

L. ANALYSIS OF EFFECTS ON CVP USE OF JPOD (STUDY NO. 6)

Effect of Monterey Amendment (Proposed Project) on CVP Use of JPOD to Fill CVP San Luis Reservoir

Historical

The Department analyzed the historical record to determine whether the Proposed Project had any impact on the CVP share of San Luis Reservoir storage any time between 1995 and 2005. Any impacts would have been confined to those periods when the SWP Banks Pumping Plant was continuing to operate at its full permitted capacity under the Proposed Project in periods when the pumping rate would have otherwise been reduced in the baseline circumstances. There are 12 months in the historical period when the Department estimates such pumping differences occurred.

Each of the 12 months was reviewed carefully to determine whether the CVP would have been likely to want to use Joint Point of Diversion (JPOD) to fill CVP San Luis Reservoir, supplementing the capacity at the Tracy Pumps. The use of JPOD involves added energy costs for the CVP, and the decision whether to use JPOD is also dependent on Reclamations' judgment of whether the CVP share of San Luis Reservoir can be filled using only the Tracy pumps.

The CVP would only use any Banks capacity freed up due to reductions in SWP Delta diversions if storage in CVP San Luis was not anticipated to fill (and power cost considerations might limit that even further). Actual CVP San Luis filled in every year but one year (1997), and in that year was only short by about 40,000 acre-feet. Given conditions in that year, it appears that there was already available JPOD capacity that the USBR chose not to use. Therefore, the Department has concluded that there would have been no additional usage of Banks capacity by CVP during this analysis period, and thus there was no impact of the Proposed Project on the CVP use of JPOD.

Future

The Department also analyzed the potential for future impacts on CVP use of JPOD to fill CVP San Luis Reservoir. The analysis was performed by reviewing CALSIM II data on SWP San Luis storage and CVP San Luis storage from both the 2020 baseline and 2020 Proposed Project model studies to identify candidate years when the CVP might desire to use JPOD. Identification of these candidate years provides the maximum potential for JPOD use by CVP. For a number of reasons discussed in more detail below, it would be extremely difficult to determine in these candidate years whether or not Reclamation would elect to use JPOD, or how the Proposed Project, including the water management provisions not modeled in CALSIM, would have affected this use. Therefore, the analysis focuses on identifying the maximum potential JPOD use to fill CVP San Luis. Any effects of the Proposed Project on CVP JPOD use would likely be considerably less than this maximum potential impact.

Maximum Potential Impact

The analysis focused on those times when the SWP share of San Luis Reservoir was full because those are the times that added pumping at Banks may occur due to the Monterey Amendment actions described for the Proposed Project. While the CVP may seek and use JPOD at other times, the only impact of the Proposed Project on CVP JPOD use would occur when the SWP share of San Luis Reservoir is full and the CVP share is not full.

The analysis was performed by first comparing the timing of fill for the SWP and CVP shares of San Luis Reservoir between the baseline and Proposed Project model studies. Because the timing of fill was nearly identical between the two studies, the analysis focused on specific data from the 2020 Proposed Project study. The next step was to determine if SWP San Luis Reservoir filled; in years when it did not fill there would be no impact on CVP potential to use Banks to fill the CVP share of San Luis because the SWP would generally be making the full use of Banks pumps consistent with upstream releases, Delta inflow, and permitting constraints.

The next step was to determine whether and when CVP San Luis filled. If both CVP and SWP shares of the reservoir filled within a month of each other, it would be unlikely that Reclamation would request the use of Banks to help fill the CVP share of San Luis Reservoir because Reclamation would be able to project that the reservoir could be filled from the Tracy pumps alone, without the added energy costs of CVP JPOD use at Banks. Such years were excluded from the analysis. Also, in years when both CVP and SWP San Luis demonstrated a strong fill rate early, showing a likelihood of CVP San Luis filling by March, it was assumed that Reclamation would not request JPOD use.

In those years when the SWP share of San Luis filled (1,062,180 acre-feet) and the CVP share (965,660 acre-feet) did not fill, or the CVP share filled two months later than the SWP share, the potential for CVP use of JPOD was identified. Those years, and the judgment as to possible JPOD use, are tabulated below.

Table L-1
Analysis of Potential Use of JPOD by the CVP to Fill CVP San Luis Reservoir

Year	Data	Judgment on JPOD Use
1940	SWP filled March, dropped quickly in April; CVP only 644 TAF max	Possibly yes, but brief – less than a month; SWP full only in one month.
1943	SWP almost filled early in December 1942, full in January 1943, slightly lower in February, full again in March; CVP filled late: March	Probably yes.

Year	Data	Judgment on JPOD Use
1951	SWP filled in January; CVP filled late: March	Probably not; CVP nearly full in January and CVP likely assumed could fill on own.
1952	SWP filled in March; CVP at 871 in March, 943 in April	Probably not; CVP likely assumed could fill on own.
1954	SWP filled in March, dropped quickly in April; CVP only at 856 TAF max	Probably yes; brief – less than a month, SWP full only in one month.
1958	SWP filled in March, but nearly full in February; CVP filled late, in April	Probably yes.
1963	SWP filled in March; CVP at 905 at March, 887 April	Probably yes; for a brief period only – month or less.
1966	SWP filled in January; CVP just shy of full in March: 951 TAF	Probably not; CVP likely assumed could fill on own.
1973	SWP filled in January; CVP filled March, nearly full in February	Probably not; CVP likely assumed could fill on own.
1974	SWP filled in March, dropped quickly in April; CVP nearly full in March at 913 TAF, dropped quickly in April	Possibly yes; for a brief period only – month or less.
1975	SWP filled in March; CVP at 924 TAF in March, 919 TAF in April	Probably yes; for a brief period only – month or less.
1978	SWP filled January, CVP filled March	Probably not; CVP likely assumed could fill on own.

From the analysis summary above, it was concluded that the CVP may have wanted to use JPOD to help fill CVP San Luis reservoir in 7 of 73 years, or in other words, there was about a 10% probability of CVP JPOD use. To estimate the maximum potential impact of the Monterey Amendment on CVP JPOD use, it was assumed that all of the possible or probable use identified above would be precluded by the Proposed Project and would not occur. The magnitude of the maximum potential impact was based on CALSIM II output of San Luis storage and a rough estimate of the available fill period. The impact was limited by the amount of the unfilled storage in the CVP share of San Luis reservoir for each year of potential impact. Other factors, listed later in this section, may further limit any impact on the CVP. If CVP San Luis eventually filled, there was no water supply impact.

For each of the above years, the following results were determined:

- 1940: CVP could have used JPOD for less than a month around the end of March; no more than 100,000 acre-feet (CVP San Luis was 322,000 acre-feet less than full)
- 1943: CVP filled late March: no water supply impact
- 1951: CVP filled late March: no water supply impact
- 1952: CVP could have used JPOD for a month or less in late March-early April, until VAMP; probably would not have requested JPOD considering close to

- full; if had requested JPOD, might have filled CVP San Luis (CVP San Luis was 23,000 acre-feet less than full)
- 1954: CVP could have used JPOD for less than a month around the end of March; no more than 100,000 acre-feet (CVP San Luis was 110,000 acre-feet less than full)
- 1963: CVP could have used JPOD for a month or less in late March-early April, until VAMP; might have filled CVP San Luis (CVP San Luis was 61,000 acre-feet less than full)
- 1974: CVP could have used JPOD for a month or less in late March-early April, until VAMP; might have filled CVP San Luis (CVP San Luis was 53,000 acre-feet less than full)
- 1975: CVP could have used JPOD for a month or less in late March-early April, until VAMP; might have filled CVP San Luis (CVP San Luis was 42,000 acre-feet less than full)

Based on these results, in six of 73 years, or about an 8% probability of occurrence, there could be a water supply impact to the CVP. The maximum potential impact would occur if the Proposed Project completely foreclosed CVP JPOD use in any of those years because Banks was meeting increased SWP diversions related to the Proposed Project. The maximum water supply impact is estimated at a maximum of 100,000 acre-feet in any year, which occurred in two years (about a 3% probability of occurrence), and in smaller amounts ranging from 23,000 to 61,000 acre-feet in four years (about a 5% probability of occurrence). The average of this maximum potential impact over the 73-year study period is about 5,000 acre-feet per year.

Note that given the monthly time step of the CALSIM II model output, the short durations available for JPOD use to fill CVP San Luis when the SWP share is full (frequently less than a month or two), fluctuations in demand as influenced by daily weather conditions, and the daily real-time operation of the Delta, these estimates derived from CALSIM II results are rough approximations. The fisheries evaluation in this EIR provides estimates of the daily impact of the Proposed Project on the availability of added capacity at Banks. The reader may want to review that analysis for added insight into the daily accounting that influences the availability of Banks for JPOD.

Factors That May Reduce Potential Impact

As noted previously, Reclamation does not necessarily use JPOD every time it is available, even when it is unsure of whether it can completely fill CVP San Luis. The maximum potential impacts identified above would be reduced if for financial reasons Reclamation chose not to use JPOD in a particular year (to avoid the added energy costs it would be charged for that use), or if any of a number of operational factors constrained the amount of JPOD pumping that could physically occur. The operational factors that can reduce the magnitude of the maximum potential impact on CVP JPOD use include:

- SWP demands, which would determine the maximum amount of pumping potentially available to the CVP for JPOD use;

- CVP demands from Tracy, and permitted Tracy pumping capacity, which would determine the amount of water pumped at Tracy that could be used to fill CVP San Luis;
- the pumping capacity of the Gianelli Pumping-Generating Plant as a function of the water surface in San Luis Reservoir: the effective pumping rate decreases as the reservoir fills and the head (lift from O'Neill Forebay to the water surface in San Luis Reservoir) increases;
- the difference between the amount of water pumped at Tracy that could be used to fill CVP San Luis Reservoir and the capacity of the Gianelli pumps to lift the water into San Luis Reservoir: if Tracy is already providing sufficient flows to meet the capacity of the Gianelli pumps, there is no need for JPOD; otherwise JPOD use at Banks would be limited to the difference in these rates;
- the number of days that a difference would occur, as influenced by the start of VAMP or an increase in demands requiring releases from San Luis Reservoir;
- use of JPOD by the EWA Program or its successor to repay debt accrued in San Luis Reservoir and to develop EWA assets in San Luis Reservoir. The EWA Operating Principles Agreement grants EWA a 50% share of JPOD when it can use it; this sharing of JPOD is most beneficial to EWA when San Luis Reservoir is full, and would reduce the CVP use of JPOD by 50% in such instances; and
- relevant SWRCB permitting requirements, specifically approved water quality, water level, and fish response plans. If approved plans are not in place, or physical conditions are not acceptable (e.g., Delta water levels are low enough to adversely affect in-Delta diversions), JPOD use may not be allowed.

Note that the effective rate at which the CVP might be able to use JPOD to fill the CVP share of San Luis Reservoir can vary during the period JPOD is available with changes in SWP and CVP demands during that period, changes in the permitted pumping rate at Banks and Tracy, the EWA's need to share JPOD with the CVP, and the decreasing rate of fill of San Luis Reservoir as it nears 100% of total capacity.

The financial and operational considerations discussed above can limit CVP JPOD use in any year, under both baseline and Proposed Project conditions. Whether the Proposed Project would further limit this use would be difficult to determine. While CALSIM II models certain provisions of the Proposed Project (Table A retirement, permanent Table A transfers, and water allocations), it does not model the water management provisions of Articles 54 and 56.

Some of the water management provisions (such as storage outside a contractor's service area under Article 56) might at times result in an increase in SWP water demand, and thereby increase or extend Banks pumping in the wet winter months, with a potential adverse impact on possible CVP JPOD use. However, as contractor demands increase in the future, any demand increases due to these provisions would likely decrease in magnitude and frequency (due to less unused water to store as demand increases), with a corresponding decrease in potential adverse impacts on CVP JPOD use.

Another water management provision, carryover storage under Article 56, would have a beneficial effect on CVP use of JPOD. Under this provision, SWP contractors would leave more of their supplies in SWP San Luis at year-end as a hedge against the next year's allocations, which would have the effect of allowing SWP San Luis to fill earlier in many years and increase the opportunities for the CVP to use JPOD to fill CVP San Luis. It would be difficult to impossible to estimate the impact of carryover storage on San Luis fill dates, and to determine how that earlier fill might free up added JPOD capacity for the CVP. However, there would be some beneficial effect on CVP use of JPOD because of the carryover storage provision of the Proposed Project, which would likely more than offset any adverse impacts due to the potential, occasional demand increases of other water management provisions.