M&I Shortage Policy - Central Valley Project

Revised November 20, 2000

POSITION #6: **CVP Water Allocation Process.** In response to the question: If the minimum level for M&I reliability is 75%, what is the mechanism to determine the shortages in between 75% and 100%, i.e. 90%, 85%, 80%?

BACKGROUND:

The M&I contractors are seeking operation and allocation trigger mechanisms for determining shortages between 75% and 100%. This would predict shortages based on storage levels, inflows, and precipitation. They questioned what operating criteria applies during shortages?

The purpose of the position paper #5 on the water allocation process and position paper #6 on Forecasting is to provide the information to the Contractors regarding the forecasting and water allocation processes. The water allocation process is also determined in accordance with law and contract language. If the contract language or the law conflicts with the policy, allocations will follow the law and/or contract language.

CVP Water Allocation Process

Beneficial uses of CVP water are many and varied. The ability of the CVP to meet its beneficial uses results from a combination of carryover storage and runoff into the reservoirs and unregulated and unstored flows in the system, together with the operational flexibility to deliver the water. In this context, operational flexibility refers to: the availability of supply at the time it is needed; physical storage and conveyance capacity; sufficient supplies and ability to control cold/warm water releases; and the ability to export water from the Delta without a "take" of threatened or endangered fish species. Increasing constraints have been placed on CVP operations by legislative requirements including implementation of the Central Valley Project Improvement Act of 1992 (CVPIA) and the requirement under Section 3406(b)(2) for 800,000 acre-feet of water for fish and wildlife purposes, ESA requirements including biological opinions covering protections of the winter-run chinook salmon and the delta smelt, and the State Water Resources Control Board's Decision D-1641 referred to as the Water Quality Control Plan. These constraints have removed some of the capability and operations flexibility required to actually deliver the water to CVP contractors. Water allocations South of the Delta have been most affected by changes in operations due to CVPIA and the biological opinions covering protection of the winter-run chinook salmon and the delta smelt. It is the combination of these factors which define the limits of water allocation, and it is the operator's perception of the diverse water needs and their interrelationship that identify the specific water allocation.

The CVP water allocation process begins in the fall when preliminary assessments are made of the next year's water supply possibilities, given current storage conditions and a range of hydrologic conditions coupled with associated operational requirements for the Water Quality Control Plan, implementation of the Central Valley Project Improvement Act of 1992 (CVPIA), and ESA biological opinion requirements. In addition, CVPIA Section 3406(b)(2) and the

Environmental Water Account (EWA) actions are now incorporated into the operations planning and forecasting process through ongoing coordination with Fish and Wildlife Service, Department of Fish and Game, and the National Marine Fisheries Service. The ability to accurately forecast these actions is somewhat limited by the lack of foreknowledge of hydrologic and fishery conditions. The protocol for coordinating EWA and implementation of CVPIA Section 3406(b)(2) actions are still under development.

These preliminary assessments may be refined as the water year progresses. Beginning February 1, forecasts of water year runoff are prepared using precipitation to date, snow water content accumulation, and runoff to date. All CVP's Sacramento River water rights contracts and San Joaquin Exchange contracts require that contractors be informed no later than February 15 of any possible deficiency in their supplies. In recent years, February 15th has been the target date for the first announcement of all CVP contractor's forecasted water allocations for the upcoming contract year.

Runoff forecasts and operations plans are updated at least monthly between February and May. Water allocations may or may not change as the year unfolds. Because a conservative forecast of runoff is used, forecasted water supply will likely increase as the year progresses. Although this may result in increased allocations, it also means that knowledge of the final allocation of water may be delayed until April, May, or June. This adds to the uncertainty facing agricultural contractors who need reliable forecasts of available supply as early as possible to assist in decision-making for farm management.

This forecast is done for two hydrologic conditions, 90% exceedance hydrology and 50% exceedance hydrology. (90% conditions would be encountered in dry years and 50% conditions would be encountered in years considered “normal.”) The National Marine Fisheries Service (NMFS) biological opinion requires Reclamation to use a conservative (at least 90% probability of exceedance) forecast as the basis of water allocations. Furthermore, NMFS reviews the operations plans devised to support the initial water allocation, and any subsequent updates to them, for sufficiency with respect to the criteria for Sacramento River temperature control. Allocations to water contracts are based on the 90% forecast as a requirement of ESA so that resources are not over-committed at the beginning of the year, thereby causing a reduction in allocations later on. The concept is that these initial forecasts will be conservative in nature. As time passes, at the end of spring in the year in question, the 90% and the 50% forecasts converge.

Carryover Storage and Water Allocation

Providing the water needed for contractor's beneficial uses requires a strategy that recognizes two competing requirements: 1) the need to retain sufficient carryover storage to reduce the risks of future shortages and to ensure sufficient temperature control capability; and 2) the need to draw from storage in a given year to provide sufficient water delivery to avert health, safety, economic, and environmental hardship.

Since the implementation of the NMFS biological opinion in 1993, CVP carryover storage is primarily an outcome of the annual balancing of the requirements to manage storage and releases

to provide for upper Sacramento River temperature control, with the use of CVP storage, diversion and conveyance facilities to make water available for other beneficial uses, including instream flows, water quality, water delivery and CVPIA purposes .

Individual CVP storage reservoir must be operated to provide reasonable assurance that minimum storage, instream flows, and diversion pools and hydroelectric power pools are able to be sustained. These elements are considered in the determination of water allocations. The CVPIA has required additional consideration by providing water for anadromous fish restoration and for providing fish and wildlife habitat.

Storage targets and release objectives are re-evaluated on an annual basis for Folsom because of its high probability of refill and relatively small amount of usable conservation storage. Because of low refill probability at Clair Engle and New Melones, long-term capabilities are more of a concern. For New Melones, water supply may already be over-allocated, so sustainable yield is a concern. For Clair Engle, releases in the current year to help meet water delivery, energy, and temperature control objectives must be balanced against retention of storage for use next year and beyond. Shasta's carryover is now mostly a by-product of temperature control requirements on the upper Sacramento; although use of Trinity Basin diversions can also affect Shasta carryover.

Even in above normal runoff years, it may no longer be possible to meet all competing needs for CVP water, especially south of the Delta. However, if sufficient carryover storage is available, CVP water allocations may be met partly with withdrawals from reservoir storage even in drier years. All beneficial uses of CVP water are adversely affected during prolonged droughts. Both environmental and economic systems are stressed by the cumulative impacts of dry conditions to a point where tolerance of continued drought is significantly weakened. When CVP storage is withdrawn to combat the effects of drought, the subsequent loss of carryover storage diminishes the capability of the system to mitigate the future impacts of a continuing drought.

Water Allocation Priorities and Categories

The water allocation process must consider the various categories of CVP water demands and the contractual amounts and deficiency criteria associated with each. These water demands may be categorized as follows:

Water Rights Settlement Agreements
Release Requirements or Diversion Restrictions for Environmental Purposes
Municipal and Industrial Water Service Contracts
Agricultural Water Service Contracts
Delivery Losses

Water rights settlement contracts and water service contracts are readily documented, consisting of agreements and contracts with specific terms and conditions. These terms and conditions may include deficiency provisions, terms for payment of water, repayment of capital obligations, etc. These terms and conditions vary depending on whether a contract is of a water rights, agricultural water service, or municipal and industrial type.

Release requirements or diversion restrictions for environmental purposes are imposed on project operations through water right permit terms and conditions (such as those in D-1641 and the Water Quality Control Plan), Endangered Species Act biological opinions, legislative mandates are exemplified by P.L. 102-575, which specified increased levels of supply and maximum deficiencies for wildlife refuges and management areas, and agreements that were generally made as part of the water rights process.

Delivery losses are included as a category of demand, because such losses will occur with the delivery of water and are in addition to contractual or other obligations.

The allocation of CVP water supplies can be portrayed as a two-tiered hierarchy, where all the above categories of water demands fall into one of two "groups": Group I and Group II. Under this allocation system, Group I water demands must be met first. Group I includes all categories of water demands with specifically defined minimum supplies. These include:

1) Sacramento River water rights and San Joaquin Exchange contracts, with associated minimum rates of delivery in "Critical" Shasta inflow years;

2) Refuge water supplies which must be provided a minimum of 75% supplies as prescribed in CVPIA;

3) M&I water supplies which are assumed to be sustained at 75% of maximum historical use, adjusted for growth;

4) conveyance, evaporation, and other such water delivery losses which are incidental to the delivery of contractual supplies.

Group II are all other agricultural water service contracts. Group II water allocations are made only after Group I obligations have been met. Further, the supplies available to Group II are then apportioned, based on contract entitlements which contain no minimum delivery provisions.

There are about 2.0 million acre-feet of such Group II water contracts for south of the Delta. Because of increases in certain Group I requirements over time (M&I and refuge water), and loss of some pumping opportunity due to recent changes in operations criteria, the potential for deficiencies to Group II exists every year.

Allocations to Agricultural and M&I Contractors.

Currently the Central Valley Project's general shortage policy allocates available water supplies as follows, ***unless otherwise dictated by contractual language***: agricultural water supplies are shorted down to 75 percent of their contractual water supply, before M&I water supplies begin taking shortages. Then agricultural and M&I shortages rachet down percentage by percentage until M&I water reaches 75 percent of its historic use and agricultural water is at 50 percent of its contractual water supply.

When the M&I's 75% reliability sets in, M&I will remain at 75% of its historic use, and agricultural water will continue to be shorted until agricultural water supplies reach 25 percent of their contract water supply. At this point CVP water supply availability, public health and safety levels, hardship water for agricultural demands, etc. will need to be evaluated. When agricultural water supplies have been reduced to 25 percent, M&I water supplies may be further shorted. Under the current operations, agricultural and M&I supplies rachet down percent by percent equally. The agricultural and M&I allocation percentages are displayed in the attached Table entitled "Current Water Allocation Process."

Some CVP Divisions, such as the American River Division, may experience shortages sooner than other Divisions because of the limited availability of CVP water supplies that can serve those areas.

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October 23, 2000

Current Water Allocation Process	
Agriculture	**M&I**
100%	100%
95%	ù
90%	ù
85%	ù
80%	ù
75%	100%
70%	95%
65%	90%
60%	85%
55%	80%
50%	75%
45%	ù
40%	ù
35%	ù
30%	ù
25%*,**	75%
20%*	70%
15%*	65%
10%*	60%
05%*	55%*
00%*	50%*
	45%*
	40%*
	35%*
	30%*
	25%*

* This is what is in the models. ** There may be an allocation of hardship water provided only for survival of tress and vines.