

DIRECTORS

IRA C. ROBINSON, LA MESA, NO. 1
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WM. H. WEST, LEMON GROVE, NO. 3
WM. H. SPERRY, SPRING VALLEY, NO. 4
FRANK R. BEATTY, EL CAJON, NO. 5
JNO. C. SCOTT, ASSESSOR-COLLECTOR
C. L. GROGAN, TREASURER

**LA MESA, LEMON GROVE & SPRING VALLEY
IRRIGATION DISTRICT**

105 SOUTH SPRING STREET
LA MESA, CALIF.

OFFICERS

IRA C. ROBINSON, PRESIDENT
C. HARRITT, GENERAL MANAGER
T. H. KING, ENGINEER
RUTH C. DREW, SECRETARY
STEARNS, LUCE & FORWARD
ATTORNEYS

May 8, 1929.

Col. Fletcher,
1020 9th St.,
San Diego, Calif.

Dear Sir:-

I herewith enclose copy of the Court Decision
El Capitan
of the/Condemnation Suit.

Yours very truly,

C. Harritt, General Manager.

LamMesa, Lemon Grove & Spring Valley
Irrigation District.

CH:AC

22.94

1 IN THE DISTRICT COURT OF APPEAL, SECOND APPELLATE DISTRICT,

2 STATE OF CALIFORNIA,

3 DIVISION ONE.

4 THE CITY OF SAN DIEGO,
5 A MUNICIPAL CORPORATION,

6 Plaintiff and Respondent,

7 v.

8 THE CUYAMACA WATER COMPANY, A CORPORATION,
9 THE CUYAMACA WATER COMPANY, A CO-PARTNERSHIP;
10 ED FLETCHER, AS SOLE SURVIVING CO-PARTNER
11 OF A CO-PARTNERSHIP FORMERLY COMPOSED OF
12 JAMES A. MURRAY, ED FLETCHER AND WILLIAM G.
13 HENSHAW, DOING BUSINESS UNDER THE FIRM NAME
14 AND SYTLE OF CUYAMACA WATER COMPANY, ED
15 FLETCHER AND C. F. STERN,

16 Defendants and Appellants,

17 LA MESA, LEMON GROVE AND SPRING VALLEY
18 IRRIGATION DISTRICT, ET AL.,

19 Intervenors and Appellants,

20 Civ. No. 5353.

21 Appeal from part of a judgment of the Superior Court of
22 Orange County, in an action to condemn real property for
23 public use, and also from an order granting motion for a
24 new trial of that part of the case tried by jury. M. W.
25 Conkling, judge presiding.

26 For Appellants: Crouch & Sanders; and Sweet, Stearns & Forward.

27 For Respondent: Shelley J. Higgins, city attorney; Arthur F.H.
28 Wright; Hunsaker, Britt & Cosgrove.

29 The defendants and intervenors have appealed from that portion
30 of the judgment "which adjudges that the plaintiff is entitled to
31 condemn the lands described in its complaint as amended, subject
32 to the reservations and restrictions contained therein and the
further restrictions in the findings of fact and conclusions of
law specified"; and also appeal from the order granting
plaintiff's motion for a new trial of that portion of the case

1 decided by the jury, and setting aside the verdict of the jury
2 heretofore rendered in said action. A more detailed descrip-
3 tion of the case and of the proceedings leading upto said
4 judgment and order will be found in the decision of this court
5 wherein we denied a motion to dismiss the appeal from part of
6 the judgment. (City of San Diego v. Cuyamaca Water Company
7 et al., 80 Cal. App. 599.)

8 In considering these appeals we shall first dispose of the
9 questions relating to the order granting a new trial. The
10 verdict of the jury determined that the value of the property
11 sought to be condemned was, at the date of the trial, \$600,000.00;
12 that the damages accruing to the remaining portion of the entire
13 parcel--to-wit, the 130 acres lying west of the 190 acres sought
14 to be taken, of which the property taken is a part, by reason
15 of its severance from the land condemned and the construction
16 of the improvement in the manner proposed by the plaintiff, is
17 the sum of \$2,000.00; and found that the portion of the entire
18 parcel not sought to be condemned will be benefited by the
19 construction of the improvement proposed by the plaintiff in the
20 sum of \$3,000.00. Upon the motion for a new trial as submitted,
21 the court made its order as follows: "The verdict of the jury
22 herein is vacated and a new trial is granted to the issues
23 heretofore submitted to the jury only, and upon all the grounds
24 specified in plaintiff's notice of intention to move for new
25 trial." The grounds of the motion were: (1) Irregularity
26 of the proceedings of the adverse parties, to-wit, the defendants,
27 by and through their attorneys, by which the plaintiff was
28 prevented from having a fair trial; (2) an excessive verdict,
29 appearing to have been given under the influence of passion and
30 prejudice; (3) insufficiency of the evidence to justify the
31 verdict of the jury, and that said verdict is against law; (4)
32 errors in law occurring at the trial and excepted to by the
plaintiff. The motion was based upon the minutes of the court,

1 and upon affidavits.

2 The case came on for trial on the 15th day of June, 1925,
3 before the Superior Court of the County of Orange, to which
4 court the cause had been transferred from the Superior Court of
5 San Diego County. A jury having been duly impaneled and sworn,
6 the jurors were excused until the 22d day of June, and thereafter
7 until the 30th day of June, and during their absence the court
8 proceeded with the trial of the issues which were to be tried
9 without a jury, including the issue relating to the existence
10 of any necessity that the land sought to be condemned be taken
11 by the city for the purposes alleged in its complaint. Upon the
12 return of the jury into court on June 30th, the trial proceeded
13 before the jury for the purpose of determining the issues
14 involving the value of the property sought to be condemned, and
15 the damages which would accrue to the remaining portion of the
16 entire parcel of which the property taken is a part, by reason of
17 its severance from the land condemned and the construction of the
18 improvement in the manner proposed by the plaintiff. The verdict
19 of the jury was received and entered on the 9th day of August,
20 1925, and thereafter on the 22d day of August, 1925, the findings
21 of fact and conclusions of law were signed and filed. Subsequently
22 such proceedings were had that the motion for a new trial was granted
23 as heretofore stated.

24 The trial court held, in effect, that the evidence was insuffi-
25 cient to justify the verdict; and more particularly that the verdict
26 was so excessive that it appeared to have been given under the in-
27 fluence of passion and prejudice.

28 Insufficiency of the evidence, before it will justify a court of
29 appeal in refusing to accept and follow a finding of fact, must
30 amount to a complete absence of any substantial evidence in support
31 of the finding. A common statement of the rule on appeal is that
32 if the evidence is conflicting, the finding will not be disturbed.
But it is not so with a trial court in passing upon a motion for a
new trial. The trial judge should not grant a new trial unless

1 he is clearly satisfied that the verdict or other decision is
2 wrong. "But in considering the question upon the motion he must
3 act upon his own judgment as to the effect of the evidence. The
4 parties are entitled to the judgment of the jury in rendering a
5 verdict, in the first instance; but upon a motion for a new
6 trial they are equally entitled to the independent judgment of the
7 judge as to whether such verdict is supported by the evidence."
8 (Green v. Soule, 145 Cal. 96, 103.)

9 In the case at bar there was a wide diversity of opinion of
10 witnesses concerning the value of the land sought to be taken.

11 The value stated in the verdict, though less than that shown by
12 the testimony of some witnesses, is many times the value given by
13 other witnesses. Counsel for defendants were deeply dissatisfied
14 with the announcement of the intention of the court to decide that
15 the right to condemn the land had been established. To such decision
16 they had the right of exception, and the right to have the matter
17 reviewed upon appeal, but upon that issue they had no right of
18 appeal to the jury. Nevertheless, on numerous occasions, and
19 apparently with a studied intention, the expressed this dissatisfac-
20 tion in the presence of the jury, and endeavored to emphasize and
21 impress upon the minds of the jurors the fact that the land was
22 being taken away from the defendants against the will and
23 contrary to the desire of the defendants. If this over-pressed
24 insistence of the defendants that the court was erroneously per-
25 mitting their land to be taken away from them caused the jury to
26 increase the amount of the compensation award, and to raise it
27 above the value which normally would have resulted from the
28 testimony of the witnesses, this easily might have produced an
29 excessive verdict. For the standard of measurement of value of
30 the land about to be taken did not in any way depend upon the
31 fact that the defendants were objecting to the condemnation.
32 The plaintiff was entitled to have the actual market value

1 established in accordance with law, unaffected by any belief
2 or suggestion that the property was being wrongfully condemned
3 and taken. It is apparent that the court in ruling on the
4 motion for a new trial had reached the conclusion that the
5 jurors, in arriving at the amount of compensation given by their
6 verdict, had improperly allowed themselves to be influenced by
7 these contentions of the defendants, and that the verdict so
8 obtained was excessive. We are of the opinion that the order
9 granting a new trial of the issues tried by the jury, should be
10 affirmed.

11 The condition of the record in relation to the judgment and
12 the appeal therefrom, has been set forth in our decision of the
13 motion to dismiss the appeal from part of the judgment. (City
14 of San Diego v. Cuyamaca Water Company, et al., 80 Cal. App.
15 599.) This appeal is from "that certain portion of the judgment
16 ~~*****~~ which adjudges that the plaintiff is entitled to condemn
17 the lands described in its complaint as amended, subject to the
18 reservations and restrictions contained therein and the further
19 restrictions in the findings of fact and conclusions of law
20 specified."

21 By its complaint, filed on the 20th day of May, 1924, plain-
22 tiff stated certain facts concerning its existence and powers as
23 a municipal corporation. The complaint then alleged the due
24 enactment of an ordinance whereby the city council determined and
25 declared that the public interest, convenience and necessity of
26 the city of San Diego and the inhabitants thereof, for public use
27 and for the impounding, conserving and delivering of water to
28 said city for municipal purposes, required the construction of a
29 dam and reservoir on, over and across certain lands in the
30 county of san Diego; that by said ordinance the council further
31 determined and declared that the taking and acquiring by the city
32 of the lands, property and rights described in the ordinance is

1 deemed necessary for the acquisition and completion of additional
2 water impounding and conserving facilities to be used for the
3 purpose of impounding, conserving and delivering water to the
4 city of San Diego and the inhabitants thereof for municipal
5 purposes, etc., etc. The ordinance characterized the interest to
6 be acquired in the land sought to be taken as being "the fee
7 simple of the following described lands, to be used for the
8 purpose of constructing and maintaining a dam and reservoir
9 thereon." By said ordinance the city attorney was instructed to
10 prosecute this action for the purpose of condemning and acquiring
11 the property and rights demanded pursuant to said ordinance. The
12 complaint, following the terms of the ordinance, alleged that it
13 was necessary to condemn and acquire a fee simple in the described
14 property, "for the use of said city in constructing and maintain-
15 ing thereon a dam and reservoir".

16 On July 27th, 1925, the plaintiff filed an amendment to
17 its complaint, whereby its demand for condemnation of the fee
18 simple of the described property sought to be taken was modified
19 by providing that there should be reserved to the defendants the
20 easement and right to conduct over and across said land by means
21 of the flume or conduit now located thereon, (giving by
22 description the location of the strip of land on which said flume
23 is located,) any water which said defendants or either or any of
24 them may now or hereafter be entitled to conduct over and across
25 said land, together with the right to enlarge and repair said
26 flume or conduit, or to relocate the same in a manner not
27 inconsistent with the use of said land by plaintiff for reservoir
28 purposes; reserving further to said defendants the right to
29 conduct, carry and have flow through, under and across and beyond
30 said land any water which defendants now own or have the right to
31 carry, conduct, or have carried and conducted through, under and
32 across said land; reserving also to said defendants the right to

1 withdraw and take from said land by pumps or otherwise any
2 water which defendants or either of them now have the right to
3 withdraw and take from said land; reserving also to said defend-
4 ants the right to store upon said land any water which said
5 defendants or either or any of them are now entitled to store
6 thereon, and which said defendants or either or any of them
7 might now or hereafter store upon said property without using
8 or flooding any land of the plaintiff; further reserving to said
9 defendants the right of access, etc., for the purposes of said
10 reservations.

11 By further amendment on July 1st, 1925, the plaintiff
12 modified its demand by providing that in the enjoyment of the
13 common use of said lands herein sought to be condemned, the
14 plaintiff shall not be entitled to construct improvements
15 thereon in a manner which shall flood said land to a height in
16 excess of 150 feet above the level of the stream bed located upon
17 said lands.

18 The case was tried upon the complaint as so amended, and a
19 second amended answer of defendants and intervenors filed July
20 9th, 1925. It may be noted here that the trial commenced on
21 June 15th, 1925, and it thus appears that the amendments to the
22 complaint, and also the second amended answer, were filed during
23 the period when the issue concerning the right of the plaintiff
24 to take said property, were being tried by the court in the
25 absence of the jury, and prior to the introduction of any
26 evidence before the jury. The answer denied many of the
27 allegations of the complaint; denied the necessity that the city
28 of San Diego acquire a fee simple or any other right or estate
29 in the property demanded, and denied the right of the city to take
30 said property at all. The answer further denied the right of the
31 plaintiff to take the property in fee simple and at the same time
32

1 reserve to the defendants the rights proposed to be reserved, or
2 to limit the rights of the defendants in any way by means of such
3 reservations.

4 The defendants further by their answer set forth facts showing
5 that defendant Cuyamaca Water Company and its predecessors in
6 interest have been, and that said defendant now is, operating a
7 public utility, and engaged in the conservation, impounding and
8 distribution of water to public and private consumers including
9 incorporated cities and their inhabitants, and to other terri-
10 tories, for domestic and irrigation purposes. The defendants
11 alleged that the value of the property sought to be taken is the
12 sum of one million dollars, and they further alleged their owner-
13 ship of certain other lands, waters, water rights, and water
14 distribution properties, alleged to be of certain stated
15 values and which would be damaged in certain stated large sums as
16 a result of the condemnation and taking of the property demanded
17 by the plaintiff. It was alleged that the property sought to be
18 taken is an integral part of the water system owned and operated
19 by the defendants, appropriated by them to the use and actually
20 used in conservation and distribution of water as before stated;
21 and that said water system will by reason of the condemnation
22 herein, be greatly damaged in a sum not less than one million
23 dollars.

24 It was further alleged in the answer that on April 5th, 1924,
25 the defendant Cuyamaca Water Company, a co-partnership, executed
26 to intervenor Irrigation District an option in writing for the
27 purchase of all of the property of the Water Company, including
28 the land described in the complaint; that said district has com-
29 plied with all of the terms and conditions of said option, and
30 the said option has thereby now become a contract of purchase and
31 sale between the water company and the district. It was further
32 alleged that the land sought to be taken constitutes a large

1 underground basin or reservoir capable of developing by means of
2 a pumping plat installed thereon, large quantities of water;
3 that prior to the year 1916 there had been installed by said Com-
4 pany on said land a pumping plant and water was pumped from said
5 underground reservoir situated on said land and used and supplied
6 for the public purposes heretofore stated. The history of said
7 pumping plant and its connected uses down to the time of the
8 filing of said answer, was set forth at length in the answer, and
9 it was alleged that should said lands be acquired by the city of
10 San Diego the district would there by be deprived of additional
11 water which could be developed by said pumping plant and put to
12 public use. The answer further set forth the ownership of
13 certain lands by the Irrigation District within the watershed of
14 the San Diego River, and riparian thereto, which were acquired
15 by the district for the purposes of a pumping plant; and
16 that by the building of the dam sought to be constructed by the
17 plaintiff the flow of water to said lands of the District will
18 be absolutely cut off and said lands will be deprived of all
19 water whatsoever. Facts were stated at length showing how the
20 supply of water in the sands on the District's said lands is
21 replenished from time to time from the surface and underground
22 flow of the river, and how the supply thus obtained will be
23 destroyed by the proposed dam, and the District be damaged
24 thereby.

25 The foregoing statements are a brief summary of what seem to
26 be the chief elements of the answer, which sets forth said matters
27 at great length.

28 The court by its findings of fact affirmed the right and
29 necessity of the city to acquire the demanded tract of land,
30 subject to the reservations and restrictions set forth in the
31 findings, which are the reservations and restrictions to which
32 we have referred in describing the complaint as amended. The

1 court found that the lands to be taken, amounting to 190 acres,
2 are a part of a larger tract amounting to 320 acres; and that
3 no other land owned by the defendants or any of them, is
4 contiguous to said 320 acre parcel. The findings of fact
5 concerning the defendants and their several properties, and
6 concerning the development and distribution of water by the,
7 are too extensive for convenient repetition here, further than
8 may be required in discussion of the questions presented for
9 decision.

10 The first proposition relied upon by appellants is that at
11 the time this action was commenced, the property sought to be
12 condemned was already appropriated to the use of various
13 cities and towns other than the plaintiff, and was being used
14 for the public purposes for which it had been so appropriated;
15 and that for this reason the plaintiff has no right to take
16 the property by condemnation. It is the law that "property
17 appropriated to the use of any county, city and county,
18 incorporated city or town, or municipal water district, may not
19 be taken by any other county, city and county, incorporated
20 city or town, or municipal water district, while such property
21 is so appropriated and used for the public purposes for which it
22 has been so appropriated." (C.C.P., Section 1240, sub. 4, and
23 section 1241, sub. 3.)

24 The San Diego River is a stream rising in the Cuyamaca
25 mountains northeast of the city of San Diego, and flowing down
26 in a general southwesterly direction some 65 miles, reaching the
27 Pacific Ocean at the city of San Diego. The so-called El
28 Capitan dam site is located in and just above a rocky gorge
29 through which the river passes, at a point about 35 miles from
30 the city. In the year 1899 a company known as the San Diego
31 Flume Company, which is a predecessor of the defendants in
32 ownership and operation of the water development and distribution

1 system now owned by the Irrigation District, was organized and
2 began the construction of a dam, reservoir and flume for the
3 diversion and use of water of the San Diego River and of
4 certain of its tributaries. The site of that dam and reservoir
5 is on Boulder Creek, about 30 miles, more or less, above the
6 location of the property sought to be condemned in this case.
7 The reservoir became known as Cuyamaca Lake. The water from
8 that reservoir, after passing along Boulder Creek for a distance
9 of 14 miles, was diverted and thence flowed through a flume
10 constructed at a suitable grade and which carried the water
11 down to the city; some of the water being distributed to smaller
12 cities and towns, and to agricultural and other lands along the
13 line of this flume and above the city. This flume, as now
14 situated, crosses the lands sought to be condemned in this case,
15 at a level approximately 50 feet higher than the high water mark
16 of the proposed reservoir.

17 At a point about five miles below El Capitan dam site, on the
18 river, there is a certain tract of land on which there is a
19 pumping plant which was first installed in the year 1898 by La
20 Mesa Development Company, and by further transfers the same
21 property at the time of the commencement of this action belonged
22 to the Cuyamaca Water Company, a partnership. Up-stream from
23 the pumping plant and below El Capitan dam site, there is a
24 basin of approximately 1400 acres, filled with sand and gravel,
25 (and under the same ownership as the pumping plant,) and known
26 as El Monte reservoir. Within the area which would contain the
27 reservoir to be created by El Capitan dam, there are other water-
28 bearing lands, on which at one time a pumping plant had been
29 established and operated by defendant Cuyamaca Water Company, a
30 partnership, and the waters so obtained were carried into the
31 distributing system of that company. Said pumping plant, which
32 had been operated during the years 1913 and 1914, was completely

1 destroyed by flood waters in January 1916, and that pumping
2 plant has not since then been restored. As a part of its
3 defense herein the defendants claimed that the waters contained
4 in the sands located in El Capitan reservoir site slowly seep
5 down into El Monte reservoir, and thus act as a feeder for that
6 reservoir. They further claimed that the Cuyamaca Water Company
7 and its accessories at all times intended, whenever the necessity
8 therefor should appear, to resume the pumping of water from El
9 Capitan reservoir lands, and to use the waters so developed and
10 obtained, either by diverting the same directly to the flume or
11 by permitting them to percolate down into the sands of El Monte
12 reservoir. They further claimed that said owners, prior to
13 and at the time of the commencement of this action, held and
14 owned the land constituting the dam site for the purpose and
15 with the intention that they would thereafter construct at that
16 place a dam for the purpose of holding back flood waters and
17 increasing the supply of water available for use in the sands of
18 El Monte reservoir.

19 At this point it seems necessary to quote certain of the
20 findings which have a bearing upon the foregoing issues of the
21 case.

22 X.

23 The Cuyamaca Water Company, a co-partnership, is in
24 charge of and operates a public utility, and for many
25 years past has been and now is engaged in the conserva-
26 tion, impounding and distribution of water to public and
27 private consumers for municipal, domestic and irrigation
28 purposes, within the county of San Diego, and that among
29 the consumers are the incorporated cities of La Mesa, and
30 El Cajon, and the towns of Lakeside, Foster, Lemon Grove,
31 Kensington Park and the territory so served by said public
32 utility is without the boundaries of the city of San Diego,
It is not true that defendant has been for many years last
past, or now is, conserving or distributing water from a
portion of said lands herein condemned by the plaintiff,
subject to said reservations and restriction, to the in-
habitants of said cities or of said territory for domestic
or other uses.

XI.

1 It is not true that by the building and erection of the
2 dam sought to be constructed by plaintiff the rights of the
3 defendants, or of any one or more of them in and to the
4 waters of the San Diego River will be destroyed or severed
5 from the land of the defendants, or any one or more of them
6 will be damaged by the destruction or taking of said water
7 rights, if said property, subject to said reservations and
8 restriction, is condemned by plaintiff herein.

XIX.

6 It is not true that the property taken and condemned
7 by this plaintiff in this action is an integral part of a
8 water system owned and operated by the defendant, Cuyamaca
9 Water Company, a co-partnership, as herein found, or was
10 at the time of the commencement of this action, or at the
11 time of the trial of this action, appropriated to the use,
12 or actually used in the conservation or distribution of
13 water to the inhabitants of said cities and towns, or of
14 said irrigation district, for domestic or irrigation pur-
15 poses, other than as used for a right of way for a flume
16 or conduit for the transmission and conveyance of water
17 as herein found, and other than as used for a right of way
18 for a flume or conduit for the transmission and conveyance
19 of water as herein found, and other than for the pumping
20 of water therefrom at the times and in the amounts all as
21 herein specifically found. It is not true that the lands
22 herein taken and condemned, subject to said reservations and
23 restriction, are used as a means of conducting water or
24 impounding water, or as a reserve storage reservoir for
25 periods or drought.

XXII.

17 That said lands consisting of 190 acres herein taken
18 and condemned, subject to said reservations and restrictions,
19 and no part thereof is now, or was at the time of the com-
20 mencement or of the trial of this action or ever has been,
21 used by the defendants or any one or more of them for a
22 public use or purpose other than as a right of way for said
23 flume or conduit as herein specifically found and other than
24 for the purpose of pumping water therefrom during the years
25 1913 and 1914, as herein specifically found, and that said
26 190 acres of land herein taken and condemned, subject to said
27 reservations and restriction, and no part thereof, is now
28 or ever has been appropriated to a public use or purpose
29 which is inconsistent with the use sought to be made of
30 said property by said plaintiff; and that the use to be
31 made of said property by plaintiff is consistent with the
32 continuance of the use of said 190 acres of land herein
sought to be condemned, subject to said reservations and
restriction, and every part and portion thereof heretofore
made of said property or any part or portion thereof, by said
defendants, or any one or more of them.

XXIII.

29 That the defendant Cuyamaca Water Company, a co-partner-
30 ship, is in charge of and operates a public utility and for
31 many years last past has been, and is now, engaged in the
32 conservation, impounding and distribution of water to public

1 and private consumers for domestic purposes within the county
2 of San Diego. That said defendant Cuyamaca Water Company
3 has not, for many years last past, and is not now conserving
4 and distributing water from a portion of said 190 acres of
5 land herein taken and condemned, subject to said reservations
6 and restriction, to the inhabitants of any city or incorpor-
7 ated village or town, or any other person or persons for any
8 purpose whatsoever, and that no part of said 190 acres herein
9 taken and condemned by plaintiff has, at any time since Jan-
10 uary, 1916, been used by said defendant Cuyamaca Water Com-
11 pany, a co-partnership, or by any one or more of said defen-
12 dants, for public use other than as a right of way for a
13 flume or conduit as herein found. That no part of said 190
14 acres herein taken and condemned has ever been appropriated
15 or dedicated to a public use other than as herein specifically
16 found, and that no part of said property at the date of the
17 issuance of the summons in this case or at any time subsequent
18 thereto, has been appropriated and dedicated to a public use
19 by the defendants herein, or by any other party, save and
20 except the use of said land for a right of way for a flume or
21 conduit as herein specifically found.

22 XXV.

23 That at the date of the commencement of this action,
24 to-wit: April 16, 1924, Ed Fletcher and the estate of James
25 A. Murray were the owners of the property sought to be con-
26 demned in this action; that on said date defendant, the
27 Cuyamaca Water Company, a corporation, had no interest in
28 said lands and property sought to be condemned in this action;
29 that on said date the Cuyamaca Water Company, a co-partnership,
30 had no interest in said lands and property sought to be con-
31 demned in this action; that on said date the La Mesa, Lemon
32 Grove and Spring Valley Irrigation District had no interest in
said lands and property sought to be condemned in this action,
save an option to buy the same which on said date had not
been exercised, and that at the present time said La Mesa,
Lemon Grove and Spring Valley Irrigation District has no
interest in said property save an executory contract to pur-
chase the same, which said contract has not as yet been ex-
ecuted; and that at the date of the commencement of this
action, defendant C.F. Stern had no interest in and to
any of the lands and property sought to be condemned in this
action; and that at the date of said trial, the 15th day of
June, 1925, Ed Fletcher was the sole owner of the property
and lands sought to be taken by said plaintiff in this action.

25 By the conclusions of law filed with the findings of
26 fact, and by the judgment directed to be entered in accordance
27 with said findings and conclusions, the court determined that
28 the use of said lands sought to be taken for reservoir pur-
29 poses, etc., is a use authorized by law, and that the taking
30 by plaintiff of said land subject to the reservations and
31 restrictions mentioned in the complaint as amended, is neces-
32 sary for such use. It was directed that the lands described in

1 the complaint be taken, subject to the stated reservations
2 and restrictions; that the lands so taken may be used by
3 plaintiff and defendant Cuyamaca Water Company, a co-partner-
4 ship, or its successors in interest, in common, and that the
5 use of said lands by plaintiff for the stated purposes is
6 consistent with the use thereof, and the continuance of such
7 use, by said co-partnership or its successors in interest
8 "according to the reservations and restrictions herein
9 specifically provided;" that said dam and reservoir is
10 planned and located in a manner which will be most compatible
11 with the greatest public good and the least private injury;
12 "that no part of the lands condemned and taken in this
13 proceeding by plaintiff has ever been dedicated, appropriated
14 or used, or is now dedicated, appropriated or used, for a
15 public use which is inconsistent with the use thereof for dam
16 and reservoir purposes for the impounding, conserving and
17 delivery of water subject to the reservations and restriction
18 herein contained."

19 On the subject of ownership by defendants of the lands
20 sought to be taken in this action, findings VII and VIII
21 should be read together with finding XXV. From these findings
22 so considered together, it appears that at the time of the
23 commencement of this action, the legal title to the land was
24 vested in Ed Fletcher, but that such title was held by him as
25 the sole surviving member of the co-partnership known as the
26 Cuyamaca Water Company. This ownership, however, was
27 subject to a contract giving the intervenor an option to
28 purchase this property, which option was exercised and was
29 succeeded by a formal agreement of purchase and sale sub-
30 sequent to the time of the commencement of this action. The
31 evidence shows that at all times the Cuyamaca Water Company and
32 its successors were holding the property as a part of the

1 system of water supply and service of that company. This
2 fact (if we correctly understand the effect of the
3 voluminous evidence in the record), is not contradicted by
4 any of the evidence. Nothing is shown to have occurred in
5 connection with the changes in title of the property of the
6 Cuyamaca Water Company which would in any way alter or
7 diminish the public uses of the property owned by that
8 company and constituting its water system, or that could
9 in any way diminish the beneficial uses and rights vested in
10 the cities, communities and persons who were being furnished
11 with water from that system.

12 Paraphrasing the facts stated indirectly in findings
13 XIX and XXII, it is in effect found that during the years
14 1913 and 1914 the land sought to be condemned was used for the
15 purpose of pumping water therefrom "as herein specifically
16 found." Turning to finding XI we learn that during those two
17 years there was pumped from said land approximately twenty-
18 two million gallons of water by defendant Cuyamaca Water
19 Company, a co-partnership, and distributed to its consumers;
20 but that in January 1916 the pumping plant which had been so
21 operated was completely destroyed by flood waters, and had
22 not since been restored. Nevertheless the court found that it
23 is not true that said land is used as a means of conducting
24 waters or impounding waters, or as a reserve storage for periods
25 of drought. In finding XXII, however, there is an indirect
26 recognition of the fact that said land has been appropriated
27 to a public use, when the court found that said land is
28 not now and never has been appropriated to a public use or
29 purpose which is inconsistent with the use sought to be made
30 of said property by said plaintiff. This in effect is a
31 statement that said land has been appropriated to a public use.
32 This being so, that public use must continue to exist unless
there is some evidence of its abandonment. The record is

1 utterly devoid of any evidence that the beneficiaries of the
2 use have ever consented to give up any of the rights which
3 had once been conferred upon them in connection with the
4 water service to which they were entitled. And if it be
5 assumed that the Water Company would have had the power of
6 abandonment or surrender of any such rights to the detriment
7 of their beneficiaries, the evidence on that subject seems
8 to be entirely to the effect that the use of said land for
9 the purposes to which it was dedicated had not been abandoned.
10 The testimony of defendant Fletcher is directly to the point
11 that this land is "part of the ownership of property owned
12 by the public utilities, used and useful and held in reserve
13 for future development, and to draw on the underground supply
14 of water in case of need." He further testified, that the
15 reason why they did not rebuild those pumps after the flood
16 of 1916 was, that "We had no necessity for so doing on account
17 of getting a 100 per cent supply of water from other sources,
18 and it would be only an added expense waiting for a dry
19 period to come when we could utilize these wells as a reserve."
20 We think that under the facts with relation to this particular
21 subject, this case is similar to that presented in City of
22 Santa Barbara v. Gould, 143 Cal., 421. The defendant
23 Montecito Valley Water Company in that action was a corporation
24 engaged in the supplying of water for the use of the inhab-
25 itants of the village of Montecito. The land sought to be
26 condemned was water-bearing land which had been used as a
27 part of the company's water system. At the time when the
28 action was begun the water so supplied from the source known
29 as Cold Spring Branch had diminished so that it could not
30 flow down to the point of diversion maintained by the company,
31 and the company was not at that particular time using the water.

1 The Supreme Court said: "Nor was said water company responsible
2 for the drought. It ceased to use the water because the water
3 had ceased to flow, but this did not deprive it of the use of
4 the water when it should again flow. Said water company had
5 acquired the land for the purpose of preserving the water in its
6 natural state. It had the right to a portion of the waters of
7 the stream. It was engaged in supplying water to the public at
8 the time the action was commenced. Its property could not be
9 taken on the theory that it was not devoted to public use at
10 the time this action was commenced, unless it had of its own
11 volition ceased to devote it to public use. ***If the waters
12 ***should again flow down to the company's point of diversion,
13 it would be entitled to the amount of water owned by it.
14 It is also entitled to the land for the purpose of preserving the
15 normal and natural flow of the stream."

16 If we give consideration to the findings of fact according
17 to their entire scope and meaning, it becomes evident that
18 plaintiff's claim of right to condemn has been sustained by the
19 trial court upon the theory that by putting into the decree
20 certain reservations and restrictions upon plaintiff's use of
21 the dam and reservoir proposed to be constructed, the water
22 rights of the defendants which are appurtenant to the land
23 sought to be taken will be fully protected, and that in view of
24 that protection the defendants have no valid defense to the
25 action. This is in effect an attempted application of the right
26 of concurrent use for public purposes, of property sought to be
27 condemned for some use not inconsistent with an existing public
28 use. This right to take such property for a concurrent public
29 use which is consistent with continuance of the use of such
30 property for an existing public purpose, is recognized by
31 the statute which governs in eminent domain proceedings (C.C.P.
32

1 See, 1240. sub. 4) The right so given, however, is subject to an
2 exception which is vitally important in this case. "But property
3 appropriated to the use of any county, city and county, incorpor-
4 ated city or town or municipal water district, may not be taken by
5 any county, city and county, incorporated city or town, or
6 municipal water district, while such property is so appropriated
7 and used for the public purposes for which it had been so appro-
8 priated." A very thorough discussion of these code provisions,
9 including the stated exception, is to be found in *Mono Power*
10 *Company v. County of Los Angeles*, 284 Fed., 784. In that de-
11 cision by the Circuit Court of Appeals, 9th Circuit, the same kind
12 of conflicting interest was involved that is exhibited by the facts
13 in the present case. In that case the city was seeking to condemn
14 land of the Power Company and it was admitted that the use intend-
15 ed by the city if permitted to take the property, was inconsis-
16 tent with the public use then existing under beneficial rights
17 vested in other cities and communities served by the Power Company.
18 The Court held that by reason of the final clause of subdivision
19 4, quoted, above, the demand of the city of Los Angeles must be
20 denied. The *Mono Power Company Case* is referred to in *East*
21 *Bay Municipal Utility District v. Railroad Commission*, 194 Cal.
22 603, at pages 621 et seq. The opinion is there expressed that
23 where there is to be no change or interruption of the use of
24 water by the inhabitants of a city, and where the condemning
25 municipal agency is merely proposing to take over from a water
26 company its property subject to the same use to which it was
27 dedicated, such declared purposes do not bring the plaintiff
28 within the prohibitions of the cited code provisions. The
29 Supreme Court said: "It is here proposed to continue the use
30 of the water to the same territory to which it has heretofore
31 been appropriated. The territory and the peoples thereof are not
32 to be disturbed in the use to which the water is now put and are

1 to enjoy an uninterrupted use thereof, if the petitioner
2 succeeds in its purpose. In other words, the change will
3 result not in the disturbance of the use or appropriation of
4 the water but in the agency authorized by law to administer
5 the trust. We find nothing in the sections referred to which
6 would prohibit such a change."
7

8 In that case the petitioner was seeking a writ of mandate
9 to compel the Railroad Commission to make a valuation of certain
10 properties in contemplation of the acquisition of the same under
11 condemnation or other proceedings. The question relating to the
12 right to condemn was not directly or necessarily presented. In
13 the case at bar we meet that question face to face, and under
14 circumstances which are materially different from those considered
15 in the East Bay case. Notwithstanding the studied effort shown
16 by the findings and judgment herein, to make a decree of condem-
17 nation which will enable plaintiff to take the land without in
18 any way disturbing or interrupting the use to which the property
19 is now put by the defendants for the benefit of the two incorpora-
20 ted cities and several unincorporated towns to which water is
21 supplied, we think that the construction and maintenance of the
22 dam and reservoir as proposed, necessarily includes a disturbance,
23 change, and probable interruption of the use. It is not here
24 proposed to substitute the plaintiff for the present owners of
25 the property, and make the plaintiff directly accountable as the
26 agency in charge of the use. The intervenor, after the condem-
27 nation, will continue to be the agency administering the use and
28 supplying water to its consumers, but will be subjected to new
29 conditions, and to the will of others, in the management of that
30 part of its property which will be transferred to the possession
31 and control of the plaintiff. Instead of an underground supply
32 of pure water taken out by pumping from the land, and instead

1 of water percolating into El Monte Basin, the beneficiaries
2 of the use in charge of the defendants will be compelled to
3 submit to the risks and inconveniences of a substituted supply
4 drawn from an open reservoir replenished by storm water, and
5 delivered by the hands of a stranger. The injury to the
6 rights of the defendants and their beneficiaries may be seen,
7 without taking into consideration the disputed claim of
8 appellants that they also intended to use the condemned property
9 as a dam site by means of which they would be able to increase
10 their supply of water in El Monte sands.

11 Since the conclusions above stated upon questions which are
12 determinative of the appeal require a reversal of the judgment,
13 we find it not necessary to express an opinion upon the other
14 grounds of appeal which have been presented in the briefs for
15 appellant in support of their objections to the judgment.

16 The application of appellants wherein they request that this
17 court receive and take additional evidence of facts occurring sub
18 sequent to the decision appealed from, and to reconsider and
19 review certain of the evidence produced before the trial court,
20 and to make findings of fact based upon such evidence contrary
21 to and in addition to those made by the trial court, is denied.
22 The order granting plaintiff's motion for a new trial of that
23 portion of the case decided by the jury, and setting aside the
24 verdict of the jury, is affirmed. That portion of the judgment
25 made and rendered in said action on the 22d day of August 1925,
26 which adjudges that the plaintiff is entitled to condemn the lands
27 described in its complaint as amended, subject to the reservations
28 and restrictions contained therein and the further restrictions
29 in the findings of fact and conclusions of law specified, is
30 reversed.

1 I concur:

2 York, J.

3 Mr. Justice Houser, deeming himself disqualified, takes no
4 part in this decision.
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SENATE BILL 3646

Section 5

That said reservoir when constructed, shall be maintained and controlled by the city of San Diego for the use and benefit of said city and the inhabitants there and such other municipality within the county of San Diego, State of California as may be now or hereafter furnished with water by said City of San Diego and for the use and benefit of riparian owners along the San Diego River, below the lands herein described and for the benefit of persons, corporations or municipalities situated along or adjacent to the pipe line of said city of San Diego for the conservation and storage of water for domestic, Irrigation or municipal usage.

CANNOT DIVERT SUTHERLAND FUND, SAYS CONKLING

City Attorney Tells Club Remaining Sum May Not Be Used on Otay Line.

San Diego city officials are bound legally, if not morally, not to divert the \$711,000 remaining Sutherland dam fund to the use of construction of a new Otay pipe line, declared City Attorney M. W. Conkling before the Present Day club meeting last night, in a discussion of the coming \$2,350,000 water bond election.

"Aside from the legal reasons that prohibit the Sutherland funds from being diverted, there remains the fact that the contracting firm of Edwards, Wildey & Dixon, now suing the city for about \$600,000, would have the best of the argument in its attempt to collect this sum from the city if the sum is diverted," said Conkling.

Conkling was referring to the law suit, now pending, brought by the contractors to collect profits expected from the Sutherland dam work, which was stopped after the contractors had installed equipment and after the dam excavation was under way.

The discussion before the Present Day club followed statements made by W. P. Mayer, speaking in favor of the coming water bond issue and Attorney W. S. Staley, opposing the bonds. The question hinged upon the possibility of using the remaining Sutherland fund to construct the Otay pipe line, instead of voting for the proposed new bond issue.

THREATEN COURT ACTION

Mayer read a statement from the attorneys of Edwards, Wildey & Dixon, in which they served notice that any attempt to divert the Sutherland fund would be met, by them, with an ac-

tion to get a court injunction prohibiting the use of the fund.

"I doubt very much if the injunction would be sought, since I believe that no court would grant the request," said Staley.

"Doubt it or not, the city council already has assured the contractors that that these funds will not be diverted, and the contractors have promised that if the attempt to do so is made, they will bring injunction proceedings," said Conkling.

"The city is legally, if not morally, bound not to divert these funds. I have advised the council that if the diversion is made the members will be personally held responsible to pay the sum sought by the contractors from their own pockets," said the attorney.

It further was divulged by the attorney that even if the Sutherland funds could be diverted, the consent of voters would be necessary, under the state law, to do so.

It has been pointed out by Hydraulic Engineer H. N. Savage that the remaining Sutherland funds are not sufficient to build the new Otay pipe line, even if the funds were available. The new pipe line, to be 19 miles of steel, concrete and cast iron, will take \$1,500,000 of the \$2,350,000 bond money to be voted on July 16. This amount is more than twice the Sutherland funds.

"The Otay pipe line issue is an important one," said Conkling. "People of this city do not know, perhaps, that the present wooden pipe line, through which San Diego receives 12,000,000 gallons of its daily average consumption of 18,000,000 gallons, is in such bad condition that it is necessary to spend more than \$100,000 annually for its repair."

SINKING FUND

"The interest on the sinking fund of the entire \$2,350,000 proposed bond issue will be less than this \$100,000 necessary to keep the old Otay pipe line in condition as the main artery for the city's water supply."

It also has been declared by city officials that the Sutherland fund now costs the city but \$3550 a year, since it is bringing in four percent interest while the city is paying but four and a half percent interest for the money.

Various members of the Present Day club spoke in favor of the coming bond issue, and declared their faith in the present city government and Hydraulic Engineer Savage.

"We should squarely face the issue of the present need for adequate water facilities," said one member. "The Otay pipe line is in danger, so our engineer tells us. The matter of the \$711,000 Sutherland fund will be taken care of in time. Meantime we should guard our present water supply, and let the future take care of itself."

The club meeting was presided over by L. R. Davis. Assemblymen William Harper and Crowell D. Eddy also spoke, telling of their experiences during the recent legislative session.

Further expressions of approval of the water bonds has been received from members of the La Jolla Kiwanis club who turned in 37 signatures to the bond pledge being printed daily in The Union and The Evening Tribune.

It is said that air travel will in-

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- SECTION I.** Recommendations and Conclusions of Hiram Newton Savage of October 23, 1930.
- SECTION II.** Recommendations of Thomas H. King, summarizing the Report to the Water Committee of January 5, 1931.
- SECTION III.** Summary of Recommendations Contained in the Report by Col. Ed Fletcher to the Water Committee.
- SECTION IV.** Compromise Agreement made by the Directors of the La Mesa, Lemon Grove & Spring Valley Irrigation District to the City Council, November 28, 1930.
- SECTION V.** John F. Covert's Analysis and Comparison appearing in the "San Diego Union" January 25, 1931.

RECOMMENDATIONS AND CONCLUSIONS OF HIRAM NEWTON SAVAGE
OF OCTOBER 23, 1930.

It is respectfully recommended that:

1. The city of San Diego authorize and direct the conservation of the available water resources of the San Diego River and initiate the construction of a masonry dam across the San Diego River, located at the outlet of the San Diego River Mission reservoir basin and about 1/3 mile below the Mission Fathers' Dam on the Fitzherbert-West tract of 310 acres of reservoir and damsite land owned by the city of San Diego. The work to be put under construction at the earliest practicable date and advanced as funds are made available. The dam to be designed for completion ultimately to impound water up to elevation 400, reservoir contour 156; and

2. The acquisition of the flowage lands required in the Mission reservoir basin below elevation 400, reservoir contour 156; and

3. The transfer, by the Honorable, the Mayor and Common Council, to the Mission Reservoir Fund of the about \$350,000 which will not be required for expenditure to complete the work, but will be saved from the bond funds authorized for the Otay Reservoir-San Diego second main pipe line; and that

4. The electors be given an opportunity at the next general election in April 1931 of authorizing the transfer to the Mission Reservoir Fund of the about \$500,000 of bond funds authorized for the enlargement of Chollas Heights

reservoir; and that

5. The electors be given an opportunity at the next general election in April 1931 of authorizing the transfer to the Mission Reservoir Fund of the about \$3,250,000 authorized but unexpended bond funds for the El Capitan dam and pipe line; and that

6. The electors be given an opportunity to transfer to the Mission Reservoir Fund, whenever available, the remaining about \$600,000 authorized and unexpended from the Sutherland Dam Bond Fund; and

7. The acquisition of Murray Reservoir in its entirety or of major storage rights therein, on terms fair alike to each, the City of San Diego and the La Mesa, Lemon Grove & Spring Valley Irrigation District; and

8. The installation and temporary operation of a booster pump in connection with the Mission Reservoir Dam, to utilize the unregulated water of the San Diego River and the water as it is impounded from the flood runoff in the reservoir and as it becomes increasingly available, and discharge and carry this water, so diverted and stored, temporarily through the lower nine mile reach of the City's Lakeside-San Diego pipe line to the University Heights filter plant and reservoir.

SUPPLEMENTAL STATEMENT

The total funds recommended to be made available for the Mission Reservoir Fund should provide sufficient money to acquire Reservoir Basin and flowage lands at prices deemed to

be fair alike to the owners and to the city of San Diego, and to construct a dam to elevation 400, reservoir contour 156, and to provide the city of San Diego with an additional net safe duty of about fifteen million gallons of water a day when the work is completed and the water impounded from the next flood runoff period of consequence.

The transfer of the \$350,000 remaining unexpended in the Otay Reservoir-San Diego second main pipe line bond fund to the Mission Reservoir fund will make it possible to initiate the acquisition of flowage lands and to construct the upstream portion of the Mission reservoir dam to a height that will make available the unregulated flow of the river and of some impounded water for delivery to the City through the existing Lakeside-San Diego pipe line.

Drawings are being printed and specifications are being type-written for the construction of Mission reservoir dam to impound water ultimately to reservoir contour 156.

Detail estimates of cost of the Mission Reservoir feature are being compiled. Estimates are being obtained from the County of San Diego of the cost of moving and reconstructing its highway around Mission Reservoir basin, and from the San Diego & Arizona Railway Company of the cost of moving and reconstructing its San Diego-Lakeside Branch line around the Mission Reservoir Basin, or for the abandonment of the reach in the reservoir basin.

Respectfully submitted,

H. N. SAVAGE,
Hydraulic Engineer.

RECOMMENDATIONS OF THOMAS H. KING, SUMMARIZING THE REPORT TO THE WATER COMMITTEE OF JANUARY 5, 1951.

(1) In solving San Diego's Water Problem not only must the present corporate limits of San Diego be considered but due regard must be had for our immediate back-country, as San Diego's business will suffer if our immediate tributary back-country suffers.

(2) The development of the San Diego River is the most important matter at present before San Diego as it is the largest potential source of water supply available to San Diego in this County and as this development necessarily ties in with the Colorado River Development.

(3) Any study of water development plans must include careful analysis of evaporation losses for as Mr. Freeman so clearly states, "Water that wastes over the spillway of a dam can be caught in another reservoir either up stream or down stream (it matters little which) but water that evaporates from the surface of a reservoir is completely lost."

(4) Our rainfall and runoff occur at the higher elevations and it is extremely unwise, unnecessary and uneconomical to permit this water to run down to the lower elevations where pumping is required to bring it back to the service area when more water can be conserved by building our reservoirs at points where it may be delivered by gravity.

(5) The cost of a water development project must take into consideration not only the cost of the structure of the dam but must include capitalized pumping costs if pumping is required, the cost of the reservoir lands, the cost of evaporation losses and the intangible but very important item of the increased population and the resulting increased assessed valuation of the community made possible by an increase in the available water supply.

(6) Estimates of cost show that the unit cost of water delivered to the consumers from the El Capitan and San Vicente development is less than the unit cost of water delivered from the Mission Gorge #2 development and added to this the El Capitan and San Vicente development will provide by gravity at least 7 million gallons per day more water, making it possible to care for an added population of 70,000 persons and creating an increased assessed valuation in excess of \$70,000,000.

The paper concludes with an appeal to the business men of the community to apply their business common sense to the problem and secure their water supply where they can get the most for their money and under better conditions of delivery.

Estimate of Cost Mission Gorge #2

	Probable Cost
Cost of dam (estimated by H. N. Savage)	\$1,672,000
Highway-Graded Road (Probably From North of Reservoir 6 Miles at \$5,000 per mile)	30,000
Highway-Graded Road from Dam to El Cajon-6 Miles at \$5,000 per mile	30,000
Paved highway about 6 miles destroyed will require about 10 miles to replace above the 400 foot contour at \$35,000 per mile which must include new bridge across San Diego River.	350,000
S. D. & A. Railroad-6 Miles at \$25,000	150,000
Damsite purchased	50,000
Clearing lands within reservoir	25,000
Reservoir lands to be purchased will require 12,000 acres at average of at least \$300 per acre.	3,600,000*
Grammar School	100,000
Rebuilding plant & buildings County Poor Farm	400,000
Improvements within reservoir	375,000
Capitalized pumping costs at 5% for lifting 15 million gallons daily an average lift of 100 feet, or new pipeline serving only 200' elevation	<u>1,400,000</u>
	<u>\$8,162,000</u>

*NOTE: These figures cannot be accepted as sufficient, as they may or may not hold in actual negotiation of purchase and quite certainly would not hold in the event of condemnation proceedings.

Cost of water 11.2¢ per 1000 gallons.

**Tabulation Showing Costs on the El Capitan
San Vicente Project.**

EL CAPITAN ESTIMATE

Indian Lands	\$ 370,000	
Relocation & Reconstruction of County Highway	50,000	
Relocation & Reconstruction of La Mesa, Lemon Grove & Spring Valley Irrigation District Flume	150,000	
Flowage Lands	42,000	
Damsite	100,000	
Dam 160' (Gravity Masonry)	4,300,000	
Clearing Reservoir Lands	30,000	
	<hr/>	\$5,042,000.00

SAN VICENTE ESTIMATE

San Vicente Dam (Dome Type)	3,500,000	
Clearing Reservoir Lands	30,000	
Highway Reconstruction	500,000	
Pipeline El Capitan to San Vicente	1,000,000	
Pipe to El Capitan from present line	500,000	
	<hr/>	\$5,530,000.00
Grand Total		\$10,572,000.00

The construction costs shown above if computed on the same basis as used previously for the Mission #2 Reservoir gives the following:

Cost \$10,572,000.00 at 7½% = \$792,900 annual charge =
\$2,172 per day = 9.9¢ per 1000 gallons for 22 million gallons
daily.

I wish to call particular attention to the fact that the capitalized pumping costs shown in the above estimates do not include the pumping now being done at University Heights Reservoir and which will be eliminated. These costs should show as a credit on the El Capitan side of the ledger.

The above costs are tangible costs only but we must also consider the intangible costs.

In the region contiguous to San Diego, level reaches of river bottom land are of comparatively rare occurrence and where flooded the loss to the community is much greater than the value represented by the loss in taxes.

If we consider the difference in the yield of 7 million gallons daily as being worth 10¢ per 1000 gallons we have \$700 per day lost in perpetuity this = \$255,500.00 per year.

This sum capitalized at 5% is equivalent to 5,110,000 as the added cost due to the inefficiency of Mission #2.

**SUMMARY OF RECOMMENDATIONS CONTAINED IN
THE REPORT BY COL. ED FLETCHER TO THE
WATER COMMITTEE.**

I am opposed to spending four, six or eight million dollars by the city on the San Diego River or anywhere else for dams for the storage of water at the present time. There is no need of it.

I am not in favor of attempting to get water from the Colorado River unless we can get an option at a nominal cost for a 20 or 30 year period. We can develop enough water on the western slope in San Diego County, including the Tiajuana River and our underground resources, also the reclamation of our sewerage water, for a million and a half people.

We are using approximately 100 gallons per day per capita or a million gallons daily for 10,000 people. Assuming we have a growth of 125,000 people the next 10 years, the plan I recommend will deliver 10 to 12 million gallons daily at a cost not to exceed two and a half to three million dollars, spent only as conditions warrant it.

Already the city of Los Angeles is reclaiming a portion of its sewerage water by new methods, at a cost not to exceed 5¢ to 6¢ a thousand gallons, and 75% of our sewerage water can and will eventually be reclaimed for irrigation and industrial purposes at a cost not to exceed 2¢ to 3¢ a thousand gallons.

Taxation is dangerously high. Today this city is overburdened with taxes. There was a delinquency of about 10% last year in the city of San Diego. This year the delinquency is much worse.

You may be interested in knowing the increased expenditures of the City and County for the last six years, which are as follows:

CITY

1924	\$4,407,574.90
1929-30 (July 1 to July 1, 1930)	6,763,629.15
An increase of over 50% in six years	

COUNTY

1924	\$6,031,002.37
1929	10,452,649.63
An increase of nearly 75% in six years.	

It is the land owners that must pay most of these increased taxes.

For twenty years the City has taken the attitude that it could only develop water for domestic purposes. This policy is a terrible mistake. Within the last two weeks I have written seventeen cities in Southern California asking for their water rates. San Diego charges more for domestic and irrigating water than any city in Southern California. Exhibit A is fully explanatory.

In order to make my point, I give you the following comparisons:

Domestic water up to 4000 cubic feet;
 Santa Barbara, .15; Pomona, .15; Los Angeles, .13;
 San Bernardino, .08; Long Beach, .10; Oceanside, .045;
 Riverside, .07; Ventura, .11; Glendale, .13; Santa Ana, .10;
 Colton, .0475; Pasadena, .18; Escondido, .075;
 National City, .18; Chula Vista, .18; La Mesa, .15. The average cost of domestic water for the above mentioned cities is 11¢ per 100 feet, while San Diego charges 20¢.

Industrial and irrigating water, sliding scale up to 100,000 cubic feet - Santa Barbara, .09; Pomona, .08; Los Angeles, .018; Los Angeles, industrial .05; San Bernardino, .075; Long Beach, .06; Oceanside, .035; Riverside, .06; Industrial Riverside, .05; Ventura, .05; Glendale, .09; Santa Ana, .06; Colton, .024; Pasadena, .10; Escondido, .075; National City, .06; Chula Vista, .06; La Mesa, .06; San Diego .20. The average cost of irrigating and industrial water of the above mentioned cities is .06 a hundred cubic feet, while San Diego charges 20¢. San Diego is certainly at a great disadvantage.

If the city of San Diego would continue a domestic rate of say 20¢ a hundred cubic feet with a minimum of \$1.00 monthly, and a sliding scale downward so that irrigation water could be had at 6 or 10 cents a thousand gallons for irrigation and industrial purposes in large quantities, the 20 or 30 thousand acres of unimproved barren land within the city limits would quickly develop.

We would add millions to our assessed valuation, thousands of people would be self-supporting, and our dream of a big city would be realized during our life time - if that is what you want.

We can develop for a cost not to exceed two and a half to three million dollars ten or twelve million gallons of water daily for the City, enough to cover its growth the next ten years, without building a dam on the San Diego River. Or, in lieu of the development of the San Pasqual gravels, build Mission Gorge #3, the water to cost from 7 to 10¢ a thousand gallons, according to the unit

developed, delivered to the City.

I recommend the immediate settlement with the La Mesa District of the San Diego River problems, the City acquiring the La Mesa District properties, the purchase price to be \$248,000.00. For the above, the City would get a deed to Murray Dam, Mission Gorge #5 damsite; lands flooded which the Cuyamaca Water Company control; surveys; core drillings; four or five hundred-acres of land in the reservoir of Mission Gorge #2 which the District owns and which cost them approximately \$100,000; the El Monte pumping plant; several hundred acres of water bearing gravels above the El Monte plant, where large quantities of water can be pumped; El Capitan damsite, and lands owned by the District for which Santa Ana jury gave a value of \$600,000 without any inclusion of water rights; Fletcher damsite and reservoir site at the head of the flume; Cuyamaca dam and 1100 acres flooded; the flume line and distribution lines; everything which the District owns. In consideration of the above, the District to get water at the present rates; the District to pay its own bond, principal and interest, of approximately \$2,000,000, and the supply of water to be limited to 4,000,000 gallons a day for irrigation and what is needed for domestic purposes. The present cost, including interest and sinking fund on the bonds, to the District, is 11¢ or 12¢ a thousand gallons for irrigating water and 21¢ for domestic, as high an irrigation rate as any district can stand. The District is now paying \$20,000 or \$30,000 above operating expenses. By the payment of \$248,000 the City immediately gets possession of the District's properties above mentioned.

Murray Dam, one of the assets, is extremely valuable to the City. It would immediately furnish an additional supply of water to the City of 3,000,000 gallons daily, holds 2,000,000,000 gallons of water, has an elevation of 550 feet above sea level, and the water will flow by gravity over the high levels of the City to Point Loma. This would eliminate the foolish expenditure of \$550,000 voted by the people to build Chollas reservoir, as Chollas reservoir only has an elevation of around 400 feet and if built would only hold 600 million. The gravity water from Murray dam will save \$60,000 or \$70,000 for the City, now being paid for pumping water to the higher levels of the City after it runs down hill to the lower levels of the City by gravity.

The present flume is good for five years and for \$50,000 a pumping plant can be installed in the upper El Monte basin, the water bearing gravels the District is deeding to the City, and 3 to 4 million gallons of water a day during the 8 months' irrigating season can be developed when needed to take care of the demands during the hot weather season, cost of water not to exceed 3¢ or 4¢ a thousand gallons into the flume.

Probably 2 years out of 3 a large surplus of flood water from the San Diego River by gravity coming through the flume, can be diverted directly into the City for the City's needs during the winter time and the surplus stored in Lower Otay dam, or the water will flow into Lower Otay by gravity from Murray dam.

The Irrigation District has, for several years, been pumping an average of 6,000,000 gallons a day during the irrigating season from its El Monte pumping plant at a cost of 5.3¢ a thousand gallons, lifting it 291 feet into the flume. The water bearing gravels are 125 to 165 feet in depth and the District has never been able to lower the water below 72 feet. In other words, for 2 years out of the last 3, the District has been pumping a billion gallons of water annually from the one pumping plant at El Monte. We can get water for the next 5 years without putting in an expensive initial investment of a dam on the river and the water that we do develop will cost less than any storage water on the river. There is no water lost by evaporation in the underground reservoirs.

Five years hence, at a cost of half to three-quarters of a million dollars, when the rebuilding of the flume line permanently (which, under the proposed arrangement, the City and the District would jointly pay for in proportion to the use of water) has been completed for all time, the City will have gravity water and save interest on a million dollars thereby, now being paid out for the cost of pumping the City's water after it reaches the City limits from its present supply.

By acquiring the San Pasqual gravels and building a pipe line over the Linda Vista mesa to San Diego from San Pasqual, a distance of about 28 miles, at an expenditure of not to exceed a million and a half dollars, at some future date, at least 8 to 10 million gallons of water daily can be secured during the 8 or 9 months of hot weather, so-called, when we need it, from the San Pasqual gravels and gravity flow, at a total cost of not to exceed 10¢ a thousand gallons delivered to University Heights reservoir.

By all means we should complete the purchase of the San Pasqual gravels immediately. It is the largest underground body of water in the County and in our purchase we kill three birds with one stone. We secure permanently the underground supply in the gravels at a cost per acre less than what Los Angeles is paying for the Owens River Valley land 275 miles away. We must acquire these same lands in order to complete the building of Sutherland dam, and, if the Super-Hodges dam is ever built a large part of these lands will be flooded and will have to be purchased at a much higher figure later on.

The acquisition of the San Dieguito Mutual Water Company system adds in addition to its present obligations 15 million gallons daily to San Diego's supply when completely developed and is the cheapest water supply to be had outside of the San Diego River.

If the City is determined to carry out immediately the construction of major dams on the San Diego River, I recommend a single arch type of dam at Mission No. 3 to the 330 foot contour which will hold 15 billion gallons of water, 45,000 acre feet, will flood only 1424 acres, with a net safe yield of approximately 8 million gallons a day under present conditions, with water costing not to exceed 7¢ a thousand gallons and the cost of the dam not to exceed \$1,250,000.00. There will only be 200 acres of good farming land destroyed, and the water will be stored where the Almighty planned it, to flood worthless land in the Mission Gorge. Core drillings have demonstrated that it is an ideal damsite, with bedrock available.

Messrs. O'Shaughnessy; State Engineer McClure; Major Olberg, Chief Engineer U. S. Reclamation Service who built the Coolidge Dam and others; F. E. Weymouth, former chief engineer U. S. Reclamation Service; Col. Leeds; T. H. King and F. M. Paude, former hydraulic engineer of the State Railway Commission, have approved this damsite. Mr. O'Shaughnessy says that this is where the first dam on the river should be built, and even Mr. Freeman advocated its purchase and later development. Messrs. White, Chandler and Wangenheim, after two years' study with hydraulic engineers in their employ, recommended the construction of Mission No. 5 dam.

The engineer who designed the single arch type of dam is the noted engineer, L. R. Jorgensen. If this dam is built, with the present pipe line which the City owns running through Mission Gorge No. 3 damsite, the water can be taken into University Heights at a cost not to exceed ½¢ a thousand gallons for pumping. In other words, at a cost not to exceed a million and a half dollars. Mission No. 3 can be installed immediately complete and the water delivered into the City either by gravity to Old Town or a slight pumping lift at a cost not to exceed 7¢ a thousand gallons.

Why start in at either Mission No. 2 or El Capitan where it is going to cost anywhere from four to six million to complete the job when we are so short of money? Our bonding margin will be materially reduced on account of the depression and lower assessed valuation. Why not live within our means, build No. 3 when it is necessary five years hence, say, and let posterity build the big dams later on. San Diego is in the position of a man with a campagn appetite and a beer pocket-book.

First, let us develop our cheapest and quickest source of supply. For \$248,000 paid to the District, we get three to four million gallons of water a day additional net safe yield without spending another dollar. By spending 50 or 100 thousand dollars we can put in a pumping plant to give an additional 3 or 4 million gallons a day during the pumping season from the El Monte sands. By spending 1½ million dollars by gravity flow and by pumping from the San Pasqual gravels, we can get another 8 or 10 million gallons a day.

I am opposed to building Mission Gorge No. 2 and spending \$350,000 as planned. The 7300 acres of land necessary will cost \$3,000,000. Under no conditions can Mr. Savage rebuild the 6 miles of San Diego & Arizona Railroad, 6 miles of paved highway, move the County Farm, which cost around a million and a quarter dollars, wipe out the towns of Santee and Lakeside, and acquire the necessary lands under 3 or 4 million dollars.

As regards building the cut-off dam 40 feet high for \$350,000, I will undertake the job of installing this cut-off wall and building a concrete dam 40 feet in height for the sum of \$75,000, but I see no need whatsoever of making this construction and it is against the City's best interests. It is not practical to use the raw, muddy water without a settling basin off the river and this will cost around two or three hundred thousand dollars. The 40 foot dam only holds 129 million gallons of water and 8 days' supply. Any one of the two big floods would fill the dam completely with mud. There is no water running there, to speak of excepting during flood time. The City is now pumping roughly 4 million gallons of water daily from the underground waters above Mission Gorge No. 2 and the building of the 40 foot dam is of very little benefit, in fact it is only an entering wedge to build the dam at Mission Gorge No. 2, to which I am opposed, for this particular reason. By building Mission No. 3, El Capitan and San Vicente, the net safe yield of the river will be in excess of 6 million gallons, then, if the major dam is built at No. 2, it means sometime a loss of 60,000 additional people for, if No. 2 is built, the water evaporates into the air, while it is saved by the construction of the dams above mentioned, and the cost of the water will be no greater in either case.

I consider any statement that we must promptly build major dams on the river to be only an attempt to stampede the voters. We have the assurance, under normal conditions, of 5 to 7 years' supply of water on hand. It is ridiculous for

(7)

Mr. Savage to assume that there will be no rainfall or runoff the next 3 or 4 years, in determining, as he has, that we only have a 3 or 4 years' supply.

I consider it an economical crime, from the taxpayers standpoint, to consider the building of any dams on the San Diego River.

I am not representing, and I have no authority to speak for, the La Mesa District. The report has been widely circulated that Mr. Stern and I own the bonds of the La Mesa District. This is absolutely untrue. The bonds were sold for cash to Los Angeles bond houses and we were paid cash for our property when we delivered same to the District. With the settlement made between the District and the City, I have no personal interest whatever on the river in conflict with the City. It will be a pleasure to work with the city officials and your Chamber of Commerce, without pay, at any time that I can in the future be of service in settling the San Diego 20-year water problems.

COMPROMISE AGREEMENT MADE BY THE DIRECTORS
OF THE LA MESA, LEMON GROVE & SPRING
VALLEY IRRIGATION DISTRICT TO THE
CITY COUNCIL, NOVEMBER 28, 1930

To the Honorable Mayor and City Council
of the city of San Diego,
San Diego, California

Gentlemen:

Having been notified that the Common Council of the city of San Diego on the 28th day of November, 1930, requested the La Mesa, Lemon Grove & Spring Valley Irrigation District to submit to the Council a written proposal of settlement of all differences between the city of San Diego and said Irrigation District as to the right to the use of the water of the San Diego River, and the members of the Board of Directors of said Irrigation District upon consideration of said request having determined that such proposal should be made, upon condition that in making the same no construction shall be so placed thereon as to affect the present status of proceedings either in the courts or the Department of the Interior, and that the rights of each of the parties to the proposed agreement shall remain unaffected by this proposal until such time as an agreement is actually reached, hereby suggests to the Honorable, the Common Council of the city of San Diego, the following as a basis for a proposed settlement:

1. That the city of San Diego buy from the Irrigation District Murray Dam and Reservoir lands, the El Capitan Dam and Reservoir lands owned by the District, which must include all lands included in the Santa Ana condemnation suit which are owned by the District, and also Eighty (80) acres adjoining belonging to the Guyamaca Water Company; the lands in the Mission Gorge Reservoir

(2)

site, about 400 acres owned by the Irrigation District; all lands owned by the Irrigation District at Mission Gorge Site No. 3.

The price to be fixed by the District and your Honorable Body, or fixed by arbitration in the usual manner

2. The Irrigation District will convey to the City of San Diego, without any further consideration except that which flows from the other obligations herein agreed upon and assumed:

(a) Five hundred (500) acres, or thereabouts, of water-bearing gravels lying above and below and adjacent to the El Monte pumping plant, and including such El Monte pumping plant, and all lands in the San Diego River bottom lying between El Capitan dam site and Lakeside which the District owns.

(b) All rights of the District to the Fletcher dam site and reservoir lands.

(c) The Cuyamaca dam and reservoir lands, approximately eleven hundred (1100) acres of land, whatever the district owns, subject to the hunting, fishing and boating rights heretofore granted to the Cuyamaca Water Company, which contract has approximately ten (10) years to run.

(d) The diverting dam near the mouth of Boulder Creek; all rights of way, entire flume line which includes Sand Creek, South Fork and Chocolate steel and concrete siphons, a mile and a half of tunnel, and all of the distribution lines of the Irrigation District, including also Murray Hill, Eucalyptus and Mt. Helix reservoirs.

3. The Irrigation District will pay all of its own outstanding bonds, both principal and interest.

4. The City to agree that it will, to the extent that it is possible to do so with the distribution facilities which are by the District conveyed to the City, furnish water to the consumers within the District, under the same conditions, regulations and

rates at which water is now furnished by the District, provided, that such rates may after ten (10) years be changed and fixed at such rate as may be by the State Railroad Commission of the state of California found to be reasonable taking into consideration the actual cost of delivering such water, and that the same may thereafter be again so changed at ten-year periods.

5. It is recognised, however, that the main flume line now owned by the District will of necessity be rebuilt within about five (5) years, and it is agreed that when the time comes to rebuild the said main flume, the cost of reconstruction or replacement by pipe lines to render the same service now rendered by such flumes, then the cost of such reconstruction or replacement with pipe lines is to be borne by the City and the Irrigation District in proportion to its use each year by the City and the District. The reconstruction of such flume or conduit shall be financed by the City of San Diego in the first instance, and the District's proportion of such cost shall be paid annually one fortieth part with five per cent (5%) interest each year until paid for; provided, that should the City issue bonds for the purpose of such work, then the District will pay annually its proportion of interest and sinking fund on such bond issue.

The matter of how much of the said flume and main pipe line shall be reconstructed, and when and of what material shall be determined by the city of San Diego, and should it be found more profitable to abandon that portion of the main flume which lies above the El Capitan Reservoir site and to pump water from a reservoir to be constructed by the City upon such site into such main flume at or near such reservoir site, then the cost of such pumping of the

water which is so delivered to the Irrigation District consumers shall be charged against the Irrigation District, and paid for by the District, or its consumers.

6. Should any of the lands now served by the District be annexed to the city of San Diego, the amount of water to be delivered to the District shall be reduced proportionately and such lands pay City rates for water.

7. The amount of water so to be supplied by the City to the Irrigation District consumers for irrigation purposes shall not be to exceed Four Million (4,000,000) gallons daily on the average, nor upon any one day greater than the greatest previous amount delivered to consumers of approximately Ten Million (10,000,000) gallons, nor at any time greater than can safely be delivered through the system in use for the delivery thereof.

8. Such contract, before it becomes binding upon either the City or the Irrigation District, shall be submitted to the electors of the city of San Diego, and approved by a majority of the electors of said City voting upon the subject at such election, and the city of San Diego must have received a patent from the United States for the Indian Reservation lands, for which application is pending.

9. It is recognized that there may be legal difficulties in carrying out the foregoing proposal, if accepted, and therefore this proposal, if accepted, shall not be deemed a contract between the parties, but rather as an agreeable basis of settlement which, if accepted in principle, requires a contract in detail, prepared with care, and possibly some change in method of accomplishing the desired end, and possibly some legislation.

(5)

10. Should this proposition, therefore, be accepted in principle by the city of San Diego as a basis for future contracts, then you are requested to have your attorney confer with the attorney for the Irrigation District, and to present a form of contract for adoption by the City and the Irrigation District, if found acceptable.

MEMBERS OF THE BOARD OF DIRECTORS OF
THE LA MESA, LEMON GROVE & SPRING
VALLEY IRRIGATION DISTRICT.

**JOHN F. COVERT'S ANALYSIS AND COMPARISON
APPEARING IN THE "SAN DIEGO UNION"
JANUARY 25, 1931.**

**CITES FIGURES SHOWING GORGE SITE OFFERS MOST WATER
FOR LEAST COST; LOGICAL SOLUTION GIVEN IN PLAN X.**

The City has been awarded paramount rights on the river, a long step toward its development. It now has the legal right to take any or all the water from any point on the watershed subject, however, to the purchase or condemnation of dam sites, reservoir sites and rights of way.

Conflicting engineering reports in regard to the best place for the location of dams and reservoirs are delaying proceedings. This letter may not, to some persons, seem to help the situation in this respect. It introduces a new element or viewpoint respecting the operation of a series of reservoirs whereby a great increase in safe yield may be obtained by conservation of evaporation losses and at less cost per unit of development. This method has been overlooked, apparently, by the engineers employed to give their opinions and as I am not employed by any particular faction, my opinion may be worth nearly as much as the attorney's street corner legal opinion. It might be considered in the nature of a compromise, as it takes the best features and eliminates most of the objectionable features of each of the proposed plans and results in a combination whereby the maximum safe yield is obtained at the minimum cost per unit of development.

OUTLINES TWO GENERAL PROPOSITIONS BRIEFLY

Briefly, the two general propositions being discussed are: The City Hydraulic Engineer, H. N. Savage, submitted a report to the City Council recommending the construction of dam 156 feet high at Mission gorge dam site No. 2. It is substantially the same plan as recommended by John R. Freeman several years ago.

Thomas H. King, in a report to a group of local people, severely criticised the Savage plan and recommended the construction of two dams farther upstream. One to be on the main river at El Capitan site and to be 160 feet high and one to be on a branch stream known as San Vicente and to be 260 feet high. He also proposes construction of a pipe line, 72 inches in diameter, connecting the two and through which to convey the excess flood waters of El Capitan to San Vicente. This is a revival of the plan made several years ago by Fred Rhodes, former manager of operations.

It is not necessary here to enter into a discussion of the relative merits of the different dam sites, reservoir sites, watersheds, runoff, rainfall, evaporation and other factors making up a complete water supply study. These have been covered fully

in the various engineering reports. The average busy person is interested principally in the cost, the amount of water developed and if the first step is the logical one for the maximum development at the minimum cost. However, a brief comparison of some of the principal features of the two projects may be of timely interest and is as follows:

	<u>Savage Plan</u>	<u>El Capitan</u>	<u>King Plan</u> <u>San Vicente</u>
Area of watershed	363 sq. mi.	178 sq. mi.	75 sq. mi.
Average runoff (long period)	36,000 acre ft.	23,000 acre ft.	6700 acre ft.
(drough period)	5400 acre ft.	4100 acre ft.	700 acre ft.
Height of dam	156 ft.	160 ft.	260 ft.
Flow line above sea level .	400 ft.	715 ft.	715 ft.
Flooded area	7330 acres	1265 acres	1375 acres
Reservoir capacity	296,000 acre ft.	78,953 acre ft.	180,000 acre ft.
Net safe yield (Savage) ...	15.0 m.g.d.		
(Freeman) ...	17.5 m.g.d.	6.5 M.G.D.	3.5 M.G.D.
(King)	15.0 m.g.d.	22.0 m. g. d.	
Total cost (Savage)	\$4,700,000		
(Freeman)	\$5,270,000		
(King)	\$8,162,000	\$5,042,000	\$5,530,000
Cost per million gallons per day:			
(Savage)	\$513,000		
(Freeman)	\$301,000		
(King)	\$543,000	\$480,500	

In artillery firing practice, the above different estimates of net safe yield and cost for the Mission gorge project would be classified as individual shots and their true center of impact determined from their algebraic mean. This method could be used to determine the probable cost of this work without staying far from the truth, and by it the following simplified comparison is obtained:

	<u>Savage Plan</u>	<u>King Plan</u>
Net safe yield	16.0 m.g.d.	22.00 m.g.d.
Total cost	\$6,044,000	\$10,572,000
Cost per mil. gal. per day	\$377,000	\$480,500

SAYS PLAN "X" IS LOGICAL SOLUTION OF PROBLEM

It would appear from the above comparison that the Savage plan has the advantage in regard to cost and that the King plan has the advantage of greater safe yield.

But regardless of cost, some plan similar to the King plan must be followed eventually to conserve evaporation losses and develop the maximum safe yield of the river.

Mr. Freeman, in his voluminous report, gave designs, estimates of cost and safe yield for reservoirs of various capacities at each of the proposed sites. From these data it is possible to study the different combinations and select one giving the best results both in cost and safe yield.

After such a study, it is my opinion, based on 20 years' experience in water development, that the following combination, herein for convenience named "Plan X," is the logical solution for the ultimate development of the stream:

PLAN "X"

	Height of dam	Capacity	Area	Safe Yield	Cost
Mission Gorge Reservoir to contour 360.....	116 ft.	87,000 ac.	3520 ac.	6.5	\$2,437,000
El Capitan to contour 750.....	200 ft.	134,000 ac.	1760 ac.	m.g.d.	\$7,097,700
San Vicente to contour 635.....	180 ft.	77,000 ac.	960 ac.	3.5	\$2,883,700
				m.g.d.	
Totals		298,000 ac.	6040 ac.	21.7	\$12,418,400
		ft.		m.g.d.	
Credit for work completed included in the Freeman estimate (pipe line, etc.)					<u>1,284,400</u>
Cost to complete					\$11,134,000

The foregoing safe yield estimates from Mr. Freeman's report are based on uniform draft from each reservoir independently. By this method the safe yield at Mission gorge would be reduced about one-half when El Capitan and San Vicente are constructed, but by holding back the water in the upper reservoirs, where the evaporation losses are comparatively small, and drawing the entire safe yield from the lower reservoir, until it is nearly empty, then drawing from the upper the total, net safe yield of the combination is increased to about 24,000,000 gallons per day.

The estimated cost for El Capitan in the above combination is also from the Freeman report and based on an earth and rock fill dam at that location instead of a masonry dam as proposed by Mr. King. The foundations are questionable for the latter type, but suitable for the former.

The principal differences in the combination proposed from the other two plans is a smaller reservoir at Mission gorge than proposed by Mr. Savage, and a larger one at El Capitan and a smaller one at San Vicente than proposed by Mr. King. The necessity of a large flood diversion pipe line between the two upper reservoirs is eliminated as any flood waters wasting over either upper dam would be intercepted at the Mission gorge reservoir.

THREE PLANS ARE COMPARED; "X" HELD BEST

The following is a comparison of the three plans:

	<u>Plan "X"</u>	<u>Savage Plan</u>	<u>King Plan</u>
Capacity	298,000 acre ft.	296,000 acre ft.	259,000 acre ft.
Area flooded	6040 acres	7350 acres	2640 acres
Net safe yield	24 M.G.D.	15 to 17.3 M.G.D.	22 M.G.D.
Total cost	\$11,154,000	4,700,000 to 8,162,000	\$10,572,000
Cost per M.G.D. ...	\$464,000	\$301,000 to \$545,000	\$480,500

Plan "X" would eliminate practically all the objections named in the King report against the Mission gorge reservoir. The two upper reservoirs would have sufficient capacity to regulate the runoff from their tributary watershed and the lower would have sufficient capacity to regulate the runoff from that part of the watershed lying below the two upper reservoirs plus any water wasted through their spillways.

Mr. King's plan for conveying flood waters from El Capitan to San Vicente is open to the objection that, in seasons like 1883-84, 1894-95, 1915-16 and 1925-27, a large part of the runoff at El Capitan would waste over its spillways and at the same time the runoff at San Vicente plus the capacity of the proposed pipe line would only partly fill this reservoir.

It is my opinion that the first work on San Diego River should be at the Mission gorge site and that the reservoir should be limited to about the 360-foot contour. A smaller reservoir would not be sufficient to regulate the runoff from the lower part of the watershed and a larger one would be made worthless when, eventually, El Capitan and San Vicente are constructed.

While Mr. King's first unit at El Capitan would yield about 6,500,000 gallons per day at a cost of about \$5,042,000, the first unit in the Plan "X" at Mission gorge would yield about 6,500,000 gallons per day at a cost of about \$2,500,000 or if capitalized pumping costs are added the cost for the Mission gorge would be about \$3,200,000.

JOHN F. COVERT.

PROGRAM

Dedication of El Capitan Dam

City of San Diego, California

February 22, 1935, 10:00 A. M.

CHAIRMAN OF PROGRAM COMMITTEE

Albert V. Mayrhofer, Chairman Water Commission

Music by SERA Band—J. B. Larkin, Director

Salute to the San Diego Fair - - - J. B. Larkin

The Desert Song - - - - - Romberg

Dance of the Hours - - - - - Bonchielli

Invocation - Rt. Rev. Monsignor John M. Hegarty, V. F.

Introductions by Chairman —

Albert W. Bennett, Acting Mayor

George L. Buck, City Manager

Chester Harritt, General Manager,
La Mesa, Lemon Grove & Spring
Valley Irrigation District

George W. Hawley, Deputy State Engineer

Fred D. Pyle, Hydraulic Engineer

The Mill in the Forest - - - - - Eilenberg

Address, Dedication and Unveiling of Plaque by
T. B. Cosgrove, Special Water Counsel

The Star Spangled Banner

CITY OF SAN DIEGO, CALIFORNIA
WATER DEPARTMENT

DIVISION OF DEVELOPMENT AND CONSERVATION
SAN DIEGO RIVER PROJECT, EL CAPITAN FEATURE

FRED D. PYLE, Hydraulic Engineer

EL CAPITAN RESERVOIR DAM

Rock embankment hydraulic fill type
Streambed elevation 553
Spillway crest elevation 750
Top of dam elevation 770
Height spillway crest above streambed 197 feet
Height top of dam above streambed 217 feet
Bottom of stripping elevation 530
Bottom of cutoff elevation 501
Bottom of grout holes elevation 475
Thickness at base 1150 feet
Length on top 1170 feet
Width on top 26 feet
Bypass tunnel 25 foot horseshoe section, 1173 feet long, of which 570 feet has a circular inner lining
Reservoir capacity 116,500 acre feet or 38,000,000,000 gallons
Reservoir area 1574 acres
Reservoir drainage area 190 square miles inclusive of Cuyamaca
Average annual runoff 44 years—24,658 acre feet
Net safe annual yield 11.6 m.g.d. or 13,000 acre feet per year, 10 m.g.d. available for City of San Diego
Maximum annual runoff 44 years—194,335 acre feet
Minimum annual runoff 44 years—5 years none
Maximum flood of record, 1916—38,000 c.f.s.
Estimated maximum peak flood flow
Once in 100 years— 48,200 c.f.s.
Once in 1000 years—102,500 c.f.s.
Spillway capacity, elevation 763—75,000 c.f.s.,
Shore line at spillway level 23 miles
Spillway capacity with storage above spillway crest capable of regulating flood having peak flow of 102,500 cubic feet per second
First bonds voted—1924—\$4,500,000 for 160 foot masonry dam
Contract for construction dated April 23, 1932

COSTS

Contracts:		
El Capitan Reservoir Dam		\$ 2,705,003
Spillway Extension		197,836
Tunnel Inner Lining		58,500*
Contingencies, appurtenances and miscellaneous		95,161*
Engineering		192,000
Rights of way		474,000
Clearing reservoir basin		55,000*
Road south side of reservoir		130,000*
Lakeside-San Diego pipe line		1,284,500
El Capitan-Lakeside pipe line		550,000*
University Heights filter plant		48,000

*Estimated

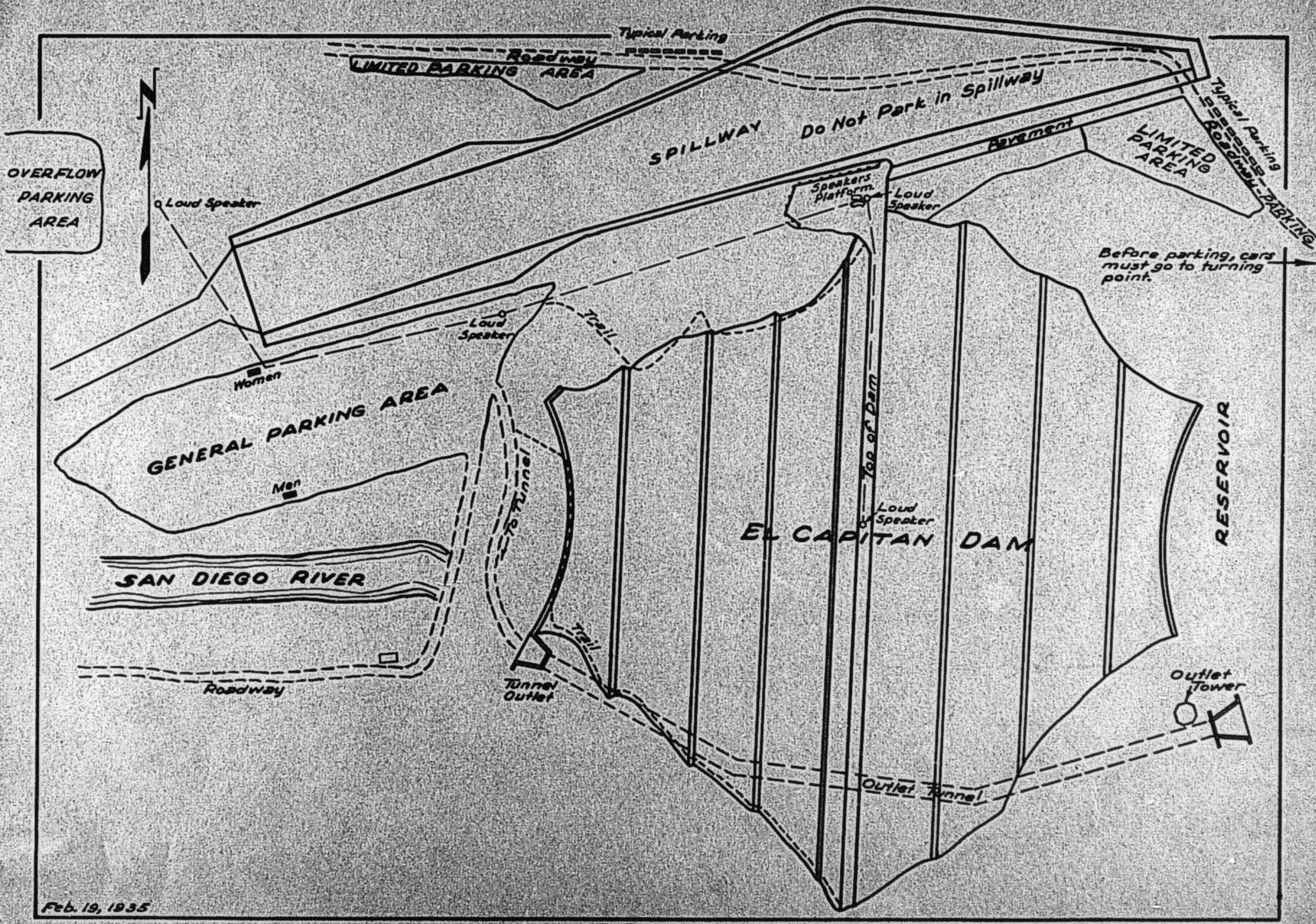
Total \$ 5,790,000

QUANTITIES

Excavation and stripping	282,749 cu. yds.
Spillway excavation	745,386
Tunnel excavation	31,319
Other excavation	45,957
Rock embankment	951,962
Hydraulic fill	1,587,937
Rolled fill	162,599
Concrete all classes	66,400
Cement	93,000 bbls.

CONTRACT PRICES

Tunnel Excavation	\$5.00 cu. yd.
Excavation Class 1 rock—wasted	1.00 "
Excavation Class 2 other materials—wasted	.25 "
Excavation Class 1 rock—in dam	1.00 "
Excavation Class 2 other materials—in dam	.40 "
Hydraulic fill material—borrow	.40 "
Rock embankment material—quarried	1.00 "
Concrete exclusive of cement, steel—average	6.40 "
Cement in place in work—average	2.00 bbl.



Feb. 19, 1935

The MUNICIPAL EMPLOYEE

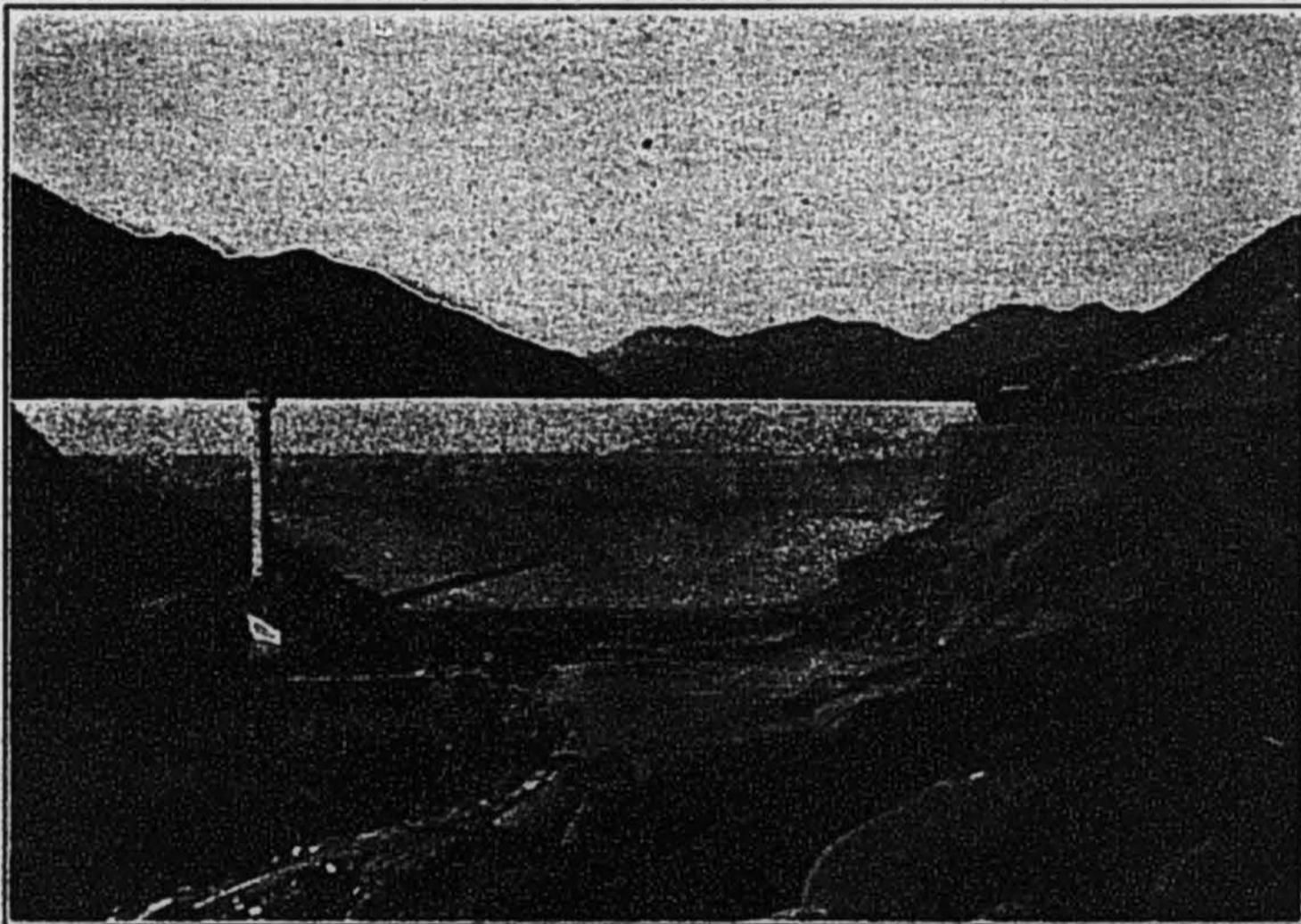


PUBLISHED IN THE INTERESTS OF CITY EMPLOYEES BY
THE SAN DIEGO MUNICIPAL EMPLOYEES' ASSOCIATION

Volume III

FEBRUARY, 1935

No. 8



View of El Capitan Dam and Appurtenances from Upstream Side

El Capitan Dam and Reservoir

By Fred D. Pyle,
Hydraulic Engineer

HISTORICAL—About 340 years ago the first white men sailed into the harbor of San Diego to take on fresh water, and since that time water has been a major problem for the inhabitants of this promising locality. In fact, the first irrigation development in San Diego County was constructed about 1800, by the Franciscan Mission Fathers, of which Junipero Serra was the leader. This development consisted of a small diversion dam across the San Diego River, where it enters Mission Gorge fourteen miles above its mouth, and a ditch six miles long, of which three miles were mortar and tile lined, to carry water to the mission lands. Today the City of San Diego, with a population of 170,000, has a water supply system valued at more than \$20,000,000, and has just constructed the first large reservoir for storage of water on the San Diego River. The total estimated cost of this reservoir, and a 25-mile reach of conduit to connect with existing University Heights standby reservoir in San Diego, is \$5,800,000.

When the Pueblo of San Diego and Mission San Diego del Alcalá were established under Spanish grant as the first settlement of Alta California in 1769, all the water of the

San Diego river was made the property of the pueblo. For many years this fact was forgotten, but when recalled it led to serious legal complications in water rights. After extended court action the City was decreed to possess in fee simple the prior and paramount right to use all surface and underground waters of the San Diego river from its source to its mouth. The present El Capitan development will provide a net safe duty of 11.6 million gallons of water a day with 10 million gallons a day available for the City's use, or enough water for nearly 100,000 people.

Population and Water Use—Since establishment of the Pueblo, the average population growth has been 1,000 per year, but more than half of the present population has come in the last twelve years. This has required a great increase in water facilities. The El Capitan development is the first of three reservoirs in the San Diego river drainage basin which will eventually supplement existing sources of supply.

In 1929 the City had a developed supply of about fifteen million gallons of water a day from the Morenz, Barrett, Otay and Hodges reservoirs, supplemented by underground development along the San Diego river.

Population growth in the past forty years

is indicative of the rapid growth of San Diego:

Year	Population	Gallons per capita per day	Gallons total year
1890	16,159		
1900	17,700	74	478,000,000
1910	40,748	111	1,650,000,000
1920	74,361	136	3,691,000,000
1925	121,000	111	4,902,000,000
1930	147,995	116	6,266,000,000
1935*	170,000	120	7,446,000,000

*Estimated

A general increase in the per capita consumption of water may be noted. Many European cities use only forty to sixty gallons per capita per day. The extensive use made of water for gardens, lawns, parking and horticulture in Southern California, aided by the exceptionally fine climate, is in a large measure responsible for the increase in population. These same factors will result in further growth and development, which will continue as long as there is water to be developed.

Preliminaries—The present development of the El Capitan feature of the San Diego River Project, was made possible by the following:

1. A grant by the United States Government approved February 28, 1919, of 1940

(Continued on Page 4)

AN APPRECIATION

By A. V. Mayrhofer, Chairman, Water Commission of San Diego

The completion of El Capitan dam is the greatest achievement in the history of the City of San Diego. It is the largest unit in our water system, almost twice the capacity of the next largest reservoir, the Morena dam. When once filled, it will give the City water enough for 100,000 people, which means that San Diego can safely increase its population with an ample water supply to care for it.

After many years of litigation and planning the San Diego river has at last been harnessed, and will now give us water for many people, as well as giving us flood control which will, for all time, protect the lands located below the reservoir.

The Water Commission of San Diego is most appreciative and deeply grateful to the Hydraulic Engineer and his staff for the satisfactory completion of the dam, and to Mr. T. B. Cosgrove, special water counsel, and to the City Attorney and his staff for their efficient and successful settlement of the legal phase of the contract with the contractors.

San Diego can well celebrate the splendid manner in which the El Capitan dam was built and brought to such a successful completion. We have a structure paid for, with no legal entanglements, and with fair prospects of storing much water the first year of its operation.

WORTH HAVING

The San Diego Municipal Employees Association may consider itself fortunate to be able to present to the readers of the Municipal Employee the two valuable and scholarly articles on the El Capitan Dam Project which appear in this issue. Unquestionably the present number of the Municipal Employee will gain a permanent place in the reference files of libraries, engineers' offices and San Diegans in general.

The mimeograph insert in this issue contains facts and figures relating to Hydraulic Engineer Pyle's article on El Capitan Dam, which should be of considerable interest.

THE COMING EXPOSITION

It was said that, in comparison, although on a smaller scale, the San Diego exposition of 1915, was much more beautiful than the one farther north. The setting was much more delightful, and this will be further emphasized when the 1935 exposition is opened. In 1915, the trees and shrubs in Balboa Park had just been planted, but during the intervening years the park has become one of the beauty spots of America.

VISTA PRESS.

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Councilman Will Cameron, incurred a fracture of the right leg near the hip recently and is confined to his home for the next ten weeks.



ELIZABETH SEYMOUR, Editor
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Apply for membership in San Diego Municipal Employees' Credit Union to Howard Ogden, Secretary and Treasurer, City Engineer's Office.

Printed in San Diego

CIVIL SERVICE EXAMINATIONS

Painter (Motor Vehicles)—Salary \$99.75. Last date to file, February 20. Date of tests: By appointment.
Patrolman—Salary \$126.00. Last date to file February 15. Date of tests, February 23, 8:30 A. M.

**CREDIT UNION CORNER
RANDOM OBSERVATIONS**

By G. A. Anderson, Pres., S.D.M.E. Credit Union.

A Credit Union member recently received a circular letter from a newly established local salary loan concern soliciting business. He inquired as to the terms upon which he could borrow \$300.00 and found he would have to sign a note for \$354.00 and make 12 monthly principal payments of \$29.50 each plus interest on the reducing balance at 10 per cent per annum. Interest on this basis figures \$19.18 for the term of the loan, making total payments \$373.18. The cost of the loan to the borrower is therefore \$73.18 which is 52.35 per cent on the average amount made available for the borrower's use. By the end of the tenth month he will have paid back all but \$5.00 of the amount advanced to him. Nevertheless he must continue to pay \$29.50 each month for two more months. Interest is computed, of course, on the reducing balance of the note, which, by the way, is always \$54.00 more than the borrower has available for his use until it too is paid at the end. For example at the beginning the note is for \$354.00 and the borrower has the use of \$300.00. The first payment of \$29.50 reduces the note to \$324.50 and the amount in use to \$270.50 and so on for all payments. It will be observed that the borrower pays 10 per cent on that extra \$54.00 for the entire term of the loan except the last month when it has been reduced to the amount of the final payment. In the absence of co-signers, security in the form of furniture or other tangibles is required.

A Credit Union loan of \$300.00 on the other hand, repayable in 12 equal monthly installments of \$25.00 each will cost the borrower \$19.50 in interest. That is the entire cost, there being no extras of any kind. The borrower pays interest only on the amount he has in use from month to month.

City employees are to be congratulated on the step they have taken to make credit available to such of their numbers as have need for it, on such reasonable terms. Borrowers must be members of the Credit Union. Requirements are easily complied with.

Let it be always remembered, however, that Credit Union loans are available only for provident or productive purposes. This limitation still leaves the Credit Committee a wide latitude in considering loan applications for there are innumerable legitimate reasons for borrowing. Unlike many loan concerns, the Credit Union does not encourage borrowing unless the borrower has constructive purposes to serve. One of the principal reasons for borrowing so far has been to consolidate and pay off scattering past due obligations. Where these are due to causes over which the borrower had no control, the loan is of a constructive character. But where such obligations are due to ill-advised commitments or seeming inability of the borrower to properly budget his income and stay within it, only his ability to profit by the lesson will determine the ultimate benefit of a loan to him. Such a borrower needs help to put his financial house in order. But if he persists in getting into further difficulties as soon as the burden is lightened, later Credit Union loans can only assist in his downfall and should and will doubtless be withheld. The keynote and keystone of every Credit Union loan is the temporary relief of the borrower on the one hand and his ultimate financial well-being on the other. Of the two, the latter is by far of the greater importance.

Note—This is the first of a series of short articles on the Credit Union which will appear in each issue of the *Municipal Employee*.

El Capitan Dam Spillway

By Paul Beermann, Engineer

Spillways of hydraulic fill dams are of the utmost importance because failure to carry the flood flow would result in destruction of the dam by overtopping.

The Lower Otay dam in 1916, when the spillway overflow capacity was not sufficient to take care of the flood, was totally destroyed by water flowing over its crest and cutting away the dam so that almost no vestige remained. The failure of the dam caused considerable loss of life and property.

The El Capitan spillway required the excavation of nearly 750,000 cubic yards of earth, disintegrated granite and solid granite, and the placing of about 30,000 cubic yards of concrete. The expenditure of more than \$500,000 indicates the magnitude and importance of the spillway and reasons for making careful studies were apparent.

Investigation of the various factors involved was made and the development naturally fell into the following steps:

(1) Determination of maximum flood flow; (2) Determination of type of spillway structure; (3) Determination of hydraulic characteristics; (4) Checking theoretical computations by means of model; (5) Structural design of the various portions; (6) Construction as designed with changes depending on local conditions.

Flood Flow

A thorough study of all known previous floods, and of the watershed characteristics of the runoff area tributary to the El Capitan dam site was made by the State of California Division of Water Resources. By comparison with neighboring watersheds, their characteristics and known floods it was determined by the State that once in 1,000 years there would be a great flood which would bring into the El Capitan reservoir 102,500 cubic feet of water per second at the maximum rate of flow. It is of interest to note that such an inflow, assuming that it could occur when reservoir was empty, and if sustained at this rate, would fill this 38 billion gallon reservoir to overflowing in about 12 hours. The peak of a flood of this magnitude was found to be very short, not exceeding two hours. Due to the flood characteristics and to the storage in the reservoir above the spillway crest the maximum flood of 102,500 cubic feet per second would cause a discharge of only 75,000 cubic feet per second over the spillway crest. With such a discharge the water surface in the reservoir would be 13 feet above the crest of the spillway.

Spillway Structure

With the reservoir empty at the beginning of the winter runoff past discharge records show that the reservoir would have filled and spillway functioned only during winters of 1861-62, 1883-84 and 1915-16, and that with ordinary use after filling of the reservoir, the spillway would function for short periods about twenty years apart.

In order to obtain the best spillway, considering all the factors involved, consideration was given by the Hydraulic Engineer's office not only to various types of spillway structures that might have been used, but also to their relative location and to estimated cost of each.

These spillway studies included straight overflow spillways, side channel spillways, spillways with automatic floating type gates, with manually operated gates and with siphons.

The advantages and disadvantages of each type of spillway studied were closely scrutin-

ized and the present side channel spillway without gates, offering no obstruction to floating driftwood and debris, was decided upon as being best suited for the purpose.

Hydraulic Characteristics

Exceptionally lengthy computations were required to ascertain the width, depth and grade of the side channel to carry the required amount of water without choking itself. In making the computations certain assumptions as to velocities, slopes and widths had to be made. After many hours of work requiring approximately 1,000 separate computations, all inter-connected, when some of the assumed factors checked, one portion of the problem was solved. But when the answers did not check sufficiently close to the assumptions, it became necessary to make new assumptions and re-compute.

Scale Model

In order to check the reasonable accuracy of the computations and assumptions, it has become the custom to make scale models, run water over them and make measurements as to velocity, depth of water, location of waves, entrained air, directions of flow and other factors indicating the capacity or affecting the design of the structure.

This was one of the most interesting stages of the work because it was visual and one is naturally more convinced as to the results to expect after seeing the actual operation of the model.



Model Spillway, El Capitan Dam

A model of the El Capitan spillway was made at the City's Riverview pumping station, using a reduction scale of one foot in model equal to 48 feet natural size. The relative velocity of water in the model was 1/7 of that of the natural flow and the relative quantity of water was 1/16000 of the natural flood flow.

The experiments indicated remarkable closeness to computed results and showed conclusively that the 75,000 cubic feet of water per second for 13 feet of water over the crest, and for which it was designed, could be carried by the spillway. A picture of the model carrying full flow is shown.

Structural Design

The spillway crest which is 510 feet long represents quite a dam itself being about 20 feet high at the upper end and about 35 feet at the lower end which is nearest the dam. This portion of the structure was designed as a regular gravity overflow dam.

The spillway crest is at elevation 750 or 197 feet above streambed and 20 feet below the top of the dam. The spillway channel is 220 feet wide opposite the lower end of the crest and 150 feet wide at the end which is

at elevation 542. The concrete floor and side lining is 12 inches thick except at the bottom of the slope where it is 24 inches thick. The incline has a grade of 31.4 feet in 100, so that very high velocities will occur which made it necessary to extend the lining for a distance of 370 feet past the bottom of the incline. A flood flow of 75,000 cubic feet per second passing over the spillway is capable of developing 1,700,000 theoretical horsepower.

Studies were made of the uplift which might come under the concrete lining due to seepage and proper provision was made to drain this part of the structure. Tile drains were used and openings were made through the sidewall of the spillway to relieve any pressure which might occur. In addition, a regular forest of 15,000 1 by 1 inch steel anchors spaced 4 to 6 feet on centers each way and extending 3.5 to 5.5 feet into the foundation were provided to tie the concrete of the floor and sidewall lining to the foundation.

In designing the structure, it was shifted on paper several times in order to best fit the lay of the ground and to avoid excessive excavation.

Construction

The spillway is located in a natural saddle at the north end of the dam and extends downstream for 1550 feet. The excavation of materials progressed rapidly and a very large amount of spillway excavation was used in the dam. The geologic formation is decomposed granite with a considerable portion of fresh rock masses and boulders scattered throughout.

To find the actual strength of the 1 by 1 inch anchors which were used to anchor the lining, tests were made to determine their resistance to pull. It took more than 20 tons to pull each of several 1 by 1 inch anchors and a number of anchors could not be pulled with the equipment available which was capable of exerting pulls of over 26 tons. The results confirmed the design assumptions.

The deepest cut on the north side of the spillway is about 200 feet, which, if translated into building comparison, is as high as the Bank of America building. On the ground, however, by comparison with the massive mountain background it appears comparatively small.

A large portion of concrete aggregate used in the spillway was manufactured by the contractors at the junction of Chocolate Creek and the San Diego river nearly a mile upstream from the dam.

The contractors for the dam, H. W. Rohl and T. E. Connolly, did the upper, about 60 per cent of this work; and the lower 40 per cent, known as the Spillway Extension, was let under contract to Bodenhamer Construction Company. Spillway construction was completed on December 1, 1934. All work was done under the general direction of the City's Hydraulic Engineer.

SUBSCRIPTIONS

We are pleased to report that our subscription list has been increased by seven, making the total subscribers to *The Municipal Employee* 42. Subscriptions are going to New York City and Honolulu, and our latest point of contact is Panama, J. C. Kneeshaw, formerly in the employ of our Water Department, but now risen during 12 years of employment in the Canal Zone to engineer in charge of dredging.

EL CAPITAN DAM AND RESERVOIR

(Continued from Page 1)

acres of land in the Capitan Grande Indian Reservation, and 141 acres in the Cleveland National Forest for reservoir purposes, which permitted the construction of El Capitan reservoir dam to store water to elevation 713, reservoir contour 160. The price for this land was subsequently fixed by the courts at \$75,000, to which the Secretary of the Interior added \$286,428 for moving and re-establishing the Indians in a new location.

2. A bond issue of \$4,500,000 authorized by the electors of the City of San Diego on November 18, 1924, by a vote of 18,131 for and 6,624 against, provided funds for the construction of a masonry dam to store water to elevation 713, reservoir contour 160.

3. A decision of the California State Supreme Court on June 20, 1929, confirmed the City's paramount right to the use of all the water, surface and subsurface, of the San Diego river, including its tributaries, from its source to its mouth.

4. Favorable reports by the City's Consulting Geologist, Professor C. F. Tolman, and Consulting Engineer, C. D. Marx, made November 18, 1931, on the safety of a dam at El Capitan, if constructed in accordance with the drawings and specifications submitted by the Hydraulic Engineer, for a hydraulic fill rock embankment dam, to store water to elevation 750, reservoir contour 197, and after favorable report from the State's Consulting Engineer, L. C. Hill, and Geologist, Chester Marliave, general approval was given by State Engineer Edward Hyatt December 7, 1931.

5. An agreement reached between officials of the City of San Diego and officials of the La Mesa, Lemon Grove & Spring Valley Irrigation District was ratified by the Council of the City of San Diego and by Directors of the Irrigation District on November 30, 1931. In accordance with this agreement certain lands owned by the Irrigation

District in the El Capitan reservoir basin and elsewhere were transferred to the City of San Diego, and in return the District was given the right to continue taking its water supply from the natural flow of the San Diego river, and was granted storage rights in El Capitan reservoir up to 10,000 acre feet, and the right to participate in the cost of installation and use of the El Capitan-Lakeside pipe line to the District's El Monte pumping plant. The City was given the right by the District to permanent storage in Murray reservoir in an amount not exceeding 5,000 acre feet.

6. The electors of the City of San Diego on December 15, 1931, by a vote of 17,295 for and 3,460 against, authorized the development of the water resources of the San

Diego river by the construction of a dam at the El Capitan site, and initiated the work by transferring \$893,873.43, remaining in the Pipe Line and Reservoir Bond Fund after completion of Morena Reservoir Dam and Spillway and Safe Duty Enlargement, the installation of the Otay Reservoir-San Diego Second Main Pipe Line, and abandonment of Chollas reservoir enlargement, made possible by the right to use 5,000 acre feet of storage space in Murray reservoir.

7. The electors on December 15, 1931, also authorized a change in the type and height of El Capitan Dam. The foundation conditions were deemed such as to make the construction of a safe high masonry dam economically inadvisable and it was found desirable to increase the net safe duty of the development by storing water to elevation 750, reservoir contour 197.

8. The City of San Diego's drawings and specifications for the construction of the El Capitan Reservoir Dam, Spillway and Outlet Works were approved by State Engineer Edward Hyatt on February 29, 1932.

9. Bids received on April 11, 1932, for the construction of El Capitan Reservoir

\$2,350,000 of El Capitan bonds at par plus accrued interest.

The El Capitan feature consists of:

El Capitan Reservoir Dam, Spillway and Outlet Works, which have been completed.

Clearing of reservoir basin, which is practically completed.

Construction of a road around south and east sides of the reservoir to replace the County road which will be flooded by the reservoir. Only a portion of this road can be undertaken until the reservoir is partially filled and the Irrigation District abandons the old Cuyamaca flume.

Twenty-five-mile reach of El Capitan-San Diego pipe line, of which 17 miles constructed of 36" Lockbar steel pipe was installed in 1927-28; and 6 miles of 48" pipe to be installed between El Capitan Dam and the La Mesa, Lemon Grove & Spring Valley Irrigation District's El Monte pumping plant and 2 miles of 36" pipe between here and the present pipe at Lakeside. The additional cost of constructing a 48" pipe line over the cost of constructing a 36" pipe line is to be borne by the district.

University Heights filter plant, constructed in 1928, gravity type, capacity, 16 million gallons daily.

Location—The dam is located about eight miles easterly of Lakeside, California, on the San Diego river, and can be easily reached by driving through El Monte Park.

Construction—The dam of the hydraulic fill-rock embankment type with its 217 feet above streambed and 23 feet below streambed and contents of about 2,700,000 cubic yards, is the second highest dam of its type in the world, trailing the highest (Cobble Mountain, Springfield, Massachusetts), by only a few feet. The cubic contents is half again as much as Cobble Mountain dam with its 1,800,000 cubic yards.

The design is based on heavy rock embankments on the upstream and downstream sides filled in between with hydraulically placed materials grading from rock

and coarse sand adjacent to the embankments which form the stability section, to fine clay materials in the impervious puddle core section which extends into the foundation by a concrete core and cutoff wall.

The construction operations in general consisted of building up rock embankments and then dumping earthy material on the inside slopes. From the center of the pool, which was maintained as shown on the accompanying picture, hydraulic giants were operated, throwing water with great force against the earthy material on the rock slopes. The earth, when it came in contact with the water, melted away like sugar. The water, heavily charged with earthy material, flowed down over the beaches, where the coarse materials were deposited and only the finest of the material reached the central pool



Placing the Puddle Core, El Capitan Dam

Dam, Spillway and Outlet Works were as follows:

H. W. Rohl & T. E. Connolly	\$2,332,860.00
The Utah Construction Co.	2,594,050.00
Northern States Contracting Company and Butler Bros.	2,853,065.50
L. E. Dixon Company and Hall-Johnson Company	2,999,260.00
Foley Brothers, Inc.	3,633,271.50

10. A second grant by the U. S. Government, approved May 4, 1932, of 920 acres additional land in the Capitan Grande Indian Reservation, to permit reservoir storage to elevation 788, reservoir contour 235, for which the City paid \$35,567.20.

11. An agreement was accomplished whereby the Reconstruction Finance Corporation on December 12, 1932, agreed to purchase

and settled to form the impervious clay core. This core prevents future percolation of water through the dam. For comparison it is of interest to note that the grains of this fine clayey material are so small that one-half of them will pass through a screen having 40,000 openings to the square inch. Such a screen is so fine that it will hold water.

Alternate operations between raising the rock embankments and filling in the fine materials gradually raised the dam on an average about one-half foot a day.

As the work progressed it became necessary, in the fall of 1933, when the water in the summit pool was at elevation about 682 or 129 feet above original streambed, to change from the semi-hydraulic process which consisted of the method above described, to the full hydraulic method. This consisted of dumping the earthy material into a "hog box" in the spillway and when mixed with water, working the wet soupy material into pumps which forced the water and mud through 16-inch diameter pipes onto the dam where it was permitted to discharge adjacent to the rock embankments.

This method was used until August 11, 1934, when the surface of the summit pool reached elevation 718, or 165 feet above original streambed, when the beaches or the area between the rock and the edge of the summit pool became so narrow that it was necessary to construct the beach section by rolled-fill methods. The impervious puddle core was carried up to elevation 763 by importing select material from vicinity of Lakeside. Above elevation 763 the earth fill was constructed entirely by the rolled-fill method.

Frequent tests were made of materials in the core to determine if sand layers were being deposited in the impervious puddle core section. Over 2,000 actual samples were analyzed in the City's Testing Laboratory in Balboa Park to determine the relative amount of fine clay materials in the impervious puddle core and to guard against sand strata in the core. Further tests were made to indicate the rate of seepage through various core materials. It is indicated that more tests have been made on the El Capitan dam materials than on any other similar dam in existence. In many instances sand strata were found which had to be corrected by the contractor. This was done by removing the sand by clam shell dragline or slackline operated buckets or mixing with other adjacent fine material by a rotating mixer operated on pontoons.

Along the contact between the impervious puddle core and the foundation and abutments of the dam and extending into each a distance of from 20 to 30 feet, is a concrete cutoff wall to prevent the percolation of water under the dam. This concrete wall was heavily reinforced with steel and besides extending into the foundation, has holes 5 feet apart and 25 feet deep drilled in the bottom of the trench under the wall, into which cement grout was forced under high pressure to seal any open seams.

At each upstream and downstream toes of the dam, heavy concrete walls were constructed as an added safety factor. The surfaces of the rock embankments were placed by hand and present a very neat appearance. To protect the work during construction from floods, and to serve as a permanent outlet for the pipes leading into the City, a 25-foot diameter horseshoe-shaped tunnel was

driven under the south embankment and was concrete lined. The portion of this tunnel located between the tunnel plug and the axis of the dam is now receiving a circular diameter inner lining to withstand the full water pressure from the reservoir.

The wasteway or spillway, serving as an overflow when the reservoir is full, is an enormous structure over 1500 feet long with a crest of 510 feet and a capacity of 75,000 cubic feet per second. The excavation required therefor amounted to about 750,000 cubic yards; about 15,000 anchors were used to tie the lining to the foundation and 30,000 cubic yards of concrete were used in the overflow crest, cutoff walls and lining.

The 12-foot inside diameter concrete outlet tower serves as an intake to the pipe lines which will lead to the City. It is about 200 feet high above foundation and has the appearance of a high chimney. Water is taken into the tower through six 30-inch saucer valves located at various levels, and one 30 by 30-inch slide gate and may be drawn out through the bottom of the tower through two 36-inch and two 42-inch pipes. Only the two 36-inch pipes will be used for the present. The outlet tower, with its smooth appearance, is an unusually fine piece of concrete work.

The dam was completed on November 27, and the Spillway Extension on December 1, 1934. The tunnel was sealed by means of a solid concrete plug 30 feet long, the last section of which was poured on December 23, 1934. The installation of the tunnel inner lining is still in progress and will be completed about the middle of February, 1935.

About 15 inches of rain has fallen on the watershed above El Capitan dam in the last three months. If this water had not soaked into the ground but had all run off, the reservoir would now be full and spilling, but due to dry ground conditions and because the rainfall each day has been light the reservoir is less than 1.5 per cent full.

A comprehensive feature history of the design and construction of the El Capitan reservoir dam as initiated by the late H. N. Savage is being compiled.

DEDICATION

El Capitan Dam will be formally commissioned on February 22, with appropriate ceremonies, which have been prepared by a dedication committee composed of leading citizens of the city and city officials. Albert V. Mayrhofer is general chairman and City Clerk Allen Wright, secretary.

Terence B. Cosgrove, former City Attorney and special water counsel for the city, who handed down in 1914, the opinion that led to the confirmation of the paramount water rights on the San Diego river and the construction of the dam, is expected to make the dedicatory address.

STUDENTS (?)

This article is for the benefit of those doubting "Tomisses" who sit at home (I hope) on Wednesday nights while Glenn Rick, Ted Kenney, Harry Helsing, and Pinky Parker attend a class at the City Hall on reinforced concrete beam design with Gene Freeland acting as lecturer and professor. Proof of our presence can be obtained, if necessary, from the night janitor, who, after 10 p. m., looks in on us with an "I wonder when" expression, and sighs a sigh of relief when books and papers are wrapped and put away for the night.

EL CAPITAN RESERVOIR DAM

Personnel

H. N. Savage—Hydraulic Engineer to June 24, 1934.

Fred D. Pyle—Assistant Hydraulic Engineer to June 30, 1934; Hydraulic Engineer since July 1, 1934.

D. W. Albert—Engineer, Hydraulic Fill.
Harold Wood—Resident Engineer to October 15, 1934.

J. W. Williams—Assistant Engineer to October 15, 1934; Resident Engineer since October 16, 1934.

San Diego Office—All Employees

Part Time

Paul Beerman, Assistant Engineer and Engineer; Norman Coote, Senior Draftsman; Evan L. Burk, General Clerk; Evelyn I. Fraser, Secretary-Stenographer; Frances T. Patten, Secretary-Stenographer; T. L. Knott, Personnel Investigator.

El Capitan Office

E. D. "Gene" Williams, Chief Clerk-Accountant; H. V. Newcomb, Senior Draftsman; P. O. Gottschling, Topographer; L. H. Hill, Chief of Party; G. W. Converse, Chief of Party; W. H. Simpson, Instrumentman; M. D. Elliott, Instrumentman to July 31, 1934; Harold Soper, Chainman; J. C. Salgado, Chainman; A. L. Remmen, Chainman; Frank Osborne, Chainman; Robert E. Lowden, Chainman to July 31, 1934; F. E. Brachmann, Excavation Inspector; H. L. Harper, Rock Fill Inspector; R. L. Carter, Concrete Inspector to November 16, 1933; Otto von Seggern, Concrete Inspector since November 6, 1933; W. E. Roberts, Hydraulic Fill Inspector; J. S. Bunch, Repair and Maintenance Man.

HIRAM NEWTON SAVAGE

H. N. Savage, for many years the City's Hydraulic Engineer, passed away on June 24, 1934.

Mr. Savage first entered the service of the City of San Diego on July 2, 1917, to replace the Lower Otay Dam which had been completely destroyed by the disastrous flood of 1916. Upon the completion of this work he constructed the Barrett dam, which, when completed, held a full reservoir.

On August 8, 1923, he filed with the City Council an exhaustive report on Rainfall, Runoff and Yield of the various San Diego County watersheds, which, to this day, remains the Water Development Department's "Bible." He left the City's service officially a short time prior to filing his report.

Mr. Savage was called back to the City's service July 2, 1928, to further the City's water program and construction. Since this time the Otay Reservoir-San Diego Second Main Pipe Line has been constructed; Morena reservoir dam raised and flood gates installed and the El Capitan reservoir dam, spillway and outlet works carried a long way towards completion.

In recognition of his outstanding service to the City of San Diego, the Council, on July 9, 1934, renamed Lower Otay Dam "Savage Dam," in his honor, and a bronze plate expressing the City's appreciation of his splendid service has been placed thereon.

Boost the San Diego International Exposition with your Eastern friends and relatives.

M. E. A. MINUTES

The regular meeting of the Board of Representatives, San Diego Municipal Employees' Association was called to order at 7:30 p. m., February 7, by President Bryant Kearney.

Sickness and Distress: Mr. Sisney reported that his mother had passed away recently; Mr. Hinckley, boiler inspector, was reported ill; Mr. LaPorte, of the Auditor's office, was absent on account of illness.

Report of Officers: The Financial Secretary reported a balance of \$571.94 in the insurance fund and \$806.24 in general the fund.

Recording Secretary reported that a more satisfactory arrangement had been worked out by the Credit Union whereby an accurate check could be made on whether or not an applicant for Credit Union Membership was a member of the Association.

Bills and Communications: Herman Sisney was named by the President as an additional member of the Auditing Committee. Bills amounting to \$109.19 were approved and ordered paid.

Reports of Committees: Mr. Wueste, reporting for the Magazine Committee gave the cheering news that receipts for the magazine last month exceeded expenditures.

Good and Welfare: Mr. Sisney suggested inquiries be made regarding reduced rates on admissions to the Exposition for city employees. A motion was made and passed to appoint a committee to look into this matter. President Kearney named Mr. Schaper and Mr. Lindsay as the committee.

Board of Governors: Miss Edna Baughman tendered her resignation from the Board of Governors, to become effective immediately. Resignation was accepted.

As the terms of three members of the Board of Governors had expired, and reference to minutes of meetings in 1932 and 1933, did not reveal definitely which three members were due to be replaced, it was decided to draw lots from the list of members of the Governors to get names of two persons to be replaced, and add one more name to fill the vacancy created by the resignation of Miss Baughman. The names of Mr. Brems and Mr. Beale were drawn, and their positions declared vacant. Nominations were called for to fill the two vacancies, plus the one made by Miss Baughman's resignation. Mr. Beale and Mr. Brems were promptly nominated to succeed themselves, and in addition, Mr. Lloyd Stove of the General Office and Capt. Clarence Woodson, of the Fire Department were proposed. The vote was as follows:

Beale 10, Brems 9, Woodson 13, Stove 7. Beale, Brems, and Capt. Woodson were thereupon declared elected. The full membership of the Board of Governors now includes J. F. Vaughan, J. A. Gordon, E. A. Beale, A. E. Brems and Capt. Clarence Woodson.

Regular order of business was suspended to hear talks by Dr. Hall G. Holder, chairman of the Central Clinic Service, explaining the services offered by that institution to people of low incomes. Mr. Latham, representing the Western Beneficial Society, explained the health insurance service offered by his society. After lengthy discussion, an motion, the whole matter of health insurance and hospitalization investigation by the Board of Governors was tabled.

Unfinished Business: Mr. Gordon, reporting for the Board of Governors, said no action had as yet been taken by the Governors regarding the proposal to place on the ballot a City Charter amendment having to do

PUBLIC WORKS DEPARTMENT

The annual report of the Public Works Department rendered by Fred A. Rhodes, Director, has just come off the press of our Print Shop, and is a piece of work to be proud of from two angles. First: the statistical and technical information contained in the report, as well as the insight it gives into the importance of the work of this Department, and, second: as a piece of fine printing. This report makes an excellent reference book and is worth preserving by those who have been its recipients.

PUBLIC WORKS NOTES

T. T. Baines and Claude Waldon are late vacationers. Bains took a short trip to Imperial Valley via Riverside, returning by the southern route. Waldon on the other hand thought home was a good place for a vacation.

Another vacationer was Leo Ackley, who returned early in January.

We are sorry to learn that George Silverhorn, of the Retired Club, is sick at the Soldier's Home at Sawtelle.

Joe Gordon returned January 2, from his vacation which he spent visiting the Carlsbad Caves in New Mexico. He says they are wonderful and a sight worth visiting again. It's a sensation to have your lunch 700 feet below the earth's surface says Joe.

John Canfield, night watchman, has been seriously ill, but at this writing it looks as though he will be returning to work soon.

Fred Koch will soon return to work after suffering a broken wrist, while cranking a truck one cold morning.

There is considerable talk around the Shops and Yards about efficiency ratings passed out lately. Several of the men received "A's" and we are happy to report that no one received a "D".

These rainy days are busy days for the men in the Street Department with plugged drains, wash outs and plenty of sand on the pavement.

AUXILIARY NEWS

The business meeting of the S. D. M. E. Social Auxiliary, held January 23, was very well attended. Ten new members were added to the roll of membership. It is hoped many more will join.

Mrs. J. W. Fisher was the speaker for the day. She gave a very interesting and descriptive talk on the coming exposition.

The members of the hostess committee for the meeting to be held February 27, 1935, are Mrs. E. W. Nevett, Mrs. H. I. Hagman, Mrs. James Barber and Mrs. J. W. Scott.

THIRTY YEARS CELEBRATED

An unusual event was celebrated last Saturday night commemorating the completion of 30 years' service in the Engineering Department of E. H. Brooks, Right-of-Way Agent.

The party was held at the home of Mr. Brooks and was a surprise given by Mrs. Brooks. Approximately thirty guests were present and enjoyed cards and a dutch luncheon. A fine fountain pen was presented by the employees of the Engineering Department, through Howard Ogden, master of ceremonies.

Poker claimed the attention of the guests until 2 in the morning. A fine time was had by all.

with fixing a sliding scale for city employees' pay.

New Business: Mr. Hanna called attention to the plight of employees in his department.

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and other departments as well, with average yearly incomes of less than \$900. A motion to refer the matter of pay scales to the Board of Governors was passed, and the Secretary was instructed to notify the Governors of the action.

There being no further business, the meeting adjourned at 10:30 p. m.

R. S. ROBINSON, Secretary.

PENNINGS OF THE PEST

Frank Stanley was off work for several days with a very bad hand. Also a bad cold didn't help him feel any better, but he's better now and hard at work again.

O. B. Usher was under the weather with a sore throat for a few days.

Have you seen Oscar Knecht's new hair cut? We wonder if it's a new fad amongst our big men. Very few of the first floor employees were able to recognize him when he came to work.

Walter Cook, our "hard working" printer, tells us he had a tooth pulled the other day. We wonder whether the dentist did the job or his wife. How's about it Walter.

Were you at the surprise party to celebrate the 25th anniversary for Frances Lockwood, given at her home? If you weren't, you missed out on a swell time. Frances was presented with a beautiful wrist watch by her many friends. She confesses that receiving the watch was the biggest surprise in her life. Just in case those of you who didn't get up to personally congratulate Frances are interested, we'll let you know that hot Tom and Jerry's were served, and we might say, they were very good. Now folks, aren't you sorry you didn't call?

They tell me Clare Baker our phone gal, has been kidded so much about her coming marriage to Jimmy Todd, that her face has been red ever since. Buck up Clare, 'cause it can't last forever.

Allene McLeod out at East San Diego is lonesome these days since Tommy Steigerwalt has left. She also states her office did a tremendous business during the past month. Things must be getting better out her way. Good work, Allene, and keep it up.

C. B. Rodman's pet spider "Susie," must have gotten mad at her little room-mate during the past month. The little fellow is now among the missing in the little glass home.

The Pest wonders if we could get enough men together to form a softball team this season, and to enter one of the leagues. Think it over men and watch this column for future announcements.

Well, folks, as Claypool would say, "Three strikes and you're out."
J.W.C.

CAN WE TAKE IT?

Jane France, nifty daughter of my friend Bill France, does a nice column in the Municipal Employee, official journal of the city employees. Good reading, too. That whole paper's good for that matter and we'd all know more about our city if we read it.

The Sunnyside, S. D. Sun.

A PERFECT SCORE

V. R. Donnahue, Safety Engineer, State Department of Compensation - Insurance, walked into the Auto Repair Shop, Twentieth and B streets, broke out his pad and cracked down on John Seuss about a pair of safety goggles that were unfit for service. Johnny told him that they were condemned, went over to the post where they hung, transferred them from their hook to a trash can, slid into his office, got out a new pair and put them into service. Donnahue walked around the shop twice, looking for trouble, found none and exclaimed, "This is the best equipped auto shop I have ever inspected; the safety laws are complied with in every respect, and I have no recommendations. Just keep up the good work, and all other departments would do well to pattern after the auto shop."

NEWLYWEDS

Announcement comes to us of the marriage last month in Phoenix, Ariz., of our own Norman T. Van Pelt, son of the late Mrs. Alice Smith, to Miss Kathleen L. Higgins, daughter of Mr. and Mrs. C. A. Higgins of Denver, Colorado. The bridal party was attended by Mr. and Mrs. Fred A. Steiner and Miss Dorothy A. Smith of San Diego, and Mrs. Jean L. Keiser of Denver.

Miss Clare Baker, one of the City Hall telephone operators was honored with a bridal shower, February 6th, at the home of Mrs. Elmer Schneider (Ruby Watt). Miss Baker is leaving the City service to become the bride of Jim Todd, motorcycle officer of the Police Department. She is the daughter of Mrs. F. E. Parrott of the Police Department.

CIVIL SERVICE NOTES

In the month of January, the Civil Service Commission established eligible lists for Police Surgeon and Repair and Maintenance man. The Commission has issued bulletins announcing examinations for Patrolman and Painter (Motor Vehicles).

The fish were biting fine at Miss Judy's fish whist party on January 12. Although Mrs. Wicks was the only one who wore a fishing license button, Dick Smith was the best angler and landed the biggest catch. No casualties from seasickness or drowning and no arrests for having too many fish. (What is the limit on fish cookies?)

PURCHASING DEPARTMENT PERSONALS

Marie Dunne celebrated her twenty-first birthday January 31. Our admonition to her is "stay as sweet as you are."

February 1, Maurice Sloper said he was hot as—well, you know—and getting hotter. We presume he referred to the atmospheric temperature which on that date went to 85°—a new record for San Diego.

V. R. Donnahue from the State Compensation Insurance office at Los Angeles, was working out of the Purchasing Department last month surveying conditions in all departments, with the object in view of preventing accidents. Two hundred and nine recommendations were made consisting of "general cleanup," "place guards on power equipment where necessary," and "remove or condemn or repair rickety saw-horses, ladders and benches."
V. A. P.

DOG SHOW

One of the most interesting and successful dog show was held in San Diego, January 27, with approximately 200 entries with every popular breed represented and a few new ones from tiny pocket size to an Alaskan Huskie. Of course, being a breeder of Irish terriers, I thought the honors should go to them, but the judges and I disagreed there, ribbons going to a pair of Newfoundlands, the Huskie taking first and last prize, and prize for best in the show to a Kerry Blue, with an English setter, favorite of the galleries, a close contender.

A. V. Goeddel, Mgr. Hagerty and Tom Armstrong, were among the dog enthusiasts present. A.V. leaning heavily toward prizes for the Great Danes. City employees represented were Harry Helsing and wife, O. B. Usher from the Water Department, Ida Rauch and boy friend, and Eileen Robertson from the Treasurer's office. Mrs. V. A. Parker had an entry on the bench that took several ribbons.
V. A. P.

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EXCHANGOGRAMS

A New York City physician contends that from a psychological viewpoint, red and green traffic lights are badly chosen, since red stimulates to action and green soothes and retards, thus accounting for failures to stop for red lights and a hesitancy in starting on the green.—(*Tacoma Civil Service Bulletin.*)

Kansas City has found that depriving a driver of his license when he is arrested under influence of liquor or narcotics and impounding his machine has proved the most effective force in controlling the accident evil.—(*Tacoma Civil Service Bulletin.*)

The San Diego Consolidated Gas and Electric Company reports in its monthly magazine, *The News-Meter*, a marked decrease in auto accidents on part of employees of the company. Their statement in part follows:

"Increasing courtesy and caution in the operation of motor vehicles by our employees are reflected in a reduction of 52 per cent in the number of company motor vehicle accidents this year over last year. There were 35 such accidents in 1934, as compared with 73 for the same period in 1933. These totals cover all automobile accidents, however trivial, including company cars damaged while properly parked."

With No. 101 (January) the Natural History Museum Bulletin embarks on a second "century." Starting—primarily as a mere calendar of events, this little leaflet has developed quite a wide reputation for itself, in addition to serving as an information sheet for our members and friends. It is apparently sufficiently valued as a file in distant museums and libraries that if a number mis-carries we are promptly requested to fill the gap, as in the case of such a request from the British Museum received within the last few days. While insignificant enough in its individual issues, we have been doing a little figuring calculate that some 1,652,500 words have gone into the hundred numbers of the Bulletin, which, in the aggregate, would make quite a sizeable book.—(*The Natural History Museum Bulletin.*)

SAN DIEGO STATISTICS

Building Permits (January):	
Dwellings, Apts, Garages	\$ 76,240 23
Commercial	55,506 35
Signs and Miscellaneous	20,765 78
Alterations and Repairs	36,776 114
Total	\$189,287 250
Electric Wiring Permits 262	
Water Figures:	
January Consumption	341.8 m.g.
Reservoir Storage, Jan. 31	26,735.3 m.g.
Maximum possible storage	105,822.3 m.g.
*Active Services, January 31	40,276
Harbor Department (October):	
Tonnage over docks	48,104
Vessels in and out of Port	75
Passengers in and out of Port	949
Health Department (January):	
Births	197
Deaths	219
Plumbing Permits	147
Gas Permits	57
Weather Figures (January):	
Rainfall	2.15 inches
Mean Temperature	56.0 degrees
*Multiply by 4 1/2 for population.	

The Exposition Grounds will be closed after Feb. 15 until the opening, May 29, to all except those on official business.



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**Business Records - Water Companies - Cuyamaca
Water Company - El Capitan Dam - 1929 decision and
miscellaneous; includes copy of dedication program**



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