



Photo by DOHMH Beach Program Staff

# NEW YORK CITY 2021

BEACH SURVEILLANCE AND  
MONITORING PROGRAM



# TABLE OF CONTENTS

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<b>1</b>	<b>INTRODUCTION .....</b>	<b>1</b>
1.1	Public Risk Communication.....	3
<b>2</b>	<b>BACKGROUND INFORMATION .....</b>	<b>5</b>
2.1	Water Quality Criteria.....	5
2.2	Rainfall Events.....	6
2.3	Beach Classifications.....	7
2.4	Beach Monitoring and Surveillance .....	8
2.5	Public Notification and Risk Communication .....	8
2.6	Inspections.....	9
<b>3</b>	<b>FINDINGS .....</b>	<b>10</b>
3.1	Water Quality and Illness Reporting .....	10
3.2	Public Notification for Warnings and Closures.....	10
3.3	Inspections .....	11
	<b>APPENDIX A: 2021 WATER QUALITY RESULTS AND EXCEEDANCE.....</b>	<b>12</b>
	Table A1-1: Brooklyn Beaches Water Quality Results .....	12
	Table A1-2: Bronx Beaches Water Quality Results .....	13
	Table A1-3: Queens Beaches Water Quality Results .....	14
	Table A1-4: Staten Island Beaches Water Quality Results.....	15
	Table A2-1: 2021 Summary of Beach Samples and Single-Sample Exceedances.....	16
	Table A2-2: 2021 Public Beaches Samples and Single-Sample Exceedances .....	16
	Table A2-3: 2021 Private Beaches Samples and Single-Sample Exceedances .....	17
	Table A2-4: 2021 Private Freshwater Lake Samples and Single-Sample Exceedances .....	17
	<b>APPENDIX B: 2021 WARNINGS AND CLOSURES .....</b>	<b>18</b>
	Table B-1: Summary of Beach Warnings and Closure .....	18
	Table B-2: Public Beaches Warnings and Closures .....	18
	Table B-3: Private Beaches Warnings and Closures.....	19
	<b>APPENDIX C: 2021 INSPECTION SUMMARY .....</b>	<b>22</b>
	Table C-1: Inspection Non-Compliance Summary .....	22

# LIST OF TABLES & FIGURES

---

Figure 1: New York City Permitted Beaches ..... 2

Table 1: New York City Permitted Beaches and Water Body Identification..... 3

Figure 2: Beach Warning and Closed Signs..... 3

Figure 3: Know Before You Go Texting Program ..... 4

Table 2: New York City Pre-emptive Rainfall Thresholds..... 6

# SECTION 1

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## INTRODUCTION

In accordance with the New York City Administrative Code §18-131(c)(4), this annual report summarizes the 2021 New York City Beach Surveillance and Monitoring Program for beaches permitted by the Department of Health and Mental Hygiene (DOHMH or the “Department”). This law requires that the Health Commissioner “forward a combined report of the dates and results of all inspections of all beaches and the dates and reasons for any warning advisory or closure, and such other information deemed appropriate by the Commissioner of Health and Mental Hygiene, for the Friday proceeding the last Monday of May until the Friday after the first Monday of September of each year, to the mayor, the public advocate and the speaker of the council.”

With the principal goal of protecting ocean beachgoers from potential health and safety hazards, the Department closely monitors and conducts surveillance of permitted beaches in New York City. Under the regulatory directive and authority of both Article 167 of the New York City Health Code (Article 167) and Subpart 6-2 of the New York State Sanitary Code (Subpart 6-2), the Department administers the Beach Surveillance and Monitoring Program for all beaches operating within the city limits and with a permit issued by the Department. The Program responsibilities include: 1) beach monitoring and surveillance, 2) public notification and communication and 3) safety inspections.

The city’s beaches function as an important recreational resource for city residents and neighboring communities. As shown in Figure 1 (page 2) and Table 1 (page 3), there are eight public beaches operated by the Department of Parks and Recreations (the Parks Department) and 17 privately operated beaches permitted within New York City limits.

This year, despite the continuing impact of the COVID-19 pandemic, the bathing beach season was not limited as it was in 2020. Parks Department beaches were open from May 29, 2021, Memorial Day weekend, through September 12, 2021.

**FIGURE 1: NEW YORK CITY PERMITTED BEACHES**



 = Public Beach (NYC Dept. Parks and Recreation)

**TABLE 1: NEW YORK CITY PERMITTED BEACHES AND WATER BODY IDENTIFICATION**

Borough	Beaches	Water Body
Brooklyn	<i>Public:</i> Coney Island, Manhattan Beach <i>Private:</i> Sea Gate, Gerritsen/Kiddie Beach, Kingsborough Community College	Lower New York Harbor
Bronx	<i>Public:</i> Orchard Beach <i>Private:</i> American Turner, Danish American Beach Club, Manhem Club, White Cross Fishing Club, Morris Yacht Club, Schuyler Hill Civic Association, Trinity Danish, Locust Point Yacht Club, West Fordham Street Association	Eastchester Bay, Western Long Island Sound
Queens	<i>Public:</i> Rockaway Beach <i>Private:</i> Breezy Point	Atlantic Ocean
	<i>Private:</i> Douglaston Manor, Whitestone Booster Civic Association	Western Long Island Sound
Staten Island	<i>Public:</i> South Beach, Midland Beach, Cedar Grove Beach, Wolfe's Pond Beach	Lower New York Bay
	<i>Private:</i> Staten Island YMCA	Private Freshwater Lake

## 1.1 Public Risk Communication

The Department continued public notification and risk communication during the beach season, using easy-to-interpret signs shown in Figure 2 for beach closures and warnings in 2021.

**FIGURE 2: BEACH WARNING AND CLOSED SIGNS**

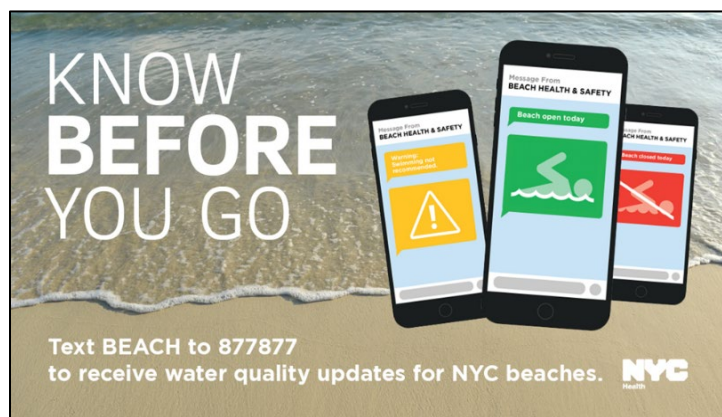


“Know Before You Go”, a free texting service introduced in 2014, was continued for the 2021 beach season. The service enables subscribers to make informed decisions before they go to a public beach by checking if the beach is open or closed or if there are any warnings due to wet weather conditions or water quality concerns. Subscribers simply text “BEACH” to 877-877 to learn the status of any of the eight public beaches in New York City. This tool also can be used by the Department to deliver notifications of high priority water quality warnings or closures, as well as safety-related messages such as warnings for high rip currents, closures for extreme weather and when beaches open and close for the season. For example, DOHMH issued the following notification to all enrolled users:

*Due to Tropical Storm Henri, a beach closure is in effect for all NYC beaches on 8/22 and 8/23: Cedar Grove Beach, Coney Island Beach, Manhattan Beach, Midland Beach, Orchard Beach, Rockaway Beach, South Beach, and Wolfe's Pond Beach. Swimming and wading are not permitted. For more information call 3-1-1, or go to <http://on.nyc.gov/2eJRxxz>*

In 2021, the Department did not conduct any paid campaign promotions for the “Know Before You Go” service. However, it did use its social media channels to increase awareness which resulted in modest increases in enrollment. At the beginning of the season, the texting service had 14,451 English-language subscribers and 612 Spanish-language subscribers. By the close of the beach season, there were 15,016 English-language subscribers (4% increase) and 615 Spanish-language subscribers (negligible increase).

**FIGURE 3: KNOW BEFORE YOU GO TEXTING PROGRAM**



## SECTION 2

### BACKGROUND INFORMATION

This chapter provides background information on the New York City Beach Surveillance and Monitoring Program.

#### 2.1 Water Quality Criteria

Under the New York State Sanitary Code §6-2.15, Article §167.13 of the New York City Health Code and the Federal Beaches Environmental Assessment and Coastal Health Act of 2000 (BEACH), enterococcus is the indicator organism mandated for evaluating the microbiological quality of marine (saline) recreational beach water.

Under the New York State Sanitary Code and the New York City Health Code, enterococci concentrations for a single sample may not exceed 104 enterococci per 100 mL (61 enterococci per 100 mL for freshwater), and the enterococci geometric mean may not exceed 35 enterococci per 100 mL (33 enterococci per 100 mL for freshwater) for a series of five or more samples collected during a 30 day period. The geometric mean and single sample maximum are determined by analyzing samples for the presence and quantification of enterococci using the IDEXX Enterolert test method, New York State ELAP method #1040, and as described in Standard Methods for the Examination of Water and Wastewater 23 9230D. Water quality is measured in most probable number per 100 mL of water (MPN/100mL), an estimate of the number of bacteria in a water sample.

In November 2012, the Environmental Protection Agency (EPA) released revised Recreational Water Quality Criteria (RWQC). The revised criteria use a geometric mean and a statistical threshold value to indicate whether waters designated for primary contact recreation use are protective of human health. The 2012 revised criteria for marine waters are a 30 day geometric mean of 35 enterococci per 100 mL and a statistical threshold value of 130 enterococci per 100 mL; the statistical threshold value is calculated as no more than 10% of samples within 30 days shall exceed the criteria. The EPA also introduced a Beach Action Value (BAV) of 70 enterococci per 100 mL to be used as a precautionary notification threshold for beach management, replacing earlier guidance that provided single sample maximum values. These water quality criteria have been adopted by the New York State Department of Environmental Conservation (DEC) and became effective November 1, 2019. The New York State Department of Health (NYSDOH), however, has not yet promulgated equivalent bathing beach water quality standards in the State Sanitary Code, which is required before local beach programs can implement them.

Also in the revised 2012 RWQC, EPA published criteria and methods to detect and quantify *Enterococcus* spp. rapidly with quantitative polymerase chain reaction (qPCR) (EPA Methods 1609 and 1611). These are optional methods of analysis which may be used by beach managers

to potentially inform same-day decision making. In 2019, the Department initiated a pilot project to assess qPCR sampling and analysis implementation for New York City beach surveillance and monitoring. The pilot continued through 2021, and the Department collected additional, paired samples from a selection of beaches throughout the season. These additional samples were analyzed with qPCR method 1609 with use of Bio Rad's QX 200 system, for comparison with the currently utilized Enterolert culture method. Analysis is ongoing and DOHMH intends to continue this project to advance sampling protocols and assess feasibility of implementation in future seasons.

## 2.2 Rainfall Events

Preemptive rainfall thresholds have been developed for New York City beaches through statistical modeling of historical precipitation and water quality data. These preemptive thresholds are used as a management tool to provide a quick and reliable indication of water quality conditions. Because the majority of the city has combined stormwater and sewer conveyance systems, high levels of precipitation, greater than the rainfall thresholds, may result in combined sewage and stormwater runoff bypassing the treatment system and flowing into local waterbodies. This process, known as Combined Sewer Overflow (CSO), poses a public health threat to nearby beaches. When preemptive rainfall thresholds are met, as defined in Table 2, a public notification or warning takes effect for the predetermined duration.

**TABLE 2: NEW YORK CITY PREEMPTIVE RAINFALL THRESHOLDS**

Beach (Borough)	Rainfall Threshold (within 24 hours)	Duration of Warning
South Beach, Midland Beach, Cedar Grove Beach (Staten Island)	1.5 – 2.5 inches	12 hours
Manhattan Beach, Kingsborough Community College (Brooklyn)	> 2.5 inches	24 hours
Orchard Beach (Brooklyn)	> 2.5 inches	24 hours
Coney Island (Brooklyn)	> 2.5 inches	12 hours
Gerritsen/Kiddie Beach (Brooklyn)	0.3 - 0.6 inches	18 hours
Whitestone Booster Civic Association (Queens)	> 0.6 inches	40 hours
American Turner, Danish American Beach Club, Manhem Club, White Cross Fishing Club, Morris Yacht Club, Schuyler Hill Civic Association, Trinity Danish, Locust Point Yacht Club, West Fordham Street Association (Bronx)	0.6 – 2.5 inches	36 hours
	> 2.5 inches	48 hours
Douglaston Manor (Queens)	0.3 – 0.6 inches	30 hours
	> 0.6 – 2.5 inches	60 hours

	> 2.5 inches	72 hours
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## 2.3 Beach Classifications

There are three swimming classifications for New York City beaches which are determined by assessing water quality, rainfall and pollution events, onsite sanitary surveys, and/or historical information. Beaches, except those specifically restricted under Article §167.05, are classified as follows:

**Class A: Open for Swimming and Wading.** Beaches may be classified as open and approved for swimming and wading when *all* of the following conditions are met:

1. Beach water quality is in accordance with standards defined under Article §167.13.
2. Sanitary and safety surveys are satisfactory in accordance with Article §167.25.
3. The epidemiological history is satisfactory to the Department, i.e., no repeated complaints or reports of illness/injury received from the public or from owners/operators of city beaches.

**Class B: Warning – Not Recommended for Swimming and Wading.** Beaches may be classified as “Not Recommended for Swimming and Wading,” resulting in notifications to the public that swimming should be avoided to prevent contracting a swimming-related illness, when *one or more* of the following conditions exists:

1. Rainfall events exceed the preemptive rainfall thresholds.
2. A water quality sample exceeds the water quality standard or a beach notification threshold. The notification should remain in effect until resampling indicates that the beach water quality standard and/or notification thresholds are being met.
3. An onsite sanitary survey or investigation reveals the presence of floatable debris, medical/infectious waste, toxic contaminants, petroleum products, other contamination, or evidence of sewage and wastewater discharge.

**Class C: Closed – Temporarily Restricted for Swimming and Wading:** Beaches may be classified as “Temporarily Restricted for Swimming and Wading” when *one or more* of the following conditions exists:

1. Sampling by bacteriological testing that finds beach water quality exceeding the statutory water quality standard for marine water beaches.
2. Epidemiological data indicates a significant incidence of related illnesses or repeated complaints/reports of illness/injury received from beach patrons.
3. A sanitary and safety survey or an investigation reveals the presence of potentially hazardous amounts of floatable debris, medical/infectious waste, toxic contaminants, petroleum products or other contaminants on the beach, or there is evidence of sewage

and wastewater discharges in sufficient quantities that will adversely affect the quality of the beach water.

4. Any other environmental factors determined to be a public health or safety hazard by the Department are present.

## **2.4 Beach Monitoring and Surveillance**

Starting one month before the beach season, the Department monitors and samples each beach weekly, except for Rockaway and Breezy Point beaches, which are sampled biweekly. In addition to routine water quality monitoring, the Department monitors daily regional wet weather conditions and occasional wastewater treatment plant bypasses, operational upsets and spills through interagency communication and cooperation. This information can be used to assess and make beach status determinations.

During a sample event, a routine onsite sanitary survey inspection is performed to identify any existing and/or potential sources of pollution that are likely to affect beach water quality. Water samples are collected at representative points on the beach by wading into the water to a point where water depth is three feet and submerging the bottle to 18 inches below the water surface. At larger beaches, such as Coney Island and Rockaway Beach, samples are taken at more locations to ensure adequate representation and reliable results. The collected samples are delivered to the Department's Public Health Laboratory for analysis. The analytical and processing turnaround time for enterococci is at least 24 hours.

The water quality of the samples analyzed is reviewed and assessed for conformance to applicable standards. If the regulatory limit for enterococci is exceeded or conditions exist that may pose a threat to the health and/or safety of the public, the Department either conducts immediate re-sampling, issues a warning and conducts re-sampling, or closes the beach and conducts re-sampling. The determining factors for additional sampling may include proximity to suspected pollution sources, the extent of pollution, beach use, historical water quality data, and other health risk factors.

## **2.5 Public Notification and Risk Communication**

When beach status changes based upon evaluation and assessment of beach water quality as specified above, the Department notifies the public through on-site beach signage, website postings, 311 non-emergency government service hotline, Notify NYC, "Know Before You Go" texting service, and Department press releases when necessary. Beach operators are notified by phone, email and/or text as to the necessary onsite postings. The specific notification procedures and requirements are as follows:

**Onsite Signage:** When notified by the Department, the permittee is required to post or remove the warning or closure signs in designated areas visible to beach users, such as beach entrances, bulletin boards, comfort stations or the general vicinity of the common swimming areas.

**“Know Before You Go” Texting Service:** Subscribers text “BEACH” to 877-877 to learn the beach status for any of the eight public beaches in New York City.

**Website Postings:** The Department has developed an easily accessible website with up-to-date information for all permitted beaches: [www.nyc.gov/health/beach](http://www.nyc.gov/health/beach). The website contains background information on the beach program, explains the causes and sources of surface water pollution, and summarizes the beach classification system, including the different types of warnings. In 2021, the Department updated the map of city beaches to improve information delivery and ease-of-use. The map visually indicates the respective status (Open, Closed, or Warning) for all beaches and provides the most recent sample results, along with all year-to-date samples results for that beach.

**Notify NYC:** When notified by the Department of status changes relating to public beaches, the Office of Emergency Management will share this information with members of the public who have signed up for Notify NYC status information via Twitter, RSS feed, e-mail and SMS.

**311:** The 311 telephone operators monitor the Department’s website for updates on warning or closure information, as described above, and convey that information to 311 callers. The public can also report a swimming-related illness via 311.

**NYC Press Release:** Press releases are disseminated to various types of media (newspaper, radio, website, television), as well as elected officials.

## **2.6 Inspections**

The Department conducts annual safety inspections and complaint inspections at bathing beaches to assure that (1) all staff, especially lifeguards and supervisors, have proper certificates and coverage, including CPR certification; (2) all required life-saving equipment is available, including rescue tubes, spine boards, first aid kits, and resuscitation equipment; and (3) there is proper signage posted on site. Direct observations of conditions are supplemented by interviews with lifeguards and other personnel. The inspections also evaluate beach facility cleanliness.

## SECTION 3

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### FINDINGS

#### **3.1 Water Quality and Illness Reporting**

Routine water quality monitoring and sample collection was performed at all 25 permitted beaches and one permitted freshwater lake between May and September 2021. In 2021, the Department did not receive any specific beach water quality or illness complaints.

Due to ongoing operational and safety related impacts of the COVID-19 pandemic and Departmental response, a modified beach monitoring plan was implemented in 2021. The Department collected fewer total samples than during a typical beach season while maintaining the normal frequency of sampling. In 2021, the Department collected roughly 570 samples, compared to over 1,000 samples in a normal beach season. Given the limitations of this beach season, the Department interpreted sample results conservatively, and in some cases did not initiate resampling events to use resample information to reduce notification periods.

Water quality sample results, including 30-day geometric mean and daily averages and any associated criteria exceedances can be found in Appendix A (pages 12 to 17). Warnings and closures issued by the Department throughout the season are summarized in Appendix B (pages 18 to 21).

Among private beaches, Douglaston Manor had the highest daily average exceedance rate (50%), followed by White Cross Fishing (47%), while all other private beaches had an average of two exceedances this season (10%). Among public beaches, Wolfes Pond Beach had the highest daily exceedance rate (22%), while most other public beaches had an average of one exceedance (8%).

The increase in sample exceedance rate in 2021 from previous years could be attributed to excessive flooding from multiple tropical storms (Elsa, Ida, and Henri) that impacted the New York City shoreline.

#### **3.2 Public Notification for Warnings and Closures**

Out of the eight public beaches, seven were issued at least one swimming advisory warning notice during the 2021 bathing season due to a rainfall event or water quality exceedance. This resulted in a total of 81 warning days ranging in length from 1 to 25 days. There was a total of 19 closure days due to tropical storm warnings or water quality exceedances ranging from 2 to 3 days. Due to storm warnings from the National Weather Service, all eight public beaches were pre-emptively closed to swimming on Sunday, August 22<sup>nd</sup> ahead of the landfall of Tropical Storm Henri.

On August 24<sup>th</sup>, all NYC public beaches reopened through the end of the season on Sunday, September 12<sup>th</sup>.

Of the 17 private beaches in NYC, 16 were open in 2021. Thirteen (13) were issued at least one swimming advisory warning notice during the bathing season. There was a total of 431 warning days with lengths ranging from 1 to 42 days. American Turner had the largest total number of warning days with a total of 76. Across all private beaches there were a total of 75 closures. Douglaston Manor had the largest number of closure days with a total of 39. The length of all beach closures ranged from 5 to 18 days. Public notification details can be found in Appendix B (pages 18 to 21).

The increase in warning and closure days in 2021 from previous years could be attributed to excessive flooding from multiple tropical storms (Elsa, Henri and Ida) that impacted the New York City shoreline.

### **3.3    Inspections**

During the 2021 beach season, inspections of all open 24 public and private beaches were successfully conducted by the Department. One beach was cited for violations at the time of inspection; disrepair of parts of the boardwalk was observed during the inspection of Coney Island, as indicated in Appendix C. This violation is a “general” category, and not considered a serious or immediate public health risk. The Parks Department responded with adequate interim safety measures until the issue can be permanently corrected.

## APPENDIX A: 2021 WATER QUALITY RESULTS AND EXCEEDANCE

**Table A1-1: Brooklyn Beaches Water Quality Results**

**Enterococci 30 Day Geometric Mean/Daily Average (MPN/100mL)**

*Water Quality Standards: 30 day geomean limit: 35 MPN/100mL, Daily average limit: 104 MPN/100mL*

Date of Week Ending	CONEY ISLAND BEACH (public)		MANHATTAN BEACH (public)		GERRITSEN/ KIDDIE BEACH (private)		KINGSBOROUGH COMMUNITY COLLEGE (private)		SEA GATE 42 <sup>ND</sup> (private)		SEA GATE BEACH CLUB (private)	
	30 Day	Daily	30 Day	Daily	30 Day	Daily	30 Day	Daily	30 Day	Daily	30 Day	Daily
5/29/2021	16	10	98	364	10	10	42	42	10	10	10	10
6/5/2021	17	24	62	10	20	41	36	31	10	10	10	10
6/12/2021	16	10	40	31	30	64	23	10	10	10	13	20
6/19/2021	14	20	37	20	23	10	25	31	10	10	12	10
6/26/2021	13	13	30	10	26	42	29	53	10	10	11	10
7/3/2021	14	13	14	10	36	53	25	20	11	20	17	75
7/10/2021	14	52	15	10	31	20	20	10	11	10	17	10
7/17/2021*	23	41	15	42	25	20	27	42	14	31	17	20
7/24/2021	21	17	13	10	24	10	21	10	14	10	17	10
7/31/2021	22	17	13	10	24	42	18	20	14	10	20	20
8/7/2021	23	41	15	20	18	10	15	10	12	10	15	20
8/14/2021	22	24	18	20	20	42	25	111	16	31	21	53
8/21/2021	16	20	13	10	18	10	33	178	12	10	18	10
8/28/2021	21	65	20	87	25	53	58	164	17	53	30	111
9/4/2021	20	10	20	10	32	137	145	>2005	22	31	30	20
9/11/2021	21	24	18	10								

\* mid-week sample result on 7/17/2021 at Manhattan Beach resulted in water quality concerns, see appendix B for description.

Values highlighted in red indicate exceedance of recreational water quality criteria.

**Table A1-2: Bronx Beaches Water Quality Results**

**Enterococci 30 Day Geometric Mean/Daily Average (MPN/100mL)**

*Water Quality Standards: 30 day geomean limit: 35 MPN/100mL, Daily average limit: 104 MPN/100mL*

Date of Week Ending	ORCHARD BEACH (public)		AMERICAN TURNER (private)		DANISH AMERICAN BEACH CLUB (private)		LOCUST POINT YACHT CLUB (private)		MANHEM CLUB (private)		MORRIS YACHT AND BEACH CLUB (private)		SCHUYLER HILL CIVIC ASSOC. (private)		TRINITY DANISH (private)		WEST FORDHAM STREET ASSOC. (private)		WHITE CROSS FISHING CLUB (private)	
	30 Day	Daily	30 Day	Daily	30 Day	Daily	30 Day	Daily	30 Day	Daily	30 Day	Daily	30 Day	Daily	30 Day	Daily	30 Day	Daily	30 Day	Daily
5/29/2021*	17	10	10	10	10	10	10	10	10	10	75	75	10	10	10	10	31	31	10	10
6/5/2021	16	10	10	10	10	10	18	31	14	20	39	20	10	10	10	10	18	10	29	87
6/12/2021	15	13	10	10	16	42	18	20	13	10	25	10	13	20	18	64	18	20	52	164
6/19/2021	13	10	20	160	22	52	21	31	16	31	23	20	16	31	24	52	16	10	74	216
6/26/2021	14	13	29	124	18	10	26	64	14	10	20	10	18	31	48	782	18	31	90	192
7/3/2021	11	10	36	31	21	20	26	10	14	10	13	10	21	20	48	10	18	31	103	20
7/10/2021	11	10	71	288	34	99	26	31	12	10	17	64	21	10	104	478	18	10	155	659
7/17/2021	14	46	162	624	48	238	32	53	22	178	17	10	30	124	208	>2005	16	10	256	>2005
7/24/2021	15	13	135	64	34	10	32	31	18	10	21	64	24	10	216	64	16	10	159	20
7/31/2021	17	39	122	75	61	178	22	10	31	178	36	137	28	75	161	178	14	20	168	254
8/7/2021	17	10	112	20	53	10	22	10	36	20	41	20	25	10	161	10	11	10	146	10
8/14/2021	23	38	71	31	38	20	22	31	36	10	28	10	33	42	99	42	11	10	73	20
8/21/2021*	25	24	36	20	20	10	16	10	20	10	28	10	20	10	34	10	11	10	45	192
8/28/2021	26	17	40	111	31	75	13	12	27	42	24	31	31	99	33	53	17	75	53	42
9/4/2021	22	13	27	10	17	10	12	10	15	10	14	10	21	10	19	10	15	10	28	10
9/11/2021	26	24	23	10	20	20					12	10	21	10	23	31	15	10		
9/18/2021											14	20					17	20		
9/25/2021											10	14								

\*mid-week sample on result 5/29/21 and 8/21/21 at Orchard Beach resulted in a water quality exceedance, see appendix B for description.

Values highlighted in red indicate exceedance of recreational water quality criteria.

**Table A1-3: Queens Beaches Water Quality Results**

**Enterococci 30 Day Geometric Mean/Daily Average (MPN/100mL)**

*Water Quality Standards: 30 day geomean limit: 35 MPN/100mL, Daily Average limit: 104 MPN/100mL*

Date of Week Ending	ROCKAWAY BEACH (Public)		BREEZY POINT 219 (Private)		BREEZY POINT Reid Ave (Private)		WHITESTONE BOOSTER CIVIC ASSOCIATION (Private)		DOUGLSTON MANOR ASSOCIATION (Private)	
	30 Day	Daily	30 Day	Daily	30 Day	Daily	30 Day	Daily	30 Day	Daily
5/22/2021	10	10								
5/29/2021							10	10	10	10
6/5/2021	10	10	10	10	10	10	10	10	18	31
6/12/2021							13	20	18	20
6/19/2021	11	13	10	10	10	10	14	20	16	10
6/26/2021							18	53	24	124
7/3/2021	11	10	10	10	10	10	18	10	41	150
7/10/2021							38	384	33	10
7/17/2021	11	10	10	10	10	10	53	99	82	>2005
7/24/2021							53	20	109	42
7/31/2021	10	10	10	10	10	10	43	20	126	254
8/7/2021							68	100	106	64
8/14/2021*	13	12	13	20	10	10	48	64	307	2005
8/21/2021							30	10	106	10
8/28/2021	14	12	27	99	10	10	43	111	162	344
9/4/2021							52	53	148	164
9/11/2021	14	10							170	124

\*mid-week sample on result 8/14/21 at Rockaway Beach resulted in a localized water quality concern. Given historical water quality sampling records, advisory signage was posted to the affected area and Rockaway Beach was kept in open status pending immediate resampling.

Values highlighted in red indicate exceedance of recreational water quality criteria.

**Table A1-4: Staten Island Beaches and Lake Water Quality Results**

**Enterococci 30 Day Geometric Mean/Daily Average (MPN/100mL)**

*Water Quality Standards: 30 day Geomean limit: 35 MPN/100mL, Daily Average limit: 104 MPN/100mL*

*Freshwater Standards: 30 day Geomean limit: 33 MPN/100mL, Daily Average limit: 61 MPN/100mL*

Date of Week Ending	SOUTH BEACH* (Public)		MIDLAND BEACH (Public)		CEDAR GROVE BEACH (Public)		WOLFE'S POND BEACH (Public)		SI YMCA (Private Freshwater Lake)	
	30 Day	Daily	30 Day	Daily	30 Day	Daily	30 Day	Daily	30 Day	Daily
5/29/2021	10	10	19	10	13	10	10	10	14	42
6/5/2021	10	10	17	10	13	10	10	10	13	10
6/12/2021	10	10	14	10	12	10	10	10	21	99
6/19/2021	11	20	10	10	12	31	14	63	21	10
6/26/2021	11	10	10	10	12	10	14	10	21	10
7/3/2021	11	10	10	10	13	10	14	10	22	53
7/10/2021	12	10	10	10	13	10	18	31	28	31
7/17/2021*	15	10	12	20	13	10	25	10	17	10
7/24/2021	16	20	11	10	14	64	22	10	17	10
7/31/2021	16	10	11	10	14	10	22	10	17	10
8/7/2021	17	20	11	10	14	10	22	10	16	31
8/14/2021*	21	42	14	31	37	49	19	31	12	10
8/21/2021	18	10	12	10	31	10	22	10	12	10
8/28/2021*	42	71	26	24	30	17	44	79	19	75
9/4/2021*	42	72	25	20	30	31	68	84	19	10
9/11/2021*	49	92	29	31	40	103	91	1401		

\*mid-week sample on result 7/17/21 at South and Wolfe's Pond beaches resulted in a water quality exceedance, see appendix B for description.

\*mid-week sample on result 8/14/21 at Cedar Grove and Wolfe's Pond beaches resulted in a water quality exceedance, see appendix B for description.

\*mid-week sample on result 8/28/21 at all four beaches resulted in a water quality exceedance, see appendix B for description.

\*mid-week sample on result 9/4/21 at South and Wolfe's Pond beaches resulted in a water quality exceedance, see appendix B for description.

\*mid-week sample on result 9/11/21 at Cedar Grove, South and Wolfe's Pond beaches resulted in a water quality exceedance, see appendix B for description.

Values highlighted in red indicate exceedance of recreational water quality criteria.

Values highlighted in orange indicate exceedance of freshwater standards.

**Table A2-1: 2021 Summary of Beach Samples and Single-Sample Exceedances**

Beach	Sample Location	Total # of Samples	# of Sample Exceed 104	% of Sample Exceed 104
<b>ALL Beaches TOTAL</b>		<b>554</b>	<b>64</b>	<b>11.55%</b>
<b>Public Beaches TOTAL</b>		<b>303</b>	<b>26</b>	<b>8.58%</b>
<b>Private Beaches TOTAL</b>		<b>251</b>	<b>38</b>	<b>15.14%</b>

**Table A2-2: 2021 Public Beaches Samples and Single-Sample Exceedances**

Beach	Sample Location		Total # of Samples	# of Sample Exceed 104	% of Sample Exceed 104 (Location)	% of Sample Exceed 104 (Beach)
<b>CEDAR GROVE</b>	CEDAR GROVE	Left	3	0	0.00%	10.71%
	CEDAR GROVE	Center	22	3	13.64%	
	CEDAR GROVE	Right	3	0	0.00%	
<b>CONEY ISLAND</b>	CONEY ISLAND BR. 15TH - 6TH	Center	10	0	0.00%	6.90%
	CONEY ISLAND BR. 6TH - OCEAN PKWY	Center	9	1	11.11%	
	CONEY ISLAND OCEAN PKWY - WEST 8TH	Center	10	0	0.00%	
	CONEY ISLAND WEST 8TH - PIER	Center	9	1	11.11%	
	CONEY ISLAND WEST 16TH - WEST 27TH	Center	9	1	11.11%	
	CONEY ISLAND WEST 28TH - WEST 37TH	Center	11	1	9.09%	
<b>MANHATTAN BEACH</b>	MANHATTAN BEACH	Left	0	0		10.53%
	MANHATTAN BEACH	Center	19	2	10.53%	
	MANHATTAN BEACH	Right	0	0		
<b>MIDLAND BEACH</b>	MIDLAND BEACH	Left	1	0	0.00%	4.55%
	MIDLAND BEACH	Center	20	1	5.00%	
	MIDLAND BEACH	Right	1	0	0.00%	
<b>ORCHARD BEACH</b>	ORCHARD BEACH	Left	21	1	4.76%	3.17%
	ORCHARD BEACH	Center	21	1	4.76%	
	ORCHARD BEACH	Right	21	0	0.00%	
<b>ROCKAWAY BEACH</b>	ROCKAWAY BEACH 9TH - 13TH	Center	5	0	0.00%	2.27%
	ROCKAWAY BEACH 15TH - 22TH	Center	6	1	16.67%	
	ROCKAWAY BEACH 23RD - 59TH	Center	5	0	0.00%	
	ROCKAWAY BEACH 59TH - 80TH	Center	6	0	0.00%	
	ROCKAWAY BEACH 80TH - 95TH	Center	5	0	0.00%	
	ROCKAWAY BEACH 95TH - 116TH	Center	6	0	0.00%	
	ROCKAWAY BEACH 116TH - 126TH	Center	5	0	0.00%	
	ROCKAWAY BEACH 126TH - 149TH	Center	6	0	0.00%	
<b>SOUTH BEACH</b>	SOUTH BEACH	Left	5	0	0.00%	15.15%
	SOUTH BEACH	Center	23	2	8.70%	
	SOUTH BEACH	Right	5	3	60.00%	
<b>WOLFE'S POND BEACH</b>	WOLFE'S POND BEACH	Left	6	1	16.67%	22.22%
	WOLFE'S POND BEACH	Center	24	6	25.00%	
	WOLFE'S POND BEACH	Right	6	1	16.67%	
<b>Public Beaches (Locations) Total</b>			<b>303</b>	<b>26</b>	<b>8.58%</b>	

**Table A2-3: 2021 Private Beaches Samples and Single-Sample Exceedances**

Beach	Sample Location		Total # of Samples	# of Sample Exceed 104	% of Sample Exceed 104 (Location)	% of Sample Exceed 104 (Beach)
AMERICAN TURNER	AMERICAN TURNER	Center	16	5	31.25%	31.25%
BREEZY POINT 219	BREEZY POINT 219	Center	8	0	0.00%	0.00%
BREEZY POINT Reid	BREEZY POINT Reid Ave	Center	8	0	0.00%	0.00%
DANISH AMERICAN BEACH CLUB	DANISH AMERICAN BEACH CLUB	Center	16	2	12.50%	12.50%
DOUGLASTON MANOR ASSOCIATION	DOUGLASTON MANOR ASSOCIATION	Center	16	8	50.00%	50.00%
GERRITSEN/KIDDIE BEACH	GERRITSEN/KIDDIE BEACH	Center	15	1	6.67%	6.67%
KINGSBOROUGH COMMUNITY COLLEGE	KINGSBOROUGH COMMUNITY COLLEGE	Center	15	4	26.67%	26.67%
LOCUST POINT YACHT CLUB	LOCUST POINT YACHT CLUB	Center	15	0	0.00%	0.00%
MANHEM CLUB	MANHEM CLUB	Center	15	2	13.33%	13.33%
MORRIS YACHT AND BEACH CLUB	MORRIS YACHT AND BEACH CLUB	Center	18	1	5.56%	5.56%
SCHUYLER HILL CIVIC ASSOCIATION	SCHUYLER HILL CIVIC ASSOCIATION	Center	16	1	6.25%	6.25%
SEA GATE 42ND	SEA GATE 42ND	Center	15	0	0.00%	0.00%
SEA GATE BEACH CLUB	SEA GATE BEACH CLUB	Center	15	1	6.67%	6.67%
TRINITY DANISH	TRINITY DANISH	Center	16	4	25.00%	25.00%
WEST FORDHAM STREET ASSOCIATION	WEST FORDHAM STREET ASSOCIATION	Center	17	0	0.00%	0.00%
WHITE CROSS FISHING CLUB	WHITE CROSS FISHING CLUB	Center	15	7	46.67%	46.67%
WHITESTONE BOOSTER CIVIC ASSOCIATION	WHITESTONE BOOSTER CIVIC ASSOCIATION	Center	15	2	13.33%	13.33%
<b>Private Beaches (Locations) Total</b>			<b>251</b>	<b>38</b>	<b>15.14%</b>	

**Table A2-4: 2021 Private Freshwater Lake Samples and Single-Sample Exceedances**

Beach	Sample Location		Total # of Samples	# of Sample Exceed 61	% of Sample Exceed 61 (Location)	% of Sample Exceed 61 (Lake)
Staten Island YMCA	Staten Island YMCA	Center	18	2	11.11%	11.11%
<b>Private Freshwater Lake (Locations) Total</b>			<b>18</b>	<b>2</b>	<b>11.11%</b>	

## APPENDIX B: 2021 WARNINGS AND CLOSURES

**Table B-1: Summary of Beach Warnings and Closure**

Beach	Types	Reason	Start Date	End Date	Beach Open Days	# of Beach-Specific Days	Notification (Beach Specific Days)		
							Warning	Closure	Total
<b>NYC ALL Beaches (N=25*)</b>	Warning or Closure	Enterococci Exceedance or Rainfall Event	5/29/2021	9/12/2021	<b>1416</b>	<b>606</b>	<b>512</b>	<b>94</b>	<b>606</b>

\*One private beach did not open for 2021 season.

**Table B-2: Public Beaches Warnings and Closures**

Beach	Types	Reason	Start Date	End Date	Beach Open Days	# of Beach-Specific Days	Notification (Beach Specific Days)		
							Warning	Closure	Total
<b>CEDAR GROVE</b>	Warning	Rainfall Event	5/29/2021	5/29/2021	93	1	12	2	14
	Warning	Enterococci Exceedance	8/11/2021	8/17/2021		7			
	Closure	Tropical Storm	8/22/2021	8/23/2021		2			
	Warning	Rainfall Event	9/2/2021	9/2/2021		1			
	Warning	Enterococci Exceedance	9/10/2021	9/12/2021		3			
<b>CONEY ISLAND</b>	Warning	Enterococci Exceedance	7/14/2021	7/15/2021	102	2	3	2	5
	Closure	Tropical Storm	8/22/2021	8/23/2021		2			
	Warning	Rainfall Event	9/2/2021	9/2/2021		1			
<b>MANHATTAN BEACH</b>	Warning	Enterococci Exceedance	5/29/2021	6/22/2021	79	25	26	2	28
	Closure	Tropical Storm	8/22/2021	8/23/2021		2			
	Warning	Rainfall Event	9/2/2021	9/2/2021		1			
<b>MIDLAND BEACH</b>	Warning	Rainfall Event	5/29/2021	5/29/2021	103	1	2	2	4
	Closure	Tropical Storm	8/22/2021	8/23/2021		2			
	Warning	Rainfall Event	9/2/2021	9/2/2021		1			
<b>ROCKAWAY BEACH</b>	Closure	Tropical Storm	8/22/2021	8/23/2021	105	2	0	2	2
<b>ORCHARD BEACH</b>	Closure	Tropical Storm	8/22/2021	8/23/2021	104	2	1	2	3
	Warning	Rainfall Event	9/2/2021	9/2/2021		1			
<b>SOUTH BEACH</b>	Warning	Rainfall Event	5/29/2021	5/29/2021	86	1	19	2	21
	Warning	Enterococci Exceedance	7/14/2021	7/15/2021		2			
	Closure	Tropical Storm	8/22/2021	8/23/2021		2			
	Warning	Enterococci Exceedance	8/28/2021	9/12/2021		16			
<b>WOLFE'S POND PARK</b>	Warning	Enterococci Exceedance	7/14/2021	7/15/2021	84	2	18	5	23
	Warning	Enterococci Exceedance	8/11/2021	8/13/2021		3			
	Closure	Tropical Storm	8/22/2021	8/23/2021		2			
	Warning	Enterococci Exceedance	8/28/2021	9/9/2021		13			
	Closure	Enterococci Exceedance	9/10/2021	9/12/2021		3			
<b>Public Beaches TOTAL</b>					<b>756</b>	<b>100</b>	<b>81</b>	<b>19</b>	<b>100</b>

**Table B-3: Private Beaches Warnings and Closures**

Beach	Types	Reason	Start Date	End Date	Beach Open Days	# of Beach-Specific Days	Notification (Beach Specific Days)		
							Warning	Closure	Total
<b>AMERICAN TURNER</b>	Warning	Rainfall Event	5/29/2021	5/30/2021	24	2	76	7	83
	Warning	Rainfall Event	5/31/2021	5/31/2021		1			
	Warning	Rainfall Event	6/5/2021	6/5/2021		1			
	Warning	Enterococci Exceedance	6/17/2021	7/14/2021		28			
	Closure	Enterococci Exceedance	7/15/2021	7/21/2021		7			
	Warning	Enterococci Exceedance	7/22/2021	9/1/2021		42			
	Warning	Rainfall Event	9/2/2021	9/3/2021		2			
<b>BREEZY POINT 219</b>					45	0	0	0	0
<b>BREEZY POINT REID</b>					45	0	0	0	0
<b>DANISH AMERICAN BEACH CLUB</b>	Warning	Rainfall Event	5/29/2021	5/30/2021	60	2	40	7	47
	Warning	Rainfall Event	5/31/2021	5/31/2021		1			
	Warning	Rainfall Event	6/5/2021	6/5/2021		1			
	Warning	Rainfall Event	7/1/2021	7/1/2021		1			
	Warning	Rainfall Event	7/2/2021	7/4/2021		3			
	Warning	Rainfall Event	7/9/2021	7/10/2021		2			
	Closure	Enterococci Exceedance	7/15/2021	7/21/2021		7			
	Warning	Rainfall Event	7/26/2021	7/27/2021		2			
	Warning	Enterococci Exceedance	7/29/2021	8/18/2021		21			
	Warning	Rainfall Event	8/22/2021	8/24/2021		3			
	Warning	Rainfall Event	8/28/2021	8/29/2021		2			
	Warning	Rainfall Event	9/2/2021	9/3/2021		2			
<b>DOUGLASTON MANOR ASSOCIATION</b>	Warning	Enterococci Exceedance	7/1/2021	7/7/2021	2	7	33	39	72
	Warning	Rainfall Event	7/9/2021	7/12/2021		4			
	Closure	Enterococci Exceedance	7/14/2021	7/22/2021		9			
	Warning	Enterococci Exceedance	7/23/2021	7/29/2021		7			
	Closure	Enterococci Exceedance	7/30/2021	8/3/2021		5			
	Warning	Enterococci Exceedance	8/4/2021	8/10/2021		7			
	Closure	Enterococci Exceedance	8/11/2021	8/17/2021		7			
	Warning	Enterococci Exceedance	8/18/2021	8/25/2021		8			
	Closure	Enterococci Exceedance	8/26/2021	9/12/2021		18			

Beach	Types	Reason	Start Date	End Date	Beach Open Days	# of Beach-Specific Days	Notification (Beach Specific Days)		
							Warning	Closure	Total
GERRITSEN/KIDDIE BEACH	Warning	Rainfall Event	5/29/2021	5/30/2021	71	2	30	0	30
	Warning	Rainfall Event	5/31/2021	6/1/2021		2			
	Warning	Rainfall Event	6/5/2021	6/5/2021		1			
	Warning	Rainfall Event	6/9/2021	6/9/2021		1			
	Warning	Enterococci Exceedance	7/1/2021	7/7/2021		7			
	Warning	Rainfall Event	7/9/2021	7/10/2021		2			
	Warning	Rainfall Event	7/18/2021	7/18/2021		1			
	Warning	Rainfall Event	7/25/2021	7/25/2021		1			
	Warning	Rainfall Event	8/8/2021	8/8/2021		1			
	Warning	Rainfall Event	8/11/2021	8/11/2021		1			
	Warning	Rainfall Event	8/22/2021	8/24/2021		3			
	Warning	Rainfall Event	8/28/2021	8/29/2021		2			
	Warning	Enterococci Exceedance	9/1/2021	9/6/2021		6			
KINGSBOROUGH COMMUNITY COLLEGE	Did not open for 2021 Season				0	0	0	0	0
LOCUST POINT YACHT CLUB	Warning	Rainfall Event	7/26/2021	7/27/2021	36	2	9	0	9
	Warning	Rainfall Event	8/22/2021	8/24/2021		3			
	Warning	Rainfall Event	8/28/2021	8/29/2021		2			
	Warning	Rainfall Event	9/2/2021	9/3/2021		2			
MANHEM BEACH CLUB	Warning	Rainfall Event	7/3/2021	7/4/2021	25	2	41	0	41
	Warning	Rainfall Event	7/9/2021	7/10/2021		2			
	Warning	Enterococci Exceedance	7/15/2021	7/21/2021		7			
	Warning	Rainfall Event	7/26/2021	7/27/2021		2			
	Warning	Enterococci Exceedance	7/29/2021	8/18/2021		21			
	Warning	Rainfall Event	8/22/2021	8/24/2021		3			
	Warning	Rainfall Event	8/28/2021	8/29/2021		2			
	Warning	Rainfall Event	9/2/2021	9/3/2021		2			
MORRIS YACHT AND BEACH CLUB	Warning	Enterococci Exceedance	5/29/2021	6/10/2021	64	13	43	0	43
	Warning	Rainfall Event	7/1/2021	7/1/2021		1			
	Warning	Rainfall Event	7/2/2021	7/4/2021		3			
	Warning	Rainfall Event	7/9/2021	7/10/2021		2			
	Warning	Rainfall Event	7/18/2021	7/19/2021		2			
	Warning	Rainfall Event	7/26/2021	7/27/2021		2			
	Warning	Enterococci Exceedance	7/30/2021	8/11/2021		13			
	Warning	Rainfall Event	8/22/2021	8/24/2021		3			
	Warning	Rainfall Event	8/28/2021	8/29/2021		2			
	Warning	Rainfall Event	9/2/2021	9/3/2021		2			

Beach	Types	Reason	Start Date	End Date	Beach Open Days	# of Beach-Specific Days	Notification (Beach Specific Days)		
							Warning	Closure	Total
SCHUYLER HILL CIVIC ASSOCIATION	Warning	Rainfall Event	5/29/2021	5/30/2021	81	2	26	0	26
	Warning	Rainfall Event	5/31/2021	5/31/2021		1			
	Warning	Rainfall Event	6/5/2021	6/5/2021		1			
	Warning	Rainfall Event	7/1/2021	7/1/2021		1			
	Warning	Rainfall Event	7/2/2021	7/4/2021		3			
	Warning	Rainfall Event	7/9/2021	7/10/2021		2			
	Warning	Enterococci Exceedance	7/15/2021	7/21/2021		7			
	Warning	Rainfall Event	7/26/2021	7/27/2021		2			
	Warning	Rainfall Event	8/22/2021	8/24/2021		3			
	Warning	Rainfall Event	8/28/2021	8/29/2021		2			
	Warning	Rainfall Event	9/2/2021	9/3/2021		2			
SEAGATE 42nd					46	0	0	0	0
SEAGATE BEACH CLUB	Warning	Enterococci Exceedance	8/26/2021	8/31/2021	40	6	6	0	6
TRINITY DANISH YOUNG PEOPLE'S SOCIETY	Warning	Enterococci Exceedance	7/24/2021	7/28/2021	18	5	26	7	33
	Closure	Enterococci Exceedance	7/29/2021	8/4/2021		7			
	Warning	Enterococci Exceedance	8/5/2021	8/18/2021		14			
	Warning	Rainfall Event	8/22/2021	8/24/2021		3			
	Warning	Rainfall Event	8/28/2021	8/29/2021		2			
	Warning	Rainfall Event	9/2/2021	9/3/2021		2			
WEST FORDHAM STREET ASSOCIATION	Warning	Rainfall Event	7/1/2021	7/1/2021	77	1	17	0	17
	Warning	Rainfall Event	7/2/2021	7/4/2021		3			
	Warning	Rainfall Event	7/9/2021	7/10/2021		2			
	Warning	Rainfall Event	7/18/2021	7/19/2021		2			
	Warning	Rainfall Event	7/26/2021	7/27/2021		2			
	Warning	Rainfall Event	8/22/2021	8/24/2021		3			
	Warning	Rainfall Event	8/28/2021	8/29/2021		2			
	Warning	Rainfall Event	9/2/2021	9/3/2021		2			
WHITE CROSS FISHING CLUB	Warning	Enterococci Exceedance	7/24/2021	7/28/2021	3	5	27	15	42
	Closure	Enterococci Exceedance	7/29/2021	8/4/2021		7			
	Warning	Enterococci Exceedance	8/5/2021	8/18/2021		14			
	Closure	Enterococci Exceedance	8/19/2021	8/26/2021		8			
	Warning	Enterococci Exceedance	8/27/2021	9/1/2021		6			
	Warning	Rainfall Event	9/2/2021	9/3/2021		2			
WHITESTONE BOOSTER CIVIC ASSOCIATION	Warning	Rainfall Event	7/3/2021	7/4/2021	23	2	57	0	57
	Warning	Enterococci Exceedance	7/9/2021	8/18/2021		41			
	Warning	Rainfall Event	8/22/2021	8/24/2021		3			
	Warning	Enterococci Exceedance	8/27/2021	9/6/2021		11			
Private Beaches TOTAL					288	181	159	22	181

## APPENDIX C: 2021 INSPECTION SUMMARY

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**Table C-1: Inspection Non-Compliance Summary\***

Beach Name	General Violations**
	167.09 (13)
CONEY ISLAND BEACH	√

\*All beaches were in full compliance of the regulations at the time of inspection.

**\*\* General Violations:**

§167.09(13)

Any other condition determined to be a Public Health Hazard by the department (e.g. Boardwalk in disrepair).