ADAPTING LOWER MANHATTAN TO CLIMATE CHANGE, FOR THIS GENERATION AND THE NEXT

Climate change is one of the most urgent and existential threats of our time.

Lower Manhattan, a critical place that helps hold the city and region together, is at risk of daily flooding, more intense rain, and more severe coastal storms.

We're here tonight to have a conversation about:

- The role Lower Manhattan plays in the city and region
- Flood risk and how it will increase in the future with climate change
- How the City is adapting Lower Manhattan and why we need to study both on-land and in-water resilience solutions
- The planning process for the Financial District and Seaport and how you can stay involved

We know it will take all of us to solve this together. Tonight, we want to hear from you:

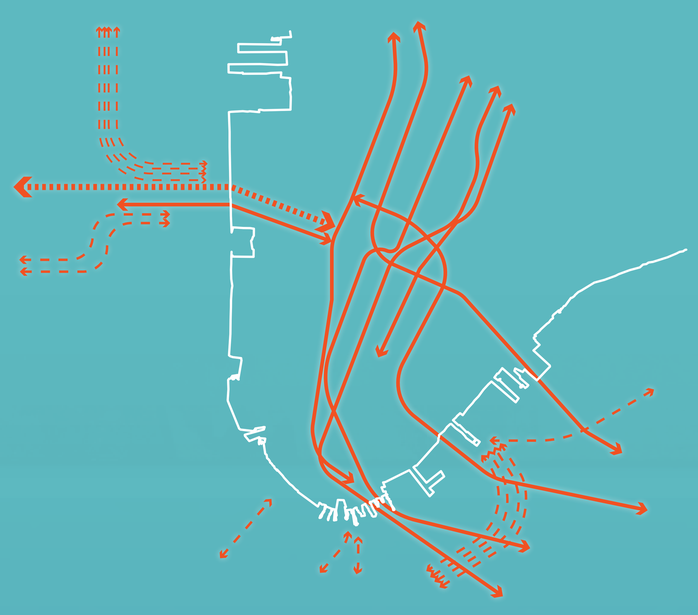
- What are your questions and concerns about climate change?
- What does resilience mean to you?
- What do you think is most important for the FiDi-Seaport Resilience Plan to achieve?
- What do you want to learn more about?

NYC/EDC

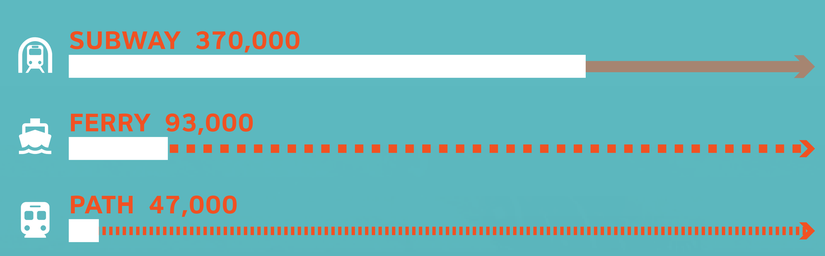
NYC Mayor's Office of Resiliency

A CRITICAL HUB OF TRANSPORTATION FOR THE CITY AND REGION

WHAT HAPPENS IN LOWER MANHATTAN AFFECTS ALL OF NEW YORK CITY.



19 OUT OF 28 NYC SUBWAY LINES AND 17 COMMUTER FERRY ROUTES PASS THROUGH LOWER MANHATTAN.



EACH DAY, 370,000 SUBWAY RIDERS, 93,000 FERRY RIDERS, AND 47,000 PATH RIDERS USE TRANSPORTATION IN LOWER MANHATTAN.

OF THE 290,000 PEOPLE WHO WORK IN LOWER MANHATTAN, MORE THAN 4 OUT OF EVERY 5 WORKERS LIVE OUTSIDE MANHATTAN

17%
OF LOWER MANHATTAN WORKERS COME FROM MANHATTAN

50%
OF LOWER MANHATTAN WORKERS COME FROM THE OTHER 4 BOROUGHS

33%
OF LOWER MANHATTAN WORKERS COME FROM OUTSIDE NYC

STATISTICAL SOURCES:

Routes + Ridership: MTA, Downtown Alliance
Journies to Work: US Census LEHD LODES

IMAGE SOURCES:

Detroit Photographic Company. South Street Seaport. Circa 1897-1924. Beinecke Rare Book & Manuscript Library, Yale University. Wikimedia Commons.
Rémi Stosskopf. South Street Seaport. 2012. Wikimedia Commons.

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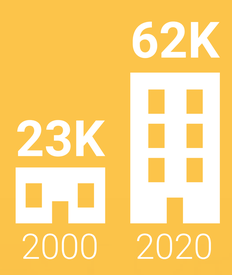
A CENTER OF CULTURE, COMMUNITY, AND CIVIC LIFE

TODAY, IN ADDITION TO A ROBUST WORKFORCE, LOWER MANHATTAN HAS A GROWING RESIDENTIAL COMMUNITY AND A THRIVING STUDENT POPULATION, AND IS A MAJOR DRAW FOR NEW YORKERS AND VISITORS ALIKE.

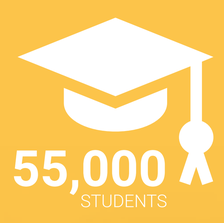
RESIDENTS



170%

INCREASE IN RESIDENTS IN LOWER MANHATTAN

STUDENTS



21

HIGHER LEARNING INSTITUTIONS

VISITORS

17.7 MILLION

ANNUAL VISITORS TO MAJOR ATTRACTIONS IN THE AREA

CIVIC LIFE

550

MAJOR CIVIC EVENTS IN THE LAST DECADE, SUCH AS PARADES, FESTIVALS, PROTESTS, AND MARCHES

STATISTICAL SOURCES:

Residents: Downtown Alliance
Workers: US Census LEHD LODES
Students: Downtown Alliance
Visitors: Audience Research & Analysis
Civic: NYC Mayor's Office of Citywide Event Coordination and Management

IMAGE SOURCES:

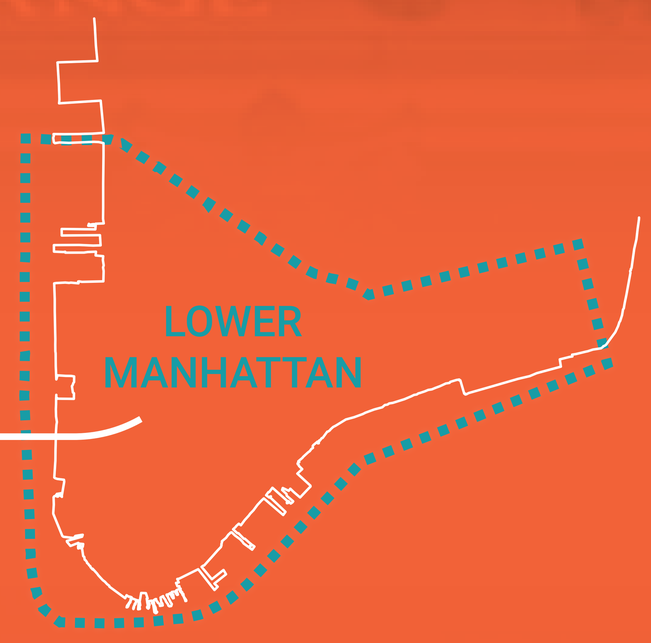
Shadia Fayne Wood. Broadway and Cortland Street, Manhattan, New York. 2019. Survival Media Agency, Flickr.

NYC/EDC

NYC Mayor's Office of Resiliency

A DRIVER OF THE CITY'S ECONOMY AND WORKFORCE

LOWER MANHATTAN PLAYS A MAJOR ROLE IN OUR ECONOMY WITH A DIVERSE RANGE OF JOBS FOR NEW YORKERS FROM ALL OVER THE CITY.



<1%
OF NYC 'S LAND MASS

10%
OF NYC'S ASSESSED PROPERTY VALUE

$6.5 BILLION
IN ESTIMATED ANNUAL TAX CONTRIBUTIONS IN 2019

1 in 10
JOBS IN NYC

290 THOUSAND
WORKERS

40%
WITH LESS THAN 4 YEAR DEGREE

30%
EARN LESS THAN NYC MEDIAN INCOME

$74 BILLION
IN ANNUAL GDP (8% OF THE CITY'S TOTAL)

SOURCES:

Assessed/Property Value: NYC Dept of Finance
Job Percentages: US Census LEHD LODES
GDP and Percent Landmass: EMSI Q1 2020
Estimated Tax Contributions: Downtown Alliance

IMAGE SOURCES:

Brendan McDermid. Fearless Girl. 2019. Reuters.

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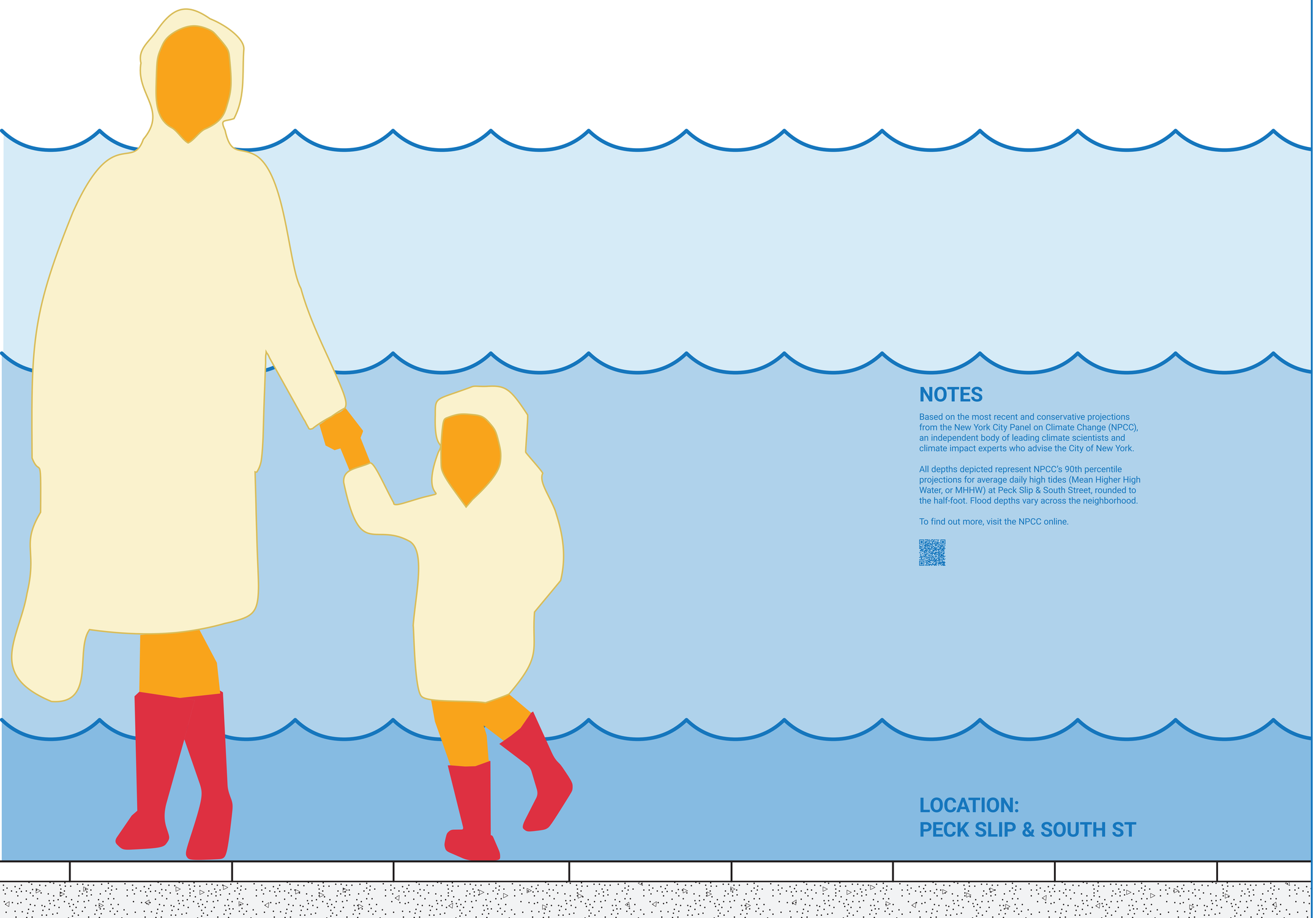
NYC Mayor's Office of Resiliency

DAILY TIDAL FLOODING



2100
HIGH TIDE FLOOD DEPTH +4.5 FT

2080s
HIGH TIDE FLOOD DEPTH +3 FT

2050s
HIGH TIDE FLOOD DEPTH +1 FT

NOTES

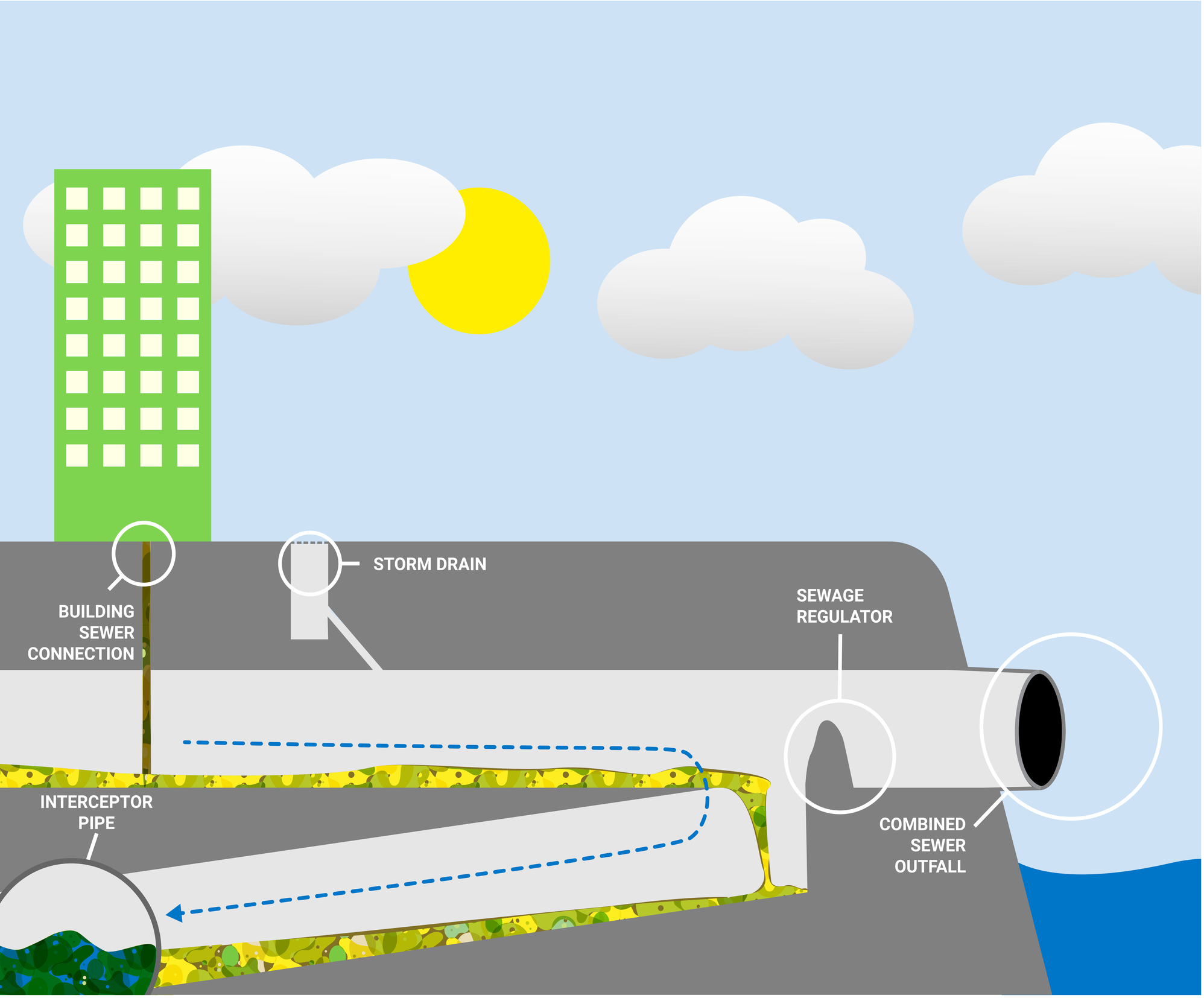
Based on the most recent and conservative projections from the New York City Panel on Climate Change (NPCC), an independent body of leading climate scientists and climate impact experts who advise the City of New York.

All depths depicted represent NPCC's 90th percentile projections for average daily high tides (Mean Higher High Water, or MHHW) at Peck Slip & South Street, rounded to the half-foot. Flood depths vary across the neighborhood.

To find out more, visit the NPCC online.

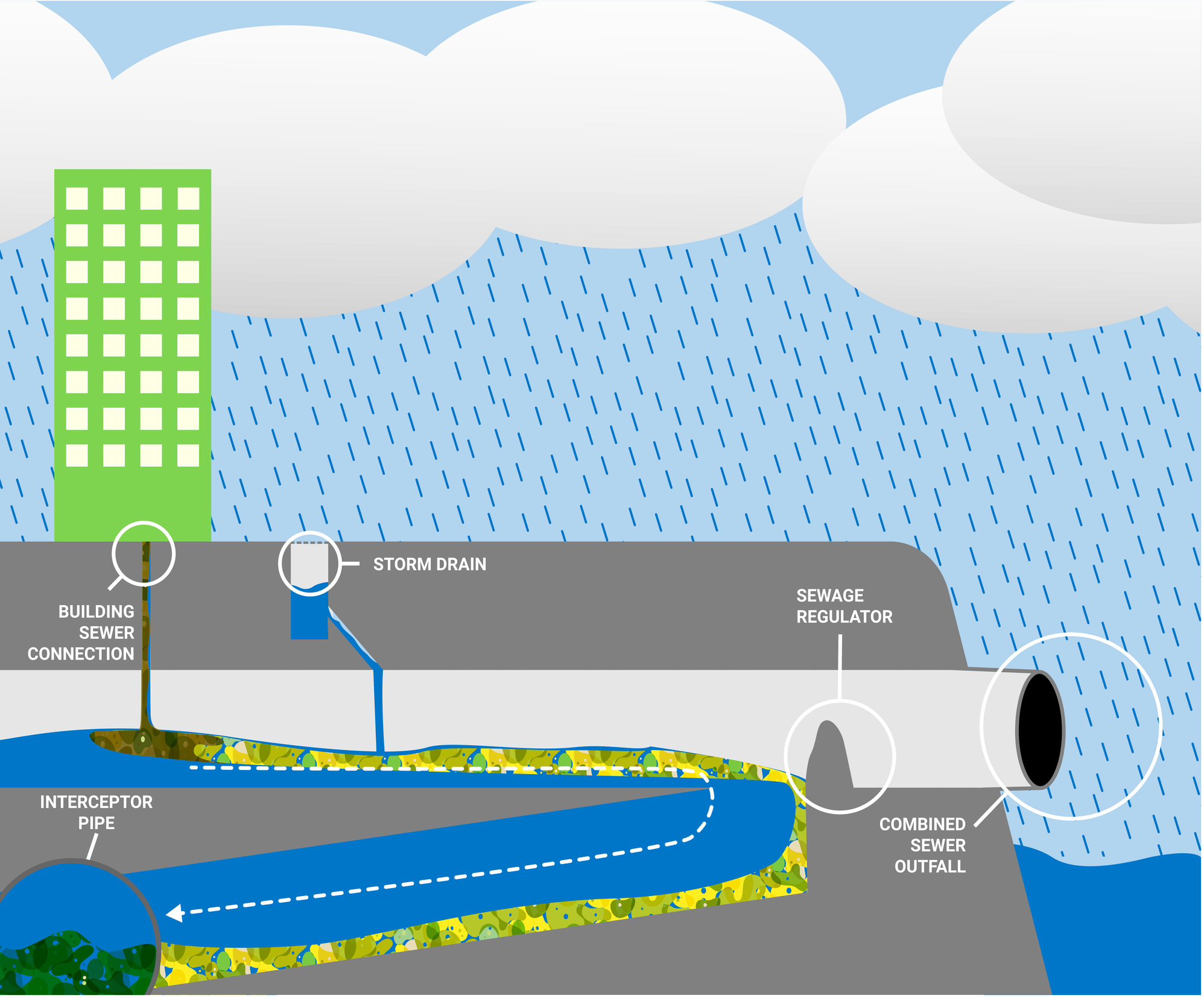
LOCATION:
PECK SLIP & SOUTH ST

RAIN & THE COMBINED SEWER SYSTEM



SUNNY DAY CONDITIONS

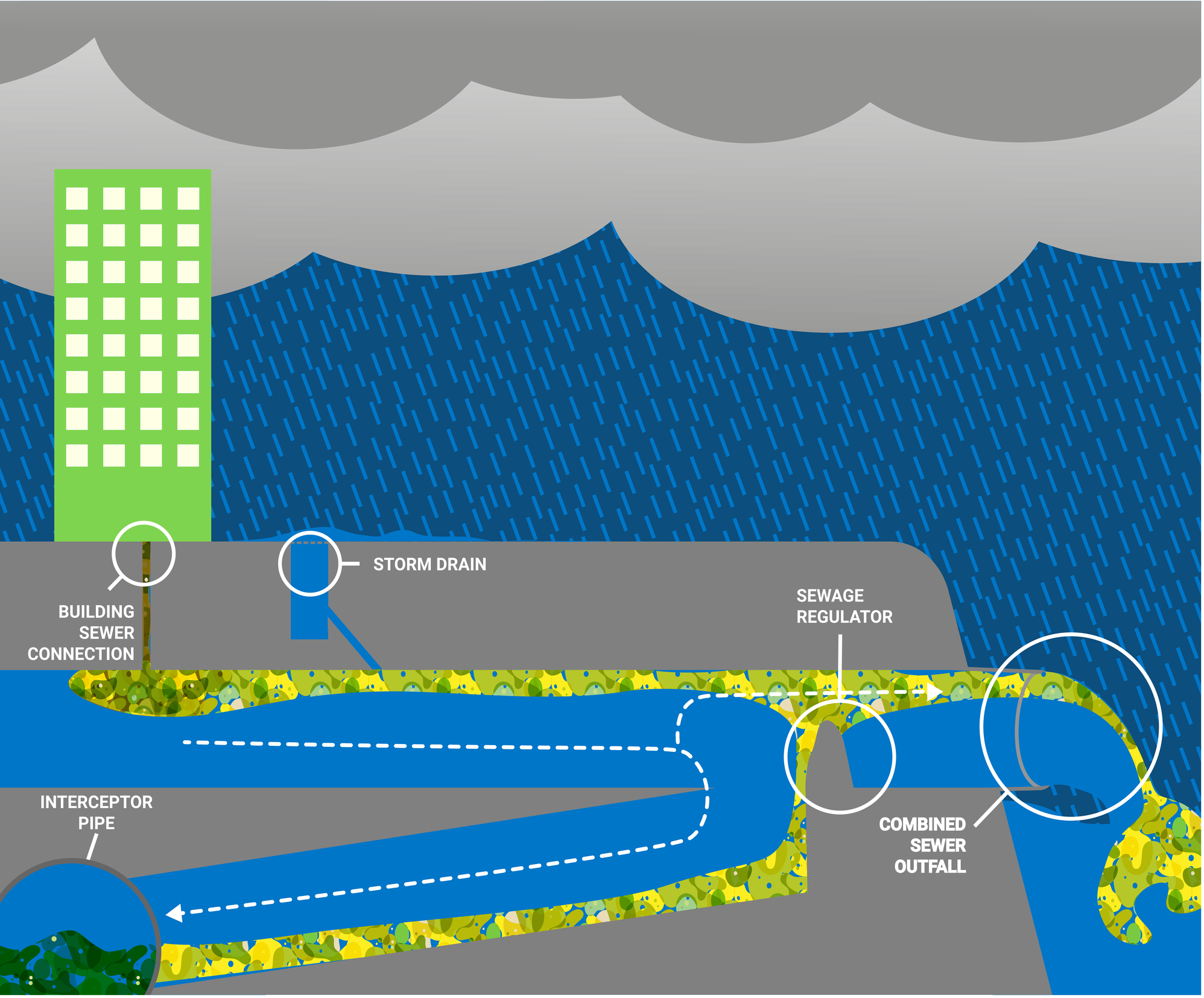
In a combined sewer system, there is a single interceptor pipe that carries both rain and other flooding along with sewage from buildings to the wastewater treatment plant. On a sunny day in today's conditions, the wastewater is carried through the interceptor pipe to the Manhattan Pump Station, where it is then pumped to the Newtown Creek Wastewater Treatment Plant to be treated. The treated water is then discharged into the river.



LIGHT RAIN EVENTS

During a light rain event in today's conditions, the rain goes into storm drains on the street, where it flows into the interceptor pipe. There is enough capacity, or room in the interceptor pipe, to take both the rain and sewage (wastewater) to the Manhattan Pump Station, where it is then pumped to the Newtown Creek Wastewater Treatment Plant to be treated. The treated water is then discharged into the river.

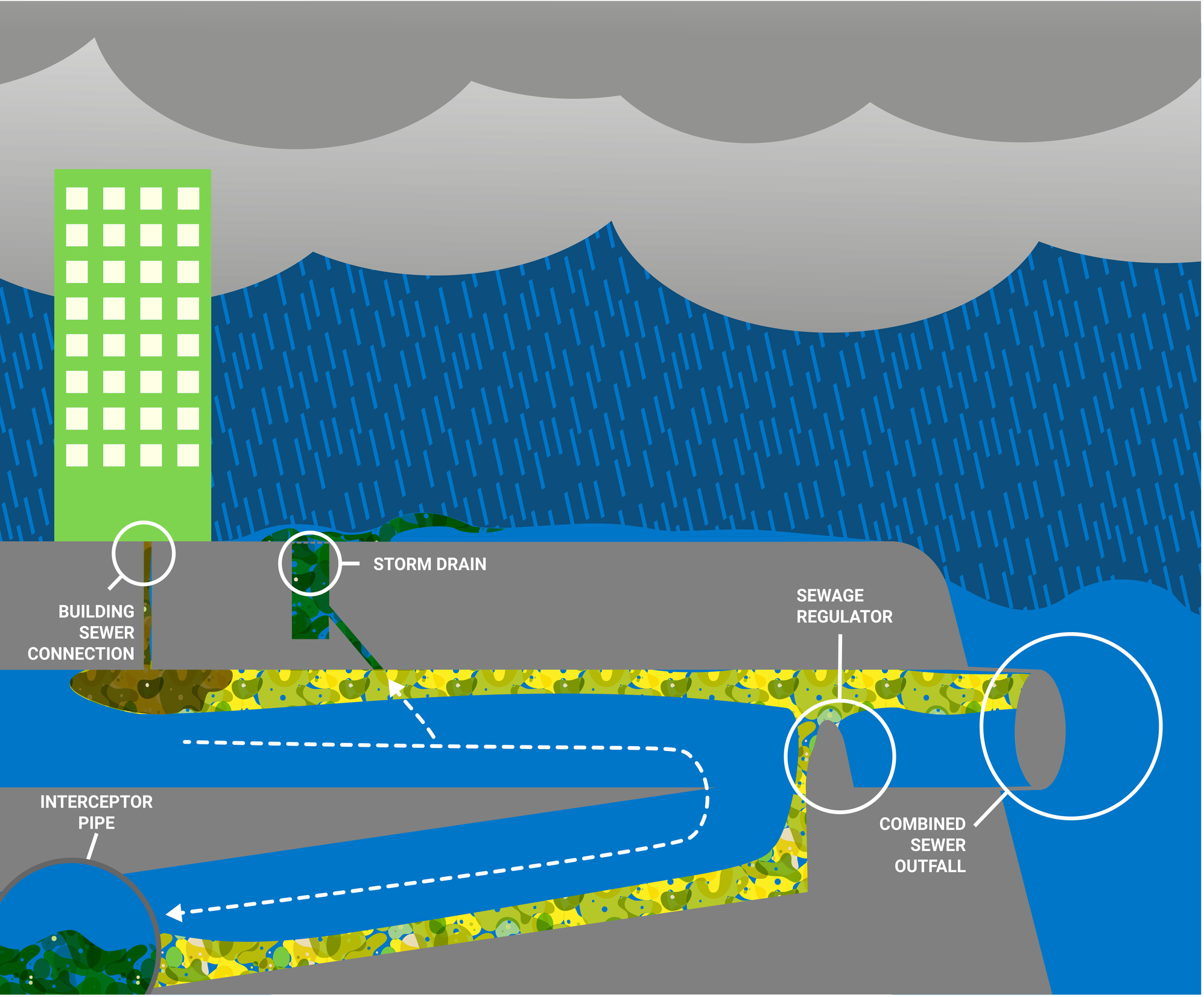
HEAVY RAIN EVENTS



* Regulators direct stormwater and wastewater to interceptors and then to combined sewer outfalls once the system reaches its capacity during heavy rainfall events.

During heavy rainstorms, the combined sewer system does not have enough capacity to manage the combined rain and sewage flows. When a rain event surpasses a certain threshold and the system reaches its capacity, the regulator directs the wastewater to a combined sewer outfall.

The system discharges untreated sewage directly into the City's waterways, including the East River. These events are called combined sewer overflows (CSOs). CSOs have a negative effect on water quality and our ability to use our waterways for recreation.



FUTURE SEA LEVEL RISE

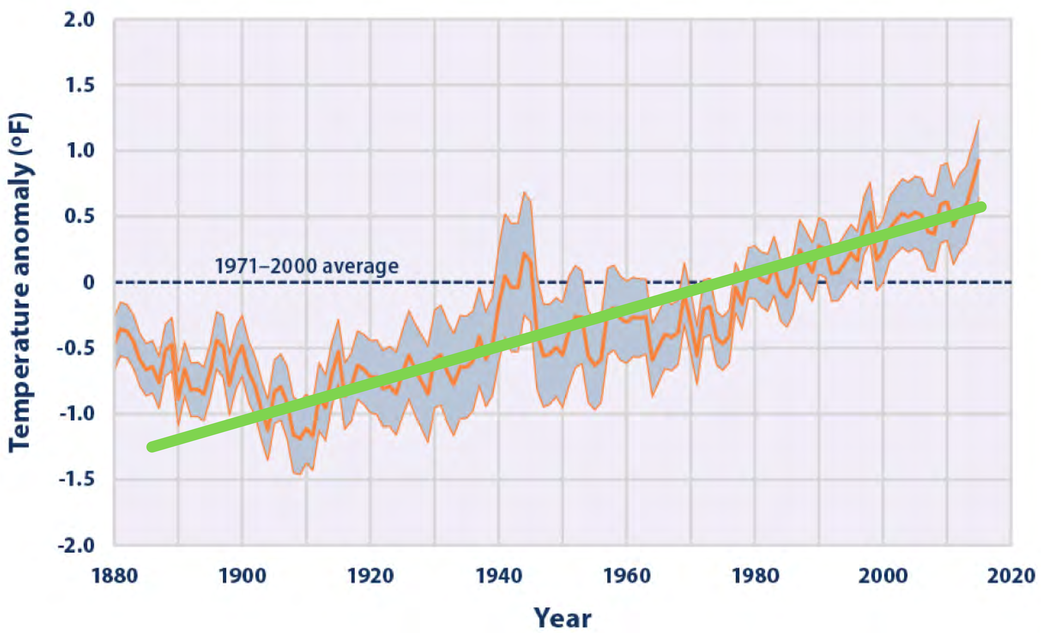
Our combined sewer system currently drains by gravity: water naturally flows to outfalls that discharge directly into the river. As sea levels rise, these outfalls will become submerged and even blocked, impacting the system's ability to discharge. This will cause more flooding to occur on our streets and in our basements, unless a significant intervention is made to increase the capacity of our system.

HOW THE COMBINED SEWER SYSTEM WORKS

Most of the sewer system in NYC is a “combined” system, meaning a variety of sanitary water is combined with rainwater in the sewer. Shower water, toilet flushes, sink water, laundry water, as well as rainwater from the streets and roofs all enter the same sewer system.

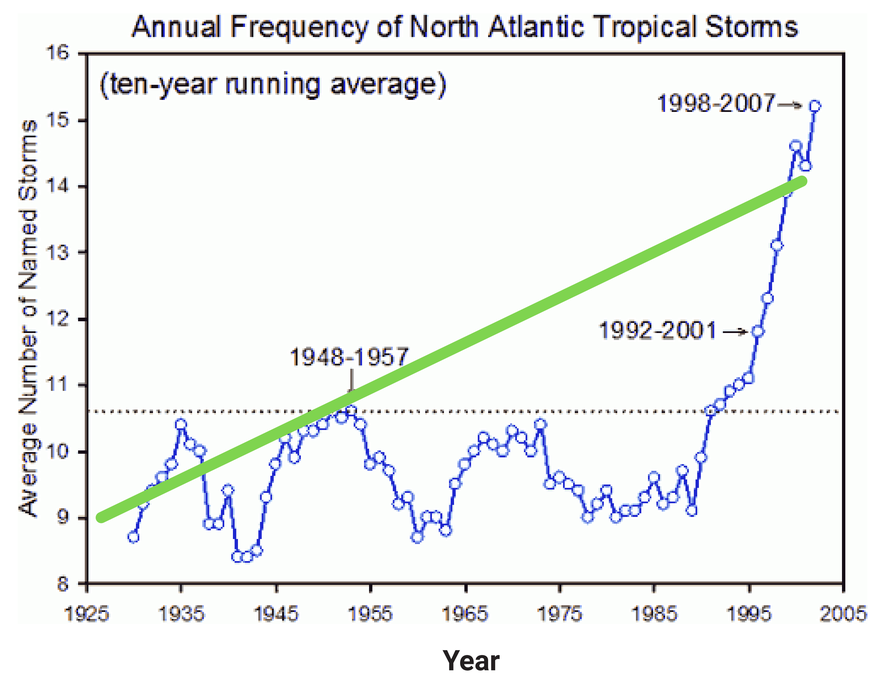
COASTAL STORMS & CLIMATE CHANGE

Climate change is causing our oceans to get warmer.



Source: https://www.epa.gov/climate-indicators/climate-change-indicators-sea-surface-temperature

Warmer ocean waters lead to more frequent and intense hurricanes.



Source: https://eo.belspo.be/en/hurricane-alert

Hurricanes are one type of storm that results in coastal flooding in New York City. Due to climate change, hurricanes have become more intense and dangerous over time.

As ocean water temperatures rise, more energy from heat becomes available for hurricanes to form, increasing their frequency. This energy converts into heavy rain and winds, which can have disastrous impacts on land. Also, warmer air can hold more moisture which leads to greater amounts of rainfall and consequently more flooding.

WHAT TYPES OF STORMS CAUSE COASTAL FLOODING?

Nor'easters

Tropical Cyclones (<74 mph winds)

Hurricanes (≥74 mph winds)

Image Sources: WNYC, Slate, LA Times