

# 2008 Annual Operating Plan

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## April 1 Runoff Forecast





























# 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.

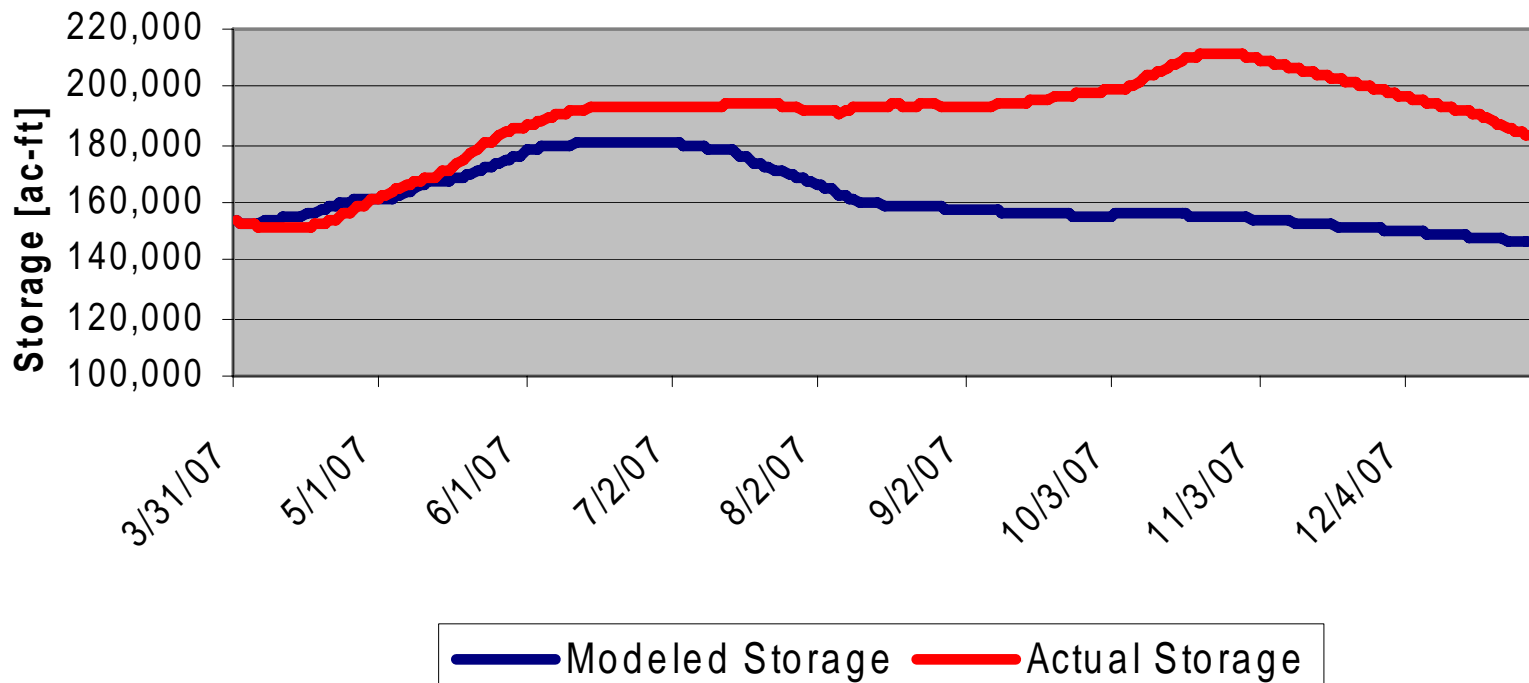
**Article 7:** Section of the Rio Grande Compact that dictates storage in reservoirs. If Rio Grande Project storage is less than 400,000 ac-ft at Elephant Butte and Caballo, no storage of Rio Grande water can take place at El Vado except to satisfy Native American needs.

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

# 2007: The Year in Review

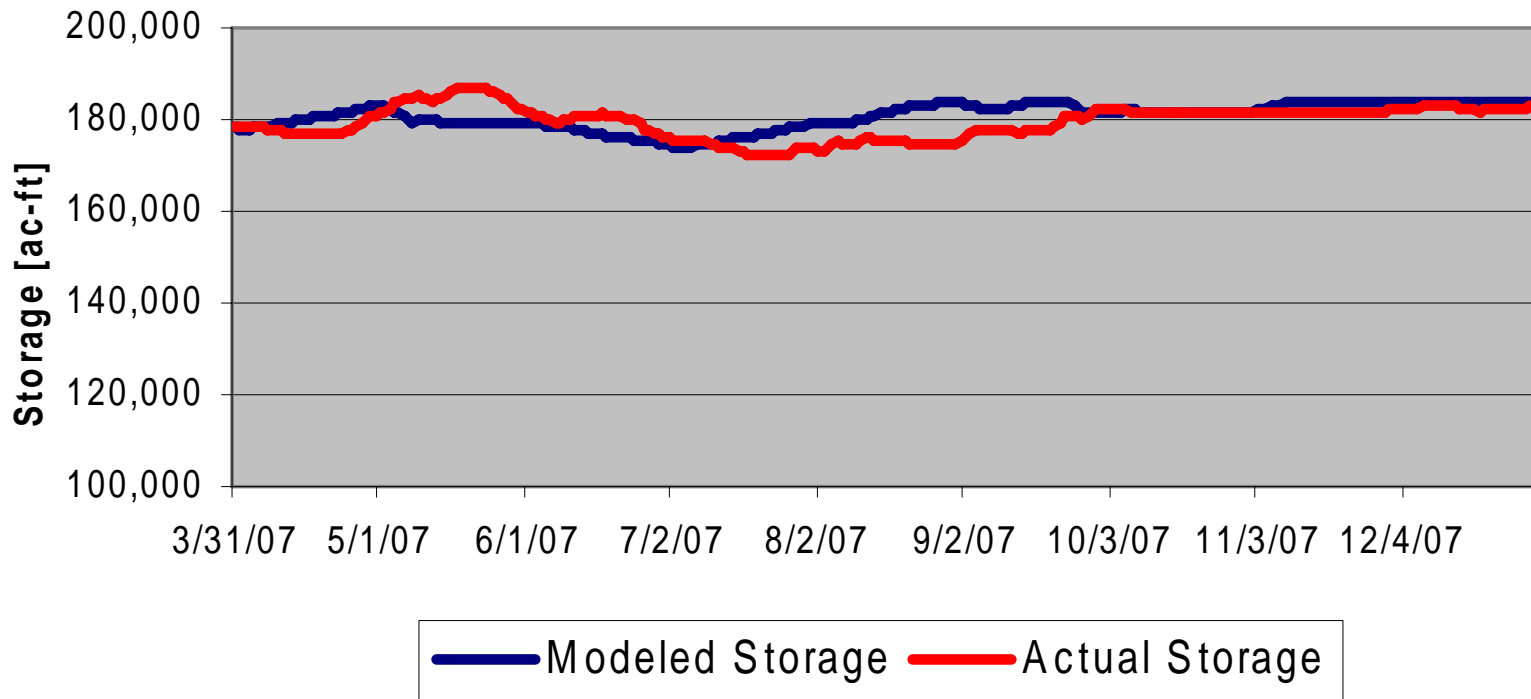
# Heron Reservoir

## 2007 Heron Operations



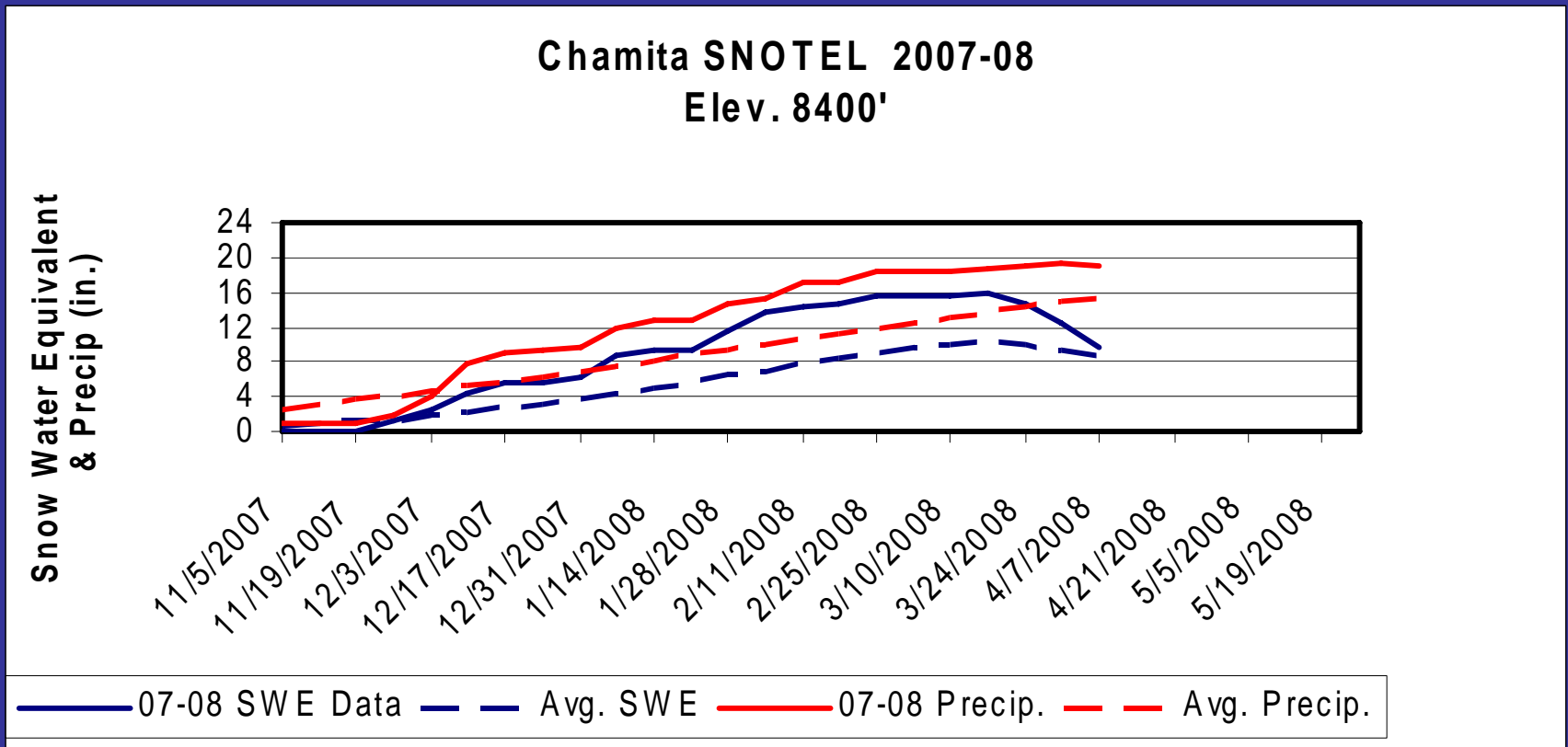
# Abiquiu Reservoir

## 2007 Abiquiu Operations



# Current Snow Conditions

# Rio Chama Snow Data

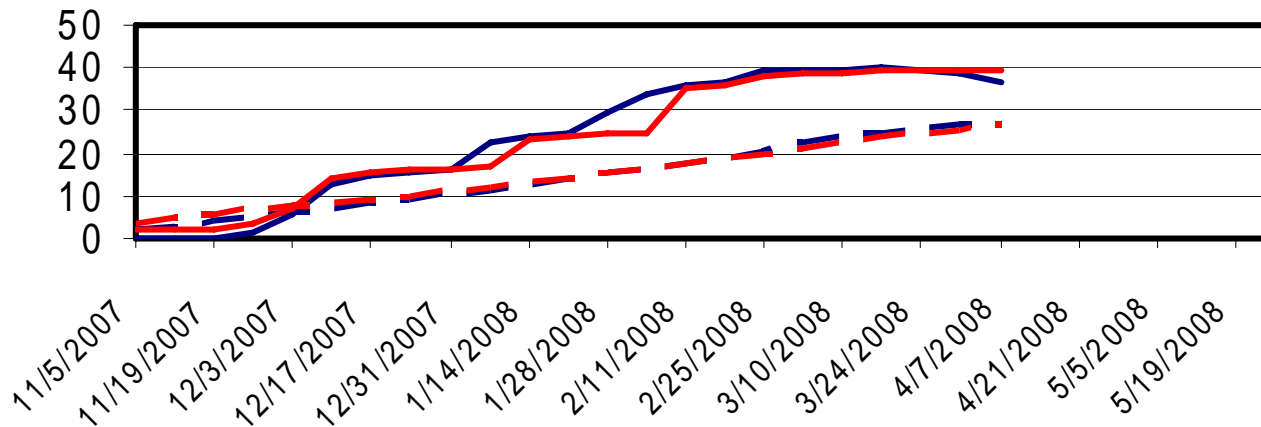




# Rio Chama Snow Data

**Cumbres SNOTEL Site 2007-08**  
**Elev. 10,400'**

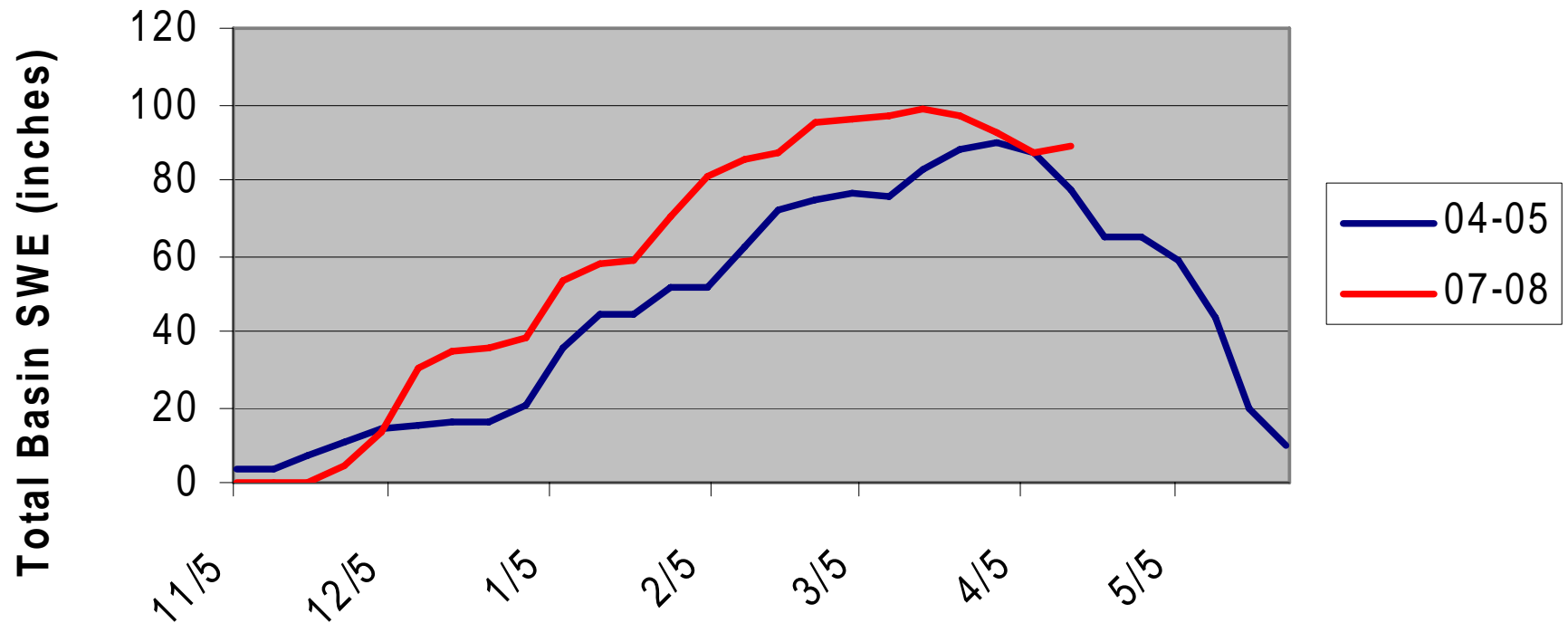
**Snow Water Equivalent & Precip (in.)**



— 07-08 SWE Data    - - - Avg. SWE    — 07-08 Precip.    - - - Avg. Precip.

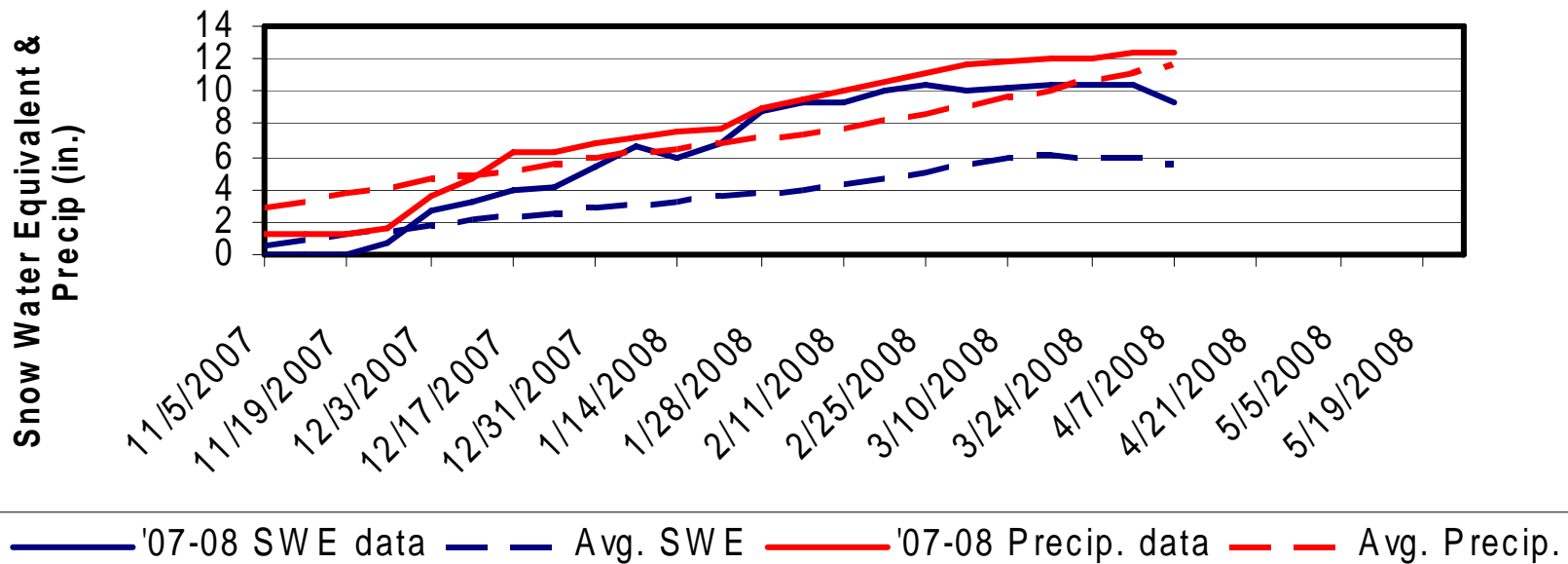
# Rio Chama Snow Comparison

## Rio Chama Snowpack Comparison

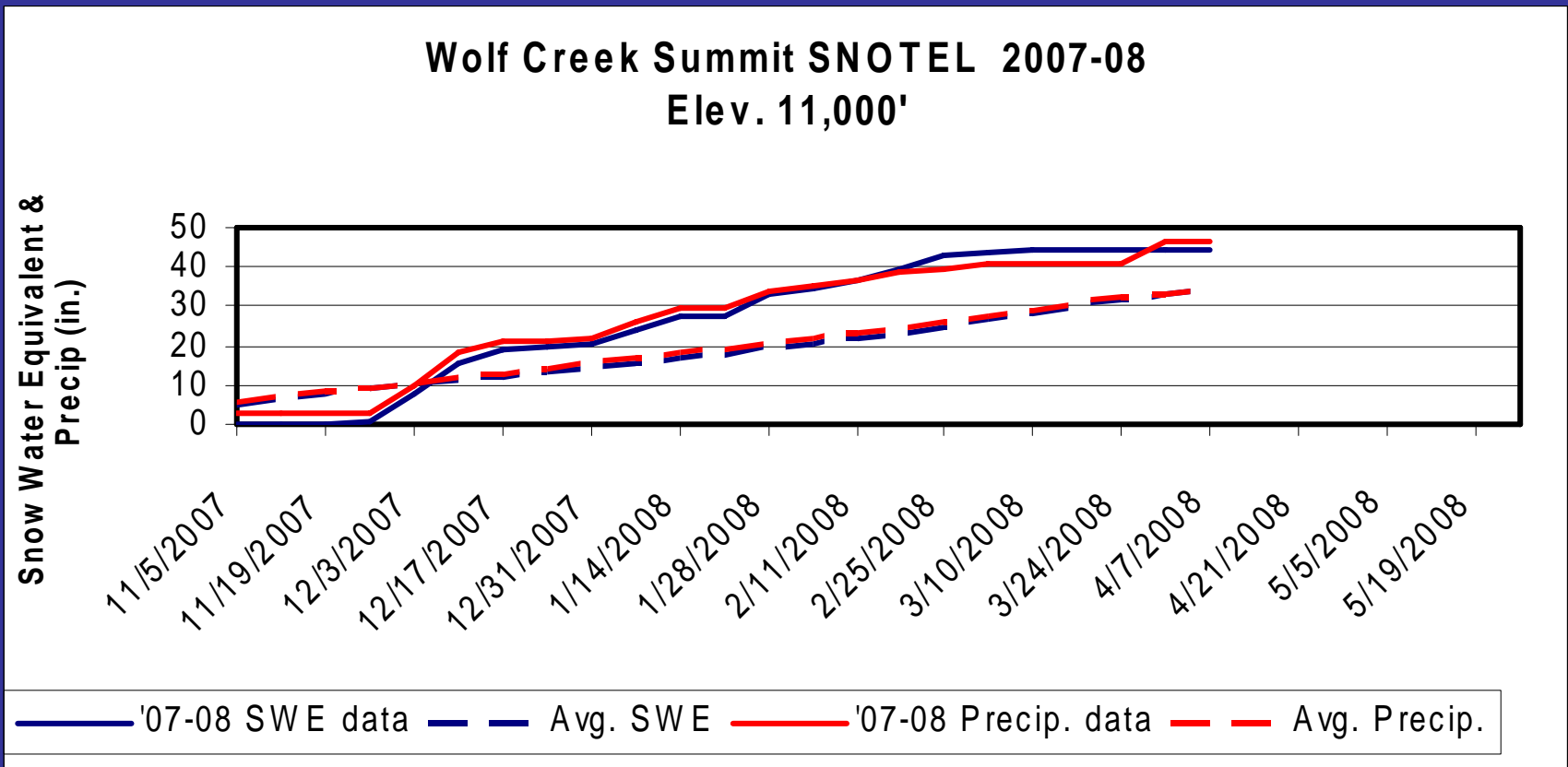


# Rio Grande Snow Data

Upper Rio Grande SNOTEL 2007-08  
Elev. 9,400'



# Rio Grande Snow Data



# Wolf Creek Pass SNOTEL

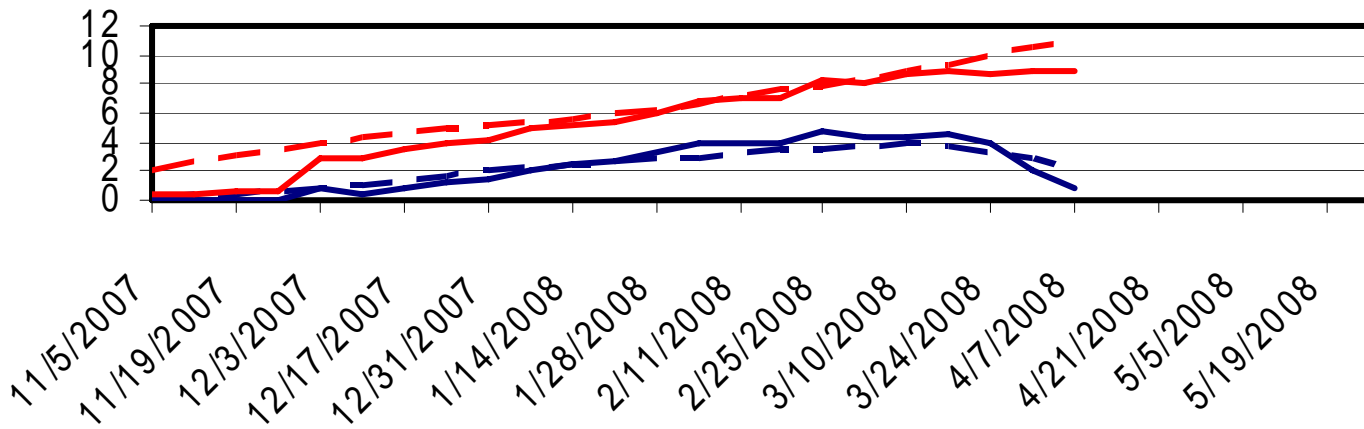
4/08/08



# Sangre de Cristo Snow Data

Elk Cabin SNOTEL 2007-08  
Elev. 8,210'

Snow Water Equivalent  
& Precip (in.)

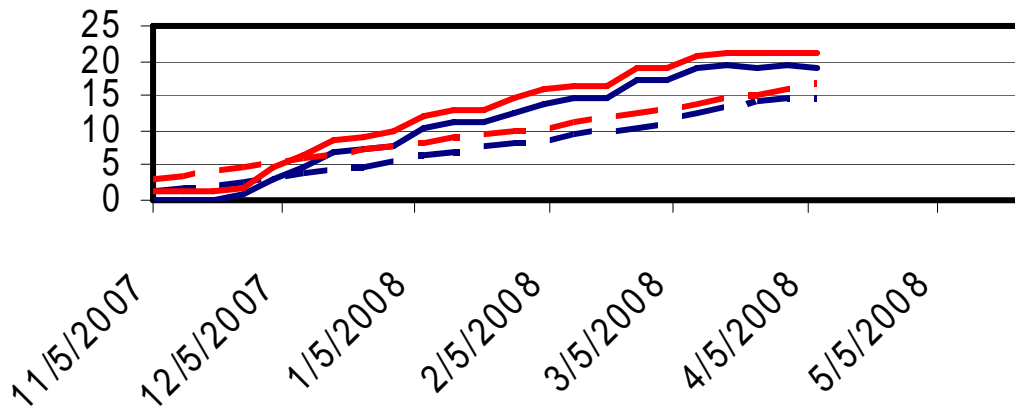


— 07-08 SWE data — Avg. SWE — 07-08 Precip. — Avg. Precip.

# Sangre de Cristo Snow Data

Santa Fe SNOTEL 2007-08  
Elev. 11,445'

Snow Water Equivalent  
& Precip (in.)

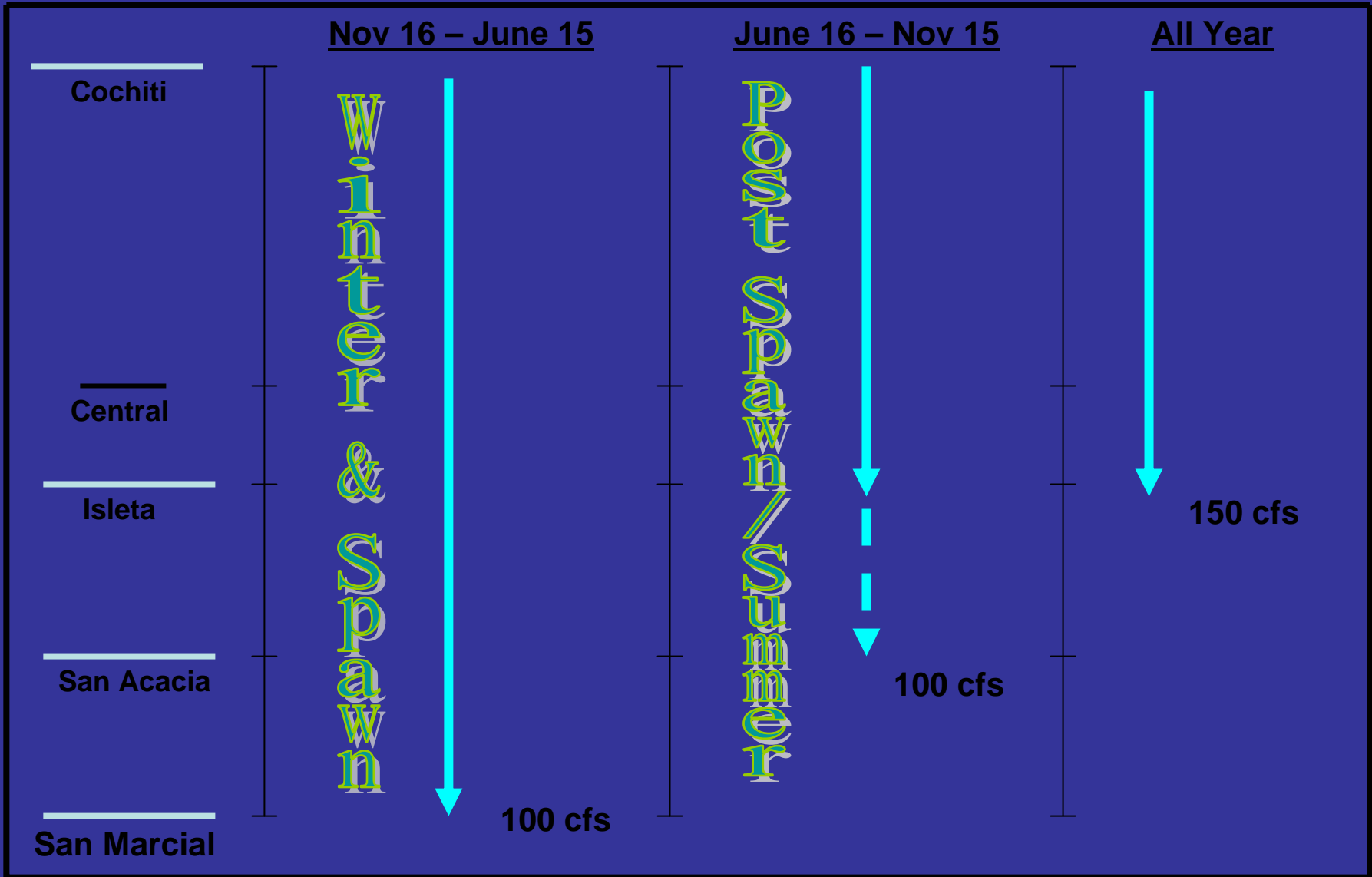


— 07-08 SWE data    - - - Avg. SWE    — 07-08 Precip.    - - - Avg. Precip.

# 2008 Water Operations Modeling



# March 2003 BiOp Flow Requirements – WET YEAR



# Major Assumptions

- April 1 50% most probable Forecast
- Wet year target flow requirements
- Same monsoon conditions as forecast hydrograph year (1979)
- No storage occurs under the Emergency Drought Water Agreement for MRGCD & Reclamation

# Similar Hydrologic Years

<b>Basin</b>	<b>Pre-Forecast Year</b>	<b>Forecast Year</b>	<b>Post-Forecast Year</b>
San Juan	1979	1979	1979
Rio Chama	1993	1984	1993
Upper Rio Grande	1985	1985	1985
Sangre de Cristo	1987	1987	1987
Middle Rio Grande	1979	1979	1979

# April Forecast Data

	Most Probable Percent of Average		April 1 Most Probable Volume (acre-feet)
	2007	2008	2008
Rio Grande nr Del Norte	78%	140%	745,000
El Vado Reservoir Inflow	65%	158%	375,000
Rio Grande at Otowi	62%	155%	1,170,000
Santa Fe River nr Santa Fe	67%	98%	4,500
Jemez blw Jemez Dam	64%	94%	44,000
Heron Reservoir Inflow	68%	150%	150,000

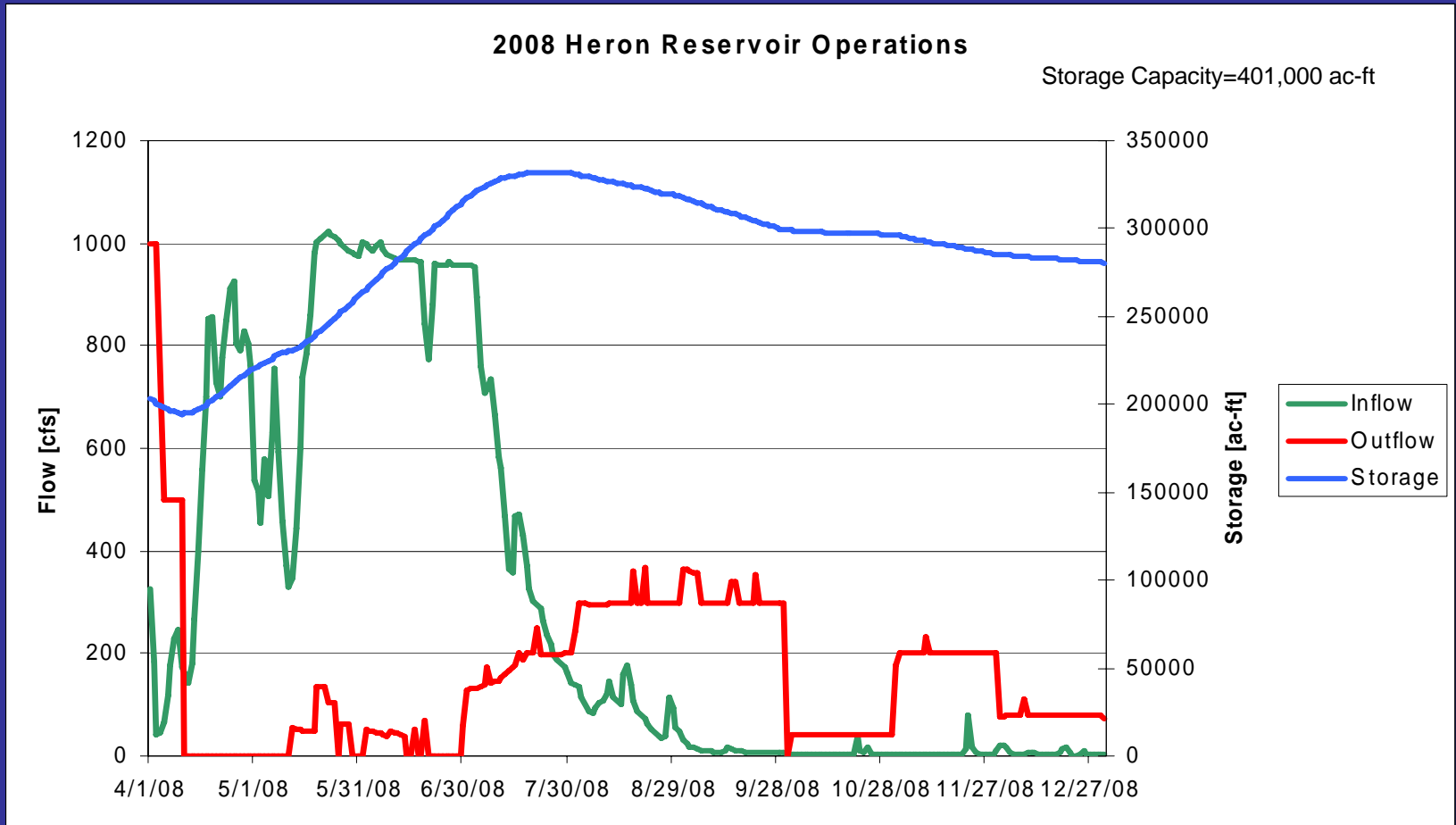
# Major Results

- Snowmelt Runoff above normal
- BiOp flow requirements met through out the irrigation season
- Supplemental Water Releases begin early-July
- Heron Reservoir Inflow roughly 150% of average (150,000 af)
- Recreational Flows provided for the Rio Chama through most of the Summer

# Heron Reservoir



# Proposed 2008 Heron Operations



## Heron Reservoir:

Lake Level: Increasing BOY to EOY from Elevation 7146' to 7164' with a peak of 7174'.

Water Supply: Able to meet this and next years' SJ-C allocations ("BOY" means beginning of calendar year. "EOY" means end of calendar year)

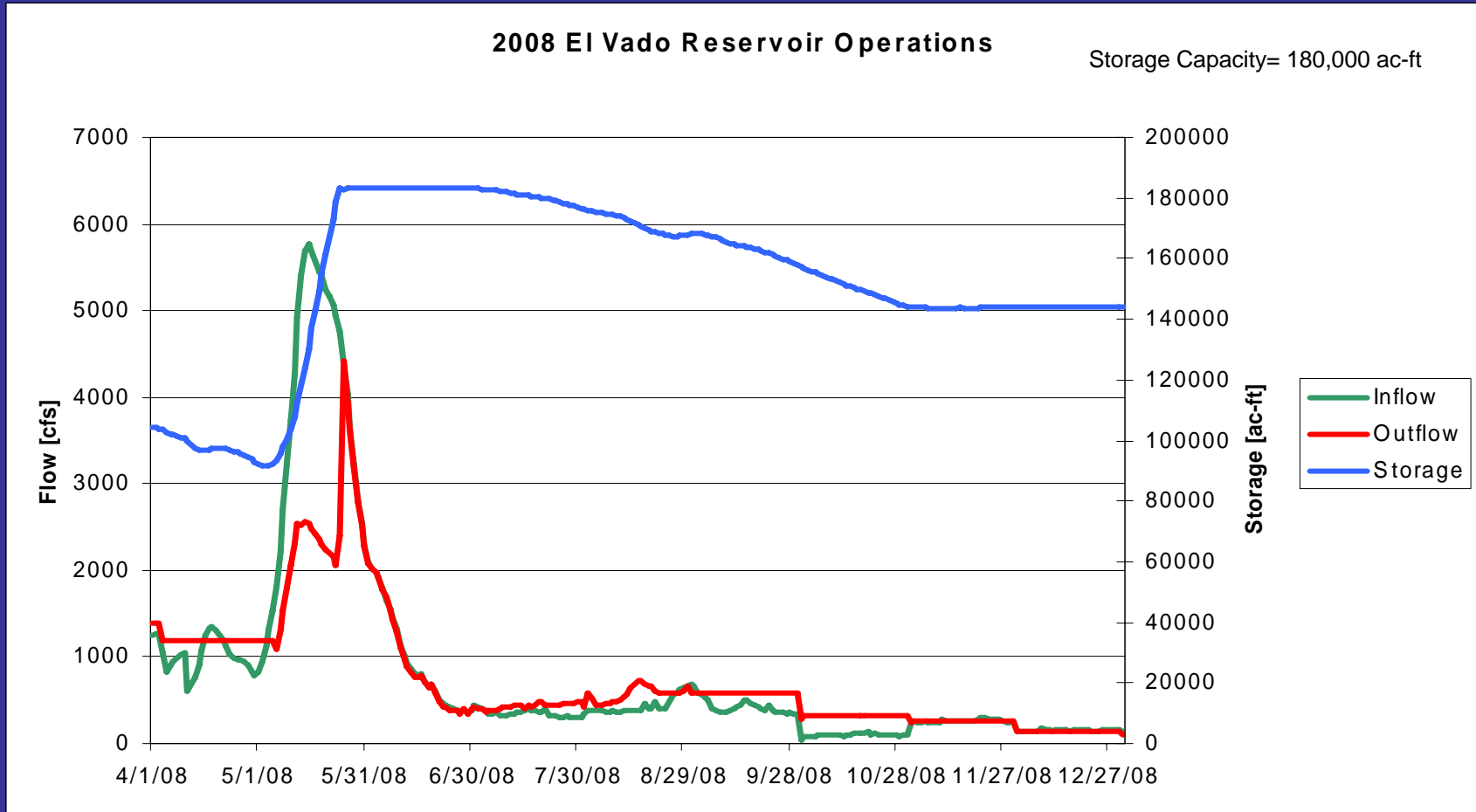


# El Vado Reservoir





# Proposed 2008 El Vado Operations



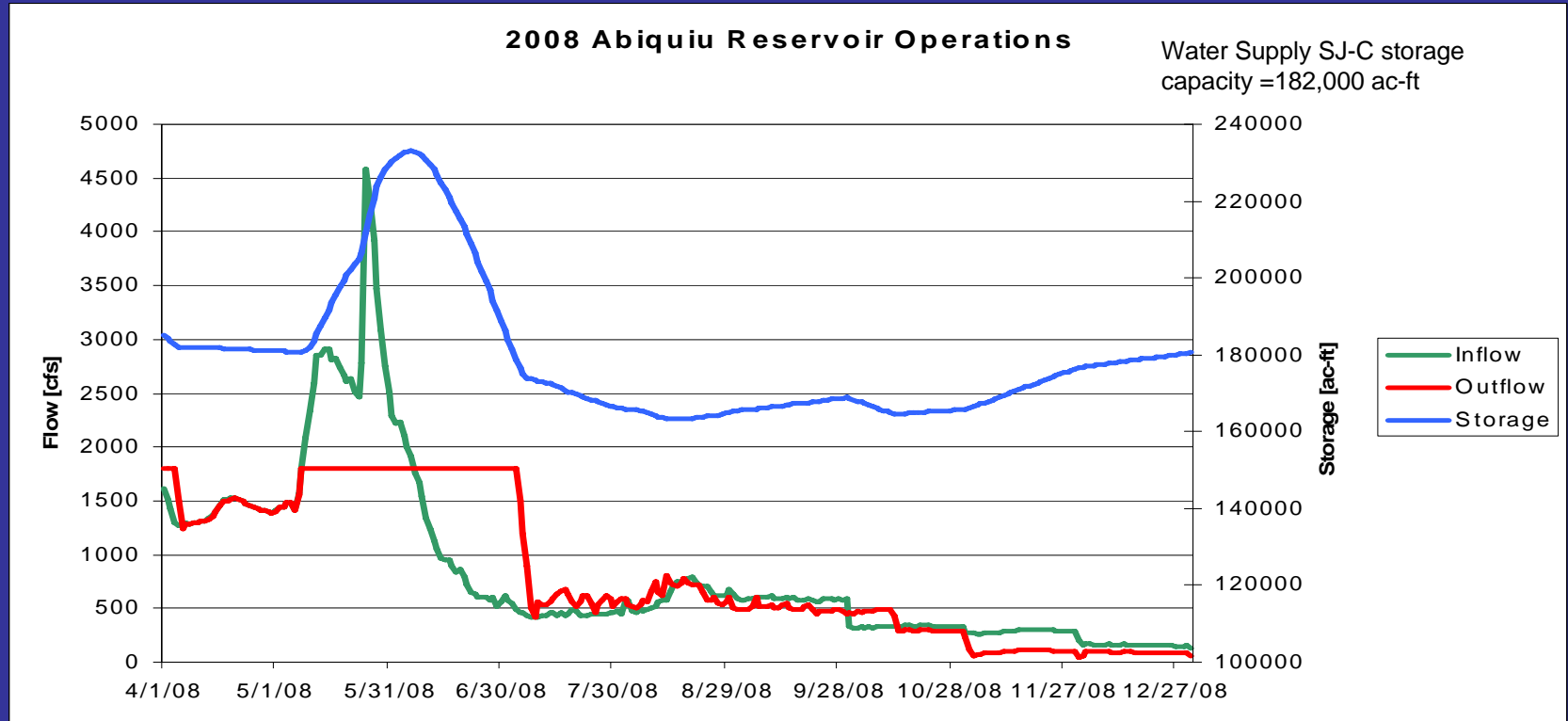
## El Vado Reservoir:

Lake Level: Dropping slightly from a peak at Elev. 6901' to 6888'  
Water Supply: Relatively little stored water used this year

# ABIQUIU LAKE



# Proposed 2008 Abiquiu Operations



## Abiquiu Reservoir:

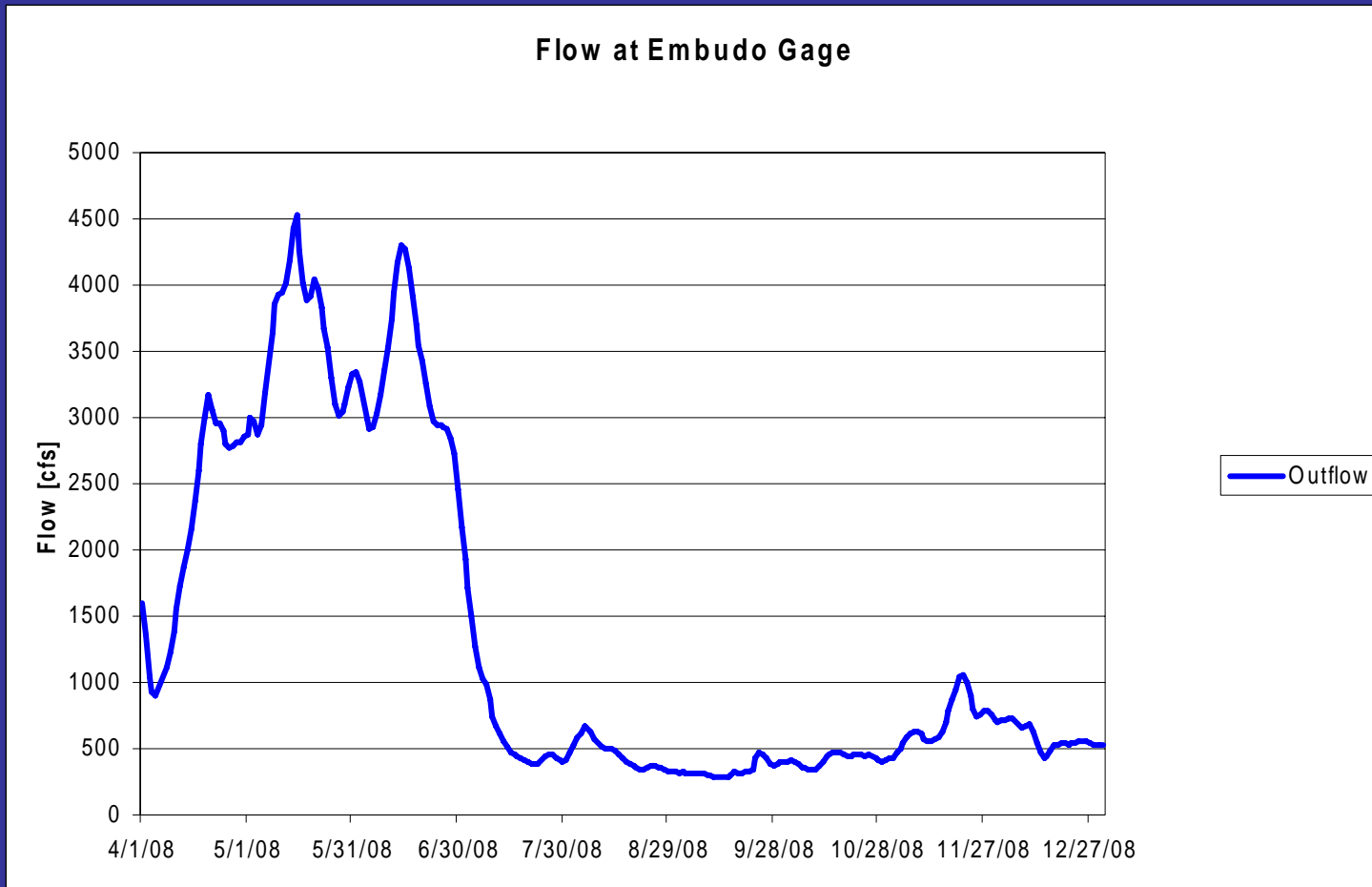
Flood Operations: Downstream channel capacity reached and 50,000 ac-ft temporarily stored

Lake Level: Started at Elev. 6220', dropping to around 6215, then recovering to full at 6220, fall thru EOY

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

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

# Estimated 2008 Hydrograph at Embudo



## Rio Grande Colorado Border to Rio Chama Confluence:

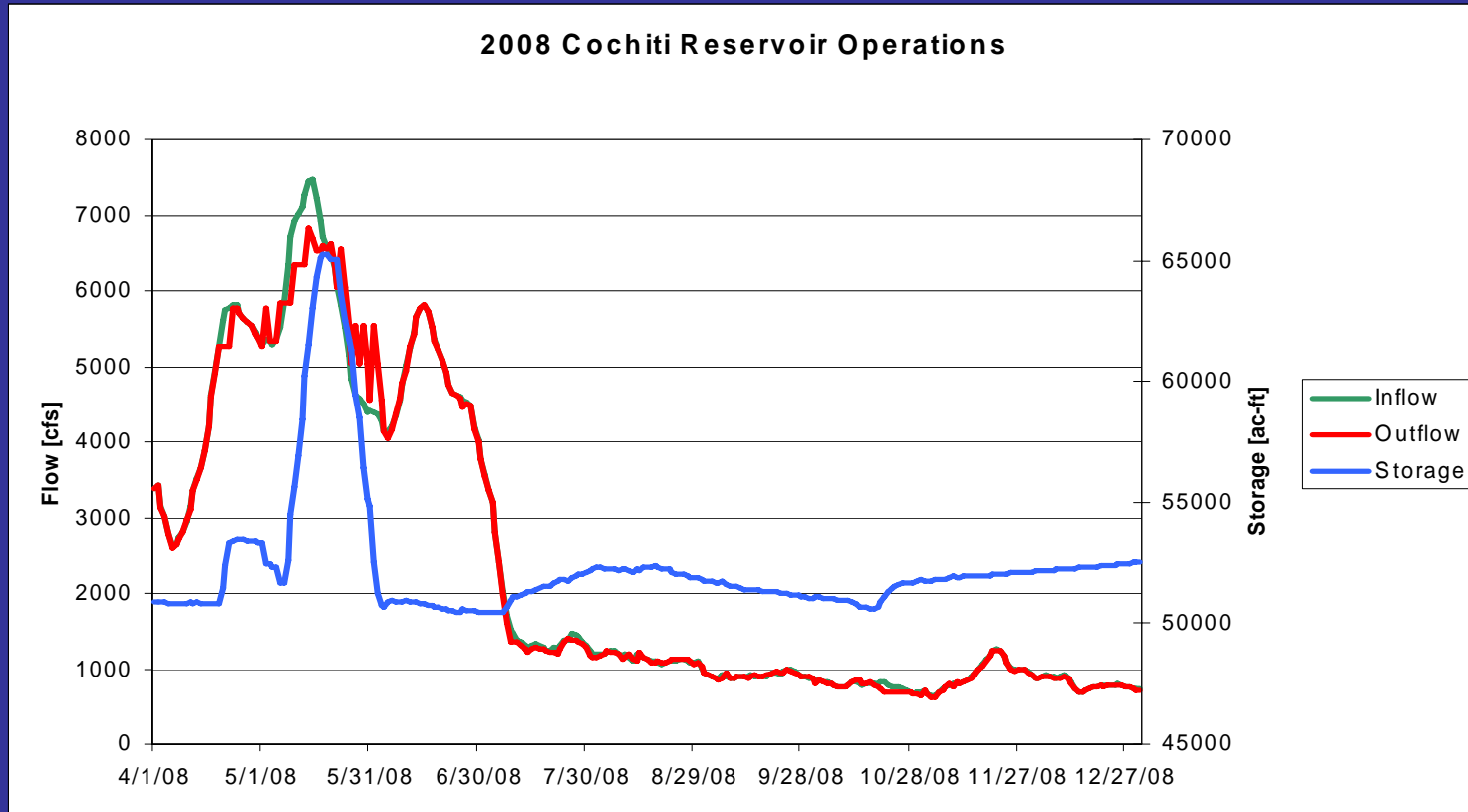
Spring Runoff Peak: Peak will occur some time in May depending on weather conditions. Flows above 4,000 cfs likely until June.

# COCHITI LAKE



# Proposed 2008 Cochiti Operations

Recreation/Fishery pool= approx 50,000 ac-ft



Flood Operations: Approximately 15,000 ac-ft stored in May.

Lake Level for Recreation, Fishery: Steady year-round (slight evaporation slope thru spring/summer/fall, refilling at end of year)

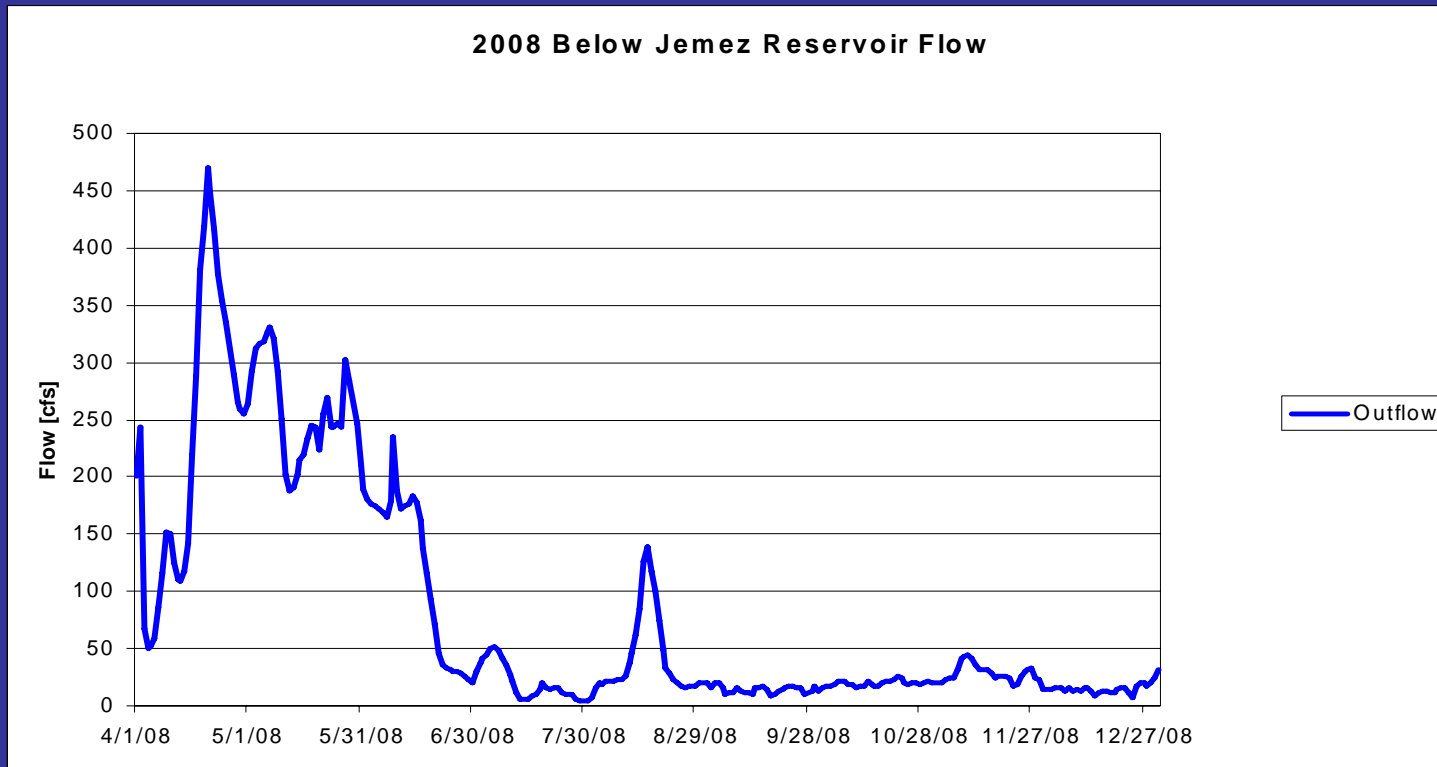
Water Supply: No water supply storage (just passes inflows downstream)



# JEMEZ CANYON DAM



# Estimated 2008 Hydrograph below Jemez Reservoir



## Jemez Canyon Reservoir:

Flood Operations: None expected unless there is rapid snowmelt or are big rains during year

Spring Runoff: moderate volume of water, with a peak of maybe 450 cfs

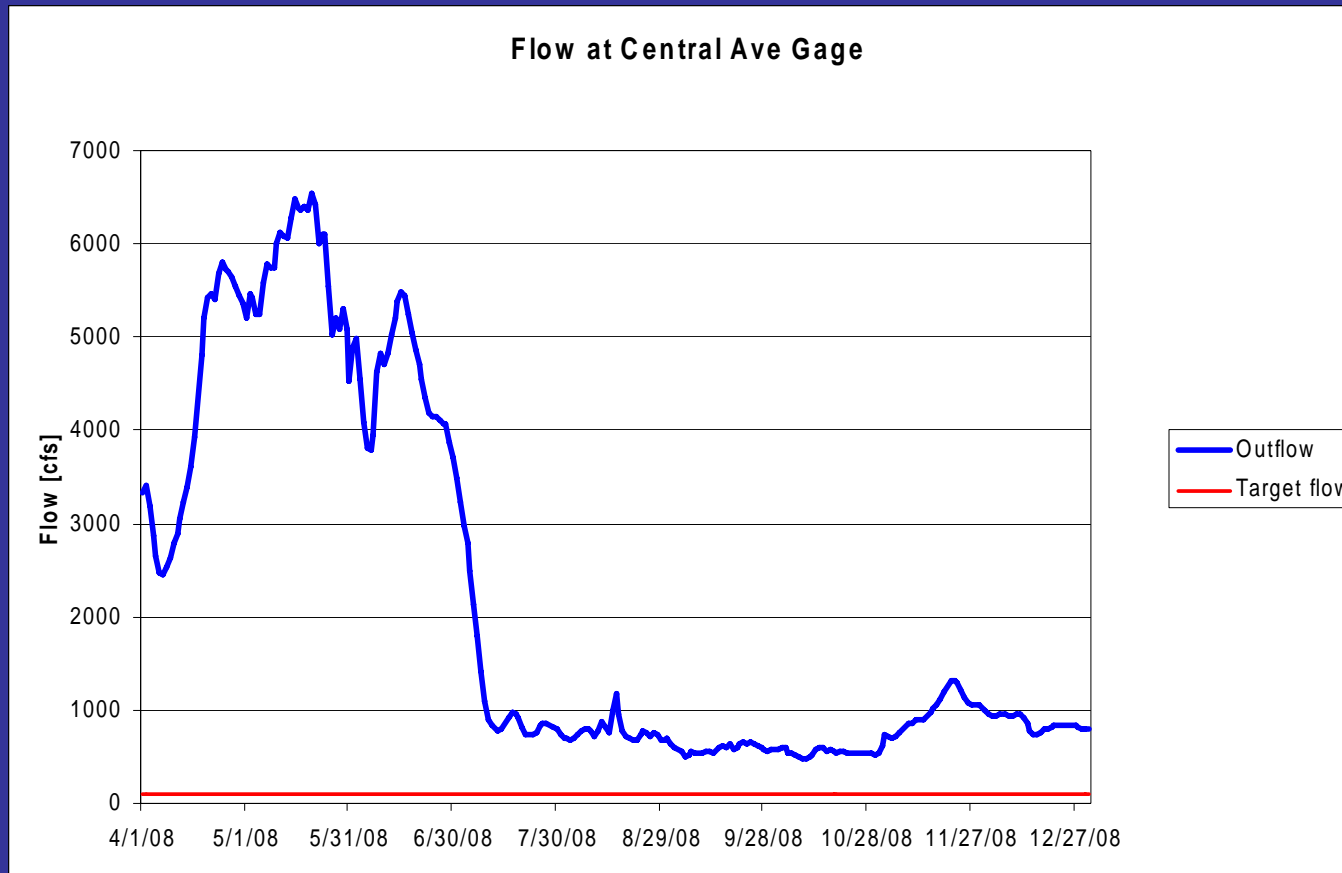
Summer/Fall Flows: Small peaks of 40 to 150 cfs, unless larger rains come

Lake Level: Dry except for very short-term, flood storage

Water Supply: No water supply storage (just passes inflows downstream)



# Estimated Hydrograph at Central Ave.

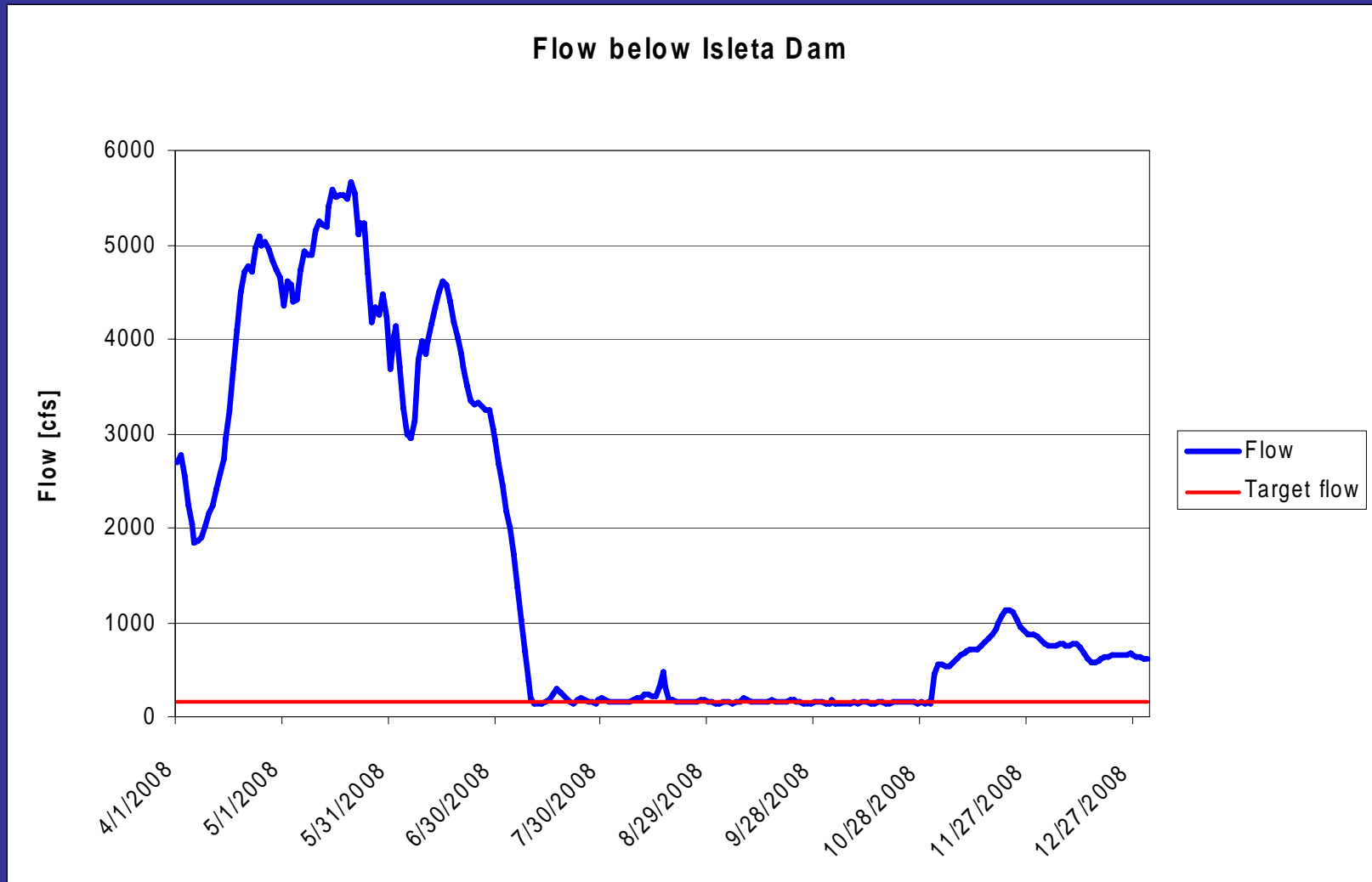


## Rio Grande Below Cochiti to Albuquerque:

Irrigation Flows: MRGCD Demand peak around 950 cfs late June thru early July.

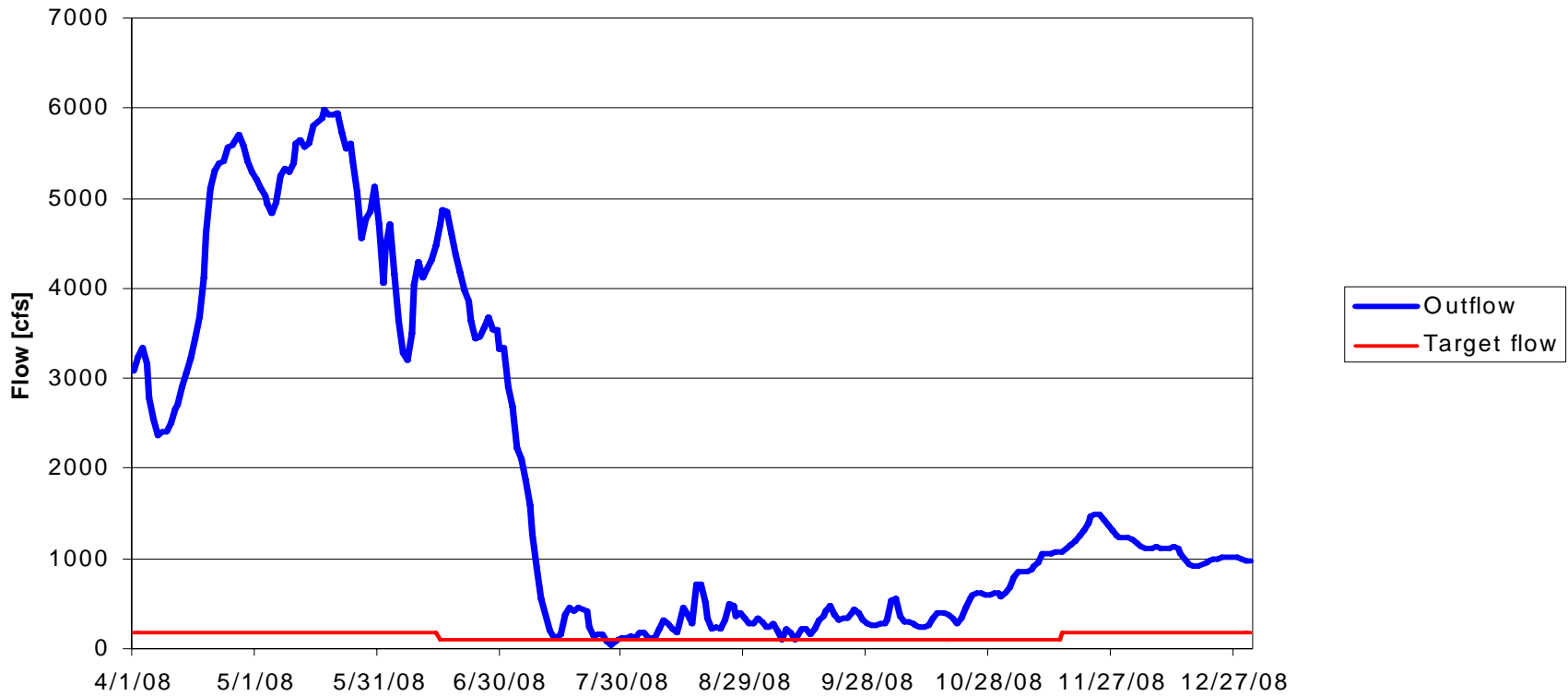
Silvery Minnow Flows: Maintained above 100 cfs year-round.

# Estimated Hydrograph below Isleta Dam



# 2008 Estimated Flow at San Acacia

Flow at San Acacia Gage



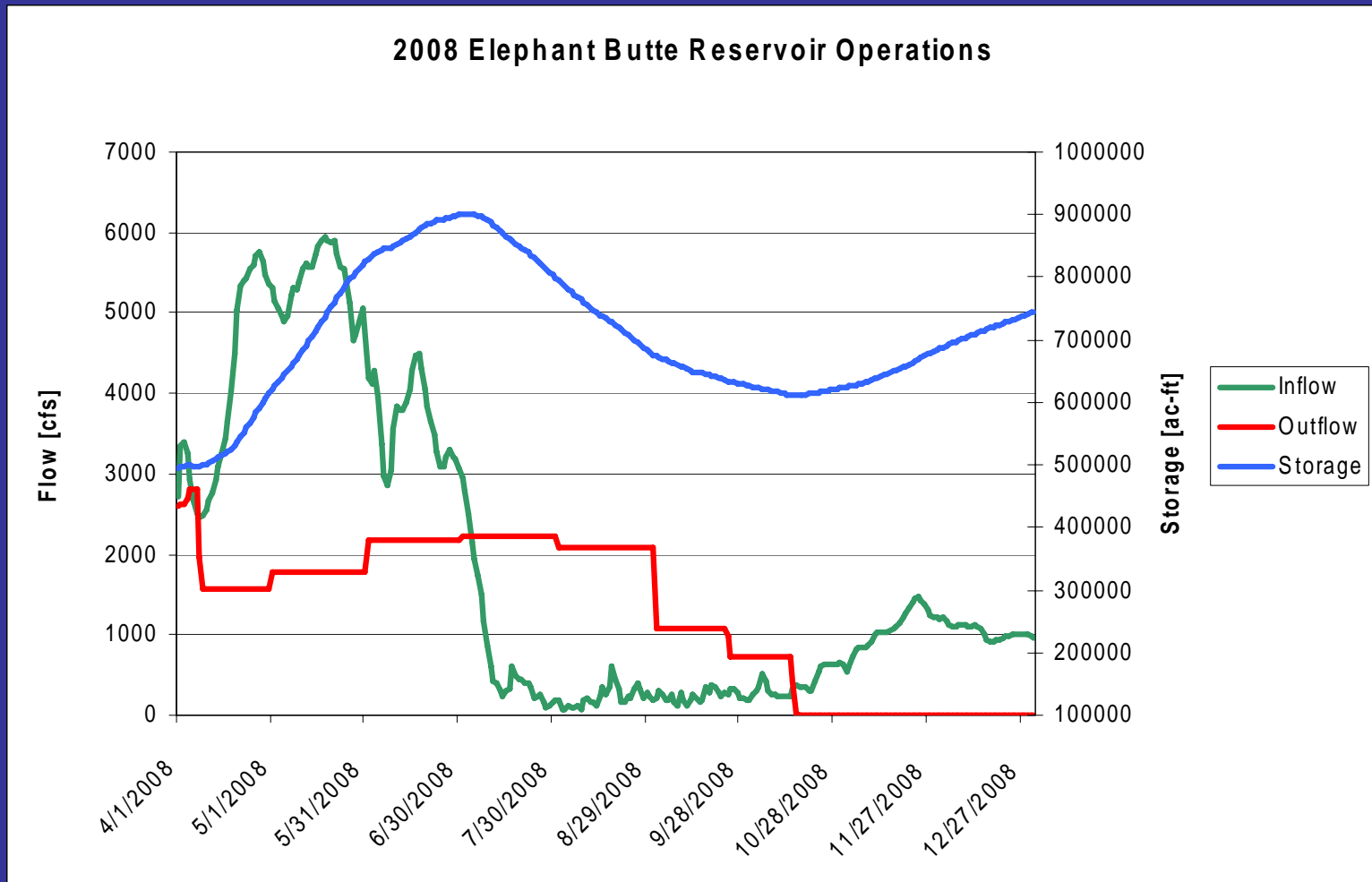
## Rio Grande Albuquerque to San Acacia:

Silvery Minnow Flows: Wet thru June 15<sup>th</sup>. Minimum flow of 150 cfs at Isleta Dam. Recession/drying at times afterwards

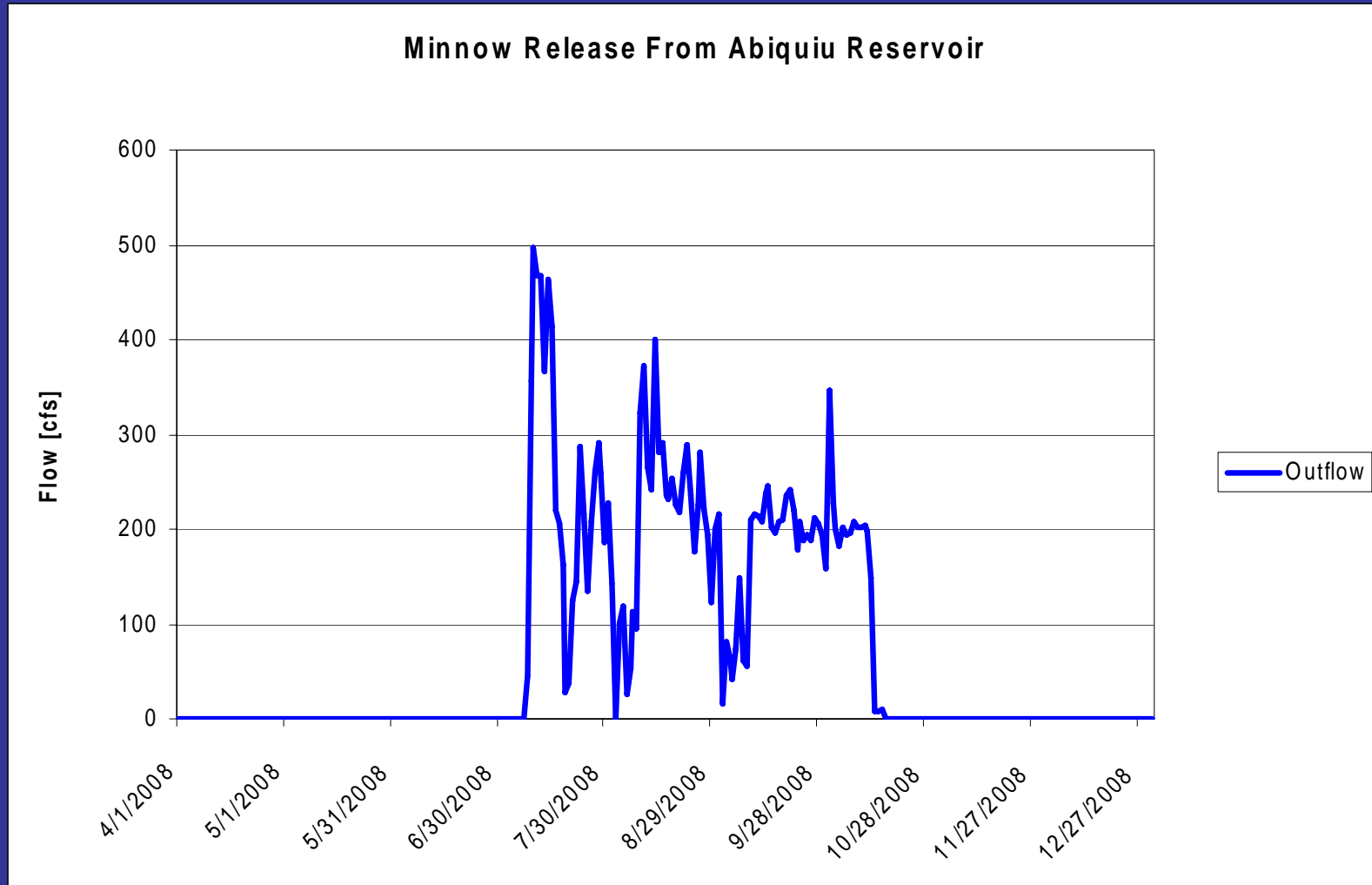
## Rio Grande San Acacia to San Marcial:

Silvery Minnow Flows: Wet thru June 15<sup>th</sup> with a target flow of 100 cfs at San Marcial. Minimum of 100 cfs at San Acacia after June 15. Recession/drying at times, with dry stretches and occasional re-wetting from monsoons

# Proposed 2008 Elephant Butte Operations



# 2008 Estimated Supplemental Water Released from Abiquiu



# 2008 Supply/Demand Outlook

Supply	Demand
50,000 -60,000	~40,000

- Actual supplemental water used in the model run is approximately 40,315 ac-ft