

REPORT ON

CARROLL - SAN DIEGUITO RANCH PIPE LINE

and

CARROLL DAM

By William S. Post

August 20, 1915

CARROLL - SAN DIEGUITO RANCH PIPE LINE AND

CARROLL DAM ~~PIPE~~ ~~LINE~~

Pipe Line

This pipe line is planned to begin at an elevation of 250 ft. above sea, being 25 ft. above the bed of the stream.

In advance of the construction of a dam this will require a 35 ft. pumping lift from the River. The proposed grade is 8 feet to the mile. The length to the East boundary of the Santa Fe Ranch is 5.5 miles, and to the west boundary 9 miles. For the first four miles the diameter of pipe proposed is 24 inches sufficient to convey 10 sec. ft. or 500 Miners Inches, or 6,500,000 Gallons daily sufficient for 5,000 acres. The remainder to be a 14 inch line on account of branches.

The available agricultural land shown on the attached map bounded by a red line, may be roughly stated, in advance of a careful survey to be as follows:

Irrigable by Gravity

San Dieguito Rancho -----	3,000 acres
Irrigable by local Pumping lift (not over 50 ft.)	
San Dieguito Rancho -----	1,000 acres
Henshaw lands -----	<u>500</u> "
	4,500 "

ESTIMATE OF COST

Carroll Pumping Plant

As there will be considerable delay in raising Carroll Dam 25 feet, a pumping plant of a capacity of 100 miners inches is proposed at once which can be later removed to a local pumping point.

Gas Engine, Centrifugal pump, sumps gathering pipe, etc., ----- \$ 4,000.

Pipe Line

In advance of survey it is assumed that 25% of the lines may be cement pipe without reinforcing, the remainder to be lockbar steel pipe 3/8" plate or riveted pipe.

24" Pipe - 4.5 miles (24,000 ft.)

6,000 lin.ft. 24" cement pipe at 1.00 ----- 6,000.
18,000 " " 24" 3/8" Plate Lockbar Pipe
at \$3.00 ----- 54,000

14" Pipe - 4.5 miles

6,000 lin.ft. 14" cement pipe at 50¢ ----- 3,000
18,000 " " 14" Riveted Pipe, No. 10 Gage
at \$1.40 ----- 25,000
Tunnel - 1,000 ft. at \$5.00 ----- 5,000

Local Pumping Plant and Reservoir

at end of line ----- 5,000

\$102,000

This sum will secure in an ordinary season

From January to April ----- 1,000 M.I.
May ----- 100 "
June ----- 50 "
July to October ----- None
November & December ----- 10 "

If a pipe line 1.5 miles in length, from the existing wells on the bottom lands of San Dieguito Ranch is laid and a high service pumping plant built, for ----- \$ 45,000
 Or a total of ----- \$147,000

The system then is good for a uniform supply of 100 Miners Inches, sufficient for 1,000 acres.

The first cost including overhead would not exceed \$200 per acre, and the annual operating expense not over \$25 per acre including interest on investment.

CARROLL DAM

To irrigate the remaining 4,000 acres requires the building of Carroll Dam.

Four estimates are presented.

(a) Eastwood Type - built to 50 ft. height, but base sufficient to increase to 100 ft. eventually.

Concrete 15,800 cu.yds. at \$8.00 -----	\$127,000
Outlet pipes, gates, buildings, etc., -----	20,000
Contingencies 20% -----	30,000
	<u>\$177,000</u>

(b) Eastwood Type - 100 ft. high.

Concrete 21,700 cu.yds. at \$8.00 -----	\$174,000
Outlet pipes, etc., -----	20,000
Contingencies 20% -----	40,000
	<u>\$234,000</u>

(c) Gravity Masonry Type - (Sweetwater Type)

Built 50 feet high with base sufficient to raise to 100 ft.

Concrete 38,500 cu. yds at \$6.00 -----	\$ 251,000
Outlet Pipes, etc., -----	20,000
Contingencies, 15% -----	<u>39,000</u>
	\$ 290,000

(d) Gravity Masonry Type built to 100 ft. height.

Concrete 54,700 cu. yds. at \$6.00 -----	\$ 328,000
Outlet pipes, etc., -----	20,000
Contingencies 15% -----	<u>52,000</u>
	\$ 400,000

WATER SUPPLY

THE O'Shaughnessy - Lippincott report finds a safe yield for the Carroll Dam (100 ft. height, storage capacity 34,800 acre feet) for a domestic supply to be 6,400 acre feet per annum. In my opinion the corresponding irrigation safe yield (providing for only 3/4 supply in certain extremely dry years) is about 50% more or 10,000 acre feet per year. The 100 foot dam therefore should contemplate the use of about 10,000 acres of irrigable land.

The 50 foot dam with a storage capacity of 3,250 acre feet may be said to be safe for the irrigation of 3,000 acres.

CONCLUSION

1. The total expenditure involved to secure the irrigation of 3,000 acres is from \$324,000 to \$437,000 or a first cost per acre of \$100 to \$150 per acre.

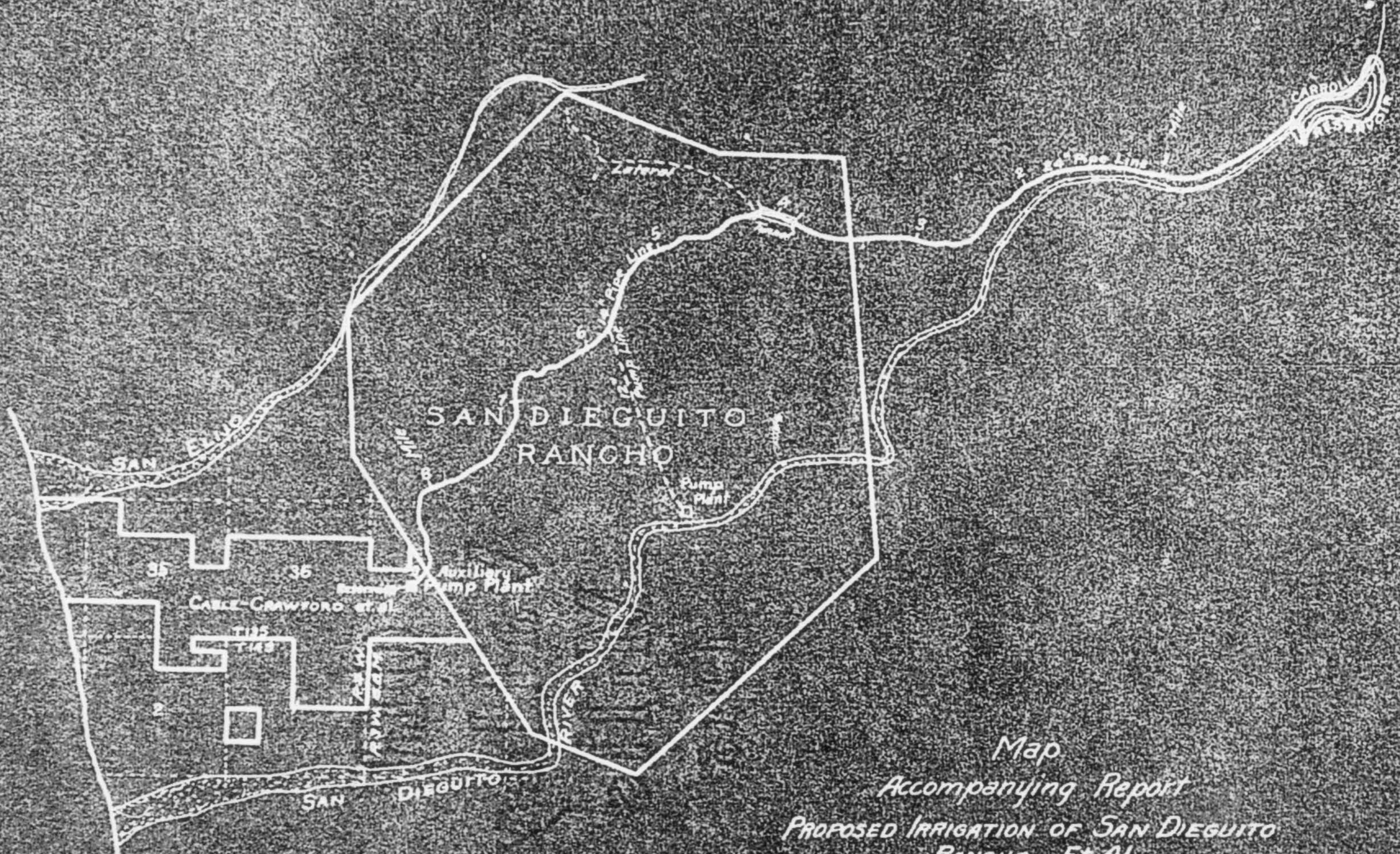
The annual operating expense including interest on above at 8% should not exceed \$20 per acre.

2. The total expenditure involved to secure the irrigation of 10,000 acres is from \$400,000 to \$570,000 or a first cost per acre of \$40 to \$60.

The annual operating expense including interest on investment should not exceed \$10 per acre.

3. The above estimates include local or auxilliary pumping to lands above the 230' elevation above sea, but do not include the value of reservoir lands in Carroll damsite, and water rights. If the project is fully developed for 10,000 acres, a charge of \$100 per acre for attached water rights or an equivalent increase of price of lands sold with water (about \$1,000 per Miners Inch) and an annual maintenance charge of \$15 per acre for service, would cover all these values and construction costs, pay interest and maintain the services.

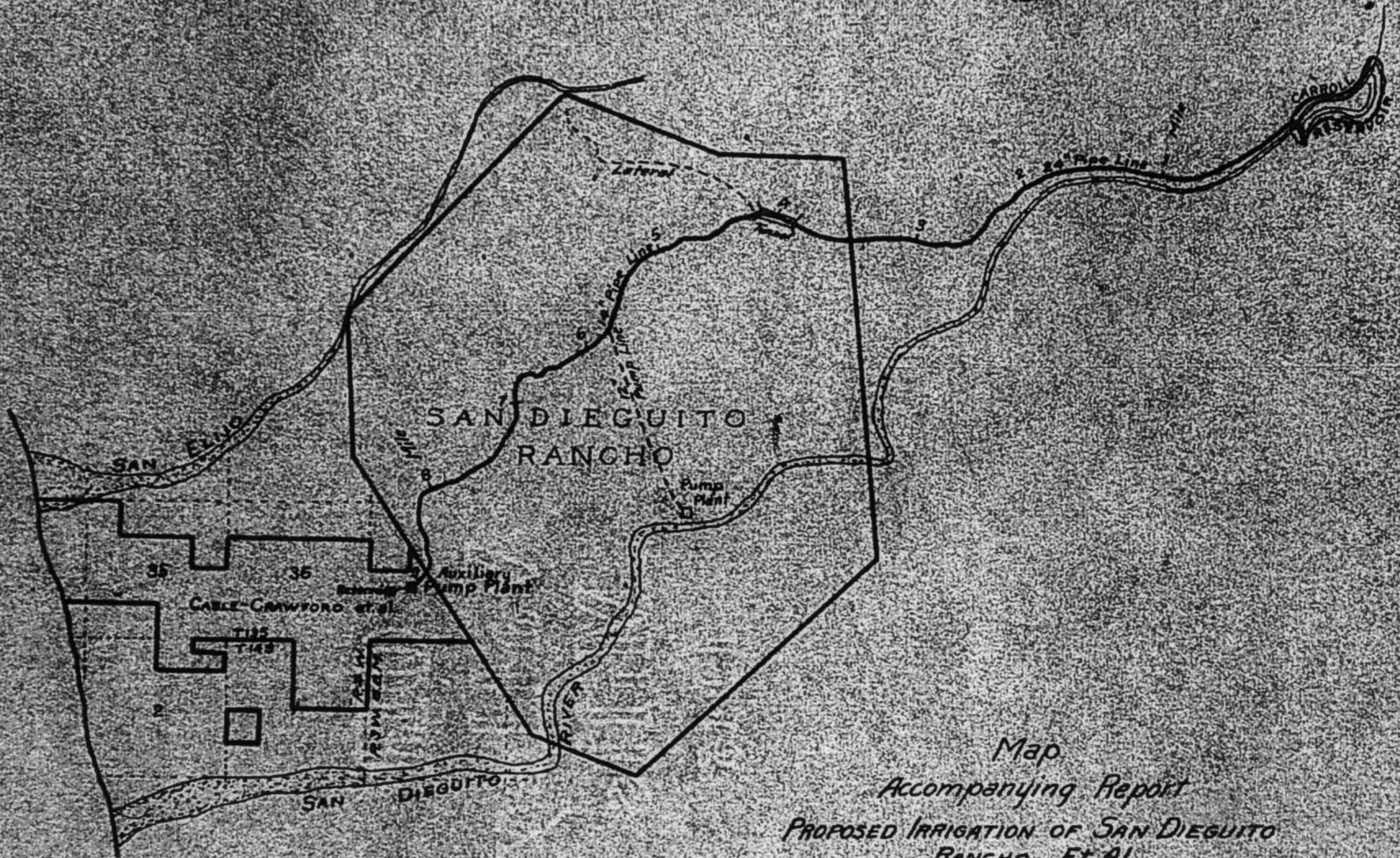
If the development stops with 3,000 acres and some of the Santa Ysabel water is reserved for instance for sale to the City of San Diego, the charge for attached water rights should be \$200 per acre and the annual maintenance charge should be \$25 per acre, to completely cover all values.



Map
 Accompanying Report
 PROPOSED IRRIGATION OF SAN DIEGUITO
 RANCHO ET AL.

W.S. Post
 Engr.

AUG. 18, 1915



Map
 Accompanying Report
 PROPOSED IRRIGATION OF SAN DIEGUITO
 RANCHO Et Al.

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AUG. 18, 1915

Ed Fletcher Papers

1870-1955

MSS.81

Box: 41 Folder: 9

**Business Records - Reports - Post, W.S - "Report on
Carroll-San Dieguito Ranch Pipe Line and Carroll Dam"**



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