



# Project 184

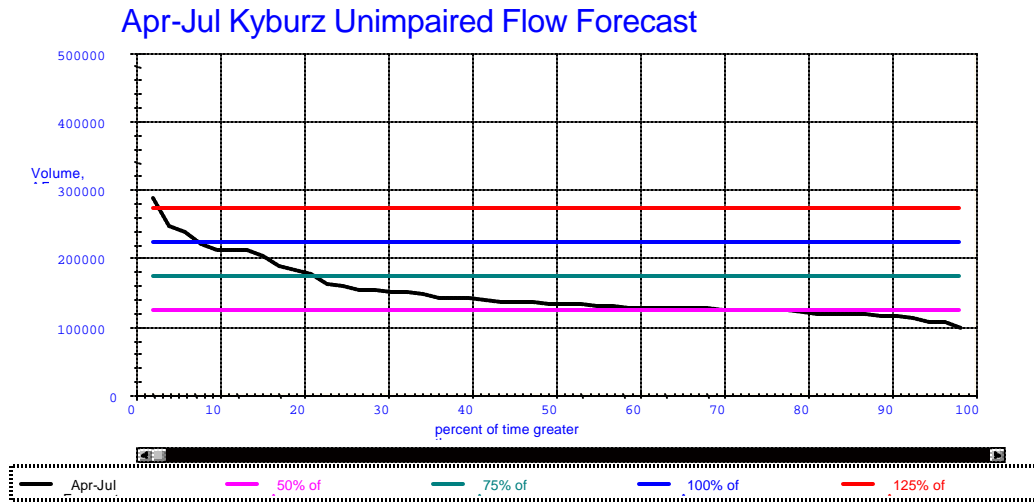
## May – January 2004

### Operations Plan

May 2004

#### April-July Runoff Forecast

The average temperatures this past March were record setters in some areas, causing significant early runoff that normally would come in the April-July period. The runoff characteristics this year are outside of the historic accumulation/melt data that we have available for our forecasts. Reasonable adjustments were made to the algorithm to compensate for the record setting spring temperatures. The graph below presents our best estimate of the range of flow that is expected for the South Fork American River near Kyburz. Our forecast and DWR's Bulletin 120 both designate 2004 as a "DRY" year for the American River Basin.



The forecasted April through July unimpaired flow at Kyburz plot, above, shows about a 78% chance that the basin will experience a dry or critical year this year. This forecast is drier than the previous forecast as we have had record temperatures and less than normal precipitation.

#### Project 184 Forecasted Operations

The following charts illustrate the results of the forecast. In each chart there are three traces. The blue circles represent the 10<sup>th</sup> percentile forecast which is a wet scenario. The red squares represent a 50<sup>th</sup> percentile forecast which is the median scenario, that is, actual flow will exceed the forecast half the time and will be less than the forecast the other half of the time. The black triangles represent a 90<sup>th</sup> percentile forecast which is a dry scenario. In May, the three forecasts should be very similar since the wet season is past and very little precipitation is expected until next fall.

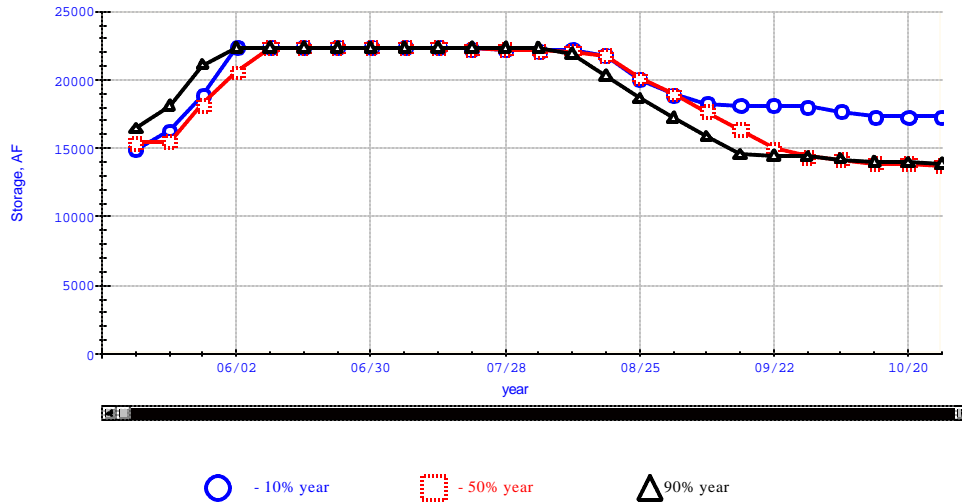
By examining the Apr-Jul Unimpaired Flow at Kyburz forecast plot, above, the corresponding year types can be estimated. In the 10<sup>th</sup> percentile scenario, we expect that the operations would be subject to the Below Normal storage and flow criteria contained in the Settlement Agreement. In the 50<sup>th</sup> we expect operations will be subject to Dry storage and



flow criteria and in the 90<sup>th</sup> percentile scenarios we expect the operations would be subject to the Critical storage and flow criteria

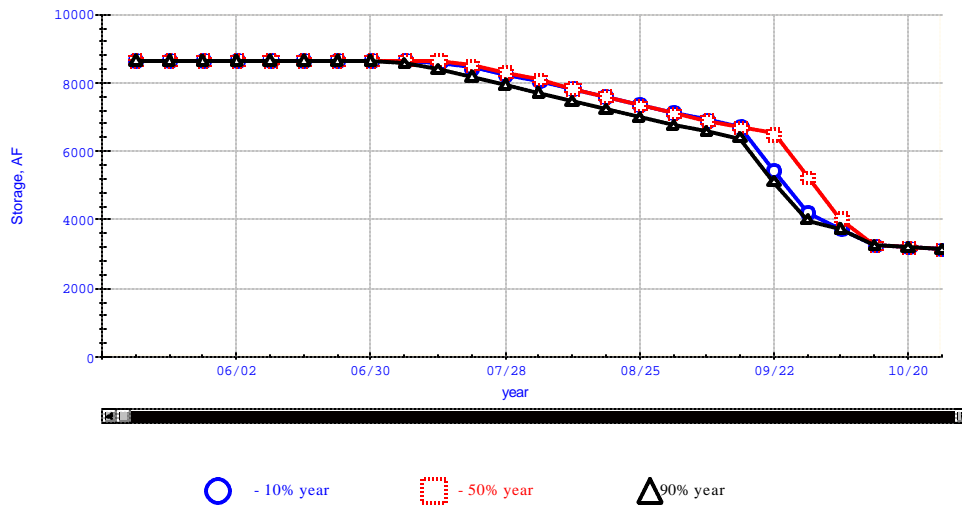
In each of these charts the traces are very similar. As we approach the end of the wet season, the range of possibilities is much smaller because at this point the likelihood of large storms increasing the snow pack diminishes.

### Caples Lake Storage Forecast



In each of the three scenarios, we expect Caples Lake to fill. Although each trace represents a different year type, many of the flow and storage operational criteria offset the water supply associated with the various year types resulting in similar operations in terms of storage.

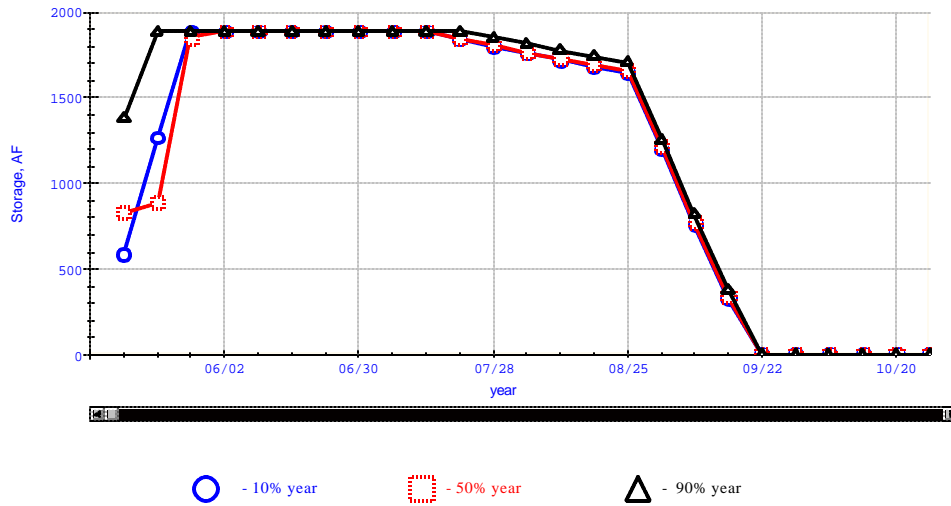
### Silver Lake Storage Forecast



The operation of Silver Lake is nearly identical in each scenario after the lake fills.

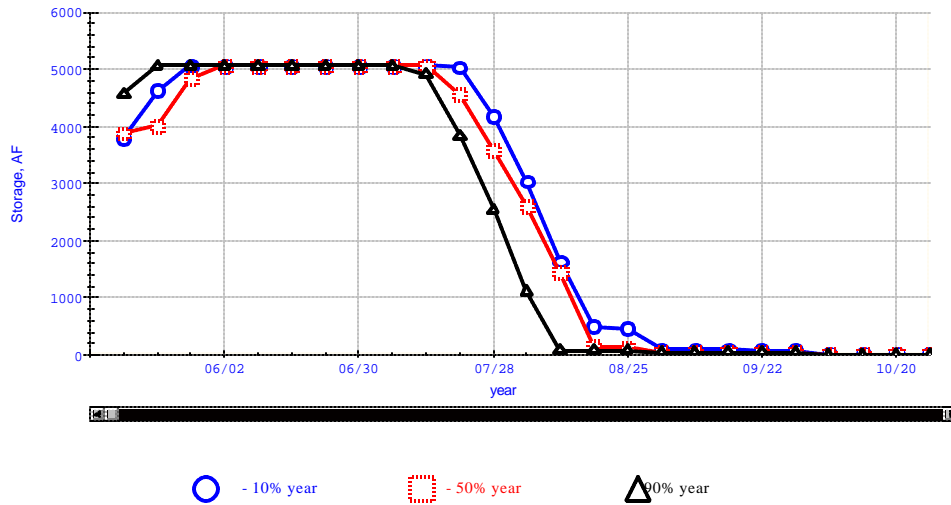


### Echo Lake Storage Forecast



Operations at Echo are very similar.

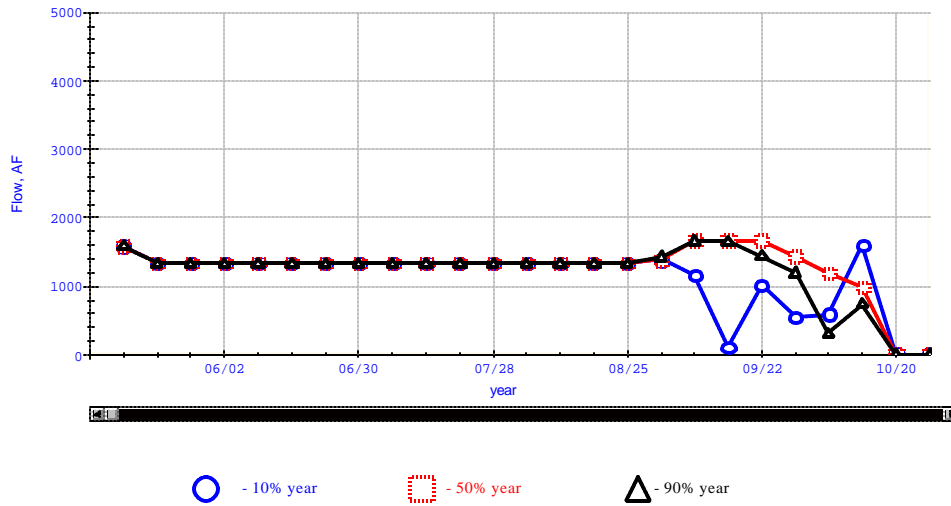
### Lake Aloha Storage Forecast



At Aloha, the drawdown varies slightly, as the wettest scenario appears to have a later runoff period than the 50<sup>th</sup> and 90<sup>th</sup> percentile scenarios.



Flow through the Power House



The flows through the powerhouse are greater in the 50<sup>th</sup> and 90<sup>th</sup> percentile scenarios than the 10<sup>th</sup> percentile scenario. This is largely due to the storage and flow requirements of the Settlement Agreement. The requirements are higher under the Below Normal condition and more flow must be bypassed at Kyburz. The requirement difference at Kyburz, shown below, is significant.

Kyburz Flow Requirement, cfs

| Month | BN  | Dry | Crit |
|-------|-----|-----|------|
| Jan   | 40  | 25  | 15   |
| Feb   | 40  | 30  | 20   |
| Mar   | 110 | 60  | 30   |
| Apr   | 180 | 120 | 60   |
| May   | 180 | 120 | 60   |
| Jun   | 180 | 120 | 60   |
| Jul   | 125 | 85  | 40   |
| Aug   | 65  | 18  | 18   |
| Sep   | 50  | 15  | 15   |
| Oct   | 40  | 15  | 15   |
| Nov   | 40  | 18  | 15   |
| Dec   | 40  | 25  | 15   |