RiskMAP
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Flood Risk Review (FRR) Meeting

Carroll County, Maryland

November 17, 2023

FEMA

Agenda

- Welcome and Introductions
- Where We Are - Draft Maps
- Flood Study Update
- Using Flood Risk Data to Reduce Risk
- Map Changes
- Discussion

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Welcome and Introductions

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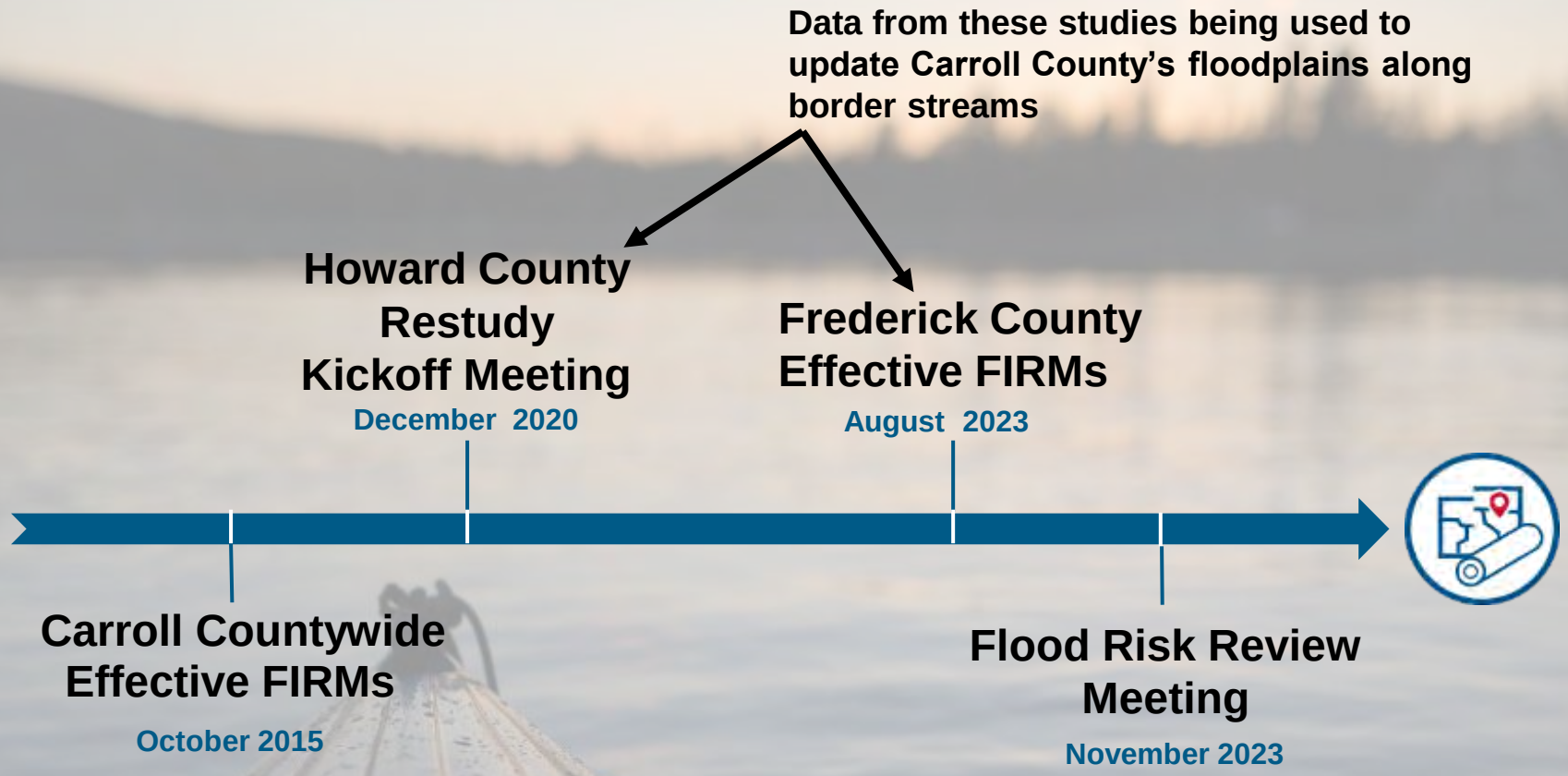
Where We Are - Draft Maps

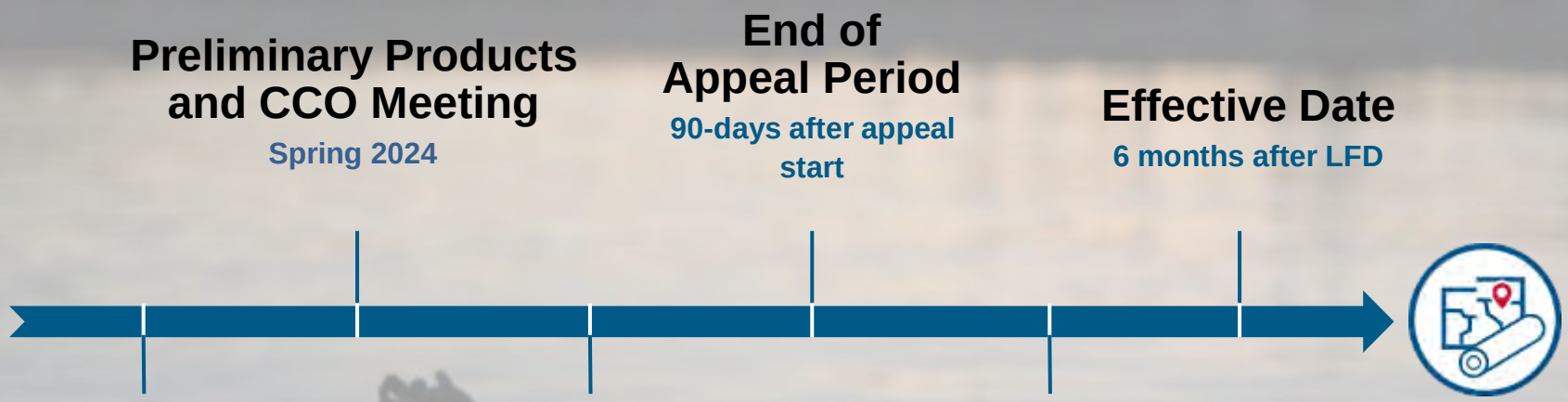
3 Reasons We Are Here Today

- To preview and discuss the updated Flood Insurance Study (FIS) report and Flood Insurance Rate Map (FIRM) for Carroll County, Maryland
- To examine the new study areas, discuss how the analysis and mapping have changed since the previous FIRM, and work collaboratively to ensure that the needs of the community and its partners are met. **BECAUSE THE EARLIER YOU KNOW THE BETTER!**
- To present a timeline of next steps

Timeline – Looking Back



Timeline – Looking Ahead



FRR: *Flood Risk Review*

CCO: *Community Coordination and Outreach*

LFD: *Letter of Final Determination*

Flood Study Overview

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Floodplain Map Overview

HIGH RISK
(Special Flood Hazard Area)

MODERATE RISK

Regulatory Floodway

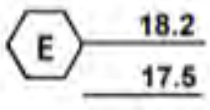
ZONE AE

1-Percent-Annual-Chance Flood Hazard Area **with Base Flood Elevations** (BFEs)

ZONE A

1-Percent-Annual-Chance Flood Hazard Area **without published BFEs**

0.2-Percent-Annual-Chance Flood Hazard Area



Cross Sections with 1% Annual Chance Water Surface Elevation Value

"The 100-Year Flood Zone Explained"

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Floodplain Map Overview

HIGH RISK
(Special Flood Hazard Area)

MODERATE RISK

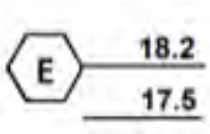
Development is not allowed unless "no rise" in flood levels is certified

ZONE AE

ZONE A

Flood insurance is mandatory for structures with federally-backed mortgages

Flood insurance is not mandatory



Cross Sections with 1% Annual Chance Water Surface Elevation Value

"The 100-Year Flood Zone Explained"

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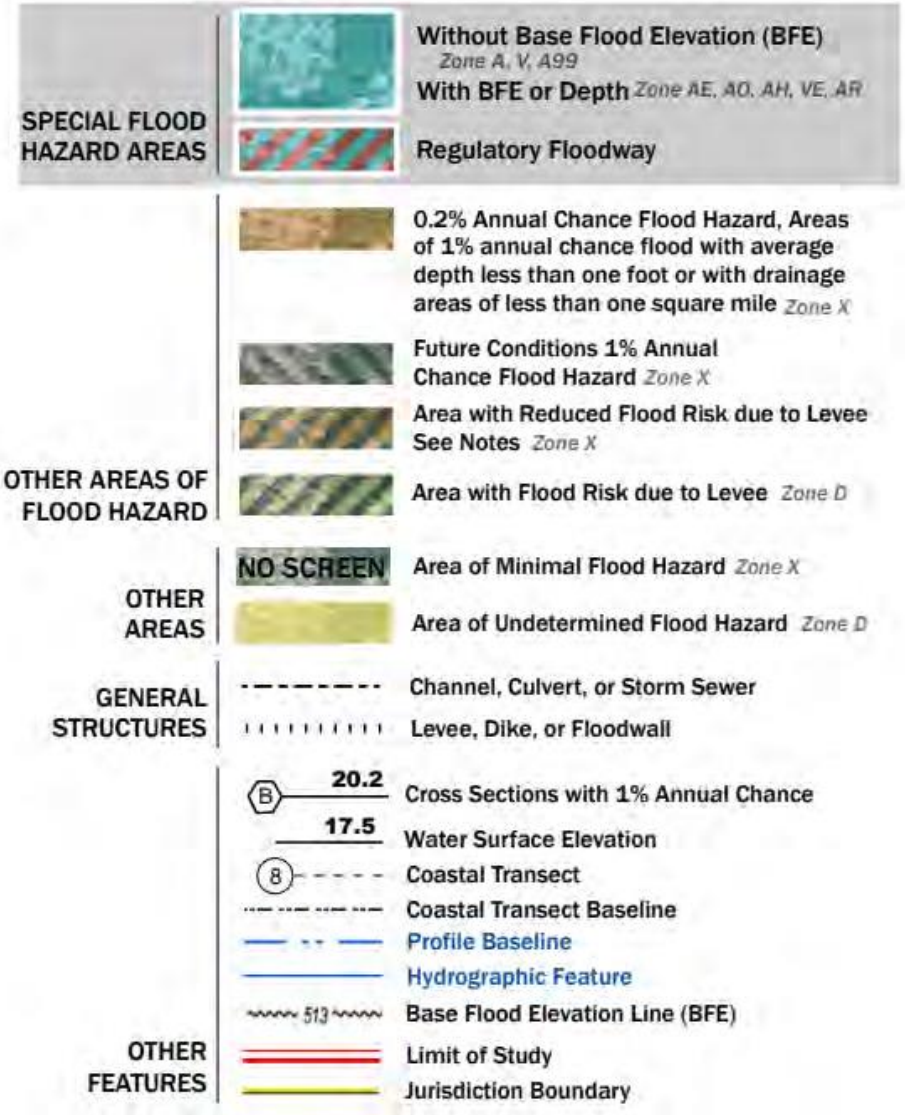
Study Types

		Approximate (Zone A)	Detailed (Zone AE)
Survey	Channel XS	None	Field survey at road crossings
	Hydraulic Structures	None	Field survey
Hydrology	Methodology	Regression Equations (and Rainfall Runoff for Great Dismal Swamp / Shingle Creek)	
Hydraulics	Recurrence Interval	10%, 4%, 2%, 1%, 1%+ and 0.2% annual chance	
	Manning's "n"	Aerial Imagery (Horizontal Variation)	
	Channel Geometry	LiDAR	LiDAR; Supplemented with field survey
Mapping	Boundaries	1% annual chance	1% and 0.2% annual chance
	Flood Zones	Zone A (no published BFEs)	Zone AE (all XS with labeled WSELs) and 'Shaded' Zone X
FIS Report	Tables	Study Summaries, Summary of Discharges	Study Summaries, Summary of Discharges, Floodway Data, Roughness Coefficient
	Profiles	None	10-, 4-, 2-, 1-, 1+, and 0.2% annual chance

Floodplain Map Overview



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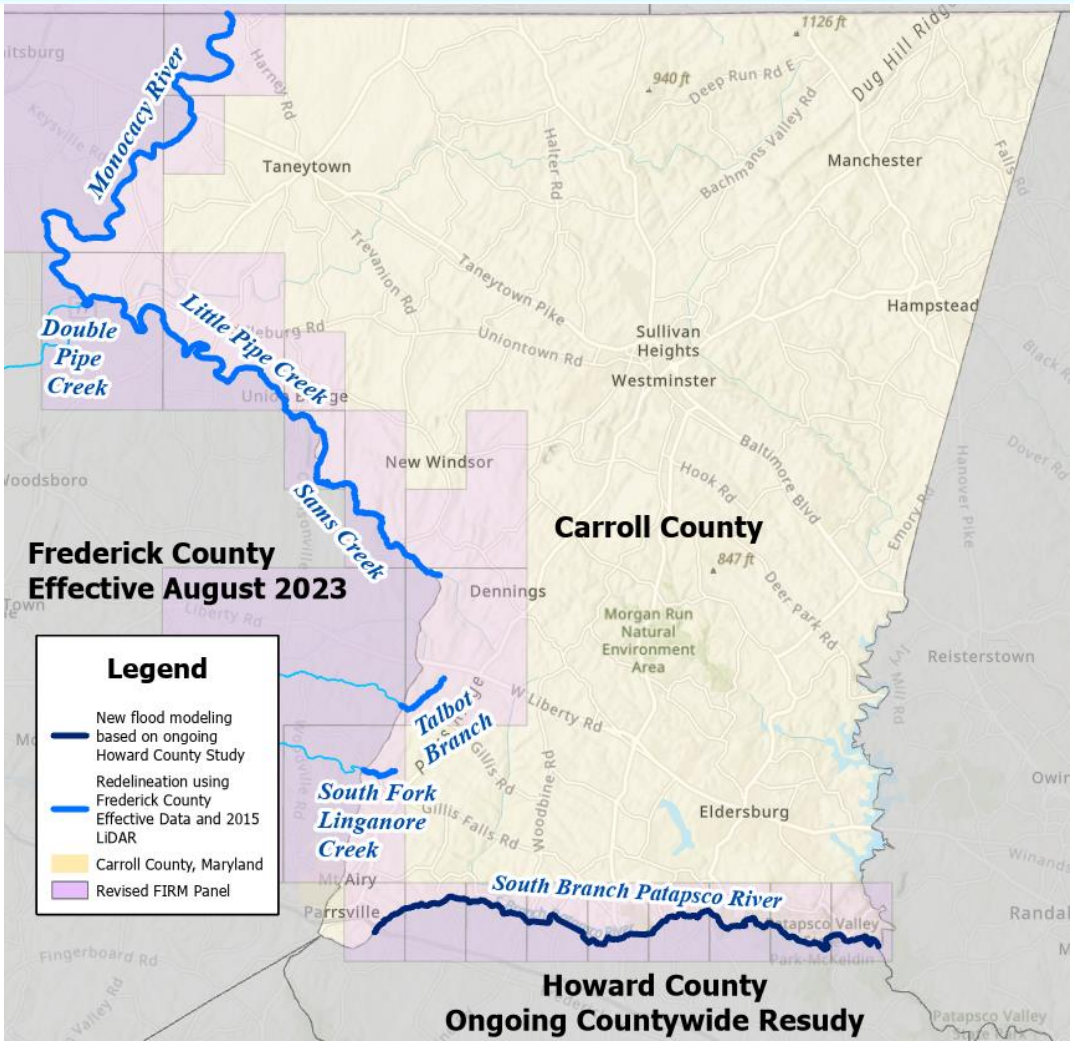
Study Overview Map

- **Updated floodplains for border streams from Frederick County Effective Data (August 2023)**
  - Talbot Branch, South Fork Linganore Creek, Monacacy River will all be upgraded to Zone AE (no floodway)
  - All portions of Little Pipe Creek and Sams Creek on the border with Frederick County will be upgraded to Zone AE (no floodway)
  - All floodplains will be based on redelineation of the Frederick County effective models with 2015 LiDAR as a base terrain.
- **Updated floodplains for South Branch Patapsco River from Howard Maryland ongoing Countywide Restudy**
  - South Branch Patapsco River was restudied as Zone AE with floodway. 2018 LiDAR was used as a base terrain.



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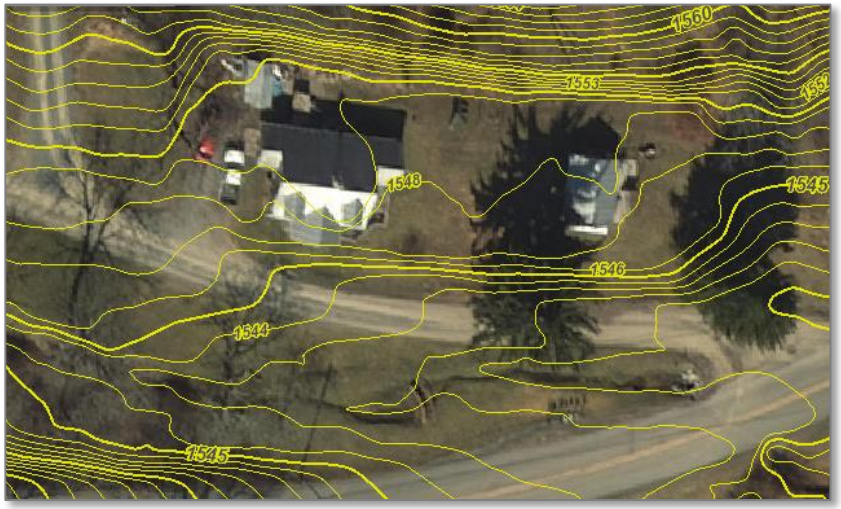
Topographic Data

2015 Carroll County LiDAR and 2018 Howard County LiDAR Based Digital Elevation Models

LiDAR = Light Detection and Ranging

- *Uses light pulses and GPS to survey elevation data*
- *Improves the level of detail for hydraulic modeling and floodplain delineation*



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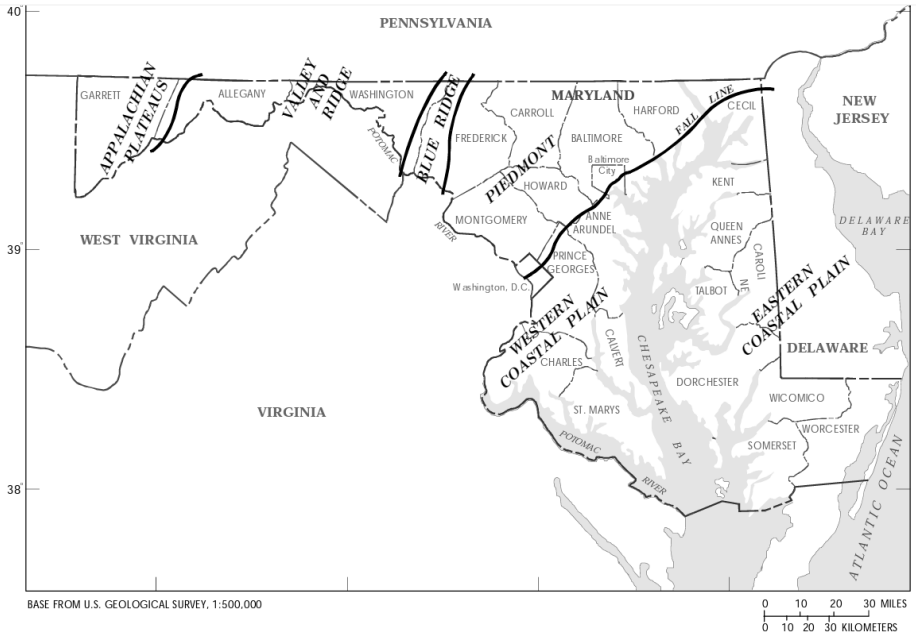
Hydrologic Analyses

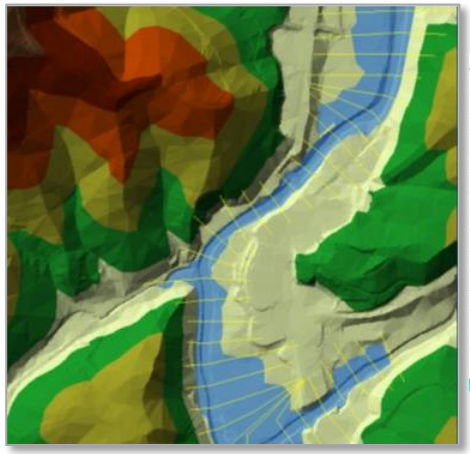
- **Regression Equations – Piedmont**
- **Stream gage weighting used if applicable**
- **Frederick County:** *Application of Hydrologic Methods in Maryland, 3rd edition (2010)*
- **Howard County:** *Application of Hydrologic Methods in Maryland, 5th edition (2020)*

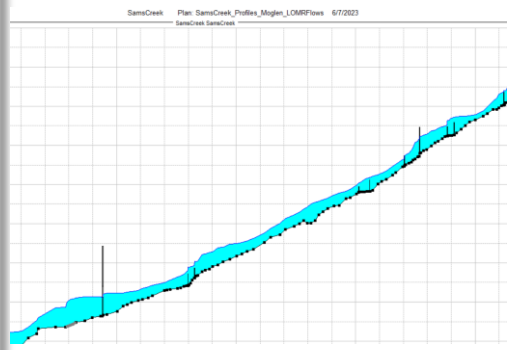


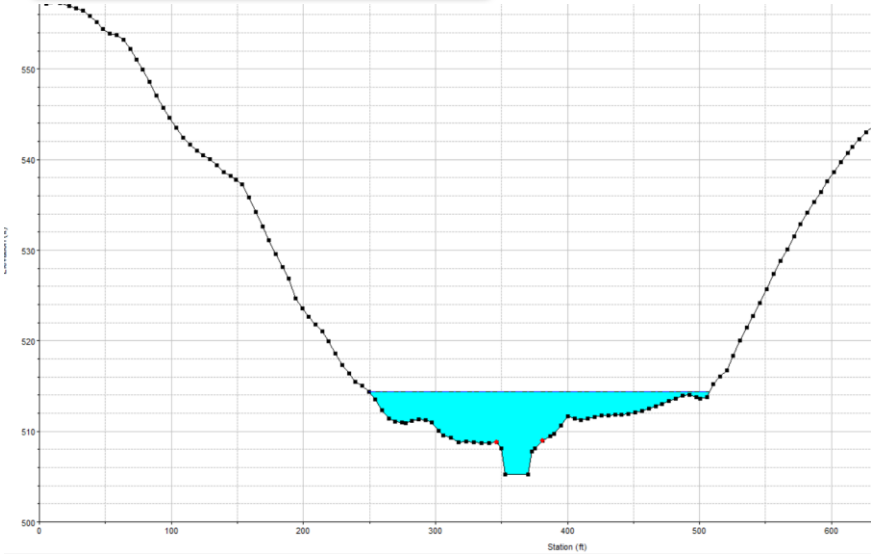
Hydraulic Analyses

Detailed ‘Zone AE’ Restudy

- Used in areas with high development or high development potential
  - All floodplain updates part of this revision are Zone AE detailed studies
- For South Branch Patapsco River, encroachments computed and regulatory floodway mapped
- Structures are modeled
- Channel bathymetry is obtained from Field Survey







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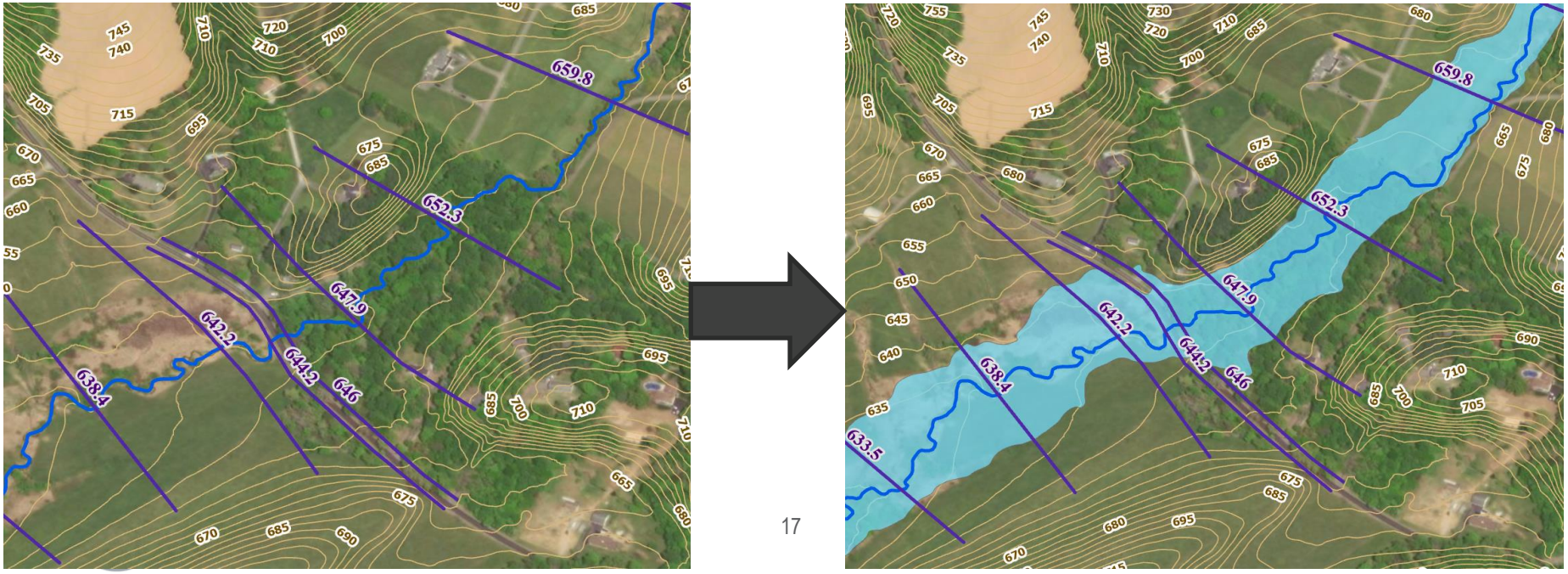
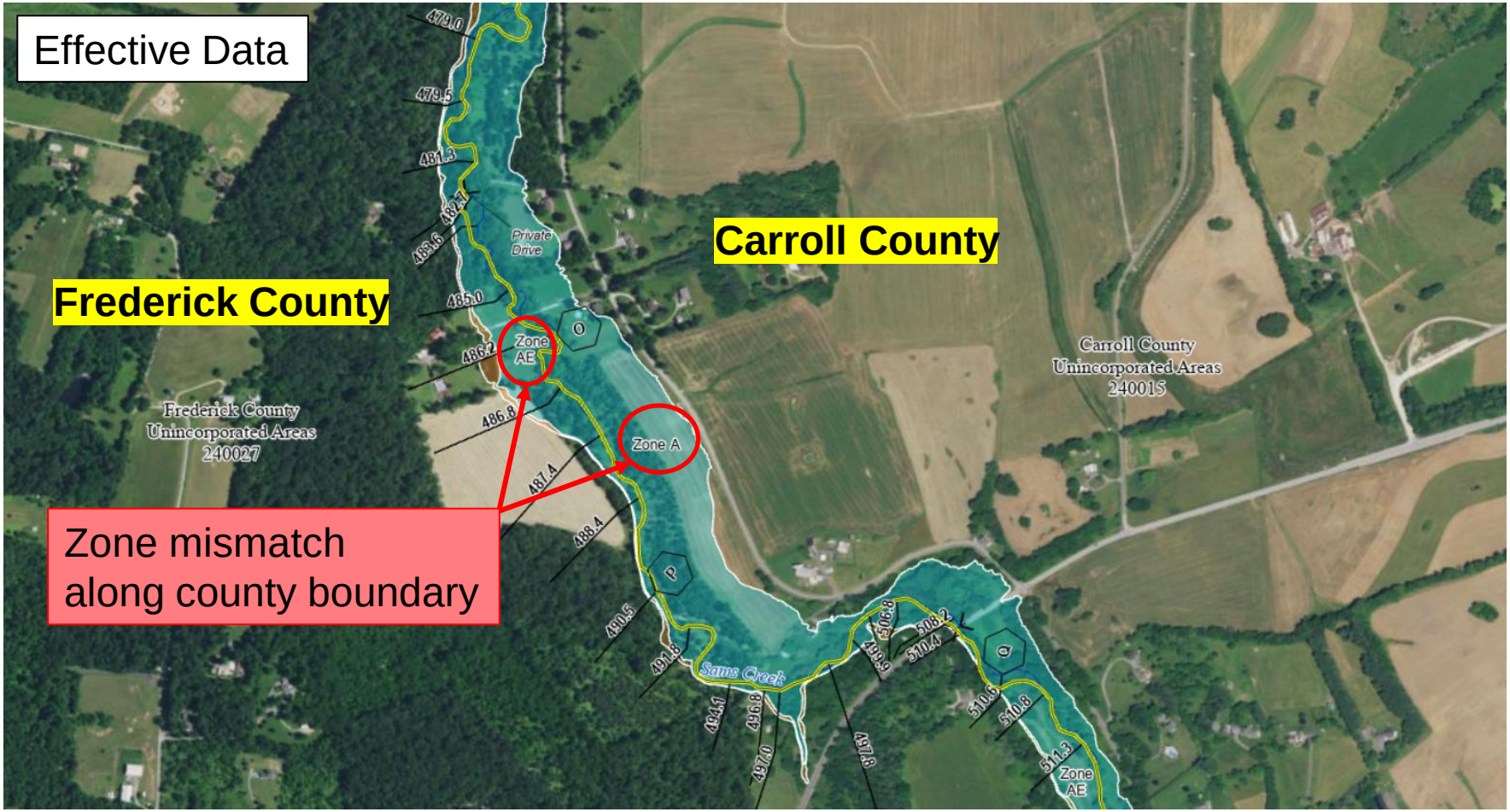
Redelineation (used for floodplains along the border with Frederick County)

- FEMA had updated flood models in Frederick County that went Effective in 2023, including several streams that either bordered Carroll County or extended into Carroll County.
- Water surface elevations for cross sections from the 2023 Frederick County Effective data were used to redraw floodplain boundaries using LiDAR from 2015.



Floodplain/BFE Consistency Across County Boundaries



Impacts

How Did the Floodplain Maps Change?

FEMA Region 3 Viewer for Changes Since Last FIRM (CSLF):

https://arcg.is/1bbDCy

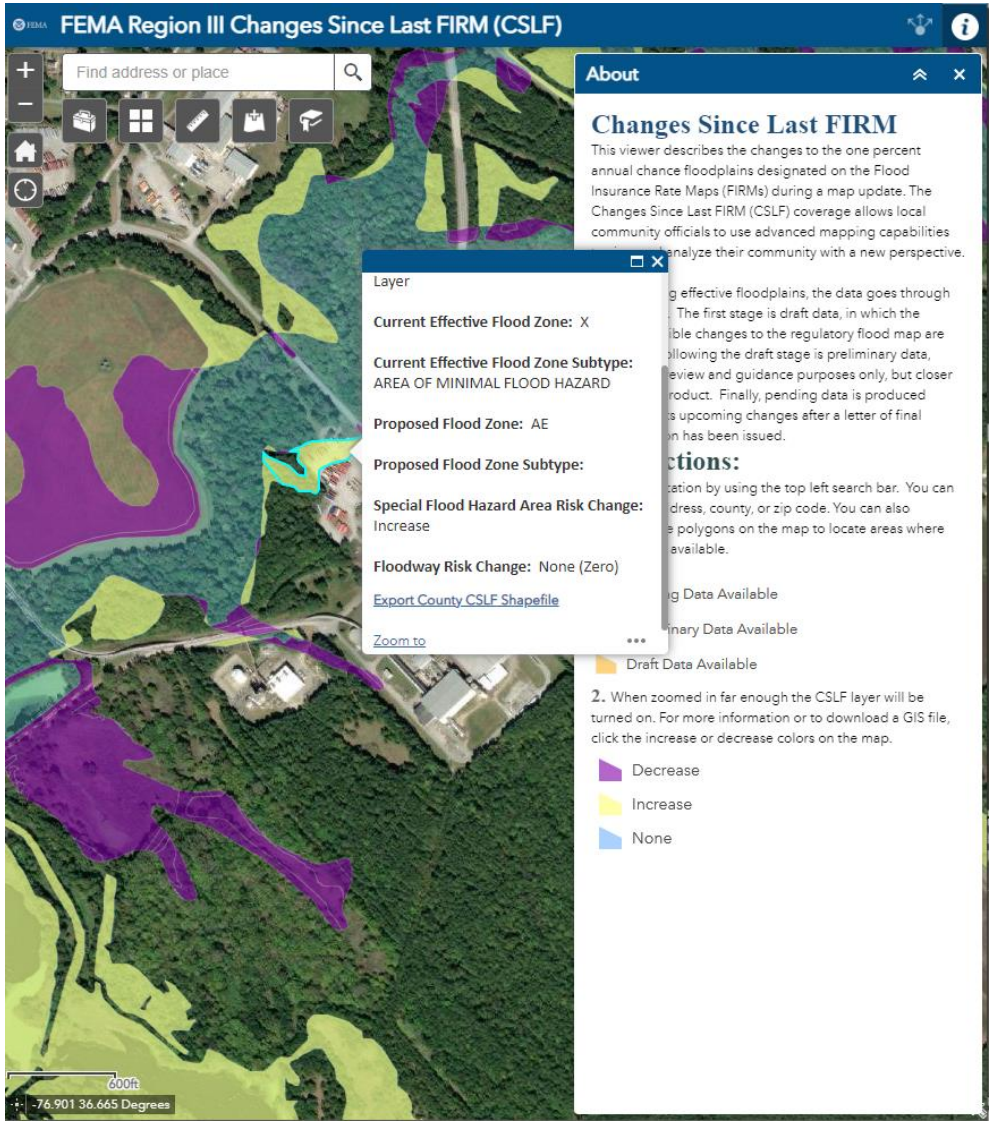
Change in Special Flood Hazard Area (SFHA) Extents:

- Purple – Decrease
- Blue – Still Floodplain
- Yellow – Increase

Default view will be at regional / county level – zoom in to view changes.

Right-click on any 'CSLF' features and select 'Export…" to download GIS data

FEMA



National Flood Hazard Layer

Visit https://www.fema.gov/national-flood-hazard-layer-nfhl for multiple options to view and download NFHL data.

Accessing the National Flood Hazard Layer

Map Service Center

Access localized National Flood Hazard Layer data by searching FEMA's Map Service Center.

FEMA's Map Service Center

NFHL ArcGIS Viewer

Or you you may view, download, and print current local digital effective flood hazard data in an ArcGIS map.

NFHL Viewer

In the NFHL Viewer, you can use the address search or map navigation to locate an area of interest and the NFHL Print Tool to download and print a full Flood Insurance Rate Map (FIRM) or FIRMette (a smaller, printable version of a FIRM) where modernized data exists. Technical GIS users can also utilize a series of dedicated GIS web services that allow the NFHL database to be incorporated into websites and GIS applications. For more information on available services, go to the NFHL GIS Services User Guide.

You can also use the address search on the FEMA Flood Map Service Center (MSC) to view the NFHL data or download a FIRMette. Using the "Search All Products" on the MSC, you can download the NFHL data for a County or State in a GIS file format. This data can be used in most GIS applications to perform spatial analyses and for integration into custom maps and reports. To do so, you will need GIS or mapping software that can read data in shapefile format.

FEMA also offers a download of a KMZ (keyhole markup file zipped) file, which overlays the data in Google Earth™. For more information on using the data in Google Earth™, please see Using the National Flood Hazard Layer Web Map Service (WMS) in Google Earth™.

Draft National Flood Hazard Layer

The Draft National Flood Hazard Layer is for early awareness of possible changes to regulatory flood map information. Until the data becomes effective and it appears in the National Flood Hazard Layer, the data cannot be used to rate flood insurance policies or enforce the federal mandatory purchase requirement.

Preliminary Flood Hazard Data

Preliminary flood hazard data provides the public an early look at their home or community's projected risk to flood hazards. Preliminary data may include new or revised Flood Insurance Rate Maps (FIRM), Flood Insurance Study (FIS) Reports and FIRM Databases. View your community's preliminary flood hazard data.

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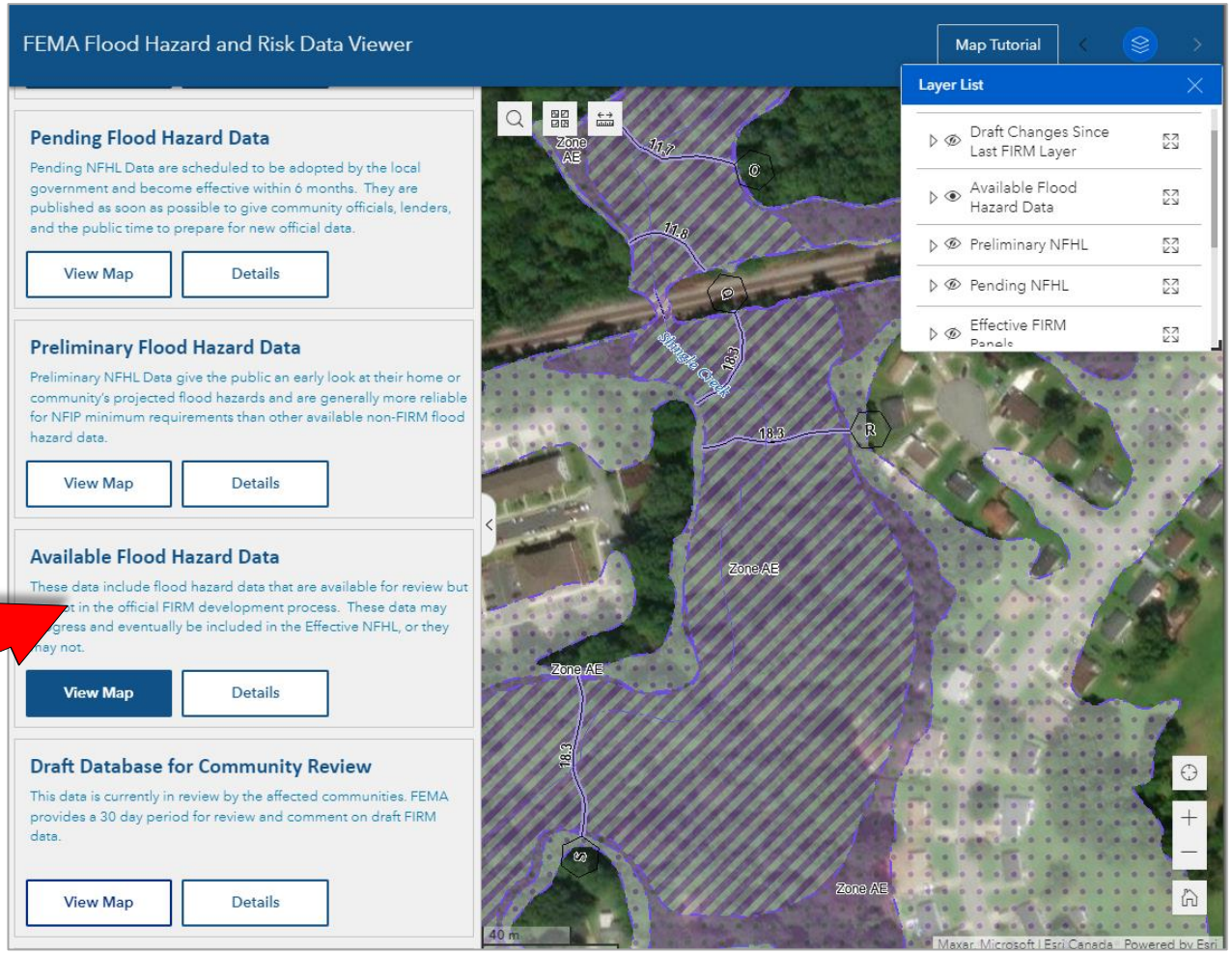

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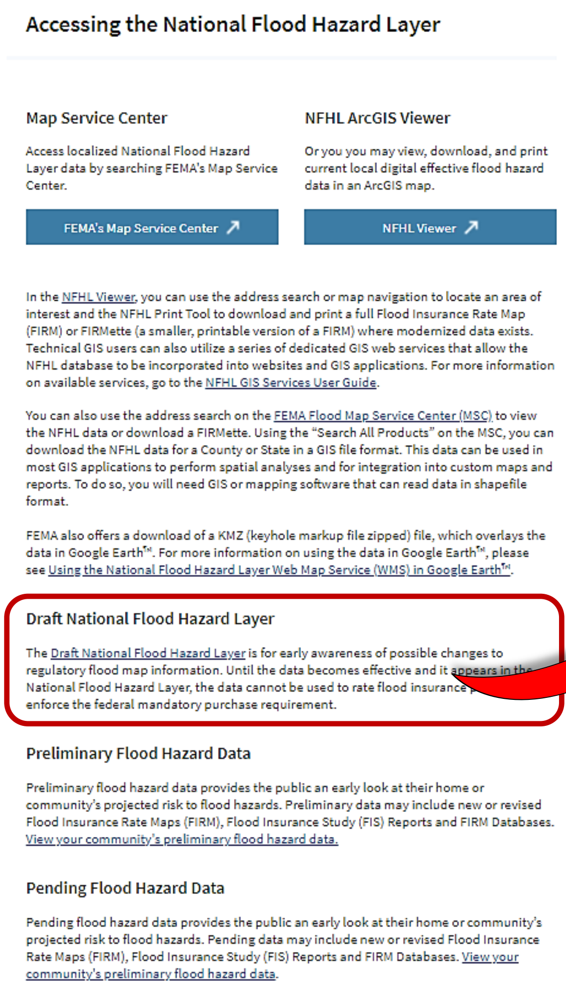

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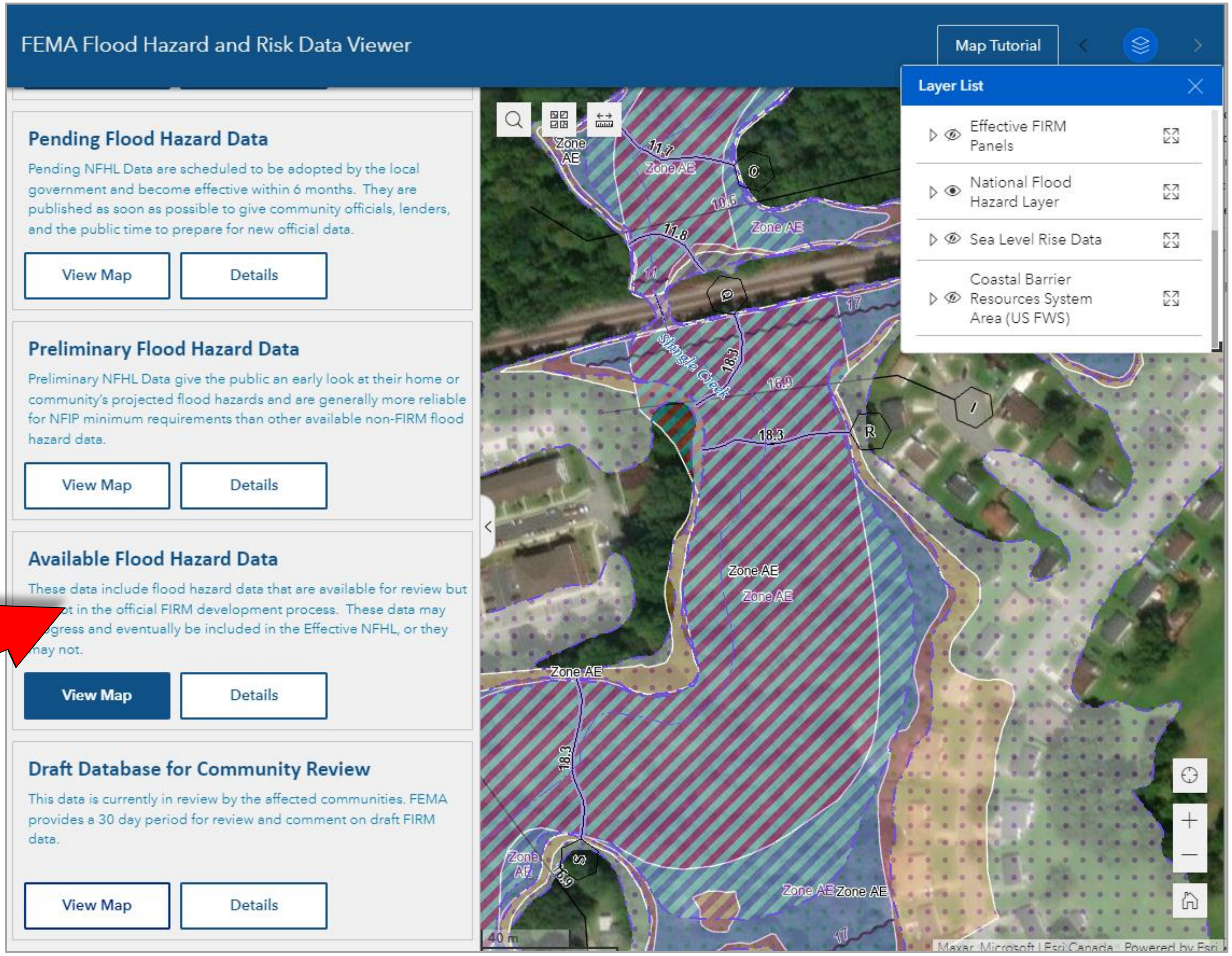

Significant Impacts Overview

Comparing DRAFT and EFFECTIVE flood data:

- **Minor changes** in Special Flood Hazard Area (SFHA) extents are observed and vary by stream reach (increases in some locations and decreases in others).
  - The town of Mount Airy had a slight increase in proposed SFHA size on the South Branch Patapsco River compared to the effective SFHA.
  - The towns of Sykesville and Union Bridge experienced both slight increases and decreases in the proposed SFHA size compared to the effective SFHA.
- Extension of Zone A hazards beyond past study limits results in newly mapped SFHAs.
- Based on rural land use and strong Chesapeake Bay regulations, study additions are expected to have minimal impact on existing or future development.

Significant Impacts Overview

Comparing DRAFT and EFFECTIVE flood data:

- The number of structures experiencing an increase in flood risk is about the same as the number of structures experiencing a decrease. FEMA expects about 10 structures to be newly mapped into the regulatory floodplain, compared to approximately 5 mapped out.

- Areas with clusters of affected structures include:

  - Mapped In: In the town of Sykesville and surrounding unincorporated areas along the South Branch Patapsco River.

  - Mapped Out: In the town of Sykesville along the South Branch Patapsco River.

- ***Most properties in the effective SFHA are not insured***. About 460 structures are within the effective SFHA, compared to just 41 National Flood Insurance Program (NFIP) policies. Countywide, 150 NFIP policies are in force.

Community Dashboards

Carroll County, MD – Countywide

FEMA

FEMA's Risk Mapping, Assessment, and Planning (Risk MAP) Program helps strengthen communities by identifying actions they can take now to reduce their hazard risk, enhance local planning, improve outreach through risk communications, and increase local resilience to natural hazards. Below is an overview of some key items identified during the Changes Since Last FIRM[1] impact assessment.

The information presented below are estimates as of October 2023.

Flood insurance is available to the entire County.

ONE COMMUNITY is taking advantage of the flood insurance savings offered through the Community Rating System

(Carroll County, Class 7)

1%

Of the population is in the draft flood high hazard area

$1.1M

Total paid losses[2]

131

Total paid claims[2]

43

Paid claims outside of the effective flood high hazard area[2]

150

Flood insurance policies in force

87%

In Unincorporated Communities

65,180

Estimated structures in the community

785

Estimated structures in the draft flood high hazard area

Estimated structures newly mapped in	Estimated structures newly mapped out
+10	-5

12

Flood-related presidential disaster declarations

0 levees and **12** dams

$980

Average premium

42%

Higher than the national average

$260K

Repetitive Loss (RL) paid losses[2]

9

RL properties[2]

41

Policies in the effective flood high hazard area

KEEPING COMMUNITIES INFORMED: Your Risk MAP Timeline

~YEAR 1 — YOU ARE HERE — ~YEAR 5

- Discovery Meeting
- Flood Risk Review Meeting
- Preliminary Map Issuance
- Community Coordination & Outreach Meeting
- Appeal Period
- Letter of Final Determination
- Effective Maps

Community Dashboards

FEMA

Town of Mount Airy/Carroll County, MD

KNOW YOUR RISK (The information presented below are estimates as of October 2023. [1] Flood Insurance Rate Map. [2] Since 1978.)

10/2/2015
Initial FIRM[1] date

10/2/2015
Effective FIRM date

$0
Total paid losses[2]

0
Total paid claims[2]

7
Flood insurance policies in force

0
Policies in the effective flood high hazard area

1,730
Estimated structures in the community

0
Estimated structures in the draft flood high hazard area

Estimated structures newly mapped in **+0**

Estimated structures newly mapped out **-0**

0%
Of the population is in the draft flood high hazard area

17%
Of households spend 30% or more of their income on housing

0
Paid claims outside of the effective flood high hazard area[2]

$0
Repetitive Loss (RL) paid losses[2]

0
RL properties[2]

12
Flood-related countywide presidential disaster declarations

KEEPING COMMUNITIES INFORMED: Your Risk MAP Timeline

~YEAR 1 — YOU ARE HERE — ~YEAR 5

- Discovery Meeting
- Flood Risk Review Meeting
- Preliminary Map Issuance
- Community Coordination and Outreach Meeting
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- Letter of Final Determination
- Effective Maps

Community Dashboards

FEMA

Town of New Windsor/Carroll County, MD

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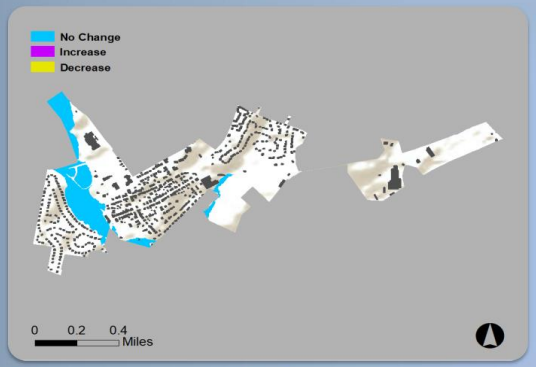


2/16/1979
Initial FIRM[1] date

10/2/2015
Effective FIRM date

$4K
Total paid losses[2]

1
Total paid claims[2]

2
Flood insurance policies in force

1
Policies in the effective flood high hazard area

580
Estimated structures in the community

1
Estimated structures in the draft flood high hazard area

Estimated structures newly mapped in	Estimated structures newly mapped out
+0	-0

<1%
Of the population is in the draft flood high hazard area

31%
Of households spend 30% or more of their income on housing

0
Paid claims outside of the effective flood high hazard area[2]

$0
Repetitive Loss (RL) paid losses[2]

0
RL properties[2]

12
Flood-related countywide presidential disaster declarations

KEEPING COMMUNITIES INFORMED: Your Risk MAP Timeline

Discovery Meeting	Flood Risk Review Meeting	Preliminary Map Issuance	Community Coordination and Outreach Meeting	Appeal Period	Letter of Final Determination	Effective Maps
	~YEAR 1 YOU ARE HERE					~YEAR 5

Community Dashboards

FEMA

Town of Sykesville/Carroll County, MD

KNOW YOUR RISK (The information presented below are estimates as of October 2023. [1] Flood Insurance Rate Map. [2] Since 1978.)

9/30/1977
Initial FIRM[1] date

10/2/2015
Effective FIRM date

$12K
Total paid losses[2]

3
Total paid claims[2]

4
Flood insurance policies in force

0
Policies in the effective flood high hazard area

1,060
Estimated structures in the community

1
Estimated structures in the draft flood high hazard area

Estimated structures newly mapped in	Estimated structures newly mapped out
+1	-1

<1%
Of the population is in the draft flood high hazard area

20%
Of households spend 30% or more of their income on housing

2
Paid claims outside of the effective flood high hazard area[2]

$0
Repetitive Loss (RL) paid losses[2]

0
RL properties[2]

12
Flood-related countywide presidential disaster declarations

KEEPING COMMUNITIES INFORMED: Your Risk MAP Timeline

~YEAR 1 — YOU ARE HERE — ~YEAR 5

- Discovery Meeting
- Flood Risk Review Meeting
- Preliminary Map Issuance
- Community Coordination and Outreach Meeting
- Appeal Period
- Letter of Final Determination
- Effective Maps

Community Dashboards

FEMA

Town of Union Bridge/Carroll County, MD

KNOW YOUR RISK **(The information presented below are estimates as of October 2023.** [1] Flood Insurance Rate Map. [2] Since 1978.)

8/1/1977
Initial FIRM[1] date

10/2/2015
Effective FIRM date

$135K
Total paid losses[2]

6
Total paid claims[2]

6
Flood insurance policies in force

2
Policies in the effective flood high hazard area

475
Estimated structures in the community

35
Estimated structures in the draft flood high hazard area

Estimated structures newly mapped in **+0**

Estimated structures newly mapped out **-0**

5%
Of the population is in the draft flood high hazard area

49%
Of households spend 30% or more of their income on housing

3
Paid claims outside of the effective flood high hazard area[2]

$0
Repetitive Loss (RL) paid losses[2]

0
RL properties[2]

12
Flood-related countywide presidential disaster declarations

KEEPING COMMUNITIES INFORMED: Your Risk MAP Timeline

~YEAR 1 — YOU ARE HERE — ~YEAR 5

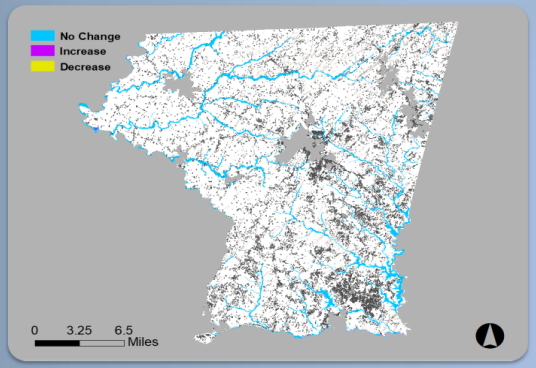
Discovery Meeting → Flood Risk Review Meeting → Preliminary Map Issuance → Community Coordination and Outreach Meeting → Appeal Period → Letter of Final Determination → Effective Maps

Community Dashboards

FEMA

Unincorporated Areas/Carroll County, MD

KNOW YOUR RISK (The information presented below are estimates as of October 2023. [1] Flood Insurance Rate Map. [2] Since 1978.)



8/1/1978
Initial FIRM[1] date

10/2/2015
Effective FIRM date

$999K
Total paid losses[2]

121
Total paid claims[2]

131
Flood insurance policies in force

38
Policies in the effective flood high hazard area

55,880
Estimated structures in the community

425
Estimated structures in the draft flood high hazard area

Estimated structures newly mapped in	Estimated structures newly mapped out
+10	-5

<1%
Of the population is in the draft flood high hazard area

20%
Of households spend 30% or more of their income on housing

38
Paid claims outside of the effective flood high hazard area[2]

$260K
Repetitive Loss (RL) paid losses[2]

9
RL properties[2]

12
Flood-related countywide presidential disaster declarations

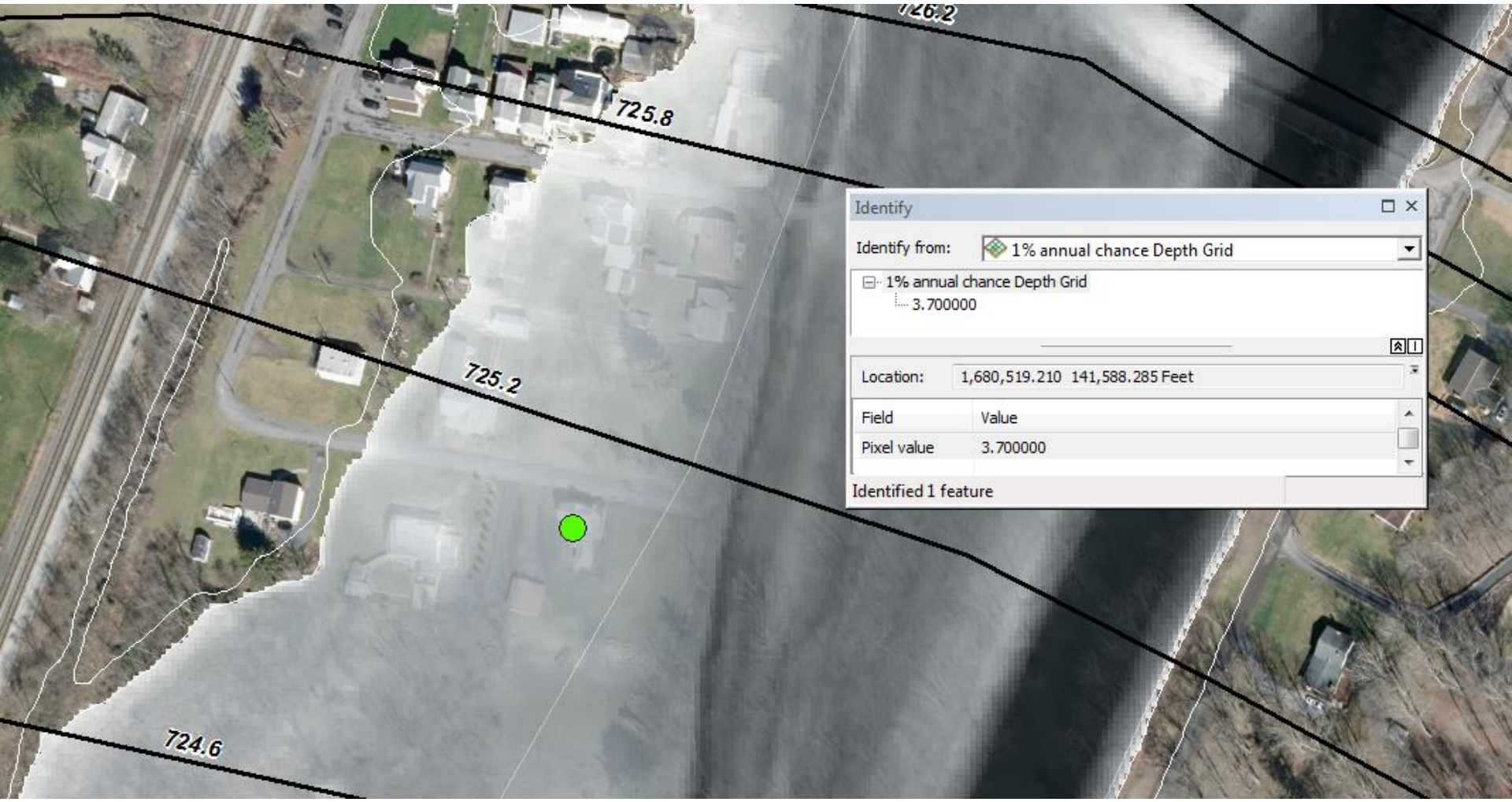
KEEPING COMMUNITIES INFORMED: Your Risk MAP Timeline

- Discovery Meeting — ~YEAR 1
- Flood Risk Review Meeting — YOU ARE HERE
- Preliminary Map Issuance
- Community Coordination and Outreach Meeting
- Appeal Period
- Letter of Final Determination
- Effective Maps — ~YEAR 5

Using Flood Risk Data to Identify and Reduce Risk

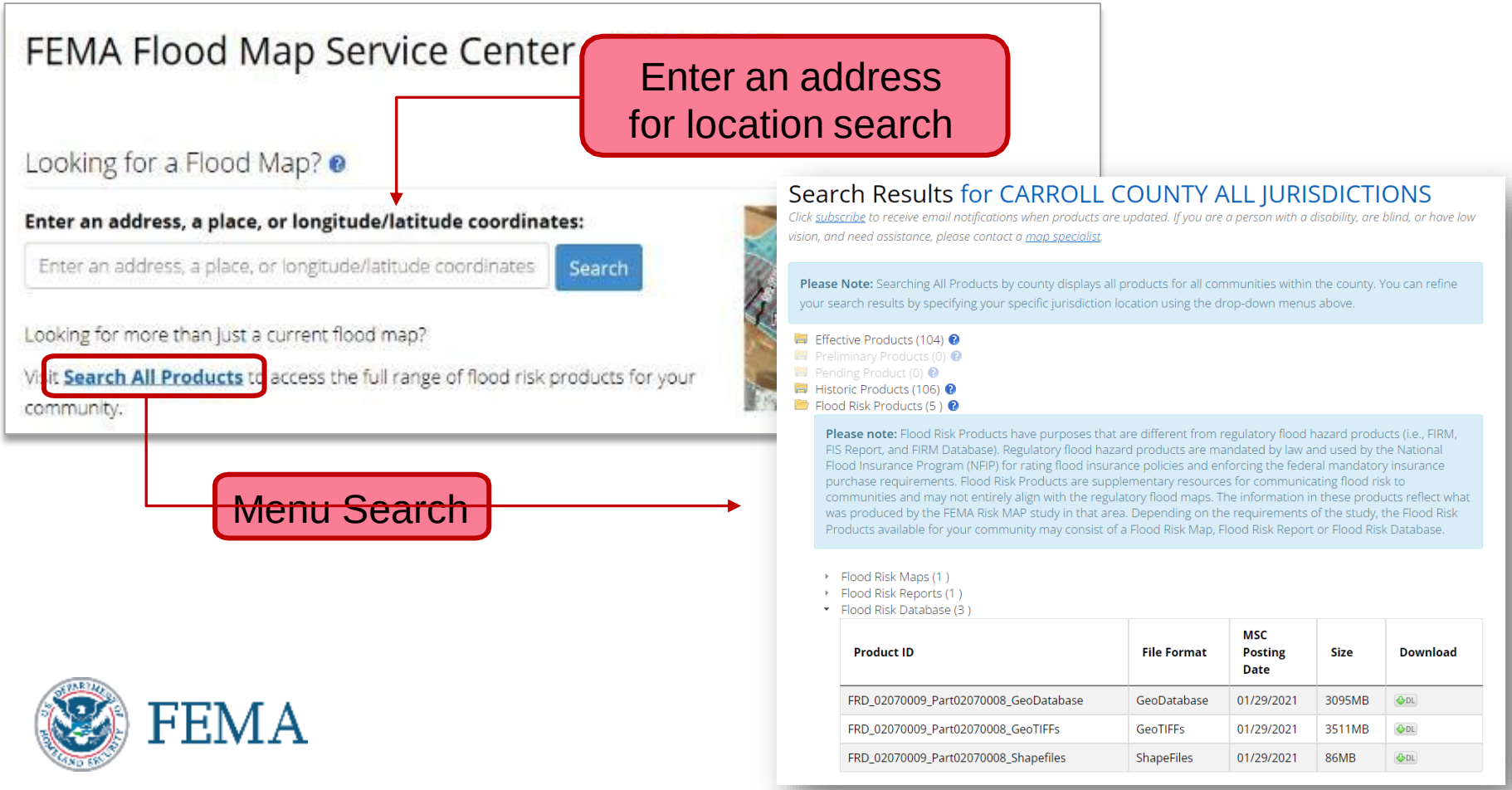
Depth Grids

Represent the difference between the ground surface and the water surface elevations



Where Can I Find Flood Risk Products?

The FEMA Map Service Center (MSC) is the official public source for flood hazard information: https://msc.fema.gov/portal/home



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MARYLAND

DFIRM OUTREACH PROGRAM

DIGITAL FLOOD INSURANCE RATE MAPS

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ABOUT DFIRM
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Participants
Federal Emergency Management Agency (FEMA)
Maryland Department of the Environment (MDE)

National Flood Insurance Program (NFIP)
nfip.gov
FloodSmart.gov

Maryland DFIRM Release Schedule

Flood Risk Application
View Maryland Flood Maps Here

CRAB Tool Application
View CRAB Tool Application Here

Dam Tool Application
Coming Soon

DFIRM Outreach

The State of Ma[illegible] has been systematically updating Flood Insurance Rate Maps (FIRMs) for communities over the past several years. This site is designed to guide homeowners/renters as well as communities through the process of determining their current flood risk as well as future flood risk based on the preliminary Digital Flood Insurance Rate Maps (DFIRMs).

The DFIRMs are digitally converted flood insurance rates maps that will be compatible with GIS (Geographic Information Systems). The improvements in spatial accuracy provided by the new base map, and the availability of electronic floodplain information should greatly enhance the ability to use the maps for planning, permitting, and insurance applications.

Using the schedule for map production in 2017, the average age of the DFIRM products in the Maryland is 4 years with 75% of the State at 3 years or less. Currently, 4 of the 6 oldest floodplain mapping products are in production to be remapped. MDE is the Cooperating Technical Partner (CTP) on three of these products in Baltimore City, Baltimore County, and Montgomery County. FEMA's Risk Assessment, Mapping and Planning Partners (RAMP) is producing the DFIRM product in Frederick County.

Researching Your Future Flood Risk

The DFIRMs are being released on a community by community basis. It is important to investigate your flood risk status and contact your insurance agent to make necessay modifications to your coverage while the maps are still preliminary. The digital files will be available when these maps become effective.

Using This Website

Preliminary Schedule

St. Mary's County - November 2022 Riverine

Montgomery County - July 31, 2023 Riverine

Howard County - October 2023 Riverine

Effective Schedule

Frederick County - August 2023 Riverine (completed)

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DFIRM Outreach

Flood Risk Application

Determine Flood Status

1) Find your address using a method below

- Enter an address into the search bar above to zoom to the closest match.
- Select the county you are interested in below:

Carroll

- Enter State Plane Meter x and y coordinates below and click zoom.

X: Y: Zoom

- In/out icons or a scroll mouse may be used for zooming your view down to a street or neighborhood level.

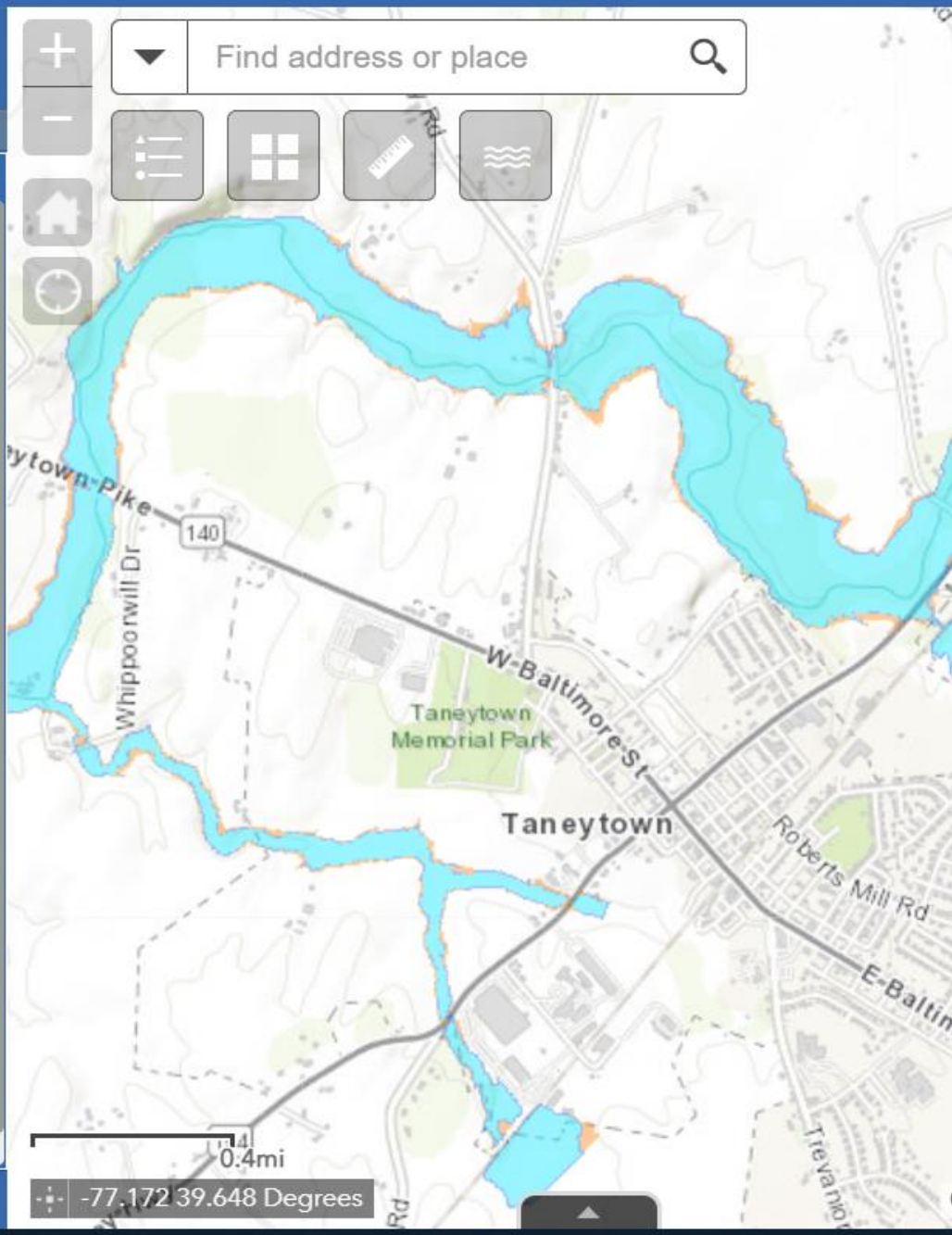
2) After locating your area of interest, activate the tool below by clicking on the Determine Flood Status button, and then clicking on the desired location on the map. Results for the selected location will display in the details tab.

Determine Flood Status:

Click this button

Open carousel if available?

Click here for more help.



Hazard Mitigation and Floodplain Management

Flood Hazard Mitigation Planning

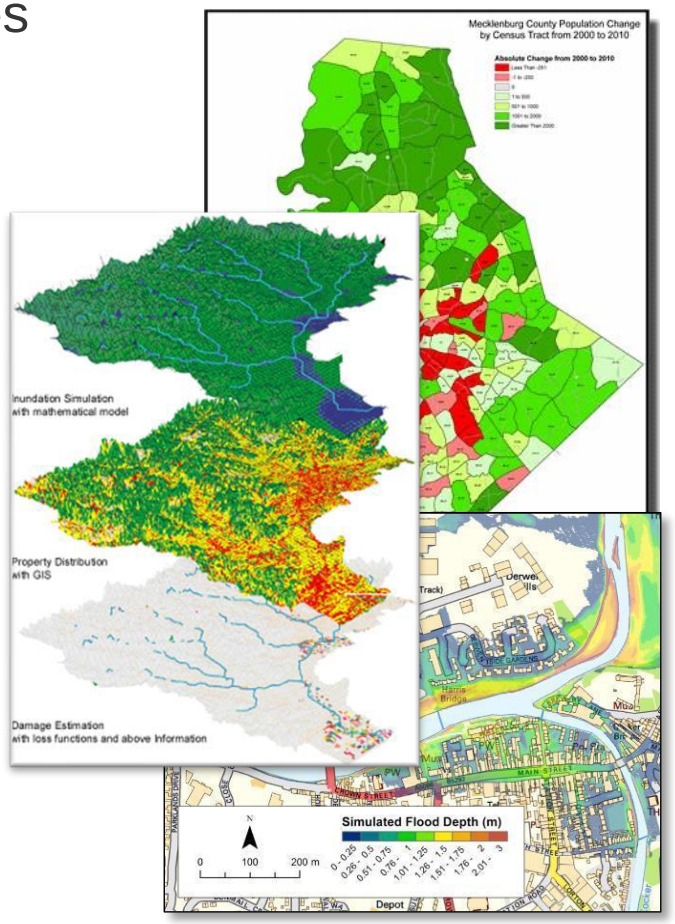
We are here

It's time to start assessing the impacts of the new floodplain boundaries

RiskMAP
Increasing Resilience Together

Using FRPs to Manage Development

- Structure-based depth of flooding analyses
- Prioritization of mitigation action
- Residential/commercial density in the floodplain
- Location/inundation area of historic events
- Properties with insurance policies and as a percentage of the population
- Areas of population growth
- Areas requiring protection



FEMA

RiskMAP
Increasing Resilience Together

Floodplain Management

- **Permits are Required for ALL Development in the regulatory floodplain!**
- Development means any **manmade change** to improved or unimproved real estate.
- Considering flood mitigation when building can help decrease flood insurance costs.

Mayberry Road is inundated by the waters of Bear Branch at the intersection of Baumgartner Road in Mayberry during heavy rainstorms associated with Tropical Depression Ida Wednesday, Sept. 1, 2021. (Dylan Slagle)
Source: Capital Gazette

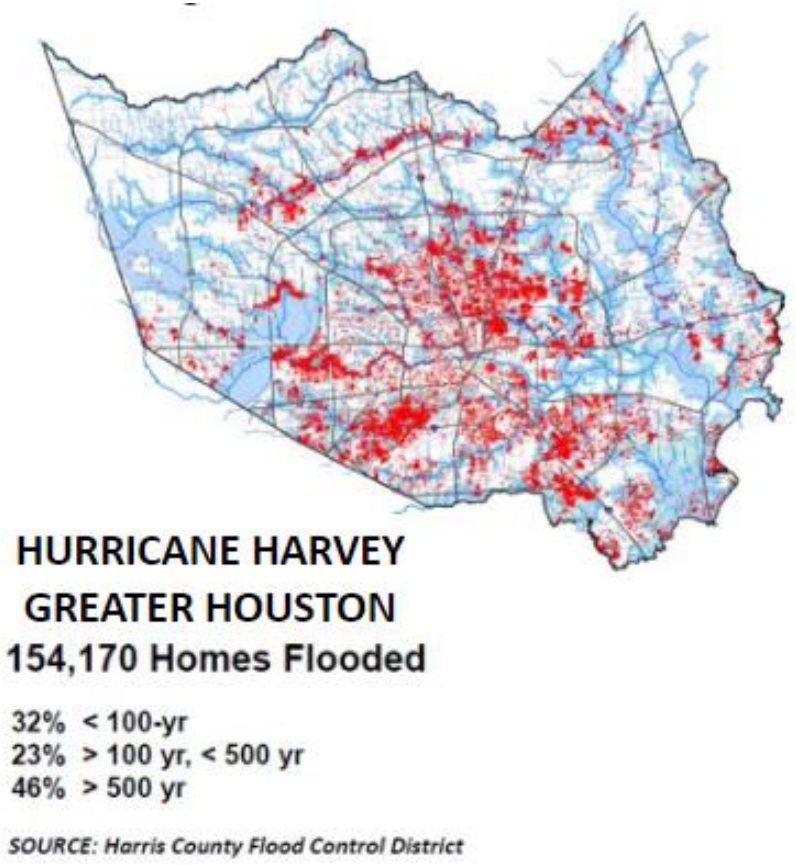
Floodplain Management

- **Flood Risk doesn't stop at a line!**

  Nationally, 25% of flood insurance claims come from outside high-risk areas.

- Your community can regulate to standards higher than the NFIP minimum standards. For additional information and resources, visit:

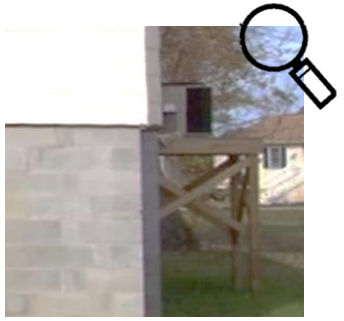
  Local Government Officials – Floodplain Management Resources | FEMA.gov



Floodplain Management

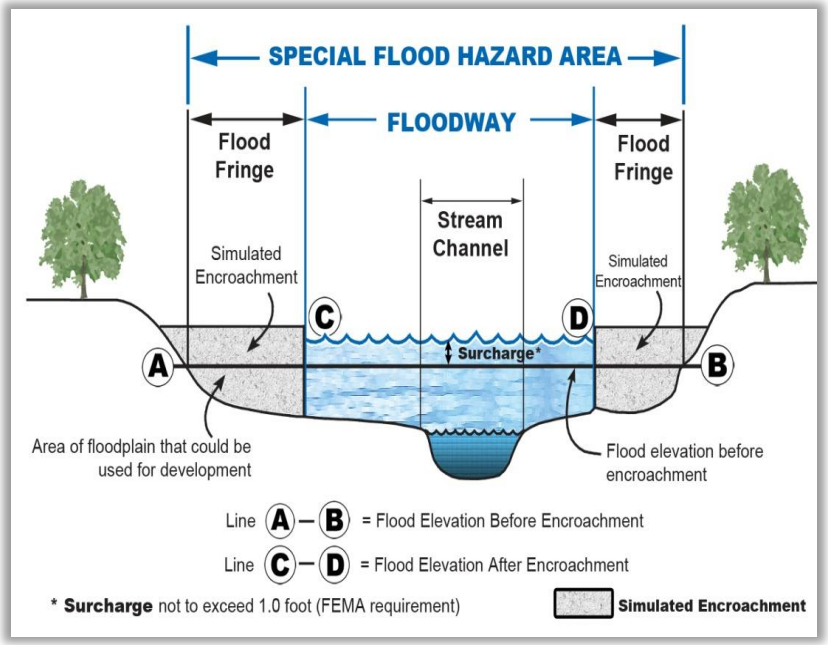
- Communities must regulate based on FIRMs
- Development should be reasonably safe from flooding
- Permits are required for all development
- State/federal permits are required
- Elevate and/or construct with flood-resistant materials
- Locate and design mechanicals to minimize or eliminate flood damage
- Locate and design public utilities and facilities to minimize or eliminate flood damage

A Zones: top of lowest floor (residential) elevated to or above the base flood level



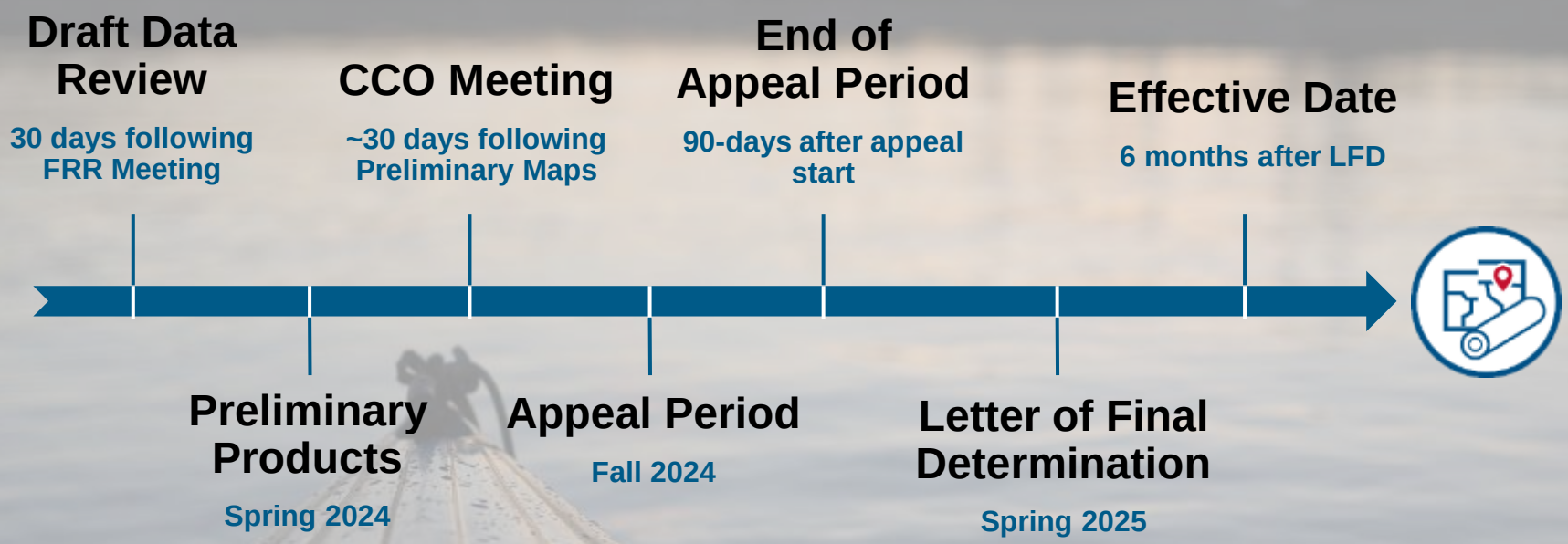
Considerations for Floodways

- Development must prove “no rise”
  - No rise = zero foot (0.00’) rise in flood heights
  - Rise is tracked both upstream and downstream of the development location
- Documentation requirement
  - Hydraulic and Hydrologic (H&H) study
  - In the case of improvements to an existing structure, the footprint shall not expand



Project Timeline

Timeline – Looking Ahead



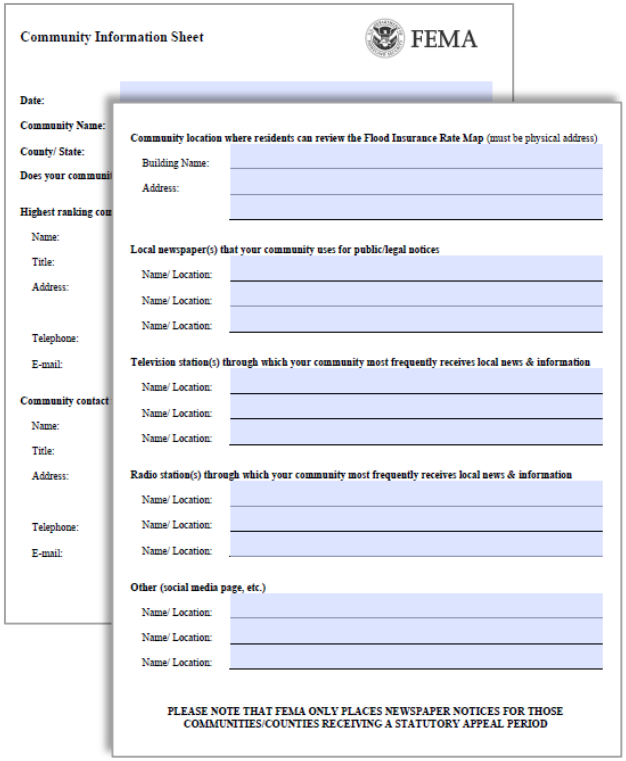
Discussion

We want to hear from you!

- **30-day comment period**
- Changes Since Last FIRM viewer:
  - https://arcg.is/1L4TG1
- Review the materials we will be sending you – and send back a filled-out ***Community Information Sheet***
- We are available to answer questions
- Talk about mitigation actions in your community
- ***Thank you for your participation!***

Community Information Sheet

- Fill out the Community Information Sheet to ensure accurate information for the forthcoming Preliminary Products and Appeal Period:
  - **Contact information** for Chief Executive and Floodplain Administrator (who will each receive hardcopies of Preliminary Products)
  - **Map Repository Address** (where hardcopy FIRMs are available for public viewing / reference) which will be specified in the Federal Register
  - **Local Media Names**
    - FEMA will publish two legal notices in a local newspaper
    - FEMA will also send a press release to local TV, radio stations, and newspapers


Community Information Sheet

FEMA

Date:

Community Name:

County/ State:

Does your communi

Highest ranking co

Name:

Title:

Address:

Telephone:

E-mail:

Community contact

Name:

Title:

Address:

Telephone:

E-mail:

Community location where residents can review the Flood Insurance Rate Map (must be physical address)

Building Name:

Address:

Local newspaper(s) that your community uses for public/legal notices

Name/ Location:

Name/ Location:

Name/ Location:

Television station(s) through which your community most frequently receives local news & information

Name/ Location:

Name/ Location:

Name/ Location:

Radio station(s) through which your community most frequently receives local news & information

Name/ Location:

Name/ Location:

Name/ Location:

Other (social media page, etc.)

Name/ Location:

Name/ Location:

Name/ Location:

PLEASE NOTE THAT FEMA ONLY PLACES NEWSPAPER NOTICES FOR THOSE COMMUNITIES/COUNTIES RECEIVING A STATUTORY APPEAL PERIOD

Example: https://www.fema.gov/press-release/20221213/public-invited-review-flood-maps-chesterfield-county

Project Contacts

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