

Alternative routes

Four alternative routes for conveyance of desalted sea water to the Colorado River were examined for purposes of comparison to the base plan. For each alternative route, costs were estimated for the provision of 2 m.a.f. and 2.5 m.a.f. of augmentation supplies. (See map of alternative routes.)

Those alternative plans which involve the delivery of desalted water into the Colorado River downstream of Hoover Dam (plans A, B, and D) would not have the use of storage capacity of Lake Mead for regulation. As a result, preliminary studies indicate that these plans would require additional regulatory storage as a feature of the augmentation plan.

Such storage near the terminal point of the conveyance works would also provide an opportunity to mix the very high quality desalted water with the natural river water. It appears that provisions for adequate mixing will be essential to optimize the benefit from use of the desalted water to reduce the river's salinity, as well as to avoid the problems associated with delivering water of widely varying quality to users.

Cost estimates for plans A, B, and D include the costs of a regulatory reservoir on the Bill Williams River arm of Lake Havasu located approximately 2 miles upstream from Parker Dam. The Bill Williams Reservoir would have a storage capacity of about 800,000 acre-feet, and the estimates include provisions for pumping from Lake Havasu into the reservoir. It would provide sufficient storage capacity to accommodate hydraulic mixing as well as regulatory storage to maintain efficient operation of the river.

The estimates for plans C and D incorporate dual-purpose nuclear desalting complexes situated at El Golfo de Santa Clara on the Gulf of California. As discussed later, siting of the plants in Mexico would involve international agreements. A joint study group formed by the Governments of the United States of America and Mexico and the International Atomic Energy Agency is currently conducting an assessment which will serve to define these considerations.

Summary tabulations of the costs and physical features of the alternative routes follow:

ALTERNATIVE IMPORT ROUTES (2,000,000 ACRE-FEET)

	Pacific-Mohave (A)	Pacific-Havasu (B)	Gulf-Mead (C)	Gulf-Havasu (D)
Construction cost (million dollars):				
Nuclear desalting facilities ¹	904	899	931	854
Conveyance system.....	1,837	1,868	2,357	1,199
Total.....	2,741	2,767	3,288	2,053
Annual costs, O.M. & R.² (million dollars):				
Nuclear desalting facilities.....	42.8	42.5	43.8	41.2
Conveyance system.....	4.6	4.2	8.3	4.2
Total.....	47.4	46.7	52.1	45.4
Physical features (miles):				
Tunnels.....	66	94	38	27
Pipeline.....	87	77	130	27
Canal.....	101	122	184	138
Penstocks and discharge lines.....	13	10	17	11
Total.....	267	303	369	203
Pumping plants:				
Number of plants.....	9	8	19	10
Total dynamic head (feet).....	4,105	3,381	5,045	5,154
Installed capacity (mw.).....	1,357	1,117	1,667	1,650
Power drops:				
Number of drops.....	4	3	6	2
Design head (feet).....	2,114	1,418	2,315	451
Installed capacity (mw.).....	481	323	527	94

¹ Includes allocated power costs for project pumping.

² Includes fuel costs, interim replacements, and sinking fund to rebuild at the end of 30-year service life.