4-2016

2016 Annual Operating Plan

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

2016 Annual Operating Plan

April 1 Runoff Forecast

RECLAMATION
Managing Water in the West

US Army Corps
of Engineers®
Albuquerque District

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 or as part of the Emergency Drought Water Agreement.

Definitions (cont.)

cfs- cubic feet per second (roughly 7.5 gallons/second)

Acre foot - approximately 326,000 gallons or 43,560 cubic feet

Hydrograph – graph of flow rate per unit time

The District – Middle Rio Grande Conservancy District (MRGCD)

The City – City of Albuquerque now Albuquerque Bernalillo County Water Utility Authority (ABCWUA)

NRCS – Natural Resources Conservation Service

Supplemental water – Water leased by Reclamation to meet flow targets specified in the 2003 Biological Opinion

P&P – Prior & Paramount

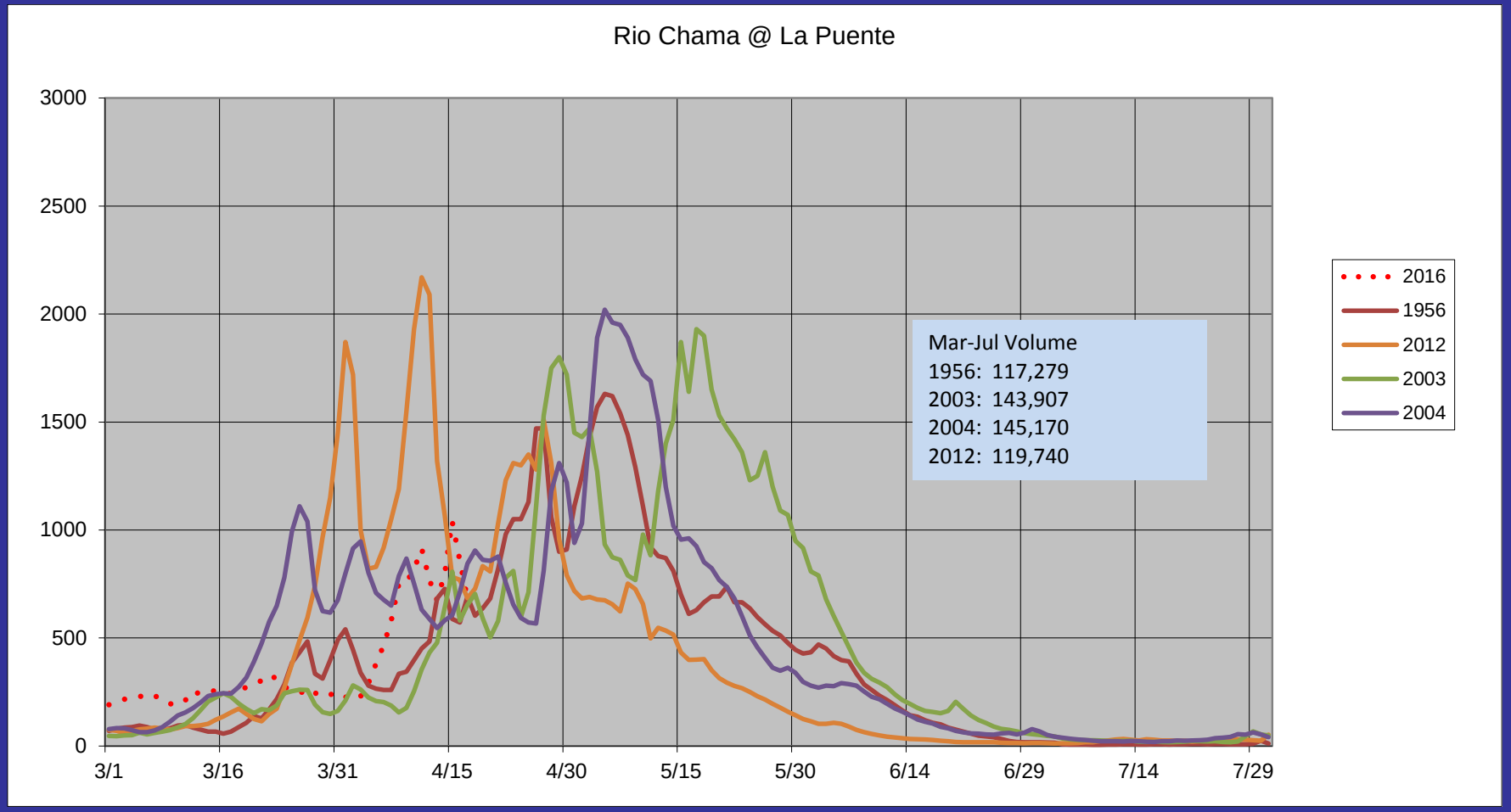
What Drives the Process

Volume Forecast from the NRCS
Based on snowpack, soil moisture, climate forecast

Choose similar year based on similar volume
Actual hydrograph vs. average hydrograph
Can tweak timing of hydrograph to best match forecasted conditions (warm Spring vs. cool Spring)

Inflows/Outflows based on nature and policies
Article VII restrictions
Flood control and channel capacity
Timing of water deliveries
Demand curves from water users
Requirements of the 2003 Biological Opinion

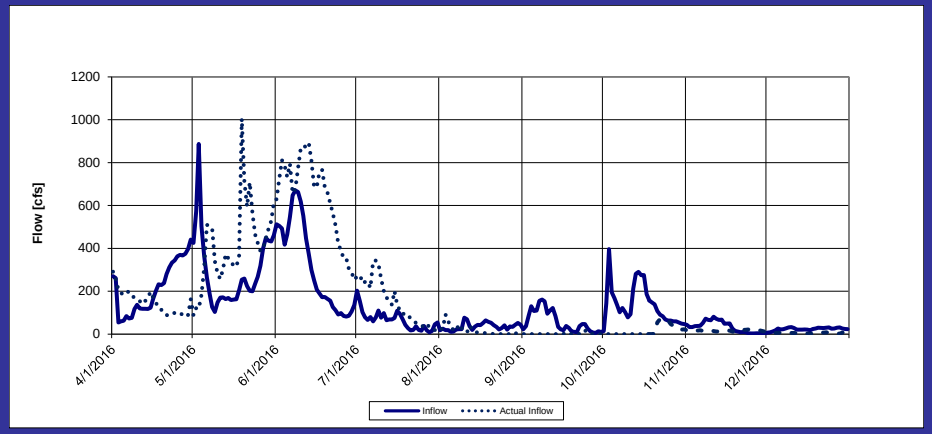
Similar Year Hydrographs

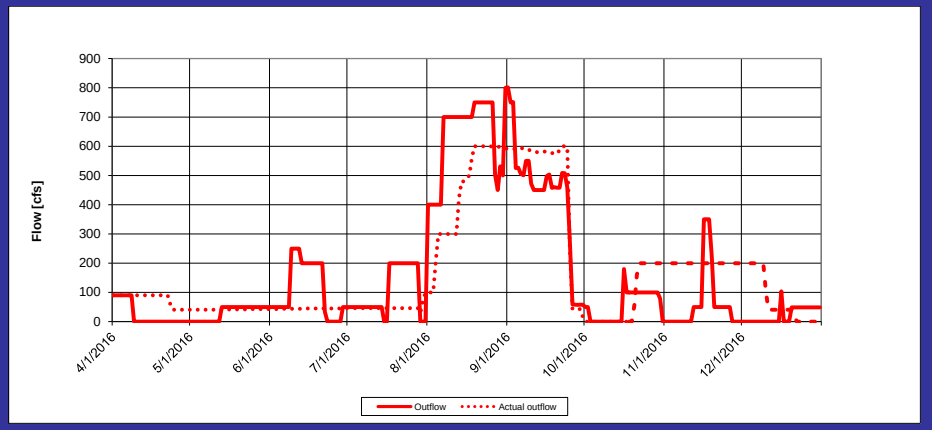


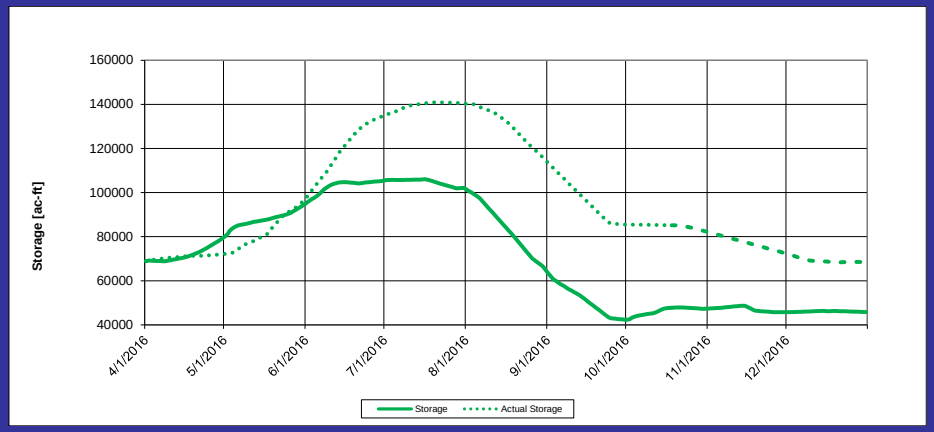
Operated By: Dams:	Reclamation	Corps	Water Supply	Recreation	Flood Control	Sediment Control
HERON						
EL VADO						
ABIQUIU						
NAMBE FALLS						
GALISTEO						
COCHITI						
JEMEZ CANYON						
ELEPHANT BUTTE						

2015: The Year in Review

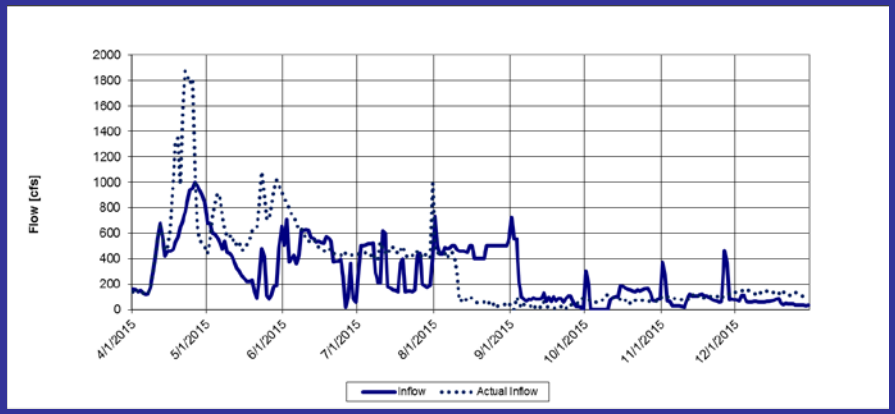
Heron Reservoir

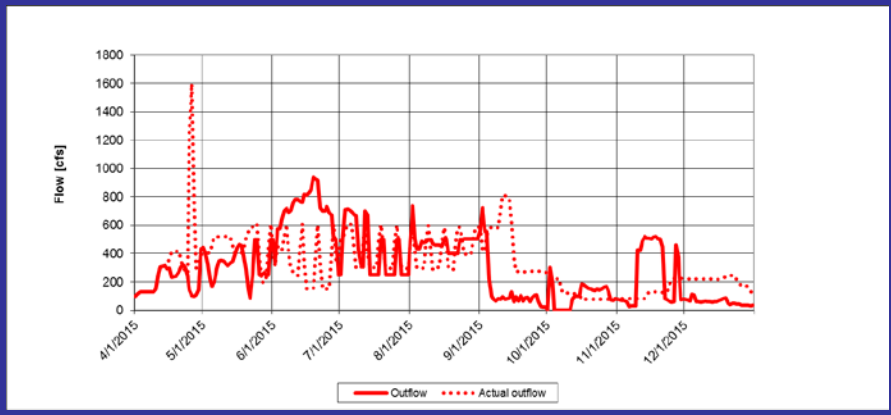


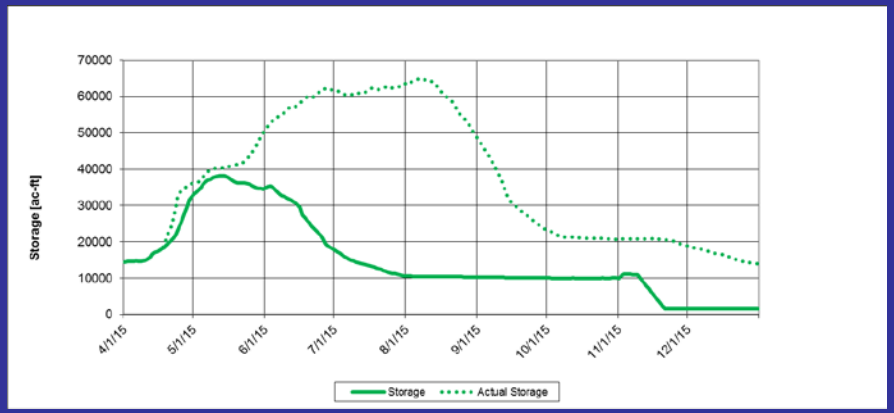




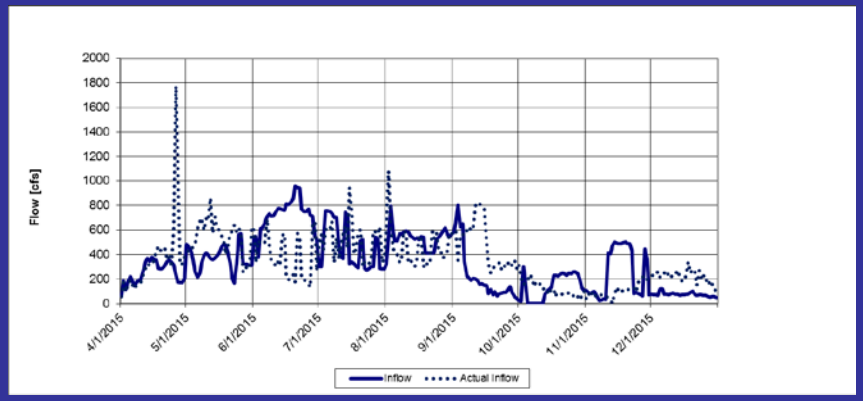
El Vado Reservoir

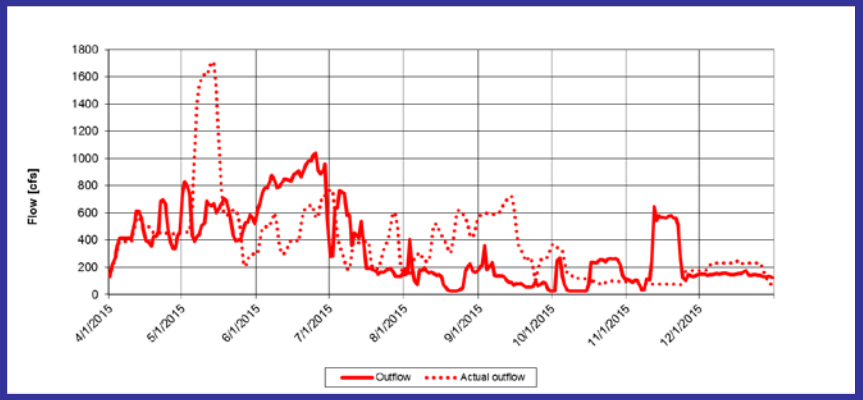


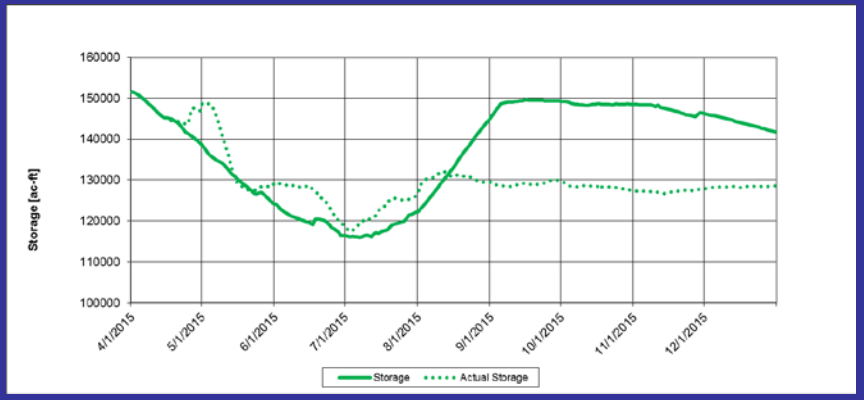




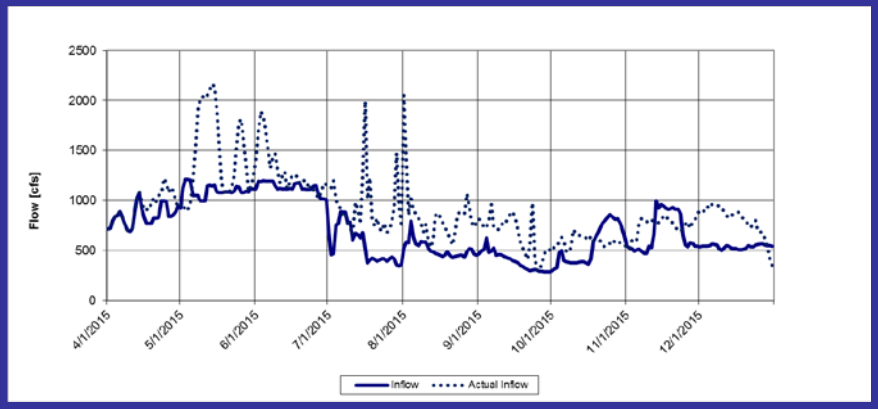
Abiquiu Reservoir

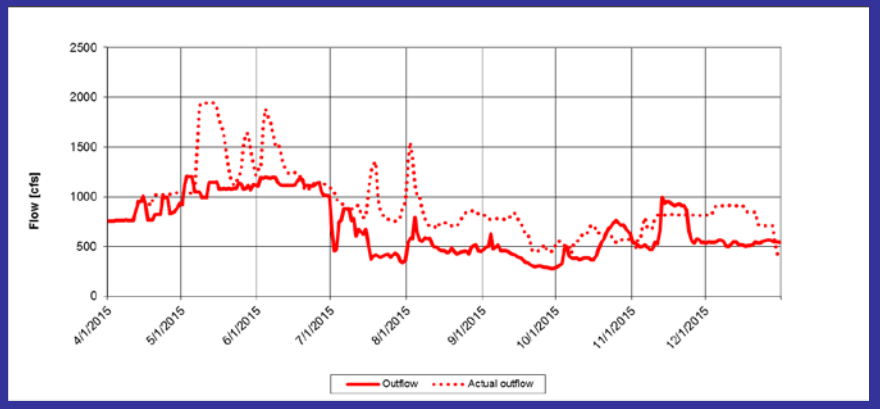


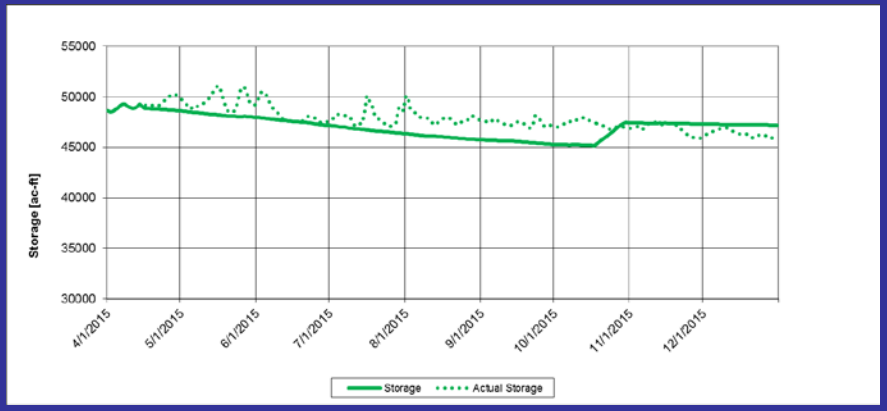




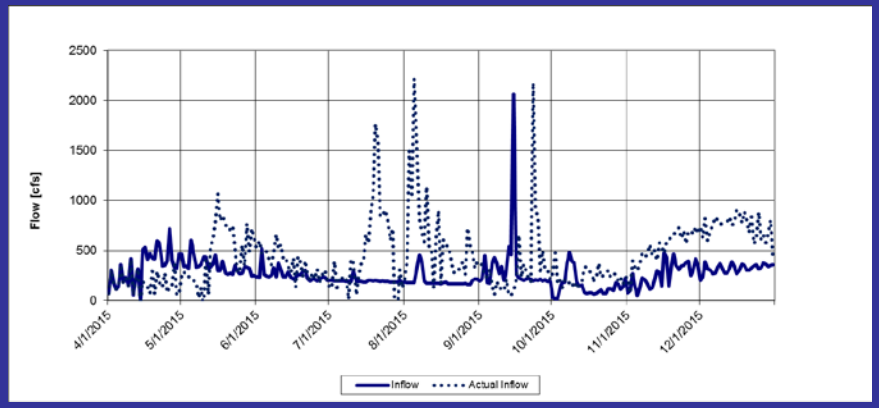
Cochiti Reservoir

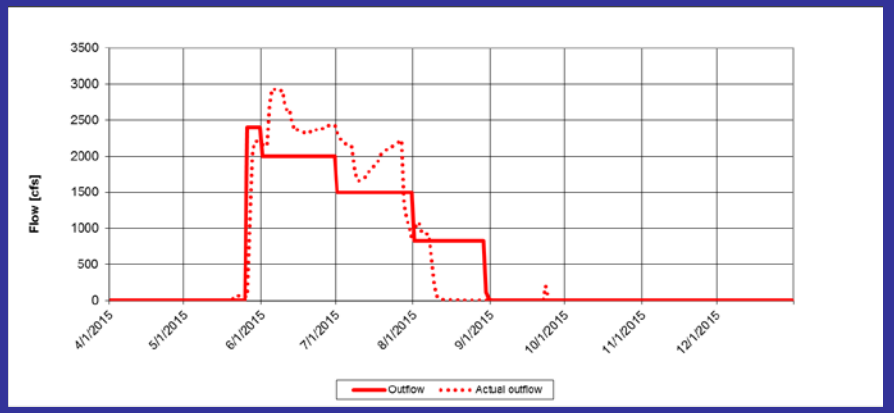


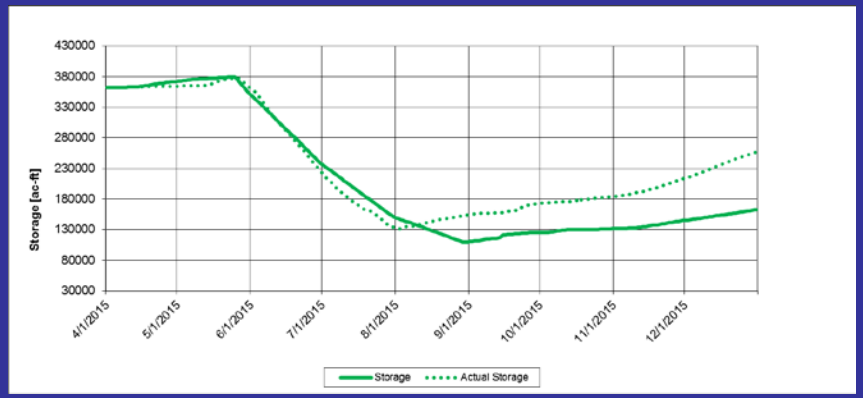




Elephant Butte Reservoir

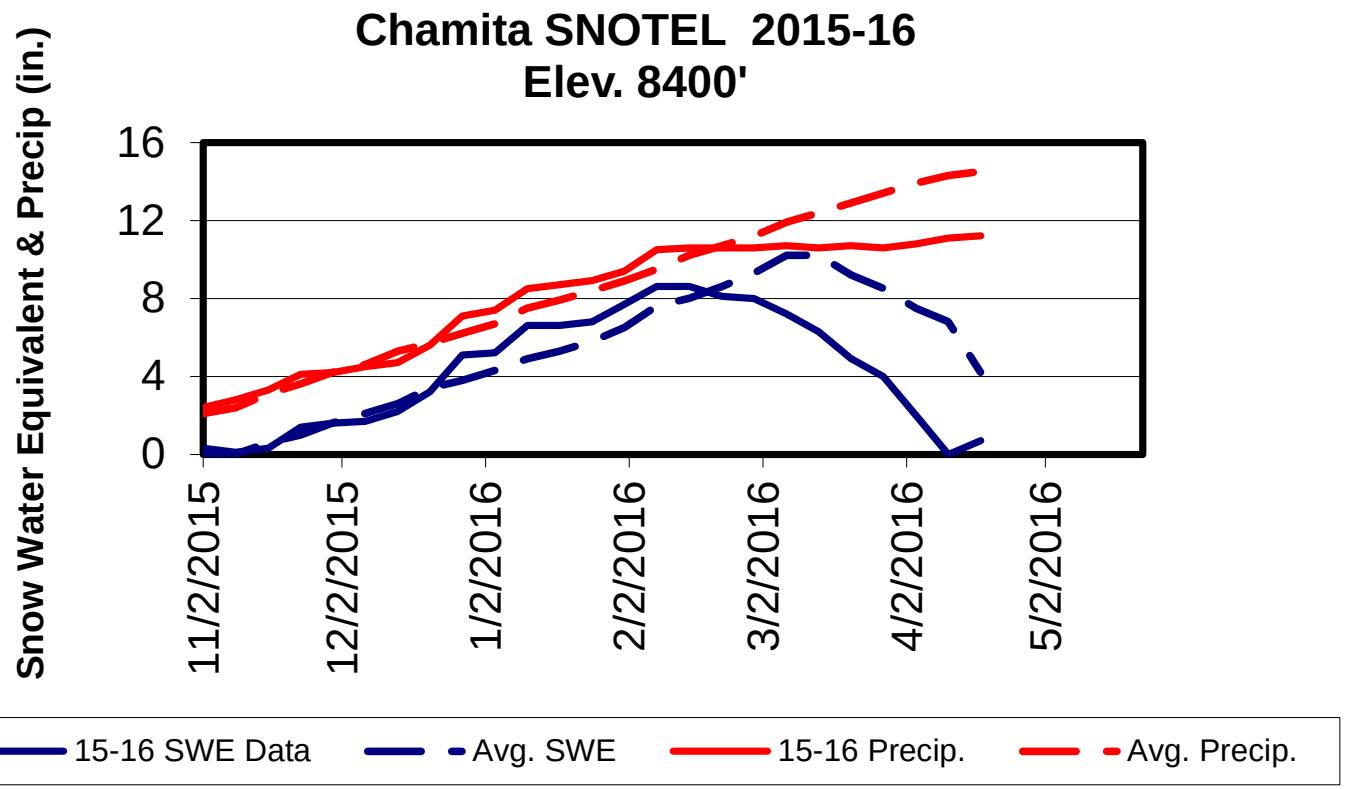




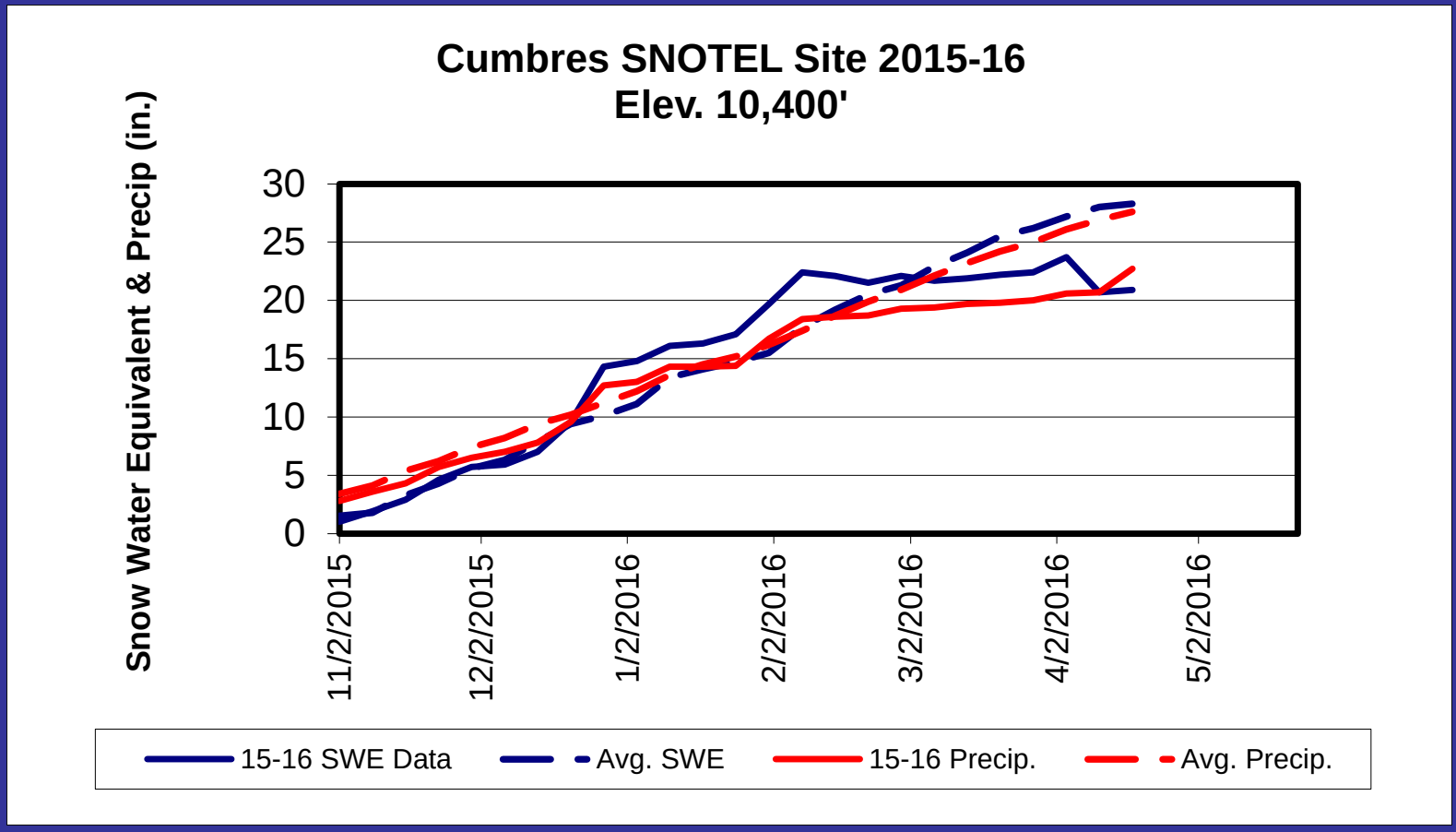


Current Snow Conditions

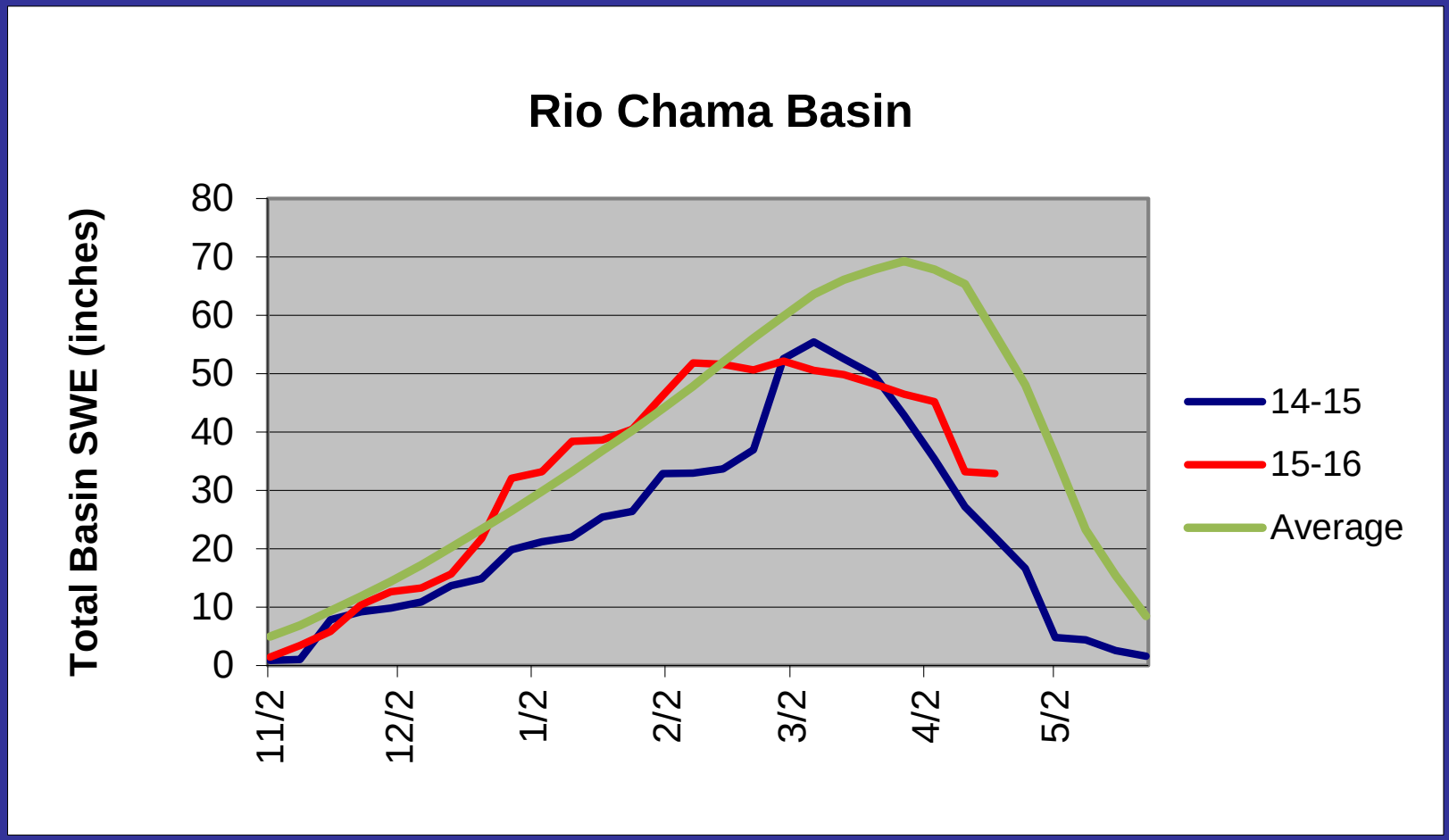
Rio Chama Snow Data



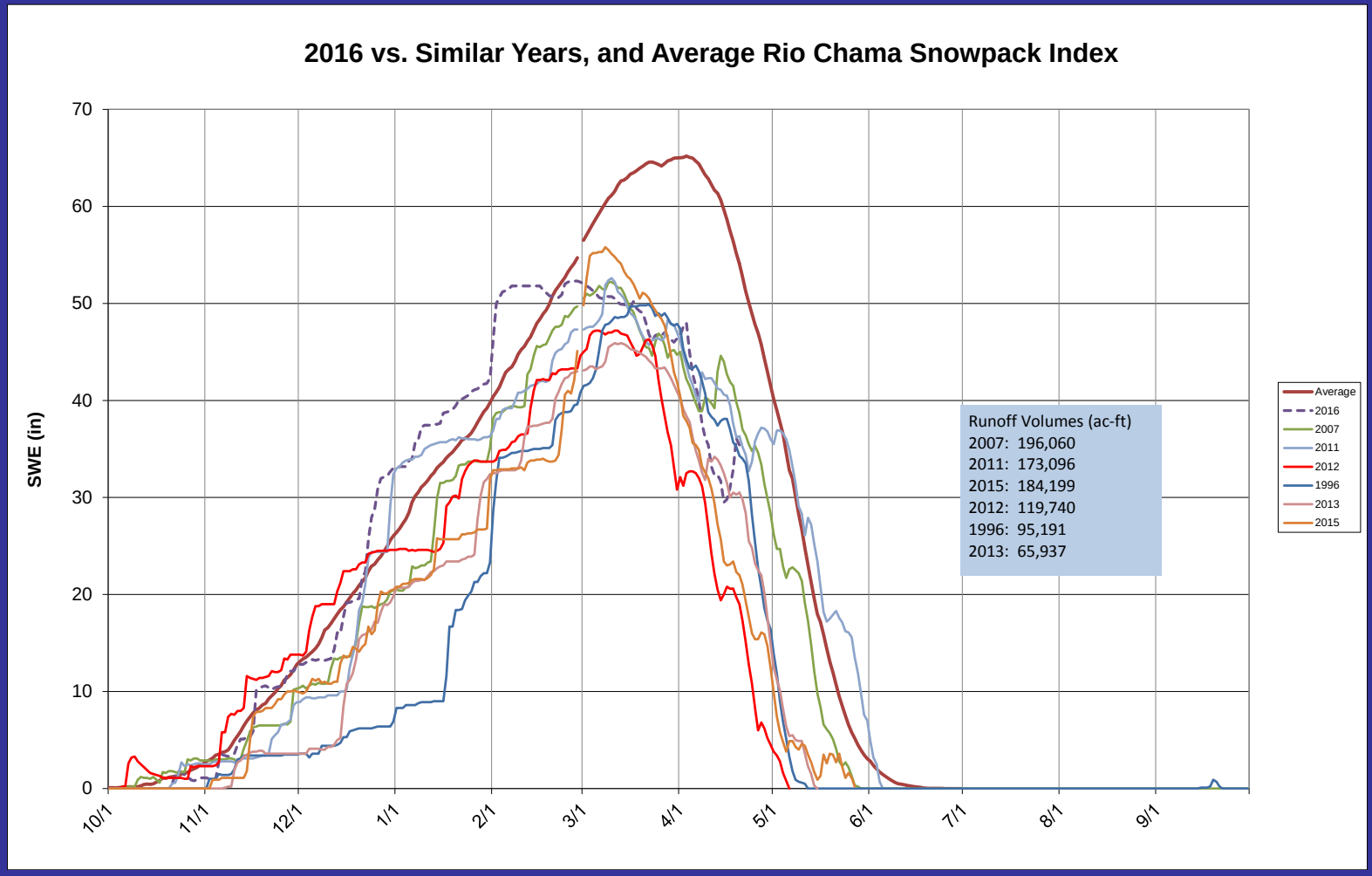
Rio Chama Snow Data



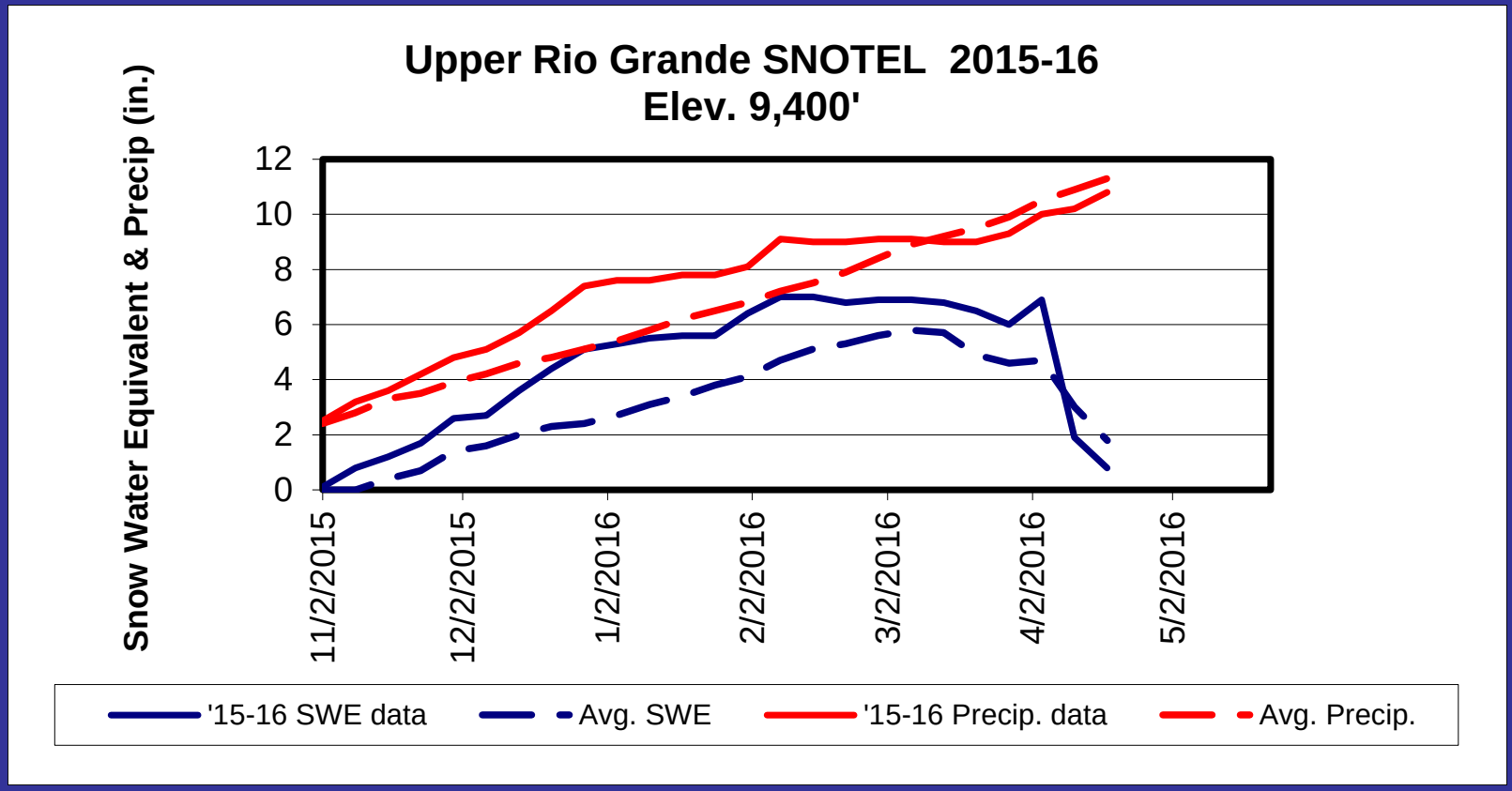
Rio Chama Snow Comparison



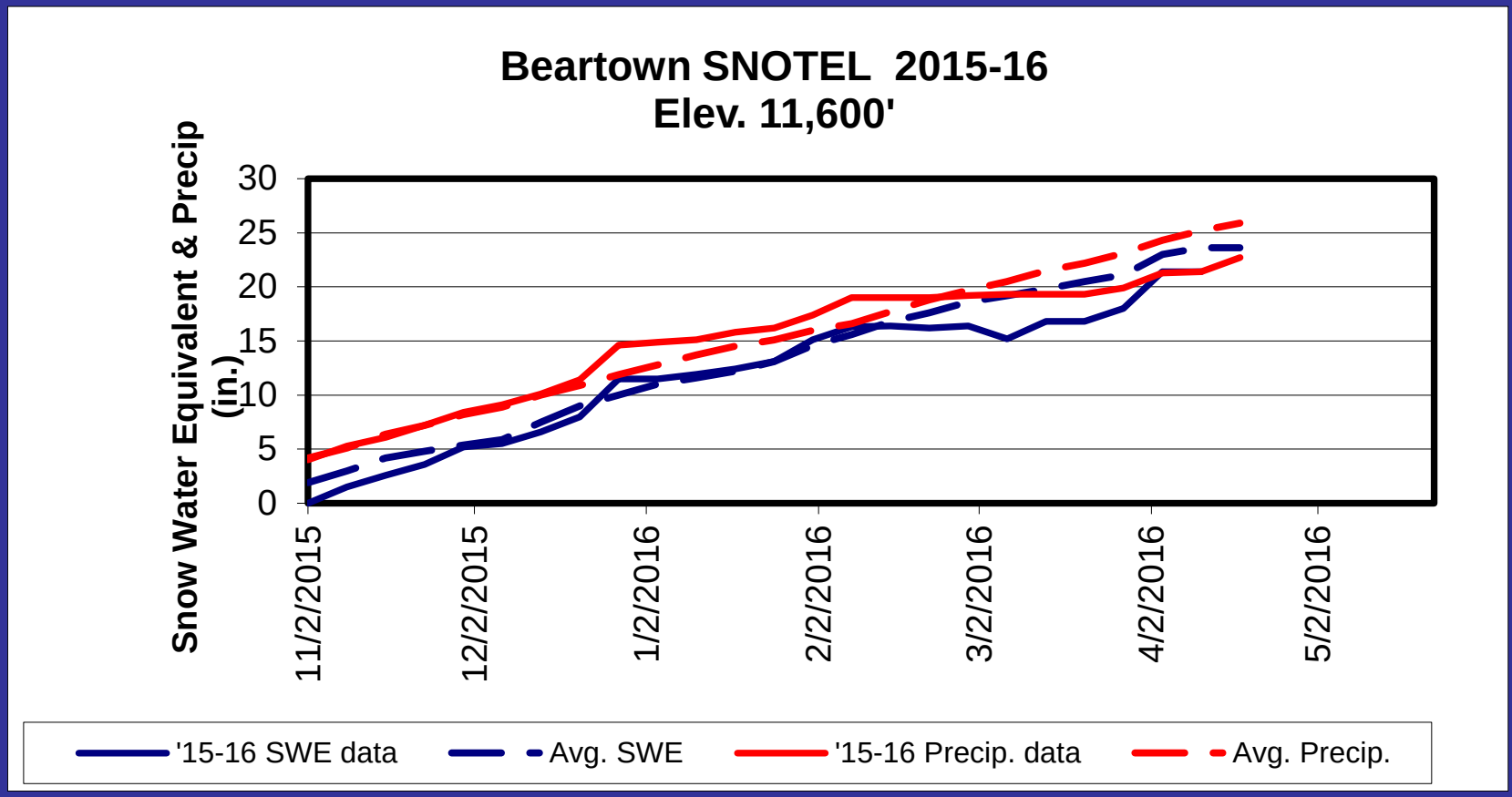
Similar Snowpack Years



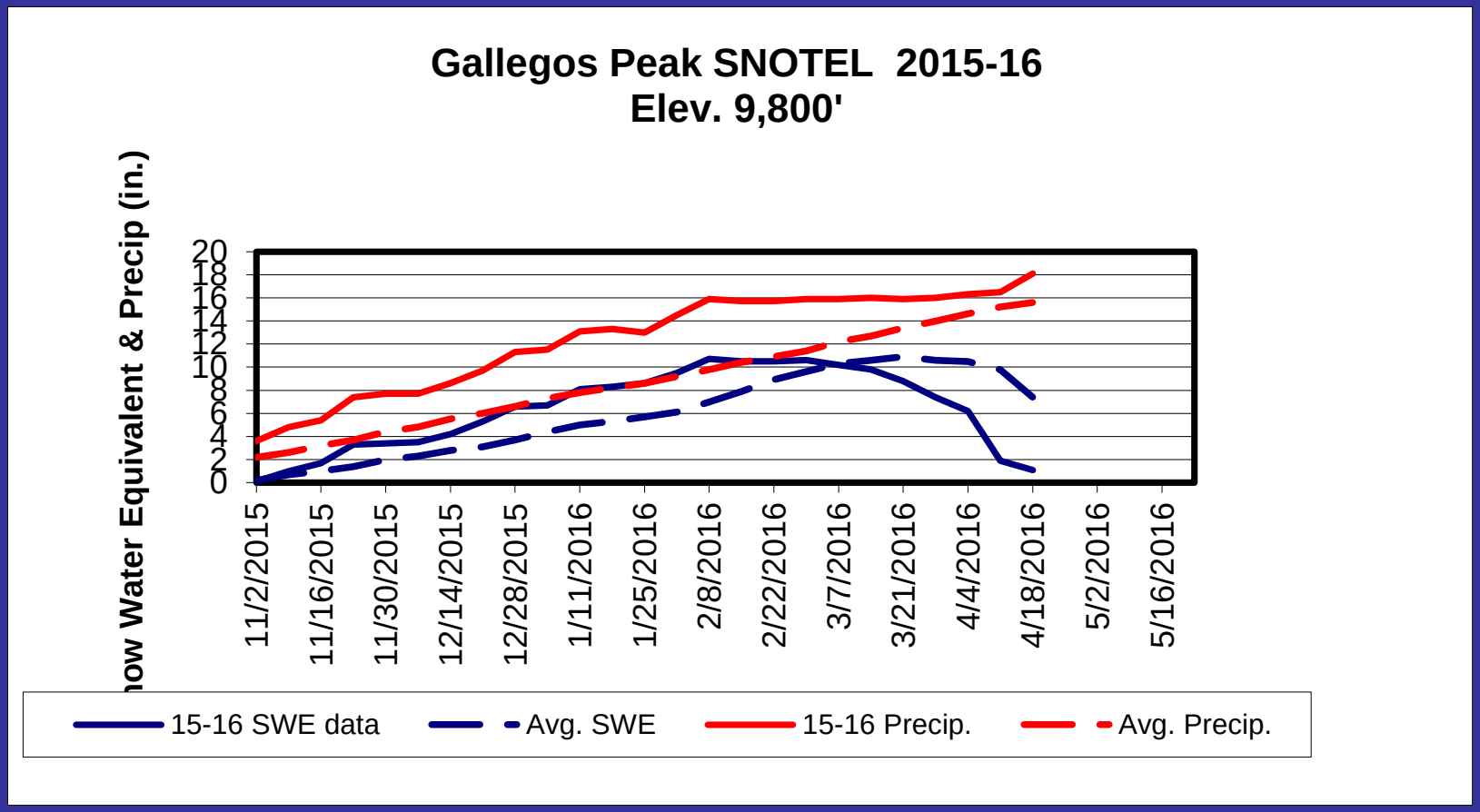
Rio Grande Snow Data



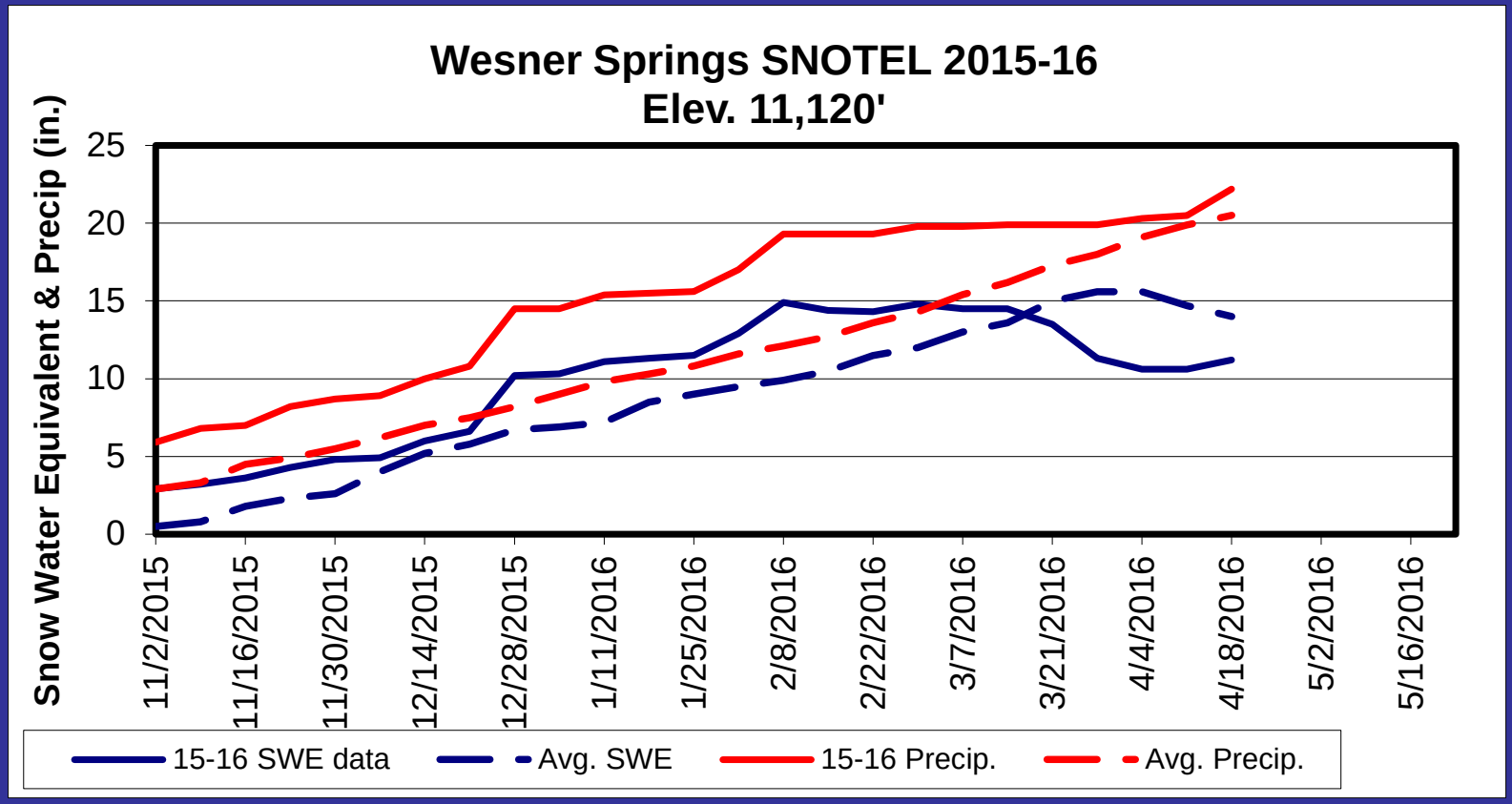
Rio Grande Snow Data



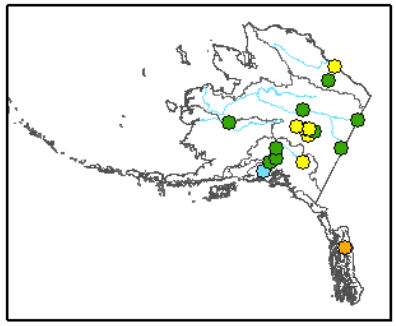
Sangre de Cristo Snow Data

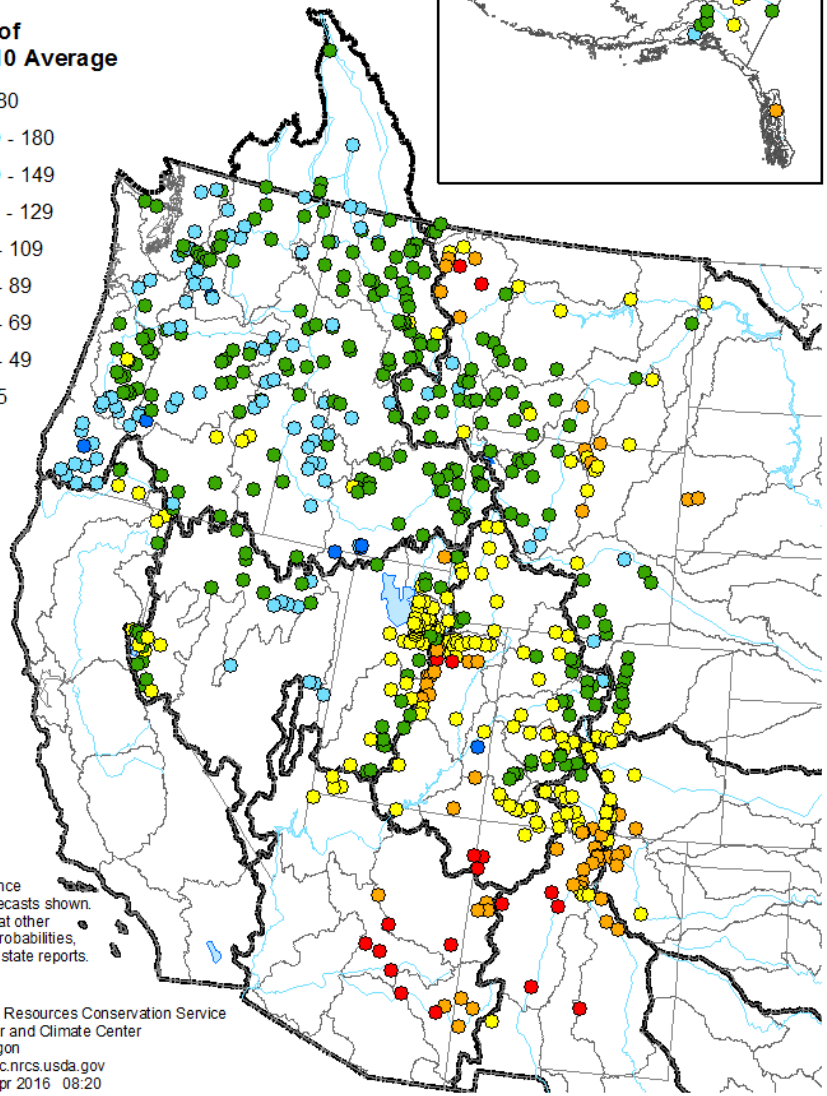


Sangre de Cristo Snow Data



Spring and Summer Streamflow Forecasts as of April 1, 2016

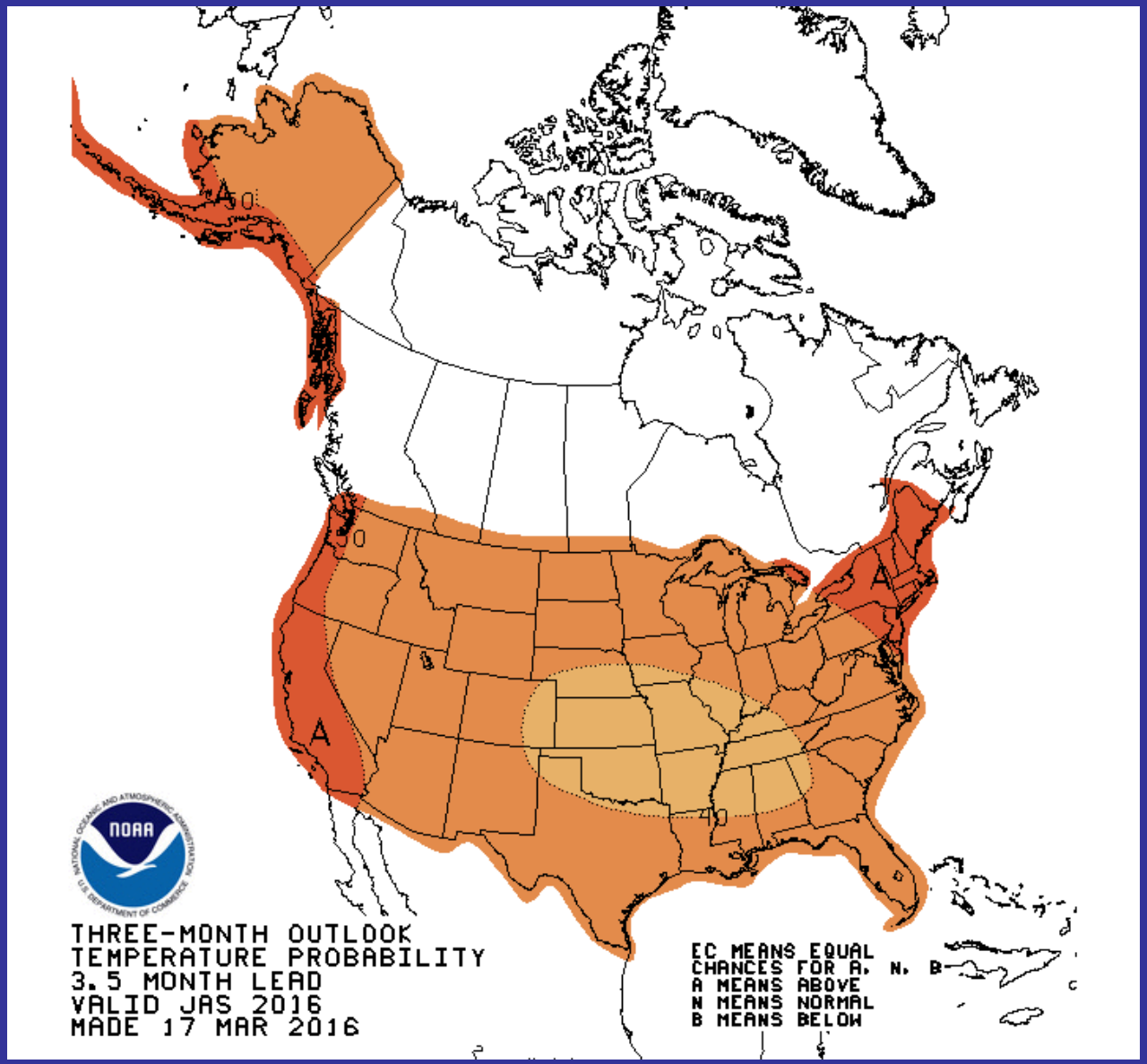




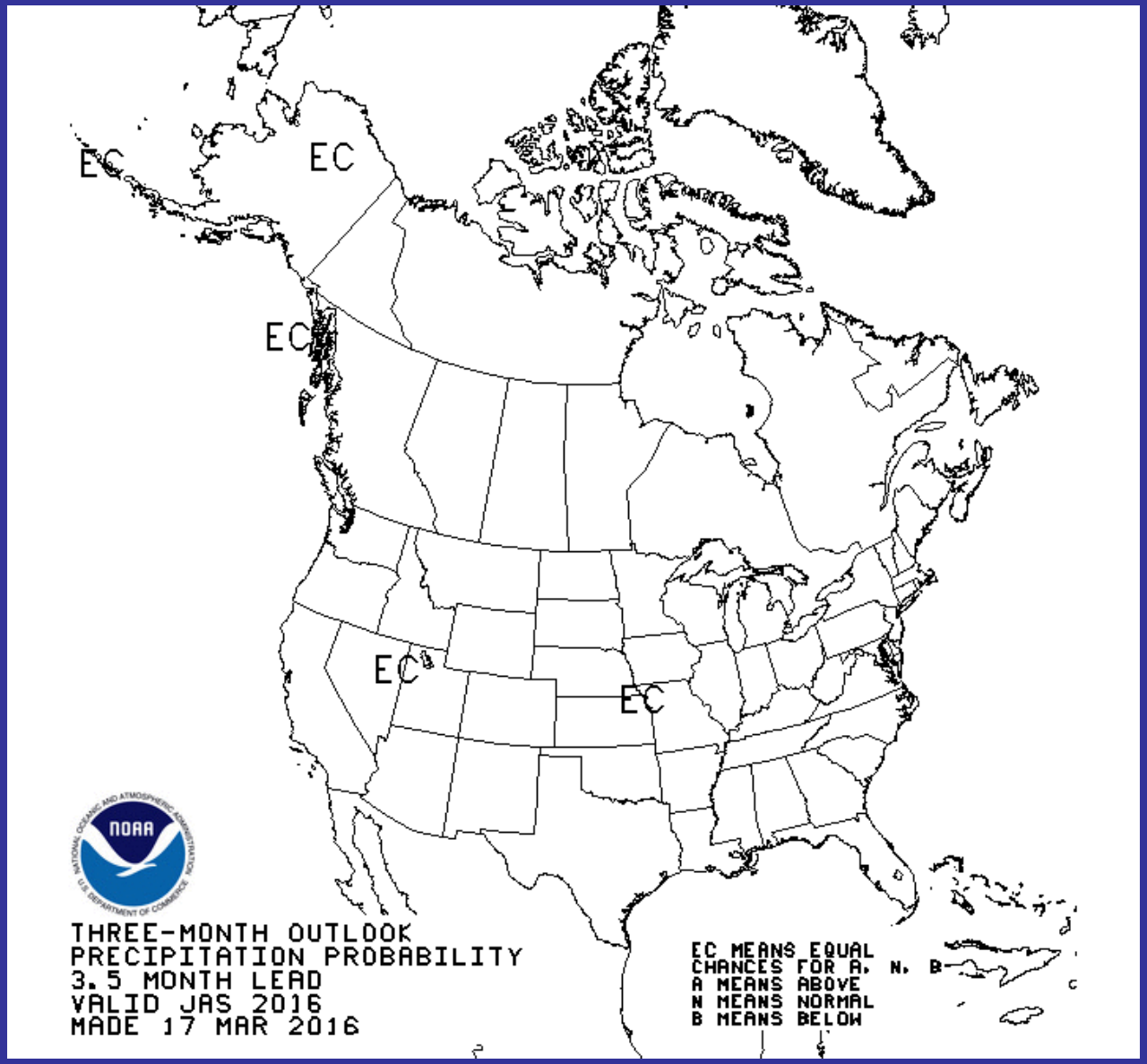
50% exceedance probability forecasts shown. For forecasts at other exceedance probabilities, see individual state reports.

Prepared by:
USDA Natural Resources Conservation Service
National Water and Climate Center
Portland, Oregon
http://www.wcc.nrcs.usda.gov
Created: 7 Apr 2016 08:20

Monsoon Season Temperature Outlook

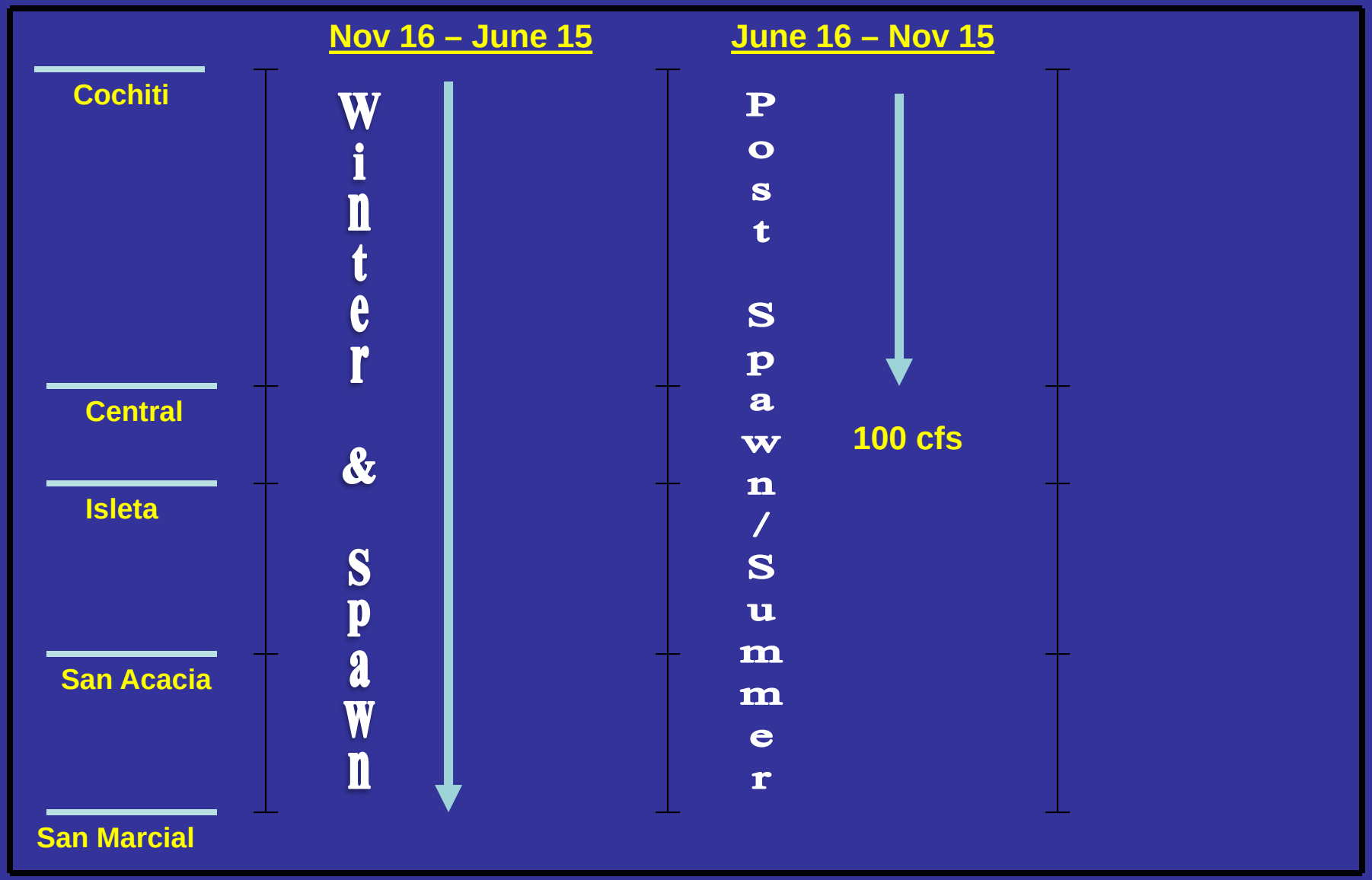


Monsoon Season Precipitation Outlook



2016 Water Operations Modeling

March 2003 BiOp Flow Requirements – Dry Year



Major Assumptions

- April 1 50% most probable forecast
- Dry year target flow requirements
- Same monsoon conditions as forecast hydrograph year
- Storage occurs under the Emergency Drought Water Agreement for MRGCD
- Storage of water for Prior & Paramount lands
- Out of Article VII restrictions for several weeks, but back in late April

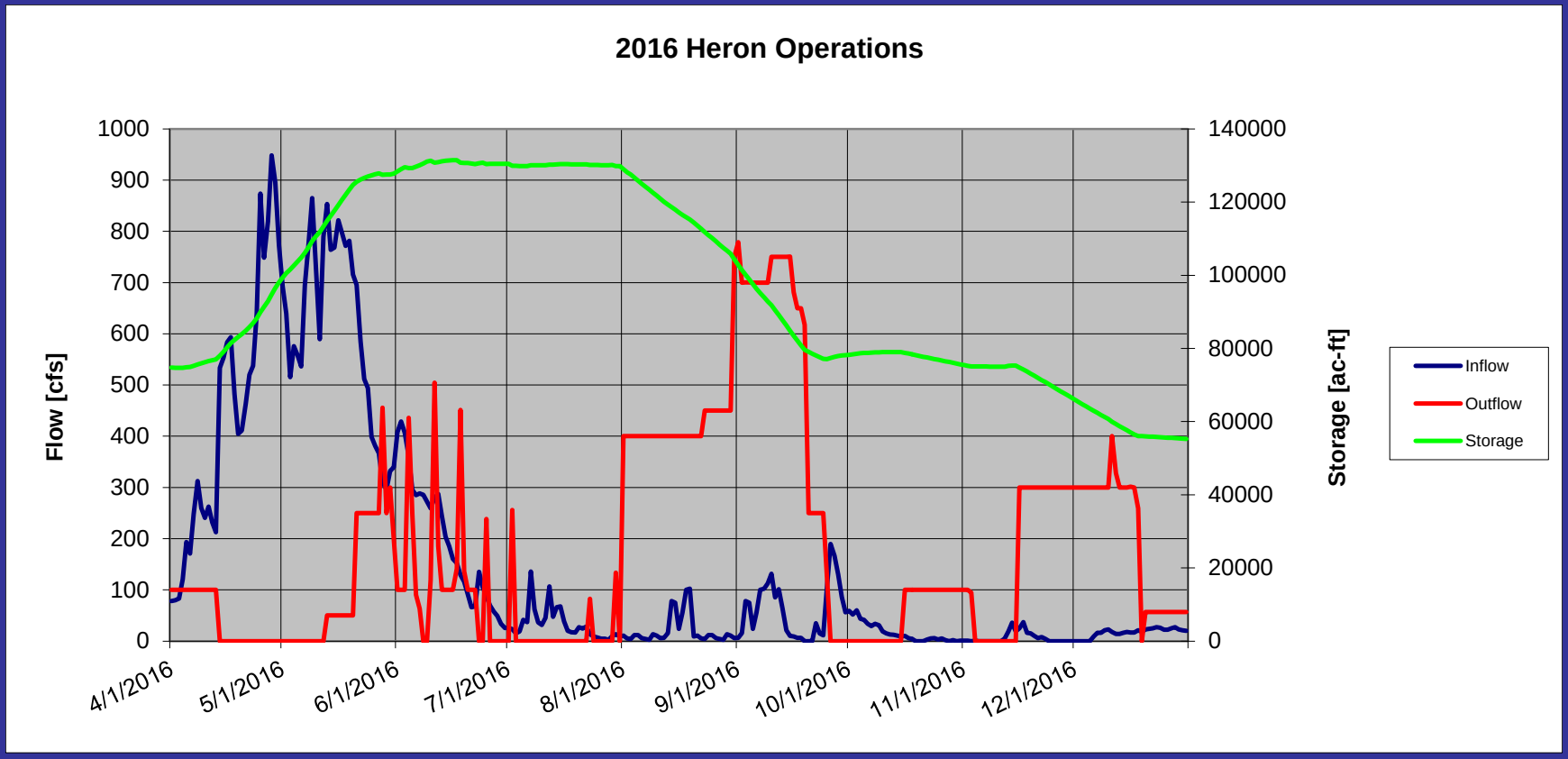
April Forecast Data

	Most Probable Percent of Average		April 1 50% Probability Volume, ac-ft
	2015	2016	2016
Rio Grande nr Del Norte	58%	84%	435,000
El Vado Reservoir Inflow	53%	60%	134,000
Rio Grande at Otowi	55%	60%	435,000
Nambe Reservoir Inflow	65%	71%	4,600
Jemez blw Jemez Dam	50%	44%	20,000
Rio Blanco @ Diversion	56%	76%	41,000
Navajo River @ Diversion	55%	75%	49,000

Heron Reservoir

Proposed 2016 Heron Operations

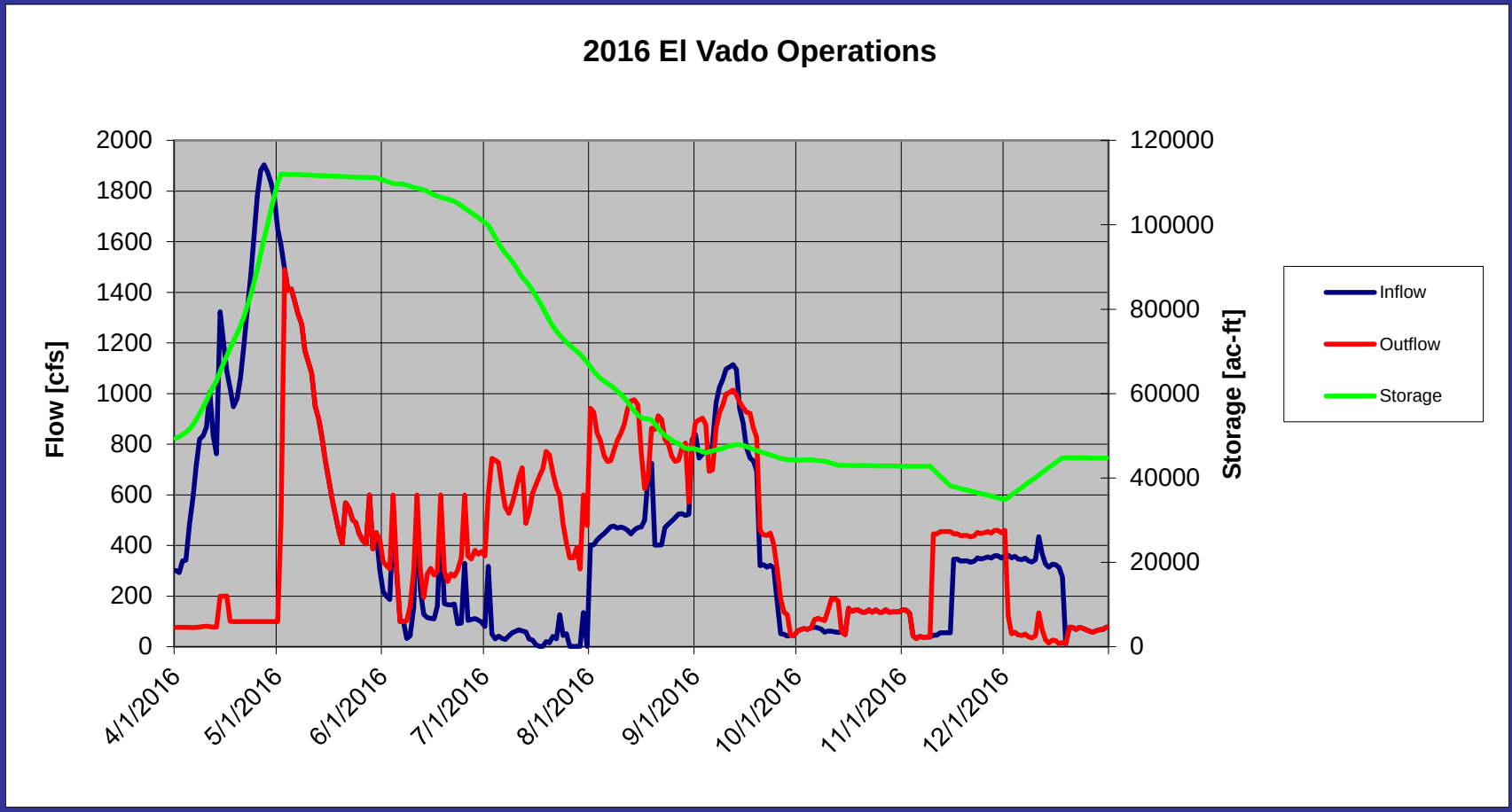
Storage Capacity=401,000 ac-ft



Reservoir will drop 8 feet from beginning of year to end

El Vado Reservoir

Proposed 2016 El Vado Operations

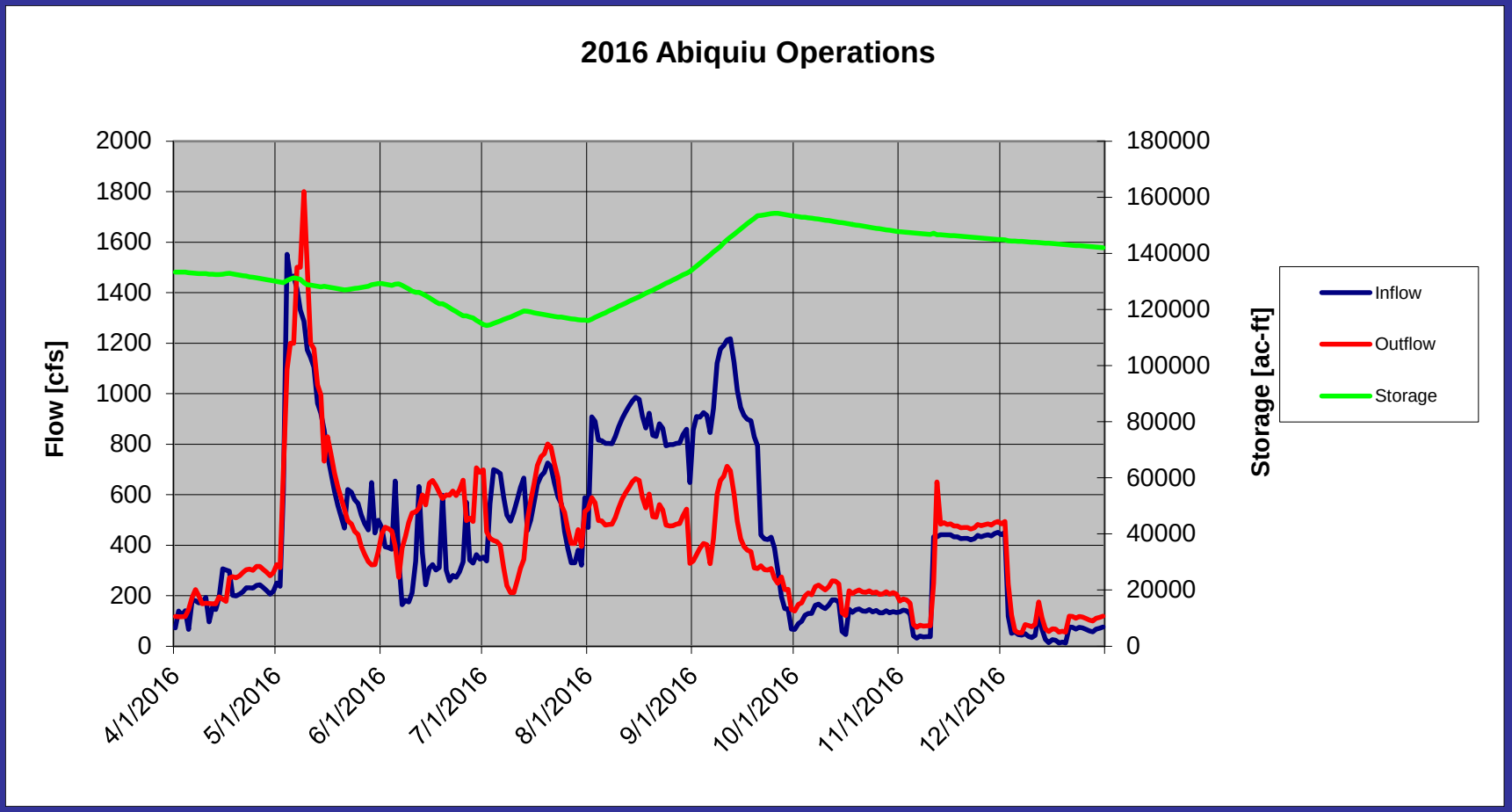


El Vado Reservoir:

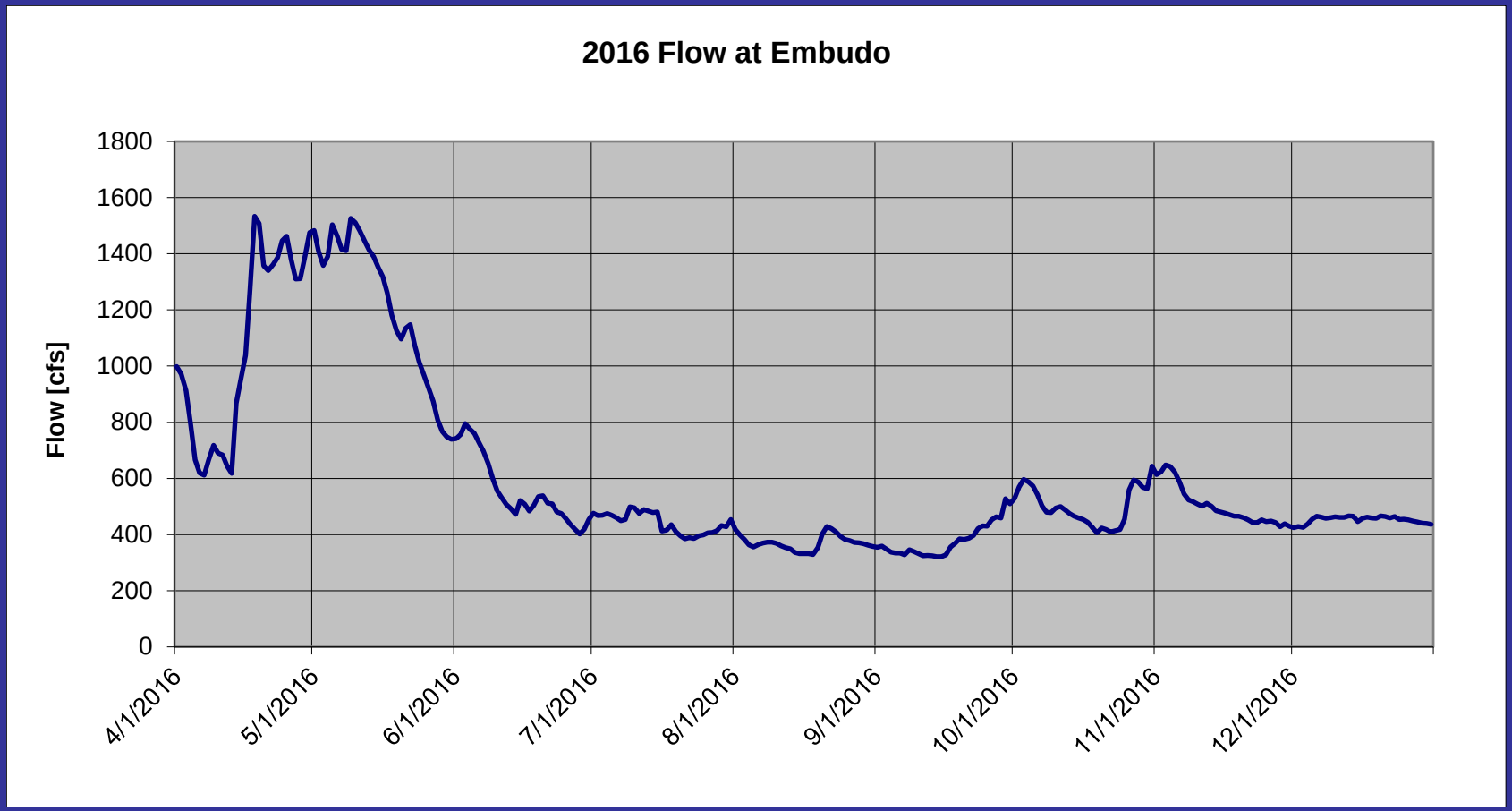
Lake Level: 47’ of fluctuation between May and Dec

ABIQUIU LAKE

Proposed 2016 Abiquiu Operations

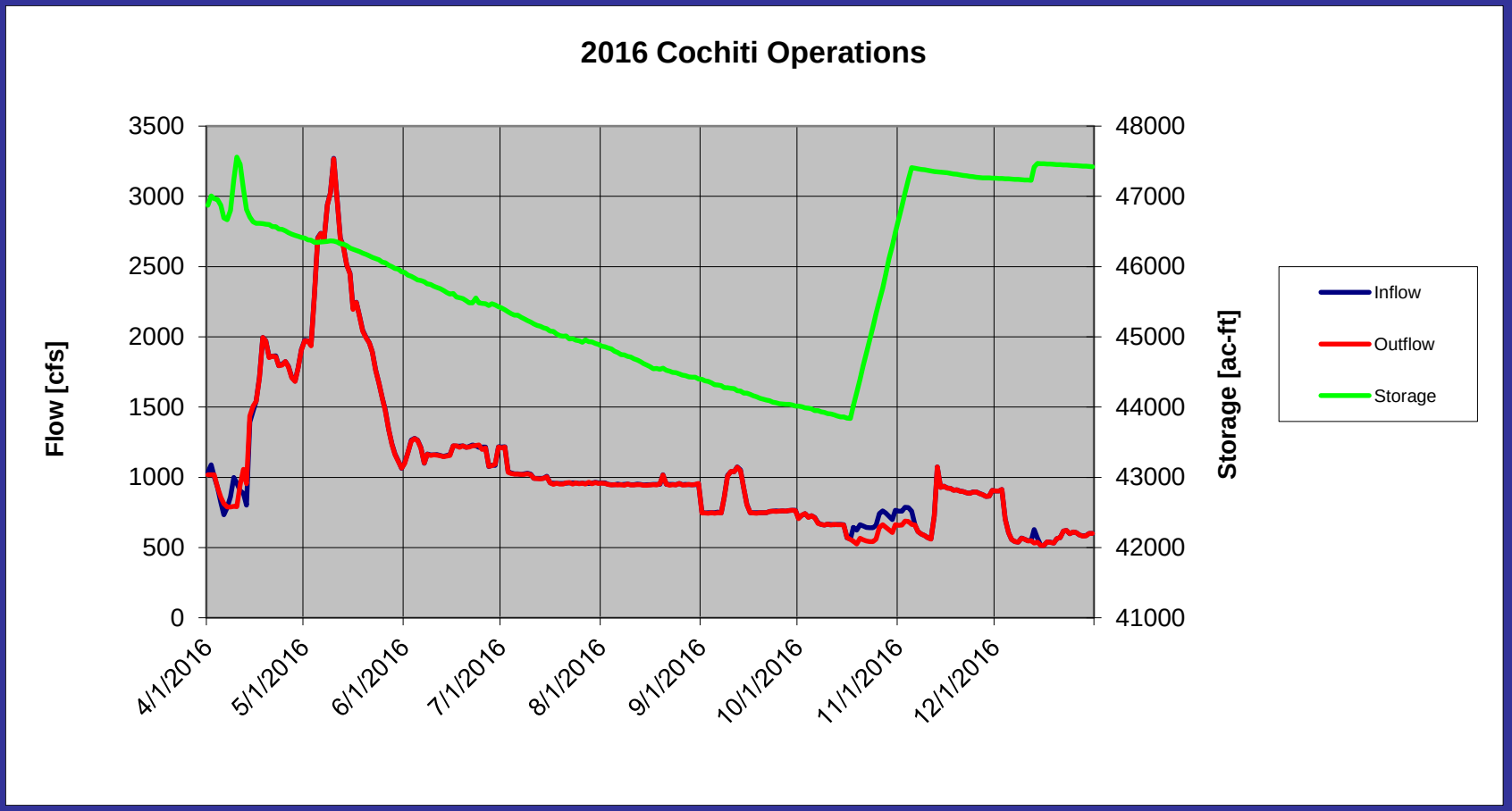


Estimated Hydrograph at Embudo

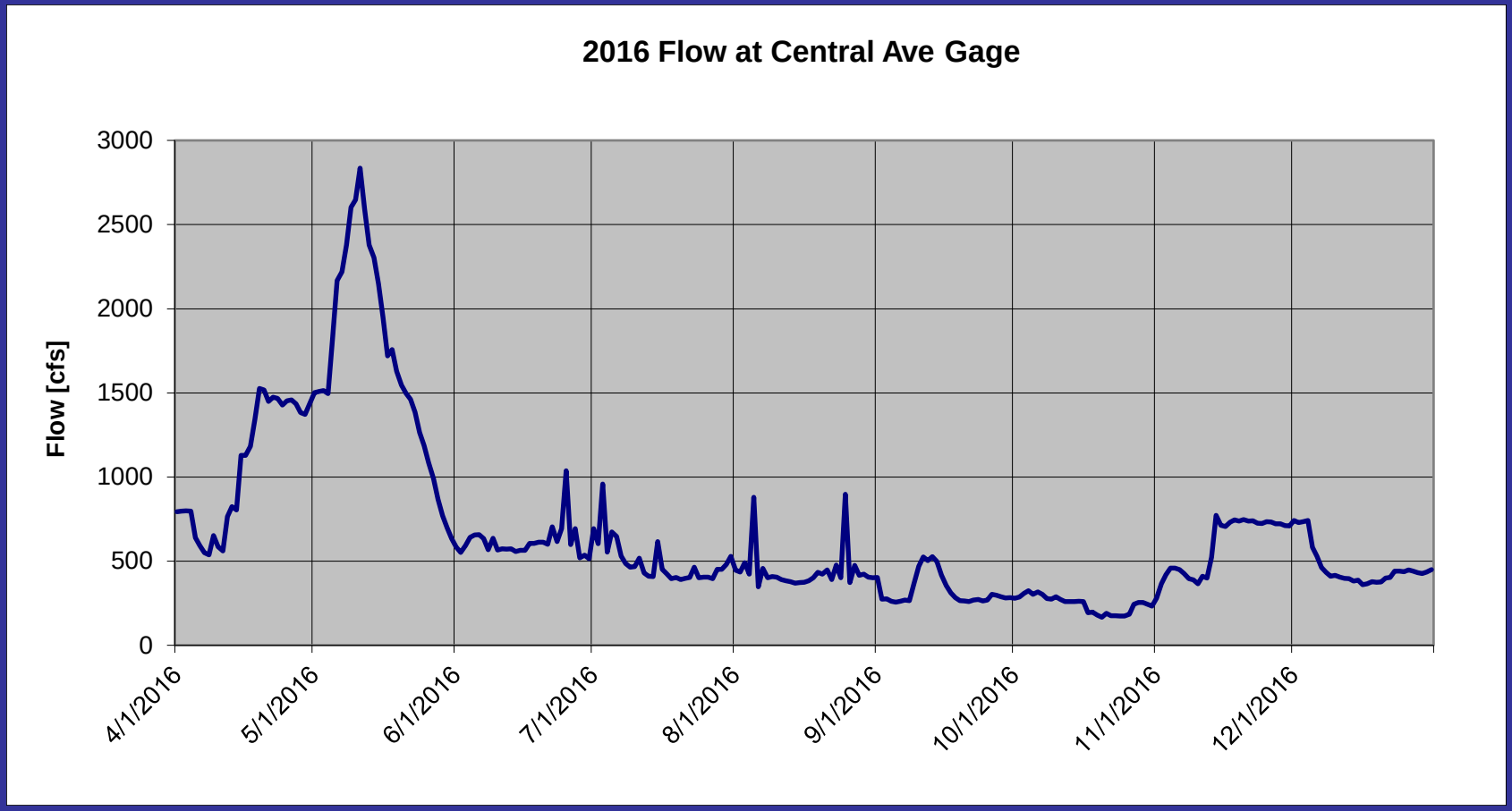



COCHITI LAKE

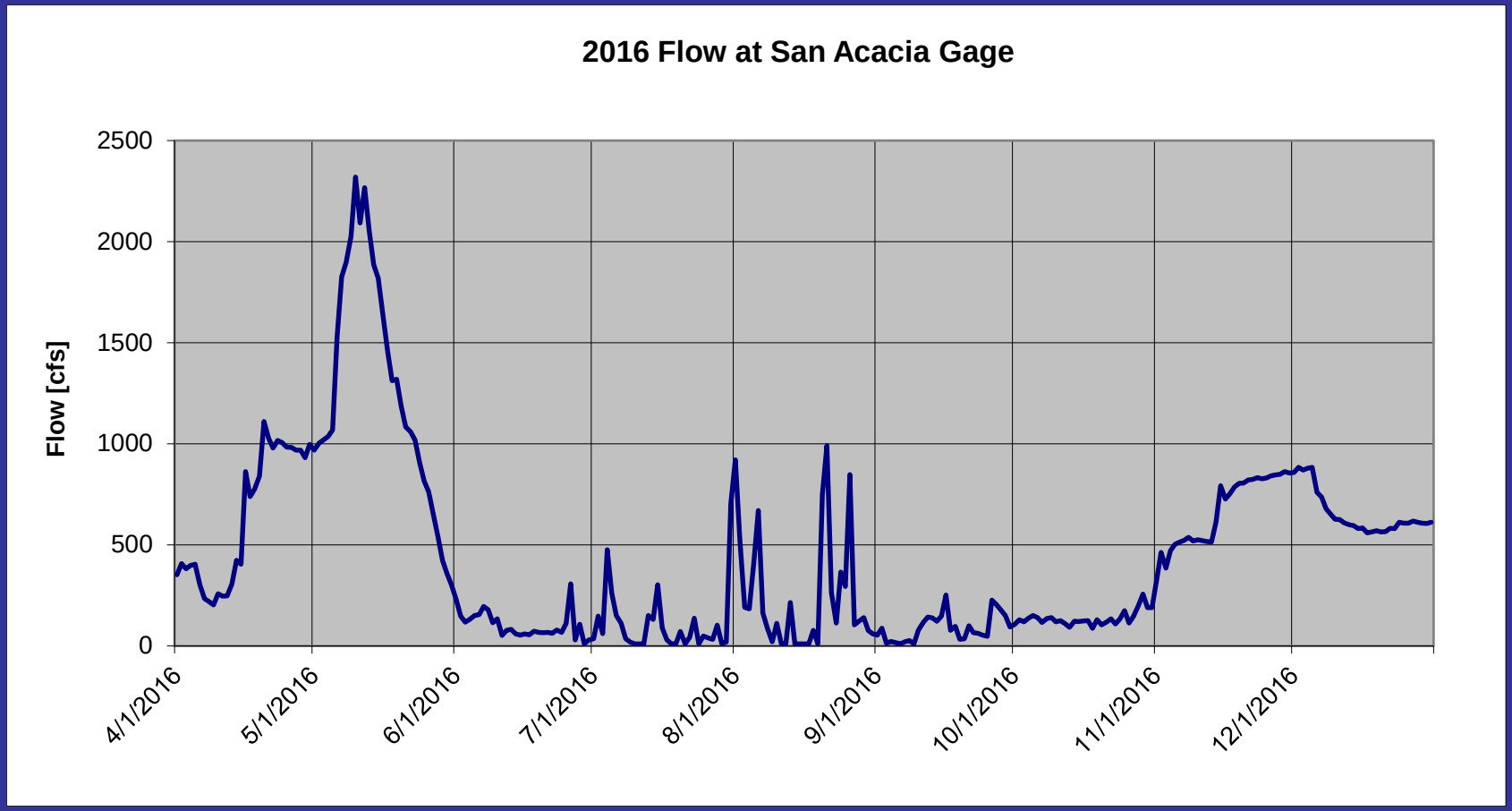
Proposed 2016 Cochiti Operations



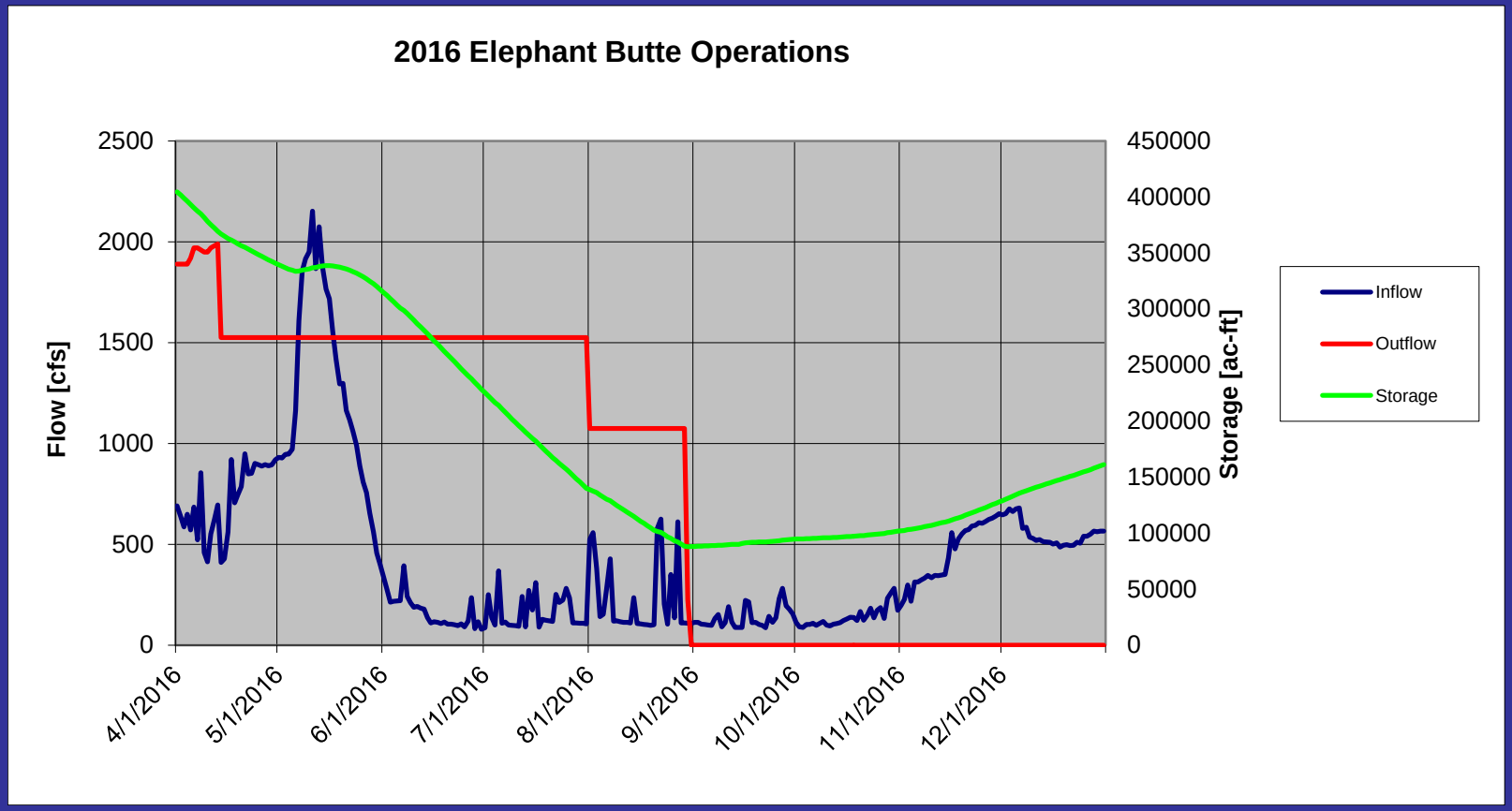
Estimated Hydrograph at Central Ave.



Estimated Flow at San Acacia



Proposed Elephant Butte Operations



Maximum Elevation = 4335.12’. Minimum Elevation= 4298.21’

Watershed and Infrastructure Protection

Reclamation has been taking steps to decrease the vulnerability of the San Juan-Chama Project and the watersheds that serve it, through:

- Application to the WaterSMART Drought Response Program to fund the development of a Wildfire Emergency Response Plan for the SJC Project,
- Becoming a signatory to the Rio Grande Water Fund, a network of public, private, and non-profit partners that seeks to enhance the resilience of upland forests to the impacts of wildfires and post-fire debris flows through forest thinning and controlled burns.
- Participation in local watershed organizations that seek to prioritize resilience-building activities, such as those funded by the Rio Grande Water Fund.
  - Navajo-Blanco Resilience Project
  - San Juan-Chama Watershed Partnership
- Partnership with the Chama Peak Land Alliance to sponsor a VISTA Volunteer to perform community outreach and planning projects associated with efforts to build upland forest resilience in the San Juan and Chama watersheds. A sequence of volunteers will be in this role for the next three years.