

CUYAMACA WATER COMPANY

DESCRIPTION OF DAMAGE TO CUYAMACA WATER SYSTEM, CAUSED

BY FLOODS OF JANUARY, 1916, ALSO AN ESTIMATE OF THE

COST OF REPAIRS TO THE SYSTEM.

On January 14th, 1916, there began an extraordinary rainfall in San Diego County which lasted for six days. The following table shows the precipitation in inches for various points on the system:

<u>Day of Month</u>	<u>Cuyamaca</u>	<u>Diverting Dam</u>	<u>El Cajon</u>	<u>La Mesa Dam</u>
14	1.20	0.60	0.41	0.65
15	0.72	1.11	0.60	0.55
16	3.35	.79	0.66	2.36
17	6.83	3.80	3.11	2.97
18	5.27	3.30	3.21	0.54
19	1.59	0.53	0.60	0.64

This storm caused damage to the Company's flume which was repaired by January 24th, and while quite extensive, the damage was by no means serious.

On January 24th there began another period of extraordinary rainfall which, coming on ground thoroughly saturated by the previous storm, caused particularly serious landslides, washed out roads, bridges, houses, farms, and left a trail of calamity and desolation. The following shows the precipitation of this last storm at various points:

<u>Day of Month</u>	<u>Cuyamaca</u>	<u>Diverting Dam</u>	<u>El Cajon</u>	<u>La Mesa Dam</u>
Jan. 24	0.23	0.10	0.08	0.12
25	1.63	0.27	0.23	0.26
26	1.53	1.64	1.98	1.56
27	8.54	5.30	4.00	3.32
28	1.30	0.10	?	0.04
29	1.12	0.27	0.24	0.33

Practically everyone is familiar with the damage suffered by the City of San Diego and the Sweetwater Water Co. on their water systems and it is unnecessary to go into the matter. The Cuyamaca System suffered severely but fortunately for the consumers on the system the damage was not so great nor so far reaching as on other water systems. Consumers on the Company's flume were without service for approximately 30 days in all during January and February and by February 20th were being served with sufficient water for all requirements at that time of year.

CUYAMACA WATER COMPANY  
DETAILS OF FLOOD DAMAGE.

EXHIBIT No 66

[assume  
FRUDC  
CSM]

After the last storm it was with the utmost difficulty that any determination of the amount of damage could be made. On January 29th, Superintendent Harritt returned from an inspection trip which extended as far as Chocolate Creek, and reported that repairs to the flume from South Fork to Eucalyptus would cost at least \$15,000. At that time it was impossible to get above Chocolate so no estimate of the damage could be made.

On the same day an order was placed for the lumber for repairs and deliveries commenced on February 1st. At that time great difficulty was experienced in getting materials to the flume, as roads and bridges were washed out. About \$600 was expended by the Company in repairing main county roads.

The first step in repairs was to rebuild and reline the flume from Los Coches Trestle to Eucalyptus. The next step was to install a pumping plant at Los Coches Creek and a feeder flume 1950 feet long up Forrester Canyon so that a temporary water supply could be provided for consumers on the flume. While this work was in progress a temporary road was constructed down Chocolate Canyon, so that materials could be hauled in for repairs, as the road up the San Diego River was absolutely impassable.

As the work progressed it became evident that repairs on the flume from the Diverting Dam to South Fork would require so much time that it was decided to build a flume 2600 feet long up South Fork. This was accordingly done and water was turned into the main flume. It then developed that the Chocolate Syphon was leaking so badly that water was shut off and it was necessary to excavate in the creek channel to discover the location of the leak. Water was turned into the main flume on March 13th.

Great difficulty was also experienced in making repairs on the South Fork and Sand Creek Syphons, sheet piling and pumping being required at each place.

Finally repairs were completed to the Diverting Dam and water was turned into the flume on April 8th.

During February, March, April and May the Cuyamaca System supplied a great portion of the water used in the City of San Diego and by its ability to do so averted a general water famine. This remarkably heavy draft on the system was sustained with no interruption of service to consumers, with the exception of a very few irrigation consumers residing on the very high ground near El Carritos Hill, and with the exception of service to consumers on the flume for 30 days, as heretofore noted, and who were not in any way affected by the supply to the City.

This was a remarkable record for the Cuyamaca System which has often been referred to throughout the county, as a "pile of junk". The entire operation of the system was on the plan of giving service that would be of the greatest benefit to the greatest possible number of people.

In following out this plan the Company succeeded in furnishing a supply of water eminently satisfactory to nearly all consumers. Some kicks of course developed, but those of our consumers who really were inconvenienced the most complained the least.

Attention is called to the fact that the system came through the storm with all dams practically uninjured, and for this the operating force deserves great credit as it was only by the hardest of work that Cuyamaca and La Mesa dams were saved. The policy of taking no chances was carried to extreme limits and results have certainly justified the excess of caution.

There follows a general but detailed description of damage to the various structures on the system;

Cuyamaca Dam and Reservoir.

Spillways scoured out at points. Discharge weir slightly damaged. Outlet channel below tunnel badly scoured and eroded. Gate stand slightly damaged. Roads badly gullied and washed. Kelly Ditch filled with debris and banks broken in places.

Boulder Creek Weir.

Some slight damage by scouring.

Diverting Dam

East end of dam undermined.  
One Gate stand broken.  
Bridge washed away.  
Automatic gage substructure destroyed.  
Some damage to scouring gates which has not yet been fully determined owing to high water.  
Fence destroyed.  
Roads badly washed and gullied.  
Water supply pipes damaged.  
Storage sheds washed away.  
Cable gaging station destroyed.  
Water cushion damaged.

Main Flume

Over 100 breaks on the flume caused by landslides. These breaks ranged from slight lateral movement of the flume to breaks 200 feet long on which the flume box, trestles, etc. were carried down hill or completely destroyed. Much of the flume which remained intact was filled with earth, rock, and other debris.

FLOOD DAMAGE

4

South Fork Feeder.

Diverting dam entirely washed out.  
Wood flume just below dam was washed out.  
Steel flume broken, twisted, and washed out in about 20 places.  
Trestles destroyed or undermined.

Sand Creek Syphon.

About 100 feet of the 42 inch concrete pipe washed out, which was replaced by steel pipe on concrete piers.  
Blow-off valve was broken, causing heavy leaks and necessitating trenching with sheet piling and pumping. There were numerous breaks and cracks on the line which were patched with concrete collars.  
A large flow of water in the creek delayed the work.

South Fork Syphon.

Pipe was badly broken and battered by rocks at creek crossing.  
Blow off valve broken necessitating sheet piling and pumping to locate and repair the damage.  
A large flow of water in the creek delayed the work.

Chocolate Syphon.

About 150 feet of syphon washed out.  
Bridge across creek washed out.  
In order to make repairs on this line it was necessary to trench 7 feet below the water line and to use sheet piling and run a pump. A large flow of water in the creek delayed the work.

Pumping Plant No. 4.

Stored in shed at Diverting Dam which was washed away. Plant entirely lost.

Sand Creek Pumping Plant.

Pump house washed away.  
Engine and pump undermined, tipped over and covered with silt and sand.  
Engine fittings, belt and accessories destroyed.  
Large distillate tank destroyed.  
Meter destroyed.  
Wells and suction pipe covered with about 12 feet of sand. Excavation and sounding with steel rods has failed to locate any of them. Probably destroyed.  
Discharge pipe badly broken and bent, partly destroyed.  
Tools, etc. lost or destroyed.

FLOOD DAMAGE

5

Chocolate Pumping Plant.

Main channel of San Diego River now runs right over site of pump house.  
Pump pit destroyed.  
Pump house washed away.  
Engine and pump undermined, tipped over and covered with sand.  
Engine fittings, belt and accessories destroyed.  
Wells and suction pipe covered with about 12 feet of sand. Excavation and sounding with steel rods has failed to locate any of them. Probably destroyed.  
Discharge pipe broken, bent and partly destroyed.  
Tools and miscellaneous supplies stored in pump house lost or destroyed.

Monte Pumping Plant.

600 feet of 12 inch suction line destroyed.  
100 " " 8 " " " "  
280 " " 6 " " " "  
Miscellaneous valves & fittings on these suction lines destroyed or broken.  
3 cased wells destroyed.  
1 large curbed wall destroyed.  
3 " " walls filled with debris and curbing and covers badly broken or destroyed.  
Discharge pipe broken and damaged.  
Transmission pipe to flume broken and partly destroyed.  
Pump pit flooded and motors and pumps soaked.

Murray Hill Dam and Reservoir.

Some slight damage to spillway.

Eucalyptus Dam & Reservoir.

Portion of dam became water logged and a part of the embankment slid away.

La Mesa Dam and Reservoir.

Pump house damaged by water when blow off gates were opened.

Grossmont Reservoirs and Pipe System

Reservoir No. 3 damaged and broken.  
Pipe system suffered small damage.

Distribution Pipe System

Slight damage to pipes at various points.

La Mesa Ditch

The floods caused numerous breaks in the ditch banks and caused considerable filling with debris.  
The work of repairs was very costly owing to the saturated condition of the ground which made the use of teams practically impossible.

FLOOD DAMAGE

Below is given a statement of the money actually expended in repair of flood damage to June 30th, 1916.

<u>Month</u>	<u>Labor</u>	<u>Material</u>	<u>TOTAL</u>
January -----	\$	\$ 28.	\$ 28.
February -----	7066.	9738.	16804.
March -----	3931	6022	9953
April -----	851	892	1743
May -----	270	503	773
June -----	572	817	1389
<b>Totals -----</b>	<b>\$12690</b>	<b>\$ 18030.</b>	<b>\$ 30690.</b>

The following is an estimate of the cost of completing the repairs to the system:

Guyamaca Reservoir.

Spillways -----	\$ 300.
Gate Stand -----	150
Outlet channel -----	150
Discharge weir -----	50
Roads, -----	50
Kelly Ditch -----	200

Total Guyamaca Reservoir ----- \$ 900.

Boulder Creek Weir

Repairs to broken masonry, etc. ----- \$ 100.

Diverting Dam

Repairs to East wing wall -----	\$ 400.
Gate stand -----	150
Leaks at sluice gates -----	200
Bridge -----	25
Automatic gage -----	50
Fence -----	100
Roads -----	25
Water supply -----	25
Storage sheds and contents -----	600
Cable measuring station -----	200
Water sushion below dam -----	2000

Total Diverting dam ----- 3775.

Carried forward ----- \$ 4775.

FLOOD DAMAGE

Brought Forward ----- \$ 4775.

Main Flume

Minor repairs ----- 1500.

South Fork Feeder.

Diverting Dam -----	\$ 500.
Wood flume repairs -----	400
Minor repairs -----	100

Total south Fork Feeder ----- 1000.

Sand Creek Syphon

Channel protection and minor repairs ----- 500

South Fork Syphon

Concrete protection for exposed pipe ----- 300

Chocolate Syphon

Channel protection and minor repairs ----- 500

Pumping Plant No. 4.

Restoration machinery, supplies, etc. ----- 600.

Sand Creek Pumping Plant

Cleaning, tallowing & storing engine and pump -----	\$ 250.
Pump house -----	300
Replacing foundations and resetting and repairing engine & pump -----	500
Replacing lost parts, belt, distillate tank, meter, tools, etc. --	500
Repairs to discharge pipe -----	200
New suction line & fittings -----	400
New wells -----	1500
Incidentals -----	350
	<u>4000.</u>

Carried Forward ----- \$ 13175.

FLOOD DAMAGE

Brought Forward ----- \$ 12175.

Chocolate Pumping Plant.

Restore pump house & pump pit -----	\$ 825.	
Cleaning, tallowing and storing engine and pump -----	250	
Restoring foundations and resetting and repairing engine & pump -----	500	
Replacing lost parts, belt, tools and supplies -----	1000	
Repairs to discharge pipe -----	300	
Replace suction line -----	500	
Replace 4 driven wells -----	2725	
" concrete well -----	215	
" steel well -----	130	
" timbered gallery -----	400	
Incidentals -----	500	7345.

Monte Pumping Plant

Repairs to suction lines -----	1750	
" " valves & fittings -----	500	
Restore cased wells -----	400	
" curbed well -----	350	
Clean out and repair 3 curbed wells ---	350	
Repair discharge pipe -----	50	
" transmission pipe -----	200	
Repair motor, pump etc. & reset -----	100	
Minor repairs & incidentals -----	350	4050.

Los Cochis Trestle

Channel protection and minor repairs -----	300.
--	------

<u>Telephone Line</u> Repairs -----	500.
-------------------------------------	------

<u>Murray Hill Dam</u> Minor repairs -----	50.
--	-----

Eucalyptus Dam

Filling, riprapping & minor repairs -----	300.
---	------

<u>La Mesa Dam</u> Repair Pump house -----	50.
--	-----

<u>Distribution Pipe Lines</u> Minor repairs -----	275.
--	------

La Mesa Ditch

Minor repairs not yet completed -----	275.
---------------------------------------	------

Total Estimated Cost of Completing Repairs \$ 26320.

Summary of Cost of All Repairs.

Expended to June 30th, 1916 -----	\$ 30690.
Estimated Cost to Complete -----	26320.
Total -----	\$ 57010.

FLOOD DAMAGE

AS a method of refunding the cost of these flood damages there is suggested the plan of taking over the amounts paid in 1916 for water by the City of San Diego, which amounts to \$51,000 in round figures and amortizing the balance of approximately \$6000.

That the purchase of water from the Cuyamaca Water Co. by the City has been a source of revenue in the past is true, but such a revenue can never be depended upon. It is always certain that the City will buy the water only when in the last extremity.

It is highly improbable that purchases of water will be made during the remainder of 1916 or during 1917 unless the City system is severely damaged.

The following letter is self explanatory:

(COPY)

F.M. Lockwood,  
Manager of Operation.

Chas. Holzeman  
Chief Clerk.

OPERATING DEPARTMENT

City of San Diego, California.  
Main Office City Hall.

July 17, 1916.

Mr. F. M. Faude, Asst. Mgr.,

Cuyamaca Water Company,

San Diego, California.

Dear Sir:

Your letter in regard to the possibility of the City requiring more water from the Cuyamaca Water Company duly received, and I have delayed answering until we had some assurance to give.

I am pleased to state that the water is now in town from Morena, and I do not anticipate the City's having to purchase any more water <sup>from</sup> the Cuyamaca Company this year.

Thanking you for your many courtesies, I am,

Very truly yours,

(signed) F. M. Lockwood,

Manager of Operation.

FML/L

FLOOD DAMAGE

In the foregoing estimates of cost nothing has been provided for repairs of the road up the San Diego River.

This road has been fixed up so that at this season of the year it can be traveled. The first high water, however, will put it out of commission if it is left in its present condition. The County Commissioner has stated that no more money is available for work on this road and in all probability this Company will have to spend about \$1000 in road repairs.

If this money is expended it will bring the total cost of flood damage repairs up to \$58,010.

**Ed Fletcher Papers**

**1870-1955**

**MSS.81**

**Box: 36 Folder: 16**

**Business Records - Reports - Faude, F.M - "Cuyamaca Water Company: Description of damage to Cuyamaca Water System, caused by floods of January, 1916, also an estimate of the cost of repairs to the system"**



**Copyright:** UC Regents

**Use:** This work is available from the UC San Diego Libraries. This digital copy of the work is intended to support research, teaching, and private study.

**Constraints:** This work is protected by the U.S. Copyright Law (Title 17, U.S.C.). Use of this work beyond that allowed by "fair use" requires written permission of the UC Regents. Permission may be obtained from the UC San Diego Libraries department having custody of the work (<http://libraries.ucsd.edu/collections/mscl/>). Responsibility for obtaining permissions and any use and distribution of this work rests exclusively with the user and not the UC San Diego Libraries.