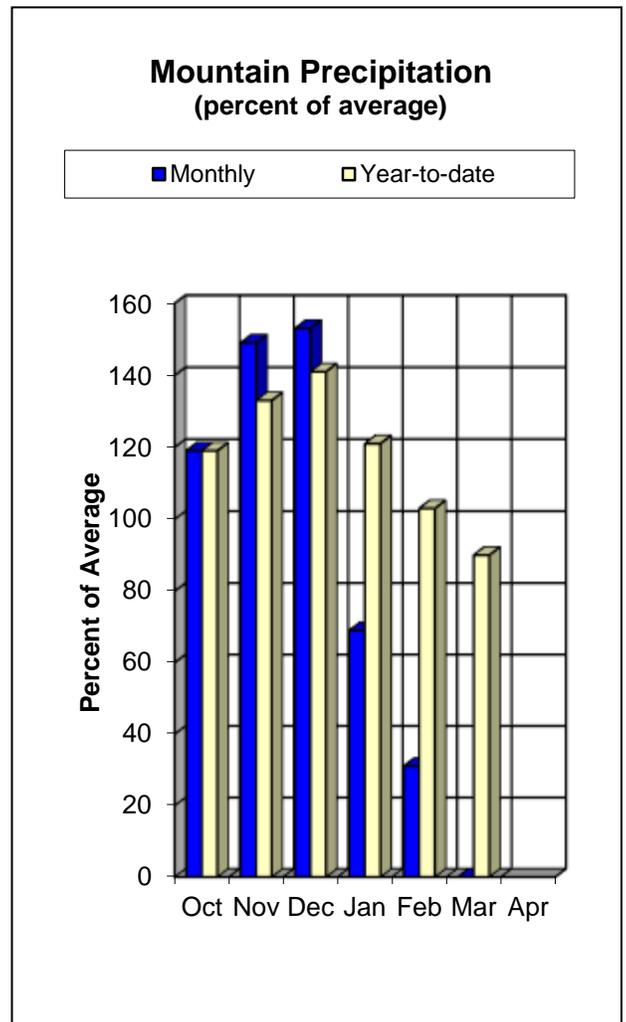
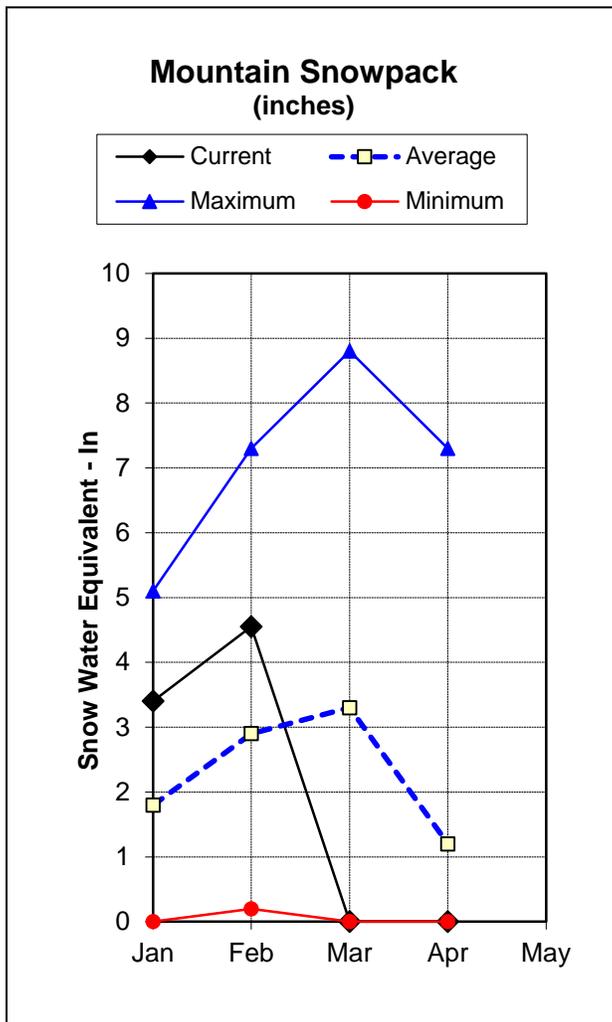
Watershed Snowpack Analysis April 1, 2016	# of Sites	% Median	Last Year % Median
RIO GRANDE BASIN	19	58%	60%

# Mimbres River Basin Water Supply Outlook Report as of April 1, 2016



The April through May forecast for the Mimbres River at Mimbres has decreased by another 9 percent and is now 73 percent of the average. This has dropped from a high of 220 percent back in February! The month of March was even harder on the Mimbres Basin than February. Water year-to-date precipitation dropped another 13 percent to 90 percent of average. The month of March received zero precipitation. Melt off has already occurred in the Mimbres Basin and there is no snow left at this time.

Users of NRCS Snow Survey data should be aware, due to reduced budget allocations; the manual snow courses at McKnight Cabin and Emory Pass #2 have been discontinued. Data is still being recorded at the automated SNOTEL sites in the basin.



## Mimbres River Basin Streamflow Forecasts - April 1, 2016

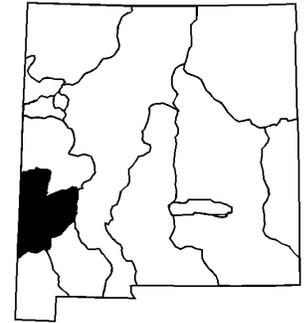
Forecast Exceedance Probabilities for Risk Assessment  
Chance that actual volume will exceed forecast

MIMBRES RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Mimbres R at Mimbres	APR-MAY	0.22	0.5	0.8	73%	1.19	1.98	1.09

- 1) 90% and 10% exceedance probabilities are actually 95% and 5%
- 2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
- 3) Median value used in place of average

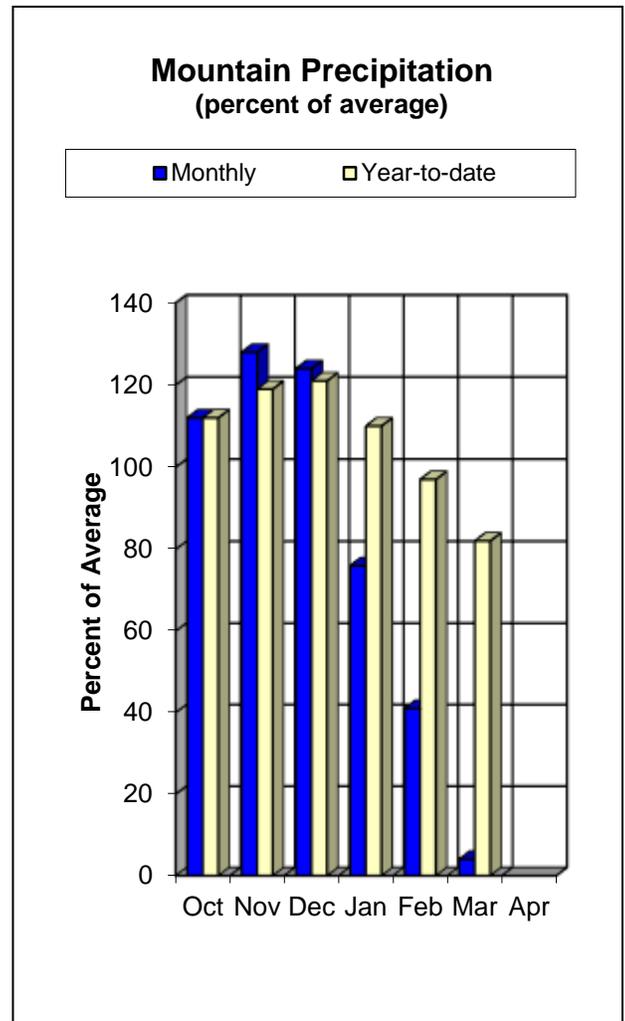
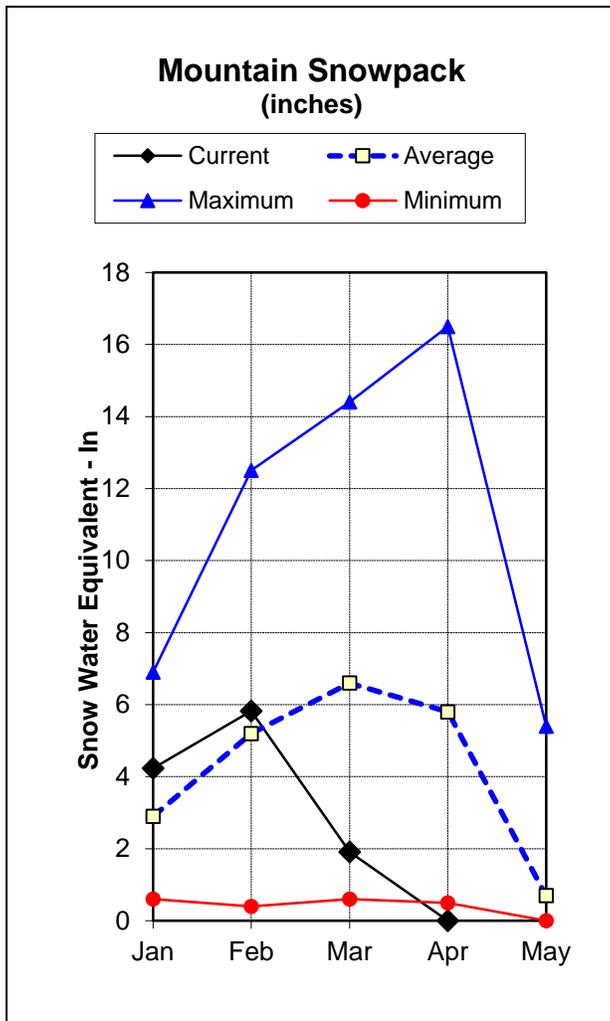
Watershed Snowpack Analysis April 1, 2016	# of Sites	% Median	Last Year % Median
MIMBRES RIVER BASIN	2		

# San Francisco / Upper Gila River Basin Water Supply Outlook Report as of April 1, 2016



Streamflow forecasts for the San Francisco/Upper Gila River Basin saw marginal decreases across all forecast points. On average, for the April to May time period the forecasts are down 6 percent. The Gila River at Gila is now at 66 percent of average, and the San Francisco at Glenwood is down to 51 percent. Water year-to-date precipitation through March has decreased an additional 15 percent to 82 percent of average. March only received 4 percent of the average precipitation for the month, as compared to 75 percent last March. The last of the snowpack in the basin has melted off over the past month. There is currently zero snowpack in the San Francisco/Upper Gila River Basin. Last year at this time the basin also had no snow.

Due to budget and contracting issues, the aerial markers at Hummingbird Saddle and Whitewater Baldy are not currently being measured. Plans are in effect to automate these sites with depth sensors which will transmit out data daily as soon as possible.



## San Francisco-Upper Gila River Basin Streamflow Forecasts - April 1, 2016

Forecast Exceedance Probabilities for Risk Assessment  
Chance that actual volume will exceed forecast

SAN FRANCISCO-UPPER GILA RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Gila R at Gila <sup>3</sup>	APR-MAY	5.9	8.6	10.9	66%	13.6	18.3	16.5
Gila R bl Blue Ck nr Virden <sup>3</sup>	APR-MAY	3.5	8.1	12.4	59%	17.5	27	21
San Francisco R at Glenwood <sup>3</sup>	APR-MAY	1.29	2.5	3.7	51%	5.3	8.2	7.3
San Francisco R at Clifton <sup>3</sup>	APR-MAY	2.5	6	9.3	54%	13.2	20	17.3

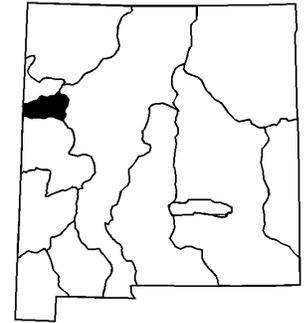
1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

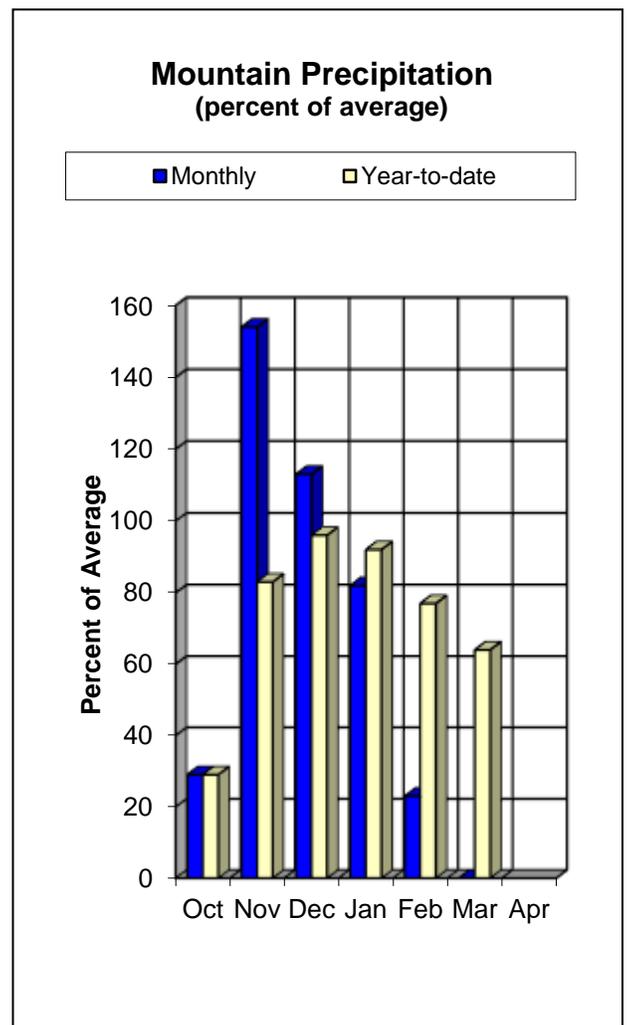
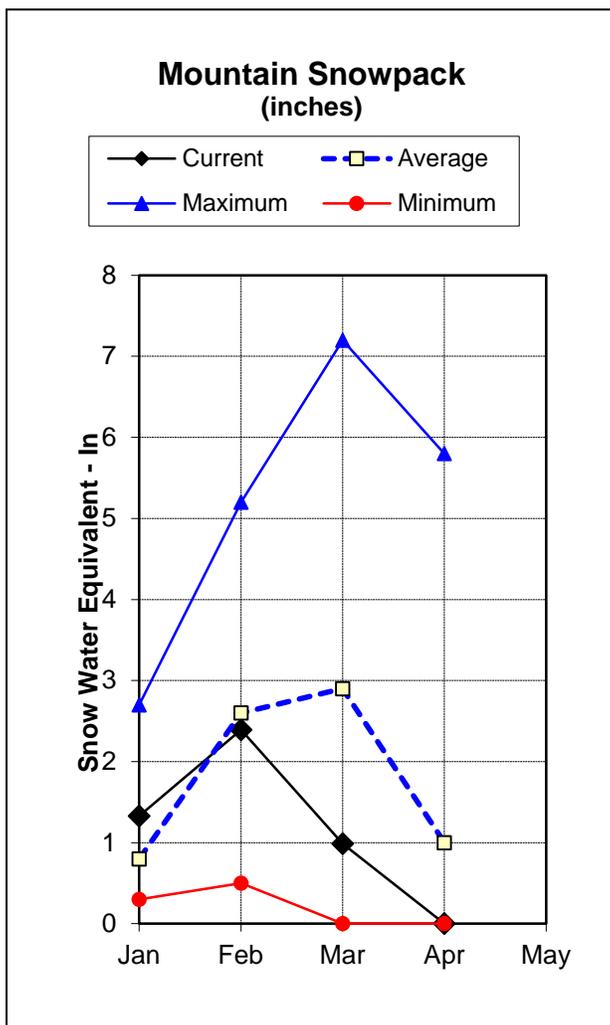
3) Median value used in place of average

Watershed Snowpack Analysis April 1, 2016	# of Sites	% Median	Last Year % Median
SAN FRANCISCO-UPPER GILA RIVER BASIN	7	0%	0%

# Zuni / Bluewater Basins Water Supply Outlook Report as of April 1, 2016



The Zuni/Bluewater Basins forecasts have increased throughout March due to snow melt occurring over the past two months. The March to May forecast for the Bluewater Lake inflow was previously at 19 percent of average, and is now at 49 percent for the April to May time period. Additionally, the April to May forecast for the Zuni River at Black Rock is up 15 percent to 50 percent of average for the same time period. Precipitation for the Zuni/Bluewater Basins is down another 13 percent to 64 percent of average for the water year-to-date. This is a decrease of 27 percent from March of last year. There was zero precipitation in either basin during the month of March. The snowpack has melted off which also occurred by this time last year. Bluewater Lake remains consistent with last month at 2,100 acre feet as compared to last year's 2,400 acre feet at the end of March. This remains only 5 percent of capacity and 22 percent of the average.



## Zuni-Bluewater Basins Streamflow Forecasts - April 1, 2016

Forecast Exceedance Probabilities for Risk Assessment  
Chance that actual volume will exceed forecast

ZUNI-BLUEWATER BASINS	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Bluewater Lake Inflow <sup>3</sup>	APR-MAY	0	0	0.5	49%	2.5	5.5	1.03
Rio Nutria nr Ramah <sup>3</sup>	APR-MAY	0	0.03	0.12	63%	0.28	0.74	0.19
Ramah Reservoir Inflow <sup>3</sup>	APR-MAY	0	0.01	0.07	64%	0.2	0.51	0.11
Zuni R ab Black Rock Reservoir <sup>3</sup>	APR-MAY	0	0	0.05	50%	0.37	1.36	0.1

1) 90% and 10% exceedance probabilities are actually 95% and 5%

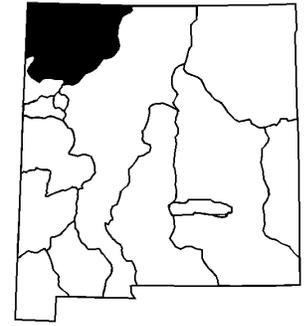
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

3) Median value used in place of average

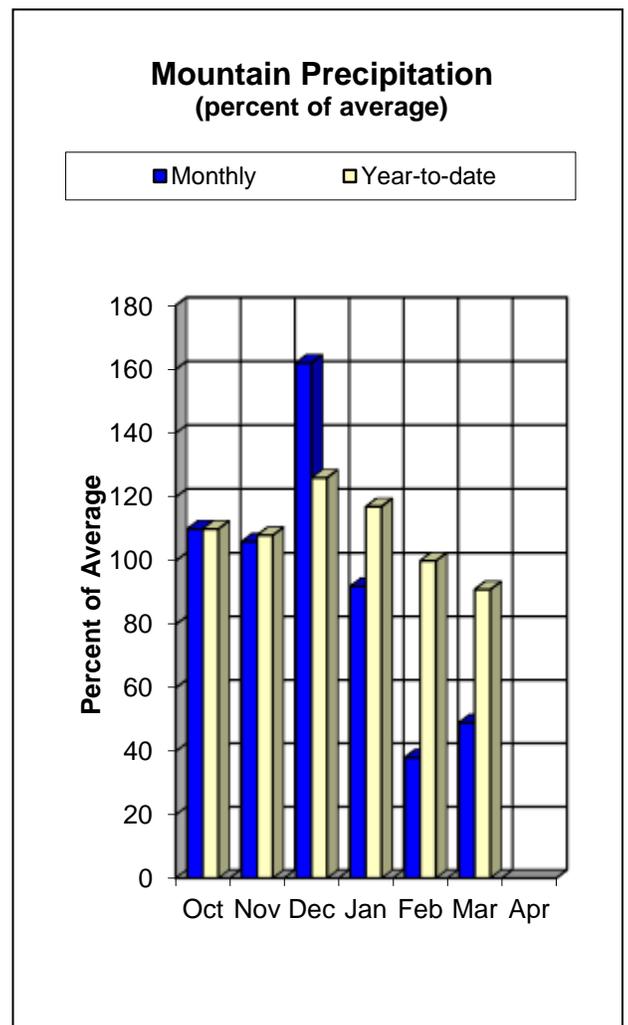
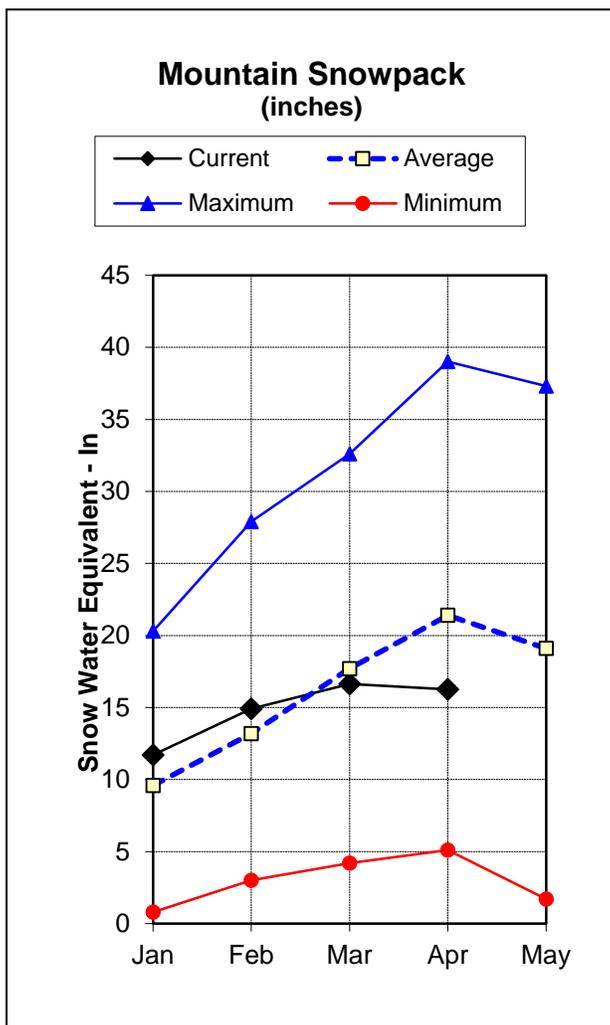
Reservoir Storage End of March, 2016	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Bluewater Lake	2.1	2.4	9.7	38.5
Basin-wide Total	2.1	2.4	9.7	38.5
# of reservoirs	1	1	1	1

Watershed Snowpack Analysis April 1, 2016	# of Sites	% Median	Last Year % Median
ZUNI-BLUEWATER BASINS	6	0%	0%

# San Juan River Basin Water Supply Outlook Report as of April 1, 2016



Depending on the forecast point the April to July water supply forecasts have dropped 10 to 25 percent. The Navajo Reservoir inflow has dropped another 22 percent to 71 percent of average. The Animas River at Durango has also gone down another 11 percent to 81 percent of the average. Year-to-date precipitation is down slightly to 91 percent of average, which remains a 22 percent increase from last year at this time. March saw marginal precipitation receiving only 49 percent of the average rainfall. This is a decrease of 11 percent from last year at this time. Due to this the snowpack has decreased 16 percent to 78 percent of median. This is still a 24 percent increase from last year as this time. Navajo Reservoir is near capacity and contains 1,440,600 acre-feet, or 110 percent of the average. This is now 85 percent of capacity which is an increase from last year's 68 percent, or 1,150,400 acre-feet at the end of March.



## San Juan River Basin Streamflow Forecasts - April 1, 2016

Forecast Exceedance Probabilities for Risk Assessment  
Chance that actual volume will exceed forecast

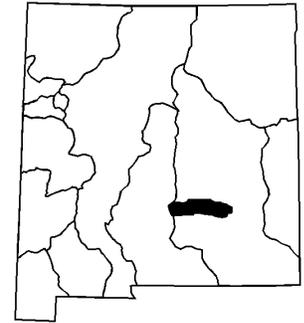
SAN JUAN RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Rio Blanco at Blanco Diversion <sup>2</sup>	APR-JUL	28	35	41	76%	46	55	54
Navajo R at Oso Diversion <sup>2</sup>	APR-JUL	34	42	49	75%	55	66	65
Navajo Reservoir Inflow <sup>2</sup>	APR-JUL	360	455	525	71%	600	725	735
Animas R at Durango	APR-JUL	245	295	335	81%	375	440	415
La Plata R at Hesperus	APR-JUL	13.2	16	18	78%	20	24	23

- 1) 90% and 10% exceedance probabilities are actually 95% and 5%
- 2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
- 3) Median value used in place of average

Reservoir Storage End of March, 2016	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Navajo Reservoir	1440.6	1150.4	1310.0	1696.0
Basin-wide Total	1440.6	1150.4	1310.0	1696.0
# of reservoirs	1	1	1	1

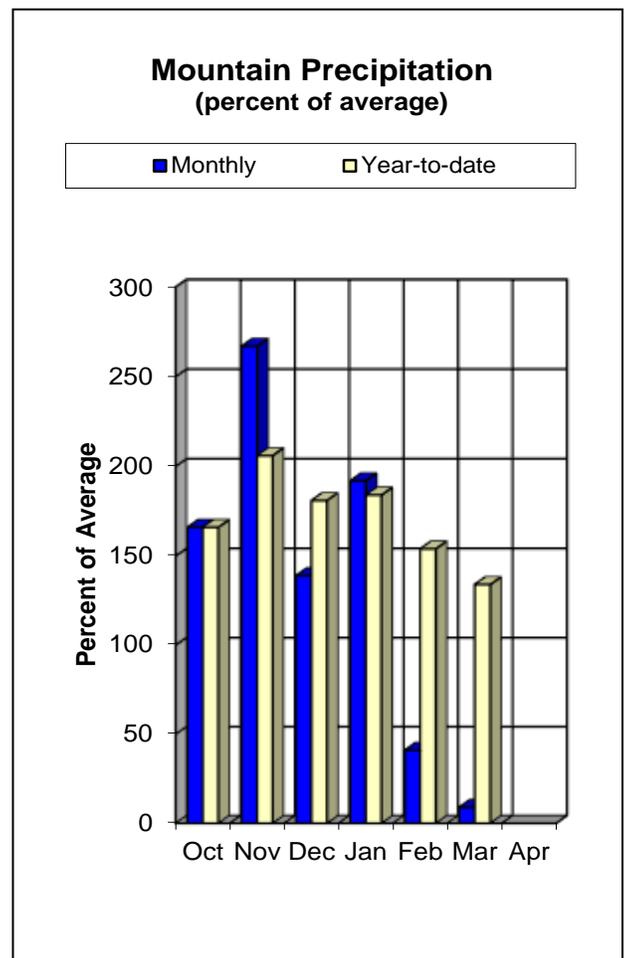
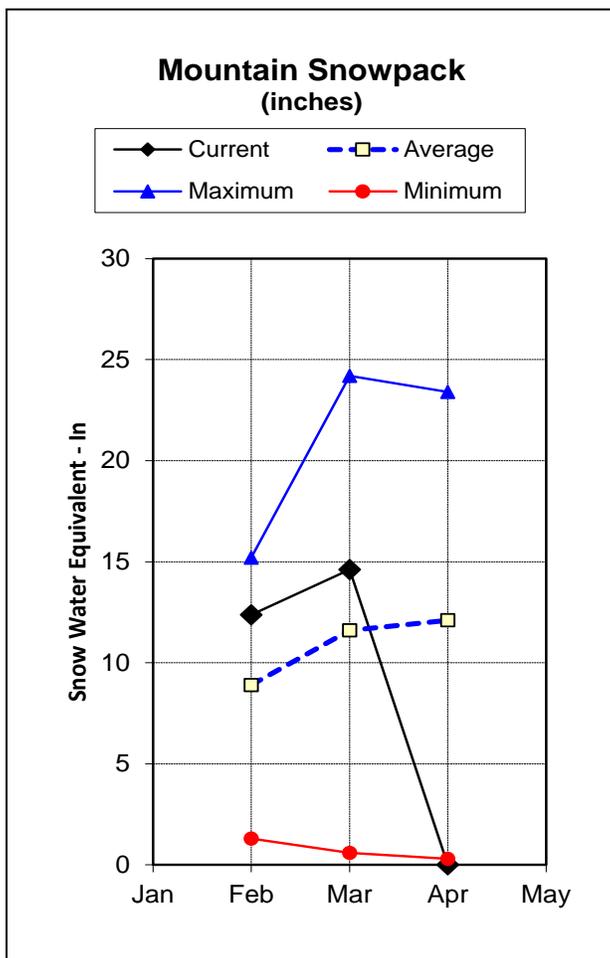
Watershed Snowpack Analysis April 1, 2016	# of Sites	% Median	Last Year % Median
SAN JUAN RIVER BASIN	13	78%	54%

# Rio Hondo Basin Water Supply Outlook Report as of April 1, 2016



The streamflow forecast for the March to June time period saw a significant decrease this month. The forecast for the Rio Ruidoso at Hollywood has dropped another 70 percent from 124 to 54 percent of average. The same forecast point for the April to June time period is 40 percent of average. This is 12 percent above last year's April to June forecast. The Rio Hondo Basin also saw a very dry March receiving only 9 percent of the average rainfall. In contrast, last March the basin received 105 percent of the average precipitation. The well above normal temperatures and lack of precipitation has led to melt off occurring leaving the basin with no snow. Last winter was also marginal, and the basin only had 8 percent of the median snowpack at this time. This measurement however should be used with caution as the Sierra Blanca SNOTEL site was impacted by the Little Bear Fire three and half years ago.

It should be noted that the switch to using median snowpack values three years ago has had a significant influence on the "average" calculations for the Rio Hondo Basin. Using the old system of computing averages based on the 1971-2000 period, 6.7 inches of SWE was considered normal for January 1. Using the new median calculations based on the 1981-2010 period, 3.2 inches of SWE is now normal. For this reason, comparisons of "percent of average" from year to year will be limited in this basin to minimize confusion.



Data Current as of: 4/6/2016 2:06:16 PM

## Rio Hondo Basin Streamflow Forecasts - April 1, 2016

Forecast Exceedance Probabilities for Risk Assessment  
Chance that actual volume will exceed forecast

RIO HONDO BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Rio Ruidoso at Hollywood								
	MAR-JUN	2.4	3	3.6	54%	4.2	5.4	6.7
	APR-JUN	0.79	1.44	2	40%	2.6	3.8	5

- 1) 90% and 10% exceedance probabilities are actually 95% and 5%
- 2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
- 3) Median value used in place of average

Watershed Snowpack Analysis April 1, 2016	# of Sites	% Median	Last Year % Median
RIO HONDO BASIN	1	0%	8%

NEW MEXICO STATEWIDE	Network	Elevation (ft)	Depth (in)	SWE (in)	Median (in)	% Median	Last Year SWE (in)	Last Year % Median
Alamitos	SC	9320	1	0.2	5.2	4%	1.9	37%
Aztec #2	SC	9880	2	0.4	4.3	9%	6.2	144%
Bateman	SNOTEL	9300	19	7.1	12.2	58%	7.0	57%
Boon	SC	8140	0	0.0	0.8	0%	0.0	0%
Bowl Canyon	SC	8980	7	2.8	7.8	36%	4.1	53%
Chamita	SNOTEL	8400	7	3.1	7.9	39%	1.5	19%
Dan Valley	SC	7640	0	0.0	0.1	0%	0.0	0%
Elk Cabin	SNOTEL	8210	0	0.0	0.6	0%	0.0	0%
Emory Pass #2	SC	7800			0.0			
Frisco Divide	SNOTEL	8000	0	0.0	0.0		0.0	
Gallegos Peak	SNOTEL	9800	16	6.8	10.4	65%	3.8	37%
Hematite Park	SC	9500	2	0.5	3.6	14%	5.3	147%
Hidden Valley	SC	8480	0	0.0			2.5	
Hopewell	SNOTEL	10000	38	13.2	19.5	68%	13.0	67%
Hummingbird - Aerial And Snow Course	SC	10550			9.0			
Lookout Mountain	SNOTEL	8500	0	0.0	0.0		0.0	
McGaffey	SC	8120	0	0.0	0.0		0.0	
Mcknight Cabin	SNOTEL	9240	0	0.0	0.0		0.0	
Mcknight Cabin Aerial Marker	SC	9300						
Mcknight Cabin Snow Course	SC	9300			1.1			
Missionary Spring	SC	7940	0	0.0	0.0		0.0	
Navajo Whiskey Ck	SNOTEL	9050	0	0.0			0.0	
North Costilla	SNOTEL	10600	14	2.6	4.8	54%	4.8	100%
Ojo Redondo	SC	8200	0	0.0	0.2	0%	0.0	0%
Palo	SNOTEL	9350	0	0.0			0.0	
Palo	SC	9300	8	2.4	7.4	32%	6.2	84%
PanchueLa	SC	8400	0	0.0			0.0	
Post Office Flats	SC	8400	0	0.0	0.0		0.0	
Quemazon	SNOTEL	9500	0	0.0	7.0	0%	0.0	0%
Red River Pass #2	SNOTEL	9850	2	0.4	7.4	5%	3.9	53%
Rice Park	SNOTEL	8460	0	0.0	0.0		0.0	
Rice Park	SC	8460			0.8		0.0	0%
Rio En Medio	SC	10300	14	5.0	9.1	55%	6.3	69%
Rio Santa Barbara	SNOTEL	10664	40	14.9			13.1	
San Antonio Sink	SNOTEL	9100	15	5.4			3.1	
San Antonio Sink	SC	9200	8	2.4	7.5	32%	3.5	47%
Santa Fe	SNOTEL	11445	43	16.7	15.9	105%	13.2	83%
Senorita Divide #2	SNOTEL	8600	7	3.4	8.5	40%	1.1	13%
Shuree	SNOTEL	10100	4	0.5			3.2	
Shuree	SC	10097	0	0.0	2.6	0%	4.8	185%
Sierra Blanca	SNOTEL	10280	0	0.0	5.9	0%	0.5	8%
Signal Peak	SNOTEL	8360	0	0.0	0.0		0.0	
Silver Creek Divide	SNOTEL	9000	0	0.0	7.0	0%	0.0	0%
State Line	SC	8000	0	0.0	0.0		0.0	
Taos Canyon	SC	9100	1	0.2	4.4	5%	2.5	57%
Taos Powderhorn	SNOTEL	11057	53	15.5			16.0	
Taos Powderhorn	SC	11250	52	19.1	25.8	74%	20.2	78%
Tolby	SNOTEL	10180	0	0.0	7.6	0%	6.1	80%
Tolby	SC	10180			9.8			
Tres Ritos	SNOTEL	8600	0	0.0			0.0	
Tres Ritos	SC	8600	1	0.2	4.4	5%	1.3	30%
Vacas Locas	SNOTEL	9306	8	4.0	8.1	49%	2.4	30%
Wesner Springs	SNOTEL	11120	28	10.9	16.0	68%	11.4	71%
Whiskey Creek	SC	9050	6	2.2	8.7	25%	1.2	14%
Whitewater - Aerial And Snow Course	SC	10750			22.6			
<b>Basin Index</b>						<b>45%</b>		<b>57%</b>
# of sites						39		39

*Issued by*

**Jason Weller  
Chief  
Natural Resources Conservation Service  
Conservation Service  
U.S. Department of Agriculture**

*Released by*

**J. Xavier Montoya  
State Conservationist  
Natural Resources  
  
Albuquerque, New Mexico**



6200 Jefferson, NE  
Albuquerque, NM 87109



**New Mexico**  
**Basin Outlook Report**  
Natural Resources Conservation Service  
Albuquerque, NM

