



# Planning, Managing and Chasing a McPhee “Spill”

or

Mother Nature Wins

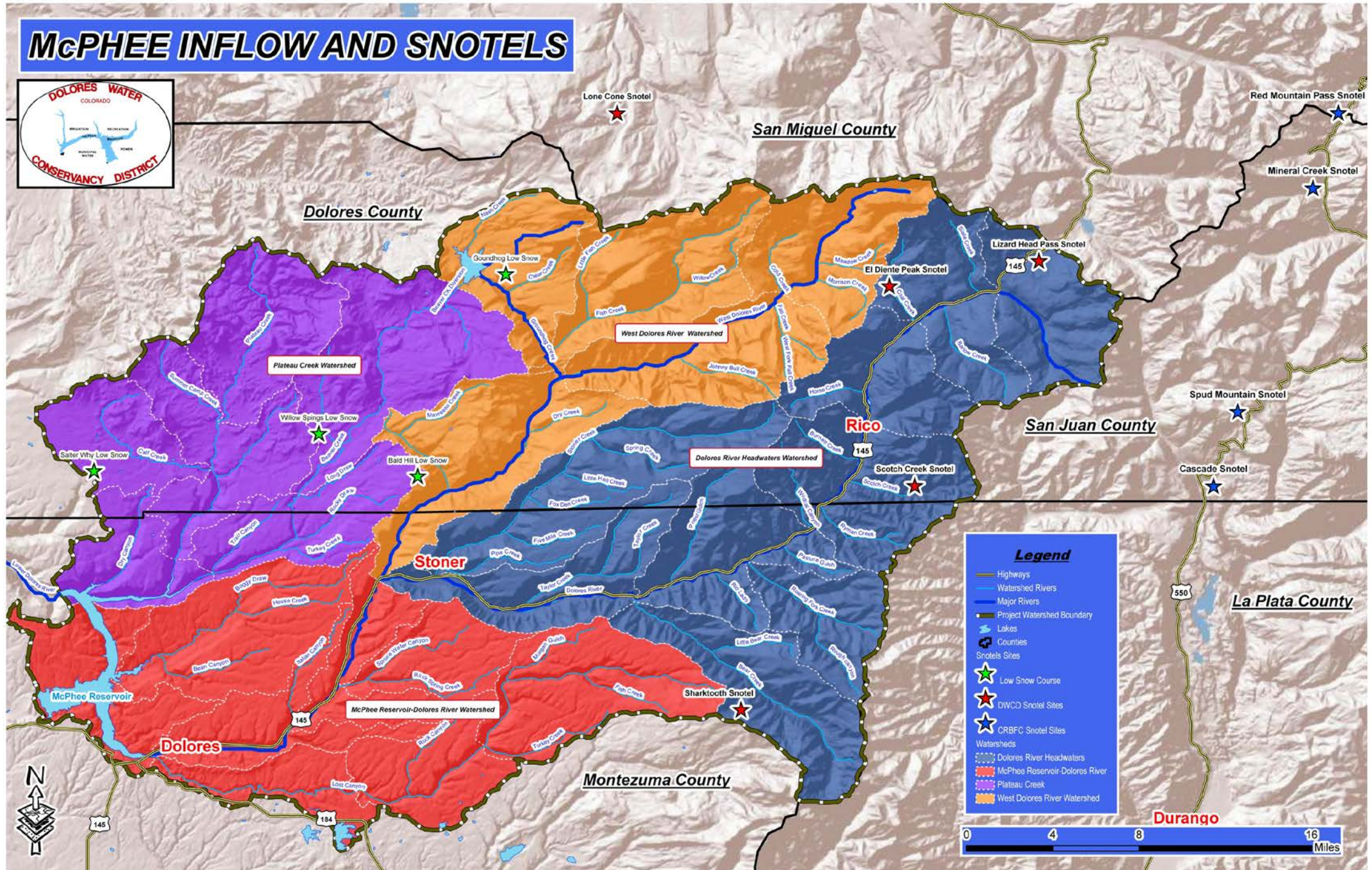
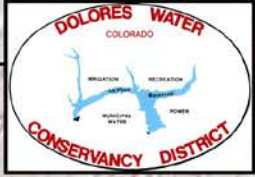
SWCD Annual Water Seminar

April 7, 2017

Ken Curtis, DWCD



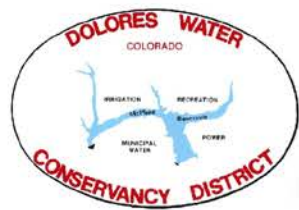
# McPHEE INFLOW AND SNOTELS



**Legend**

- Highways
- Watershed Rivers
- Major Rivers
- Project Watershed Boundary
- Lakes
- Counties
- Snotels Sites
- ★ Low Snow Course
- ★ DWCD Snotel Sites
- ★ CRBFC Snotel Sites
- Watersheds
- Dolores River Headwaters
- McPhee Reservoir-Dolores River
- Plateau Creek
- West Dolores River Watershed

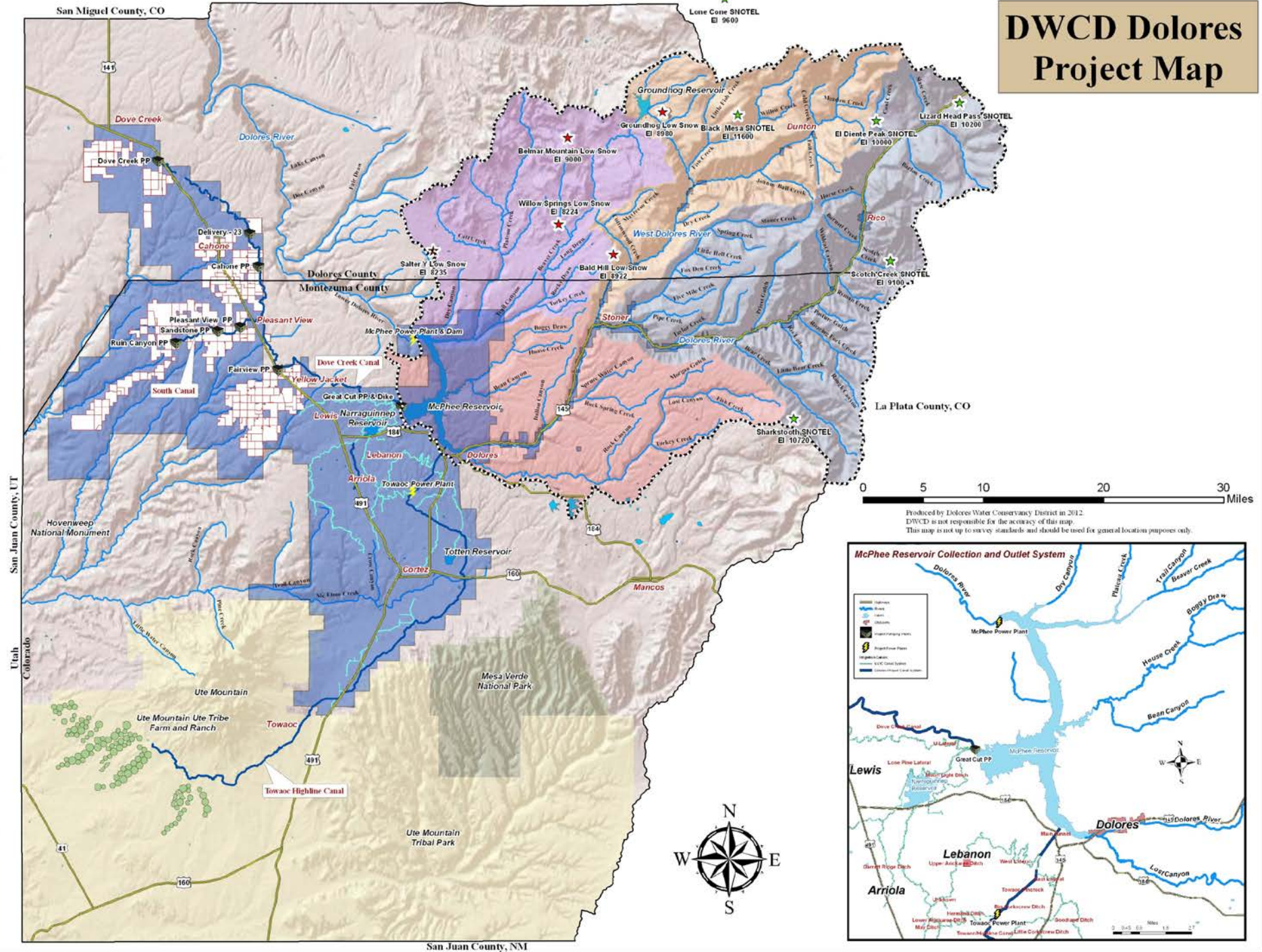
Durango  
0 4 8 16 Miles



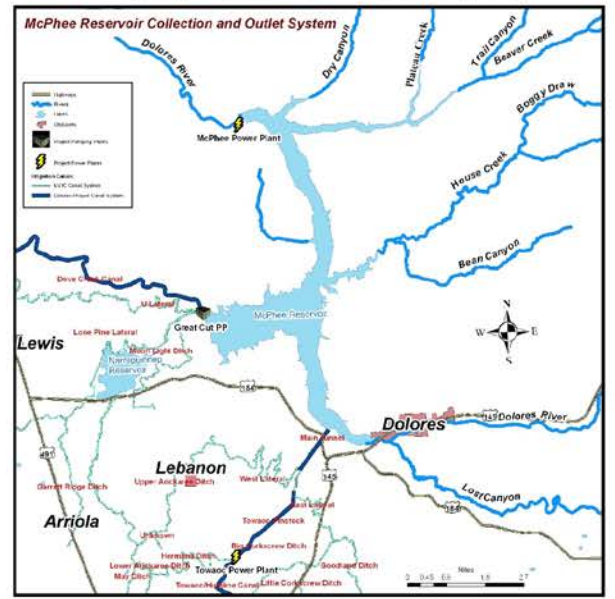
- Rivers
- Lakes
- Highways
- Mesa Verde National Park
- Ute Mountain Ute Tribe Farm & Ranch
- DWCD District Boundary
- DWCD Full Service Farmers
- Project Pumping Plants
- Project Power Plants
- County Line
- SNOTEL Sites
- Low Snow Course
- UMUT Boundary
- Dolores Project Canals
- MVIC Canal System
- Watershed Boundary
- Dolores River Headwaters
- Lower Dolores River/Lost Canyon
- Plateau/Beaver Creek
- West Fork Dolores River

Acres:  
 Full Service: 28,800 Ac  
 Ute Farm: 7,600 Ac  
 MVIC: 37,500 Ac

# DWCD Dolores Project Map

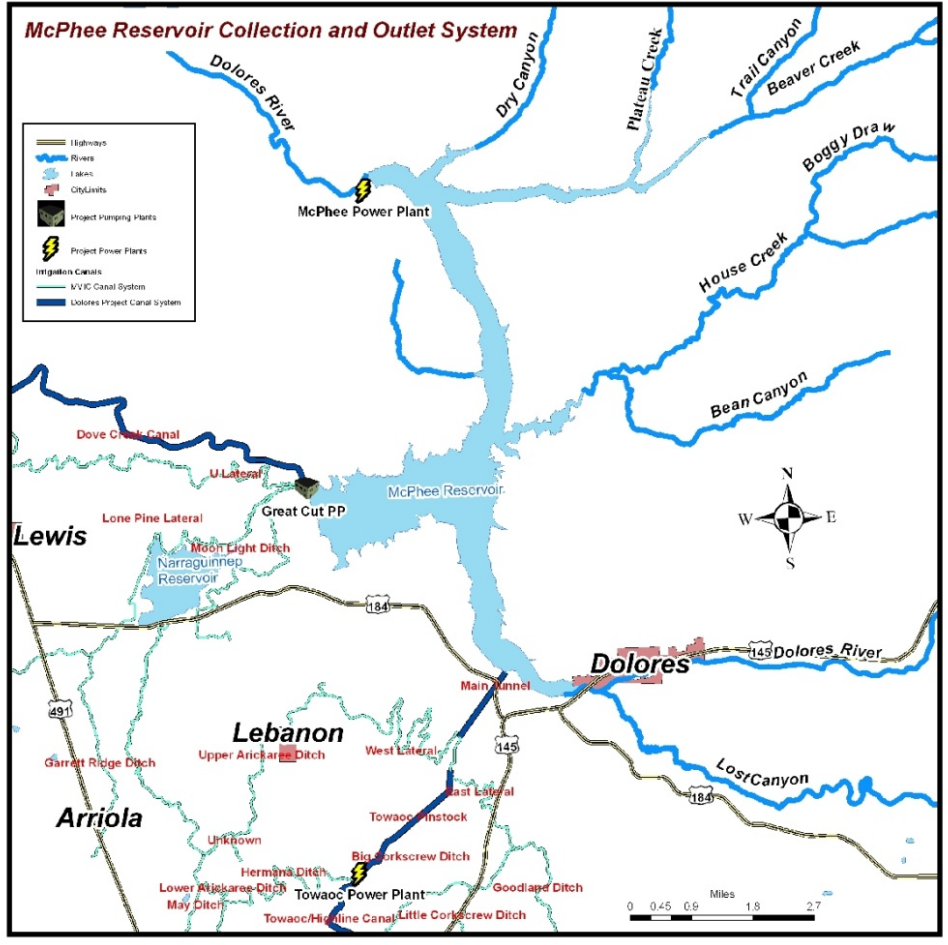


Produced by Dolores Water Conservancy District in 2012.  
 DWCD is not responsible for the accuracy of this map.  
 This map is not up to survey standards and should be used for general location purposes only.

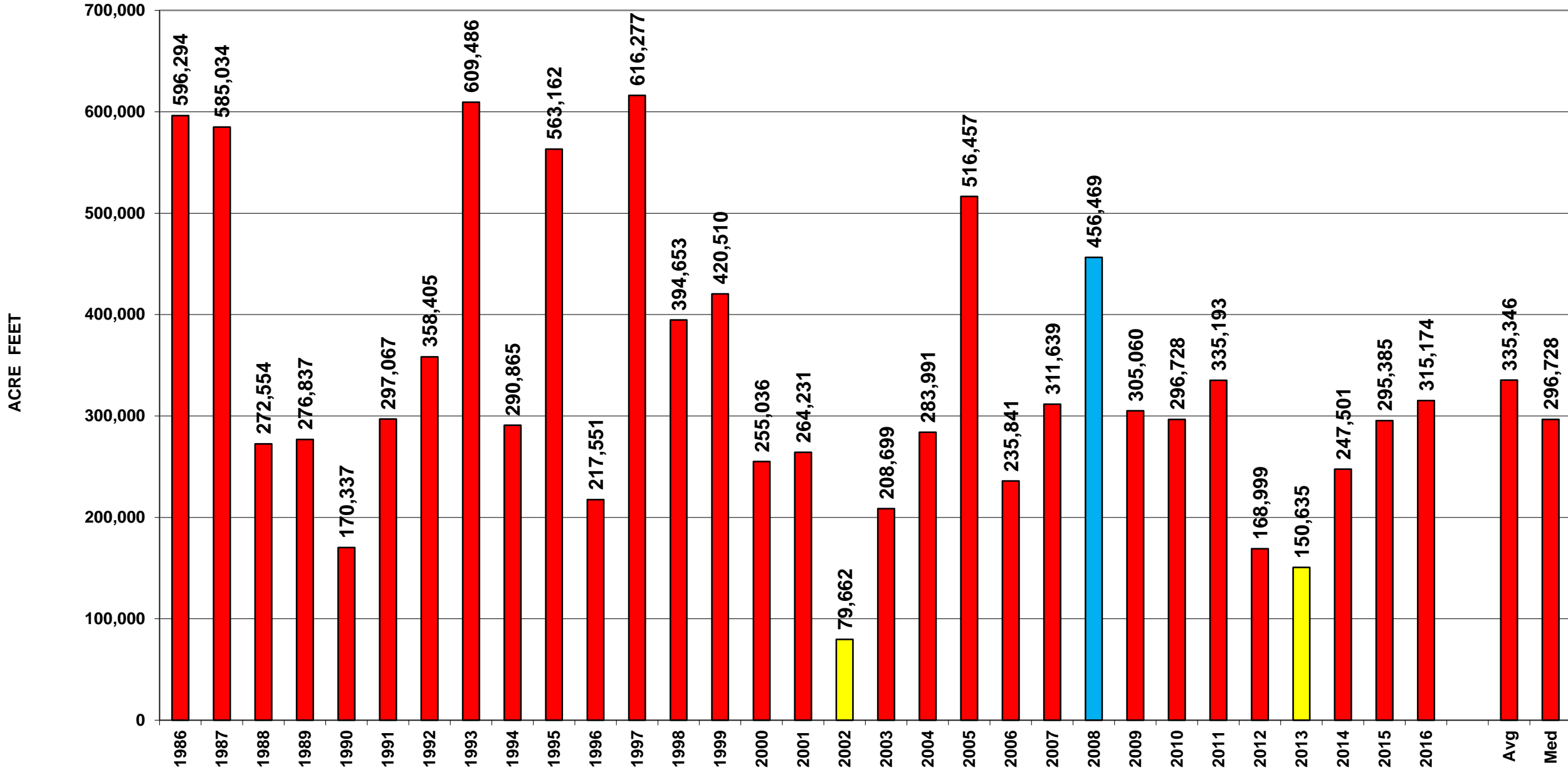




Produced by Dolores Water Conservancy District in 2012.  
 DWCD is not responsible for the accuracy of this map.  
 This map is not up to survey standards and should be used for general location purposes only.

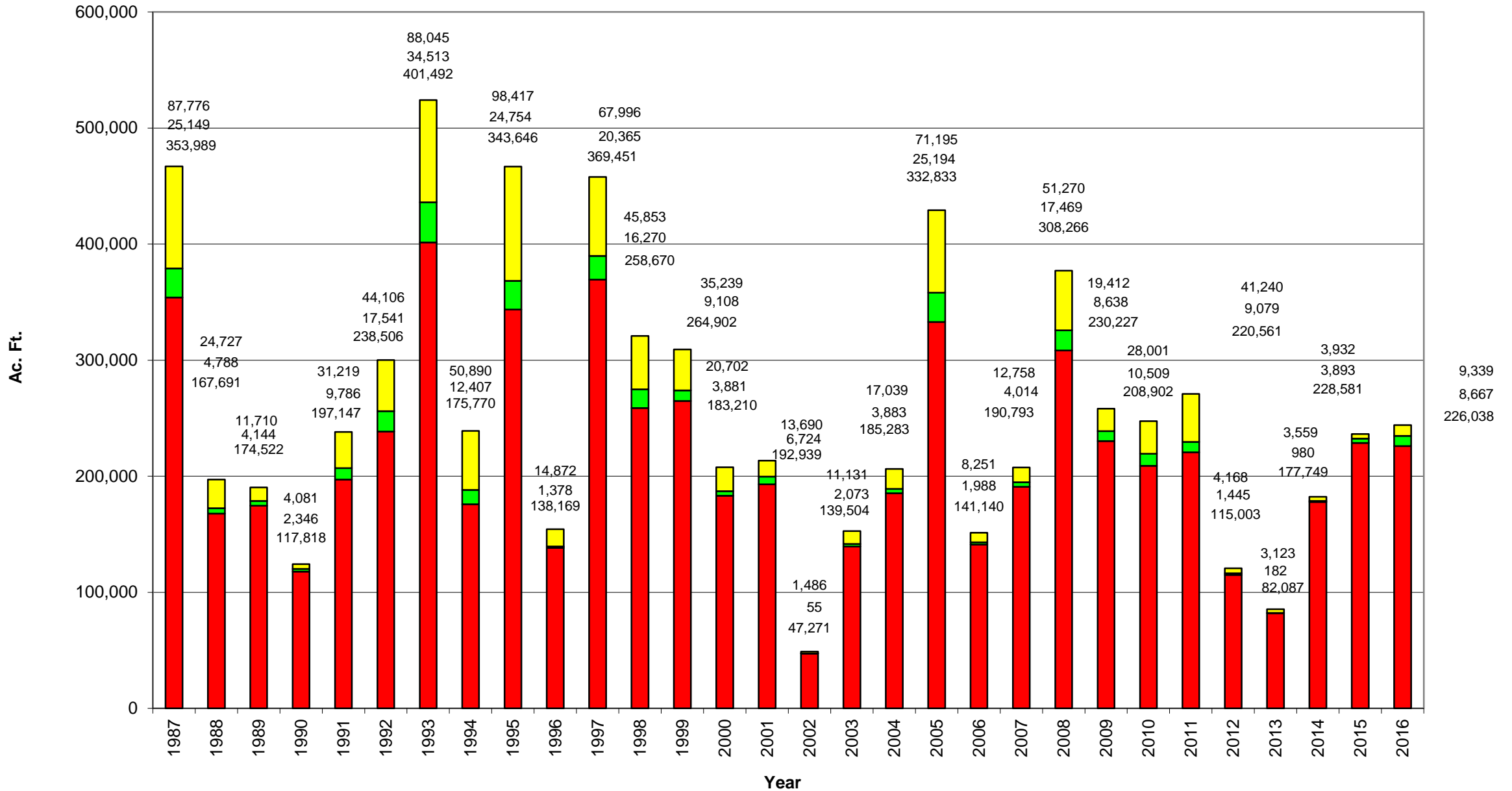


# TOTAL McPHEE RESERVOIR INFLOW

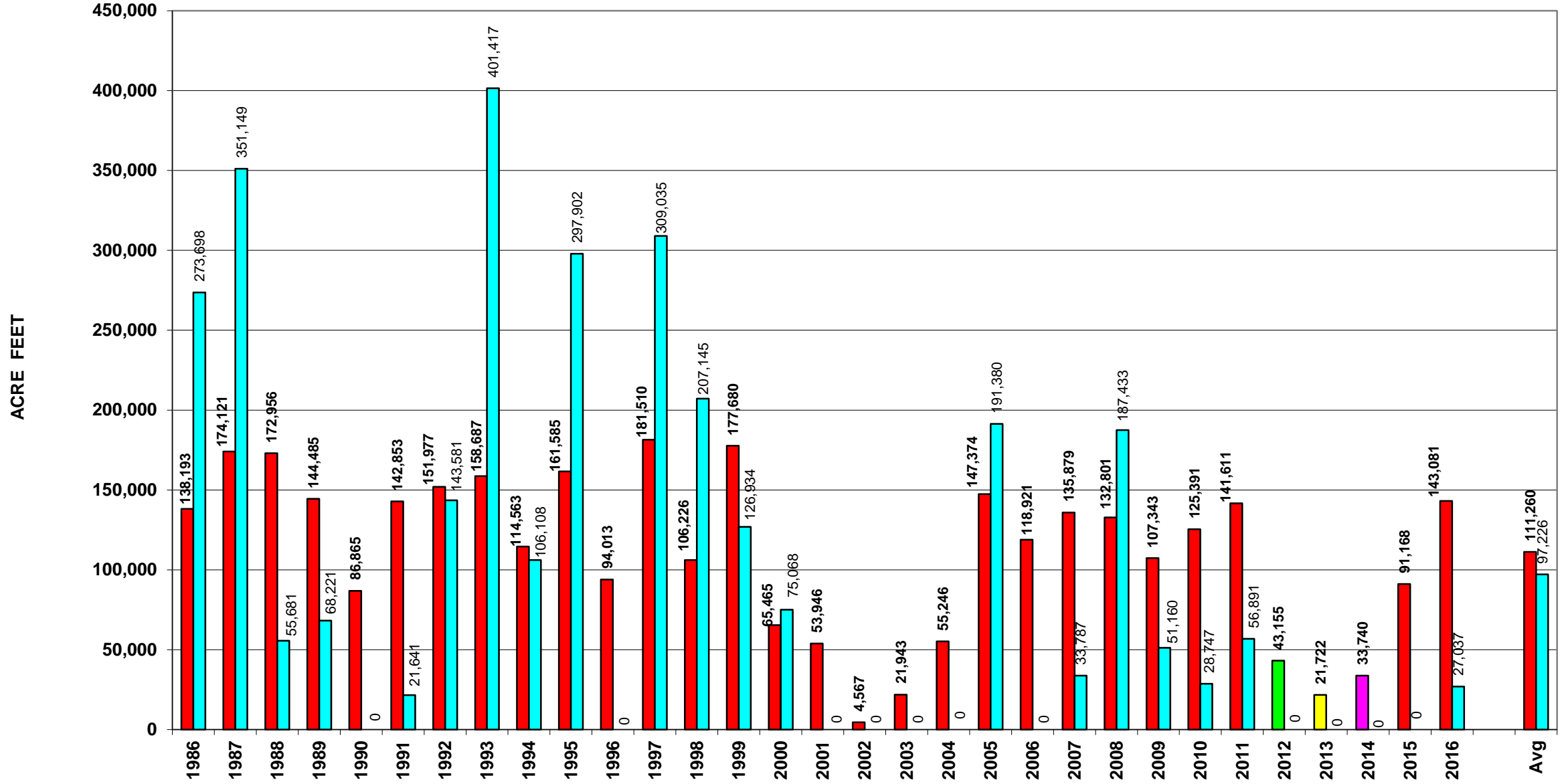


### Apr-Jul McPhee Reservoir Inflow (1987-2016) Avg. 260,556 / Med. 238,152 (Ac. Ft.)

■ Dolores River   
 ■ Lost Canyon   
 ■ Other Inflow



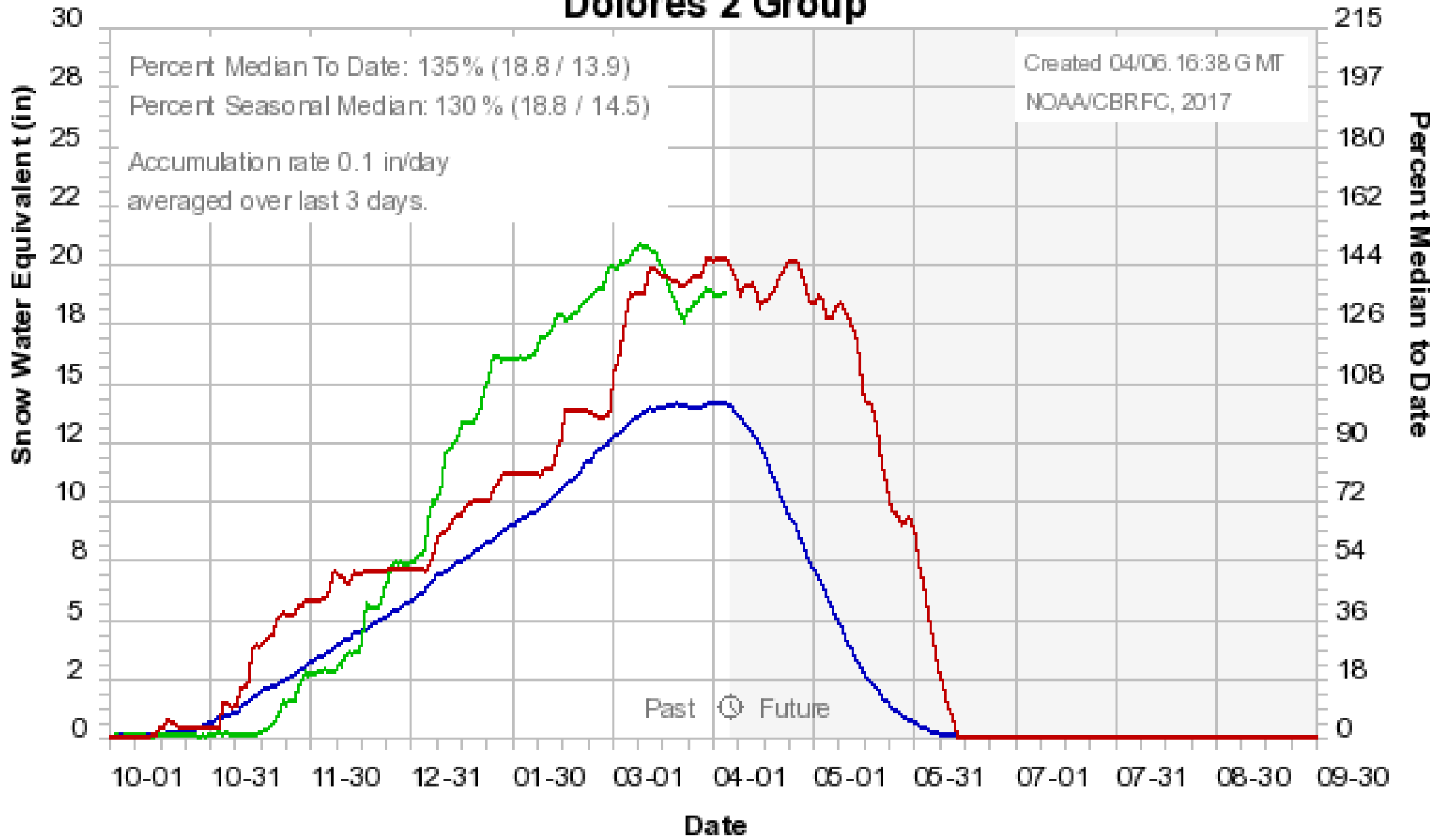
# MCPHEE RESERVOIR ENDING ACTIVE CAPACITY & SPILL





# Colorado Basin River Forecast Center

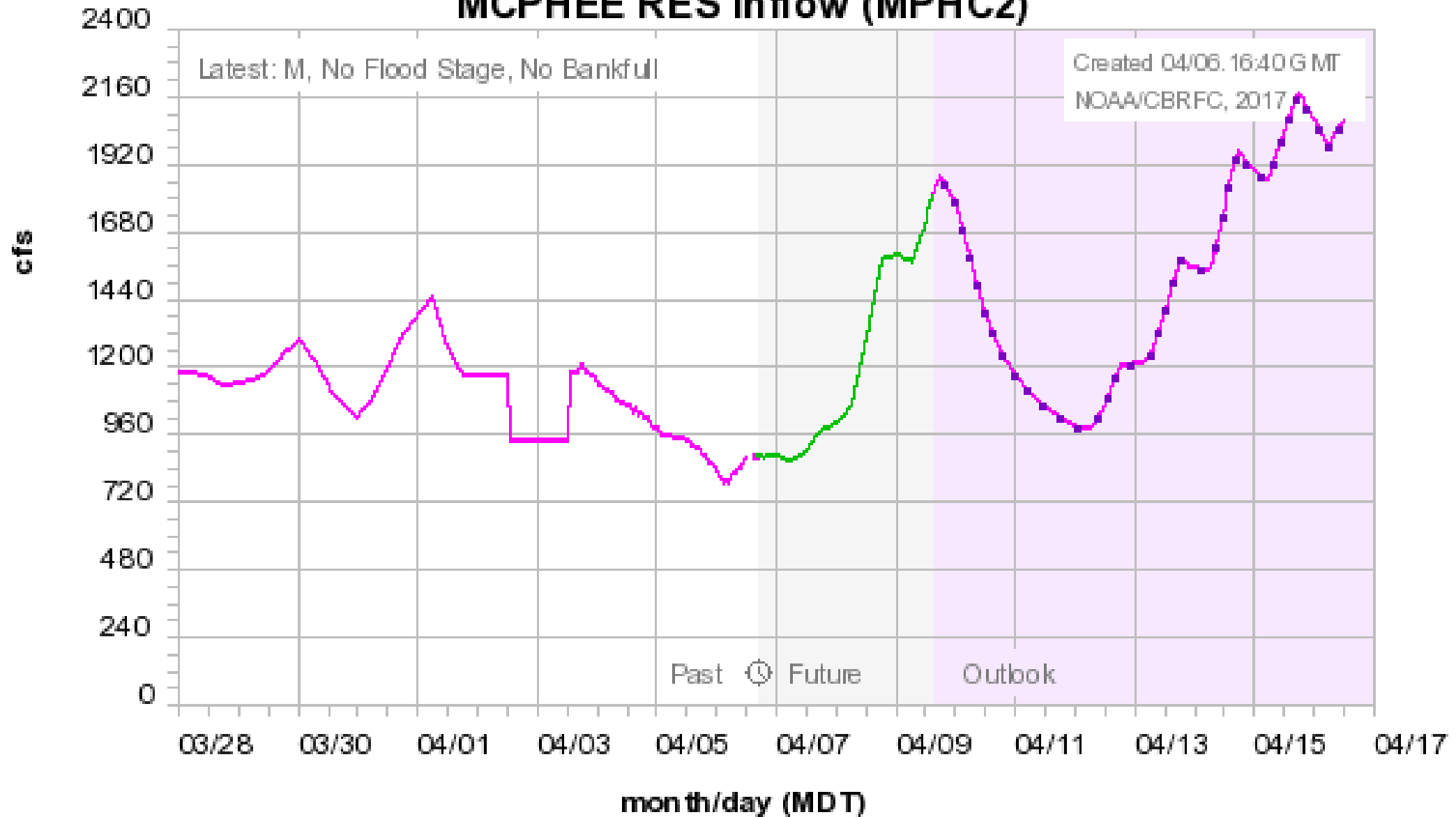
## Dolores 2 Group



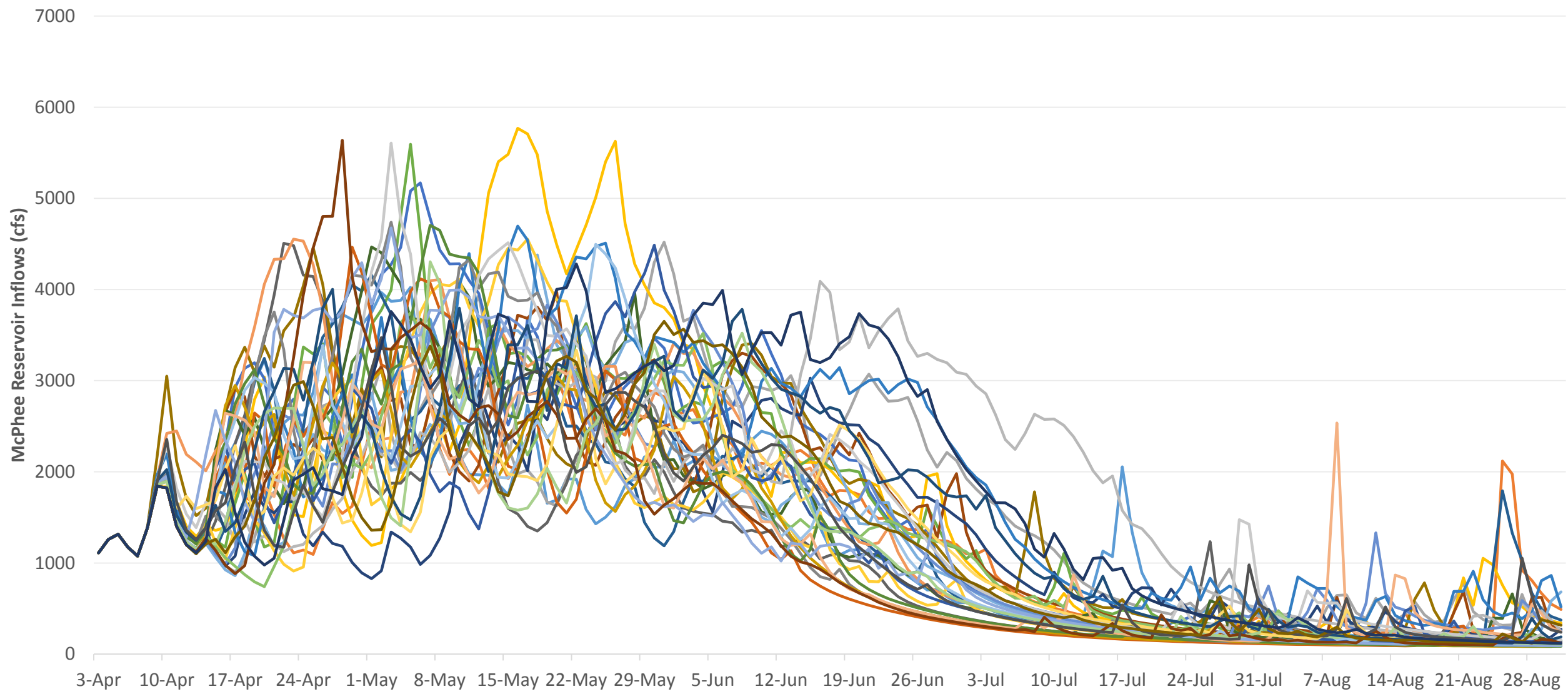
Average 1981-2010 — 2017 — 1995 —

# Colorado Basin River Forecast Center

## MCPHEE RES Inflow (MPHC2)

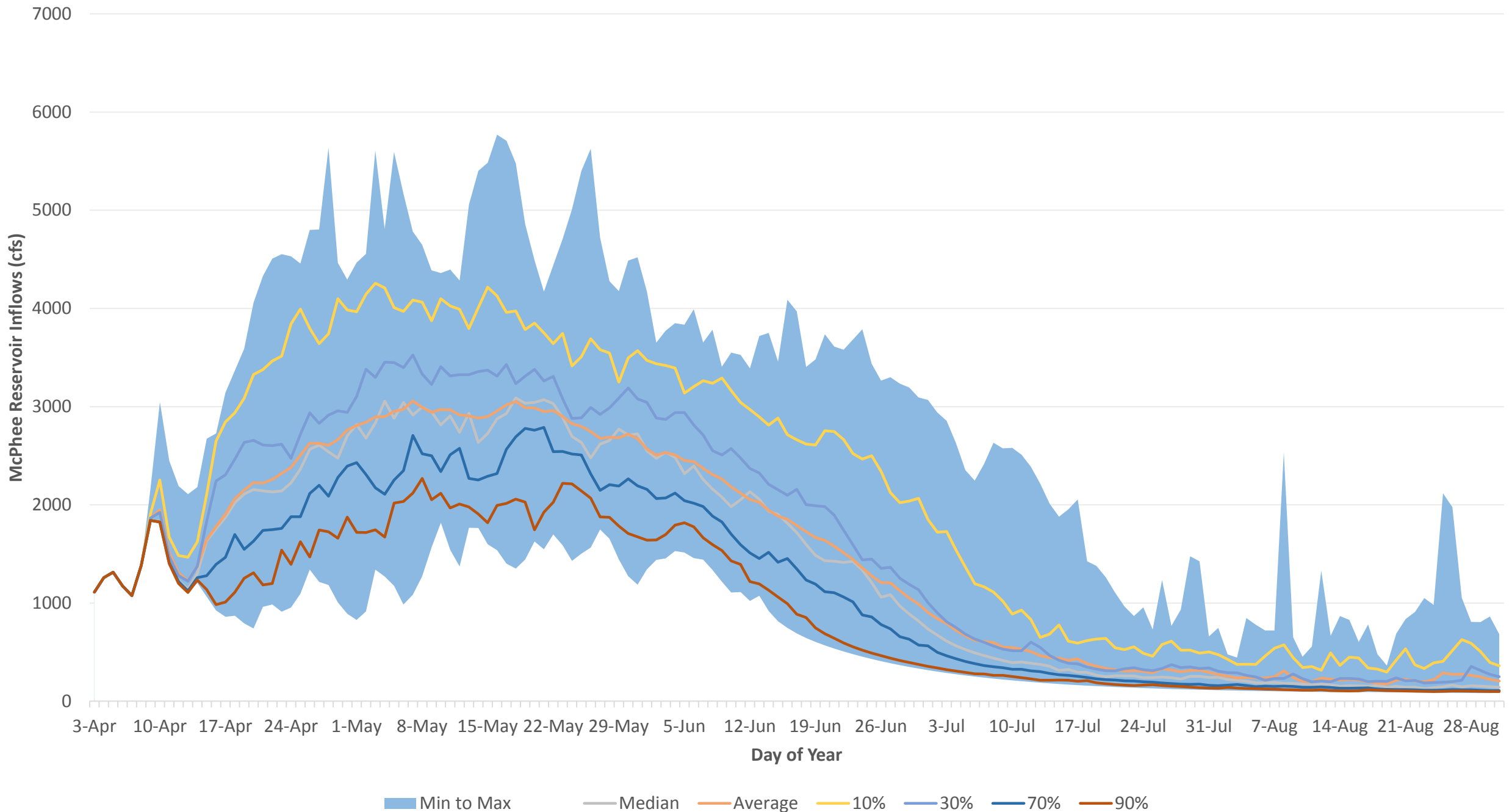


35 CBRFC Forecast Traces for McPhee Ensemble Streamflow Prediction

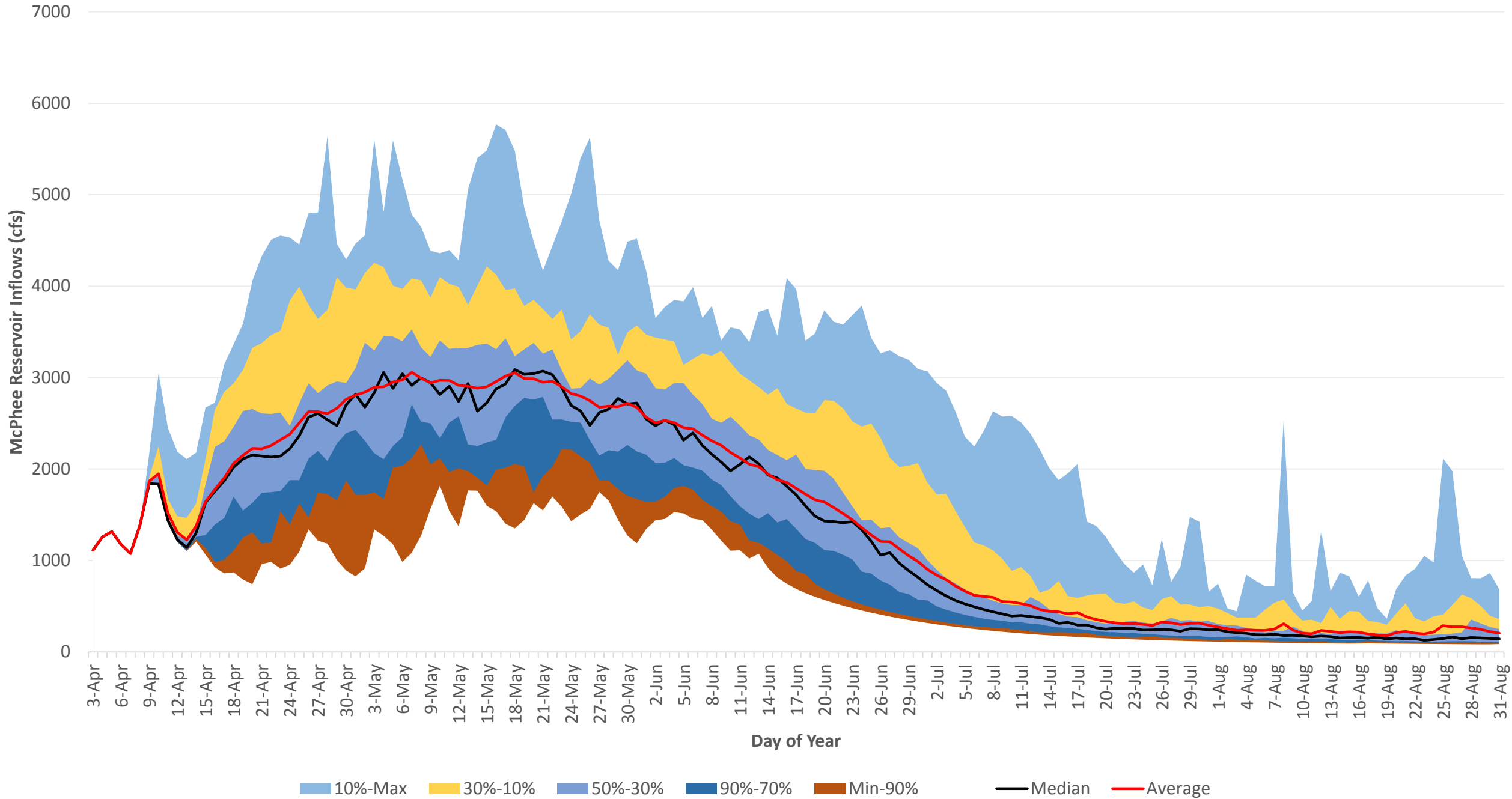


- 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992
- 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004
- 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015

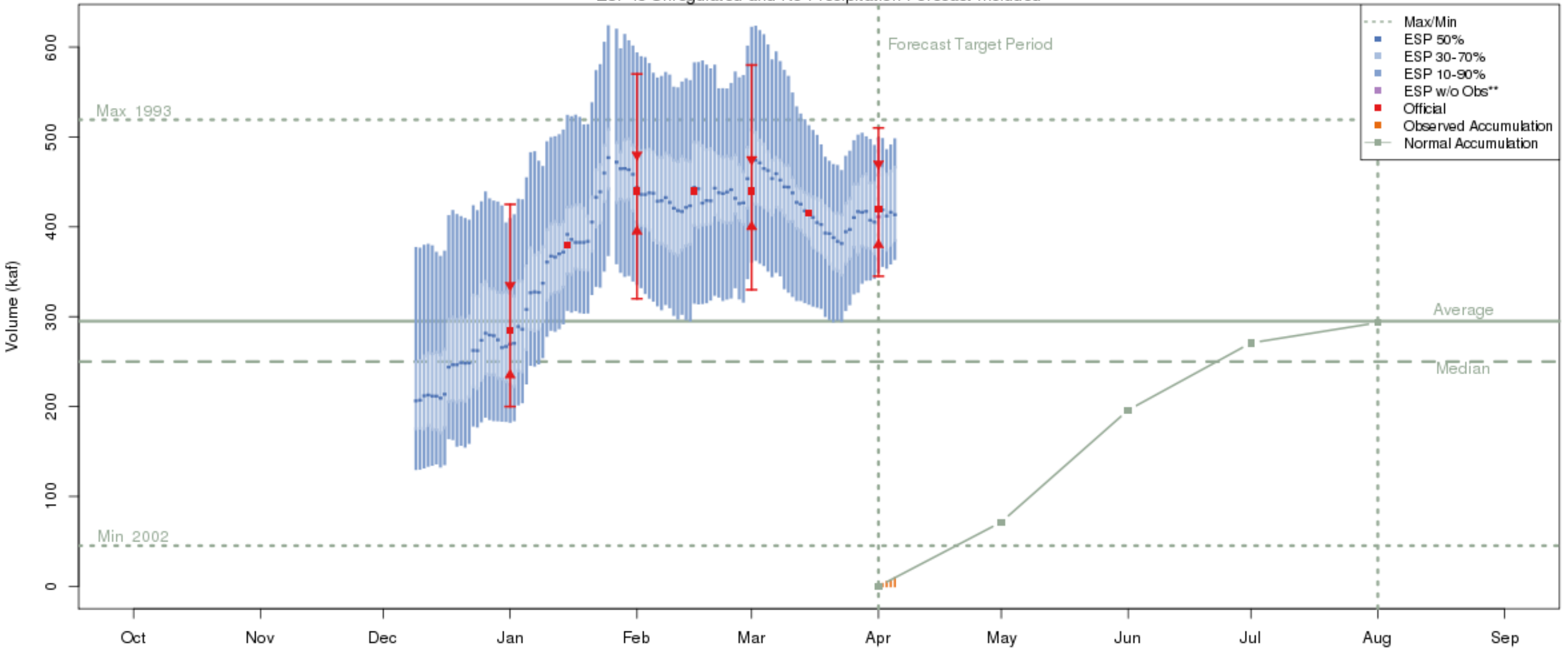
35 CBRFC Forecast Traces for McPhee Ensemble Streamflow Prediction



35 CBRFC Forecast Traces for McPhee Ensemble Streamflow Prediction



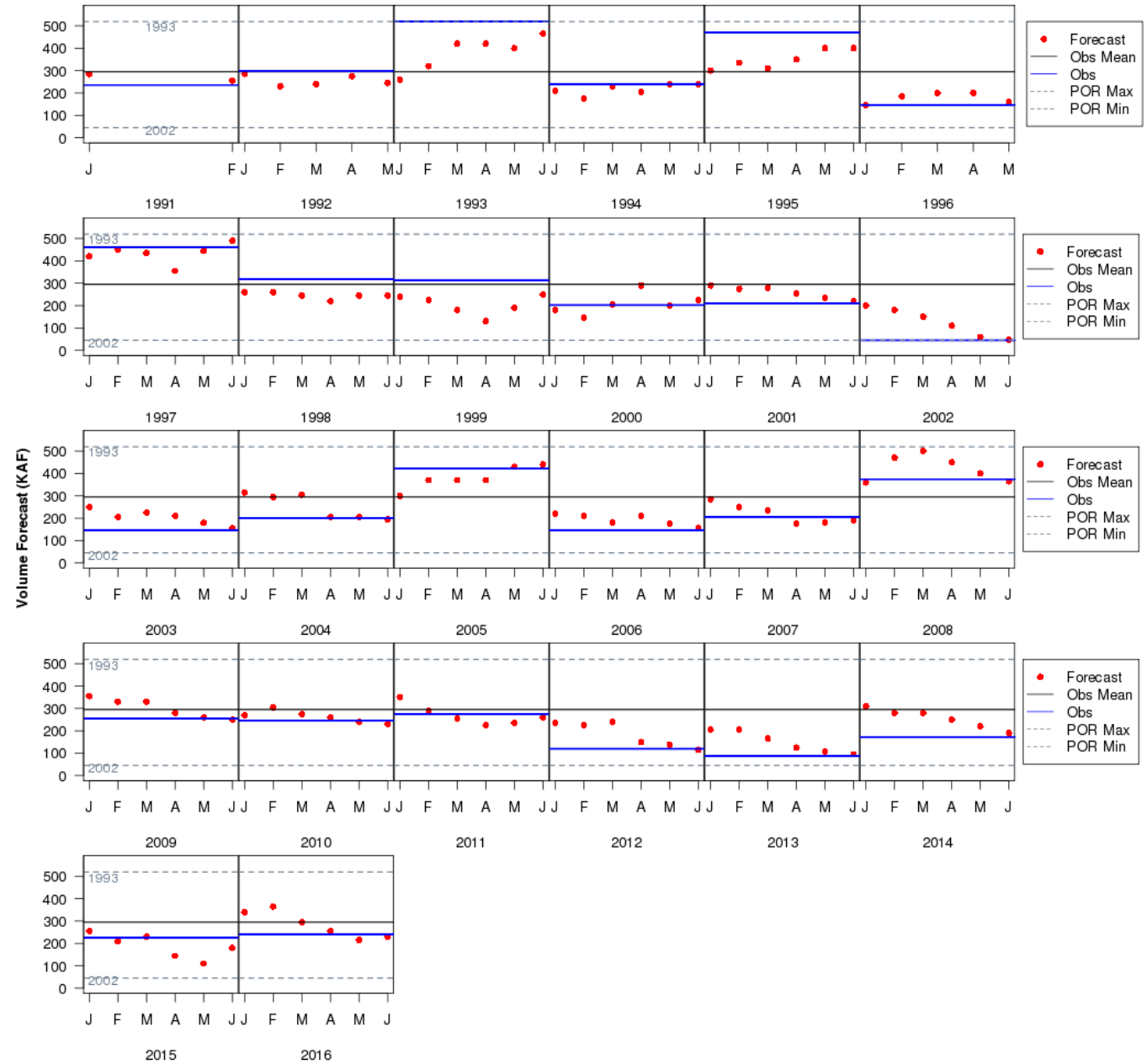
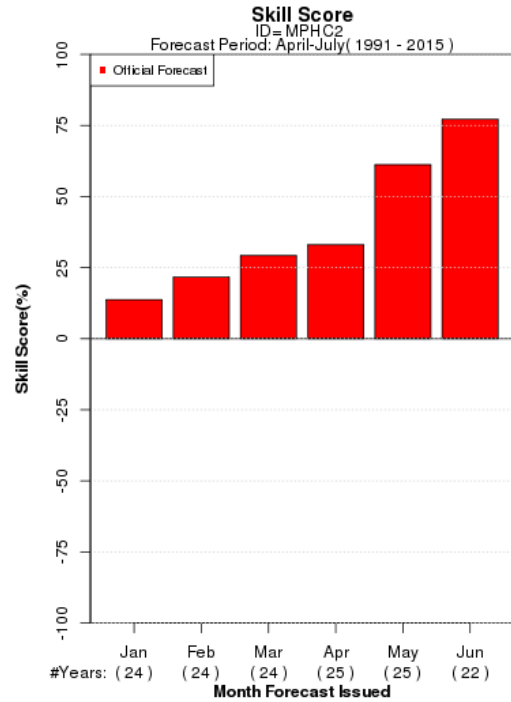
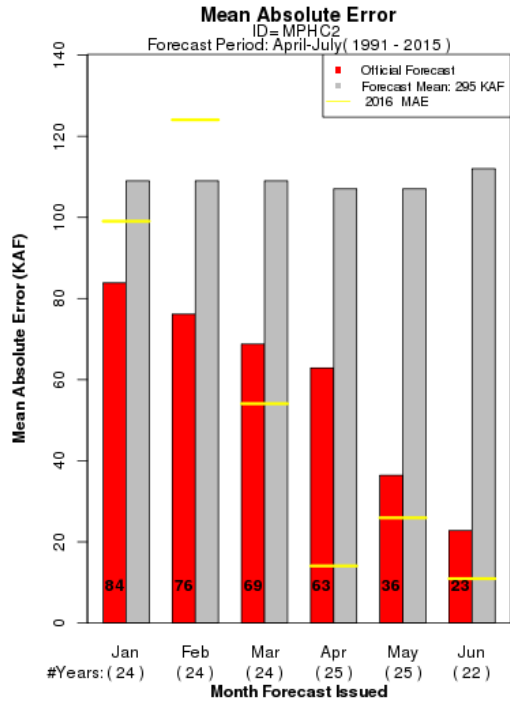
**Dolores - Mcphee Res (MPHC2)**  
**2017-04-01 Apr-Jul Official 50% Forecast: 420 kaf (142% of average)**  
 ESP is Unregulated and No Precipitation Forecast Included



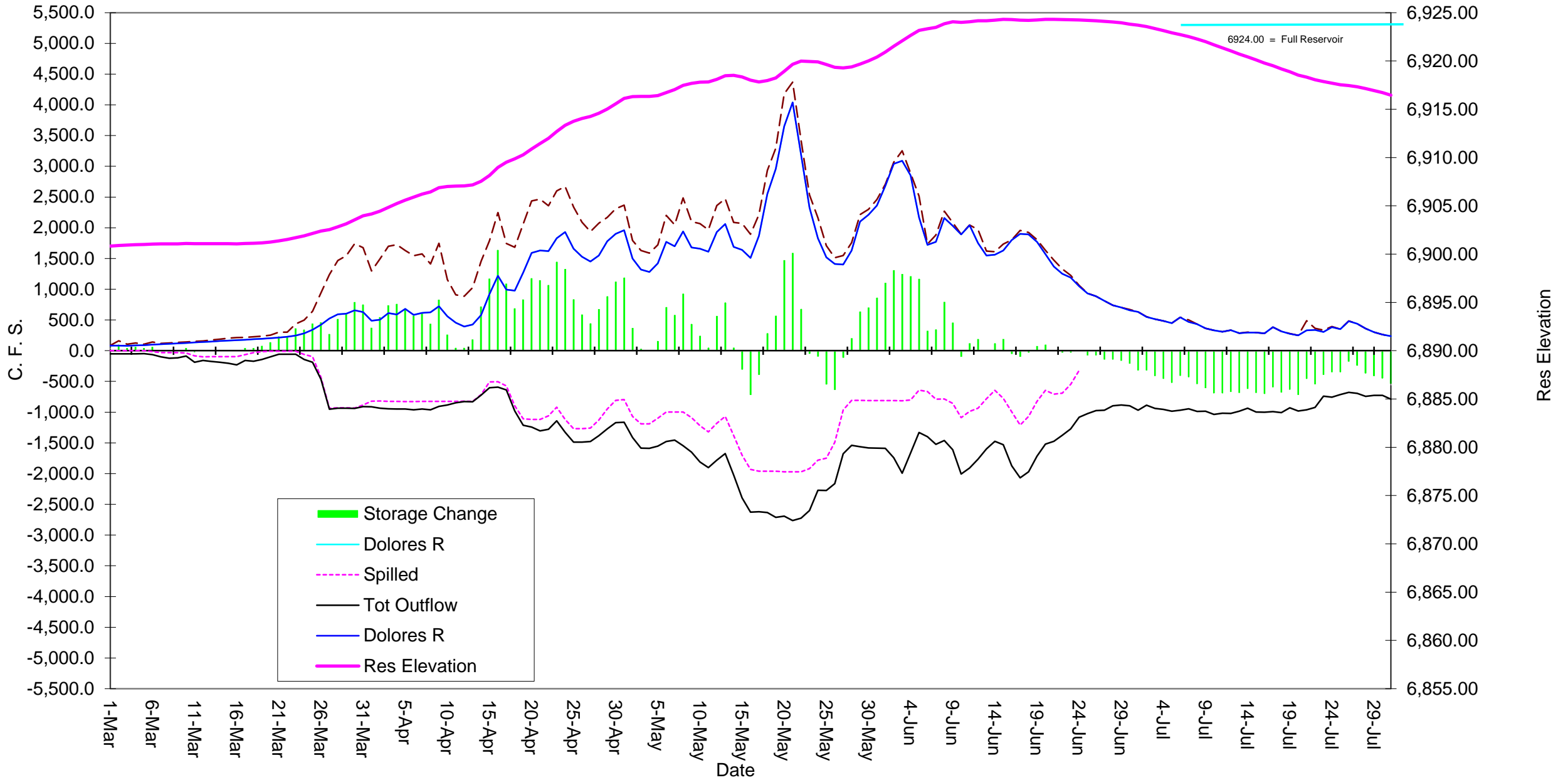
**The latest (2017-04-05) 50% ESP forecast is 413 kaf.**  
 Plot Created 2017-04-05 14:04:01, NOAA / NWS / CBRFC  
 \*\*Purple ESP forecasts do not include observed and are not total runoff.

# What is the Margin of Error associated with CBRFC's Forecasts?

MPHC2 : Historical Time Series ( 1991 - 2016 )

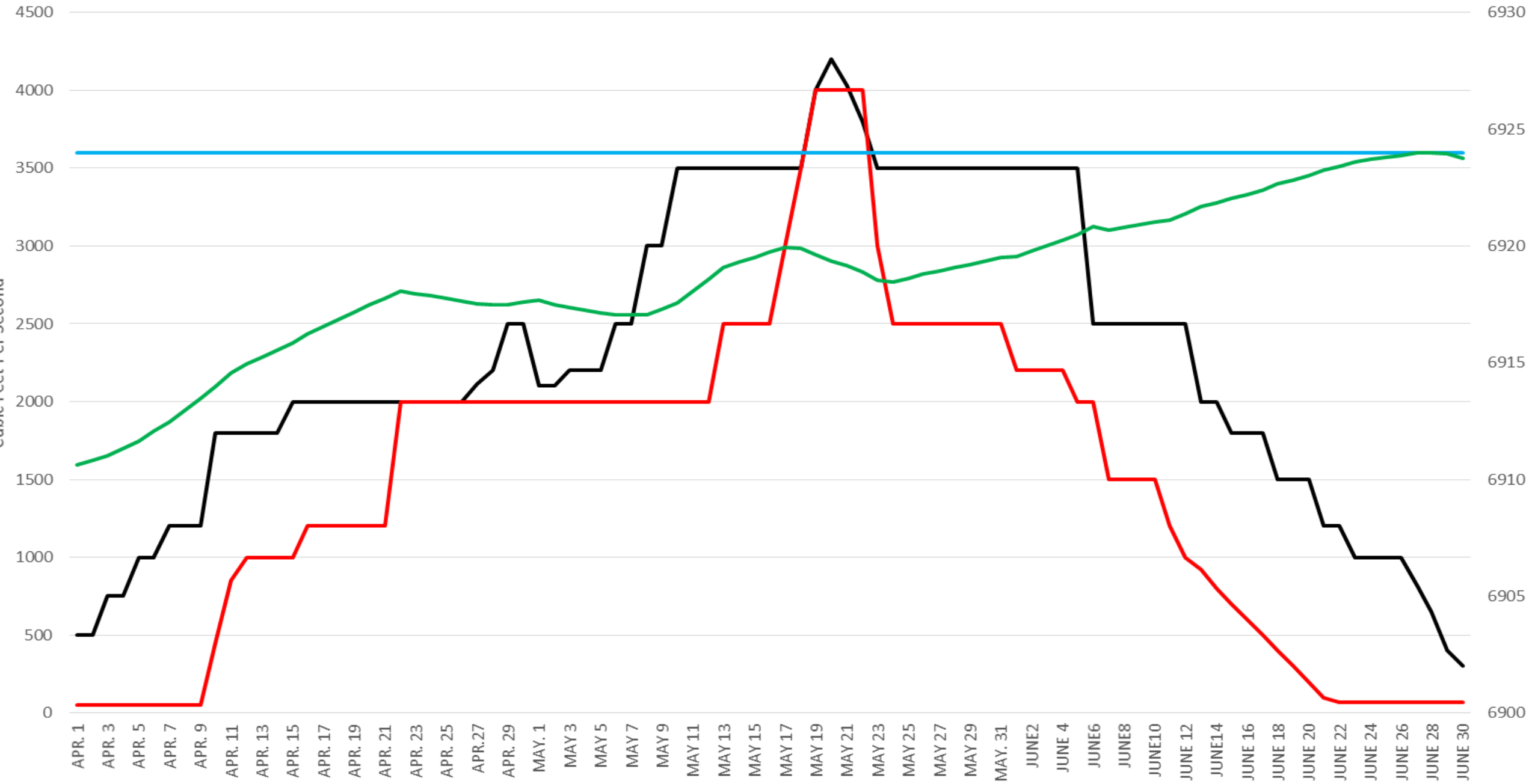


# 2008 Hydrograph (Mar-Jul)

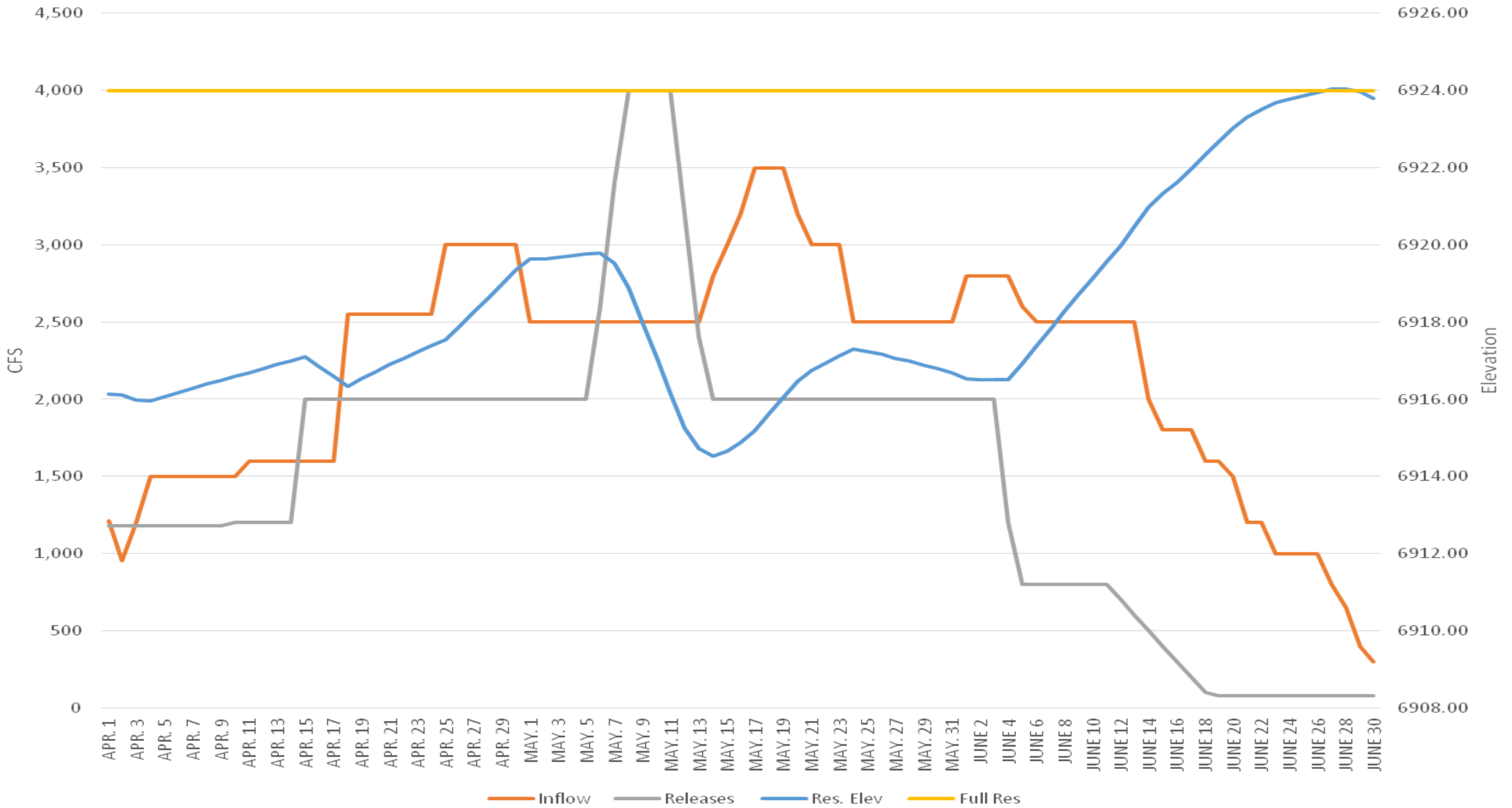




# March 1, 2017 Most Probable Forecast



# April 1 2017 Most Probable



## Expected Accomplishments of the 2017 Managed Release (Spill)

- Very long spill at relatively high flows
- High flows for channel maintenance
  - Scouring of the channel
  - Removal of sediment in pools (clean out pools)
  - Redistribution of cobbles
- Flood plain inundation
- Native vegetation establishment on floodplain
- Disadvantaging non-native fishes by extending high releases into their nesting season
- Native fish sampling
- Non-native fish removal
- Long spill will benefit the fishery pool
- Long spill will ensure higher carryover storage
- All project water allocations will be fully met