Cooper Creek
Flood Map Revision

City of Columbus,

Muscogee County, GA

July 8, 2025

Binita Shrestha

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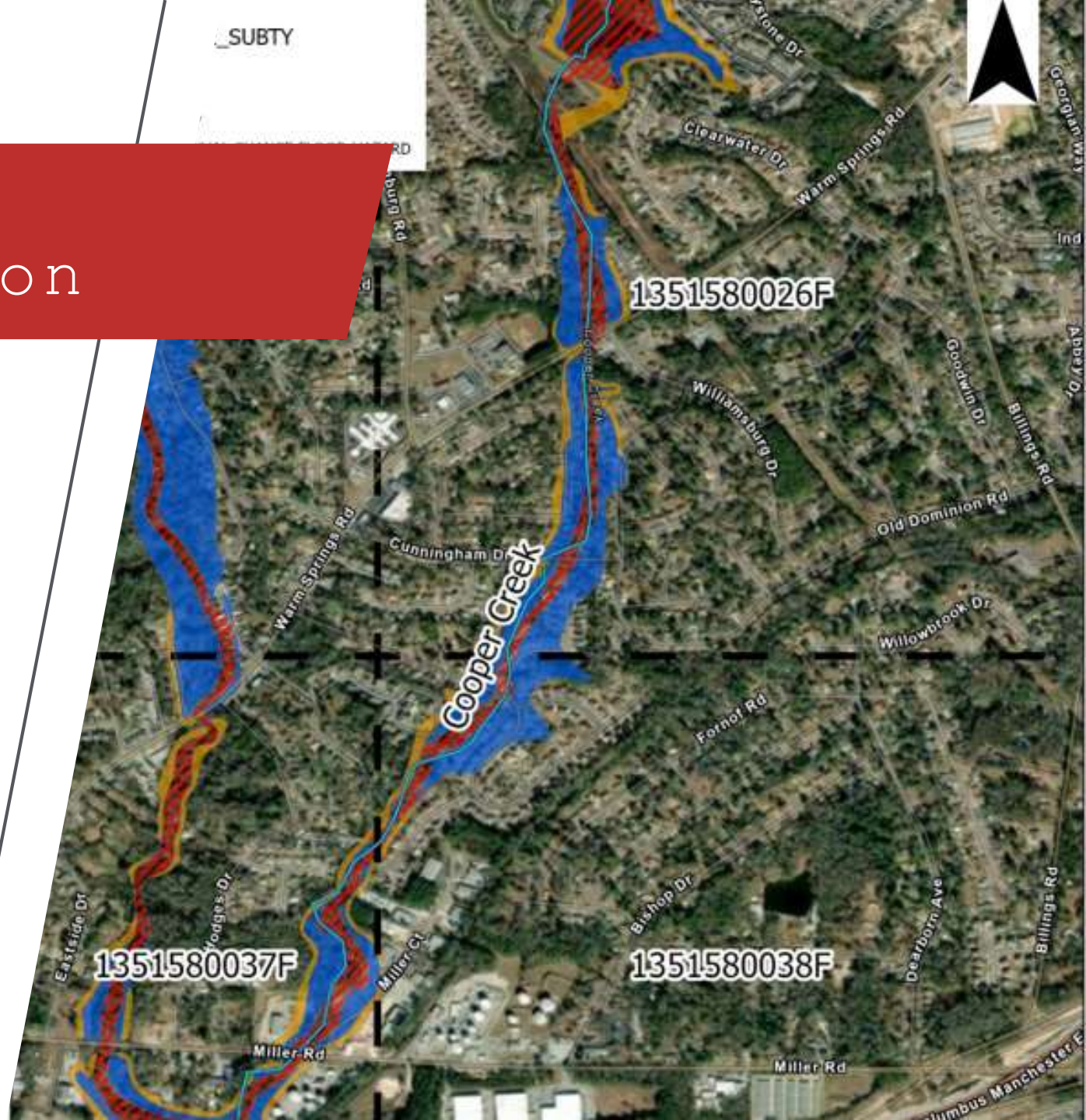

Objectives

- Project Background
- Engineering Methodology for New Study
- Map Updates
  - Floodplain Boundary Comparison
  - Properties Affected
  - Base Flood Elevation Changes

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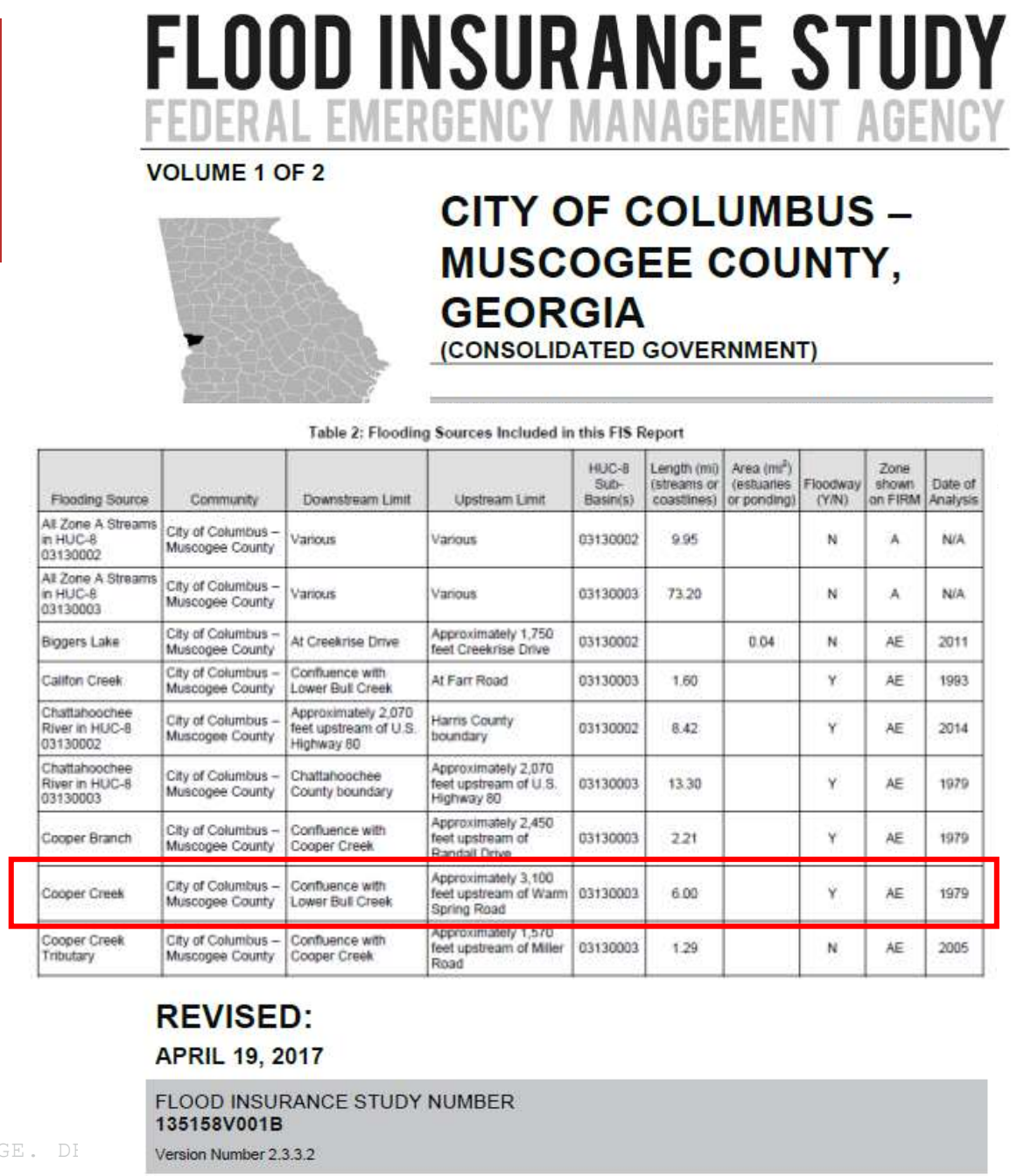
Background

- FMEA FIS Study for City of Columbus, Muscogee County: revised Apr 19, 2017
- Cooper Creek is within FEMA Flood zone AE with floodway
- The date of Analysis for Cooper Creek reach is 1979
- Due to the needs of map revision, Moon Meeks teamed with Waggoner Engineering to provide engineering study for flood map revisions.



FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 1 OF 2

CITY OF COLUMBUS – MUSCOGEE COUNTY, GEORGIA

(CONSOLIDATED GOVERNMENT)

Table 2: Flooding Sources Included in this FIS Report

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
All Zone A Streams in HUC-8 03130002	City of Columbus – Muscogee County	Various	Various	03130002	9.95		N	A	N/A
All Zone A Streams in HUC-8 03130003	City of Columbus – Muscogee County	Various	Various	03130003	73.20		N	A	N/A
Biggers Lake	City of Columbus – Muscogee County	At Creekrise Drive	Approximately 1,750 feet Creekrise Drive	03130002		0.04	N	AE	2011
Calfon Creek	City of Columbus – Muscogee County	Confluence with Lower Bull Creek	At Farr Road	03130003	1.60		Y	AE	1993
Chattahoochee River in HUC-8 03130002	City of Columbus – Muscogee County	Approximately 2,070 feet upstream of U.S. Highway 80	Harris County boundary	03130002	8.42		Y	AE	2014
Chattahoochee River in HUC-8 03130003	City of Columbus – Muscogee County	Chattahoochee County boundary	Approximately 2,070 feet upstream of U.S. Highway 80	03130003	13.30		Y	AE	1979
Cooper Branch	City of Columbus – Muscogee County	Confluence with Cooper Creek	Approximately 2,450 feet upstream of Randall Drive	03130003	2.21		Y	AE	1979
Cooper Creek	City of Columbus – Muscogee County	Confluence with Lower Bull Creek	Approximately 3,100 feet upstream of Warm Spring Road	03130003	6.00		Y	AE	1979
Cooper Creek Tributary	City of Columbus – Muscogee County	Confluence with Cooper Creek	Approximately 1,570 feet upstream of Miller Road	03130003	1.29		N	AE	2005

REVISED:

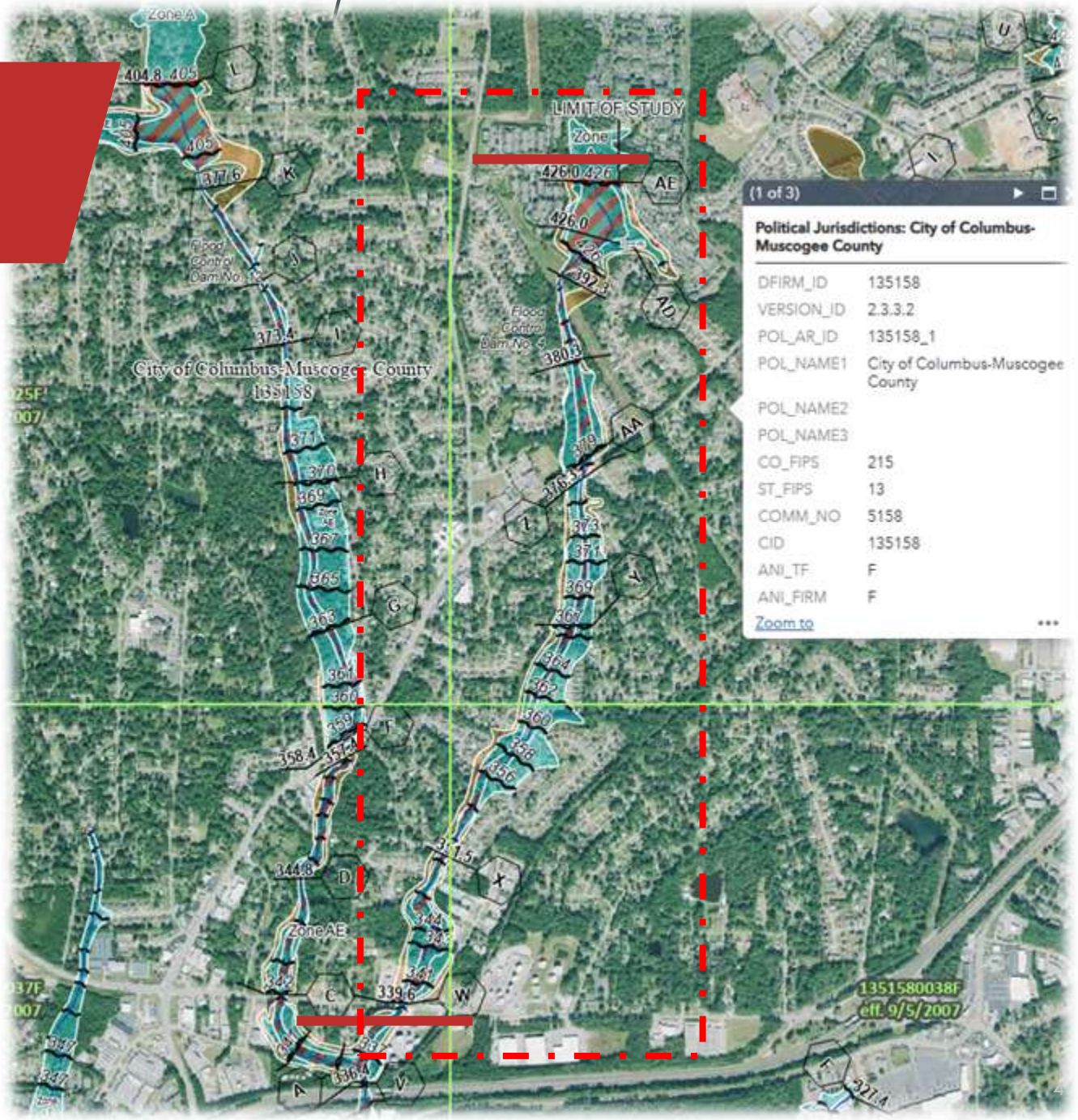
APRIL 19, 2017

FLOOD INSURANCE STUDY NUMBER
135158V001B

Version Number 2.3.3.2

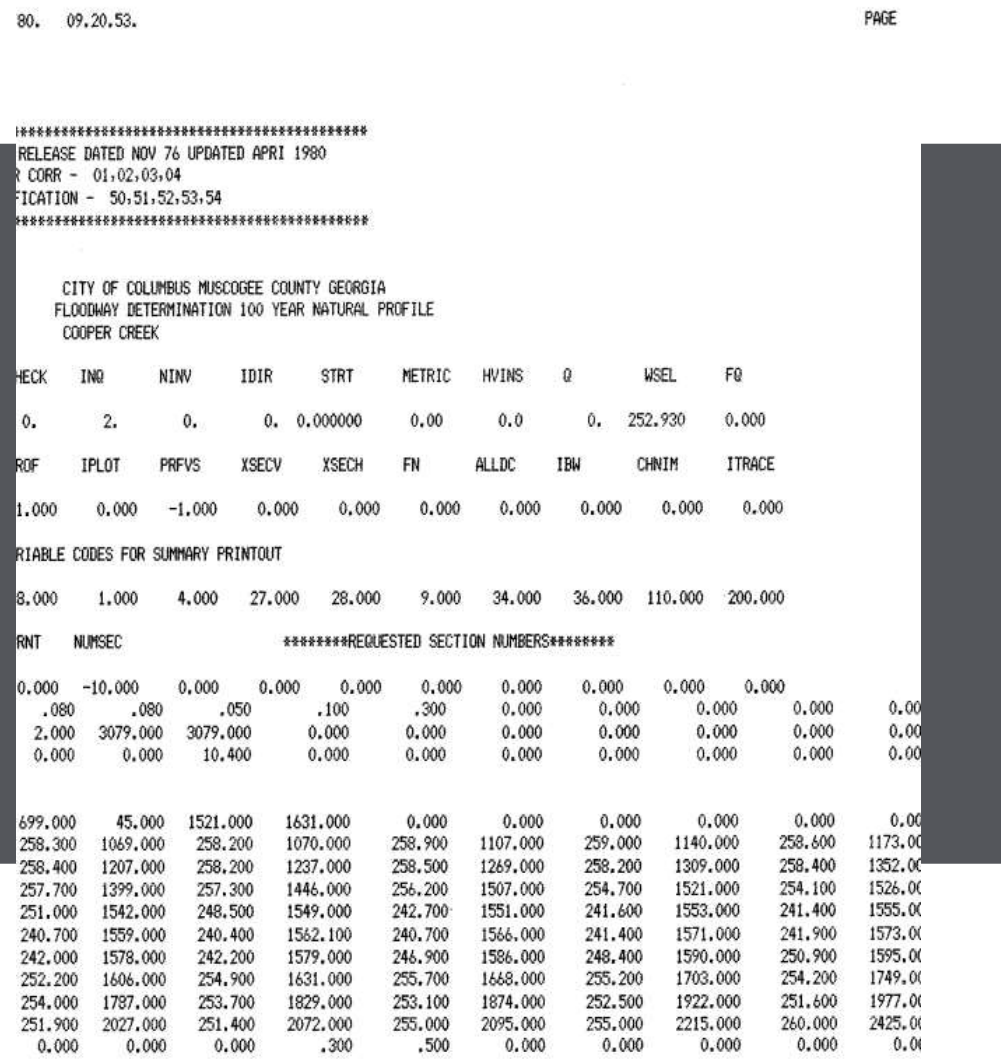
Scope of Map Revision

- Upstream limit: at Lake Smith where FEMA study limit
- Downstream limit: at the confluence of Cooper Branch near Miller Rd
- 1.8 stream miles of Cooper Creek is restudied
- The restudy will affect 3 FEMA Flood Insurance Rate Maps (FIRM) Panels: 135158 (0026F, 0038F, 0037F)
- Letter Of Map Revisions (LOMR) is required to be submitted to FEMA to make map revisions effective



Data Collections

- FEMA Original Hydraulic Model was requested through FEMA library and received in HEC2 pdf format only
- Hydraulic Survey was conducted by Moon Meeks for the study reach
- Latest LiDAR topo data from USGS



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RELEASE DATED NOV 76 UPDATED APRI 1980
R CORR - 01,02,03,04
FICATION - 50,51,52,53,54

CITY OF COLUMBUS MUSCOGEE COUNTY GEORGIA
FLOODWAY DETERMINATION 100 YEAR NATURAL PROFILE
COOPER CREEK

HECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
0.	2.	0.	0.	0.000000	0.00	0.0	0.	252.930	0.000

ROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
1.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

RIABLE CODES FOR SUMMARY PRINTOUT

8.000	1.000	4.000	27.000	28.000	9.000	34.000	36.000	110.000	200.000

RNT NUMSEC ********REQUESTED SECTION NUMBERS********

0.000	-10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
.080	.080	.050	.100	.300	0.000	0.000	0.000	0.000	0.000	0.00
2.000	3079.000	3079.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
0.000	0.000	10.400	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00

699.000	45.000	1521.000	1631.000	0.000	0.000	0.000	0.000	0.000	0.00
258.300	1069.000	258.200	1070.000	258.900	1107.000	259.000	1140.000	258.600	1173.00
258.400	1207.000	258.200	1237.000	258.500	1269.000	258.200	1309.000	258.400	1352.00
257.700	1399.000	257.300	1446.000	256.200	1507.000	254.700	1521.000	254.100	1526.00
251.000	1542.000	248.500	1549.000	242.700	1551.000	241.600	1553.000	241.400	1555.00
240.700	1559.000	240.400	1562.100	240.700	1566.000	241.400	1571.000	241.900	1573.00
242.000	1578.000	242.200	1579.000	246.900	1586.000	248.400	1590.000	250.900	1595.00
252.200	1606.000	254.900	1631.000	255.700	1668.000	255.200	1703.000	254.200	1749.00
254.000	1787.000	253.700	1829.000	253.100	1874.000	252.500	1922.000	251.600	1977.00
251.900	2027.000	251.400	2072.000	255.000	2095.000	255.000	2215.000	260.000	2425.00
0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.00

Engineering Methodology

- FEMA Effective discharge remains the same as effective for 2.2 sq miles drainage basin just upstream of confluence of Cooper Branch (Figure)
- HECRAS 1D model was used for hydraulic study
- Elevation Source: Lidar 2017 Georgia County Lidar 3.28 ft (1m) resolution
- Bathymetry: Survey data included throughout the study reach

Table 10: Summary of Discharges continued

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Chattahoochee River in HUC-8 03130002	Approximately 12,170 feet upstream of Oliver Dam	4,600	88,568	110,102	126,335	142,530	180,938
Chattahoochee River in HUC-8 03130002	Approximately 17,110 feet upstream of Oliver Dam	4,550	86,616	107,746	123,717	139,694	177,750
Cooper Branch	Just upstream of confluence with Cooper Creek	3.69	926	*	1,340	1,536	2,192
Cooper Creek	Just upstream of confluence with Lower Bull Creek	10.01	1,810	*	2,661	3,079	4,540
Cooper Creek	At State Highway 22/Macon Road	9.36	1,541	*	2,283	2,646	3,912
Cooper Creek	Just upstream of confluence of Cooper Branch	2.20	674	*	976	1,115	1,613
Cox Creek	Just upstream of Norfolk Southern Railway	3.54	623	*	990	1,164	1,725
Dozier Creek	At Chattsworth Road	3.37	463	*	726	856	1,495
Dram Branch	Just upstream of confluence with Lower Bull Creek	1.49	899	*	1,366	1,600	2,436

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Results: Changes in Base Flood Elevations

- Downstream of DAM: survey data incorporation
- Cunningham Dr: overtopping at double 10’x4’ box culvert
- Upstream of Miller Rd: overtopping at a triple 4’x4’ box culvert

HYDRAULIC MODEL RESULTS COMPARISON -100YR

FEMA Effective XS		NEW STUDY	WSEL (ft)			notes
LETTER	Location	Station	FEMA	new study	Difference	
AE	lake intake	11473	426.0	426	0.0	lake dam control
AD	us of dam	10868	426.0	426	0.0	lake dam control
AC	ds of dam	10377	392.3	393.74	1.4	ds of dam
AB		9484	380.3	381.59	1.3	survey data
AA	us of Warm Springs Rd	8331	378.6	377.86	-0.7	
Z	ds of Warm Springs Rd	8216	376.3	374.55	-1.8	
Y	Cunningham Dr	6509	367.2	368.34	1.1	OVER TOPPING@Double 10'X4' BOX CULVERT
X	US of Mccaghren Dr	3424	351.5	348.68	-2.8	
W	US of Miller Rd	1221	339.6	342.77	3.2	OVER TOPPING AT TRIPLE 4'X4' BOX CULVERT
	DS of Miller Rd	1134	338.0	336.9	-1.1	OVER TOPPING AT TRIPLE 4'X4' BOX CULVERT
V	US27	33	336.4	336.11	-0.3	tie in location with FEMA XS V

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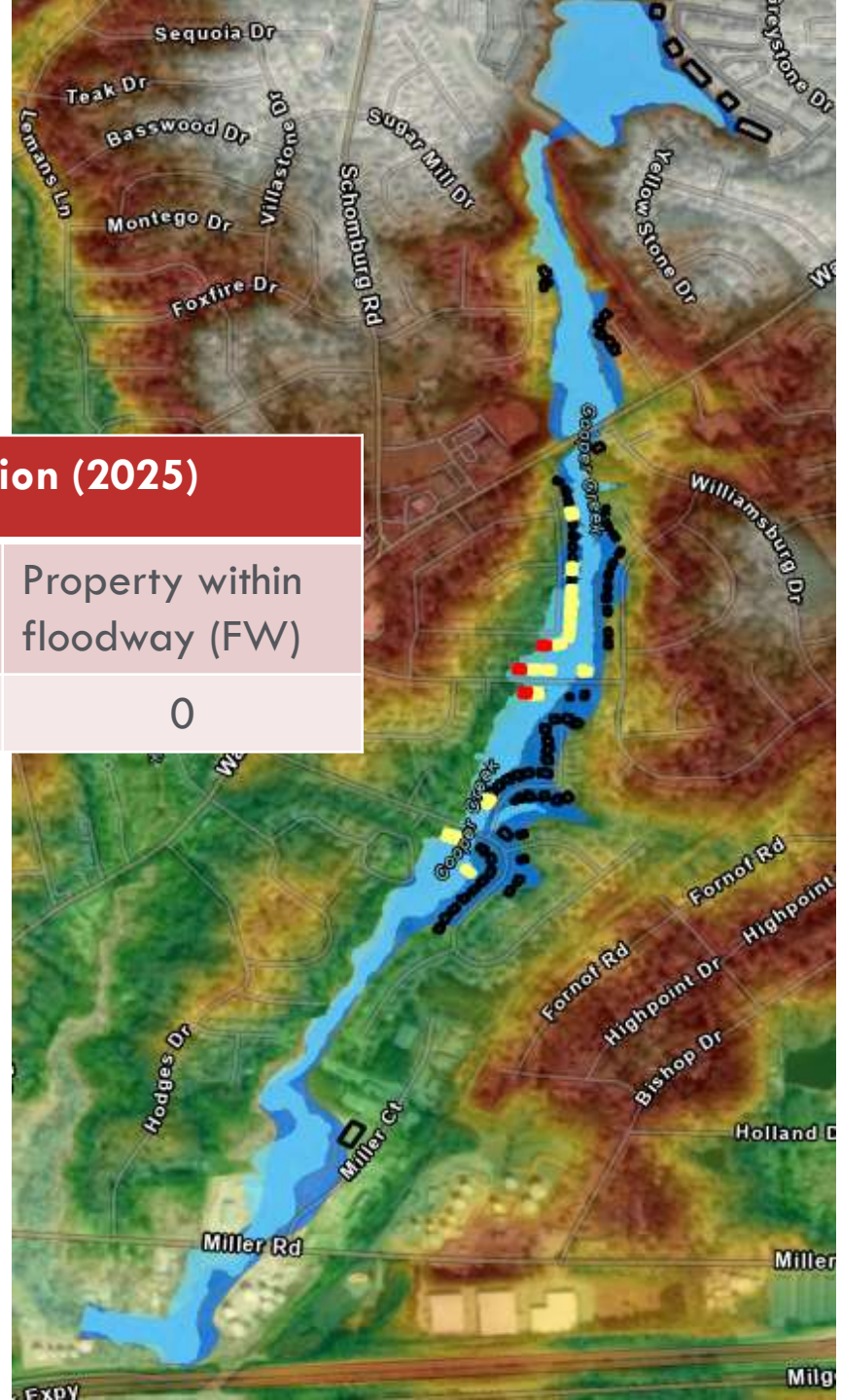
MAP REVISION – INUNDATION STATS

FEMA Effective (1979)		Map Revision (2025)	
Property within SFHA	Property within floodway (FW)	Property within floodplain	Property within floodway (FW)
83	10	19	0

80% of properties within the SFHA were removed in the new map!



1% SFHA boundary

1% Restudy Flood boundary

Properties in the Floodplain unchanged

Properties removed from the Floodplain

Properties added to the Floodplain

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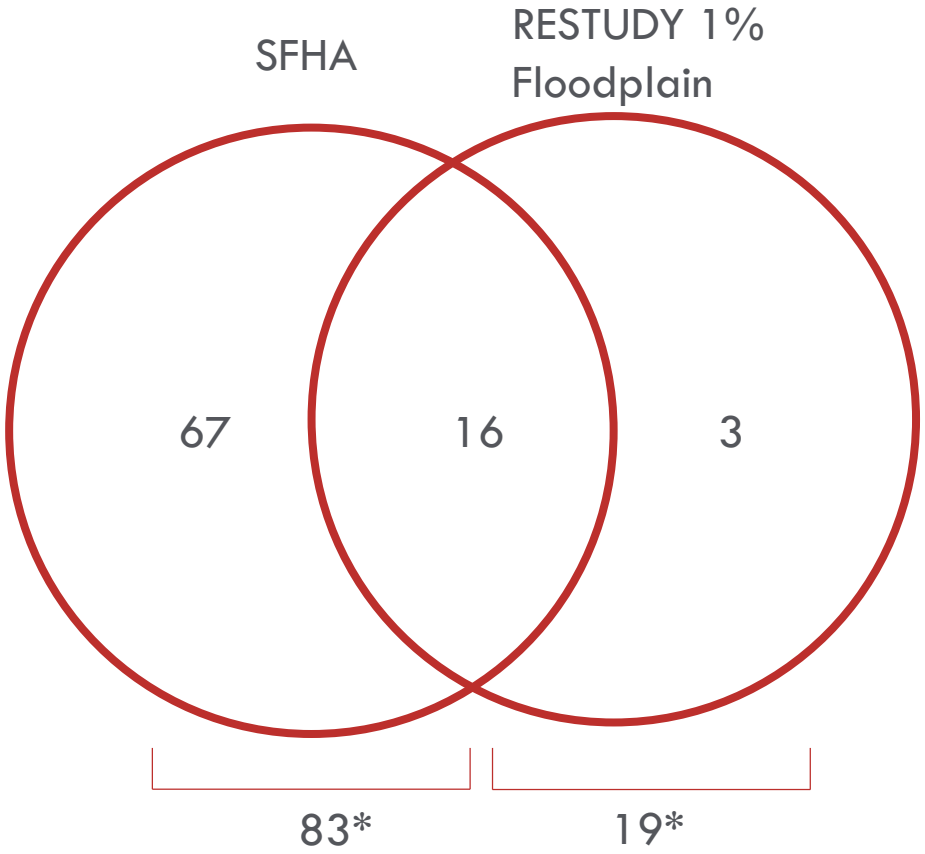
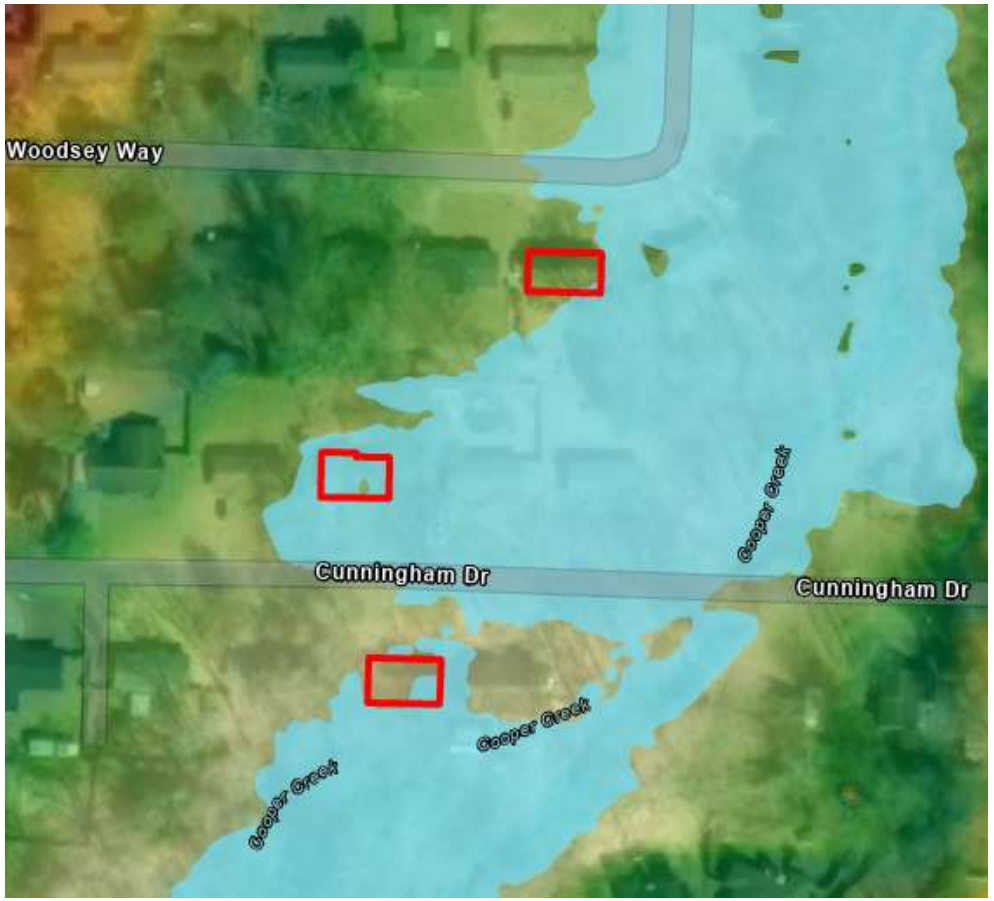
Inundated Structures (100yr Floodplain)



* numbers include both entirely or partially in the floodplain



Two properties on Cunningham Dr and **one** property on Woodsey Way

1% Restudy Flood boundary

Properties added to the Floodplain

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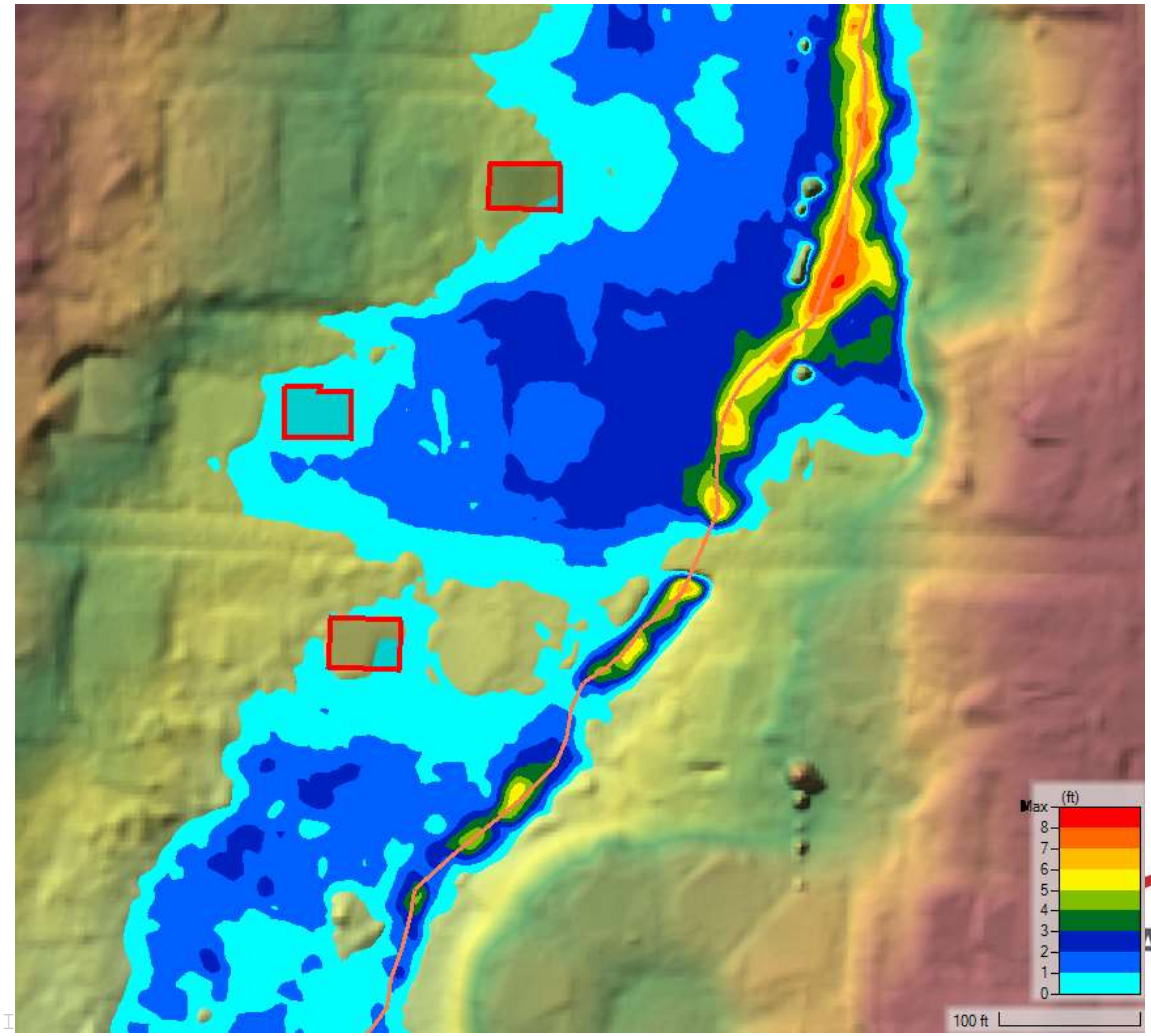
Inundated Structures (100yr Flood Depth)

1% Restudy Flood boundary

Properties added to the Floodplain

Note: Inundation Depth for all three properties added in revised floodplain are **less than 1ft**



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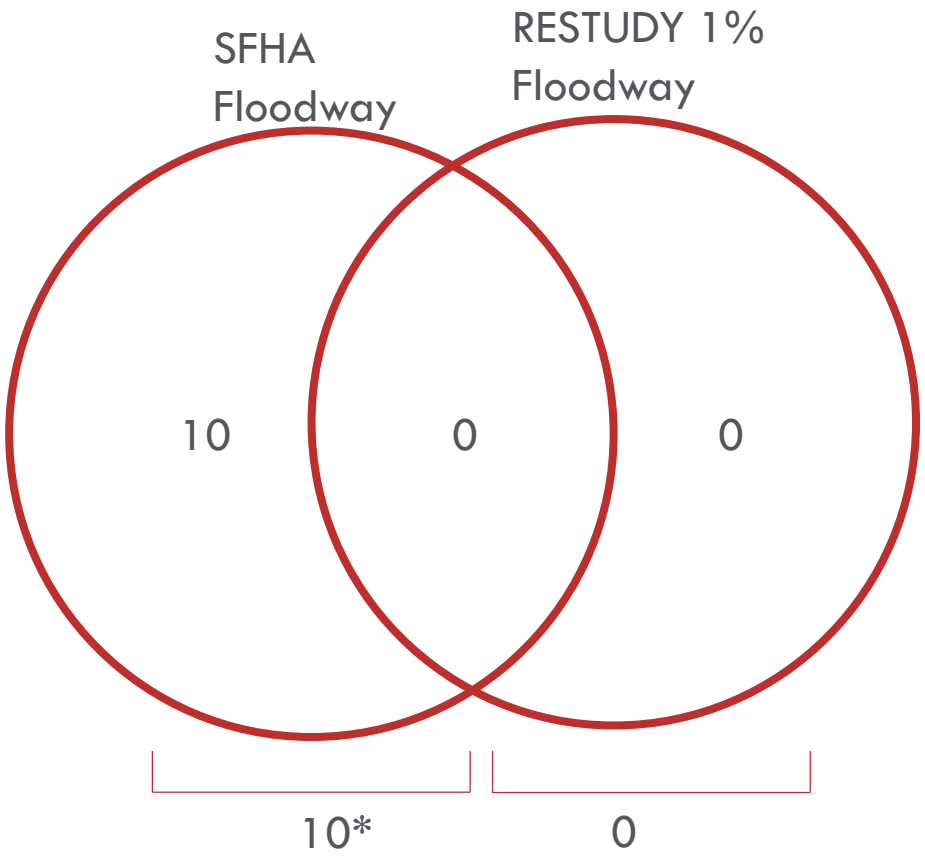
Inundated Structures (100yr Floodway)



* numbers include both entirely or partially in the floodway

Properties possibly on the floodway due to misrepresentation of channel

1% SFHA FW boundary

Properties on the Effective Floodway

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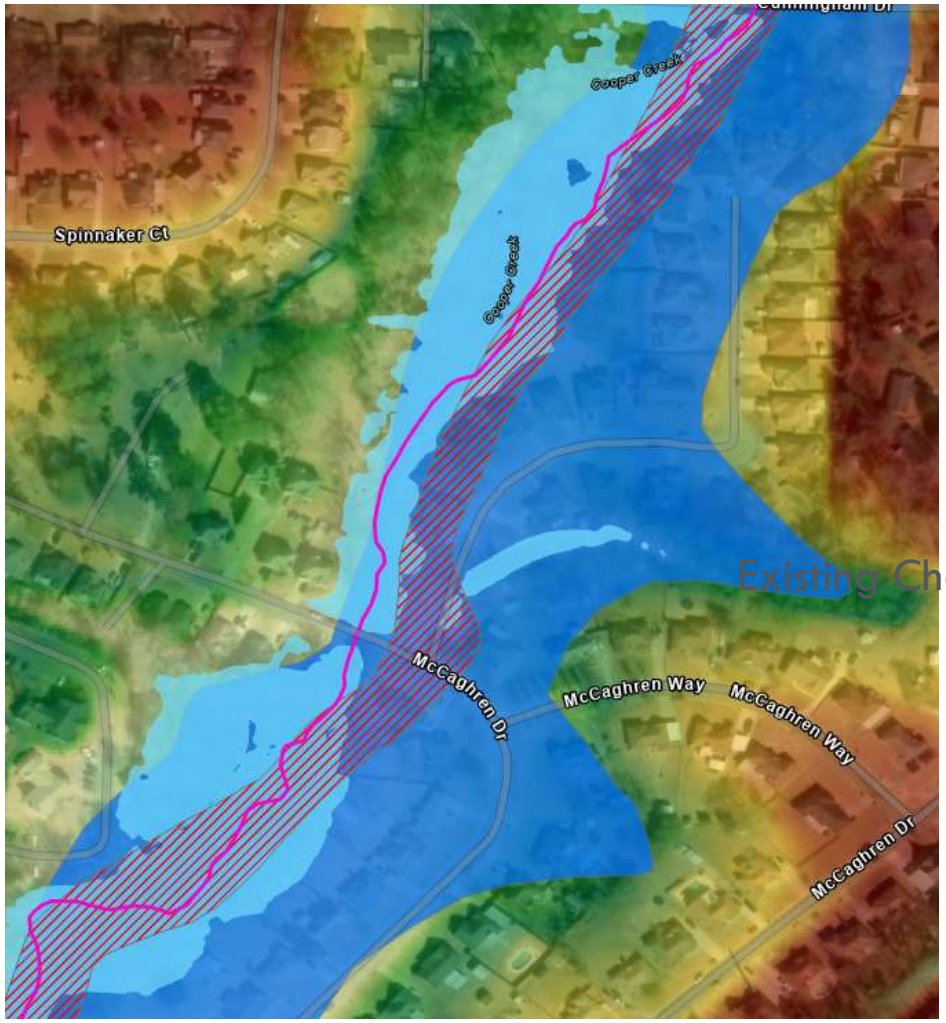
Map Revision- Floodplain Boundary

Why did flood boundary change from 1979 ?

- Latest Lidar data shows the accurate stream course
- **Better data leads to better maps**
- New hydraulic survey collected latest information about the structures.



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Result: Improved Floodplain Boundary

- Channel modification from urban development since 1979
- **Better data leads to better maps:** Knowing the exact path of the stream helps create accurate floodplain and floodway maps

1% SFHA FW boundary

1% Restudy FW boundary

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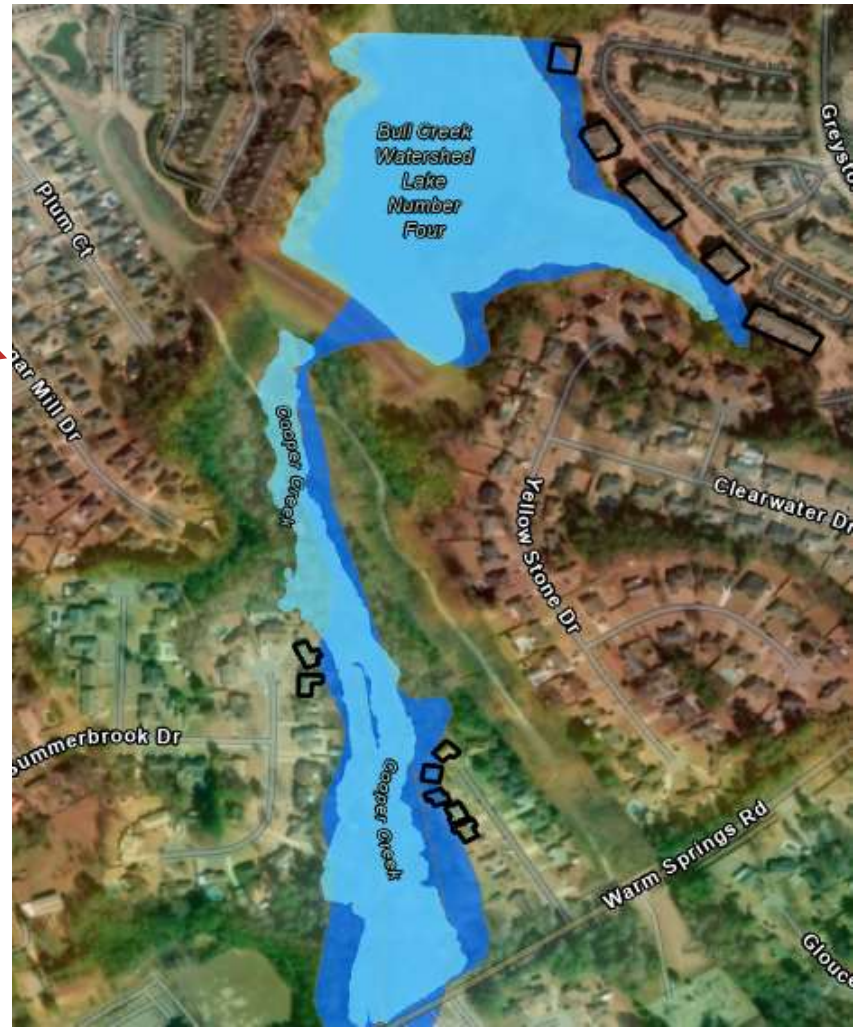
Map Changes- Upstream



1% SFHA boundary

1% Restudy Flood boundary

Properties removed from the Floodplain

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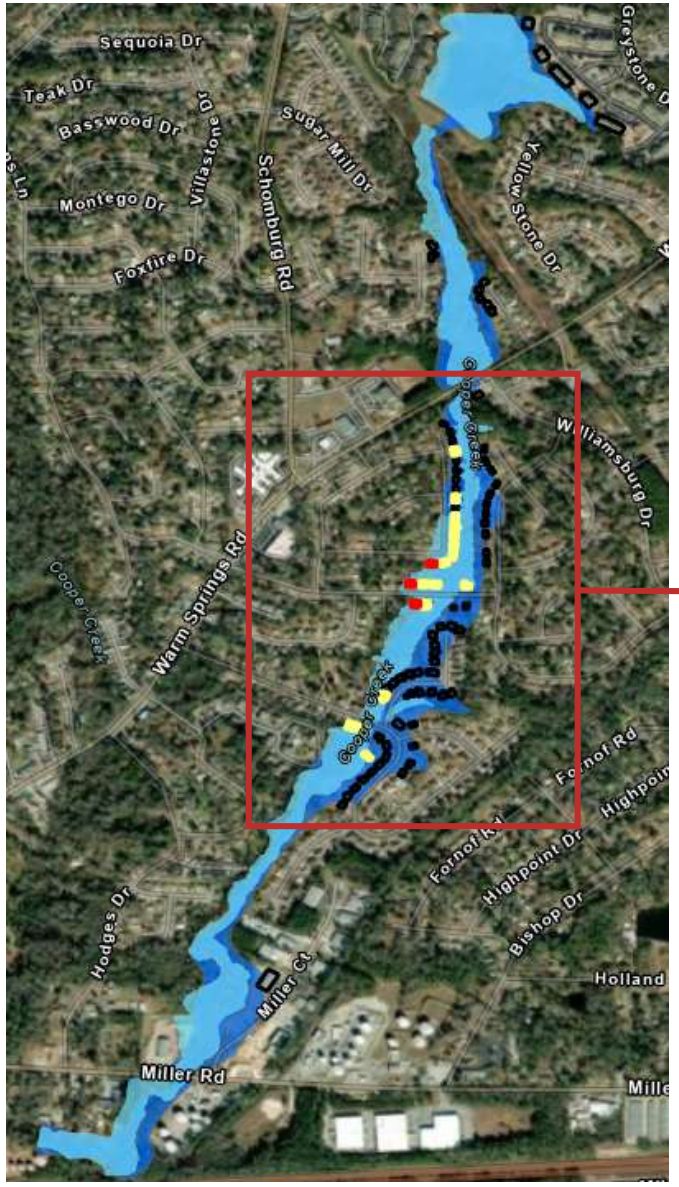
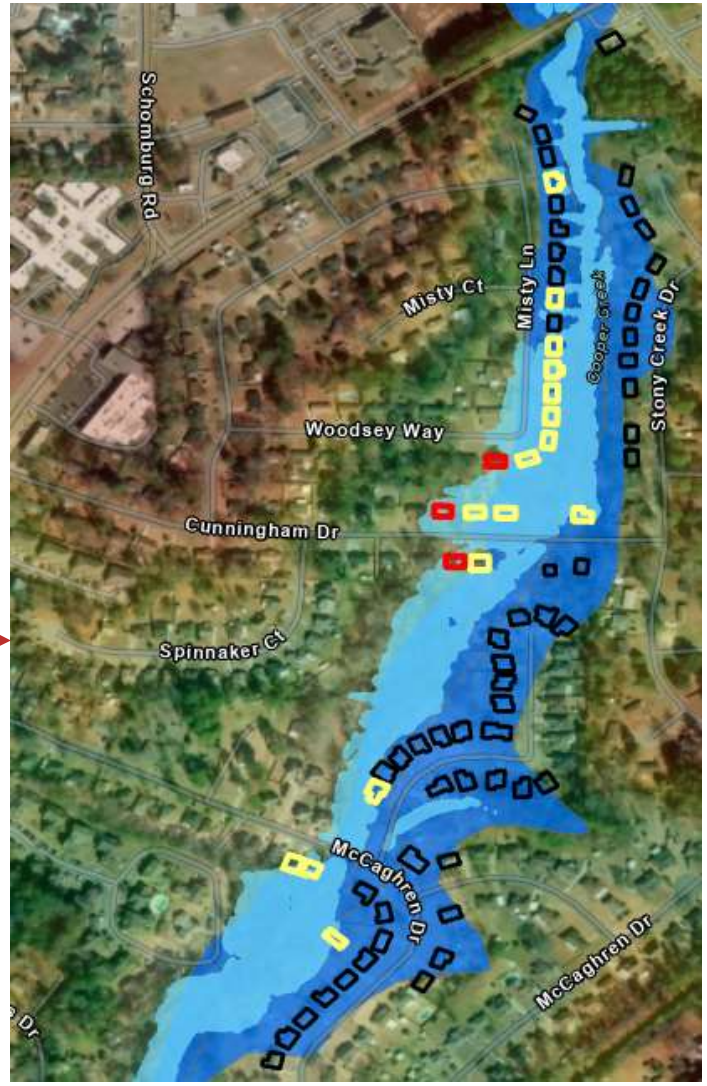
MAP CHANGES –Middle





1% SFHA boundary

1% Restudy Flood boundary

Properties in the Floodplain unchanged

Properties removed from the Floodplain

Properties added to the Floodplain

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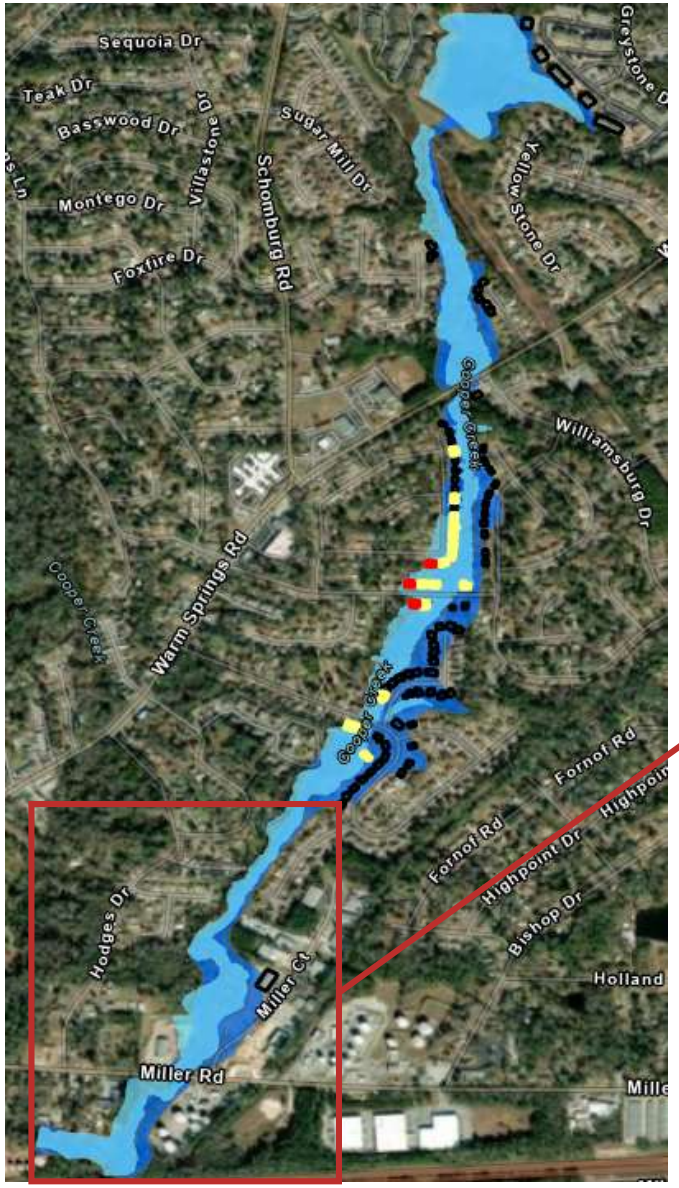
MAP CHANGES – Downstream



1% SFHA boundary

1% Restudy Flood boundary

Properties removed from the Floodplain

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LOMR Application Process

1. Determine the Need for a LOMR

•• A physical change has occurred in the floodplain.

•• You want FEMA to officially revise the floodplain boundaries or flood elevations on the FIRM.

• Your project alters flood flow characteristics (e.g., culvert replacement, channel modification)

2. Prepare Technical Data

• Hydrologic and Hydraulic (H&H) Modeling Topographic Information (LiDAR, survey data).

• As-Built Plans (for completed construction).

• Community Acknowledgment (Local floodplain administrator's review).

• All modeling must meet NFIP regulations (44 CFR 65.6).

3. Submit Application via FEMA's Online MT-2 Portal

■• Completed MT-2 Forms

■• Certified H&H models (input/output)

■• Engineering analysis report

■Topographic work map

■• Floodplain development documentation

4. FEMA Review Process

After submittal, FEMA:

• Reviews for completeness (within ~15 days).

• Sends Requests for Information (RFIs) if needed.

• Evaluates compliance with FEMA standards.

• Coordinates with state and local officials.

FEMA Review Timeline in General

Conclusion

- Preliminary Result: subject to change
- Open to investigating Areas of Interest (AOIs) by the Community
- Elevation Certificate: Removing a property from floodplain
- Appeal period: 90 days after LOMR approval

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Questions

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THANK YOU!

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