

# Montana

# Water Supply

# Outlook Report

# April 1, 2013



**Picture: Madison Plateau SNOTEL Site near West Yellowstone**

# Water Supply Outlook Report and Federal - State - Private Cooperative Snow Surveys

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*How forecasts are made*

**Most of the annual streamflow in the Western United States originates as snowfall that has accumulated high in the mountains during winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Predictions are based on careful measurements of snow water equivalent at selected index points. Precipitation, temperature, soil moisture and antecedent streamflow data are combined with snowpack data to prepare runoff forecasts. Streamflow forecasts are coordinated by Natural Resources Conservation Service and National Weather Service hydrologists. This report presents a comprehensive picture of water supply conditions for areas dependent upon surface runoff. It includes selected streamflow forecasts, summarized snowpack and precipitation data, reservoir storage data, and narratives describing current conditions.**

**Snowpack data are obtained by using a combination of manual and automated SNOTEL measurement methods. Manual readings of snow depth and water equivalent are taken at locations called snow courses on a monthly or semi-monthly schedule during the winter. In addition, snow water equivalent, precipitation and temperature are monitored on a daily basis and transmitted via meteor burst telemetry to central data collection facilities. Both monthly and daily data are used to project snowmelt runoff.**

**Forecast uncertainty originates from two sources: (1) uncertainty of future hydrologic and climatic conditions, and (2) error in the forecasting procedure. To express the uncertainty in the most probable forecast, four additional forecasts are provided. The actual streamflow can be expected to exceed the most probable forecast 50% of the time. Similarly, the actual streamflow volume can be expected to exceed the 90% forecast volume 90% of the time. The same is true for the 70%, 30%, and 10% forecasts. Generally, the 90% and 70% forecasts reflect drier than normal hydrologic and climatic conditions; the 30% and 10% forecasts reflect wetter than normal conditions. As the forecast season progresses, a greater portion of the future hydrologic and climatic uncertainty will become known and the additional forecasts will move closer to the most probable forecast.**

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# Montana Water Supply Outlook Report as of April 1, 2013

Spring has officially sprung around the state of Montana. This year has been fairly neutral as far as Oceanic Nino Indices go, which would trend towards equal chances of a wet or dry winter for the state of Montana. Much of Montana's weather to this point has been driven by the Arctic Oscillation, which when neutral or positive allows cold moist air to enter Montana. During February and March of this year, the Arctic Oscillation has been pushing this air further east, increasing precipitation through the mid-west and into the northeastern part of the country. Cold air and moisture spilled into the state through the month, however, March proved to be somewhat variable, and was dependant on the region of the state. In central and southern Montana it was a fairly warm and dry month causing the basins snowpack percent of normal to decrease, while in northern Montana cool wet air was still able to bring a few storm systems which improved the basins snowpacks. Since the upcoming month plays a vital role in the timing of snowmelt and river flows, a cool wet April could increase our snowpack and stream flow prospects. However, if the current weather patterns hold steady the decreases in basin averages and the transition to a melting spring snowpack will certainly continue. Moving into the spring runoff season, water managers across the state are preparing for the yearly fill of reservoirs. Streamflow prospects continue to be near to slightly below normal for the April through July time period. Reservoir storage across the state currently ranges from 78 to 178 percent of average for end of March storage. Most reservoirs across the state are near to slightly above average for storage this time of year.

## Snowpack

Entering the month of March most basins around the state of Montana were near to slightly below normal, with the St. Mary-Milk River Basin having the highest percentage of basin normal at 108 percent, and the Bitterroot River Basin with the lowest percentage at 85 percent. Through the month the weather patterns continued to favor the northern basins in the state while the central and southern parts of the state experienced long periods of high pressure, which led to an influx of warm southern air, above average temperatures and significantly below average precipitation. During the month, central and southern basins saw a 3-9 percent decrease in their basin percentage of normal while the basins in northern Montana saw a 4-7 percent gain in basin percentage of normal. As of April 1, the St. Mary-Milk River Basin continues to have the highest percentage of normal at 106 percent, and the Bitterroot River Basin continues to be the lowest at 84 percent. Overall, the variability in the weather patterns across the state balanced out during the month of March changing the statewide percentage of normal only 1 percent below where it was on March 1, 2013 to 92 percent of normal. It is important to note that snowpack has typically reached, or is close to reaching our snowpack maximum during the month of April. Because of this, the weather to come during April will have a big impact on the timing and volume of our stream flows through the spring and into the summer. The warm weather experienced during the end of the month of March has begun the melt of low-elevation snowpacks in most parts of the state. The mid and upper elevations are still holding on but are slowly beginning to trend in this direction. Continued warm weather will most likely continue to change the snowpack at these elevations to isothermal, starting the larger scale runoff process. The mid and upper elevations of the basins typically yield the bulk of the water supply across the state, so continued close monitoring of the snowpack will be required to determine the timing and volume of this year's runoff. To view individual basin reports online goto: <http://www.mt.nrcs.usda.gov/snow/>

| RIVER BASIN              | % OF<br>MEDIAN | % LAST YEAR | MARCH<br>% CHANGE |
|--------------------------|----------------|-------------|-------------------|
| COLUMBIA                 | 93             | 74          | +1                |
| KOOTENAI                 | 100            | 71          | +7                |
| FLATHEAD                 | 99             | 80          | +5                |
| UPPER CLARK FORK         | 85             | 70          | -5                |
| BITTERROOT               | 84             | 70          | -1                |
| LOWER CLARK FORK         | 94             | 72          | +5                |
| MISSOURI                 | 92             | 84          | -5                |
| MISSOURI HEADWATERS      | 90             | 88          | -6                |
| JEFFERSON                | 89             | 86          | -9                |
| MADISON                  | 89             | 87          | -3                |
| GALLATIN                 | 94             | 96          | -6                |
| MISSOURI MAINSTEM        | 95             | 77          | -3                |
| HEADWATERS MAINSTEM      | 95             | 73          | -5                |
| SMITH-JUDITH-MUSSELSHELL | 95             | 85          | -6                |
| SUN-TETON-MARIAS         | 88             | 66          | -3                |
| MILK (Bearpaw Mtns)      | 149            | 518         | +24               |
| ST. MARY                 | 99             | 79          | -2                |
| ST. MARY & MILK          | 106            | 96          | +4                |
| YELLOWSTONE              | 88             | 88          | -2                |
| UPPER YELLOWSTONE        | 90             | 85          | -2                |
| LOWER YELLOWSTONE        | 85             | 89          | -4                |
| STATE-WIDE               | 92             | 80          | -1                |

## Precipitation

Water Year-to-Date Precipitation continues to stay near normal across the state for most basins, with the statewide average being 102 percent, dropping from 106 percent last month. This downward trend mimics what we saw during the month for snow accumulation, with northern basins and valleys seeing precipitation through the month. The southwestern basins received the significantly below average monthly precipitation with mountain precipitation values ranging from 57 to 74 percent. Valley precipitation during the month was significantly below average in the central and southern basins, with no snowcover remaining in most valley locations on April 1. To view individual reports online goto: <http://www.mt.nrcs.usda.gov/snow/>

## Reservoirs

State-wide reservoir storage was 106 percent of average and 90 percent of last year. Reservoir storage west of the divide was 126 percent of average and 98 percent of last year. East of the Divide, reservoir storage was 99 percent of average and 86 percent of last year.

| RIVER BASIN              | % OF AVERAGE | % OF LAST YEAR |
|--------------------------|--------------|----------------|
| COLUMBIA                 | 126          | 98             |
| KOOTENAI                 | 132          | 92             |
| FLATHEAD                 | 124          | 103            |
| UPPER CLARK FORK         | 99           | 70             |
| BITTERROOT               | 120          | 95             |
| LOWER CLARK FORK         | 102          | 103            |
| MISSOURI                 | 98           | 86             |
| JEFFERSON                | 105          | 79             |
| MADISON                  | 102          | 118            |
| GALLATIN                 | 87           | 113            |
| MISSOURI MAINSTEM        | 98           | 85             |
| SMITH-JUDITH-MUSSELSHELL | 110          | 79             |
| SUN-TETON-MARIAS         | 99           | 97             |
| MILK                     | 123          | 93             |
| ST. MARY                 | 179          | 158            |
| YELLOWSTONE              | 112          | 95             |
| UPPER YELLOWSTONE        | 90           | 95             |
| LOWER YELLOWSTONE        | 112          | 106            |
| STATEWIDE                | 106          | 90             |

## Streamflow

State-wide, streamflows are forecast to be 83 percent of average. West of the divide streamflows are forecast to be 88 percent of average and east of the divide are forecast to be 79 percent of average.

Following are streamflow forecasts for the period April 1 through July 31. THE FIGURES IN THE TABLE BELOW ARE AN AVERAGE OF ALL FORECASTS WITHIN THE PARTICULAR BASIN AT THE 50 PERCENT EXCEEDANCE ONLY. FOR FORECASTS ABOVE AND BELOW THE 50 PERCENT EXCEEDANCE, LOOK TO THE SPECIFIC BASIN REPORTS.

| RIVER BASIN                | April-July<br>THIS YEAR<br>% OF AVERAGE | April-July<br>LAST YEAR<br>% OF AVERAGE |
|----------------------------|---|---|
| COLUMBIA .....             | 88 .....                                | 109                                     |
| KOOTENAI .....             | 96 .....                                | 114                                     |
| FLATHEAD .....             | 98 .....                                | 111                                     |
| UPPER CLARK FORK .....     | 77 .....                                | 106                                     |
| BITTERROOT .....           | 80 .....                                | 104                                     |
| LOWER CLARK FORK .....     | 85 .....                                | 109                                     |
| MISSOURI .....             | 80 .....                                | 96                                      |
| JEFFERSON .....            | 68 .....                                | 84                                      |
| MADISON .....              | 87 .....                                | 95                                      |
| GALLATIN .....             | 89 .....                                | 90                                      |
| MISSOURI MAINSTEM .....    | 80 .....                                | 89                                      |
| SMITH-JUDITH-MUSSELSHELL . | 75 .....                                | 101                                     |
| SUN-TETON-MARIAS .....     | 92 .....                                | 119                                     |
| MILK .....                 | 87 .....                                | 87                                      |
| ST. MARY .....             | 106 .....                               | 119                                     |
| YELLOWSTONE .....          | 78 .....                                | 91                                      |
| UPPER YELLOWSTONE .....    | 82 .....                                | 93                                      |
| LOWER YELLOWSTONE .....    | 75 .....                                | 89                                      |
| STATE-WIDE .....           | 83 .....                                | 101                                     |

NOTE: The APRIL-JULY LAST YEAR % OF AVERAGE column above is what was forecast last year at this same time, NOT what actually occurred.

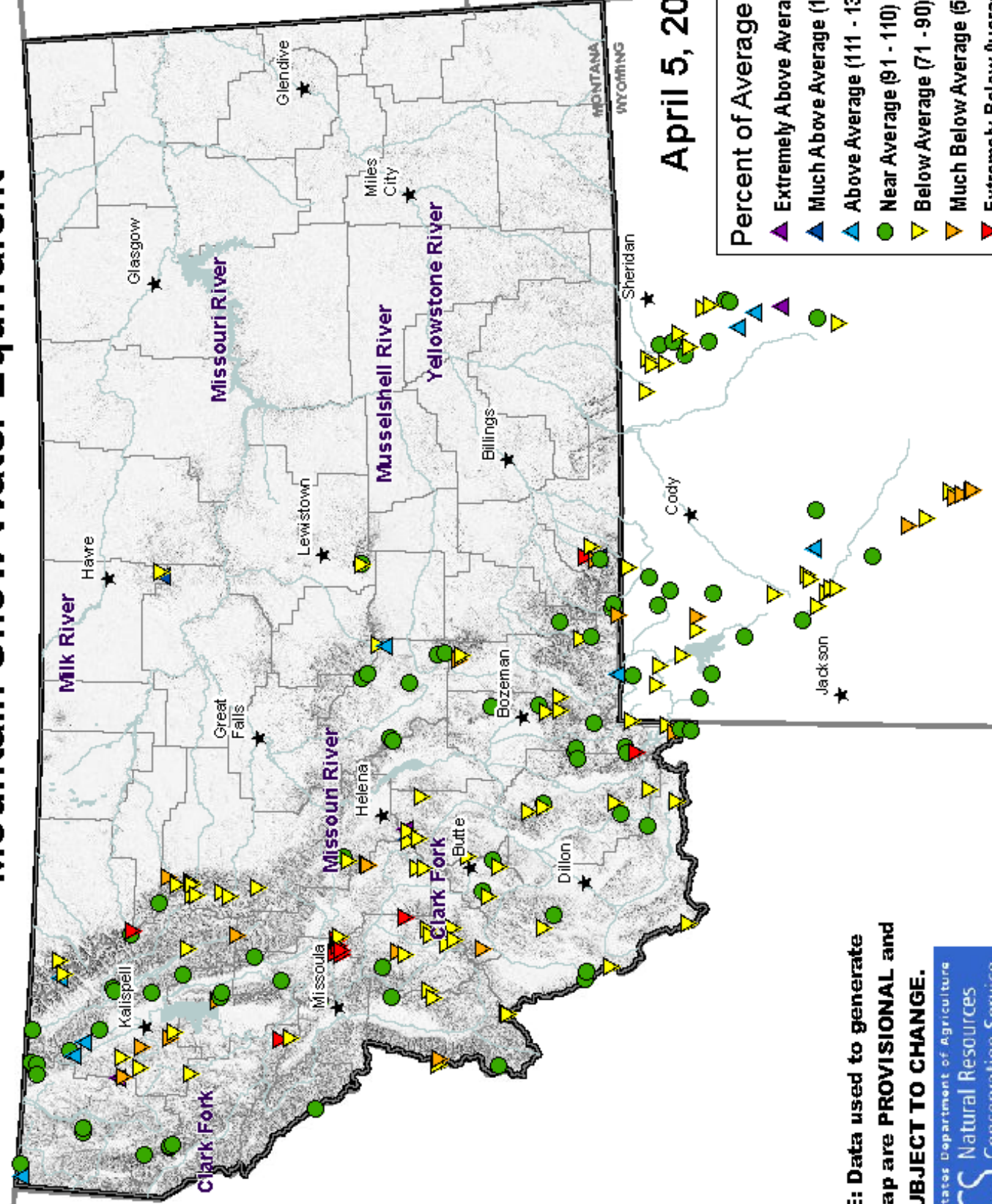
## Surface Water Supply Index

The Surface Water Supply Index (SWSI) is a measure of available surface water availability for the spring and summer months. Water users that rely on mountain precipitation can use the index to evaluate seasonal surface water supplies. The SWSI accounts for mountain snowpack, mountain precipitation, streamflow, reservoir storage, and soil moisture.

| SWSI RATING  | SURFACE WATER CONDITION |
|--------------|-------------------------|
| +3.0 to +4.0 | Extremely Wet           |
| +2.0 to +3.0 | Moderately Wet          |
| +1.0 to +2.0 | Slightly Wet            |
| -1.0 to +1.0 | Near Average            |
| -1.0 to -2.0 | Slightly Dry            |
| -2.0 to -3.0 | Moderately Dry          |
| -3.0 to -4.0 | Extremely Dry           |

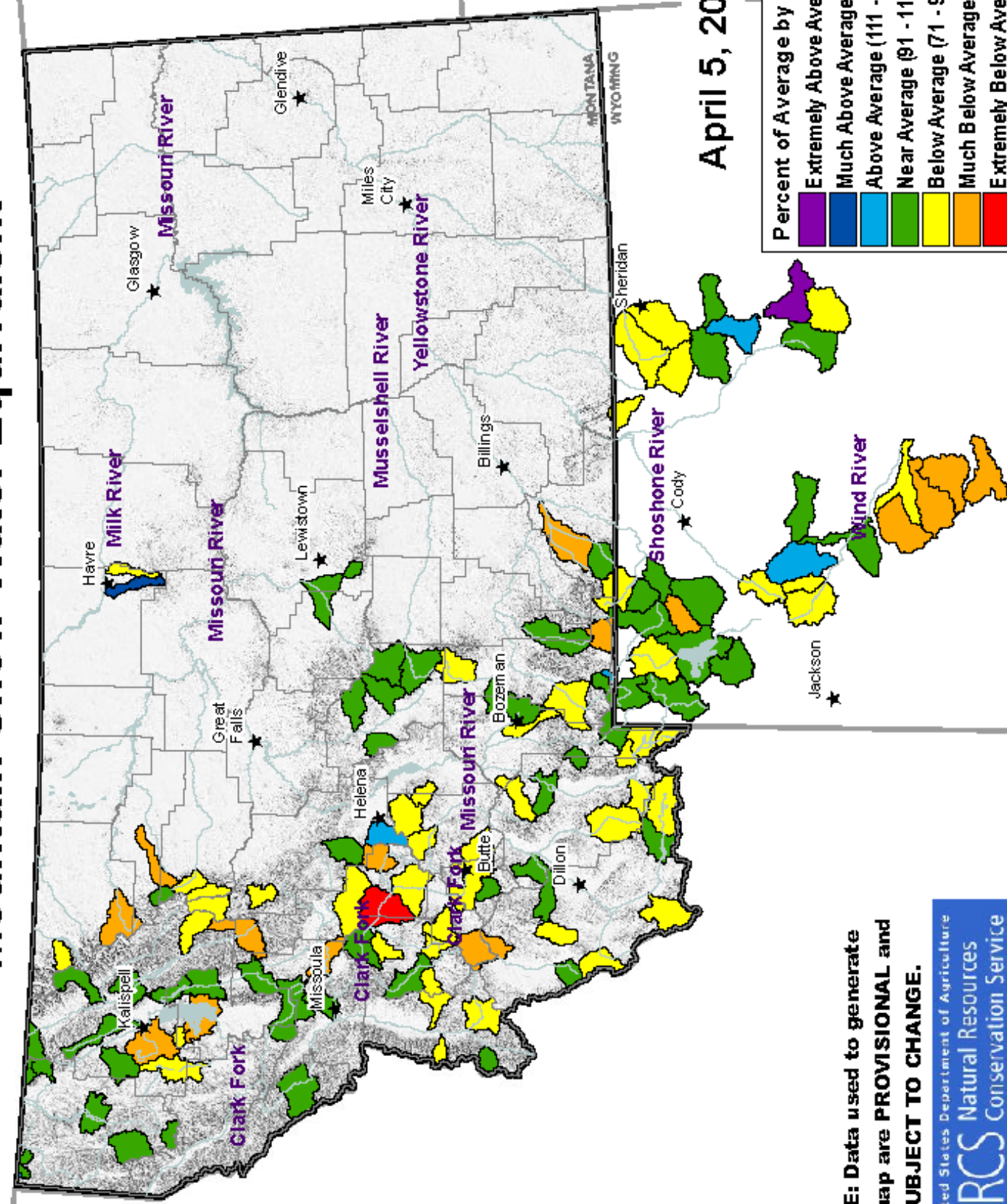
| This Year<br>SWSI | Last Year<br>SWSI | Basin                                   |
|-------------------|-------------------|---|
| +0.2              | +1.7              | Tobacco River                           |
| +0.3              | +2.5              | Kootenai Ft. Steele to Libby Dam        |
| +2.0              | +4.0              | Kootenai River below Libby Dam          |
| -1.6              | +1.4              | Fisher River                            |
| +0.8              | +2.8              | Yaak River                              |
| +1.1              | +1.9              | North Fork Flathead River               |
| +0.7              | +1.6              | Middle Fork Flathead River              |
| +4.0              | +4.0              | South Fork Flathead River               |
| +1.6              | +2.4              | Flathead River at Columbia Falls        |
| -1.4              | +1.3              | Swan River                              |
| +0.7              | +1.3              | Flathead River at Polson                |
| -3.3              | +0.9              | Mission Valley                          |
| -0.2              | +3.1              | Little Bitterroot River                 |
| -1.8              | +1.1              | Clark Fork River above Milltown         |
| -2.2              | +1.2              | Clark Fork above Missoula               |
| -2.4              | +1.2              | Blackfoot River                         |
| -2.0              | +1.2              | Bitterroot River                        |
| -2.1              | +1.2              | Clark Fork River below Bitterroot River |
| -0.3              | +1.3              | Clark Fork River below Flathead River   |
| -1.0              | +0.7              | Beaverhead River                        |
| -1.6              | -0.7              | Ruby River                              |
| -1.5              | -0.2              | Big Hole River                          |
| -1.8              | +0.1              | Boulder River (Jefferson)               |
| -0.7              | +1.0              | Jefferson River                         |
| -1.5              | -0.4              | Madison River                           |
| -1.2              | -0.4              | Gallatin River                          |
| -0.7              | +0.2              | Missouri River above Canyon Ferry       |
| -0.6              | -0.6              | Missouri River below Canyon Ferry       |
| +0.5              | +3.2              | Smith River                             |
| -1.8              | +1.5              | Sun River                               |
| +0.3              | +1.8              | Teton River                             |
| -2.4              | +2.4              | Birch/Dupuyer Creeks                    |
| -0.7              | +2.6              | Upper Judith River                      |
| -2.1              | +1.7              | Marias River above Tiber                |
| -0.2              | +2.6              | Marias River below Tiber                |
| -1.2              | +1.4              | Musselshell River                       |
| -1.2              | +0.9              | Missouri River above Ft. Peck           |
| -1.7              | +0.6              | Missouri River below Ft. Peck           |
| +1.7              | +2.8              | St. Mary River                          |
| +0.7              | +1.3              | Milk River                              |
| -1.5              | +1.7              | Dearborn River near Craig               |
| -1.8              | +0.3              | Yellowstone River above Livingston      |
| -1.8              | -0.3              | Shields River                           |
| -1.1              | -0.2              | Boulder River (Yellowstone)             |
| -2.1              | -0.9              | Stillwater River                        |
| -2.8              | ----              | Rock/Red Lodge Creeks                   |
| -1.6              | +1.2              | Clarks Fork River                       |
| -1.8              | +0.2              | Yellowstone River above Bighorn River   |
| -1.2              | -0.4              | Bighorn River below Bighorn Lake        |
| -2.8              | +1.2              | Little Bighorn River                    |
| -1.5              | -0.1              | Yellowstone River below Bighorn River   |
| -1.8              | +1.8              | Tongue River                            |
| -0.6              | 0.0               | Powder River                            |

# Mountain Snow Water Equivalent

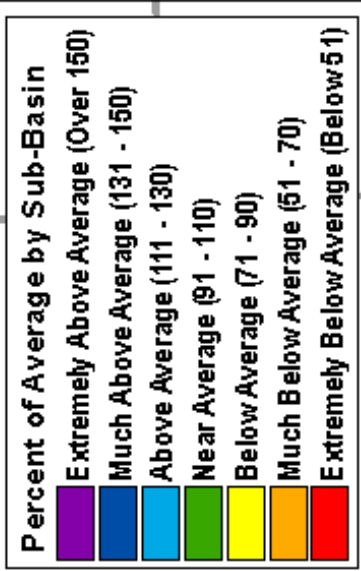


**NOTE: Data used to generate this map are PROVISIONAL and SUBJECT TO CHANGE.**

# Mountain Snow Water Equivalent



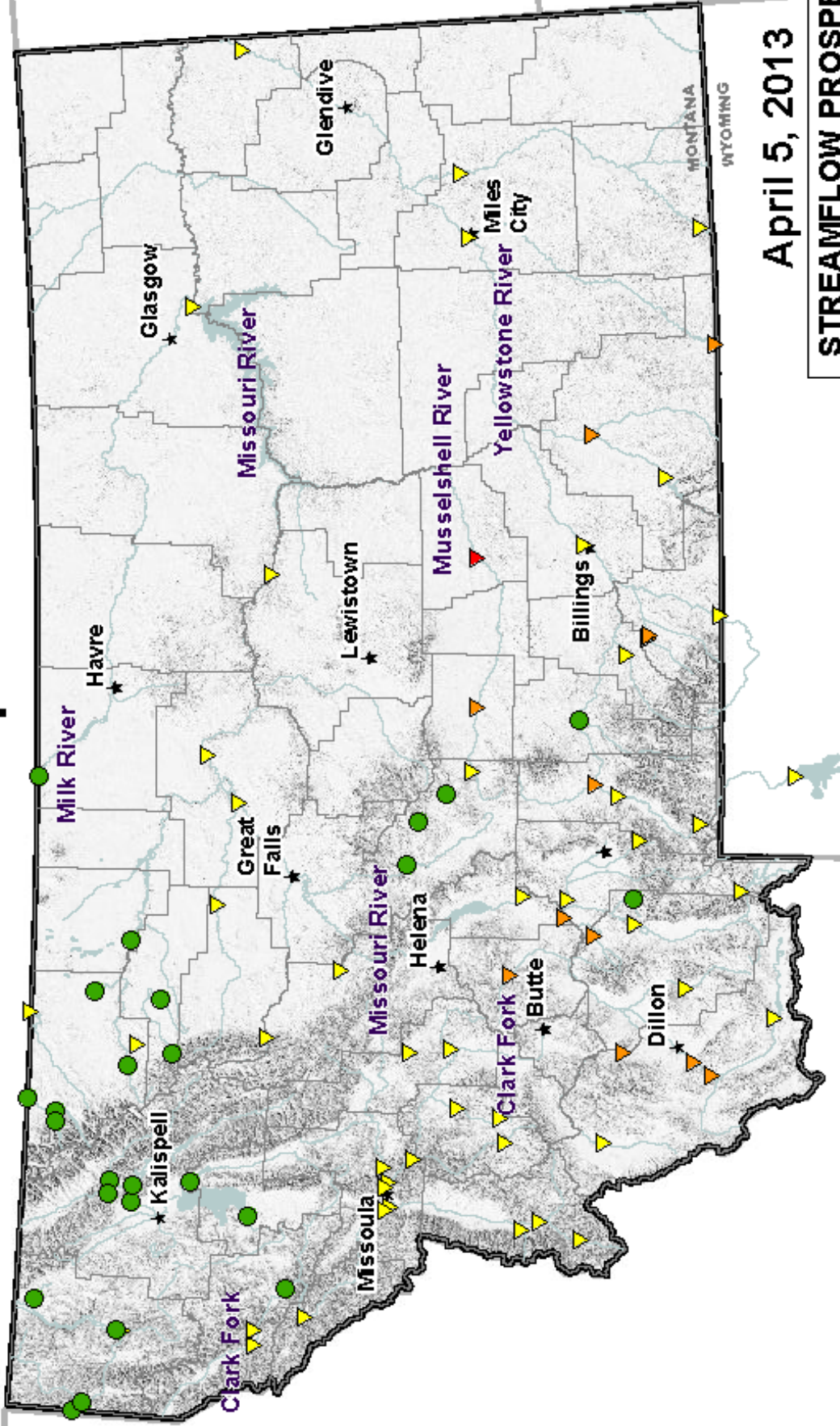
April 5, 2013



**NOTE: Data used to generate this map are PROVISIONAL and SUBJECT TO CHANGE.**



# Streamflow Prospects for Montana



April 5, 2013

## STREAMFLOW PROSPECTS

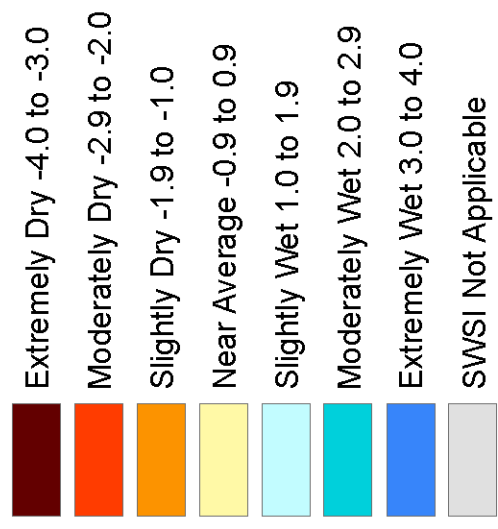
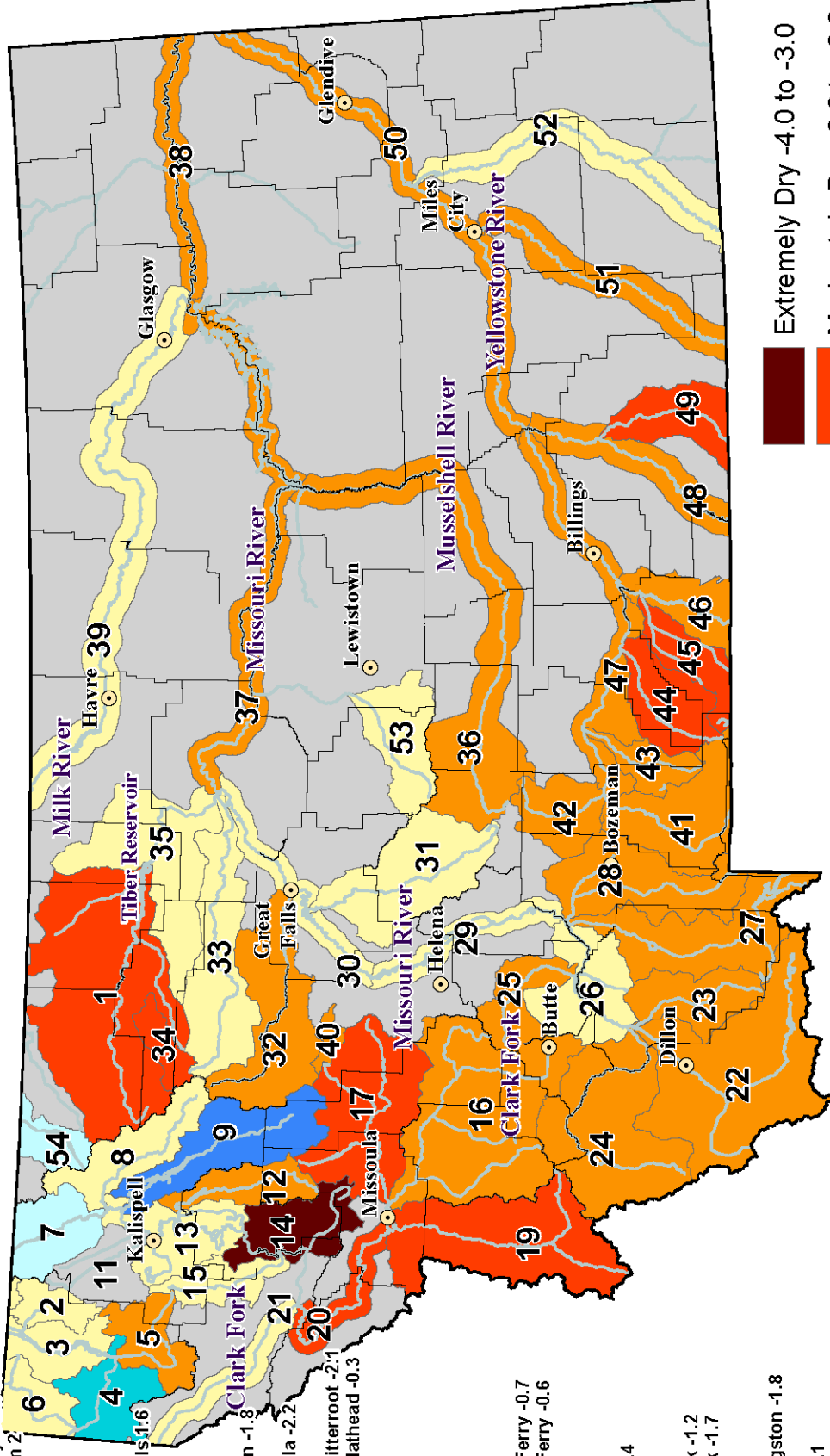
- ▲ Extremely Above Average (Over 150)
- ▲ Much Above Average (131 - 150)
- ▲ Above Average (111 - 130)
- Near Average (91 - 110)
- ▲ Below Average (71 - 90)
- ▲ Much Below Average (51 - 70)
- ▲ Extremely Below Average (Below 51)

**NOTE: Data used to generate this map are PROVISIONAL and SUBJECT TO CHANGE.**

# Surface Water Supply Index (SWSI) Values

## RIVER INDEX & SWSI VALUES

- 1 Marias above Tiber Reservoir -2.1
- 2 Tobacco 0.2
- 3 Kootenai Ft. Steele to Libby Dam 0.3
- 4 Kootenai below Libby Dam 2
- 5 Fisher -1.6
- 6 Yaak 0.8
- 7 North FK. Flathead 1.1
- 8 Middle FK. Flathead 0.7
- 9 South FK. Flathead 4
- 10 Flathead at Columbia Falls 1.6
- 11 Kalispell
- 12 Swan -1.4
- 13 Flathead at Polson 0.7
- 14 Mission Valley -3.3
- 15 Little Bitterroot -0.2
- 16 Clark Fork above Milltown -1.8
- 17 Blackfoot -2.4
- 18 Clark Fork above Missoula -2.2
- 19 Bitterroot -2
- 20 Clark Fork River below Bitterroot -2.1
- 21 Clark Fork River below Flathead -0.3
- 22 Beaverhead -1
- 23 Ruby -1.6
- 24 Big Hole -1.5
- 25 Boulder (Jefferson) -1.8
- 26 Jefferson -0.7
- 27 Madison -1.5
- 28 Gallatin -1.2
- 29 Missouri above Canyon Ferry -0.7
- 30 Missouri below Canyon Ferry -0.6
- 31 Smith 0.5
- 32 Sun -1.8
- 33 Teton 0.3
- 34 Birch/Dupuyer Creeks -2.4
- 35 Marias -0.2
- 36 Musselshell -1.2
- 37 Missouri above Fort Peck -1.2
- 38 Missouri below Fort Peck -1.7
- 39 Milk 0.7
- 40 Dearborn near Craig -1.5
- 41 Yellowstone above Livingston -1.8
- 42 Shields -1.8
- 43 Boulder (Yellowstone) -1.1
- 44 Stillwater -2.1
- 45 Rock/Red Lodge Creeks -2.8
- 46 Clarks Fork Yellowstone -1.6
- 47 Yellowstone above Bighorn River -1.8
- 48 Bighorn below Bighorn Lake -1.2
- 49 Little Bighorn -2.8
- 50 Yellowstone below Bighorn -1.5
- 51 Tongue -1.8
- 52 Powder -0.6
- 53 Upper Judith -0.7
- 54 Saint Mary 1.7



**April 5, 2013**

**NOTE: Data used to generate this map are PROVISIONAL and SUBJECT TO CHANGE.**

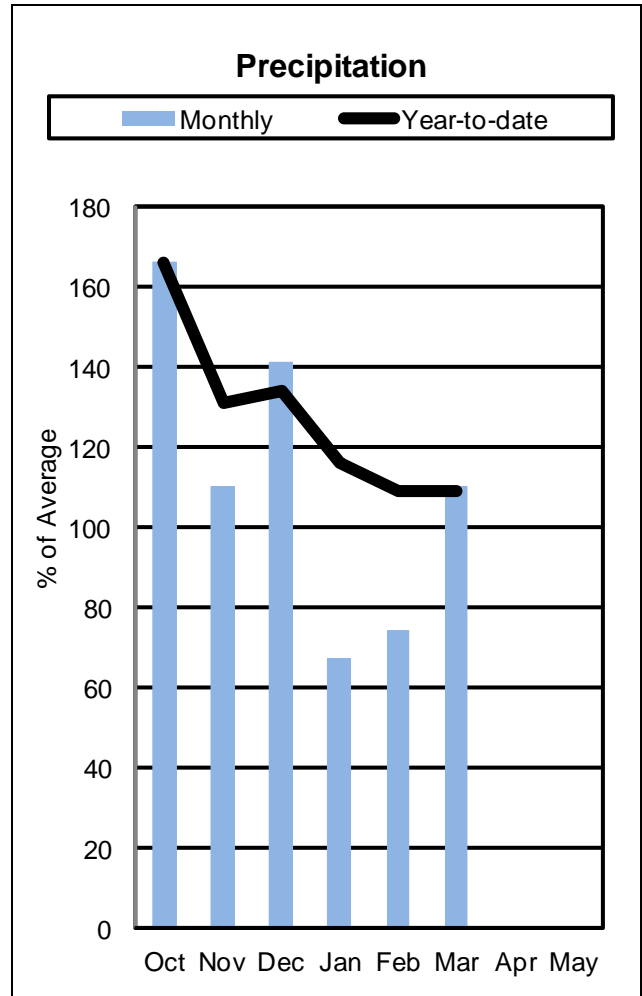
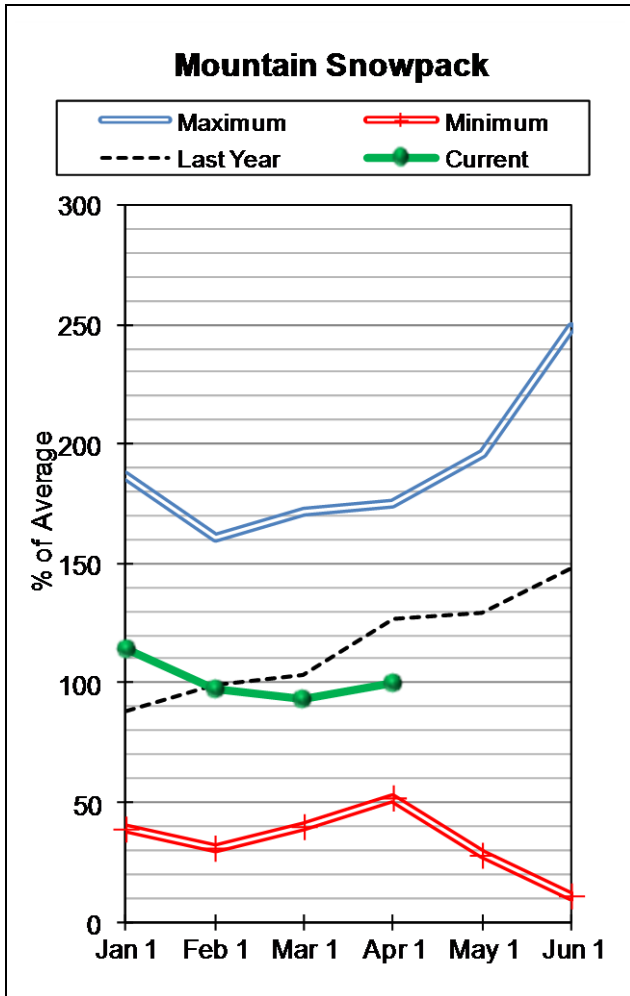
APRIL 2013

| SNOW COURSE          | ELEVATION | DATE    | SNOW DEPTH | WATER CONTENT | LAST YEAR | MEDIAN 81-10 |
|----------------------|-----------|---------|------------|---------------|-----------|--------------|
| ALBRO LAKE SNOTEL    | 8300      | 4/01/13 | 46         | 14.5          | 16.6      | 17.7         |
| AMBROSE              | 6480      | 3/24/13 | 41         | 9.9           | 14.2      | 10.4         |
| ARCH FALLS           | 7350      | 3/27/13 | 31         | 8.5           | 8.9       | 10.8         |
| ASHLEY DIVIDE        | 4820      | 3/25/13 | 12         | 2.8           | 6.6       | 4.4          |
| BADGER PASS SNOTEL   | 6900      | 4/01/13 | 80         | 32.3          | 42.3      | 29.8         |
| BANFIELD MTN SNOTEL  | 5600      | 4/01/13 | 47         | 16.7          | 26.2      | 17.2         |
| BAREE CREEK          | 5500      | 3/26/13 | 93         | 36.7          | 42.7      | 34.9         |
| BAREE MIDWAY         | 4600      | 3/26/13 | 70         | 25.5          | 36.0      | 27.8         |
| BAREE TRAIL          | 3800      | 3/26/13 | 23         | 7.8           | 12.2      | 7.2          |
| BARKER LAKES SNOTEL  | 8250      | 4/01/13 | 42         | 12.0          | 13.6      | 13.9         |
| BASIN CREEK SNOTEL   | 7180      | 4/01/13 | 25         | 6.0           | 6.4       | 7.5          |
| BASSOO PEAK          | 5150      | 3/28/13 | 20         | 6.6           | 10.5      | 7.8          |
| BEAGLE SPGS SNOTEL   | 8850      | 4/01/13 | 29         | 7.6           | 8.9       | 8.8          |
| BEAR BASIN           | 8150      | 3/25/13 | 56         | 18.3          | 18.7      | 17.7         |
| BEAVER CREEK SNOTEL  | 7850      | 4/01/13 | 54         | 16.8          | 16.8      | 16.6         |
| BIG SNOWY            | 7150      | 3/27/13 | 51         | 15.8          | 19.7      | 18.2         |
| BISSON CREEK SNOTEL  | 4920      | 4/01/13 | 17         | 5.8           | 11.3      | 10.0         |
| BLACK BEAR SNOTEL    | 7950      | 4/01/13 | 91         | 33.7          | 41.3      | 36.3         |
| BLACK MOUNTAIN       | 7750      | 3/22/13 | 43         | 11.3          | 15.5      | 14.1         |
| BLACK PINE SNOTEL    | 7100      | 4/01/13 | 25         | 7.9           | 13.2      | 9.6          |
| BLACKTAIL            | 5650      | 3/25/13 | 34         | 9.5           | 14.7      | 12.0         |
| BLACKTAIL MTN SNOTEL | 5650      | 4/01/13 | 27         | 9.5           | 16.1      | --           |
| BLOODY DICK SNOTEL   | 7550      | 4/01/13 | 33         | 9.9           | 12.4      | 10.9         |
| BOTS SOTS            | 7750      | 4/03/13 | 18         | 4.0           | 6.0       | 7.0          |
| BOULDER MTN SNOTEL   | 7950      | 4/01/13 | 56         | 18.0          | 22.9      | 19.4         |
| BOX CANYON SNOTEL    | 6700      | 4/01/13 | 18         | 6.3           | 7.3       | 8.6          |
| BOXELDER CREEK       | 5100      | 3/27/13 | 20         | 6.1           | 1.2       | 7.1          |
| BRACKETT CR SNOTEL   | 7320      | 4/01/13 | 49         | 17.7          | 18.9      | 19.0         |
| BRISTOW CREEK        | 3900      | 3/25/13 | 21         | 6.6           | 13.3      | 7.0          |
| BRUSH CREEK TIMBER   | 5000      | 3/28/13 | 30         | 10.0          | 15.7      | 6.1          |
| BULL MOUNTAIN        | 6600      | 3/28/13 | 17         | 6.1           | 4.4       | 5.6          |
| BURNT MTN SNOTEL     | 5880      | 4/01/13 | 6          | 2.2           | .0        | 4.4          |
| CABIN CREEK          | 5200      | 3/26/13 | 12         | 4.2           | 5.2       | 5.0          |
| CALVERT CR SNOTEL    | 6430      | 4/01/13 | 12         | 4.4           | 8.9       | 7.1          |
| CAMP SENIA           | 7890      | 4/03/13 | 29         | 7.7           | 13.5      | 5.4          |
| CARROT BASIN SNOTEL  | 9000      | 4/01/13 | 72         | 24.5          | 26.2      | 25.2         |
| CHESSMAN RESERVOIR   | 6200      | 3/27/13 | 14         | 4.8           | 5.5       | 2.6          |
| CHICKEN CREEK        | 4060      | 3/28/13 | 42         | 16.4          | 18.6      | 13.8         |
| CLOVER MDW SNOTEL    | 8800      | 4/01/13 | 43         | 12.4          | 13.8      | 15.6         |
| COLE CREEK SNOTEL    | 7850      | 4/01/13 | 33         | 9.6           | 13.5      | 13.5         |
| COMBINATION SNOTEL   | 5600      | 4/01/13 | 8          | 2.8           | 2.9       | 4.2          |
| COPPER BOTTOM SNOTEL | 5200      | 4/01/13 | 0          | .0            | 5.5       | --           |
| COPPER CAMP SNOTEL   | 6950      | 4/01/13 | 77         | 34.6          | 53.0      | --           |
| COPPER MOUNTAIN      | 7700      | 3/25/13 | 33         | 7.0           | 8.7       | 9.9          |
| COTTONWOOD CREEK     | 6400      | 3/22/13 | 23         | 6.1           | 8.0       | 7.3          |
| CREVICE MOUNTAIN     | 8400      | 3/27/13 | 38         | 11.4          | --        | 9.4          |
| CRYSTAL LAKE SNOTEL  | 6050      | 4/01/13 | 37         | 12.1          | 12.8      | 11.9         |
| DAISY PEAK SNOTEL    | 7600      | 4/01/13 | 29         | 7.8           | 10.3      | 9.8          |
| DALY CREEK SNOTEL    | 5780      | 4/01/13 | 24         | 8.1           | 11.2      | 9.6          |
| DARKHORSE LK. SNOTEL | 8700      | 4/01/13 | 76         | 26.5          | 27.7      | 26.2         |
| DEADMAN CR SNOTEL    | 6450      | 4/01/13 | 28         | 9.4           | 10.5      | 9.7          |
| DESERT MOUNTAIN      | 5600      | 3/26/13 | 42         | 13.2          | 14.8      | 12.6         |
| DISCOVERY BASIN      | 7050      | 3/27/13 | 27         | 7.6           | 11.8      | 9.2          |
| DIVIDE SNOTEL        | 7800      | 4/01/13 | 37         | 9.7           | 9.7       | 9.8          |
| DIX HILL             | 6400      | 3/30/13 | 18         | 6.0           | 10.4      | 9.1          |
| DUPUYER CREEK SNOTEL | 5750      | 4/01/13 | 17         | 4.7           | 8.7       | 8.6          |
| EAGLE CREEK          | 7000      | 3/30/13 | 32         | 11.3          | --        | 11.6         |
| EL DORADO MINE       | 7800      | 3/26/13 | 32         | 8.7           | 16.3      | 17.4         |
| ELK HORN SPRINGS     | 7800      | 3/28/13 | 30         | 7.2           | 8.3       | 8.0          |
| ELK PEAK             | 8000      | 3/28/13 | 42         | 12.2          | --        | 12.8         |

| SNOW COURSE          | ELEVATION | DATE    | SNOW<br>DEPTH | WATER<br>CONTENT | LAST<br>YEAR | MEDIAN<br>81-10 |
|----------------------|-----------|---------|---------------|------------------|--------------|-----------------|
| EMERY CREEK SNOTEL   | 4350      | 4/01/13 | ---           | 13.3             | 14.6         | 13.7            |
| FATTY CREEK          | 5500      | 3/27/13 | 64            | 21.1             | 26.8         | 21.2            |
| FISHER CREEK SNOTEL  | 9100      | 4/01/13 | 82            | 29.4             | 36.6         | 30.1            |
| FLATTOP MTN SNOTEL   | 6300      | 4/01/13 | 125           | 48.1             | 53.4         | 42.0            |
| FLEECER RIDGE        | 7500      | 3/28/13 | 27            | 7.8              | 10.2         | 9.5             |
| FOREST LAKE          | 6400      | 3/30/13 | 29            | 9.7              | --           | 10.0            |
| FOUR MILE            | 6900      | 3/29/13 | 22            | 7.2              | 8.2          | 7.0             |
| FREIGHT CREEK        | 6000      | 3/25/13 | 32            | 9.9              | 16.3         | 11.9            |
| FROHNER MDWS SNOTEL  | 6480      | 4/01/13 | 19            | 6.5              | 9.1          | 7.4             |
| GARVER CREEK SNOTEL  | 4250      | 4/01/13 | 26            | 8.9              | 16.4         | 9.1             |
| GIBBONS PASS         | 7100      | 3/28/13 | 48            | 15.8             | 23.0         | 20.0            |
| GOAT MOUNTAIN        | 7000      | 3/23/13 | 24            | 7.2              | 11.3         | 8.0             |
| GRAVE CRK SNOTEL     | 4300      | 4/01/13 | 37            | 14.3             | 18.3         | 13.8            |
| GRIFFIN CR DIVIDE    | 5150      | 3/28/13 | 22            | 6.3              | 9.7          | 8.4             |
| HAND CREEK SNOTEL    | 5030      | 4/01/13 | 19            | 7.2              | 12.9         | 11.1            |
| HAWKINS LAKE SNOTEL  | 6450      | 4/01/13 | 72            | 27.8             | 39.2         | 23.4            |
| HEBGEN DAM           | 6550      | 3/29/13 | 20            | 4.8              | 6.2          | 9.8             |
| HELL ROARING DIVIDE  | 5770      | 3/26/13 | 72            | 26.1             | 29.8         | 25.8            |
| HERRIG JUNCTION      | 4850      | 3/28/13 | 60            | 22.8             | 27.1         | 24.1            |
| HOLBROOK             | 4530      | 3/30/13 | 12            | 4.1              | 5.9          | 6.8             |
| HOODOO BASIN SNOTEL  | 6050      | 4/01/13 | 105           | 36.6             | 48.6         | 38.9            |
| JOHNSON PARK         | 6450      | 3/31/13 | 12            | 4.9              | 3.4          | 4.2             |
| KISHENEHN            | 3890      | 3/27/13 | 22            | 7.2              | 9.5          | 6.6             |
| KRAFT CREEK SNOTEL   | 4750      | 4/01/13 | 26            | 9.6              | 13.4         | --              |
| LAKEVIEW RDG. SNOTEL | 7400      | 4/01/13 | 28            | 9.3              | 8.4          | 10.4            |
| LEMHI RIDGE SNOTEL   | 8100      | 4/01/13 | 29            | 8.4              | 9.8          | 9.7             |
| LICK CREEK SNOTEL    | 6860      | 4/01/13 | 33            | 9.9              | 9.4          | 11.2            |
| LITTLE PARK          | 7400      | 3/28/13 | 45            | 14.0             | 13.0         | 13.7            |
| LOGAN CREEK          | 4300      | 3/28/13 | 19            | 4.2              | 7.8          | 5.8             |
| LONE MOUNTAIN SNOTEL | 8880      | 4/01/13 | 50            | 16.7             | 17.4         | 16.7            |
| LOWER TWIN SNOTEL    | 7900      | 4/01/13 | 48            | 14.5             | 17.0         | 16.6            |
| LUBRECHT SNOTEL      | 4680      | 4/01/13 | 0             | .0               | 4.0          | 1.6             |
| LUBRECHT FOREST NO 3 | 5450      | 3/29/13 | 8             | 2.3              | 4.8          | 4.6             |
| LUBRECHT FOREST NO 4 | 4650      | 3/29/13 | 0             | .0               | .6           | .4              |
| LUBRECHT FOREST NO 6 | 4040      | 3/29/13 | 0             | .0               | 1.1          | .6              |
| LUBRECHT HYDROPLOT   | 4200      | 3/29/13 | 0             | .0               | 3.7          | .6              |
| MADISON PLT SNOTEL   | 7750      | 4/01/13 | 59            | 20.0             | 25.6         | 21.3            |
| MANY GLACIER SNOTEL  | 4900      | 4/01/13 | 28            | 10.0             | 18.3         | 12.4            |
| MARIAS PASS          | 5250      | 3/30/13 | 38            | 14.2             | 19.2         | 14.4            |
| MINERAL CREEK        | 4000      | 4/01/13 | 29            | 11.0             | 15.4         | 15.4            |
| MONUMENT PK SNOTEL   | 8850      | 4/01/13 | 59            | 19.5             | 20.1         | 18.8            |
| MOSS PEAK SNOTEL     | 6780      | 4/01/13 | 92            | 35.5             | 41.1         | 35.1            |
| MT LOCKHART SNOTEL   | 6400      | 4/01/13 | 44            | 16.4             | 26.0         | 18.4            |
| MULE CREEK SNOTEL    | 8300      | 4/01/13 | 47            | 14.0             | 14.0         | 13.8            |
| N.E. ENTRANCE SNOTEL | 7350      | 4/01/13 | 19            | 6.4              | 8.0          | 9.6             |
| NEVADA RIDGE SNOTEL  | 7020      | 4/01/13 | 40            | 12.3             | 20.3         | 13.9            |
| NEW WORLD            | 6900      | 3/26/13 | 36            | 12.1             | 11.8         | 12.8            |
| NEZ PERCE CMP SNOTEL | 5650      | 4/01/13 | 36            | 11.9             | 14.4         | 13.0            |
| N.F. ELK CR SNOTEL   | 6250      | 4/01/13 | 28            | 8.3              | 14.2         | 10.6            |
| NF JOCKO SNOTEL      | 6330      | 4/01/13 | 93            | 39.3             | 45.4         | 40.3            |
| NOISY BASIN SNOTEL   | 6040      | 4/01/13 | 102           | 40.9             | 39.5         | 39.3            |
| OPHIR PARK           | 7150      | 3/30/13 | 32            | 9.6              | 15.8         | 14.8            |
| PETERSON MDW SNOTEL  | 7200      | 4/01/13 | 32            | 8.5              | 10.2         | 9.6             |
| PICKFOOT CRK SNOTEL  | 6650      | 4/01/13 | 30            | 9.8              | 11.8         | 9.5             |
| PIKE CREEK SNOTEL    | 5930      | 4/01/13 | 29            | 8.2              | 15.0         | 22.9            |
| PIPESTONE PASS       | 7200      | 3/25/13 | 18            | 4.7              | 3.8          | 4.6             |
| PLACER BASIN SNOTEL  | 8830      | 4/01/13 | 53            | 15.5             | 17.4         | 16.6            |
| POORMAN CR SNOTEL    | 5100      | 4/01/13 | 77            | 32.7             | 49.1         | 35.1            |
| PORCUPINE SNOTEL     | 6500      | 4/01/13 | 13            | 4.1              | 2.8          | 5.9             |
| REVAIS CREEK         | 4800      | 4/01/13 | 0             | .0               | .0           | .2              |
| ROCK CREEK MEADOW    | 8160      | 3/26/13 | 56            | 17.0             | 17.2         | 18.2            |
| ROCKER PEAK SNOTEL   | 8000      | 4/01/13 | 40            | 10.8             | 15.2         | 12.4            |
| ROCKY BOY SNOTEL     | 4700      | 4/01/13 | 16            | 5.5              | .8           | 3.8             |

| SNOW COURSE          | ELEVATION | DATE    | SNOW<br>DEPTH | WATER<br>CONTENT | LAST<br>YEAR | MEDIAN<br>81-10 |
|----------------------|-----------|---------|---------------|------------------|--------------|-----------------|
| SACAJAWEA SNOTEL     | 6550      | 4/01/13 | 33            | 11.9             | 11.5         | 14.8            |
| SADDLE MTN SNOTEL    | 7900      | 4/01/13 | 57            | 20.1             | 26.1         | 22.9            |
| S.F. SHIELDS SNOTEL  | 8100      | 4/01/13 | 43            | 12.0             | 14.3         | 15.3            |
| SHORT CREEK SNOTEL   | 7000      | 4/01/13 | 18            | 5.8              | 4.5          | 5.7             |
| SHOWER FALLS SNOTEL  | 8100      | 4/01/13 | 60            | 18.4             | 21.2         | 20.7            |
| SKALKAHO SNOTEL      | 7260      | 4/01/13 | 50            | 17.9             | 24.7         | 21.4            |
| SLEEPING WOMAN SNTL  | 6150      | 4/01/13 | 36            | 12.1             | 20.5         | 13.9            |
| SLIDE ROCK MOUNTAIN  | 7100      | 3/26/13 | 45            | 13.6             | 18.4         | 12.9            |
| SPOTTED BEAR MTN.    | 7000      | 4/02/13 | 24            | 8.8              | 15.0         | 12.2            |
| SPUR PARK SNOTEL     | 8100      | 4/01/13 | 61            | 19.9             | 25.5         | 19.5            |
| STAHL PEAK SNOTEL    | 6030      | 4/01/13 | 93            | 34.5             | 38.9         | 33.3            |
| STEMPLE PASS         | 6600      | 3/28/13 | 31            | 8.1              | 12.7         | 8.3             |
| STORM LAKE           | 7780      | 3/25/13 | 40            | 10.5             | 13.1         | 12.6            |
| STRYKER BASIN        | 6180      | 3/28/13 | 86            | 33.4             | 35.9         | 28.2            |
| STUART MOUNTAIN SNTL | 7400      | 4/01/13 | 76            | 29.6             | 34.1         | 30.6            |
| TAYLOR ROAD          | 4080      | 3/27/13 | 19            | 6.0              | 1.4          | 1.0             |
| TEN MILE LOWER       | 6600      | 3/25/13 | 27            | 7.6              | 8.9          | 5.7             |
| TEN MILE MIDDLE      | 6800      | 3/25/13 | 35            | 8.8              | 11.4         | 9.8             |
| TEPEE CREEK SNOTEL   | 8000      | 4/01/13 | 37            | 11.3             | 12.3         | 13.3            |
| TIMBERLINE CREEK     | 8850      | 4/03/13 | 39            | 11.0             | 11.4         | 12.1            |
| TIZER BASIN SNOTEL   | 6840      | 4/01/13 | 26            | 7.8              | 9.5          | 9.4             |
| TRINKUS LAKE         | 6100      | 4/01/13 | ---           | 39.4E            | 42.6         | 37.2            |
| TRUMAN CREEK         | 4060      | 3/25/13 | 6             | 1.5              | 5.9          | 2.5             |
| TWELVEMILE SNOTEL    | 5600      | 4/01/13 | 28            | 9.2              | 21.5         | 14.5            |
| TWENTY-ONE MILE      | 7150      | 3/31/13 | 40            | 12.8             | 15.0         | 14.7            |
| TWIN LAKES SNOTEL    | 6400      | 4/01/13 | 74            | 31.5             | 43.0         | 35.4            |
| UPPER HOLLAND LAKE   | 6200      | 3/27/13 | 83            | 30.3             | 30.5         | 29.6            |
| WALDRON SNOTEL       | 5600      | 4/01/13 | 27            | 8.3              | 14.1         | 10.7            |
| WARM SPRINGS SNOTEL  | 7800      | 4/01/13 | 53            | 16.0             | 23.6         | 19.0            |
| WEASEL DIVIDE        | 5450      | 3/28/13 | 84            | 27.5             | 37.9         | 29.0            |
| WEST YELL 'ST SNOTEL | 6700      | 4/01/13 | 24            | 8.5              | 9.7          | 10.2            |
| WHISKEY CREEK SNOTEL | 6800      | 4/01/13 | 37            | 10.3             | 16.2         | 15.0            |
| WHITE MILL SNOTEL    | 8700      | 4/01/13 | 55            | 20.3             | 23.4         | 21.6            |
| WOOD CREEK SNOTEL    | 5960      | 4/01/13 | 22            | 6.5              | 10.4         | 8.5             |
| WRONG CREEK          | 5700      | 3/25/13 | 25            | 8.0              | 13.2         | 10.2            |
| WRONG RIDGE          | 6800      | 3/25/13 | 35            | 11.4             | 16.5         | 13.5            |

# Kootenai River Basin in Montana



Snowpack conditions in the Kootenai River Basin as of April 1 were near normal. Snow water content was 100 percent of median and 72 percent of last year.

Mountain precipitation according to SNOTEL stations during March was 110 percent of average and 49 percent of last year. Water year precipitation, beginning October 1, 2012, was 109 percent of average and 91 percent of last year.

Lake Koocanusa storage at the end of March was 132 percent of average and 92 percent of last year.

Assuming average precipitation, April through July streamflows are forecast to average 96 percent.

KOOTENAI RIVER BASIN in Montana  
Streamflow Forecasts - April 1, 2013

| Forecast Point               | Forecast Period | <<===== Drier ===== Future Conditions ===== Wetter =====>> |          |          |          |          |          | 30-Yr Avg.<br>(1000AF) |
|------------------------------|-----------------|--|----------|----------|----------|----------|----------|------------------------|
|                              |                 | 90%  |          | 50%      |          | 30%      |          |                        |
|                              |                 | (1000AF)   | (1000AF) | (1000AF) | (% AVG.) | (1000AF) | (1000AF) |                        |
| Tobacco R nr Eureka          | APR-JUL         | 97   | 116      | 128      | 102      | 140      | 159      | 126                    |
|                              | APR-SEP         | 105  | 127      | 141      | 101      | 155      | 177      | 140                    |
| Libby Reservoir Inflow (1,2) | APR-JUL         | 4520   | 5130     | 5400     | 101      | 5670     | 6280     | 5340                   |
|                              | APR-SEP         | 5400   | 6020     | 6300     | 101      | 6580     | 7200     | 6250                   |
| Fisher River nr Libby        | APR-JUL         | 111  | 139      | 158      | 77       | 177      | 205      | 205                    |
|                              | APR-SEP         | 120  | 150      | 170      | 77       | 190      | 220      | 220                    |
| Yaak River nr Troy           | APR-JUL         | 320  | 375      | 415      | 99       | 455      | 510      | 420                    |
|                              | APR-SEP         | 335  | 395      | 435      | 99       | 475      | 535      | 440                    |
| Kootenai R at Leonia (1,2)   | APR-JUL         | 5590   | 6320     | 6660     | 101      | 7000     | 7730     | 6600                   |
|                              | APR-SEP         | 6550   | 7300     | 7640     | 101      | 7980     | 8730     | 7590                   |

KOOTENAI RIVER BASIN in Montana  
Reservoir Storage (1000 AF) - End of March

KOOTENAI RIVER BASIN in Montana  
Watershed Snowpack Analysis - April 1, 2013

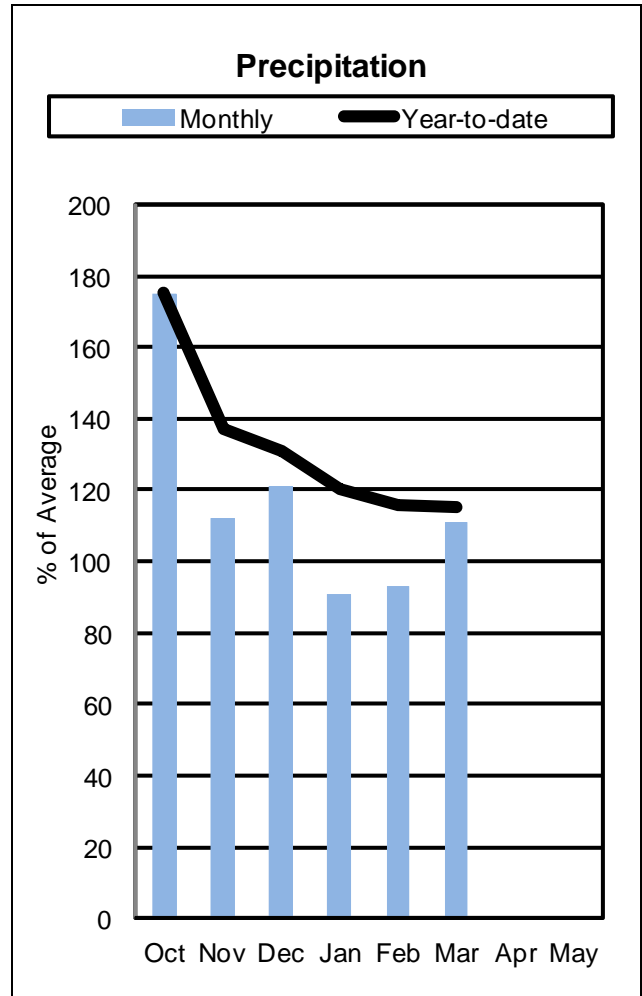
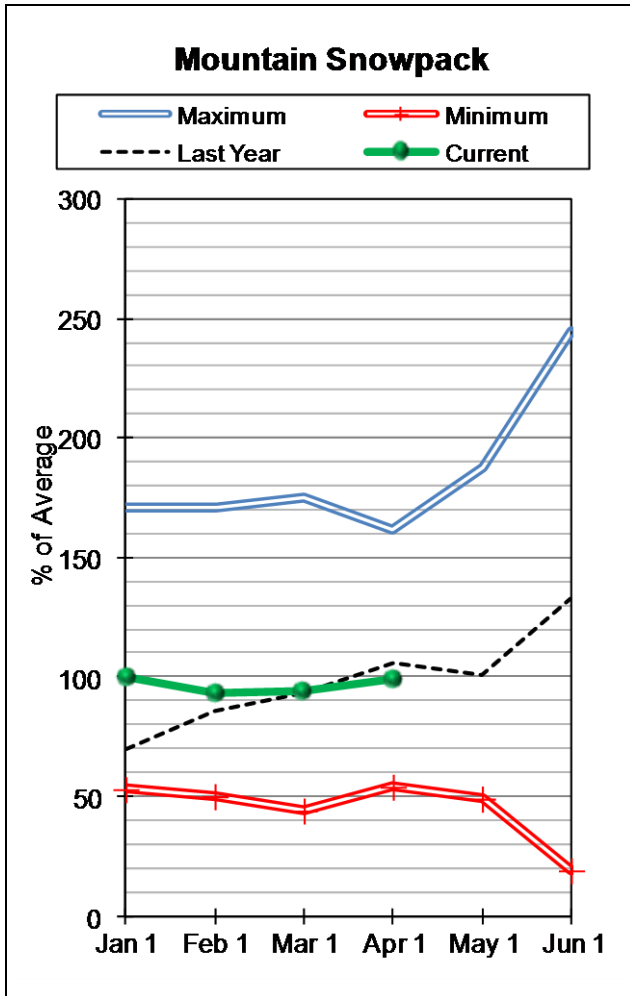
| Reservoir                 | Usable Capacity | *** Usable Storage *** |           |        | Watershed           | Number of Data Sites | This Year as % of |        |
|---------------------------|-----------------|------------------------|-----------|--------|---------------------|----------------------|-------------------|--------|
|                           |                 | This Year              | Last Year | Avg    |                     |                      | Last Yr           | Median |
| LAKE KOOCANUSA            | 5748.0          | 3180.0                 | 3442.0    | 2408.0 | KOOTENAY in CANADA  | 10                   | 73                | 104    |
|                           |                 |                        |           |        | KOOTENAI MAINTSTEM  | 4                    | 67                | 95     |
|                           |                 |                        |           |        | TOBACCO             | 3                    | 80                | 100    |
|                           |                 |                        |           |        | FISHER              | 5                    | 73                | 100    |
|                           |                 |                        |           |        | YAAK                | 2                    | 66                | 113    |
|                           |                 |                        |           |        | KOOTENAI in MONTANA | 14                   | 71                | 100    |
| KOOTENAI ab BONNERS FERRY | 24              | 72                     | 101       |        |                     |                      |                   |        |

\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural volume - actual volume may be affected by upstream water management.
- (3) - Median value used in place of average.

# Flathead River Basin



Snowpack conditions in the Flathead River Basin were near normal on April 1. Snow water content was 99 percent of median and 80 percent of last year.

Mountain precipitation during March was 111 percent of average and 60 percent of last year. Water year precipitation, beginning October 1, 2012, was 115 percent of average and 97 percent of last year.

Hungry Horse Reservoir storage at the end of March was 139 percent of average and 106 percent of last year. Flathead Lake storage at the end of March was 85 percent of average and 91 percent of last year.

Assuming average precipitation, April through July streamflows are forecast to average 98 percent.



FLATHEAD RIVER BASIN  
Streamflow Forecasts - April 1, 2013

| Forecast Point                      | Forecast Period | <<===== Drier ===== Future Conditions ===== Wetter =====>> |          |          |          |          |          | 30-Yr Avg.<br>(1000AF) |
|-------------------------------------|-----------------|--|----------|----------|----------|----------|----------|------------------------|
|                                     |                 | 90%  |          | 50%      |          | 10%      |          |                        |
|                                     |                 | (1000AF)   | (1000AF) | (1000AF) | (% AVG.) | (1000AF) | (1000AF) |                        |
| NF Flathead R nr Columbia Falls     | APR-JUL         | 1490   | 1610     | 1690     | 110      | 1770     | 1890     | 1540                   |
|                                     | APR-SEP         | 1640   | 1780     | 1870     | 110      | 1960     | 2100     | 1700                   |
| MF Flathead R nr West Glacier       | APR-JUL         | 1400   | 1530     | 1620     | 108      | 1710     | 1840     | 1500                   |
|                                     | APR-SEP         | 1520   | 1660     | 1760     | 108      | 1860     | 2000     | 1630                   |
| SF Flathead R nr Hungry Horse       | APR-JUL         | 1060   | 1150     | 1220     | 103      | 1290     | 1380     | 1180                   |
|                                     | APR-SEP         | 1110   | 1220     | 1290     | 102      | 1360     | 1470     | 1260                   |
| Hungry Horse Reservoir Inflow (1,2) | APR-JUL         | 1590   | 1840     | 1960     | 105      | 2080     | 2330     | 1860                   |
|                                     | APR-SEP         | 1670   | 1950     | 2070     | 105      | 2190     | 2470     | 1980                   |
| Flathead R at Columbia Falls (2)    | APR-JUL         | 4750   | 5140     | 5400     | 108      | 5660     | 6050     | 5020                   |
|                                     | APR-SEP         | 5110   | 5550     | 5850     | 107      | 6150     | 6590     | 5450                   |
| Ashley Ck nr Marion (2)             | APR-JUL         | 3.7  | 5.1      | 6.0      | 92       | 6.9      | 8.3      | 6.5                    |
|                                     | APRIL           | 1.2  | 2.0      | 2.6      | 100      | 3.2      | 4.0      | 2.6                    |
| Swan R nr Bigfork                   | APR-JUL         | 390  | 445      | 480      | 92       | 515      | 570      | 520                    |
|                                     | APR-SEP         | 445  | 510      | 550      | 92       | 590      | 655      | 595                    |
| Flathead Lake Inflow (1,2)          | APR-JUL         | 5200   | 5920     | 6250     | 108      | 6580     | 7300     | 5810                   |
|                                     | APR-SEP         | 5540   | 6360     | 6740     | 108      | 7120     | 7940     | 6270                   |
| Mill Ck ab Bassoo Ck nr Niarada     | APR-JUL         | 1.5  | 2.3      | 2.8      | 70       | 3.3      | 4.1      | 4.0                    |
|                                     | APR-SEP         | 1.8  | 2.6      | 3.1      | 71       | 3.6      | 4.4      | 4.4                    |
| South Crow Ck nr Ronan              | APR-JUL         | 7.2  | 8.6      | 9.6      | 95       | 10.6     | 12.0     | 10.1                   |
|                                     | APR-SEP         | 8.3  | 9.9      | 11.0     | 95       | 12.1     | 13.7     | 11.6                   |
| Mission Ck nr St. Ignatius          | APR-JUL         | 20   | 22       | 24       | 96       | 26       | 28       | 25                     |
|                                     | APR-SEP         | 24   | 27       | 29       | 97       | 31       | 34       | 30                     |
| Sf Jocko R nr Arlee                 | APR-JUL         | 23   | 27       | 30       | 91       | 33       | 37       | 33                     |
|                                     | APR-SEP         | 26   | 31       | 34       | 92       | 37       | 42       | 37                     |
| NF Jocko R bl Tabor Feeder Canal    | APR-JUL         | 24   | 26       | 28       | 90       | 30       | 32       | 31                     |
|                                     | APR-SEP         | 26   | 28       | 30       | 91       | 32       | 34       | 33                     |

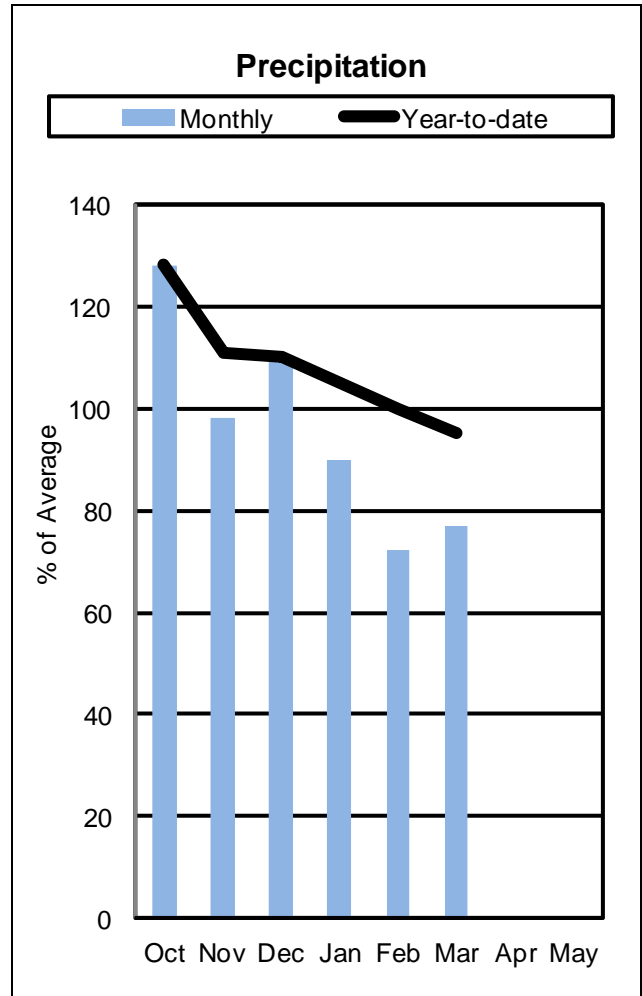
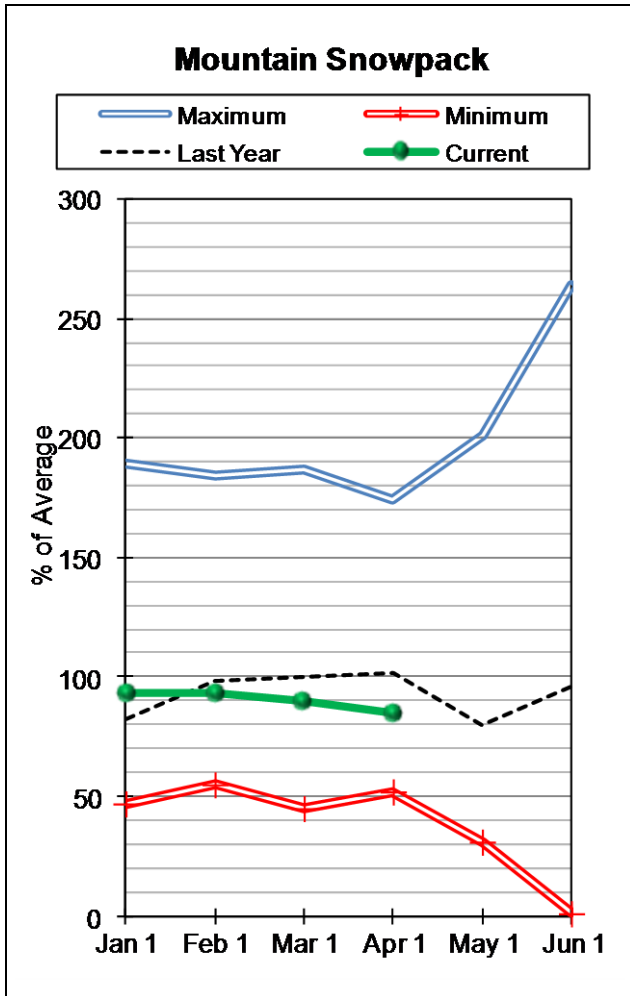
| FLATHEAD RIVER BASIN<br>Reservoir Storage (1000 AF) - End of March |                 |                        |           |        | FLATHEAD RIVER BASIN<br>Watershed Snowpack Analysis - April 1, 2013 |                      |                   |        |
|--|-----------------|------------------------|-----------|--------|---|----------------------|-------------------|--------|
| Reservoir  | Usable Capacity | *** Usable Storage *** |           |        | Watershed   | Number of Data Sites | This Year as % of |        |
|  |                 | This Year              | Last Year | Avg    |   |                      | Last Yr           | Median |
| CAMAS (4)  | 45.2            | 31.8                   | 28.9      | 22.5   | NF FLATHEAD in CANADA   | 3                    | 79                | 99     |
| LOWER JOCKO LAKE   | 6.4             | 0.0                    | 0.0       | 0.0    | NF FLATHEAD in MONTANA  | 9                    | 81                | 100    |
| MISSION VALLEY (8)   | 100.0           | 22.1                   | 33.7      | 33.7   | MIDDLE FORK FLATHEAD  | 6                    | 81                | 95     |
| HUNGRY HORSE   | 3451.0          | 2896.0                 | 2734.0    | 2081.0 | SOUTH FORK FLATHEAD   | 6                    | 92                | 99     |
| FLATHEAD LAKE  | 1791.0          | 644.5                  | 705.0     | 762.6  | STILLWATER-WHITEFISH  | 9                    | 79                | 101    |
|  |                 |                        |           |        | SWAN  | 6                    | 90                | 102    |
|  |                 |                        |           |        | MISSION VALLEY  | 4                    | 74                | 92     |
|  |                 |                        |           |        | LITTLE BITTERROOT-ASHLEY  | 5                    | 57                | 76     |
|  |                 |                        |           |        | JOCKO   | 4                    | 81                | 95     |
|  |                 |                        |           |        | FLATHEAD in MONTANA   | 36                   | 80                | 96     |
| FLATHEAD RIVER BASIN   | 39              | 80                     | 97        |        |   |                      |                   |        |

\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural volume - actual volume may be affected by upstream water management.
- (3) - Median value used in place of average.

# Upper Clark Fork River Basin



Snowpack conditions in the Upper Clark Fork River Basin were below normal on April 1. Snow water content was 85 percent of median and 70 percent of last year.

Mountain precipitation according to SNOTEL stations during March was 77 percent of average and 56 percent of last year. Water year precipitation, beginning October 1, 2012, was 95 percent of average and 83 percent of last year.

East Fork Rock Creek storage was 112 percent of average and 82 percent of last year; and Nevada Creek storage was 82 percent of average and 56 percent of last year.

Assuming average precipitation, April through July streamflows are forecast to average 77 percent.

UPPER CLARK FORK RIVER BASIN  
Streamflow Forecasts - April 1, 2013

| Forecast Point                       | Forecast Period | <<===== Drier ===== Future Conditions ===== Wetter =====>> |          |          |          |          |          | 30-Yr Avg.<br>(1000AF) |
|--------------------------------------|-----------------|--|----------|----------|----------|----------|----------|------------------------|
|                                      |                 | 90%  |          | 50%      |          | 30%      |          |                        |
|                                      |                 | (1000AF)   | (1000AF) | (1000AF) | (% AVG.) | (1000AF) | (1000AF) |                        |
| Little Blackfoot R nr Garrison       | APR-JUL         | 23   | 39       | 50       | 71       | 61       | 77       | 70                     |
|                                      | APR-SEP         | 26   | 44       | 56       | 73       | 68       | 86       | 77                     |
| Flint Ck nr Southern Cross           | APR-JUL         | 3.7  | 7.4      | 9.9      | 80       | 12.4     | 16.1     | 12.4                   |
|                                      | APR-SEP         | 3.7  | 8.3      | 11.5     | 79       | 14.7     | 19.3     | 14.6                   |
| Flint Ck bl Boulder Ck               | APR-JUL         | 19.4   | 33       | 43       | 83       | 53       | 67       | 52                     |
|                                      | APR-SEP         | 26   | 43       | 55       | 83       | 67       | 84       | 66                     |
| Lower Willow Ck Reservoir Inflow (2) | APR-MAY         | 1.6  | 3.7      | 5.1      | 70       | 6.5      | 8.6      | 7.3                    |
|                                      | APR-JUL         | 1.9  | 5.2      | 7.5      | 71       | 9.8      | 13.1     | 10.6                   |
| MF Rock Ck nr Philipsburg            | APR-JUL         | 31   | 41       | 47       | 81       | 53       | 63       | 58                     |
|                                      | APR-SEP         | 35   | 46       | 53       | 82       | 60       | 71       | 65                     |
| Rock Ck nr Clinton                   | APR-JUL         | 123  | 169      | 200      | 80       | 230      | 275      | 250                    |
|                                      | APR-SEP         | 141  | 191      | 225      | 80       | 259      | 309      | 280                    |
| Clark Fork R ab Milltown             | APR-JUL         | 173  | 310      | 400      | 76       | 490      | 625      | 530                    |
|                                      | APR-SEP         | 218  | 368      | 470      | 76       | 572      | 722      | 615                    |
| Nevada Ck nr Helmville               | APR-MAY         | 0.9  | 4.0      | 6.1      | 73       | 8.2      | 11.3     | 8.4                    |
|                                      | APR-JUL         | 1.8  | 6.9      | 10.4     | 73       | 13.9     | 19.0     | 14.2                   |
| Blackfoot R nr Bonner                | APR-JUL         | 370  | 475      | 545      | 76       | 615      | 720      | 720                    |
|                                      | APR-SEP         | 425  | 540      | 615      | 77       | 690      | 805      | 800                    |
| Clark Fork R ab Missoula             | APR-JUL         | 565  | 785      | 935      | 75       | 1080     | 1300     | 1250                   |
|                                      | APR-SEP         | 685  | 925      | 1090     | 77       | 1250     | 1490     | 1420                   |

UPPER CLARK FORK RIVER BASIN  
Reservoir Storage (1000 AF) - End of March

UPPER CLARK FORK RIVER BASIN  
Watershed Snowpack Analysis - April 1, 2013

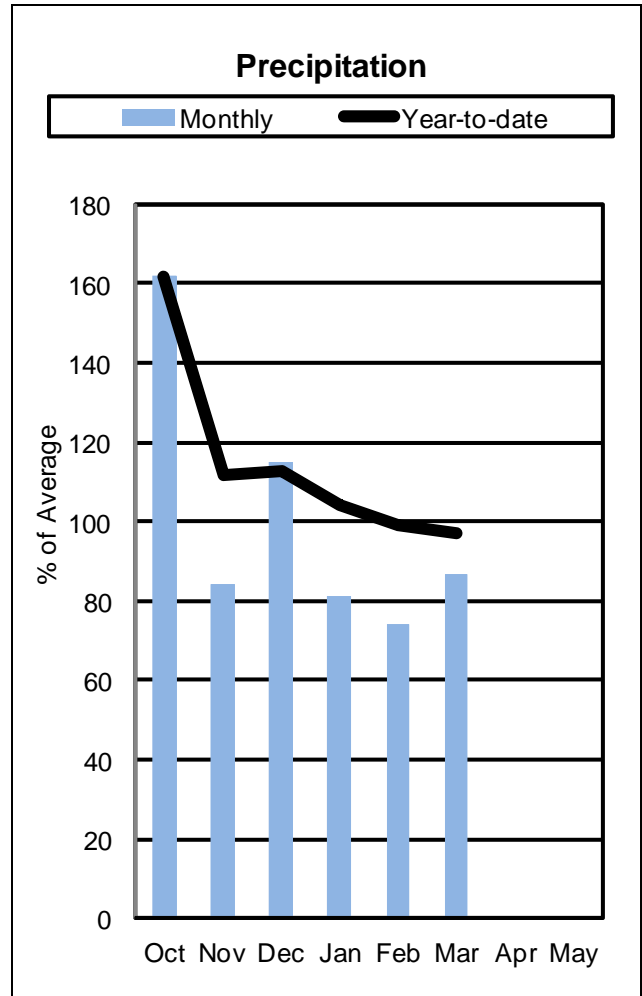
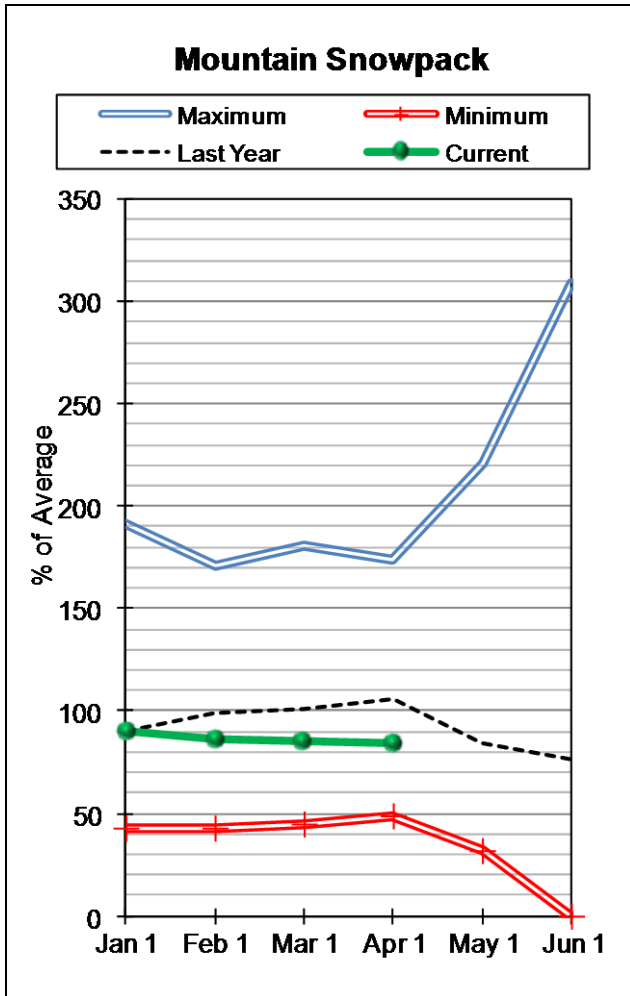
| Reservoir            | Usable Capacity | *** Usable Storage *** |           |     | Watershed                 | Number of Data Sites | This Year as % of |        |
|----------------------|-----------------|------------------------|-----------|-----|---------------------------|----------------------|-------------------|--------|
|                      |                 | This Year              | Last Year | Avg |                           |                      | Last Yr           | Median |
| EAST FORK ROCK CREEK | 15.6            | 10.2                   | 12.5      | 9.1 | CLARK FORK ab FLINT CREEK | 13                   | 71                | 81     |
| GEORGETOWN LAKE      |                 | NO REPORT              |           |     | FLINT CREEK               | 5                    | 73                | 83     |
| LOWER WILLOW CREEK   |                 | NO REPORT              |           |     | ROCK CREEK                | 5                    | 75                | 90     |
| NEVADA CREEK         | 12.6            | 6.3                    | 11.2      | 7.7 | CLARK FORK ab BLACKFOOT   | 21                   | 72                | 83     |
|                      |                 |                        |           |     | BLACKFOOT                 | 12                   | 67                | 85     |
|                      |                 |                        |           |     | UPPER CLARK FORK BASIN    | 30                   | 70                | 85     |

\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural volume - actual volume may be affected by upstream water management.
- (3) - Median value used in place of average.

# Bitterroot River Basin



Snowpack conditions in the Bitterroot River Basin were below normal on April 1. Snow water content was 84 percent of median and 70 percent of last year.

Mountain precipitation according to SNOTEL stations during March was 87 percent of average and 63 percent of last year. Water year precipitation, beginning October 1, 2012, was 97 percent of average and 61 percent of last year.

Como storage was 108 percent of average and 110 percent of last year.

Assuming near average precipitation, April through July streamflows are forecast to average 80 percent.

BITTERROOT RIVER BASIN  
Streamflow Forecasts - April 1, 2013

| Forecast Point                | Forecast Period | <<===== Drier ===== Future Conditions ===== Wetter =====>> |          |          |          |          |          | 30-Yr Avg.<br>(1000AF) |
|-------------------------------|-----------------|--|----------|----------|----------|----------|----------|------------------------|
|                               |                 | 90%  |          | 50%      |          | 30%      |          |                        |
|                               |                 | (1000AF)   | (1000AF) | (1000AF) | (% AVG.) | (1000AF) | (1000AF) |                        |
| WF Bitterroot R nr Conner (2) | APR-JUL         | 58   | 83       | 100      | 78       | 117      | 142      | 128                    |
|                               | APR-SEP         | 65   | 91       | 109      | 78       | 127      | 153      | 139                    |
| Bitterroot R nr Darby         | APR-JUL         | 210  | 280      | 330      | 81       | 380      | 450      | 410                    |
|                               | APR-SEP         | 260  | 330      | 380      | 81       | 430      | 500      | 470                    |
| Como Reservoir Inflow (2)     | APR-JUL         | 50   | 57       | 62       | 82       | 67       | 74       | 76                     |
|                               | APR-SEP         | 52   | 60       | 65       | 82       | 70       | 78       | 79                     |
| Bitterroot R nr Missoula      | APR-JUL         | 665  | 815      | 920      | 80       | 1020     | 1180     | 1150                   |
|                               | APR-SEP         | 715  | 880      | 995      | 80       | 1110     | 1270     | 1250                   |

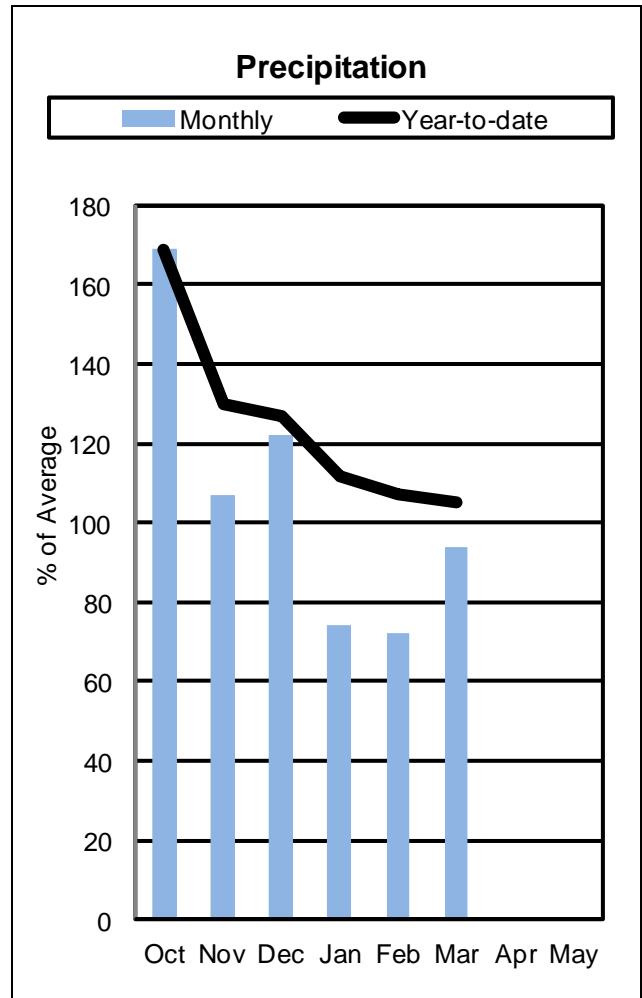
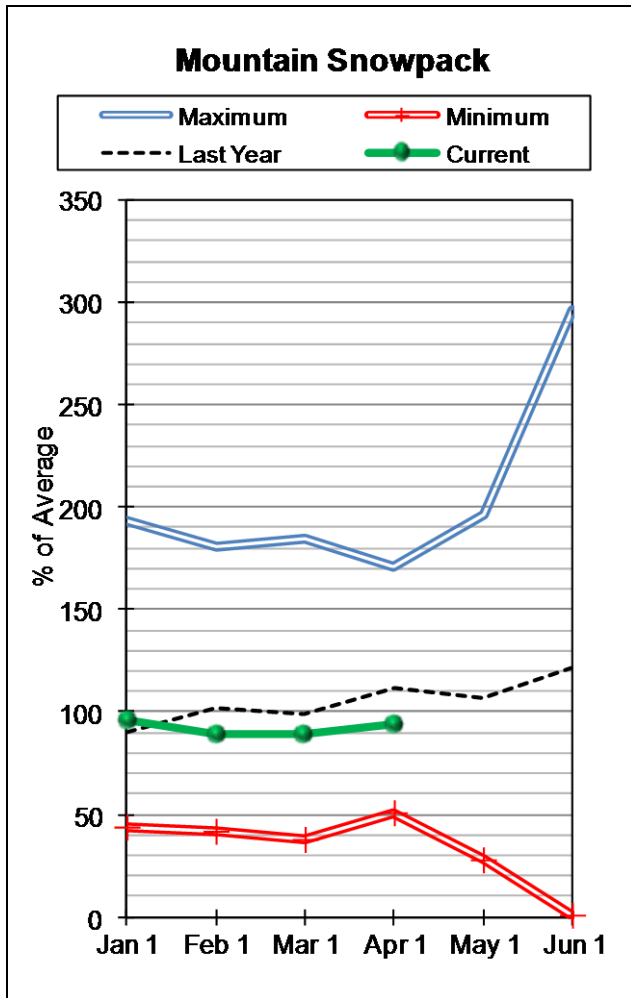
| BITTERROOT RIVER BASIN<br>Reservoir Storage (1000 AF) - End of March |                 |                        |           |      | BITTERROOT RIVER BASIN<br>Watershed Snowpack Analysis - April 1, 2013 |                      |                   |        |
|--|-----------------|------------------------|-----------|------|---|----------------------|-------------------|--------|
| Reservoir  | Usable Capacity | *** Usable Storage *** |           |      | Watershed   | Number of Data Sites | This Year as % of |        |
|  |                 | This Year              | Last Year | Avg  |   |                      | Last Yr           | Median |
| PAINTED ROCKS LAKE   | 31.7            | 12.3                   | 15.4      | 8.7  | WEST FORK BITTERROOT  | 2                    | 79                | 89     |
| COMO   | 34.9            | 16.9                   | 15.3      | 15.6 | EAST SIDE BITTERROOT  | 5                    | 72                | 85     |
|  |                 |                        |           |      | WEST SIDE BITTERROOT  | 3                    | 65                | 81     |
|  |                 |                        |           |      | BITTERROOT RIVER BASIN  | 9                    | 70                | 84     |

\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural volume - actual volume may be affected by upstream water management.
- (3) - Median value used in place of average.

# Lower Clark Fork River Basin



Snowpack conditions in the Lower Clark Fork River Basin were near above normal on April 1. Snow water content was 94 percent of median and 72 percent of last year.

Mountain precipitation according to SNOTEL stations during March was 94 percent of average and 52 percent of last year. Water year precipitation, beginning October 1, 2012, was 105 percent of average and 93 percent of last year.

Storage at the end of March in Noxon Rapids was 102 percent of average and 103 percent of last year.

Assuming average precipitation, April through July streamflows are forecast to average 85 percent.

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LOWER CLARK FORK RIVER BASIN  
Streamflow Forecasts - April 1, 2013

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| Forecast Point                      | Forecast Period | <<===== Drier ===== Future Conditions ===== Wetter =====>> |          |          |          |          |          | 30-Yr Avg.<br>(1000AF) |
|-------------------------------------|-----------------|--|----------|----------|----------|----------|----------|------------------------|
|                                     |                 | 90%  |          | 50%      |          | 30%      |          |                        |
|                                     |                 | (1000AF)   | (1000AF) | (1000AF) | (% AVG.) | (1000AF) | (1000AF) |                        |
| Clark Fork R bl Missoula            | APR-JUL         | 1300   | 1660     | 1900     | 79       | 2140     | 2500     | 2400                   |
|                                     | APR-SEP         | 1450   | 1840     | 2100     | 79       | 2360     | 2750     | 2670                   |
| Clark Fork R at St. Regis (1)       | APR-JUL         | 1600   | 2230     | 2520     | 80       | 2810     | 3440     | 3160                   |
|                                     | APR-SEP         | 1800   | 2490     | 2800     | 80       | 3110     | 3800     | 3510                   |
| Clark Fork R nr Plains (1,2)        | APR-JUL         | 7020   | 8380     | 9000     | 98       | 9620     | 11000    | 9200                   |
|                                     | APR-SEP         | 7670   | 9200     | 9900     | 98       | 10600    | 12100    | 10100                  |
| Thompson R nr Thompson Falls        | APR-JUL         | 80   | 113      | 135      | 75       | 157      | 190      | 181                    |
| Thompson R Nr Thompson Falls        | APR-SEP         | 96   | 131      | 155      | 76       | 179      | 215      | 205                    |
| Prospect Ck at Thompson Falls       | APR-JUL         | 63   | 74       | 82       | 80       | 90       | 101      | 102                    |
|                                     | APR-SEP         | 68   | 80       | 88       | 80       | 96       | 108      | 110                    |
| Clark Fork at Whitehorse Rpds (1,2) | APR-JUL         | 8250   | 9660     | 10300    | 98       | 10900    | 12400    | 10500                  |
|                                     | APR-SEP         | 8970   | 10600    | 11300    | 98       | 12000    | 13600    | 11500                  |

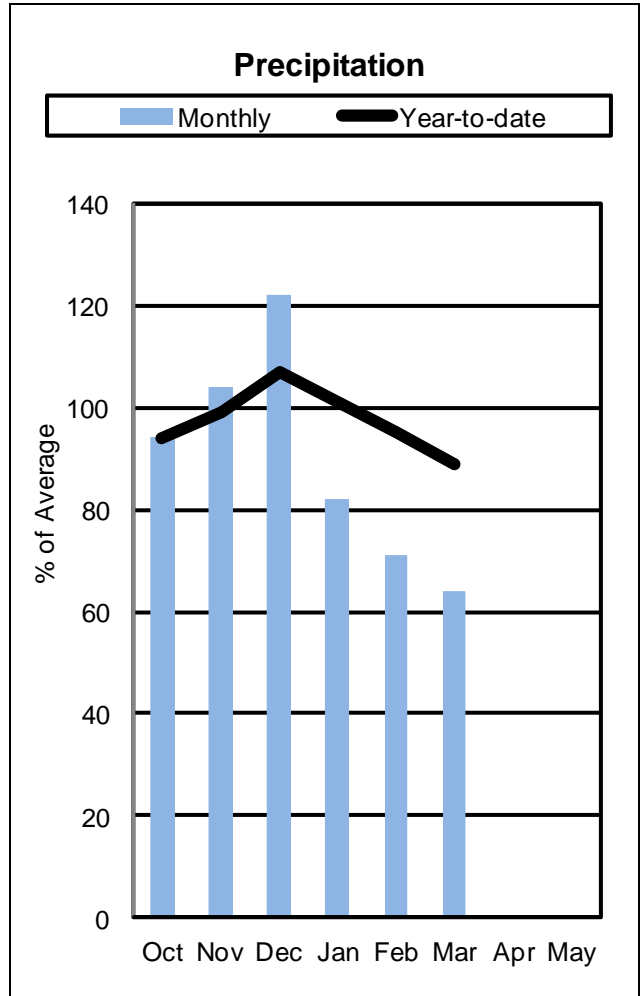
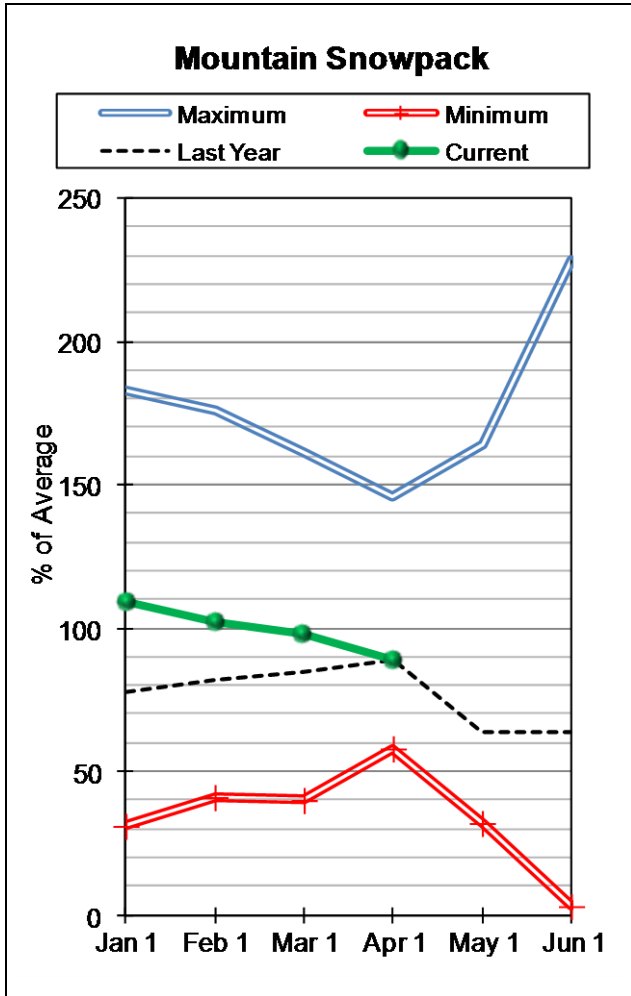
| LOWER CLARK FORK RIVER BASIN<br>Reservoir Storage (1000 AF) - End of March |                 |                        |           |       | LOWER CLARK FORK RIVER BASIN<br>Watershed Snowpack Analysis - April 1, 2013 |                      |                   |        |
|--|-----------------|------------------------|-----------|-------|---|----------------------|-------------------|--------|
| Reservoir  | Usable Capacity | *** Usable Storage *** |           |       | Watershed   | Number of Data Sites | This Year as % of |        |
|  |                 | This Year              | Last Year | Avg   |   |                      | Last Yr           | Median |
| NOXON RAPIDS   | 335.0           | 317.5                  | 308.3     | 309.9 | LOWER CLARK FORK BASIN  | 12                   | 72                | 94     |

\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural volume - actual volume may be affected by upstream water management.
- (3) - Median value used in place of average.

# Jefferson River Basin



Snowpack conditions in the Jefferson River Basin were below normal on April 1. Snow water content was 89 percent of median and 186 percent of last year.

Mountain precipitation according to SNOTEL stations during March was 64 percent of average and 45 percent of last year. Water year precipitation, beginning October 1, 2012, was 89 percent of average and 83 percent of last year.

Lima storage was 134 percent of average and 75 percent of last year; Clark Canyon storage was 99 percent of average and 79 percent of last year.

Assuming average precipitation, April through July streamflows are forecast to average 68 percent.



JEFFERSON RIVER BASIN  
Streamflow Forecasts - April 1, 2013

| Forecast Point                    | Forecast Period | <<===== Drier ===== Future Conditions ===== Wetter =====>> |          |          |          |          |          | 30-Yr Avg.<br>(1000AF) |
|-----------------------------------|-----------------|--|----------|----------|----------|----------|----------|------------------------|
|                                   |                 | 90%  |          | 50%      |          | 10%      |          |                        |
|                                   |                 | (1000AF)   | (1000AF) | (1000AF) | (% AVG.) | (1000AF) | (1000AF) |                        |
| Lima Reservoir Inflow (2)         | APR-JUL         | 48   | 58       | 65       | 79       | 72       | 82       | 82                     |
|                                   | APR-SEP         | 49   | 61       | 69       | 78       | 77       | 89       | 89                     |
| Clark Canyon Reservoir Inflow (2) | APR-JUL         | 5.0  | 34       | 61       | 60       | 88       | 128      | 101                    |
|                                   | APR-SEP         | 5.0  | 47       | 76       | 63       | 105      | 147      | 120                    |
| Beaverhead R at Barretts (2)      | APR-JUL         | 29   | 48       | 90       | 70       | 132      | 195      | 129                    |
|                                   | APR-SEP         | 40   | 62       | 112      | 72       | 162      | 235      | 156                    |
| Ruby R Reservoir Inflow (2)       | APR-JUL         | 34   | 48       | 57       | 74       | 66       | 80       | 77                     |
|                                   | APR-SEP         | 43   | 58       | 69       | 76       | 80       | 95       | 91                     |
| Big Hole R at Wisdom              | APR-JUL         | 7.0  | 46       | 72       | 71       | 98       | 137      | 102                    |
|                                   | APR-SEP         | 7.0  | 48       | 77       | 71       | 106      | 148      | 108                    |
| Big Hole R nr Melrose             | APR-JUL         | 205  | 295      | 360      | 70       | 425      | 515      | 515                    |
|                                   | APR-SEP         | 225  | 325      | 395      | 71       | 465      | 565      | 560                    |
| Jefferson R nr Twin Bridges (2)   | APR-JUL         | 106  | 300      | 435      | 63       | 570      | 765      | 690                    |
|                                   | APR-SEP         | 96   | 320      | 470      | 64       | 620      | 845      | 730                    |
| Boulder R nr Boulder              | APR-JUL         | 24   | 38       | 48       | 70       | 58       | 72       | 69                     |
|                                   | APR-SEP         | 25   | 41       | 52       | 70       | 63       | 79       | 74                     |
| Willow Ck Reservoir Inflow (2)    | APR-JUL         | 2.5  | 7.1      | 10.2     | 61       | 13.3     | 17.9     | 16.8                   |
|                                   | APR-SEP         | 3.8  | 8.9      | 12.4     | 64       | 15.9     | 21       | 19.3                   |
| Jefferson R nr Three Forks (2)    | APR-JUL         | 108  | 310      | 450      | 61       | 590      | 790      | 740                    |
|                                   | APR-SEP         | 105  | 330      | 485      | 61       | 640      | 865      | 800                    |

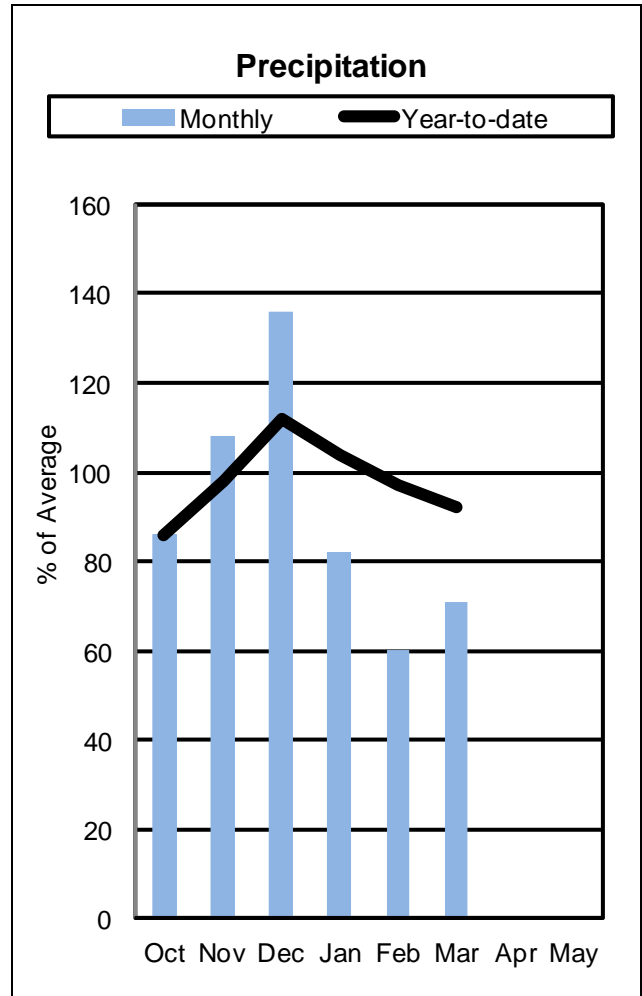
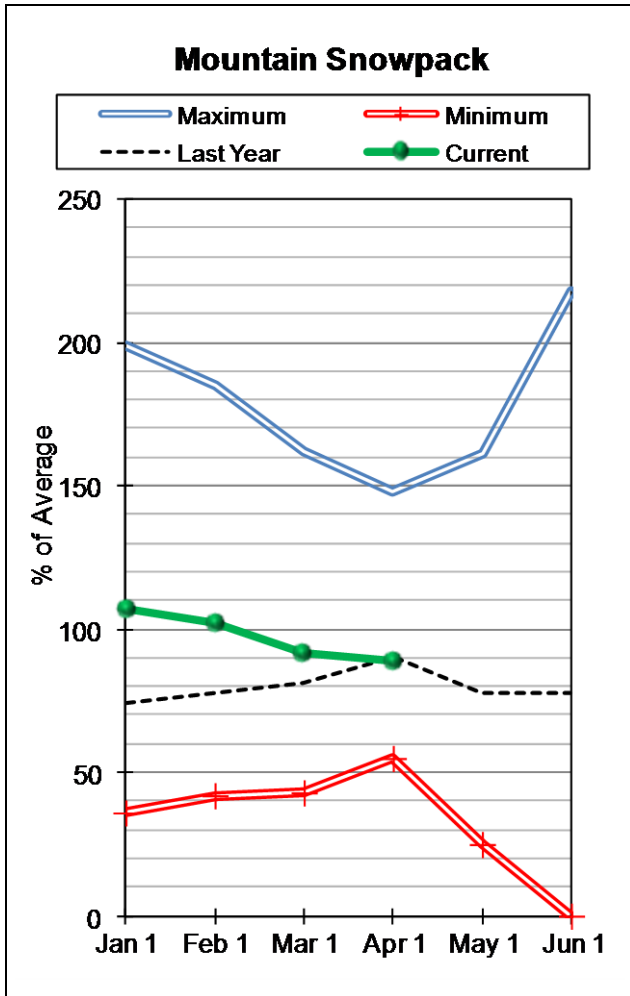
| JEFFERSON RIVER BASIN<br>Reservoir Storage (1000 AF) - End of March |                 |                        |           |       | JEFFERSON RIVER BASIN<br>Watershed Snowpack Analysis - April 1, 2013 |                      |                   |        |
|---|-----------------|------------------------|-----------|-------|--|----------------------|-------------------|--------|
| Reservoir   | Usable Capacity | *** Usable Storage *** |           |       | Watershed  | Number of Data Sites | This Year as % of |        |
|   |                 | This Year              | Last Year | Avg   |  |                      | Last Yr           | Median |
| LIMA  | 84.0            | 45.7                   | 61.0      | 34.2  | BEAVERHEAD   | 10                   | 94                | 98     |
| CLARK CANYON  | 255.6           | 132.7                  | 167.1     | 134.5 | RUBY   | 5                    | 92                | 87     |
| RUBY RIVER  | 38.8            | 31.7                   | 37.7      | 31.5  | BIGHOLE  | 13                   | 83                | 88     |
|   |                 |                        |           |       | BOULDER  | 6                    | 80                | 85     |
|   |                 |                        |           |       | JEFFERSON RIVER BASIN  | 28                   | 86                | 89     |

\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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- (2) - The value is natural volume - actual volume may be affected by upstream water management.
- (3) - Median value used in place of average.

# Madison River Basin



Snowpack conditions in the Madison River Basin were below normal on April 1. Snow water content was 89 percent of median and 87 percent of last year.

Mountain precipitation according to SNOTEL stations during March was 71 percent of average and 38 percent of last year. Water year precipitation, beginning October 1, 2012, was 92 percent of average and 82 percent of last year.

Ennis Lake storage at the end of March was 97 percent of average and 96 percent of last year and Hebgen Lake storage was 102 percent of average and 121 percent of last year.

Assuming average precipitation, April through July streamflows are forecast to average 87 percent.

MADISON RIVER BASIN  
Streamflow Forecasts - April 1, 2013

| Forecast Point              | Forecast Period | <<===== Drier ===== Future Conditions ===== Wetter =====>> |          |          |          |          |          | 30-Yr Avg.<br>(1000AF) |
|-----------------------------|-----------------|--|----------|----------|----------|----------|----------|------------------------|
|                             |                 | 90%  |          | 50%      |          | 30%      |          |                        |
|                             |                 | (1000AF)   | (1000AF) | (1000AF) | (% AVG.) | (1000AF) | (1000AF) |                        |
| Hebgen Reservoir Inflow (2) | APR-JUL         | 275  | 305      | 325      | 88       | 345      | 375      | 370                    |
|                             | APR-SEP         | 355  | 390      | 415      | 88       | 440      | 475      | 470                    |
| Ennis Reservoir Inflow (2)  | APR-JUL         | 410  | 480      | 530      | 85       | 580      | 650      | 625                    |
|                             | APR-SEP         | 530  | 610      | 665      | 86       | 720      | 800      | 775                    |

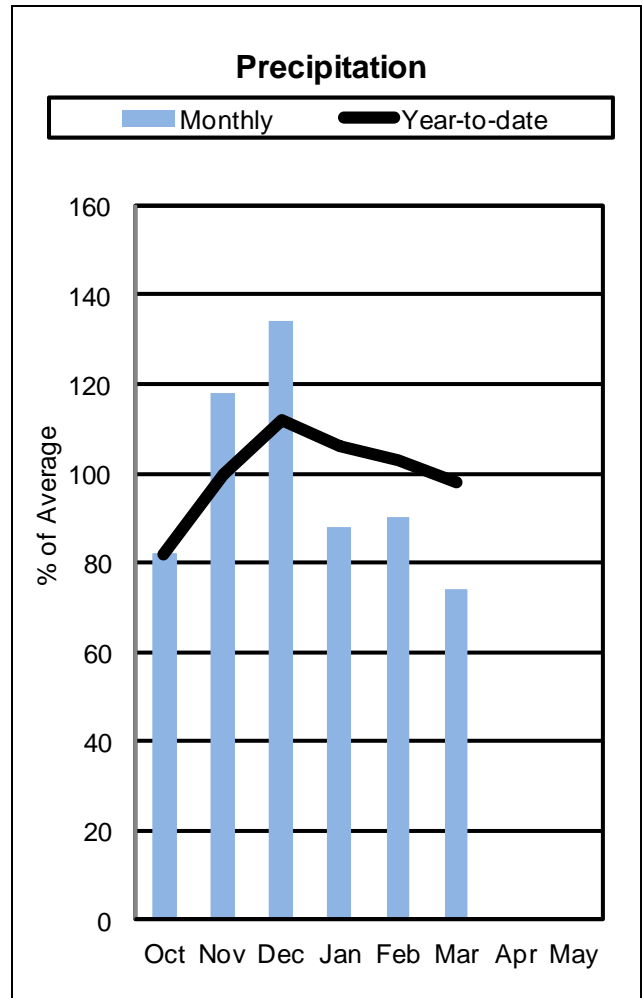
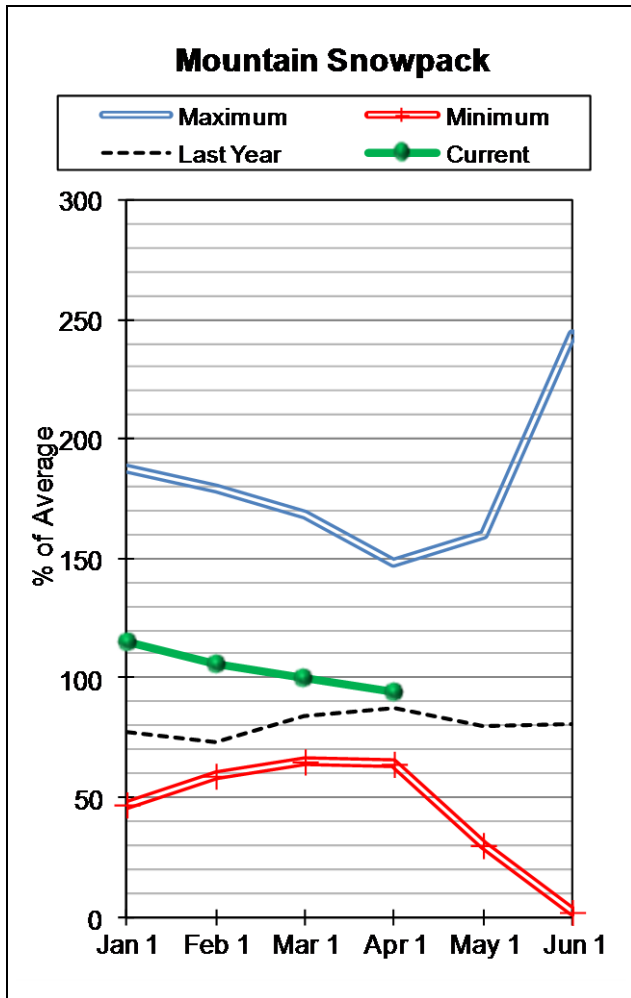
| Reservoir   | MADISON RIVER BASIN<br>Reservoir Storage (1000 AF) - End of March |                        |           |       | MADISON RIVER BASIN<br>Watershed Snowpack Analysis - April 1, 2013 |                      |                   |        |
|-------------|---|------------------------|-----------|-------|--|----------------------|-------------------|--------|
|             | Usable Capacity   | *** Usable Storage *** |           |       | Watershed  | Number of Data Sites | This Year as % of |        |
|             |   | This Year              | Last Year | Avg   |  |                      | Last Yr           | Median |
| ENNIS LAKE  | 41.0  | 28.5                   | 29.6      | 29.5  | MADISON abv HEBGEN LAKE  | 6                    | 81                | 89     |
| HEBGEN LAKE | 377.5   | 276.4                  | 227.8     | 270.4 | MADISON blw HEBGEN LAKE  | 9                    | 91                | 89     |
|             |   |                        |           |       | MADISON RIVER BASIN  | 15                   | 87                | 89     |

\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural volume - actual volume may be affected by upstream water management.
- (3) - Median value used in place of average.

# Gallatin River Basin



Snowpack conditions in the Gallatin River Basin were near normal on April 1. Snow water content was 94 percent of median and 96 percent of last year.

Mountain precipitation according to SNOTEL stations during March was 74 percent of average and 48 percent of last year. Water year precipitation, beginning October 1, 2012, was 98 percent of average and 91 percent of last year.

Middle Creek storage was 86 percent of average and 112 percent of last year.

Assuming average precipitation, April through July streamflows are forecast to average 89 percent.

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GALLATIN RIVER BASIN  
Streamflow Forecasts - April 1, 2013

=====

| Forecast Point               | Forecast Period | <<===== Drier ===== Future Conditions ===== Wetter =====>> |          |          |          |          |          | 30-Yr Avg.<br>(1000AF) |
|------------------------------|-----------------|--|----------|----------|----------|----------|----------|------------------------|
|                              |                 | 90%  |          | 50%      |          | 30%      |          |                        |
|                              |                 | (1000AF)   | (1000AF) | (1000AF) | (% AVG.) | (1000AF) | (1000AF) |                        |
| Gallatin R nr Gateway        | APR-JUL         | 275  | 330      | 365      | 91       | 400      | 455      | 400                    |
|                              | APR-SEP         | 320  | 385      | 425      | 90       | 465      | 530      | 470                    |
| Hyalite Reservoir Inflow (2) | APR-JUL         | 14.6   | 16.6     | 18.0     | 90       | 19.4     | 21       | 20                     |
|                              | APR-SEP         | 16.5   | 18.6     | 20       | 87       | 21       | 23       | 23                     |
| Gallatin R at Logan          | APR-JUL         | 220  | 315      | 380      | 86       | 445      | 540      | 440                    |
|                              | APR-SEP         | 255  | 365      | 440      | 87       | 515      | 625      | 505                    |

| GALLATIN RIVER BASIN<br>Reservoir Storage (1000 AF) - End of March |                 |                        |           |     | GALLATIN RIVER BASIN<br>Watershed Snowpack Analysis - April 1, 2013 |                      |                   |        |
|--|-----------------|------------------------|-----------|-----|---|----------------------|-------------------|--------|
| Reservoir  | Usable Capacity | *** Usable Storage *** |           |     | Watershed   | Number of Data Sites | This Year as % of |        |
|  |                 | This Year              | Last Year | Avg |   |                      | Last Yr           | Median |
| MIDDLE CREEK   | 10.2            | 4.8                    | 4.3       | 5.6 | UPPER GALLATIN  | 7                    | 97                | 98     |
|  |                 |                        |           |     | HYALITE   | 4                    | 95                | 88     |
|  |                 |                        |           |     | BRIDGER   | 2                    | 97                | 88     |
|  |                 |                        |           |     | GALLATIN RIVER BASIN  | 13                   | 96                | 94     |

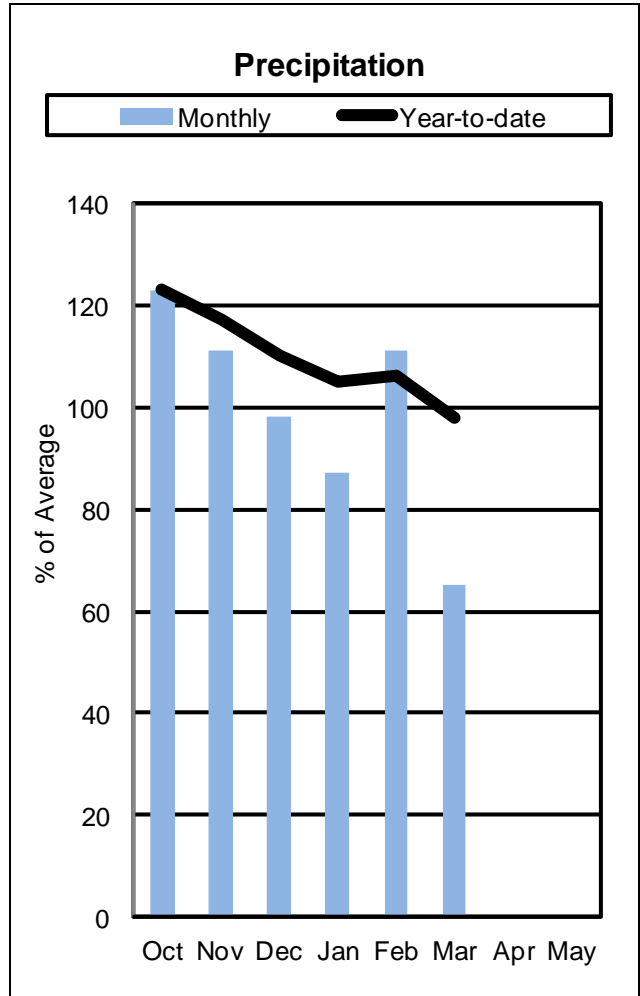
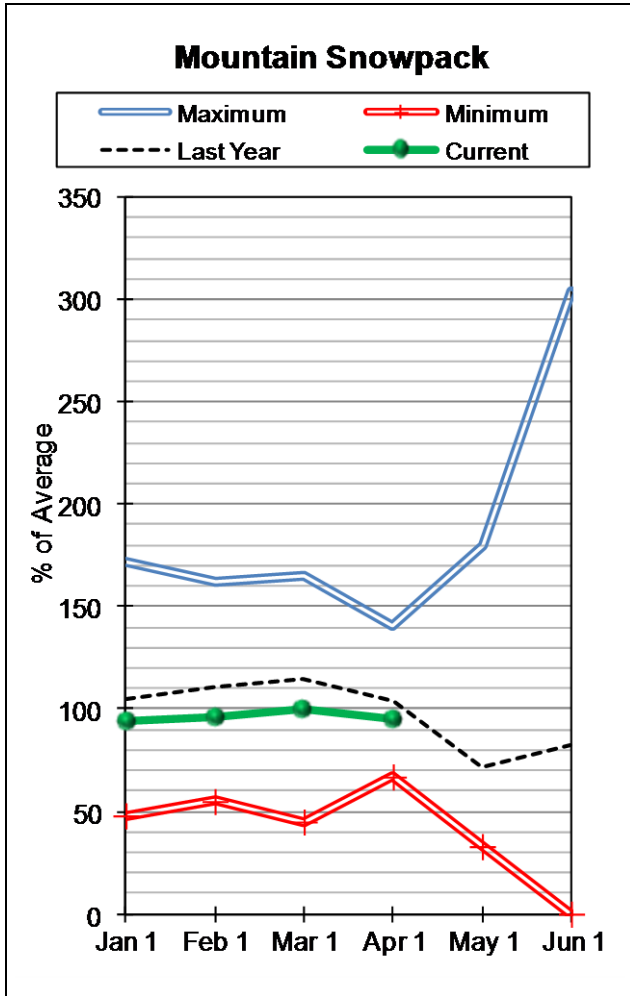
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\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural volume - actual volume may be affected by upstream water management.
- (3) - Median value used in place of average.

# Missouri Mainstem River Basin



Snowpack conditions in the Headwaters Missouri Mainstem River Basin were near normal on April 1. Snow water content was 95 percent of median and 73 percent of last year.

Mountain precipitation according to SNOTEL stations during March was 65 percent of average and 49 percent of last year. Water year precipitation, beginning October 1, 2012, was 98 percent of average and 78 percent of last year.

Canyon Ferry Lake storage was 100 percent of average and 95 percent of last year; Helena Valley storage was 111 percent of average and 93 percent of last year; Lake Helena storage was 94 percent of average and 103 percent of last year; Hauser & Helena storage was 97 percent of average and 101 percent of last year; Holter Lake storage was 104 percent of average and 100 percent of last year; and Fort Peck Lake storage was 98 percent of average and 84 percent of last year.

Assuming average precipitation, April through July streamflows are forecast to average 80 percent.

MISSOURI MAINSTEM RIVER BASIN  
Streamflow Forecasts - April 1, 2013

| Forecast Point                | Forecast Period | <<===== Drier ===== Future Conditions ===== Wetter =====>> |          |          |          |          |          | 30-Yr Avg.<br>(1000AF) |
|-------------------------------|-----------------|--|----------|----------|----------|----------|----------|------------------------|
|                               |                 | 90%  |          | 50%      |          | 10%      |          |                        |
|                               |                 | (1000AF)   | (1000AF) | (1000AF) | (% AVG.) | (1000AF) | (1000AF) |                        |
| Missouri R at Toston (2)      | APR-JUL         | 830  | 1170     | 1400     | 78       | 1630     | 1970     | 1790                   |
|                               | APR-SEP         | 935  | 1340     | 1620     | 78       | 1900     | 2310     | 2070                   |
| Dearborn R nr Craig           | APR-JUL         | 29   | 58       | 77       | 87       | 96       | 125      | 89                     |
|                               | APR-SEP         | 32   | 63       | 83       | 87       | 103      | 134      | 95                     |
| Missouri R at Fort Benton (2) | APR-JUL         | 1180   | 1690     | 2040     | 78       | 2390     | 2900     | 2610                   |
|                               | APR-SEP         | 1380   | 2010     | 2440     | 79       | 2870     | 3500     | 3110                   |
| Missouri R nr Virgelle (2)    | APR-JUL         | 1400   | 1990     | 2390     | 80       | 2790     | 3380     | 3000                   |
|                               | APR-SEP         | 1570   | 2300     | 2790     | 79       | 3280     | 4010     | 3520                   |
| Missouri R nr Landusky (2)    | APR-JUL         | 1510   | 2100     | 2510     | 79       | 2920     | 3510     | 3160                   |
|                               | APR-SEP         | 1700   | 2440     | 2940     | 79       | 3440     | 4180     | 3720                   |
| Missouri R bl Ft Peck Dam (2) | APR-JUL         | 1360   | 2040     | 2500     | 77       | 2960     | 3640     | 3240                   |
|                               | APR-SEP         | 1320   | 2200     | 2790     | 75       | 3380     | 4260     | 3700                   |
| Lake Sakakawea Inflow (2)     | APR-JUL         | 3670   | 5320     | 6440     | 78       | 7560     | 9210     | 8310                   |
|                               | APR-SEP         | 3660   | 5770     | 7200     | 77       | 8630     | 10700    | 9400                   |

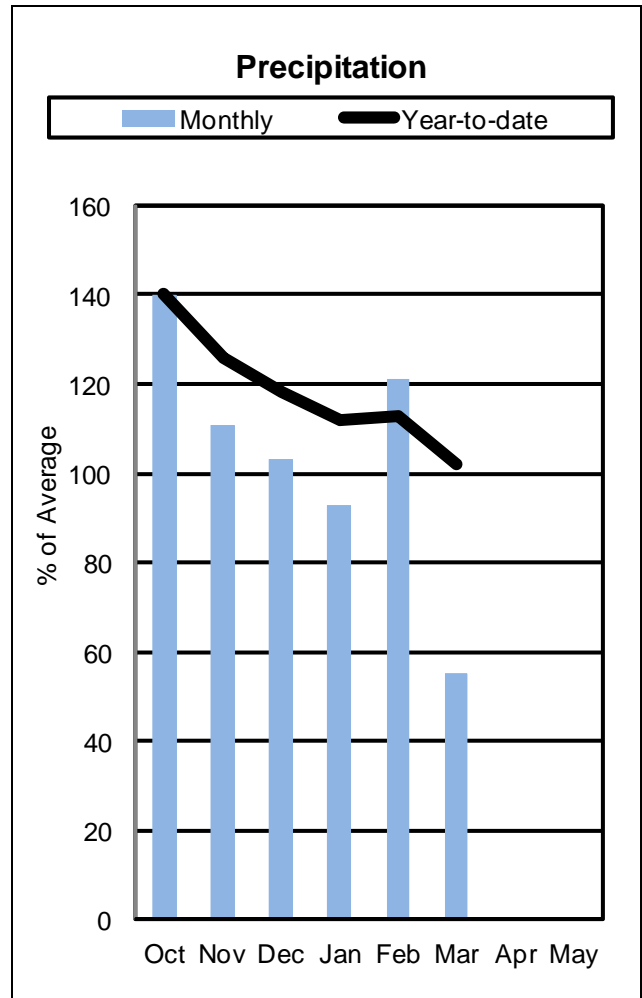
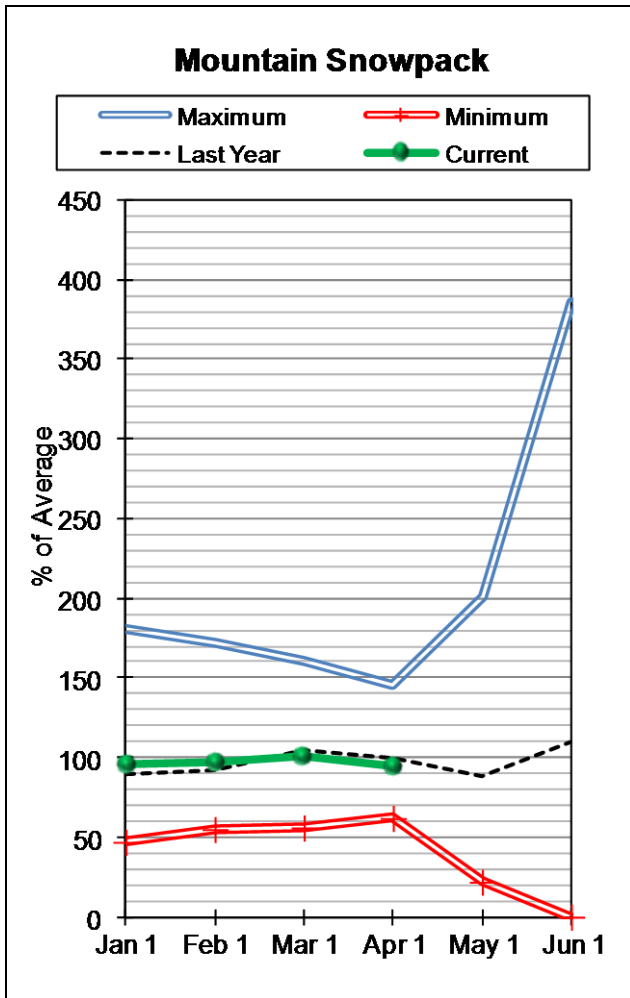
| MISSOURI MAINSTEM RIVER BASIN<br>Reservoir Storage (1000 AF) - End of March |                 |                        |           |         | MISSOURI MAINSTEM RIVER BASIN<br>Watershed Snowpack Analysis - April 1, 2013 |                      |                   |        |
|---|-----------------|------------------------|-----------|---------|--|----------------------|-------------------|--------|
| Reservoir   | Usable Capacity | *** Usable Storage *** |           |         | Watershed  | Number of Data Sites | This Year as % of |        |
|   |                 | This Year              | Last Year | Avg     |  |                      | Last Yr           | Median |
| CANYON FERRY LAKE   | 2043.0          | 1452.1                 | 1529.0    | 1457.0  | HEADWATERS MAINSTEM  | 9                    | 73                | 95     |
| HELENA VALLEY   | 9.2             | 5.1                    | 5.5       | 4.6     | SMITH-JUDITH-MUSSELSHELL   | 14                   | 86                | 95     |
| LAKE HELENA   | 12.7            | 10.3                   | 10.0      | 10.9    | SUN-TETON-MARIAS   | 12                   | 66                | 81     |
| HAUSER & HELENA   | 74.6            | 71.6                   | 70.6      | 73.5    | MAINSTEM ab FT PECK RES  | 34                   | 75                | 90     |
| HOLTER LAKE   | 81.9            | 81.1                   | 81.4      | 77.9    | MILK RIVER BASIN   | 3                    | 518               | 148    |
| FORT PECK LAKE  | 18910.0         | 12745.0                | 15190.0   | 13029.0 | MISSOURI MAINSTEM BASIN  | 36                   | 79                | 95     |

\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural volume - actual volume may be affected by upstream water management.
- (3) - Median value used in place of average.

# Smith-Judith-Musselshell River Basins



Snowpack conditions in the Smith-Judith-Musselshell River Basins were near normal April 1. Snow water content was 95 percent of median and 85 percent of last year. Snow water content in the Smith River Basin was 98 percent of median and 83 percent of last year; the Judith River Basin was 94 percent of median and 82 percent of last year; and the Musselshell Basin River was 92 percent of median and 102 percent of last year.

Mountain precipitation according to SNOTEL stations during March in all three basins was 55 percent of average and 44 percent of last year. Water year precipitation for the greater basin, beginning October 1, 2012, was 102 percent of average and 85 percent of last year.

Ackley storage was 104 percent of average and 85 percent of last year; Bair storage was 122 percent of average and 71 percent of last year; Martinsdale storage was 78 percent of average and 62 percent of last year.

Assuming average precipitation, April through July streamflows are forecast to average 75 percent.



SMITH-JUDITH-MUSSELSHELL RIVER BASINS  
Streamflow Forecasts - April 1, 2013

| Forecast Point                    | Forecast Period | Future Conditions     |                 |                     |          |                 |                 | 30-Yr Avg.<br>(1000AF) |
|-----------------------------------|-----------------|-----------------------|-----------------|---------------------|----------|-----------------|-----------------|------------------------|
|                                   |                 | <<===== Drier =====>> |                 | ===== Wetter =====> |          |                 |                 |                        |
|                                   |                 | 90%<br>(1000AF)       | 70%<br>(1000AF) | 50%<br>(1000AF)     | (% AVG.) | 30%<br>(1000AF) | 10%<br>(1000AF) |                        |
| Sheep Ck nr White Sulphur Springs | APR-JUL         | 9.1                   | 12.3            | 14.5                | 94       | 16.7            | 19.9            | 15.5                   |
|                                   | APR-SEP         | 10.7                  | 14.6            | 17.3                | 94       | 20              | 24              | 18.4                   |
| Smith R bl Eagle Ck (2)           | APR-JUL         | 47                    | 78              | 99                  | 93       | 120             | 151             | 106                    |
|                                   | APR-SEP         | 50                    | 87              | 113                 | 97       | 139             | 176             | 116                    |
| NF Musselshell R nr Delpine       | APR-JUL         | 2.0                   | 3.1             | 3.9                 | 91       | 4.7             | 5.8             | 4.3                    |
|                                   | APR-SEP         | 2.4                   | 3.7             | 4.6                 | 92       | 5.5             | 6.8             | 5.0                    |
| SF Musselshell R ab Martinsdale   | APR-JUL         | 2.2                   | 14.0            | 25                  | 71       | 36              | 52              | 35                     |
|                                   | APR-SEP         | 2.5                   | 16.0            | 28                  | 74       | 40              | 58              | 38                     |
| Musselshell R at Harlowton (2)    | APR-JUL         | 0.0                   | 14.5            | 35                  | 61       | 55              | 86              | 57                     |
|                                   | APR-SEP         | 0.0                   | 12.6            | 35                  | 59       | 57              | 90              | 59                     |
| Musselshell R nr Roundup (2)      | APR-JUL         | -20.0                 | 3.0             | 26                  | 39       | 68              | 131             | 67                     |
|                                   | APR-SEP         | -20.0                 | 1.2             | 22                  | 33       | 64              | 126             | 66                     |

SMITH-JUDITH-MUSSELSHELL RIVER BASINS  
Reservoir Storage (1000 AF) - End of March

SMITH-JUDITH-MUSSELSHELL RIVER BASINS  
Watershed Snowpack Analysis - April 1, 2013

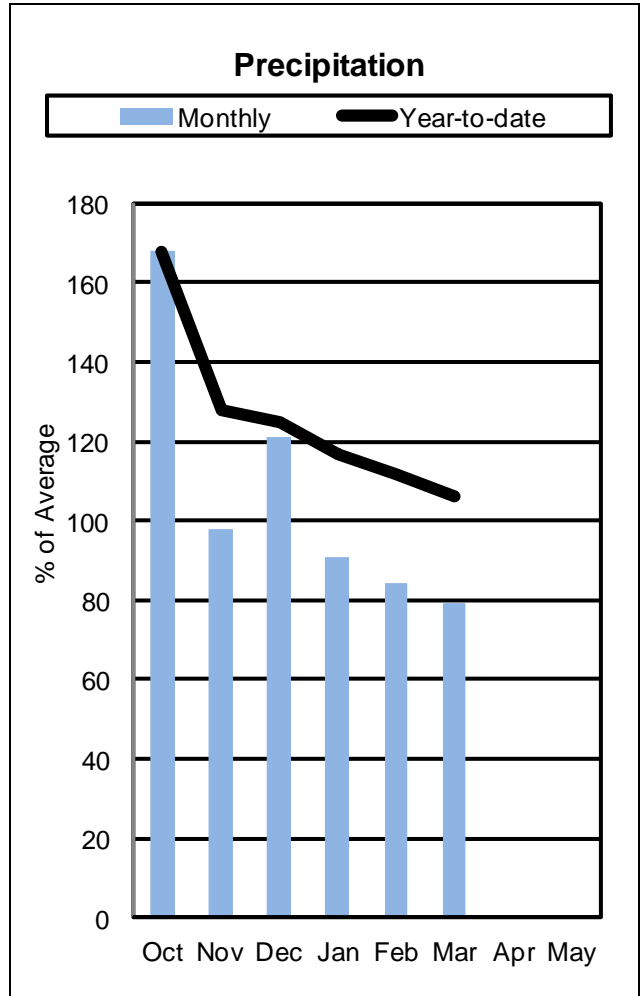
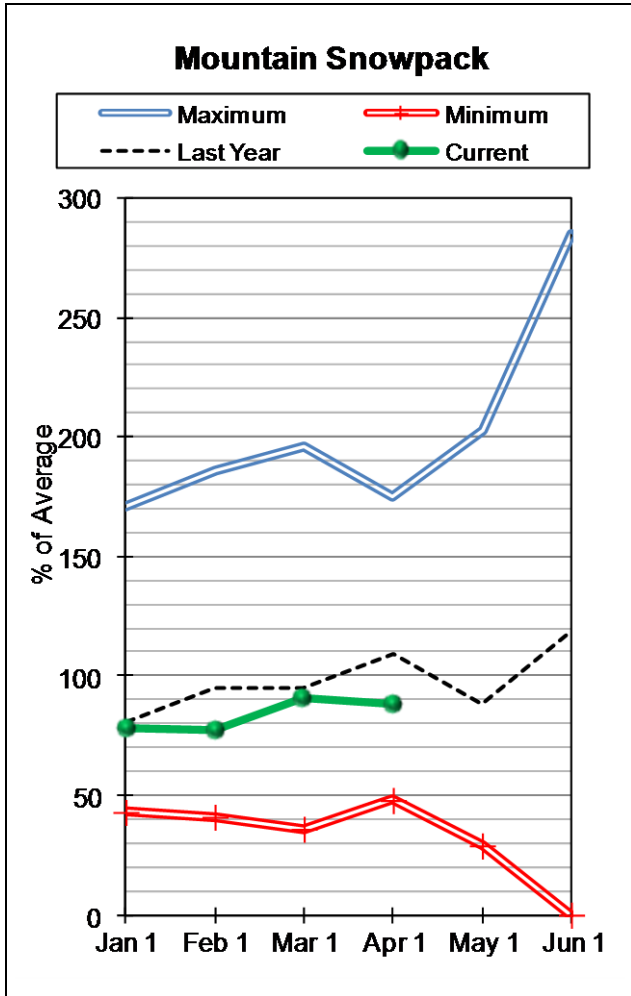
| Reservoir       | Usable Capacity | *** Usable Storage *** |           |      | Watershed                | Number of Data Sites | This Year as % of |        |
|-----------------|-----------------|------------------------|-----------|------|--------------------------|----------------------|-------------------|--------|
|                 |                 | This Year              | Last Year | Avg  |                          |                      | Last Yr           | Median |
| SMITH RIVER     | 10.6            | 7.5                    | 8.6       | 6.7  | SMITH                    | 7                    | 84                | 98     |
| ACKLEY LAKE     | 7.0             | 2.9                    | 3.4       | 2.8  | HIGHWOOD                 | 0                    | 79                | 0      |
| BAIR            | 7.0             | 4.5                    | 6.3       | 3.7  | JUDITH                   | 5                    | 82                | 94     |
| MARTINSDALE     | 23.1            | 6.9                    | 11.1      | 8.8  | MUSSELSHELL              | 6                    | 95                | 92     |
| DEADMAN'S BASIN | 72.2            | 54.8                   | 68.0      | 47.5 | SMITH-JUDITH-MUSSELSHELL | 14                   | 86                | 95     |

\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural volume - actual volume may be affected by upstream water management.
- (3) - Median value used in place of average.

# Sun-Teton-Marias River Basins



Snowpack conditions in the Sun-Teton-Marias River Basins were below normal on April 1. Snow water content was 88 percent of median and 66 percent of last year. Snow water content in the Sun River Basin was 84 percent of median and 65 percent of last year; the Teton River Basin was 79 percent of median and 60 percent of last year; and the Marias River Basin was 94 percent of median and 68 percent of last year.

Mountain precipitation according to SNOTEL stations during March in all three basins was 79 percent of average and 47 percent of last year. Mountain water year precipitation for the greater basin according to SNOTEL stations, beginning October 1, 2012, was 106 percent of average and 90 percent of last year.

Gibson storage was 49 percent of average and 110 percent of last year; Pishkun storage was 10 percent of average and 9 percent of last year; Willow Creek storage was 116 percent of average and 95 percent of last year; Swift storage was 97 percent of average and 125 percent of last year; Lake Frances storage was 69 percent of average and 49 percent of last year; and Lake Elwell (Tiber) storage was 106 percent of average and 105 percent of last year.

Assuming average precipitation, April through July streamflows are forecast to average 92 percent.

SUN-TETON-MARIAS RIVER BASINS  
Streamflow Forecasts - April 1, 2013

| Forecast Point                 | Forecast Period | <<===== Drier ===== Future Conditions ===== Wetter =====>> |          |          |          |                       |          | 30-Yr Avg.<br>(1000AF) |
|--------------------------------|-----------------|--|----------|----------|----------|-----------------------|----------|------------------------|
|                                |                 | 90%  |          | 70%      |          | Chance Of Exceeding * |          |                        |
|                                |                 | (1000AF)   | (1000AF) | (1000AF) | (% AVG.) | (1000AF)              | (1000AF) |                        |
| Gibson Reservoir Inflow (2)    | APR-JUL         | 270  | 315      | 350      | 89       | 385                   | 430      | 395                    |
|                                | APR-SEP         | 295  | 350      | 385      | 88       | 420                   | 475      | 440                    |
| Two Medicine R nr Browning (2) | APR-JUL         | 129  | 152      | 168      | 92       | 184                   | 205      | 183                    |
|                                | APR-SEP         | 138  | 162      | 179      | 92       | 196                   | 220      | 194                    |
| Badger Ck nr Browning          | APR-JUL         | 55   | 68       | 77       | 88       | 86                    | 99       | 88                     |
|                                | APR-SEP         | 65   | 80       | 90       | 87       | 100                   | 115      | 103                    |
| Swift Reservoir Inflow (2)     | APR-JUL         | 36   | 47       | 54       | 95       | 61                    | 72       | 57                     |
|                                | APR-SEP         | 43   | 55       | 64       | 96       | 73                    | 85       | 67                     |
| Dupuyer Ck nr Valier           | APR-JUL         | 1.5  | 5.8      | 10.6     | 96       | 15.4                  | 22       | 11.1                   |
|                                | APR-SEP         | 1.8  | 6.5      | 11.8     | 93       | 17.1                  | 25       | 12.7                   |
| Cut Bank Ck nr Browning        | APR-JUL         | 46   | 58       | 66       | 96       | 74                    | 86       | 69                     |
|                                | APR-SEP         | 49   | 62       | 71       | 95       | 80                    | 93       | 75                     |
| Marias R nr Shelby (2)         | APR-JUL         | 166  | 265      | 330      | 96       | 395                   | 495      | 345                    |
|                                | APR-SEP         | 155  | 260      | 335      | 93       | 410                   | 515      | 360                    |
| Teton R nr Dutton              | APR-JUL         | 5.0  | 18.4     | 36       | 86       | 54                    | 80       | 42                     |
|                                | APR-SEP         | 5.2  | 23       | 42       | 88       | 61                    | 89       | 48                     |

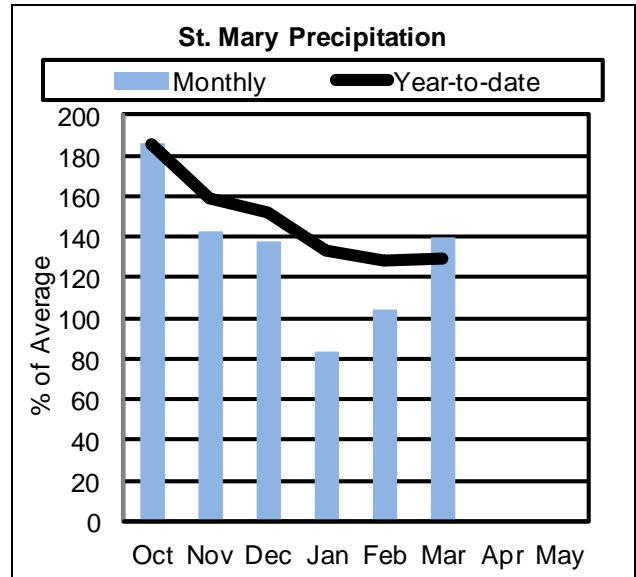
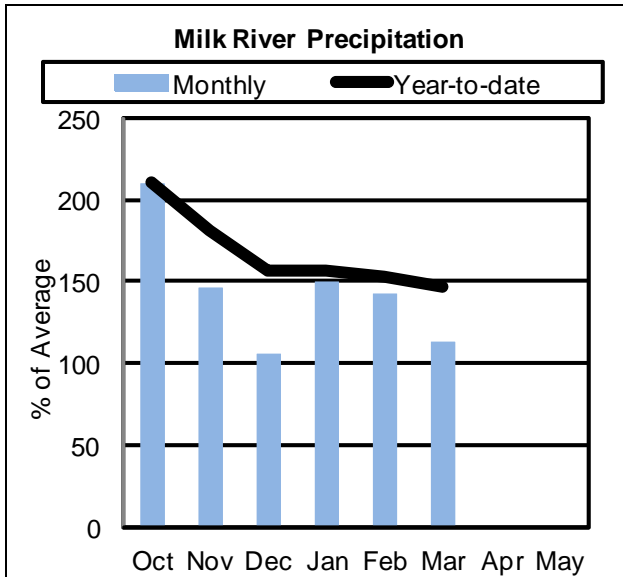
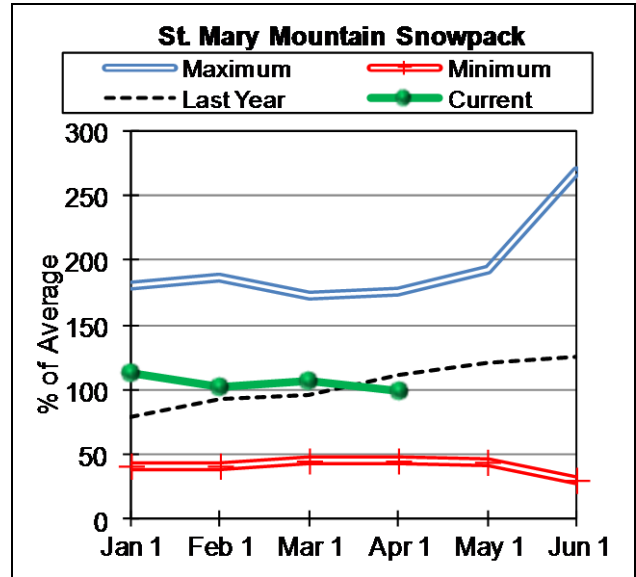
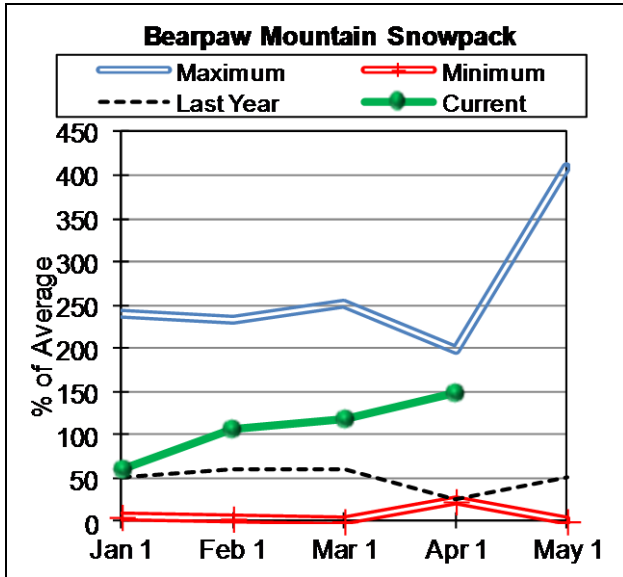
| SUN-TETON-MARIAS RIVER BASINS<br>Reservoir Storage (1000 AF) - End of March |                 |                        |           |       | SUN-TETON-MARIAS RIVER BASINS<br>Watershed Snowpack Analysis - April 1, 2013 |                      |                   |        |
|---|-----------------|------------------------|-----------|-------|--|----------------------|-------------------|--------|
| Reservoir   | Usable Capacity | *** Usable Storage *** |           |       | Watershed  | Number of Data Sites | This Year as % of |        |
|   |                 | This Year              | Last Year | Avg   |  |                      | Last Yr           | Median |
| GIBSON  | 99.1            | 23.6                   | 21.4      | 47.9  | SUN  | 6                    | 65                | 84     |
| PISHKUN   | 32.0            | 1.8                    | 19.5      | 18.2  | TETON  | 4                    | 60                | 79     |
| WILLOW CREEK  | 32.2            | 27.7                   | 29.2      | 23.8  | MARIAS   | 5                    | 68                | 79     |
| LOWER TWO MEDICINE LAKE   |                 | NO REPORT              |           |       | SUN-TETON-MARIAS   | 13                   | 68                | 83     |
| FOUR HORNS LAKE   |                 | NO REPORT              |           |       |  |                      |                   |        |
| SWIFT   | 30.0            | 16.6                   | 13.3      | 17.2  |  |                      |                   |        |
| LAKE FRANCES  | 112.0           | 41.5                   | 85.0      | 60.1  |  |                      |                   |        |
| LAKE ELWELL (TIBER)   | 1347.0          | 742.2                  | 710.0     | 697.7 |  |                      |                   |        |

\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural volume - actual volume may be affected by upstream water management.
- (3) - Median value used in place of average.

# St. Mary and Milk River Basins



Snowpack in the Saint Mary River Basin was normal on April 1. Snow water content was 99 percent of median and 79 percent of last year. Snowpack in the Milk River Basin was well above average at 149 percent of median and 518 percent of last year. Keep in mind, snowpack in the Milk River Basin is not as deep as most other basin snowpacks in the state and are based on lower values. Just one two inch storm can cause a large increase in percent of normal. 149 percent of median is not out of the norm. This year's percent of last year value is high because last year's snowpack at this time was nearly 1.1 inches of snow water equivalent (SWE), and there is currently nearly 6 inches of SWE in the basin. Again these values are not extreme. The combined basins had a snowpack at 106 percent of median and 96 percent of last year.

Mountain precipitation, according to SNOTEL stations, in the St. Mary River Basin during March was 140 percent of average and 53 percent of last year; and in the Milk River Basin during March was 113 percent of average and 63 percent of last year. Water year precipitation for both basins, beginning October 1, 2012, was 131 percent of average and 105 percent of last year.

Lake Sherburne storage was 178 percent of average and 158 percent of last year; Fresno storage was 110 percent of average and 86 percent of last year; and Nelson storage was 148 percent of average and 105 percent of last year.

Assuming average precipitation, April through July streamflows in the St. Mary are forecast to average 106 percent. Assuming average precipitation, April through July streamflows in the Milk are forecast to average 87 percent.

ST. MARY and MILK RIVER BASINS  
Streamflow Forecasts - April 1, 2013

| Forecast Point                   | Forecast Period | <<===== Drier ===== Future Conditions ===== Wetter =====>> |          |          |          |          |          | 30-Yr Avg.<br>(1000AF) |
|----------------------------------|-----------------|--|----------|----------|----------|----------|----------|------------------------|
|                                  |                 | 90%  |          | 50%      |          | 30%      |          |                        |
|                                  |                 | (1000AF)   | (1000AF) | (1000AF) | (% AVG.) | (1000AF) | (1000AF) |                        |
| Lake Sherburne Inflow            | APR-JUL         | 88   | 96       | 102      | 105      | 108      | 116      | 97                     |
|                                  | APR-SEP         | 104  | 113      | 120      | 107      | 127      | 136      | 112                    |
| St. Mary R nr Babb (2)           | APR-JUL         | 330  | 370      | 395      | 107      | 420      | 460      | 370                    |
|                                  | APR-SEP         | 385  | 430      | 460      | 108      | 490      | 535      | 425                    |
| St. Mary R at Int'l Boundary (2) | APR-JUL         | 370  | 425      | 465      | 107      | 505      | 560      | 435                    |
|                                  | APR-SEP         | 435  | 495      | 535      | 106      | 575      | 635      | 505                    |
| Milk R at Western Crossing       | APR-JUL         | 1.1  | 14.7     | 24       | 77       | 33       | 47       | 31                     |
|                                  | APR-SEP         | 1.0  | 14.9     | 25       | 76       | 35       | 50       | 33                     |
| Milk R at Eastern Crossing       | APR-JUL         | 1.5  | 20       | 43       | 96       | 66       | 100      | 45                     |
|                                  | APR-SEP         | 10.0   | 26       | 52       | 95       | 78       | 116      | 55                     |

ST. MARY and MILK RIVER BASINS  
Reservoir Storage (1000 AF) - End of March

ST. MARY and MILK RIVER BASINS  
Watershed Snowpack Analysis - April 1, 2013

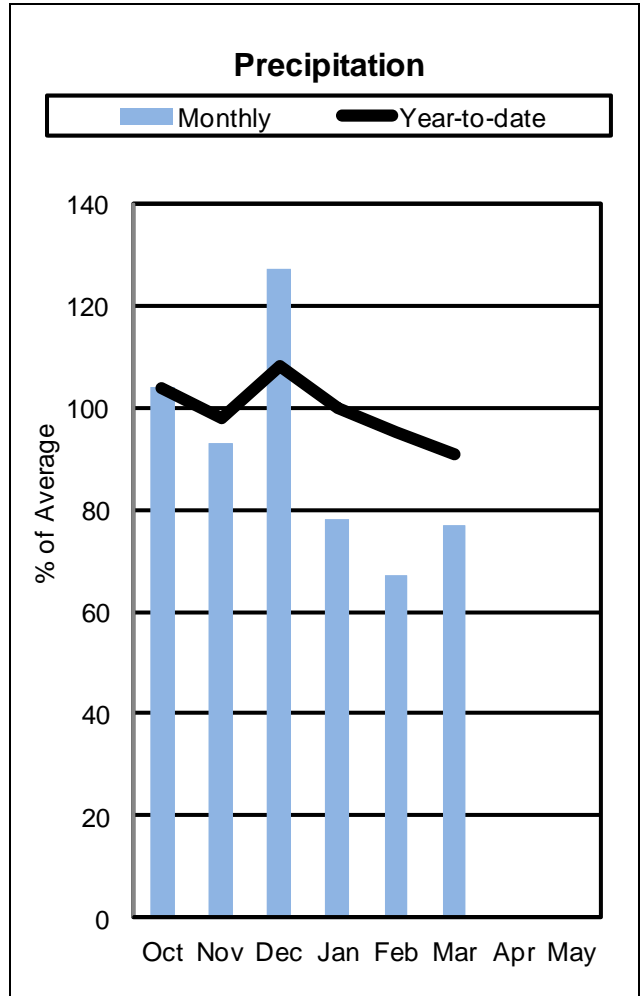
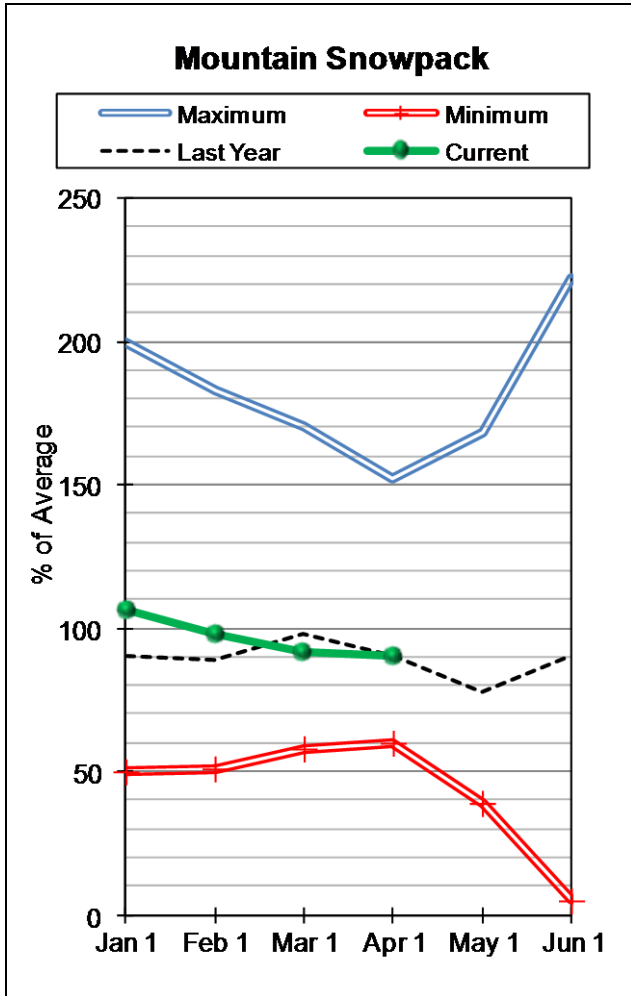
| Reservoir      | Usable Capacity | *** Usable Storage *** |           |      | Watershed              | Number of Data Sites | This Year as % of |        |
|----------------|-----------------|------------------------|-----------|------|------------------------|----------------------|-------------------|--------|
|                |                 | This Year              | Last Year | Avg  |                        |                      | Last Yr           | Median |
| LAKE SHERBURNE | 64.3            | 47.1                   | 29.9      | 26.4 | ST. MARY               | 3                    | 79                | 99     |
| FRESNO         | 127.0           | 64.2                   | 74.5      | 58.6 | BEARPAW MOUNTAINS      | 3                    | 518               | 148    |
| BEAVER CREEK   |                 | NO REPORT              |           |      | CYPRESS HILLS, CANADA  | 0                    | 0                 | 0      |
| NELSON         | 66.8            | 50.2                   | 47.9      | 34.0 | MILK RIVER BASIN       | 3                    | 518               | 148    |
|                |                 |                        |           |      | ST. MARY & MILK BASINS | 6                    | 96                | 106    |

\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural volume - actual volume may be affected by upstream water management.
- (3) - Median value used in place of average.

# Upper Yellowstone River Basin



Snowpack conditions in the Upper Yellowstone River Basin were near normal on April 1. Snow water content was 90 percent of median and 85 percent of last year.

Mountain precipitation according to SNOTEL stations during March was 77 percent of average and 67 percent of last year. Water year precipitation, beginning October 1, 2012, was 91 percent of average and 84 percent of last year.

Mystic Lake storage was 0 percent of average and 0 percent of last year and Cooney storage was 95 percent of average and 95 percent of last year.

Assuming average precipitation, April through July streamflows are forecast to average 82 percent.

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UPPER YELLOWSTONE RIVER BASIN  
Streamflow Forecasts - April 1, 2013

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| Forecast Point                    | Forecast Period | <<===== Drier ===== Future Conditions ===== Wetter =====>> |          |          |          |          |          | 30-Yr Avg.<br>(1000AF) |
|-----------------------------------|-----------------|--|----------|----------|----------|----------|----------|------------------------|
|                                   |                 | 90%  |          | 50%      |          | 30%      |          |                        |
|                                   |                 | (1000AF)   | (1000AF) | (1000AF) | (% AVG.) | (1000AF) | (1000AF) |                        |
| Yellowstone R at Yellowstone Lake | APR-JUL         | 395  | 450      | 490      | 85       | 530      | 585      | 575                    |
|                                   | APR-SEP         | 515  | 590      | 640      | 83       | 690      | 765      | 770                    |
| Yellowstone R at Corwin Springs   | APR-JUL         | 1120   | 1290     | 1400     | 88       | 1510     | 1680     | 1590                   |
|                                   | APR-SEP         | 1290   | 1500     | 1640     | 87       | 1780     | 1990     | 1880                   |
| Yellowstone R at Livingston       | APR-JUL         | 1240   | 1450     | 1600     | 89       | 1750     | 1960     | 1800                   |
|                                   | APR-SEP         | 1450   | 1710     | 1880     | 88       | 2050     | 2310     | 2140                   |
| Shields R nr Livingston           | APR-JUL         | 21   | 61       | 88       | 68       | 115      | 155      | 129                    |
|                                   | APR-SEP         | 21   | 66       | 97       | 68       | 128      | 173      | 143                    |
| Boulder R at Big Timber           | APR-JUL         | 188  | 230      | 255      | 91       | 280      | 320      | 280                    |
|                                   | APR-SEP         | 197  | 245      | 275      | 92       | 305      | 355      | 300                    |
| West Rosebud Ck nr Roscoe (2)     | APR-JUL         | 41   | 45       | 48       | 81       | 51       | 55       | 59                     |
|                                   | APR-SEP         | 51   | 58       | 62       | 84       | 66       | 73       | 74                     |
| Stillwater R nr Absarokee (2)     | APR-JUL         | 275  | 330      | 370      | 83       | 410      | 465      | 445                    |
|                                   | APR-SEP         | 315  | 385      | 430      | 83       | 475      | 545      | 520                    |
| Clarks Fk Yellowstone R nr Belfry | APR-JUL         | 365  | 415      | 450      | 88       | 485      | 535      | 510                    |
|                                   | APR-SEP         | 390  | 445      | 485      | 88       | 525      | 580      | 550                    |
| Cooney Reservoir Inflow           | APR-JUL         | 4.7  | 16.2     | 24       | 63       | 32       | 43       | 38                     |
|                                   | APR-SEP         | 10.8   | 23       | 32       | 67       | 41       | 53       | 48                     |
| Yellowstone R at Billings         | APR-JUL         | 1870   | 2370     | 2710     | 84       | 3050     | 3550     | 3230                   |
|                                   | APR-SEP         | 2080   | 2690     | 3100     | 83       | 3510     | 4120     | 3730                   |

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UPPER YELLOWSTONE RIVER BASIN  
Reservoir Storage (1000 AF) - End of March

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UPPER YELLOWSTONE RIVER BASIN  
Watershed Snowpack Analysis - April 1, 2013

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| Reservoir   | Usable Capacity | *** Usable Storage *** |           |      | Watershed                 | Number of Data Sites | This Year as % of |        |
|-------------|-----------------|------------------------|-----------|------|---------------------------|----------------------|-------------------|--------|
|             |                 | This Year              | Last Year | Avg  |                           |                      | Last Yr           | Median |
| MYSTIC LAKE | 21.0            | 0.0                    | 0.0       | 1.0  | YELLOWSTONE ab LIVINGSTON | 16                   | 85                | 92     |
| COONEY      | 27.4            | 19.1                   | 20.1      | 20.2 | SHIELDS                   | 5                    | 96                | 86     |
|             |                 |                        |           |      | BOULDER-STILLWATER        | 3                    | 96                | 94     |
|             |                 |                        |           |      | RED LODGE-ROCK CREEK      | 5                    | 78                | 81     |
|             |                 |                        |           |      | CLARK'S FORK              | 7                    | 79                | 91     |
|             |                 |                        |           |      | UPPER YELLOWSTONE BASIN   | 32                   | 85                | 90     |

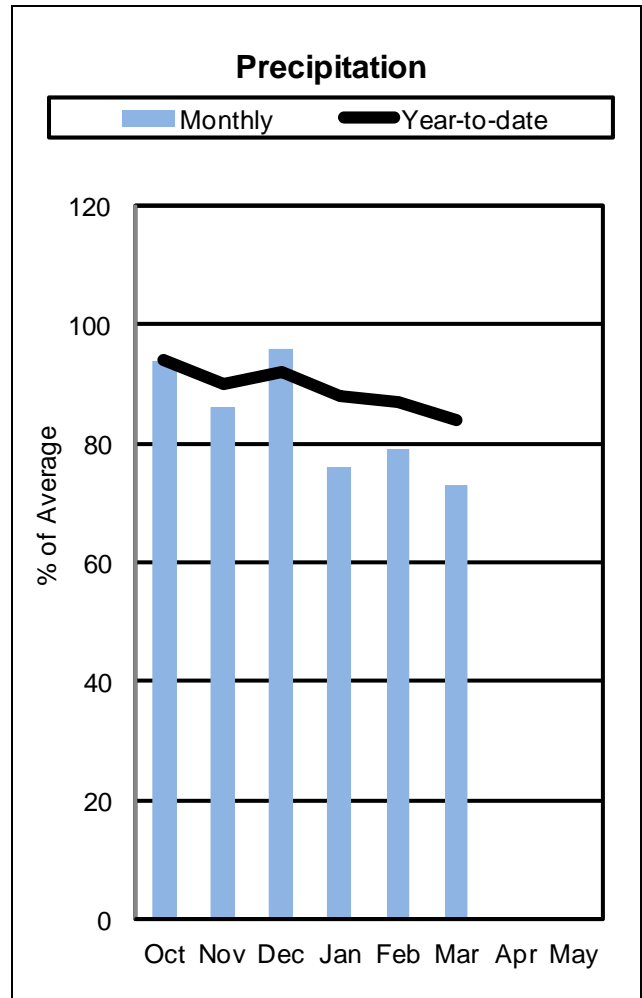
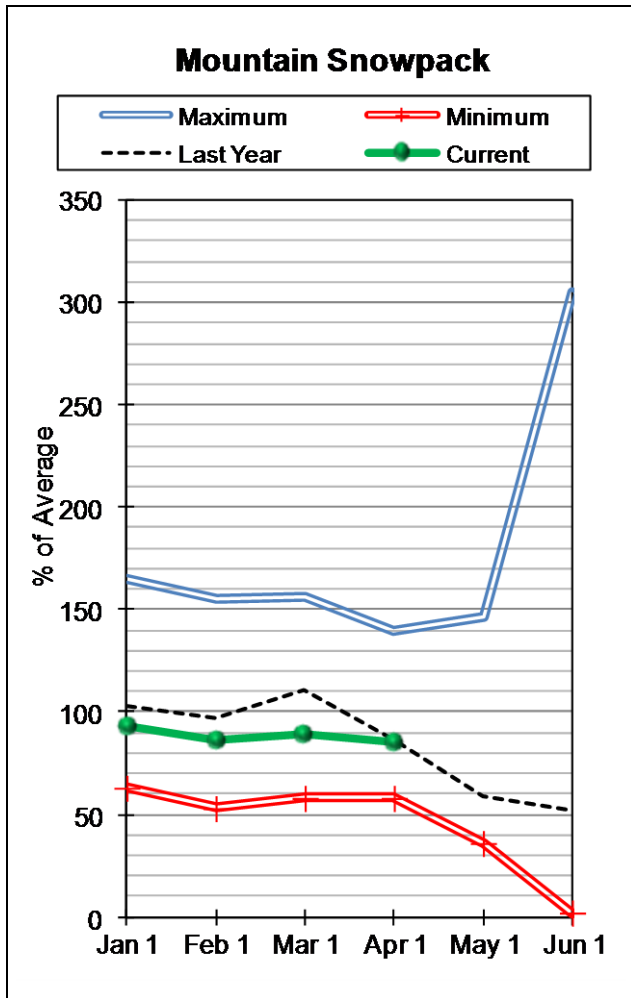
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\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural volume - actual volume may be affected by upstream water management.
- (3) - Median value used in place of average.

# Lower Yellowstone River Basin



Snowpack conditions in the Lower Yellowstone River Basin were below normal on April 1. Snow water content was 85 percent of median and 89 percent of last year.

Mountain precipitation according to SNOTEL stations during March was 73 percent of average and 127 percent of last year. Water year precipitation, beginning October 1, 2012, was 84 percent of average and 78 percent of last year.

Bighorn Lake storage was 110 percent of average and 101 percent of last year and Tongue River storage was 167 percent of average and 99 percent of last year.

Assuming average precipitation, April through July streamflows are forecast to average 75 percent.



LOWER YELLOWSTONE RIVER BASIN  
Streamflow Forecasts - April 1, 2013

| Forecast Point                    | Forecast Period | <<===== Drier ===== Future Conditions ===== Wetter =====>> |          |          |          |          |          | 30-Yr Avg.<br>(1000AF) |
|-----------------------------------|-----------------|--|----------|----------|----------|----------|----------|------------------------|
|                                   |                 | 90%  |          | 50%      |          | 30%      |          |                        |
|                                   |                 | (1000AF)   | (1000AF) | (1000AF) | (% AVG.) | (1000AF) | (1000AF) |                        |
| Bighorn R nr St. Xavier (2)       | APR-JUL         | 390  | 755      | 1000     | 73       | 1250     | 1610     | 1380                   |
|                                   | APR-SEP         | 360  | 780      | 1060     | 73       | 1340     | 1760     | 1460                   |
| Little Bighorn R nr Hardin        | APR-JUL         | 19.3   | 44       | 61       | 62       | 78       | 103      | 98                     |
|                                   | APR-SEP         | 25   | 52       | 71       | 64       | 90       | 117      | 111                    |
| Tongue R nr Dayton (2)            | APR-JUL         | 44   | 60       | 71       | 83       | 82       | 98       | 86                     |
|                                   | APR-SEP         | 52   | 70       | 82       | 84       | 94       | 112      | 98                     |
| Big Goose Ck nr Sheridan          | APR-JUL         | 15.1   | 25       | 31       | 67       | 37       | 47       | 46                     |
|                                   | APR-SEP         | 23   | 32       | 39       | 72       | 46       | 55       | 54                     |
| Little Goose Ck nr Bighorn        | APR-JUL         | 12.1   | 18.0     | 22       | 71       | 26       | 32       | 31                     |
|                                   | APR-SEP         | 18.2   | 25       | 29       | 74       | 33       | 40       | 39                     |
| Tongue River Reservoir Inflow (2) | APR-JUL         | 32   | 91       | 131      | 68       | 171      | 230      | 193                    |
|                                   | APR-SEP         | 46   | 109      | 151      | 70       | 193      | 255      | 215                    |
| Yellowstone R at Miles City (2)   | APR-JUL         | 2360   | 3210     | 3790     | 79       | 4370     | 5220     | 4780                   |
|                                   | APR-SEP         | 2490   | 3570     | 4310     | 79       | 5050     | 6130     | 5450                   |
| Powder R at Moorhead              | APR-JUL         | 31   | 99       | 146      | 83       | 193      | 260      | 177                    |
|                                   | APR-SEP         | 47   | 118      | 166      | 85       | 215      | 285      | 196                    |
| Powder R nr Locate                | APR-JUL         | 26   | 108      | 164      | 82       | 220      | 300      | 199                    |
|                                   | APR-SEP         | 37   | 125      | 185      | 84       | 245      | 335      | 220                    |
| Yellowstone R nr Sidney (2)       | APR-JUL         | 2090   | 3090     | 3770     | 78       | 4450     | 5450     | 4830                   |
|                                   | APR-SEP         | 2070   | 3340     | 4200     | 77       | 5060     | 6330     | 5430                   |

LOWER YELLOWSTONE RIVER BASIN  
Reservoir Storage (1000 AF) - End of March

LOWER YELLOWSTONE RIVER BASIN  
Watershed Snowpack Analysis - April 1, 2013

| Reservoir    | Usable Capacity | *** Usable Storage *** |           |       | Watershed                 | Number of Data Sites | This Year as % of |        |
|--------------|-----------------|------------------------|-----------|-------|---------------------------|----------------------|-------------------|--------|
|              |                 | This Year              | Last Year | Avg   |                           |                      | Last Yr           | Median |
| BIGHORN LAKE | 1356.0          | 864.7                  | 854.4     | 787.5 | WIND RIVER (Wyoming)      | 19                   | 96                | 78     |
| TONGUE RIVER | 79.1            | 54.0                   | 54.6      | 32.3  | SHOSHONE RIVER (Wyoming)  | 5                    | 81                | 87     |
|              |                 |                        |           |       | BIGHORN RIVER (Wyoming)   | 18                   | 86                | 91     |
|              |                 |                        |           |       | LITTLE BIGHORN (Wyoming)  | 3                    | 72                | 78     |
|              |                 |                        |           |       | TONGUE RIVER (Wyoming)    | 10                   | 82                | 85     |
|              |                 |                        |           |       | POWDER RIVER (Wyoming)    | 9                    | 102               | 99     |
|              |                 |                        |           |       | LOWER YELLOWSTONE BASIN ( | 47                   | 88                | 85     |

\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural volume - actual volume may be affected by upstream water management.
- (3) - Median value used in place of average.

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**Montana**  
**Water Supply Outlook**  
**Report**  
Natural Resources Conservation Service

