AUBURN UNIT
CENTRAL VALLEY PROJECT
CALIFORNIA

A REPORT ON THE FEASIBILITY OF WATER SUPPLY DEVELOPMENT

UNITED STATES
DEPARTMENT OF THE INTERIOR
FRED A. SEATON, *Secretary*

BUREAU OF RECLAMATION
FLOYD E. DOMINY, *Commissioner*
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REGION 2

SACRAMENTO, CALIFORNIA
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delta, and/or bay areas are faced with the problem of meeting the water needs of a rapidly increasing population and expanding industry.

The city of Stockton currently obtains its water supplies from ground water sources; the other areas from ground water or surface supplies. Additional supplies which could be obtained from these sources are limited, and both may be inadequate to meet anticipated future needs.

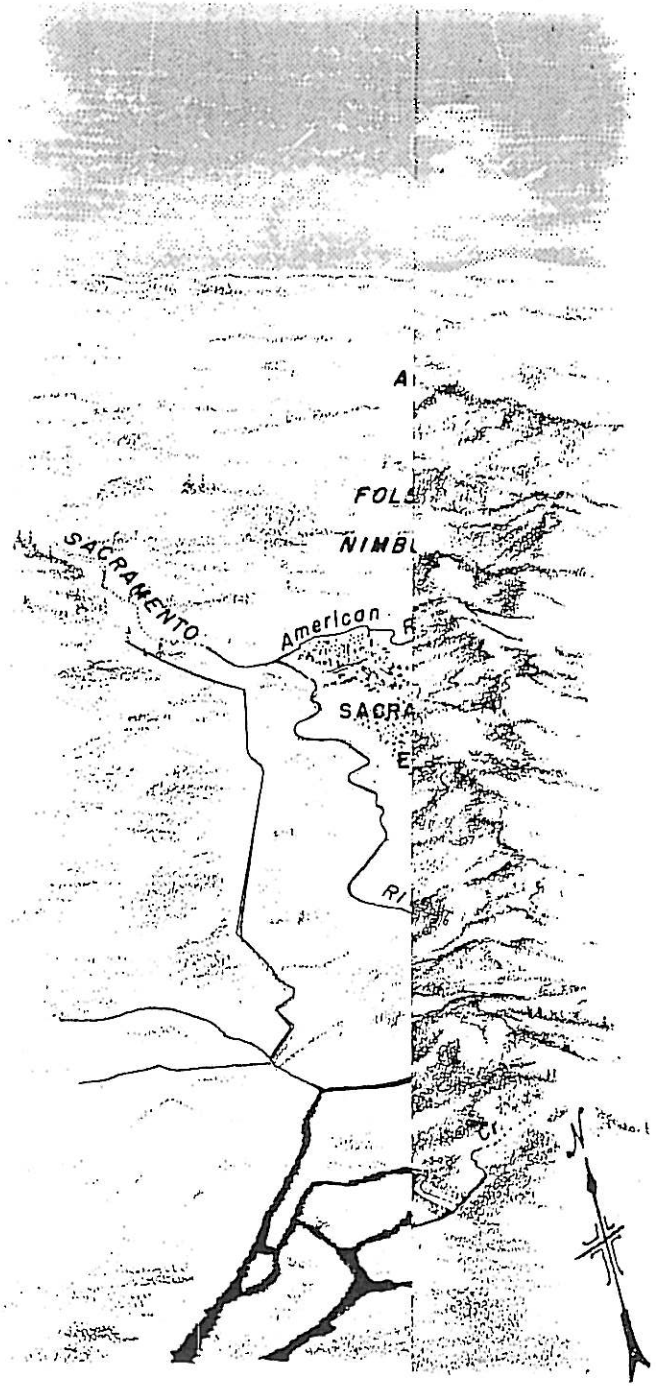
Development of additional supplies from local ground water sources by the city of Stockton is hazardous for the reason that any further appreciable decline in ground water levels could permit saline water intrusions with a resulting degradation in water quality. Should this saline intrusion occur, it would not only preclude the possibility of developing additional supplies from ground water sources, but would also make portions of the existing supplies unusable.

The incremental yield of the Central Valley project attributable to the Auburn unit combined with the incremental yield of the Central Valley project attributable to the existing Folsom Lake would provide the water supply necessary to stabilize the ground water table which is drawn on for municipal and industrial supplies in the Folsom South unit area. Auburn unit could provide the water required to meet the anticipated future needs of the city of Stockton and the other areas for many years.

Generation of hydroelectric energy.—The general power market area for the Auburn unit is northern California, which is basically served by the Pacific Gas & Electric Co. The local market is the five-county area of Amador, El Dorado, Placer, Sacramento, and San Joaquin Counties. In the local market area the Sacramento Municipal Utility District serves the major portion of Sacramento County; the rest of the area being served by the Pacific Gas & Electric Co. The areas, both general and local, are in need of additional electric power for farms, for homes, and for industries. An increasing population, more irrigation pumping, more home appliances, and expanding industries are placing a burden on existing facilities.

A review of the past growth in population and domestic customer usage of electric energy illustrates the rapidity of buildup in demand. The population growth of northern California since the 1950 census to the end of 1957 has shown about a 30-percent increase. For Sacramento County, considered representative of the Sacramento Municipal Utility District, the population growth has been even faster, showing about a 44-percent increase. The Pacific Gas & Electric Co. electric energy usage per domestic customer has increased from 1943 kilowatt-hours in 1950 to 2923 kilowatt-hours in 1957. For the same period the Sacramento Municipal Utility District domestic customer usage has increased from 2108 kilowatt-hours to 3338 kilowatt-hours. Total energy sales (kilowatt-hours) for the Pacific Gas & Electric Co. for the period 1950 through 1957 increased about 68 percent with about a 70-percent increase in system peak demand (kilowatts). The Sacramento Municipal Utility District energy sales and peak demand more than doubled.

To meet this increase in demand and energy use the Pacific Gas & Electric Co. installed into its system in the 8 years following January 1950 a net of 208,900 kilowatts of hydroelectric capacity and a net of 2,261,600 kilowatts of steamplant capacity. The Burer of Reclamation in this same period has put into service 200,500 .o-



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LETTER OF TRANSMITTAL

U.S. Department of the Interior,
Bureau of Reclamation,
Regional Office, Region 2,
Sacramento, Calif., January 29, 1960.

To: Commissioner, Washington 25, D.C.
From: Regional Director, Sacramento, Calif.
Subject: Report on Folsom South unit—Central Valley project, California.

This letter, with its attachments is my report [1] on the feasibility of the Folsom South unit in the Central Valley of California. This report supersedes the regional report of April 9, 1956. That report, although recommending works to serve Sacramento County only, pointed out the desirability of extending facilities for service to San Joaquin County, and recommended preparation of a report on the feasibility of such facilities. The present report contains the results of the feasibility studies of service to both San Joaquin and Sacramento Counties.

The works of the Folsom South unit would convey 852,000 acre-feet of irrigation, municipal and industrial water from Lake Natoma (Nimbus Dam) on American River to a gross area of about one-half million acres in Sacramento and San Joaquin Counties. This water supply would halt an existing overdraft of ground water, make available a firm water supply for lands presently unirrigated and reduce the threat of underground saline water intrusion. Supplemental municipal and industrial water would be made available for the city of Stockton and other local and/or bay areas.

The principal feature of the Folsom South unit is a main canal, with appurtenant pumps, channels, and other works extending southward from Lake Natoma to Lone Tree Creek in San Joaquin County, a distance of 67.5 miles. The estimated cost of this feature is $42,095,000. Included also are distribution facilities consisting of a 270,000-acre distribution system, a 390,000-acre drainage system, 52 relift pumps, and a well development program to coordinate use of surface and ground water supplies.[2] The estimated cost of these features, exclusive of the well development program, is $43,991,000. The well development program ($1,566,000 for well drilling or well purchase) is considered to be the responsibility of the water users for installation in stages as needs develop. The other distribution and drainage system features including the relift pumps could be constructed either by the Federal Government or the water users. Total cost, exclusive of the well development program, is estimated at $86,086,000 (October 1957 prices).[3]

[1] Authorized by the Federal reclamation laws, act of June 17, 1902, (32 Stat. 388), and acts amendatory thereof or supplementary thereto, particularly the American River Basin Development Act (ch. 690, 63 Stat. 852).

[2] The proposed distribution and drainage systems will supplement the existing systems and private well pumping which already serve parts of the area.

[3] A comparison of October 1957 costs with current costs (July 1959) indicates that price ch have not significantly affected the cost estimates.

Part of the water supply would come from the existing Folsom Reservoir of the Central Valley project. It is estimated that this supply would be sufficient for about 15 years. The remainder is planned to come from the proposed Auburn Reservoir. This reservoir, which is not now authorized, is the subject of a separate report,[4] but has been included in the repayment analysis to show the effect of the complete undertaking.

The report demonstrates that the proposed unit, operated as an integral part of the Central Valley project, is engineeringly feasible and economically justified.

The ratio of benefits to costs for this project is:

Period of analysis	Total benefits	Direct benefits
100 years	4.70 to 1	1.97 to 1.
50 years	4.03 to 1	1.68 to 1.

Canalside rates for the Folsom South unit used in the analyses are $2.75 per acre-foot for irrigation water and $14 per acre-foot for municipal and industrial water. Both rates are within the payment capacity of the water users. With these rates, and operational and financial integration of the Folsom South and Auburn units with the Central Valley project, the reimbursable costs of the Central Valley project could be recovered by the year 2026.

There is widespread public support throughout the Sacramento and San Joaquin Counties for a development of the unit. The Bureau of Reclamation has received requests for water service from the local water agencies in the area. Resolutions urging completion of the project have been adopted by the California Legislature and local governmental units.

Effects of the development upon fish and wildlife and recreation with present plans of operation are expected to be minor. The Fish and Wildlife Service has estimated the annual wildlife (upland game) benefit to be $44,000. The reports of the Fish and Wildlife Service are included in this volume. Recommendations in those reports will be followed to the extent feasible and compatible with the purposes of the project and the policies of local land and water managing agencies. Further studies of water releases from the Folsom South Canal into the Cosumnes and Mokelumne Rivers to improve the fishery or into special fishery impoundments along the canal have been recommended by the Fish and Wildlife Service.

Of the 852,000 acre-foot diversion requirement at Nimbus Dam, 587,000 acre-feet would be supplied from the yield of American River including Folsom Reservoir storage and the remaining 265,000 acre-feet from Auburn storage. Permits for appropriation of the Folsom supply were granted by the California State Water Rights Board on April 22, 1958. Permits for the Auburn supply have been applied for and remain to be secured under the administrative procedures established by the State of California.

The Folsom South Canal could form an important element in an overall plan to transfer surplus Sacramento Valley waters to water-short areas in the San Joaquin Valley. These studies will be continued

[4] Aut nit, Central Valley project, California, dated January 1960.

in order to determine the practicability of incorporating provisions for future enlargement during initial construction of the canal.

The opportunity of serving the Folsom-Malby area lying above the Folsom South Canal between the American and Cosumnes Rivers in easterly Sacramento and westerly El Dorado Counties directly from Folsom Reservoir has stimulated a growing interest for a development to serve the area. A preliminary study of the area's water needs and possible methods of service is presented in the last chapter of this report.

Recommendations

I recommend that—

(*a*) The following works constituting the features of the Folsom South unit be authorized to be constructed by the Bureau of Reclamation, Department of the Interior, as an integral part of the Central Valley project, California, in accordance with the Federal reclamation laws,[5] substantially in accordance with the plans set forth in this report, with such modifications, including provisions for future canal enlargement, and omissions or additions to the works, as the Secretary of the Interior may find proper and necessary for carrying out the purposes of the project:

Folsom South Canal;
Pumping plants;
Wasteways, channels and levees, and other appurtenant works;

provided that no construction be undertaken unless and until (1) water rights for project development satisfactory to the Secretary of the Interior have been assured and (2) satisfactory assurances of repayment have been received.

(*b*) The Bureau of Reclamation, Department of the Interior, be authorized to construct the necessary distribution and drainage systems including relift pumps (but exclusive of the well development program) for Folsom South unit, so that such local agencies as desire may contract with the United States for distribution system construction.

(*c*) Further studies be made by the Fish and Wildlife Service and the Bureau of Reclamation of possible arrangements for fishery improvement, and the financing thereof.

(*d*) Further study be given to the feasibility of providing a water supply for the Folsom-Malby area.

H. P. DUGAN.

ATTACHMENTS.

[5] Act of June 17, 1902, 32 Stat, 388, and acts amendatory thereof or supplemental thereto.