

associated with the augmentation to a portion of the joint venture, and important advantages might be provided the augmentation effort by plant siting in Mexico.

Because of the obvious uncertainties of international agreements and timing associated with siting of the plant in Mexico, this reconnaissance report has been based upon a plan which is located entirely within the United States. If feasibility studies are undertaken, however, further attention should be given to the progress of the study group's efforts and economic analyses made of the alternative of utilizing the joint venture as a source of augmentation water.

National Water Commission

Congressional action is well advanced on pending legislation to establish a National Water Commission. If established, it is anticipated that the commission will address itself to the problems of water supply in the Pacific Southwest at an early date. Among the factors which should be considered by the commission is the practicability of augmenting the Colorado River by desalting of sea water. To meet the objectives outlined in this report, it will not be necessary to initiate construction of desalting facilities until after 1980. The National Water Commission's recommendations will be available well in advance of the need to make a final decision to proceed with construction.

Need for additional augmentation

This reconnaissance study has been directed toward the provision of sufficient water to prevent shortages in the 7.5 m.a.f. of annual consumptive use apportioned among the State of the Lower Colorado River Basin. The provision of this quantity of water would, of course, not supply adequately the potential uses of the Pacific Southwest. California uses from the river presently exceed 5.0 m.a.f. annually and would, with this augmentation in effect, be reduced to an assured 4.4 m.a.f. Estimates of Arizona's present ground-water overdraft made for earlier reports are 2.2 m.a.f. annually as compared to about 1.5 m.a.f. which would be supplied from the Central Arizona Project. Nevada's allocation has been estimated to be adequate to provide for municipal and industrial growth of the Las Vegas metropolitan area until 2020, but population growth is exceeding the projections annually in this area. One potential source for provision of water would be by desalting, as is being studied by the joint committee discussed above. The ability to provide staged construction of desalting facilities has the advantages of flexibility in timing capacity to meet needs, spreading the time of construction investment, and maximizing the use of advancing technology. Future studies of desalting facilities should include consideration of additional capacity for long-range needs. If such capacity can be shown to be desirable, plans should include provisions which would facilitate future stages.

The Upper Basin has committed the major portion of its available water supply. Large population centers within and adjacent to the Upper Basin will remain dependent on the Colorado River for the development of increased supplies of municipal water. Mineral resources of phosphates, oil and gas, coal, trona, uranium, and oil shale exist extensively in the Upper Basin and would depend on a supply of additional water for development. Agricultural opportunities also exist which could use additional water.

Potential pumped storage

In the course of the reanalysis of the Central Arizona Project, which was performed in late 1966, and other reconnaissance-grade investigations, the Bureau of Reclamation has made preliminary examinations of a number of potential pumped storage, hydroelectric plants in Arizona. The plan which appeared most favorable, based upon available data, was the Mohave pumped storage plan which is located in Arizona adjacent to Lake Mohave about 21 river miles downstream from Hoover Dam.

The existing Lake Mohave, the reservoir formed by Davis Dam, would serve as the lower reservoir for the installation. Low cost thermal electric power from plants of power systems in the Southwest would be used at times of low power demand to pump water, using reversible pump-generators, to an upper reservoir. The 49,000-acre-foot upper reservoir would be formed by excavation and damming of a natural depression on Malpais Mesa almost 1,400 feet above Lake Mohave.

During periods of peak power demand or at times of sudden loads on the integrated power systems, water would be released from the upper reservoir back into Lake Mohave, providing a source of quickly available, high value peaking power.