Risk MAP Products for Western MD

Jason Sevanick Durant

June 19, 2019

News & Press: News Releases

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National Institute of Building Sciences Issues New Report on the Value of Mitigation

Thursday, January 11, 2018

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Shows How Society Benefits When Buildings Can Withstand Natural Disasters

Today, the National Institute of Building Sciences issued *Natural Hazard Mitigation Saves: 2017 Interim Report*, more than a decade after releasing its original report on the same topic and only days after the National Oceanic and Atmospheric Administration (NOAA) declared 2017 the costliest year on record for weather and climate disasters.

As NOAA exemplified (16 events in 2017 had losses exceeding $1 billion, with total costs of approximately $306 billion, eclipsing the record losses in 2005 by $100 billion), natural hazards present significant risks to many communities across the United States. Fortunately, there are measures governments, building owners, developers, tenants and others can take to reduce the impacts of such events. The *2017 Interim Report* highlights the benefits of two such mitigation strategies.

During the ongoing study, the Institute's project team looked at the results of 23 years of federally funded mitigation grants provided by the Federal Emergency Management Agency (FEMA), U.S. Economic Development Administration (EDA) and U.S. Department of Housing and Urban Development (HUD) and found mitigation funding **can save the nation $6 in future disaster costs, for every $1 spent** on hazard mitigation.

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Off-Site Construction Council Posts New Implementation Resources

Every $1 in hazard mitigation saves society $6 in future disaster costs

** *In the case of riverine flood, the savings are a $7-to-$1 benefit for proactive mitigation steps such as acquiring or demolishing flood-prone buildings.*

Shows How Society Benefits When Buildings Can Withstand Natural Disasters

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Haven't registered yet?

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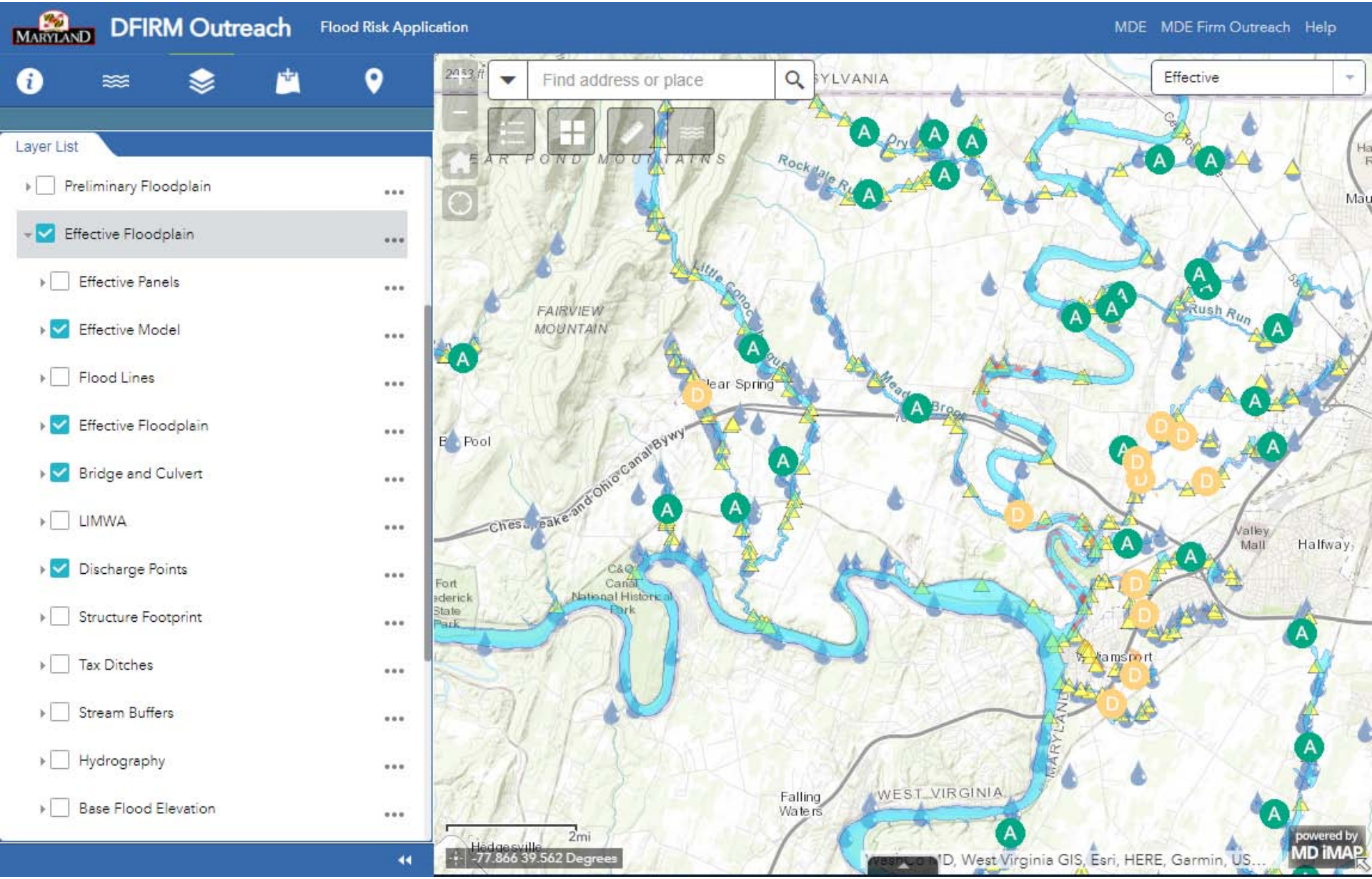
MARYLAND
DFIRM Outreach
Flood Risk Application
MDE
MDE Firm Outreach
Help
Layer List
Preliminary Floodplain
Effective Floodplain
Effective Panels
Effective Model
Flood Lines
Effective Floodplain
Bridge and Culvert
LIMWA
Discharge Points
Structure Footprint
Tax Ditches
Stream Buffers
Hydrography
Base Flood Elevation
Find address or place
Effective
FAIRVIEW MOUNTAIN
Rush Run
Chesapeake and Ohio Canal Bywy
C&O Canal National Historical Park
Valley Mall
Halfway
Falling Waters
WEST VIRGINIA
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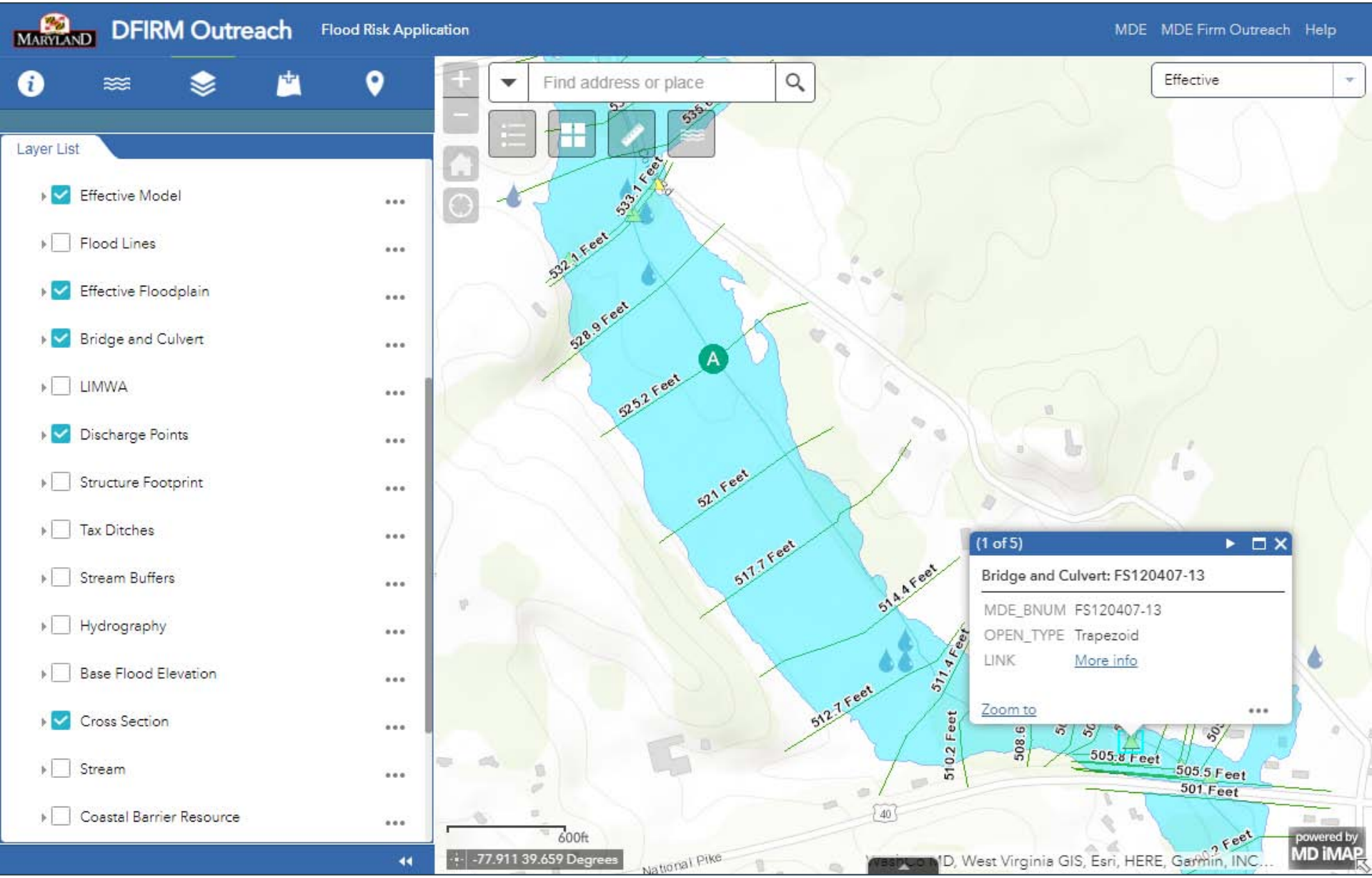
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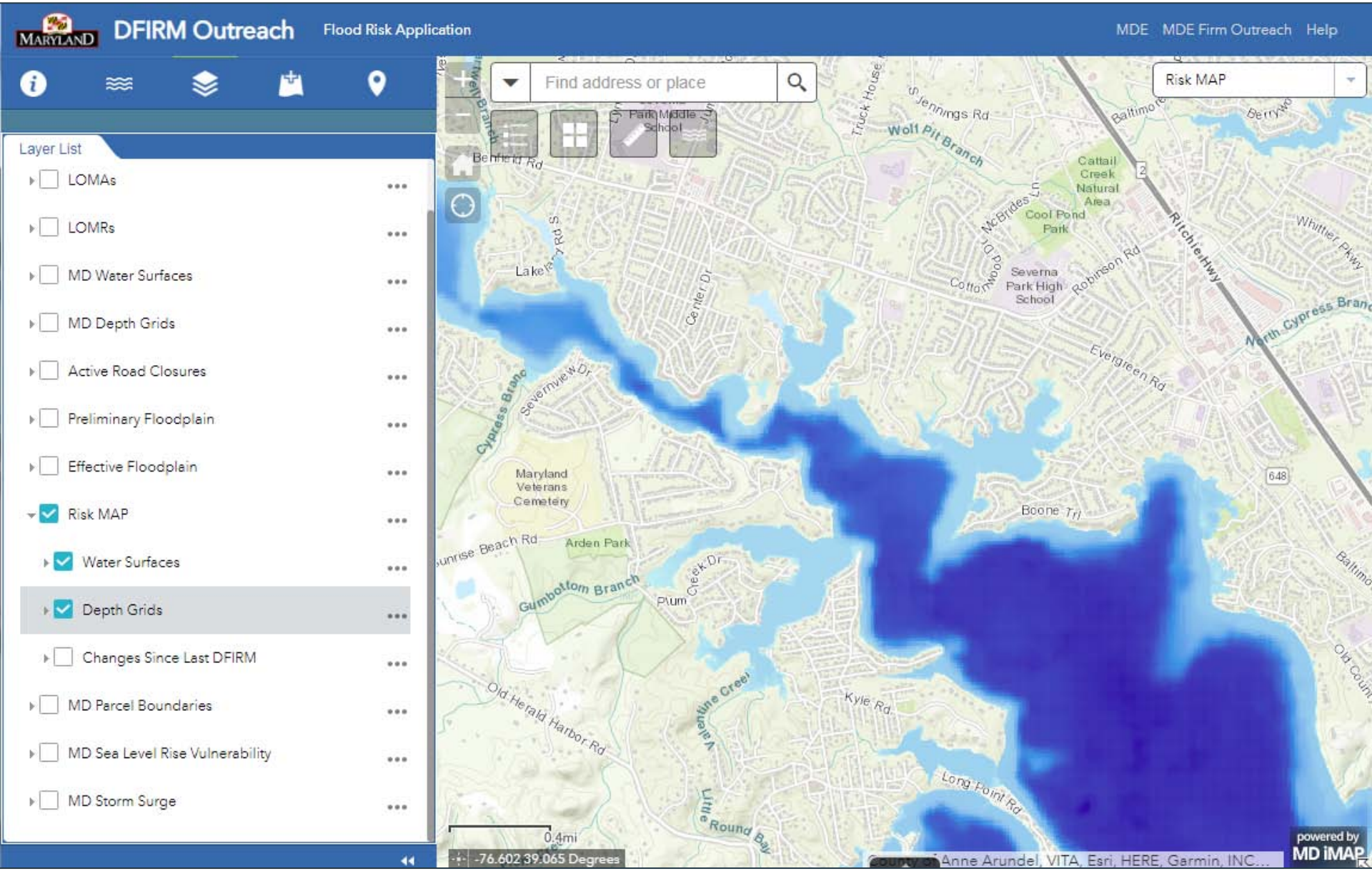
MARYLAND
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Layer List
LOMAs
LOMRs
MD Water Surfaces
MD Depth Grids
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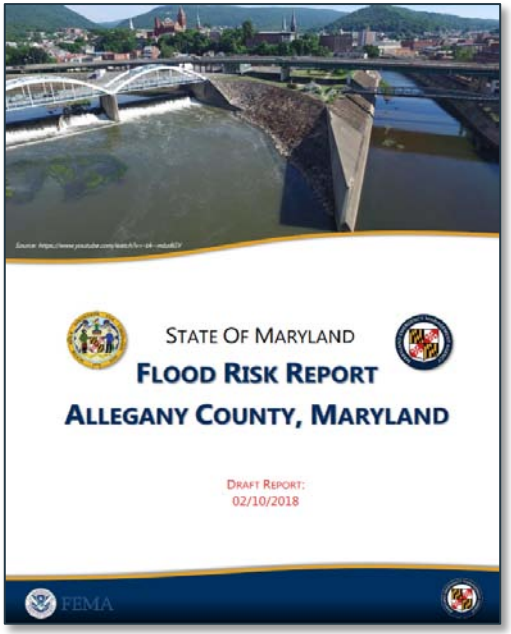
Risk MAP
Wolf Pit Branch
Cattail Creek Natural Area
Cool Pond Park
Severna Park High School
Maryland Veterans Cemetery
Arden Park
Gumbottom Branch
Cypress Branch
Ritchie Hwy
Evergreen Rd
Boone Trl
Kyle Rd
Old Herald Harbor Rd
Long Point Rd
Little Round Bay
0.4mi
-76.602 39.065 Degrees
powered by MD iMAP

Non-Regulatory Flood Risk Products

What are Non-Regulatory Flood Risk Products?

- **Flood Risk Database**

  Associated GIS and tabular data useful for making more informed floodplain management and hazard mitigation decisions



Degree of Damage[1]	Building Count	% of Total Building Count	Value of Buildings and Contents[2]	Value per Building	Total Damage[2]	Damage per Building	% of Total Damage
Less than 1%	44	7	$9,300,000	$200,000	$60,000	<$10,000	0
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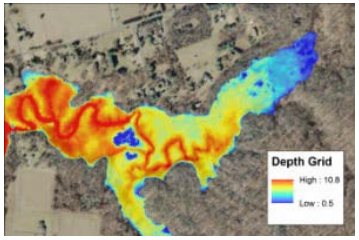
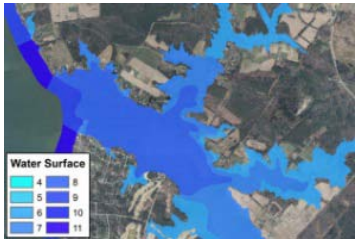
TOTAL	607	100	$98,000,000	$900,000	$20,900,000	$30,000	100

Types of Flood Risk Datasets



Flood Depth Grids

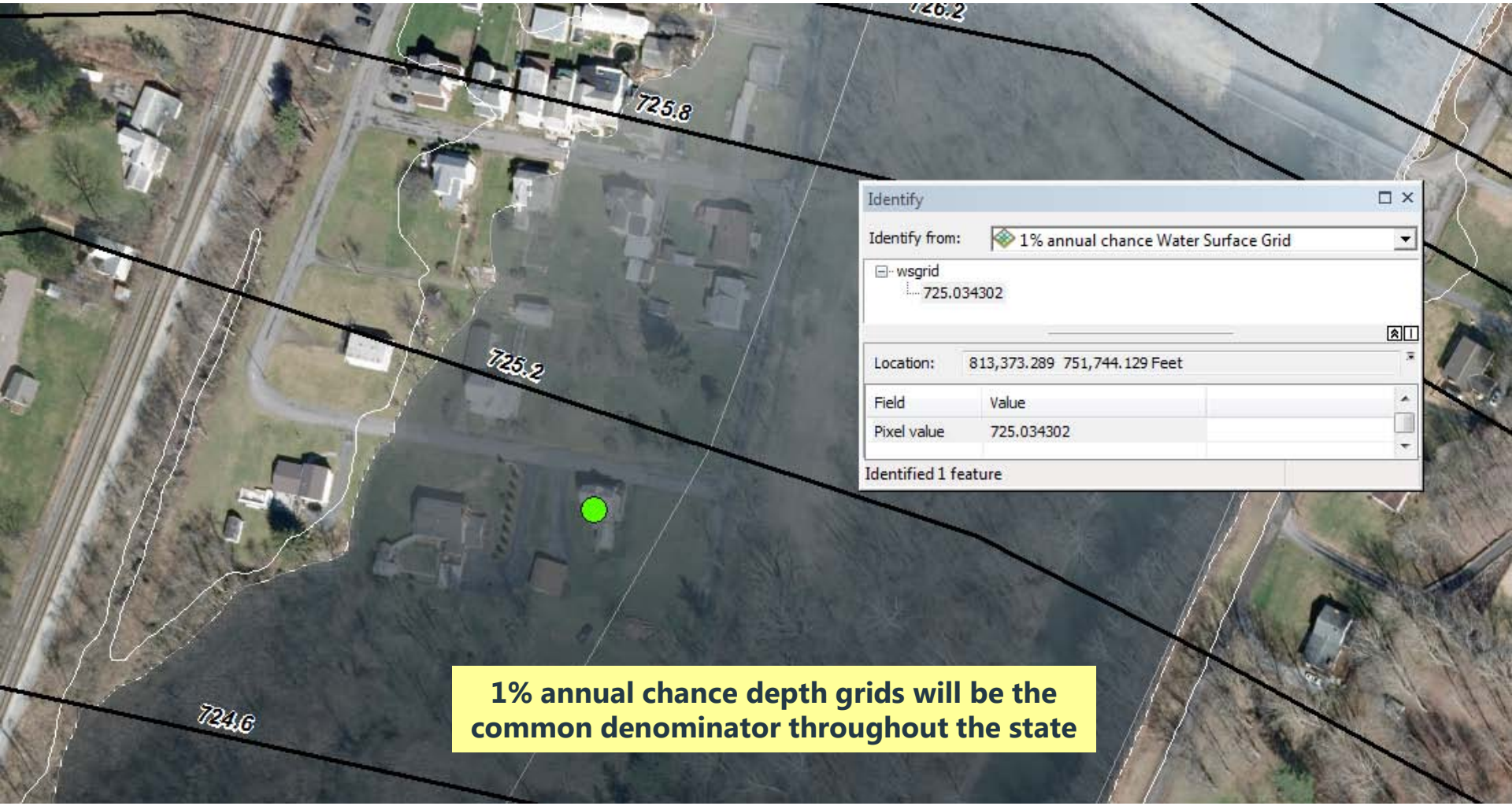
Water Surface Elevation Grids



Flood Risk Assessment /
Economic Loss Calculations

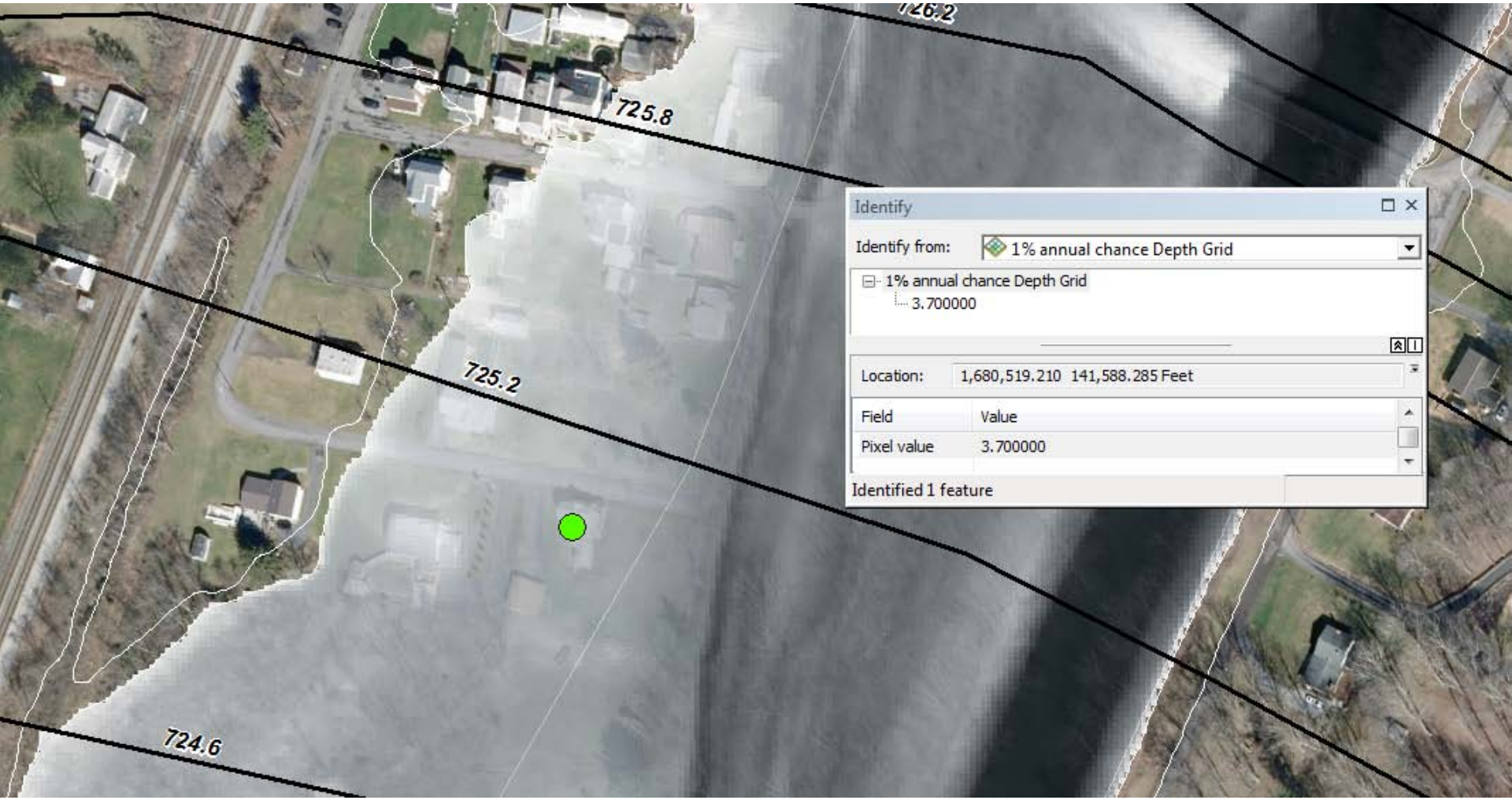
Water Surface Grids

Represent the continuous water surface elevations as determined at modeled cross-sections and interpolations values between cross sections

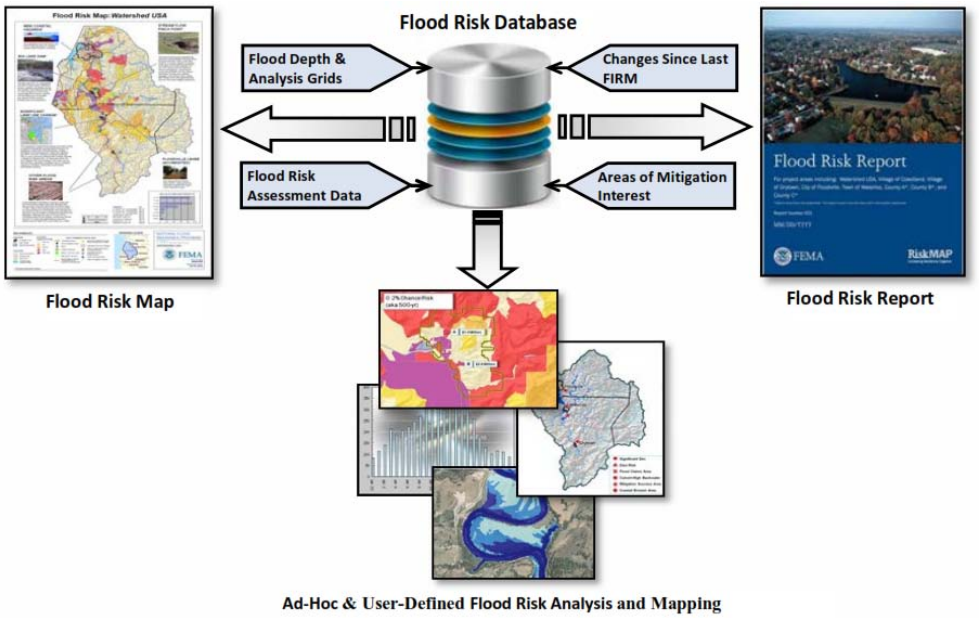


Depth Grids

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



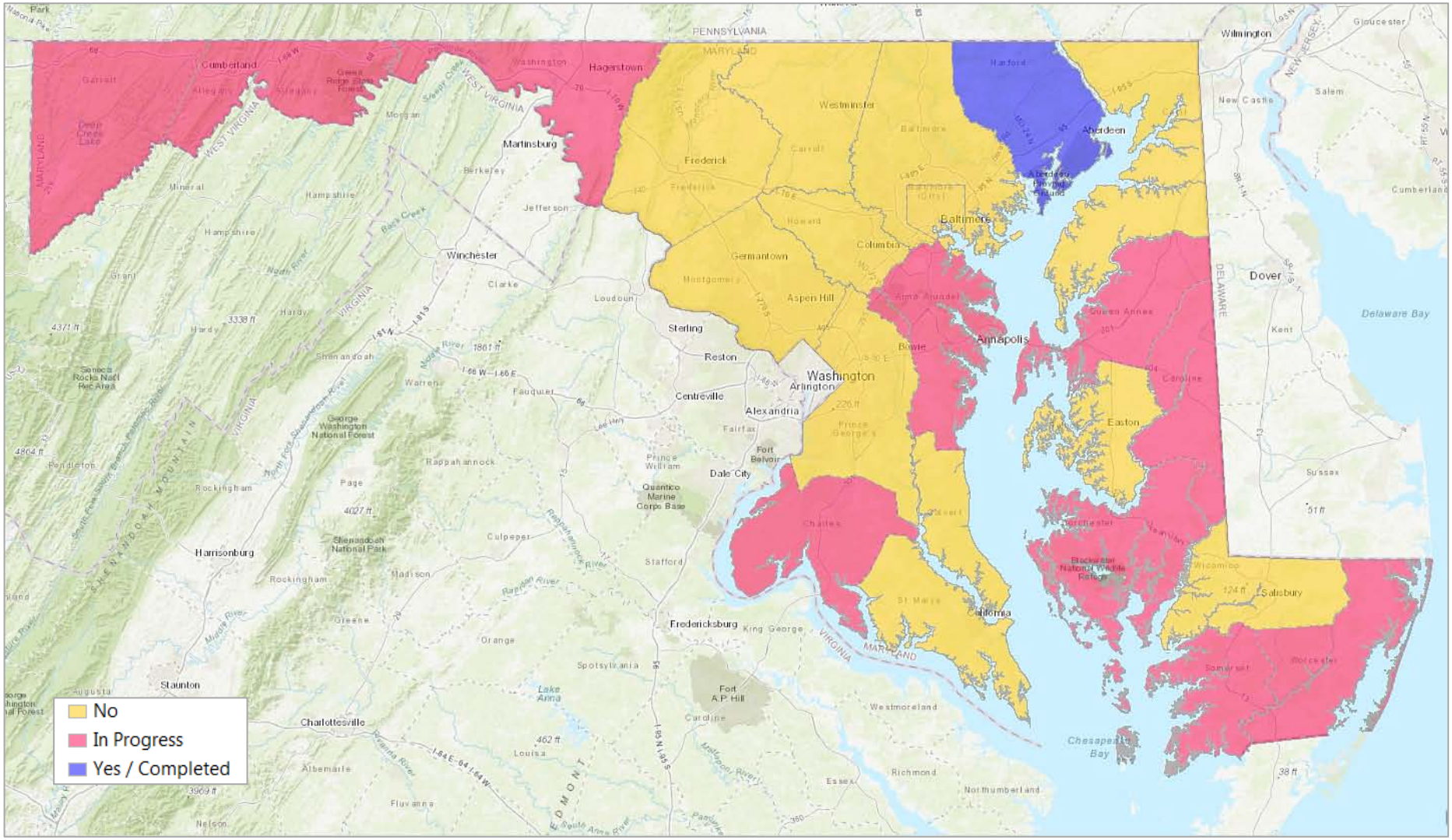
What is Hazus?



Software program from FEMA used to estimate physical damage and socioeconomic impact of natural disasters

- Requires ArcGIS
- Flooding, Hurricanes, Earthquakes

Status of Enhanced Countywide Risk Assessments



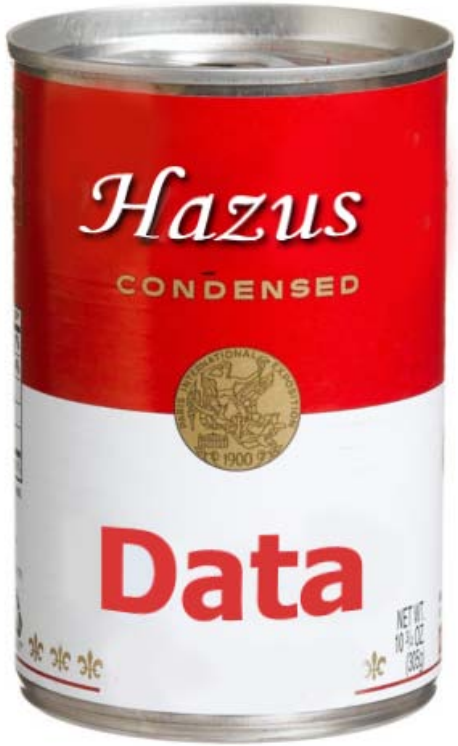
Hazus Estimation for Flood Losses

Hazus provides users the option to perform different types of analyses:

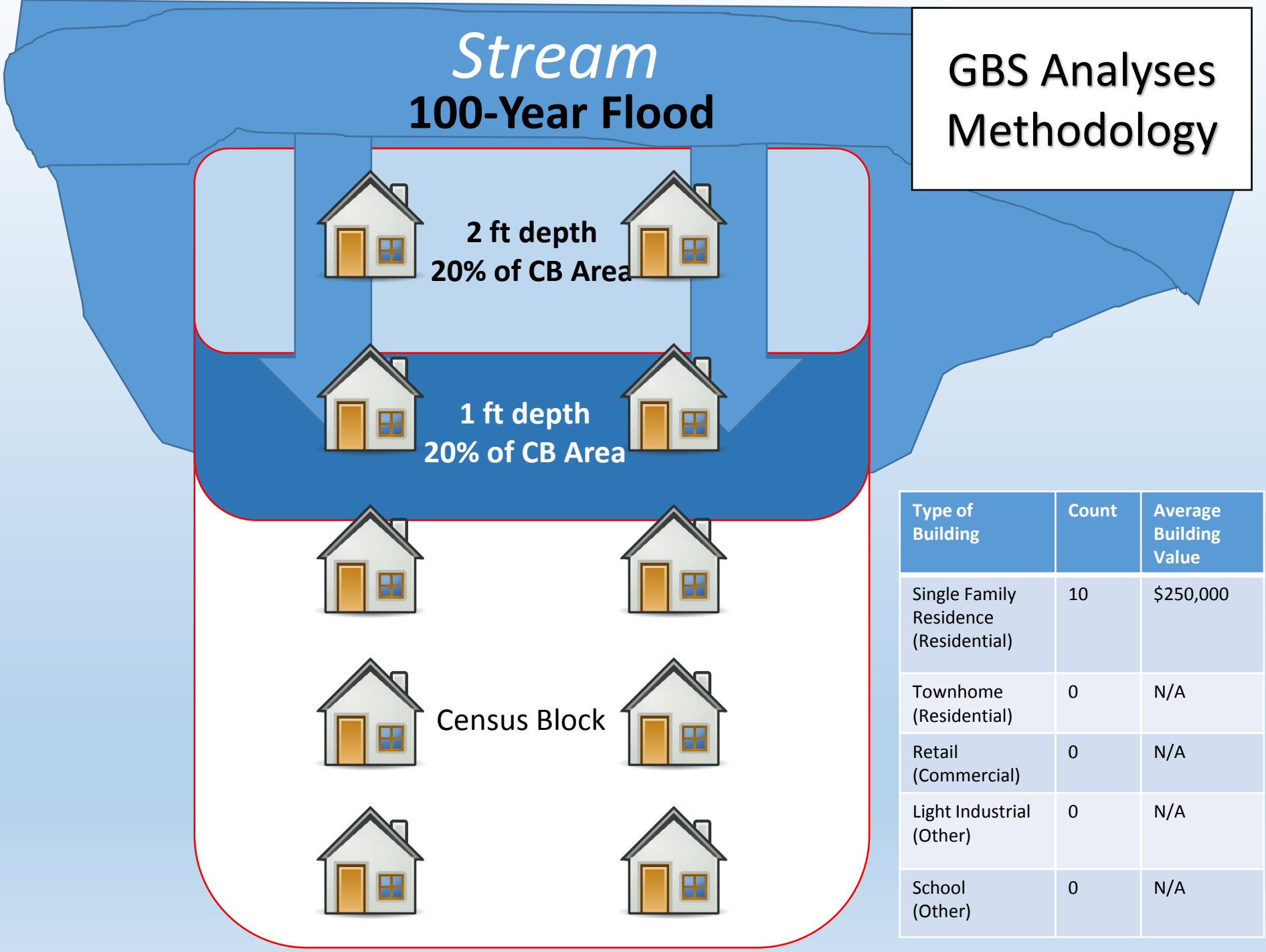
General Building Stock (GBS)

More generalized analysis, but easier to perform

- Input data available for download from Hazus website
- Flood losses are computed by census blocks (polygons)

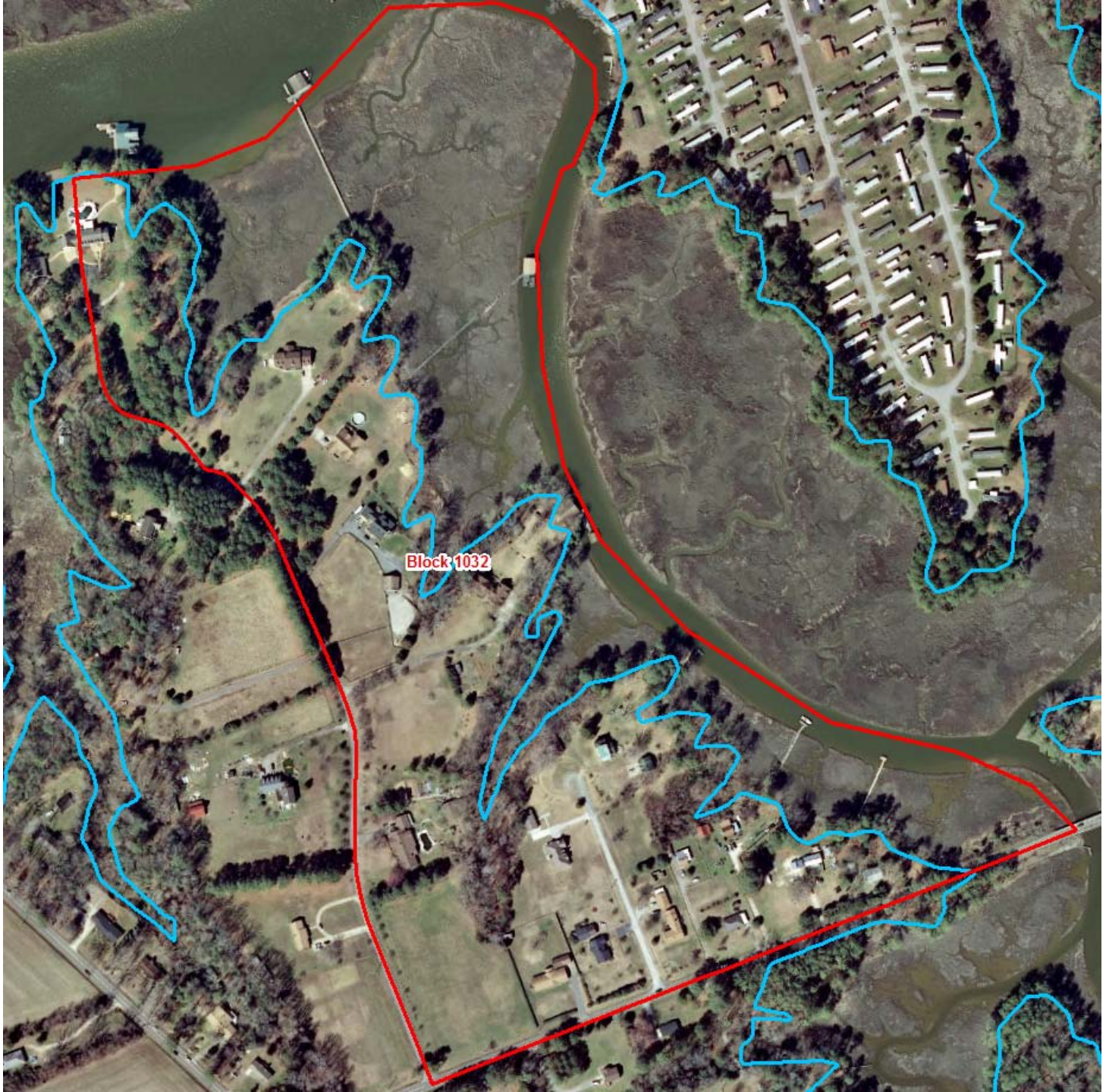


GBS Analyses Methodology

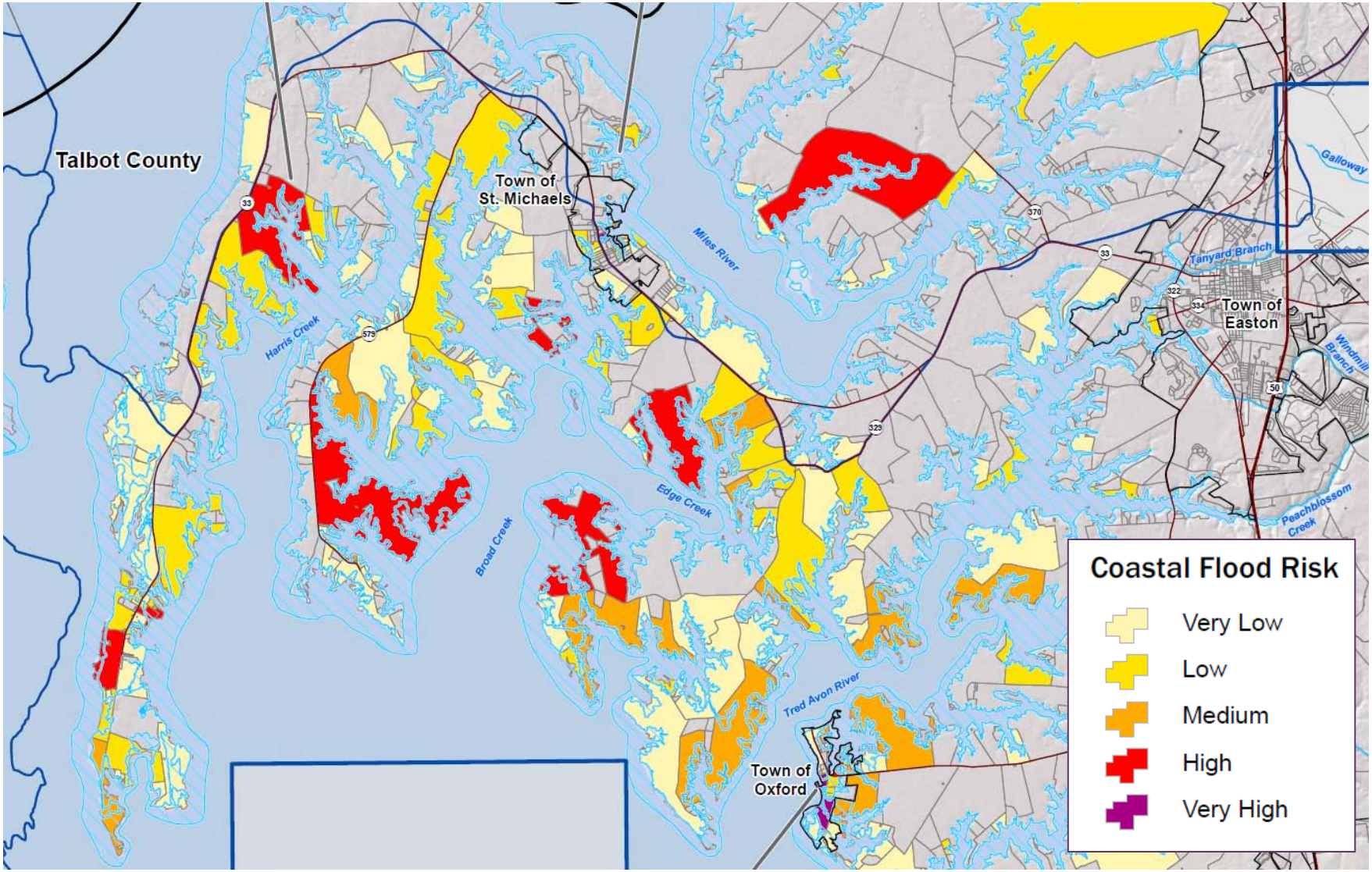


Type of Building	Count	Average Building Value
Single Family Residence (Residential)	10	$250,000
Townhome (Residential)	0	N/A
Retail (Commercial)	0	N/A
Light Industrial (Other)	0	N/A
School (Other)	0	N/A

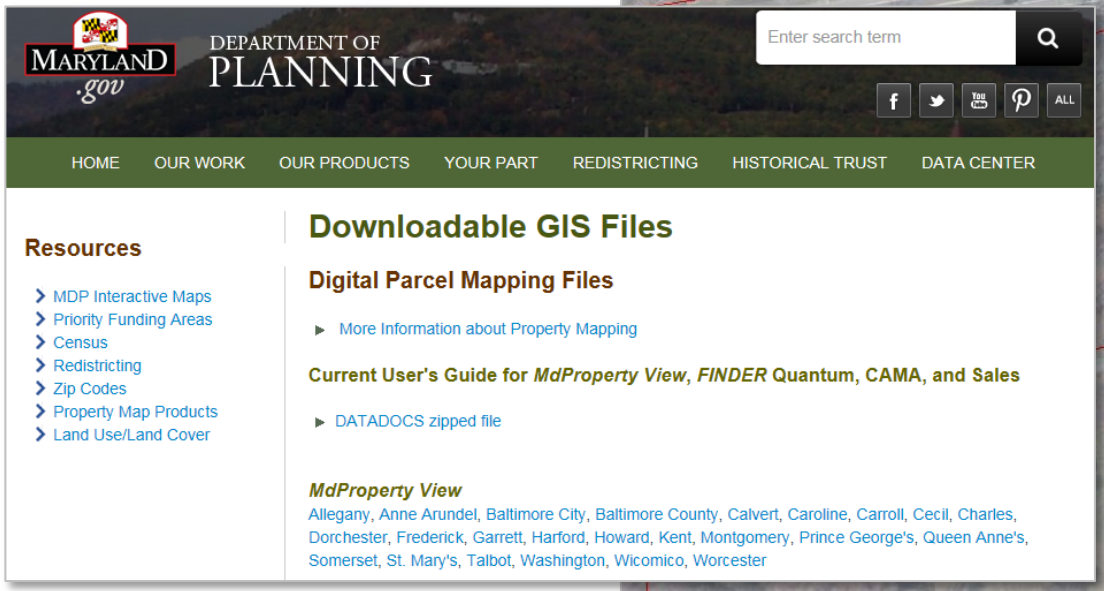

Block 1032


Block 1032

Flood Losses – Aggregated by Census Block



Parcel Data


MARYLAND .gov
DEPARTMENT OF PLANNING
Enter search term
ALL
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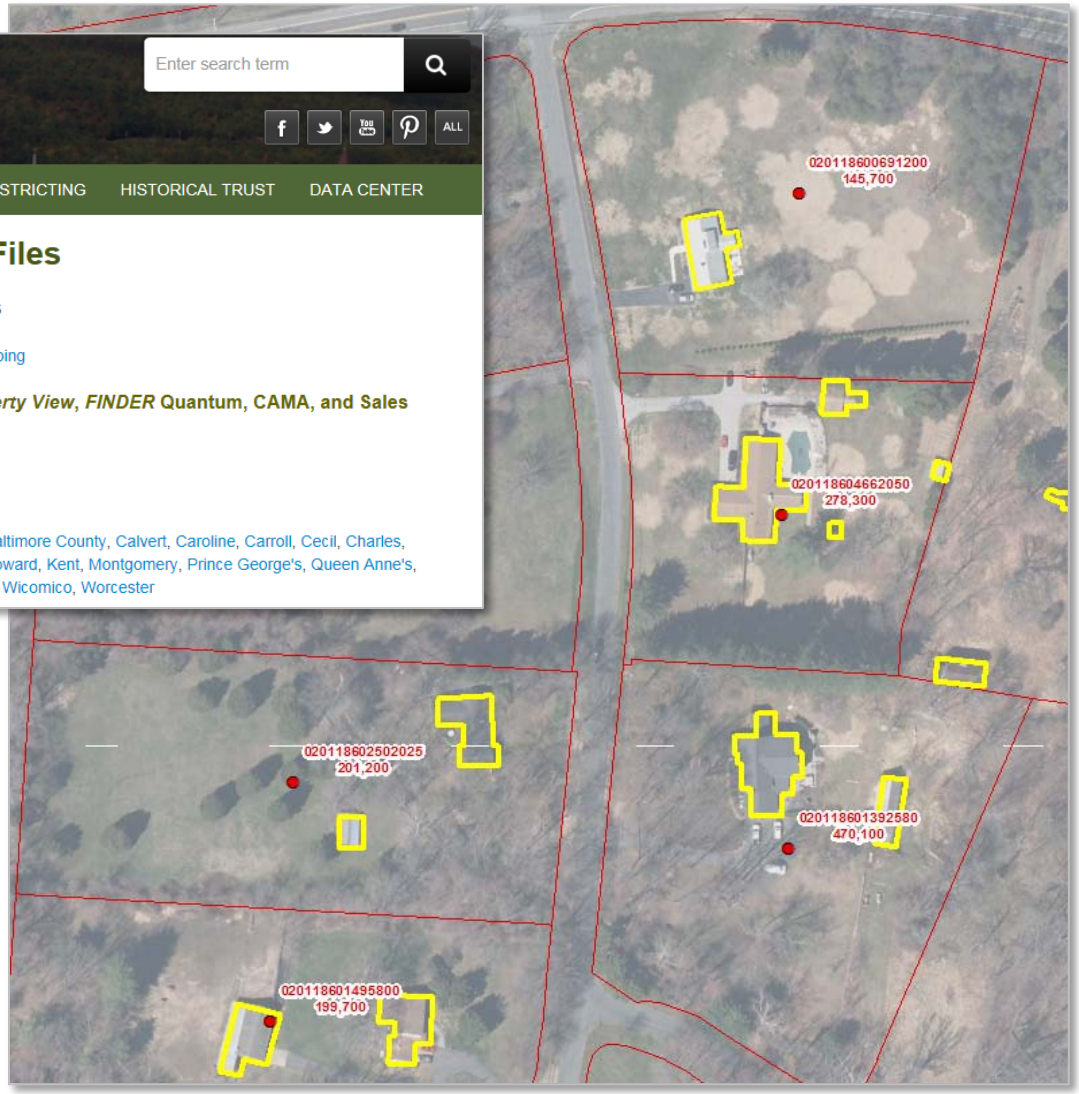
OUR WORK
OUR PRODUCTS
YOUR PART
REDISTRICTING
HISTORICAL TRUST
DATA CENTER
Resources
MDP Interactive Maps
Priority Funding Areas
Census
Redistricting
Zip Codes
Property Map Products
Land Use/Land Cover
Downloadable GIS Files
Digital Parcel Mapping Files
More Information about Property Mapping
Current User's Guide for MdProperty View, FINDER Quantum, CAMA, and Sales
DATADOCS zipped file
MdProperty View
Allegany, Anne Arundel, Baltimore City, Baltimore County, Calvert, Caroline, Carroll, Cecil, Charles, Dorchester, Frederick, Garrett, Harford, Howard, Kent, Montgomery, Prince George's, Queen Anne's, Somerset, St. Mary's, Talbot, Washington, Wicomico, Worcester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020118602502025
201,200
020118601392580
470,100
020118601495800
199,700

Hazus Estimation for Flood Losses

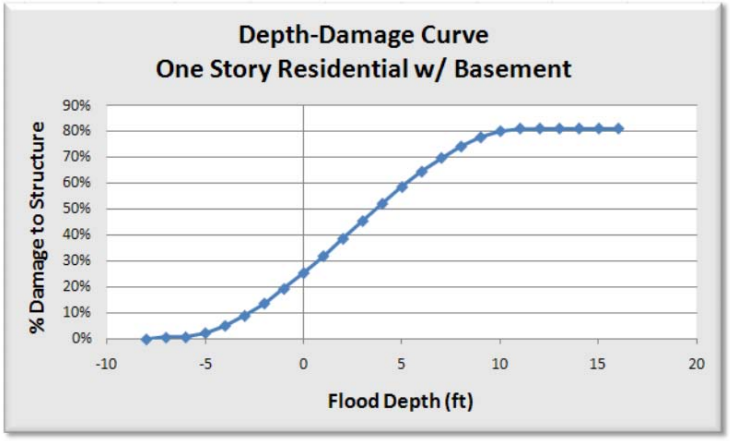
Hazus provides users the option to perform different types of analyses:

User-Defined Facilities (UDFs)

More detailed analysis, but requires additional data and time to put it in a Hazus-compliant format

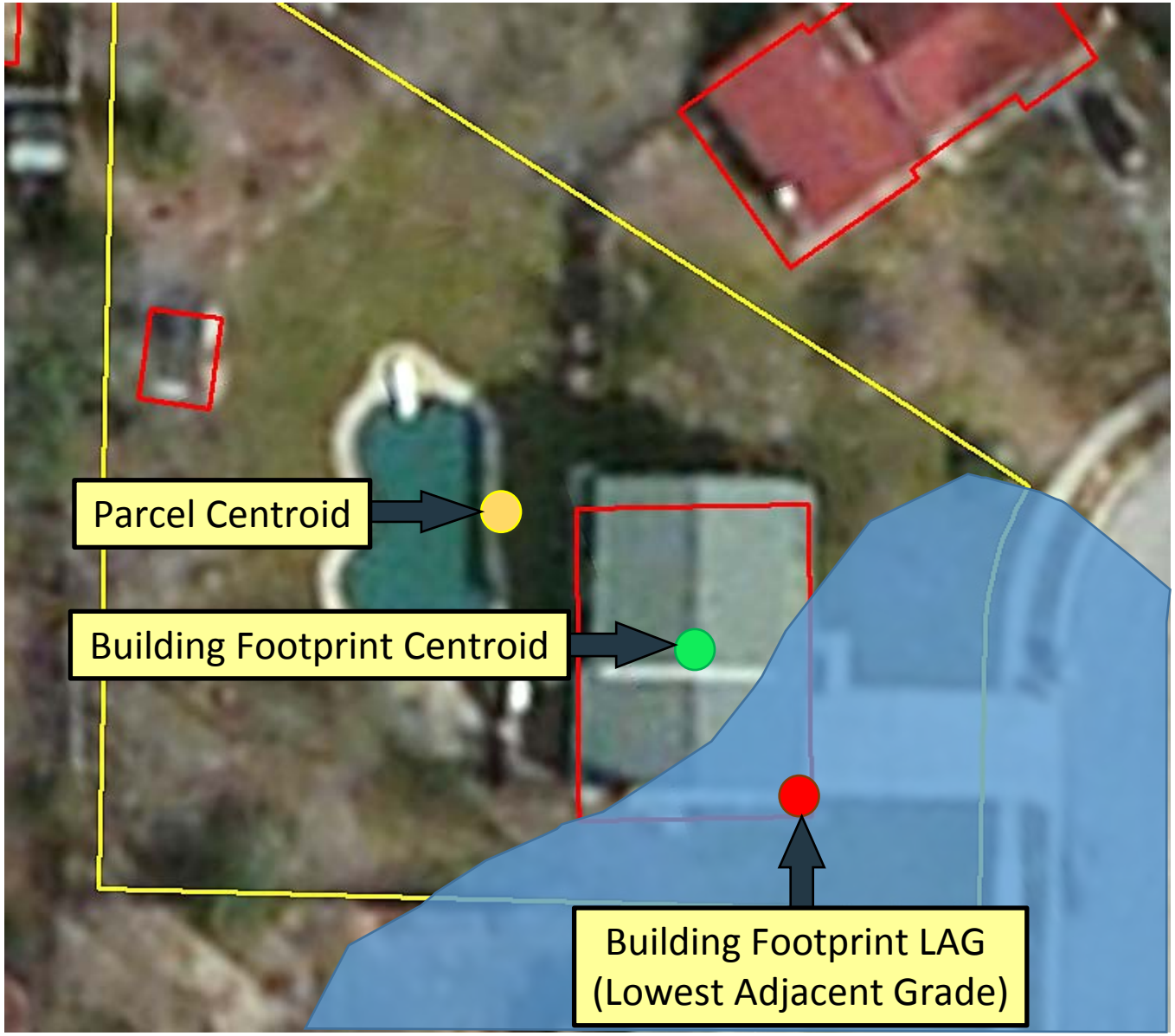
- Flood losses are reported for individual parcels or structures (points)

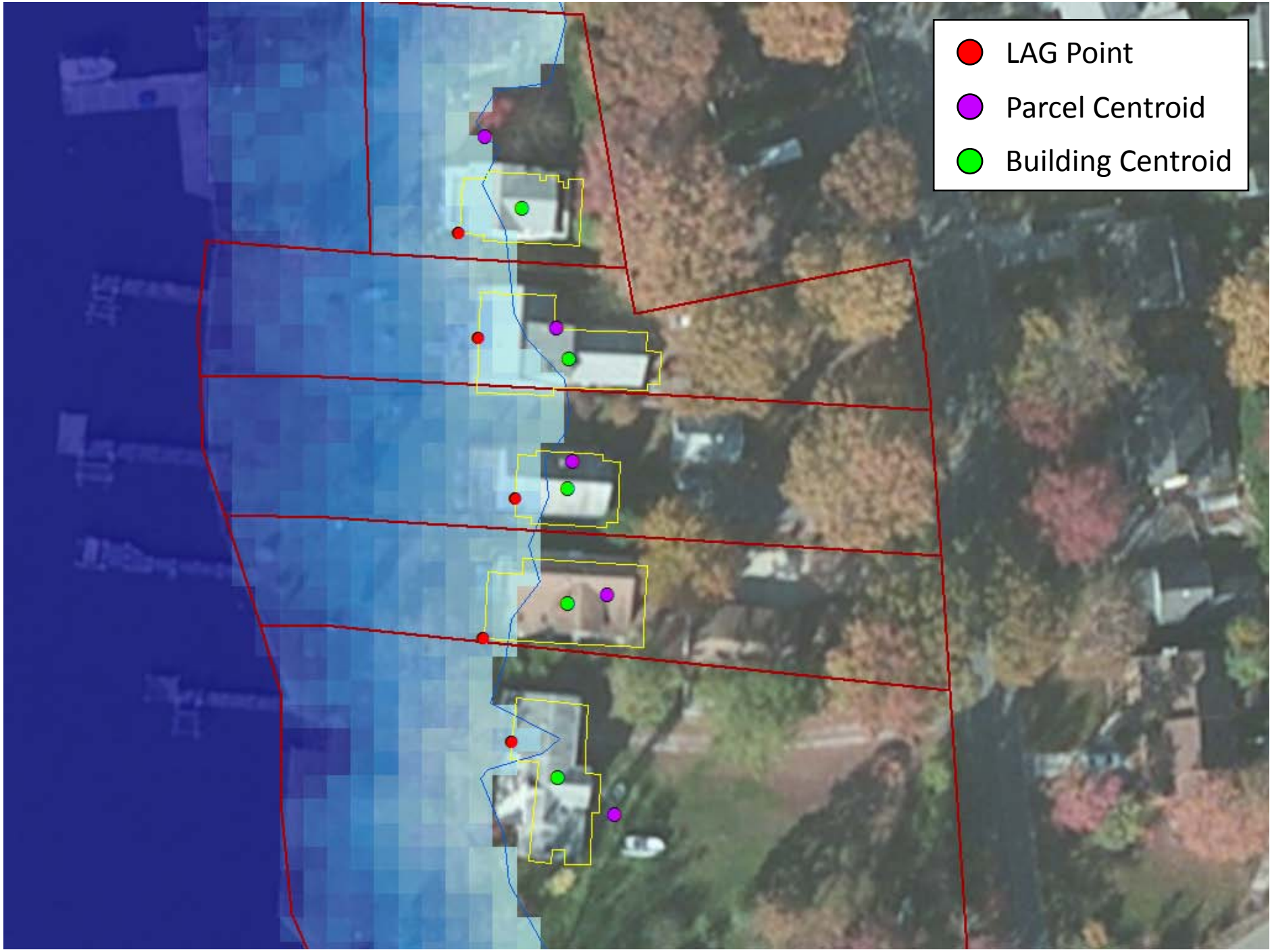
Figure 9: Example depth-damage relationship:
United States Army Corps of Engineers, *Economic Guidance Memo #04-01*, October 2003



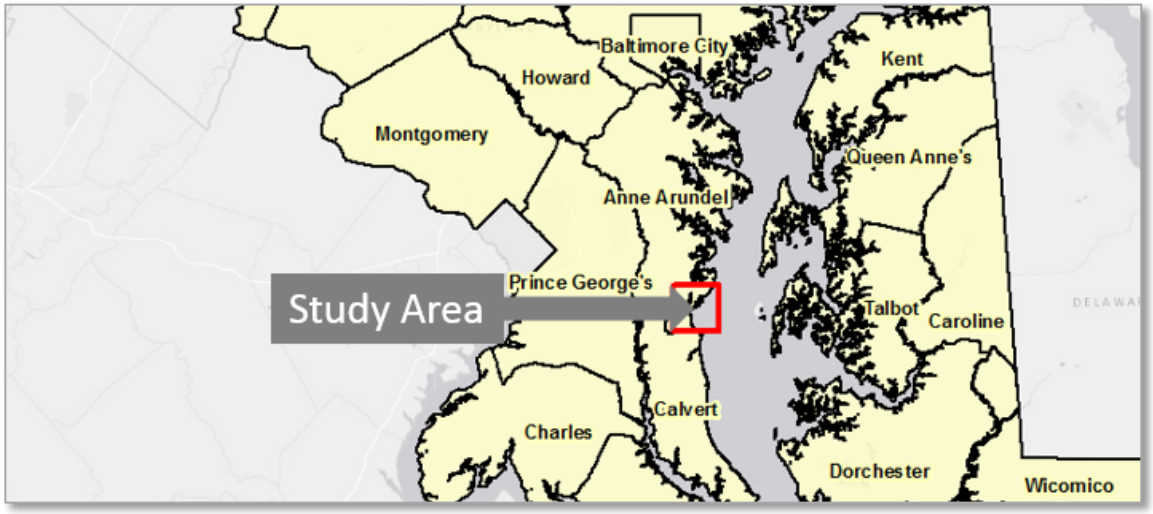
Attribute	Description
Building Type	Residential, commercial, other
Building Cost	Assessed value of building
Foundation Type	e.g. pile, slab on grade, crawl space, basement
First Floor Height	Height of first floor of building above ground
Building Type	Materials used to construct building (e.g. wood, concrete, masonry)
Year Built	Year that structure was built
Number of Stories	
Latitude/ Longitude	Location of UDF point
Building Size	Area of structure in square feet

How are UDF points positioned?



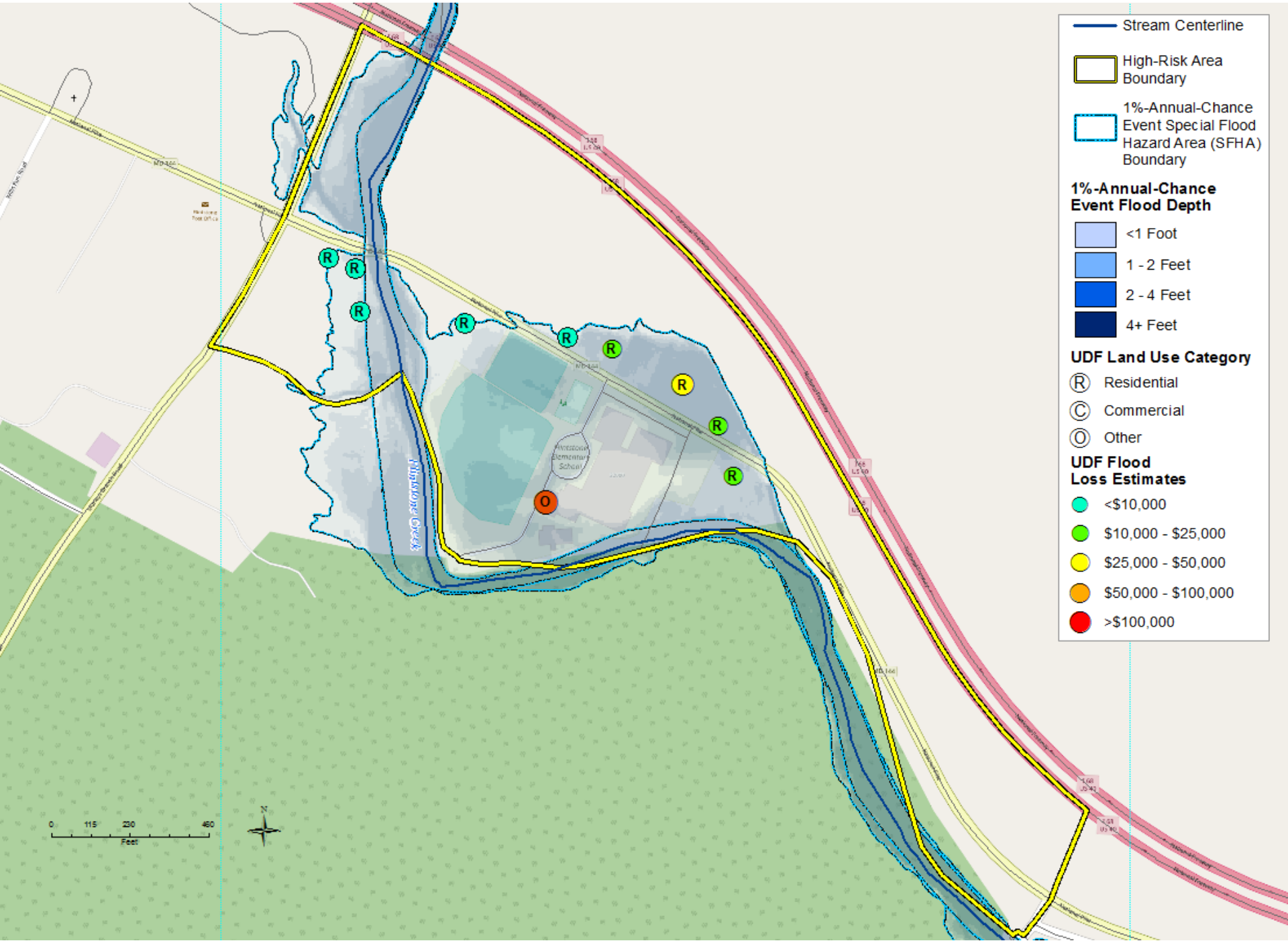

LAG Point
Parcel Centroid
Building Centroid

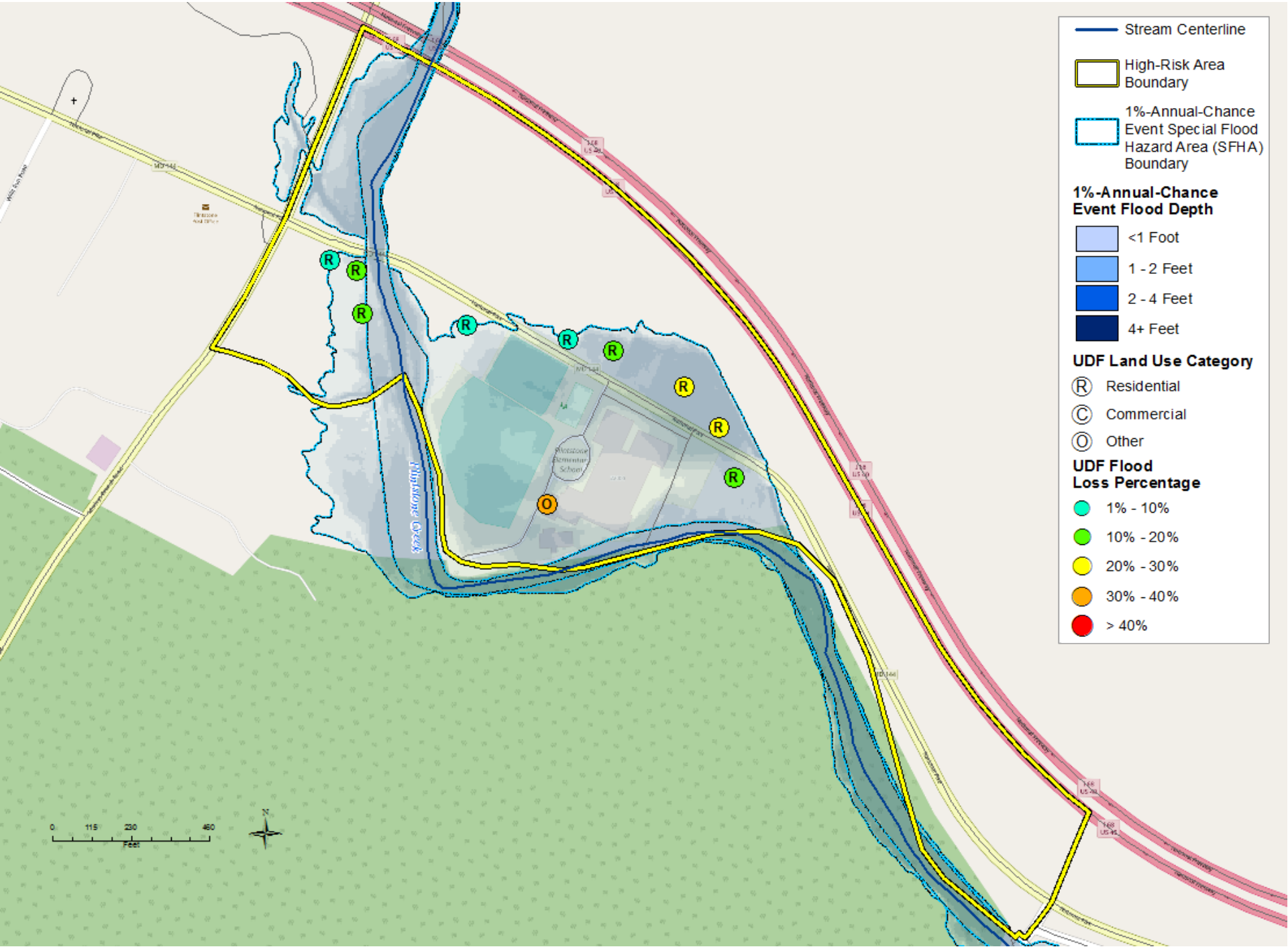
Comparative Results of UDF Point Placements



	LAG Points	Building Centroids	Parcel Centroids
Number of UDF Points in Coastal Floodplain	343	240	195
Average Depth at UDF Point	1.7 feet	1.5 feet	1.3 feet
Total Losses	$10,100,000	$7,400,000	$6,800,0000

*2010 AAL Loss Estimate for Study Area (GBS): $55,278,000


Stream Centerline
High-Risk Area Boundary
1%-Annual-Chance Event Special Flood Hazard Area (SFHA) Boundary
1%-Annual-Chance Event Flood Depth
<1 Foot
1 - 2 Feet
2 - 4 Feet
4+ Feet
UDF Land Use Category
Residential
Commercial
Other
UDF Flood Loss Estimates
<$10,000
$10,000 - $25,000
$25,000 - $50,000
$50,000 - $100,000
>$100,000
Tributary to Cedar Creek
0 115 230 460
Feet
N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<1 Foot
1 - 2 Feet
2 - 4 Feet
4+ Feet
UDF Land Use Category
Residential
Commercial
Other
UDF Flood Loss Percentage
1% - 10%
10% - 20%
20% - 30%
30% - 40%
> 40%
Pipestone Creek
Pipestone Elementary School
0
115
230
460
Feet
N

Flood Risk Report

Countywide Reports will build upon FEMA template with MD-specific customizations:

- Expanded list of state/local resources
- Analysis of critical infrastructure, state assets, and debris & sheltering needs
- Additional tables/summaries and a map series appendix

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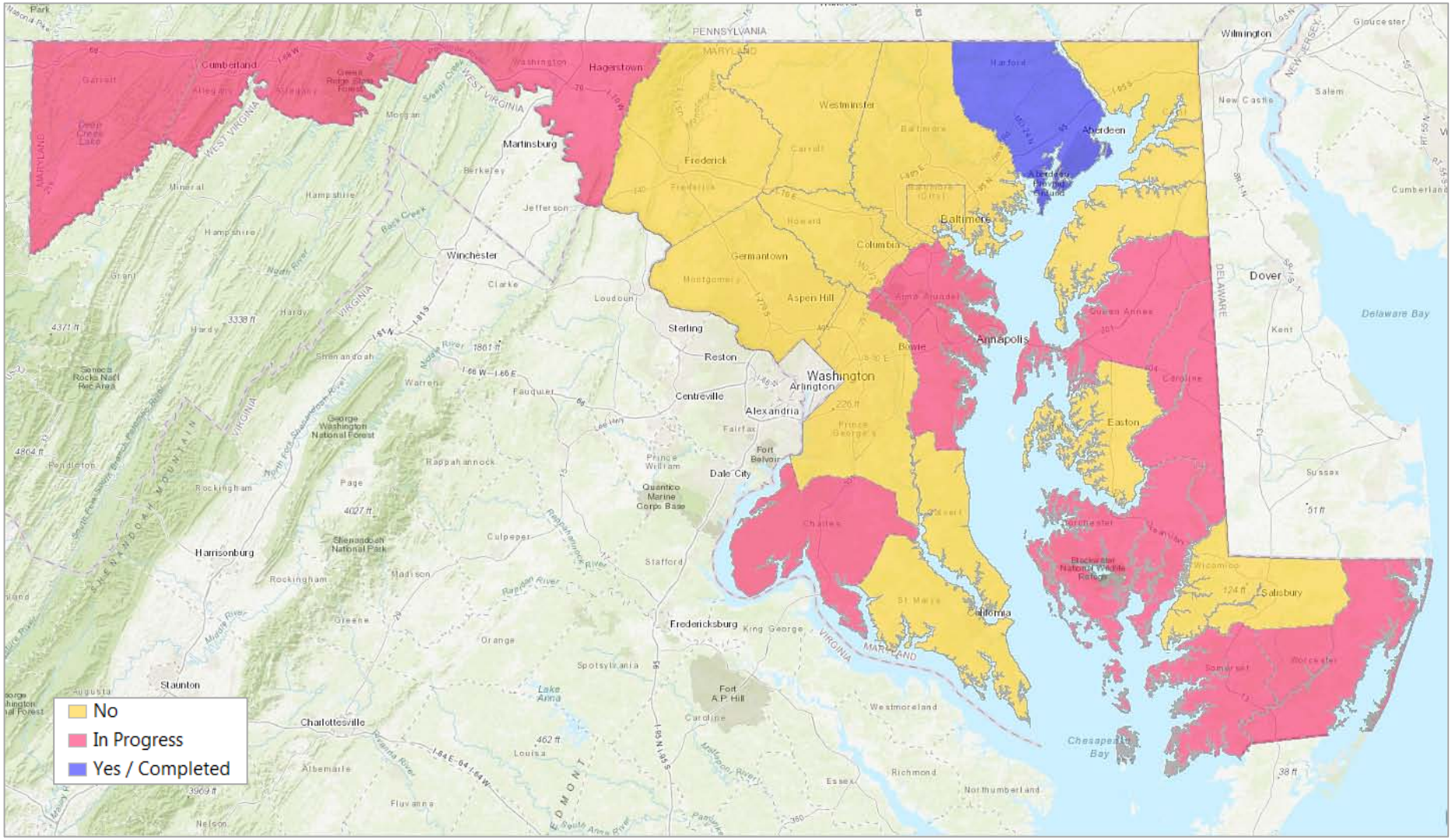
TOTAL	**607**	**100**	**$98,000,000**	**$900,000**	**$20,900,000**	**$30,000**	**100**

Source: Hazus analysis (Version 3.1) results stored as the User Defined Facilities (UDFs) Flood Risk Assessment Dataset in the Flood Risk Database.

[1] Degree of Damage is the estimated financial loss to a building and its contents from flooding as a percentage of the total assessed value of the building and its contents.
[2] Value and damages shown are rounded to nearest $10,000 for values under $100,000 and to the nearest $100,000 for values over $100,000.

The figures in these tables only represent information within the Allegany County, Maryland Study

Status of Enhanced Countywide Risk Assessments



Q & A

Jason Sevanick Durant
jason.sevanick@woodplc.com