

## **IMPORTANCE OF LOCAL GOVERNMENT GIS DATA LAYERS FOR WV FLOOD TOOL**

GIS data layers (parcels, addresses, elevation contour lines, building footprints, etc.) produced at the county level are important for statewide mapping applications such as the WV Flood Tool and Statewide Addressing and Mapping System. These local map layers can be integrated into a standardized, state-level GIS database that benefit a range of applications for emergency response, risk assessments, economic development, natural resources, transportation planning, etc. In turn the statewide applications benefit the local officials and citizens who reside in the counties. Below are more detailed descriptions of essential local GIS layers and integration at the state level.

### **SURFACE TAX PARCELS**

The parcel layer provides building characteristic data for various flood risk products and 3D visualizations to help enhance the understanding of flood risk and its potential impact on communities and individuals. These products also enable communities to take proper mitigation actions to reduce the risk.

See examples below where counties have incorporated their parcels in the WV Flood Tool to display flood risk information and 3D flood visualizations.

- Berkeley County: <https://www.mapwv.gov/flood/Map/?v=1&pid=02-04-037M-0020-0000>
- Morgan County: <https://www.mapwv.gov/flood/Map/?v=0&pid=33-03-0002-0160-0000>
- Logan County: <https://www.mapwv.gov/flood/map/?v=0&pid=23-04-0071-0009-0000>
- Monongalia County: <https://www.mapwv.gov/flood/map/?v=1&pid=31-05-0019-0046-0000>

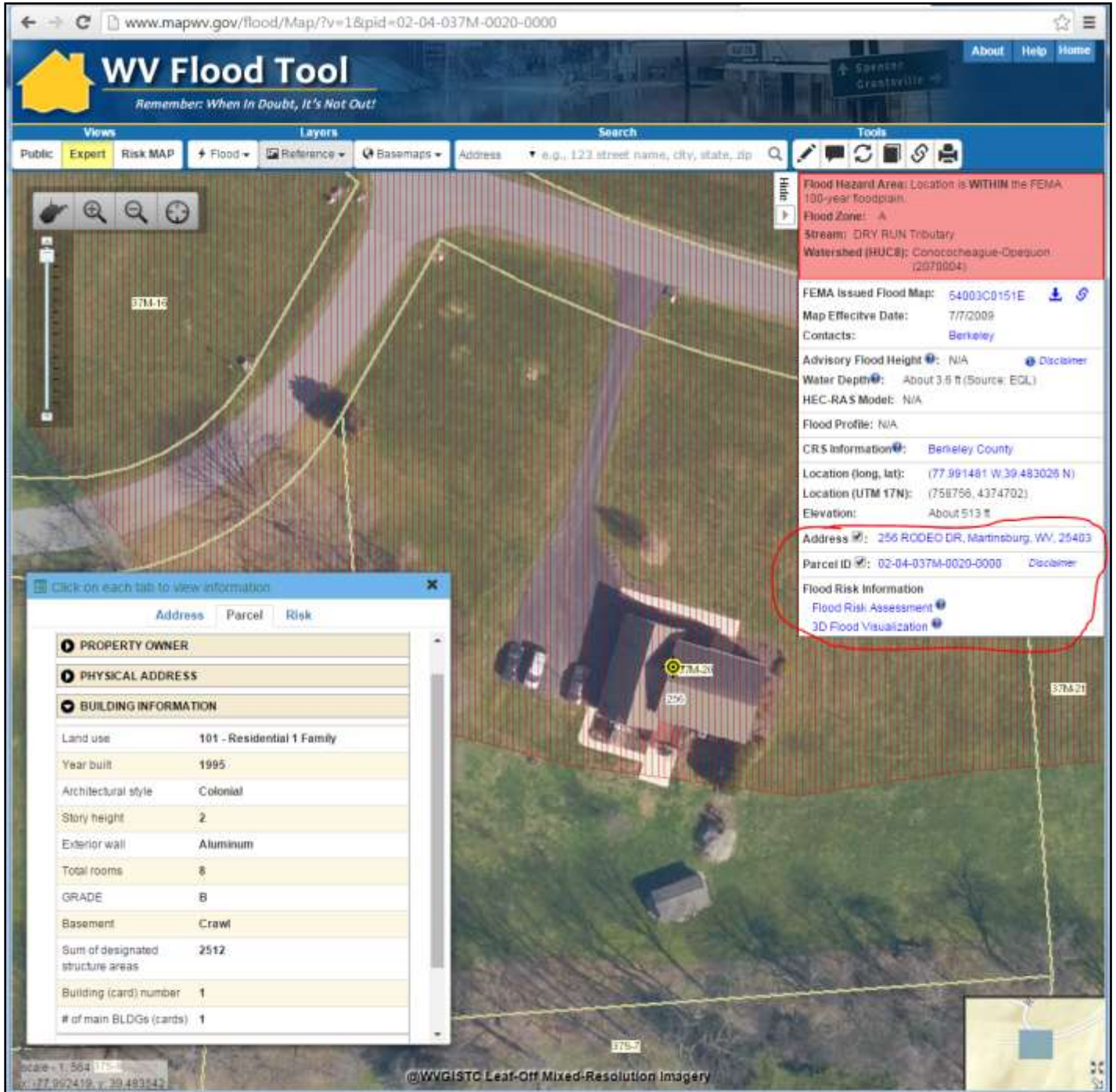
The tax parcel centroids and associated building characteristic data (YRBLT, STYLE, STORIES, EXTWALL, GRADE, BSMT, AREASUM) from the Integrated Assessment System, along with the RS Means building construction cost values, are used by Hazus Flood Model software to estimate flood damages to each structure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

Importantly, the GIS parcel outlines and assessment records are necessary for counties to conduct detailed flood risk studies for their communities. All flood-risked derived data layers, map products, and reports developed for the WV Flood Tool are available to the local governments for their benefit. Below are examples of flood risk assessment studies for Berkeley and Morgan counties:

- Berkeley County, WV  
[https://data.wvgis.wvu.edu/pub/temp/FEMA/FRA/Berkeley\\_FloodRiskRpt\\_20161026.pdf](https://data.wvgis.wvu.edu/pub/temp/FEMA/FRA/Berkeley_FloodRiskRpt_20161026.pdf)
- Morgan County, WV  
[https://data.wvgis.wvu.edu/pub/temp/FEMA/FRA/Morgan\\_FloodRiskRpt\\_20161026.pdf](https://data.wvgis.wvu.edu/pub/temp/FEMA/FRA/Morgan_FloodRiskRpt_20161026.pdf)

# Surface Tax Parcel and Building Information

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



**Figure 1.** Example flood determination of home located at 256 Rodeo Drive, Martinsburg, WV, that is within the 1% annual chance (100-year event) floodplain.

## Flood Risk Assessment & Visualization

3D Flood Model
✕

3D Visualization
Cost Tool
Related Resources

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](#)
- [>15 Ft](#)

256 RODEO DR, Martinsburg, WV, 25403

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

Water Depth: ~ 3.6 ft ( EQL)

[Google Map](#)

[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 framing is not damaged because it is composed of capped aluminum.

[14 Feet](#) **Countertops** - Water comes over countertops.

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	
<b>Damage Estimates (UDF)</b>		
Building Damage Pct	12%	
Building Loss USD	\$37,029	
Content Damage Pct	10%	
Content Loss USD	\$15,559	



**Figure 2.** Example flood risk assessment information including 3d Flood Visualization for 256 Rodeo Drive.

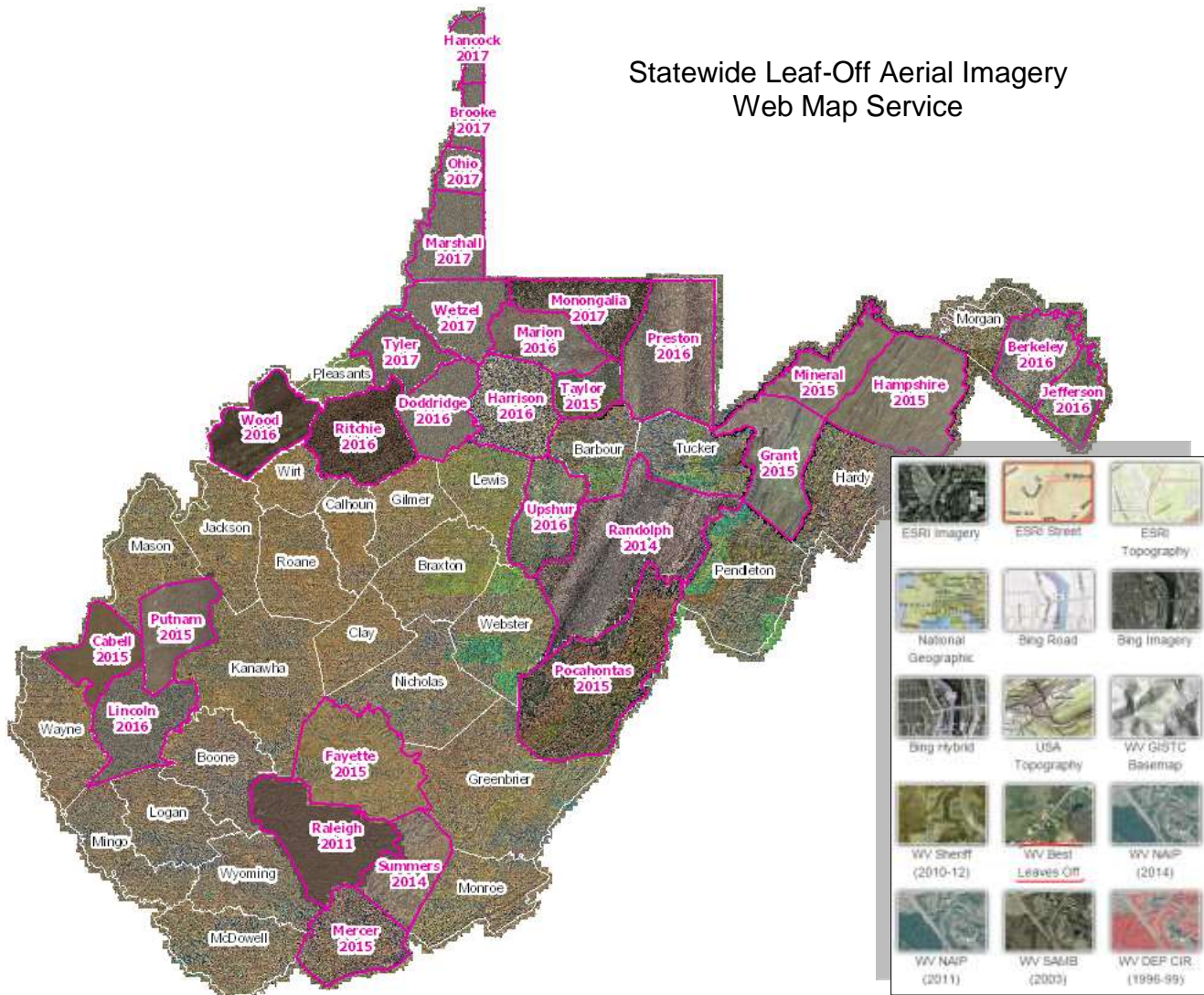
## AERIAL IMAGERY

Current leaf-off imagery is an important background layer for the WV Flood Tool and other map applications that benefit the citizens of West Virginia. Since the last statewide leaf-off imagery acquisition occurred in 2010 and no future statewide acquisitions are planned for the future, the counties are an important contributor to the imagery web map service.

Presently the best statewide leaf-off imagery web service is the statewide 2010-12 Sheriffs Association imagery updated with more current leaf-off imagery from county sources. To date twenty-nine counties have been mosaicked into this statewide imagery web map service. The imagery web service is for viewing only and aerial imagery from county sources is not redistributed without authorization.

Click here to view imagery service:

[https://services.wvgis.wvu.edu/arcgis/rest/services/ImageryBaseMaps/wv\\_aerial\\_photos\\_mixed\\_resolutions\\_wm/MapServer?f=jsapi](https://services.wvgis.wvu.edu/arcgis/rest/services/ImageryBaseMaps/wv_aerial_photos_mixed_resolutions_wm/MapServer?f=jsapi)



**Figure 3.** Statewide Leaf-Off Imagery mosaic of 2010-12 Sheriffs Association imagery and newer aerial imagery from county sources.

## TOPOGRAPHY (Elevation Contours)

Higher-resolution topography is an important layer for the WV Flood Tool. Various federal, state, and county agencies acquire high-resolution elevation data and make it available for public use. It is recommended that high-resolution elevation data collected meet USGS National Elevation Dataset (NED) and FEMA LiDAR standards according to the minimum Quality Level 2 (QL2) specifications which support 1-foot elevation contour accuracies. LiDAR deliverables should include a hydro-flattened bare-earth digital elevation model (DEM) in which the raster cell size is no greater than 1.0 meter and in accordance with USGS LiDAR Base Specification Guidelines. Specifically, for the WV Flood Tool the high-resolution topographic data is important for:

- More accurate ground elevations represented as contours or elevation value queries
- Improved flood zone delineations, flood water heights, and depth grids
- More accurate flood risk assessments and realistic
- More realistic 3D flood visualizations

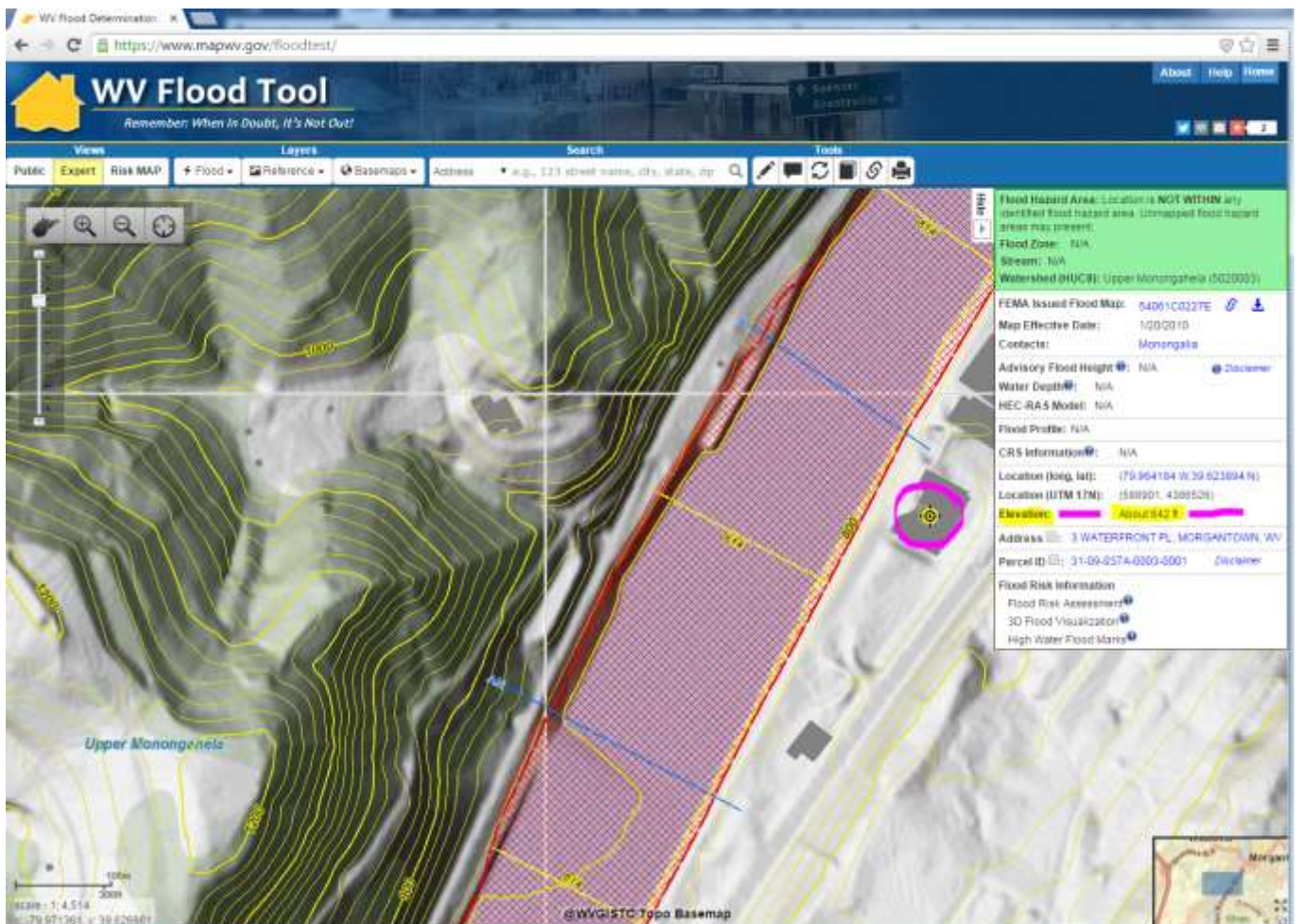


Figure 4. Detailed 2-foot elevation contours provided by county for WV Flood Tool.

## BUILDING FOOTPRINTS

The building footprints are an important map layer for generating 3d flood visualizations. The visualizations can be incorporated into local mitigation plans required by the Disaster Act of 2000 for communities to receive disaster funds.



**Figure 5.** Building footprints are useful for creating 3D flood models of communities.

## SITE AND STREET ADDRESSES

The building addresses are maintained by the local E-911 offices and integrated into the statewide addressing and mapping system (SAMS) by the WV Division of Homeland Security and Emergency Management. The addresses provide numerous benefits to include:

- Creating statewide geocoding service for matching addresses to locations (e.g., zoom to address)
- Linking multiple site addresses with other data sources like tax parcels
- Allowing for external links to other applications like Google Maps Street View and Zillow.com
- Exchanging URL links with others by incorporating the site address in the web address

### Building Site Addresses

Web Link:

<https://www.mapwv.gov/flood/Map/?v=0&address=1920%20BONA%20VISTA%20DR,%20Charleston,%20WV,%2025311>

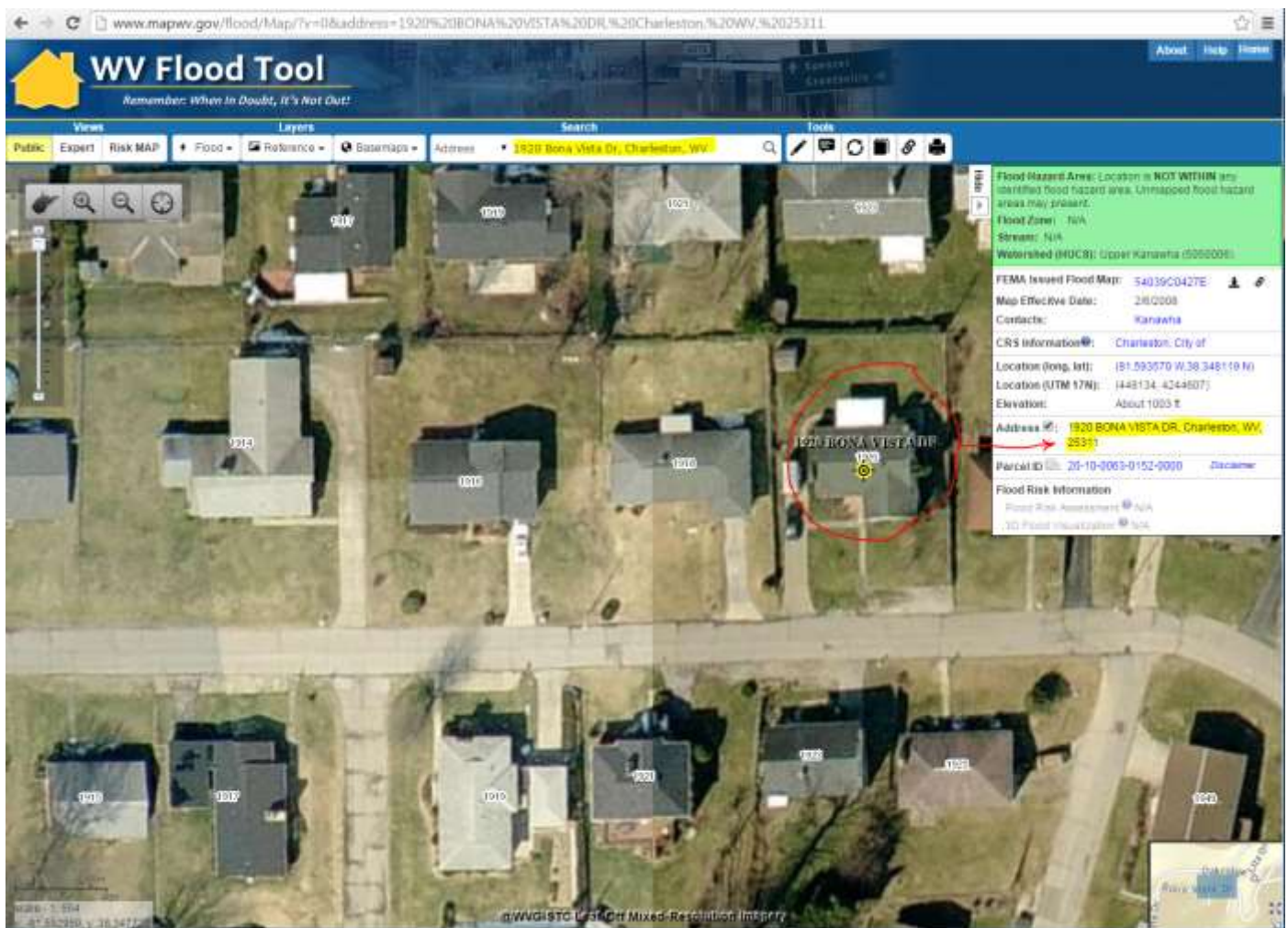


Figure 6. Building site address for 1920 Bona Vista Drive, Charleston, WV.