

Memorandum

To : Gerald H. Meral
Deputy Director

Date : January 26, 1978

File No.:

Albert J. Dolcini, Chief
Northern District

Subject: Campbell-Boatwright
Eel River Proposal

From : Department of Water Resources

Your mini-memo of January 24 asks for background information on the Eel River plan advanced this week by Senator Campbell and Assemblyman Boatwright.

The proposal is based on a study by Amalio Gomez and William Doyle, independent consulting engineers retained by San Joaquin Valley water interests. The bill introduced earlier this week does not specify the facilities to be constructed, but its cost figure of \$3.6 billion was taken from the consultants' study. The plan outlined by Gomez and Doyle was adopted almost entirely from DWR reports; it includes the following features:

<u>Stage 1*</u>	<u>Cost, Millions of Dollars</u>	<u>Yield MAF/yr.</u>
Dos Rios Reservoir (7.6 MAF)	\$ 600	0.92
English Ridge Reservoir (1.8 MAF)	} 1,000	
Wilson Valley Reservoir (0.04 MAF)		
Bear Valley Reservoir (1.98 MAF)		
Elk Creek Pump Plant (1450 cfs, h=120')		
Elk Creek Tunnel (9.5 mi., 15' diam.)		
Garrett Tunnel (13.3 mi., 14' diam.)		
WV-BV Pump Plant (1250 cfs, h=540')		
WV-BV Tunnel (9.1 mi., 15' diam)		
Subtotals	\$1,600	1.20
 <u>Stage 2**</u>		
Yellow Jacket Reservoir (7.0 MAF)	\$1,400	1.00
Conveyance facilities to Dos Rios	} 450	
Grindstone Tunnel (23.4 mi., 17' diam)		
Rancheria Reservoir (1.26 MAF)		
Subtotals	\$2,000	1.10
GRAND TOTALS	\$3,600	2.30

* Alternative C2 from "Alternative Eel River Projects and Conveyance Routes, Appendix B, Supporting Engineering Studies," Northern District, December 1972.

** Combination of features from Bulletin No. 172, "Eel River Development Alternatives, Supporting Studies Appendix," January 1970.

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The costs in the preceding tabulation were apparently indexed directly from the DWR reports (except for the Yellow Jacket Reservoir, which is smaller than that shown in our report) and we get about the same answers when we repeat that process. The yield of 2.3 million acre-feet (MAF) per year is overly optimistic, but the consultants did note that it was subject to some adjustment. Our analysis indicates that the features shown could provide approximately 2.0 MAF per year over a repetition of the historic 1928-34 dry period, but the available water supply would be inadequate to maintain a long-term average annual yield of more than about 1.1 MAF. (This ratio of average yield to dry period yield is comparable to that used in our 1968-72 Eel River Studies, which were predicated on firming surplus flows in the Sacramento-San Joaquin Delta.) We derive the 1.1 MAF figure as follows:

	<u>MAF/yr.</u>
Average full natural flow at Yellow Jacket =	3.08
Depletion by Potter Valley diversion and local use =	<u>-0.18</u>
Present impaired runoff at Yellow Jacket	2.90
Required Yellow Jacket fish release	<u>-1.05*</u>
Storable flow in Eel River Basin	1.85
Storable flow on Cache Creek (Wilson V. & Bear V.)	0.17
Storable flow on Stony Creek (Rancheria)	<u>0.15</u>
Total storable inflow to plan reservoirs	2.17
Average correction for evaporation (6 reservoirs)	<u>-0.23</u>
Net flow available for development	1.94

This reservoir system contains a total of 12.68 MAF of conservation storage. On a long-term average basis, the water to refill that storage space when it empties is the portion of the above 1.94 MAF that is not devoted to export. If we assume that the reservoir system should be able to refill completely within 15 years, then about 0.84 MAF (1/15 of 12.68) of the 1.94 MAF available for development cannot be committed, leaving 1.1 MAF per year available for long-term average yield.

It is theoretically possible to export a greater share of the flow available, but this could be accomplished only at the expense of increasing the risk of not being able to meet the claimed dry period yield. In the extreme case, the reservoir system could be essentially emptied each year; this would produce an average yield of approximately 2 MAF per year, but the dry period yield would disappear entirely.

You also asked about the cost of getting Eel River water "to and through the Delta without the Peripheral Canal". Physical works required would include conveyance systems on lower Stony and Cache Creeks, Sacramento River seepage and erosion mitigation measures, channel improvements in the southern Delta, and the additional pumping units at the Delta Pumping Plant. Costs of these measures are not readily available, but they would not be great in comparison to the \$3.6 billion cost of the entire plan. The major "cost" of getting the

* This is the preliminary recommendation of the Department of Fish and Game, established during the Department's 1969 analysis of Eel River alternatives.

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added water through the Delta would be the additional Delta outflows required to allow it to be conveyed to the pumps. In effect, part of the new water would have to be devoted to Delta outflow so that the remainder could be pumped. The percentage of the Eel Project water that could be pumped is a function of how the project would operate and the Delta quality standards to be met. We consulted with John McClurg and Ed Huntley and concluded that, for now, all we can say is that a "substantial" amount of the Eel Project yield would be lost in crossing the Delta via existing channels.

Our biggest concern about the proposed Eel River Project is its environmental impact. During our years of Eel River Studies, we became acutely aware of the sensitive environmental issues involved, particularly those associated with developments on the lower Eel. In fact, Bulletin No. 172 notes that we dropped Yellow Jacket Dam from further consideration due to its extremely high cost and major environmental detriments. As you well know, this proposal will trigger enormous opposition from environmental interests. We have grave doubts that the plan would be approved in any statewide referendum. If it were approved, we suspect that legal challenges would delay it interminably or stop it entirely.

cc: W. MacRostie, Central District
Ed Huntley, Central District
J. O. McClurg, Room 1114