

5-2009

2009 Annual Operating Plan

U.S. Department of the Interior, Bureau of Reclamation

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RECLAMATION

Managing Water in the West

May 1, 2009 Runoff Forecast And 2009 Annual Operating Plan

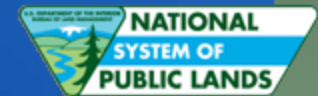
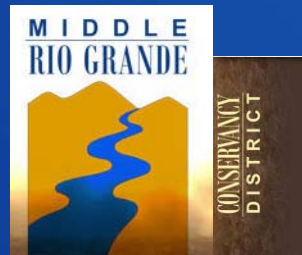


U.S. Department of the Interior
Bureau of Reclamation

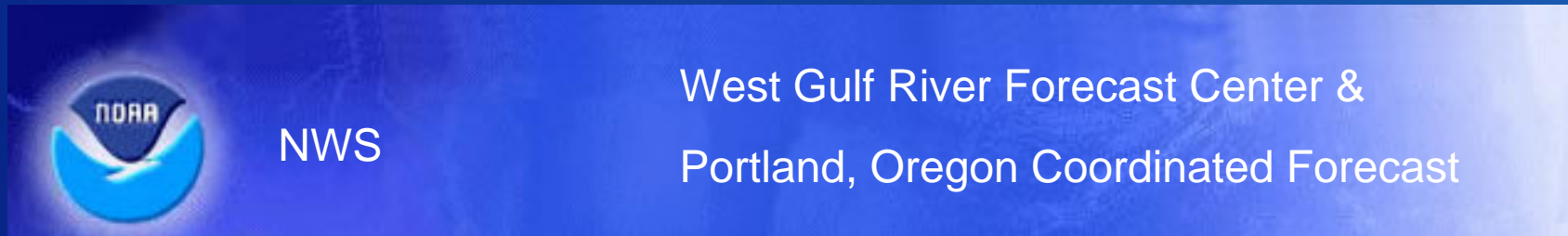
May 14, 2009



Acknowledgements



BLM



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

























Definitions

- Native/Natural Rio Grande water: Water that comes directly from the Rio Grande Basin
- San Juan-Chama water: Water that is imported into the Rio Grande Basin from the San Juan Basin through the San Juan-Chama Project
- Rio Grande Compact: Agreement between the states of Colorado, New Mexico, and Texas that apportions Rio Grande water between the three states.
- Article 7: Section of the Rio Grande Compact that dictates storage in reservoirs. If Rio Grande Project storage is less than 400,000 ac-ft at Elephant Butte and Caballo, no storage of Rio Grande water can take place at El Vado except to satisfy Native American needs.

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<div>Operated By →</div> <div>Dams ↓</div>	Reclamation	Corps	Water Supply	Recreation	Flood Control	Sediment Control
						
HERON						
EL VADO						
ABIQUIU						
NAMBE FALLS						
GALISTEO						
COCHITI						
JEMEZ CANYON						
ELEPHANT BUTTE						

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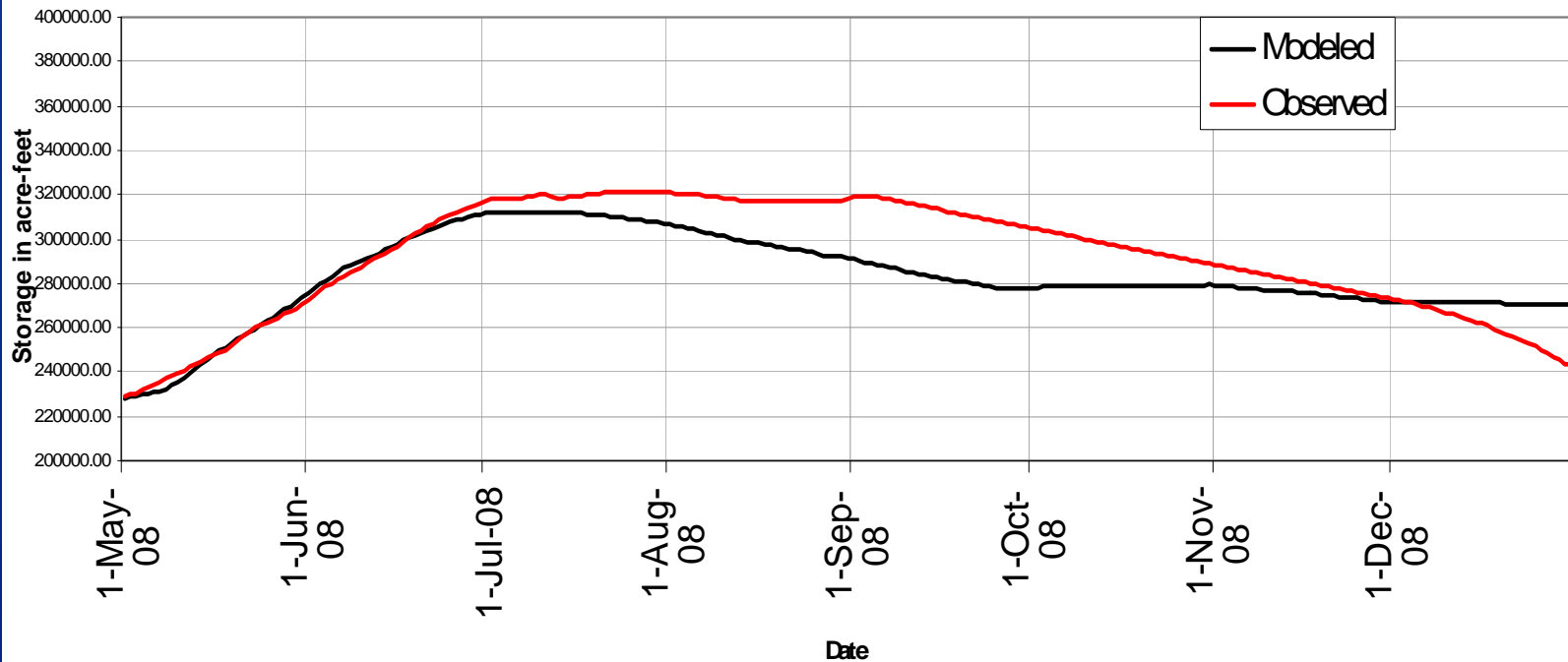
2008: The Year in Review

RECLAMATION



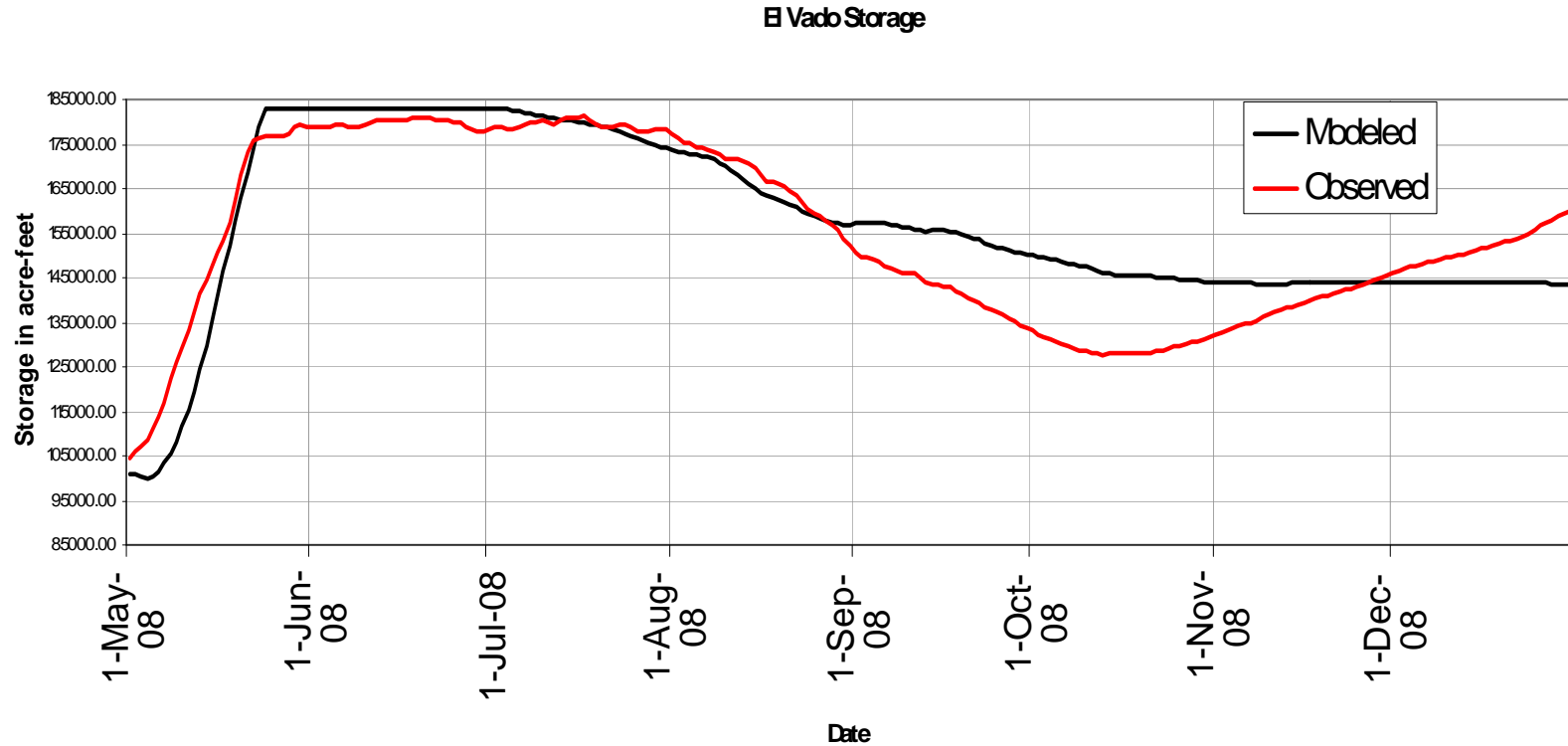
Heron Reservoir

Heron Storage





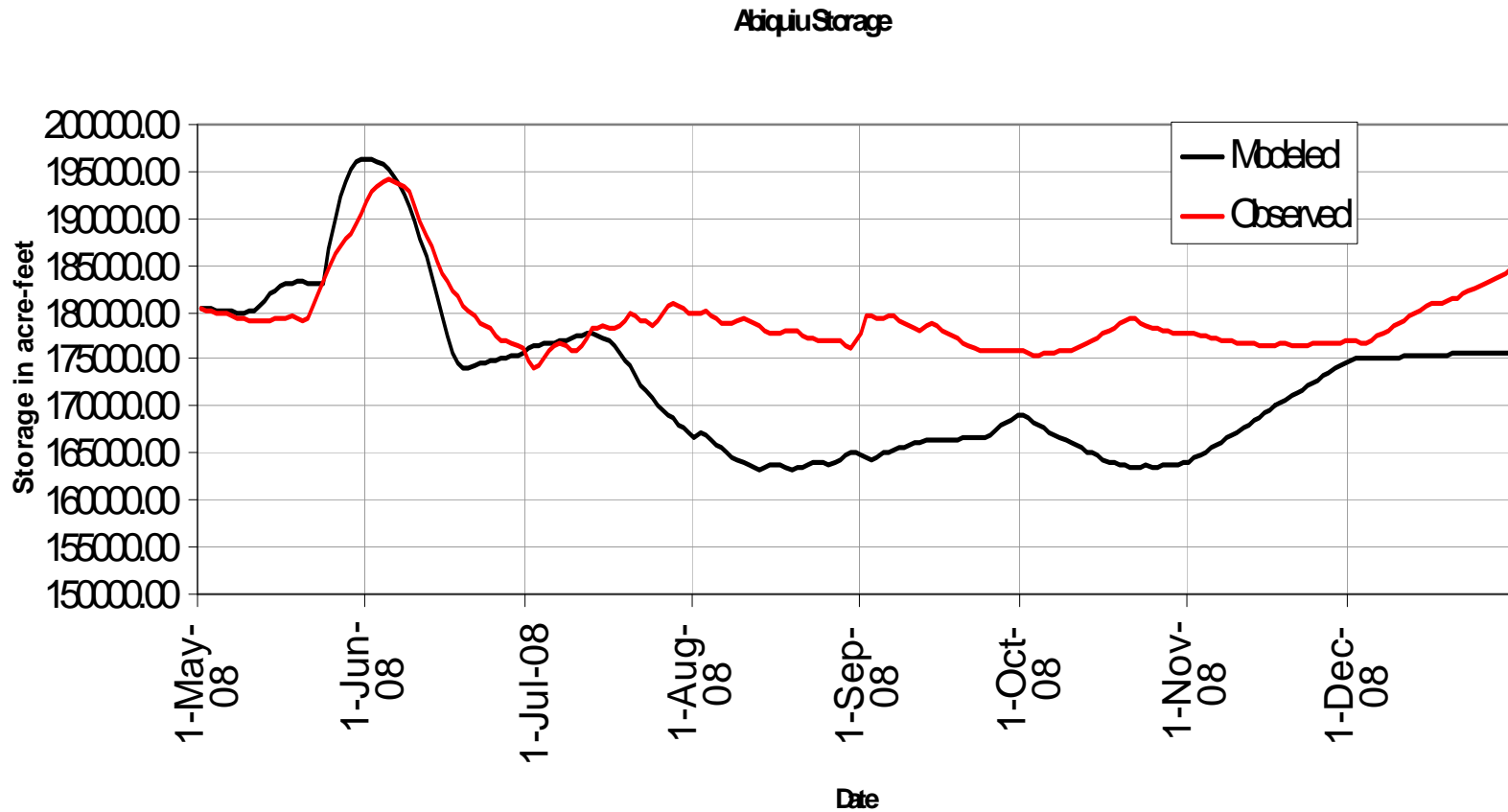
El Vado Reservoir



RECLAMATION



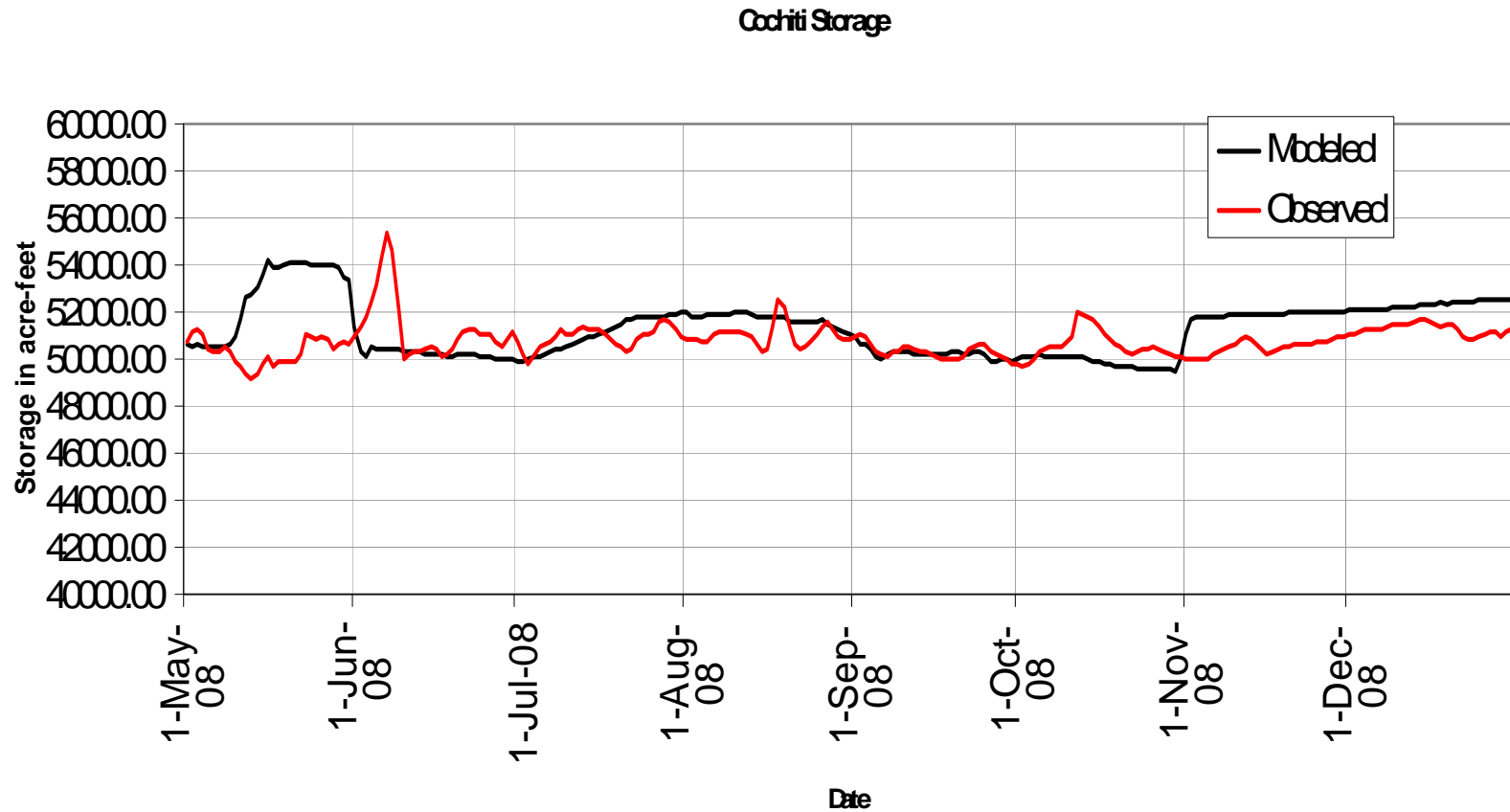
Abiquiu Reservoir



RECLAMATION



Cochiti Reservoir



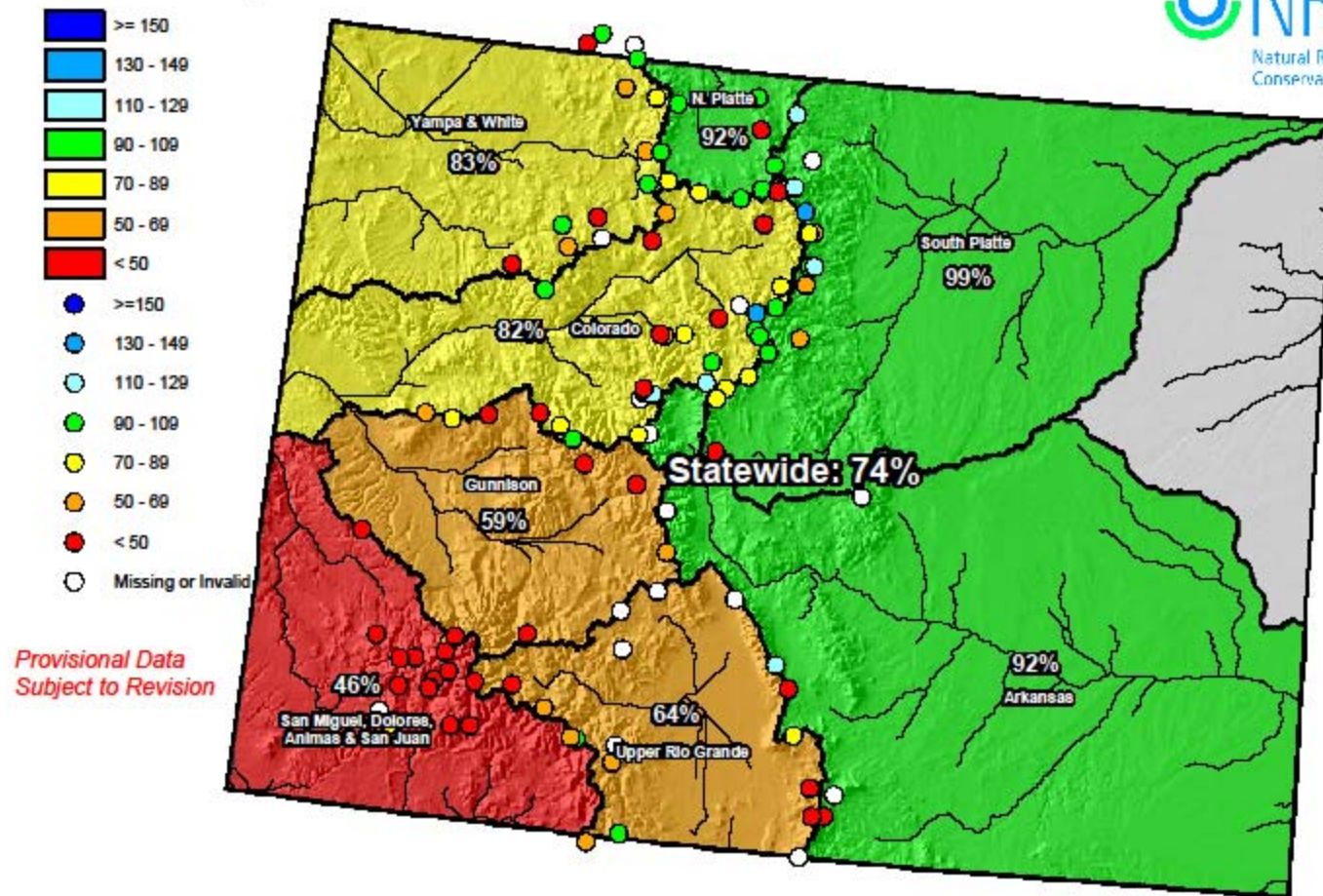
Current Snow Conditions

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Colorado SNOTEL Snowpack Update Map with Site Data

Percent of Average



Current as of May 10, 2009

*Data may not provide a valid measure of conditions

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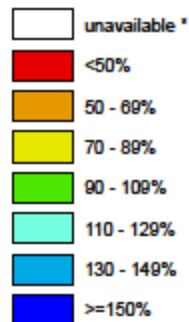


May 12, 2009

Colorado SNOTEL Current Snow Water Equivalent (SWE) % of Normal

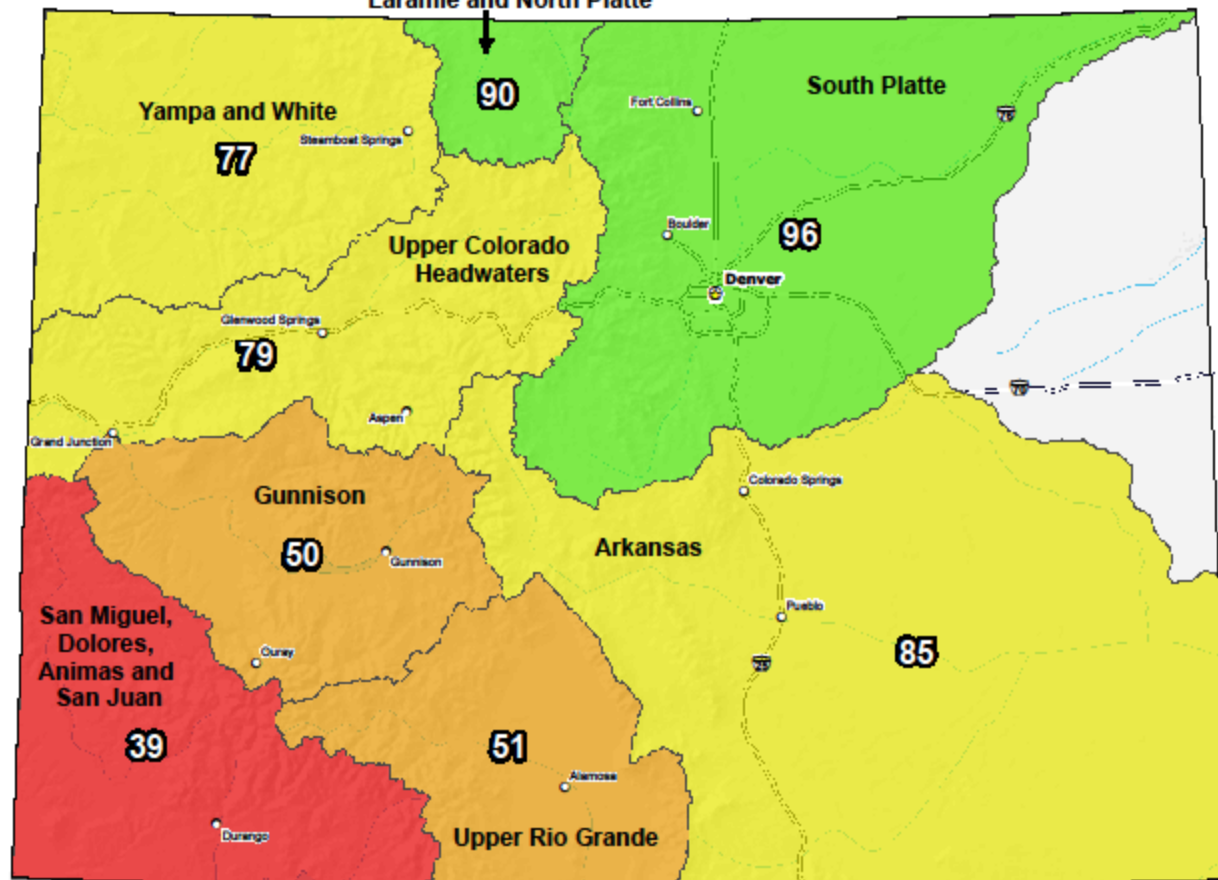
Laramie and North Platte

Current Snow Water
Equivalent (SWE)
Basin-wide Percent
of 1971-2000 Normal



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

Provisional Data
Subject to Revision



0 10 20 40 60 80 100 Miles

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

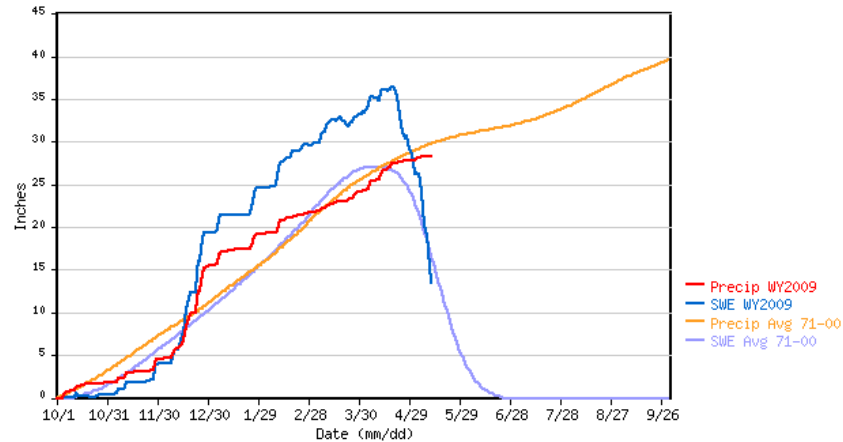
Prepared by the USDA/NRCS National Water and Climate Center
Portland, Oregon <http://www.wcc.nrcs.usda.gov/gis/>
Based on data from <http://www.wcc.nrcs.usda.gov/reports/>
Science contact: Tom.Pagano@por.usda.gov 503 414 3010

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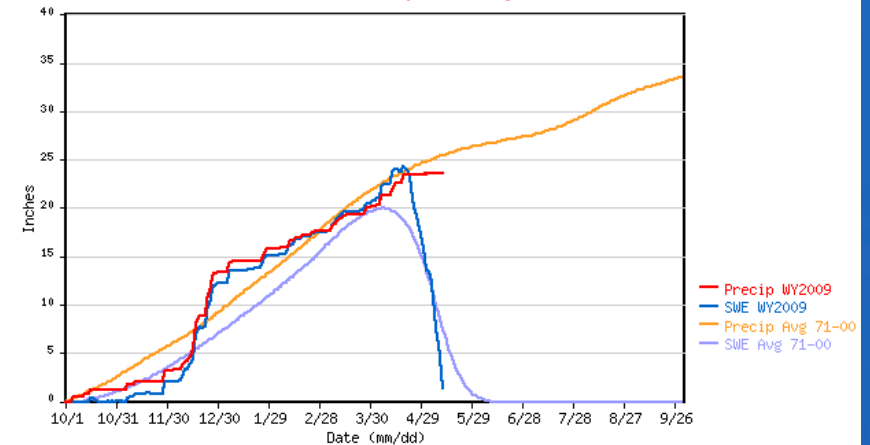
CUMBRES TRESTLE SNOTEL for Water Year 2009

*** Provisional Data, Subject to Change ***



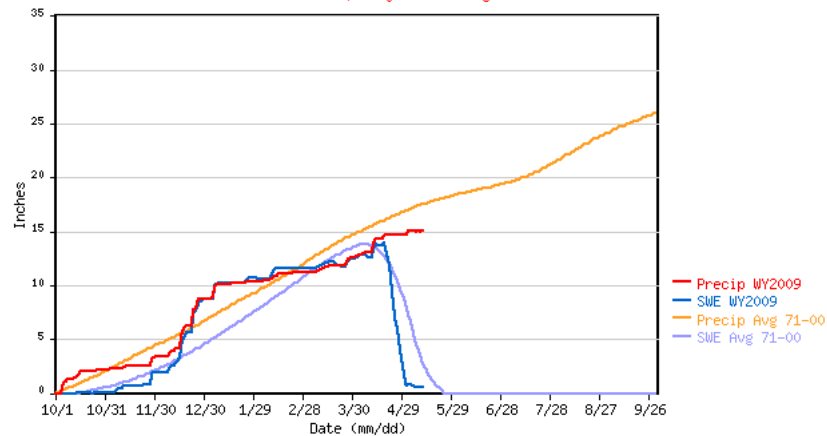
HOPEWELL SNOTEL for Water Year 2009

*** Provisional Data, Subject to Change ***



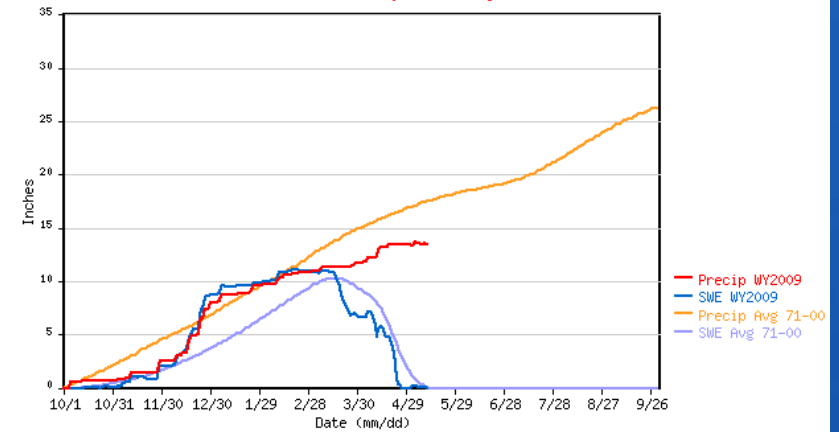
BATEMAN SNOTEL for Water Year 2009

*** Provisional Data, Subject to Change ***



CHAMITA SNOTEL for Water Year 2009

*** Provisional Data, Subject to Change ***

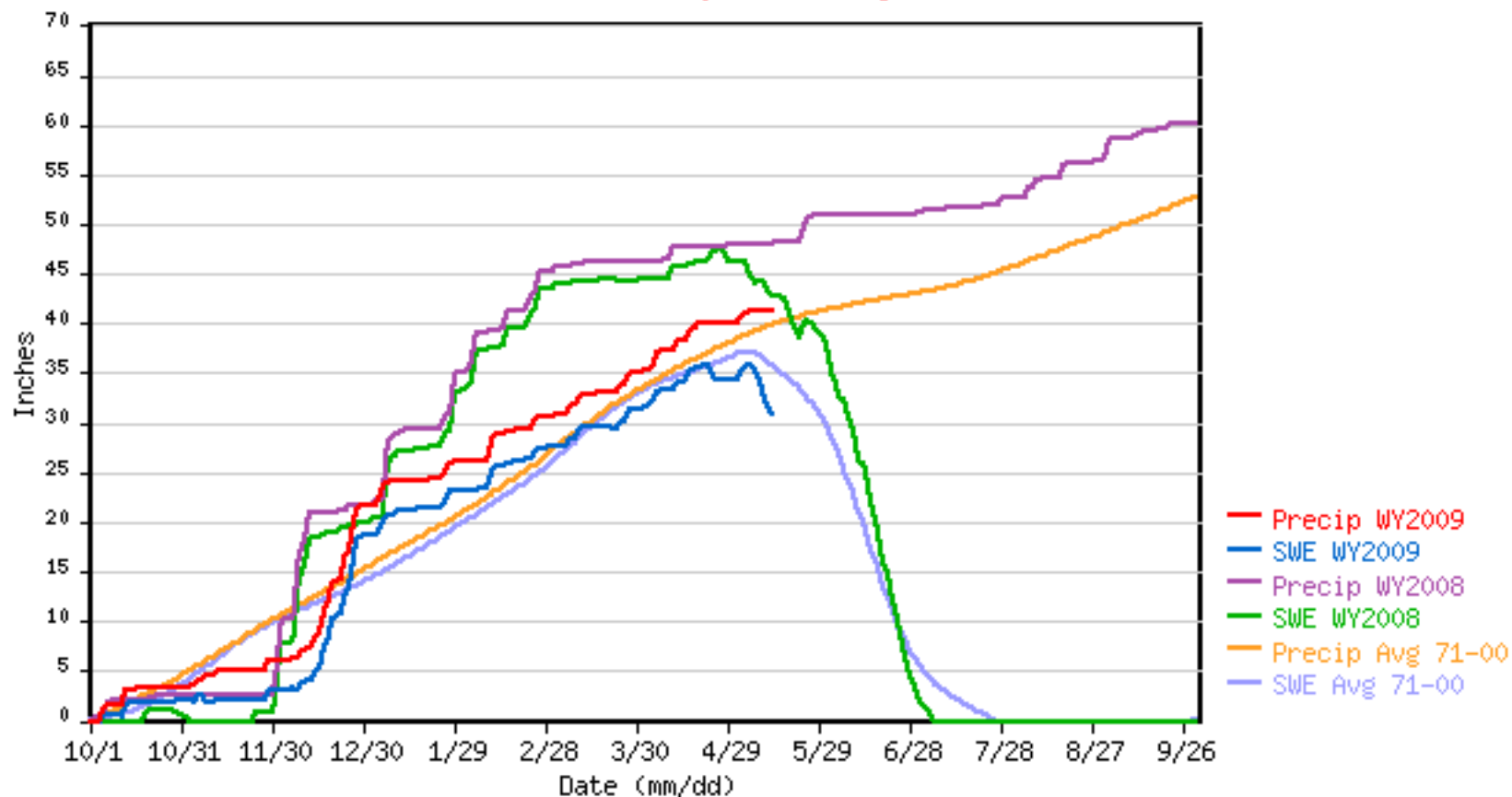


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Rio Grande Snotel Sites

WOLF CREEK SUMMIT SNOTEL as of 05/13/2009

*** Provisional Data, Subject to Change ***

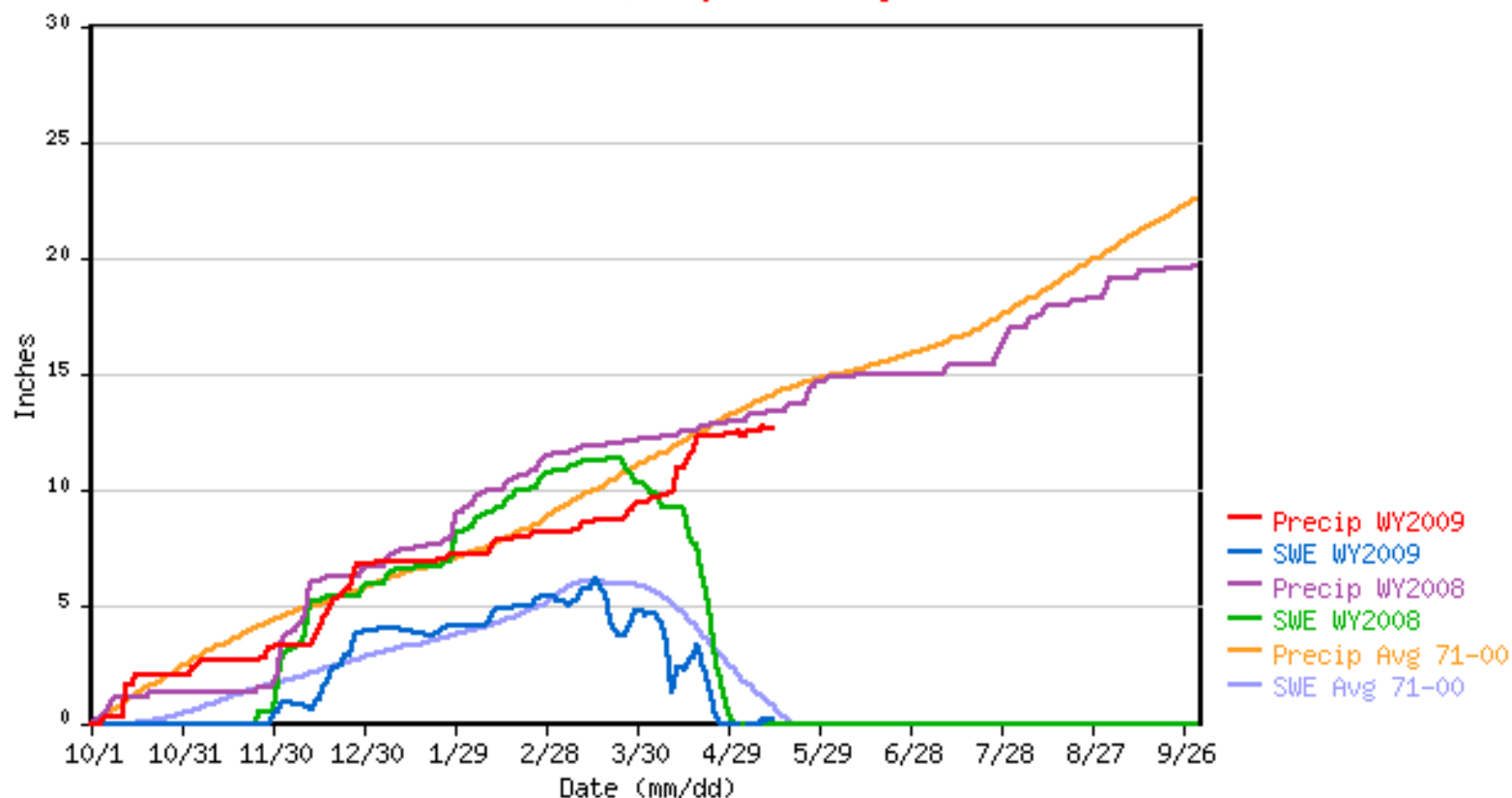


RECLAMATION

Rio Grande Snotel Sites

UPPER RIO GRANDE SNOTEL as of 05/13/2009

*** Provisional Data, Subject to Change ***

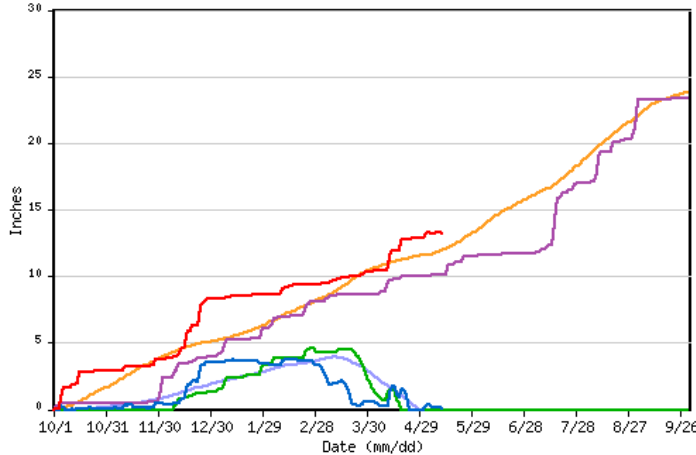


RECLAMATION

Sangre de Cristo Snow Data

ELK CABIN SNOTEL as of 05/13/2009

*** Provisional Data, Subject to Change ***

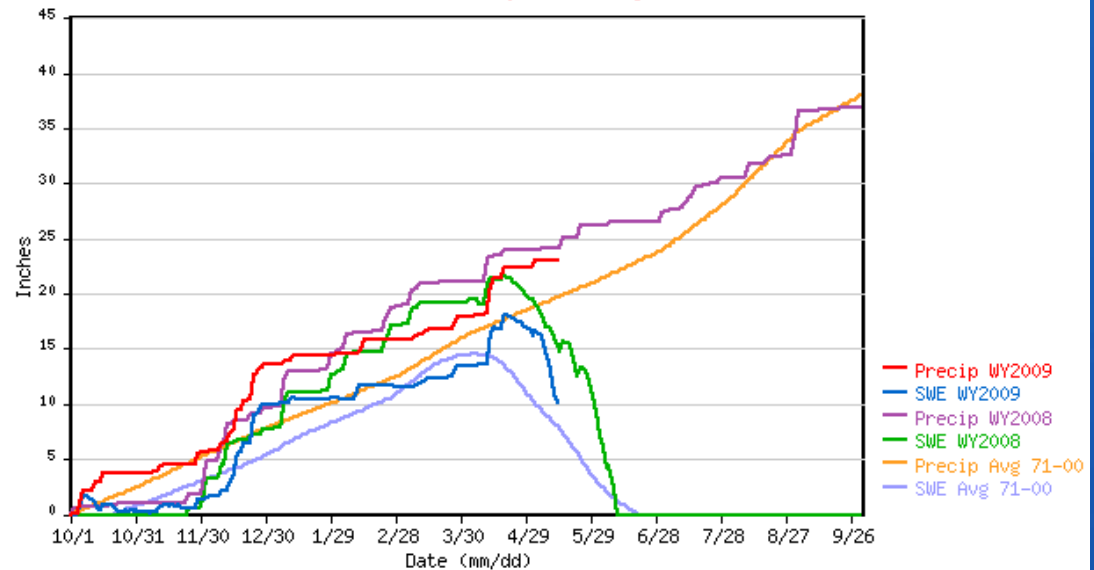


Elk Cabin Snotel
Site is at elevation
8,210 ft

Santa Fe Snotel Site is
at elevation 11,445 ft

SANTA FE SNOTEL as of 05/13/2009

*** Provisional Data, Subject to Change ***

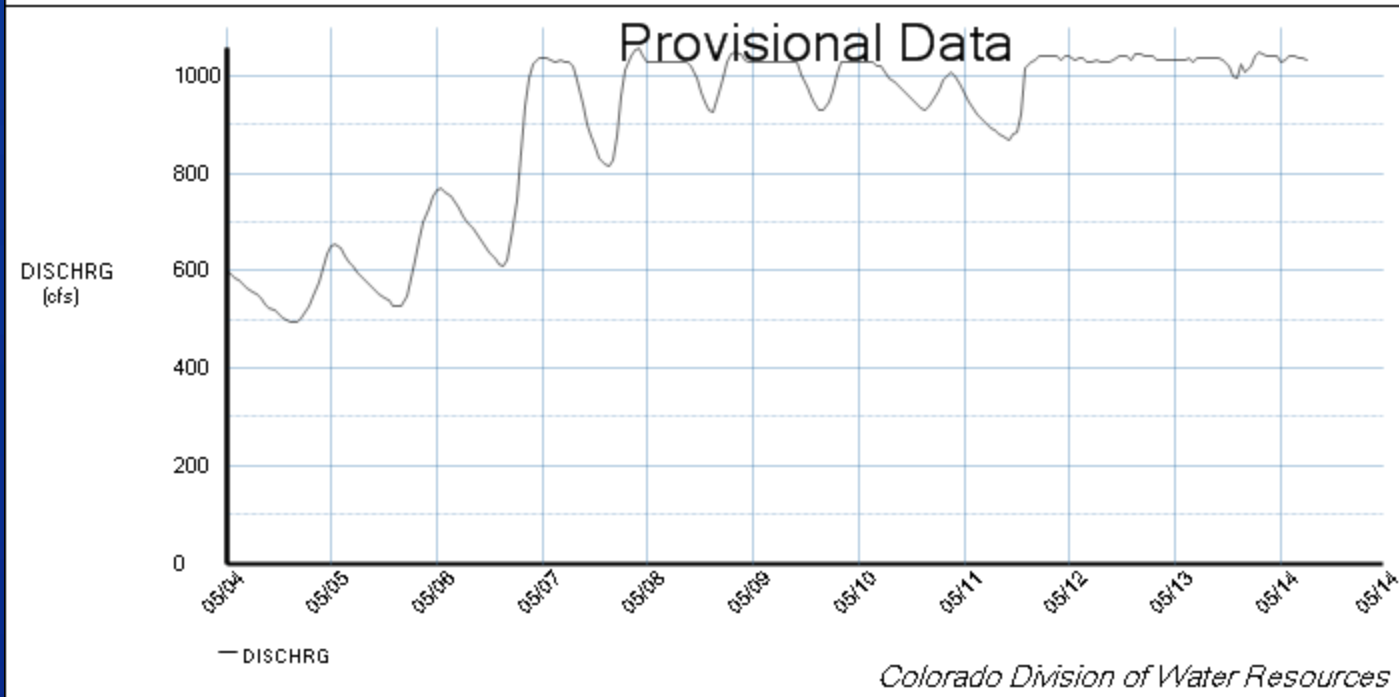


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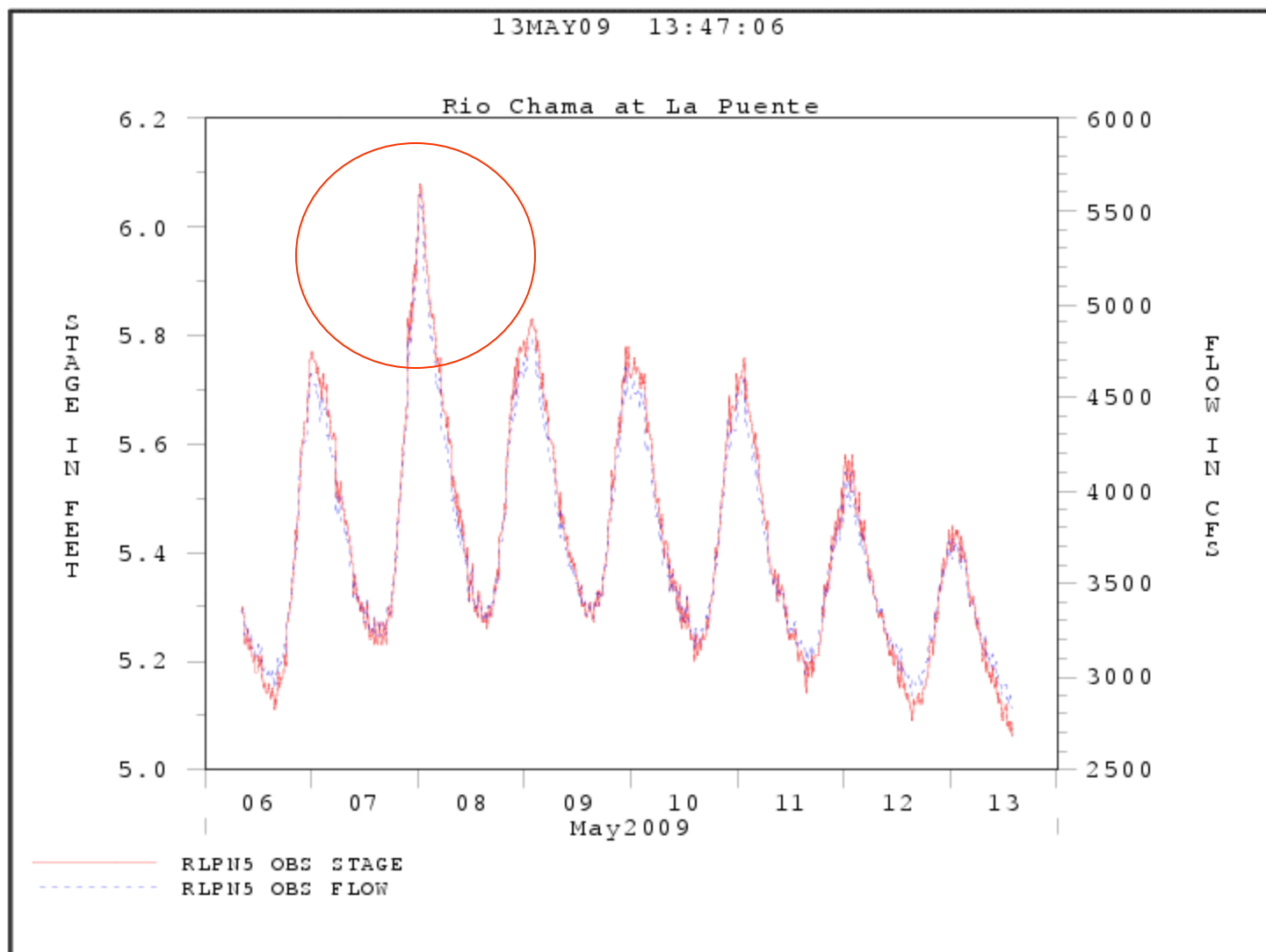


Current Surface Water Conditions

AZOTEA OUTLET TUNNEL NEAR CHAMA, NM (AZOTUNNM)
05/04/2009 To 05/15/2009
Data Source: Division of Water Resources



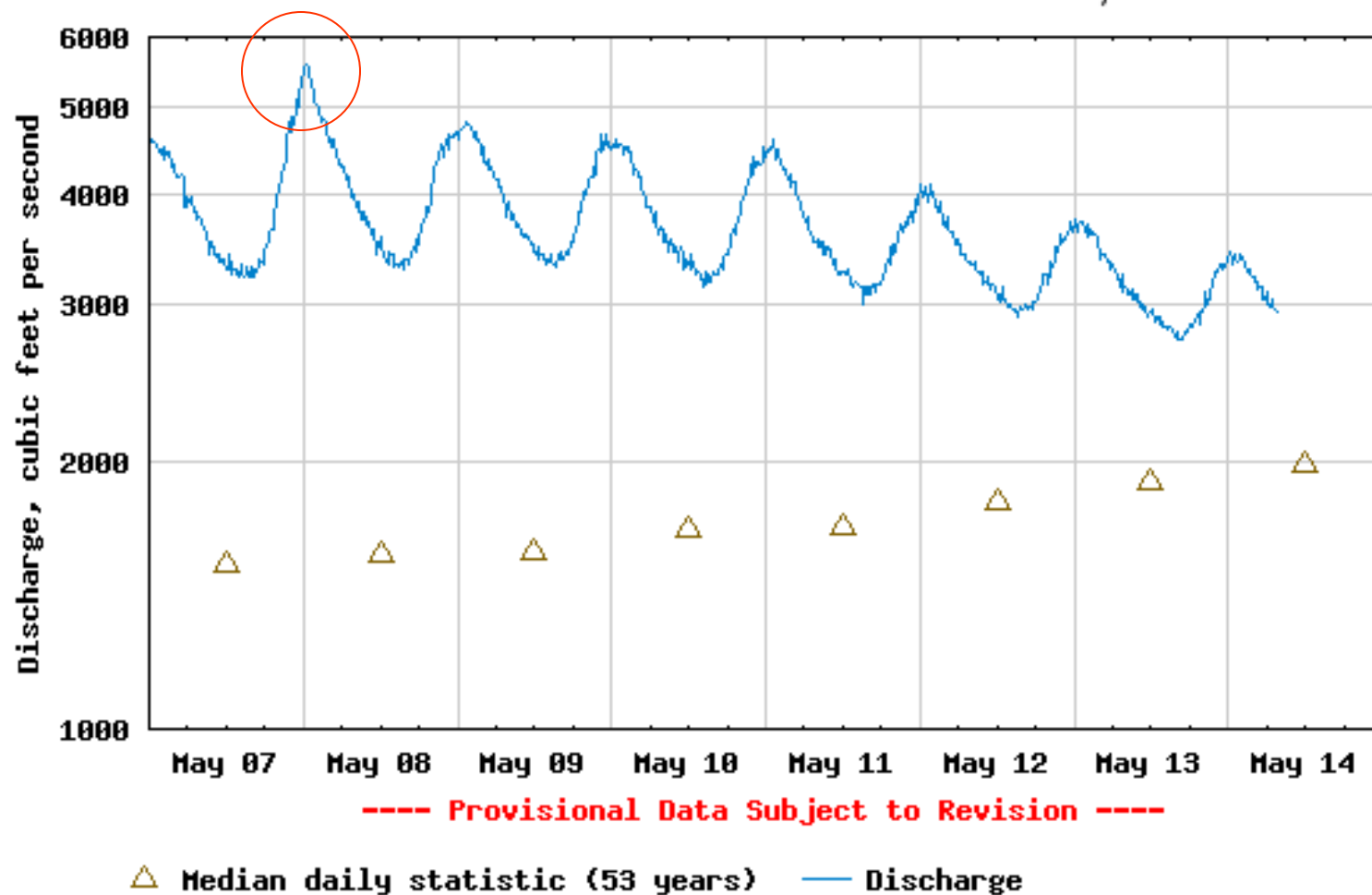
RECLAMATION



RECLAMATION



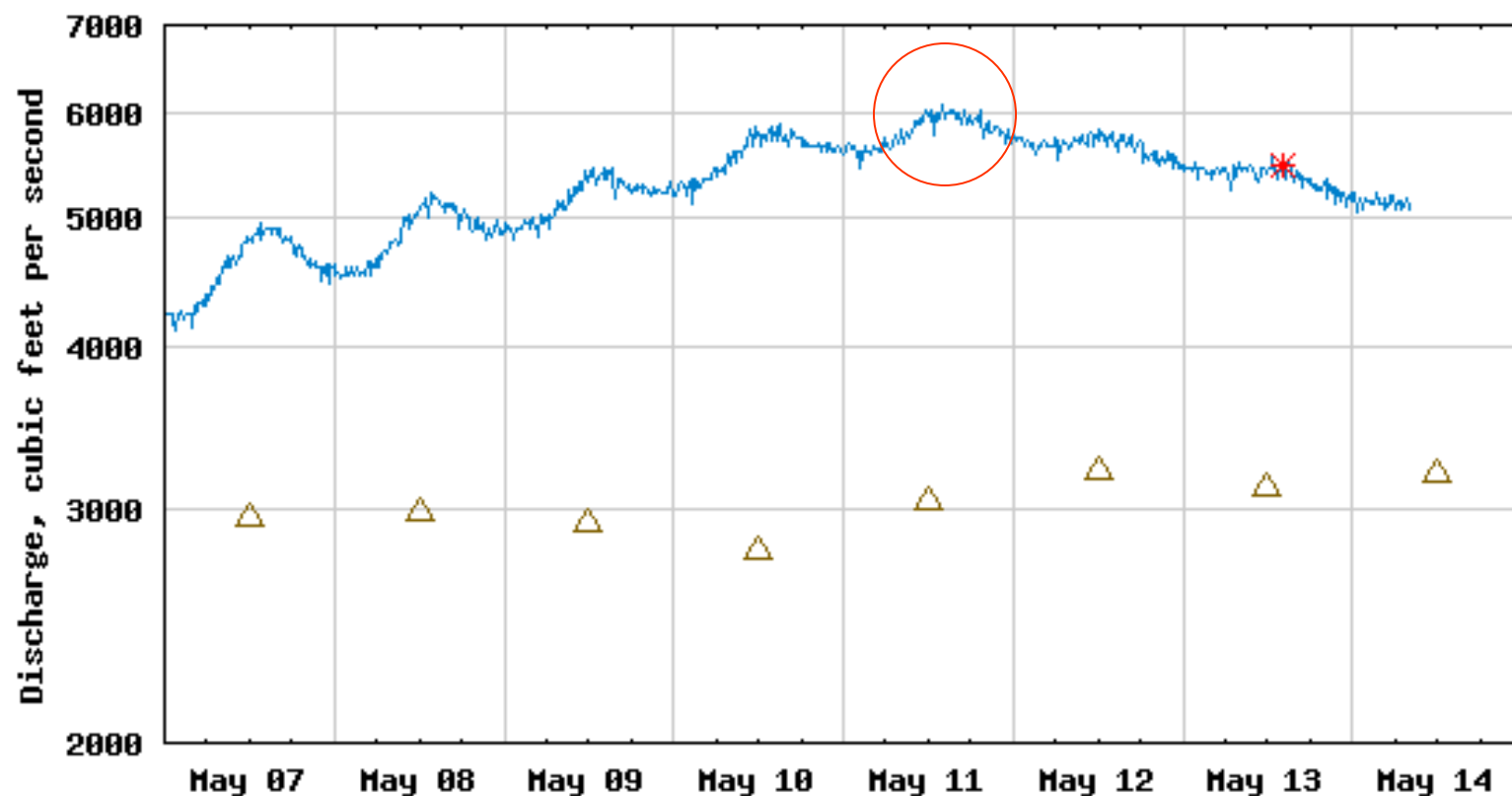
USGS 08284100 RIO CHAMA NEAR LA PUENTE, NM



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USGS 08313000 RIO GRANDE AT OTOWI BRIDGE, NM



---- Provisional Data Subject to Revision ----

△ Median daily statistic (37 years) * Measured discharge
— Discharge

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2009 Water Operations Modeling

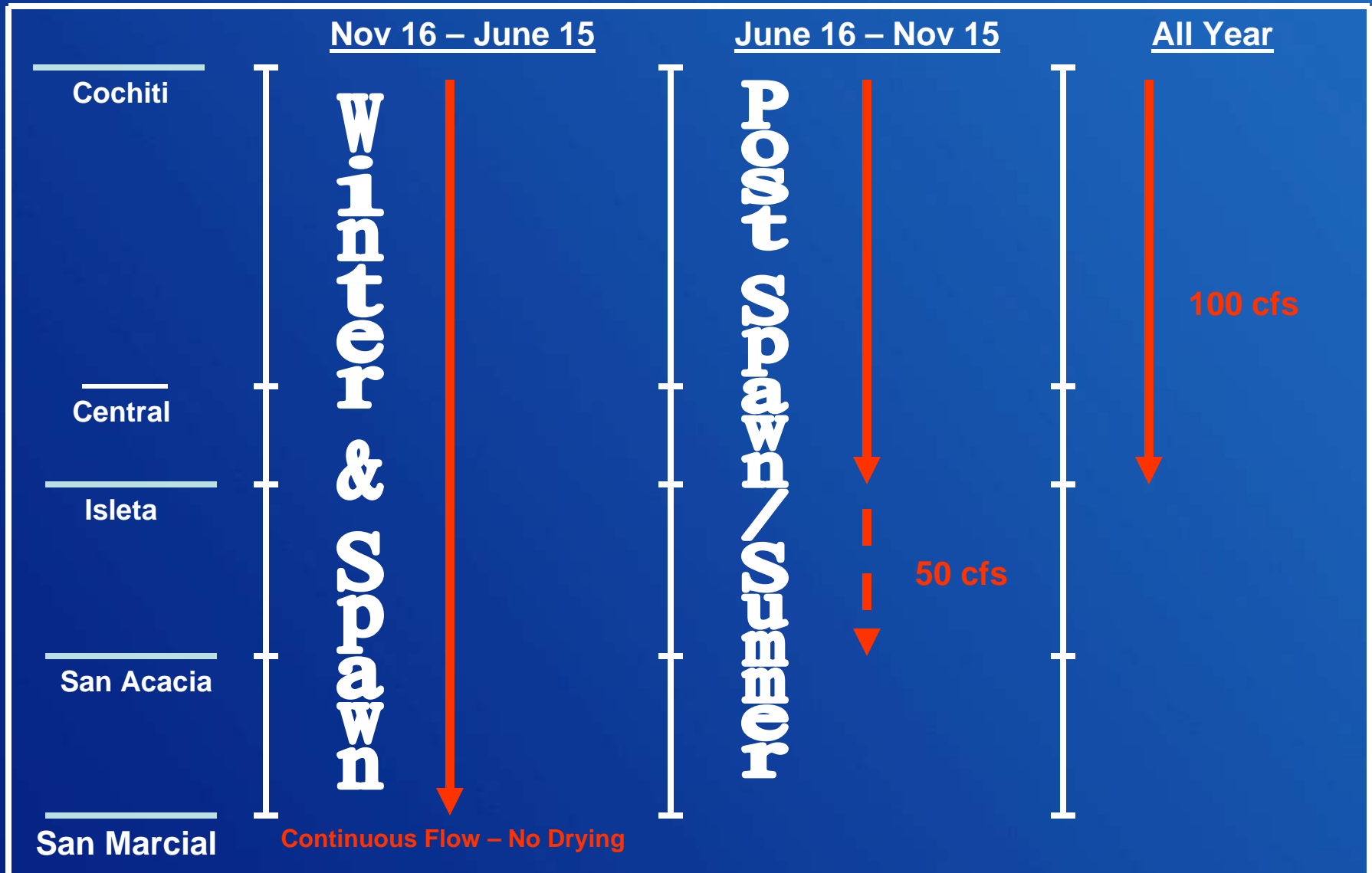
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Major Assumptions

- **May 1, 50% most probable Forecast**
- **'Average' year minnow flow target requirements**
- **Same monsoon conditions as forecast hydrograph year (2004)**
- **No storage occurs under the Emergency Drought Water Agreement for MRGCD & Reclamation**

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March 2003 BiOp Flow Requirements – **AVERAGE YEAR**



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Similar Hydrologic Years

Basin	Pre-Forecast Year	Forecast Year	Post-Forecast Year
San Juan	1998	2004	1998
Rio Chama	1987	2004	1987
Upper Rio Grande	1998	2004	1977
Sangre de Cristo	1999	2004	1978
Middle Rio Grande	1992	2004	1992

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May 2009 Forecast Data

	Most Probable Percent of Average		May 1 Most Probable Volume (acre-feet)
	4/2008	5/2009	2009
Rio Grande nr Del Norte	140%	88%	430,000
El Vado Reservoir Inflow	158%	105%	175,000
Rio Grande at Otowi	155%	85%	450,000
Santa Fe River nr Santa Fe	98%	91%	3,000
Jemez blw Jemez Dam	94%	41%	9,000
Heron Reservoir Inflow	150%	110%	110,000

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Major Results

- **Snowmelt Runoff volume about average**
- **BiOp flow requirements met, including possible intermittency below San Acacia later in the irrigation season**
- **Supplemental Water Releases begin mid- to late-June**
- **Heron Reservoir Inflow roughly 110% of average (110,000 af)**
- **Recreational Flows possibly provided for the Rio Chama through most of the Summer**

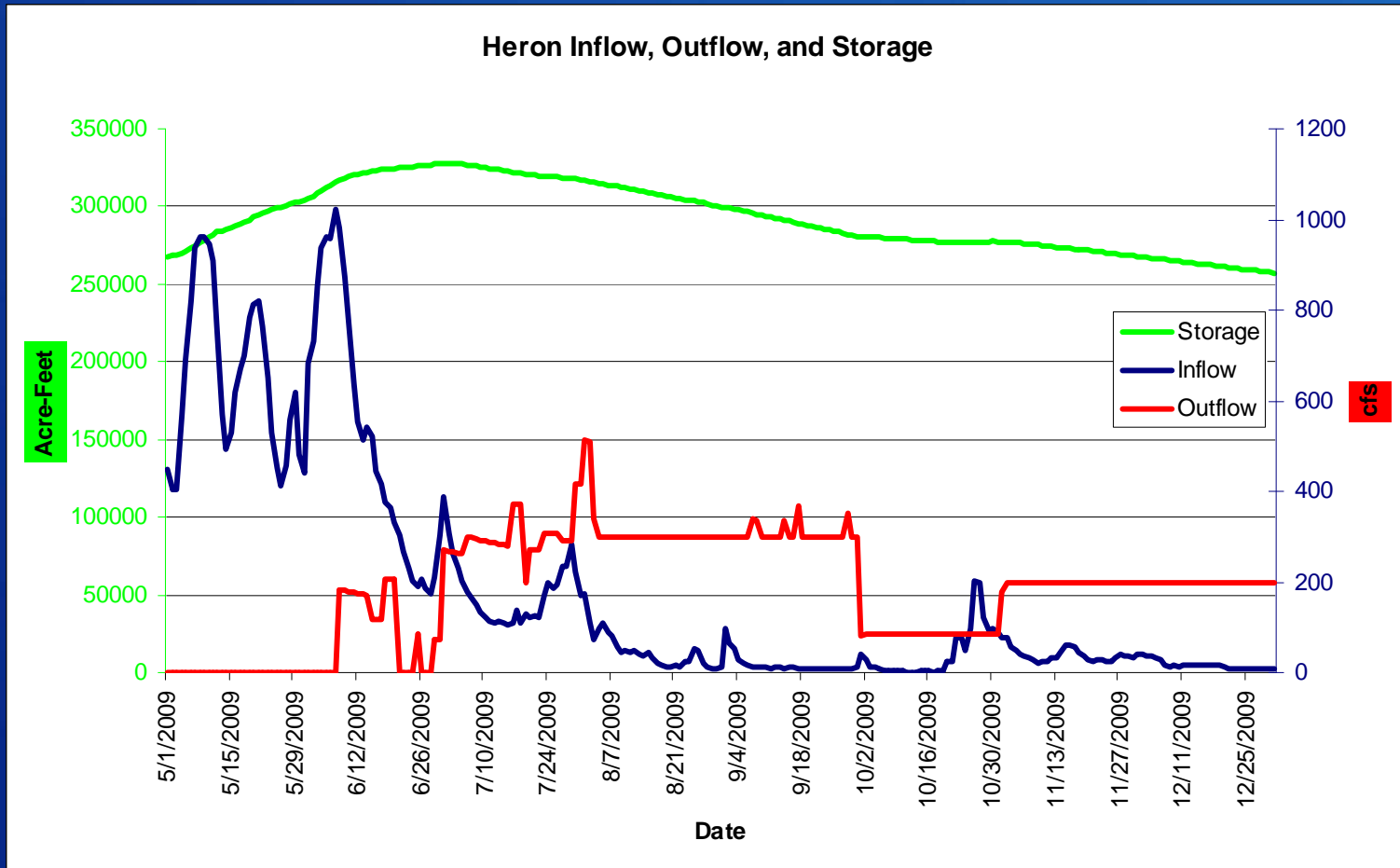
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Heron Reservoir



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Proposed 2009 Heron Operations



Heron Reservoir:

Lake Content: Increasing BOY to EOY from content 267,656 af to 257,121 af with a peak of 327,655 af.

Water Supply: Able to meet this and next years' SJ-C allocations

("BOY" means beginning of calendar year. "EOY" means end of calendar year)

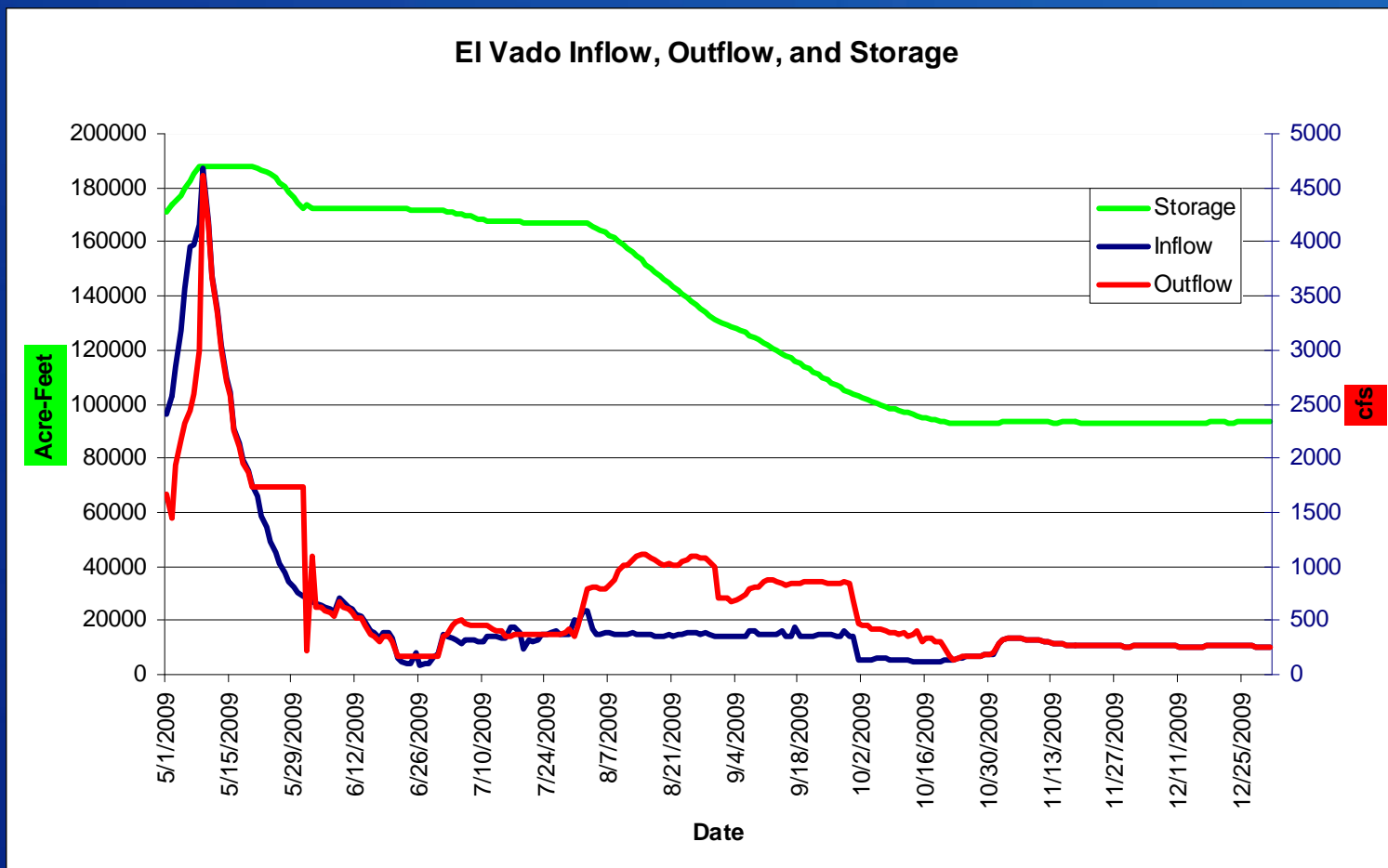
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El Vado Reservoir



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Proposed 2009 El Vado Operations



El Vado Reservoir:

Lake Level: Dropping from a peak at Elev. 6900' to 6866'

Water Supply: Approximately half of stored water used this year

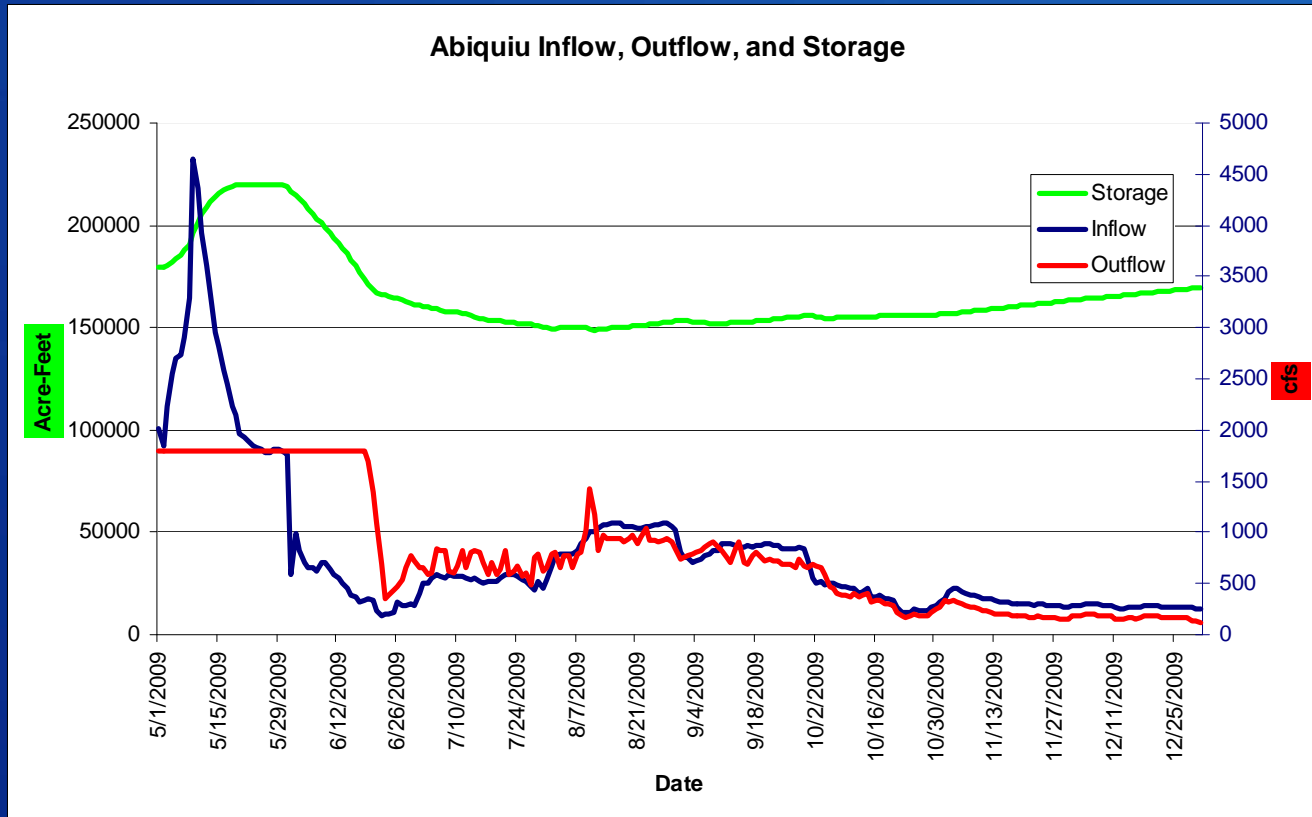
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Abiquiu Lake



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Proposed 2009 Abiquiu Operations



Water Supply
SJ-C storage
capacity = 182,000 ac-ft

Abiquiu Reservoir:

Flood Operations: Downstream channel capacity reached and ~50,000 ac-ft temporarily stored

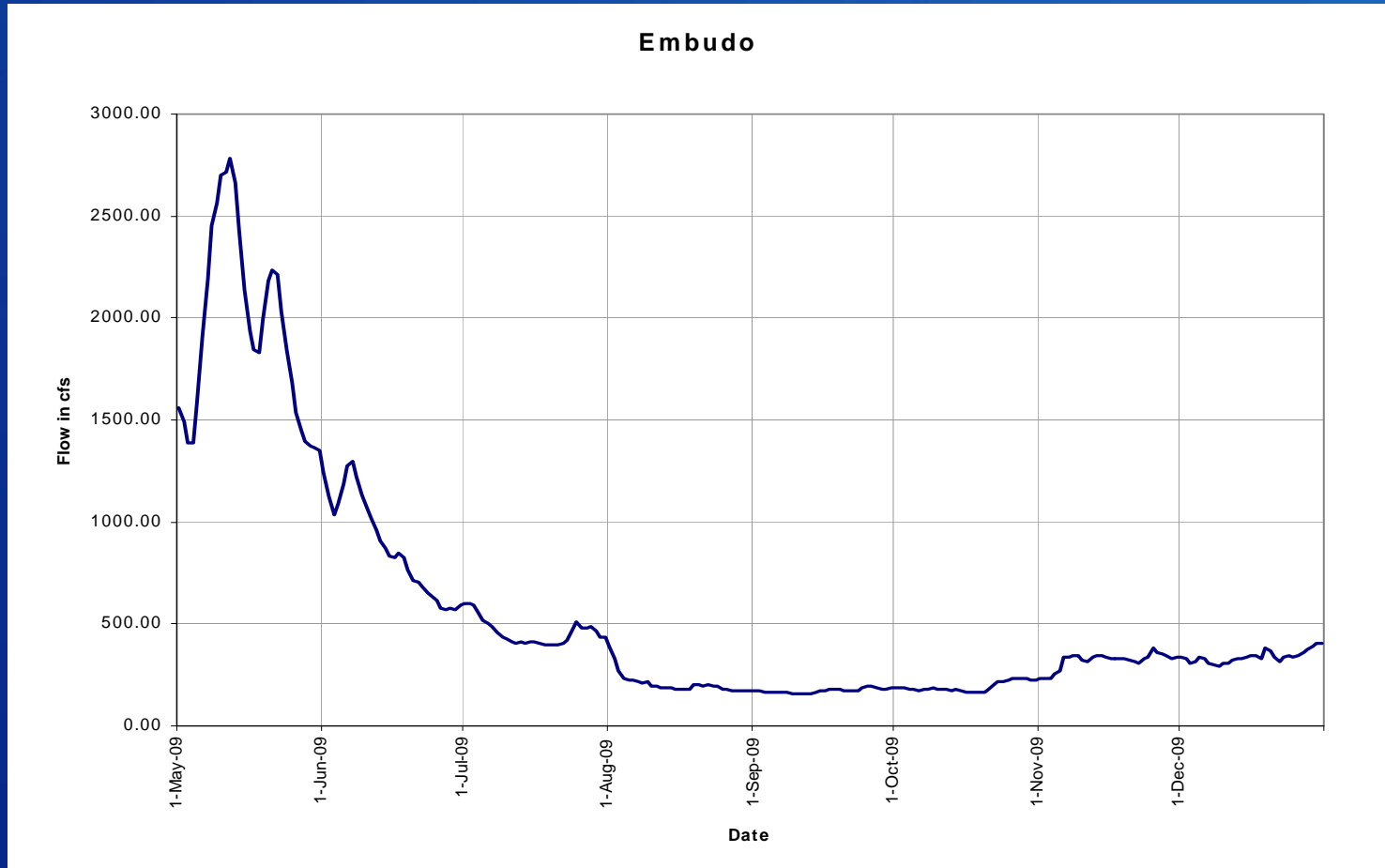
Lake Level: Started at Elev. 6218', dropping to around 6211', then almost recovering to full at 6216'

Water Supply: Storing Albuquerque's and others' SJ-C water for the future.

Silvery Minnow: Releasing SJ-C water for Silvery Minnow this year

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Estimated 2009 Hydrograph at Embudo



Rio Grande Colorado Border to Rio Chama Confluence:

Spring Runoff Peak: Peak likely occurred in May 11.

Flows above 2,000 cfs likely until June.

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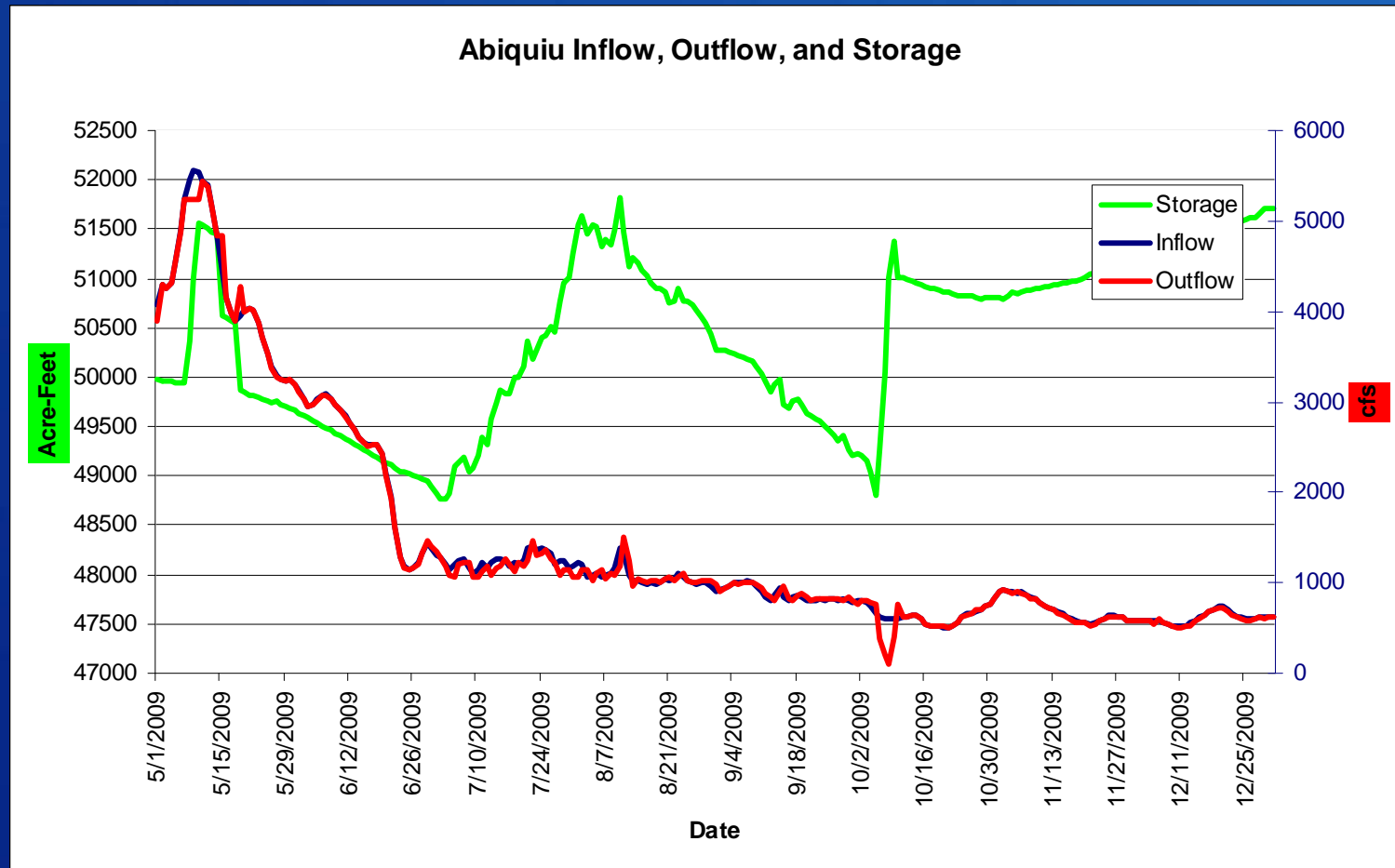
Cochiti Lake



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Proposed 2009 Cochiti Operations



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Jemez Canyon Dam

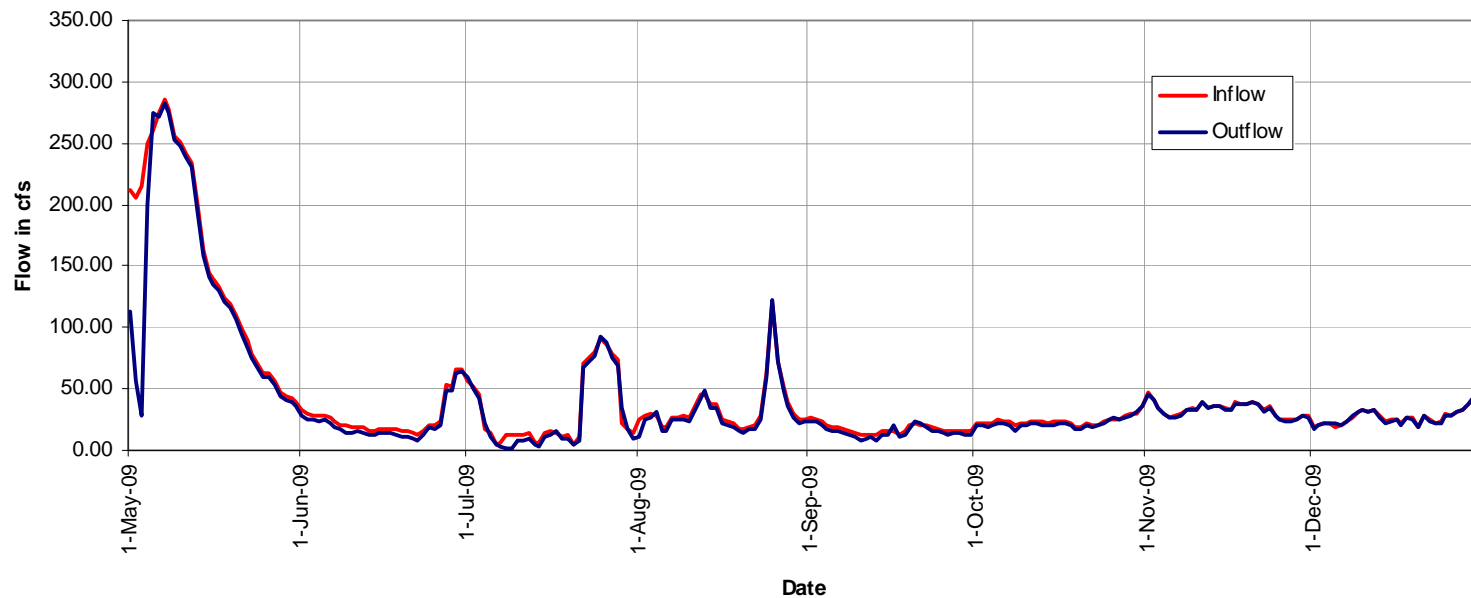


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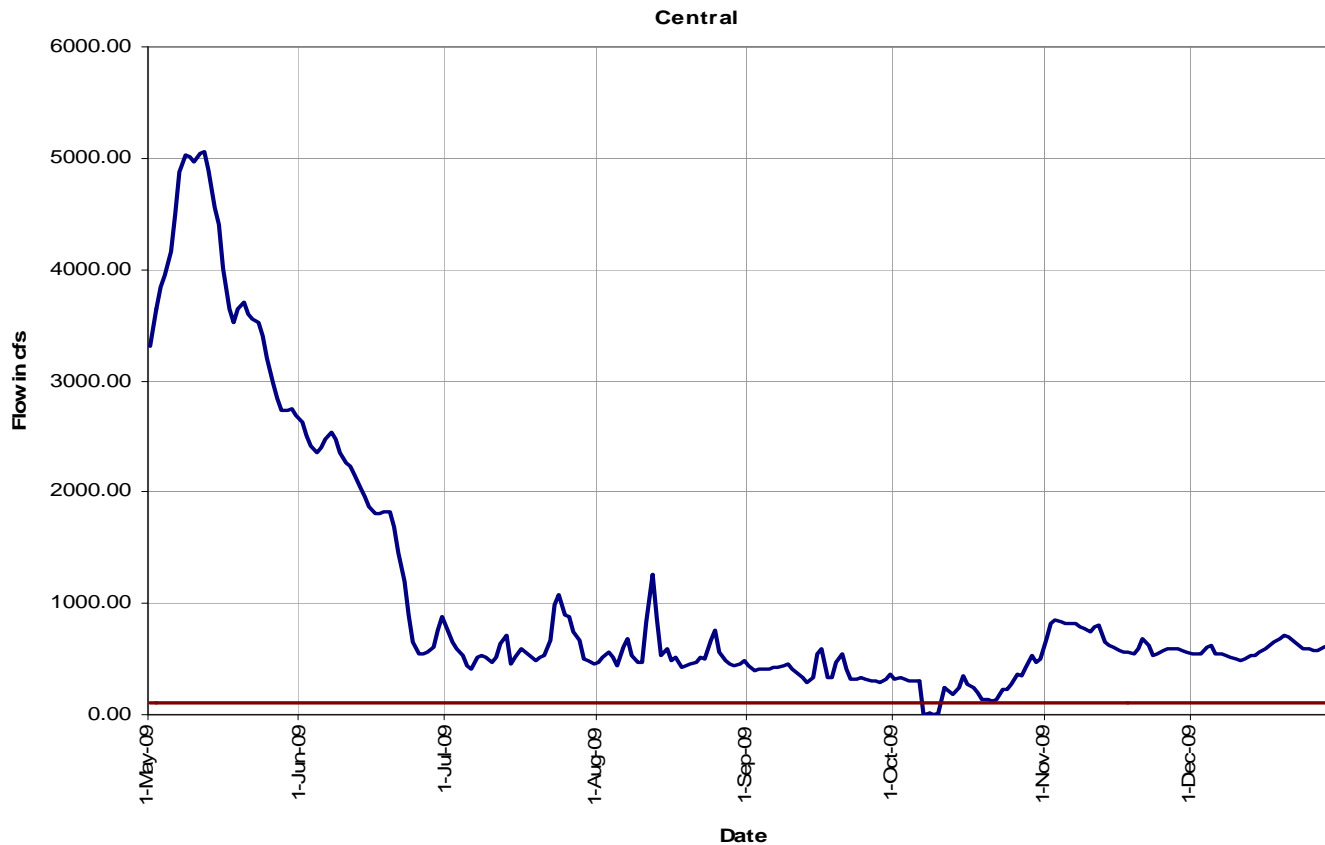
Estimated 2009 Hydrograph below Jemez Reservoir

Jemez Inflow and Outflow





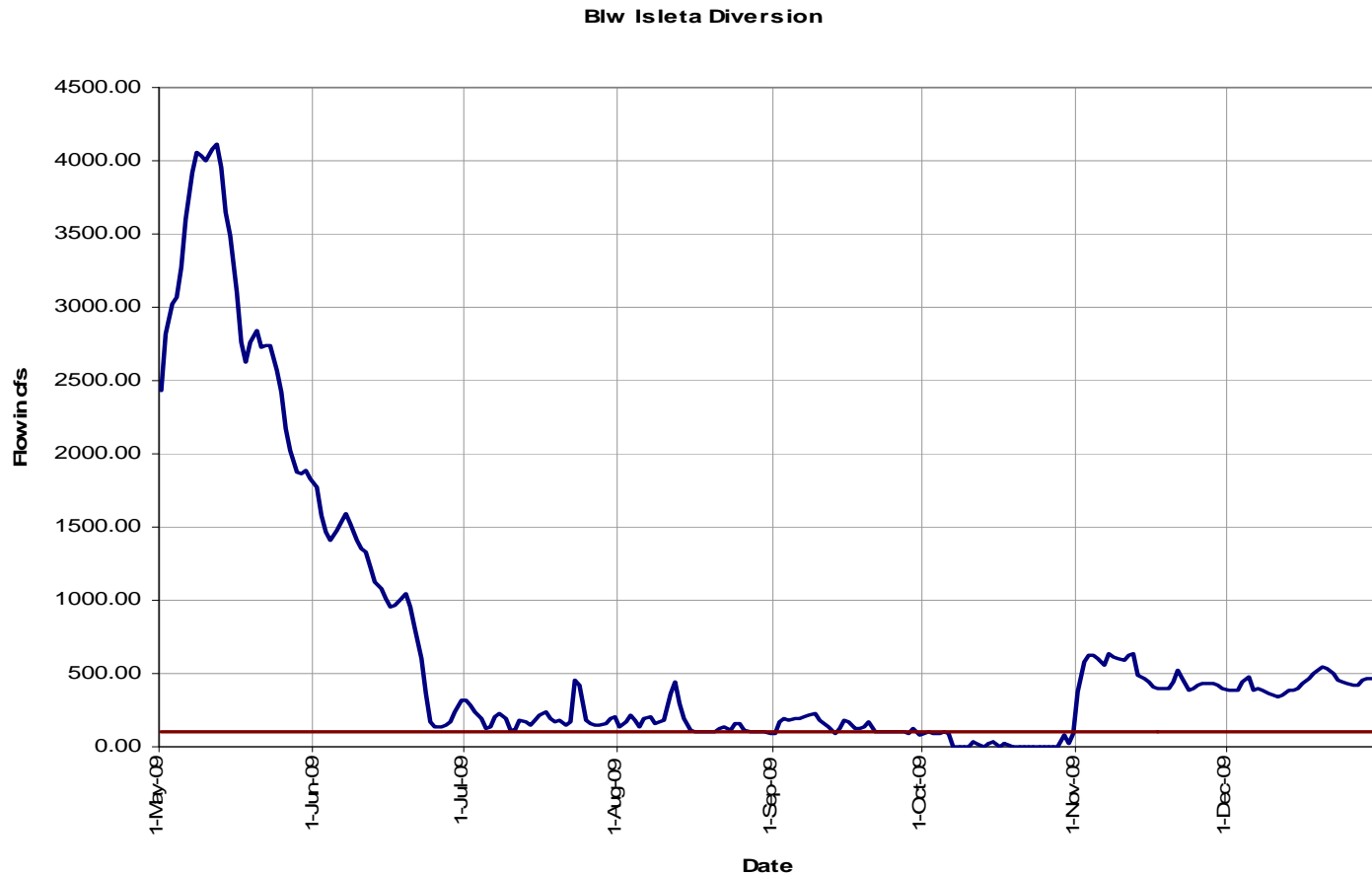
Estimated 2009 Hydrograph at Central Avenue gage



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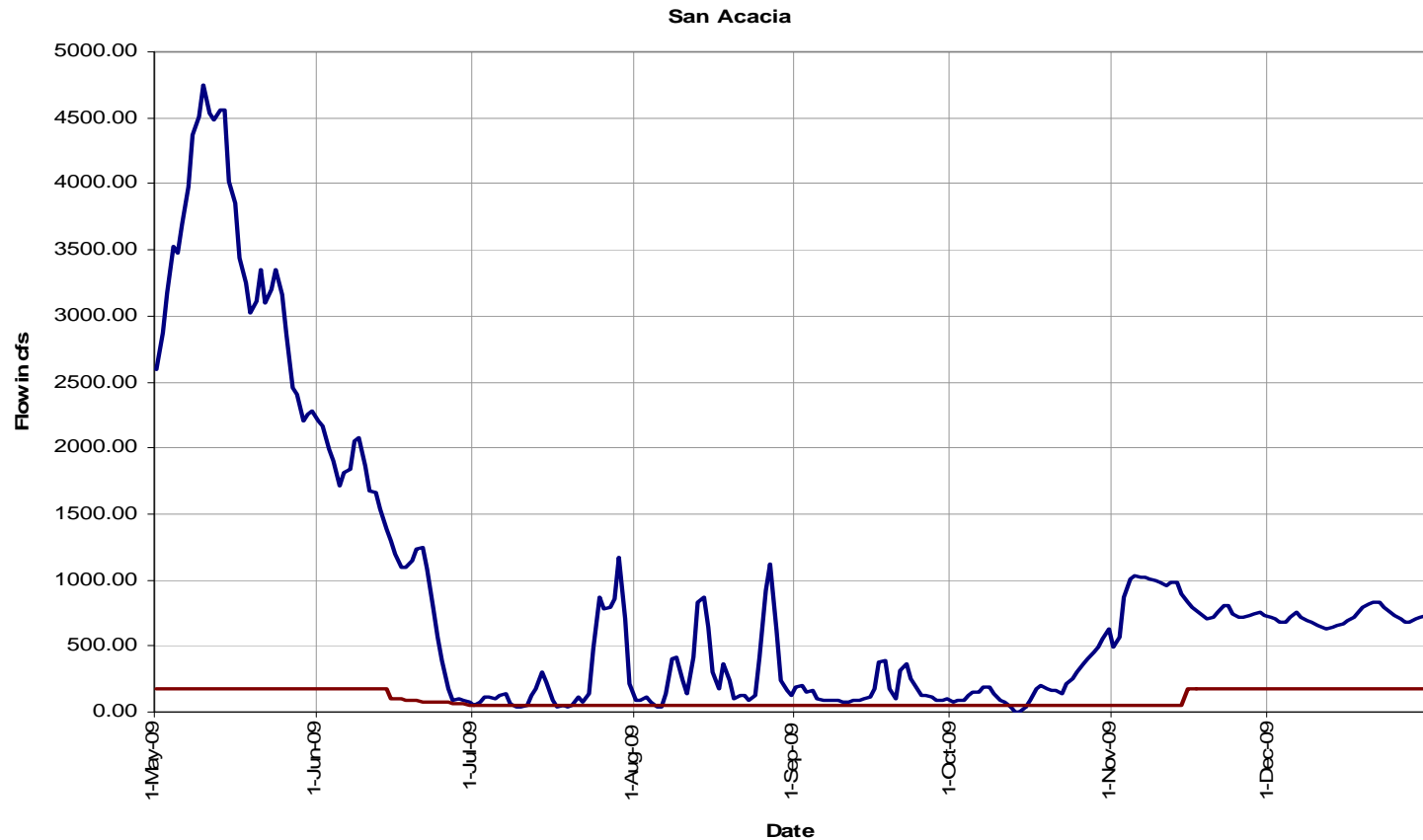
Estimated 2009 Hydrograph below Isleta Dam



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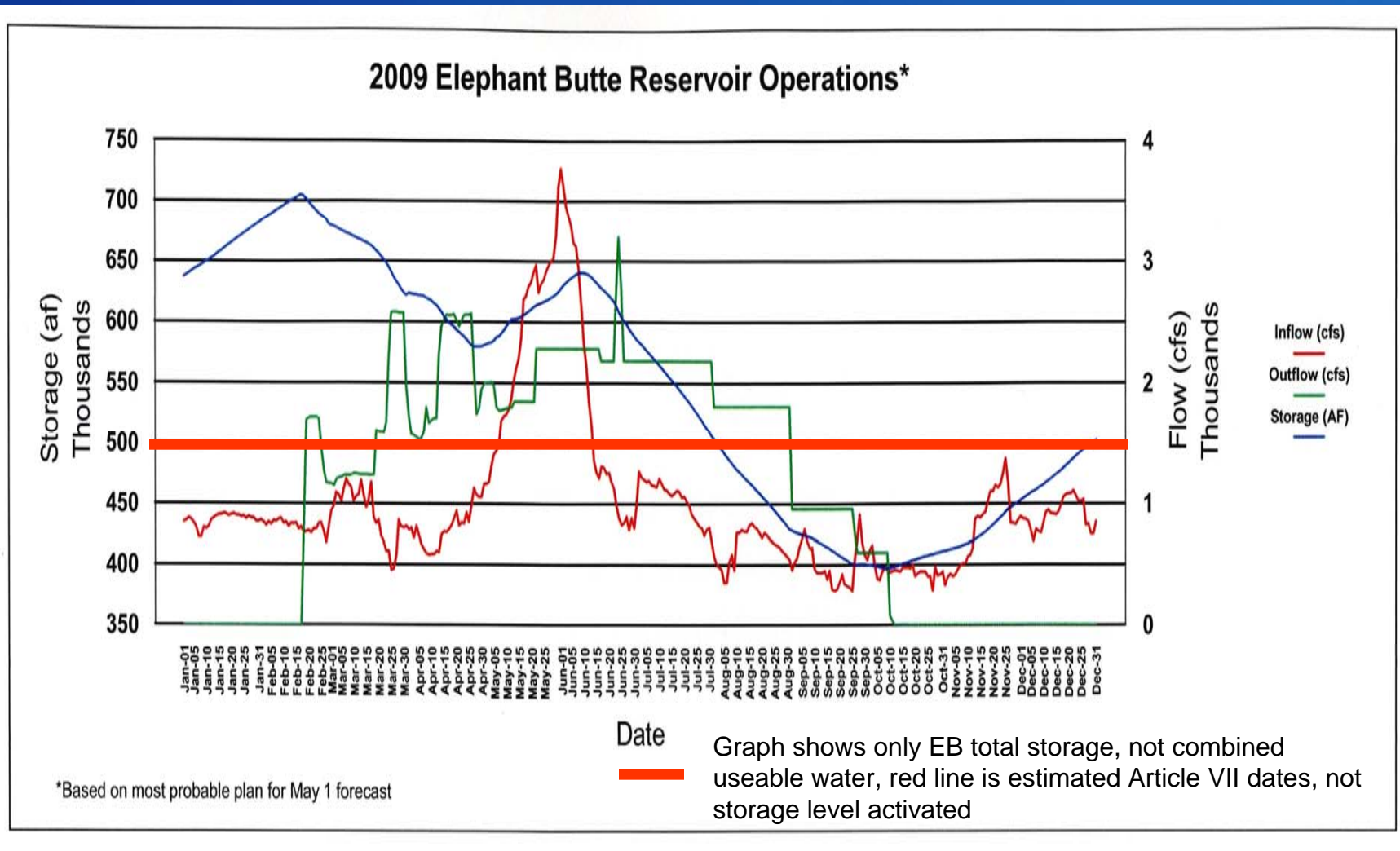
2009 Estimated Flow at San Acacia



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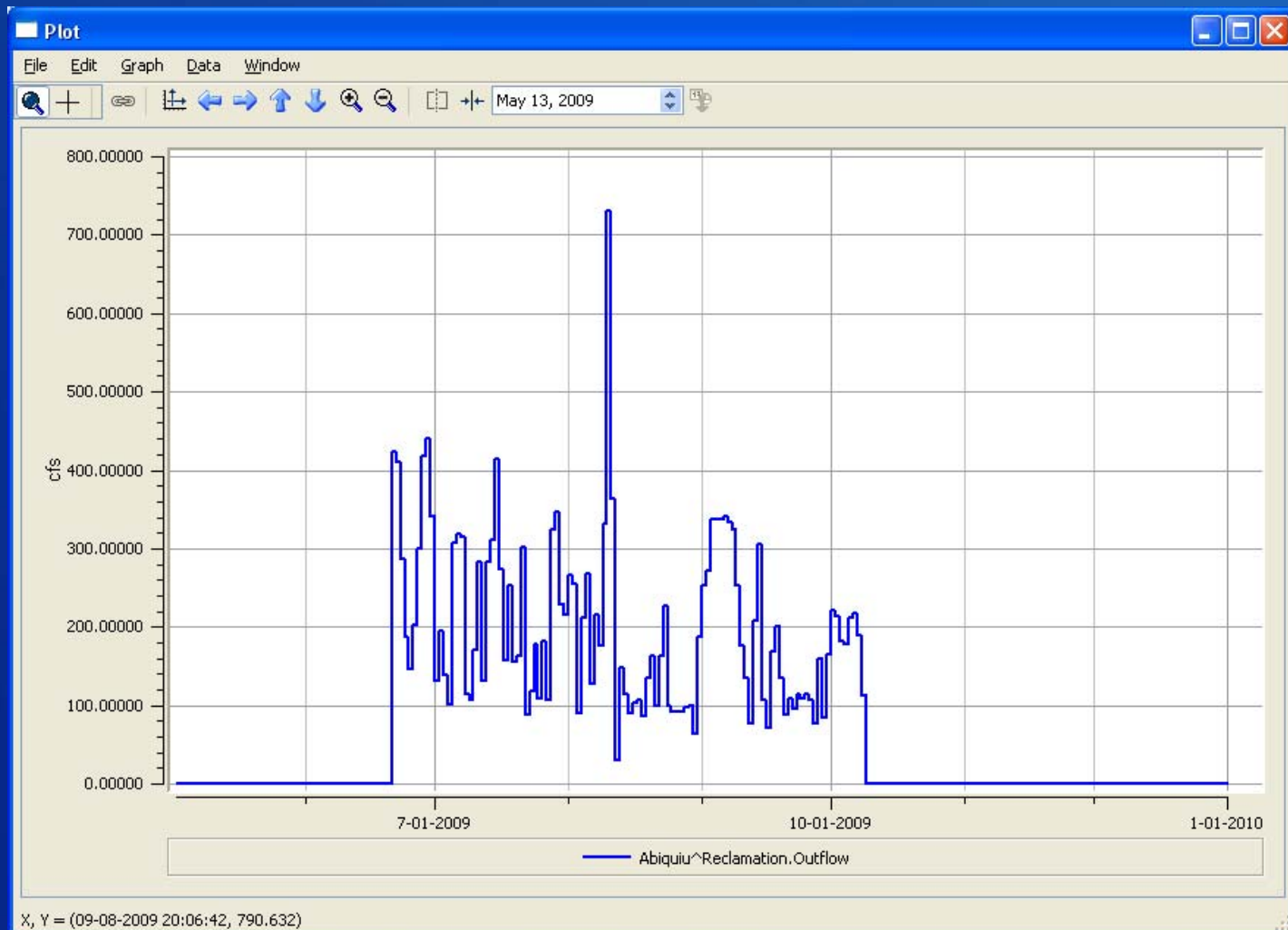


Proposed 2009 Elephant Butte Operations



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2009 Estimated Supplemental Water Released from Abiquiu



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Supplemental Water Supply/Demand Outlook

Estimated Supply	Estimated Demand
50,000 -60,000 (2008)	~40,000 (2008)
30,000-36,000 (2009)	~38,000 (2009)
5,000-8,000 (2010)	Currently Unknown

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