



Flooding in Keyport: Understanding & Next Steps

September 15, 2026



Overview

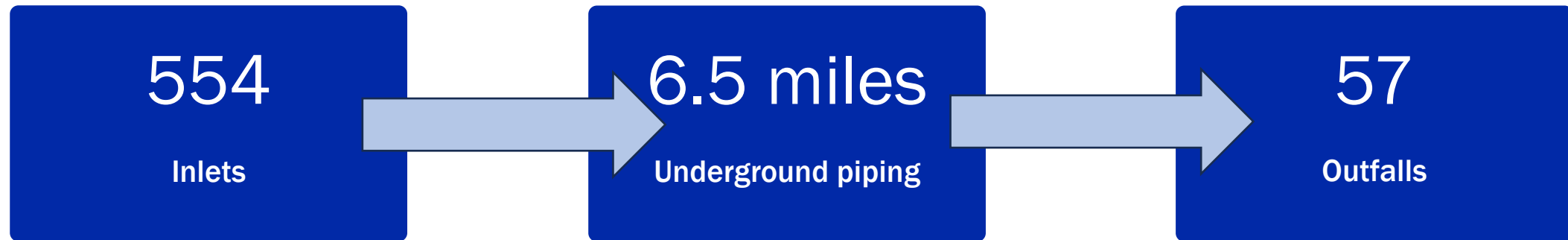
- How does the storm sewer system work?
- What types of flooding affect Keyport?
- Summer 2026 mini case study
- What is the Borough doing?
- Who are we working with?
- What are the next steps?

MS4 System Overview

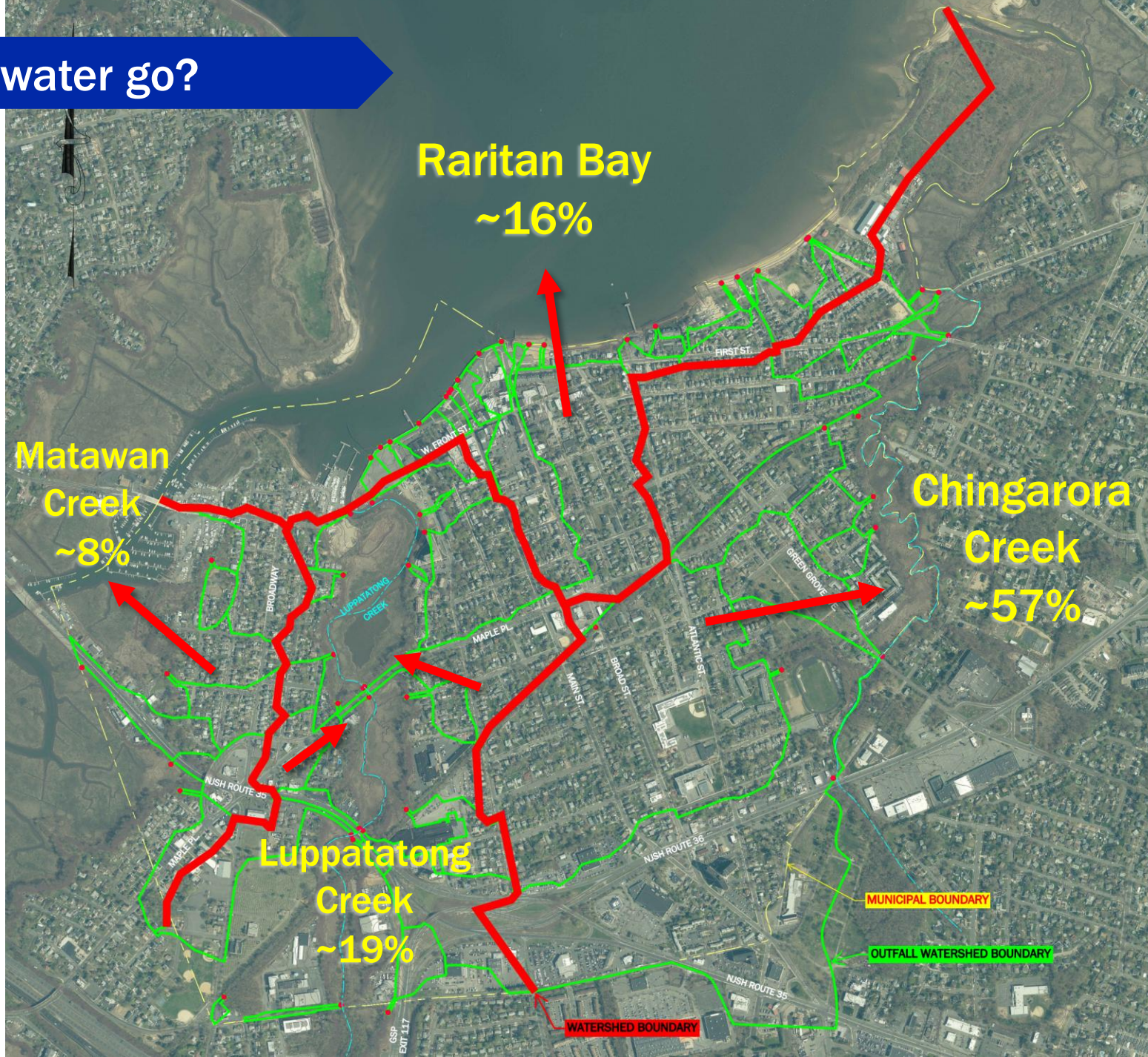
MS4 = **M**unicipal **S**eparate **S**torm **S**ewer **S**ystem

Not designed to handle all storms

Storm Sewer ≠ Sanitary Sewer ... but storms and rainfall do impact sanitary sewers



Where does the water go?



NOTE:

THIS MAP BASED ON PARCEL DATA FROM
MONMOUTH COUNTY GIS PARCEL DATA
DATED JUNE 21, 2021

STORMWATER LOCATIONS DATED 2023
PERFORMED BY CME ASSOCIATES DATED 2024.

EARLIER STORMWATER LOCATIONS BASED
ON KEYPORT BOROUGH MAP DATED 2015.

Coordinate System: NAD 1983 StatePlane New Jersey FIPS 2903 Feet
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 400,125.0000
False Northing: 0.0000
Central Meridian: -74.5000
Scale Factor: 0.9999
Latitude Of Origin: 38.8333
Units: Foot US

Legend

Drainage Conveyance

- Open Channel
- Pipe
- INLET
- OUTFALL
- DRAINAGE MANHOLE
- BOROUGH OF KEYPORT
- PARCELS
- TOPOGRAPHIC CONTOURS
- RIVER AND STREAM
- WATERBODY
- Keyport_Borough_Boundary

0 0.5 1 2



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Common Types of Flooding



Tidal Flooding

Caused by the normal rise and fall of tides, becoming pronounced during lunar cycles and due to sea level rise



Coastal Flooding (Storm Surge)

Coastal storm flooding and inundation in FEMA-mapped coastal flood hazard areas.



Pluvial (Surface Water) Flooding

Rainfall intensity exceeds storm sewer design capacity, typical during high-intensity, short-duration storms



Fluvial (Riverine) Flooding

Water overtopping stream banks
(closely connected to pluvial flooding events in Keyport)



Related Impact: Sanitary Sewer I&I

Inflow & infiltration overwhelms the sanitary system
infrastructure during flood and rain events

Tidal Flooding



Low-lying areas repeatedly affected



Tidal surge from unchecked, submerged outfalls



Compound effects during rain events
Water cannot drain until tide recedes

Tidal Flooding

Flooding that recurs on a predictable tidal cycle: high water backing up through outfalls and inlets even without significant rainfall.

TYPICAL CHARACTERISTICS

- Occurs during astronomical high tides, often worsened by onshore wind
- Concentrated in low-lying areas near tidal waters
- Can occur on clear, dry days
- Linked to outfall and pipe elevations relative to mean high water
- Number of flood days increasing with predicted sea level rise
- **Compound effect:** During rain events, water cannot drain through submerged outfalls until tide drops below outfall

FREQUENTLY REPORTED LOCATIONS

- Beers Street
- American Legion Drive
- Less Frequent: W. Front Street bridge into Aberdeen (road elevated)
- Less Frequent: Broadway bridge into Union Beach (road elevated)

MITIGATION EFFORTS

- Check valves where feasible
- Roadway elevation where feasible

Coastal Flooding



NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0029G

FIRM

FLOOD INSURANCE RATE MAP

MONMOUTH COUNTY,
NEW JERSEY
(ALL JURISDICTIONS)

PANEL 29 OF 457

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ABERDEEN, TOWNSHIP OF	340312	0029	G
HAZLET, TOWNSHIP OF	340258	0029	G
KEYPORT, BOROUGH OF	340304	0029	G
UNION BEACH, BOROUGH OF	340331	0029	G

REVISED PRELIMINARY
JANUARY 30, 2015

NOTE:

THIS MAP INCLUDES BOUNDARIES OF THE COASTAL BARRIER RESOURCES SYSTEM ESTABLISHED UNDER THE COASTAL BARRIER RESOURCES ACT OF 1982 AND/OR SUBSEQUENT ENABLING LEGISLATION.

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
34025C0029G

MAP REVISED

Federal Emergency Management Agency



Coastal Flooding

Inundation from hurricanes and nor'easters within FEMA-mapped Flood Hazard Areas

TYPICAL CHARACTERISTICS

- Storm surge and wave action during coastal storm events
- Concentrated within FEMA mapped 100-year (1% chance) Flood Hazard Areas
- Substantial damage to structures within flood zones from waves action
- Severity driven by a structure's elevation relative to Base Flood Elevation

MITIGATION EFFORTS

- Elevation
- Restrictions on development within FHA's

FEMA MAPPED FHA's

- Raritan Bay waterfront
 - Waterfront Park (Zone VE16) = **8 feet ± above promenade**
- Luppataong Creek
 - Maple Place culvert (Zone AE13) = **1.5 feet ± above road**
- Chingarora Creek
 - Green Grove Ave Bridge (Zone AE13) = **5 feet ± above road**
- Matawan Creek
 - Up the Creek (Zone VE15) = **12 feet ± above gravel parking lot**

Pluvial (Surface Water) Flooding

August 27, 2026

2.83 inches of rain in 90 minutes



Broad Street



Atlantic Street



Main Street

Pluvial (Surface Water) Flooding

Flash flooding caused by rainfall intensities that exceed the capacity of the municipal storm sewer system
Type of flooding that impacted Keyport during spring and summer 2026 storms

TYPICAL CHARACTERISTICS

- Short, intense cloudburst-type events increasingly common in recent storm records
- Shows up at low points along roads and properties
- Flooding tends to recede within hours once the storm passes
- May require significant capital investment to replace and upsize pipes
- **Compound effects:** Intensified in drainage areas with backwater conditions caused by low outfall elevations compared Bay and creek water surface elevations, high tides

FREQUENTLY REPORTED LOCATIONS

- Division Street & East Front Street (natural low point)
- Waverly Street & Third Street
- Main Street, Broad Street & Atlantic Street
- Route 35 and Route 36

MITIGATION EFFORTS

- Maintenance
- Increased system capacity where feasible

Fluvial (Riverine) Flooding

Streams and rivers overtopping as a result of runoff from intense storm events

TYPICAL CHARACTERISTICS

- Flooded roads at bridges and culverts
- **Compound effects:** Creeks are tidally controlled, so flooding is intensified during high tide cycles

FREQUENTLY REPORTED LOCATIONS

- Green Grove Avenue at Chingarora Creek
- Route 36 & Florence Avenue at Chingarora Creek
- Route 35 at Luppataong Creek
- Clark Street at Luppataong Creek (planned for ~2030)



MITIGATION EFFORTS

- Stream cleaning
- Roadway elevation where feasible

Sanitary Sewer Surcharges (I&I)

Inflow and infiltration (I&I): stormwater and groundwater entering the sanitary sewer system through defects, and deteriorated structures

TYPICAL CHARACTERISTICS

- Surcharging or backups occur during or shortly after intense rainfall
- Often traced to cracked pipe joints, deteriorated manholes, or illegal stormwater cross-connections (e.g., sump pumps, roof leaders)
- Can result in sewage backups into basements
- More likely concentrated in older sections of sanitary collection systems
- Financial impact – rainwater ends up being sent to BRSA for treatment along with sewage

FREQUENTLY REPORTED LOCATIONS

- I&I – system wide
- Surcharges – Lower Atlantic Street

IMPROVEMENTS

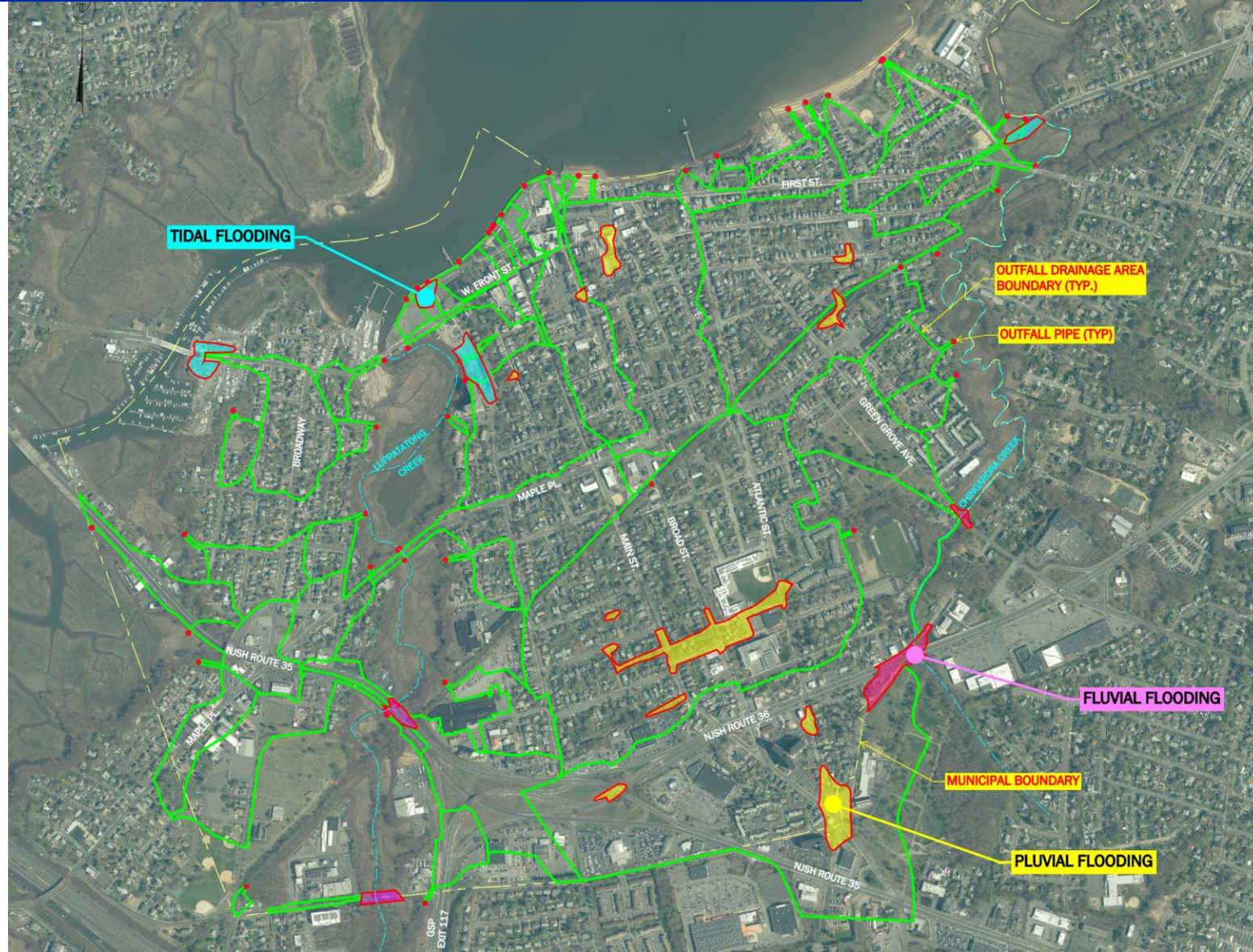
- Pipe lining and sewer renewal programs
- Targeted sewer capacity assessments
- Watertight manhole covers at flood-prone locations

Recurring Tidal, Pluvial & Fluvial Flooding

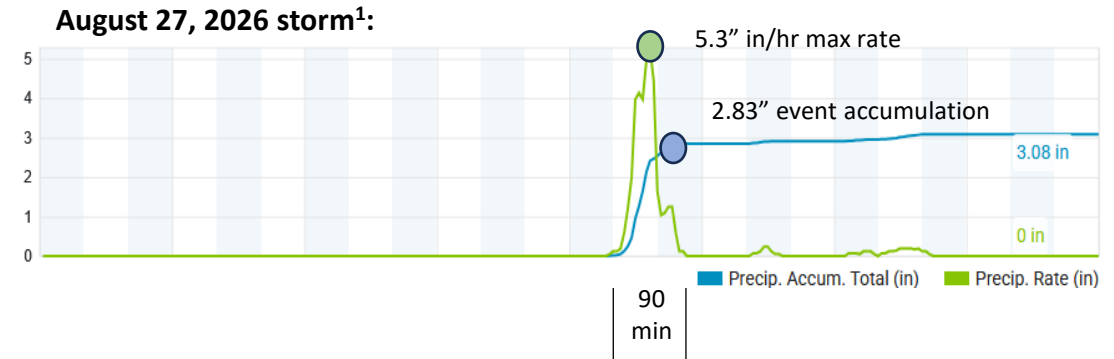
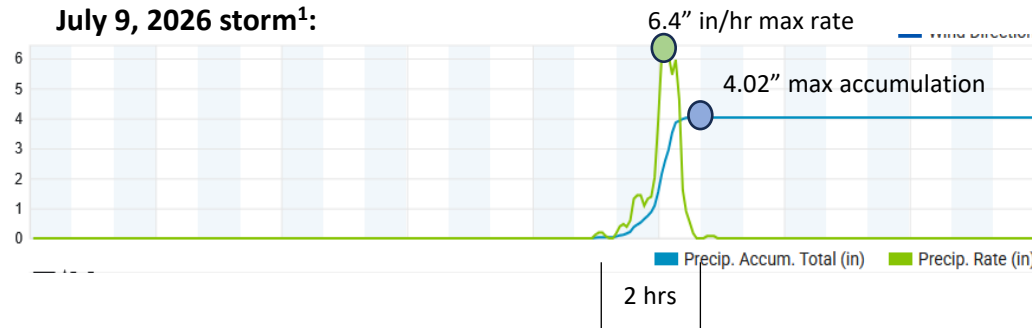


Recurring Tidal, Pluvial & Fluvial Flooding

- Green lines denote sub-drainage areas to outfalls
- Pluvial flooding generally concentrated within larger drainage areas
- Chingarora Creek watershed most impacted by flooding
- Storm sewer capacity should be analyzed to determine the extent to which flooding depth and frequency can be reduced



Recent Storm Case Studies



- Warmer air holds more water vapor = more rain available to fall
- Cloudburst storms overwhelm even properly designed systems. Significant events becoming more frequent!
 - July 9th storm: 4.02" of rain in 2 hours [Equivalent of a 100-to-200-year storm event – 0.5% to 1% annual chance]²
 - August 27th storm: 2.83" of rain in 90 minutes [Equivalent of a 25-year storm event – 4% annual chance]²
- 2024: NJDEP rainfall data adjusted for climate trends and rainfall intensity – up to a 26% projected increase for Monmouth County through 2100
- Effects compounded by rising sea level forecasts at tidally influenced outfalls
- July/August storms: Main/Atlantic/Broad drainage area generated a peak of ~175 cubic feet of water per second (cfs) – **pipes in that system can only handle about 60 cfs**

For extreme events, eliminating flooding may not be technically or economically feasible. Goals should be framed around reducing frequency and severity as practicable.

What has the Borough Done?

Spring – Summer 2026:

- Reporting system launched
- DPW: High impact plan for targeted drain inspections and cleaning ahead of storms
- DPW: Stepped up street sweeping frequency
- Chingarora Creek inspection – potential blockages identified
- Funding: met with USDA & NJ Infrastructure Bank
- Engaging partners:
 - Hazlet Twp: Chingarora Creek maintenance
 - County: Henry Hudson Trail ditch maintenance and County culverts
 - NJDOT: Route 36/Florence Ave culvert maintenance

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WATERBODY

INSPECT AND CLEAN STRUCTURE
AHEAD OF FORECASTED STORM

0 0.1 0.2 0.3

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What's Next?

2026 into 2027:

1. Ongoing MS4 compliance, storm sewer CCTV cleaning, and inspections
2. Potential jet-vac truck shared service with Freehold Twp.
3. Continue engaging regional partners (Hazlet, County, NJDOT)
4. USDA Rural Development Predevelopment Planning Grant (PPG):
 - 75% grant (up to \$60K) for quantitative analysis of storm sewer system
 - Focus on pluvial flooding areas (Chingarora Creek watershed)
 - Generate engineering and environmental reports for state/federal grants and financing

What's Next?

2027 and beyond:

1. USDA PPG to identify and plan for specific stormwater improvements
2. NJ Infrastructure Bank Storm Sewer Reuse and Overflow (OSG):
 - \$2M grant available for stormwater projects
3. USDA Rural Development Water & Waste Disposal Loan & Grant Program:
 - Up to 45% grant and low-interest financing
4. Monitor additional funding initiatives for long-term solutions
 - Proposed Assembly Bill A2273 to support regional stormwater projects

How Residents Can Help

- Continue reporting issues to ksomerville@keyportonline.com

40+

Total reports logged

Since May 2026

20+

Distinct locations

- Don't blow yard debris or litter into streets
- Report clogged storm drains to DPW
- Rain barrels and low impact development to reduce runoff on a local scale
- Know your FEMA flood zone (www.msc.fema.gov)
- Never drive through standing water

In Conclusion

- Keyport faces multiple forms of flooding – all interconnected
- Storms and rainfall intensities becoming more extreme
- Older system pushed beyond limits and natural topography play role
- No silver bullet to address 100% of flooding from extreme events
- Short term: Focusing on improved SOP's, maintenance, and grants to fund quantitative assessment in known areas of concern
- Longer term: Capital projects to reduce frequency and severity of recurring flooding through local and regional improvements