MINNESOTA STATE BOARD OF HEALTH

DIVISION OF SANITATION

PORTABLE HYPOCHLORITE PLANT AND FIELD EQUIPMENT FOR ITS ADMINISTRATION

Plants of this type and the necessary equipment for testing the various phases of the hypochlorite treatment are constantly kept on hand by the Minnesota State Board of Health for immediate shipment to localities within the State suffering from water-borne epidemics or where water supplies are known to be contaminated. The plant is always accompanied by a technically trained man to install and put it in operation. At the same time, detailed instructions are given to the local authorities regarding the treatment.

The plant will consistently treat water supplies distributing amounts up to 1,000,000 gallons per day and with additional efforts on the part of the operators will treat as much as 4,000,000 gallons per day. Under ordinary working conditions, the plant can be set up and put into operation within an hour's time.

The cost of this plant exclusive of installation does not exceed $50.

This exhibit includes the following:

1. Sketch showing the plant set up for operation.
2. Trunk which carries the hypochlorite plant complete, exclusive of barrels and stand.
3. Mechanical parts of the collapsible mixing device of this plant and detail drawings of the same.
4. Chemical feed box of the plant equipped with float and control valve and detailed drawings of the same.
5. Photograph of the complete field equipment maintained by the Minnesota State Board of Health for administering and testing the hypochlorite treatment of a water supply.

A detailed description of the plant, including references to the complete field equipment here exhibited, has been published in Public Health Reports, United States Public Health Service, Volume 30, Number 9, February 26, 1915, pages 608 to 619. Reprints of this article and any information desired may be obtained on application to the Minnesota State Board of Health, Division of Sanitation, Minneapolis, Minnesota.

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CALIFORNIA JEWELL FILTER CO

THE MERCHANTS EXCHANGE

San Francisco.

DIRECTIONS FOR INSTALLING FLOAT METER

ON MODEL "D" AND MODEL "C" APPARATUS.

The Float Meter consists of seven (7) parts, namely:

A. Meter body marked (1) with nuts and gaskets to hold the Glass tubes and Chlorine Inlet and outlet (10)

B. Outer tube consisting of straight glass tube, closed at lower end.

C. The inner tube which is tapered in its lower part, sealed at the bottom and contains a small hole in the side close to the bottom.

D. A glass float consisting of blue glass contained in the tapered inner tube.

E. A celluloid strip on which is printed the calibration in ounces or pounds Chlorine per hour.

F. A back plate (6) holding the celluloid strip by means of knurled nuts (9)

G. Guard rods (3) to protect the meter.

To fasten the meter proceed carefully as follows:

Remove the nuts (2), (11) and (5) with washers and rubber gaskets; also, loosen the bottom rest (7). Place the gasket (14) at the open end of the outer tube, slide the washer (16) and nut (5) over its closed end and insert this tube without tightening nut (5) too much. The outer tube should just be held loosely without being stiff; then insert the inner tube the same way from above, placing gasket (13) washer (12) and nut (11) over it in the order named. The top of this tube should project about 3/16" from the top of the nut (11). Tighten nut (11) with the accompanying key, but do not use too much force as the rubber gaskets are very pliable and will produce an air tight seal without being strained too much. Screw nut (2) down tight. Lift bottom rest (7) until the outer tube rests against it and tighten nut (5) by hand; also without using excessive force.

After this has been done, the scale on the back plate (6) should be adjusted so that the zero point is in line with the top of the blue glass float when it is resting on the bottom of the inner glass tube. This having been done the apparatus is ready for operation. By slightly moving the scale up or down between the knurled nut (9) it can easily be adjusted whenever necessary. The guard rods (3) should be replaced to protect the meter.

DIRECTIONS FOR CLEANING THE METER.

If for any reason the meter becomes clogged and it is necessary to remove it for cleaning, proceed as follows:

(103)

Remove the nuts (2) and (11) carefully. Then lift the inner tube of the meter carefully out; if for any reason it is difficult to do this, and there is danger of breaking the inner tube of the meter, proceed as follows:

Remove the guard rods (3) and loosen the nut (5). Loosen the nuts (8) on the Outer Meter Tube supports (7) and allow the outer tube to hang free. Then take a soft piece of wood and gently press the inner tube down into outer tube and both tubes can be removed together. Great care should be taken in performing this operation in order that the lower end of the inner tube will not be pushed down into the bottom of the outer tube and broken.

When the two tubes are removed they can be cleaned as follows:

Remove the glass float and rinse the glass tube in a Cleaning Mixture made up as follows:

Concentrated Sulphuric Acid C. P. 100 C.C.
Powdered Potassium or Sodium Bichromate 1/4 oz.

Rinse in this solution for half an hour. Then rinse in clear water and dry with heat and alcohol or with ether. The tubes should then be thoroughly dried out by heat and replaced in the apparatus. If a new meter is put in, use the new celluloid scale that comes with it as each meter is calibrated separately and has its own scale.

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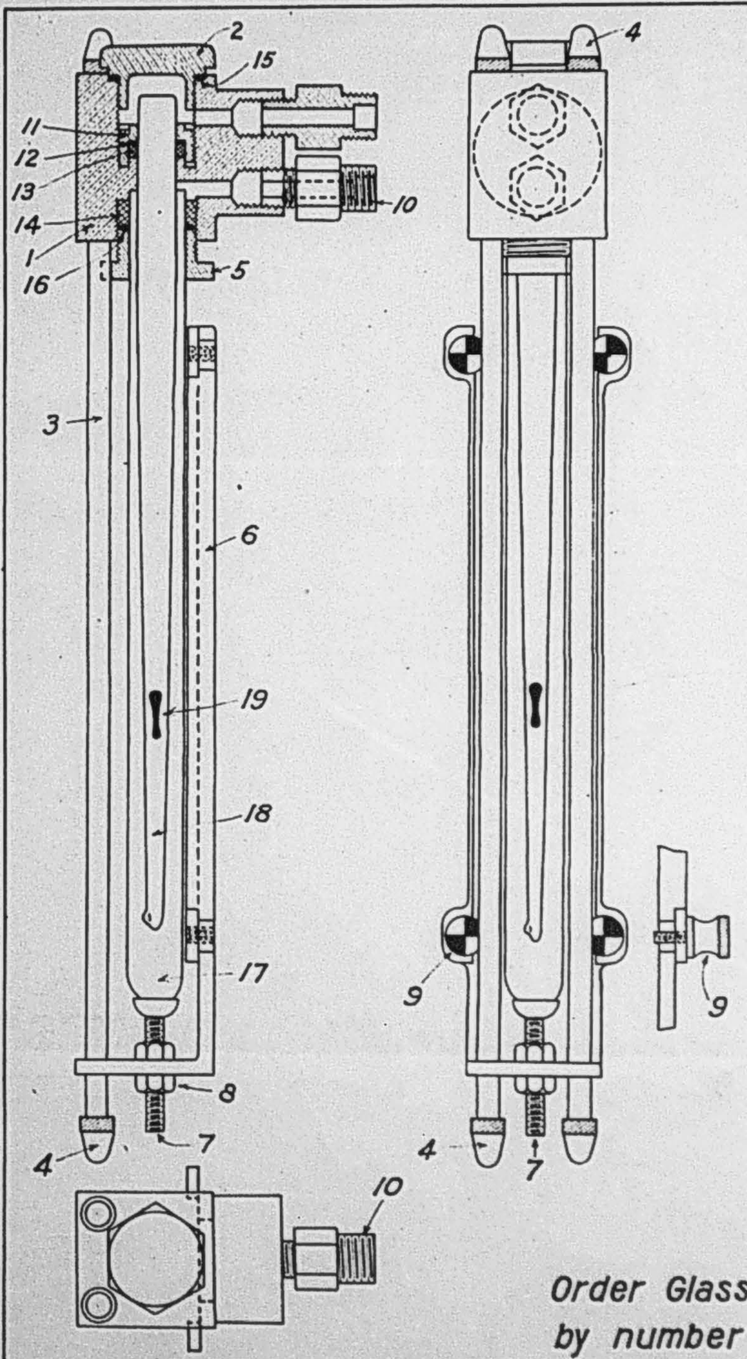

Nº	NAME OF PARTS
1	METER BLOCK
2	TOP NUT
3	GUARD ROD
4	„ „ NUTS
5	LOWER GLAND NUT
6	BACK PLATE
7	OUTER METER TUBE SUPR'T.
8	LOCKNUTS FOR „ „
9	KNURLED NUTS
10	METER BLOCK CONNECTION
11	INNER METER TUBE LOCKNUT
12	„ „ „ WASHER
13	„ „ „ RUBBER GASKET
14	OUTER METER TUBE RUBBER GASKET
15	LEAD WASHER FOR TOP-NUT
16	OUTER METER TUBE WASHER
17	„ „ „ GLASS
18	INNER „ „ „
19	BLUE GLASS FLOAT

Order Glass Float Meter repair parts by number and name

Glass Float Meter all Models.

CALIFORNIA JEWELL FILTER CO.
MERCHANTS EXCHANGE
SAN FRANCISCO CAL.

103

CALIFORNIA JEWELL FILTER CO.

THE MERCHANTS EXCHANGE

San Francisco.

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103

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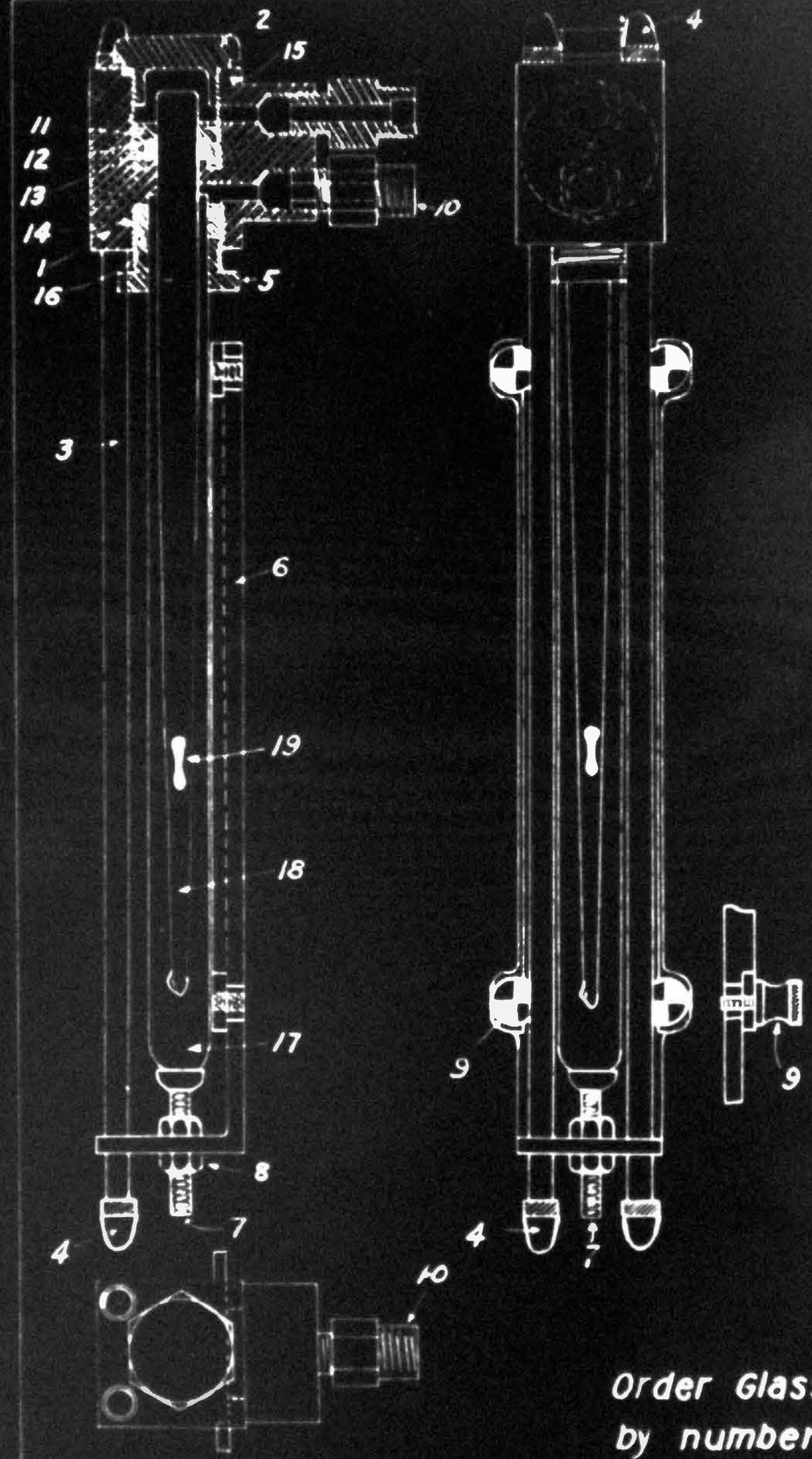
103



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4	" " NUTS
5	LOWER GLAND NUT
6	BACK PLATE
7	OUTER METER TUBE SUP'R'T.
8	LOCKNUTS FOR " "
9	KNURLED NUTS
10	METER BLOCK CONNECTION
11	INNER METER TUBE LOCKNUT
12	" " " WASHER
13	" " " RUBBER GASKET
14	OUTER METER TUBE RUBBER GASKET
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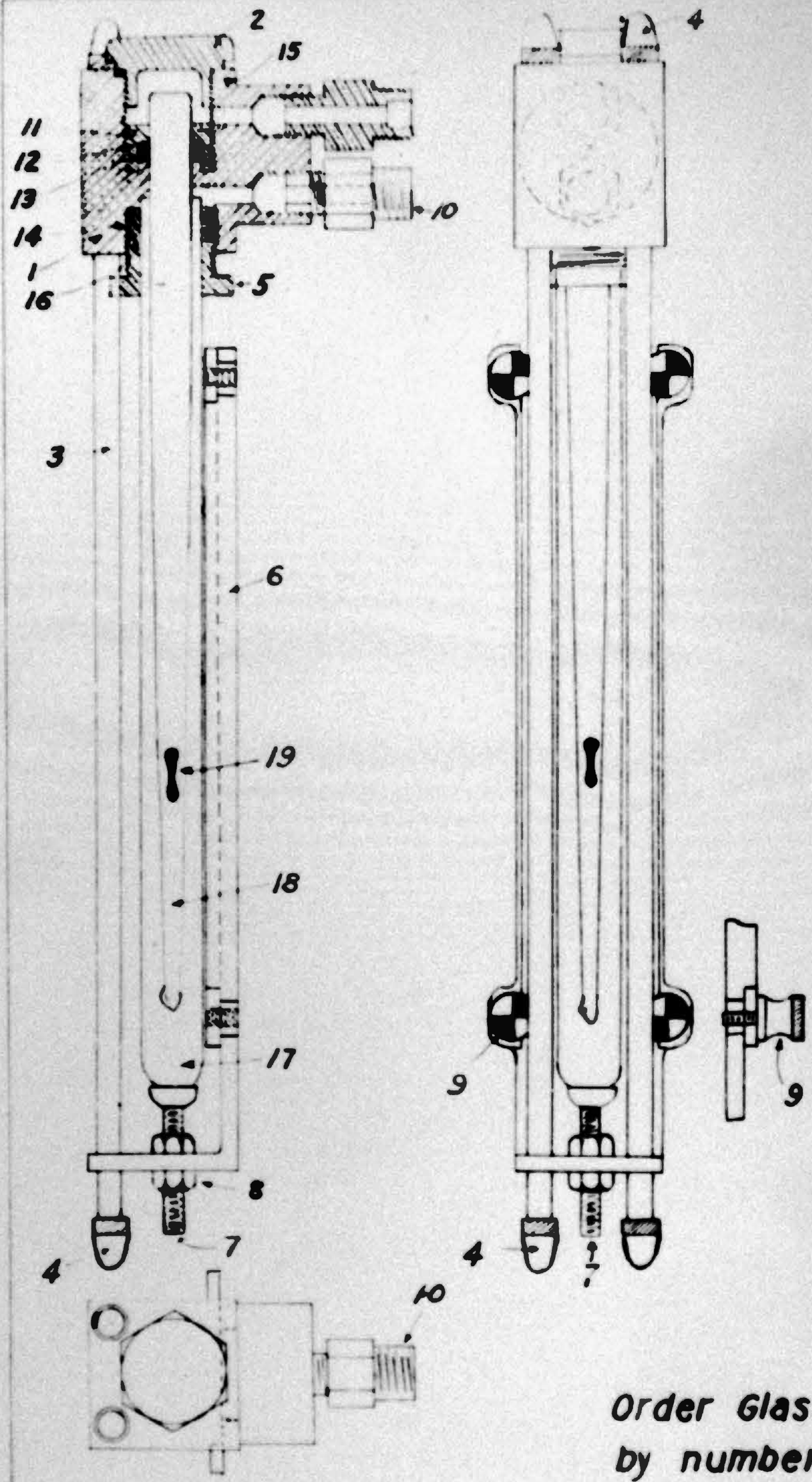
Glass Float Meter, all Models.

CALIFORNIA JEWELL FILTER CO.
MERCHANTS EXCHANGE
SAN FRANCISCO CAL.



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CALIFORNIA JEWELL FILTER CO.
MERCHANTS EXCHANGE
SAN FRANCISCO CAL.

DEPARTMENT OF THE INTERIOR

UNITED STATES GEOLOGICAL SURVEY

WASHINGTON

WATER RESOURCES BRANCH.

September 30, 1914.

Mr. W. S. Post,

Chief Engr., Cuyamaca Water Co.,

San Diego, California.

Dear Sir:-

In compliance with your request for a rough examination of the Cuyamaca water system to determine, if possible, the origin of certain reported evidences of contamination, I visited this sytem on September 26th and 28th, 1914 at the following places, namely; (1) A service tap in a store at the corner of 41st and Adams Streets; (2) A service tap in a store on Adams Street about two blocks east of 41st Street; and, (3) the reservoir at La Mesa.

At the two service taps I found that the water contained a considerable amount of suspended matter and gave off a strong, unpleasant odor. I took samples at these taps. It was reported at each of these places that the water had a bad odor continually; that sometimes it had "creepers" in it, and that sometimes it was roily.

I found that the water in the reservoir held about as much suspended matter as the samples collected at the service

taps. Algae appeared to be plentiful and plankton animalcula, particularly cyclops, rather conspicuous. At a tap in the wooden flume a short distance below the dam I detected the same odor that was found at the taps on Adams Street near 41st Street.

A certain leak at a point just below the dam is being gaged over a wier, and at the time of my visit was about one gallon per minute. The water flowing through the wier box carried masses of brown matter which settled forming a floculent deposit on the bottom of the box. At the time of my visit, about 4 p. m., this deposit was about 3 inches thick. The caretaker stated that the box is cleaned daily and that it had been cleaned that morning. I took a sample of the water from this box, and through the courtesy of Dr. W. E. Ritter, and with his assistance, I examined that sample microscopically at the Marine Biological Laboratory near La Jolla, and found that the brown substance was a filamentous alga; and that plankton were numerous. Neither I nor any one at the Biological Station was able to identify the species of the brown alga which constituted by far the largest part of the organic matter in the sample; but if the name and description of the species are desired, a sample may be mailed to Dr. C. A. Kofoid, Berkley, California, who, I am told, makes a practice of reporting on microscopic examinations of water.

With regard to the condition of the water at this time, I offer the following remarks:

Plankton animalcula are found in all quiet waters, and the only significance that attaches to their presence depends on their numbers. They are harmless themselves, but their presence in great numbers indicates that their food, which consists of organic contamination of almost any kind, is abundant, and this is a condition that should not be permitted to continue. The objects referred to as "creepers" by the consumers may have been filaments of algae, or more probably, cyclops - the most common plankton visible to the unaided eye; and their observation at service taps simply indicates their abundance in the reservoir, and consequently the presence there of ample food for them. They do not propogate in the mains.

The alga when examined was dead, but the spore sacs were still intact, indicating that it had been very recently living. The caretaker at La Mesa Reservoir stated that "blue stone" had been used recently and I judge that algae have been killed by copper sulphate and the dead masses are floating out. It is possible, of course, that the alga examined had died after collection, 20 hours previous, but I regard this as improbable under the attendant circumstances.

The odor detected at the taps is no doubt due to the

decomposition of algae, the gas being confined while the water is under pressure in the mains, and freed as the water escapes from the taps.

In so far as my brief examination has enabled me to judge, the present condition of the water could be remedied by aeration, and a very careful use of copper sulphate, bearing in mind that the latter is much easier to use as a preventive than as a cure, and that the condition may be rendered worse instead of better unless the work is done under competent advice and supervision.

Yours sincerely,

A. J. Ellis

Assistant Geologist.

AJE-BK

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ARTHUR L. EMERY, PRESIDENT
EMORY [illegible] SMITH, V.-P. & GEN. MGR.
M. F. [illegible]DONALD, SECRETARY

H. O. SLATER, 2D VICE-P. & MGR., L. A.
H. E. PUTNAM, TEXAS & ASST. MINING DEPT.
W. C. HAHN, MGR. MINING DEPT., L. A.

SMITH, EMERY & COMPANY

INCORPORATED

INSPECTING, TESTING AND CHEMICAL ENGINEERS AND CHEMISTS

BUREAU OF INSPECTION AND TESTS

OFFICE AND LABORATORIES
245 SO. LOS ANGELES STREET

SUNSET MAIN 845
HOME F 8285

CABLE ADDRESS "CHEMENG"

CHEMICAL AND PHYSICAL LABORATORIES
DRAFTING ROOMS
ORE TESTING PLANT

REPRESENTED AT
SAN FRANCISCO, PORTLAND, SAN DIEGO
SEATTLE, BIRMINGHAM, PUEBLO
PITTSBURG, NEW YORK, CHICAGO
GLASGOW MONTREAL

SUBJECT

LOS ANGELES, July 23, 1915.

Cuyamaca Water Co.,
San Diego, Cal.

Gentlemen:- Attention Mr. Faude, Asst. Mgr.

We are enclosing a pamphlet entitled "Sanitary Features of the Los Angeles Aqueduct."

Since this is one of the largest water systems in the United States used for a domestic supply, you will doubtless be interested in the studies presented in this paper.

Yours very truly,

SMITH, EMERY & COMPANY
CHEMISTS & CHEMICAL ENGINEERS.

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103

July 19, 1915.

Kettner & Salmons,
Timken Bldg.,
San Diego, Cal.

Gentlemen:-

Enclosed herewith applications for bonds for Joseph N. Ruis and Chester Harritt for deputy sheriffs. I have made the application so that the bond will date from July 24th. The date of the appointments and the end of the term in each case is left blank as I presume the appointments will be made immediately after the bonds are prepared and will probably continue indefinitely until such time as this Company no longer desires deputy sheriffs in its employ. As soon as bonds are prepared, please send them to this Company.

Yours very truly,

Assistant Manager.

FMF-BK

Enclos.

August 2, 1915.

Mr. Ralph L. Conklin,
County Sheriff,
San Diego, Cal.

Dear Sir:-

I enclose bonds for $1,000 each for Chester Harritt and Jos. N. Ruis. These are the employees of this Company whom we wrote you about a short time ago asking that they be appointed deputy sheriffs. Messrs. Harritt and Ruis will come to your office the next time they are in town to be sworn in if such a course of proceddure meets with your approval. Please inform us if this is all right.

Yours very truly.

Assistant Manager.

FMF-BK
Enclos.

103

Water Turned Off
Normal Heights and Kensington Park

Water will be turned off in Normal Heights and Kensington Park, for the purpose of cleaning out water mains, from 9 o'clock P.M., Saturday August 14th to 6 o'clock A.M., Sunday, August 15th.

Cuyamaca Water Company.

Wednesday, Thursday, Friday and Saturday.

In "Ann"

103

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Cuyamaca Water Company.

Wednesday, Thursday, Friday and Saturday.

In "Tribune"

D. GOCHNAUER, M. D
PRESIDENT

W. L. ROHRER
MANAGER

The Agnew Sanitarium and Hospital
Fifth and Beech Streets

San Diego, California, Nov.27, 1915

REPORT ON SAMPLE OF WATER.FROM CUYAMACA WATER CO.

Submitted Nov 22",1915.

SANITARY ANALYSIS.

Taste	Slightly earthy.
Odor	Slightly earthy.
Color, (standard scale)	25.
Turbidity (standard scale)	Clear.

Parts Per Million.

Total Solids	495.
Chlorine	I52.
Nitrogen as:	
Free Ammonia	.048
Albuminoid Ammonia,	.2I0
Nitrites	.0I0
Nitrates	I600
Oxygen Consumed	27
Total Alkalinity	I80.
" " due to bicarbonates	60.

Bacteriological Examination.:

Total Bacteria per CC	II00
Colon Bacilli present in ten CC.	
" " " " one CC.	
" " " " one tenth CC.	

Respectfully Submitted,

H. A. Thompson

Chemist and Bacteriologist.

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Nov 29, 1915

Col Ed Fletcher

This analysis made by Dr Thompson was from a bottle of water furnished by A. C. Sauer the doctors charges were $25.00 are we to stand this or will Sauer pay us. The report shows that the water is not fit for domestic purposes and Sauer said he would furnish another bottle of water later on. Lou A Mathews

March 8, 1916.

Mr. Taylor:

Please read this copy of letter to Neylan. If a representative of the State Board of Health comes down, if I am not here, show him the place where the 23 cows are buried at Foster's. Also take him down to the sump where they are pumping water out of the river.

Ed Fletcher.

F-S

LABORATORY CERTIFICATE.

DEPARTMENT OF PUBLIC HEALTH, Mr. Mathews: Keep this with the records

CITY OF SAN DIEGO,

CALIFORNIA.

Laboratory No. Cuy 1.

Date. Mar 10 16

Sample, WATER.

Received. Mar 10' 6. P.M.

Marked. La Mesa Dam

****

BACTERIOLOGICAL EXAMINATION.

	24 hours.	48 hours.
Total count on standard agar, at 37° C. per cc.	290	

Colon Bacillus ~~was~~ .present in 0.1 cc.
Colon Bacillus ~~was~~ .present in 1. cc.
Colon Bacillus ~~was~~ .present in 10. cc.

Noted

Conclusions:

Respectfully submitted,

H A Thompson

Chemist and Bacteriologist

D

LABORATORY CERTIFICATE

DEPARTMENT OF PUPLIC HEALTH

CITY OF SAN DIEGO, CALIFORNIA

Laboratory No. 5

Date Mar 10 ; 16

Sample Water

Received

Marked San Diego River near Wertons Dairy

BACTERIOLOGICAL EXAMINATION

	24 hours	48 hours
Total count on standard agar, at 37° C. per cc.	890	

Colon Bacillus.....present in 0.1 cc.
Colon Bacillus ~~was~~ .present in 1. cc.
Colon Bacillus ~~was~~ .present in 10. cc.

Conclusions:

Respectfully submitted,

H A Thompson

Chemist and Bacteriologist.

LABORATORY CERTIFICATE.

DEPARTMENT OF PUBLIC HEALTH,

CITY OF SAN DIEGO,

CALIFORNIA.

Laboratory No. Cuy 2.

Date. March 13 '16

Sample, WATER.

Received. Taken by H. A. Thompson at 11:00 a.m.

Marked. El Cajon Blvd. from hydrant at roadside

****

BACTERIOLOGICAL EXAMINATION.

	24 hours.	48 hours.
Total count on standard agar, at 37° C. per cc.	1180	

Colon Bacillus not d..present in 0.1 cc.
Colon Bacillus was A.present in 1. cc.
Colon Bacillus was A.present in 10. cc.

Noted

Conclusions:

Respectfully submitted,

H A Thompson

Chemist and Bacteriologist

LABORATORY CERTIFICATE.

DEPARTMENT OF PUBLIC HEALTH,

CITY OF SAN DIEGO,

CALIFORNIA.

Laboratory No. Cuyamaca No 2.

Date. Apl 4,16

Sample. WATER.

Received. Marked. La Mesa Dam

****

BACTERIOLOGICAL EXAMINATION.

	24 hours.	48 hours.
Total count on standard agar, at 37° C. per cc.	350	

Colon Bacillus.....present in 0.1 cc.
Colon Bacillus was..present in 1. cc.
Colon Bacillus was.present in 10. cc.

Conclusions:

Respectfully submitted,

H A Thompson

Chemist and Bacteriologist.

LABORATORY CERTIFICATE.

DEPARTMENT OF PUBLIC HEALTH,

CITY OF SAN DIEGO,

CALIFORNIA.

Laboratory No. Cuyamaca No 4

Date. Apr 4/16

Sample. WATER.

Received.

Marked. Ditch at Intake La Mesa dam.

****

BACTERIOLOGICAL EXAMINATION.

	24 hours.	48 hours.
Total count on standard agar, at 37° C. per cc.	700	

Colon Bacillus.....present in 0.1 cc.
Colon Bacillus was present in 1. cc.
Colon Bacillus was present in 10. cc.

Conclusions:

Respectfully submitted,

H A Thompson

Chemist and Bacteriologist.

LABORATORY CERTIFICATE.

DEPARTMENT OF PUBLIC HEALTH,

CITY OF SAN DIEGO,

CALIFORNIA.

Laboratory No. Cuy. 7

Date. Apr 7, 16

Sample. WATER.

Received.

Marked. Pipe line El Cajon Blvd. Treated water

****

BACTERIOLOGICAL EXAMINATION.

	24 hours.	48 hours.
Total count on standard agar, at 37° C. per cc.	38	

Colon Bacillus not present in 0.1 cc.
Colon Bacillus not present in 1. cc.
Colon Bacillus not present in 10. cc.

Conclusions:

Respectfully submitted,

H A Thompson

Chemist and Bacteriologist.

LABORATORY CERTIFICATE.

DEPARTMENT OF PUBLIC HEALTH,

CITY OF SAN DIEGO,

CALIFORNIA.

Laboratory No. Cuy. 6.

Date. Apr 7 '16

Sample. WATER.

Received.

Marked. La Mesa Dam Raw Water

****

BACTERIOLOGICAL EXAMINATION.

	24 hours.	48 hours.
Total count on standard agar, at 37° C. per cc.	345	

Colon Bacillus. not present in 0.1 cc.
Colon Bacillus. was present in 1. cc.
Colon Bacillus. was present in 10. cc.

Conclusions:

Respectfully submitted,

H A Thompson

Chemist and Bacteriologist.

LABORATORY CERTIFICATE.

DEPARTMENT OF PUBLIC HEALTH,

CITY OF SAN DIEGO,

CALIFORNIA.

Laboratory No. Cuy 8

Date. Apr 8 '16

Sample. WATER.

Received.

Marked. Bottled 08 Lake raw water.

****

BACTERIOLOGICAL EXAMINATION.

	24 hours.	48 hours.
Total count on standard agar, at 37° C. per cc.	280	

Colon Bacillus. 0. present in 0.1 cc.
Colon Bacillus. not present in 1. cc.
Colon Bacillus. was present in 10. cc.

Conclusions:

Respectfully submitted,

H A Thompson

Chemist and Bacteriologist.

LABORATORY CERTIFICATE.

DEPARTMENT OF PUBLIC HEALTH,

CITY OF SAN DIEGO,

CALIFORNIA.

Laboratory No. Cuy 9.

Date. Apr 8 '16

Sample. WATER.

Received. Marked. Wood litle line treated water.

****

BACTERIOLOGICAL EXAMINATION.

	24 hours.	48 hours.
Total count on standard agar, at 37° C. per cc.	80	

Colon Bacillus.....present in 0.1 cc.
Colon Bacillus not present in 1. cc.
Colon Bacillus not present in 10. cc.

Conclusions:

Respectfully submitted,

H A Thompson

Chemist and Bacteriologist.

April 8, 1916.

Brunswig Drug Co.,
5th & "J" Streets,
San Diego, Calif.

Gentlemen:

Will you kindly make the Cuyamaca Water Co. a price on liquid chlorine, F. O. B. San Diego, as we will want a large quantity of it.

Yours very truly,

CUYAMACA WATER COMPANY

By _____

Manager

EF:B

CUYAMACA WATER CO.
FILE No. 103
DO NOT REMOVE ANY LETTER FROM THIS FILE.

LABORATORY CERTIFICATE.

DEPARTMENT OF PUBLIC HEALTH,

CITY OF SAN DIEGO,

CALIFORNIA.

Date. Apr 11'16

Laboratory
No. Cuy 10

Sample. WATER.

Received.

Marked. La Mesa dam. Raw water.

****

BACTERIOLOGICAL EXAMINATION.

24 hours. 48 hours.

Total count on standard agar, at 37° C. per cc. 530

Colon Bacillus.....present in 0.1 cc.
Colon Bacillus.....present in 1. cc.
Colon Bacillus.....present in 10. cc.

Conclusions:

Respectfully submitted,

H A Thompson

Chemist and Bacteriologist.

LABORATORY CERTIFICATE.

DEPARTMENT OF PUBLIC HEALTH,

CITY OF SAN DIEGO,

CALIFORNIA.

Date. Apr 11'16

Laboratory
No. Cuy 11

Sample. WATER.

Received.

Marked. Pipe line El Cajon Ave.

****

BACTERIOLOGICAL EXAMINATION.

24 hours. 48 hours.

Total count on standard agar, at 37° C. per cc. 205

Colon Bacillus.....present in 0.1 cc.
Colon Bacillus.....present in 1. cc.
Colon Bacillus.....present in 10. cc.

Conclusions:

Respectfully submitted,

H A Thompson

Chemist and Bacteriologist.

LABORATORY CERTIFICATE.

DEPARTMENT OF PUBLIC HEALTH,

CITY OF SAN DIEGO,

CALIFORNIA.

Laboratory No. Cuy 12.

Date. Apr 13 16

Sample. WATER.

Received.

Marked. La Mesa dam raw water

****

BACTERIOLOGICAL EXAMINATION.

	24 hours.	48 hours.
Total count on standard agar, at 37° C. per cc.	520	

Colon Bacillus.....present in 0.1 cc.
Colon Bacillus.....present in 1. cc.
Colon Bacillus.....present in 10. cc.

Conclusions:

Respectfully submitted,

H. A Thompson

Chemist and Bacteriologist.

LABORATORY CERTIFICATE.

DEPARTMENT OF PUBLIC HEALTH,

CITY OF SAN DIEGO,

CALIFORNIA.

Laboratory No. 13

Date. Apr. 13. 16

Sample. WATER.

Received.

Marked. La Mesa pipe line treated water

****

BACTERIOLOGICAL EXAMINATION.

	24 hours.	48 hours.
Total count on standard agar, at 37° C. per cc.	12	

Colon Bacillus.....present in 0.1 cc.
Colon Bacillus.....present in 1. cc.
Colon Bacillus.....present in 10. cc.

Conclusions:

Respectfully submitted,

H A Thompson

Chemist and Bacteriologist.

LABORATORY CERTIFICATE.

DEPARTMENT OF PUBLIC HEALTH,

CITY OF SAN DIEGO,

CALIFORNIA.

Laboratory No. City 14

Date. Apr 15 '16

Sample. WATER.

Received.

Marked. La Mesa dam (raw)

****

BACTERIOLOGICAL EXAMINATION.

	24 hours.	48 hours.
Total count on standard agar, at 37° C. per cc.	720	

Colon Bacillus.....present in 0.1 cc.
Colon Bacillus~~.....~~.present in 1. cc.
Colon Bacillus~~.....~~.present in 10. cc.

Conclusions:

Respectfully submitted,

H A Thompson

Chemist and Bacteriologist.

LABORATORY CERTIFICATE.

DEPARTMENT OF PUBLIC HEALTH,

CITY OF SAN DIEGO,

CALIFORNIA.

Laboratory No. City 15.

Date. Apr 15 '16

Sample. WATER.

Received.

Marked. Pipe line El Cajon. (heated)

****

BACTERIOLOGICAL EXAMINATION.

	24 hours.	48 hours.
Total count on standard agar, at 37° C. per cc.	245	

Colon Bacillus.....present in 0.1 cc.
Colon Bacillus~~.....~~.present in 1. cc.
Colon Bacillus~~.....~~.present in 10. cc.

Conclusions:

I would suggest increasing the chlorine to 4# per million for a little while until the bacterial count comes down.

Respectfully submitted,

H A Thompson

Chemist and Bacteriologist.

LABORATORY CERTIFICATE.

DEPARTMENT OF PUBLIC HEALTH,

CITY OF SAN DIEGO,

CALIFORNIA.

Laboratory No. Cuy 16

Date. Apr 17, 16

Sample. WATER.

Received.

Marked. Apr. 17. La Mesa dam Raw water.

****

BACTERIOLOGICAL EXAMINATION.

24 hours. 48 hours.

Total count on standard agar, at 37° C. per cc. 550.

Colon Bacillus.....present in 0.1 cc.
Colon Bacillus not present in 1. cc.
Colon Bacillus was present in 10. cc.

Conclusions:

Respectfully submitted,

H A Thompson

Chemist and Bacteriologist.

LABORATORY CERTIFICATE.

DEPARTMENT OF PUBLIC HEALTH,

CITY OF SAN DIEGO,

CALIFORNIA.

Laboratory No. Cuy 17

Date. Apr 17, 16

Sample. WATER.

Received.

Marked. Pipeline, El Cajon

****

BACTERIOLOGICAL EXAMINATION.

24 hours. 48 hours.

Total count on standard agar, at 37° C. per cc. 310

Colon Bacillus.....present in 0.1 cc.
Colon Bacillus not present in 1. cc.
Colon Bacillus was present in 10. cc.

Conclusions:

Respectfully submitted,

H A Thompson

Chemist and Bacteriologist.

LABORATORY CERTIFICATE.

DEPARTMENT OF PUBLIC HEALTH,

CITY OF SAN DIEGO,

CALIFORNIA.

Laboratory No. Cuy 18.

Date. Apr 19 16.

Sample. WATER.

Received.

Marked. La Mesa - Treated water. El Cajon pipe line

****

BACTERIOLOGICAL EXAMINATION.

	24 hours.	48 hours.
Total count on standard agar, at 37° C. per cc.	330	

Colon Bacillus.....present in 0.1 cc.
Colon Bacillus.....present in 1. cc.
Colon Bacillus.....present in 10. cc.

Conclusions:

Respectfully submitted,

H. A. Thompson

Chemist and Bacteriologist.

LABORATORY CERTIFICATE.

DEPARTMENT OF PUBLIC HEALTH,

CITY OF SAN DIEGO,

CALIFORNIA.

Laboratory No. Cuy 19.

Date. Apr 1916.

Sample. WATER.

Received.

Marked. La Mesa dam. raw water.

****

BACTERIOLOGICAL EXAMINATION.

	24 hours.	48 hours.
Total count on standard agar, at 37° C. per cc.	305	

Colon Bacillus.....present in 0.1 cc.
Colon Bacillus.....present in 1. cc.
Colon Bacillus.....present in 10. cc.

Conclusions:

Respectfully submitted,

H. A. Thompson

Chemist and Bacteriologist.

LABORATORY CERTIFICATE.

DEPARTMENT OF PUBLIC HEALTH,

CITY OF SAN DIEGO,

CALIFORNIA.

Laboratory No. 20 Cuy. Date. Apr. 21, 16

Sample. WATER.

Received. Marked. La Mesa dam Raw water)

****

BACTERIOLOGICAL EXAMINATION.

	24 hours.	48 hours.
Total count on standard agar, at 37° C. per cc.	220	

Colon Bacillus.....present in 0.1 cc.
Colon Bacillus.....present in 1. cc.
Colon Bacillus.....present in 10. cc.

Conclusions:

Respectfully submitted,

H A Thompson

Chemist and Bacteriologist.

LABORATORY CERTIFICATE.

DEPARTMENT OF PUBLIC HEALTH,

CITY OF SAN DIEGO,

CALIFORNIA.

Laboratory No. 21 Cuy Date. 4/11. 216

Sample. WATER.

Received. Marked. Pipe line Treated water.

****

BACTERIOLOGICAL EXAMINATION.

	24 hours.	48 hours.
Total count on standard agar, at 37° C. per cc.	200	

Colon Bacillus.....present in 0.1 cc.
Colon Bacillus.....present in 1. cc.
Colon Bacillus.....present in 10. cc.

Conclusions:

Respectfully submitted,

H A Thompson

Chemist and Bacteriologist.

LABORATORY CERTIFICATE.

DEPARTMENT OF PUBLIC HEALTH,

CITY OF SAN DIEGO,

CALIFORNIA.

Laboratory No. Cuy 22

Date. Apl. 24 16

Sample. WATER.

Received.

Marked. La Mesa Dam Raw water.

****

BACTERIOLOGICAL EXAMINATION.

	24 hours.	48 hours.
Total count on standard agar, at 37° C. per cc.	265	

Colon Bacillus.....present in 0.1 cc.
Colon Bacillus not present in 1. cc.
Colon Bacillus was present in 10. cc.

Conclusions:

Respectfully submitted,

H A Olmsteads

Chemist and Bacteriologist.

LABORATORY CERTIFICATE.

DEPARTMENT OF PUBLIC HEALTH,

CITY OF SAN DIEGO,

CALIFORNIA.

Laboratory No. Cuy 23.

Date. Apl. 24'16

Sample. WATER.

Received.

Marked. El Cajon Pipeline. treated water.

****

BACTERIOLOGICAL EXAMINATION.

	24 hours.	48 hours.
Total count on standard agar, at 37° C. per cc.	220	

Colon Bacillus.....present in 0.1 cc.
Colon Bacillus.....present in 1. cc.
Colon Bacillus not present in 10. cc.

Conclusions:

Respectfully submitted,

H A Olmsteads

Chemist and Bacteriologist.

LABORATORY CERTIFICATE.

DEPARTMENT OF PUBLIC HEALTH,

CITY OF SAN DIEGO,

CALIFORNIA.

Laboratory No. Cuy. 24

Date. Apr 27 16.

Sample. WATER.

Received.

Marked. La Mesa dam. raw water.

****

BACTERIOLOGICAL EXAMINATION.

	24 hours.	48 hours.
Total count on standard agar, at 37° C. per cc.	180	

Colon Bacillus.....0.present in 0.1 cc.
Colon Bacillus not present in 1. cc.
Colon Bacillus not present in 10. cc.

Conclusions:

Respectfully submitted,

H. A. Clemmons

Chemist and Bacteriologist.

LABORATORY CERTIFICATE.

DEPARTMENT OF PUBLIC HEALTH,

CITY OF SAN DIEGO,

CALIFORNIA.

Laboratory No. Cuy 25.

Date. Apr. 27 '16

Sample. WATER.

Received.

Marked. El Cajon Pipe Line. treated water

****

BACTERIOLOGICAL EXAMINATION.

	24 hours.	48 hours.
Total count on standard agar, at 37° C. per cc.	335	

Colon Bacillus....0.present in 0.1 cc.
Colon Bacillus not present in 1. cc.
Colon Bacillus not present in 10. cc.

Conclusions:

Respectfully submitted,

H. A. Clemmons

Chemist and Bacteriologist.

LABORATORY CERTIFICATE.

DEPARTMENT OF PUBLIC HEALTH,

CITY OF SAN DIEGO,

CALIFORNIA.

Laboratory No. Cuy 26

Date. Apr 29 '16

Sample. WATER.

Received.

Marked. La Mesa dam. Raw water.

****

BACTERIOLOGICAL EXAMINATION.

	24 hours.	48 hours.
Total count on standard agar, at 37° C. per cc.	460.	

Colon Bacillus.....present in 0.1 cc.
Colon Bacillus not d..present in 1. cc.
Colon Bacillus not d..present in 10. cc.

Conslusions:

Respectfully submitted,

H A Thompson

Chemist and Bacteriologist.

LABORATORY CERTIFICATE.

DEPARTMENT OF PUBLIC HEALTH,

CITY OF SAN DIEGO,

CALIFORNIA.

Laboratory No. Cuy 27

Date. Apr. 29 '16.

Sample. WATER.

Received.

Marked. El Cajon Pipe line. treated water

****

BACTERIOLOGICAL EXAMINATION.

	24 hours.	48 hours.
Total count on standard agar, at 37° C. per cc.	335	

Colon Bacillus.....present in 0.1 cc.
Colon Bacillus.....present in 1. cc.
Colon Bacillus not d..present in 10. cc.

Conslusions:

Respectfully submitted,

H A Thompson.

Chemist and Bacteriologist.

PATHOLOGICAL LABORATORY
Dr.H.A.Thompson,
San Diego, Cal.

Laboratory No. Cuy 28 Date. La Mesa dam. Raw water.

Sample. Water. Marked. May 3 16

BACTERIOLOGICAL EXAMINATION.

24.Hrs.

Total count on standard agar at 37.C per cc. 300

Colon Bacillus.....present in 0.I cc.
Colon Bacillus. ~~no.~~ present in I.0 cc.
Colon Bacillus. ~~none~~ present in IO. cc.

Conclusions:

.....

.....

Respectfully submitted,
H A Thompson
Chemist and Bacteriologist.

PATHOLOGICAL LABORATORY, SAN DIEGO, CAL.
Dr.H.A.Thompson.

Laboratory No. Cuy 29 Date. May 3'16.

Sample. WATER.

Marked. El Cajon pipe line.

****

BACTERIOLOGICAL EXAMINATION.

24 hours.

Total county on standard agar, at 37° C. per cc 50

Colon Bacillus. .....present in o.i cc
Colon Bacillus. ~~no.~~ present in I. cc
Colon Bacillus. ~~none~~ present in IO.cc

Conclusions:

.....

.....

Respctfully submitted,
H A Thompson
Chemist and Bacteriologist.

PATHOLOGICAL LABORATORY SAN DIEGO,CAL.
Dr.H.A.Thompson.

Laboratory No. Cuy 30

Date. May 5 16

Sample. WATER.

Marked. La Mesa Dam Raw Water

****

BACTERIOLOGICAL EXAMINATION.

24 hours.

Total count on standard agar, at 37 C. per cc 400

Colon Bacillus. not. present in o.i cc
Colon Bacillus. not. present in I. cc
Colon Bacillus. was. present in IO.cc

Conclusions:

Respectfully submitted,

H A Thompson

Chemist and Bacteriologist.

PATHOLOGICAL LABORATORY SAN DIEGO,CAL.
Dr.H.A.Thompson.

Laboratory No. Cuy 31.

Date. May 5 16

Sample. WATER.

Marked. E.L. Cajon Pipe Line. Treated Water

****

BACTERIOLOGICAL EXAMINATION.

24 hours.

Total count on standard agar, at 37 C. per cc 125

Colon Bacillus. not. present in o.i cc
Colon Bacillus. not. present in I. cc
Colon Bacillus. not. present in IO.cc

Conclusions:

Respectfully submitted,

H A Thompson

Chemist and Bacteriologist.

PATHOLOGICAL LABORATORY
Dr.H.A.Thompson,
San Diego, Cal.

Laboratory No. Cuy 32

Date... May 8 16.

Sample. Water. Marked. La Mesa Dam (raw water)

BACTERIOLOGICAL EXAMINATION.

24.Hrs.

Total count on standard agar at 37.Cper cc. 265

Colon Bacillus..... no d..present in 0.I cc.
Colon Bacillus..not d..present in I.0 cc.
Colon Bacillus..was.present in I0. cc.

Conclusions:

.....

.....

Respectfully submitted,
H A Thompson
Chemist and Bacteriologist.

PATHOLOGICAL LABORATORY
Dr.H.A.Thompson,
San Diego, Cal.

Laboratory No. Cuy 33.

Date. May 8, 16

Sample. Water. Marked. El Cajon Pipe Line treated water.

BACTERIOLOGICAL EXAMINATION.

24.Hrs.

Total count on standard agar at 37.Cper cc. 360.

Colon Bacillus..... no d..present in 0.I cc.
Colon Bacillus..not d..present in I.0 cc.
Colon Bacillus..was.present in I0. cc.

Conclusions:

.....

.....

Respectfully submitted,
H A Thompson
Chemist and Bacteriologist.

May 10, 1916.

Mr. Faude,
Office.

Please C. K. the California Jewel Filter Company's bill, providing it is correct, also Colonel Fletcher would like for you to make a report to him on same.

Lou. B. Mathews.

LBM:B

103

LABORATORY CERTIFICATE

DEPARTMENT OF PUPLIC HEALTH

CITY OF SAN DIEGO, CALIFORNIA

Laboratory No. City 34

Date May 10,16

Sample Water

Received

Marked El Cajon Pipe Line Treated Water.

BACTERIOLOGICAL EXAMINATION

	24 hours	48 hours
Total count on standard agar, at 37° C. per cc.	1050	

Colon Bacillus.....present in 0.1 cc.
Colon Bacillus.....present in 1. cc.
Colon Bacillus.....present in 10. cc.

Conclusions:

Respectfully submitted,

H C Thompson

Chemist and Bacteriologist.

LABORATORY CERTIFICATE

DEPARTMENT OF PUPLIC HEALTH

CITY OF SAN DIEGO, CALIFORNIA

Laboratory No. Cuy 35

Date May 10, 16.

Sample Water

Received

Marked La Mesa School Treated water.

BACTERIOLOGICAL EXAMINATION

	24 hours	48 hours
Total count on standard agar, at 37° C. per cc.	350.	

Colon Bacillus.....present in 0.1 cc.
Colon Bacillus.....present in 1. cc.
Colon Bacillus.....present in 10. cc.

Conclusions:

Respectfully submitted,

H. A. Thompson

Chemist and Bacteriologist.

LABORATORY CERTIFICATE

DEPARTMENT OF PUPLIC HEALTH

CITY OF SAN DIEGO, CALIFORNIA

Laboratory No. Cuy. 36

Date May 13.16

Sample Water

Received

Marked Pipe line El Cajon. Treated Water.

BACTERIOLOGICAL EXAMINATION

	24 hours	48 hours
Total count on standard agar, at 37° C. per cc.	98	

Colon Bacillus.....present in 0.1 cc.
Colon Bacillus.....present in 1. cc.
Colon Bacillus.....present in 10. cc.

Conclusions:

Respectfully submitted,

H. A. Thompson

Chemist and Bacteriologist.

CUYAMACA WATER CO.
FILE No. 103
DO NOT REMOVE ANY LETTER FROM THIS FILE.

103

LABORATORY CERTIFICATE

DEPARTMENT OF PUPLIC HEALTH

CITY OF SAN DIEGO, CALIFORNIA

Laboratory No. Cuy 37.

Date May 15.

Sample Water

Received

Marked El Cajon Pipe Line.

BACTERIOLOGICAL EXAMINATION

	24 hours	48 hours
Total count on standard agar, at 37° C. per cc.	70	

Colon Bacillus.....present in 0.1 cc.
Colon Bacillus.....present in 1. cc.
Colon Bacillus ~~N.G.~~ present in 10. cc.

Conclusions:

Respectfully submitted,

Chemist and Bacteriologist.

103

103

LABORATORY CERTIFICATE

DEPARTMENT OF PUPLIC HEALTH

CITY OF SAN DIEGO, CALIFORNIA

Laboratory No. Cuy 38.

Date May 22' 16

Sample Water

Received

Marked El. Cajon Pipe Line

BACTERIOLOGICAL EXAMINATION

	24 hours	48 hours
Total count on standard agar, at 37° C. per cc.	540	

Colon Bacillus.....present in 0.1 cc.
Colon Bacillus.....present in 1. cc.
Colon Bacillus ~~N.G.~~ present in 10. cc.

Conclusions:

Respectfully submitted,

H. A. Thompson

Chemist and Bacteriologist.

103

Pathological Laboratory
Dr.H.A.Thompson
San Diego, California.

May 23,16.

Col. Ed Fletcher,
Cuyamaca Water Co.

Dear Sir:-

I beg to report the examinations of Cuyamaca water made for you during the past two months have shown very conclusively the value of efficient chlorination.

Owing to the recent heavy rains and the fact that most of the water impounded was surface water it was liable to an excessive amount of contamination, in spite of any precautions that could be taken.

The total number of examinations made to date has been,of raw water 21, of treated water 16.

At first colon bacilli, which are regarded as our best evidence of contamination, were found in every sample in ten c.c. and in one cc. quantity. Later only in ten cc.

Since the installation of the chlorine plant and its proper regulation, out of thirteen samples examined, colon bacilli have been found present in but two samples and then only in ten cc. quantity.

Samples of the untreated water taken at the same time have shown colon organisms present in twelve out of the thirteen samples in ten cc. quantity.

I believe this shows the efficiency of your chlorine plant.

Resp. submitted,

H. A. Thompson.

May 24, 1916.

Mr. Ed Fletcher,
Mgr C W Co.

Dear Sir:-

I attach the original and two copies of report from Dr. Thompson.

F. M. Faude.

FMF:K

103

LABORATORY CERTIFICATE

DEPARTMENT OF PUPLIC HEALTH

CITY OF SAN DIEGO, CALIFORNIA

Laboratory No. City 39

Date May 29.

Sample Water

Received

Marked El Cajon Pipe Line.

BACTERIOLOGICAL EXAMINATION

	24 hours	48 hours
Total count on standard agar, at 37° C. per cc.	130.	

Colon Bacillus.....present in 0.1 cc.
Colon Bacillus.....present in 1. cc.
Colon Bacillus N.D. present in 10. cc.

Conclusions:

Respectfully submitted,

H A Thompson

Chemist and Bacteriologist.

103

PURIFICATION

PURIFICATION OF WATER
From the papers of Ed Fletcher, the following letters were removed to the alphabetized correspondence files:

BANKS, A.E.
- FMF to Health Dept., 2 letters,3/10/16, 3/14/16
- Banks to Cuyamaca Water Co., 3/10/16
- Cuyumaca Water Co. to Banks, 2 letters, 3/11/16 4/14/16
- Fletcher to Faude, 3/28/16
- Banks to Fletcher, 3 letters, 3/24/16, 4/8/16, 5/9/16
- F-S to Banks, 3 letters, 3/28/16, 4/8/16, 5/11/16
- Fletcher to Mathews, 4/14/16
- Fairbanks, Morse & Co. to Cuyumaca Water Co., 3/25/16

FAUDE, F.M.
- Faude to Fletcher, 8 letters, 4/6/16, 11/13/16 7/3/16, 5/10/16, 5/10/16, 5/1/16, 3/31/16 3/30/16
- Fletcher to Faude, 3 letters, 11/11/16, 4/17/16 3/28/16

WICHERSKI, O.G.
- Wicherski to Cuyumaca Water Co., 2 letters, 9/29/14 2/16/16,
- Faude to Fletcher, 2 letters, 8/31/15, 9/27/15
- Faude to Harritt, 8/31/15
- Faude to Wicherski, 1/25/16
- Fletcher to Faude, 2/17/16
- Cuyumaca Water Co. to Wicherski, 2/17/16

REMOVED TO THE ALPHABETIZED BUSINESS PAPERS - CUYUMACA WATER CO.

AMERICAN WATER SOFTENER CO.
- Hodkinson to Harritt, 10/27/15
- Faude to American Water Softener, 11/10/15
- Hodkinson to Faude, 11/15/15

Faude to CALIFORNIA DRUG & CHEMICAL CO., 5/16/16
C.W. HILL CHEMICAL CO.
- C.W.Hill to Cuyumaca Water Co. 3 letters, 5/18/16 5/26/16, 6/3/16
- Fuade to C.W. Hill, 6/1/16, 6/7/16

Cuyamaca Water Co. to ELECTRO BLEACHING GAS CO., 5/31/16
Faude to WESTERN WHOLESALE DRUG CO., 5/16/16

RECORD OF MATERIALS REMOVED PAGE ___ OF ___

COLLECTION NAME ED FLETCHER

SERIES & FOLDER TITLE CUYA WTR CO. - PURIFICATION OF WATER

Description of Material		Date Of Material	Re-Filed As: Series	Re-Filed As: Folder Title
entire file	CALIF JEWEL FILTER CO	AP. 12, '16 NOV 16, 1917	CUYA: BUSINESS CORRES.	
" "	AMERI.			

Ed Fletcher Papers

1870-1955

MSS.81

Box: 56 Folder: 12

Business Records - Water Companies - Cuyamaca Water Company - Purification of Water and Sanitary measures