



Flood Preparedness Town Hall

2025

Five-Borough Flood Preparedness Kit Giveaway

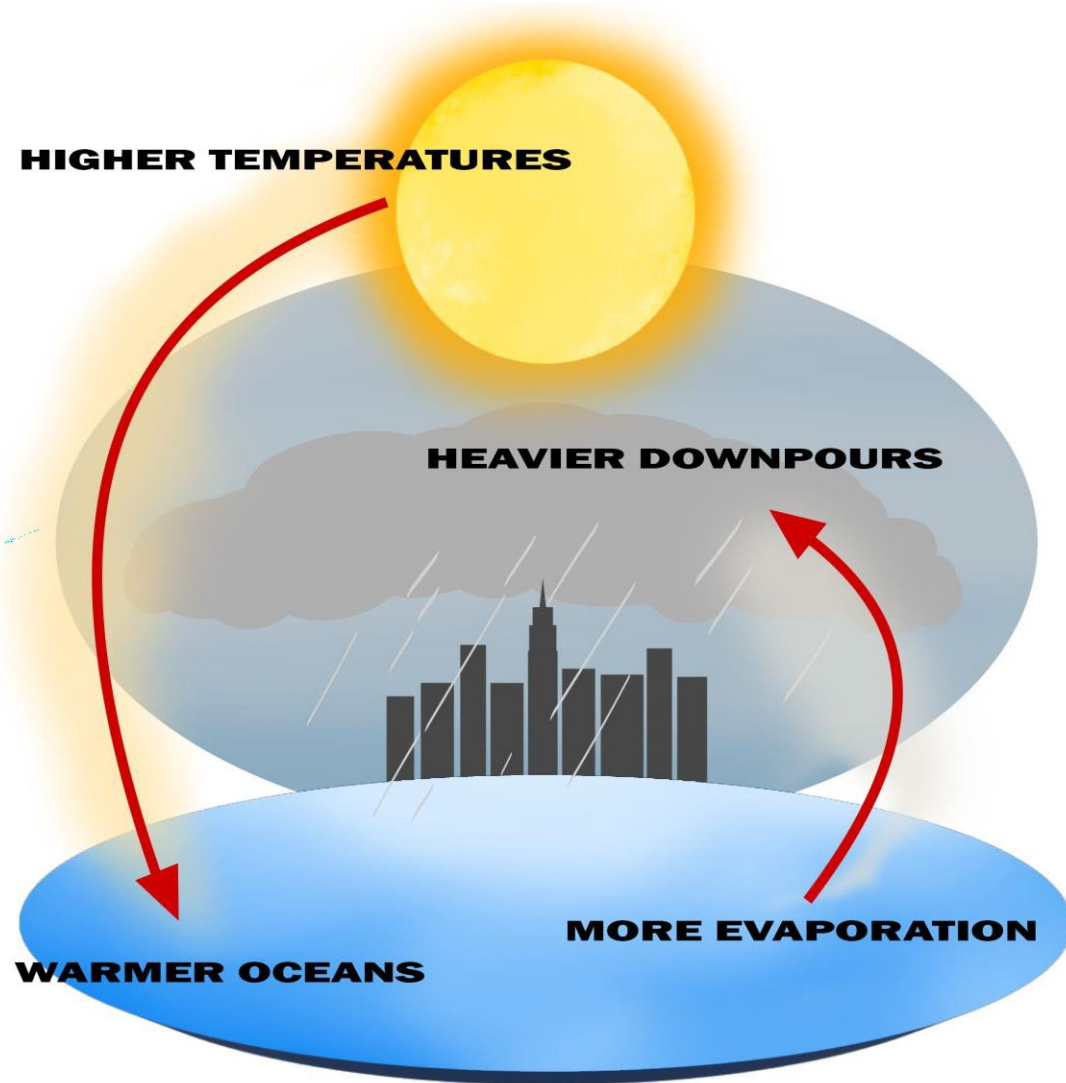




Each day DEP ...

- Delivers 1 billion gallons of drinking water
- Treats 1.3 billion gallons of wastewater
- Operates 14 wastewater resource recovery facilities and 96 pumping stations
- Maintains:
 - ✓ 7,000 miles of water mains
 - ✓ 7,500 miles of sewers
 - ✓ 109,000 fire hydrants
 - ✓ 150,000 catch basins

Our Changing Climate



NOAA (National Oceanic and Atmospheric Administration) has **reclassified NYC** a “**humid subtropical**” climate.

Sudden, powerful storms are bringing more **intense rainfall** to New York City.

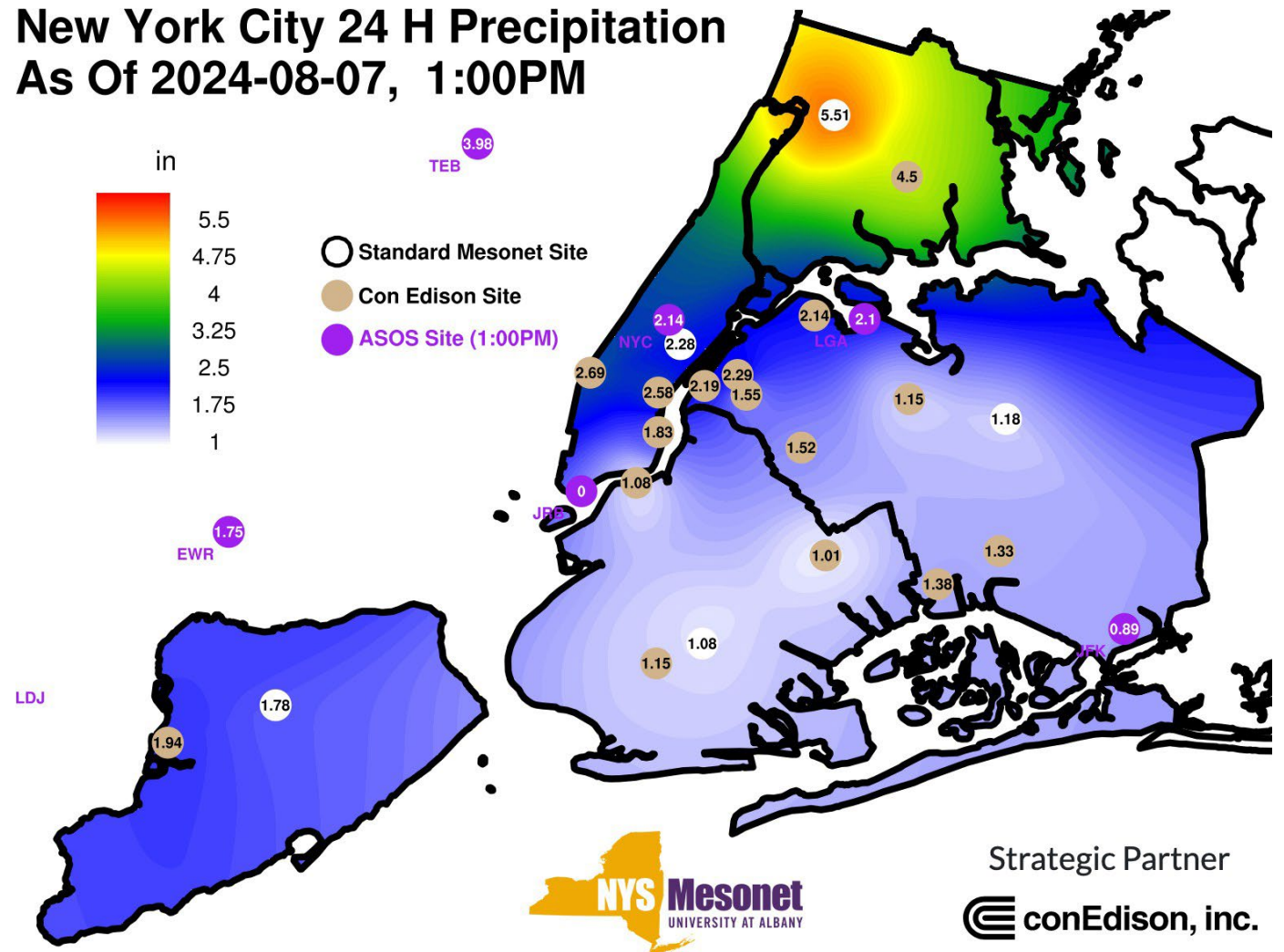
- August 2021 (Henri): 1.94 inches in an hour
- September 2021 (Ida): 3.15 inches in an hour
- September 29, 2023: 2.5 inches in an hour

Effects of these storms can be made worse in coastal areas by **sea level rise** and **tidal cycles**.

August 6, 2024

- The City activated the Flash Flood Plan and issued a flash flood warning and a travel advisory.
- The Bronx was particularly hard hit by Tuesday night's storm, with rainfall amounts **between 4 and 5.4 inches in 24 hours**.
- This rainfall far exceeded the amounts over the rest of the city.

New York City 24 H Precipitation As Of 2024-08-07, 1:00PM



August 6, 2024

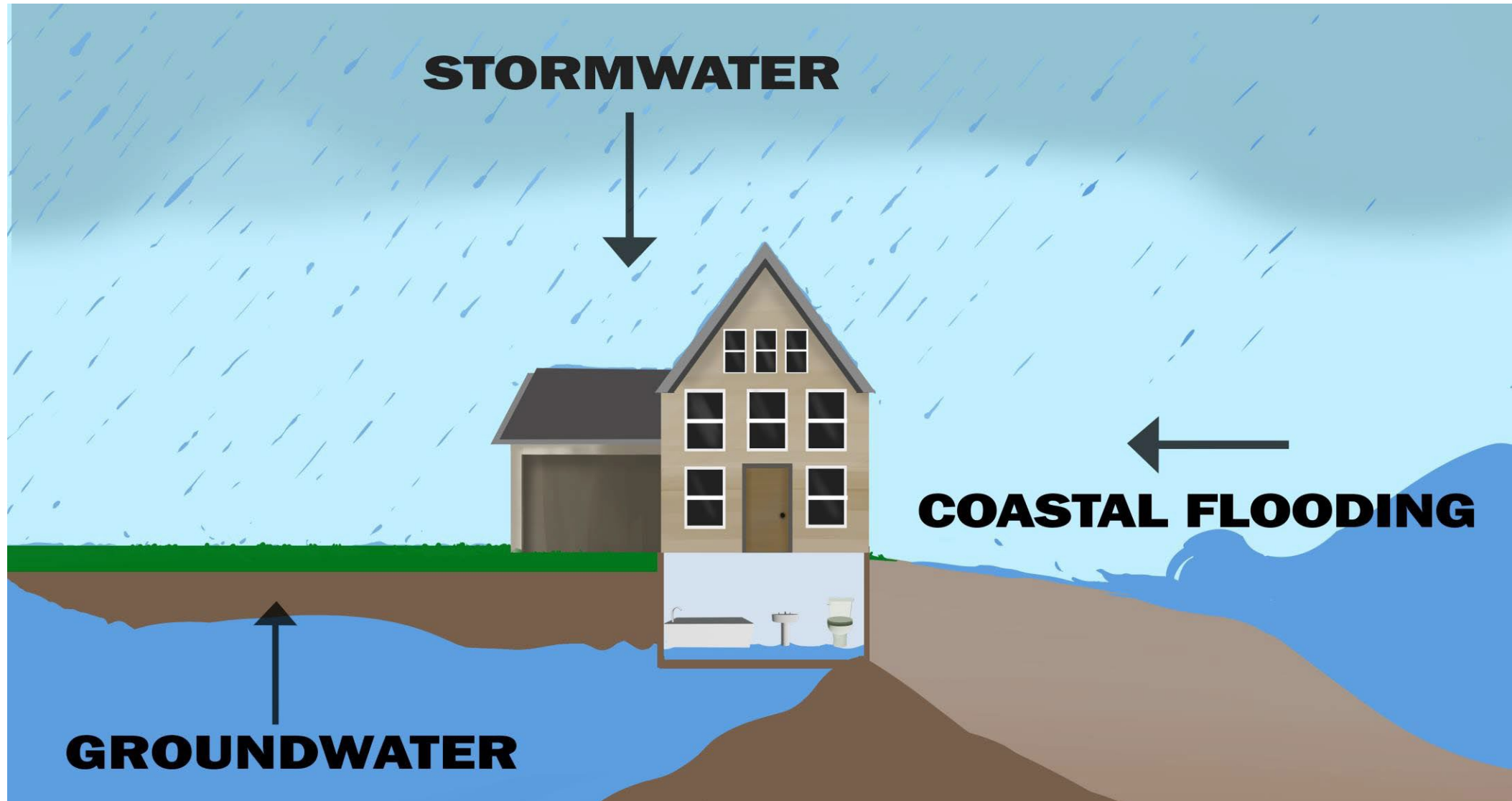


Major Deegan Expressway Flooding



Cross Island Parkway Rescue

Types of Flooding



Sewers

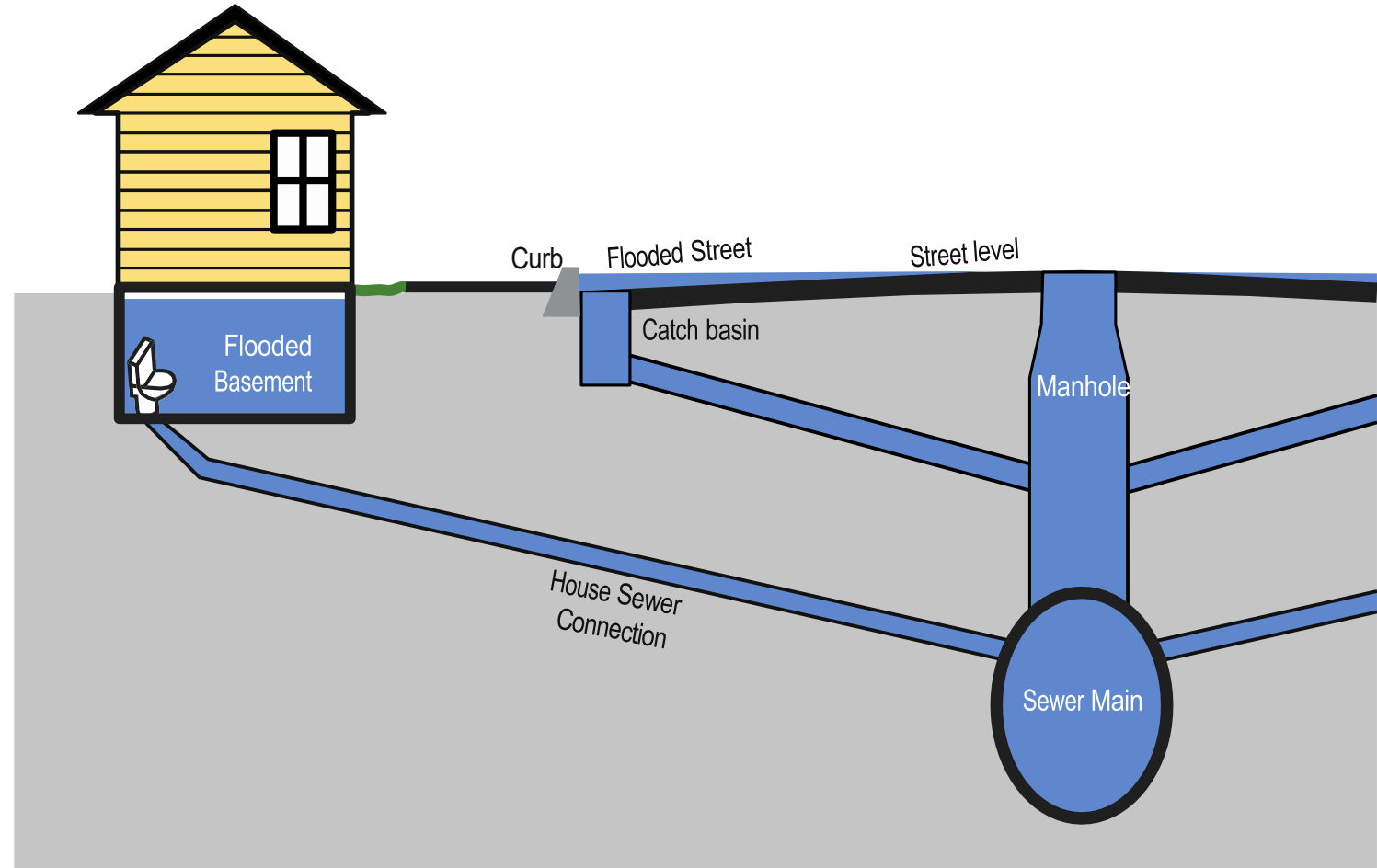
- **Sewers** work in every rainstorm and protect fully against 98% of rain events.
- The sewer network is generally built to handle 1.5 to 1.75 inches of rain per hour.
- During rainstorms, the system can get overwhelmed when the amount of water produced by the storm is greater than the capacity of the pipes.
- Due to climate change, NYC is experiencing more frequent heavy downpours that our sewers were not designed to handle.



Sewer Construction

Sewer Back-Ups & Overflows

- 60% of New York City has combined sewers that carry wastewater from your home and stormwater from rains.
- During rainstorms, the sewer system can get overwhelmed when the amount of water produced by the storm is greater than the capacity of the pipes.
- This can result in back-ups from manholes, catch basins and basement sewer connections or overflows into local waterways.



Street Flooding

- Catch basins are located on street and highway curbs to collect rainwater.
- Leaves and trash can accumulate on top of the basin grate and block drainage, causing rainwater to flood the street.
- Blocked catch basins are not broken catch basins.



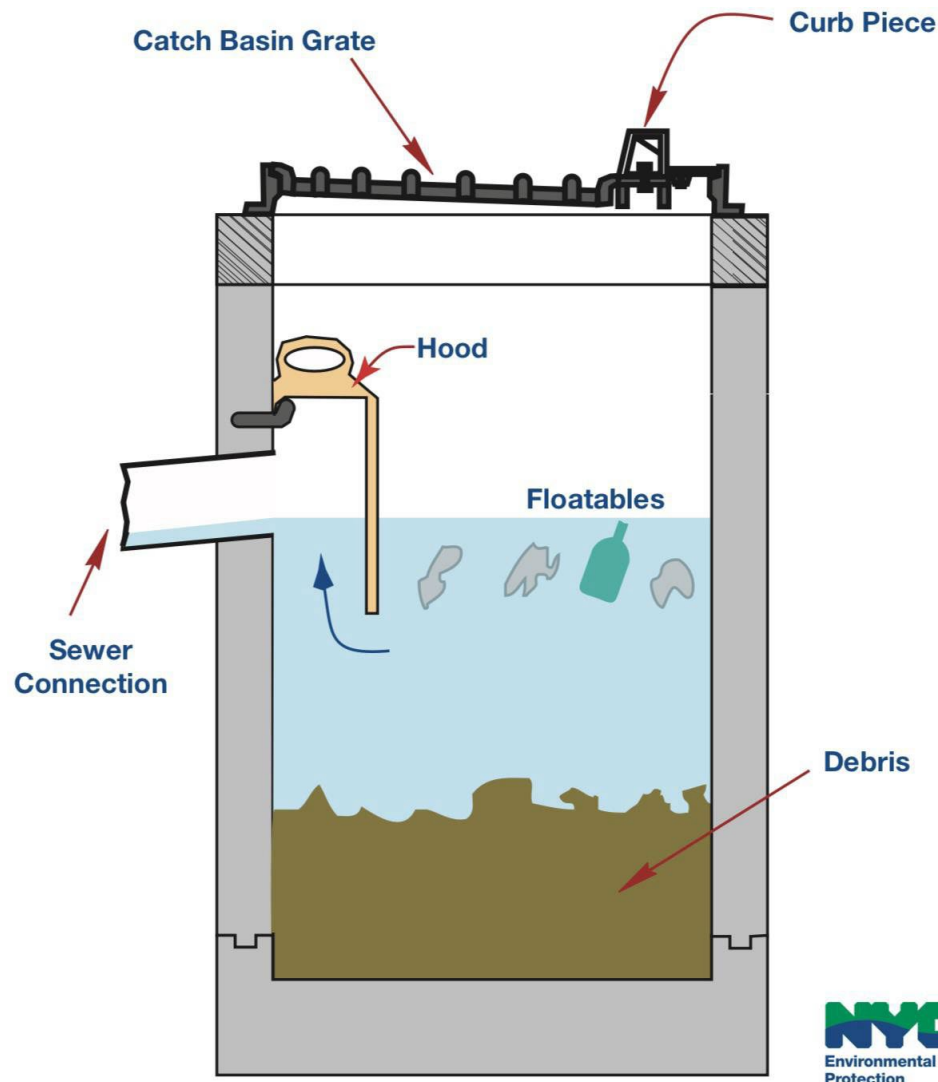
Cleared Catch Basin



Blocked Catch Basin

Street Flooding

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Catch Basin Cleaning

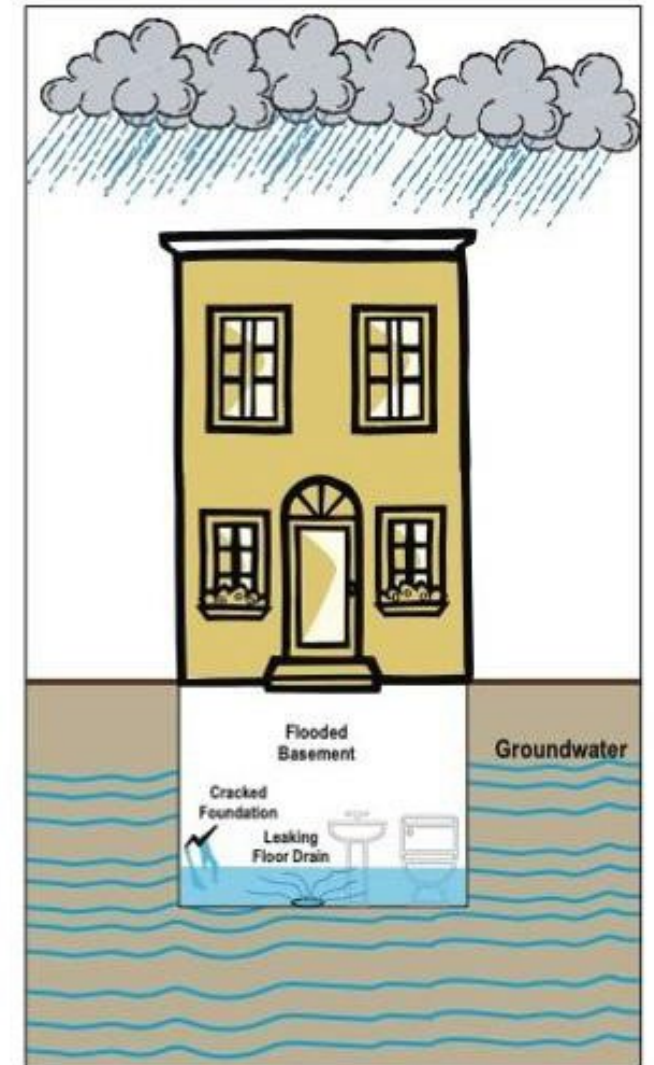
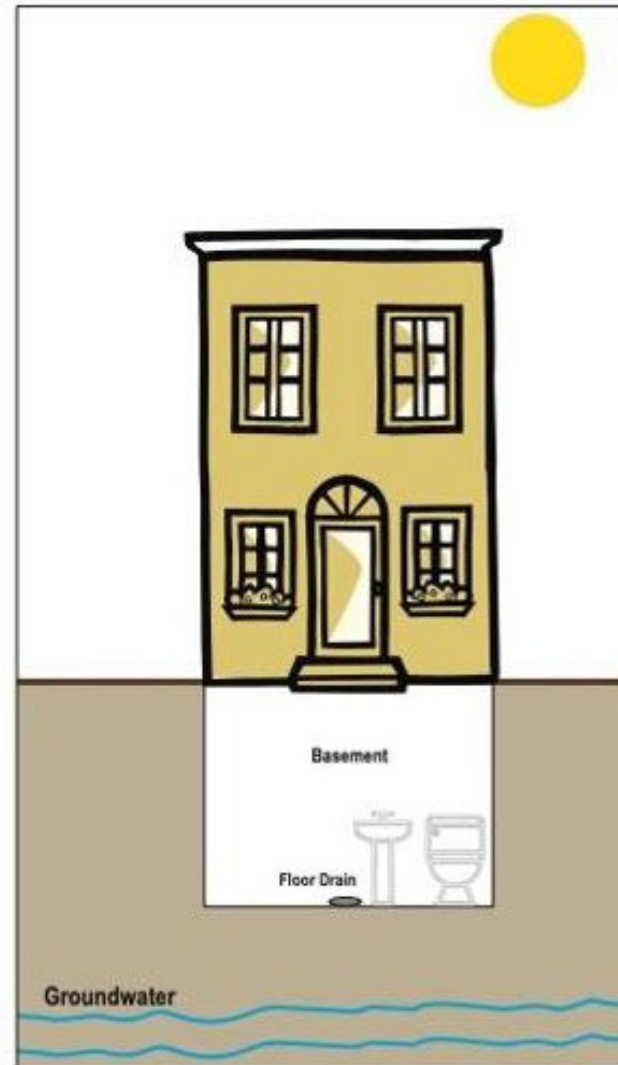
How does DEP clean catch basins?

- **We use data:** NYC's **150,000** catch basins are inspected based on an historical analysis of cleaning and 311 complaints, but at minimum once every 3 years. Catch basins in commercial areas are inspected twice a year. Some are inspected every 6 months. DEP also inspects in response to 311 complaints.
- **Before major storms**, DEP proactively sends staff to inspect catch basins in flood-prone areas to make sure they are clean and working properly when heavy rain is forecasted.



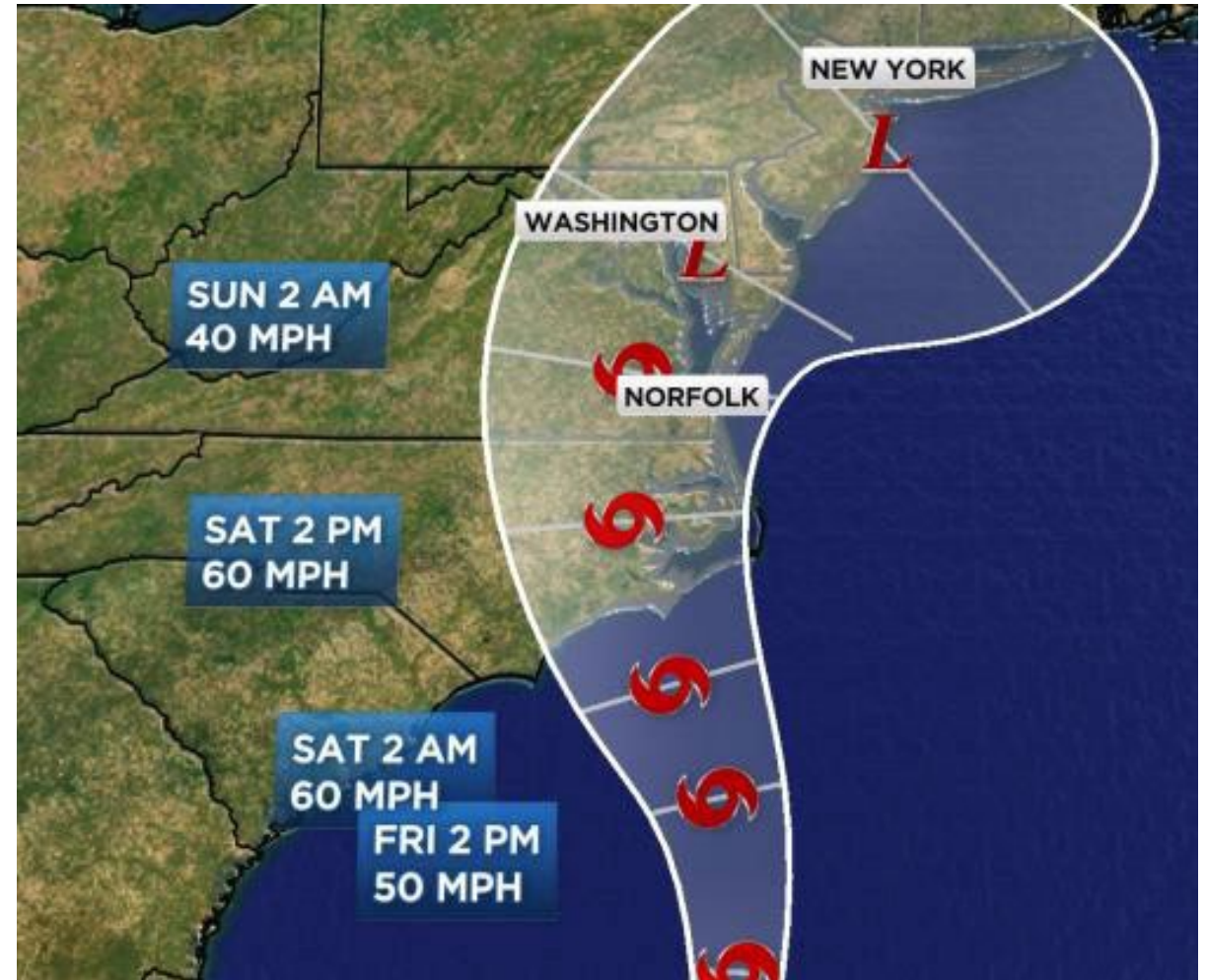
Groundwater Flooding

- Some areas of the city have naturally high ground water.
- After a heavy rain or **back-to-back rainstorms**, the ground can become saturated.
- Water seeks its own level. It will find and travel through cracks in a basement foundation or floor drains.



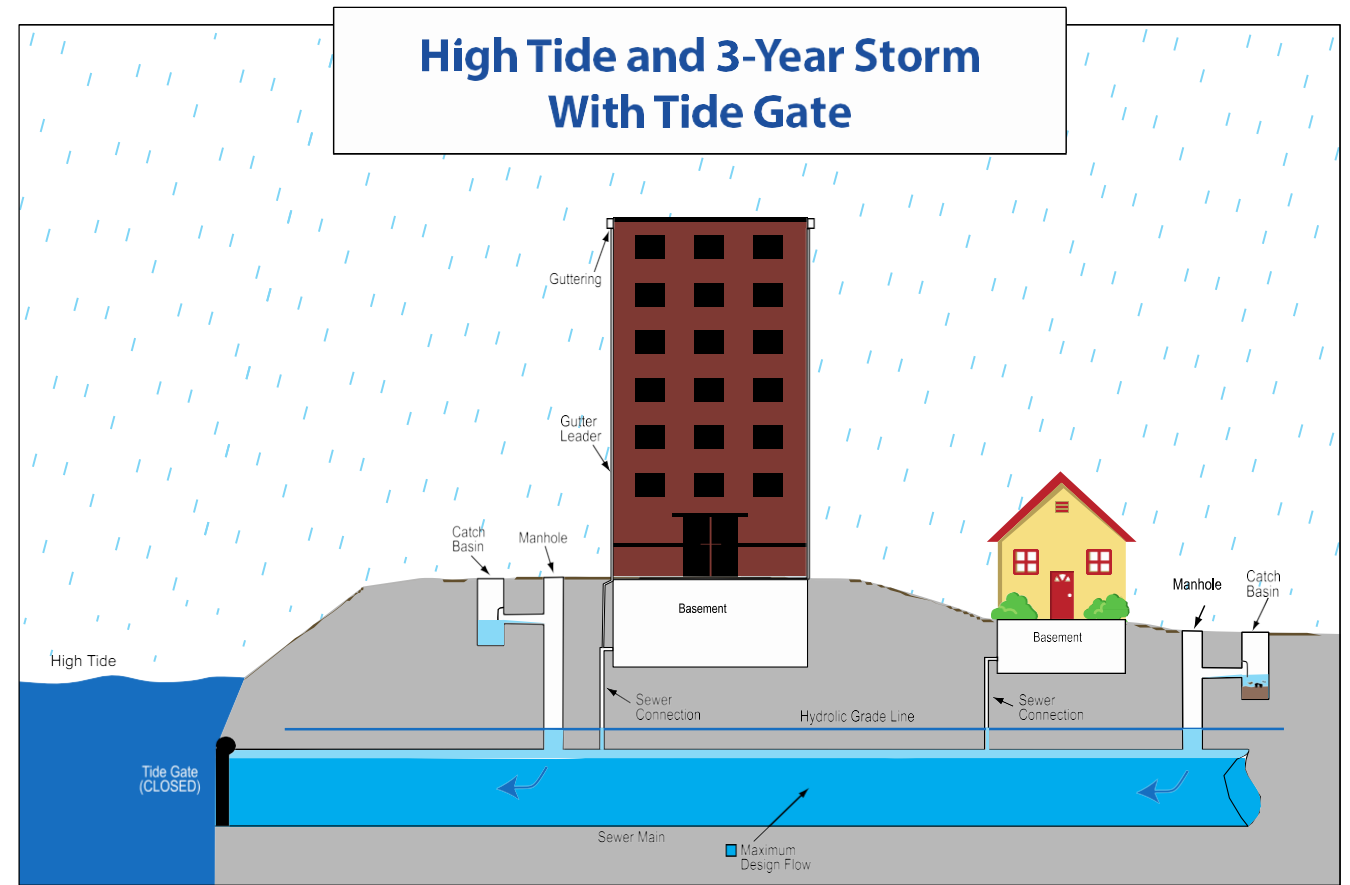
Hurricane Season

- Hurricanes are powerful storms that draw their energy from warm tropical waters in the Atlantic Ocean.
- Hurricanes bring high winds that can create a “storm surge” – when the winds push sea level higher and over the coastline, causing flooding.
- Hurricane Season is June through November but typically begins in August in NYC.
- 2024 Hurricane Season is expected to bring a high number of powerful storms to the Atlantic coastline because of higher ocean temperatures caused by climate change.



Coastal Flooding

- In waterfront areas, high tide combined with storm surge can make local flooding conditions worse.
- Coastal flooding can send tidal water back up into the sewer system, resulting in overflows from manholes, catch basins, and basement connections.
- Tide gates keep ocean water out of the system during high tides or storm surge.



The City has a **toolkit** to combat flooding

DEP is using a multi-layered approach that strategically uses grey infrastructure, green infrastructure, and other flooding solutions.

- ✓ Grey Infrastructure
- ✓ Green Infrastructure
- ✓ Blue Infrastructure
- ✓ Regulation
- ✓ Real-time Monitoring

Sewers

- **Sewers** work in every rainstorm and protect fully against 98% of rain events.
- The sewer network is generally built to handle 1.5 to 1.75 inches of rain per hour.
- During rainstorms, the system can get overwhelmed when the amount of water produced by the storm is greater than the capacity of the pipes.
- DEP's 10-year capital plan includes \$8.2 billion for sewer system upgrades. Over 100 sewer projects are in the pipeline for the next five years, totaling a \$3.6 billion investment.



Bluebelts: Natural Storage

- **Bluebelts** divert rainfall away from sewers, provide retention and create rich ecological areas.
- The program preserves natural drainage corridors like streams, ponds and wetlands and enhances them to convey, store and filter stormwater.
- DEP manages 545 acres of bluebelts and natural areas in the Bronx, Staten Island and Queens.
- DEP is working to bring bluebelts to all five boroughs.



Staten Island Bluebelt

Green Infrastructure: Natural Storage

- **Green infrastructure (GI)** absorbs water into the ground in areas with good soil. It also greens neighborhoods, reducing urban heat island effect.
- These projects reduce street flooding by catching stormwater before it enters the sewer system, freeing up drainage capacity and reducing sewer overflows into local waterways.



Typical Raingarden



Typical GI Median

Porous Pavement

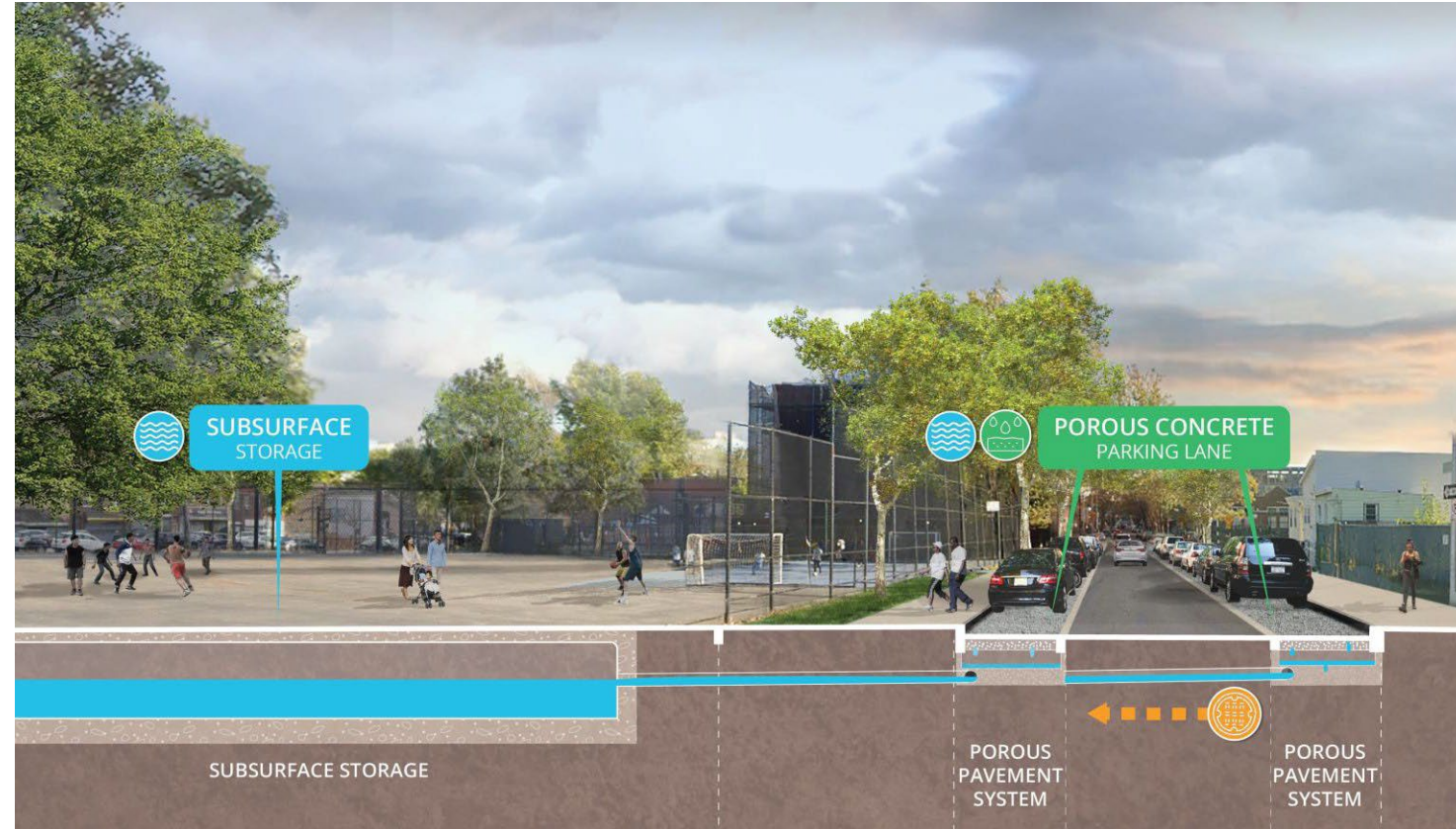
- **Porous pavement** is a special roadway paving designed to absorb and drain rainwater.
- “The Concrete Jungle” is limited in areas that naturally soak up rainwater because most paving materials are impermeable or non-porous.
- DEP uses this tool in primarily residential areas. Over three miles of porous pavement installed as of 2023. We are adding 10 more miles in the Bronx and another 35 miles in Brooklyn.



Porous Pavement in Action

Cloudburst: Built-in Storage

- **Cloudburst infrastructure** capture and hold rainwater from heavy downpours that drops a lot of rain in a short amount of time.
- Cloudburst management projects can use contained spaces normally used for other purposes, like a sunken basketball court, to hold stormwater.
- They can also use sewer pipes, underground storage tanks and green infrastructure.



Typical Cloudburst Strategies

FloodNet Sensors

- Sensors detect and monitor street flooding in real-time and relay life-saving information to City agencies.
- Installed in neighborhoods that are vulnerable to high tides, storm surge, and stormwater runoff.
- NYC first flood-monitoring network is set to expand — DEP is spending \$7.2 million to install 500 across all five boroughs.
- www.floodnet.nyc



Unified Stormwater Rule

- In 2022, DEP increased the amount of stormwater new and redeveloped properties must manage on-site.
- Rezoning and/or development present a **huge opportunity** to manage stormwater on-site and reduce demand on the city's drainage system.
- The rule prioritizes the use of green infrastructure, which has the added benefits of reducing heat island effect and supporting wildlife habitat.



Green Roofs Absorb Stormwater

What *you* can do to protect your home from flooding



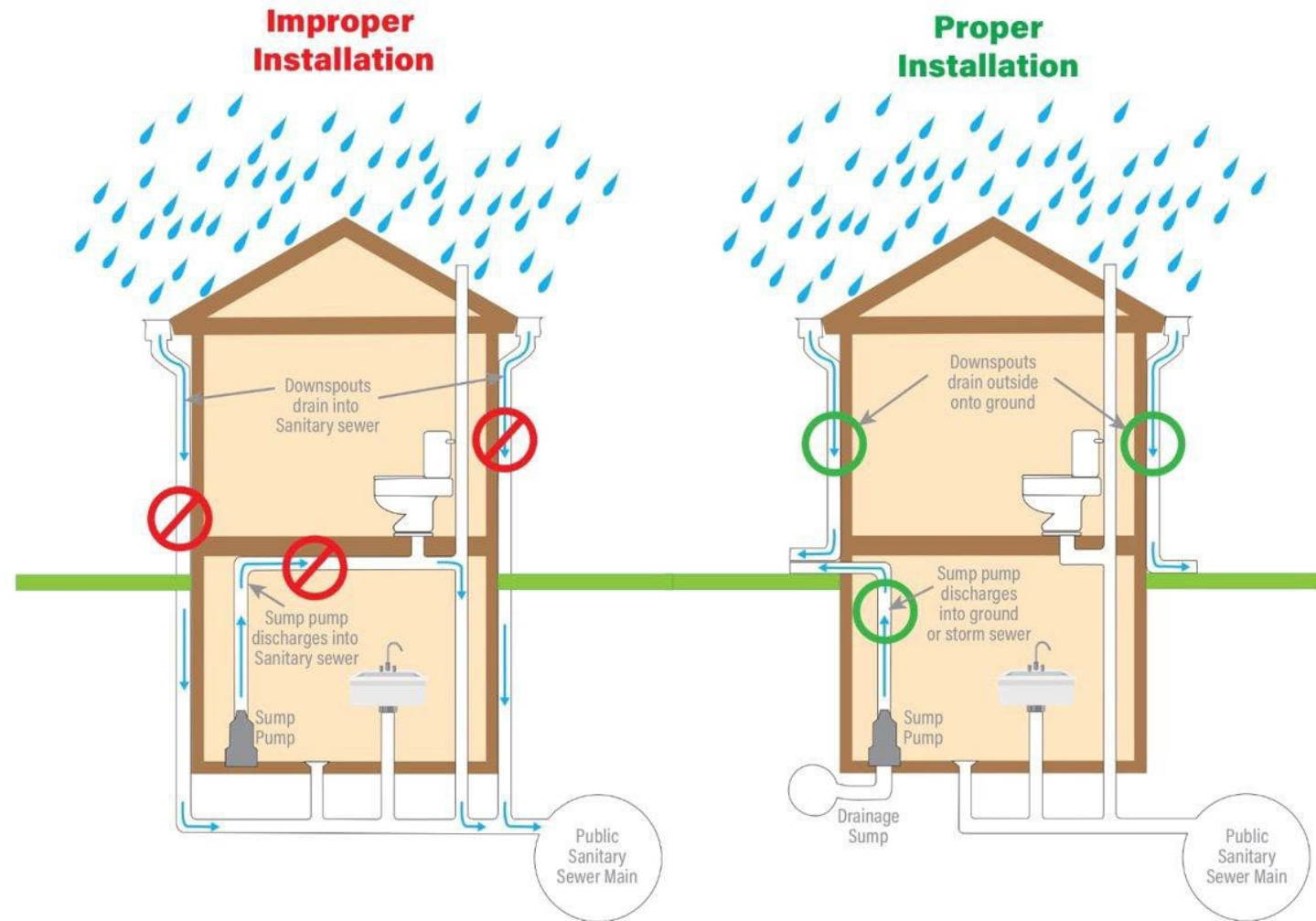
Converted Basements



- **Sewer Back-ups** – Bathroom fixtures shouldn't be located lower than the sewer connection. This can result in raw sewage backing up into basement apartments through drains.
- **Stormwater Flooding** – Basements located at the bottom of a driveway or below sidewalk level are prone to stormwater flooding and groundwater flooding.
- **Safety** – Exit routes are critical in the event of a flood. Bars on windows trap people in flooding basement apartments.

Reroute Downspouts

- Disconnecting downspouts from the sewer keeps rainwater out of the system and reduces the likelihood of back-ups.
- Direct downspouts away from your building.



Install a Rain Barrel

- Connecting your home's gutters to a rain barrel will keep water out of the sewer and reduce the demand on the system.
- You can reuse the collected rainwater to water plants.
- So far in 2024, DEP has given away nearly 5,500 free rain barrels to New Yorkers in partnership with local elected officials.



Use Flood Sensors & Elevate Belongings

- Place belongings and valuables on a shelf above where water may flow into your basement.
- Use flood sensors to alert you when water is entering your basement.
- **Pro tip:** Place the sensor on the floor, near the sewer drain, or under the windows if you have outdoor window wells.



Use Flood Barriers

- Flood barriers can be filled with water or sand and reused in storms.
- Place flood barriers near doors, garages, and/or basement windows that may allow stormwater to enter your home.



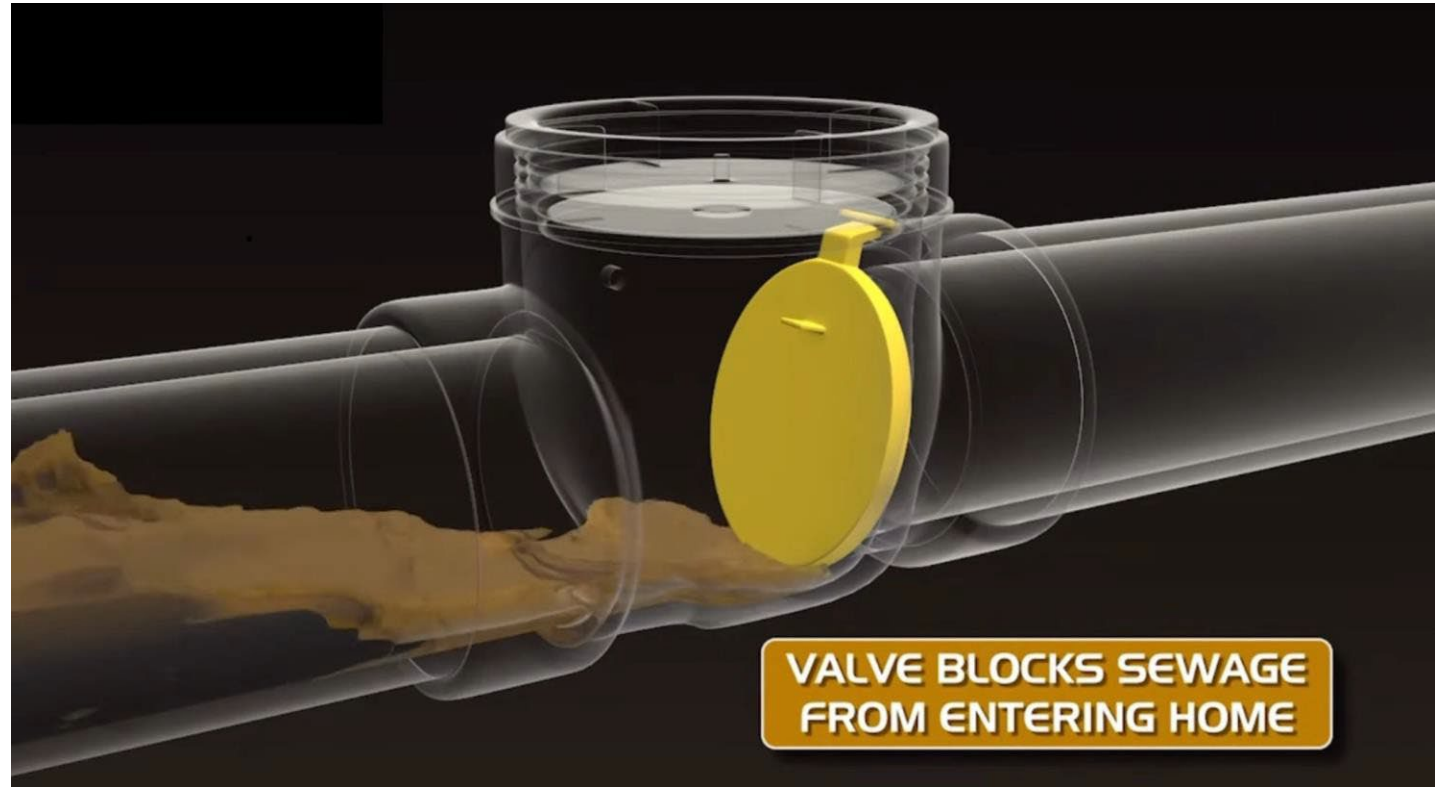
Use Sump Pumps

- Use a sump pump to remove flood water.
- A sump pump is a device that detects rising water, say in a basement pit or drain, and pushes it outdoors.
- **Pro tip:** Be sure to use pipes or hoses that extend 10-15 feet beyond your building.



Install a Sewer Check Valve

- Check valves stop sewage from flowing into your home, through toilets and bathtubs, during a storm.
- Use a licensed plumber to install.



Use a Drain or Toilet Plug

- Toilet plugs can stop sewage from backing up into your home through your toilet.
- Drain plugs (also called gripper plugs) can stop sewage from flowing into your home through tub or floor drains.
- These can be found at a hardware store or online.



Homeowner Insurance

- Most homeowner's insurance policies do not include coverage for a sewer back-up.
- You can add an optional rider to your insurance policy to cover any damages to your home from a sewer back-up.



Wait to Use Water

- Wait to flush the toilet, take a shower or use appliances that use water (washing machine, dishwasher) during heavy rain.
- The extra water discharge puts unnecessary strain on an already taxed sewer system.



Trash It. Don't Flush It.

- Many sewer back-ups are caused by grease or debris in the sewers.
- DEP spends roughly \$18M a year to degrease sewers, deal with damage from back-ups, and repair equipment trashed by wet wipes. New Yorkers foot that bill.



Plan for Intense Storms

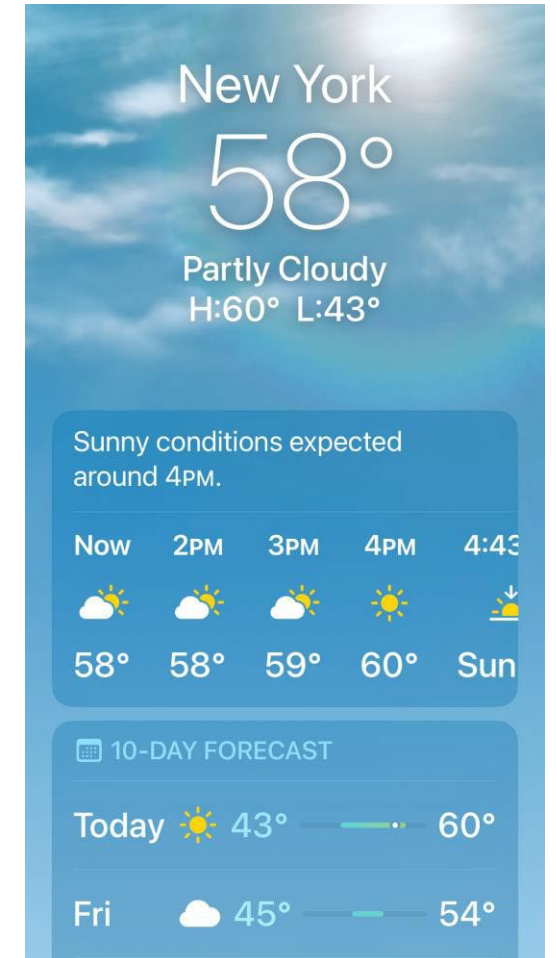


Tide Alert (NOAA) app



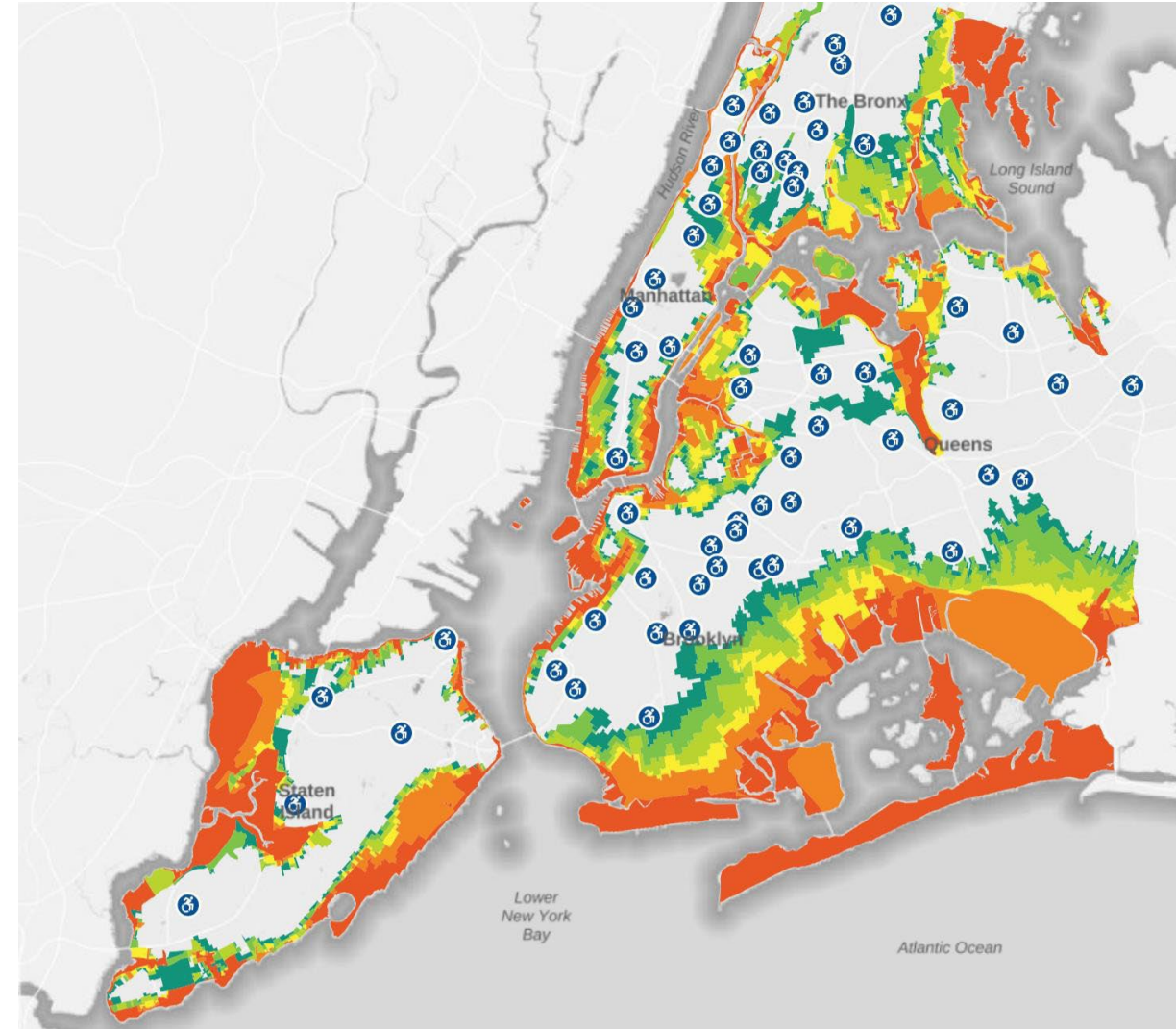
Pay attention **high tides**.

Monitor forecast
for rainfall
amounts **greater
than 1.5 inches
per hour**.



Know Your Evacuation Zone

- The best way to be prepared for the possibility of a hurricane evacuation is to know your evacuation zone and plan your destination and travel routes ahead of time.
- City officials will tell you when to evacuate through the media and direct warnings like Notify NYC.
- Evacuation is a last resort during a serious threat to public safety.



Sign Up for Notify NYC

Sign up for **Notify NYC** or download the app.

Notify NYC is the City's official source for information about emergencies.



Online Instructions

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Flood Kit

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Thank you for attending the DEP flood preparedness townhall. Use the video and manuals below to learn more about your new flood prevention supplies.

Flood Kit: How to Guide

NYC

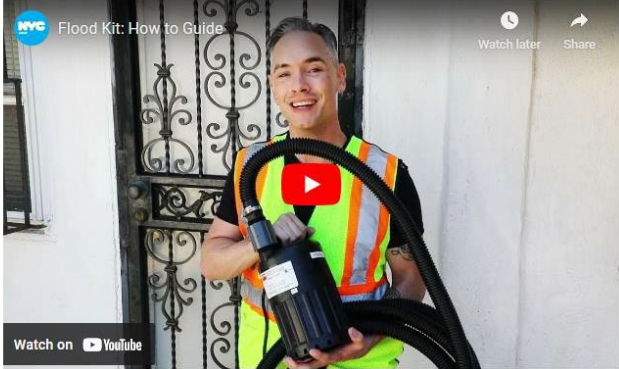
Flood Kit: How to Guide

Watch later

Share

Watch on

YouTube



Flood Kit Manual

Your flood kit includes:

1. **Flood Sensor:** Alerts you to flooding in your home
2. **Flood Barriers:** Keep flood water from entering your home
3. **Sump Pump:** Pumps flood water from your home
4. **1-inch Hose:** Directs the pumped flood water away from your home
5. **Coupling:** Connects the sump pump to the hose
6. **Rainfall Ready Brochure:** Tips for protecting your home



Download the Flood Kit Manual in your preferred language.

ENGLISH

ESPAÑOL (SPANISH)

العربية (ARABIC)

简体中文 (SIMPLIFIED CHINESE)

繁體中文 (TRADITIONAL CHINESE)

한국어 (KOREAN)

РУССКИЙ (RUSSIAN)

বাংলা (BENGALI)

FRANÇAIS (FRENCH)

POLSKI (POLISH)

אורו (URDU)

יידיש (YIDDISH)

Scan the QR Code:

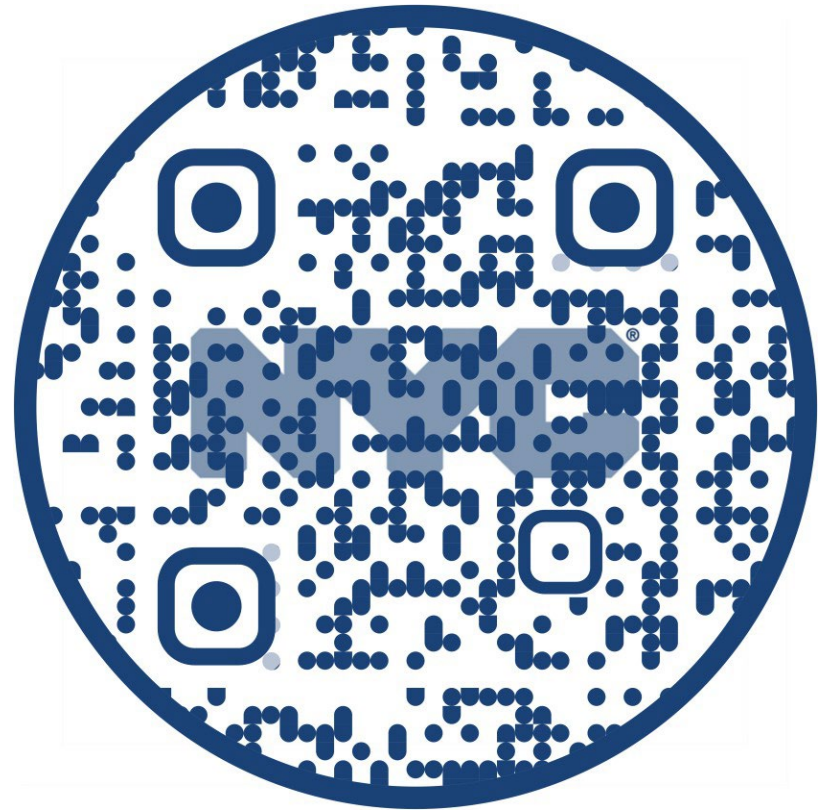


nyc.gov/dep/floodkit

Your Flood Preparedness Kit

- **Flood Sensor:** Alerts you to flooding in your home
- **Flood Barriers:** Keep flood water from entering your home
- **Sump Pump:** Pumps flood water from your home
- **1-inch Hose:** Directs the pumped flood water away from your home
- **Coupling:** Connects the sump pump to the hose
- **Rainfall Ready Brochure:** Tips for protecting your home

For more information and video instructions for use, go to **nyc.gov/dep/floodkit** or scan the **QR code**.



nyc.gov/dep/floodkit

Questions?



DEP is Here to Help

Call 311. All complaints go directly to DEP response teams on duty in your neighborhood.

Contact DEP Community Affairs with your 311 complaint number for follow-up.

DEP Community Affairs:
CommunityAffairs@dep.nyc.gov
718-595-3496

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Department of Environmental Protection Flickr



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