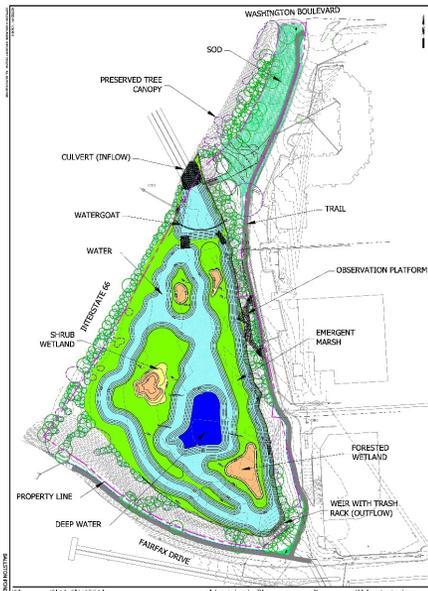


# Bluemont Civic Association

July 19, 2021



# Speakers

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# Agenda – information requested

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Status of survey of Abingdon St area and FEMA floodplain map process

Status of FEMA appeal period

Questions about Ballston Pond Design

Maintenance of channels

# What is the Flood Insurance Rate Map?

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Federal Emergency Management Agency (FEMA) publishes flood hazard maps, called Flood Insurance Rate Maps (FIRMs). The purpose of a FIRM is to show the areas in a community that are subject to flooding and the risk associated with these flood hazards.

The flood hazard and risk information presented on the FIRMs is the result of engineering studies that are performed by engineering companies, other Federal agencies, or communities, which are reviewed for compliance with FEMA guidelines and approved by FEMA.

<https://environment.arlingtonva.us/flood-insurance-rate-maps/>

<https://msc.fema.gov/portal/search#searchresultsanchor>

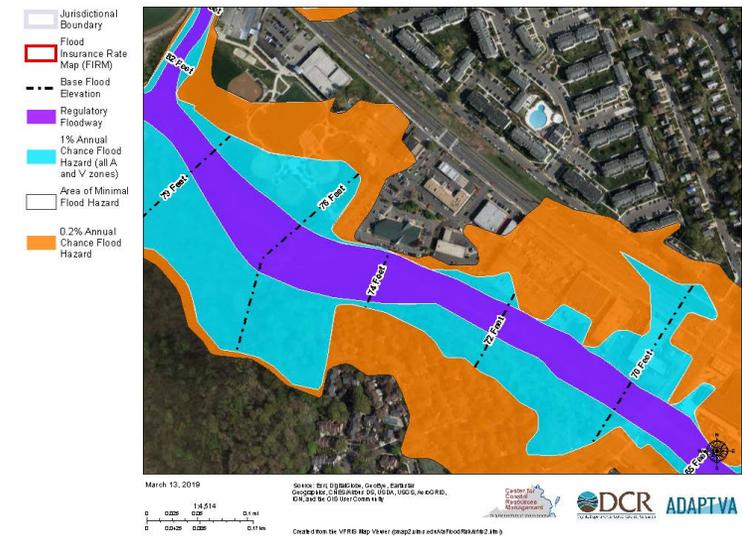


# Special Flood Hazard Area

One of the areas shown on the FIRM is a Special Flood Hazard Area (SFHA).

The SFHA is the area that has a 1-percent or greater chance of flooding in any given year.

This area is also referred to by some as the 1-percent-annual-chance floodplain, base floodplain, or the 100-year floodplain.



# Flood Insurance Rate Map Update Schedule

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9/18/20: Preliminary maps released

October 2020: County notify property owners

11/18/20: Public meeting

11/19 -12/19/20: 30 day general comment period begins after public meeting – the County submitted comments on several areas, including Abingdon St.

July, 2021: 90 day technical appeal period will begin approximately in July, 2021. Property owner can submit data to appeal or revise floodplain designation.

Spring 2022 (approx.): FEMA will issue letter of final determination. County will need to update ordinance.

Fall 2022 (approx.): New FIRMS will be effective

# Update on Survey Work

What did we do?

What did we find out?

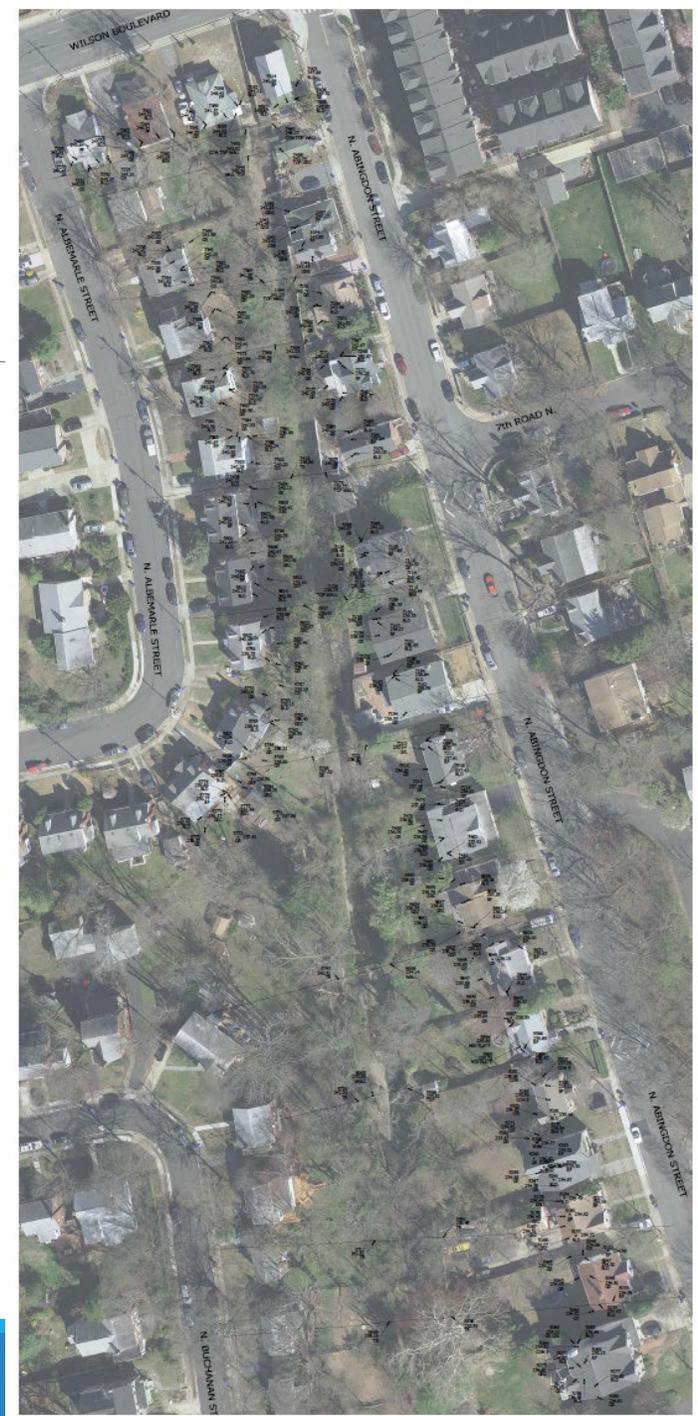


# Update on Survey Work

---

## What did we do?

1. Spot elevations
2. Cross sections
3. Photo Documentation
4. Incorporated elevation data into FEMA digital terrain model



# Update on Survey Work

What did we do?

- 1. Spot elevations - details



# Update on Survey Work

What did we do?

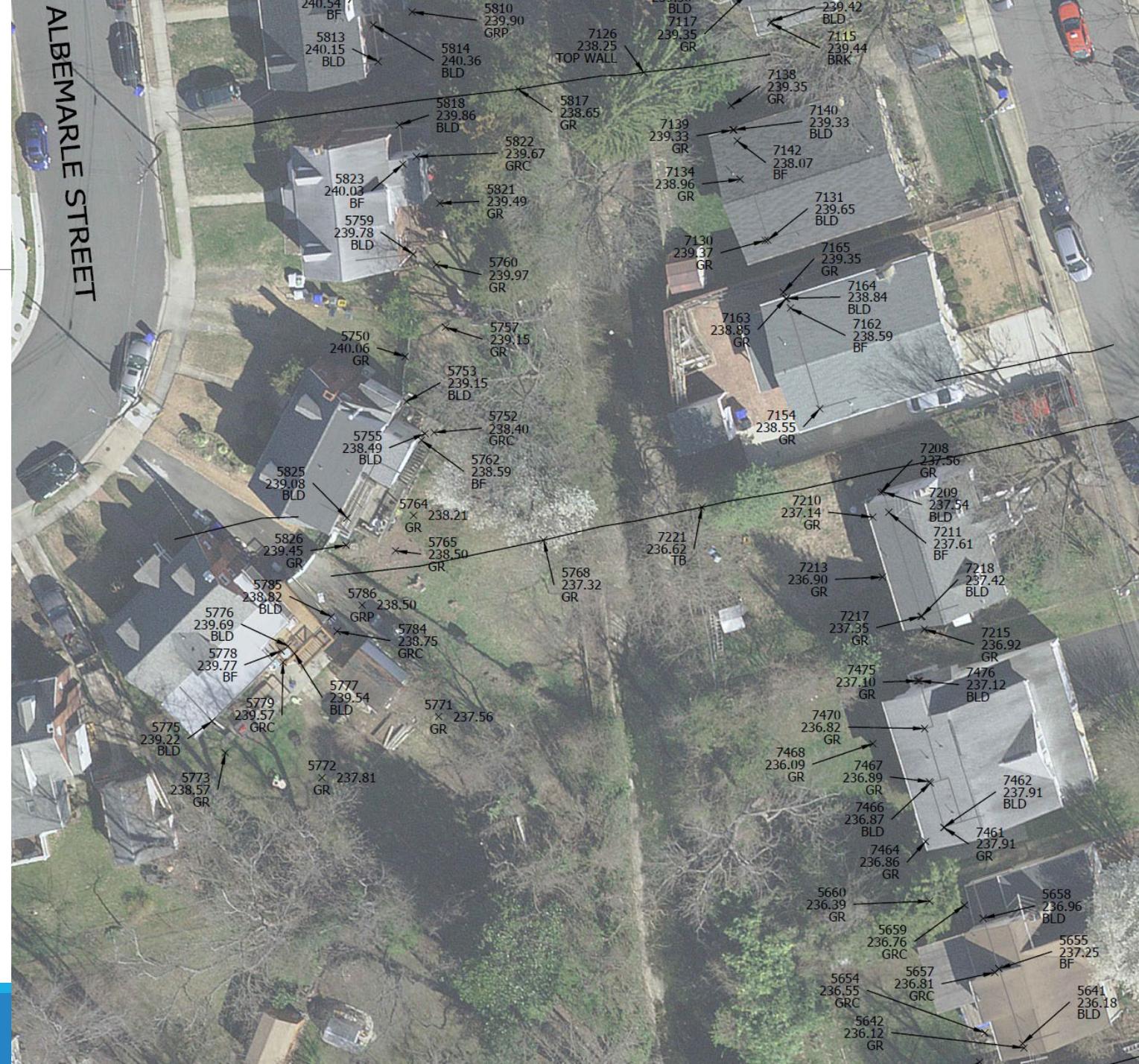
1. Spot elevations - details



# Update on Survey Work

What did we do?

1. Spot elevations - details



# Update on Survey Work

## What did we do?

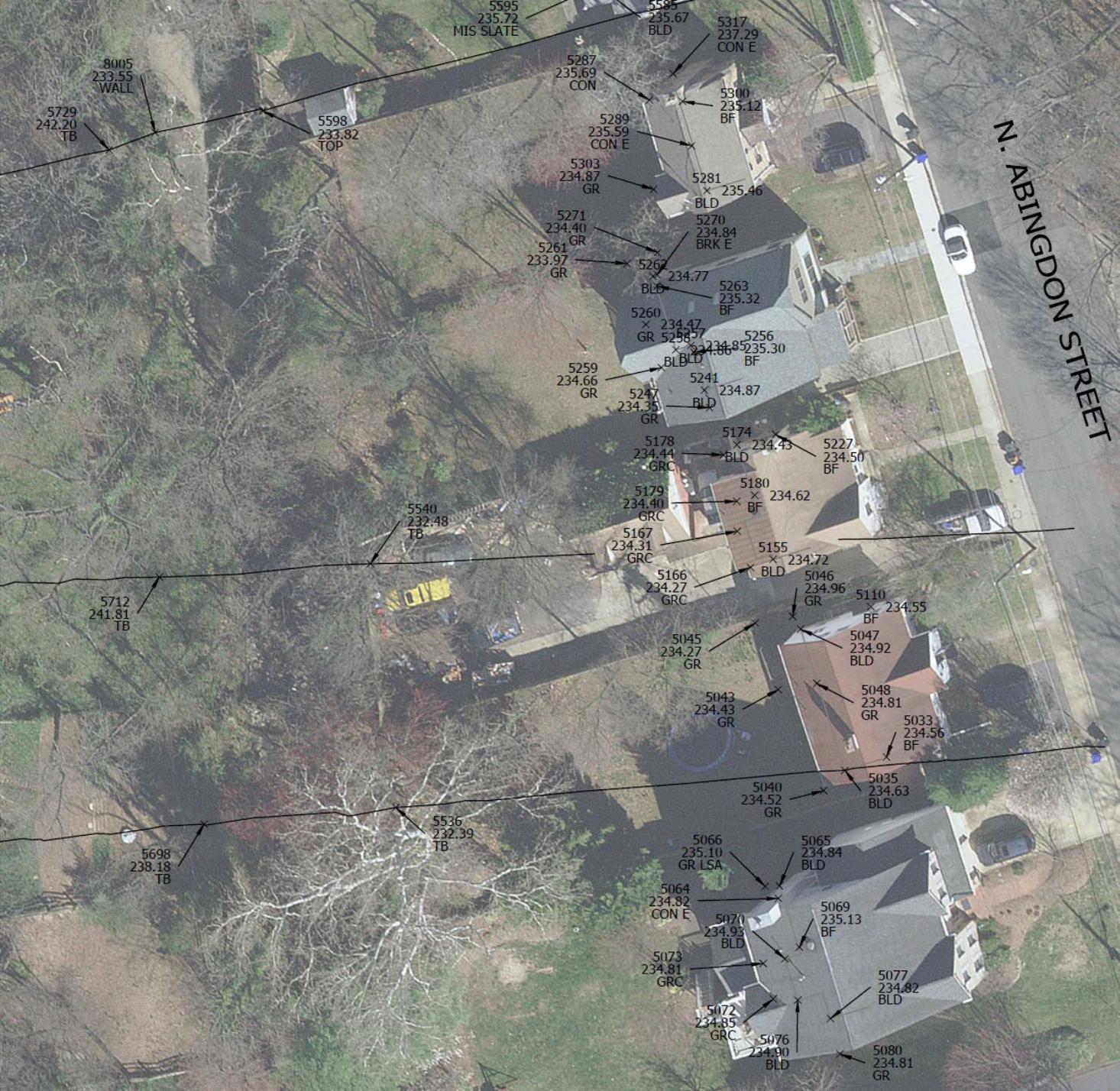
- 1. Spot elevations - details



# Update on Survey Work

What did we do?

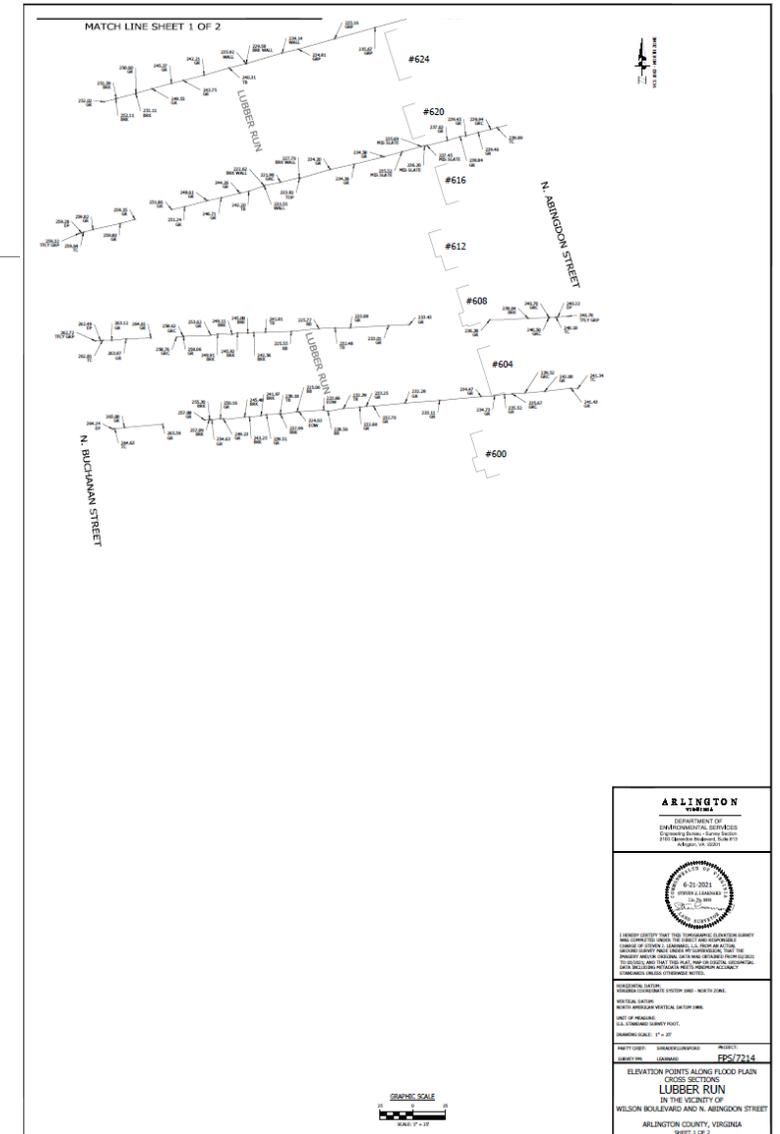
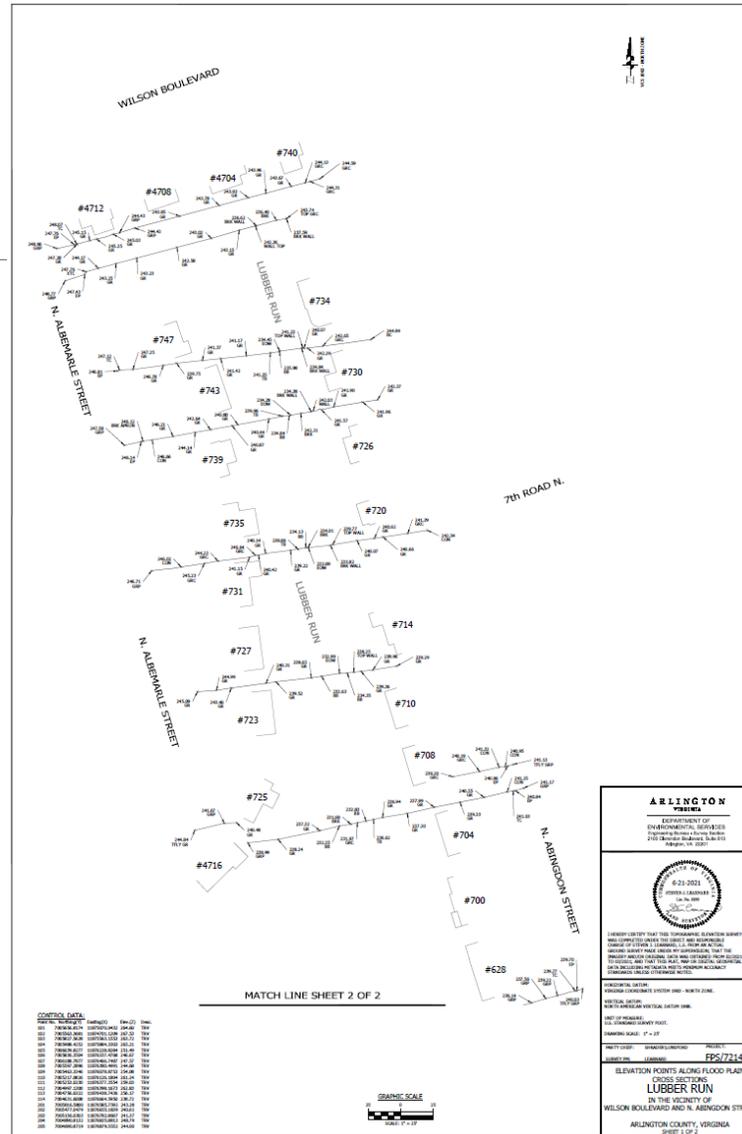
1. Spot elevations - details



# Update on Survey Work

What did we do?

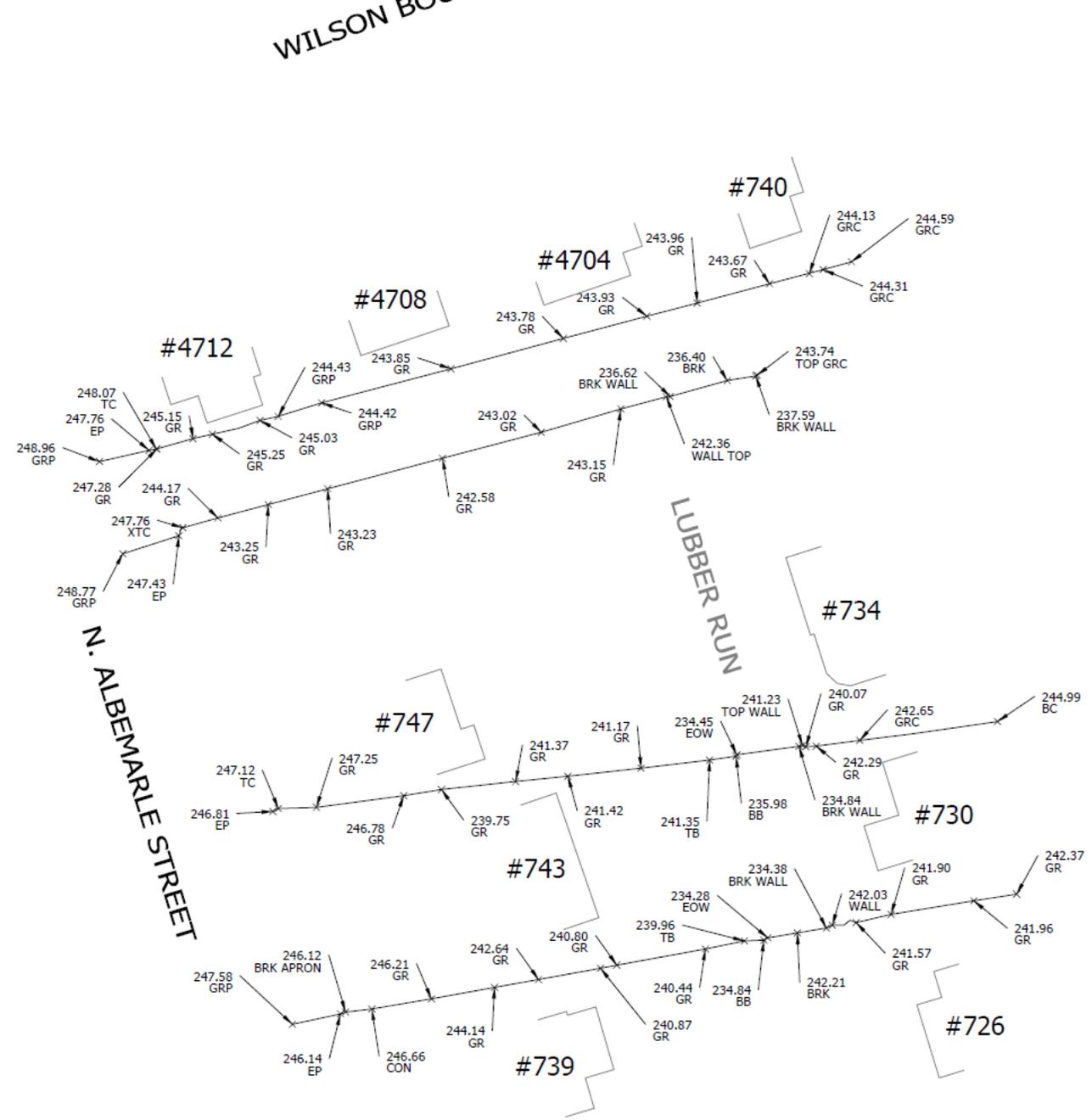
2. Cross sections



# Update on Survey Work

What did we do?

2. Cross sections - details

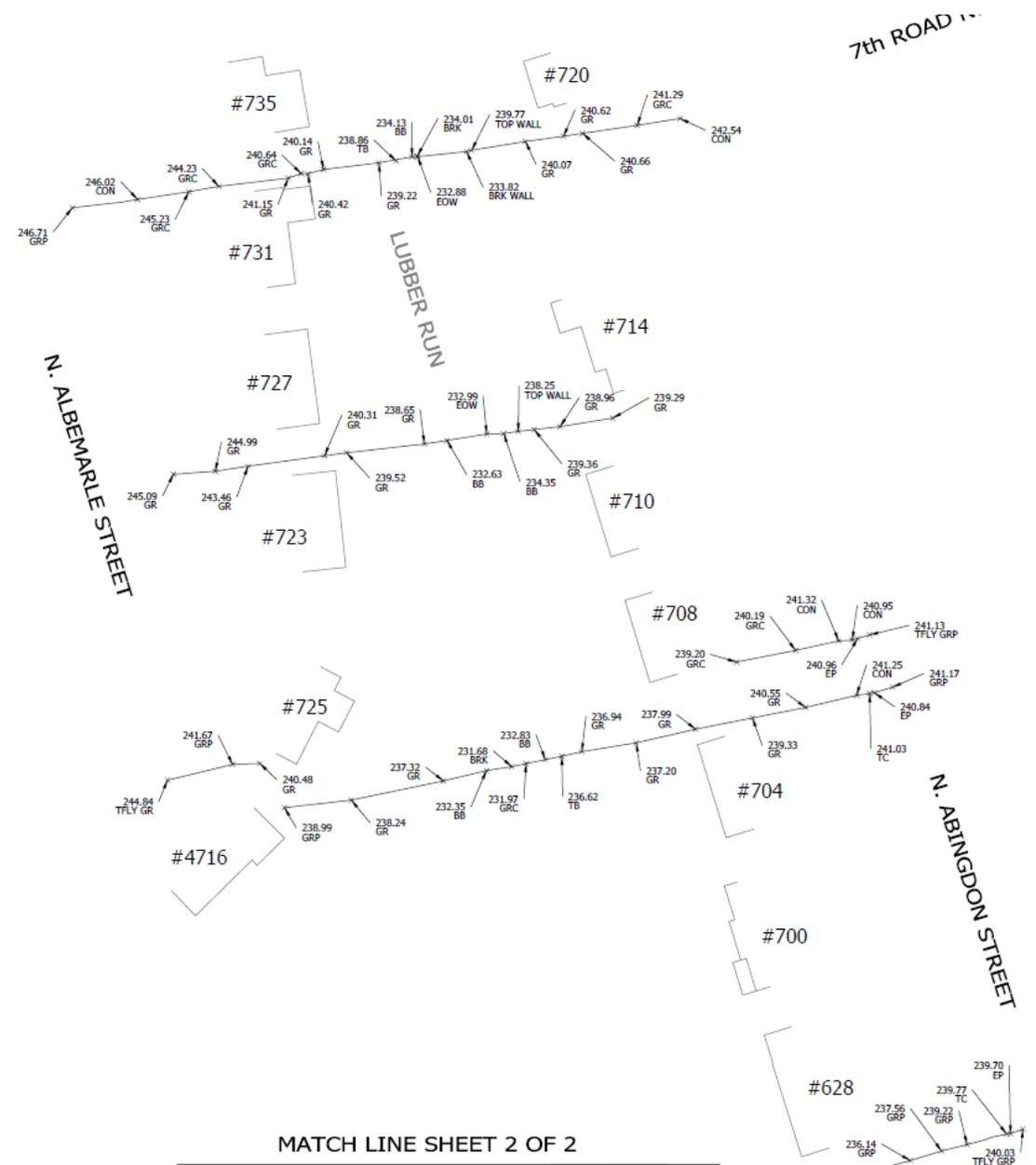




# Update on Survey Work

What did we do?

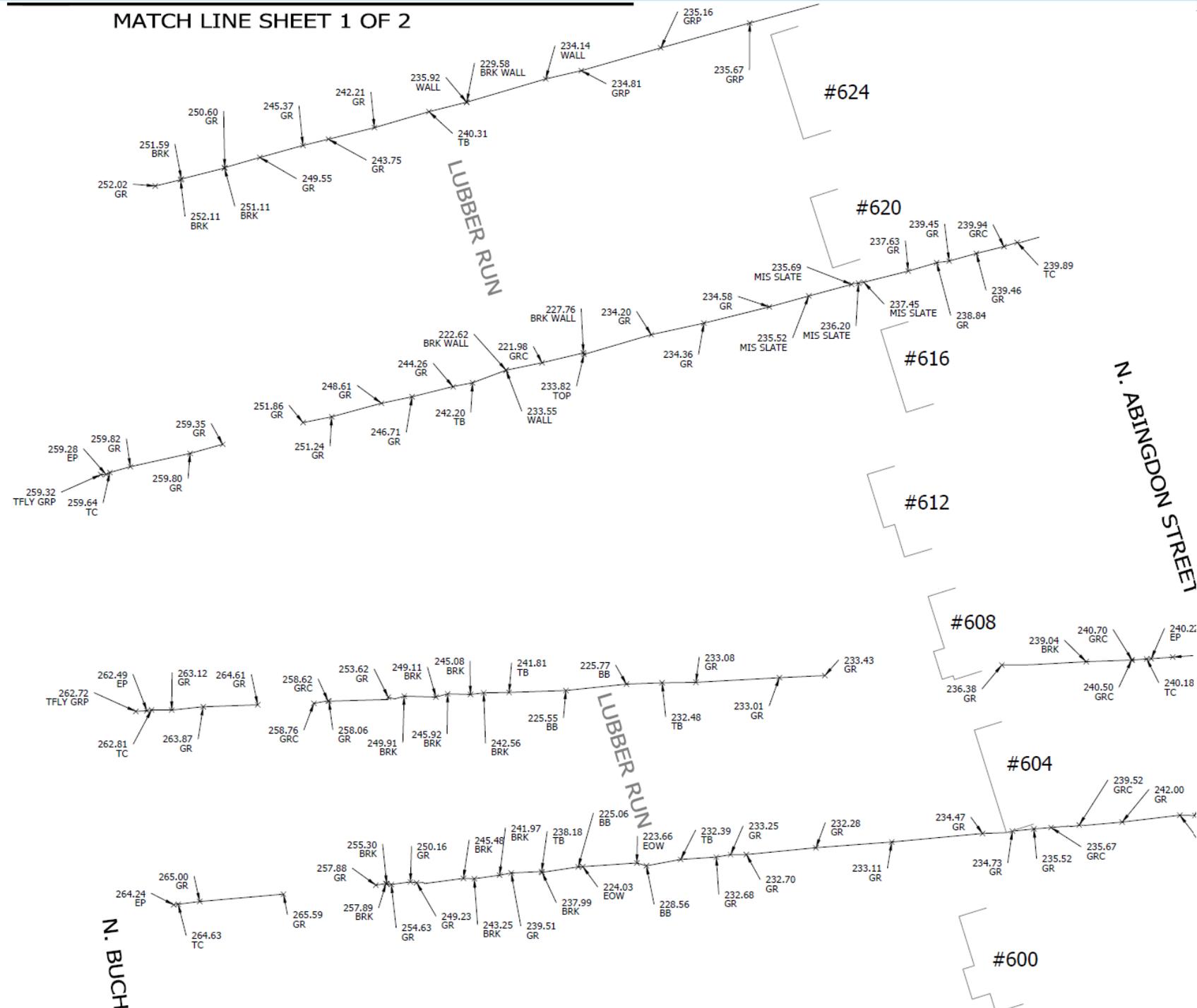
2. Cross sections - details



# Update on Survey Work

What did we do?

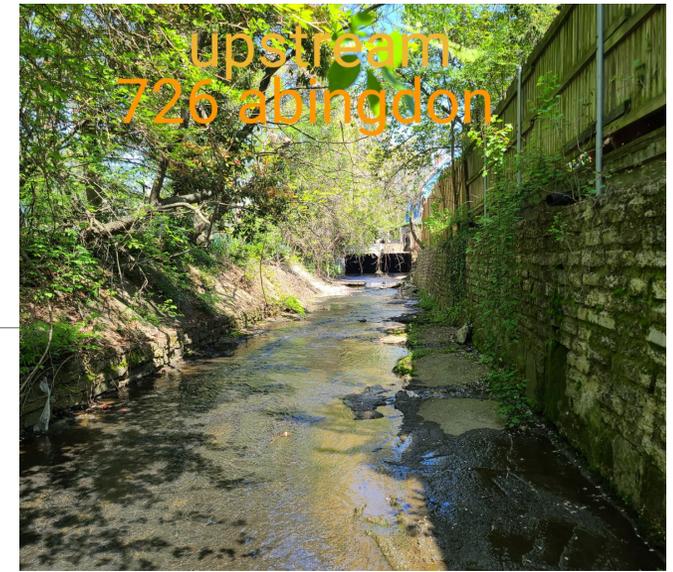
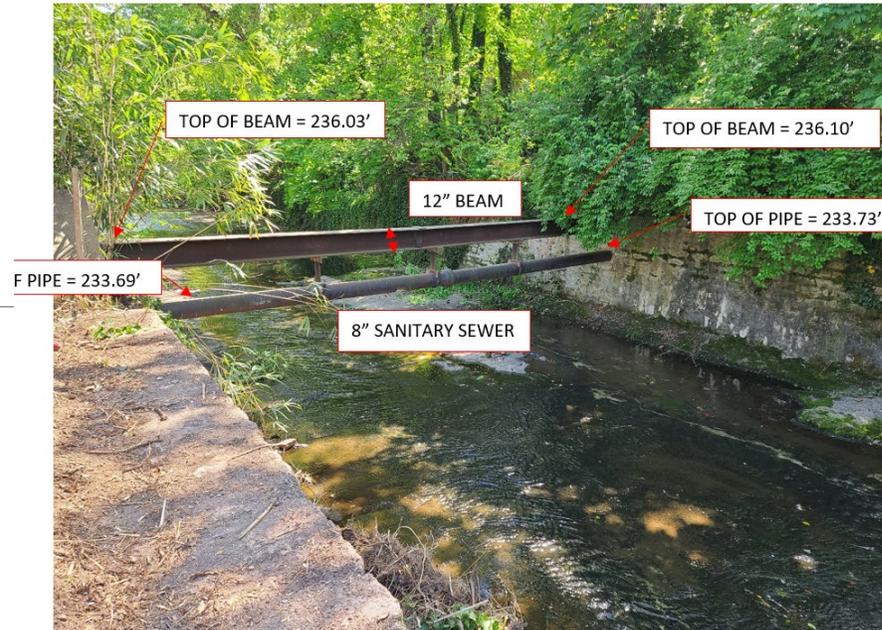
2. Cross sections - details



# Update on Survey Work

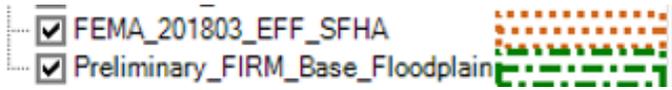
What did we do?

3. Photo Documentation

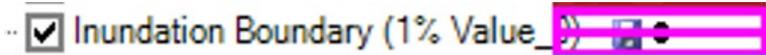


# Update on Survey Work

What did we find out?



County Analysis for Appeal

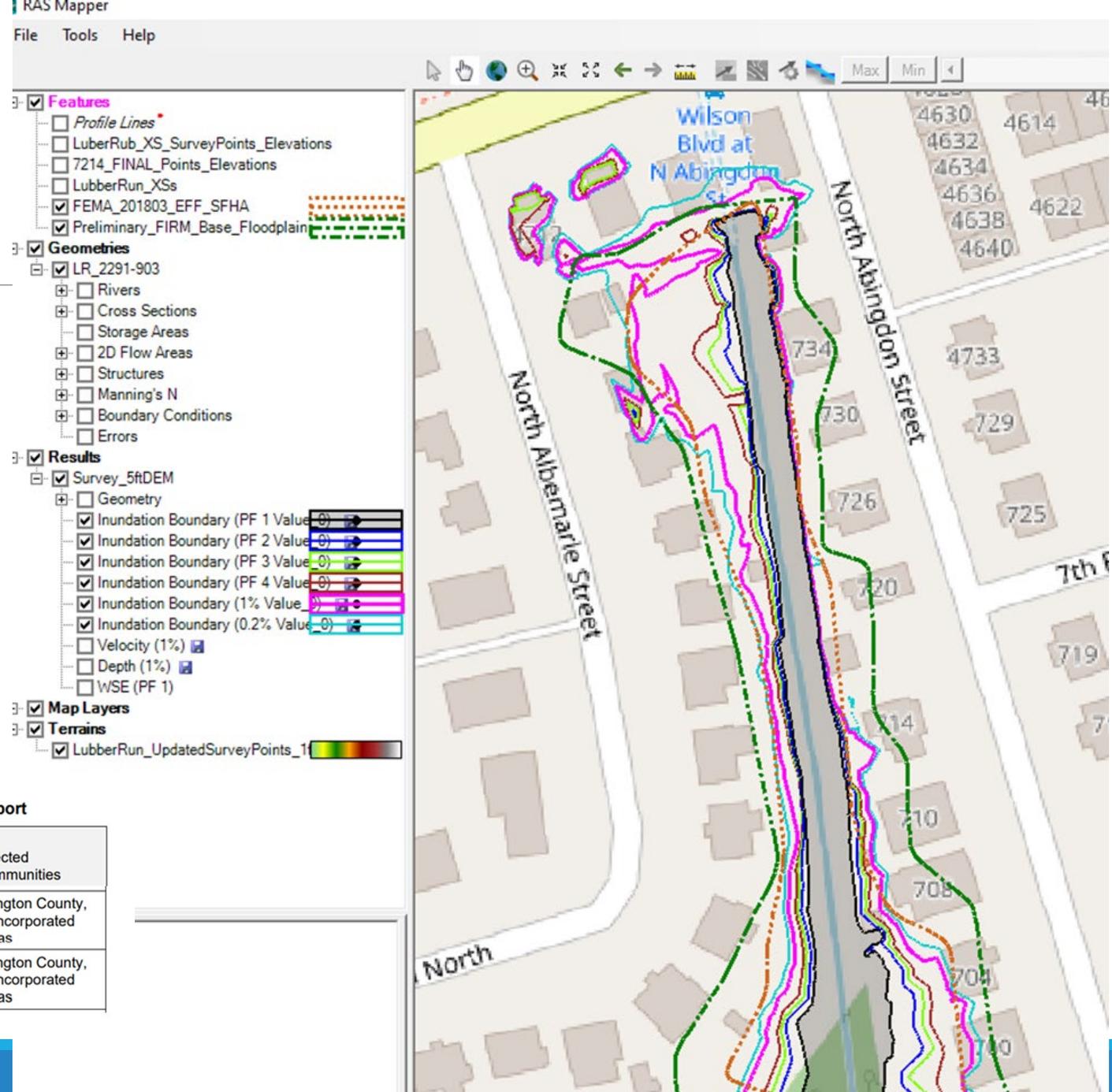


Note: Some areas still being refined.  
Analysis uses effective discharge.

Note: Flows are based on Preliminary FIS Table 28.

Table 28: Summary of Contracted Studies Included in this FIS Report

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Lubber Run	08/19/2013	Dewberry & Davis	97-03-109P	February 1998	Arlington County, Unincorporated Areas
Lubber Run	08/19/2013	Dewberry & Davis	98-03-175P	April 1999	Arlington County, Unincorporated Areas





County analysis is major improvement over FEMA preliminary mapping

**Legend**

- Cross-Sections of Lubber Run
- Channl Line of Lubber Run
- FEMA\_201803\_EFF\_SFHA
- Inundation Boundary (PF 1 Value\_0)
- Inundation Boundary (PF 2 Value\_0)
- Inundation Boundary (PF 3 Value\_0)
- Inundation Boundary (PF 4 Value\_0)
- Inundation Boundary (1% Value\_0)
- FEMA Preliminary\_SFHA

River	Reach	RS	PF 1	PF 2	PF 3	PF 4	1%	0.2%
1 LubberRun	Lubber	5622.13	381	603	751	896	1120	2000
2 LubberRun	Lubber	4667.50	482	758	941	1121	1400	2460
3 LubberRun	Lubber	4282.16	696	921	1081	1169	1484	2560
4 LubberRun	Lubber	3678.346	729	1057	1209	1342	1678	1830
5 LubberRun	Lubber	2291	730	1057	1209	1341	1676	1831
6 LubberRun	Lubber	1633	936	1440	1668	1880	2376	2697
7 LubberRun	Lubber	903.5895	933	1437	1664	1876	2369	2691
8 LubberRun	Lubber	388.8564	1089	1728	2024	2303	2914	3403

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)
Lubber	2291	1%	1676	236	244.56	241.93	7.14	270.37	150.72
Lubber	2274	1%	1676	236.1	242.6	242.6	12.77	132.01	31
Lubber	2174	1%	1676	234	241.69	240.65	10.2	164.66	103.9
Lubber	2124	1%	1676	234	240.59	240.59	12.61	133.49	47.74
Lubber	2021	1%	1676	233.15	239.16	239.09	11.61	144.42	34.77
Lubber	1921	1%	1676	232.66	238.52	238.52	11.59	144.86	37.36
Lubber	1804	1%	1676	231.7	237.13	237.13	10.79	162.72	65.31
Lubber	1633	1%	2376	228	237.54	233.83	6.97	386.94	152.35
Lubber	1630.222		Bridge						
Lubber	1618	1%	2376	228	235.24	235.24	12.63	200.32	80.85
Lubber	1536	1%	2376	221.99	233.69		7.98	297.89	39.31
Lubber	1420	1%	2376	222.18	233.28	231.13	8.6	290.37	94.77
Lubber	1357	1%	2376	223.77	233.14	230.62	8.41	290.68	115.04
Lubber	1247	1%	2376	223.41	232.99		7.44	397.63	117.1
Lubber	1089	1%	2376	222.68	232.86		6.48	550.97	128.62



---

FEMA Appeal Period may begin July 22, 2021.

Lasts for 90 Days.

Basis of Appeal will be better topographic data – Field Run Survey data and would not include use of a new discharge.

No guarantees that appeal will be successful.

Could also file for LOMR.



# Risk Rating 2.0

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FEMA is updating risk rating methodology through the implementation of a new pricing methodology called **Risk Rating 2.0**.

Actuarially sound, equitable, easier to understand and better reflect a property's flood risk.

Incorporating more flood risk variables, such as flood frequency, multiple flood types—river overflow, storm surge, coastal erosion and heavy rainfall—and distance to a water source along with property characteristics such as elevation and the cost to rebuild.

New **policies beginning Oct. 1, 2021**, will be subject to the new rating methodology. Also beginning Oct. 1, existing policyholders eligible for renewal will be able to take advantage of immediate decreases in their premiums.

813 policies in the County. 57% will see a slight decrease and 41% will see a slight increase of \$0-\$10 per month.

# Risk Rating 2.0

## Phased Implementation

### October 1, 2021

- All **NEW** policies will be rated with **RR2.0 Full Risk Rates**.
- Any existing policy that costs **LESS** under RR2.0 will receive **the reduced rate**.

### April 1, 2022

- All customers will know their **RR2.0 Full Risk Rate**
- Policyholders with cost increase will start to see gradual increases to full Risk Rates.

All Existing Policies Renewing on or After October 1<sup>st</sup>, 2021 Will **Also** be Rated Using RR 2.0 “Full Risk Rates”. If the “Full Risk Rate” Method Will Result in a Premium Decrease, a **Refund** Will be Sent to the Policyholder.



## The Rating Shift

### Legacy Pricing Methodology



Heavily weights two variables: Flood Zone and Elevation Difference (Base Flood Elevation subtracted from Lowest Floor Elevation)



Relies on the mapping process to do all of the geographic differentiation – an A Zone is rated the same everywhere, for example



The Base Flood is the sole elevation reference point used to calculate exposure to the hazard

### New Pricing Methodology



Takes into account a much larger set of inputs, using actuarial and data science to index risk to a key set of rating variables



Is ‘geospatially aware,’ accounts for distances to flooding sources and the concentration of policies in an area



Uses multiple elevation reference points, e.g., elevation relative to flooding source (coastal/riverine hazard) and elevation relative to surrounding elevation (pluvial)

## Variables in the New Pricing

### Geographic

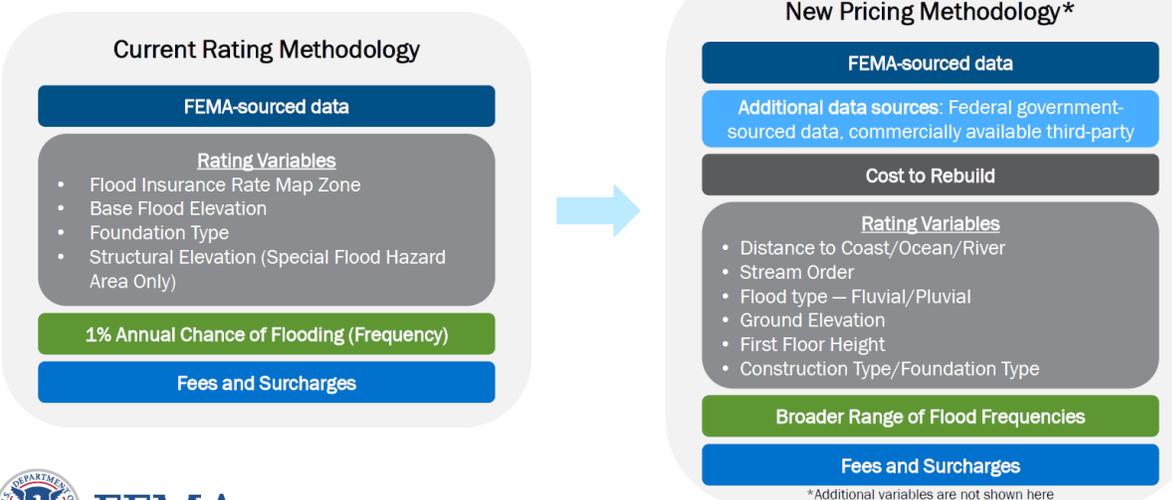
- Ground Elevation (may be revised by elevation certificate)
- Distance to Flooding Source(s)
- Elevation Relative to Flooding Source(s)
- Elevation Relative to surroundings (How high is the ground on which the building sits relative to the average elevation of the surrounding area?)

\*Determined by property Lat/Long geolocation; not subject to revision/correction (except for ground elevation)



### Building

- Replacement Cost Value (RCV)
- Construction Type (frame, masonry, other)
- First Floor Height (How high does building sit relative to flood source? How high is the first floor off the ground?)
- Foundation Type (See next slide)
- Mitigation Credits (elevation of machinery & equipment, flood openings, elevation on piers, posts or pilings)



# Water Doesn't Stop at a "Flood Line"



Federal Emergency Management Agency

## Risk Rating 2.0

### What Do I Need to Know?

#### FLOODPLAIN MANAGER

CRS discounts will be rolled out to all areas of participating communities.

#### INSURANCE AGENT

Agents may begin quoting flood insurance using the "rating engine" as early as August 1<sup>st</sup> for policies to be effective on or after October 1<sup>st</sup>.

#### REALTOR

A seller may still transfer title of their flood insurance policy to a buyer. This will avoid potential loss of discounts.

#### PROPERTY OWNER

Property owners are advised to purchase flood insurance prior to October 1<sup>st</sup>. Preferred Risk Policies must be applied and paid for no later than August 30<sup>th</sup> to become effective prior to October 1<sup>st</sup>.

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## Broader Range of Flood Frequency

Flood Frequency = The probability of occurrence of a given flood.

Legacy Pricing	New Pricing
Includes two types of flood hazard <ul style="list-style-type: none"> <li>The 1% annual-chance riverine flood</li> <li>The 1% annual-chance coastal/storm surge flood</li> </ul>	<ul style="list-style-type: none"> <li>Uses commercial catastrophe models to model up to the 10,000-year event and Probabilistic Flood Risk Analysis (PFRA) to model a broader range of flooding events</li> <li>Includes risk behind levees and tsunami risk</li> </ul>



### Risk Rating 2.0 Equity in Action: Three New Rating Characteristics

Replacement Cost Value (RCV)

Distance to River/Coast/Ocean

#### River Class

The difference in flood depth between the 10yr and 100yr flood. For example, some rivers have very flat stream beds and the difference in flood depth between the 10yr and 100yr flood may be minimal – the floodwaters just extend out farther.



### Risk Rating 2.0 Equity in Action: Three Credited Mitigation Activities

Elevation on Pilings/Piers/Posts

Proper Openings

Elevation of Machinery & Equipment

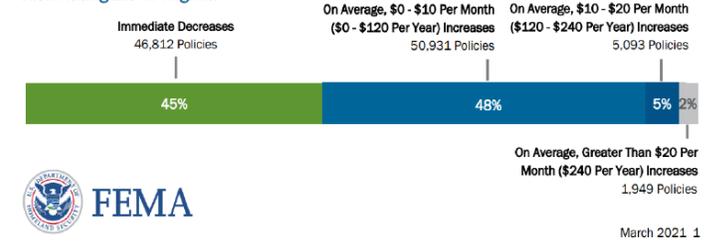


Federal Emergency Management Agency

FEMA's core mission and programs continue to emphasize purchasing flood insurance and pursuing mitigation options to achieve resiliency. While there are many policies in force in Virginia, there are still opportunities to increase participation in the program to improve resilience, as shown in the table below.

NFIP Policies in Force in VA	Properties in VA Not Covered by NFIP Policy	Average NFIP Claim Payout in VA in the Past 10 Years	Average Individual Assistance Claim Payout in VA in the Past 10 Years
104,800	3.0 million	\$16,800	\$3,900

### Risk Rating 2.0 in Virginia



### Estimated Premium Effects-Current Rating Methodology vs RR 2.0

- Under the Current Rating Methodology, the average premium increases \$8 per month (\$96 annually)
- Under RR 2.0, 45% of VA policyholders will have a premium decrease (no premium decreases under Current Methodology)
- Under RR 2.0, 48% of VA policyholders will have a monthly premium increase between 0 and \$10 (0-\$120 annually)
- Under RR 2.0, 7% of VA policyholders will have a monthly premium increase >\$10
- Annual premium increase CAP of 18% applies



Federal Emergency Management Agency

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# What does it mean if your property is in the floodplain?

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If you have a mortgage from a federally regulated lender, you are required by Federal law to carry flood insurance when these maps become effective.

Contact your insurance agent to get the best rate and learn about options offered by the National Flood Insurance Program (NFIP) for properties being mapped into higher risk areas for the first time.

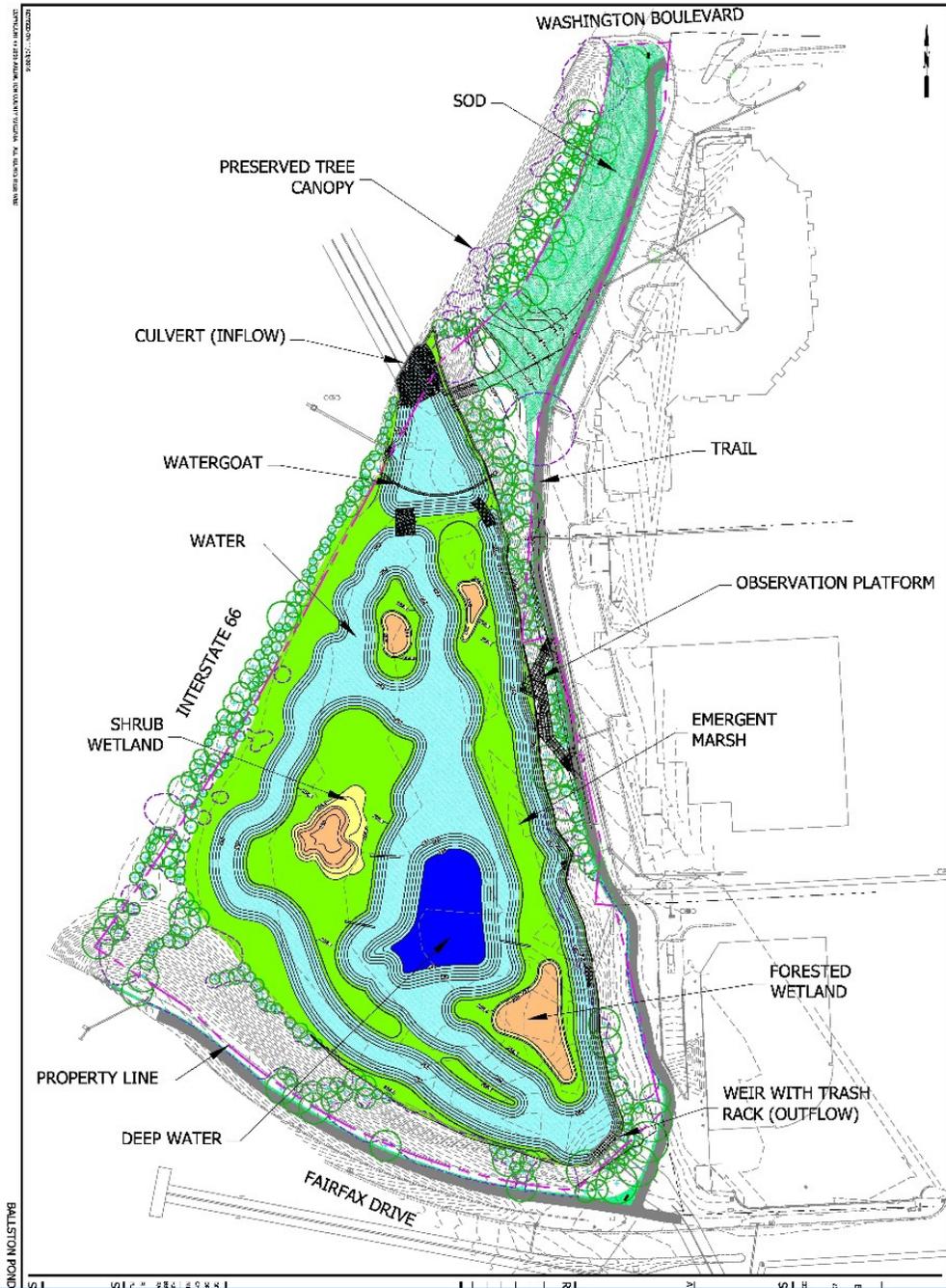
If you do not have a mortgage, you are still strongly recommended to purchase flood insurance. Over the life of a 30-year loan, you are about three times more likely to have a flood in your home than a fire, and most homeowners' insurance policies do not provide coverage for damage due to flooding.

Rates for flood insurance for properties newly mapped into the floodplain will be lower before new maps become effective.

# Ballston Pond Project

Construction start –  
Fall 2021

Construction length-  
12-18 months



# Ballston Pond Design

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The original pond was designed to reduce peak flows by 30%, and the new design will maintain that flood mitigation.

The project will remove accumulated sediment from the pond, route water all throughout the pond area in new flow channels, as opposed to flowing directly along one side of the pond as it does now.

There will be regular maintenance after the project is done.

The County has pollution reduction regulations in addition to flood mitigation. This project was designed to maintain the flood mitigation of the pond, and also to add water quality treatment.

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)
Lubber	2291	1%	1676	236	244.56	241.93	7.14	270.37	150.72

### Ballston Pond Design:

1. Improve ecological function
2. Improve water quality function
3. Improve interpretive function
4. Maintains flood attenuation function (actually increases it slightly by approximately 30%)
5. Does not increase base flood elevation
6. Maintains freeboard for I-66

POND ROUTING						
	EX PEAK INFLOW [CFS.]	EX PEAK OUTFLOW [CFS.]	EX PEAK ELEVATION [FT.]	PROP PEAK INFLOW [CFS.]	PROP PEAK OUTFLOW [CFS.]	PROP PEAK ELEVATION [FT.]
1-YEAR	238.9	205.2	256.6	238.9	193.1	256.6
2-YEAR	364.8	316.4	257.0	364.8	308.9	257.0
10-YEAR	809.7	703.6	258.1	809.7	703.4	258.1
100-YEAR	1654.7	1146.3	263.0	1654.7	1147.3	263.0

Changing the discharge in the FEMA models will require a LOMR, not an appeal.  
LOMR would have to re analyze hydrology of entire watershed.

# Channel Maintenance

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Note that Maintenance of channels is not related at all to the FEMA map update process or Appeals process.

Current Budget has no funding for any significant channel Maintenance

There are multiple other channels that also need Maintenance. To-date, no prioritization analysis has been completed.

Consideration for new funding will be part of upcoming budget processes (starting Fall 2021)

# Questions?

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**Bureau Chief, Office of Sustainability and  
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