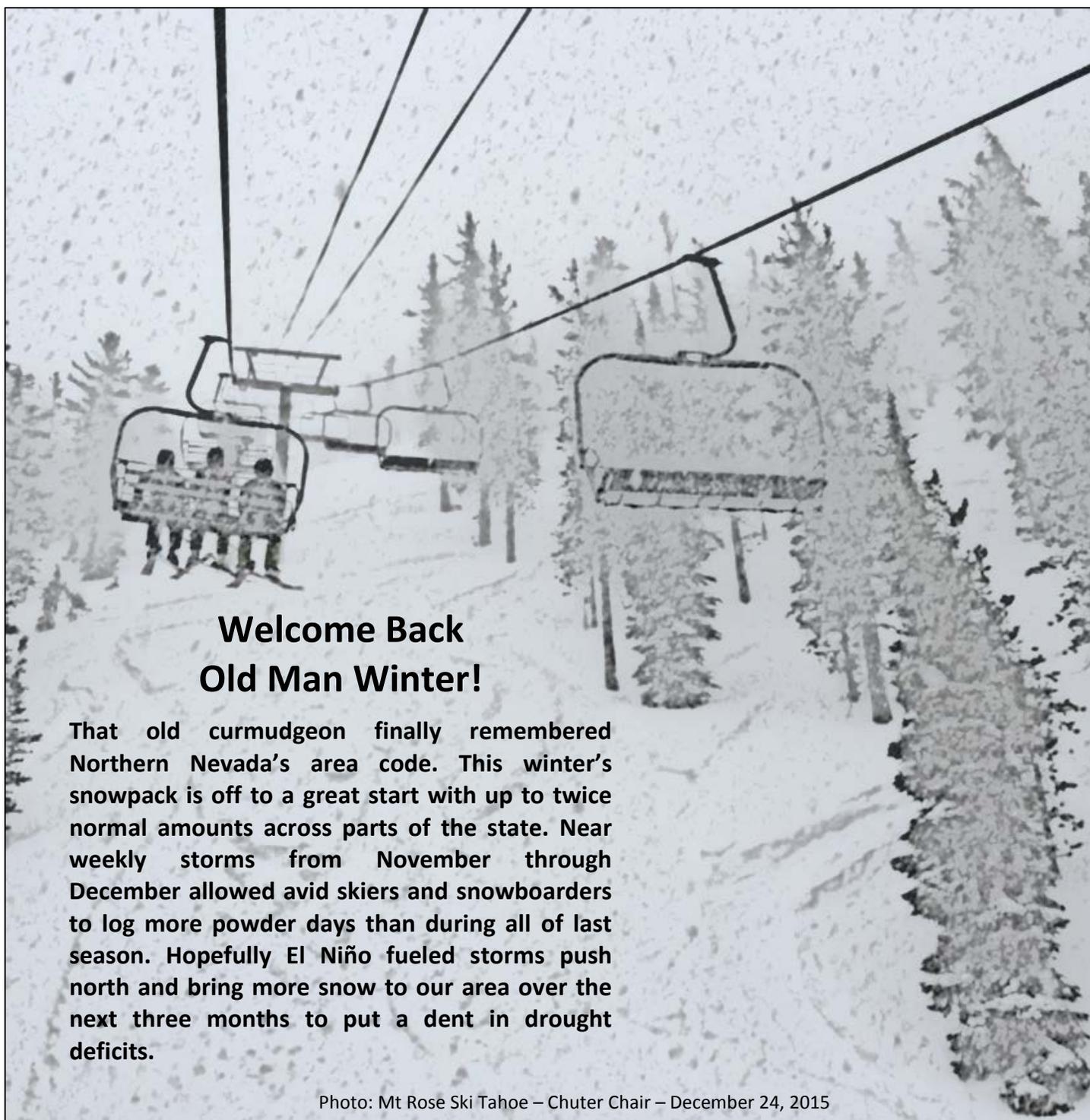


*Natural Resources Conservation Service*

# Nevada Water Supply Outlook Report

## January 1, 2016



### **Welcome Back Old Man Winter!**

**That old curmudgeon finally remembered Northern Nevada's area code. This winter's snowpack is off to a great start with up to twice normal amounts across parts of the state. Near weekly storms from November through December allowed avid skiers and snowboarders to log more powder days than during all of last season. Hopefully El Niño fueled storms push north and bring more snow to our area over the next three months to put a dent in drought deficits.**

Photo: Mt Rose Ski Tahoe – Chuter Chair – December 24, 2015

## Background information about this report:

This report provides an analysis of water supply conditions across Nevada and a part of the eastern Sierra in California. It is published monthly from January to May. First of month data are summarized and used to forecast summer streamflow at various points. The report is best read in digital format which allows readers to click on the blue internet links. Email [jeff.anderson@nv.usda.gov](mailto:jeff.anderson@nv.usda.gov) to join a digital subscription list.

**Streamflow Forecasts:** Most of the annual streamflow in the western United States originates as snowfall that accumulates in the mountains during the winter. As the snowpack accumulates, hydrologists can estimate the runoff that will occur when the snow melts. Measurements of [snow water equivalent \(SWE\)](#) at snow courses and SNOTEL sites, along with precipitation, antecedent streamflow, and El Niño / Southern Oscillation indices are used in computerized statistical models to produce streamflow runoff forecasts. **Forecasts in this report give the total volume of water expected to flow past a location during a specified period, such as March 1 to July 31.**

Forecasts of any kind 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. 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. **Unless otherwise stated the 50% exceedance forecast is the one referred to in the text of this report.** To quantify the range around this 50% value, four other forecasts are provided in the forecast tables, two smaller values (90% and 70% exceedances) and two larger values (30% and 10% exceedances). There is a 90% chance that the actual flow will be more than the minimum forecast (90% exceedance forecast). Likewise there is a 10% chance the actual flow will be more than the maximum forecast (10% exceedance forecast). Other forecasts can be interpreted similarly. The wider the spread between these values, the more forecast uncertainty.

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. Water 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 perhaps due to a dry climate outlook for the coming months, 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 if there is a 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.

Most **streamflow forecast volumes** in this report are expressed in KAF (thousand-acre-feet). Some smaller streams are forecast in acre-feet and noted as such in parentheses after the forecast name, such as “Marlette Lake Inflow (acre-feet)”. Forecasts for Lake Tahoe, Pyramid Lake and Walker Lake are expressed in feet of water surface elevation change during the forecast period. A rise in lake level is indicated by a positive value, while a drop in lake level is indicated by a negative number. The East Fork Carson River has two recession forecasts that provide the dates when spring river flows are expected to recede to 500 cfs and 200 cfs levels as the snowmelt decreases in late spring.

**Streamflow Adjustments:** Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream lakes, reservoirs and diversions. Certain forecasts are adjusted for these structures; these are footnoted with a (2) in the report. A summary of adjustments in this report follows:

**Marlette Lake Inflow (2)** = Marlette Lake Inflow, observed + Marlette Lake storage change

**Little Truckee River above Boca Reservoir (2)** = Little Truckee River above Boca Reservoir, observed + Sierra Valley Diversion + Independence Lake storage change + Stampede Reservoir storage change

**Truckee River at Farad (2)** (externally adjusted by Water Master) = Truckee River at Farad, observed – Lake Tahoe outflow + Sierra Valley Diversion + Donner Lake storage change + Martis Lake storage change + Prosser Reservoir storage change + Independence Lake storage change + Stampede Reservoir storage change + Boca Reservoir storage change

**East Walker River near Bridgeport (2)** = East Walker River near Bridgeport, observed + Bridgeport Reservoir storage change

**“Normal” (Averages and Medians):** Throughout this report conditions are expressed as a “percent of normal”. In this context “normal” is meant to be a catch-all word that refers to the statistical **average** for the 1981-2010 period when related to streamflow, precipitation and reservoir storage, and the statistical **median** for the 1981-2010 period when related to snowpack. For an explanation of why snowpack uses median visit: [www.wcc.nrcs.usda.gov/normals/median\\_average.htm](http://www.wcc.nrcs.usda.gov/normals/median_average.htm). Soil moisture has only been measured at SNOTEL sites since ~2006. Due to the short record the soil moisture normal is based on the short-term average for water years 2006-2015.

**Maximums and Minimums:** Graphs in this report display “Max” and “Min” lines for snowpack, precipitation and soil moisture. For snow and precipitation these are basin-wide, daily maximums and minimums for water years 1981-2015; for soil moisture the period is 2006-2015.

**Watershed Snowpack Analysis:** These tables summarize the snowpack percent of median for each main basin, and its sub-basins. Percentages are based on SNOTEL and snow course measurements. By selecting “Nevada” and report type “Snow” a full report with station-by-station data can be found here: <http://www.wcc.nrcs.usda.gov/basin.html>. Similar monthly reports for precipitation, streamflow forecasts and reservoir storage are also available at the same link.

# ***Nevada Water Supply Outlook Report***

***January 1, 2016***

## **SUMMARY**

The early winter outlook for Nevada is hopeful. Above normal precipitation combined with cold temperatures produced first-rate snow from the valleys to the mountaintops in time for Christmas. Now it appears the storm door is opening again for January. Historically January is the biggest month of winter, but in recent years January has been very disappointing. A good January could unlock the path to an above average winter; something not seen since 2011 and something desperately needed to begin Nevada's climb out of the drought. The [drought monitor comparison tool](#) shows that Nevada's status has improved somewhat from a year ago, however more than 30% of the state remains in the extreme or exceptional drought categories. An above average winter will help fill a portion of this water deficit, but it would take a record breaking water year to solve all drought impacts in 2016 alone. This is unlikely.

## **SNOWPACK**

Compared to the last couple of pathetic winters this year is off to a great start. Valley snowfall in Reno and Elko is ahead of normal. The snowpack in the mountains is above normal ranging from 113% of median in the Truckee Basin to 203% in the Owyhee Basin. [Snowpack comparison graphs](#) reveal that January 1 snow water already tops the maximum amount measured last winter in all areas except the Spring Mountains in Southern Nevada. Many basins have also surpassed the 2014 peak and others are within a couple storms of this mark. Early winter has been especially generous near Elko where basin snowpacks are near 200% of median. A high percent of median on January 1 is exciting, but the real goal for water supply is to reach or surpass the normal peak snow water amount. These peaks typically occur between mid-March and late-April depending on the location. The Upper Humboldt, Clover Valley, Snake and Owyhee basins are already about 70% of the way to their normal peaks with three solid months of winter to go. Comparing January 1 snow water measurements this year to those for the past 35 years using the [interactive map](#), ranks this year in the top two to five at a number of SNOTELs in these basins. In the Ruby Mountains, Green Mountain SNOTEL is already 91% of its normal peak with 13.1 inches of snow water on the ground compared to the median peak amount of 14.4 inches on March 15. Other winters, such as 2013, have also started off strong only to turn dry and end up below normal. There is no guarantee a strong start means a strong finish. Hopefully El Niño wins the fight with the ridge of high pressure that plagued Nevada the past few winters and the snow keeps falling.

## **PRECIPITATION**

Water year to date precipitation is also above normal statewide and gets stronger the further east in Nevada you go. Water year totals since October 1 range from 106-121% of average in the Truckee, Lake Tahoe, Carson and Walker basins to 180% of average in Eastern Nevada. Much of central Nevada has had about 150% of average precipitation since October 1. Each month this water year has been a winner with near average or better amounts. December (or should it be called "De-storm-ber"?) was the strongest with monthly amounts of 150-200% of normal for Lake Tahoe, Upper and Lower Humboldt, Clover Valley, Snake, Owyhee, Northern Great Basin and Eastern Nevada. The [climate outlook](#) for January, February and March issued on December 17<sup>th</sup> by NOAA continues show a pattern typical of El Niño favoring above normal precipitation probabilities for the southwestern United States. This outlook holds for much of western Nevada, however the signal is not as strong for north-eastern Nevada. The

temperature outlook favors warmer than normal conditions which could result in rain and high snow elevation levels, although so far this winter temperatures have been below normal. The relatively cold and dry snow currently on the ground has room to store (absorb and freeze) a certain amount of rain. The February, March and April climate outlook will be released on January 21.

## **SOIL MOISTURE**

Soil moisture has improved substantially from summer lows is above average for all basins.

## **RESERVOIRS**

The only good news in terms of reservoir storage is that there is plenty of room to store water. That could provide water managers flexibility if flooding was to occur. After four years of drought water storage in our region's lakes and reservoirs is minimal. End of December storage amounts rank as some of the lowest on record. Lake Tahoe is 1.39 feet below its natural rim equaling a storage deficit of about 169 thousand acre-feet (KAF). That's just what is needed to get the lake back to the point where it is storing useable water, full is 6 feet higher. In the Truckee Basin, [Stampede Reservoir](#) is storing 12% of its capacity, the lowest since 1969, the winter following the completion of the dam. In the Carson Basin, [Lahontan Reservoir](#) is storing 12 KAF (4% of capacity), the second lowest end of December reading in the 99 years since it was constructed. Only December 31, 1931 was lower with 7.2 KAF. In the Lower Humboldt Basin, Rye Patch Reservoir's storage has been ~5% of capacity since June 2013. The last two years have produced almost no springtime rise in [Rye Patch](#) storage, something not seen since 1958 when the NRCS data collection records begin. Down south, [Lake Mead](#) is also at a historic low.

## **STREAMFLOW FORECASTS**

Streamflow forecasts in the Truckee, Carson and Walker basins range from 85-115% of average for the March – July period. Similar near average forecasts dominate in the Northern Great Basin, as well as, for points along the Humboldt River, Franklin River, Virgin River and for Lake Powell Inflow. Forecasts range from 115-127% of average in Eastern Nevada and for tributaries in the Humboldt Basin (Marys River, Lamoille Creek, NF Humboldt, SF Humboldt, Rock Creek and Martin Creek). The highest forecasts are for Salmon Falls Creek (159%) and the Owyhee River near Gold Creek (175%). Keep in mind forecast skill in January is lower than in later months. This is indicated by the large range in water volumes between the 10% and 90% exceedance forecasts. Forecasts become more accurate as the winter progresses, primarily because a greater portion of the future weather conditions become known; this increase in skill is reflected by a narrowing of the range around the 50% exceedance probability forecast.

## **UPCOMING EVENTS**

### ***Northern Nevada Streamflow, Weather and Reservoir Forecast Meeting***

The public is invited to attend presentations by the NRCS, NWS, USBOR regarding the 2016 streamflow, precipitation and reservoir forecasts for the Truckee, Carson, Walker, and Humboldt rivers.

When: Tuesday, January 19, 2016 2:00-4:00 PM, No RSVP necessary.

Where: Nevada Division of Water Resources; 901 S. Stewart Street Suite 2002, Carson City, NV

***Snow Survey Book Event:*** Truckee Meadows Community College will host Pat Armstrong discussing his book "[The Log of a Snow Survey – Skiing and Working in a Mountain Winter World.](#)"

When: Tuesday, March 8, 2016, time TBD Where: TMCC main campus: 7000 Dandini Blvd., Reno, NV

***Western Snow Conference,*** April 18-21, 2016, Seattle, WA <http://www.westernsnowconference.org>

## SNOW SURVEY PRODUCT HIGHLIGHT

This section highlights products that are linked from the Nevada NRCS Snow Program website: [www.nv.nrcs.usda.gov/snow](http://www.nv.nrcs.usda.gov/snow). The [Monthly Basin Data Reports](#) are the focus this month.

Each basin in this report has a Watershed Snowpack Analysis (right) which summarizes the snowpack percent of median for the main basin followed by its sub-basins. Percentages are based on averaging the first of month SNOTEL measurements with any snow courses that were measured.

| Watershed Snowpack Analysis<br>March 1, 2015 | # of Sites | % Median | Last Year<br>% Median |
|--|------------|----------|-----------------------|
| Eastern Nevada                               | 12         | 41%      | 68%                   |
| Kingston Creek                               | 1          | 50%      | 78%                   |
| Steptoe Valley                               | 5          | 43%      | 56%                   |
| Baker & Lehman Creeks                        | 3          | 43%      | 76%                   |

These summaries give a quick glimpse at snowpack conditions in each basin, but you may be interested in the underlying station data to see if the snowpack has any peculiarities. For example, warmer storms may have only boosted high elevation sites above their medians, while low elevation sites that received rain are below their median value. This kind of site by site data can be found using the Monthly Basin Data Reports and selecting “Nevada” and report type “Snowpack” from this page: <http://www.wcc.nrcs.usda.gov/basin.html>. Below is an example from March 1, 2015. Similar reports are also available for precipitation, reservoir storage and streamflow forecasts.

March 1, 2015

| Kingston Creek                   | Network        | Elevation (ft)        | Depth (in)        | SWE (in)        | Median (in)        | % Median        | Last Year SWE (in)        | Last Year % Median        |
|----------------------------------|----------------|-----------------------|-------------------|-----------------|--------------------|-----------------|---------------------------|---------------------------|
| Big Creek Sum                    | SNOTEL         | 8695                  | High<br>29        | 6.6             | 13.2               | 50%             | 10.3                      | 78%                       |
| Big Creek Mine                   | SC             | 7735                  | Low               |                 |                    |                 |                           |                           |
| <b>Basin Index</b>               |                |                       |                   |                 |                    | <b>50%</b>      |                           | <b>78%</b>                |
| # of sites                       |                |                       |                   |                 |                    |                 | 1                         | 1                         |
| <b>Baker &amp; Lehman Creeks</b> | <b>Network</b> | <b>Elevation (ft)</b> | <b>Depth (in)</b> | <b>SWE (in)</b> | <b>Median (in)</b> | <b>% Median</b> | <b>Last Year SWE (in)</b> | <b>Last Year % Median</b> |
| Wheeler Peak                     | SNOTEL         | 10120                 | High<br>28        | 5.8             |                    |                 | 9.3                       |                           |
| Baker Creek #3                   | SC             | 9250                  | 30                | 5.7             | 13.4               | 43%             | 12.0                      | 90%                       |
| Baker Creek #2                   | SC             | 8950                  | 25                | 5.1             | 10.9               | 47%             | 7.8                       | 72%                       |
| Baker Creek #1                   | SC             | 7950                  | Low<br>10         | 1.8             | 5.0                | 36%             | 2.4                       | 48%                       |
| <b>Basin Index</b>               |                |                       |                   |                 |                    | <b>43%</b>      |                           | <b>76%</b>                |
| # of sites                       |                |                       |                   |                 |                    |                 | 3                         | 3                         |

Snow course not measured this month so all data are empty.

New SNOTEL, not enough years of data to calculate a median. Data are presented but SWE is withheld from basin index

The order of the basins in this report follows the order that the basins are listed in the Water Supply Outlook Report with the main basin listed first followed by its sub-basins then the next main basin. Stations are ranked from high elevation to low elevation within each basin. Newer stations that do not have enough years of data to calculate a meaningful median are withheld from the basin index calculation, however their data are still presented in the table for comparison with other sites. All active snow courses are listed each month, however, each one may not be scheduled for measurement every month. If un-measured the snow course data is left empty. A snow course measurement schedule can be found on the Nevada NRCS Snow Survey Program webpage.

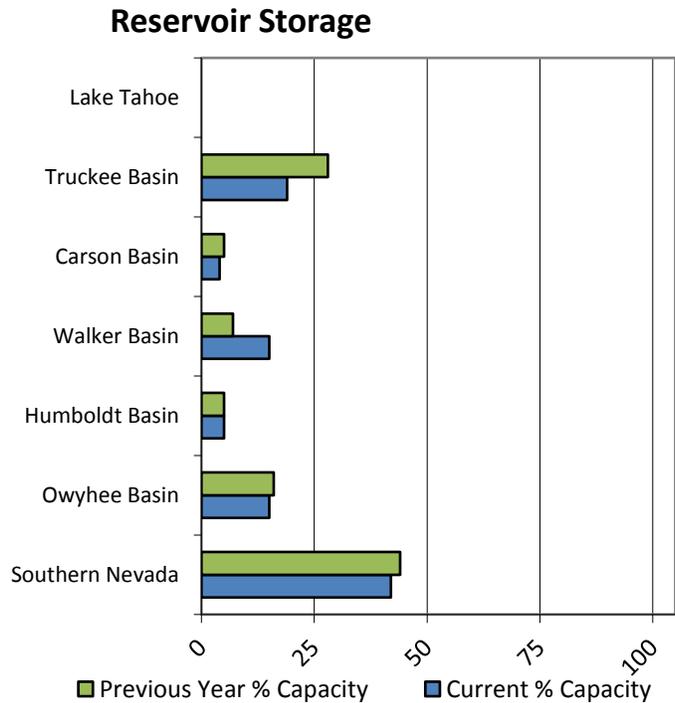
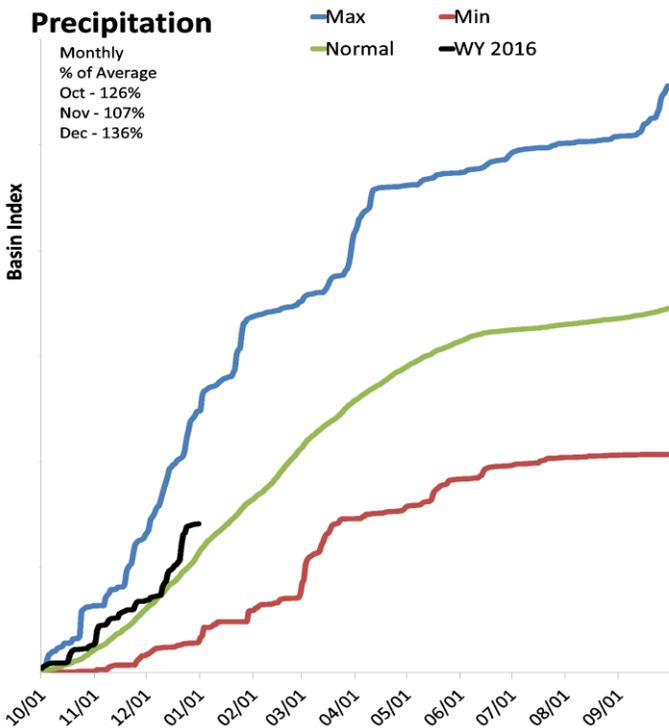
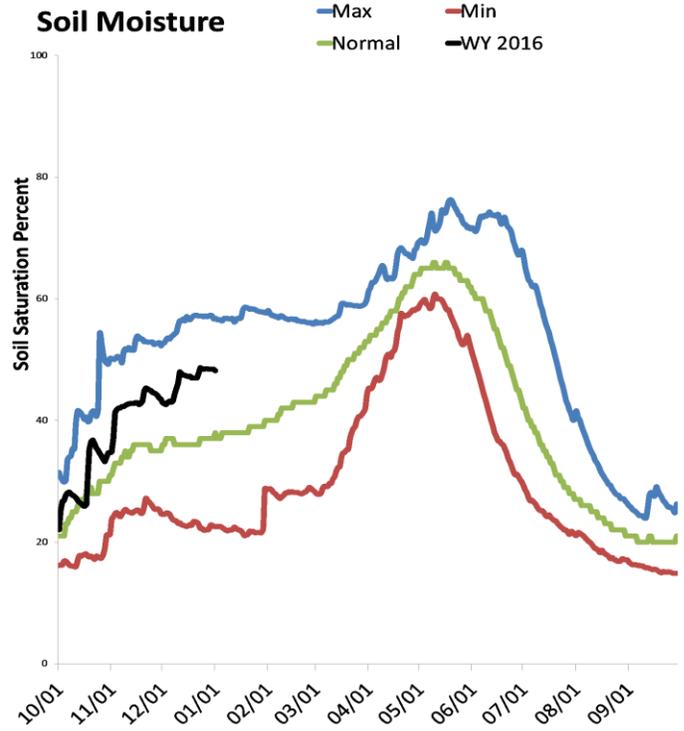
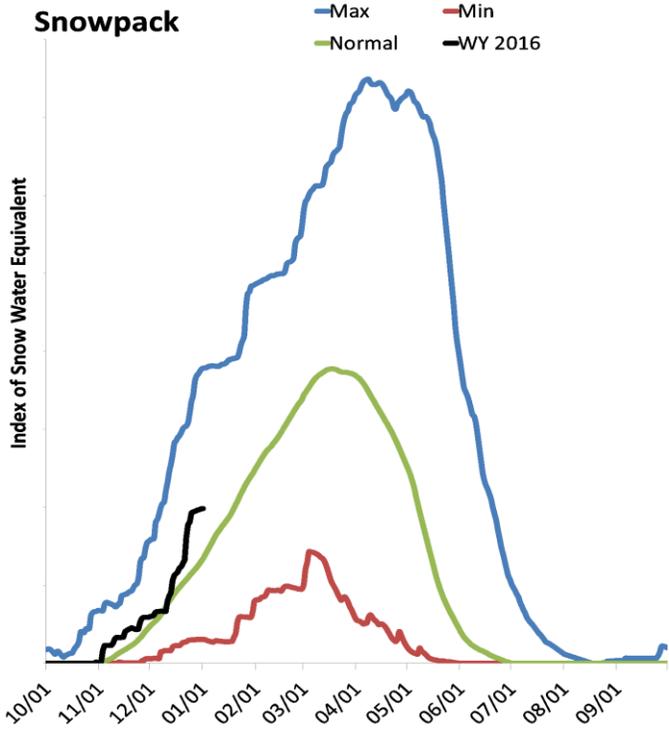
**Basin Group Definitions:** In December 2015 all basin groups were re-evaluated. Over the last decade a number of snow courses were automated to become SNOTEL sites and some snow courses were discontinued. The re-evaluation added new stations and got rid of defunct stations. With the help of the [interactive map's watershed boundaries](#) it was also possible to evaluate which nearby, out-of-basin, sites could be added to a basin to cover an elevation band or geographic area not represented by stations inside the exact watershed boundary. A good example is the Clover Valley – Franklin River Basin which only had one long term SNOTEL, Hole-in-Mountain, to represent the snow on the entire east side of Ruby Mountains and East Humboldt Range. After conducting a statistical analysis which showed a good correlation between Hole-in-Mountain SNOTEL and a number of the west-side Ruby Mountain sites it was decided that adding west-side sites would provide a better representation of the snow in the basin. The changes to the basin groups were also made to the [SNOTEL Update Reports](#) and the [Snow](#) and [Precipitation](#) percent of normal maps.

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# State of Nevada & Eastern Sierra

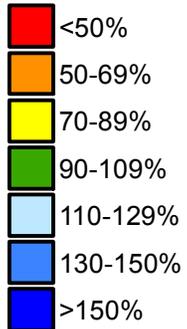
1/1/2016

The snowpack across Northern Nevada and the Eastern Sierra (Truckee, Tahoe, Carson and Walker basins) is much above normal at 154% of median, compared to 80% last year. Precipitation in December was much above average at 142%, which brings the seasonal accumulation (Oct-Dec) to 127% of average. Soil moisture is 48% compared to 54% last year. Reservoir storage ranges from 0% of useable capacity in Lake Tahoe to 42% of capacity in Southern Nevada.

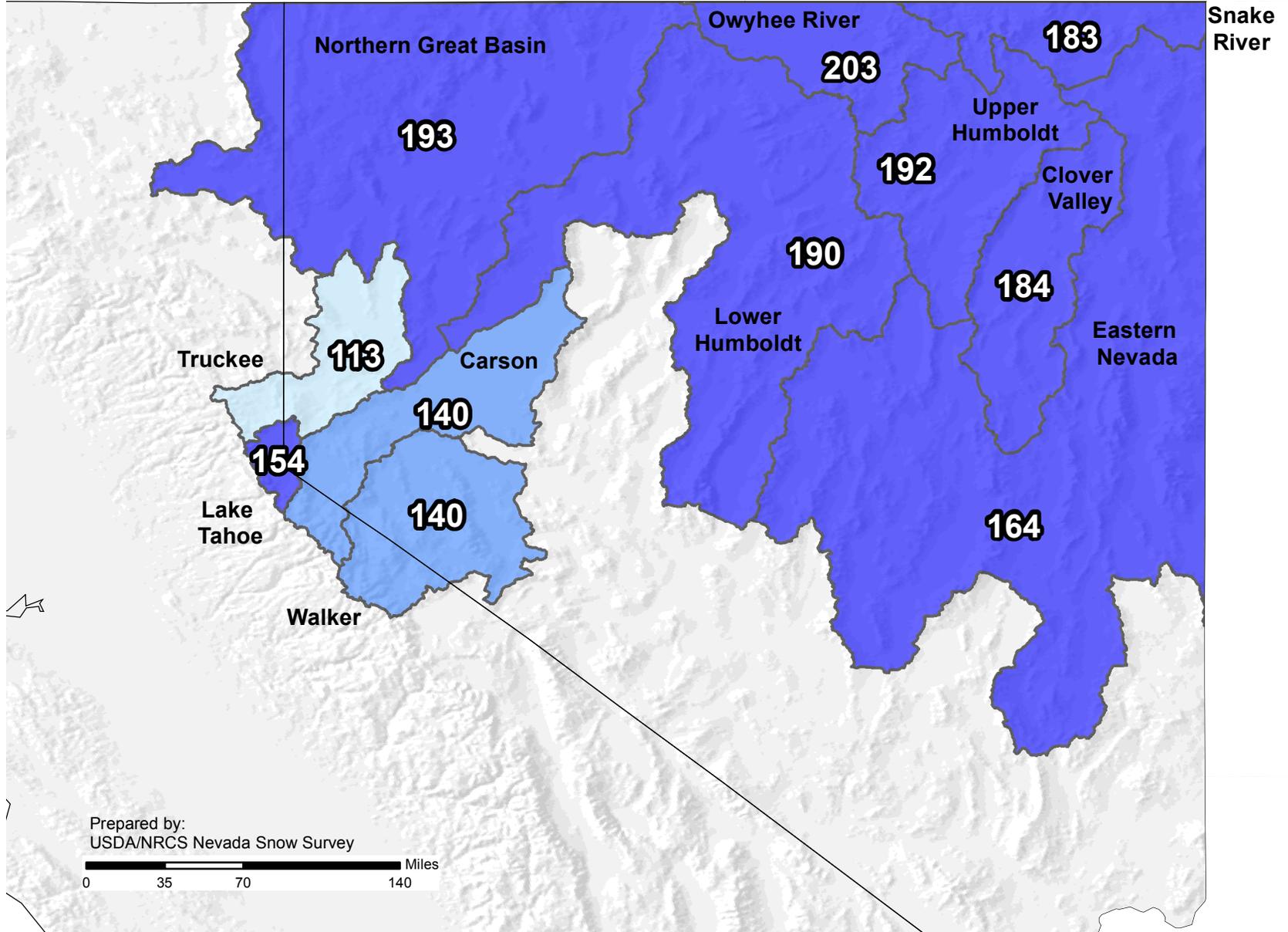


# Nevada & Eastern Sierra Percent of Median Snowpack January 1, 2016

1st of Month Snow  
Water Equivalent  
Basin-wide Percent  
of 1981-2010 Median



*Provisional data  
subject to revision*



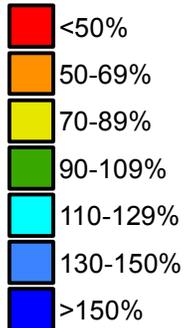
Prepared by:  
USDA/NRCS Nevada Snow Survey



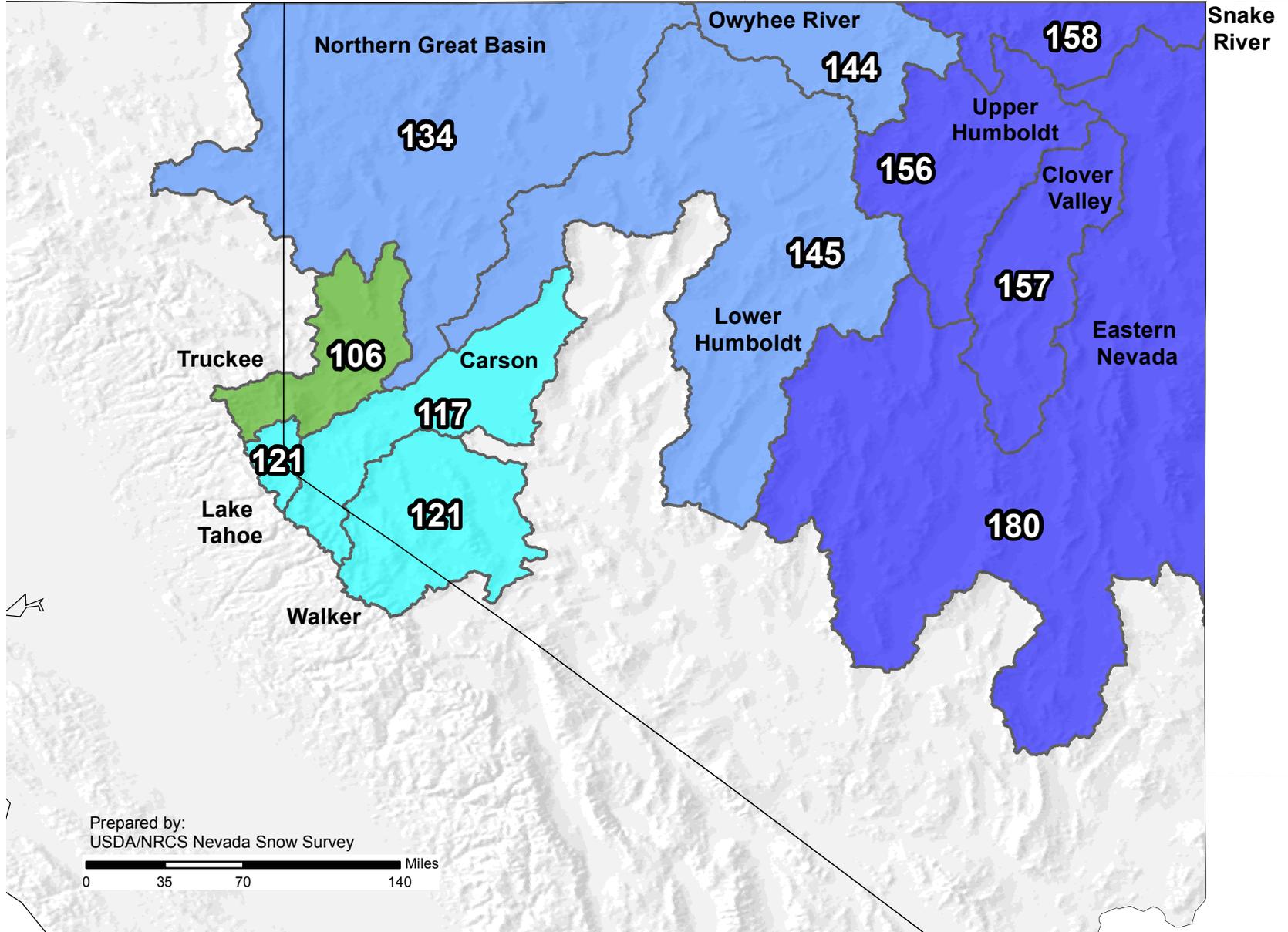
Map data based on the first of month snow water equivalent found at selected SNOTEL and snow course sites in or near the basin compared to the median value for those sites. SNOTEL data based on the first reading of the day (typically midnight). Snow course data based on measurements taken within the last 5 days of preceding month. A table based, station-by-station, report of the underlying data can be found by selecting "Nevada" and report type "Snowpack" for the date listed above on the following webpage: <http://www.wcc.nrcs.usda.gov/basin.html>.

# Nevada & Eastern Sierra Water Year to Date Precipitation January 1, 2016

Basin-wide  
Water Year  
Precipitation to date  
as a Percent of  
the 1981-2010 Average



*Provisional data  
subject to revision*



Prepared by:  
USDA/NRCS Nevada Snow Survey

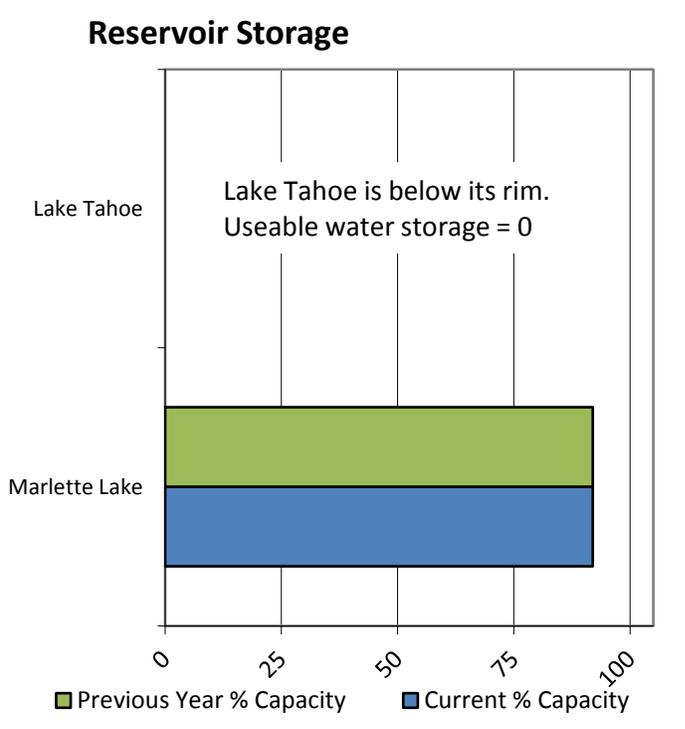
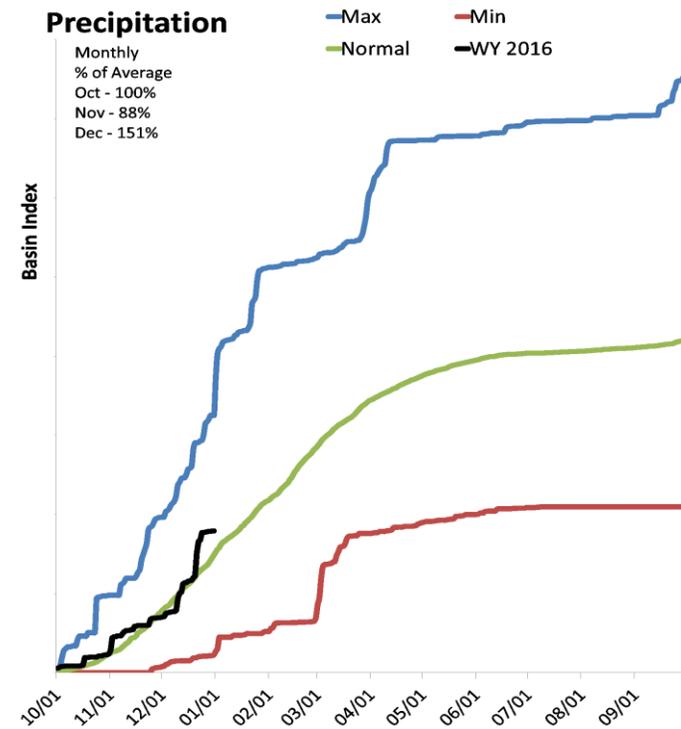
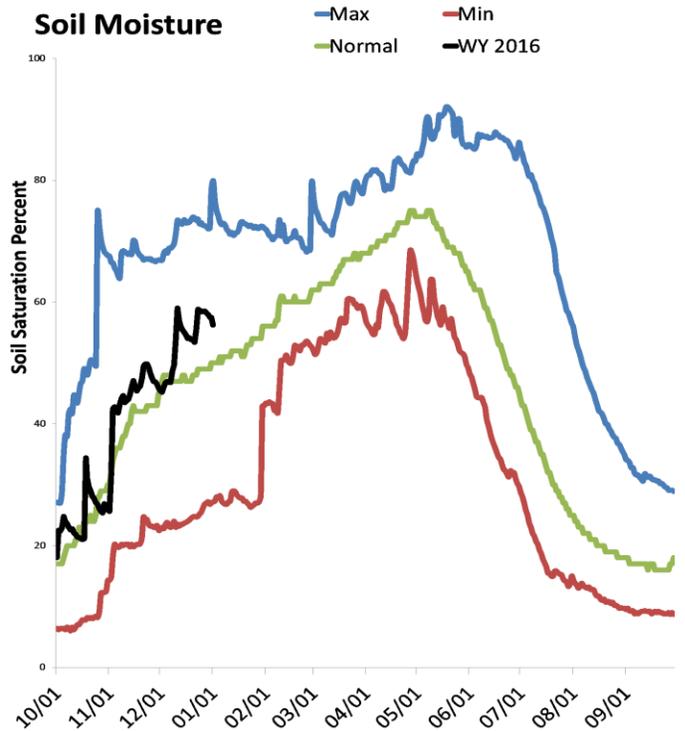
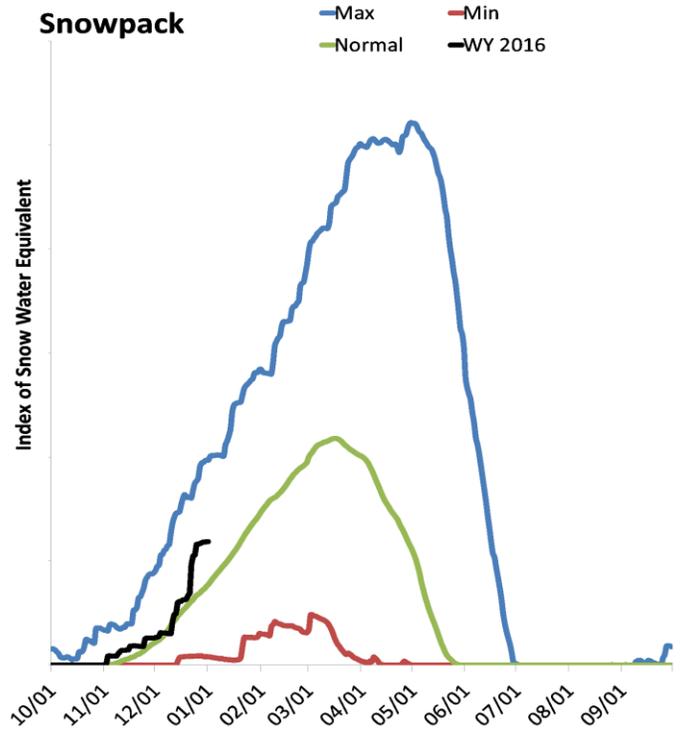


Map data based water year to date precipitation for the first of the month at selected SNOTEL sites in or near the basin compared to the average value for those sites. SNOTEL data based on the first reading of the day (typically midnight). A table based, station-by-station, report of the underlying data can be found by selecting "Nevada" and report type "Precipitation" for the date listed above on the following webpage: <http://www.wcc.nrcs.usda.gov/basin.html>.

# Lake Tahoe Basin

1/1/2016

Snowpack in the Lake Tahoe Basin is much above normal at 154% of median, compared to 45% last year. Precipitation in December was much above average at 151%, which brings the seasonal accumulation (Oct-Dec) to 121% of average. Soil moisture is 57% compared to 57% last year. Lake Tahoe's water elevation is 6221.61 ft, which is 1.39 ft below the lake's natural rim and equals a storage deficit of approximately 169 thousand acre-feet. Last year the elevation was 6222.51 ft which equaled a storage deficit of approximately 59 thousand acre-feet. Lake Tahoe is forecast to rise 1.9 feet from October 1 to its highest elevation.



### Lake Tahoe Basin Streamflow Forecasts - January 1, 2016

| Lake Tahoe Basin                                   | Forecast Period | Forecast Exceedance Probabilities for Risk Assessment<br>Chance that actual volume will exceed forecast |           |           |       |           |           | 30yr Avg (KAF) |
|--|-----------------|---|-----------|-----------|-------|-----------|-----------|----------------|
|  |                 | 90% (KAF)   | 70% (KAF) | 50% (KAF) | % Avg | 30% (KAF) | 10% (KAF) |                |
| Marlette Lake Inflow (acre-feet) <sup>2</sup>      | MAR-JUL         | -293  | 425       | 910       | 75%   | 1400      | 2110      | 1213           |
|  | APR-JUL         | -320  | 315       | 745       | 82%   | 1180      | 1810      | 911            |
| Lake Tahoe Rise - Gates Closed (feet) <sup>1</sup> | OCT-HIGH        | 0.179   | 1.088     | 1.9       | 85%   | 2.7       | 4.5       | 2.24           |
|  | MAR-HIGH        | 0.36  | 1.15      | 1.5       | 87%   | 1.86      | 2.6       | 1.73           |
|  | APR-HIGH        | 0.3   | 0.9       | 1.2       | 92%   | 1.4       | 2.5       | 1.31           |

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

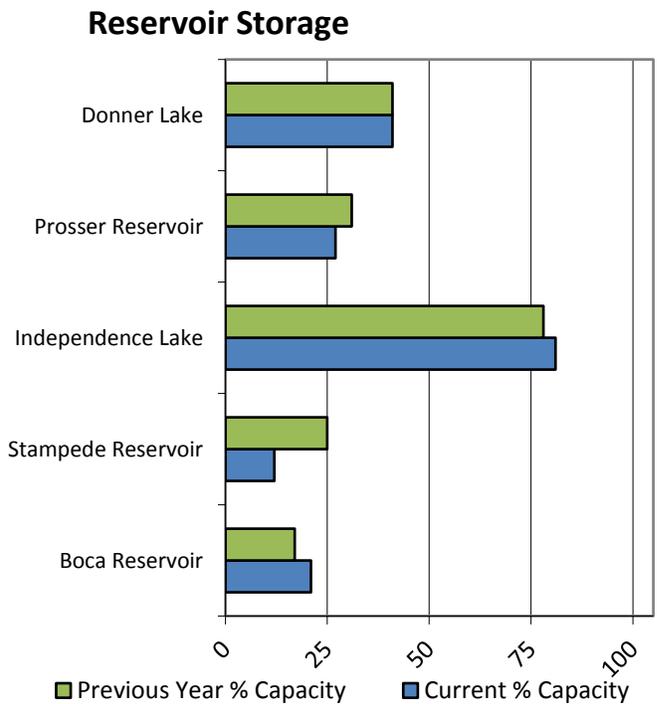
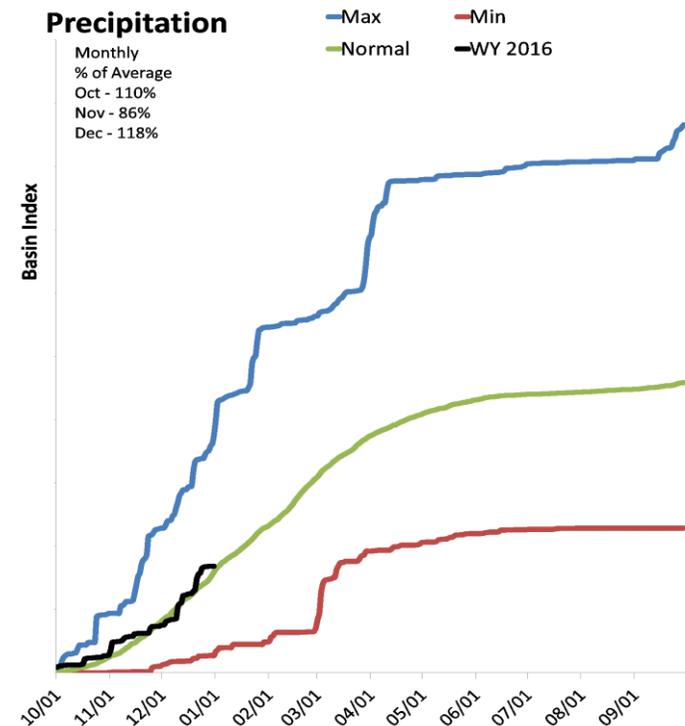
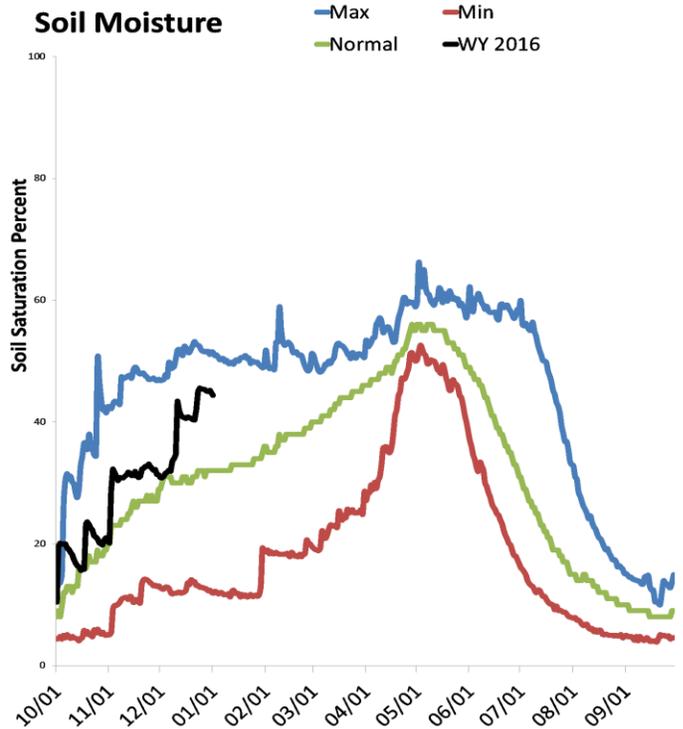
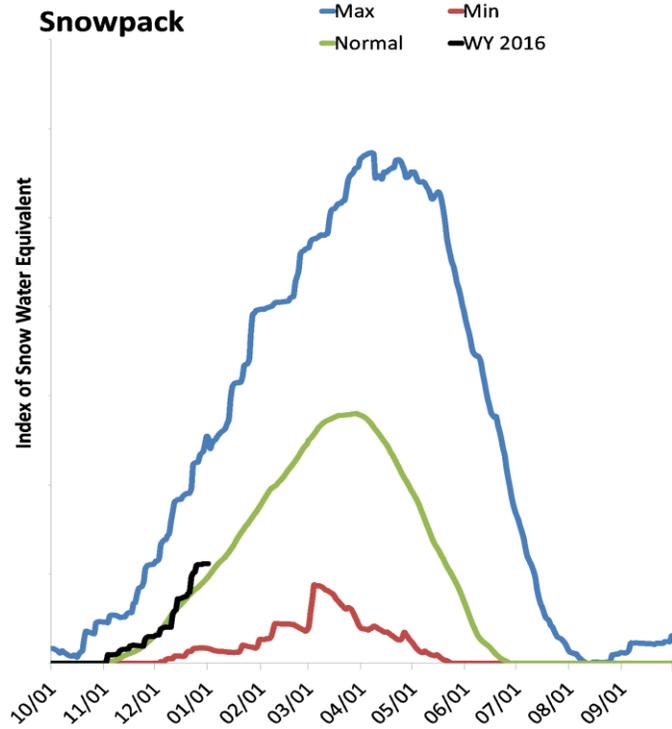
| Reservoir Storage<br>End of December, 2015 | Current (KAF) | Last Year (KAF) | Average (KAF) | Capacity (KAF) |
|--|---------------|-----------------|---------------|----------------|
| Lake Tahoe                                 | 0.0           | 0.0             | 262.1         | 744.6          |
| Marlette Lk nr Carson City, NV             | 10.9          | 10.8            | 11.7          | 11.8           |
| Basin-wide Total                           | 10.9          | 10.8            | 273.8         | 756.4          |
| # of reservoirs                            | 2             | 2               | 2             | 2              |

| Watershed Snowpack Analysis<br>January 1, 2016 | # of Sites | % Median | Last Year % Median |
|--|------------|----------|--------------------|
| Lake Tahoe Basin                               | 8          | 154%     | 45%                |

# Truckee River Basin

1/1/2016

Snowpack in the Truckee River Basin is above normal at 113% of median, compared to 64% last year. Precipitation in December was above average at 118%, which brings the seasonal accumulation (Oct-Dec) to 106% of average. Soil moisture is 45% compared to 57% last year. Combined reservoir storage is 19% of capacity, compared to 28% last year. Forecast streamflow volumes range from 85% to 107% of average.



## Truckee River Basin Streamflow Forecasts - January 1, 2016

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

| Truckee River Basin                               | Forecast Period | 90% (KAF) | 70% (KAF) | 50% (KAF) | % Avg | 30% (KAF) | 10% (KAF) | 30yr Avg (KAF) |
|---|-----------------|-----------|-----------|-----------|-------|-----------|-----------|----------------|
| Sagehen Ck nr Truckee                             | MAR-JUL         | 2.7       | 4.1       | 5.5       | 86%   | 7.4       | 11.3      | 6.4            |
|   | APR-JUL         | 2.2       | 3.5       | 4.7       | 84%   | 6.4       | 10        | 5.6            |
| L Truckee R ab Boca Reservoir <sup>2</sup>        | MAR-JUL         | 36        | 78        | 106       | 107%  | 135       | 176       | 99             |
|   | APR-JUL         | 50        | 65        | 85        | 101%  | 105       | 150       | 84             |
| Truckee R at Farad <sup>2</sup>                   | MAR-JUL         | 88        | 215       | 300       | 98%   | 385       | 510       | 307            |
|   | APR-JUL         | 140       | 170       | 245       | 96%   | 320       | 420       | 255            |
| Galena Ck at Galena Ck State Pk                   | MAR-JUL         | 2         | 3.5       | 4.5       | 93%   | 5.5       | 7         | 4.85           |
|   | APR-JUL         | 1.57      | 3         | 4         | 92%   | 5         | 6.4       | 4.37           |
| Steamboat Ck at Steamboat                         | APR-JUL         | 0.56      | 3.1       | 6.7       | 85%   | 12.4      | 26        | 7.9            |
| Pyramid Lake Elevation Change (feet) <sup>1</sup> | LOW-HIGH        | -3.3      | 0.102     | 1.5       | 88%   | 3         | 6.3       | 1.7            |

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

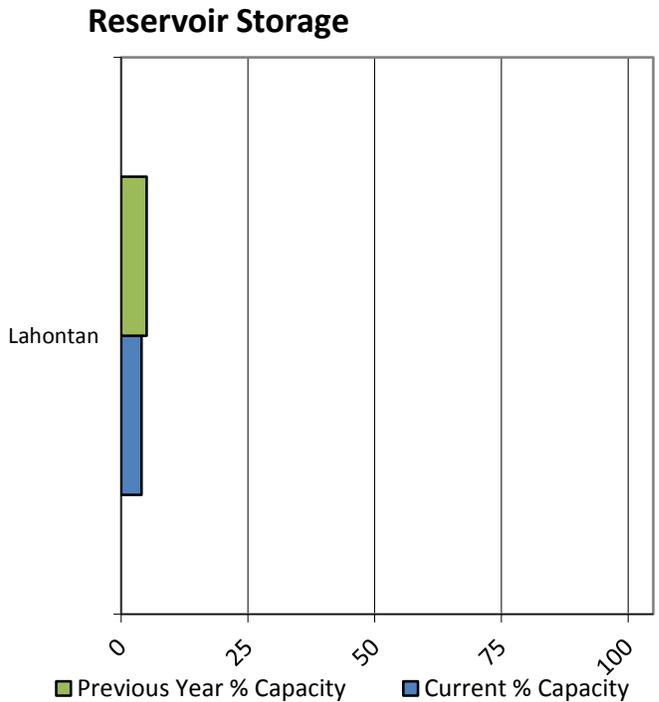
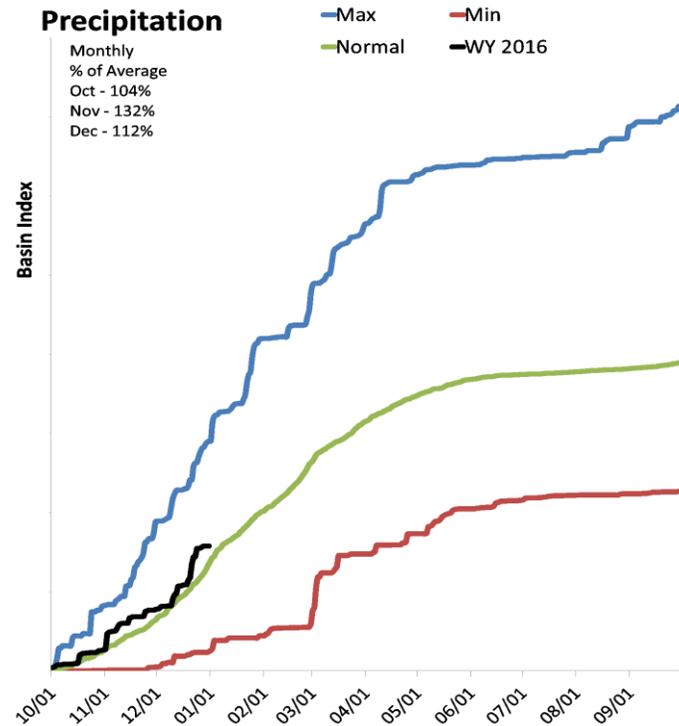
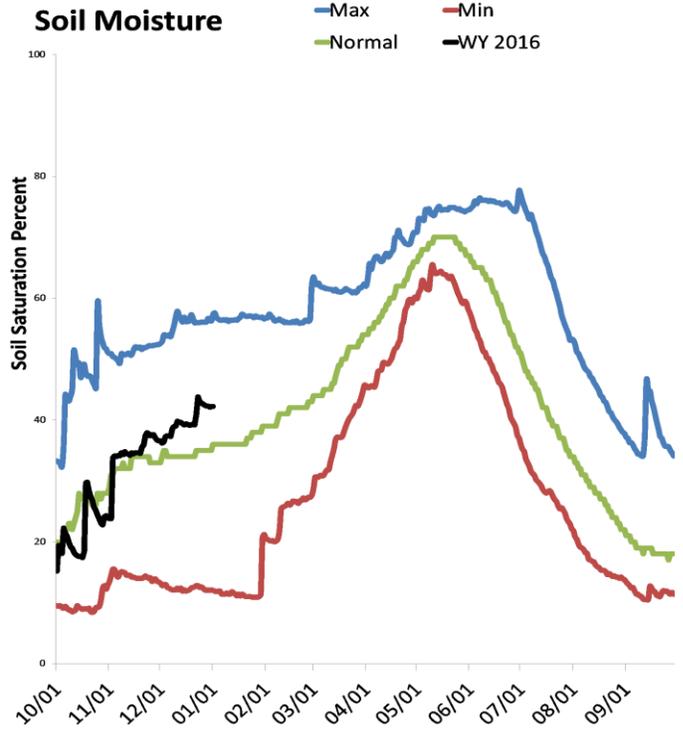
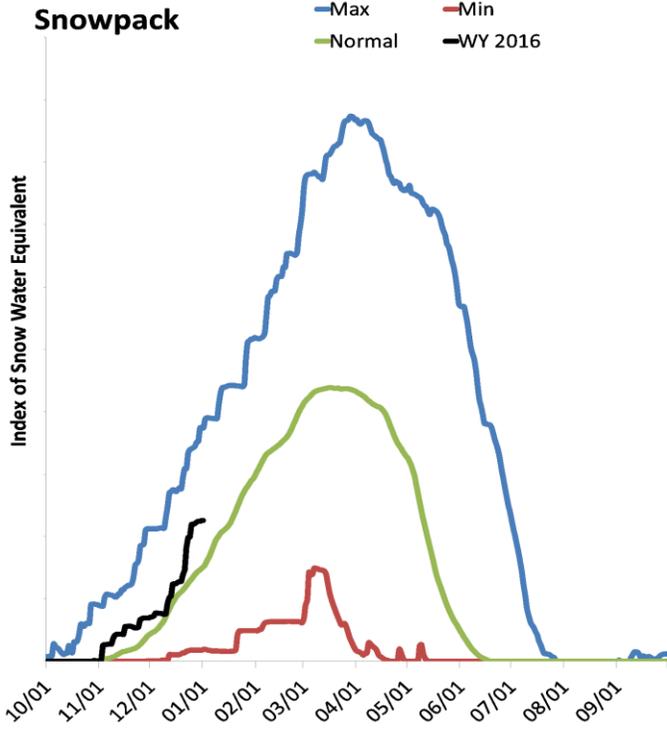
| Reservoir Storage<br>End of December, 2015 | Current (KAF) | Last Year (KAF) | Average (KAF) | Capacity (KAF) |
|--|---------------|-----------------|---------------|----------------|
| Boca Reservoir                             | 8.6           | 6.8             | 14.7          | 40.9           |
| Donner Lake                                | 3.9           | 3.9             | 3.7           | 9.5            |
| Independence Lake                          | 14.0          | 13.5            | 13.4          | 17.3           |
| Prosser Reservoir                          | 7.8           | 8.9             | 9.7           | 28.6           |
| Stampede Reservoir                         | 27.2          | 57.2            | 144.6         | 226.5          |
| Basin-wide Total                           | 61.5          | 90.2            | 186.1         | 322.8          |
| # of reservoirs                            | 5             | 5               | 5             | 5              |

| Watershed Snowpack Analysis<br>January 1, 2016 | # of Sites | % Median | Last Year % Median |
|--|------------|----------|--------------------|
| Truckee River Basin                            | 9          | 113%     | 64%                |
| Little Truckee River                           | 3          | 116%     | 64%                |
| Sagehen & Independence Creeks                  | 3          | 116%     | 64%                |
| Galena Creek                                   | 1          | 115%     | 62%                |
| Steamboat Creek                                | 1          | 115%     | 62%                |
| Truckee River above Pyramid Lake               | 17         | 129%     | 57%                |

# Carson River Basin

1/1/2016

Snowpack in the Carson River Basin is much above normal at 140% of median, compared to 61% last year. Precipitation in December was above average at 112%, which brings the seasonal accumulation (Oct-Dec) to 117% of average. Soil moisture is 42% compared to 57% last year. Storage in Lahontan Reservoir is 4% of capacity, compared to 5% last year. Forecast streamflow volumes range from 95% to 116% of average.



### Carson River Basin Streamflow Forecasts - January 1, 2016

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

| Carson River Basin            | Forecast Period | 90% (KAF) | 70% (KAF) | 50% (KAF) | % Avg | 30% (KAF) | 10% (KAF) | 30yr Avg (KAF) |
|-------------------------------|-----------------|-----------|-----------|-----------|-------|-----------|-----------|----------------|
| EF Carson R nr Gardnerville   | MAR-JUL         | 66        | 146       | 200       | 98%   | 255       | 335       | 205            |
|                               | APR-JUL         | 125       | 152       | 170       | 91%   | 188       | 215       | 186            |
|                               | 200 cfs         | 16 Jun    | 07 Jul    | 21 Jul    |       | 04 Aug    | 25 Aug    | 01 Jul         |
|                               | 500 cfs         | 27 May    | 15 Jun    | 28 Jun    |       | 11 Jul    | 30 Jul    | 25 Jul         |
| WF Carson R nr Woodfords      | MAR-JUL         | 18.6      | 44        | 62        | 105%  | 80        | 105       | 59             |
|                               | APR-JUL         | 13        | 37        | 54        | 100%  | 71        | 95        | 54             |
| Carson R nr Carson City       | MAR-JUL         | 18.6      | 133       | 210       | 100%  | 285       | 400       | 210            |
|                               | APR-JUL         | 12.5      | 109       | 175       | 98%   | 240       | 335       | 179            |
| King Canyon Ck nr Carson City | MAR-JUL         | 0.04      | 0.24      | 0.44      | 116%  | 0.64      | 0.93      | 0.38           |
|                               | APR-JUL         | 0.02      | 0.24      | 0.41      | 108%  | 0.58      | 0.84      | 0.38           |
| Ash Canyon Ck nr Carson City  | MAR-JUL         | 0.62      | 1.14      | 1.5       | 106%  | 1.86      | 2.4       | 1.41           |
|                               | APR-JUL         | 0.43      | 0.89      | 1.2       | 107%  | 1.51      | 1.97      | 1.12           |
| Carson R at Ft Churchill      | MAR-JUL         | 53        | 121       | 190       | 95%   | 280       | 465       | 200            |
|                               | APR-JUL         | 60        | 98        | 155       | 91%   | 200       | 280       | 171            |

- 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

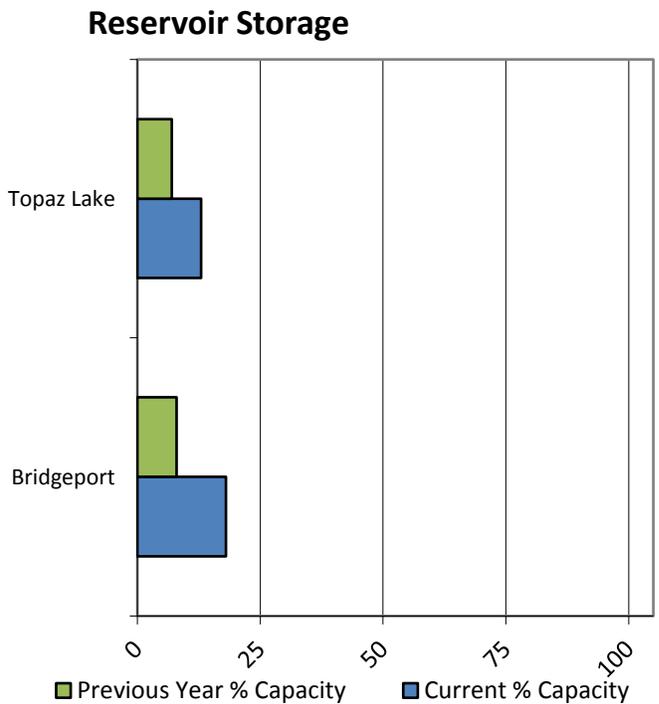
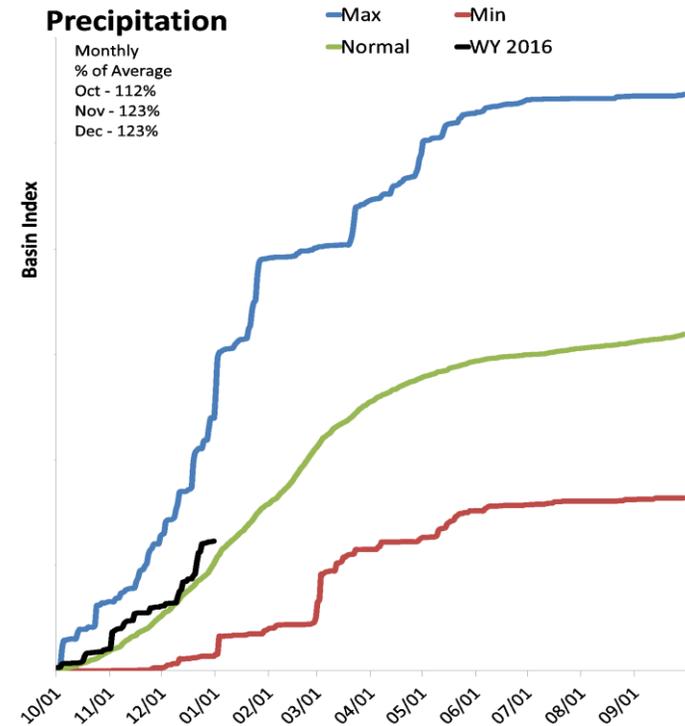
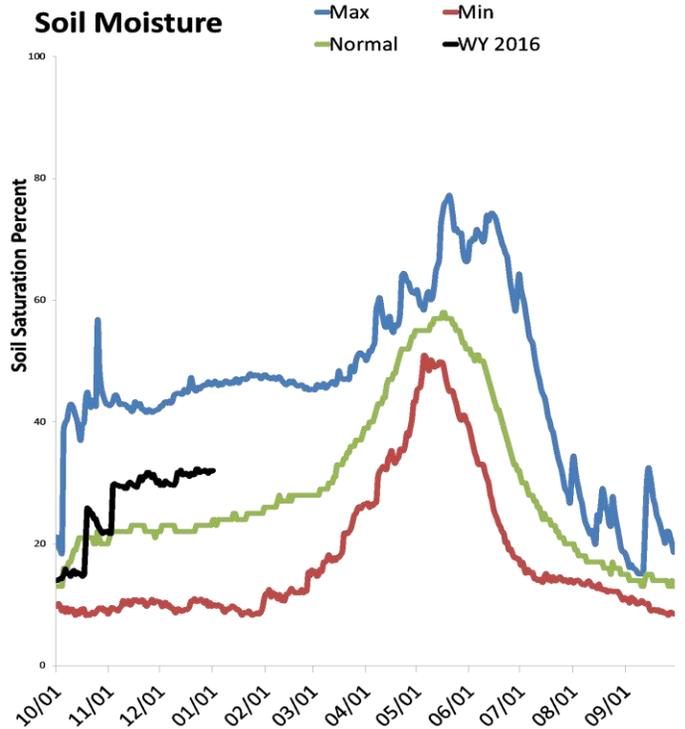
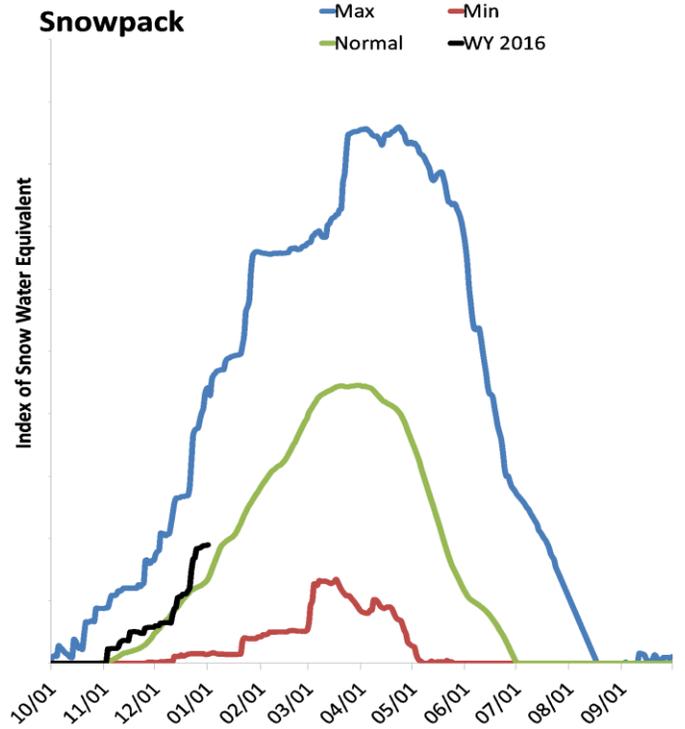
| Reservoir Storage<br>End of December, 2015 | Current (KAF) | Last Year (KAF) | Average (KAF) | Capacity (KAF) |
|--|---------------|-----------------|---------------|----------------|
| Lahontan Reservoir, NV                     | 12.0          | 14.6            | 123.3         | 295.1          |
| Basin-wide Total                           | 12.0          | 14.6            | 123.3         | 295.1          |
| # of reservoirs                            | 1             | 1               | 1             | 1              |

| Watershed Snowpack Analysis<br>January 1, 2016 | # of Sites | % Median | Last Year % Median |
|--|------------|----------|--------------------|
| Carson River Basin                             | 10         | 140%     | 61%                |
| East Fork Carson River                         | 6          | 146%     | 59%                |
| West Fork Carson River                         | 7          | 145%     | 63%                |

# Walker River Basin

1/1/2016

Snowpack in the Walker River Basin is much above normal at 140% of median, compared to 67% last year. Precipitation in December was above average at 123%, which brings the seasonal accumulation (Oct-Dec) to 121% of average. Soil moisture is 32% compared to 57% last year. Combined reservoir storage is 15% of capacity, compared to 7% last year. Forecast streamflow volumes range from 105% to 112% of average.



## Walker River Basin Streamflow Forecasts - January 1, 2016

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

| Walker River Basin                               | Forecast Period | 90% (KAF) | 70% (KAF) | 50% (KAF) | % Avg | 30% (KAF) | 10% (KAF) | 30yr Avg (KAF) |
|--|-----------------|-----------|-----------|-----------|-------|-----------|-----------|----------------|
| E Walker R nr Bridgeport <sup>2</sup>            | MAR-AUG         | 26        | 61        | 85        | 112%  | 109       | 144       | 76             |
|  | APR-AUG         | 19.3      | 50        | 71        | 106%  | 92        | 123       | 67             |
| W Walker R bl L Walker nr Coalville              | MAR-JUL         | 71        | 135       | 178       | 105%  | 220       | 285       | 170            |
|  | APR-JUL         | 66        | 128       | 170       | 105%  | 210       | 275       | 162            |
| W Walker R nr Coalville                          | MAR-JUL         | 77        | 140       | 183       | 106%  | 225       | 290       | 172            |
|  | APR-JUL         | 70        | 132       | 174       | 107%  | 215       | 280       | 163            |
| Walker Lake Elevation Change (feet) <sup>1</sup> | LOW-HIGH        | -3.1      | -0.15     | 1.2       | 85%   | 2.5       | 5.5       | 1.41           |

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

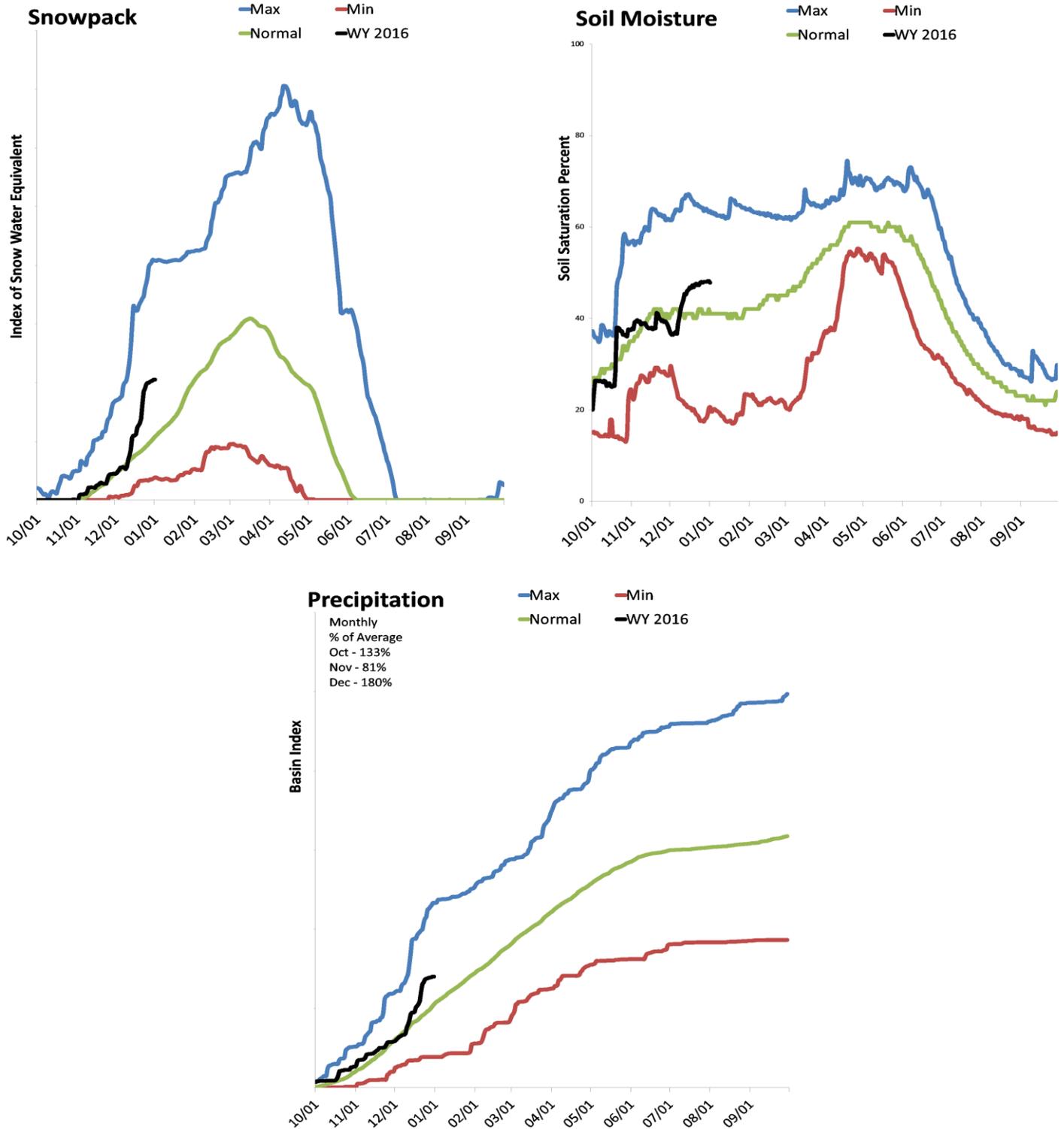
| Reservoir Storage<br>End of December, 2015 | Current (KAF) | Last Year (KAF) | Average (KAF) | Capacity (KAF) |
|--|---------------|-----------------|---------------|----------------|
| Bridgeport Reservoir                       | 7.8           | 3.4             | 17.3          | 42.5           |
| Topaz Lk nr Topaz, CA                      | 7.9           | 4.0             | 18.9          | 59.4           |
| Basin-wide Total                           | 15.6          | 7.4             | 36.2          | 101.9          |
| # of reservoirs                            | 2             | 2               | 2             | 2              |

| Watershed Snowpack Analysis<br>January 1, 2016 | # of Sites | % Median | Last Year % Median |
|--|------------|----------|--------------------|
| Walker River Basin                             | 7          | 140%     | 67%                |
| East Walker River above Bridgeport             | 2          | 147%     | 41%                |
| West Walker River above Coleville              | 5          | 136%     | 72%                |

# Northern Great Basin

1/1/2016

Snowpack in the Northern Great Basin is much above normal at 193% of median, compared to 89% last year. Precipitation in December was much above average at 179%, which brings the seasonal accumulation (Oct-Dec) to 134% of average. Soil moisture is 45% compared to 28% last year. Forecast streamflow volumes range from 83% to 98% of average.



## Northern Great Basin Streamflow Forecasts - January 1, 2016

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

| Northern Great Basin       | Forecast Period | 90% (KAF) | 70% (KAF) | 50% (KAF) | % Avg | 30% (KAF) | 10% (KAF) | 30yr Avg (KAF) |
|----------------------------|-----------------|-----------|-----------|-----------|-------|-----------|-----------|----------------|
| Davis Ck (acre-feet)       | APR-JUL         | 2600      | 4300      | 6000      | 83%   | 8400      | 13800     | 7233           |
|                            | APR-SEP         | 3100      | 4900      | 6700      | 84%   | 9200      | 14700     | 7991           |
| Bidwell Ck nr Fort Bidwell | APR-JUL         | 6.9       | 9.8       | 11.8      | 98%   | 13.8      | 16.7      | 12             |
| Eagle Ck nr Eagleville     | APR-JUL         | 0.22      | 2.4       | 4.2       | 98%   | 6         | 8.5       | 4.3            |
| McDermitt Ck nr McDermitt  | MAR-JUN         | 1.55      | 10.9      | 17.2      | 98%   | 24        | 33        | 17.5           |
|                            | APR-JUL         | 1.77      | 8.6       | 13.3      | 95%   | 18        | 25        | 14             |

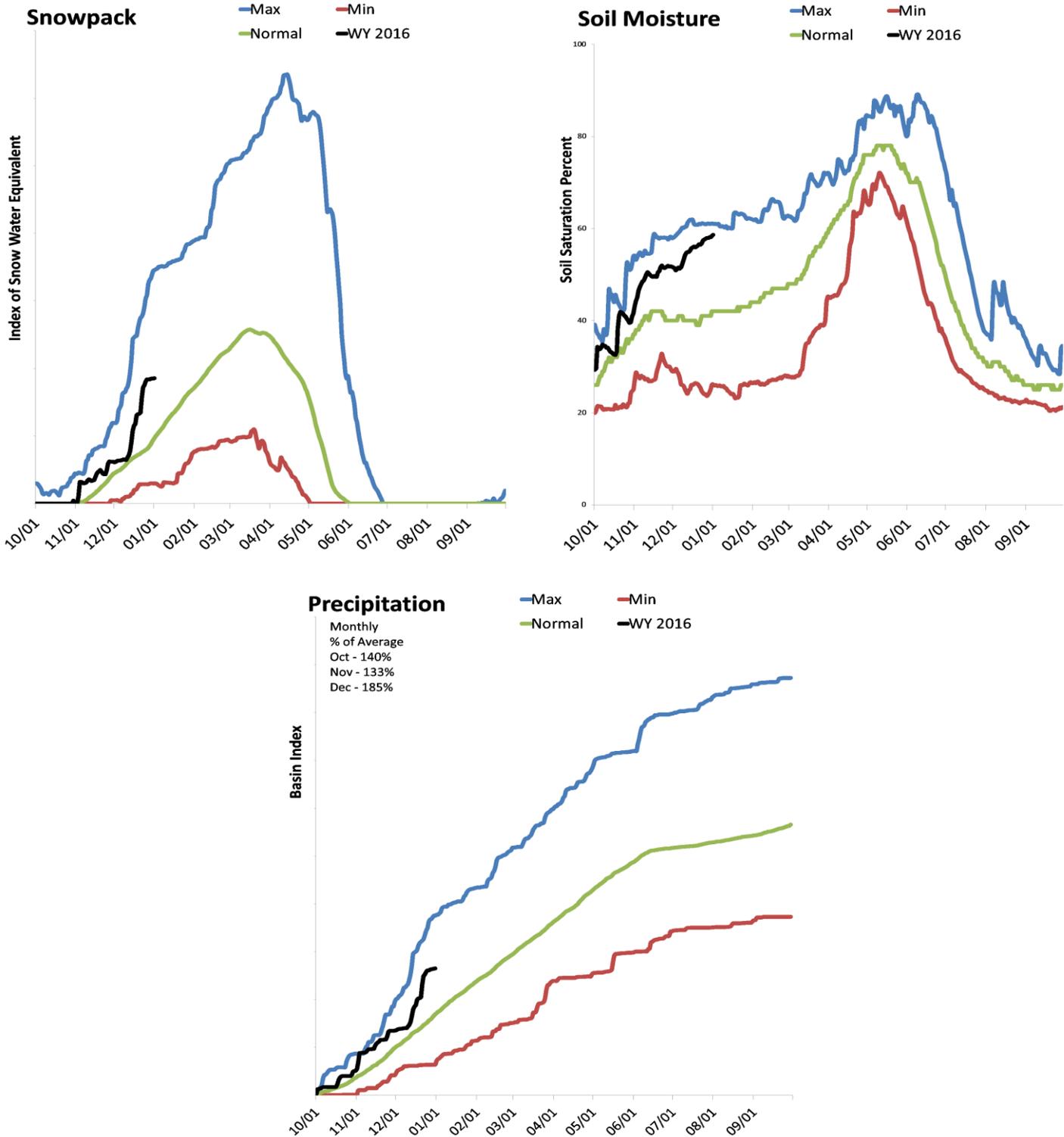
- 1) 90% and 10% exceedance probabilities are actually 95% and 5%
- 2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
- 3) Median value used in place of average

| Watershed Snowpack Analysis<br>January 1, 2016 | # of Sites | % Median | Last Year<br>% Median |
|--|------------|----------|-----------------------|
| Northern Great Basin                           | 7          | 193%     | 89%                   |
| Surprise Valley - Warner Mtns                  | 2          | 189%     | 99%                   |
| McDermitt Creek                                | 1          | 219%     | 88%                   |
| Quinn River                                    | 4          | 192%     | 77%                   |

# Upper Humboldt River Basin

1/1/2016

Snowpack in the Upper Humboldt River Basin above Palisade is much above normal at 192% of median, compared to 125% last year. Precipitation in December was much above average at 185%, which brings the seasonal accumulation (Oct-Dec) to 156% of average. Soil moisture is 58% compared to 28% last year. Forecast streamflow volumes range from 111% to 127% of average.



## Upper Humboldt River Basin Streamflow Forecasts - January 1, 2016

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

| Upper Humboldt River Basin   | Forecast Period | 90% (KAF) | 70% (KAF) | 50% (KAF) | % Avg | 30% (KAF) | 10% (KAF) | 30yr Avg (KAF) |
|------------------------------|-----------------|-----------|-----------|-----------|-------|-----------|-----------|----------------|
| Marys R nr Deeth             | MAR-JUL         | 29        | 43        | 52        | 127%  | 61        | 75        | 41             |
|                              | APR-JUL         | 22        | 36        | 45        | 125%  | 54        | 68        | 36             |
| Lamoille Ck nr Lamoille      | MAR-JUL         | 21        | 30        | 36        | 120%  | 43        | 52        | 30             |
|                              | APR-JUL         | 19.8      | 29        | 35        | 121%  | 41        | 50        | 29             |
| NF Humboldt R at Devils Gate | MAR-JUL         | 25        | 41        | 52        | 118%  | 63        | 79        | 44             |
|                              | APR-JUL         | 11.2      | 28        | 39        | 115%  | 50        | 67        | 34             |
| Humboldt R nr Elko           | MAR-JUL         | 100       | 163       | 205       | 113%  | 247       | 310       | 182            |
|                              | APR-JUL         | 81        | 140       | 180       | 117%  | 220       | 279       | 154            |
| SF Humboldt R at Dixie       | MAR-JUL         | 30        | 63        | 86        | 119%  | 109       | 142       | 72             |
|                              | APR-JUL         | 30        | 60        | 80        | 121%  | 100       | 130       | 66             |
| Humboldt R nr Carlin         | MAR-JUL         | 210       | 270       | 310       | 113%  | 350       | 410       | 274            |
|                              | APR-JUL         | 161       | 220       | 260       | 109%  | 300       | 360       | 238            |
| Humboldt R at Palisade       | MAR-JUL         | 199       | 260       | 300       | 111%  | 340       | 400       | 270            |
|                              | APR-JUL         | 145       | 210       | 250       | 111%  | 290       | 355       | 225            |

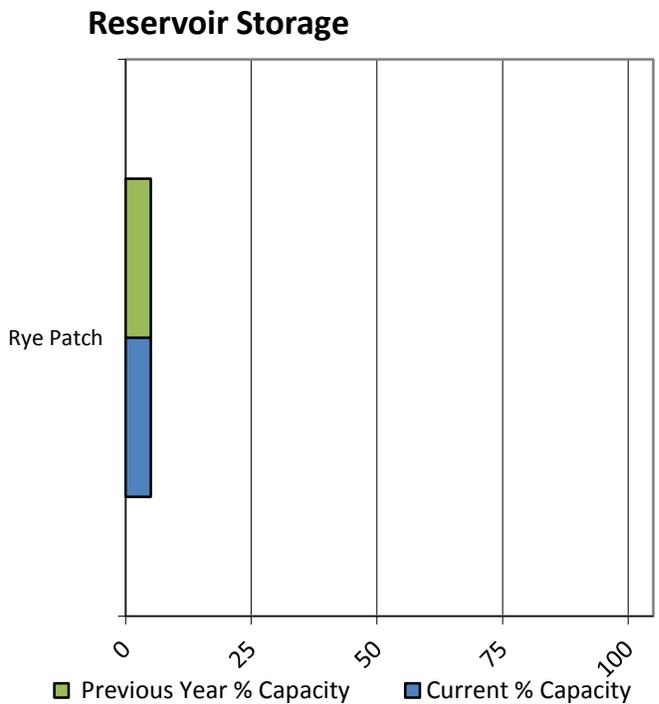
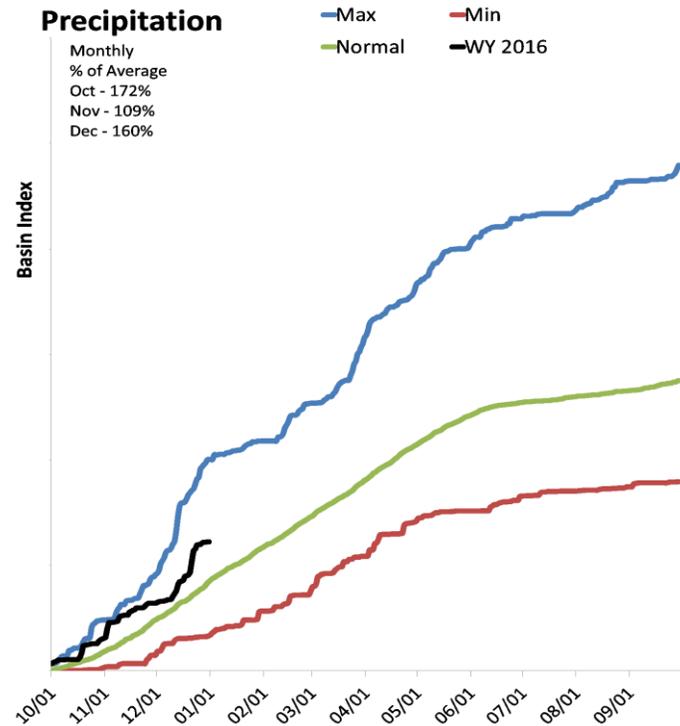
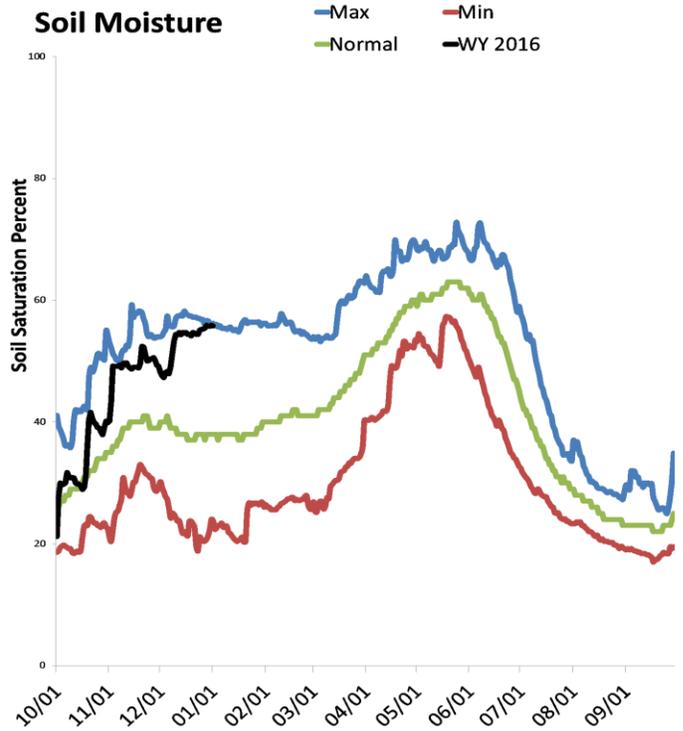
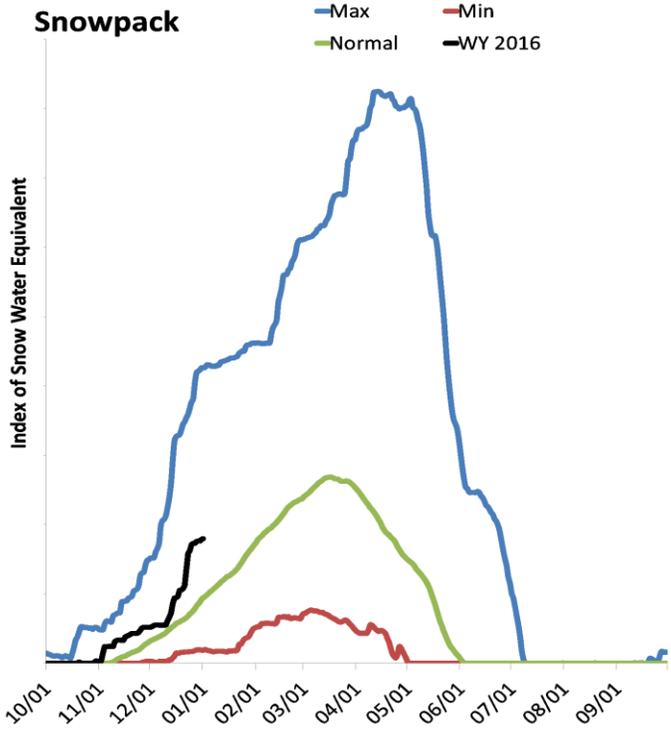
- 1) 90% and 10% exceedance probabilities are actually 95% and 5%
- 2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
- 3) Median value used in place of average

| Watershed Snowpack Analysis<br>January 1, 2016 | # of Sites | % Median | Last Year<br>% Median |
|--|------------|----------|-----------------------|
| Upper Humboldt River Basin                     | 9          | 192%     | 125%                  |
| Mary's River                                   | 3          | 172%     | 130%                  |
| Lamoille Creek                                 | 1          | 159%     | 96%                   |
| North Fork Humboldt River                      | 2          | 216%     | 123%                  |
| South Fork Humboldt River                      | 2          | 222%     | 124%                  |

# Lower Humboldt River Basin

1/1/2016

Snowpack in the Lower Humboldt River Basin below Palisade is much above normal at 190% of median, compared to 73% last year. Precipitation in December was much above average at 162%, which brings the seasonal accumulation (Oct-Dec) to 145% of average. Soil moisture is 55% compared to 57% last year. Storage in Rye Patch Reservoir is 5% of capacity, compared to 5% last year. Forecast streamflow volumes range from 99% to 119% of average.



## Lower Humboldt River Basin Streamflow Forecasts - January 1, 2016

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

| Lower Humboldt River Basin | Forecast Period | 90% (KAF) | 70% (KAF) | 50% (KAF) | % Avg | 30% (KAF) | 10% (KAF) | 30yr Avg (KAF) |
|----------------------------|-----------------|-----------|-----------|-----------|-------|-----------|-----------|----------------|
| Rock Ck nr Battle Mtn      | MAR-JUL         | 20        | 27        | 32        | 119%  | 37        | 44        | 27             |
|                            | APR-JUL         | 14.6      | 18.4      | 21        | 115%  | 24        | 27        | 18.2           |
| Humboldt R at Comus        | MAR-JUL         | 145       | 220       | 270       | 106%  | 320       | 395       | 255            |
|                            | APR-JUL         | 101       | 175       | 225       | 105%  | 275       | 350       | 215            |
| L Humboldt R nr Paradise   | MAR-JUL         | 3.8       | 8.7       | 12        | 114%  | 15.3      | 20        | 10.5           |
|                            | APR-JUL         | 2.9       | 7.7       | 11        | 113%  | 14.3      | 19.1      | 9.7            |
| Martin Ck nr Paradise      | MAR-JUL         | 6.8       | 18.2      | 26        | 118%  | 34        | 45        | 22             |
|                            | APR-JUL         | 3.3       | 13.3      | 20        | 114%  | 27        | 37        | 17.5           |
| Humboldt R nr Imlay        | MAR-JUL         | 82        | 164       | 220       | 99%   | 275       | 355       | 222            |
|                            | APR-JUL         | 40        | 126       | 185       | 98%   | 245       | 330       | 188            |

- 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

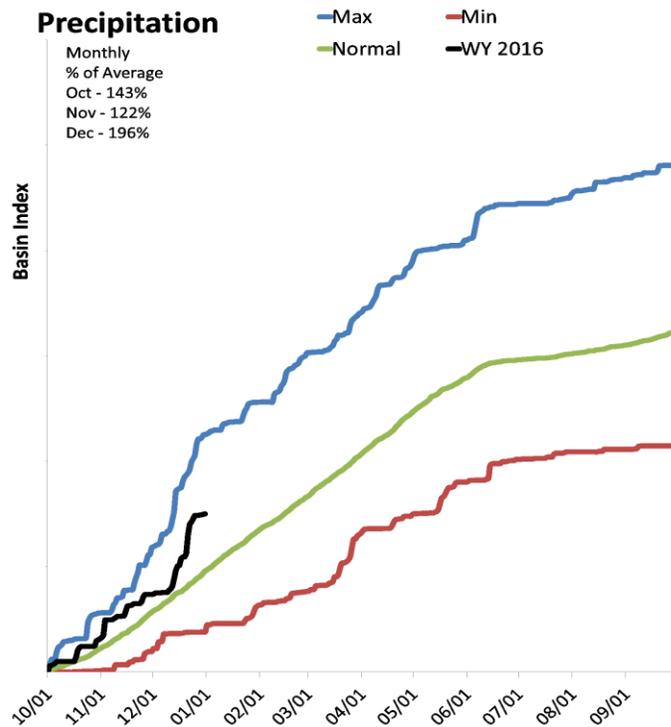
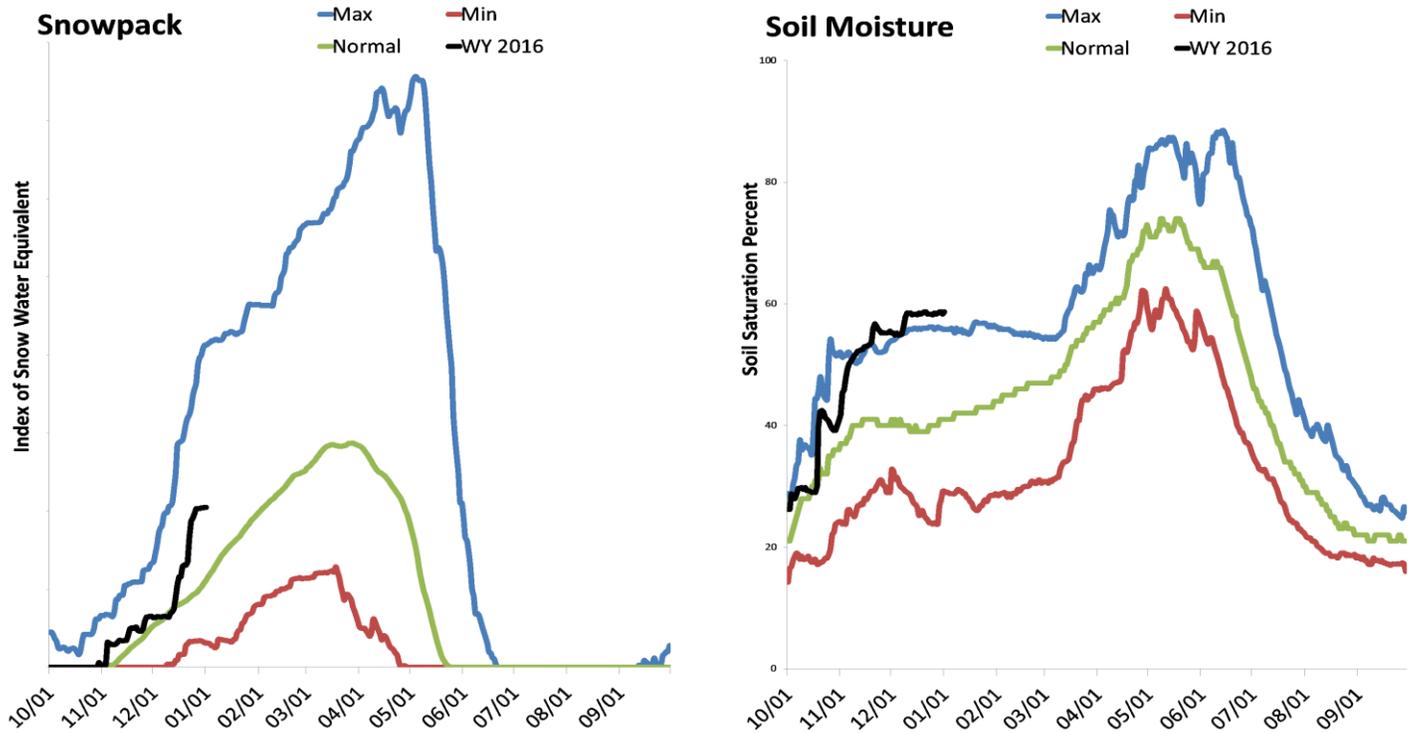
| Reservoir Storage<br>End of December, 2015 | Current (KAF) | Last Year (KAF) | Average (KAF) | Capacity (KAF) |
|--|---------------|-----------------|---------------|----------------|
| Rye Patch Re nr Rye Patch, NV              | 10.4          | 9.2             | 69.2          | 194.3          |
| Basin-wide Total                           | 10.4          | 9.2             | 69.2          | 194.3          |
| # of reservoirs                            | 1             | 1               | 1             | 1              |

| Watershed Snowpack Analysis<br>January 1, 2016 | # of Sites | % Median | Last Year % Median |
|--|------------|----------|--------------------|
| Lower Humboldt River Basin                     | 5          | 190%     | 73%                |
| Rock Creek                                     | 0          |          |                    |
| Reese River                                    | 2          | 195%     | 70%                |
| Martin Creek                                   | 3          | 187%     | 75%                |
| Little Humboldt River                          | 3          | 187%     | 75%                |
| Humboldt River above Imlay                     | 14         | 191%     | 106%               |

# Clover Valley & Franklin River Basin

1/1/2016

Snowpack in the Clover Valley and Franklin River Basin is much above normal at 184% of median, compared to 127% last year. Precipitation in December was much above average at 196%, which brings the seasonal accumulation (Oct-Dec) to 157% of average. Soil moisture is 60% compared to 28% last year. The forecast streamflow volume for the Franklin River is 101% of average.



## Clover Valley & Franklin River Basin Streamflow Forecasts - January 1, 2016

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

| Clover Valley & Franklin River Basin | Forecast<br>Period | 90%<br>(KAF) | 70%<br>(KAF) | 50%<br>(KAF) | % Avg | 30%<br>(KAF) | 10%<br>(KAF) | 30yr Avg<br>(KAF) |
|--------------------------------------|--------------------|--------------|--------------|--------------|-------|--------------|--------------|-------------------|
| Franklin Ck nr Arthur                | APR-JUL            | 4.2          | 5.9          | 7            | 101%  | 8.1          | 9.8          | 6.9               |

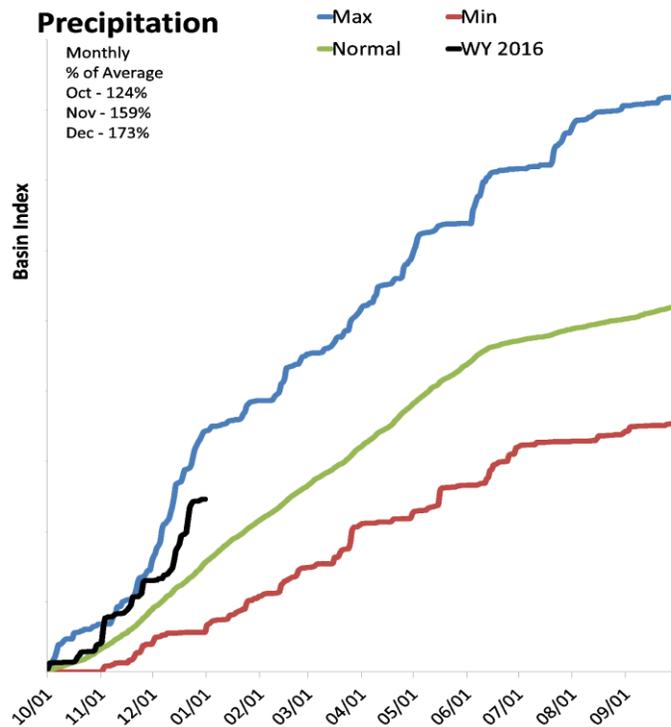
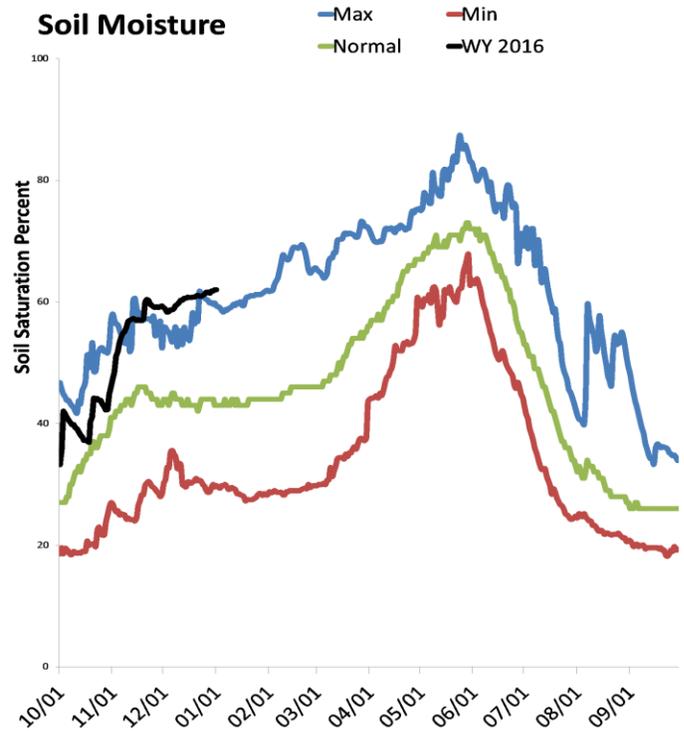
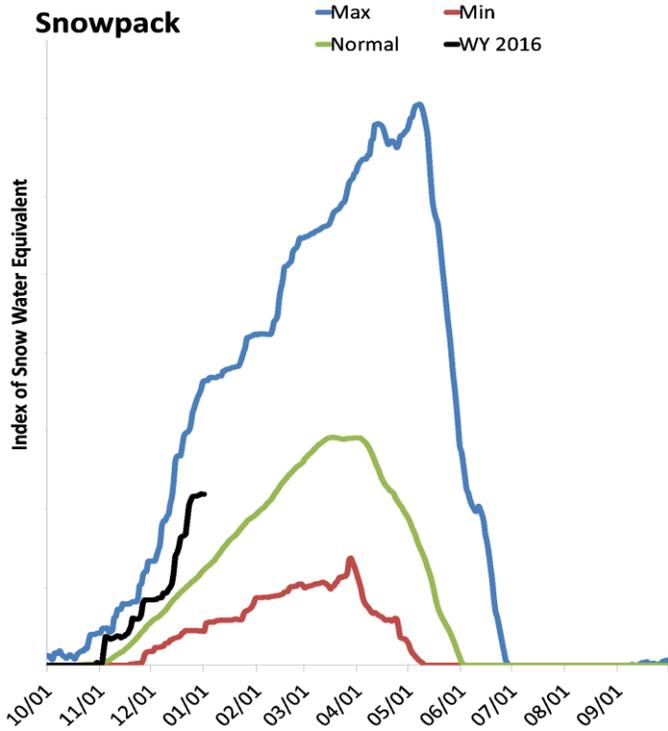
- 1) 90% and 10% exceedance probabilities are actually 95% and 5%
- 2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
- 3) Median value used in place of average

| <b>Watershed Snowpack Analysis<br/>January 1, 2016</b> | # of Sites | % Median | Last Year<br>% Median |
|--|------------|----------|-----------------------|
| Clover Valley & Franklin River Basin                   | 5          | 184%     | 127%                  |
| Clover Valley  | 2          | 159%     | 143%                  |
| Franklin River   | 4          | 197%     | 121%                  |

# Snake River Basin

1/1/2016

Snowpack in the Snake River Basin is much above normal at 183% of median, compared to 134% last year. Precipitation in December was much above average at 172%, which brings the seasonal accumulation (Oct-Dec) to 158% of average. Soil moisture is 57% compared to 28% last year. The forecast streamflow volume for Salmon Falls Creek is 159% of average.



## Snake River Basin Streamflow Forecasts - January 1, 2016

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

| Snake River Basin              | Forecast Period | 90% (KAF) | 70% (KAF) | 50% (KAF) | % Avg | 30% (KAF) | 10% (KAF) | 30yr Avg (KAF) |
|--------------------------------|-----------------|-----------|-----------|-----------|-------|-----------|-----------|----------------|
| Salmon Falls Ck nr San Jacinto | MAR-JUL         | 86        | 110       | 129       | 159%  | 149       | 182       | 81             |
|                                | MAR-SEP         | 89        | 114       | 133       | 156%  | 154       | 186       | 85             |

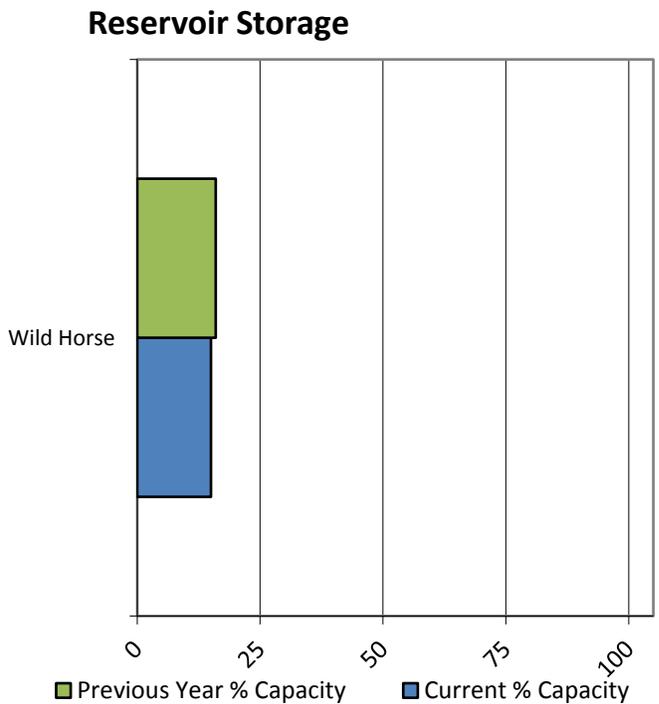
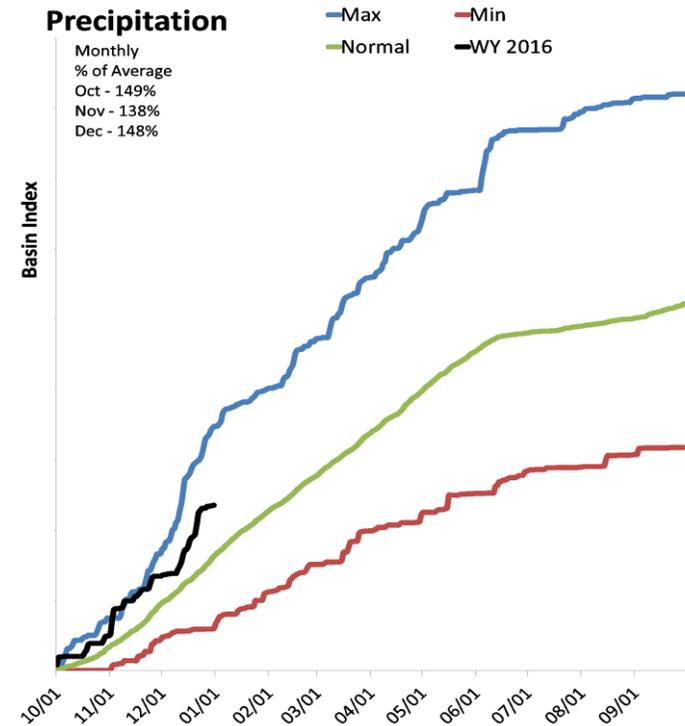
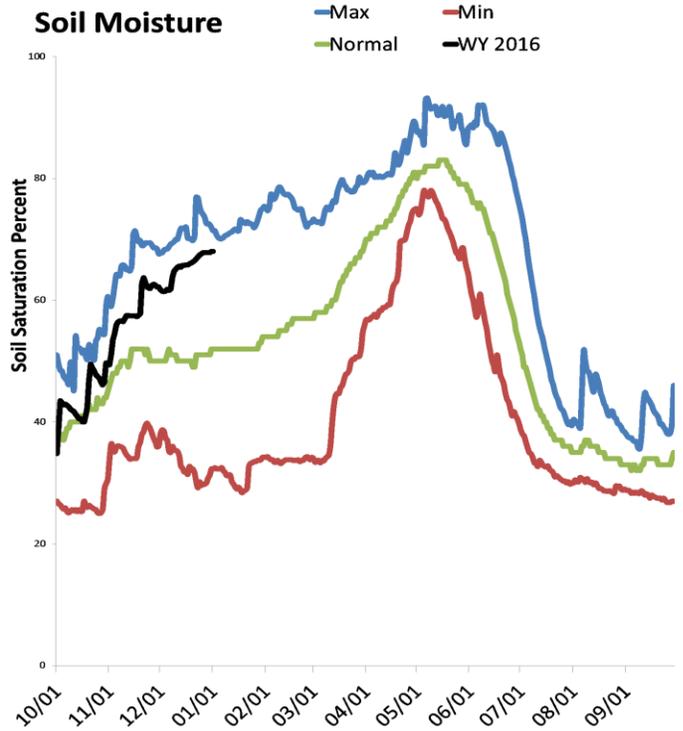
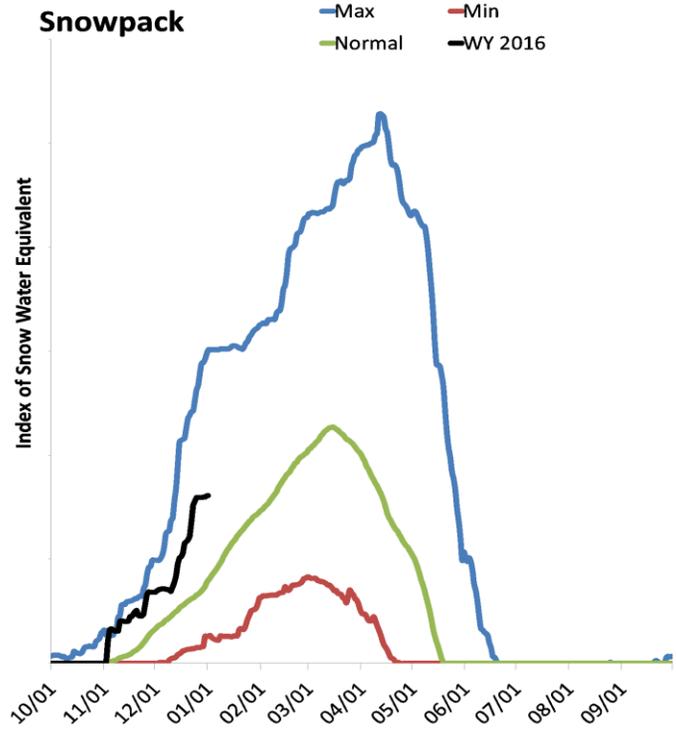
- 1) 90% and 10% exceedance probabilities are actually 95% and 5%
- 2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
- 3) Median value used in place of average

| Watershed Snowpack Analysis<br>January 1, 2016 | # of Sites | % Median | Last Year<br>% Median |
|--|------------|----------|-----------------------|
| Snake River Basin                              | 8          | 183%     | 134%                  |
| Bruneau River                                  | 5          | 190%     | 127%                  |
| Jarbidge River                                 | 3          | 174%     | 121%                  |
| Salmon Falls Creek                             | 6          | 179%     | 133%                  |

# Owyhee River Basin

1/1/2016

Snowpack in the Owyhee River headwaters is much above normal at 203% of median, compared to 123% last year. Precipitation in December was much above average at 148%, which brings the seasonal accumulation (Oct-Dec) to 144% of average. Soil moisture is 65% compared to 57% last year. Storage in Wildhorse Reservoir is 15% of capacity, compared to 16% last year. The forecast streamflow volume for the Owyhee River near Gold Creek is 175% of average.



## Owyhee River Basin Streamflow Forecasts - January 1, 2016

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

| Owyhee River Basin               | Forecast Period | 90% (KAF) | 70% (KAF) | 50% (KAF) | % Avg | 30% (KAF) | 10% (KAF) | 30yr Avg (KAF) |
|----------------------------------|-----------------|-----------|-----------|-----------|-------|-----------|-----------|----------------|
| Owyhee R nr Gold Ck <sup>2</sup> | MAR-JUL         | 24        | 37        | 49        | 175%  | 63        | 87        | 28             |
|                                  | MAR-SEP         | 23        | 36        | 47        | 174%  | 60        | 84        | 27             |
|                                  | APR-JUL         | 14.5      | 28        | 40        | 182%  | 55        | 85        | 22             |

- 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

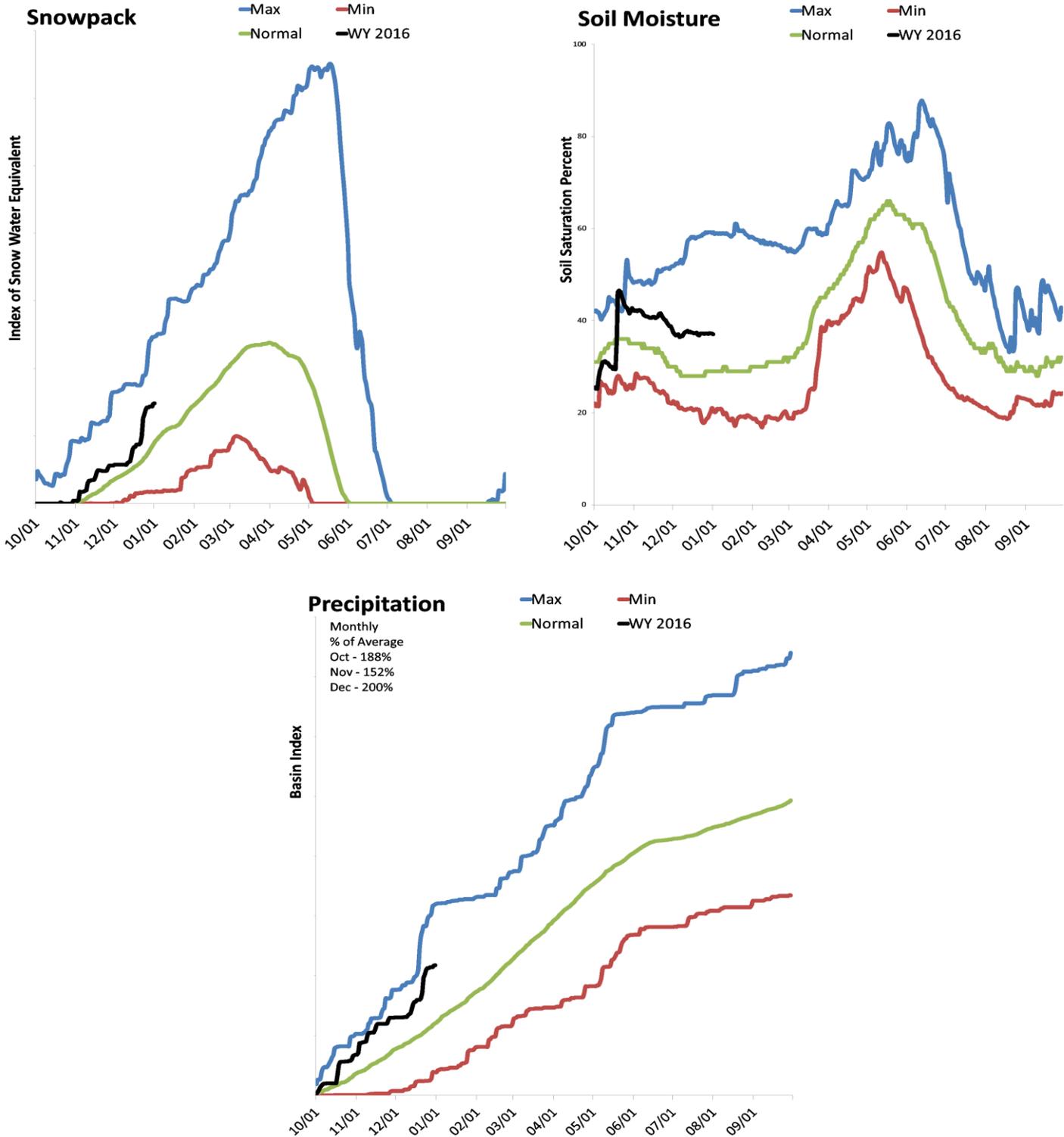
| Reservoir Storage<br>End of December, 2015 | Current (KAF) | Last Year (KAF) | Average (KAF) | Capacity (KAF) |
|--|---------------|-----------------|---------------|----------------|
| Wild Horse Reservoir                       | 10.5          | 11.2            | 32.4          | 71.5           |
| Basin-wide Total                           | 10.5          | 11.2            | 32.4          | 71.5           |
| # of reservoirs                            | 1             | 1               | 1             | 1              |

| Watershed Snowpack Analysis<br>January 1, 2016 | # of Sites | % Median | Last Year % Median |
|--|------------|----------|--------------------|
| Owyhee River Basin                             | 5          | 203%     | 123%               |
| Owyhee River above Owyhee                      | 4          | 198%     | 131%               |
| Owyhee River above Gold Creek                  | 2          | 227%     | 143%               |
| South Fork Owyhee River                        | 2          | 216%     | 123%               |

# Eastern Nevada

1/1/2016

Snowpack in Eastern Nevada is much above normal at 164% of median, compared to 80% last year. Precipitation in December was much above average at 202%, which brings the seasonal accumulation (Oct-Dec) to 180% of average. Soil moisture is 40% compared to 28% last year. Forecast streamflow volumes range from 118% to 125% of average.



**Eastern Nevada  
Streamflow Forecasts - January 1, 2016**

|   |
|---|
| Forecast Exceedance Probabilities for Risk Assessment<br>Chance that actual volume will exceed forecast |
|---|

| <b>Eastern Nevada</b> | Forecast Period | 90% (KAF) | 70% (KAF) | 50% (KAF) | % Avg | 30% (KAF) | 10% (KAF) | 30yr Avg (KAF) |
|-----------------------|-----------------|-----------|-----------|-----------|-------|-----------|-----------|----------------|
| Kingston Ck nr Austin | APR-JUL         | 0.11      | 2.5       | 4.5       | 125%  | 6.5       | 9.5       | 3.6            |
| Steptoe Ck nr Ely     | APR-JUL         | 1.66      | 2.6       | 3.3       | 122%  | 4         | 4.9       | 2.7            |
| Cleve Ck nr Ely       | APR-JUL         | 2.2       | 4.1       | 5.4       | 122%  | 6.7       | 8.6       | 4.41           |
| Lehman Ck nr Baker    | APR-JUL         | 1.27      | 2.4       | 3.2       | 118%  | 4         | 5.1       | 2.72           |

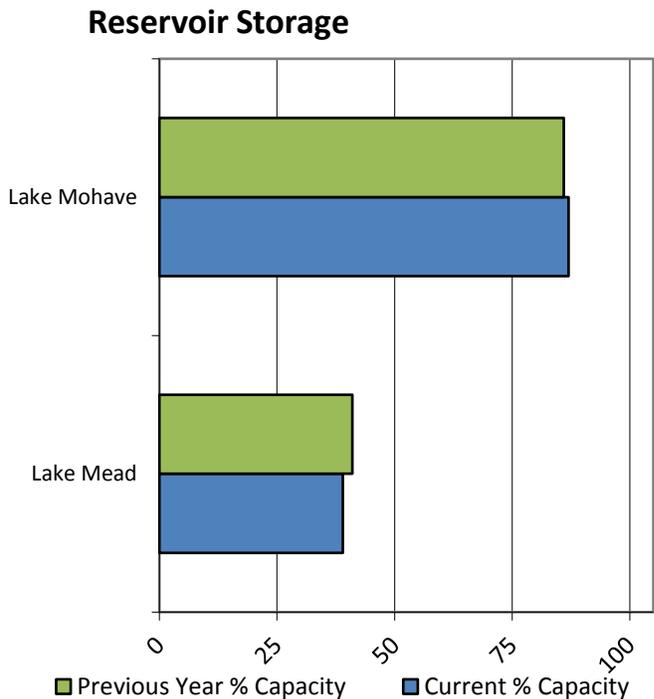
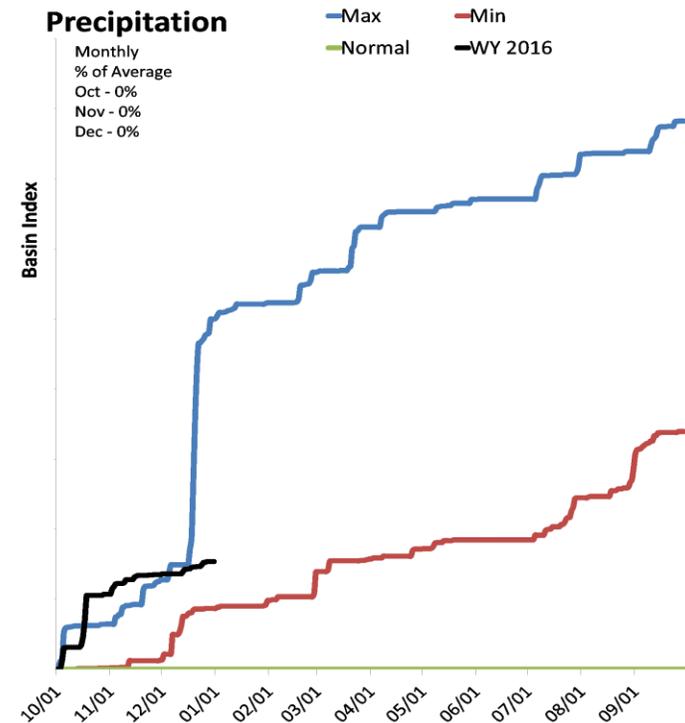
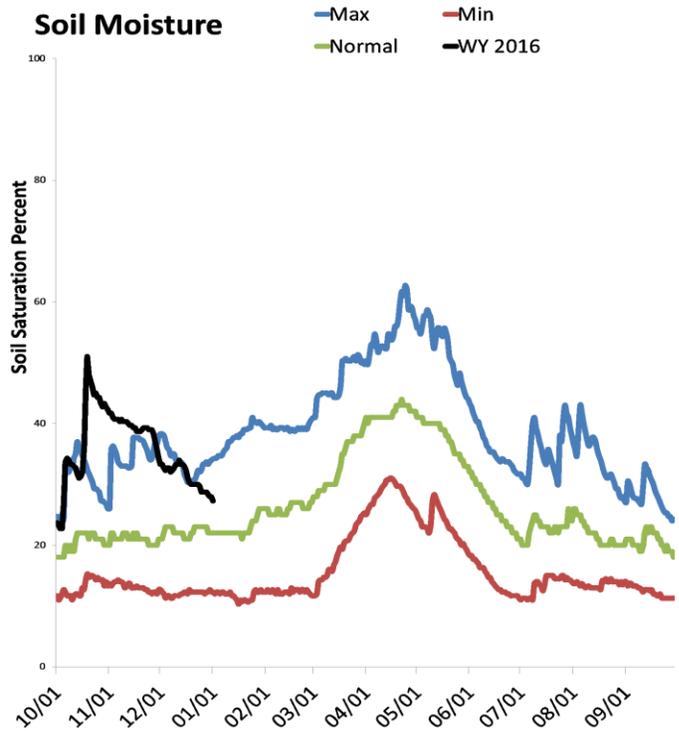
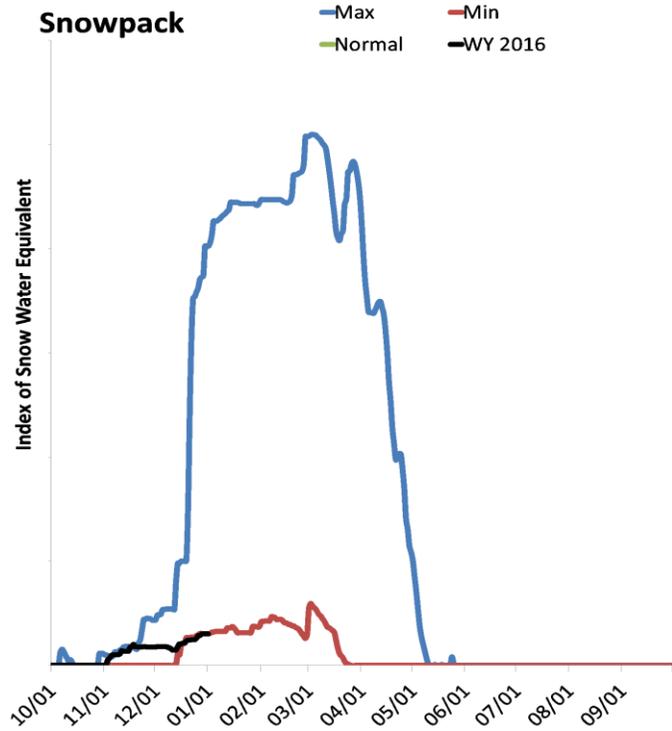
- 1) 90% and 10% exceedance probabilities are actually 95% and 5%
- 2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
- 3) Median value used in place of average

| <b>Watershed Snowpack Analysis<br/>January 1, 2016</b> | # of Sites | % Median | Last Year % Median |
|--|------------|----------|--------------------|
| Eastern Nevada   | 4          | 164%     | 80%                |
| Kingston Creek   | 1          | 186%     | 79%                |
| Steptoe Valley   | 2          | 139%     | 75%                |
| Baker & Lehman Creeks                                  | 0          |          |                    |

# Spring Mountains & Southern Nevada

1/1/2016

Average snow water content at SNOTEL sites in the Spring Mountains is 1.5 inches. Precipitation in December averaged 0.9 in, which brings the seasonal accumulation (Oct-Dec) to 7.7in. Soil moisture is 27% compared to 57% last year. Storage in Lake Mead is 39% of capacity, compared to 41% last year, while Lake Mohave storage is 87% of capacity, compared to 86% last year. Streamflow forecasts range from 95% to 112% of average for the Virgin River and Lake Powell inflow.



\*\*SNOTEL sites in the Spring Mtns were installed in June 2008. Due to the short record snowpack and precipitation normals are not presented. Max and Min lines are based on water years 2009-2015, same goes for the soil moisture normal line.

## Spring Mountains & Southern Nevada Streamflow Forecasts - January 1, 2016

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

| Spring Mountains & Southern Nevada | Forecast Period | 90% (KAF) | 70% (KAF) | 50% (KAF) | % Avg | 30% (KAF) | 10% (KAF) | 30yr Avg (KAF) |
|------------------------------------|-----------------|-----------|-----------|-----------|-------|-----------|-----------|----------------|
| Virgin R nr Hurricane              | APR-JUL         | 21        | 45        | 67        | 106%  | 93        | 138       | 63             |
| Virgin R at Littlefield            | APR-JUL         | 23        | 49        | 73        | 112%  | 102       | 152       | 65             |
| Lake Powell Inflow <sup>2</sup>    | APR-JUL         | 3420      | 5300      | 6800      | 95%   | 8490      | 11300     | 7160           |

- 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<br>End of December, 2015 | Current (KAF) | Last Year (KAF) | Average (KAF) | Capacity (KAF) |
|--|---------------|-----------------|---------------|----------------|
| Lake Mead                                  | 10095.0       | 10676.0         | 20297.0       | 26159.0        |
| Lake Mohave                                | 1580.3        | 1559.7          | 1602.0        | 1810.0         |
| Basin-wide Total                           | 11675.3       | 12235.7         | 21899.0       | 27969.0        |
| # of reservoirs                            | 2             | 2               | 2             | 2              |

| Watershed Snowpack Analysis<br>January 1, 2016 | # of Sites | % Median | Last Year % Median |
|--|------------|----------|--------------------|
| Spring Mountains                               | 0          |          |                    |
| White River                                    | 1          | 120%     | 67%                |
| Virgin River                                   | 8          | 133%     | 72%                |
| Colorado R above Glen Canyon Dam               | 106        | 113%     | 105%               |



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## Questions?

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