

Memo

To: Bob Brueggeman, PE, Newman Lake Flood Control Zone District Administrator
Via: Marianne Barrentine, PE, Environmental Programs Manager
From: Jane Clark, PE, Environmental Programs

Date: March 7, 2013

Subject: Newman Lake Snow Pack/Lake Level Update – March 1st Data

The second snow course monitoring of the year was completed on February 27th in the Newman Lake watershed. The snow pack increased slightly at all four sites since the January 31st survey. The snow pack at the three snow courses are right at average or slightly above and the Quartz Peak Snotel is slightly below average. Below is the comparison of Snow Water Equivalent readings (in inches) with previous year's data as of March 1:

	Thompson Creek	Ragged Ridge	Round Top	Quartz Peak
Date	Elev. 2500'	Elev. 3250'	Elev. 4020'	Elev. 4700'
1997	10.0	13.5	18.5	30.6
1998	3.4	8.2	13.1	19.2
1999	6.1	15.6	18.8	30.5
2000	6.9	10.6	14.0	23.8
2001	5.6	7.9	9.2	10.9
2002	7.4	12.2	17.2	26.2
2003	0.0	2.8	6.3	13.4
2004	6.4	8.8	13.1	20.5
2005	0.0	0.0	0.0	4.7
2006	3.0	7.1	12.2	23.1
2007	4.2	8.6	14.0	20.4
2008	11.3	17.2	20.4	26.0
2009	7.3	-	12.8	16.4
2010	0.0	0.1	8.0	14.6
2011	6.0	4.8	12.2	19.9
2012	2.6	4.2	10.2	21.0
2013	5.2	7.8	12.3	17.6
Average	5.0*	7.6	12.2*	18.8
2013 % of Average	103.7	102.8	100.9	93.4

*Average of previous years since 1997 (only available data)

The first half of February was mostly dry with some precipitation coming the second half of the month. The lake level as of the morning of March 6th was 2124.26 feet and the gates were opened from 2/10ths each to 4/10ths each. The lake was still iced over with the exception of near the outlet gate area as you can see on page 4. With warmer temperatures expected in the next week we will monitor the ice conditions, inlet flows and the lake level closely.

The National Weather Service three month outlook is forecasting equal chances for above normal, normal, and below normal precipitation and below average temperatures for our region. Warming and thawing have begun slowly and rains have been moderate. Nothing of concern at this point unless we get unusually heavy spring rains.

Per the HSPF model, assuming an average amount of precipitation (50 percentile) we estimate 4,300 acre-feet of runoff for the rest of the season. This 4,300 acre-feet of runoff equates to about 3.6 feet of water spread out over the lake surface. If assuming a very wet above average amount of precipitation (90 percentile) we estimate 8,600 acre-feet of runoff for the rest of the season. This equates to 7.2 feet of water spread out over the lake surface. These values are based on the 17.6-inch snow water equivalent at Quartz Peak on March 1st.

Operational Recommendations:

With the average snowpack in the high elevations and long range forecast predicting an equal chance of above, normal and below average precipitation and below average temperatures, we will continue to monitor the lake level, stream flows, and ice conditions closely and keep the lake level close to the winter elevation until the ice is off the lake.

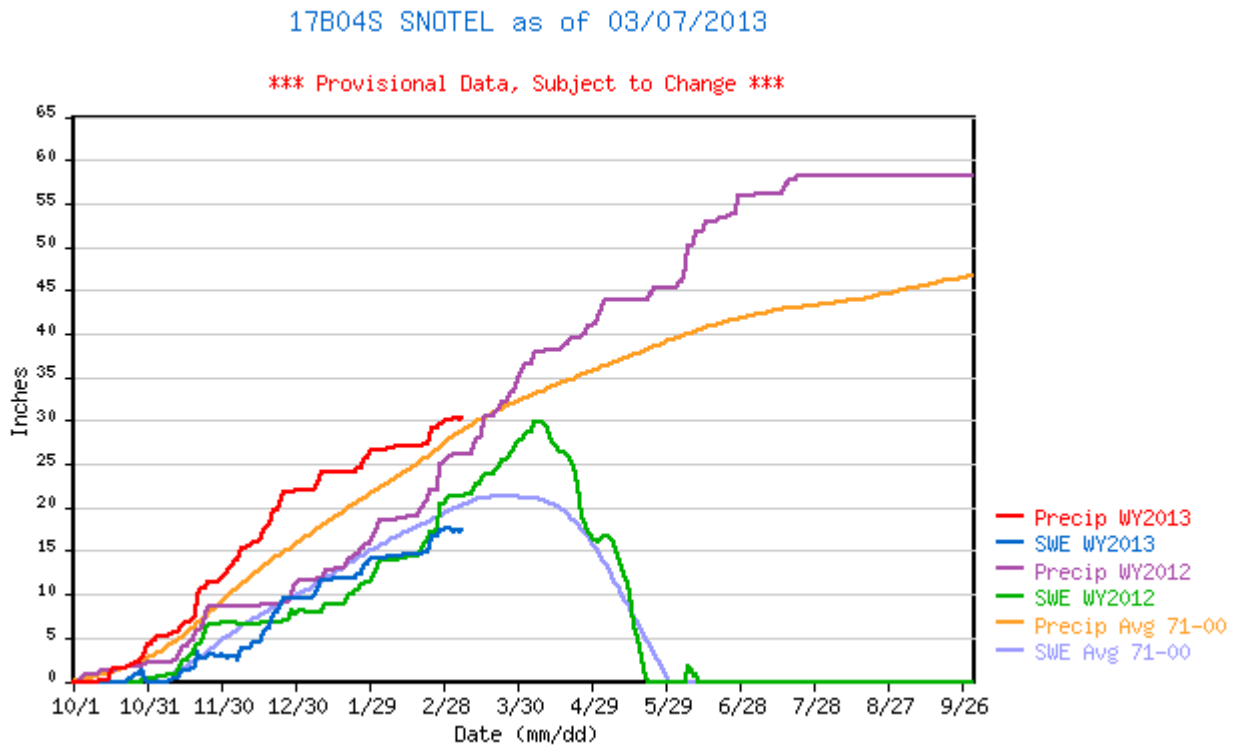


Figure 1: Quartz Peak Snotel Precipitation (Precip) and Snow Water Equivalent (SWE) as of March 7, 2013.

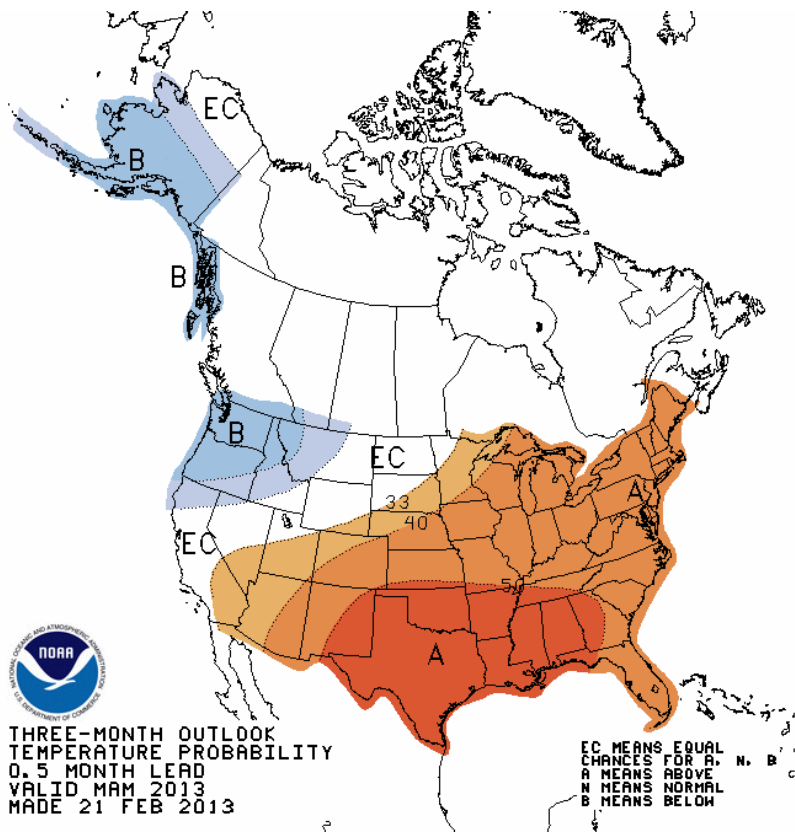


Figure 2: NOAA three month temperature outlook.

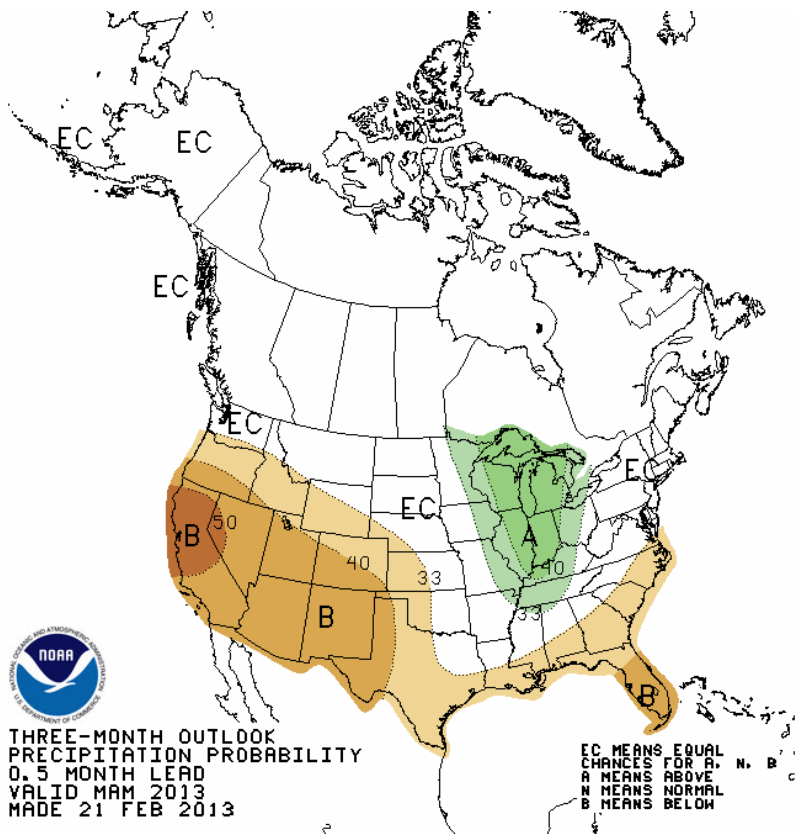


Figure 3: NOAA three month temperature outlook.

Obtained from the National Weather Service Climate Prediction Center

http://www.cpc.ncep.noaa.gov/products/predictions/long_range/seasonal.php?lead=01



Figure 4: Looking west toward the lake from the outlet gate structure on March 5, 2013.



Figure 5: Looking toward Mt. Spokane from Sutton Bay Resort on March 5, 2013.