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STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS

Review of Federal Reports Pursuant to Public Law 534,
78th Congress, 2nd Session

VIEWS AND RECOMMENDATIONS
OF
STATE OF CALIFORNIA
ON
PROPOSED REPORT OF THE SECRETARY OF INTERIOR
ON
SANTA MARIA PROJECT, SOUTHERN PACIFIC BASIN,
CALIFORNIA

December, 1952

Office of the
Director

Earl Warren
Governor
(SEAL)
State of California
DEPARTMENT OF PUBLIC WORKS
Sacramento

December 31, 1952

Honorable Oscar L. Chapman
Secretary of the Interior
Washington 25, D. C.

Dear Sir:

The proposed report of the Secretary of the Interior on the Santa Maria Project, Southern Pacific Basin, California, was received on September 22, 1952, and was transmitted on the same date to the Division of Water Resources of this Department for review and report thereon.

The report of the Division of Water Resources has been received and is transmitted herewith in accordance with the provisions of Public Law 534, 78th Congress, 2d Session.

I concur in the conclusions and recommendations contained in the report of the Division of Water Resources and it is requested that said report be considered as expressing the views and recommendations of the State of California on your proposed report on Santa Maria Project, Southern Pacific Basin, California. It is further requested that the report of the Division of Water Resources, dated December 31, 1952, on this subject be transmitted to the President of the United States and to the Congress along with the other material that may be so transmitted.

Very truly yours,

Original signed by
FRANK B. DURKEE
Director of Public Works

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REVIEW BY STATE DIVISION OF WATER RESOURCES
OF
PROPOSED REPORT OF SECRETARY OF THE INTERIOR
ENTITLED
SANTA MARIA PROJECT, SOUTHERN PACIFIC BASIN,
CALIFORNIA

INTRODUCTION

In accordance with the provisions of the Flood Control Act, approved December 22, 1944 (Public Law No. 534, 78th Congress, 2nd Session), the Commissioner of Reclamation by letter dated September 10, 1952, transmitted to the Director of Public Works for review and comment the proposed report of the Secretary of the Interior, approved August 29, 1952, on the Santa Maria Project, Southern Pacific Basin, California. The proposed report contains a letter, dated August 12, 1952, from the Acting Commissioner of Reclamation to the Secretary of the Interior, stating the report is based on and incorporates the report of the Regional Director, Region 2, Bureau of Reclamation, Sacramento, California, dated November 30, 1951, which letter was approved and adopted by the Secretary of the Interior on August 28, 1952.

The report was received by the Director of Public Works on September 22, 1952, and by the Division of Water Resources from the Director of Public Works on September 23, 1952. Copies of the proposed report were also sent directly to Governor Earl Warren by the Commissioner of Reclamation on September 10, 1952, for review by the head of the agency exercising administration over the wildlife resources of the State of California in keeping with the provisions of Public Law 732, 79th Congress (60 Stat. 1080).

On September 24, 1952, copies of the proposed report were forwarded by the State Engineer to the State Division of Highways, Department of Fish and Game, and Department of Natural Resources for comment. The comments of these agencies have been received and are included herein.

Recommendations in Report Under Review

The Regional Director, Region 2, U. S. Bureau of Reclamation, has made the following recommendations with reference to the Santa Maria Project:

"It is recommended:

"(a) That the United States adopt a water-conservation and flood-control project for the construction of (1) a multiple-purpose reservoir at the Vaquero site on the Cuyama River; and (2) levee and channel improvements in the Santa Maria Valley.

"(b) That Vaquero Reservoir, with a capacity of 214,000 acre-feet, be authorized to be constructed, operated and maintained by the Department of the Interior, Bureau of Reclamation, pursuant to Federal Reclamation Law (Act of June 17, 1902, 32 Stat. 388, and acts amendatory thereof or supplementary thereto) substantially in accordance with the plans set forth in this report with such modification as may be recommended by the Commissioner, and approved by the Secretary of Interior after full consultation with local interests and the State of California; that for Vaquero Reservoir \$3,530,000, which would include a lump-sum payment for a share of maintenance, operation and replacement, be allocated to flood control and be non-reimbursable; and that all the remaining costs be allocated to water conservation and be reimbursable.

"(c) That the operation of the reservoir for flood control be in accordance with regulations to be prescribed by the Secretary of the Army.

"(d) That the Corps of Engineers, United States Army, construct the levee and channel improvements in Santa Maria Valley and make necessary alterations of railroad bridges and railroad bridge approaches; and that local interests (1) pay for the cost of other railroad relocations and the cost of relocation of highways and utilities and provide necessary lands, easements, and rights-of-way in connection with these channel improvements and (2) maintain and operate the levee

and channel improvements in accordance with regulations to be prescribed by the Secretary of the Army."

The following recommendation of the Commissioner of Reclamation to the Secretary of the Interior, dated August 12, 1952, was approved and adopted by the Secretary on August 29, 1952:

"I concur in and adopt the recommendations of the Regional Director as set forth in his report.

"I recommend that you approve and adopt this report as your proposed report on the Santa Maria Project, Southern Pacific Basin, California, and that you authorize me to transmit it in your behalf to the Secretary of the Army and to the State of California for their views and recommendations in accordance with the provisions of Section 1(c) of the Flood Control Act of 1944 (58 Stat. 887); to the State of California for the report and recommendations of the head of the Agency exercising administration over the Wildlife resources of that State in accordance with the provisions of the Act of August 14, 1946 (60 Stat. 1080); and to interested Federal agencies for their views and comments."

The foregoing recommendations of the Regional Director therefore become those of the Secretary of the Interior.

Prior Reports

The Santa Maria Project, Southern Pacific Basin, is a component part of the comprehensive plan of the Department of the Interior for Santa Barbara County. It was first described in the report of the Secretary of the Interior entitled "Comprehensive Basin Plan, Santa Barbara County Project, California, dated June, 1945. This report was submitted to the Director of Public Works on October 30, 1945. The Views and Recommendations of the State of California on the proposed report were transmitted to the Secretary of the Interior on February 9, 1946.

The Santa Maria Project, Southern Pacific Basin, as described in the report presently under review, is a joint water conservation and flood control project for the Santa Maria River

Basin, in which the Bureau of Reclamation and the Corps of Engineers have integrated their planning efforts. The plan of the Corps of Engineers is set forth in the report of the District Engineer, Los Angeles District, dated June 15, 1951, entitled "Report on Survey, Flood Control, Santa Maria River and Tributaries, California." The report of the District Engineer was submitted to the State Engineer for comments of interested State agencies and such comments were forwarded to the District Engineer on July 20, 1951.

The Secretary of Agriculture on May 7, 1951, submitted to the State of California for comments, his "Report of Survey, Santa Maria River Watershed, California," dated February 1951. On September 17, 1951, the Director of Public Works transmitted the "Views and Recommendations of the State of California on Proposed Report of the Secretary of Agriculture on Santa Maria River Watershed, California."

Description of Project

The report under review presents a plan for water conservation and flood control for the Santa Maria River Basin. It is stated that the plan is the result of coordinated studies by the Bureau of Reclamation and the Corps of Engineers, and the proposal is that each agency construct certain of the features in the dual purpose plan. The project is a component of the Comprehensive Plan for Santa Barbara County, proposed by the Department of the Interior and described in House Document 587, 80th Congress, 2d Session.

The project as proposed consists of a dam at the Vaquero site on the Cuyama River about six miles upstream from the con-

fluence of Cuyama and Sisquoc Rivers, together with levees along the Santa Maria River and a portion of a tributary stream, Bradley Canyon.

The proposed dam would be constructed of earth, sand, and gravel fill, and would extend 184 feet above streambed and would be 1,775 feet in length at the crest. The reservoir would cover an area of 3,400 acres and would impound 214,000 acre-feet of water to the top of the spillway gates. The Vaquero Dam and Reservoir is a multiple-purpose development having storage allocations as follows:

Silt storage	45,000 acre-feet
Flood control reservation	89,000 acre-feet
Conservation storage	80,000 acre-feet

The Santa Maria Valley Levee and Channel Improvements are described in Appendix 3 to the report of the District Engineer Corps of Engineers, Los Angeles District, dated June 15, 1951, as follows:

"17. Location and function.--The Santa Maria Valley levee and channel improvements consist of the following: (1) Levee and channel improvements along Santa Maria River and (2) levees and an excavated channel extending from the canyon mouth of Bradley Canyon to a point on Santa Maria River about 3.3 miles downstream from Fugler's Point.

"18. The levee and channel improvements along Santa Maria River would consist of the following: (1) a single levee extending along the left bank of Santa Maria River for about 17 miles from Fugler's Point to a point about 600 feet downstream from the highway bridge at Guadalupe, (2) a single levee extending along the right bank of Santa Maria River for about 5 miles from a point about $1\frac{1}{4}$ miles downstream from the Highway US 101 bridge to a point about $1\frac{1}{2}$ miles upstream from the railroad bridge at Guadalupe, and (3) channel clearing from Fugler's Point to the Pacific Ocean. Upstream from the upper end of the right-bank levee, the channel would be cleared between the levee on the left bank and the edge of the right bank. Between the upper end of the right-bank levee and Bonita Road, the channel would be cleared between the levees.

Below Bonita Road, clearing would be limited, in general to a 1,500-foot-wide channel.

"19. The Bradley Canyon levee and channel would consist of 2,600 feet of double levees along the lower end of the work and 7,500 feet of single levee. In addition, a 1,500-foot dike would be constructed along the right bank at the mouth of the canyon to prevent the inundation of high-valued agricultural and residential property."

These levees would have an 18-foot crown and vary in height from 10 to 14 feet above streambed.

Operation of the Project.

The proposed project would provide complete protection in the Santa Maria Valley from a design flood peak of 230,000 c.f.s. in the Santa Maria River. Operation of Vaquero Reservoir would reduce the design peak to 150,000 c.f.s. at Fugler's Point. Below Fugler's Point the proposed channel improvements are designed to safely pass 150,000 c.f.s.

It is estimated by the Bureau of Reclamation that, over the first 50 years of project operation, an average annual new water yield of 18,500 acre-feet would be made available to the Santa Maria Valley. Under proposed operation of conservation features of the project, deliveries would not be made directly to project lands. Development of the average annual new yield of 18,500 acre-feet would occur in increased ground water recharge effected through short-term detention of flood flows, with subsequent releases to achieve maximum channel percolation. The period 1929 to 1948, considered representative of average water supply conditions, was employed in the Bureau of Reclamation's hydrologic analyses.

The present overdraft in Santa Maria Valley has been estimated by the Bureau of Reclamation at 14,000 acre-feet per annum, derived by deducting the estimated long-time mean seasonal re-

charge of 50,000 acre-feet from the estimated present net ground water withdrawals of 64,000 acre-feet. Although the long-time mean recharge under present conditions of development has been estimated by the Bureau at 53,000 acre-feet per annum, probable increased ground water draft in the Cuyama Valley is estimated to effect a future reduction in net recharge to the Santa Maria Valley of 3,000 acre-feet per annum. Estimates of recharge, net ground water withdrawals, and overdraft were based on basic data presented in United States Geological Survey Water Supply Papers 1000 and 1110-B.

Cost of Project

The total cost of the project is estimated at \$24,575,000, based on October, 1950, price levels. A summary of project costs is as follows:

Vaquero Dam and Reservoir	\$14,300,000
Santa Maria River levees	9,540,000
Bradley Canyon levees	<u>735,000</u>
Total estimated construction costs	\$24,575,000

In addition to the cost of the flood control levees, the estimated allocation to flood control of the cost of Vaquero Dam is \$3,530,000, making a total flood control allocation for the project of \$13,805,000. Of this amount, local interests would contribute \$990,000 toward the cost of levees and channel improvements in the Santa Maria Valley, which cost represent acquisition of lands easements, rights of way, and relocation of utilities necessary for construction of the channel improvements. The remainder, \$12,815,000, is non-reimbursable. The \$10,770,000 allocated to

water conservation would be repaid to the Federal Government by local beneficiaries.

Repayment of the portion of the capital cost allocated to water conservation over 40 years, plus annual operation, maintenance, and replacement expenses for the project works, would require an annual payment of about \$313,000 by local interests. Of this amount \$269,300 represents repayment of the capital cost and \$43,700 represents the annual operation, maintenance and replacement costs. The annual cost of the flood control features of the project to be borne by local interests is estimated at \$87,900. Of this amount \$40,400 represents the annual payment required to amortize \$990,000 over a 100-year period at four per cent interest, and \$47,500 are operation and maintenance costs.

Benefit-Cost Ratio

The annual equivalent net benefits attributable to the project over a 100-year period as estimated in the Regional Director's Report, are estimated at \$2,266,100. This is the sum of irrigation benefits of \$1,684,000 and flood-control benefits of \$670,000, less non-Federal costs of \$87,900. The direct irrigation benefits are based on the estimated differential annual net farm income for the 100-year average from an additional 9,700 acres which could be irrigated under project conditions as compared with non-project conditions. Indirect irrigation benefits from processing, merchandising, and shipping farm produce, and selling goods and service to local farmers, were estimated to be equal to about 91 per cent of the direct benefits. Intangible benefits included stabilization of property values by reason of the removal of the fear of water shortages, the preclusion of increased pumping costs,

elimination of the threat of salt water intrusion, and the saving in lives and health by flood control. The flood control benefits developed by the Corps of Engineers arise primarily from a reduction of physical damage to property, based on long-term normal or true property values.

The annual equivalent Federal costs of the project over the same 100-year period are estimated by the Regional Director to be \$688,000.

Based on the foregoing total annual net benefits estimated at \$2,266,100, and the total equivalent annual costs estimated at \$688,000, the benefit-cost ratio as set forth in the Regional Director's Report is 3.29 to 1.

COMMENTS OF THE STATE DIVISION OF WATER RESOURCES

The following comments of the State Division of Water Resources are submitted on the proposed report of the Secretary of Interior, which comprises the letter of the Commissioner of Reclamation to the Secretary of the Interior, dated August 12, 1952, and approved and adopted by the Secretary on August 29, 1952, and the report of the Regional Director, Region 2, dated November 30, 1951, entitled "Santa Maria Project, Southern Pacific Basin, California," together with Substantiating Material which accompanies the report.

Prior Reports

The Division of Water Resources in February, 1946, commented on the report of the Secretary of the Interior entitled "Comprehensive Basin Plan, Santa Barbara County Project, California,"

dated June 1945, which included as a part of the plan, the Vaquero Dam and Reservoir. The Conclusions of the report of the Division of Water Resources which was forwarded to the Secretary of the Interior as the Views and Recommendations of the State of California applicable to the Santa Maria Project, are as follows:

"2. The protection of the City of Santa Maria and the developments in the delta area of the Santa Maria River from floods is of prime importance in that river basin, and immediate steps should be taken to secure such protection. In this regard, it is believed consideration should be given to a plan whereby a system of levees would be constructed along the river from Fugler Point to its mouth which would provide a flood capacity of approximately 100,000 second-feet. Such procedure would furnish substantial flood protection to the area and permit in the interim an investigation of the feasibility of incorporating flood control storage in the proposed Vaquero Reservoir on the Cuyama River, and if found feasible, the construction of the reservoir, including space for such purpose.

"With the Vaquero Reservoir constructed and operated for flood control the levee system as constructed would be capable of handling the estimated uncontrolled capital flood from the Sisquoc branch of the Santa Maria River of 90,000 second-feet, and the affected area then would have protection against a flood estimated to occur once in 100 years. If the incorporation of flood control features in the Vaquero Reservoir were not determined to be feasible, then the levee system could be revised to carry the entire capital flood of the Santa Maria River."

On January 7, 1948, the Secretary of the Interior approved and adopted a report on the Cachuma Unit of the Santa Barbara County Project. This report was transmitted to the State of California on January 8, 1949, and the Views and Recommendations of the State on the Unit were forwarded to the Secretary of the Interior in February 1948. The report on the Comprehensive Plan, of which the Santa Maria Project is a component, is printed with the report on the Cachuma Project in House Document 587, 80th Congress, 2d Session.

The District Engineer, Corps of Engineers, Los Angeles District, in June, 1951, forwarded to the State Engineer his "Report on Survey, Flood Control, Santa Maria River and Tributaries, California," dated June 15, 1951, for preliminary comments by interested State agencies. The concluding statement by the Division of Water Resources in a letter dated July 20, 1951, to the District Engineer, commenting on his proposed project, is as follows:

"Concurrence cannot be given to the District Engineer's recommendations that a project comprising a multiple-purpose reservoir at the Vaquero site on Cuyama River and levee and channel improvements in the Santa Maria Valley as proposed be adopted by the United States until the corresponding project report by the U. S. Bureau of Reclamation has been reviewed.

"It is believed that Federal legislation should expressly provide that Federal agencies authorized to act in this matter proceed in conformity with the laws of the State of California relating to water and water rights."

On May 7, 1951, the Secretary of Agriculture transmitted to the State of California for official review and comment, his "Report of Survey, Santa Maria River Watershed, California," dated February 1951. The recommended program of the Secretary of Agriculture consists of measures aimed at the reduction of flood water and sediment damage and the conservation of soil and water resources. The flood control structures consist of $7\frac{1}{2}$ miles of revetment and 7 miles of levee along the north side of the Cuyama River and one-half mile along the south side, in the vicinity of Cuyama School.

Recommendation 4 of the Views and Recommendations of the State of California on Proposed Report of the Secretary of Agriculture on Santa Maria River Watershed, California, dated September 17, 1951, is as follows:

"That all Federal activities which affect land use should be harmonized, and Federal policy with respect to carrying out various means of subsidization of farm crops should be such that it will not undo approved soil and water conservation practices. Therefore, in the belief that a better and more effective program could be formulated, it is further recommended that the plan be reviewed at the local level by a committee composed of representatives of the U. S. Department of Agriculture, district offices of the Corps of Engineers, regional office of the U. S. Bureau of Reclamation, State of California, and interested local agencies with the objective of composing differences and agreeing on a program before submittal to higher authority. When the final report is officially submitted to the State of California for consideration, it is believed it should be a consolidated report signed and approved by the department heads of all the reporting Federal agencies in Washington, D. C."

The report of the Secretary of Interior, presently under review, is a consolidated report of the water conservation measures of the Department of the Interior and the flood control measures of the Corps of Engineers, Department of the Army. The plans for conservation of soil and water resources proposed by the Secretary of Agriculture are not considered in the report.

Overdraft of Water Supply

It is stated in the Substantiating Material of the Regional Director's Report that it is estimated that 35,700 acres of land are presently irrigated in Santa Maria Valley, requiring an average annual net water supply of 57,000 acre-feet. Municipal and industrial water requirements were estimated to be 7,000 acre-feet in 1950, resulting in a total present net water requirement of 64,000 acre-feet. However, in Footnote 19, page 131 of U.S.G.S. Water Supply Paper 1000, it is stated that "Since the completion of this report (Water Supply Paper 1000), estimated net pumpage for the 5 years, 1945 to 1949, has been 75,000, 85,000, 100,000, 90,000, and 100,000 acre-feet, respectively." The net water requirement

in Santa Maria Valley of 64,000 acre-feet estimated by the Bureau of Reclamation, appears to be about the average requirement during 1929-1948 base period employed in its hydrologic analyses.

It is also stated in the Supporting Material of the Regional Director's report that the safe perennial yield of Santa Maria Valley ground water basin is 50,000 acre-feet per year, after deducting an estimated upstream impairment of 3,000 acre-feet per year resulting from probable future increased water utilization in Cuyama Valley. The estimated 3,000 acre-feet of impairment represents the present discharge from the ground water body in Cuyama Valley.

If the water requirement of 64,000 acre-feet annually and the ground water yield of 50,000 acre-feet annually were correct, there would be a present deficiency in the Santa Maria Valley of 14,000 acre-feet per year. However, determination of "present overdraft" should be predicated on a comparison of long-time mean seasonal safe yield with the actual water requirement for the most recent years for which records are available, not with the average water requirement for a base period. Thus, with a safe perennial yield of 50,000 acre-feet and an estimated net water requirement of 100,000 acre-feet as in 1949, the present ground water overdraft would be about 50,000 acre-feet annually, rather than 14,000 acre-feet as derived in the report under review.

Studies of this Division, in connection with the preparation of State Water Resources Board Bulletin No. 2, indicate a present water requirement (1950) in the Santa Maria Valley in excess of 75,000 acre-feet per annum for about 45,000 irrigated acres. Determination of this requirement was based on applying unit con-

sumptive use values to irrigated areas, with proper consideration being given to areas of ground water confinement. It is probable that the requirement, so determined, is on the low side because of the ever increasing double and triple cropping practices in Santa Maria Valley. This could account for the discrepancy between the Division's estimated water requirement, based on consumptive use, and the estimated requirement of 100,000 acre-feet in 1949 of the U.S.G.S which was based on analysis of records of agricultural power consumption.

The urgent need for the development of supplemental water to meet the present overdraft in Santa Maria Valley is emphasized by the foregoing discussion. It is apparent that every effort should be made to develop immediately as much regulatory surface storage as practicable.

Supplemental Water Supply

It is stated in the Regional Director's report that the 214,000 acre-foot Vaquero Reservoir with 89,000 acre-feet reserved for flood control and 125,000 acre-feet utilized for water conservation and silt storage would yield 18,500 acre-feet of water on the average which could be used for recharge of the ground water basin of the Santa Maria Valley since it is proposed that no surface water deliveries to lands in that valley would be made. Also, it is stated in the Substantiating Material of the Regional Director's report that the present irrigated acreage in Cuyama Valley is about 2,200 acres. Cultural surveys of this Division for 1950 indicate about 13,000 acres irrigated in Cuyama Valley comprising a portion of a gross irrigable area of about 62,000 acres. The question arises as to whether increased development in the Cuyama Valley

could in the future, by using additional amounts of ground water and surface flow, affect the inflow to the Vaquero Reservoir and thereby reduce the estimated yield of that reservoir now estimated at 18,500 acre-feet per annum.

As stated in the foregoing paragraph, the Regional Director's report states that 125,000 acre-feet of space in the Vaquero Reservoir is to be allocated to water conservation and silt storage. The report further states that the average sediment concentration of the runoff at the dam site was estimated to be twice that at Gibraltar Reservoir on the Santa Ynez River, and that the rate of storage depletion due to sediment accumulation would be 900 acre-feet per year. Therefore, the space allotted to silt would be filled in about 50 years and the total 125,000 acre-feet storage allocated to water conservation and silt storage would be filled in 139 years. It is noted that several alternative solutions to the silt problem were considered, and it was concluded that the most economical solution was to provide for raising the Vaquero Dam at a future date. However, no cost estimate was furnished for such construction. In view of the possibility of overdraft in the Santa Maria Valley, substantially in excess of that estimated in the report, it is imperative that every effort should be made to develop and preserve as much conservation storage as practicable within the Santa Maria Watershed.

Flood Control

It is stated in the report of the District Engineer, Corps of Engineers, dated June 15, 1951, that the levees along Santa Maria River would prevent overflow of most of the Santa Maria River Valley including the City of Santa Maria and the Oso Flaco

area from nearly all floods resulting from the combination of natural flows on Sisquoc River and the controlled discharges from the recommended dam at the Vaquero site on Cuyama River. The levee and channel from the canyon mouth of Bradley Canyon to Santa Maria River would divert the standard project flood (7,000 to 9,000 cubic feet per second) from an agricultural area along Santa Maria River and from the City of Santa Maria.

The proposed project would provide complete protection in the Santa Maria Valley from a design flood peak of 230,000 cubic feet per second in the Santa Maria River. Operation of Vaquero Reservoir for flood control would reduce the design peak to 150,000 cubic feet per second at Fugler's Point. Below Fugler's Point the proposed channel improvements are designed to safely pass 150,000 cubic feet per second.

Since conservation storage is a pressing need of the Santa Maria Valley, question arises as to whether a portion of the storage capacity of Vaquero Reservoir allocated to flood control could not be utilized for conservation purposes. The necessity for the reservation of 89,000 acre-feet of reservoir space to control a design flood of 230,000 second-feet, which is about 130,000 second-feet in excess of the largest flood of record, should be re-examined giving consideration to the fact that the proposed channel capacity of 150,000 second-feet exceeds the maximum flow of record by 50 per cent.

Excess Land Provisions

Paragraph 3 of the Regional Director's Report states that "The project would be unique in that all hold-over storage would

be maintained in the ground water reservoir" with the result that "No surface-water delivery to irrigators is contemplated." Also, on page 51 of the Substantiating Material of the Regional Director's Report, it is stated, "While some large holdings still prevail, only 13, or about 3 per cent of present ownerships exceed 320 acres in size." The table presented on page 51 indicates, however, that the 13 ownerships exceeding 320 acres in size embrace about 36 per cent of the project's service area, and that the "excess lands" in these ownerships is 26 per cent of the total area of the project lands. It is assumed that since the entire water supply would be drawn from the underground basin the provisions of certain Central Valley Project contracts which relate to the use of comingled ground water supplies by "excess lands" would also be applied to the Santa Maria Project.

Water Rights

On page 41 of the Substantiating Material of the Regional Director's Report, the following statement is made: "It is intended that the proposed project operations will not infringe upon any existing water rights, and that the project will be operated under water rights to be acquired by the United States in conformance with State law." This Division believes that Federal legislation authorizing the project should expressly provide that Federal agencies authorized to act in this matter proceed in conformity with the laws of the State of California relating to water and water rights.

Financial Feasibility

Paragraph 28 of the Regional Director's Report states that "Payment capacity for irrigation water in the project service area

is estimated at about \$76 per acre on the flood plain and \$45 per acre on the uplands." The repayment of the reimbursable cost of the project of \$10,770,000 in 40 equal installments, without interest, together with operation, maintenance, and replacement costs estimated at \$43,700 annually would require a total annual payment to the Federal Government by local interests of \$313,000 or about \$8.26 per net irrigated acre. This large differential indicates there would be ample repayment capacity in the service area to assume the increased local financial obligation that would result from construction of additional storage capacity in the initial project.

The report states that since there would be no sale of water from which tolls could be collected to reimburse the Federal Government the amount of \$10,770,000 allocated for repayment, an ad valorem tax might be collected on assessed valuation within a taxing district, perhaps the Santa Maria Valley Water Conservation District. While this method of raising repayment appears at this time to be the only practicable one if the \$10,770,000 is not paid in a lump sum, objection could be raised because of the probable unequal ground water benefits resulting from project operation.

It is proposed in the report that cost of local cooperation in the project be assumed by the Santa Maria Valley Water Conservation District or "its possible successor". It is pointed out that this district does not embrace the entire service area of the project, and thus either a new district must be formed or the present district must enlarge its boundaries. Furthermore, the present district does not appear to have powers of taxation adequate to meet financial obligations imposed by the project.

Local Interest

The proposed report of the Secretary of the Interior was submitted to the Santa Maria Valley Water Conservation District by the State Engineer. The President of the Board of Directors of the District, by letter dated November 20, 1952, states as follows:

"The Board of Directors of the Santa Maria Valley Water Conservation District has reviewed the Project Planning Report submitted to you by the Secretary of the Interior.

"We approve said report without qualification.

"We do sincerely hope that your office will be able to complete your comments on said report at a very early date because the Directors of the Santa Maria Valley Water Conservation District desire to have a bill submitted to authorize this project in the next session of Congress.

"The provisions of the report have been widely discussed by farmers and water users in the Santa Maria area and there have been no objections thereto, but, to the contrary, all of the residents of this area, so far as known to us, approve the project and desire to have the same constructed at as early a date as possible.

"Thanking you for referring the report to the Board of Directors of the Santa Maria Valley Water Conservation District, I am,

Yours very truly,

(Signed) L. H. Adam

President, Board of Directors"

COMMENTS OF OTHER STATE AGENCIES

On September 24, 1952, copies of the proposed report of the Secretary of the Interior on Santa Maria Project, were forwarded to the State Division of Highways, Department of Fish and Game, and Department of Natural Resources for comment. The comments of these agencies follow:

State Division of Highways

The State Highway Engineer, by verbal request on December 4, 1952, requested that his comments, dated June 22, 1951, on the report of the District Engineer, Corps of Engineers, Department of the Army, and comments dated August 17, 1951, on the report of the Regional Director, Region 2, Bureau of Reclamation, be considered as the comments of the State Highway Engineer on the proposed report of the Secretary of the Interior.

The comments, dated June 22, 1951, on the report of the District Engineer, Corps of Engineers, are as follows:

"The report recommends a multi-purpose dam at the Vaquero Site on the Cuyama River, in cooperation with the U. S. Bureau of Reclamation, levees along the Santa Maria River from confluence of the Cuyama and Sisquoc River to below Guadalupe and a leveed channel diverting Bradley Canyon Creek into the river.

"The Vaquero Reservoir will require relocation of a portion of State Route 57, and it is assumed the cost of so doing will be a Federal first-cost subject to comment of this office when report on the reservoir project is submitted by the Bureau of Reclamation.

"The recommended levee and channel work on the Santa Maria River proposes raising Bridge No. 49-23 on U. S. 101 and extending it 835 feet southerly to the proposed levee. The existing bridge is considered by the Division of Highways to be high enough to clear floods of magnitude used for design flood on which State bridge plans are based. The extension will permit the State to abandon the bridge over the old flood bypass. The extent to which the Division of Highways

could contribute toward a portion of this non-Federal cost item in the report will be subject to later consideration.

"The State bridge on Route 56 at Guadalupe is not to be modified by the report recommendations.

"In the report reference is made in paragraph 82 to relocation of a county highway at the proposed levee on Bradley Canyon Creek. This road is now maintained as State Highway Route 148, Sign Route 166. Costs of respective agencies commensurate with benefits from the flood control measures may invite an alternative treatment of re-establishing the highway. As in the case of the alteration of U. S. 101, the matter is subject to later consideration when details of the project plan are started.

"Although the Division of Highways feels the standard project flood used in the report is excessive as a basis for economic design of the highway structures and for appraisal of benefits to its facilities, it will be glad to give consideration to reasonable participation and will appreciate opportunities to confer with the Corps of Engineers on details of plans as the project materializes."

The comments, dated August 17, 1951, on the report of the Regional Director, Region 2, U. S. Bureau of Reclamation, are as follows:

"The report recommends a multi-purpose reservoir at the Vaquero Site on the Cuyama River as a joint water conservation and flood control project correlated with flood control measures of the U. S. Corps of Engineers.

"'Report of Survey, Flood Control, Santa Maria River and Tributaries,' by the Corps of Engineers, dated June 15, 1951, was the subject of comments to you on June 22, 1951. It included reference to the Vaquero Reservoir, the feature of the current report of the Bureau of Reclamation. The Reservoir will require relocation of about five miles of State Route 57, Sign Route 166. It is understood cost of said highway relocation will be a Federal obligation and that the Bureau of Reclamation has included a reasonable estimate for same in its estimate of project costs.

"The Division of Highways has made preliminary review of the highway relocation problem which indicates several alternatives are practicable. The Division will

cooperate in the final determination of plans for the highway relocation when project authorization makes such procedure advisable and believes that a mutually satisfactory plan for replacement of the existing highway facility can be developed without appreciably adding distance to highway travel."

Department of Fish and Game

On November 12, 1952, Seth Gordon, Director of the Department of Fish and Game submitted the following comments:

"The Department of Fish and Game has reviewed this report and we find that our comments at this time are substantially the same as were included in General Warren T. Hannun's memorandum to the State Engineer on August 23, 1951. Our comments were included in the letter that was sent to the Bureau of Reclamation by A. D. Edmonston on September 4, 1951, a copy of which was transmitted to us with this report.

"As far as we are able to discern the principal difference in the present report and the previous Corps of Engineers' report from the Fish and Game's standpoint is that the Bureau considers utilizing the reservoir for fishing and hunting recreation and that a minimum pool of 1,000 acre-feet will be maintained. The Department of Fish and Game believes that if this recreational pool can be maintained it will prove to be a considerable asset to the people of the Santa Maria area both for warm-water fishing and for waterfowl hunting.

"In summary the Department of Fish and Game does not believe that any additional comments need be made on this report at this time."

The comments of the Division of Fish and Game above referred to are as follows:

"Effects on Game

"As far as flood control structures, mentioned in the Army Engineer's report, are concerned, no possible game benefits can be foreseen and losses to game involved in the game lands lost in the reservoir basin and levee sites while negligible in the over-all State picture, still add up locally.

"Effect on Fisheries

"To summarize briefly, the report outlines a multiple purpose project for flood control and water conservation

for the Santa Maria River system. The project is divided into two parts. One consists of the construction of a dam at the Vaquero site at river mile 7 on the Cuyama River. The second part consists of the construction of levee and channel improvements on the lower river area. This latter part of the project would have no effect on fish life and would be of little or no concern to us.

"After careful consideration, we believe that our letter of March 9th, 1951, to the District Engineer, Los Angeles District, Corps of Engineers, U. S. Army, a copy of which is appended, outlines quite clearly the recommendations of this Division. These still seem entirely adequate and suitable. However, we would like to discuss each one a little more fully.

"Discussion:

"A. General. As stated in the report, 'The present and future demands for water in the Santa Maria Valley considerably exceed the present supply.' We have tried to be cognizant of this fact in recommending water uses for fish life.

"The U. S. Fish and Wildlife Service report minimizes or disregards the fisheries value of the river system on the basis of a lack of a steelhead run since 1942. The fallacy in this reasoning can readily be shown in the fact that the project benefits are based largely on flood control benefits. No such benefits could be justified on the basis of the runoff record since 1942, either.

"B. Recreational Use of the Impoundment. The report states: 'No provisions are made for recreational use of the basin due to the rapid anticipated drawdown resulting in the lake area being surrounded by mud flats that would become barren wastes.' We believe that this matter should be more fully investigated prior to such a decision. Such conditions do not necessarily preclude recreational use of a reservoir. We have other reservoirs which are characterized by severe water level fluctuations and yet are utilized for recreation. It is quite true that most of them would not undergo as rapid a change in water levels as would occur here, but much of our current recreation at reservoirs is now being carried on to a large extent in these barren waste bottom areas of basins only partially filled.

"Quoting from the report, 'Construction of Vaquero Reservoir in 1957 would result in an annual safe yield initially of 20,000 acre-feet, more than enough to satisfy the present demand.' This intimates that during the initial years, at least until the agriculture in the area expands, a quantity of water could be obtained for a recreation pool.

"The anticipated average annual yield of the Vaquero Reservoir is 18,500 acre-feet. The capacity is 214,000 acre-feet with a surface area of 3,400 acres. Allocation of the water storage space is on the following basis:

Flood control	89,000	acre-feet
Water conservation	80,000	" "
Allowance for sediment	45,000	" "

(See Paragraph 78 of the report). We would like to see amendment of this paragraph considered to include a minimum pool to be maintained solely for the preservation and maintenance of fish life, possibly one of 1,000 acre-feet. This is less than half of one per cent of the storage allocation. Further, it may be possible to utilize, for a period at least, some portion of the storage space allocated for sedimentation for a recreational pool.

"Release of the water stored for flood control purposes would be extremely rapid, no doubt, while that stored for water conservation would be at the rate of percolation of the waters (estimated at 300 c.f.s. or 600 acre-feet per day). It would thus require several months to reduce the impoundment each year. It may, nevertheless, reach an established minimum level and provide for a fairly stable water level for a summer-fall recreation program, including both fishing and swimming (similar to that in operation at Puddingstone Dam, a Los Angeles County flood control reservoir).

"There are few fresh-water fishing areas in the vicinity of Santa Maria. Any such development would also be utilized by people living in the southwestern portion of the San Joaquin Valley.

"C. Creation of a Fishing Lake in the Guadalupe Area. This has been adequately covered previously and it is merely reiterated that this should be fully investigated. The Guadalupe area should possess some suitable sites. From the contour maps, Guadalupe Lake looks worth rechecking.

"As an alternative, if no satisfactory sites are found, we call attention to the fact that the report considers the lands adjacent to Oso Flaco Lake as being 'an integral part of the Santa Maria Valley' and states that it is included in this project report. As a last consideration for a compensatory project it may be possible to acquire a marginal strip of land around this lake to insure public access.

"D. Sub-impoundments. This matter should also be thoroughly investigated prior to reaching any decision as to its feasibility.

"E. Steelhead Fishery. Past hydrological records

of the report show that on 34 out of every 100 years a peak discharge of 30,000 c.f.s. occurs at Fugler's Point on the Santa Maria River above its junction with the Cuyama River (see page 17 of Report). This would indicate that at least the possibility that anadromous fishes would enter the system exists.

"In summary, we recommend that:

"1. The four points outlined in our letter of March 9, 1951 to the Corps of Engineers still serve as the expression of the Division of Fish and Game.

"2. The matter of recreational use of the impoundment be reconsidered and fully investigated.

"3. A request be made for amendment of the allocated use of water storage space available in Vaquero Reservoir to include retention of a minimum pool of at least 1,000 acre-feet solely for the maintenance and preservation of fish life.

"We thank you for an opportunity to review this report which is being returned under separate cover."

The letter dated March 9, 1951, to the Corps of Engineers from the Division of Fish and Game, is as follows:

"In your letter of November 1, 1950, to the Division of Fish and Game (signed by Lt. Col. Jackson Graham, Acting District Engineer), you outlined the multiple-purpose plan including flood control and water conservation being developed for the Santa Maria River and tributaries by the U. S. Bureau of Reclamation and the Corps of Engineers and invited us to submit to you such comments as we wished to make at the time.

"We were not prepared to submit recommendations at the time of your letter, but have since conducted our own field investigations and have also consulted with representatives of the Office of River Basin Studies, U. S. Fish and Wildlife Service. On the basis of these investigations and consultations, we wish to summarize briefly for you our views regarding the proposed developments in relation to fish life.

"It appears that at one time the Sisquoc River supported the major portion of the steelhead fishery in the drainage. The 30-mile long Santa Maria River served only as an access route for steelhead entering from the ocean and moving upstream into the Sisquoc and Cuyama Rivers. The sport fishery in the headwaters of these streams was supported by both the offspring of these steelhead and resident trout. The part

played by each group in this fishery is uncertain, although it is reported that local people believe that the steelhead runs have been the means by which the headwaters trout fishing has been sustained. In any case, large numbers of trout 9-14 inches long have been reported from the headwaters of the Sisquoc River drainage in years following good steelhead runs.

"These runs of steelhead have been rather unstable, being dependent upon the uncertain runoff. During the past seven dry years, of course, conditions have been unsuitable for the entry of steelhead from the ocean.

"In the light of the situation described above, we do not feel justified in requesting extensive requirements in an attempt to perpetuate the steelhead runs. For example, we will not require a fish ladder at Vaquero Dam for passage of migratory fishes. Also, because of the great width and pervious character of the river bed below the proposed dam, we do not believe that it would be feasible to request a regular schedule of water releases for maintenance of a stream fishery. Instead, we believe that compensation for losses to recreational fishing resulting from the project should be provided through development of a warm-water fishery, either within the Santa Maria River drainage or in nearby areas. In order to determine how this may best be accomplished, we believe that studies should be carried out along the following lines, with emphasis on the first three:

"1. Investigate fully the feasibility of utilizing the impoundment for public fishing during the summer-fall period each year by retention of a minimum permanent impoundment. This would in all probability be a warm-water fishery.

"2. Investigate fully the possibilities of creating, on a compensatory basis, a fishing lake or lakes in the Guadalupe area for public warm-water fishing. Water would be supplied if necessary by extension of normal releases into the Santa Maria River channel.

"3. Investigate fully the creation of one or several impoundments for fishing purposes, either on the Cuyama River tributaries above Vaquero Dam or within the main impoundment itself.

"4. Investigate the amount of water that would be required to provide access from the ocean for steelhead for sustaining the Sisquoc River fishery only.

"We further believe that it would be proper for your office to assume the major responsibility in conducting such investigations and in presenting the most favorable development compatible with the structural and

operational features of the remainder of the project, as part of the over-all plan. On our part, we would be ready to extend our full cooperation toward the achievement of the best possible solution of the problem of the retention or replacement of fisheries values to be affected by the proposed project. We hope to receive your favorable reply to our proposal."

Department of Natural Resources

General Warren T. Hannum, Director of Natural Resources, by communication dated October 30, 1952, submitted the following:

"Replying to yours of September 24 on the above subject, transmitting copy of the report for comment. On September 4, 1951, you submitted comments to the Regional Director, Region 2, on this project report. In your comments was included comments from this Department of the Division of Fish and Game. Since the Division of Fish and Game has been by statute reformed into a separate Department such comments are now withdrawn.

"The report has been reviewed by the staff of the State Soil Conservation Commission of this Department and comments in which I concur are submitted herewith."

The comments of the State Soil Conservation Commission, dated October 28, 1952, in which the Director of Natural Resources concurs, are as follows:

"1. During the past year, the Santa Maria Valley Soil Conservation District has been encouraging the Oso Flaco Reclamation District to undertake a channel revetment project on the north bank of the Santa Maria River between the U.S. 101 Highway Bridge and the Southern Pacific Railroad, as a means of protecting the low-lying lands of farmers who have been seeking protective assistance from the soil conservation district.

"The Oso Flaco Reclamation District was organized several years ago to install a revetment through this area. No maintenance was provided the completed works, and through a series of dry years and changes of ownership of lands bordering the river, the levees and revetments deteriorated and were removed, so that no protection is now afforded in the event the river should rise.

"Through the efforts of the Santa Maria Valley Soil Conservation District and the Santa Barbara County Board of Supervisors, the Oso Flaco Reclamation District has been reactivated and is now installing a rail revetment designed by the U.S. Department of Agriculture Soil

Conservation Service in the area proposed for a levee by the Bureau of Reclamation. Approximately \$40,000 is being expended on this work, with a possibility that another \$10,000 may be added before the work is completed. Negotiations are now under way between the District and the Southern Pacific Railroad Company for this additional amount.

"It is suggested that the Bureau of Reclamation give consideration to the bank protection work now being done in the design of their levee system for this section of the river.

"2. It has been reported that a section of the north bank of the Santa Maria River for a quarter mile immediately west of the U.S. 101 Highway Bridge is not sufficiently protected by the natural bluffs, and offers a low place for high water in the river to sweep over this section and flow down through the low lands behind the proposed levee.

"It is suggested that the possibilities of this occurrence be checked and provision made for levees or channel deepening if necessary.

"3. In the design for the Vaquero Dam, provision is made for silt storage; raising of the dam; or construction of a debris basin upstream for sediment control. Nowhere is mention made of a program for watershed control, although it is presumed that the recommendations made by the Flood Control Survey Division of the U.S. Forest Service at Berkeley included adequate consideration of this phase of the problem, at least from the public lands standpoint.

"It is suggested that positive statements be included in the report relating to cooperative efforts by all the public agencies administering public lands and private landowners toward a coordinated effort to reduce the erosion in the upper watershed. This will extend the effective life of the reservoir or reduce its cost applicable to sediment storage, and retain the productive value of the watershed lands.

"While no soil conservation district or other local organization now exists in the upper watershed area draining into the Vaquero Reservoir, probable expansion of the existing Santa Maria Valley Soil Conservation District to this area, or the formation of other soil conservation districts covering this area is likely in the near future. The possibilities of such expansion would be enhanced, were the necessities for coordinated action between public agencies and private landowners recognized by a statement in this report."

CONCLUSIONS

The following conclusions are submitted with reference to the proposed report of the Secretary of the Interior entitled, "Santa Maria Project, Southern Pacific Basin, California."

1. The water supply situation in the Santa Maria River Basin is critical and steps should be taken immediately to relieve the water shortage in that area.

2. The ultimate annual net water uses in the Santa Maria River Basin are estimated to be about 85,000 acre-feet in the Cuyama Valley and 220,000 acre-feet in the Santa Maria Valley.

3. The overdraft on the ground water of the Santa Maria Valley under present conditions is estimated to be from 35,000 to 50,000 acre-feet per year instead of the 14,000 acre-feet per year stated in the report under review.

4. Flood waters of the Santa Maria River are wasting into the Pacific Ocean in certain years. In the period 1941-1951 flows into the ocean have been zero to 183,000 acre-feet annually, with an average over the 11-year (1941-1951) period of about 26,000 acre-feet per year.

5. The urgently needed supplemental water supply can be provided in part by the construction of surface storage reservoirs and their operation in conjunction with the ground water basins.

6. The proposed Vaquero Reservoir with a space of 80,000 acre-feet allocated to conservation storage and 45,000 acre-feet allocated to silt storage, is estimated to provide an average annual new water yield of 18,500 acre-feet which could be utilized in the Santa Maria Valley which contains about 47,000 acres of

presently irrigated land and a net irrigable area of about 100,000 acres. This new water yield must be determined under conditions of actual operation and may vary from the amount estimated. Other means may be available for increasing ground water recharge if percolation from the river channel is less than estimated.

7. Future increases in irrigation development in the Cuyama Valley could, by using additional amounts of ground water and surface flow, materially affect the flows to the proposed Vaquero Reservoir and thereby reduce the estimated annual yield of that reservoir in new water for irrigation and other uses.

8. The City of Santa Maria and developments in the flood plain of the Santa Maria River should be protected adequately from damage from future floods in that stream.

9. The proposed Vaquero Reservoir with an allocated space of 89,000 acre-feet for flood control would reduce floods having a peak flow of 230,000 second-feet to 150,000 second-feet. This flow could be confined within the river channel by the levee system proposed in the report. This levee system, combined with the operation of the Vaquero Reservoir, would adequately protect the City of Santa Maria and other lands and developments in the flood plain.

10. The structures proposed in the report under review comprising the Vaquero Dam, levee systems along the Santa Maria River and Bradley Canyon and works appurtenant thereto, are engineeringly feasible of construction and the estimated costs appear to be reasonable based upon preliminary plans, and prices as of October, 1950. Construction costs and cost of water to the

irrigators should be revised to the present price basis.

11. Geologic investigations indicate that a safe dam of the type proposed can be built at the Vaquero site. However, careful consideration should be given to conditions existing at the site in designing the dam in order to assure its safety.

12. Further studies and investigations should be made with reference to the method or methods of distribution and utilization of the flood waters which would be conserved and regulated in the Vaquero Reservoir.

13. The charge for water service should be such that the water users at the end of 40 years, or other period, will have paid all charges allocated to conservation so that they may at that time acquire the project works by and through the necessary Congressional action.

14. A district should be formed with taxing power adequate to provide the sums necessary for payments to the United States as they become due.

15. Supplemental water supplies in the amount of 35,000 to 50,000 acre-feet per year are required to meet present overdrafts, and about 300,000 acre-feet per year will be required to meet ultimate needs in the Santa Maria River Basin. The portion of these water supplies not provided by the development of local sources could be secured by and through the Feather River Project.

16. Federal legislation authorizing the project should expressly provide that the Federal construction and contracting agencies proceed in conformity with the laws of the State of California relating to water and water rights.

17. The excess of from \$37 to \$68 per net irrigated acre of repayment capacity over required annual payments for conservation benefits for lands in the Santa Maria Valley service area, based on the October 1950 prices, indicates ample repayment capacity for the conservation portion of the Vaquero Reservoir as estimated in the report. The repayment capacity would probably be adequate if the cost estimates are revised to the present price basis.

18. While the proposed method of repayment to the United States of that portion of the reservoir cost allocated to water conservation by an ad valorem tax on the area benefited appears at this time to be the only practical one, study should be made to determine some more equitable method due to probable unequal ground water benefits resulting from project operation.

19. Details of State Highway relocations and revisions, and possible participation by the State in such revision, should be adjusted by conferences between the California Division of Highways, the Corps of Engineers, and Bureau of Reclamation, after the project has been authorized, and as plans for it materialize.

20. The investigations requested by the California Department of Fish and Game in its comments contained herein should be made in order to resolve the issues involved.

RECOMMENDATIONS

It is recommended that:

1. The plan of levee and channel improvements proposed by the Corps of Engineers, Department of the Army, for flood control in the Santa Maria Basin be adopted and approved and an appropriation made for the construction of these works.

2. The construction of a 214,000 acre-foot capacity multiple-purpose reservoir at the Vaquero site on the Cuyama River be approved, and funds appropriated for such construction.

3. In view of the design of the proposed Santa Maria River levee and channel improvements to a capacity of 150,000 second-feet, which is 50 per cent larger than any flood of record, consideration be given to appreciably increasing the amount of storage space in the Vaquero Reservoir allocated to conservation use, with the proposed levee and channel improvements remaining the same.

4. Some provision for sediment control to prevent filling of Vaquero Reservoir be incorporated as an initial feature of the proposed Santa Maria Project.

5. Federal legislation authorizing the project expressly provide that Federal constructing and operating agencies for this project proceed in conformity with laws of the State of California relating to water and water rights.

6. Contracts between the United States and local interests provide among other things for the inclusion in the water rates or charges of sums for operation and maintenance of project works and for repayment of capital costs of such works on a non-interest

bearing basis in 40 years, or other period, and that such contracts provide for the acquisition by the local interests and water users of the project works and water rights by and through the necessary Congressional action.

7. Consideration be given to the advantages of repaying the reimbursable cost of the conservation features to the Federal Government in a lump sum.

8. Consideration be given to the comments and views of the California State Highway Engineer, set forth in his letters dated June 22 and August 17, 1951, to the District Engineer, Corps of Engineers and Regional Director, Region 2, U. S. Bureau of Reclamation, respectively, which are quoted in this report.

9. Consideration be given to the comments and recommendations of the Director of the State Department of Fish and Game contained in his communication dated November 12, 1952, and included in this report, which comments are also submitted in conformance with the provisions of Public Law 732, 79th Congress (60 Stat. 1080).

10. Consideration be given to the comments and recommendations of the Director of the Department of Natural Resources, contained in his communication dated October 30, 1952, and included in this report.

Submitted by:

Original signed by

T. B. Waddell
Assistant State Engineer

Sacramento, California
December 31, 1952

Approved:

Original signed by

A. D. Edmonston
State Engineer