

WV Flood Tool Upgrades

www.mapWV.gov/Flood

- Flood Query Results Panel
- External Links
- Shared Links
- Parcel Search
- Building-Specific Risk Assessments
- 3D Flood Visualizations
- Mobile Enhancements
- Improved Data Layers
 - Flood Layers
 - Advisory Floodplains
 - Mitigated/Buyout Properties
 - Local Data (parcels, addresses, imagery, elevation)
- Other Enhancements
- Future Statewide Coverage Goals

August 2017

Flood Query Results Panel

#	Each Location Query Answers:
1	In Flood Hazard Area? In Floodway?
2	Stream name?
3	Watershed name?
4	FEMA Issued Flood Map?
5	Floodplain Manager Contact?
6	Flood Height value?
7	Water Depth value?
8	HEC-RAS Model available?
9	Flood Profile available?
10	In a CRS community?
11	Coordinate x,y location?
12	Ground elevation value?
13	Street address location?
14	Parcel ID location?
15	Flood risk assessment info?
16	3D flood visualization?

02-04-037M-0020-0000

Search: 256 Rodeo Drive, Martinsburg, WV

Tools: [Icons]

Click Here

256 Rodeo Dr.

1: Flood Hazard Area: Location is WITHIN the FEMA 100-year floodplain.

2: [Map Feature]

3: Flood Zone: A
Stream: DRY RUN Tributary
Watershed (HUC8): Conococheague-Opequon (2070004)

4: FEMA Issued Flood Map: 54003C0151E

5: Map Effective Date: 7/7/2009
Contacts: Berkeley

6: Advisory Flood Height: N/A

7: Water Depth: About 4.4 ft (Source: EQL)

8: HEC-RAS Model: N/A

9: Flood Profile: N/A

10: CRS Information: Berkeley County

11: Location (long, lat): (77.991540 W, 39.483028 N)

12: Location (UTM 17N): (758751, 4374702)

13: Elevation: About 513 ft

14: Address: 256 RODEO DR, Martinsburg, WV, 25403

15: Parcel ID: 02-04-037M-0020-0000

16: Flood Risk Information: Flood Risk Assessment, 3D Flood Visualization

New External Links

EXTERNAL WEB LINKS

- (1) Google Street View (address required)
- (2) Zillow.com (single address required)
- (3) View FEMA Flood Map (panel ID required)
- (4) Download FEMA Flood Map (panel ID)
- (5) FEMA's National Flood Hazard Layers (NFHL) web viewer (map extent and zoom level passed as parameters)

The screenshot displays the WV Flood Tool interface. On the left, a sidebar shows a search for '256 RODEO DR, Martinsburg, WV, 25403'. The main area features a map with a red flood hazard boundary and a yellow location pin. A right-hand panel provides detailed information about the location, including FEMA Flood Map details and flood risk information. Red circles and arrows highlight specific elements: (1) and (2) point to the address field in the search bar; (3) points to the FEMA Issued Flood Map ID; (4) points to the download icon; and (5) points to the FEMA National Flood Hazard Layers link. A Google Street View inset is shown at the bottom left, and a text overlay '256 Rodeo Drive' is placed over the map.

External links launched from WV Flood Tool

Parcel ID Web Link: <http://www.mapwv.gov/flood/Map/?v=1&pid=02-04-037M-0020-0000>

More Shared Links

The screenshot displays the WV Flood Tool interface. At the top, the browser address bar shows the URL www.mapwv.gov/flood/Map/?v=1&pid=02-04-037M-0020-0000, which is circled in red. Below the address bar, a text box displays the "Parcel ID Web Link" as <http://www.mapwv.gov/flood/Map/?v=1&pid=02-04-037M-0020-0000>. The main map area shows an aerial view of a property at 256 Rodeo Drive, with a red outline indicating a flood hazard area. A red callout box labeled "Share Link" points to a share icon in the top right toolbar. A "Share Link" dialog box is open in the foreground, showing options for "Map Click", "Map Center", "Parcel" (which is circled in red), and "Address". The "Parcel" option is selected, and the "Full Parcel Number" is displayed as 02-04-037M-0020-0000. A "Generate the link" button is visible at the bottom of the dialog. To the right of the map, a metadata panel provides details about the flood hazard area, including the FEMA Issued Flood Map (54003C0151E), Map Effective Date (7/7/2009), and various technical specifications.

Parcel ID Web Link: <http://www.mapwv.gov/flood/Map/?v=1&pid=02-04-037M-0020-0000>

Remember: When In Doubt, It's Not Out!

Views: Public Expert Risk MAP
Layers: Flood Reference Basemaps
Search: Address 256 Rodeo Drive, Martinsburg, WV
Tools: [Share Link icon circled]

256 Rodeo Drive

Share Link

Share Link dialog box options:
Step 1: choose link type and specify the parameters.
 Map Click Map Center Parcel Address
Works only when a parcel # on Flood Info panel is displayed.
Full Parcel Number: 02-04-037M-0020-0000
Step 2: Click Generate the Link button for a link, and copy/paste the link into your web browser.
<http://www.mapwv.gov/flood/Map/?v=1&pid=02-04-037M-0020-0000>
Generate the link
Show helps on customizing the share link

Flood Hazard Area: Location is WITHIN the FEMA 100-year floodplain.
Flood Zone: A
Stream: DRY RUN Tributary
Watershed (HUC8): Conococheague-Opequon (2070004)
FEMA Issued Flood Map: 54003C0151E
Map Effective Date: 7/7/2009
Contacts: Berkeley
Advisory Flood Height: N/A
Water Depth: About 4.4 ft (Source: EQL)
HEC-RAS Model: N/A
Flood Profile: N/A
CRS Information: Berkeley County
Location (long, lat): (77.991540 W, 39.483028 N)
Location (UTM 17N): (758751, 4374702)
Elevation: About 513 ft
Address: 256 RODEO DR, Martinsburg, WV, 25403
Parcel ID: 02-04-037M-0020-0000
Flood Risk Information: Flood Risk Assessment, 3D Flood Visualization

Exchange flood info with others using various link types: (1) Map Click, (2) Map Center, (3) **Parcel ID**, (4) Address

Parcel Search

Parcel Search

Search: 256 RODEO DR, Martinsburg, WV, 25403

Address
Parcel
Coordinate
GIS Name
City
County
USGS Quad

Parcel Search

Search Results

Step 1: Select a county: Berkeley

Step 2: Select search type: Parcel Number

Step 3: Enter numbers in their boxes:

Choose parcel number search option
 By parts Whole #

District: 4 | Hedgesville Parcel # in IAS format: 37M002000000000 Match: Exact

Search Parcel(s) Disclaimer

Parcel Search Results

1 parcels returned. Click to zoom and check out more detailed info.

#	Parcel	Owner	Address
1	04 037M-0020-0000	[Redacted]	256 RODEO DR

Parcel Search for
256 Rodeo Drive

Search by:

1. Parcel Owner
2. Parcel Address
3. Parcel Number

Parcel Search Results

IAS Parcel ID:

04 37M002000000000

GIS Parcel ID:

02-04-037M-0020-0000

Locate and zoom to parcels using various search parameters

Building-Specific Flood Risk Assessments

(Currently only Berkeley & Morgan Counties)

Web Link: <http://www.mapwv.gov/flood/Map/?v=1&pid=02-04-037M-0020-0000>

WV Flood Tool
Remember: When In Doubt, It's Not Out!

Views: Public | Expert | Risk MAP | Layers: Flood | Reference | Basemaps | Search: Address: e.g., 123 street name, city, state, zip | Tools: [Icons]

Flood Hazard Area: Location is WITHIN the FEMA 100-year floodplain.
Flood Zone: A
Stream: DRY RUN Tributary
Watershed (HUC8): Conococheague-Opequon (2070004)

FEMA Issued Flood Map: 54003C0151E
Map Effective Date: 7/7/2009
Contacts: Berkeley

Advisory Flood Height: N/A
Water Depth: About 3.6 ft (Source: EOL)
HEC-RAS Model: N/A
Flood Profile: N/A

CRS Information: Berkeley County
Location (long, lat): (77.991481 W, 39.483026 N)
Location (UTM 17N): (758756, 4374702)
Elevation: About 513 ft

Address: 256 RODEO DR, Martinsburg, WV, 25403
Parcel ID: 02-04-037M-0020-0000

Flood Risk Information
[Flood Risk Assessment](#)
[3D Flood Visualization](#)

256 Rodeo Drive

Click on each tab to view information

Address **Parcel** Risk

PROPERTY OWNER

PHYSICAL ADDRESS

BUILDING INFORMATION

Land use	101 - Residential 1 Family
Year built	1995
Architectural style	Colonial
Story height	2
Exterior wall	Aluminum
Total rooms	8
GRADE	B
Basement	Crawl
Sum of designated structure areas	2512
Building (card) number	1
# of main BLDGs (cards)	1

Click on each tab to view information

Address **Parcel** Risk

BUILDING INFORMATION

Land use	101 - Residential 1 Family
Year built	1995
Architectural style	Colonial
Story height	2
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Total rooms	8
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Basement	Crawl
Sum of designated structure areas	2512
Building (card) number	1
# of main BLDGs (cards)	1

The tax parcel centroids and associated building characteristic data (YRBLT, STYLE, STORIES, EXTWALL, GRADE, BSMT, AREASUM) from the Integrated Assessment System --along with RS Means construction cost values, flood inundation areas, and water depth inputs -- are used by Hazus Flood Model software to estimate flood damages to each structure for a riverine 1% annual flood event.

Click on **Parcel ID** (Building Info), **Flood Risk Assessment**, and **3D Flood Visualization** links in bottom right of Flood Query Results Panel

Flood Risk Assessment (Cont.)

3D Flood Model

3D Visualization Cost Tool Related Resources

256 RODEO DR, Martinsburg, WV, 25403

Depth

- 0 Foot
- 1 Foot
- 2 Feet
- 3 Feet
- 4 Feet
- 5 Feet
- 6 Feet
- 7 Feet
- 8 Feet
- 9 Feet
- 10 Feet
- 11 Feet
- 12 Feet
- 13 Feet
- 14 Feet
- 15 Feet

Parcel ID: 02-04-037M-0020-0000 Water Depth: ~ 3.6 ft (EQL) Google Map

Web Link: <http://www.mapwv.gov/flood/Map/?v=1&pid=02-04-037M-0020-0000>

12 Feet Door and Frames - Most doors in residential structures are hollow and are warped and destroyed between 0.0 and 1.0 foot of floodwater. Some would require replacement at 1.5 feet of floodwater. All doors are totaled at 4.0 feet of floodwater. Hollow metal door frames are never a total loss.

13 Feet Sheetrock/Wall Insulation/Wall Boards - Walls and insulation are damaged at the rate of 25 percent damages at 0.0 foot to 1.5 feet of floodwater, 50 percent damages at 2.0 feet, and total damages at 4.0 feet. In residential and some commercial structures, the ceiling is made of sheetrock and is a total loss at 0.5 feet of floodwater because of the absorption of water from the sheetrock and insulation in the walls. In commercial structures with a suspended ceiling, tiles are damaged at 4.0 feet of flooding, whereas the frames is not damaged because it is composed of capped aluminum.

	Address	Parcel	Risk
Building Replacement Cost		\$319,878	
Content Cost		\$252,870	
Building Area		2,512 sq ft	
Hazus Occupancy Code		RES1	
Number of Stories		2	
Year Built		1995	
Building Construction		Wood	
Building Condition		Medium	
Building Foundation		Crawl	
First Floor Ht		3 ft above ground	
Damage Estimates (UDF)			
Building Damage Pct		12%	
Building Loss USD		\$37,029	
Content Damage Pct		10%	
Content Loss USD		\$15,559	

Structure-specific (called “User-Defined Facilities”, or UDFs, in Hazus) flood risk assessments produce results and loss estimates at the building or structure level, and can often help facilitate flood risk discussions with individual home- or business-owners in a community.

Source: “Guidance for Flood Risk Analysis and Mapping, Flood Risk Assessments”

Example **flood risk assessment** information for 256 Rodeo Drive. Includes **3D flood visualization** with water depth-flood damage information for homeowner.

3D Flood Visualizations

Visualizations are easier for non-technical users to understand flood risks to their property in feet of water rather than comprehending the adjacent base flood elevation

1-Story Home

Depth: 0 Feet, 1 Feet, 2 Feet, 3 Feet, 4 Feet, 5 Feet, 6 Feet, 7 Feet, 8 Feet, 9 Feet, 10 Feet, 11 Feet, 12 Feet, 13 Feet

Parcel ID: 02-06-0006-0059-0001 Water Depth: ~ 13.4 ft (EQL)

Second Floor Damage - Similar to first floor damage

Mobile Home

Depth: 0 Feet, 1 Feet, 2 Feet

Commercial

Depth: 0 Feet, 1 Feet, 2 Feet, 3 Feet, 4 Feet, 5 Feet, 6 Feet, 7 Feet, 8 Feet, 9 Feet, 10 Feet, 11 Feet, 12 Feet, 13 Feet, 14 Feet, 15 Feet

Parcel ID: 33-03-001A.0022-0000 Water Depth: ~ 6.7 ft (EQL)

General Damage - Woodwork, doors, and most appliances damaged when 2 feet of water is in the area and it is classified as a Major Emergency by the WV Division of Homeland Security and Emergency Management (DHSEM).

Appliances - Most appliances (refrigerator, stove, dishwasher, washer, dryer) are a total loss below 2.0 feet of water, especially quickly flowing flood waters, can float a larger vehicle such as a truck or trailer, and 1.5 feet can float a small vehicle.

2-Story Home

Depth: 3 Feet, 4 Feet, 5 Feet, 6 Feet, 7 Feet, 8 Feet, 9 Feet, 10 Feet, 11 Feet, 12 Feet, 13 Feet, 14 Feet, 15 Feet

Parcel ID: 02-04-027M-0126-0000 Water Depth: ~ 3.8 ft (EQL)

Door: Floods
Floor: Floods
Wall: Floods
Window: Floods
Roof: Floods
Basement: Floods
Garage: Floods
Crawl Space: Floods
Countertops - Water comes over countertops.

"The 3D visualization is really cool. Our citizen comes to the counter and says 'there is no way there can be a flood like that.' Then we show them how much water you will get in your house and how much it will cost to repair it. The 3d visual is really good! And then we like the way you can click on a parcel ID and it brings up all the information as far as property owner, tax map and parcel number, deed book, page number - everything is right there. And the building information is really good too because it tells what the structure is made of, whether it has a basement - all the information that we would have to go to another system to pull is right there." Source: 3D Flood Visualization Comment from Debbie Robinson, Kanawha County Planning and Development Office

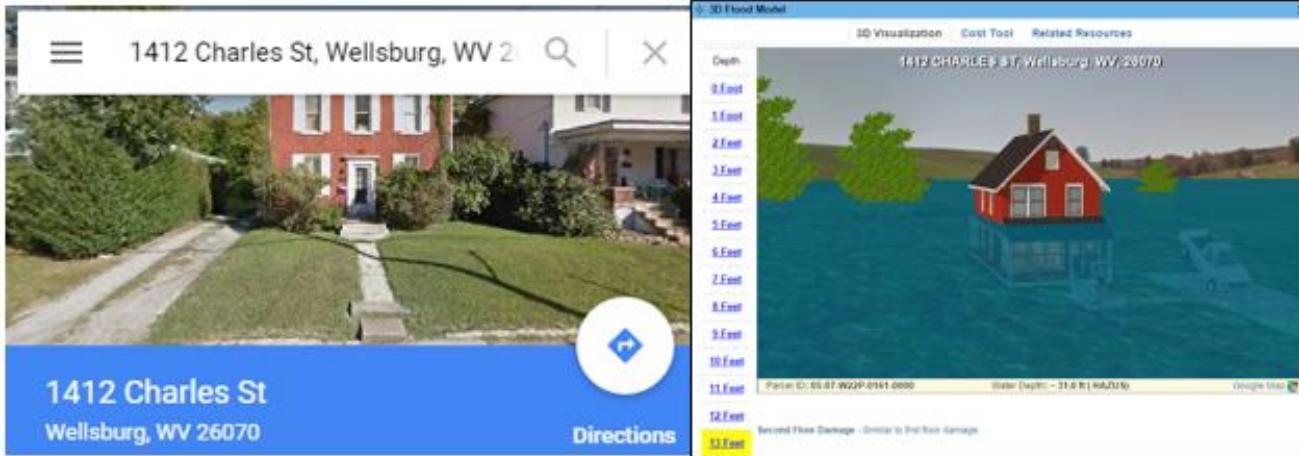
3D flood visualizations are available statewide for locations where **flood depth grids** exist. The parcel assessment data fields (land use, stories) are necessary to identify the correct property type: residential one- or two-story homes, mobile home, commercial/industrial, etc.

3D Flood Visualizations

Brooke County

<https://www.mapwv.gov/flood/map/?v=1&pid=05-07-W22P-0161-0000>

1412 Charles St, Wellsburg, WV, 26070, Parcel ID: 05-07-W22P-0161-0000



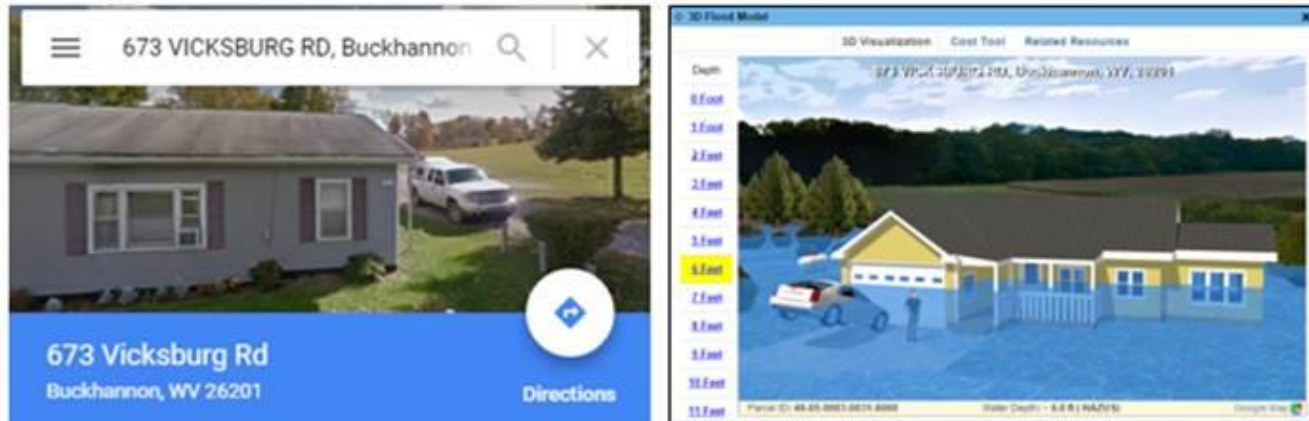
“This is the coolest thing ever....thank you!!!”

Source: 3D Flood Visualization Comment from Terri Jo Bennett, CFM, Upshur County Building Permit, Floodplain and Addressing and Mapping Coordinator

Upshur County

<https://www.mapwv.gov/flood/map/?v=0&pid=49-05-0003-0031-0000>

673 Vicksburg Rd, Buckhannon, WV, 26201, Parcel ID: 49-05-0003-0031-0000

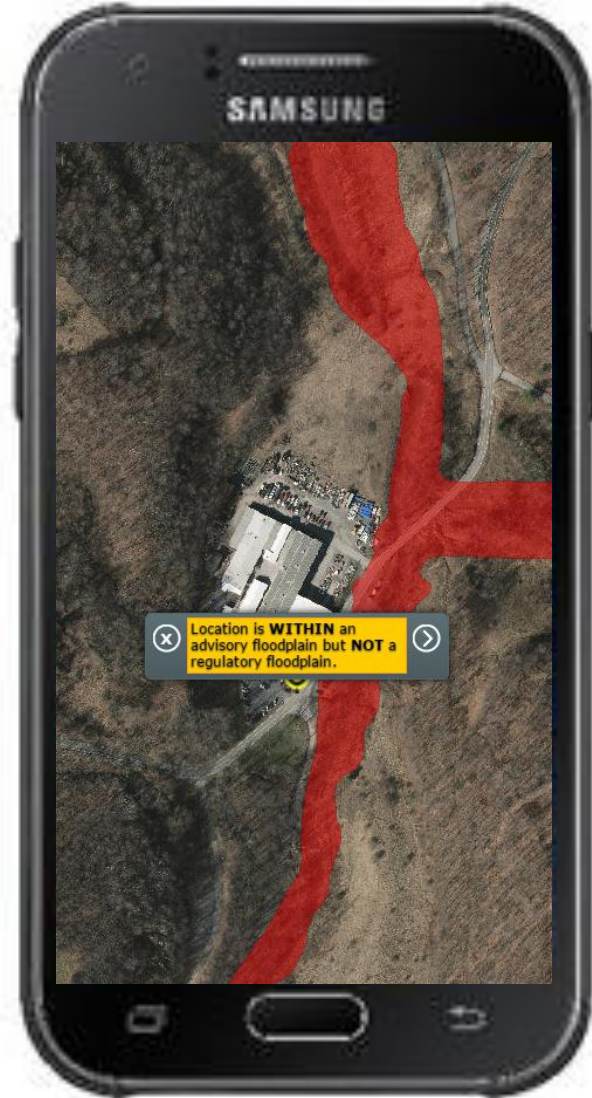


Mobile Application Enhancements

<http://www.mapwv.gov/flood/mmap/>



Added Floodway



Advisory Floodplain Notification

New Flood Layers Added

FLOOD LAYERS	Public View <i>for general public</i>	Expert View <i>for floodplain managers</i>	RiskMAP View <i>for flood risk planning</i>
Flood Hazard Layers <ul style="list-style-type: none"> • Flood Hazard Zones • Panel Index • X-Sections • BFE's / Advisory Flood Heights • LOMAs / LOMRs* • <i>Structures, Levees, Mile Markers*</i> 	<p style="text-align: center;">Yes</p> <p style="text-align: center;">No</p> <p style="text-align: center;">No</p> <p style="text-align: center;">No</p> <p style="text-align: center;">No</p> <p style="text-align: center;">No</p>	<p style="text-align: center;">Yes</p> <p style="text-align: center;">Yes</p> <p style="text-align: center;">Yes</p> <p style="text-align: center;">Yes</p> <p style="text-align: center;">Yes</p> <p style="text-align: center;">Yes</p>	<p style="text-align: center;">Yes</p> <p style="text-align: center;">No</p> <p style="text-align: center;">No</p> <p style="text-align: center;">No</p> <p style="text-align: center;">No</p> <p style="text-align: center;">No</p>
Flood Prediction <ul style="list-style-type: none"> • <i>USGS Real-Time Stream Gages*</i> 	<p style="text-align: center;">No</p>	<p style="text-align: center;">Yes</p>	<p style="text-align: center;">No</p>
Flood Mitigation <ul style="list-style-type: none"> • Mitigated/Buyout Properties 	<p style="text-align: center;">No</p>	<p style="text-align: center;">Yes</p>	<p style="text-align: center;">Yes</p>
Flood Risk <ul style="list-style-type: none"> • Flood Water Depths • <i>Historical High Water Marks</i> • <i>Site-Specific Flood Risk Assessment Data</i> • Flood/Dam Inundation Maps (future) 	<p style="text-align: center;">No</p> <p style="text-align: center;">No</p> <p style="text-align: center;">No</p> <p style="text-align: center;">No</p>	<p style="text-align: center;">Yes</p> <p style="text-align: center;">Yes</p> <p style="text-align: center;">No</p> <p style="text-align: center;">No</p>	<p style="text-align: center;">Yes</p> <p style="text-align: center;">Yes</p> <p style="text-align: center;">Yes</p> <p style="text-align: center;">Yes</p>

Italics Text = New Layers Added

* External Agency Web Map Services

New Flood Layers Added

The screenshot displays a web-based flood map interface. At the top, there are tabs for 'Public', 'Expert', and 'Risk MAP'. Below these are navigation and search tools, including a search bar with the address 'Parkersburg, WV'. A 'Layers' panel on the left lists various data layers with checkboxes and sliders, including 'Hazard Layers', 'FEMA LOMA*', 'River Mile Marker*', 'Levees*', 'General Structures*', 'FEMA LOMR*', 'High Water Marks', 'Real-time Stream Gage*', 'Mitigated Properties', 'RiskMAP Restudy', and 'Water Depth (HEC-RAS)'. A 'National Weather Info. System Site' window on the right provides details for site 03151000, including its coordinates, name 'OHIO RIVER AT PARKERSBURG, WV', and website links. A 'Levees: LAUREL RUN' window in the bottom left shows metadata for a specific levee structure. A blue arrow points from the 'Levees: LAUREL RUN' window to a red hatched area on the map, which is also labeled 'Laurel Run Levee'. A black circle on the map highlights a specific location, which is also labeled 'NWIS Stream Gage'.

Layers

- Hazard Layers
- FEMA LOMA*
- River Mile Marker*
- Levees*
- General Structures*
- FEMA LOMR*
- High Water Marks
- Real-time Stream Gage* (◆)
- Mitigated Properties
- RiskMAP Restudy
- Water Depth (HEC-RAS)

* Indicates that data is external web service

[Show Legend](#)

National Weather Info. System Site

(Lat, Long) (39.2681306, -81.5637358)

Site Name **OHIO RIVER AT PARKERSBURG, WV**

Site No **03151000**

[Site 03151000 on NWISWeb](#)

[AHPS River Forecasts Website](#)

Levees: LAUREL RUN

DFIRM_ID	54107C
VERSION_ID	1.1.1.0
LEVEE_ID	54107C_63
FC_SYS_ID	NP
LEVEE_NM	PARKERSBURG FLOODWALL
LEVEE_TYP	Levee Centerline
WTR_NM	LAUREL RUN

NWIS Stream Gage

Laurel Run Levee

Example: Levee structure and real-time stream gage located at Parkersburg, WV

<http://www.mapwv.gov/flood/Map/?wkid=102100&x=-9080275&y=4759882&l=8&v=1>

NWIS Stream Gage

The screenshot displays the 'WV Flood Tool' interface. The 'Expert' view is selected in the top navigation bar. The 'Layers' panel on the left has 'Real-time Stream Gage*' checked and circled in red. A callout box points to a location on the map labeled 'Beartown Stream Gage'. A 'National Weather Info. System Site' pop-up window shows details for 'DRY FORK AT BEARTOWN, WV' with site number '03212980'. A red circle highlights the text 'Site 03212980 on NWISWeb' and 'AHPS River Forecasts Website'. A graph in the bottom left shows 'Gage height, feet' from April 17 to 24, 2017, with a red line for 'Floodstage' and a blue line for 'Gage height'. The gage height peaks at 9.64 feet on April 24, 2017, at 08:00 EDT.

WV Flood Tool
Remember: When In Doubt, It's Not Out!

Public **Expert** Risk MAP Layers Search
Flood Reference Basemaps City Bradshaw

Hazard Layers
 FEMA LOMA*
 River Mile Marker*
 Levees*
 General Structures*
 FEMA LOMR*
 High Water Mark*
 Real-time Stream Gage*
 Mitigated Properties
 RiskMAP Restudy
 Water Depth (HEC-RAS)
* indicates that data is external web service
[Show Legend](#)

Beartown Stream Gage

National Weather Info. System Site
(Lat, Long) (37.39538968, -81.8026142)
Site Name **DRY FORK AT BEARTOWN, WV**
Site No **03212980**
Site 03212980 on NWISWeb
[AHPS River Forecasts Website](#)
Zoom to

Gage height, feet
Most recent instantaneous value: 9.64 04-24-2017 08:00 EDT
USGS 03212980 DRY FORK AT BEARTOWN, WV

Date	Gage Height (feet)	Floodstage (feet)
Apr 17 2017	~3.8	~10.0
Apr 18 2017	~3.8	~10.0
Apr 19 2017	~3.8	~10.0
Apr 20 2017	~3.8	~10.0
Apr 21 2017	~3.8	~10.0
Apr 22 2017	~4.5	~10.0
Apr 23 2017	~9.0	~10.0
Apr 24 2017	9.64	~10.0

--- Provisional Data Subject to Revision ---
— Gage height — Floodstage

Example: Real-Time Stream Gage ♦ Data for Dry Fork at Beartown, WV (Expert View)

<https://www.mapwv.gov/flood/map/?wkid=102100&x=-9104675&y=4491964&l=6&v=1>

Advisory Floodplains

New **advisory** flood heights, depth grids, and floodplain boundaries are being added to the WV Flood Tool and will exist for all counties in the near future

WV Flood Tool
Remember: When In Doubt, It's Not Out!

Views: Expert, Risk MAP, Flood, Reference, Basemaps
Layers: Address, Search, Tools
Address: owl creek road, morgantown, wv

Advisory A

437 Goshen Road

Click on each tab to view information

Address		Parcel	Risk
PHYSICAL ADDRESS			
BUILDING INFORMATION			
Property Class Type	I - Industrial		
Land use	401 - Manufacturing		
Year built	1976		
Story height	2		
Exterior wall	Concrete Block		
Construction Type	Wood frame/Joist/Beam		
Building Grade	C		
Basement Type	None		
Business Living Area	86,684		
# of cubic feet	1,896,430		
Use Type	43-Manufacturing, 44-Light Manufacturing, 45-Warehouse, 82-Multi-Use - Office, 84-Multi-Use - Storage, 85-Enclosure, 86-Support Area		

Flood Hazard Area: Location is WITHIN an advisory floodplain but NOT a regulatory floodplain. ✓
Flood Zone: Advisory A
Stream: Booths Creek
Watershed (HUC8): Upper Monongahela (5020003)
FEMA Issued Flood Map: 54061C0240E
Map Effective Date: 1/20/2010
Contacts: Monongalia
Advisory Flood Height: About 996 ft
Water Depth: About 0.4 ft (Source: HEC-RAS)
HEC-RAS Model: Booths Creek
Flood Profile: N/A
CRS Information: N/A
Location (long, lat): (79.977896 W, 39.534745 N)
Location (UTM 17N): (587837, 4376618)
Elevation: About 996 ft
Address: 437 GOSHEN RD, MORGANTOWN, WV
Parcel ID: 31-05-0019-0046-0000
Flood Risk Information
Flood Risk Assessment: N/A
3D Flood Visualization

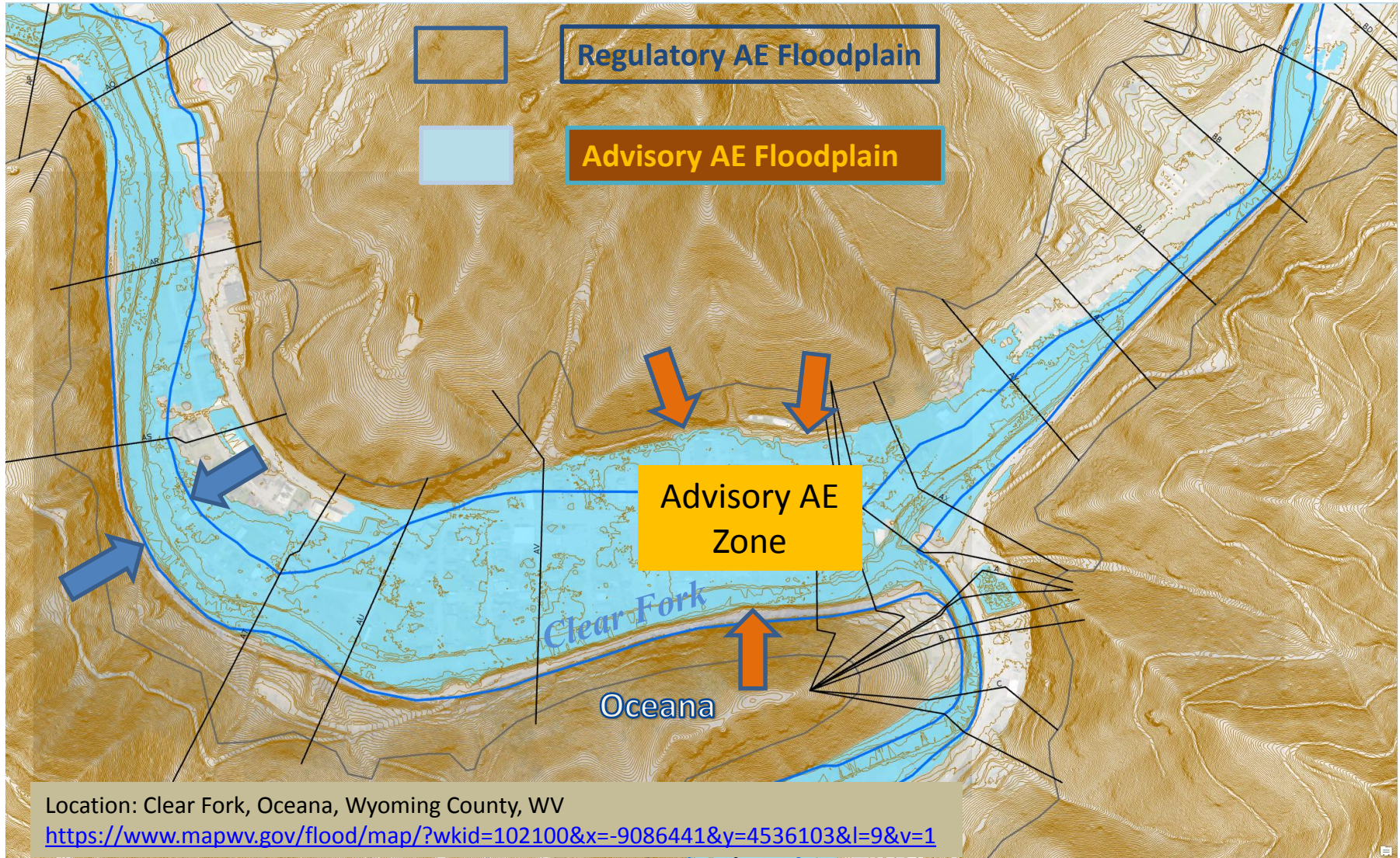
A new flood zone status (orange/mango color) has been added to the WV Flood Tool when the location is **WITHIN** an advisory floodplain but **NOT** a regulatory floodplain. In the example on the left note how a the Swanson Industries building is located in the new model-backed Advisory A Zone (blue water depth grid) but not the effective Approximate A Zone (red vertically hatched polygon). This example represents an **Advisory A Zone** but the same could be done for new **Advisory AE Zones** generated from re-delineated AE Non-Restudy areas using new topography.

Example: 437 Goshen Road, Morgantown, WV (Swanson Industries Plant)

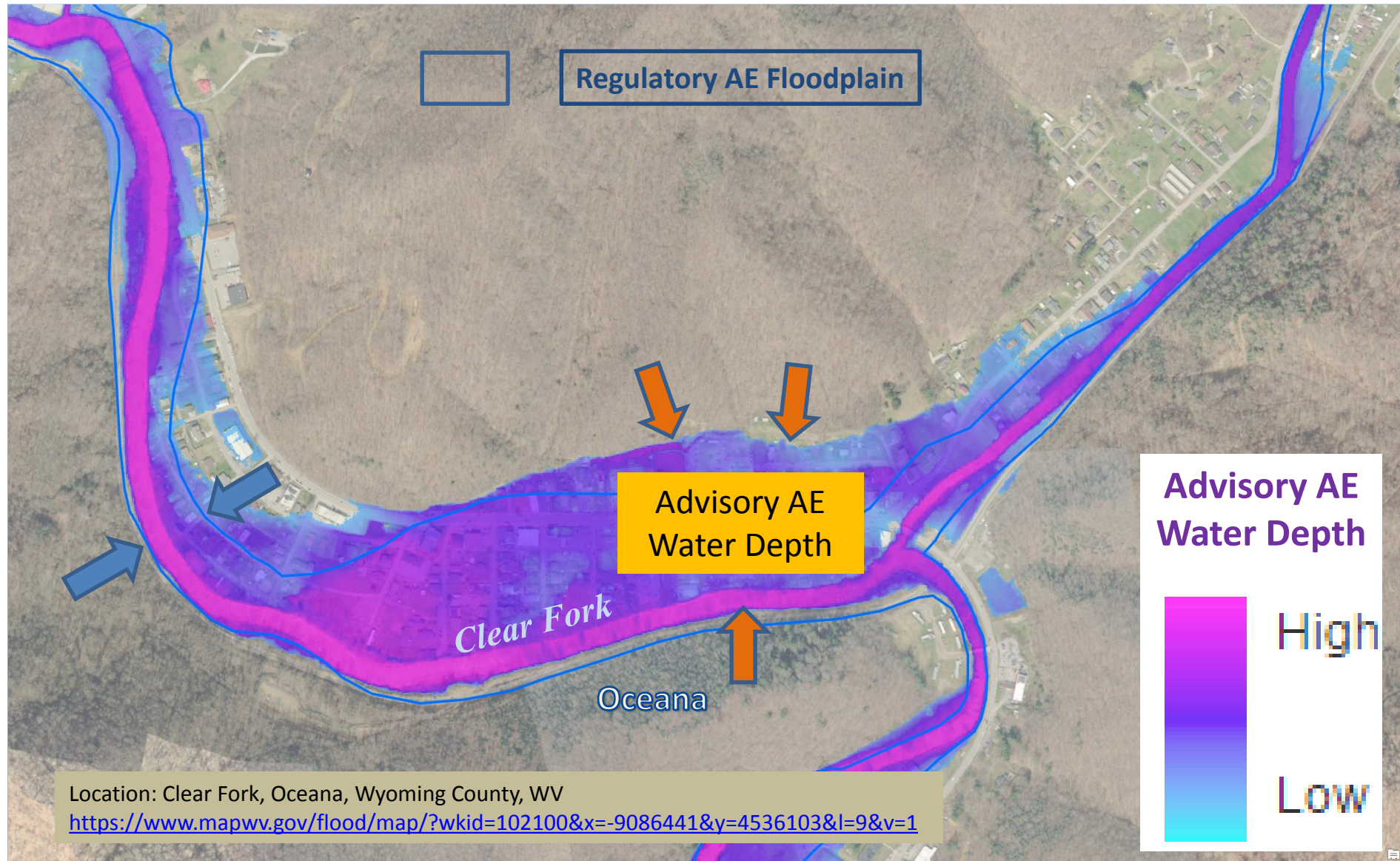
<https://www.mapwv.gov/flood/map/?wkid=102100&x=-8903099&y=4798561&l=12&v=1>

Advisory AE Floodplain

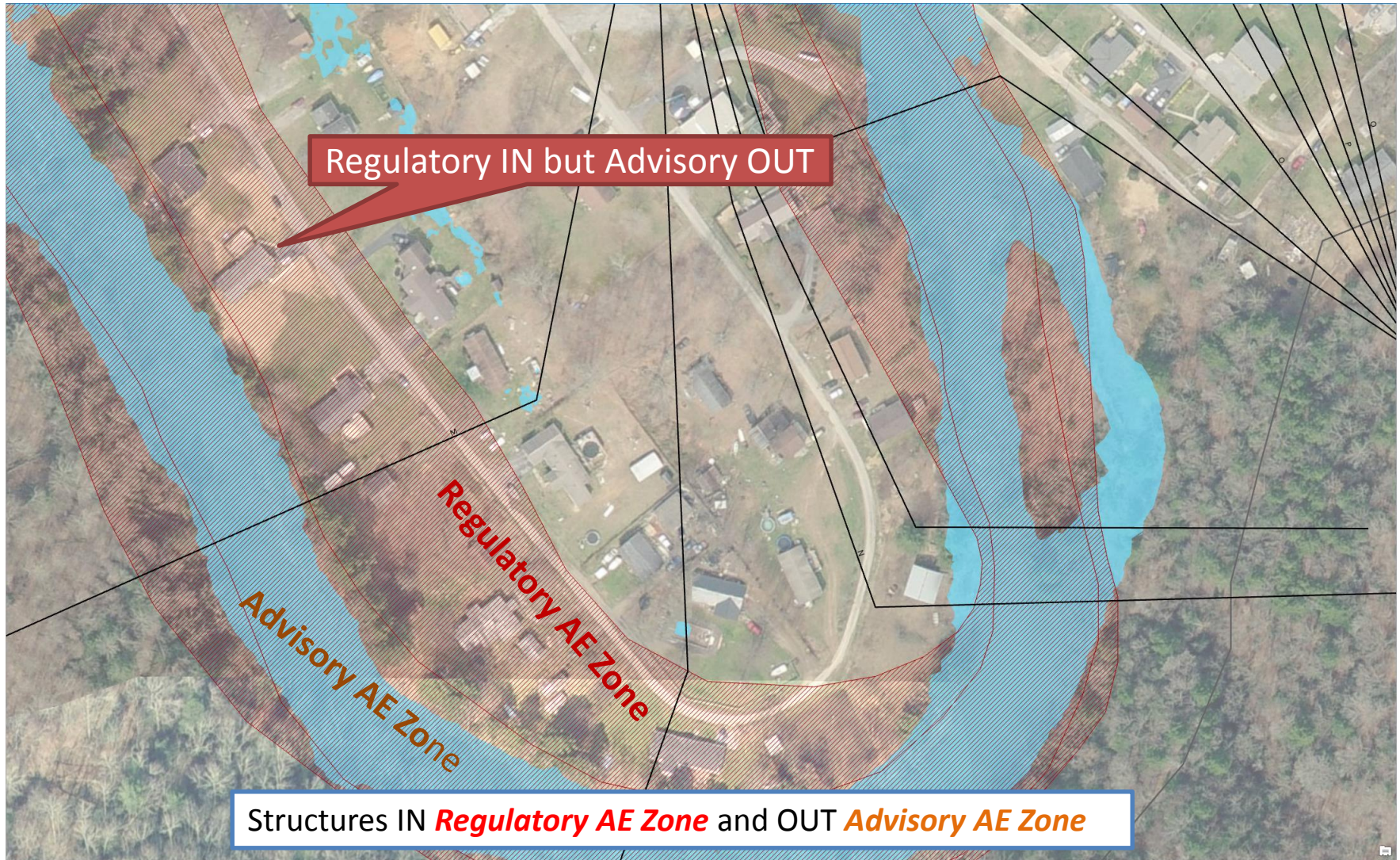
Redelineated Floodplain Using New Topo



Advisory AE Depth Grid

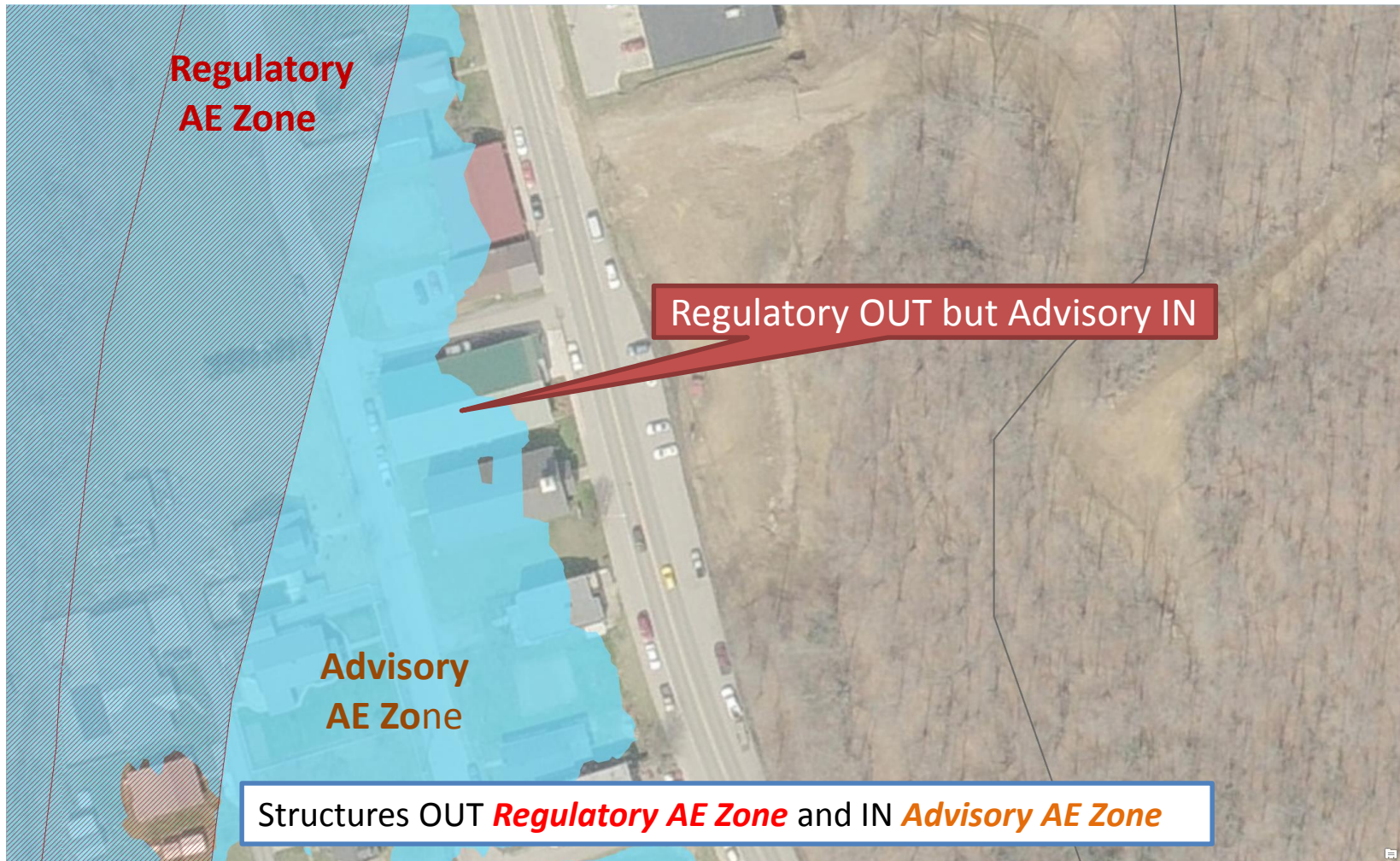


Advisory AE Determinations



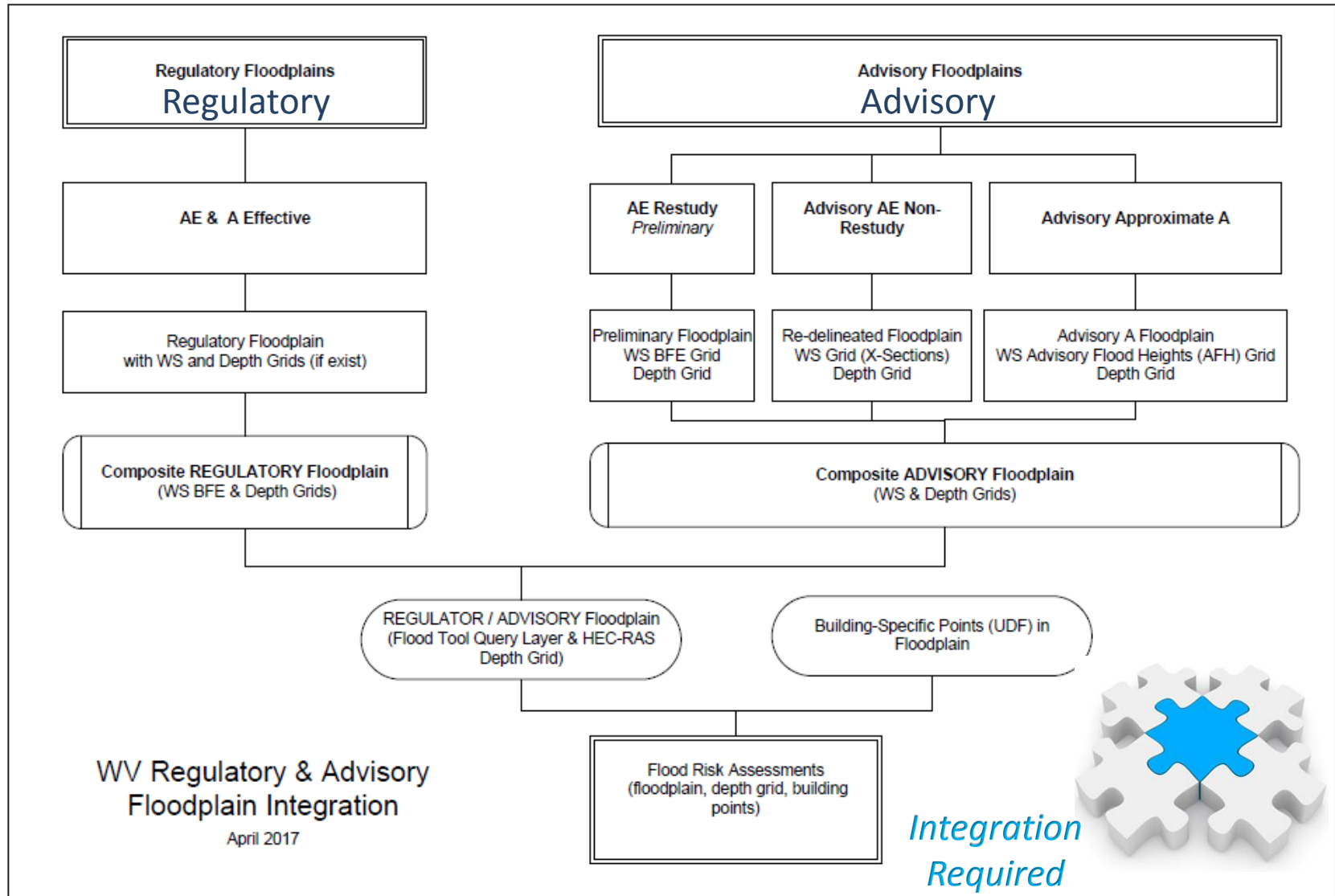
What do you tell the public? Acquire an elevation certificate and use the advisory flood elevation to request a LOMA to amend the effective NFIP map.

Advisory AE Determinations

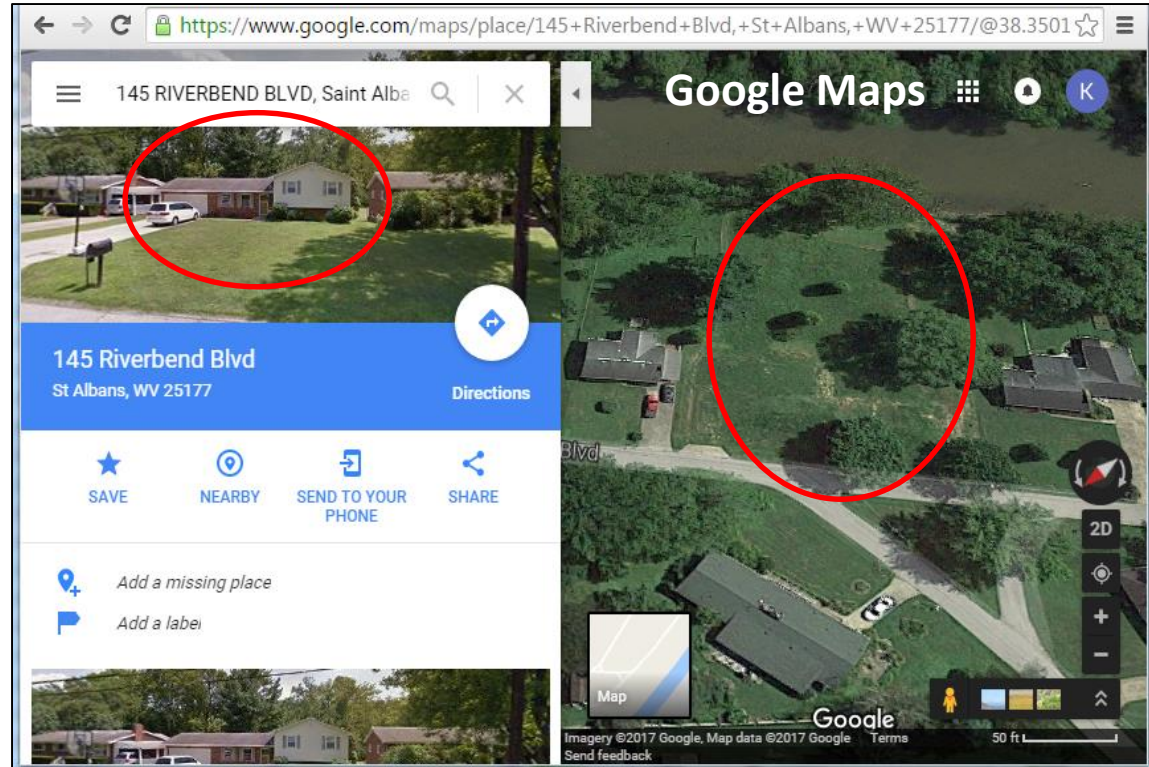


What do you tell the public? Advisory information indicates a flood hazard area and will likely be incorporated into future effective NFIP maps. New development should not occur in Advisory Floodplains without a detailed study to show development reasonably safe from flooding. Recommend purchasing flood insurance for existing structures.

Regulatory vs. Advisory Floodplains



Mitigated/Buyout Properties



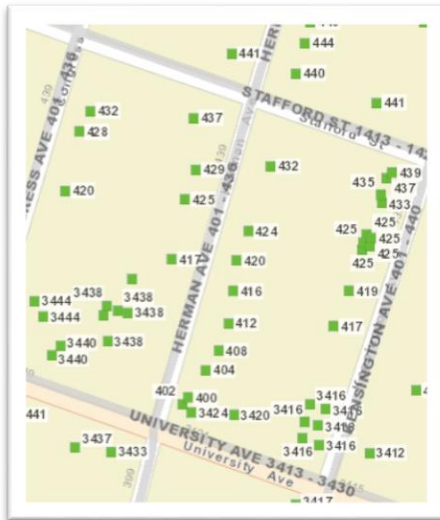
Example: 145 Riverbend Blvd, Saint Albans, WV (adjacent to Coal River)

House still visible in default imagery of WV Flood Tool and Google StreetView; however, in Google Maps oblique view the structure has been removed.

<https://www.mapwv.gov/flood/map/?v=0&pid=20-16-012E-0125-0000>

Improved Local Data Integration

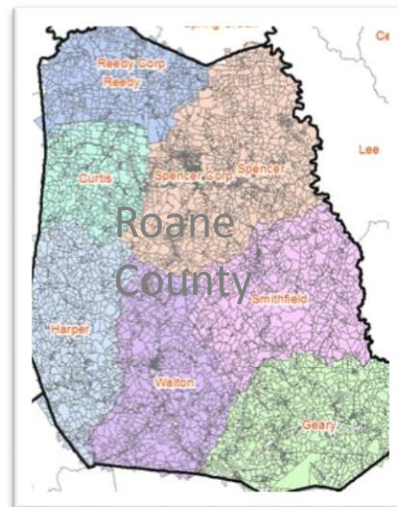
Site Addresses



41

E-911 offices updated addresses to the Statewide Addressing & Mapping System which links to WV Flood Tool

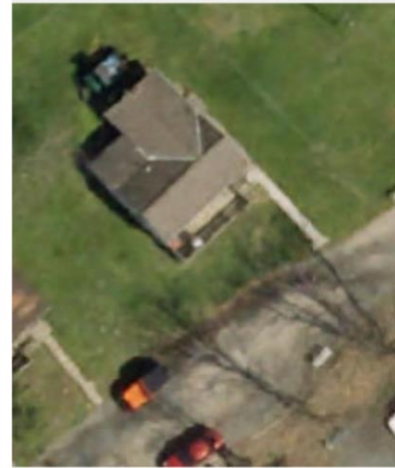
Tax Parcels



38

county assessors have given permission to have parcels added to the WV Flood Tool

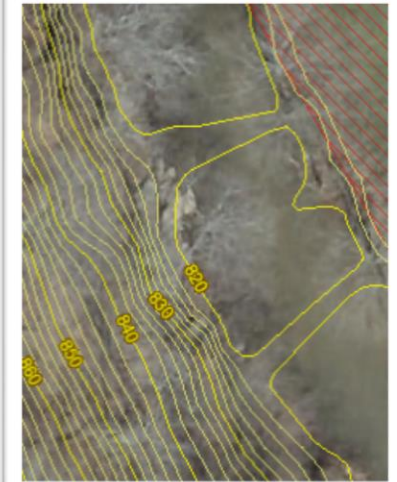
Aerial Imagery



29

counties have submitted their more current aerial imagery to be included in the WV Flood Tool

Elevation Contours



3

counties have requested that their 2-foot elevation contours be displayed in the WV Flood Tool

County data reference layers are very important for flood determinations and flood risk products

Parcels link to Owner/Building Info

629 PENNSYLVANIA AVE, Morgantown, WV, 26501

<https://www.mapwv.gov/flood/map/?wkid=102100&x=-8899684&y=4811867&l=13&v=0>

The screenshot displays the WV Flood Map application interface. On the left, a sidebar contains tabs for 'Address', 'Parcel', and 'Risk'. The 'Address' tab is active, showing a table with the following information:

DESCRIPTION	
Land use	101 - Residential 1 Family
Year built	1911

Below this is a '3D Flood Model' window. It features a 'Depth' dropdown menu with options from 0 to 14 feet. The '1 Foot' option is selected. The main visualization shows a 3D rendering of a red house and a white car partially submerged in blue floodwater. Below the visualization, the 'Parcel ID' is listed as 31-10-0029-0130-0000 and the 'Water Depth' is ~1.0 ft (HAZUS). A 'Google Map' link is also present.

The central map area shows an aerial view of the property with yellow parcel boundaries and red flood hazard lines. A red pin is placed on the property. The right-hand panel provides detailed flood hazard information:

- Flood Hazard Area:** Location is WITHIN the FEMA 100-year floodplain.
- Flood Zone:** AE
- Stream:** Deckers Creek
- Watershed (HUC8):** Upper Monongahela (5020003)
- FEMA Issued Flood Map:** 54061C0114E
- Map Effective Date:** 1/20/2010
- Contacts:** Monongalia
- Advisory Flood Height:** N/A
- Water Depth:** About 1.0 ft (Source: HAZUS)
- HEC-RAS Model:** N/A
- Flood Profile:** 54061_005
- CRS Information:** N/A
- Location (long, lat):** (79.947234 W, 39.626885 N)
- Location (UTM 17N):** (590352, 4386875)
- Elevation:** About 823 ft
- Address:** 629 PENNSYLVANIA AVE, Morgantown, West Virginia, 26501
- Parcel ID:** 31-10-0029-0130-0000
- Flood Risk Information:** Flood Risk Assessment: N/A
- 3D Flood Visualization:** (highlighted with a red circle)

At the bottom right, a blue banner contains the text: **Residential or Farm Property**

Parcels link to Owner/Building Info

Residential or Farm Property

629 PENNSYLVANIA AVE, Morgantown, WV, 26501

<https://www.mapwv.gov/flood/map/?wkid=102100&x=-8899684&y=4811867&l=13&v=0>



DESCRIPTION	
GIS Parcel ID	31-10-0029-0130-0000
Legal Description	BL 12-1/2 LOT 10
Acreage (deed)	0.0373
Tax Year	2015
Tax Class	4
Deed Book / Page	1259 / 45
PROPERTY OWNER(S)	
Property Owner(s)	Smith John
BUILDING INFORMATION	
Property Class Type	R- Residential
Land Use	101 - Residential 1 Family
Year Built	1911
Architectural style	Conventional
Exterior Wall	Aluminum
Stories	2
Total Rooms	8
Building Grade	C
Basement Type	Full
Structure Area	1,320
Building (card) Number	1
# of main BLDGs (cards)	1
APPRAISED VALUES	
Land Appraisal	\$33,200
Building Appraisal	\$29,000
Total Appraisal	\$62,200

Parcels link to Owner/Building Info

Commercial or Industrial Property

1501 DECKERS CREEK BLVD, Morgantown, West Virginia, 26505
<https://www.mapwv.gov/flood/map/?v=0&pid=31-14-0031-0101-0000>

Depth

- 0 Foot
- 1 Foot
- 2 Foot
- 3 Foot
- 4 Foot
- 5 Foot
- 6 Foot
- 7 Foot
- 8 Foot
- 9 Foot
- 10 Foot
- 11 Foot
- 12 Foot
- 13 Foot
- 14 Foot

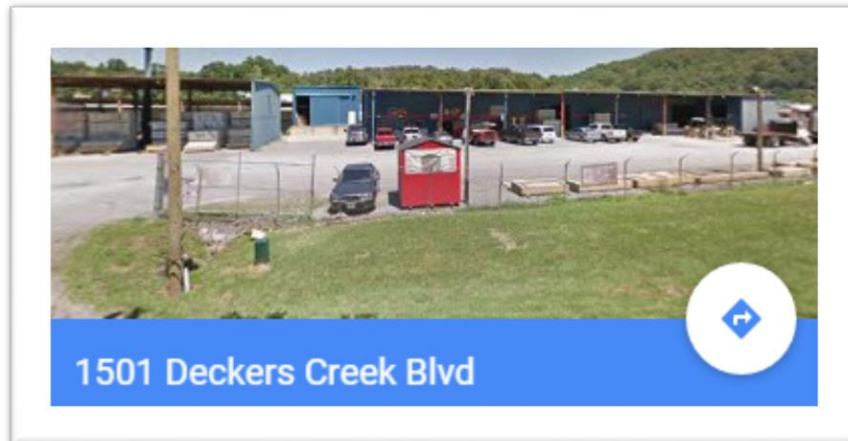
1501 DECKERS CREEK BLVD, Morgantown, West Virginia, 26505

Parcel ID: 31-14-0031-0101-0000 Water Depth: ~ 2.0 ft (HAZUS) Google Map

12 Feet General Damage - Woodwork, doors, and most appliances damaged. When 2 feet of water is in the living space and the walls are wet it is classified as a Major Emergency by the WV Division of Homeland Security and Emergency Management (WV DHSEM).

13 Feet

14 Feet Appliances - Most appliances (refrigerator, stove, dishwasher, washer, dryer) are a total loss between 1 ft and 2 ft feet of water.



DESCRIPTION	84 Lumber
GIS Parcel ID	31-14-0031-0101-0000
Legal Description	5.0922 AC;SABRATON
Acreage (deed)	5.09
Deed Book / Page	1376 / 234
PROPERTY OWNER(S)	
Property Owner(s)	SPIRIT SPE PORTFOLIO

BUILDING INFORMATION	
Property Class Type	C- Commercial
Land Use	373 - Retail-Single Occupancy
Year Built	1994
Stories	2
Exterior Wall	Brick or Stone
Construction Type	Pre-Engineered Steel
Building Grade	D+
Basement Type	None
Business Living Area	15,255
Cubic Feet	292,380
Use Type	34-Retail Store, 82- Multi-Use Office

COST VALUES	
Other Bldg/Yard Values	\$67,020
Commercial Value	\$227,700
APPRAISED VALUES	
Land Appraisal	\$378,800
Building Appraisal	\$294,700
Total Appraisal	\$673,500

Assessment Building Info

West Virginia Parcel Property Class Breakdown for Tax Year 2017

Code	Property Class	# of Parcels	Percent (%)
R	Residential	1,164,470	79.61%
F	Farm	121,384	8.30%
A	Apartment	3,222	0.22%
C	Commercial	65,784	4.50%
I	Industrial	3,105	0.21%
X	Exempt	97,773	6.68%
U	Utility	192	0.01%
Other	Not classified	6,837	0.47%
		1,462,767	100.00%

*Assessment records are important for **building inventories** and are used to estimate the total building exposure (\$) and building loss (\$) for multi-hazards. Often building inventories and corresponding loss estimates are organized by **property class**.*

Addresses Link to Parcels

<https://www.mapwv.gov/flood/map/?wkid=102100&x=-8901769&y=4816526&l=13&v=0>

The screenshot displays the WV Flood Map interface. At the top, the WV Flood logo and the URL are visible. The main map area shows an aerial view of a residential area with a red flood hazard overlay. A search bar at the top center contains the address "680 Killarney Drive, Morgantown, wv" and is marked with a red "1".

On the left side, a "Parcel Building Info" panel is open, showing details for a property. It is marked with a red "3". The panel includes tabs for "Address", "Parcel", and "Risk", with "Address" selected. The "BUILDING INFORMATION" section lists:

- Property Class Type: A - Apartment
- Land use: 211 - Apartment-Garden (1-3 stories)
- Year built: 1958
- Construction Type: Wood frame/Joist/Beam
- Use Type: 11-Apartment
- # of cubic feet: 211688
- # of units: 18
- Story height: 2
- Exterior wall: Brick or Stone
- GRADE: D+
- Basement: First Basement
- Building (card) number: 1
- # of main BLDGs (cards): 4

At the bottom left, an "Address Search" panel is open, showing the search results for "680 KILLARNEY NoUnit, MORGANTOWN, WV 26505". It is marked with a red "1". A red banner at the bottom of this panel reads "Site Address Match".

On the right side, a "Flood Hazard Area" information panel is open, showing details for the location. It is marked with a red "2". The panel includes:

- Flood Hazard Area: Location is WITHIN the FEMA 100-year floodplain.
- Flood Zone: A
- Stream: Burroughs Run
- Watershed (HUC8): Upper Monongahela (5020003)
- FEMA Issued Flood Map: 54061C0112E
- Map Effective Date: 1/20/2010
- Contacts: Monongalia
- CRS Information: N/A
- Location (long, lat): (79.965948 W, 39.659095 N)
- Location (UTM 17N): (588705, 4390431)
- Elevation: About 995 ft
- Address: multiple addresses
- Parcel ID: 31-15-0054-0220-0000
- Flood Risk Information: Flood Risk Assessment: N/A, 3D Flood Visualization: No Depth Grid Available

At the bottom right, a "Multi-Unit Addresses" panel is open, showing a list of addresses for the property. It is marked with a red "2". The list includes:

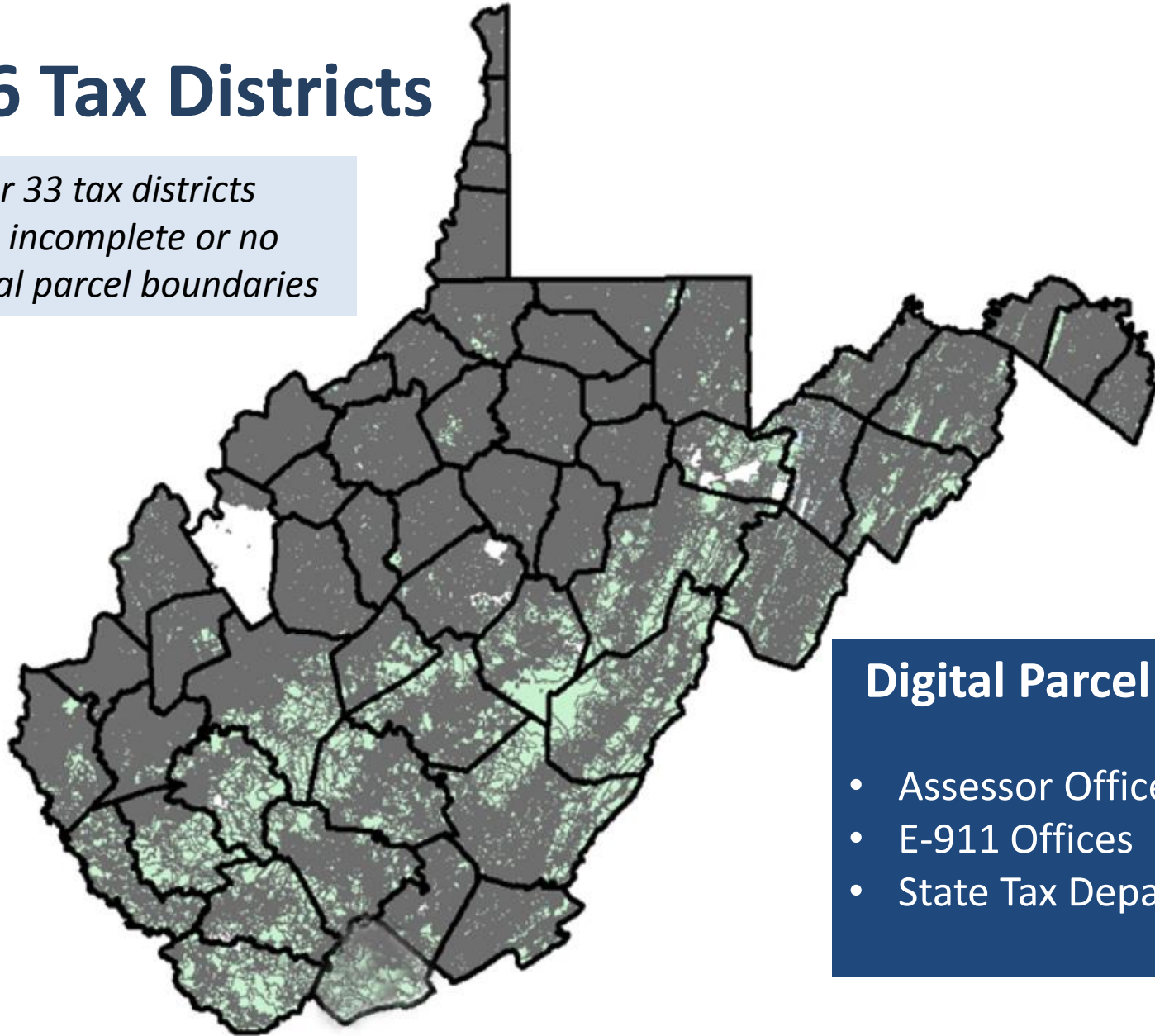
- #11: 682 KILLARNEY DR, Morgantown, West Virginia, 26505
- #13: 680 KILLARNEY DR, Morgantown, West Virginia, 26505
- #14: 680 KILLARNEY DR, Morgantown, West Virginia, 26505
- #15: 680 KILLARNEY DR, Morgantown, West Virginia, 26505
- #16: 680 KILLARNEY DR, Morgantown, West Virginia, 26505
- #17: 680 KILLARNEY DR, Morgantown, West Virginia, 26505

At the bottom center, a red banner reads "Site Address Match".

Statewide Digital Parcel File

606 Tax Districts

*5% or 33 tax districts
have incomplete or no
digital parcel boundaries*



Digital Parcel Sources

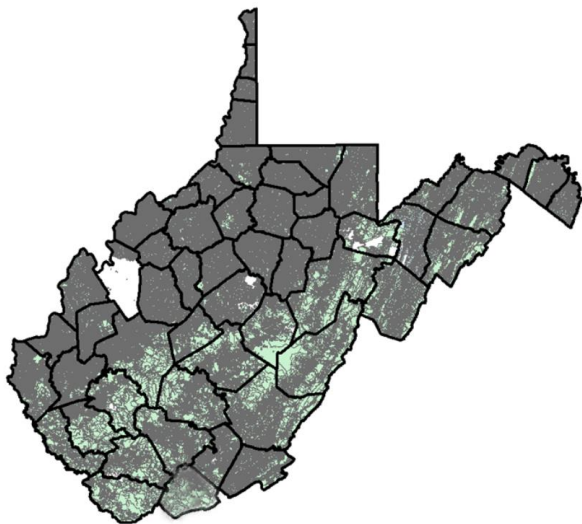
- Assessor Offices
- E-911 Offices
- State Tax Department

Statewide Digital Parcel File



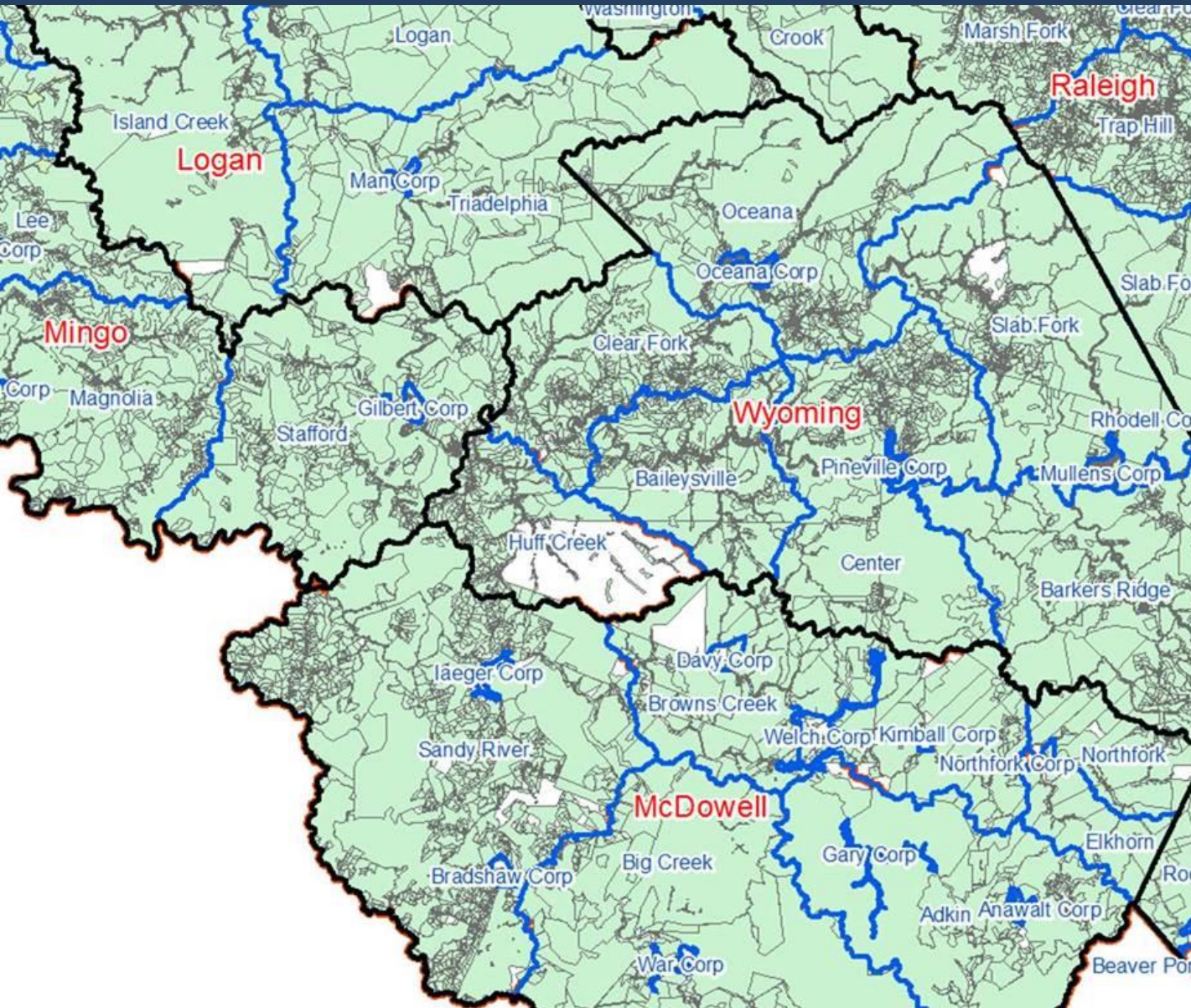
2013 WEST VIRGINIA STATEWIDE STANDARD
HAZARD MITIGATION PLAN UPDATE

ID	Description	Priority (H, M, L)	Responsible Agency	Potential Funding Sources	Interim Measure of Success	Target Comple- tion Date	Hazard Mitigated
2013-16	Creation of a statewide tax parcel for use in the HIRA/THIRA.	H	DHSEM, WVGISTC	Agency budget	Develop a prototype map that would consist of a pilot study to determine what would be possible if/when data was available or created.	2014 for pilot	All, except Dam & Levee



**High Priority
of
2013 State Hazard Mitigation Plan**

Statewide Digital Parcel File



#	Missing/ Obsolete Data Parcels
1	Boone
2	Braxton
3	Calhoun
4	Clay
5	Jackson
6	Logan
7	McDowell
8	Roane
9	Tucker
10	Tyler
11	Wirt
12	Wyoming

What is the cost for
parcel conversion?

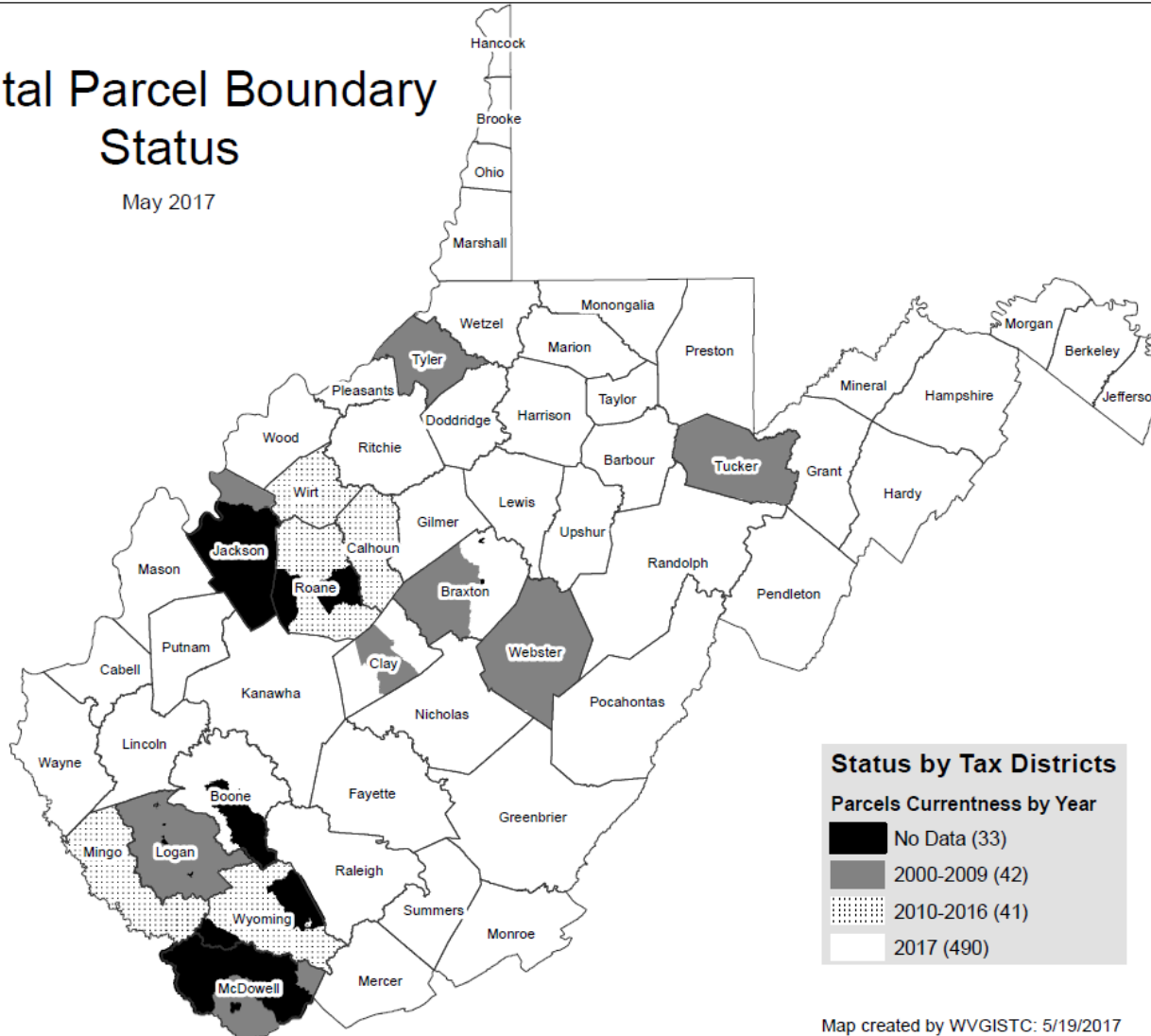
\$3.00 to \$3.50 per
parcel

Cost estimate of \$420K to achieve a current and accurate Digital Parcel Boundary file

Statewide Digital Parcel File

Digital Parcel Boundary Status

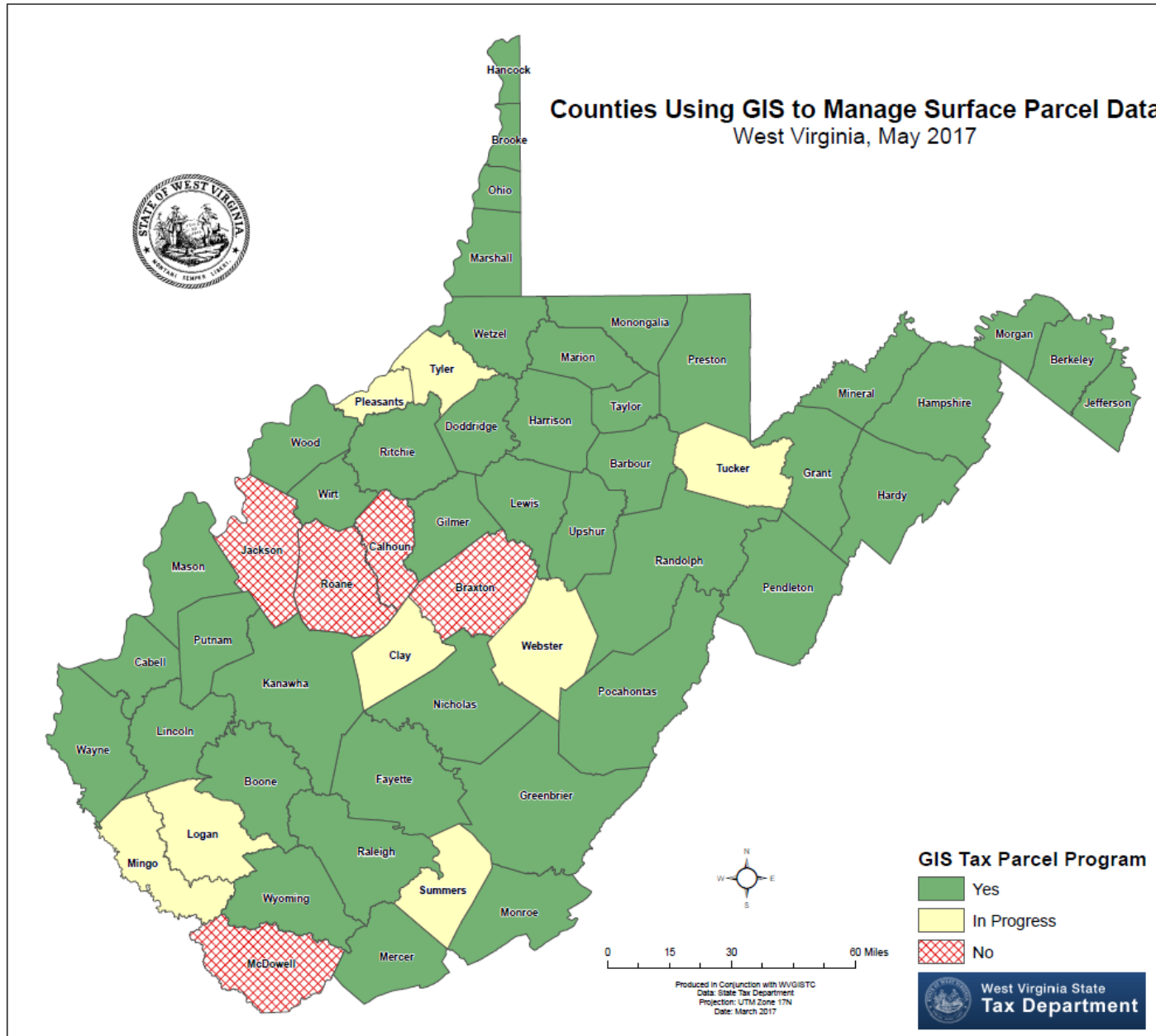
May 2017



#	Missing/ Obsolete Data Parcels
1	Boone
2	Braxton
3	Calhoun
4	Clay
5	Jackson
6	Logan
7	McDowell
8	Roane
9	Tucker
10	Tyler
11	Wirt
12	Wyoming

- Estimated cost of \$420K to achieve a current, accurate, and maintained Digital Parcel Boundary file
- SB 588 – As of July 5 will cost about \$25 instead of \$165,000 to acquire Statewide Parcel File

Counties using GIS



Paper to Digital Tax Maps

Mapper: *“I was apprehensive four years ago when our newly elected assessor decided to digitize our parcel mapping system; but with the work done by the mapping contractor then and their continual assistance today, I cannot imagine returning to the manual system.”*

Source: 2017 Tax Map Survey

MANUAL (Paper)

5 counties



TRANSITION

7 counties



DIGITAL

43 counties

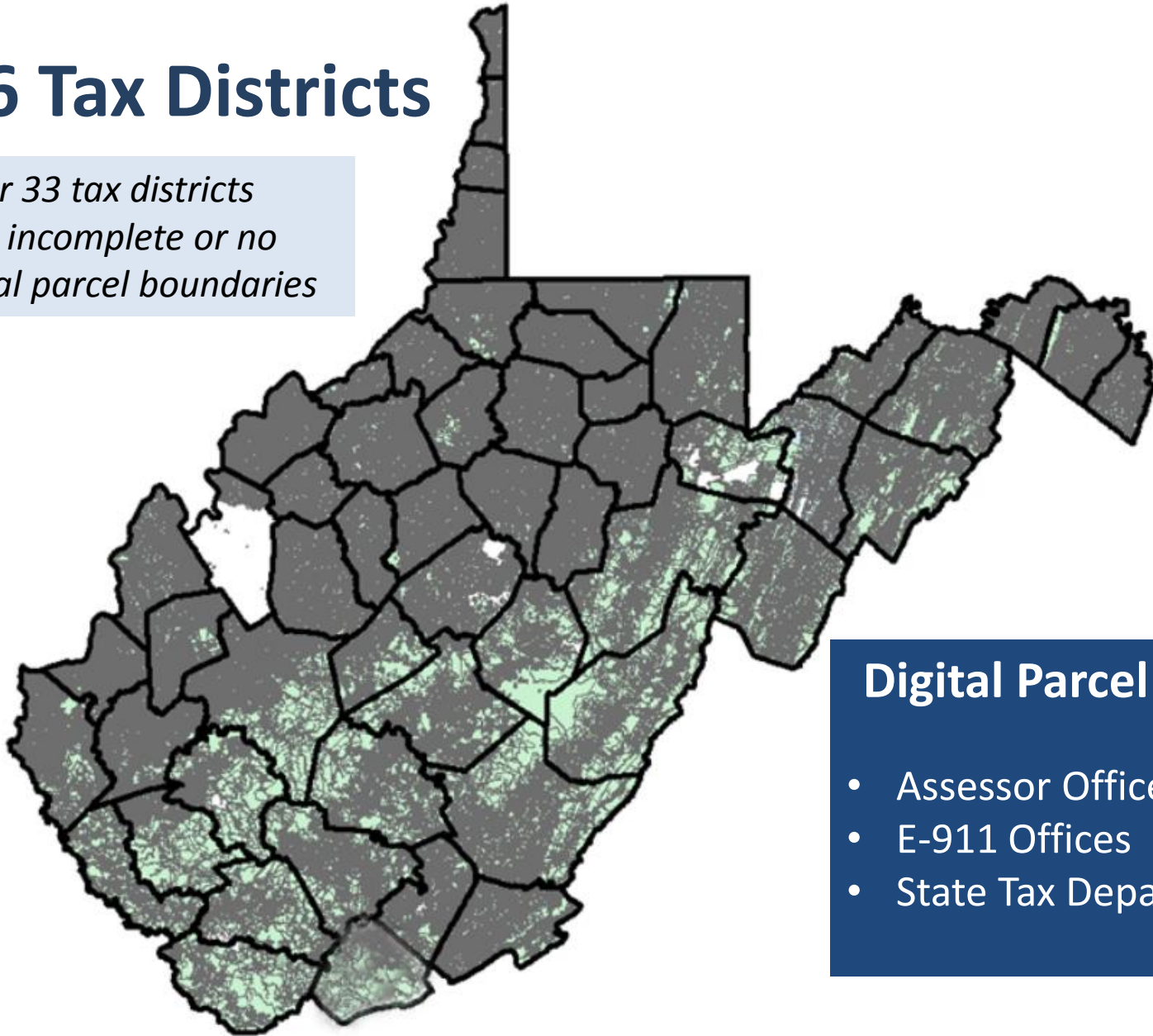


- Manual drafting of tax maps is becoming obsolete!!!
- There are no schools that teach manual drafting skills
- Manual drafting supplies are becoming scarce
- Tax Division may remove itself from drafting contract services

Statewide Digital Parcel File

606 Tax Districts

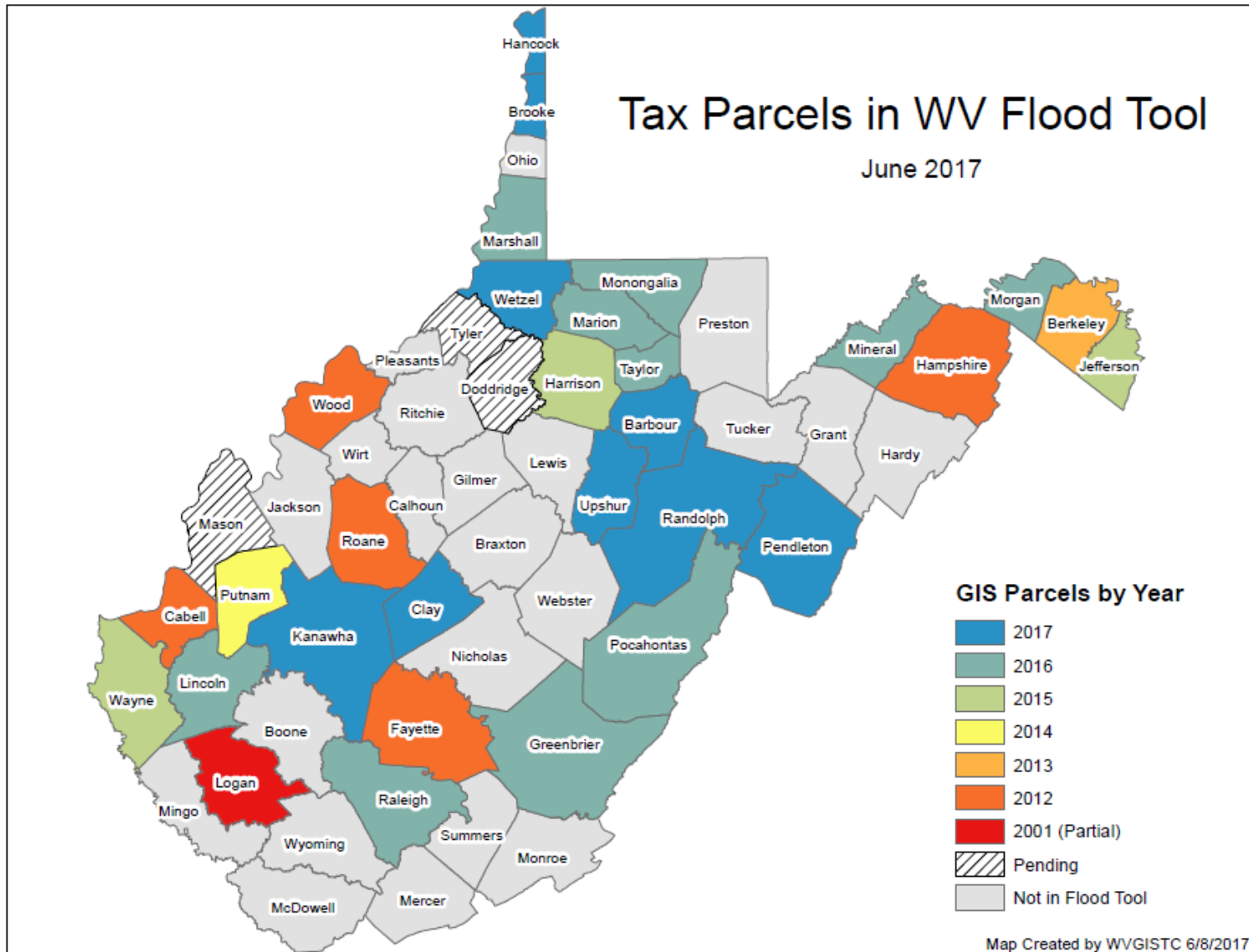
*5% or 33 tax districts
have incomplete or no
digital parcel boundaries*



Digital Parcel Sources

- Assessor Offices
- E-911 Offices
- State Tax Department

Parcels in WV Flood Tool

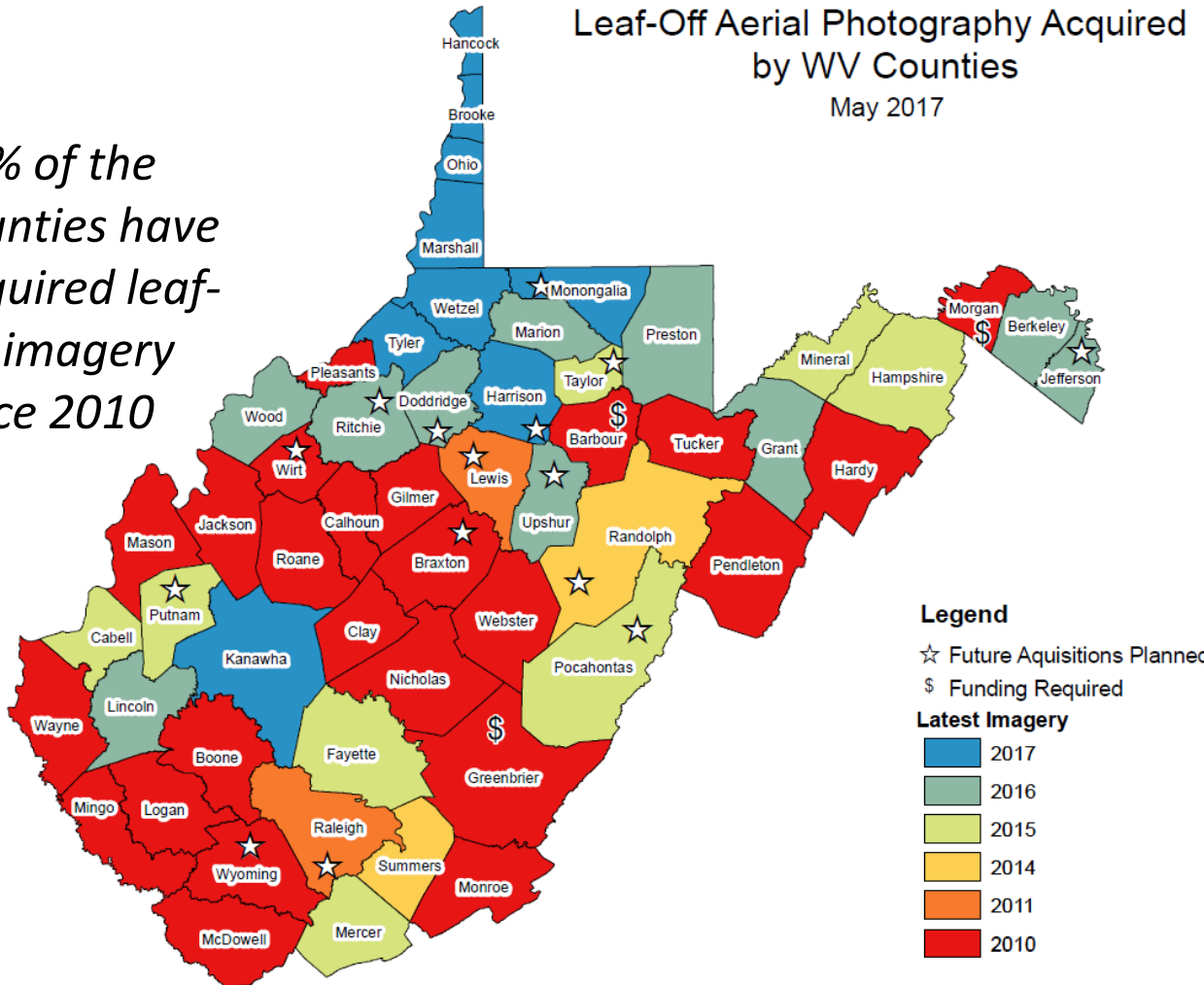


Contact your assessor about including parcels in WV Flood Tool

Aerial Imagery

55% of the counties have acquired leaf-off imagery since 2010

Leaf-Off Aerial Photography Acquired by WV Counties
May 2017



What is the cost?

\$70 per square mile for aerial imagery

Legend

- ☆ Future Acquisitions Planned
- \$ Funding Required

Latest Imagery

- 2017
- 2016
- 2015
- 2014
- 2011
- 2010

Source: County GIS

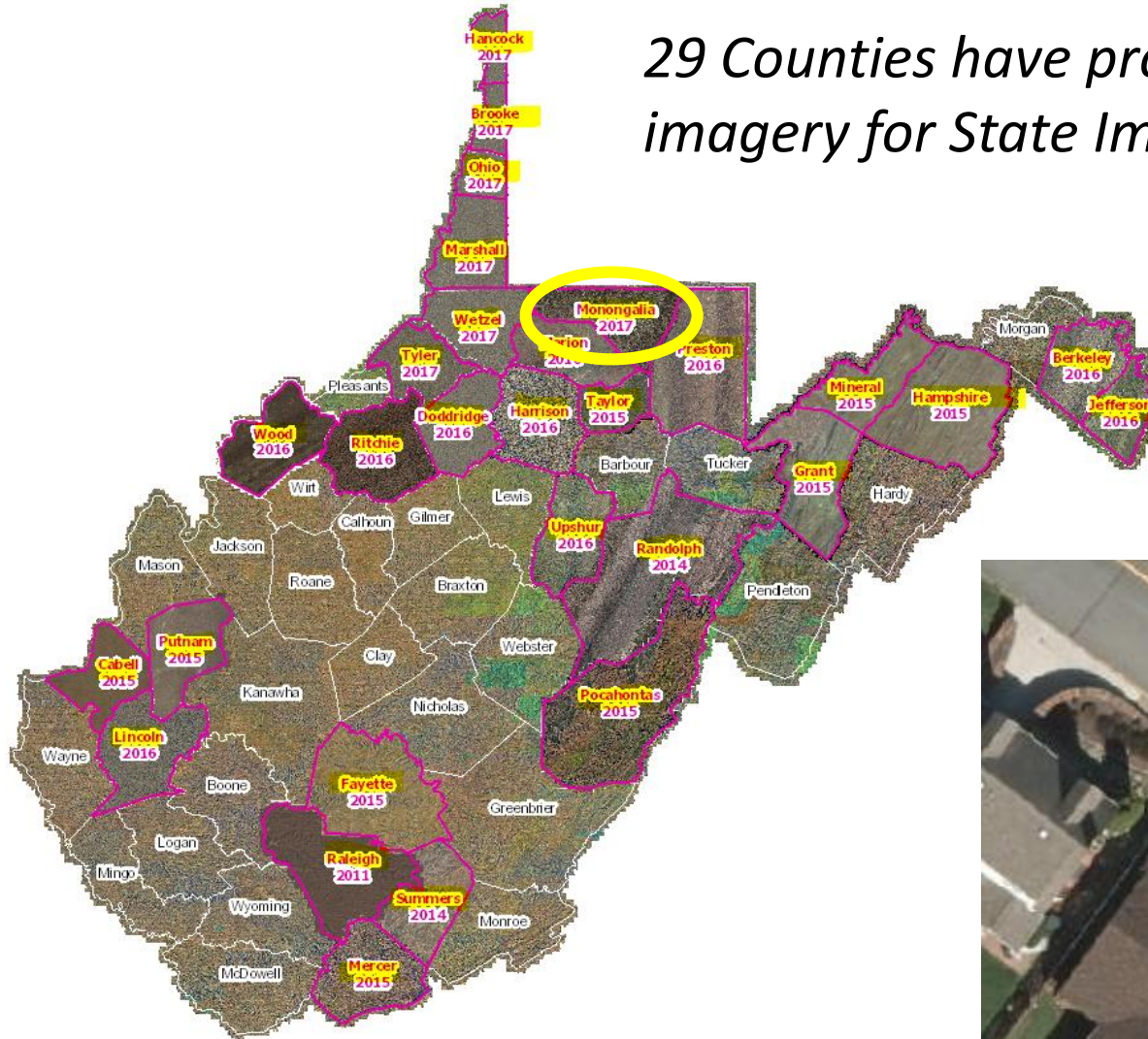
Map Created by WVGISTC: 6/2/2017

Ideally, leaf-off imagery should not be older than 5 years. Imagery is important for identifying at-risk structures and accurate disaster mapping.

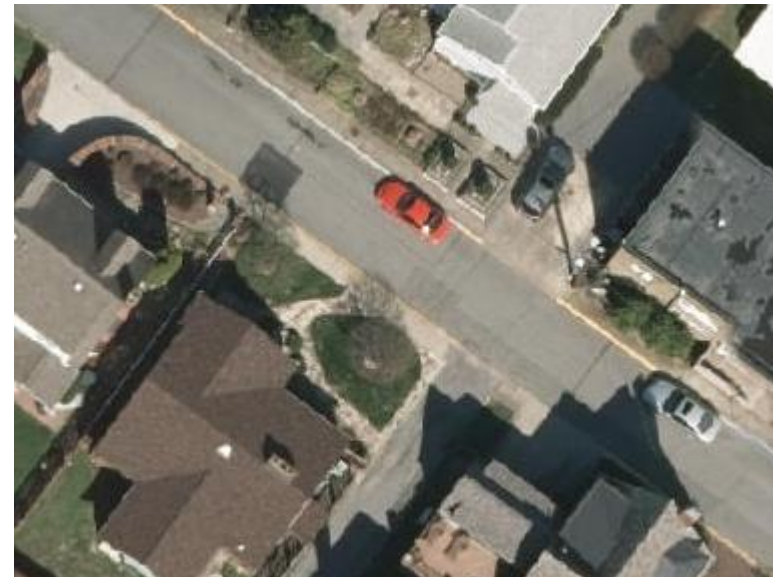
Leaf-Off Aerial Imagery Web Service

https://services.wvgis.wvu.edu/arcgis/rest/services/ImageryBaseMaps/wv_aerial_photos_mixed_resolutions_wm/MapServer?f=jsapi

29 Counties have provided leaf-off imagery for State Imagery Web Service



2017
Monongalia
County
Aerial Imagery



Aerial Imagery Costs

Source --->	WV Area (Sq. Miles)		Target Counties
Categories --->	Area	%	
WV Totals --->	24,231	\$ 1,696,200	
COUNTY ↓			
Barbour County	343	\$ 23,994	\$ 23,994
Berkeley County	322	\$ 22,513	
Boone County	503	\$ 35,225	\$ 35,225
Braxton County	516	\$ 36,134	\$ 36,134
Brooke County	92	\$ 6,458	
Cabell County	288	\$ 20,163	
Calhoun County	281	\$ 19,646	\$ 19,646
Clay County	344	\$ 24,070	\$ 24,070
Doddridge County	321	\$ 22,436	
Fayette County	668	\$ 46,788	
Gilmer County	340	\$ 23,806	\$ 23,806
Grant County	480	\$ 33,616	
Greenbrier County	1,024	\$ 71,714	\$ 71,714
Hampshire County	645	\$ 45,127	
Hancock County	88	\$ 6,185	
Hardy County	585	\$ 40,916	\$ 40,916
Harrison County	417	\$ 29,164	
Jackson County	472	\$ 33,013	\$ 33,013
Jefferson County	212	\$ 14,811	
Kanawha County	911	\$ 63,775	
Lewis County	390	\$ 27,285	\$ 27,285
Lincoln County	439	\$ 30,703	
Logan County	456	\$ 31,894	\$ 31,894
Marion County	312	\$ 21,806	
Marshall County	312	\$ 21,854	



Mason County	445	\$ 31,139	\$ 31,139
McDowell County	535	\$ 37,446	\$ 37,446
Mercer County	421	\$ 29,450	
Mineral County	329	\$ 23,041	
Mingo County	424	\$ 29,656	\$ 29,656
Monongalia County	366	\$ 25,614	
Monroe County	474	\$ 33,158	\$ 33,158
Morgan County	230	\$ 16,078	\$ 16,078
Nicholas County	654	\$ 45,812	\$ 45,812
Ohio County	109	\$ 7,620	
Pendleton County	698	\$ 48,875	\$ 48,875
Pleasants County	135	\$ 9,422	\$ 9,422
Pocahontas County	942	\$ 65,933	
Preston County	651	\$ 45,602	
Putnam County	350	\$ 24,529	
Raleigh County	609	\$ 42,657	\$ 42,657
Randolph County	1,040	\$ 72,800	
Ritchie County	454	\$ 31,753	
Roane County	484	\$ 33,866	\$ 33,866
Summers County	368	\$ 25,741	\$ 25,741
Taylor County	176	\$ 12,299	
Tucker County	421	\$ 29,479	\$ 29,479
Tyler County	261	\$ 18,250	
Upshur County	355	\$ 24,842	
Wayne County	512	\$ 35,856	\$ 35,856
Webster County	556	\$ 38,933	\$ 38,933
Wetzel County	361	\$ 25,297	
Wirt County	235	\$ 16,440	\$ 16,440
Wood County	377	\$ 26,389	
Wyoming County	502	\$ 35,130	\$ 35,130

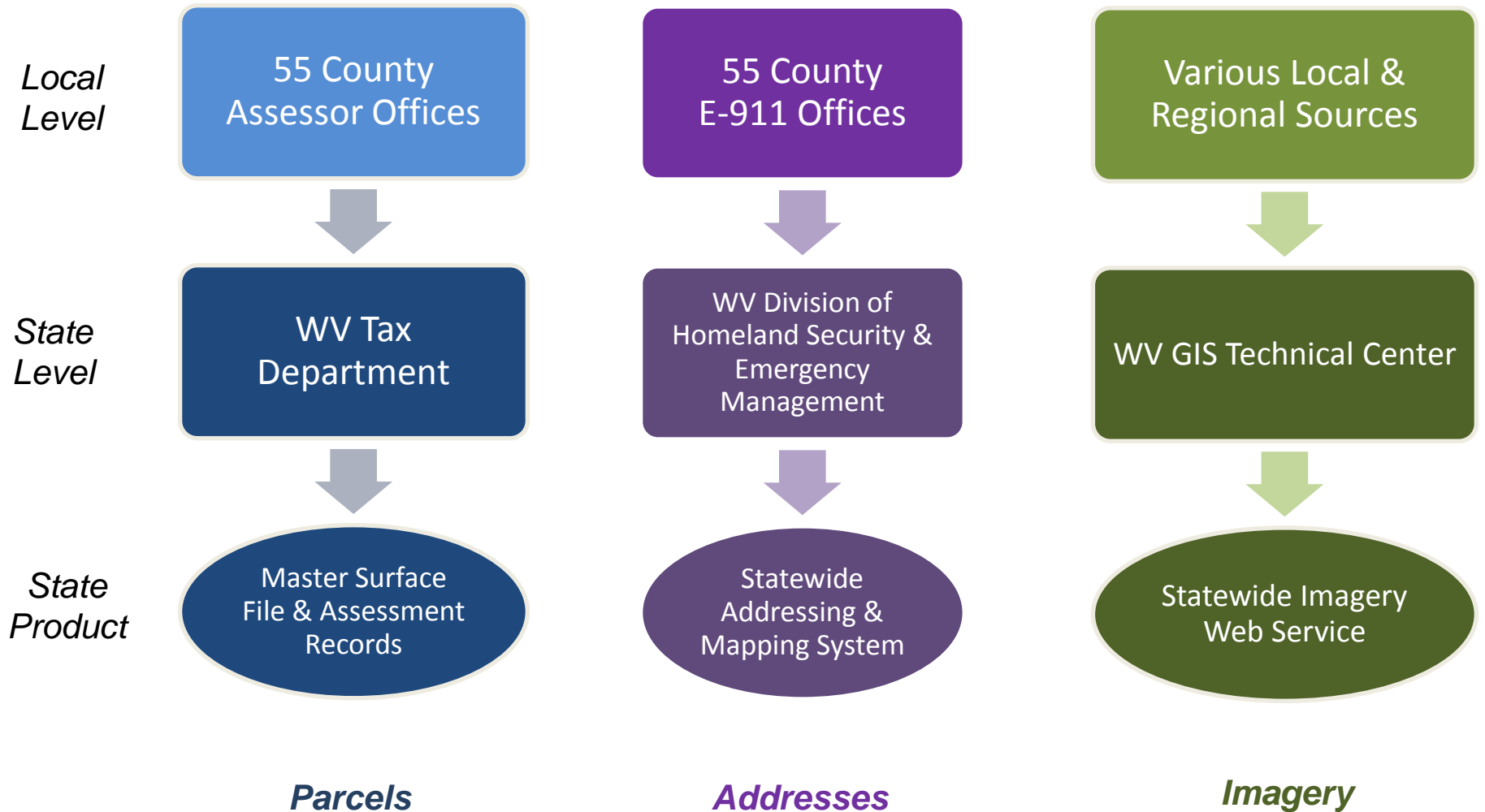
Currentness
Yellow highlighted counties indicates imagery older than 5 years.

Resolution
6-inch resolution or better

Leaf-Off
WV 3rd most forested state (78% forested)

Funding Sources
Assessor Valuation or County Commission Funds

State-Level Integration



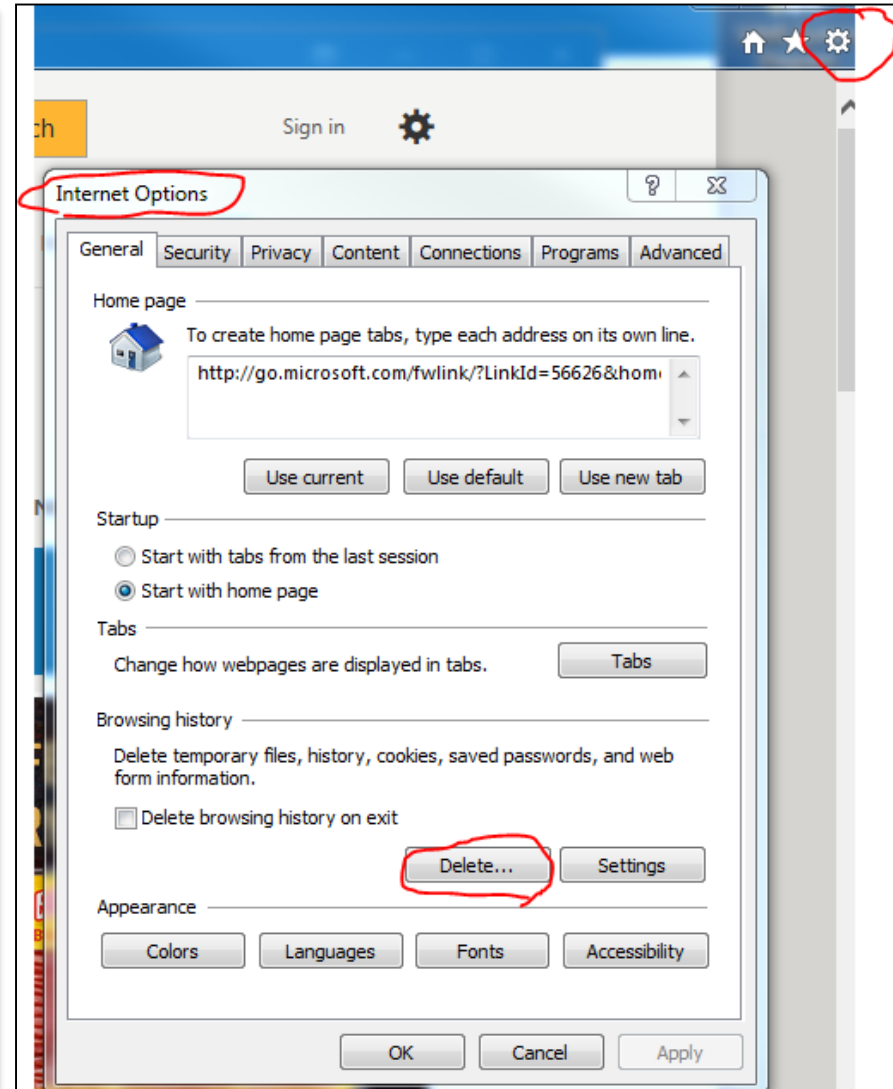
Other & Future Enhancements

- **Other Enhancements Accomplished**
 - Added Leaf-on USDA NAIP 2016 Statewide Imagery & WV DEP Hillshade
 - Best Leaf-Off imagery updated with aerial imagery from 29 counties
 - Parcels added for 36 counties, with 2 counties pledged by end of summer
 - Added Tug Fork Detailed Restudy
 - Improved Parcel ID Search tool
 - Embedded FloodSmart.gov Cost Calculator (*currently out of service due to security breach*)
 - Link to National Weather Service Advanced Hydrologic Prediction Service (AHPS)
 - Links to Flood Smart and Flood Risk Documents
 - Updated WV Address Locator Services
 - Re-programmed toolbar icons for restrictive settings on federal IE web browsers
 - Improved drawing and text markup tools
 - Update contact list of Floodplain Managers
 - Update statewide mitigated buyout properties flood layer
 - Added floodway to mobile application, updated data layers, services, flood queries
 - Added nearly 1.5 million assessor attribute records for Tax Year 2017 to include building specific information for commercial/industrial/apartment properties
- **Future Enhancements**
 - Add Upper Mon. Detailed Restudy (includes BFE grid)
 - Add new advisory floodplains and depth grids for A and AE Zones
 - Update statewide elevation grid with new lidar acquisitions
 - Acquire digital parcel and addressing layers for all counties
 - Add flood risk assessments and products for all counties
 - Improve building and essential facility inventories for risk planning
 - Incorporate 3D flood visualization models of communities (requires building footprints)
 - Add Historical Flood Inundation and Dam Break Inundation maps from external sources
 - Reclassify statewide water depth grid

Clear Browser Cache

Remember to clear browser cache to access all the current information and updates of Flood Tool

- Step 1
 - Press [Control]+[F5] on the keyboard. This is a FORCED refresh.
- Step 2
 - This process is more complicated. To do it thoroughly follow these steps.
 - close all browser windows
 - open a single browser
 - go to [Tools] on the top menu
 - select [Internet Options]
 - You will get a dialog box similar to the one shown below.
 - Press the [Delete Files] button. This should clear all the files in your browser cache.



Statewide Coverage Goals

- *In 2 years...*
 - Advisory Flood Heights (AFH) for Approximate A Zones and model Ordinance
- *In 3 years...*
 - Building-Specific Inventories
 - Site-Specific Flood Risk Assessments
 - Statewide Parcel File
 - Composite Depth Grid
 - Restudies
 - Advisory A & AE Zones



Technical Questions about Tool?

WVU GIS Technical Center

- **Eric Hopkins**

eric.hopkins@mail.wvu.edu, phone: 304-293-9463

- **Kurt Donaldson**

kurt.donaldson@mail.wvu.edu, phone: 304-293-9467