

MEMORANDUM

TO: City of Santa Fe Public Utilities Committee
City of Santa Fe Water Conservation Committee
Buckman Direct Diversion Board

FROM: Rick Carpenter, Water Resources and Conservation Manager *RC*

VIA: Nick Schiavo, Public Utilities Department and Water Division Director *NSA*

DATE: March 23, 2015

SUBJECT: 43^d Monthly Update on Drought and Water Resource Management

CURRENT UPDATE – GENERAL WATER RESOURCE MANGEMENT

As the Committee/Board is aware, our region is still suffering through a prolonged drought. Our region has gone through four consecutive years of record drought and heat, and it appears that we may be heading into our fifth straight year of drought. This drought is likely present significant challenges to all water purveyors, utilities, and irrigators going forward into the rest of this water-year.

July/August/September, 2014 yielded good summer rains due to a series of moist northeast cold fronts and monsoonal flow, but the monsoons generally exited by early October. Most models are still predicting the likelihood of a return of an El Nino weather pattern, 50%-60% chance of a return to El Nino conditions with normal to above normal precipitation over the rest of spring/summer. This could mean good precipitation for the coming months (see attached figure). Therefore, normal to above normal precipitation is still likely over the next several months. The most recent March NOAA ENSO update states that:

ENSO-neutral (El Nino) conditions are active. Positive equatorial sea surface temperature (SST) anomalies continue across the Pacific Ocean. There is an approximate 50%-60% chance of El Nino conditions through summer."

It is worth noting that City of Santa Fe has invested in a robust and diverse portfolio of four distinct water supply sources that allows for flexibility in meeting demand: Buckman well field, City well field, Canyon Road Water Treatment Plant on the Upper Santa Fe River, and the Buckman Direct Diversion on the Rio Grande. Supply from these groundwater and surface water sources are expected to be adequate in meeting local demands. The City also has a considerable amount of SJCP water stored ("banked from previous years") in reservoirs upstream from the BDD diversion, and that water could be called for if needed over the coming 3 or 5 years.

LOCAL CONDITIONS

Source of Supply Utilization Summary

February 2015

City Wells	00.0mg/m	00.0af/m
Buckman Wells	0.00mg/m	0.00af/m
CRWTP	71.95mg/m	220.82af/m
BRWTP	98.73mg/m	302.95af/m
<i>Other Wells (Osage, MRC, etc)</i>	<i>0.00mg/m</i>	<i>0.00af/m</i>

Upper Santa Fe River/CRWTP

	Total Combined Reservoir Level	Santa Fe Snow Gage	Reservoir Inflow
March 23, 2015	9.50%	49.00 inches	8.44 MGD
5-Year Average for This Date (2010 – 2014)	45.35 %	32.40 inches	1.53 MGD

As of March 23, 2015 total combined storage in Nichols and McClure reservoirs is 9.5% of total (or about 380 acre-feet of storage out of 4,000 acre-feet of capacity). Some flows have been by-passed due to construction on the new intake facilities. Minor inflows are expected to continue for the near future and so the reservoirs have been managed to allow for water treatment plant production, active construction, and draining/drying.

Buckman Regional Water Treatment Plant (BDD)

Flows in the Rio Grande are relatively good for this time of year, and turbidity has been generally good. The BDD has been able to divert and treat in line with demand.

REGIONAL CONDITIONS

Rio Grande Basin

Surface flows in the Rio Grande and its tributaries through mid-March have been relatively good. However, storage levels in regional reservoirs are still very low (see attached figure). There was very little carry-over storage from 2014 into 2015. A good snow pack this winter/spring is essential if there is to be significant runoff into regional reservoirs for next high demand season, but time is running short. Runoff forecasts for the upper/mid Rio Grande vary geographically but generally range from 70% - 75% of normal.

San Juan Basin

It should be stressed that, conditions could significantly worsen for San Juan Chama Project deliveries this coming year, if the drought persists, due to a lack of carry-over storage in Heron from last year to this year. Heron Reservoir is currently at a very low level. However, the San Juan Basin as well as the local Sangre de Cristo Mountains have experienced several good snow storms recently. Recent estimates by the BoR suggest that the snow pack is about 70-80% of normal for this time of year (through mid-March 2015). The BoR is estimating that yield from the San Juan-Chama Project for this year will likely be about 70% of normal total firm yield.

ESA/Silvery Minnow Update

Minnow numbers are low, especially wild minnow. River managers are recommending an artificial Spring flow pulse lasting 8 – 10 days (2000-2,500 cfs) to help with the Spring spawn. Certain sections of the river could experience drying in late Summer/Fall, but 2003 B.O. guidelines will be followed. However, there is considerable uncertainty given the active El Nino conditions over this same period of time. There are no new updates regarding Wild Earth Guardians legal actions or endangered species issues.

Rio Grande Water Fund/Watershed Management Update

The Santa Fe governing body was recently asked to become signatory to the RGWF Charter, and that item is still under consideration. The Nature Conservancy is scheduled to make a presentation to the Santa Fe Public Utilities Committee on April 1, 2015. It is anticipated that the Charter will then go before the full City Council for a vote.

The RGWF Technical Committee is currently evaluating/scoring over a dozen watershed protection proposals that were submitted for funding assistance.

March Southwest Climate Outlook

Online Resources

Figure 1&2
NOAA/NWS - Advanced Hydrologic
Prediction Service
<http://water.weather.gov/ahps/>

Figure 3
High Plains Regional Climate
Center
<http://www.hprcc.org/>

Figure 4&7
Natural Resources Conservation
Service
<http://www.nrcs.usda.gov/wps/>

Figure 5
National Drought Mitigation Center
<http://droughtmitigationcenter.org/>

Figure 6
NOAA - Climate Prediction Center
<http://www.cpc.ncep.noaa.gov/products/forecasts/>



Figure 1: Departure from Normal Precipitation - Past 30 Days

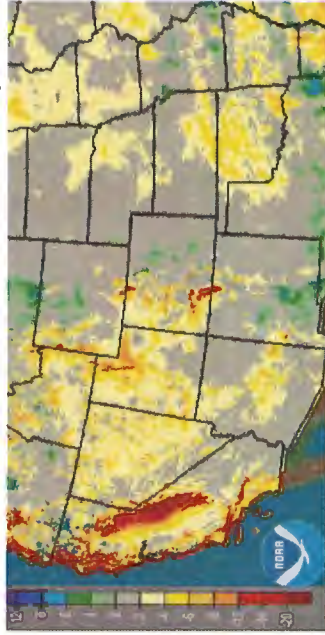


Figure 2: Departure from Normal Precipitation - Since Oct 1

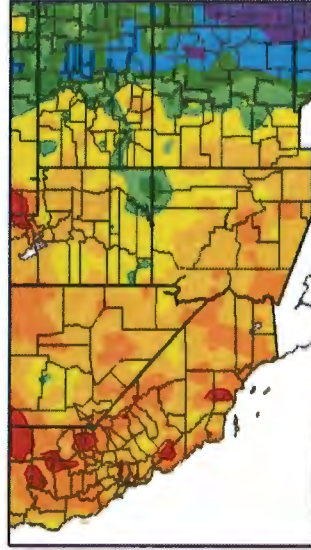


Figure 3: Departure from Normal Temp (F) - Feb 17 - Mar 18, 2015

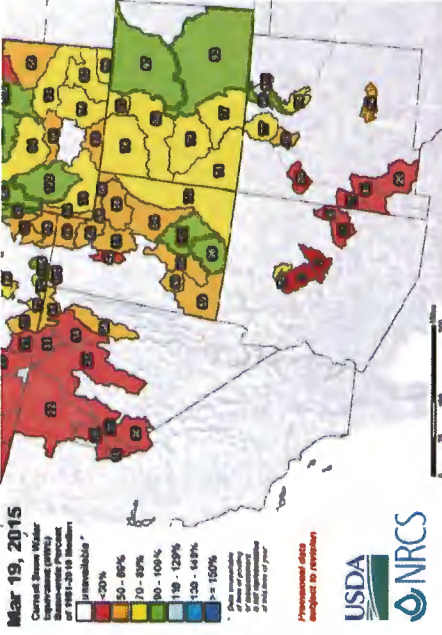


Figure 4: Percent of Snow Water Equivalent (SWE) by Basin

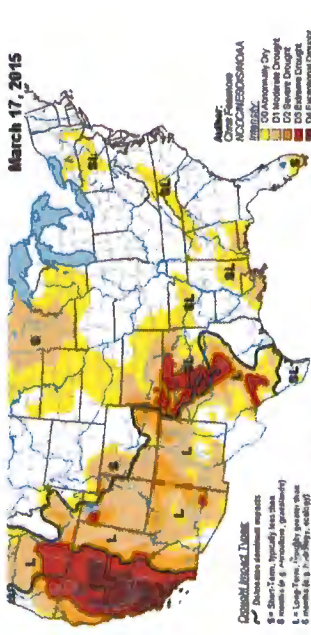


Figure 5: U.S. Drought Monitor - Feb 10, 2015

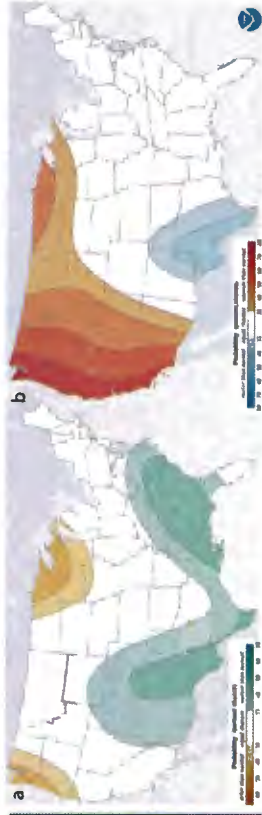


Figure 6a-b: Three-Month Seasonal Outlook for Precipitation (a) & Temperature (b)

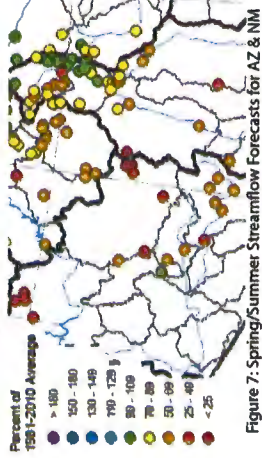


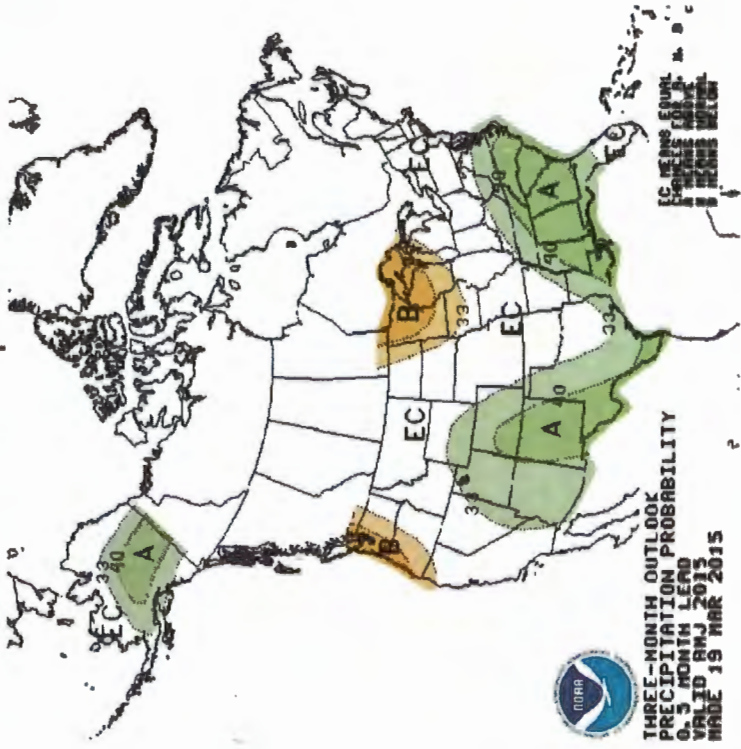
Figure 7: Spring/Summer Streamflow Forecasts for AZ & NM

U. S. Seasonal Outlooks

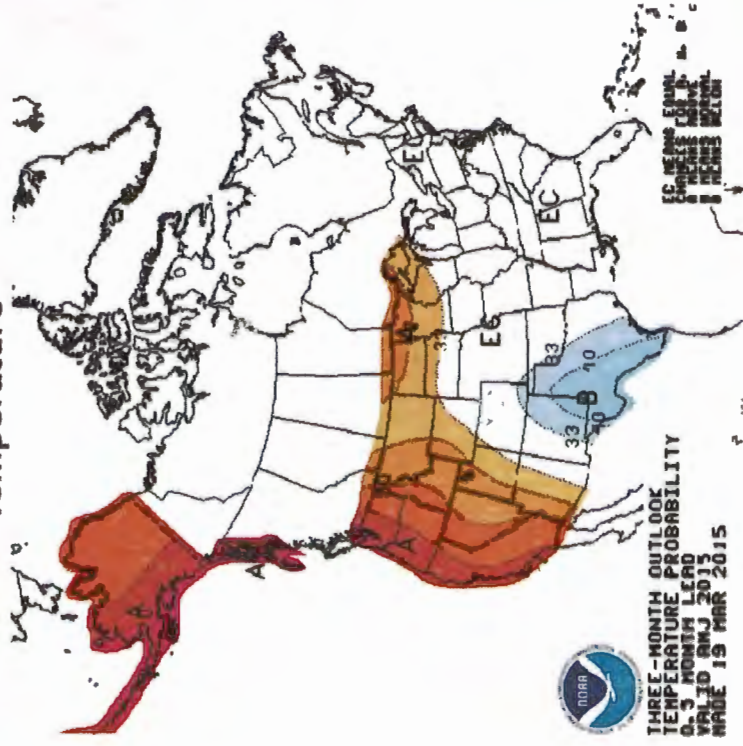
April - June 2015

The seasonal outlooks combine the effects of long-term trends, soil moisture, and, when appropriate, ENSO.

Precipitation



Temperature



Online Resources

Portions of the information provided in this figure can be accessed at the Natural Resources Conservation Service

Arizona: <http://1.usa.gov/9e299d>
 New Mexico: http://www.wcc-nrcs.usda.gov/cgi-bin/resv_jul.pl?state=new_mexico

Notes

The map gives a representation of current storage for reservoirs in Arizona and New Mexico. Reservoir locations are numbered within the blue circles on the map, corresponding to the reservoirs listed in the table. The cup next to each reservoir shows the current storage (blue fill) as a percent of total capacity. Note that while the size of each cup varies with the size of the reservoir, these are representational and not to scale. Each cup also represents last year's storage (dotted line) and the 1981-2010 reservoir average (red line).

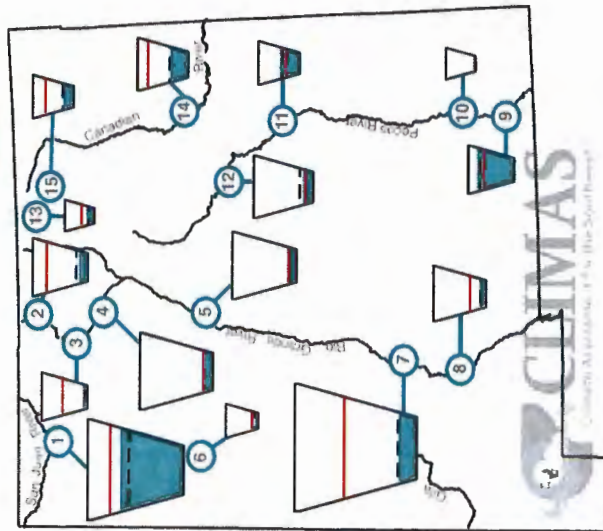
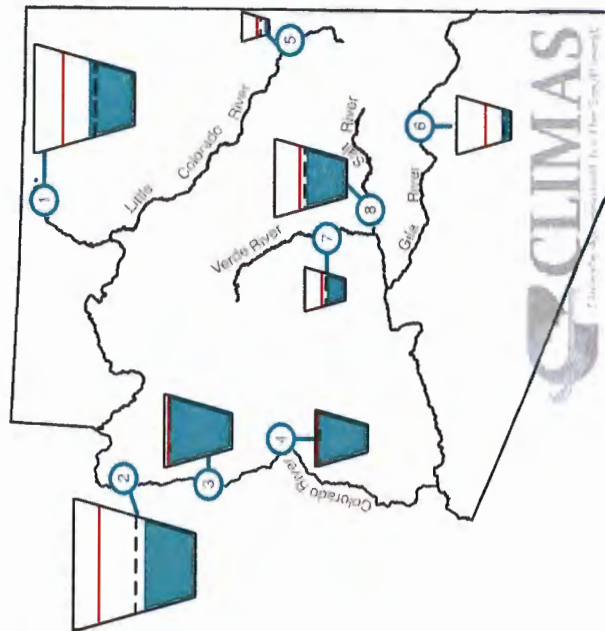
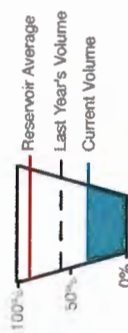
The table details more exactly the current capacity (listed as a percent of maximum storage). Current and maximum storage are given in thousands of acre-feet for each reservoir. One acre-foot is the volume of water sufficient to cover an acre of land to a depth of 1 foot (approximately 325,851 gallons). On average, 1 acre-foot of water is enough to meet the demands of 4 people for a year. The last column of the table lists an increase or decrease in storage since last month. A line indicates no change.

These data are based on reservoir reports updated monthly by the National Water and Climate Center of the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS).

Reservoir Volumes

DATA THROUGH FEB 28, 2015

Data Source: National Water and Climate Center, Natural Resources Conservation Service



Reservoir	Capacity	Current Storage*	Max Storage*	One-Month Change in Storage*
1 Lake Powell	45%	11,024.0	24,322.0	-122.0
2. Lake Mead	41%	10,768.0	26,159.0	29.0
3. Lake Mohave	92%	1,858.0	1,810.0	-39.0
4. Lake Havasu	93%	578.0	619.0	-7.2
5. Lyman	14%	4.2	30.0	0.1
6. San Carlos	16%	141.7	875.0	53.0
7. Verde River System	44%	126.1	287.4	10.6
8. Salt River System	54%	1,103.3	2,025.8	48.7

*KAF: thousands of acre-feet

Reservoir	Capacity	Current Storage*	Max Storage*	One-Month Change in Storage*
1. Navajo	65%	1096.4	1,696.0	5.7
2. Heron	15%	61.3	400.0	-0.6
3. El Vado	9%	17.2	190.3	-3.9
4. Abiquiu	11%	133.8	1,192.8	1.6
5. Cochiti	10%	48.9	491.0	0.7
6. Bluewater	8%	2.4	38.5	0.0
7. Elephant Butte	15%	328.7	2,195.0	37.6
8. Ceballos	11%	35.3	332.0	1.4
9. Lake Avalon	79%	3.2	4.0	-0.3
10. Brantley	8%	84.5	1,008.2	1.6
11. Sumner	47%	48.3	102.0	3.3
12. Santa Rosa	18%	69.3	438.3	-0.2
13. Costilla	25%	4.0	16.0	0.4
14. Conchas	33%	84.5	254.2	-0.1
15. Eagle Nest	23%	18.3	79.0	0.7

* In KAF = thousands of acre-feet