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ENGINEERING REPORT
on
POLLUTION OF WATERS OF
Interstate Sanitation District
by CITY OF LONG BEACH

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ON
POLLUTION OF THE WATERS OF THE INTERSTATE
SANITATION DISTRICT BY THE CITY OF LONG BEACH

January 14, 1949

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S U M M A R Y

The resort and residential community of Long Beach is located on an island in the southwestern corner of Nassau County within easy commuting distance of New York. The 1948 permanent population has been estimated at between 15,000 and 20,000 with a peak summer population of between 75,000 and 100,000.

The sewage from this population is treated at two plants. The New York Avenue (West) Plant which discharges into the ocean, treats the sewage from all but about 1000 residents at the extreme east end of the City. This plant is operating at about five times its design capacity and has consistently failed to produce an effluent meeting the standards of the Tri-State Compact. There has also been frequent failure to provide the chlorination required by the Nassau County Department of Health.

The Lido (East) Plant treats the sewage from approximately 1000 residents at the east end of the City plus the sewage from approximately an additional 1000 residents in the adjacent area of the Town of Hempstead. This plant discharges into Reynolds Channel and is producing a satisfactory effluent.

The sewer system of the City of Long Beach is greatly over-taxed. There have been frequent instances of raw sewage overflowing from manholes on lines of inadequate capacity. Auxiliary pumping has failed to alleviate this situation. *(overflow during summer '48 & also Jan 49)*

The net effect of the above factors has been to produce a condition which is a ~~potential~~ menace to the public health of the people of Long Beach as well as an affront to their aesthetic sense. In more concrete terms it has resulted in the restriction of shellfishing in the vicinity of Long Beach and the closing down of

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some of the City's finest bathing areas.

3.

Part I

GENERAL INFORMATION

LOCATION (see Map No. 1)

The City is situated centrally on an island in the southwestern corner of Nassau County and is connected to the mainland by a number of causeways. The Town of Hempstead is located on either side of the City with the unincorporated community of Atlantic Beach ~~contiguous~~ ^{contiguous} on the west. The water area bordering on the City has been designated "Class A" by the Interstate Sanitation Commission.

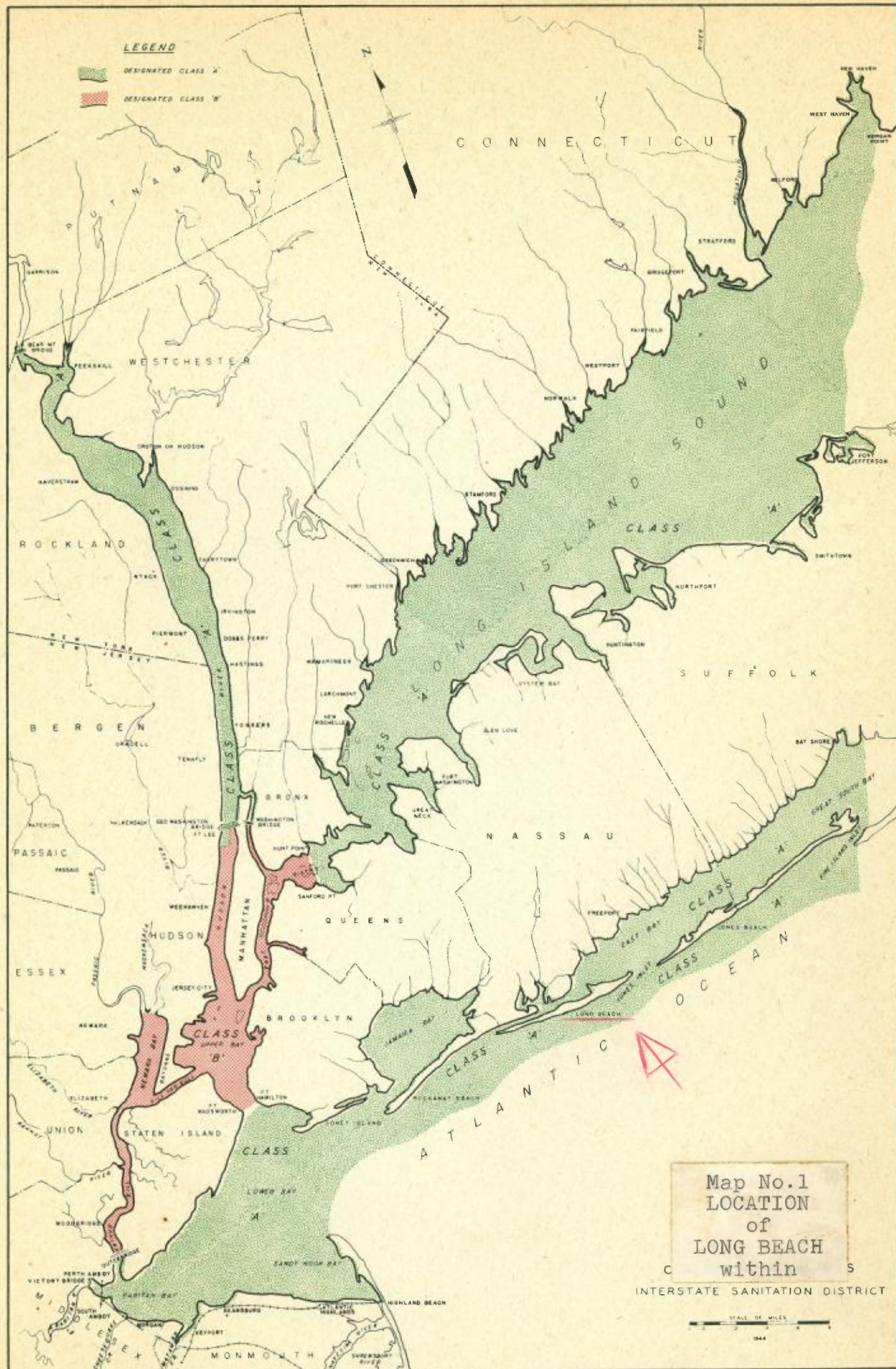
Character of Municipality

Long Beach is principally a residential and summer resort community. The city's seacoast forms part of one of the best expanses of bathing beach on the Atlantic Coast, ~~extending from Atlantic Beach on the west to Jones Beach State Park eight miles to the east.~~ The City is within easy commuting distance of New York by either railroad or car. In addition to extensive bungalow and summer hotel developments, the last few decades have shown a marked increase in the number of all-year-round residences.

Industrial development in Long Beach has been negligible. Manufacturing is at present limited to three small concerns employing under 500 persons in all.

Population

The population of the City of Long Beach, according to the 1940 U.S. Census, was 9,036. Mr. Bernard J. Rinklin, City Tax Assessor, estimates that the present (1948) population is between 15,000 and 20,000. He also estimates that the peak summer population is between 75,000 and 100,000.



Corporation and Finances

Long Beach was incorporated as a village in 1913 and became a city under Chapter 635, Laws of 1922.

According to Mr. Rinklin, the assessed evaluation of the City for 194 is approximately \$45,000,000. Of this amount approximately \$800,000 is municipally owned. As of September 21, 1948, the City had outstanding \$3,141,718 in general obligation bonds, and \$1,340,000 in water system bonds. The latter are outside the normal debt limit imposed by the state.

Part II

SEWAGE FLOW

The domestic sewage flow of Long Beach is not metered. It is estimated that an average daily flow of 5,000,000 gallons and an average maximum flow of 9,000,000 gallons per day is discharged to the Atlantic Ocean through the New York Avenue (West) Plant. An estimated average daily flow of 800,000 gallons, and an average maximum daily flow of 1,500,000 gallons, is discharged to Reynolds' Channel through the Lido (East) Plant. Infiltration of ground water contributes appreciably to these flow figures.

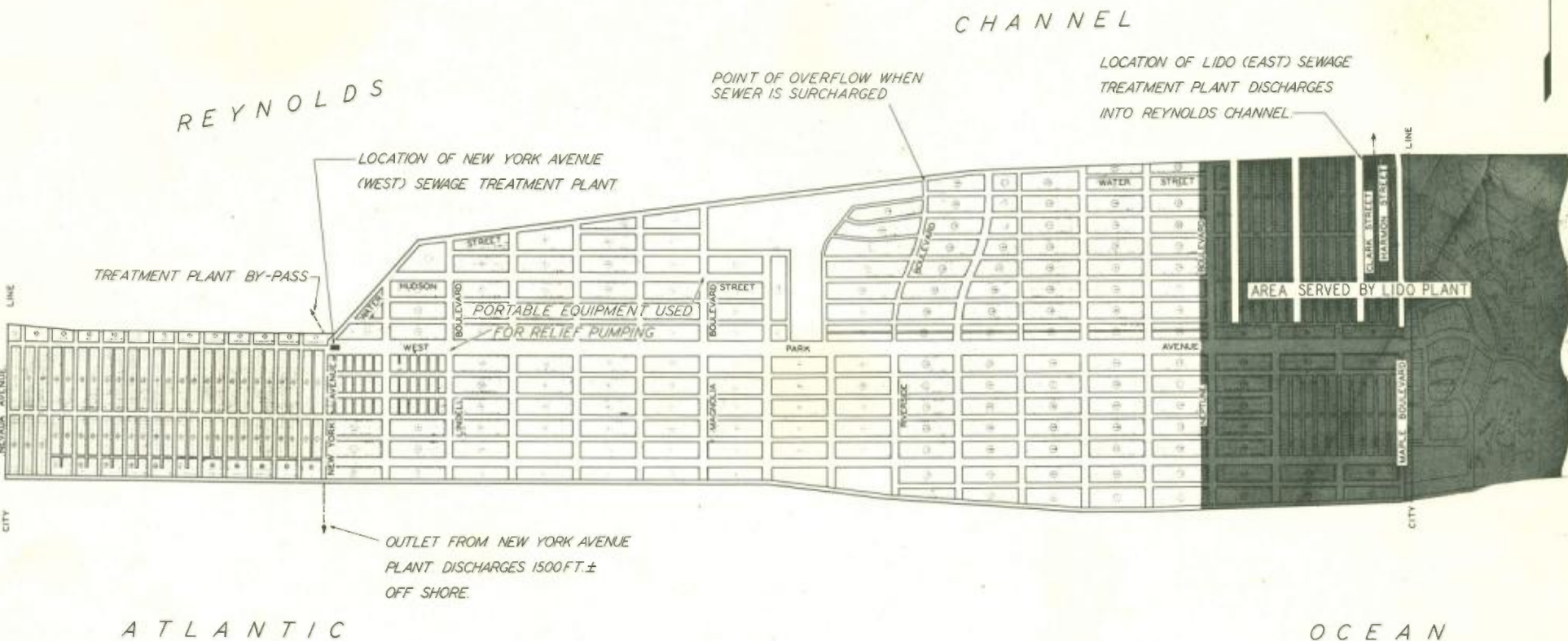
As far as is known there are no industrial wastes entering the district from the City of Long Beach.

PART III
SEWERAGE SYSTEM

Collection System

The City of Long Beach is served by a separate sewer system. At the present time these sewers are grossly overloaded as evidenced by the frequency with which they overflow or must be pumped to prevent overflows of ^{raw} ~~rain~~ sewerage into the streets of the City or into the surrounding waterways. During the past year the following instances indicating the inadequacy of the Long Beach collection system and the resulting dangers have come to the attention of the Commission.

- 1) On July 17, 1948, Mr. Herberger of the Nassau County Department of Health reported raw sewage overflowing from a manhole at the corner of Riverside Boulevard and Water Street (see Map No. 2). This sewage flowed down a gutter in a southerly direction to within 20 feet of a water supply well, then into a catch basin and through a storm drain in a northerly direction to Reynolds Channel. He indicated that this overflow resulted whenever the pump in the adjoining lift station operated, discharging sewage into a line of inadequate capacity. An attempt to relieve this condition by installing an emergency pump at Magnolia Boulevard and Hudson Street had been unsuccessful.
- 2) Mr. Larkin of the New York State Department of Health reported essentially the same conditions on July 19, with the exception that equipment for the emergency chlorination of the overflow was being installed.
- 3) On July 25, Mr. Larkin again visited Riverside Boulevard



MAP NO. 2
SEWERAGE DATA
CITY OF LONG BEACH
NASSAU COUNTY NEW YORK

INTERSTATE SANITATION COMMISSION
SCALE IN FEET
500 0 500 1000 1500 2000
SEPTEMBER 1946

and Water Street and found that a small earthen dam and diverting channel had been constructed so that the sewage from the manhole flowed directly into Reynolds Channel (a distance of about 25 feet). Chlorine was being applied in this manhole at a rate of 92 pounds per day.

- 4) On July 27, Mr. Hess of this Commission reported the emergency arrangement at Riverside Blvd and Water Street still in effect. (see Fig. 1 and 2.) Chlorine was being applied, but because of the short detention time and the fact that it was raw sewage being chlorinated, the effectiveness of the precaution was doubtful.

On the same date a temporary gasoline driven pump was diverting sewage from a surcharge line to a high level line at Hudson Street and Magnolia Blvd. (See Fig. 3.) Because of the relative locations of the end of the pump's suction and discharge lines, the operation necessitated closing half the street to traffic.

At West Park Avenue and Lindell Blvd. a similar arrangement was carried out, with the exception that traffic was more seriously disrupted than at Hudson Street and Magnolia Blvd. (See Fig. 4)

- 5) On August 7, Mr. Larkin reported that the emergency overflow at Riverside Blvd was still in operation, but that no chlorine was being applied and the chlorinator was shut off.
- 6) Mr. Herberger reported that on January 7, 1949 raw sewage was again overflowing into Reynolds Channel.

New York Avenue (West) Plant

The New York Avenue Plant serves the area from the westerly



FIG. 1. Overflowing manhole at Riverside Blvd. and Water Street. Hose at left is used for applying chlorine Reynolds Channel in background.



Fig.2 Location of overflow manhole at Riverside Blvd. and Water St. Note pools from flow which formerly ran toward city wells at Park Pl.



Fig.4 West Park Ave. and Lindell Blvd. Temporary pumping operations to relieve surcharged sewer.



Fig.3 Hudson St. and Magnolia Blvd. Gasoline driven pump being used to divert sewage from overloaded line.

city limits to Neptune Blvd. from Reynolds Channel to the Atlantic Ocean (see Map No. 2.) It is located at New York Avenue and West Park Avenue. This plant serves all of the connected population of Long Beach with the exception of the approximately 1000 person living in the area east of Neptune Blvd. who are served by the Lido (East) Plant.

The original plant was constructed in 1916 with additions reported in 1923. The present design population is 10,000 ^{with} ~~which~~ ~~is equivalent to~~ a design capacity of 1,000,000 gallons per day. Estimates of the present rate of flow indicate an average of 5,000,000 gallons per day and a maximum of 9,000,000 gallons per day. This means that the plant is attempting to treat five times the amount of sewage it was designed to treat.

The plant provides for plain sedimentation and chlorination prior to discharge through a 3200' outlet pipe which extends an estimated 1500' into the Atlantic Ocean. The effluent is pumped through this line under pressure. According to Mr. MacCullum, Consulting Engineer for the City, there is a large break about 1200' off shore. He is not sure that any sewage is conveyed beyond this break at present. The plant is also provided with a 16 inch emergency by-pass line which discharges into Reynolds Channel at West Park Avenue and New York Avenue. *Sludge from settling tanks is disposed of annually. Last year it is reported to have been pumped to sea through the*

The New York Avenue Plant has failed to provide adequate treatment for at least the past ten years. Interstate Sanitation Commission records of 15 investigations conducted by Commission Personnel since 1938 show that the plant has consistently failed to comply with the provisions of the Tri-State Compact relative to the required removal of total suspended solids (60% removal for Class A

104.
waters). On six occasions the plant has failed to meet Compact requirements relative to removal of coliform organisms (most probable number shall not exceed one per cubic centimeter in more 50% of the effluent samples tested). A summary of the laboratory analyses is given in Appendix A.

The City of Long Beach is required to chlorinate its sewage effluent all-year round. Prior to 1946 chlorination was required only during the months of May through October. The Change was brought about in an effort to protect the shellfishing industry in the vicinity of the City. The Nassau County Department of Health requires that the effluent from the plant be effectively chlorinated to a minimum residual of five tenths part per million of chlorine after 15 minutes. It has come to the attention of the Commission that during the past year there were frequent instances when this residual was not maintained due to lack of sufficient water pressure to operate the chlorinators at their rated capacities. On several occasions water pressures of as low as 10 pounds per square inch and chlorine residuals of one tenth part per million were observed by members of the New York State or Nassau County Departments of Health. These instances occurred during the summer months when, because of increased population, water pressure was at its lowest and sewage flow was of its highest. It is understood that this condition has now been temporarily alleviated by the installation of an additional chlorinator, cleaning of the chlorine feed lines, and the installation of a new booster pump to increase water pressure at the plant.

Lido (East) Plant

The Lido (East) Plant serves the area extending eastward from Neptune Blvd. from Reynolds Channel to the Atlantic Ocean in-

cluding a portion of the adjacent Town of Hempstead (see Map No. 2) The estimated population served is 2,000, including 1000 residents of Hempstead. The plant located at the foot of Clarke Street adjoining Reynolds Channel.

The Lido Plant was constructed for the Navy in 1943 to serve the Lido Naval Station and has since been taken over by the City. Operation was started in January 1944. The plant was designed to handle a connected population of 8,000 equivalent to a flow of 800,000 gallons per day. The present estimated average daily flow is 800,000 gallons with a maximum rate of flow estimated at 1,500,000 gallons per day. A large portion of the present flow can safely be attributed to ground water infiltration as evidenced by the low suspended solids in the plant influent (See Appendix A).

The treatment provided consists of plain sedimentation and chlorination. As is the case at the New York Avenue plant, chlorination is required all-year round. The plant effluent is discharged into Reynolds Channel about 80 feet offshore opposite Harmon Street. In case of emergency the plant may be by-passed, in which case the raw sewage receives only chlorination prior to its discharge into the Channel.

During the past five years eight investigations of the Lido (East) Plant have been made by Commission personnel. In each instance the plant effluent has been found to comply with the provisions of the Tri-State Compact.

PART IV
EFFECT OF POLLUTION ON ADJACENT
WATERS

Shellfish Areas

in the State of N.Y.

Whether or not a given area[^] is safe for the taking of shellfish is determined by the Bureau of Marine Fisheries, New York State Conservation Department. Their certification is based upon the results of bacterial analyses^{and sanitary survey} which they make to determine the extent of sewage pollution in the waters in question. The present condition of the waters in the vicinity of Long Beach with respect to shellfishing is as follows:

- 1) The waters of Reynolds channel from the westerly end of the City of Long Beach to Ingraham Hassock to the east of the City are closed to the taking of shellfish.
- 2) That area of the Atlantic Ocean lying within one mile of the shore line and extending from a line due south through the tower on the City Hall of the City of Long Beach westerly to a line due south from the end of the breakwater at East Rockaway Inlet is closed to the taking of shellfish.

This latter area was opened to shellfishing in April 1948 as a result of tests made the previous February. However on July 29, 1948, the Conservation Department again found it necessary to close this area. The official notice contains this statement

"Due to an unusual situation which has developed in the City of Long Beach, resulting in unsatisfactory disposal of sewage of that City, it is necessary that this Department immediately close certain additional shellfish areas. . . .".

Bathing Areas

The extensive bathing areas to which the City of Long
owes much of its popularity have also been adversely affected
by the ever-increasing polluttional load on the surrounding waters.
The "Report on Nassau County Bathing Beach Waters" issued June
29, 1948 by the Nassau County Department of Health classed the
waters of the Atlantic Ocean at New York Avenue as "Fair", a rating
which is usually considered safe for bathing. No "Public Bathing
Beach Permit" was issued at that time, however because of the lack
of adequate toilet facilities on the city's beach.

On July 16, 1948 the County Health Department issued an
order prohibiting bathing on the Long Beach side of Reynolds
This was a direct result of the overflow of raw sewage into the Channel
Channel at Riverside Blvd. and Water Street.

On August 7, 1948, the County Health Department found it
necessary to prohibit bathing for one-half mile of ocean front,
both to the east and west of New York Avenue. The reason stated
for this order was the lack of adequate chlorination of the effluent
from the New York Avenue (West) Plant.

APPENDIX A
LABORATORY ANALYSES OF
SEWAGE FROM THE CITY OF LONG BEACH

DATE	TOTAL SUPSPENDED SOLIDS			B.O.D.			COLIFORMS	
	Inf. ppm	Eff. ppm	% Rem.	5 DAY Inf. ppm	20°C Eff. ppm	% Rem.	M.P.N. / ml.	% Over 1/ml.
<u>NEW YORK AVENUE (WEST) PLANT</u>								
5/14/38	144	109	26				2900+	100
5/17/38				93	61	34	22.6	50
8/21/39	142	112	21	180	160	11	715	100
11/8/39	110	62	44	86	44	49	2400+	100
5/16/40	108	70	35	112	80	29	56.5	100
8/20/41	160	120	25	170	148	13	0.78	25
7/ 9/42	154	93	40	203	143	30	0.97	25
7/14/43	165	85	48	178	142	20	0.8	50
7/17/44	215	132	39	222	160	28	4.1	75
7/11/45	169	103	39	168	147	13	0.6	25
7/17/46	217	124	43	174	141	19	0.89	25
7/ 9/48	171	111	35	177	144	19	< 0.3	0
4/27/48	121	76	40	117	68	42	7.2	75
6/25/48	108	74	31	110	95	14	< 0.3	0
8/22/48	143	107	25	169	218	Neg.	< 0.3	0
<u>LIDO (EAST) PLANT</u>								
4/10/44	220	62	72	275	149	46	< 0.3	0
7/17/44				417	237	43	< 0.5	0
7/19/45	248	62	75	324	182	44	< 0.3	0
5/ 2/46	245	61	75	293	145	51	< 0.3	0
5/21/47	99	25	75	76	6	92	< 0.3	0
4/15/48	82	21	74	121	37	69	< 0.3	0
6/16/48	88	21	76	167	30	82	< 0.3	0
9/18/48	127	43	66	170	126	26	< 0.3	0