



# Comprehensive Flood Management Plan Phase 1 Virtual Community Forum

October 20, 2022



# Agenda



- Introductions & Context
- Consultant Presentation
- Q&A
- Breakout Groups *\*as time and numbers allow\**
- Wrap-up
- Adjourn

# Introduction & Context





# What is the Comprehensive Flood Management Plan? Why do we need it?



- Recurrent problem
- Impacts: nuisance flooding > significant damage > loss of life
- Projected to worsen due to climate change and urban development



*Loss of life and severe property impacts, Rockville*



*Road closure, Sligo Creek Parkway*



*Severe property impacts, Potomac*



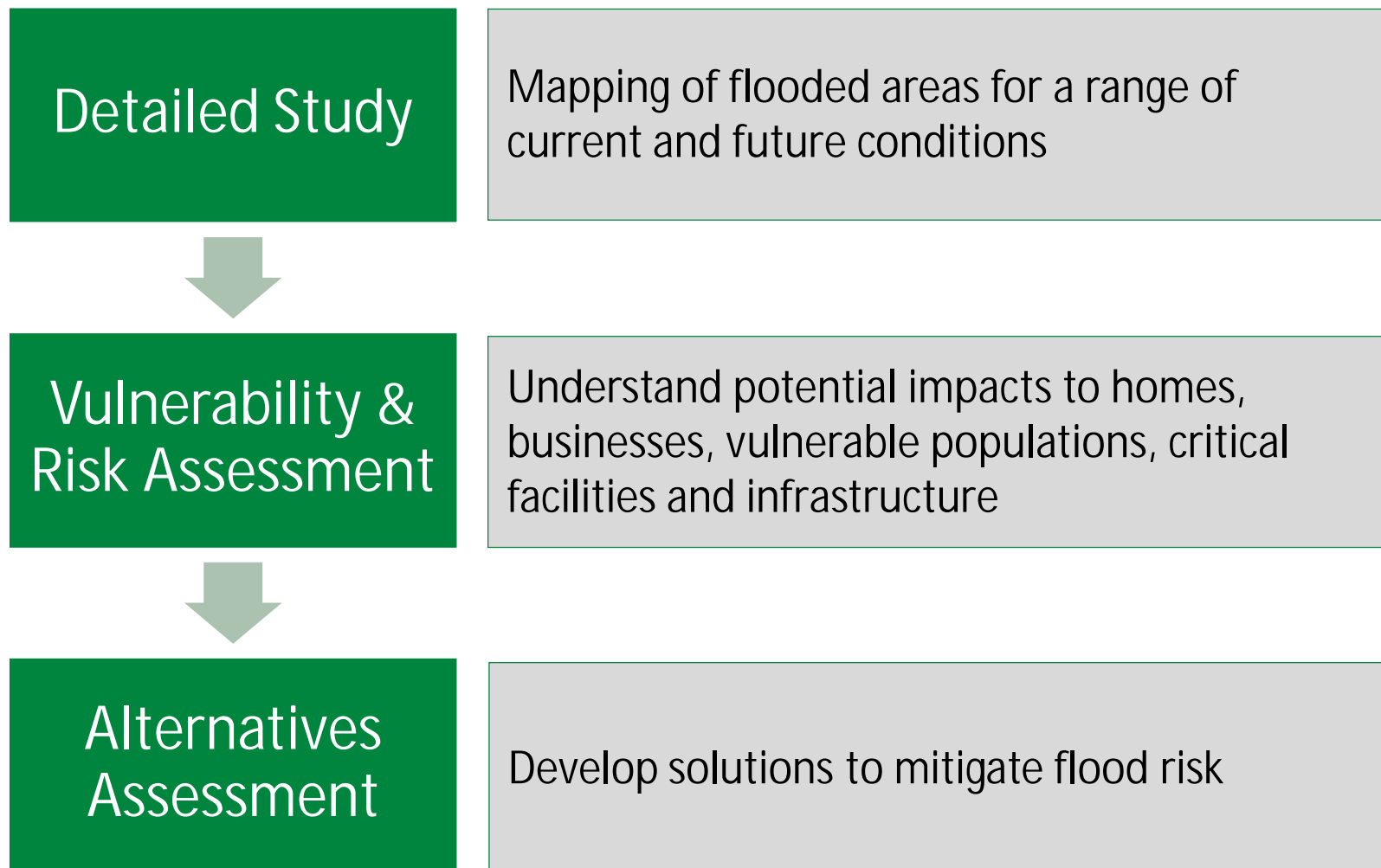
*Local road and property impacts, Oakmont*

*Development of a Comprehensive Flood Management Plan will provide the County with solutions to mitigate flood risk...*

# What is the Comprehensive Flood Management Plan?



The plan will develop solutions to flooding based on an understanding of current and future flood risk



# The County's approach to Comprehensive Flood Management



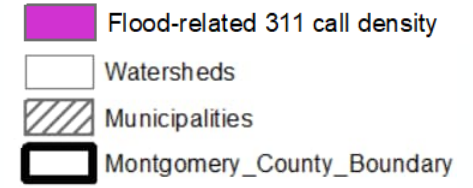
- Phase 1 (9 months): Understand current organizational approach to flooding and identify recommended changes
- Phase 2 (2-3 years): Detailed studies including risk assessment and alternatives analysis
- Phase 3 (varies): Implementation of alternatives

*Further community engagement is anticipated at all phases of this process.*



*Durations dependent on data availability, funding*

- ### Legend



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# Understanding Stormwater and Flooding





# What is Stormwater?

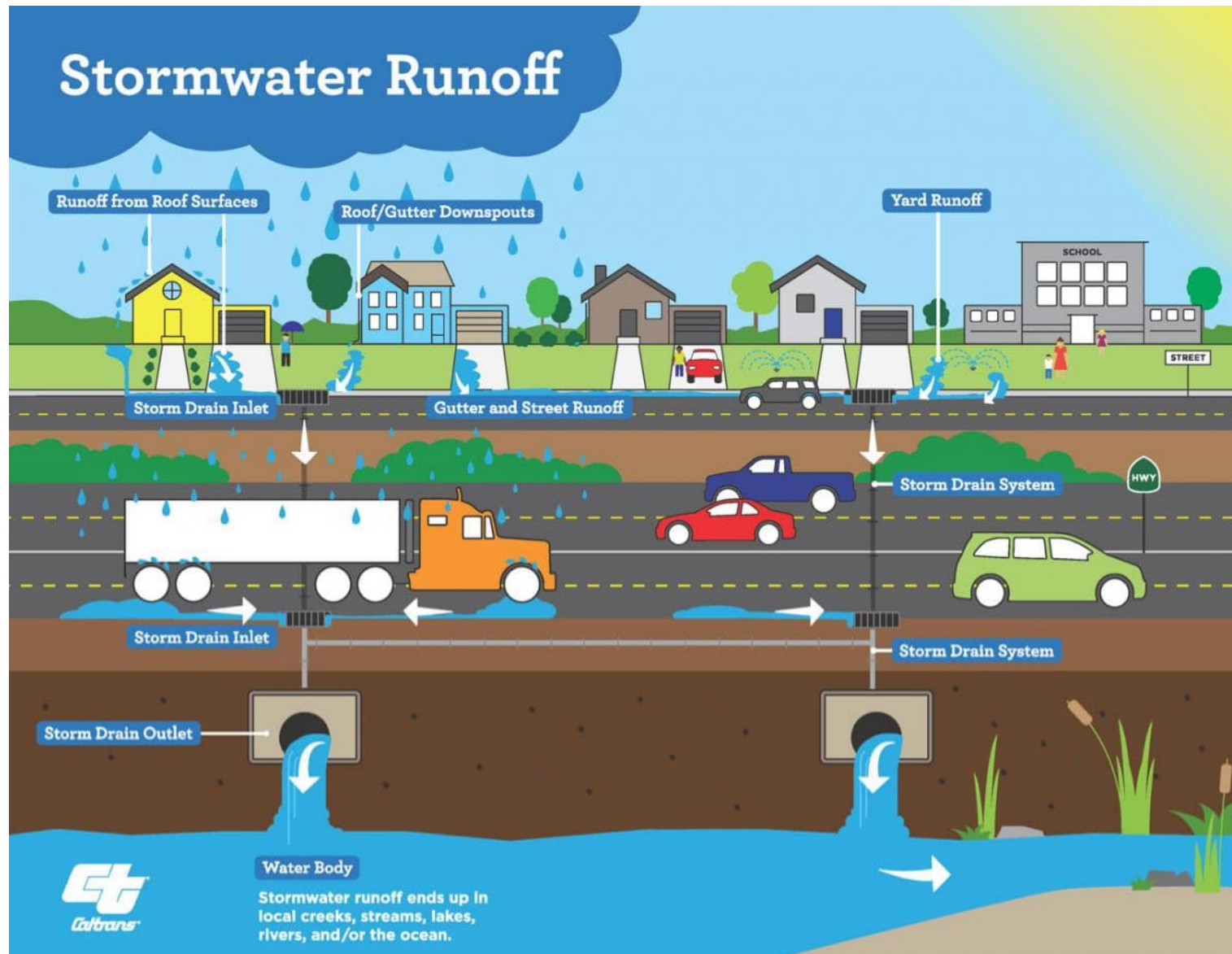


Image Source: California Department of Transportation (CalTrans)

# Flooding happens in different ways....



## Precipitation – Driven Flooding

### Pluvial / Urban

Smaller storms exceed capacity of local drainage



Localized flooding

### Riverine

Larger storms overtop stream/river channels



Regional flooding

A high groundwater table (driven by precipitation, riverine and/or coastal influence) can also cause flooding

# What is a Floodplain?



A floodplain is an area adjacent to a stream or river that is expected to flood when water levels rise

- FEMA definition: area inundated by 1% annual occurrence storm (100-year storm)
- County definition: area inundated by 100-year storm for any stream channel with a drainage area of 30 acres or more

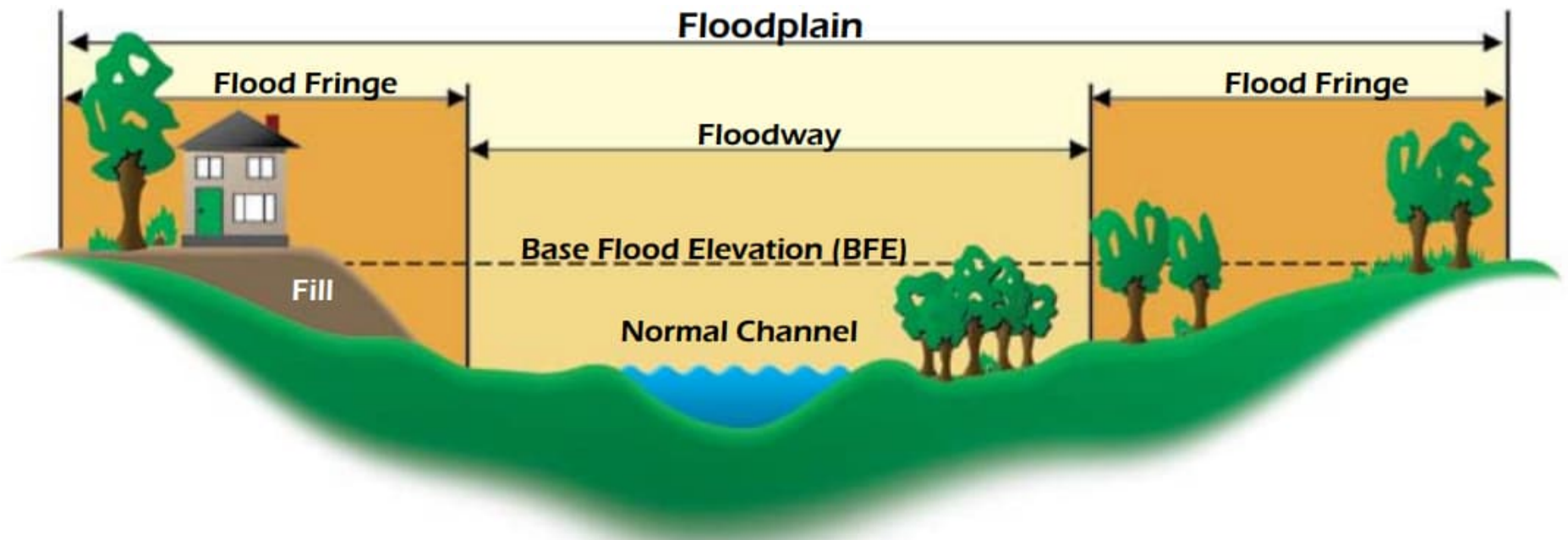


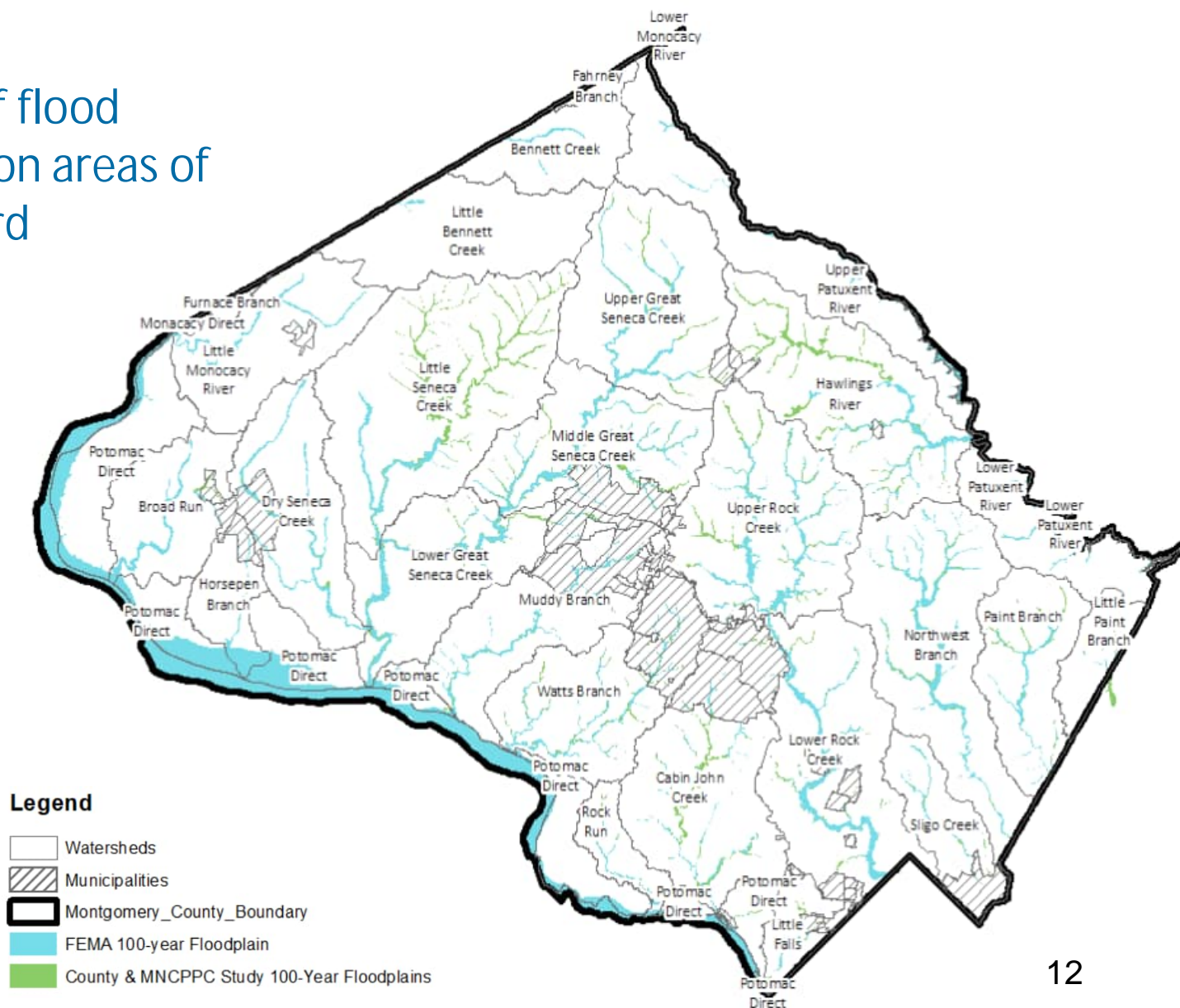
Image Source: Oregon NFIP Guidebook 5<sup>th</sup> Edition (FEMA Region 10, 2009)



# What information does the County currently have on flood risk areas?



Existing mapping of flood hazards is focused on areas of riverine flood hazard

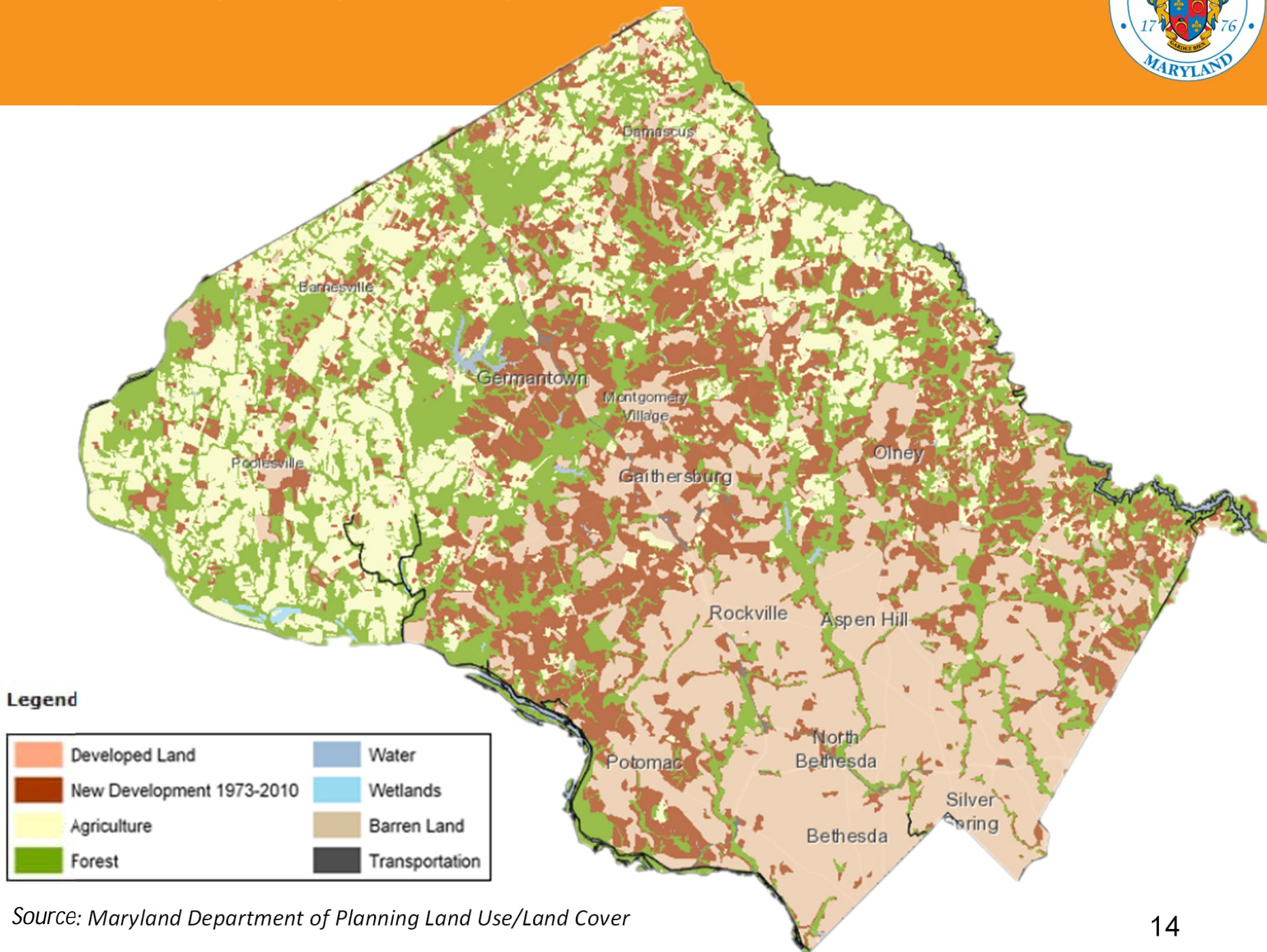


# Why is flood risk changing?





# Increased Urbanization



## Legend

Developed Land	Water
New Development 1973-2010	Wetlands
Agriculture	Barren Land
Forest	Transportation

Source: Maryland Department of Planning Land Use/Land Cover

# Aging Infrastructure



Image sources: MoCo Show, Washington Post

## TRANSPORTATION

### I-270 sinkhole work could last weeks during drainage pipe repairs

By Justin George

June 21, 2022 at 5:45 p.m. EDT

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Maryam Shahzad  
@maryam\_mcm · Follow



The sinkhole on I-270 from the Muddy Branch Road overpass. @mymcmmedia

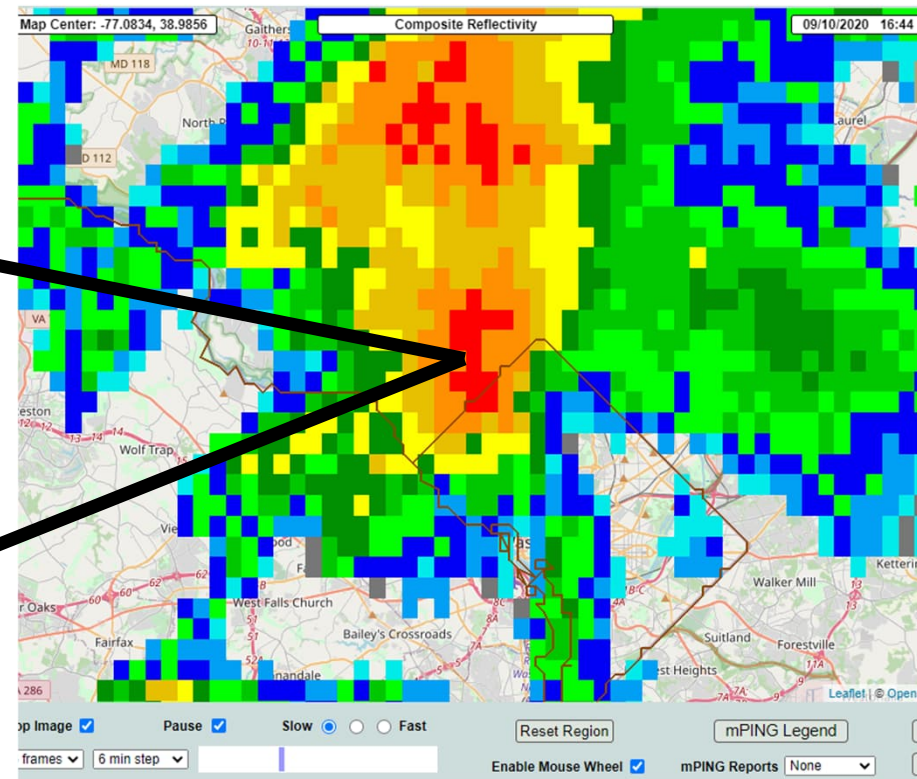




# Climate Change



*High-intensity events exceeding storm drain inlet capacity result in localized flooding impacts*



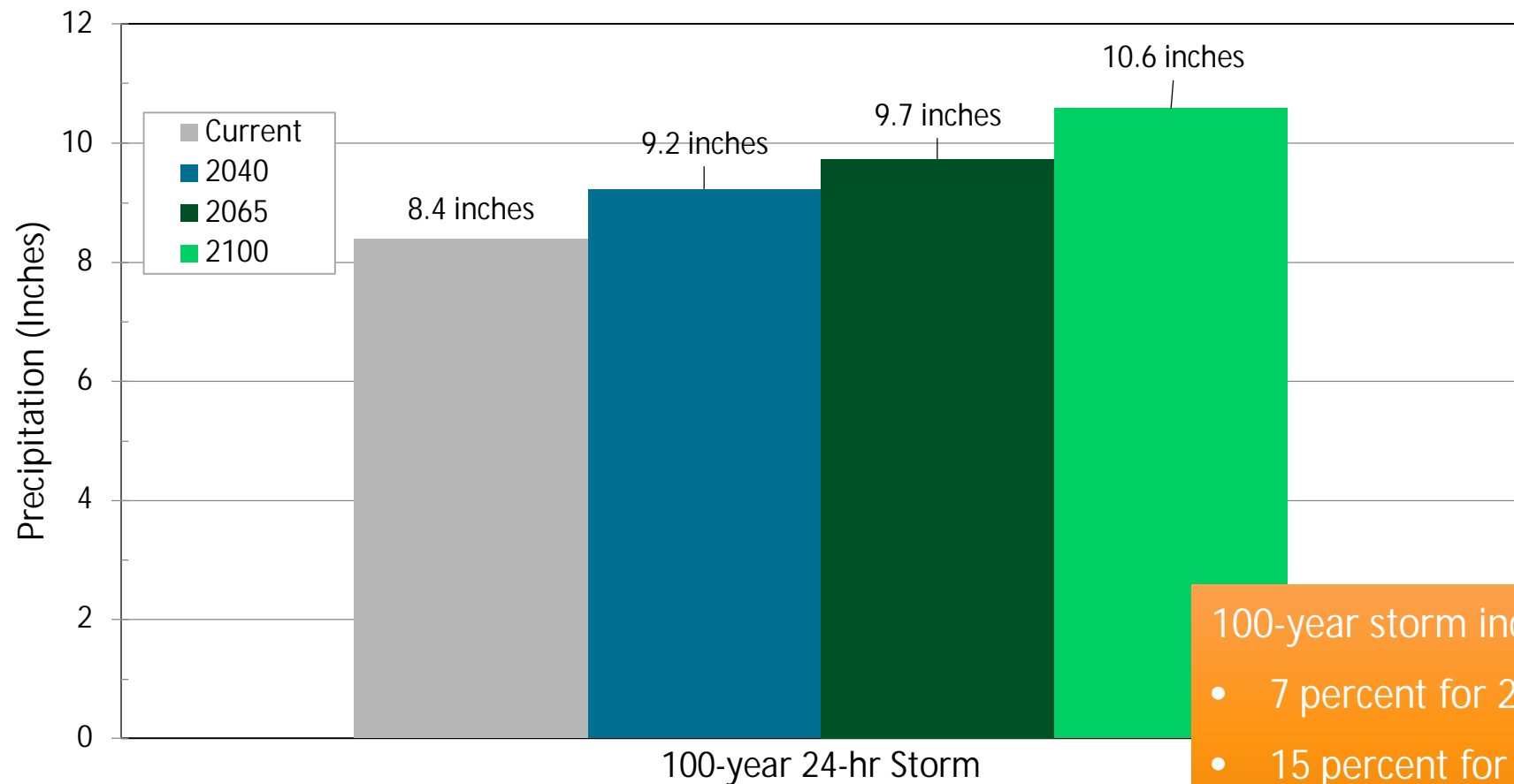
*Weather radar showing cumulative 3-hour rainfall for the September 10, 2020 storm cell—a high-intensity short-duration event, with rain intensities as high as 10 inches per hour for 1 to 3 hours in some areas.*

*Source: NOAA Multi-Radar Multi-Sensor (MRMS) Operational Product Viewer*

# Climate Change



Rainfall depth (inches) for the 1% annual recurrence (100-year) 24-hr storm



100-year storm increases:

- 7 percent for 2040
- 15 percent for 2065
- 23 percent for 2100

Source: Rainfall projections for WSSC Water (Jacobs, 2019)

How is flood risk in the County expected to change?

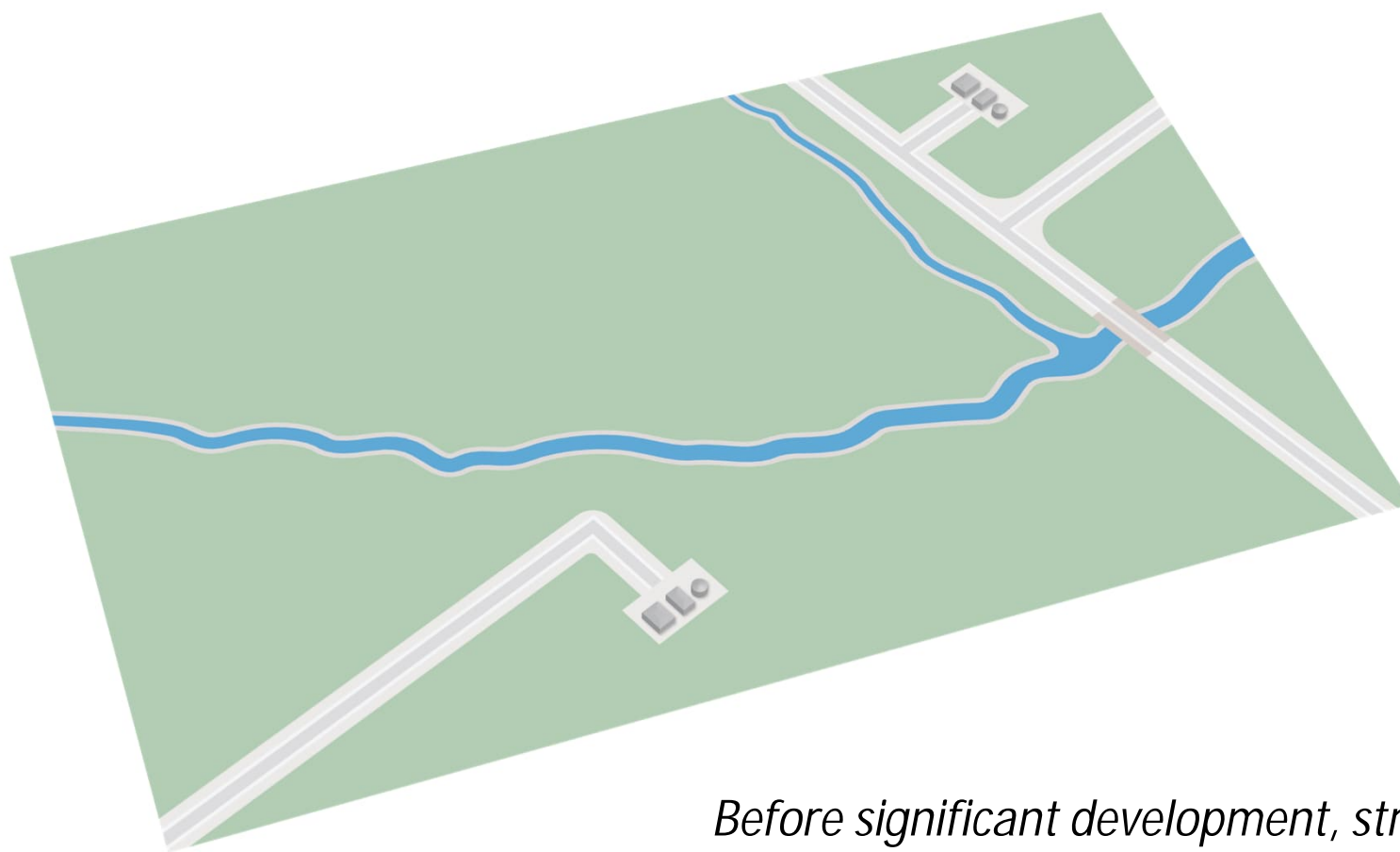




# How is flood risk in the County expected to change?



Pre-development

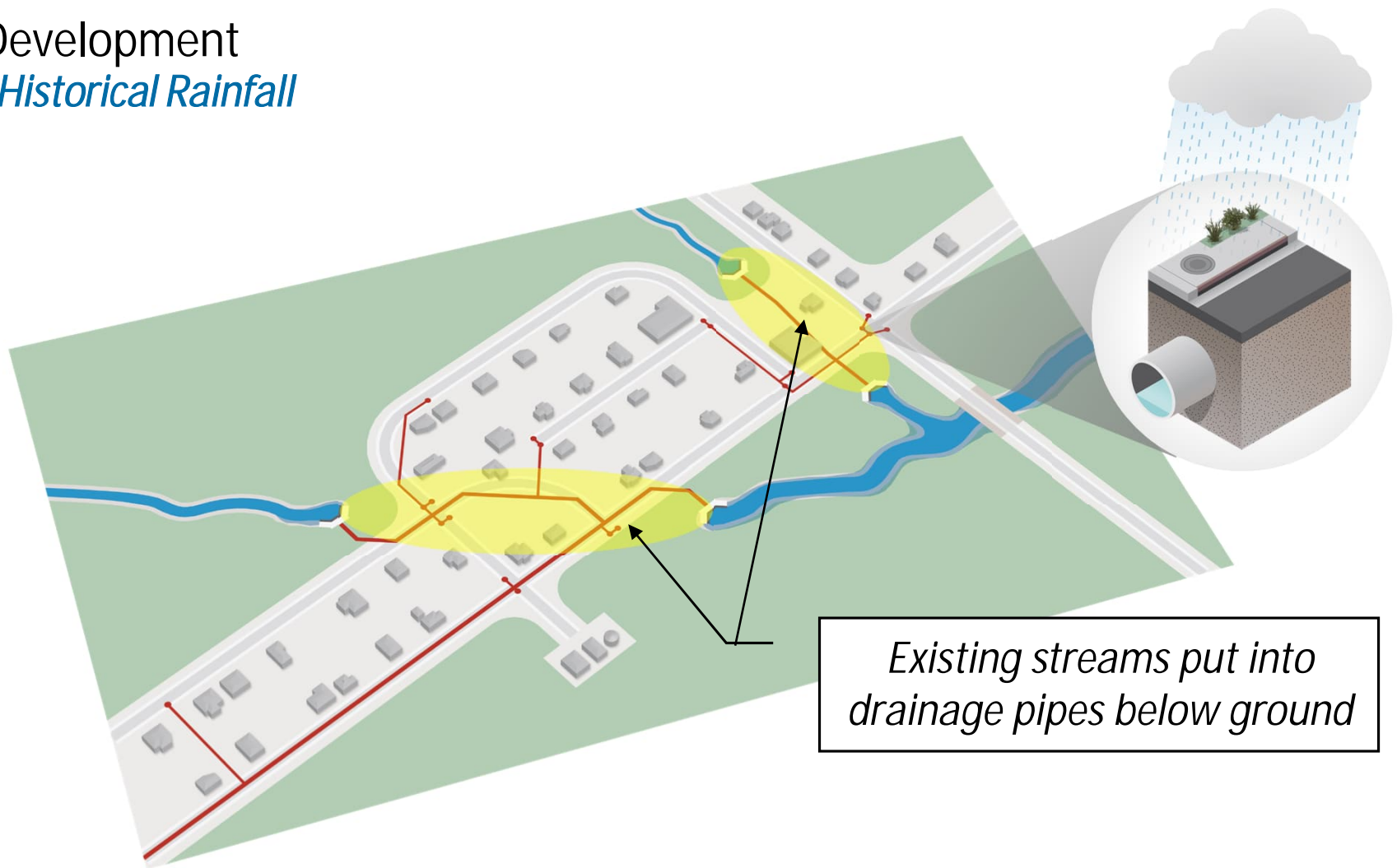


*Before significant development, stream channels remain largely intact*

# How is flood risk in the County expected to change?



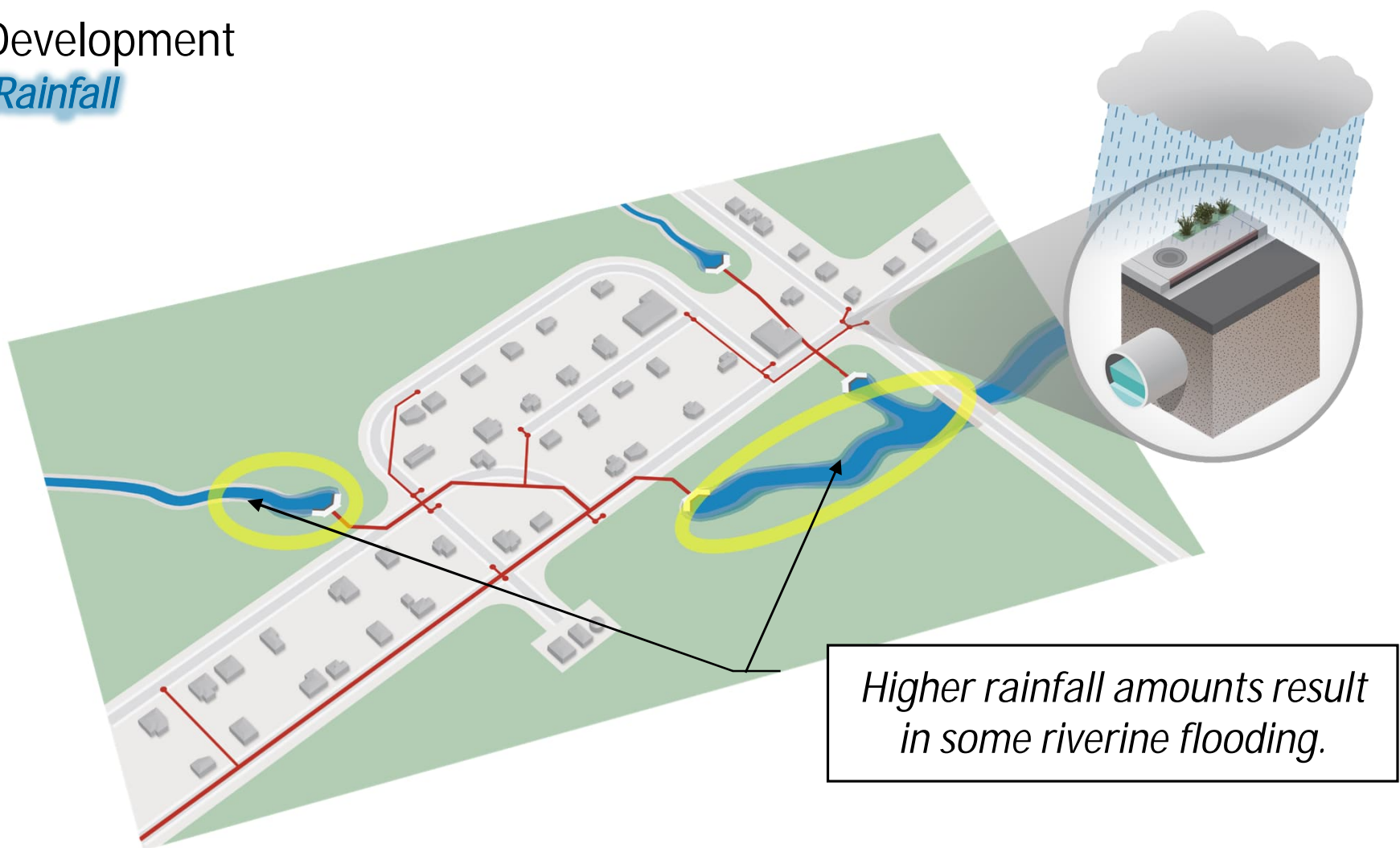
Early Development  
*Typical Historical Rainfall*



# How is flood risk in the County expected to change?



Early Development  
*Heavy Rainfall*

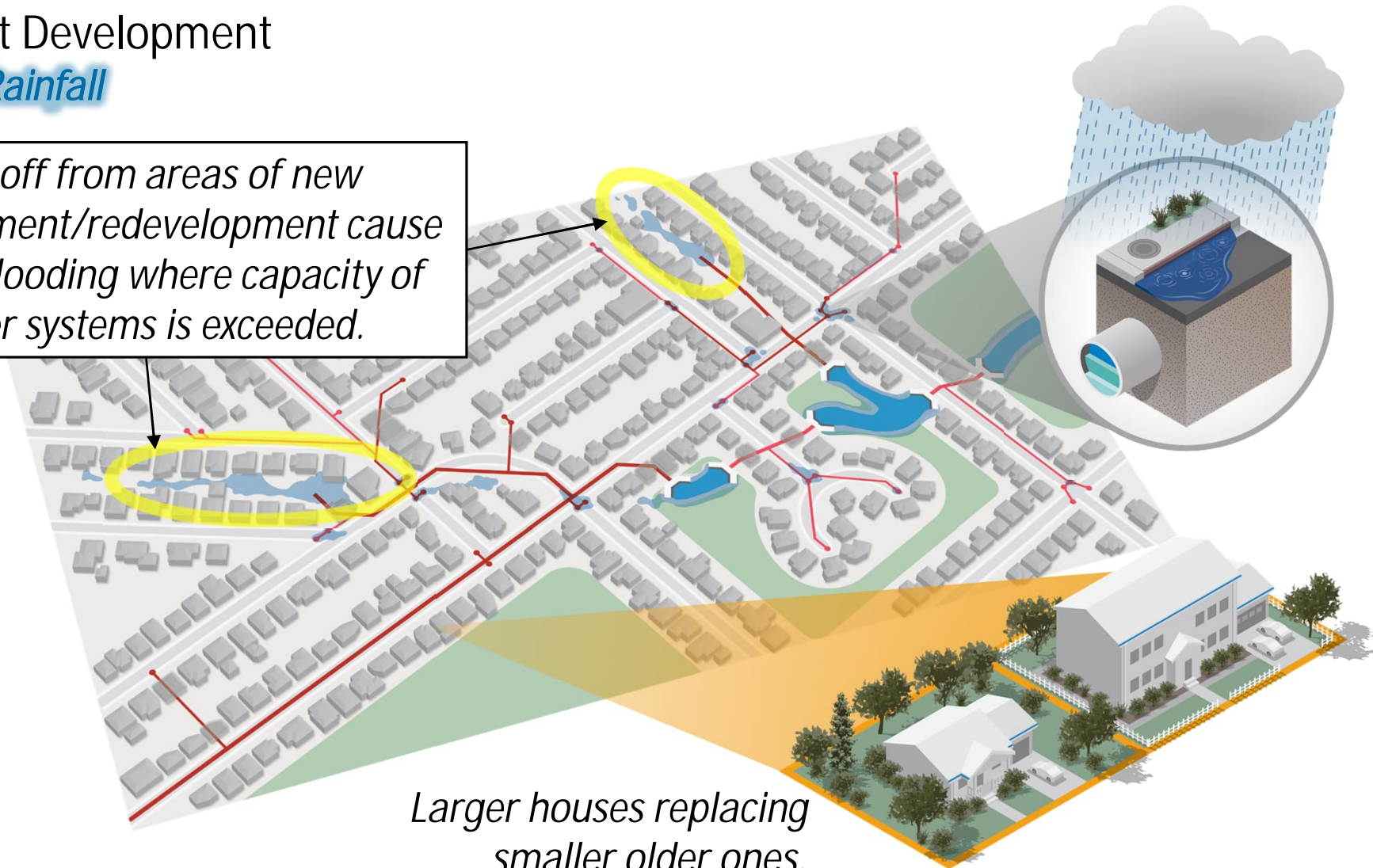


# How is flood risk in the County expected to change?



## Current Development *Heavy Rainfall*

*Runoff from areas of new development/redevelopment cause urban flooding where capacity of older systems is exceeded.*



*Larger houses replacing smaller older ones.*

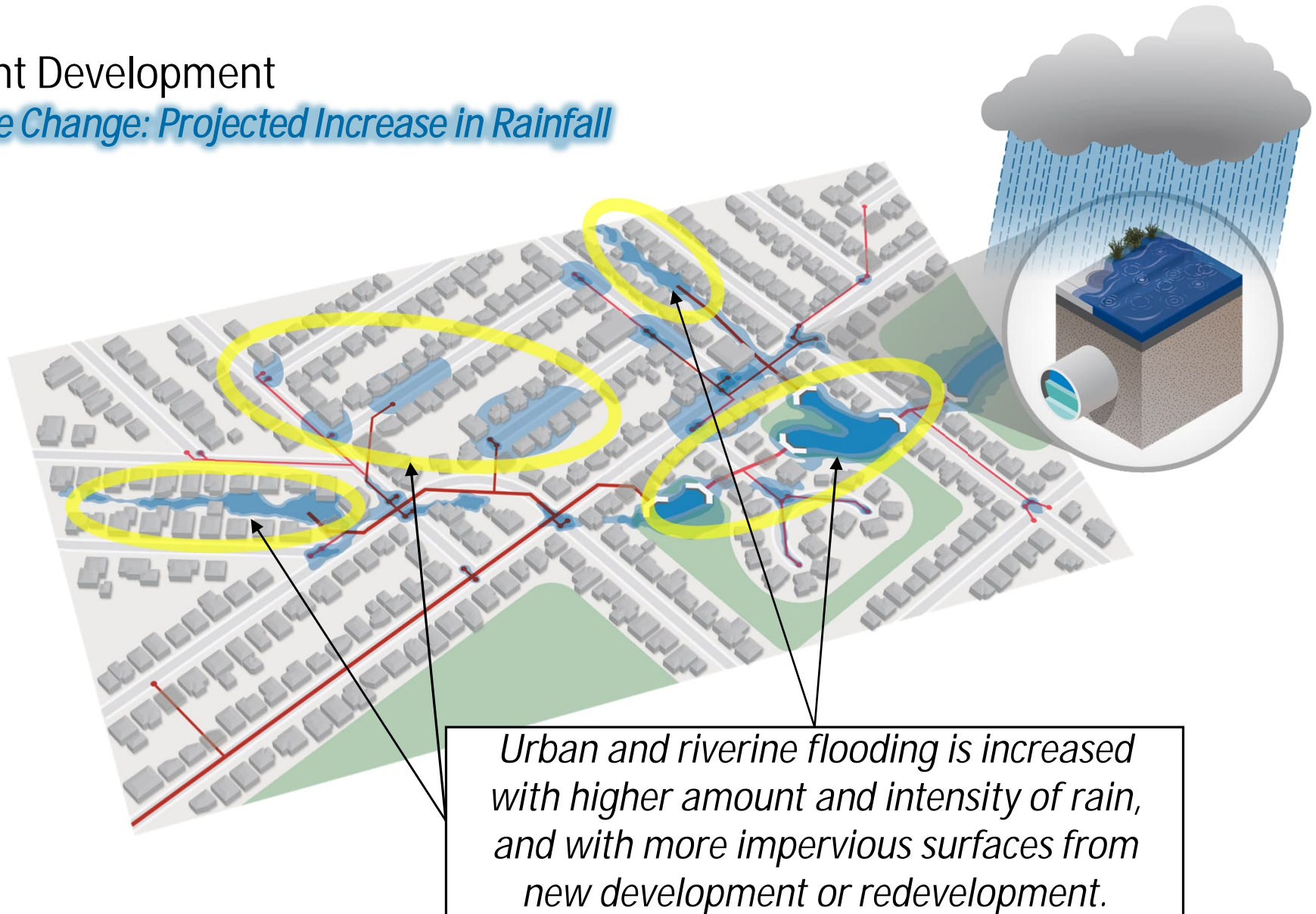


# How is flood risk in the County expected to change?



Current Development

*Climate Change: Projected Increase in Rainfall*





# The Comprehensive Flood Management Plan will expand our understanding of flood risk

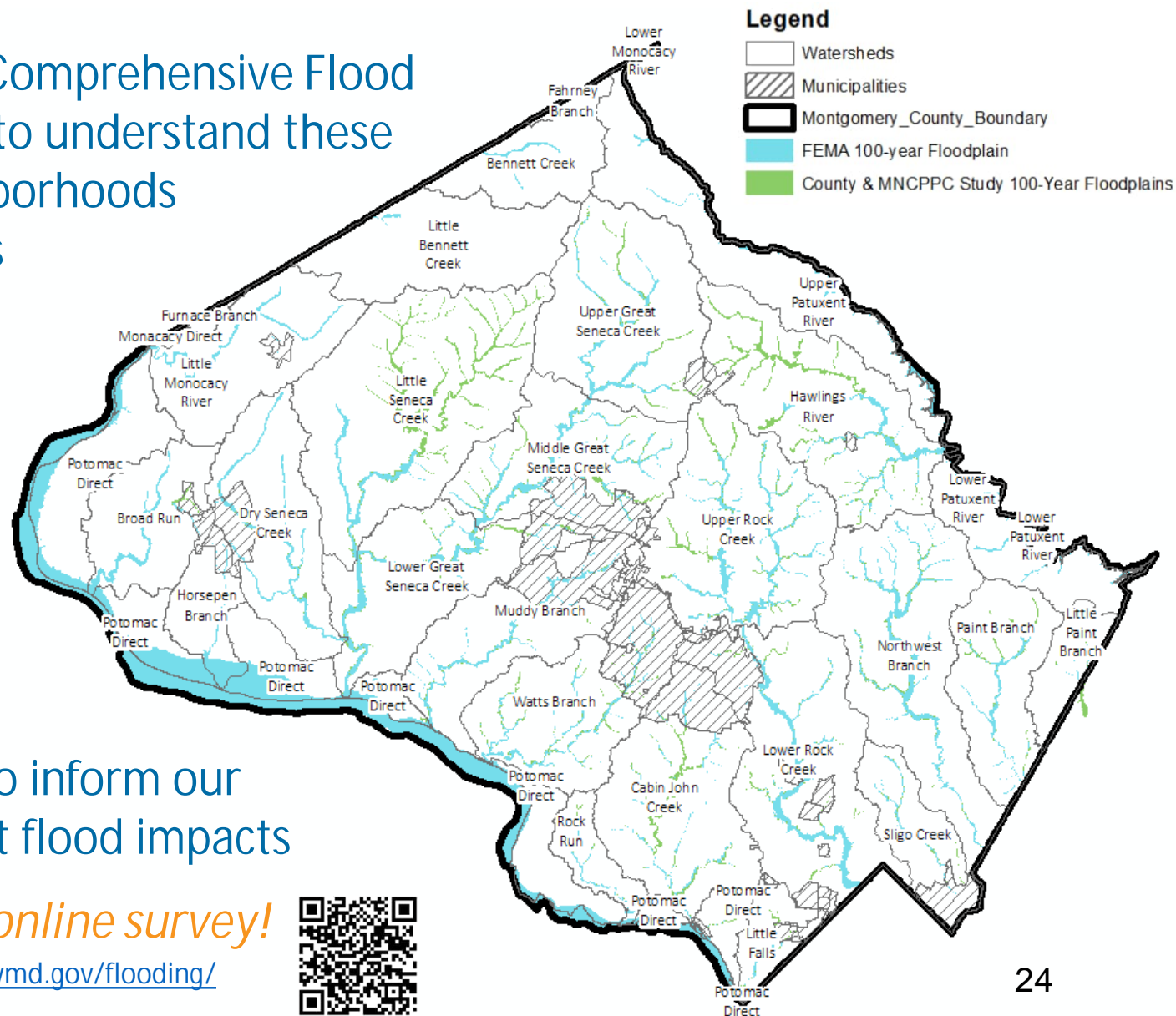


The objective of the Comprehensive Flood Management Plan is to understand these risks in County neighborhoods and identify solutions

Your help is needed to inform our understanding of past flood impacts

*Please complete the online survey!*

<https://www.montgomerycountymd.gov/flooding/>



# Summary



# Summary



- Flood risk is anticipated to worsen and affect more residents in the future.
- Addressing flood risk is a complex problem that involves a variety of infrastructure issues.
- This is the beginning of the process to address flooding on a County-wide basis.
- Please stay connected via the new DEP flooding website to learn about future engagement opportunities.

The Comprehensive Flood Management Plan will provide the County with a plan to address these issues in a technically sound and equitable manner.

*Please complete the online survey and share with others!*

<https://www.montgomerycountymd.gov/flooding/>



# Questions?





# Breakout Sessions



# Breakout Group Questions



1. Do you have any questions on the presentation that you would like to ask?
2. What would be the most useful outcome of this effort from your perspective?
3. Have you been impacted by flooding?
4. Where and when have you been impacted?
5. How would you characterize the impact? (health and safety, economic, nuisance, etc.)

*Please complete the online survey and share with others!*

<https://www.montgomerycountymd.gov/flooding/>



# Wrap Up & Next Steps



# Wrap Up



- Breakout Session Report-out



# Next Steps



- What are the next steps?
  - County agencies are working toward a list of recommendations for moving forward that will touch on governance, resources, funding, additional studies, etc.
- How will information gathered today be used?
  - Virtual forum and survey results will be used to more accurately/fully characterize past flood impacts
  - This understanding will be helpful in prioritizing future work

# Closing – Actions!



Please complete the online survey  
and share with others!

<https://survey123.arcgis.com/share/5b44d52148be4fbc7ec4923d8736547>

Response deadline: ~~October 28, 2022~~ (extended to 2023)

Sign up for information and future opportunities to  
be involved:

<https://www.montgomerycountymd.gov/flooding/>

Sign up to receive emergency flooding alerts via  
AlertMontgomery:

<https://member.everbridge.net/1332612387832009/login>

View available flood risk mapping:

<https://mdfloodmaps.net/map/>



# Thank you!

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