

## **Appendix B**

### **Detailed HAZUS-MH Flood Vulnerability Modeling Results for Each Subdivision in Maryland**

## **Allegany County**

Allegany County is a county of 74,930 people in Western Maryland. The county is 74.1% urban and 25.9% rural. The municipalities are Barton, Cumberland, Frostburg, Lonaconing, Luke, Midland, and Westernport. Allegany County is a rugged, hilly county with elevations ranging from a high of 2,895 ft to a low of 420 ft (Map B1). It should be considered to have relatively low exposure to flooding as only 0.96% (\$76.9 million) of the state's total building stock flood exposure (\$7.99 billion) is contained within the County (Table 2).

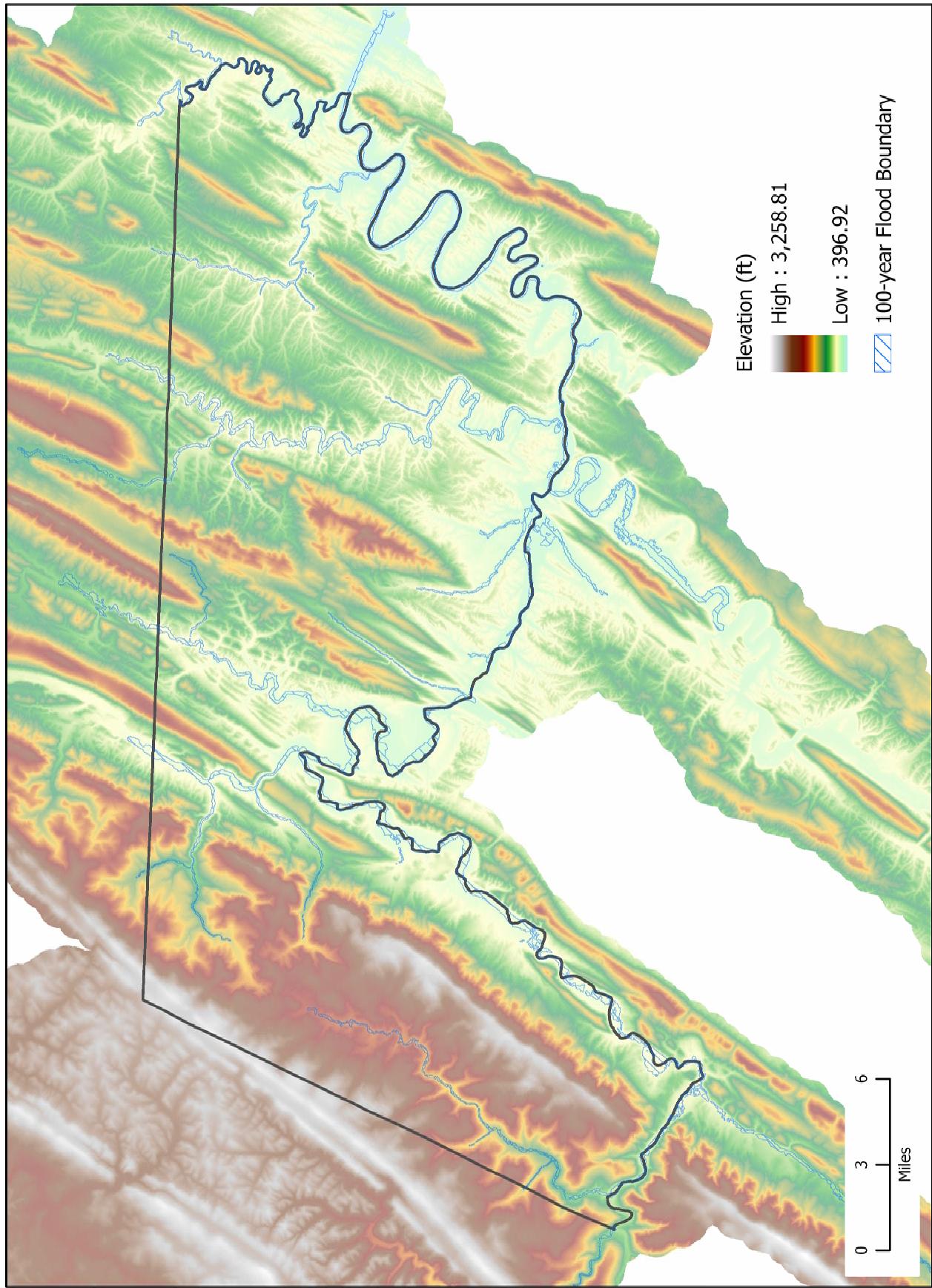
The results of the HAZUS-MH modeling effort report that 17.8 square miles of Allegany County are subject to the 100-year flood, or 4.1% of the county's total land area. The county ranks 23<sup>rd</sup> of 24 subdivisions in the percentage of total land area in flood zone. The floodplain is generally constrained to the river courses, the most significant of which are the Potomac River, Wills Creek, Evitts Creek, Town Creek, and Sideling Hill Creek. The depth of the 100-year flood zone has a maximum of 60.3 ft (Map B2).

With regard to the predicted damage estimates from the HAZUS-MH modeling effort, Allegany County is predicted to have 2,352,410 square feet of building damage but only 15,880 square feet (0.7% of the total damaged) of substantially damaged buildings. Allegany County is 13<sup>th</sup> of 24 Maryland subdivisions with regard to the amount of square feet of building damage. From the map, we can see that the heaviest damage occurs in and on the outskirts of Cumberland (Map B3). The rest of the county is predicted to sustain minimal damage.

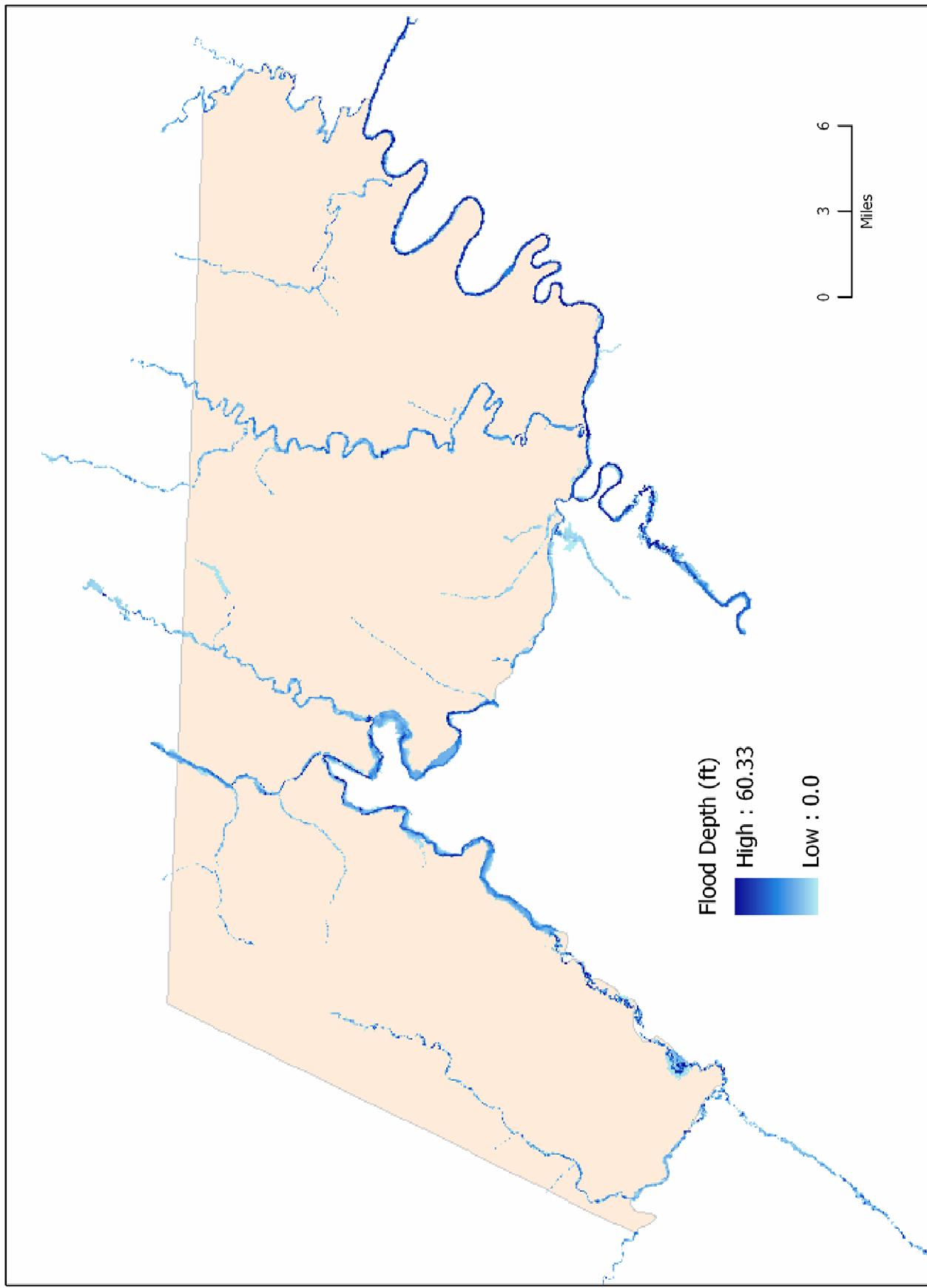
In relation to the potential number of buildings damaged by a 100-year flood predicted by HAZUS-MH, Allegany County has 731 buildings vulnerable to flooding with 8 buildings to be damaged substantially (1.1% of the total number of buildings damaged). This places the county 16<sup>th</sup> of 24 Maryland subdivisions in total number of damaged buildings. This distribution of the count of buildings is similar to the damaged amount of square feet (Map B4). As an exception, more damage appears in the small towns along Wills Creek and Georges Creek as well as Westernport.

Finally, the amount of direct economic losses from building damage in Allegany County is predicted by HAZUS-MH to be \$164,837,000. This amount is 2.0% of the total amount of direct economic losses for the state (\$8,121,065,000), which ranks the County 12<sup>th</sup> out of 24. A majority (68.4%) of the losses come from capital stock losses (structural damage, contents damage, and inventory loss) versus income loss (relocation costs, capital costs, wages lost, and rental income lost). The map shows a similar clustered pattern of direct economic losses from buildings in Cumberland with most of the rest of the affected areas of the county showing minimal losses (Map B5).

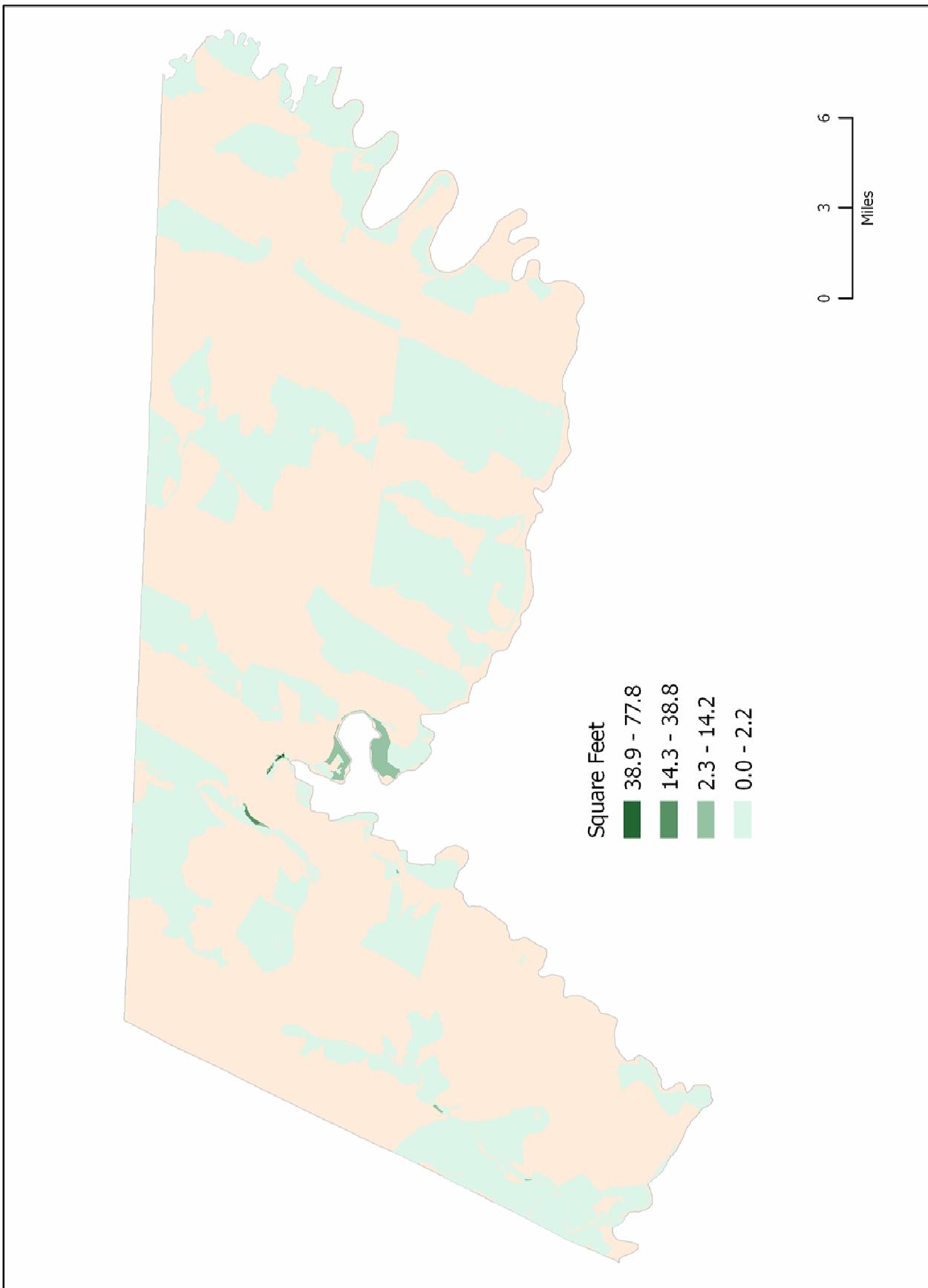
**Map B1.** Topography and modeled 100-year flood boundary in Allegany County



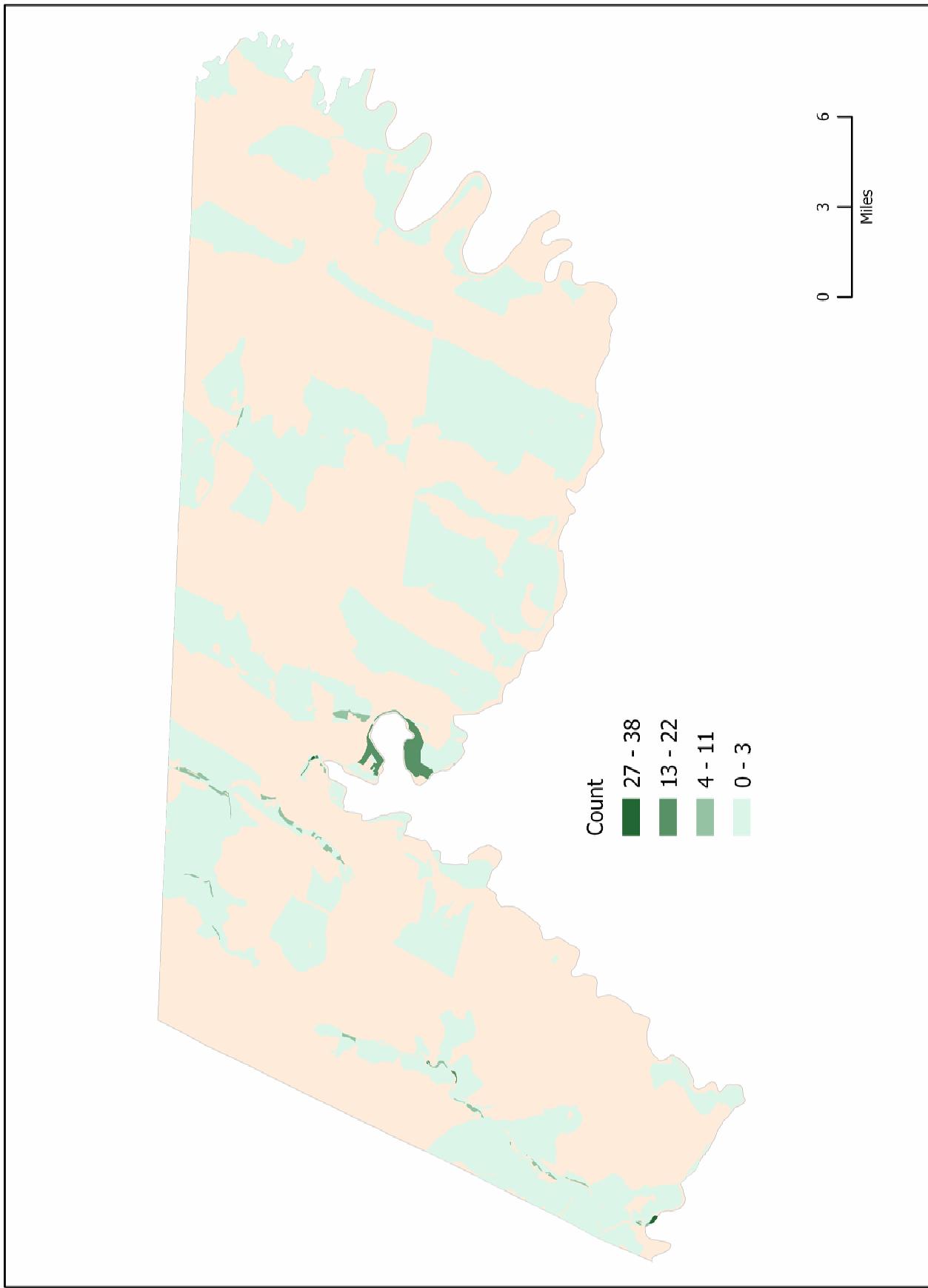
**Map B2.** Modeled 100-year flood depth in Allegany County



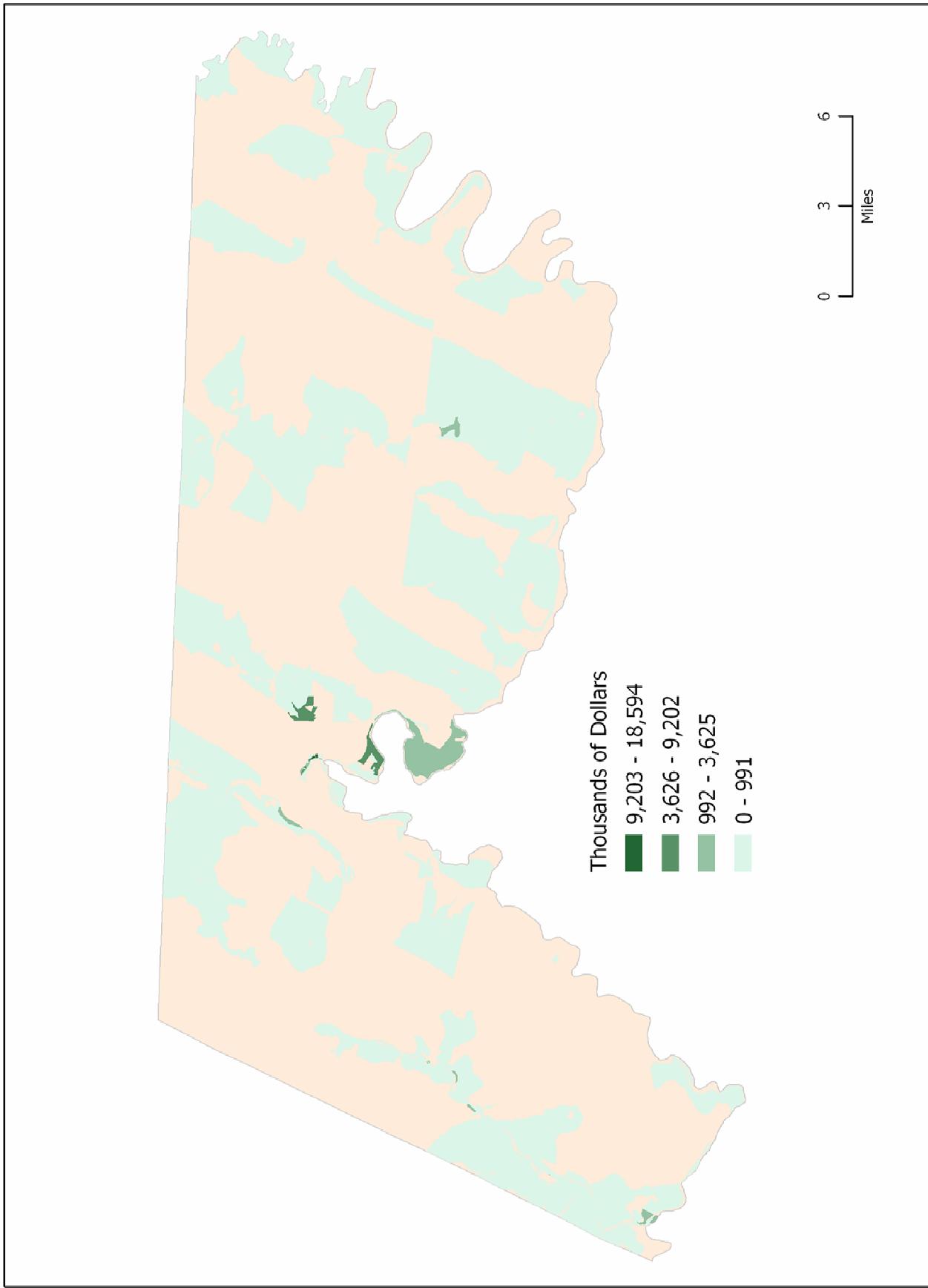
**Map B3.** Predicted amount of building damage in thousands of square feet in Allegany County



**Map B4.** Predicted amount of building damage in numbers of buildings in Allegany County



**Map B5.** Predicted amount of direct economic losses in thousands of dollars in Allegany County



## Anne Arundel County

Anne Arundel County is a county of 489,656 people in Central Maryland. The county is 94.4% urban and 5.6% rural. The municipalities are Annapolis and Highland Beach. Anne Arundel County is a mix of flat coastal plains and rolling hills with elevations ranging from a high of 300 ft to a low of 0 ft (Map B6). It should be considered to have relatively high exposure to flooding with 8.7% (\$691.5 million) of the state's total building stock flood exposure (\$7.99 billion) is contained within the County (Table 2).

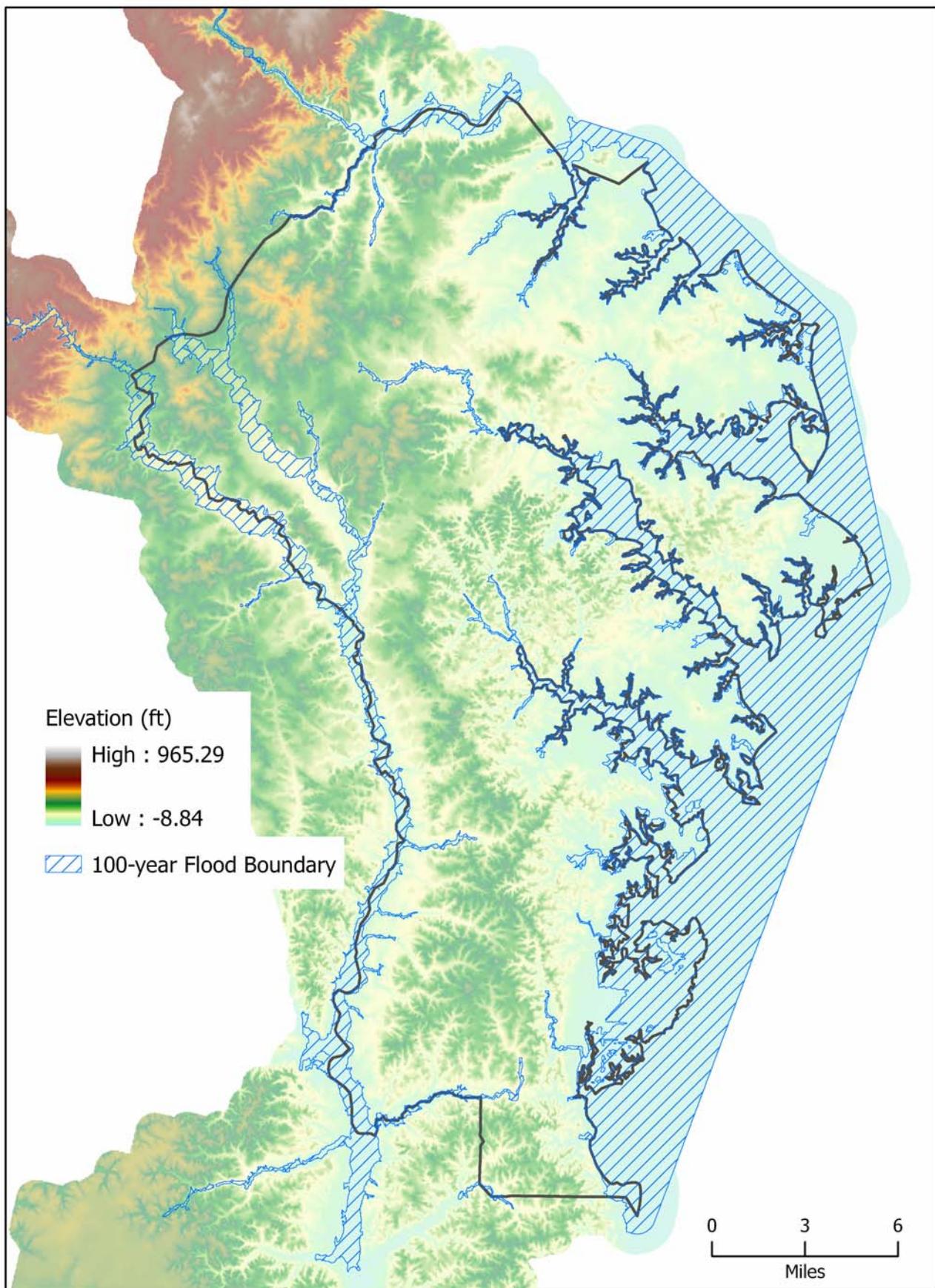
The results of the HAZUS-MH modeling effort report that 42.1 square miles of Anne Arundel County are subject to the 100-year flood, or 10.1% of the county's total land area. The county ranks 8<sup>th</sup> of 24 subdivisions in the percentage of total land area in flood zone. The floodplain encompasses the major river systems in the county as well as that which lies along the shores of the Chesapeake Bay. The river systems most affected include the Patapsco River, Curtis Creek, Stony Creek, Rock Creek, the Magothy River, the Severn River, the South River, the West River, the Patuxent River and the Little Patuxent River. The depth of the 100-year flood zone has a maximum of 59.5 ft (Map B7).

With regard to the predicted damage estimates from the HAZUS-MH modeling effort, Anne Arundel County is predicted to have 15,532,340 square feet of building damage including 1,061,040 square feet (6.8% of the total damaged) of substantially damaged buildings. Anne Arundel County is 2<sup>nd</sup> of 24 Maryland subdivisions with regard to the amount of square feet of building damage. From the map, we can see that the heaviest damage occurs along the Patapsco, in the areas of Ferndale, Green Haven, Hog Neck, Bodkin Neck, Belvedere Heights, Annapolis and south of Annapolis, and Mayo. Of particular concern is the area of Shady Side, Churchton, and Deale in the southern coastal portion of the county and the Jessup area to the far west of the county (Map B8). Other areas of the county are predicted to sustain either minimal or moderate damage.

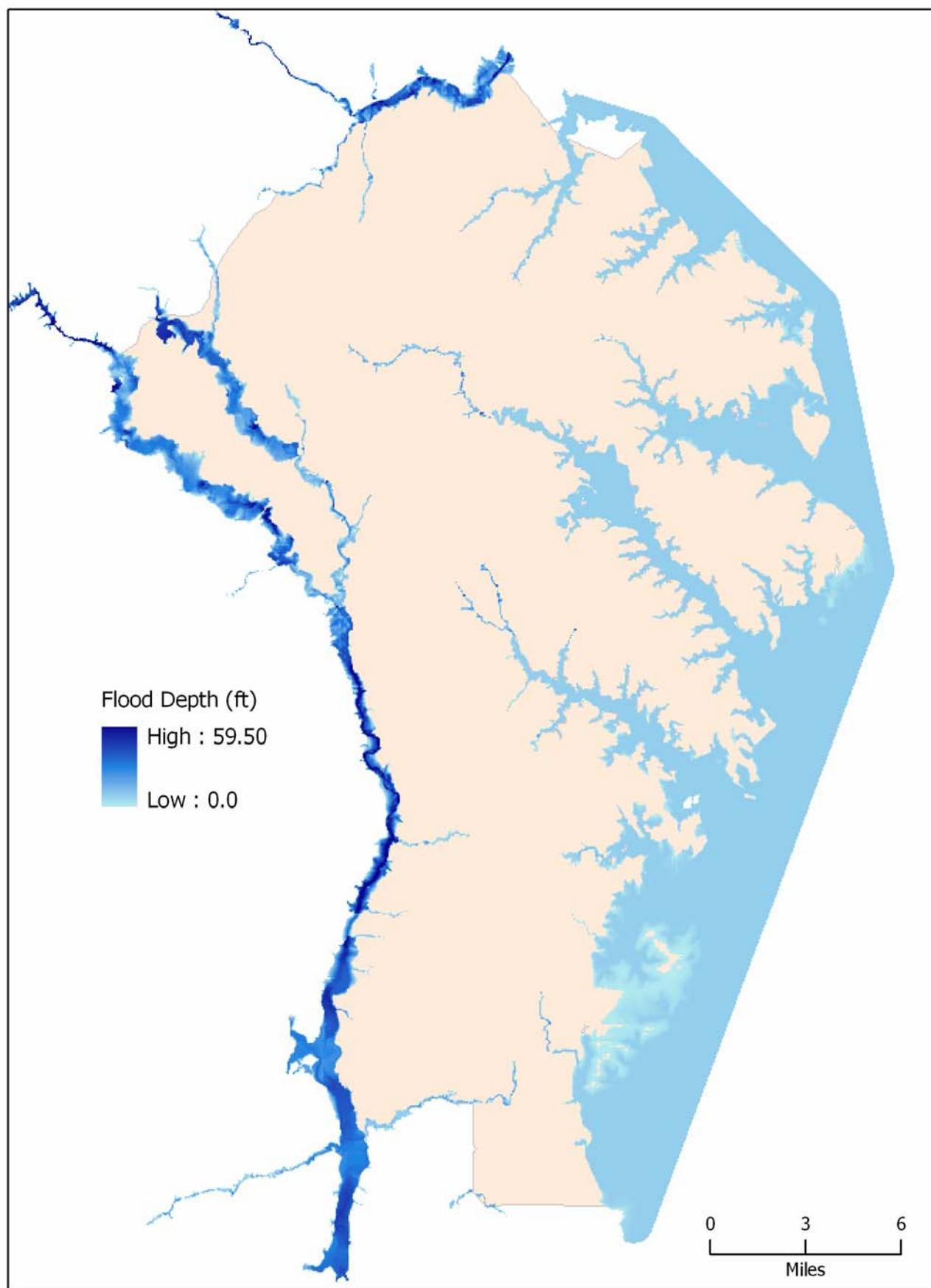
In relation to the potential number of buildings damaged by a 100-year flood predicted by HAZUS-MH, Anne Arundel County has 7,038 buildings vulnerable to flooding with 606 buildings to be damaged substantially (8.5% of the total number of buildings damaged). This places the county 1<sup>st</sup> of 24 Maryland subdivisions in total number of damaged buildings. This distribution of the count of buildings is similar to the damaged amount of square feet (Map B9). As an exception, the damage in the Shady Side/Galesville/Owensville area seems more severe.

Finally, the amount of direct economic losses from building damage in Anne Arundel County is predicted by HAZUS-MH to be \$919,691,000. This amount is 11.3% of the total amount of direct economic losses for the state (\$8,121,065,000), which ranks the County 3<sup>rd</sup> out of 24. A majority (77.8%) of the losses come from capital stock losses (structural damage, contents damage, and inventory loss) versus income loss (relocation costs, capital costs, wages lost, and rental income lost). The map shows a much more clustered pattern of direct economic losses from buildings with areas like Jessup, the Patapsco River area, and the Naval Academy in Annapolis as major concerns (Map B10).

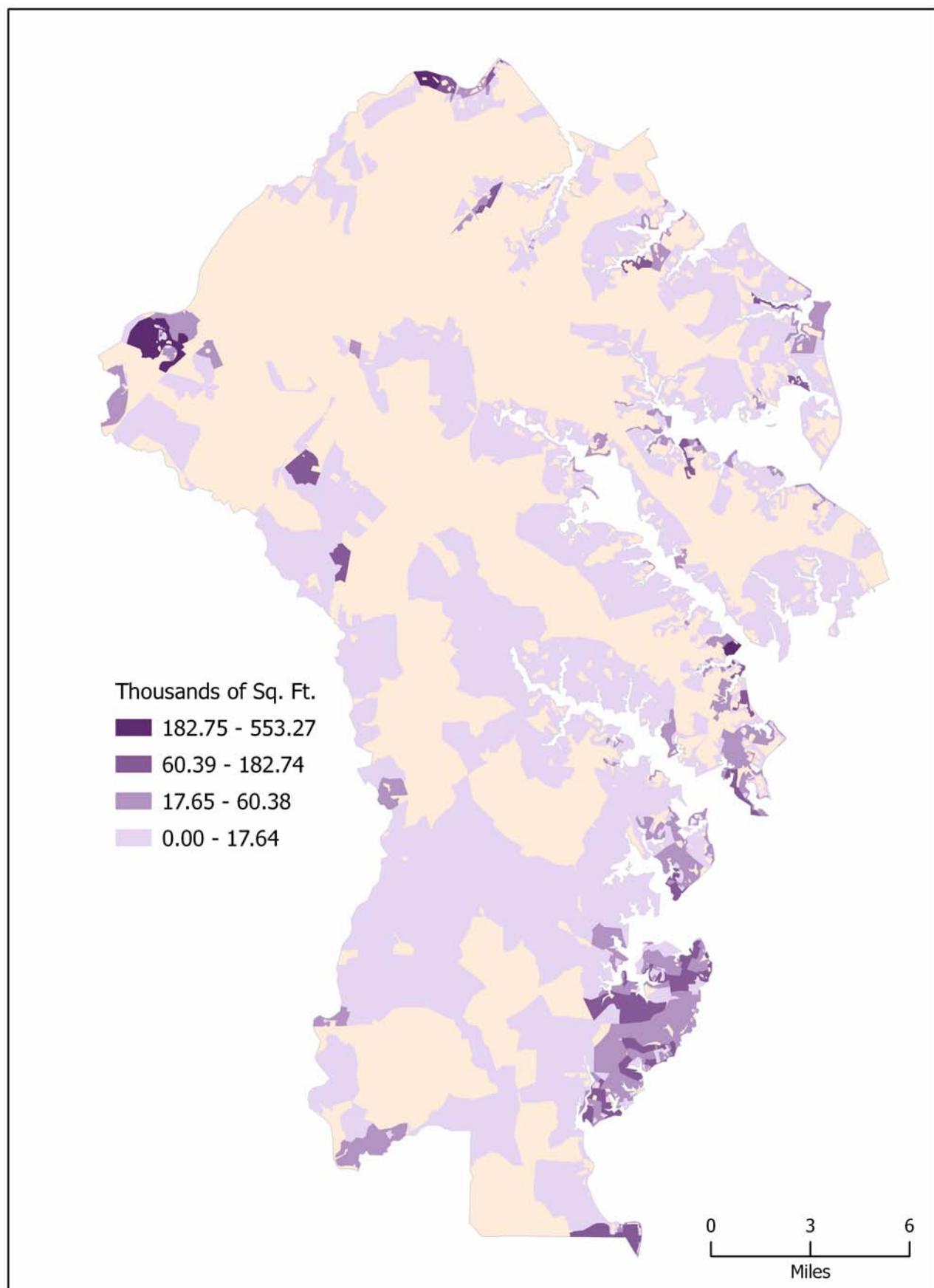
**Map B6.** Topography and modeled 100-year flood boundary in Anne Arundel County



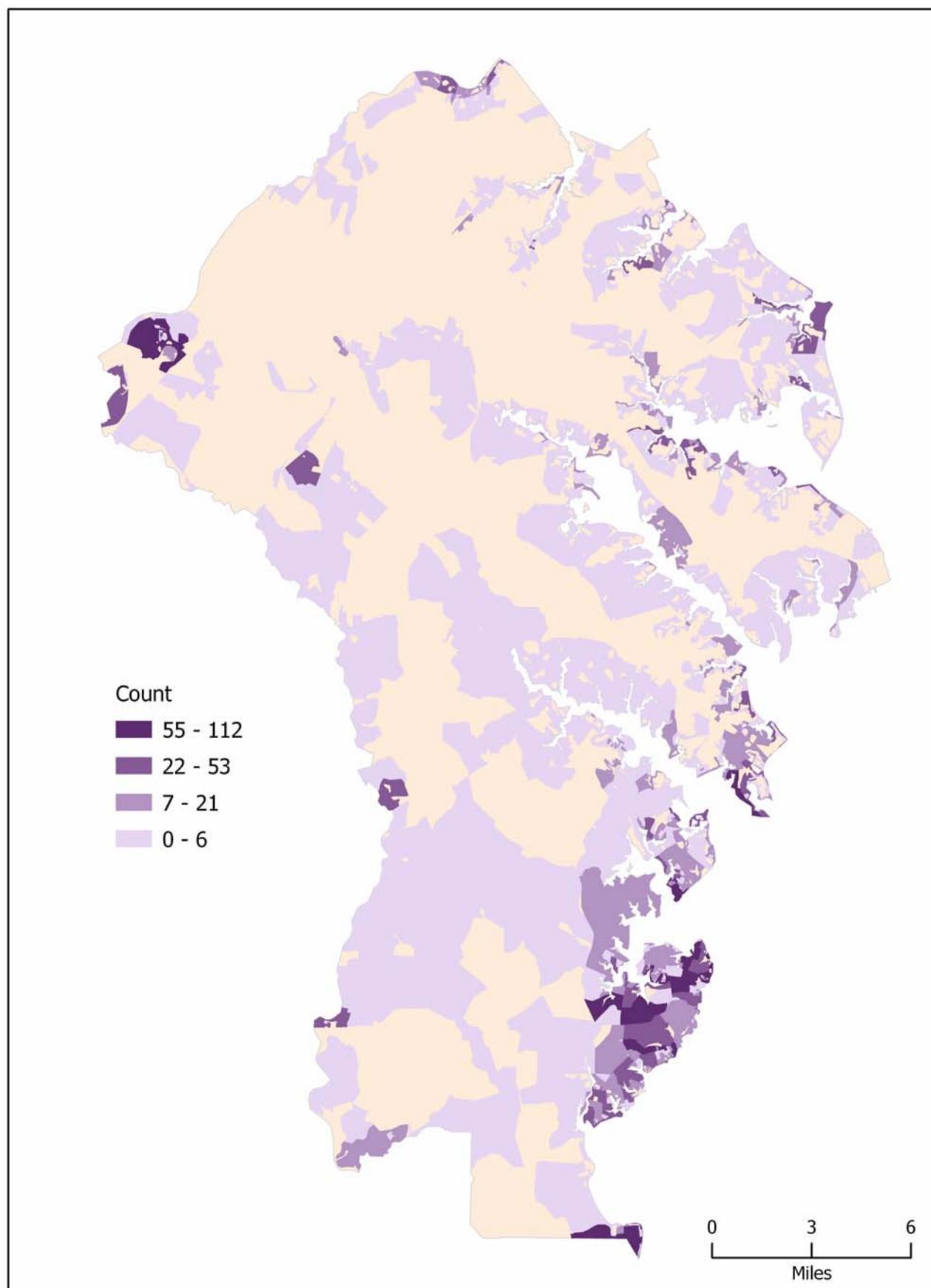
**Map B7.** Modeled 100-year flood depth in Anne Arundel County



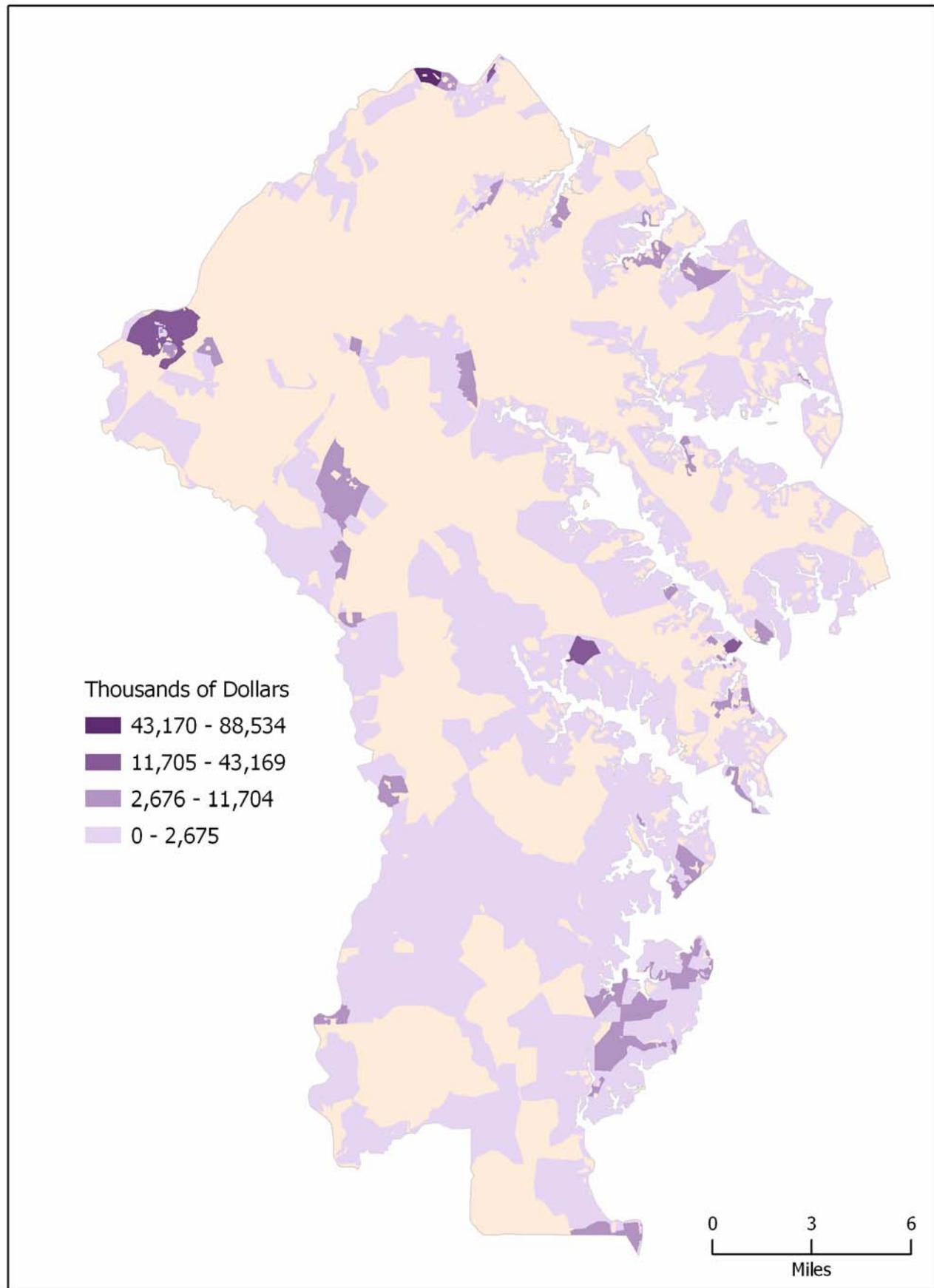
**Map B8.** Predicted amount of building damage in thousands of square feet in Anne Arundel County



**Map B9.** Predicted amount of building damage in numbers of buildings in Anne Arundel County



**Map B10.** Predicted amount of direct economic losses in thousands of dollars in Anne Arundel County



## Baltimore City

Baltimore City is a city of 651,154 people in Central Maryland. It is 100% urban. Baltimore City is a combination of rolling hills and flat coastal plain with elevations ranging from a high of around 480 ft to a low of 0 ft (Map B11). It should be considered to have relatively high exposure to flooding as 8.0% (\$641 million) of the state's total building stock flood exposure (\$7.99 billion) is contained within the city (Table 2).

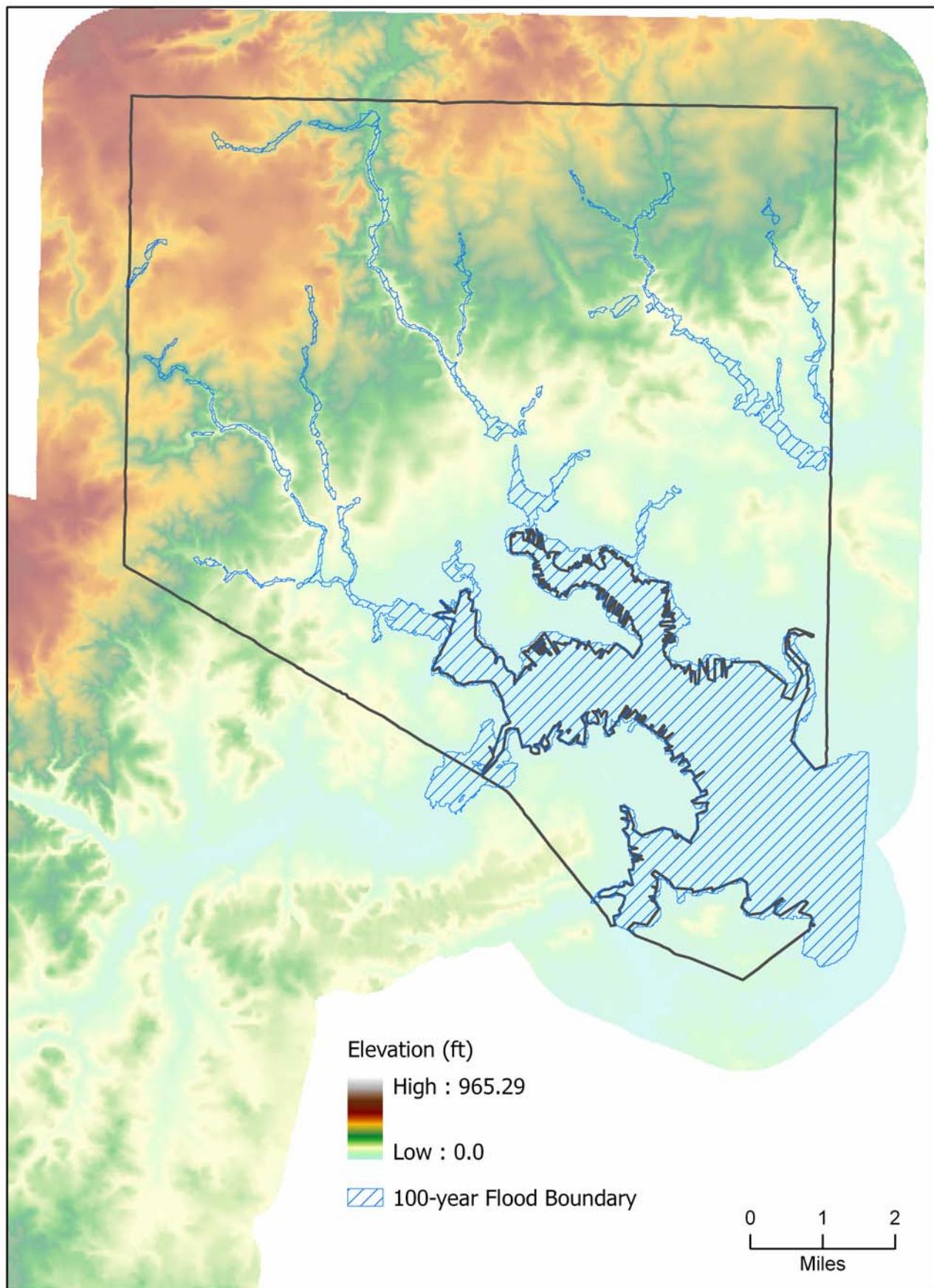
The results of the HAZUS-MH modeling effort report that 5.2 square miles of Baltimore City are subject to the 100-year flood, or 6.4% of the city's total land area. The city ranks 15<sup>th</sup> of 24 subdivisions in the percentage of total land area in flood zone. The floodplain is generally constrained to the river courses, the most significant of which are Moores Run, Herring Run, Jones Falls, and Gwynns Falls and the area surrounding Baltimore Harbor. The depth of the 100-year flood zone has a maximum of 28.8 ft (Map B12).

With regard to the predicted damage estimates from the HAZUS-MH modeling effort, Baltimore City is predicted to have 7,656,890 square feet of building damage including 699,800 square feet (9.1% of the total damaged) of substantially damaged buildings. Baltimore City is 5<sup>th</sup> of 24 Maryland subdivisions with regard to the amount of square feet of building damage. From the map, we can see that the heaviest damage occurs in Fells Point, Herring Run Park, Fulton Station, and just off the Jones Falls Expressway. (Map B13). The rest of the city is predicted to sustain minimal or no damage.

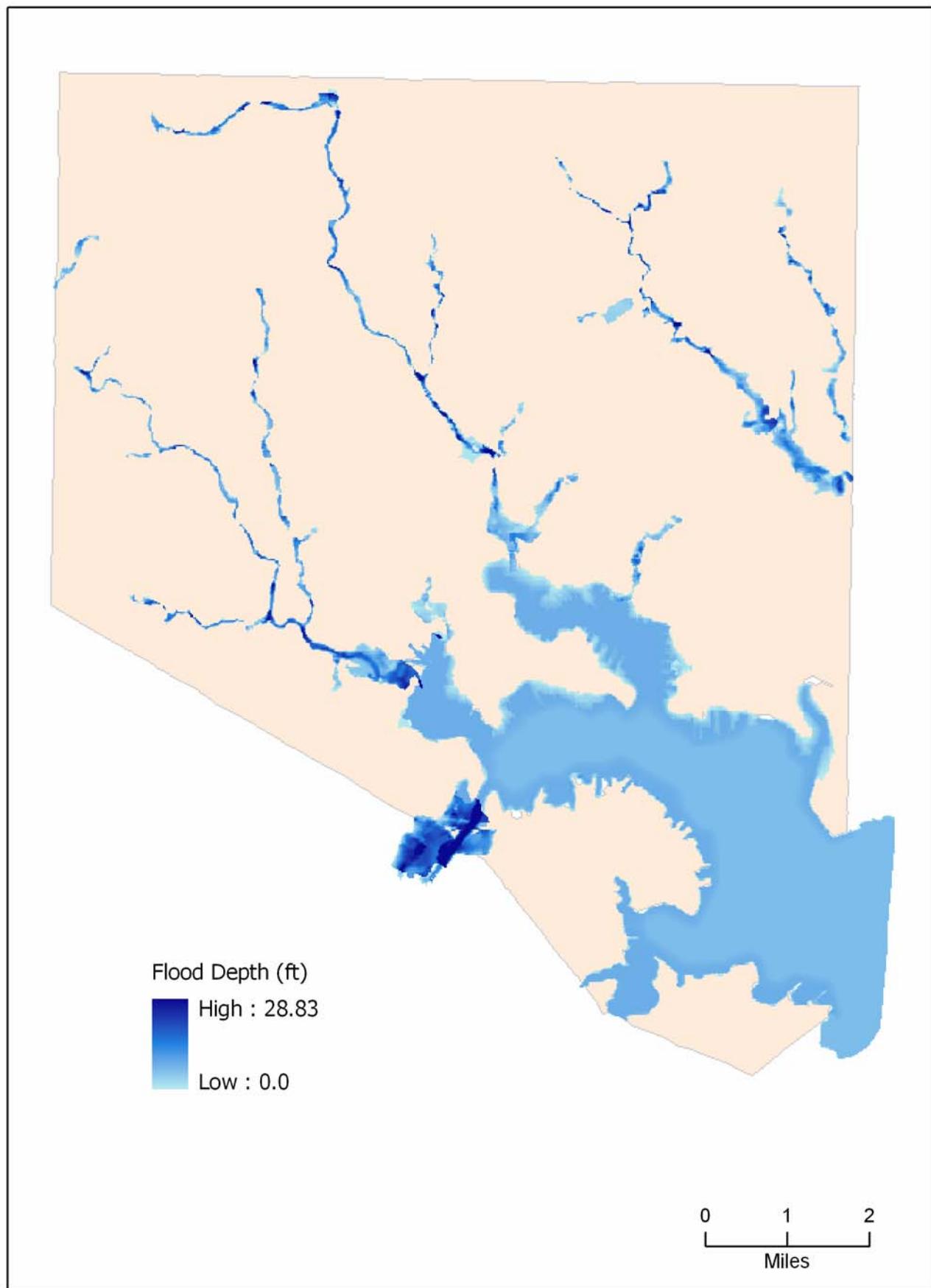
In relation to the potential number of buildings damaged by a 100-year flood predicted by HAZUS-MH, Baltimore City has 2,384 buildings vulnerable to flooding with 200 buildings to be damaged substantially (8.4% of the total number of buildings damaged). This places the city 7<sup>th</sup> of 24 Maryland subdivisions in total number of damaged buildings. This distribution of the count of buildings is similar to the damaged amount of square feet (Map B14).

Finally, the amount of direct economic losses from building damage in Baltimore City is predicted by HAZUS-MH to be \$526,653,000. This amount is 6.5% of the total amount of direct economic losses for the state (\$8,121,065,000), which ranks the city 8<sup>th</sup> out of 24. A majority (62.1%) of the losses come from capital stock losses (structural damage, contents damage, and inventory loss) versus income loss (relocation costs, capital costs, wages lost, and rental income lost). The map shows a similar clustered pattern of direct economic losses from buildings with the Fells Point area along Baltimore Harbor having the highest levels of vulnerability (Map B15).

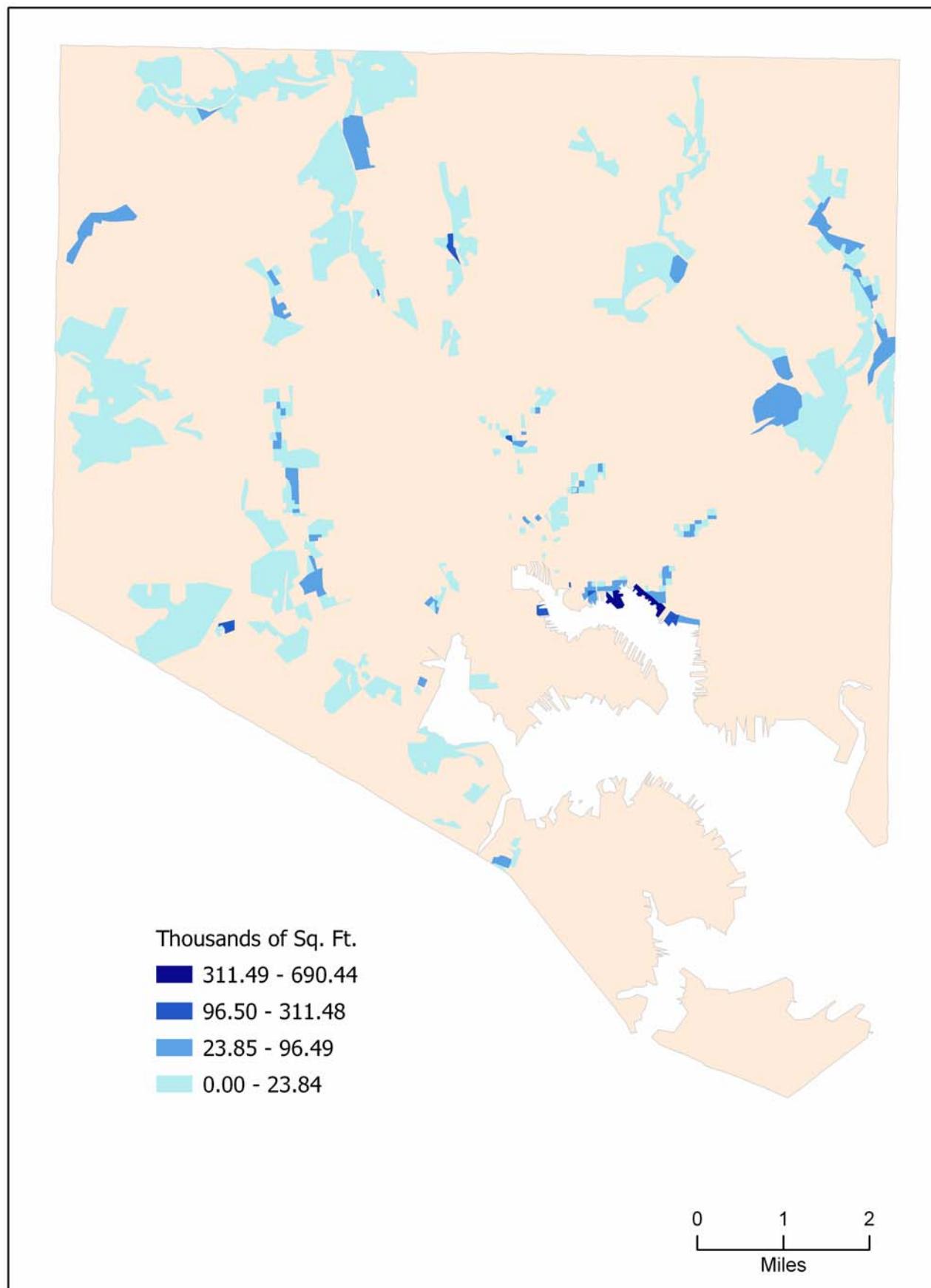
**Map B11.** Topography and modeled 100-year flood boundary in Baltimore City



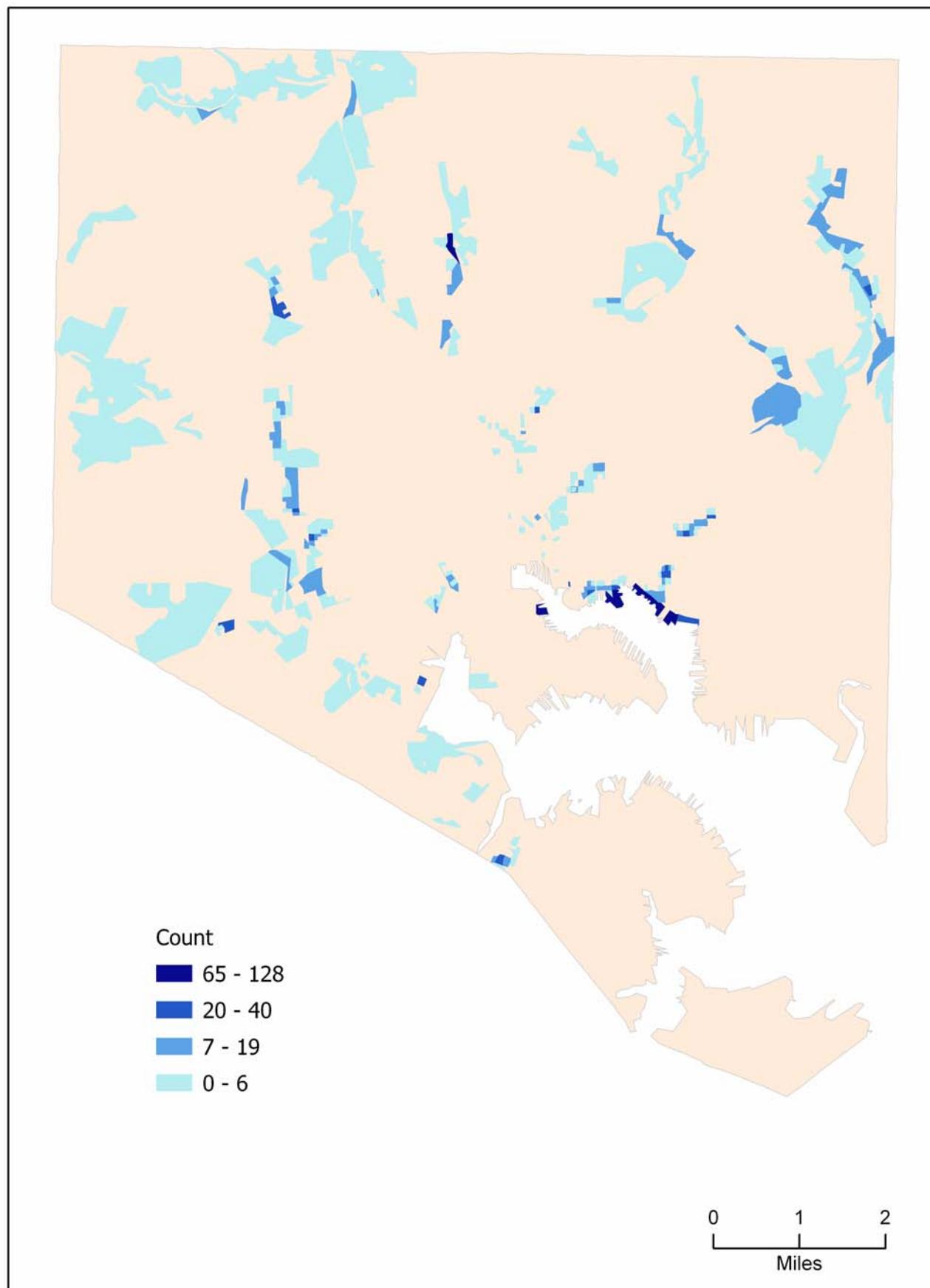
**Map B12.** Modeled 100-year flood depth in Baltimore City



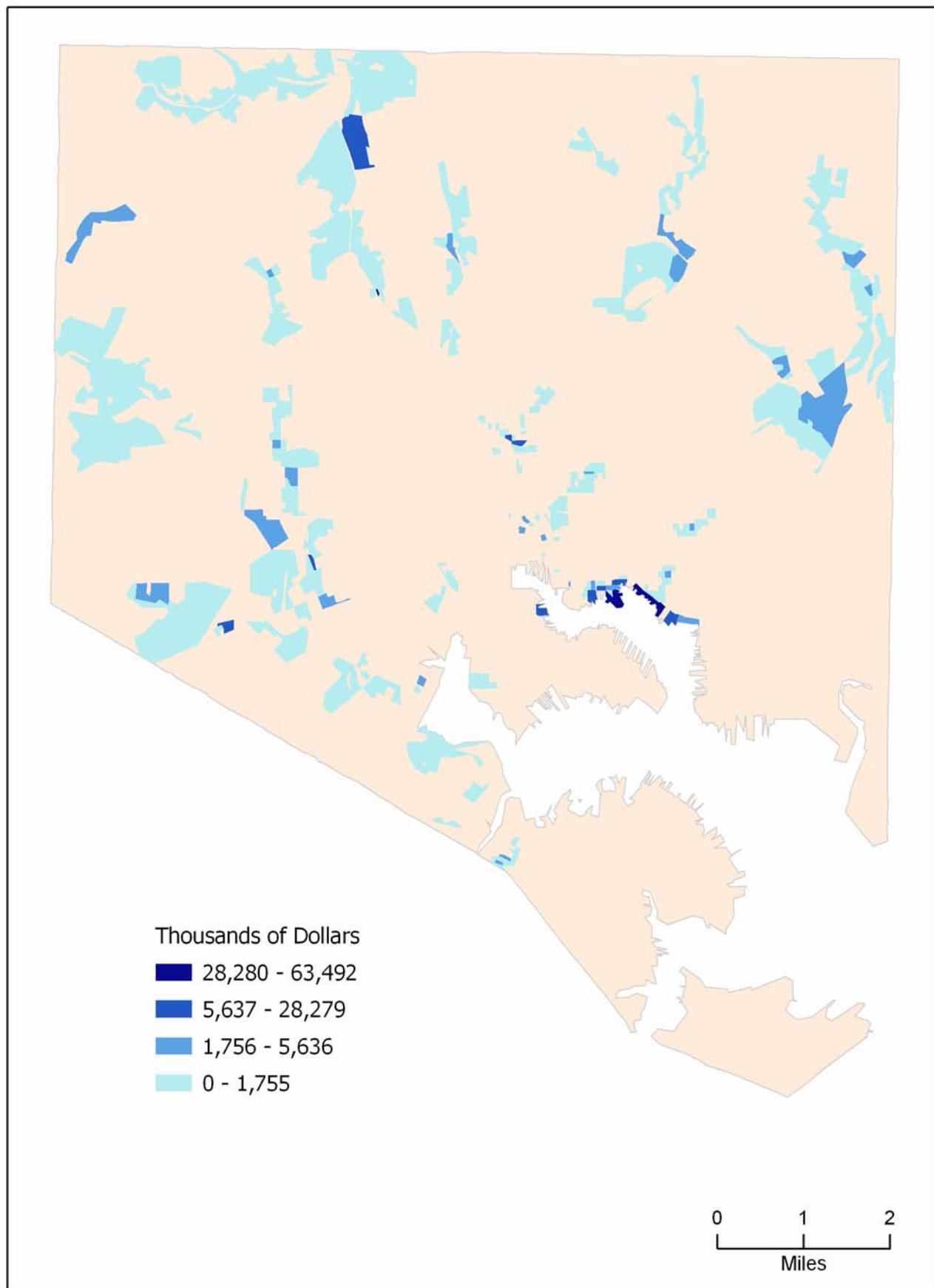
**Map B13.** Predicted amount of building damage in thousands of square feet in Baltimore City



**Map B14.** Predicted amount of building damage in numbers of buildings in Baltimore City



**Map B15.** Predicted amount of direct economic losses in thousands of dollars in Baltimore City



## Baltimore County

Baltimore County is a county of 754,292 people in Central Maryland. The county is 93.8% urban and 6.2% rural. There are no incorporated municipalities. Baltimore County is a combination of rolling hills and flat coastal plain with elevations ranging from a high of 966 ft to a low of 0 ft (Map B16). It should be considered to have a high exposure to flooding as only 7.89% (\$630.2 million) of the state's total building stock flood exposure (\$7.99 billion) is contained within the County (Table 2).

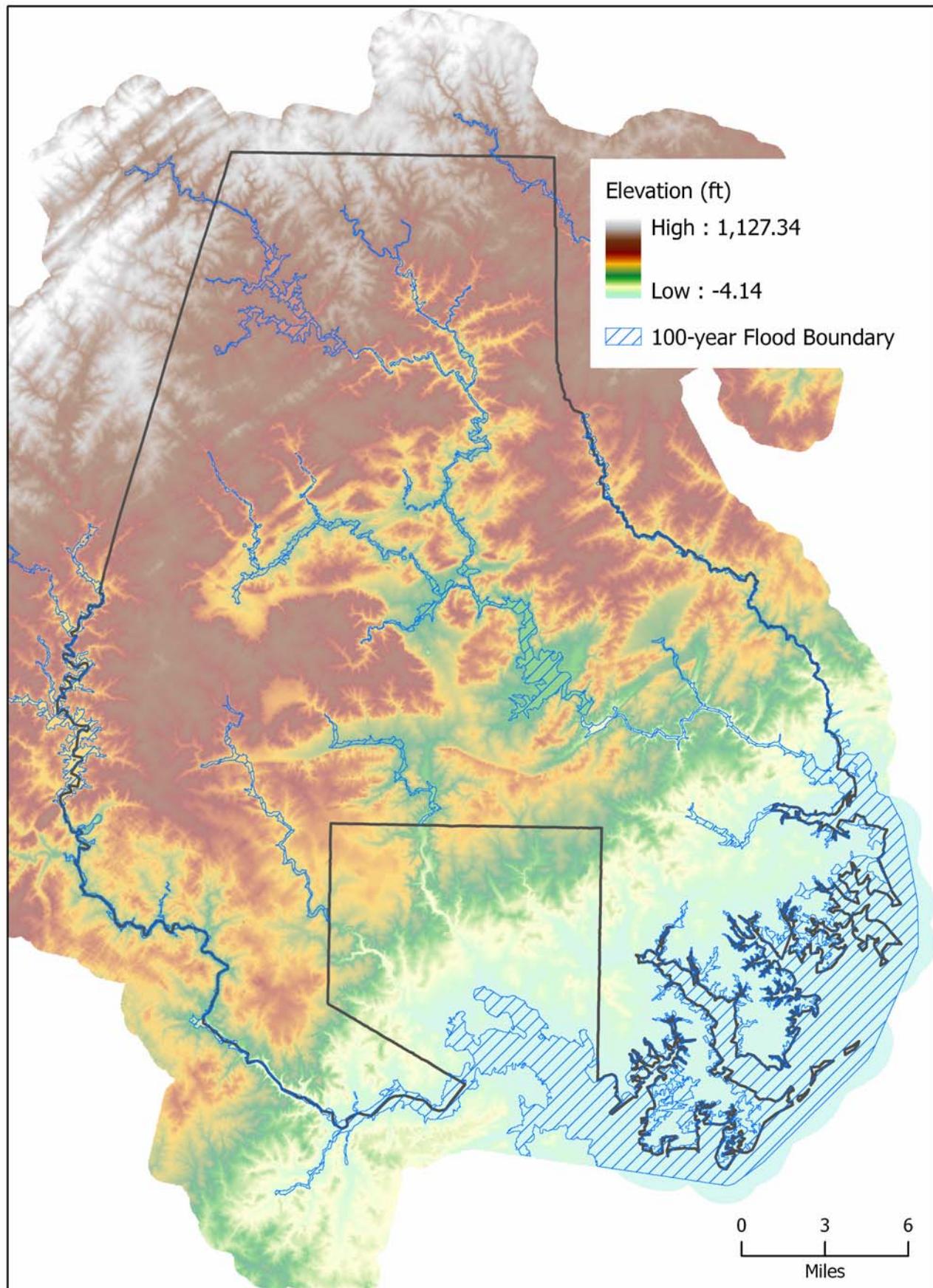
The results of the HAZUS-MH modeling effort report that 41.6 square miles of Baltimore County are subject to the 100-year flood, or 6.8% of the county's total land area. The county ranks 13<sup>th</sup> of 24 subdivisions in the percentage of total land area in flood zone. The floodplain is generally constrained to the area along the Chesapeake Bay as well as the river courses, the most significant of which are the Patapsco River, Gwynns Falls, Jones Falls, Back River, Middle River, Bird River, Gunpowder River, Gunpowder Falls, Western Run, and Little Gunpowder Falls. The depth of the 100-year flood zone has a maximum of 104.61 ft (Map B17).

With regard to the predicted damage estimates from the HAZUS-MH modeling effort, Baltimore County is predicted to have 8,805,220 square feet of building damage with 615,120 square feet (7.0% of the total damaged) of substantially damaged buildings. Baltimore County is 4<sup>th</sup> of 24 Maryland subdivisions with regard to the amount of square feet of building damage. From the map, we can see that the heaviest damage occurs in the southeastern portion of the county (Map B18). Specifically, places like Dundalk, Edgemere, Essex, Middle River, Bowleys Quarters, and Harewood. Exceptions are vulnerable central locations such as just north of Cockeysville on Loch Raven Reservoir, near Perry Hall, and Woodlawn. The rest of the county is predicted to sustain minimal damage.

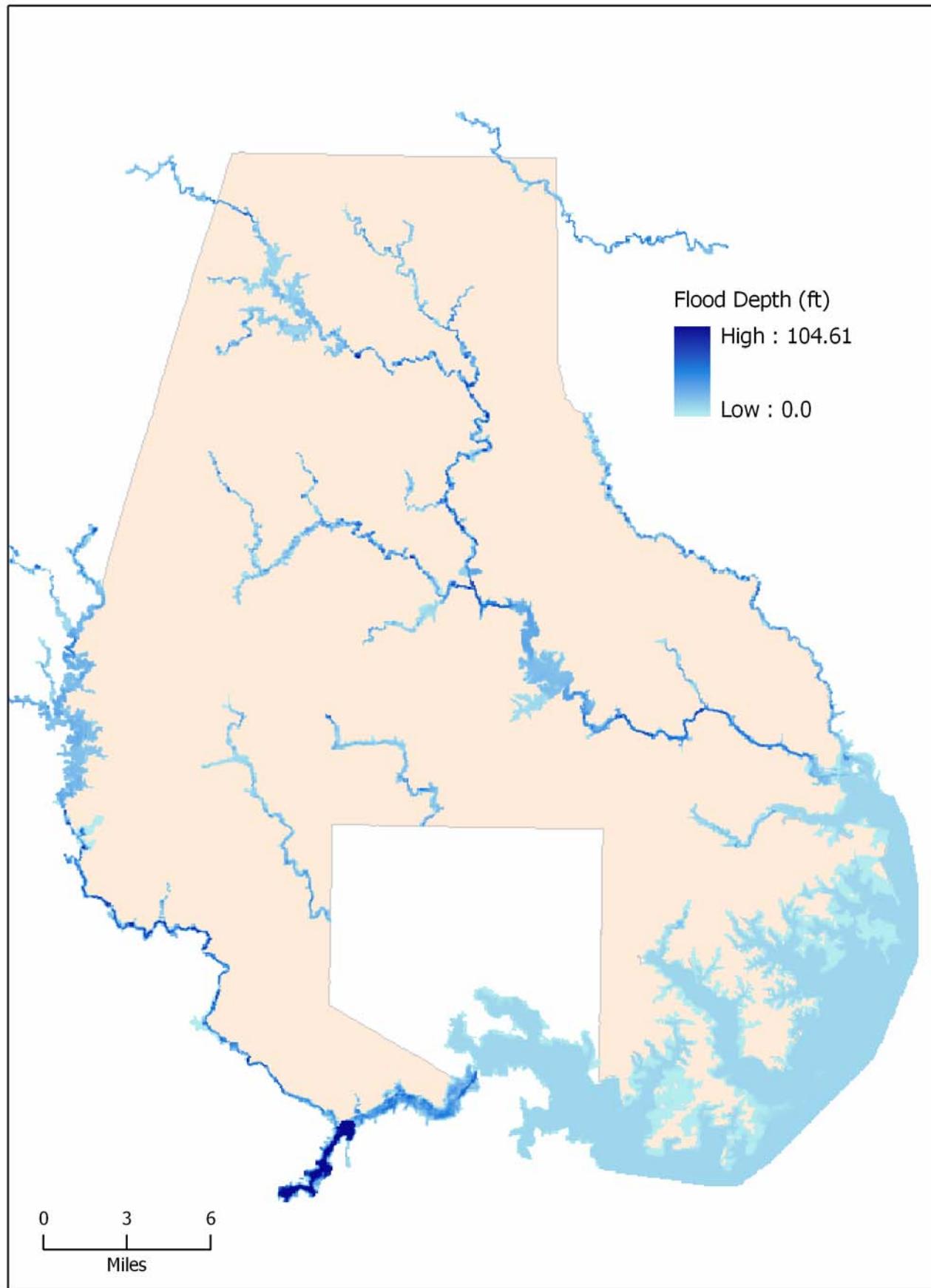
In relation to the potential number of buildings damaged by a 100-year flood predicted by HAZUS-MH, Baltimore County has 3,999 buildings vulnerable to flooding with 315 buildings to be damaged substantially (7.9% of the total number of buildings damaged). This places the county 3<sup>rd</sup> of 24 Maryland subdivisions in total number of damaged buildings. This distribution of the count of buildings is nearly identical to the damaged amount of square feet (Map B19).

Finally, the amount of direct economic losses from building damage in Baltimore County is predicted by HAZUS-MH to be \$531,157,000. This amount is 6.5% of the total amount of direct economic losses for the state (\$8,121,065,000), which ranks the County 7<sup>th</sup> out of 24. A majority (79.0%) of the losses come from capital stock losses (structural damage, contents damage, and inventory loss) versus income loss (relocation costs, capital costs, wages lost, and rental income lost). The map shows the pattern of direct economic losses from buildings to be more distributed than other measures of vulnerability (Map B20). For example, Cockeysville, Gunpowder, Towson, and Catonsville appear to be higher with regard to losses compared to damaged buildings.

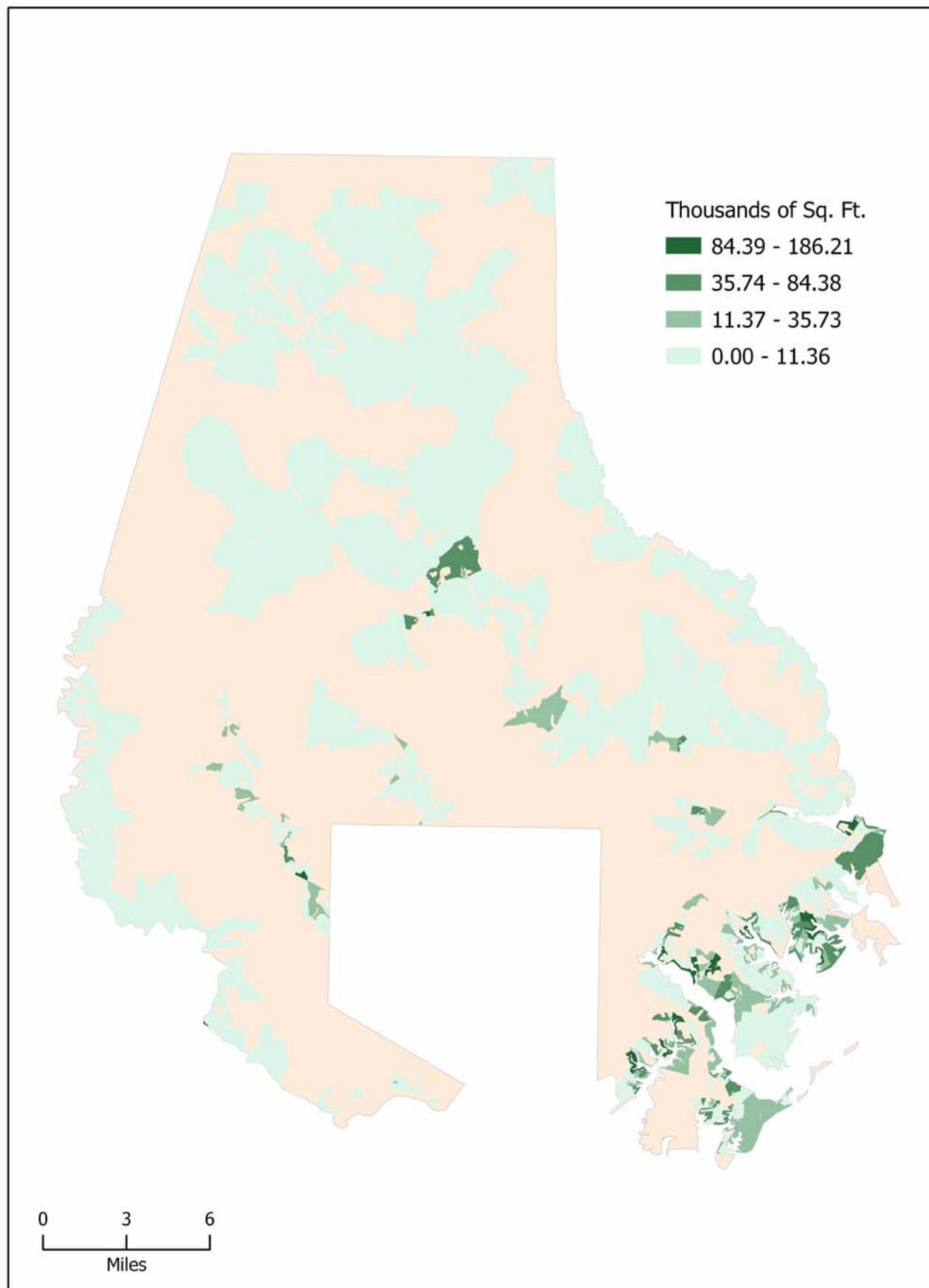
**Map B16.** Topography and modeled 100-year flood boundary in Baltimore County



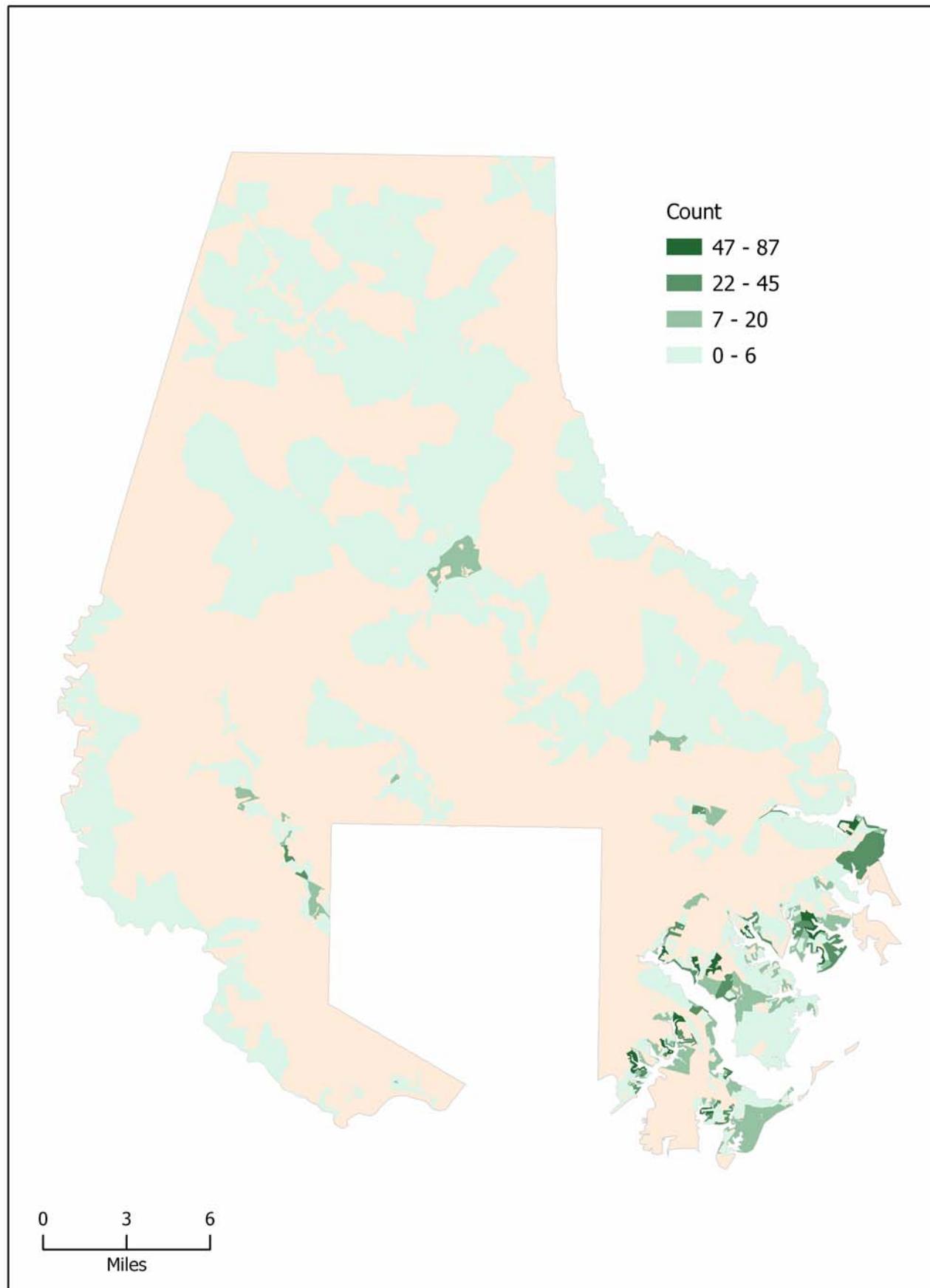
**Map B17.** Modeled 100-year flood depth in Baltimore County



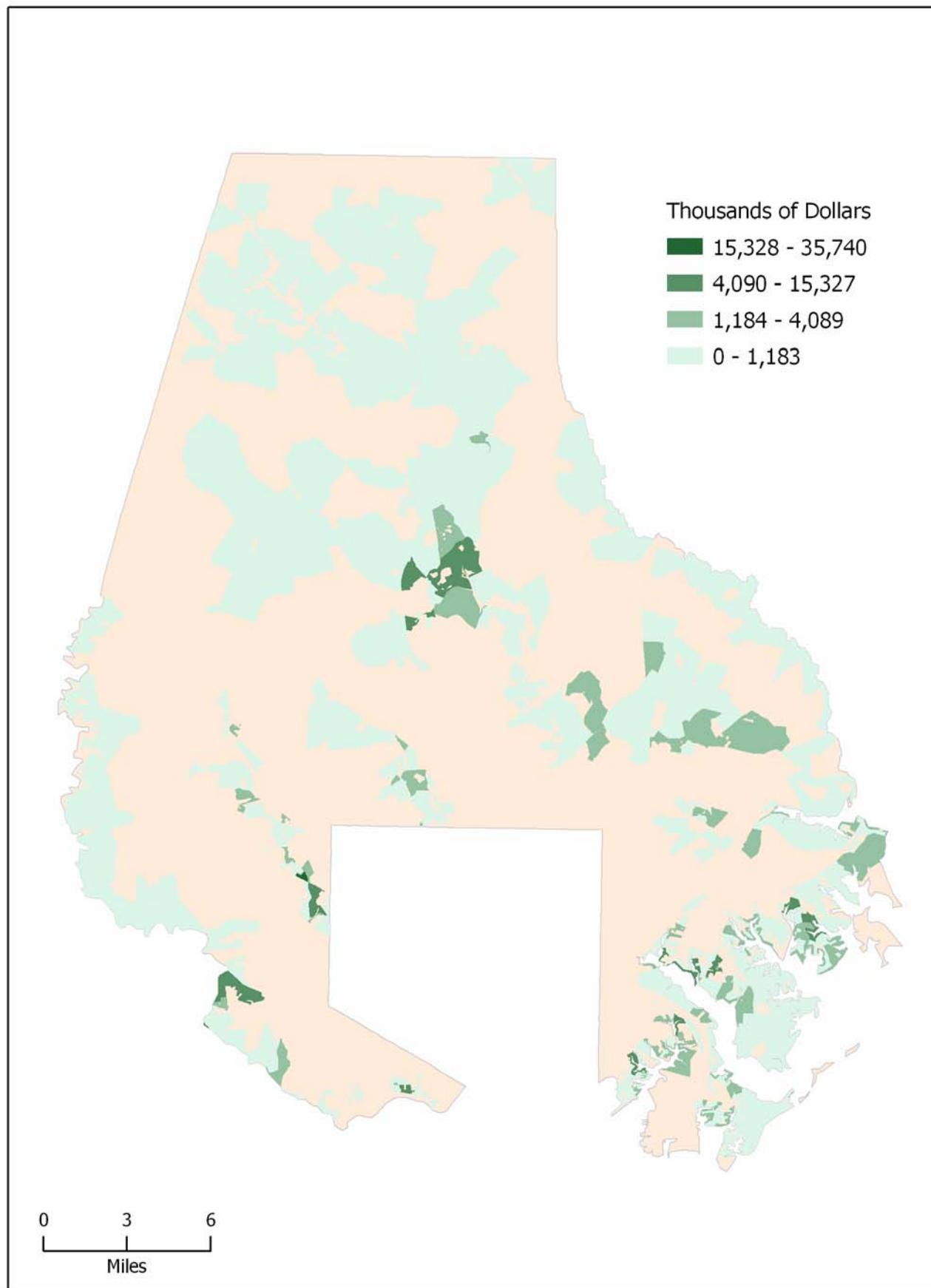
**Map B18.** Predicted amount of building damage in thousands of square feet in Baltimore County



**Map B19.** Predicted amount of building damage in numbers of buildings in Baltimore County



**Map B20.** Predicted amount of direct economic losses in thousands of dollars in Baltimore County



## Calvert County

Calvert County is a county of 74,563 people in Southern Maryland. The county is 54.2% urban and 45.8% rural. The municipalities are Chesapeake Beach and North Beach. Calvert County is a combination of rolling hills and flat coastal plain with elevations ranging from a high of 168 ft to a low of 0 ft (Map B21). It should be considered to have a below average exposure to flooding as only 1.55% (\$123.7 million) of the state's total building stock flood exposure (\$7.99 billion) is contained within the County (Table 2).

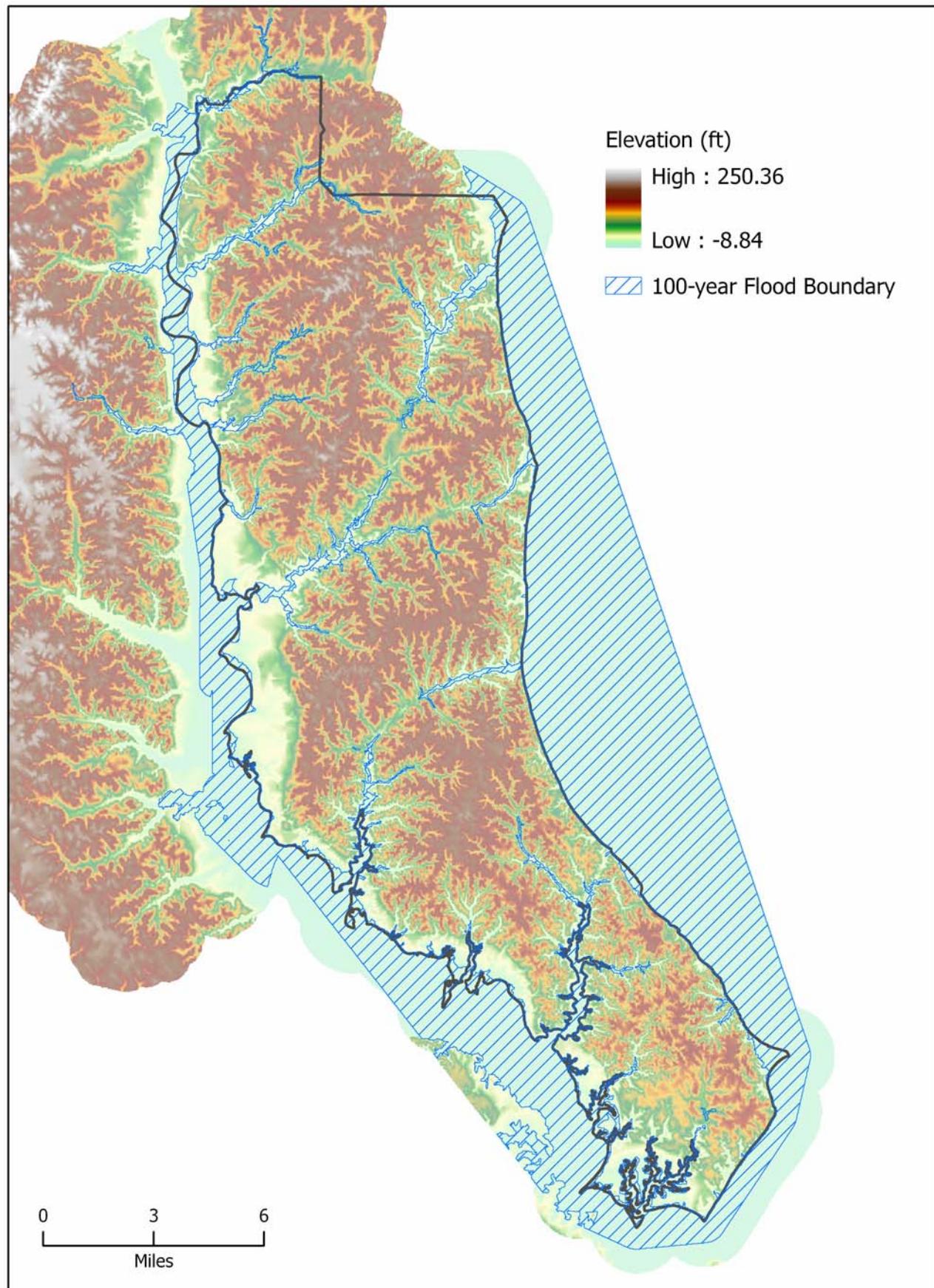
The results of the HAZUS-MH modeling effort report that 13.7 square miles of Calvert County are subject to the 100-year flood, or 6.3% of the county's total land area. The county ranks 17<sup>th</sup> of 24 subdivisions in the percentage of total land area in flood zone. The floodplain is generally constrained to the area along the Chesapeake Bay as well as the river courses, the most significant of which are the Patuxent River, Lyons Creek, Hall Creek, Hunting Creek, Battle Creek, St. Leonard Creek, Mill Creek, Parker Creek, Plum Point Creek, and Fishing Creek. The depth of the 100-year flood zone has a maximum of 22.4 ft (Map B22).

With regard to the predicted damage estimates from the HAZUS-MH modeling effort, Calvert County is predicted to have 2,326,660 square feet of building damage with 366,440 square feet (15.7% of the total damaged) of substantially damaged buildings. Calvert County is 14<sup>th</sup> of 24 Maryland subdivisions with regard to the amount of square feet of building damage. From the map, we can see that the heaviest damage occurs in residential subdivisions along the upper portion of the Patuxent River, Broome Island, Solomons Island, Cove Point, Long Beach, North Beach, and the interior sections of Chesapeake Beach (Map B23). The rest of the county is predicted to sustain minimal or no damage.

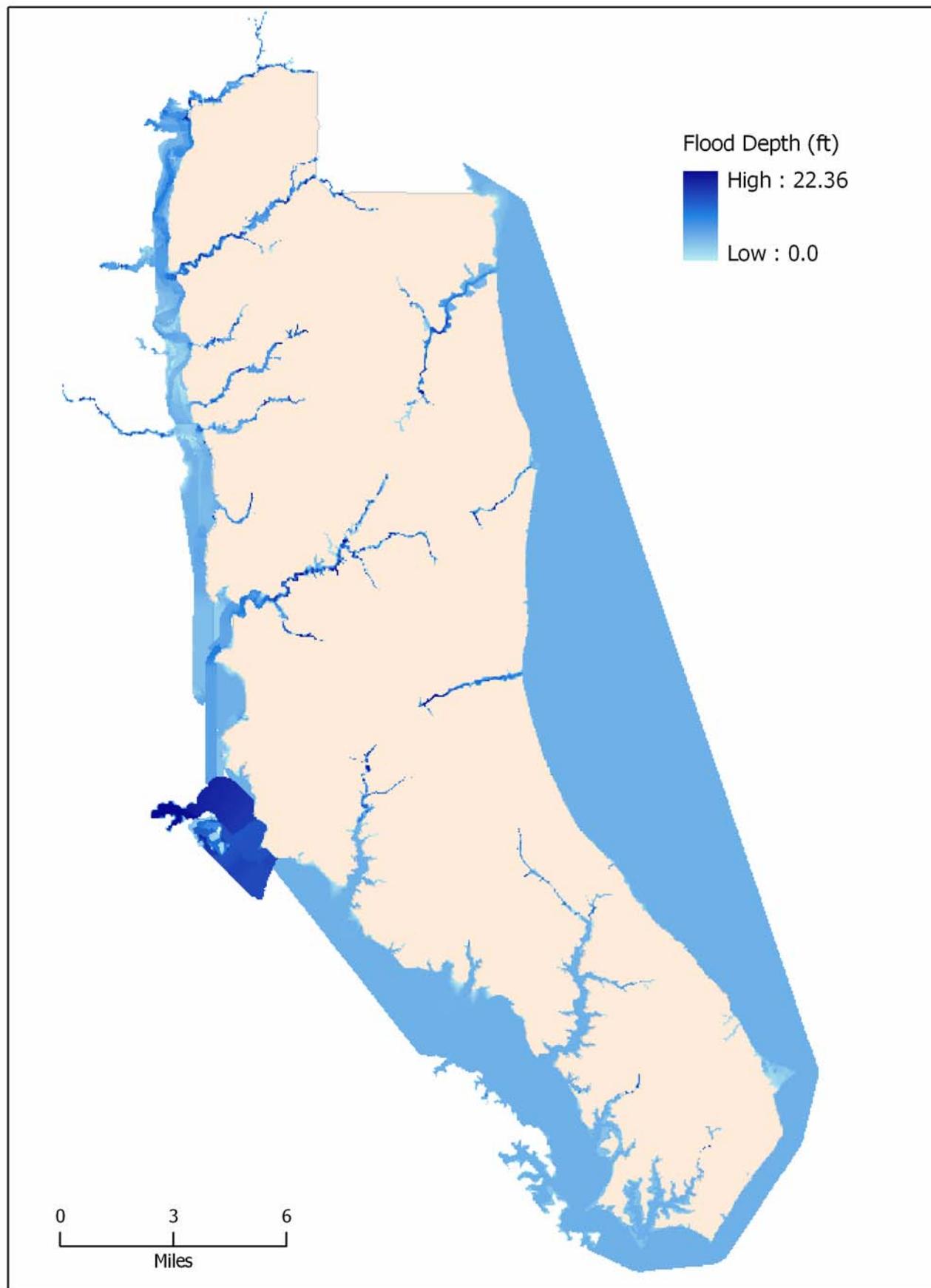
In relation to the potential number of buildings damaged by a 100-year flood predicted by HAZUS-MH, Calvert County has 1,008 buildings vulnerable to flooding with 181 buildings to be damaged substantially (18.0% of the total number of buildings damaged). This places the county 13<sup>th</sup> of 24 Maryland subdivisions in total number of damaged buildings. This distribution of the count of buildings is almost identical to the damaged amount of square feet (Map B24).

Finally, the amount of direct economic losses from building damage in Calvert County is predicted by HAZUS-MH to be \$98,312,000. This amount is 1.2% of the total amount of direct economic losses for the state (\$8,121,065,000), which ranks the County 14<sup>th</sup> out of 24. A majority (76.7%) of the losses come from capital stock losses (structural damage, contents damage, and inventory loss) versus income loss (relocation costs, capital costs, wages lost, and rental income lost). The map shows that direct economic losses from flooding are more distributed than the building damage (see above). Interior sections of the county along MD 2/MD 4 north of Prince Frederick are shown to be more vulnerable (Map B25).

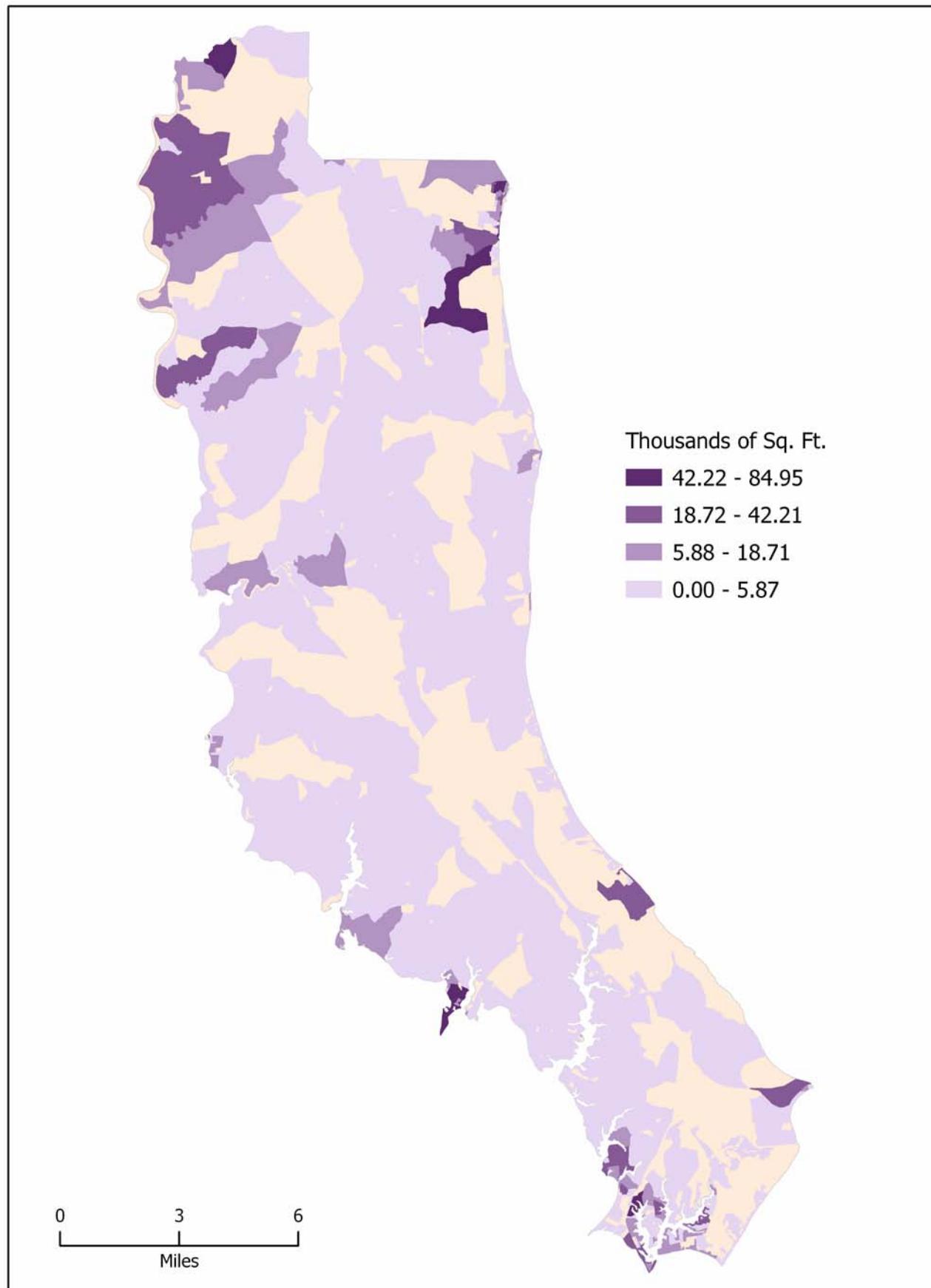
**Map B21.** Topography and modeled 100-year flood boundary in Calvert County



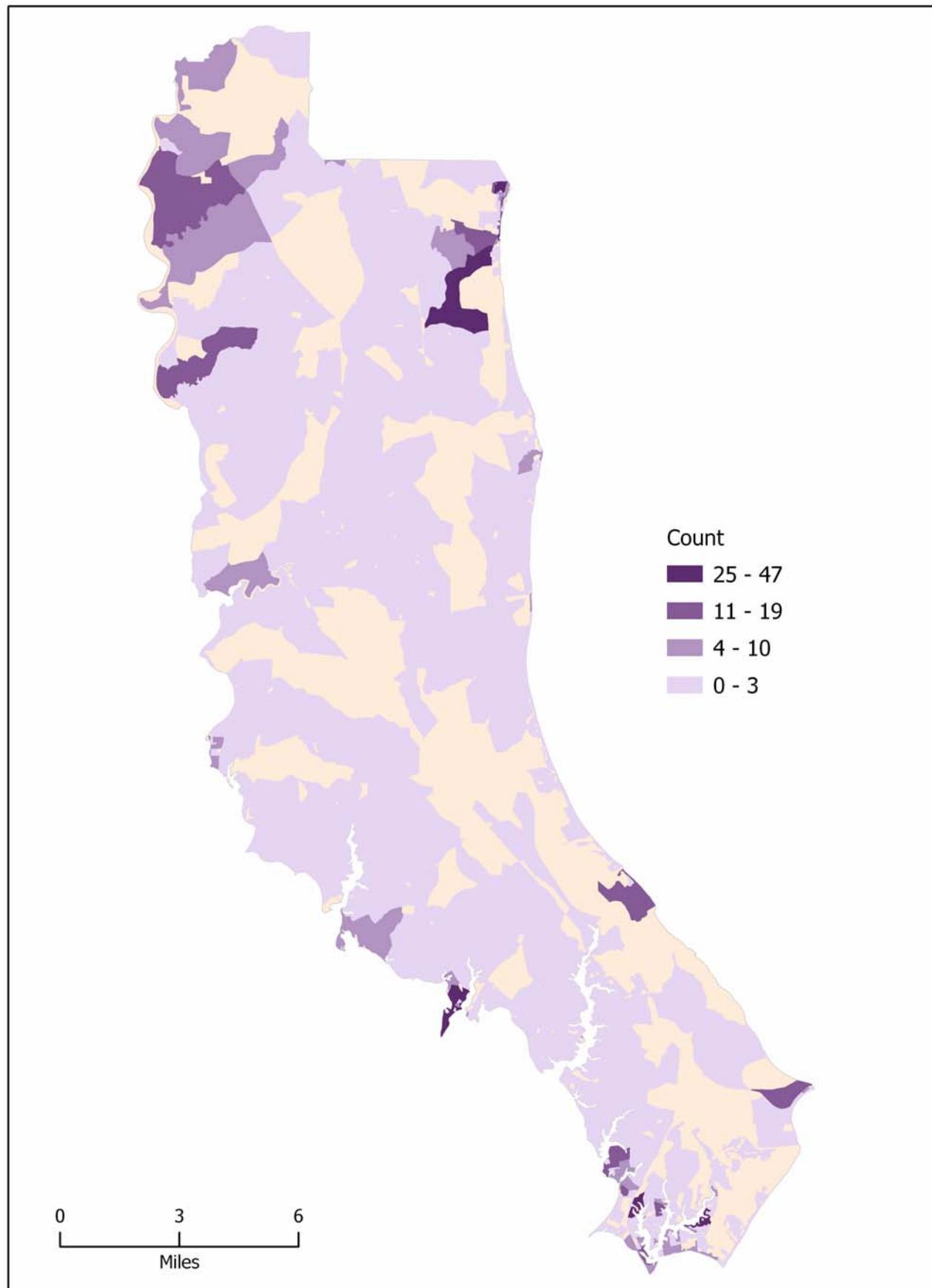
**Map B22.** Modeled 100-year flood depth in Calvert County



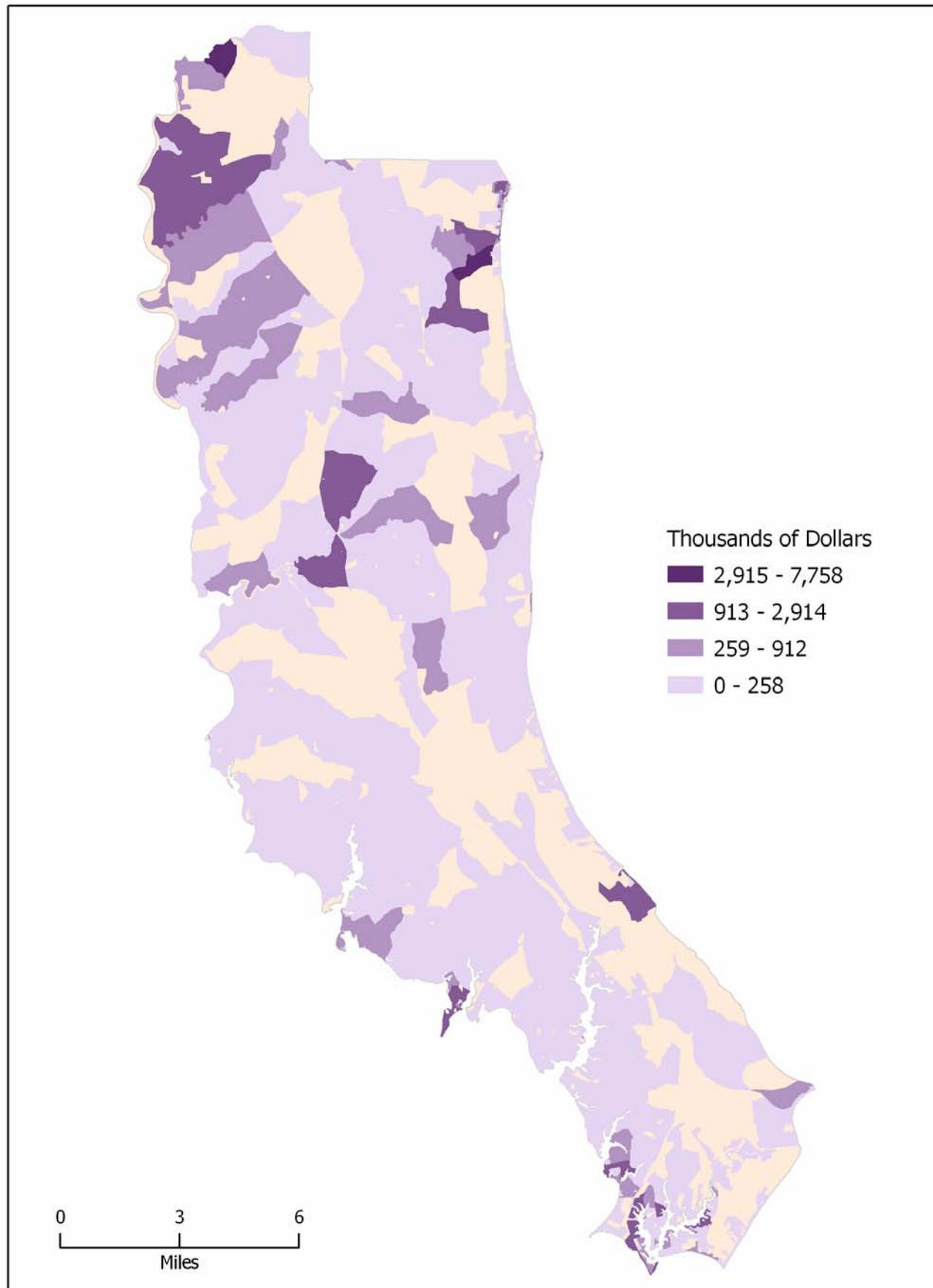
**Map B23.** Predicted amount of building damage in thousands of square feet in Calvert County



**Map B24.** Predicted amount of building damage in numbers of buildings in Calvert County



**Map B25.** Predicted amount of direct economic losses in thousands of dollars in Calvert County



## **Caroline County**

Caroline County is a county of 29,772 people on the Eastern Shore of Maryland. The county is 21.7% urban and 78.3% rural. The municipalities are Denton, Goldsboro, Greensboro, Henderson, Hillsboro, Marydel, Preston, Ridgely, and Templeville.

Caroline County is a flat coastal plain county with elevations ranging from a high of 79 ft to a low of 0 ft (Map B26). It should be considered to have relatively low exposure to flooding as only 0.59% (\$46.8 million) of the state's total building stock flood exposure (\$7.99 billion) is contained within the County (Table 2).

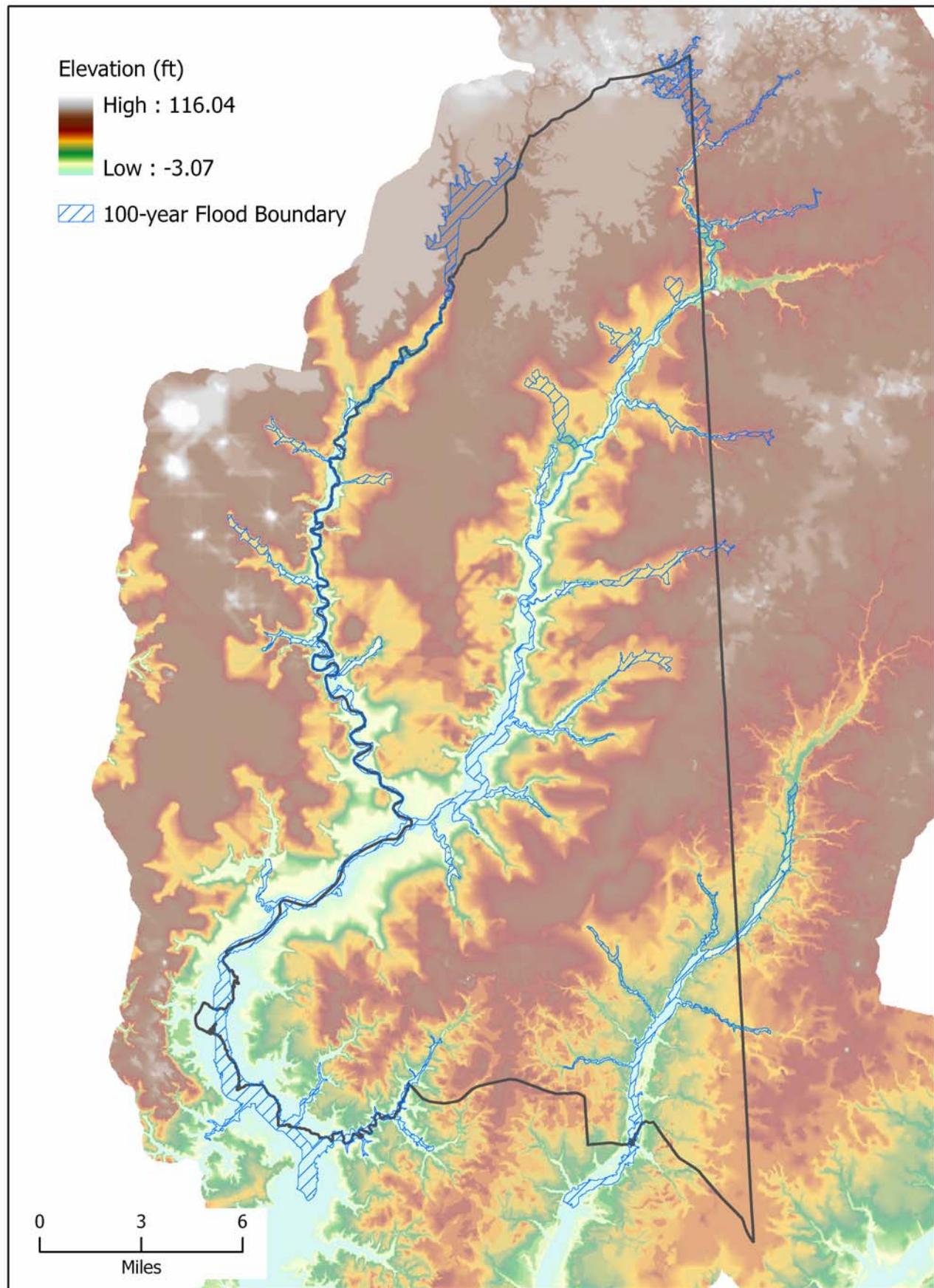
The results of the HAZUS-MH modeling effort report that 15.0 square miles of Caroline County are subject to the 100-year flood, or 4.6% of the county's total land area. The county ranks 21<sup>st</sup> of 24 subdivisions in the percentage of total land area in flood zone. The floodplain is generally constrained to the river courses, the most significant of which are the Choptank River, Hunting Creek, Marshyhope Creek, and Tuckahoe Creek. The depth of the 100-year flood zone has a maximum of 30.3 ft (Map B27).

With regard to the predicted damage estimates from the HAZUS-MH modeling effort, Caroline County is predicted to have 391,690 square feet of building damage with 23,480 square feet (6.0% of the total damaged) of substantially damaged buildings. Caroline County is 23<sup>rd</sup> of 24 Maryland subdivisions with regard to the amount of square feet of building damage. From the map, we can see that the heaviest damage (such as it is) occurs near Marydel, in Greensboro, south of Denton (Williston/Two Johns), near Hog Island, and on either side of the Marshyhope north of Federalsburg (Map B28). The rest of the county is predicted to sustain minimal to no damage.

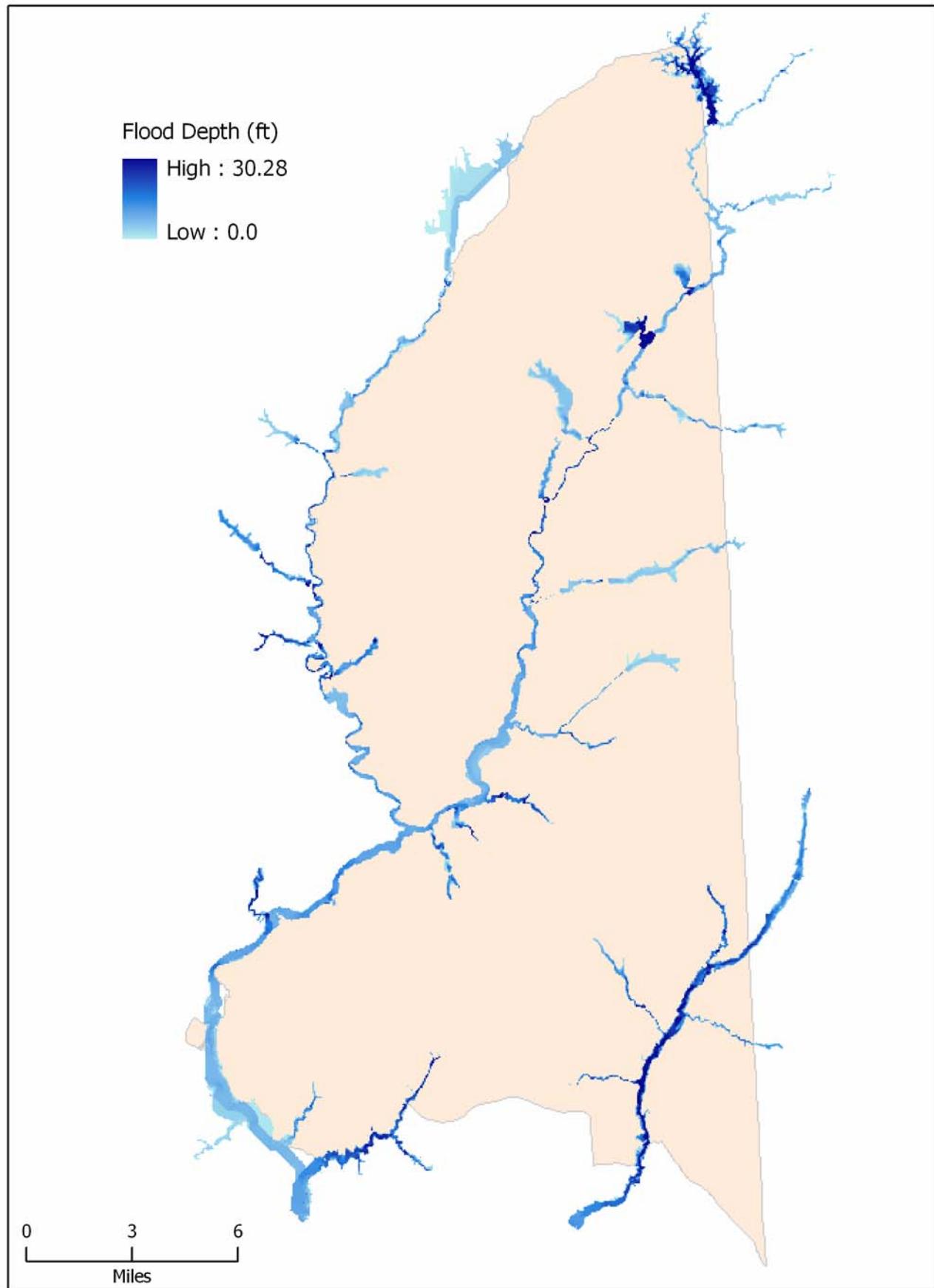
In relation to the potential number of buildings damaged by a 100-year flood predicted by HAZUS-MH, Caroline County has 105 buildings vulnerable to flooding with 10 buildings to be damaged substantially (9.5% of the total number of buildings damaged). This places the county 24<sup>th</sup> of 24 Maryland subdivisions in total number of damaged buildings. This distribution of the count of buildings is nearly identical to the damaged amount of square feet (Map B29).

Finally, the amount of direct economic losses from building damage in Caroline County is predicted by HAZUS-MH to be \$17,799,000. This amount is 0.2% of the total amount of direct economic losses for the state (\$8,121,065,000), which ranks the County 24<sup>th</sup> out of 24. A majority (67.9%) of the losses come from capital stock losses (structural damage, contents damage, and inventory loss) versus income loss (relocation costs, capital costs, wages lost, and rental income lost). The map shows a increasingly clustered pattern of direct economic losses from buildings in Greensboro, south of Denton, and along Marshyhope Creek (Map B30).

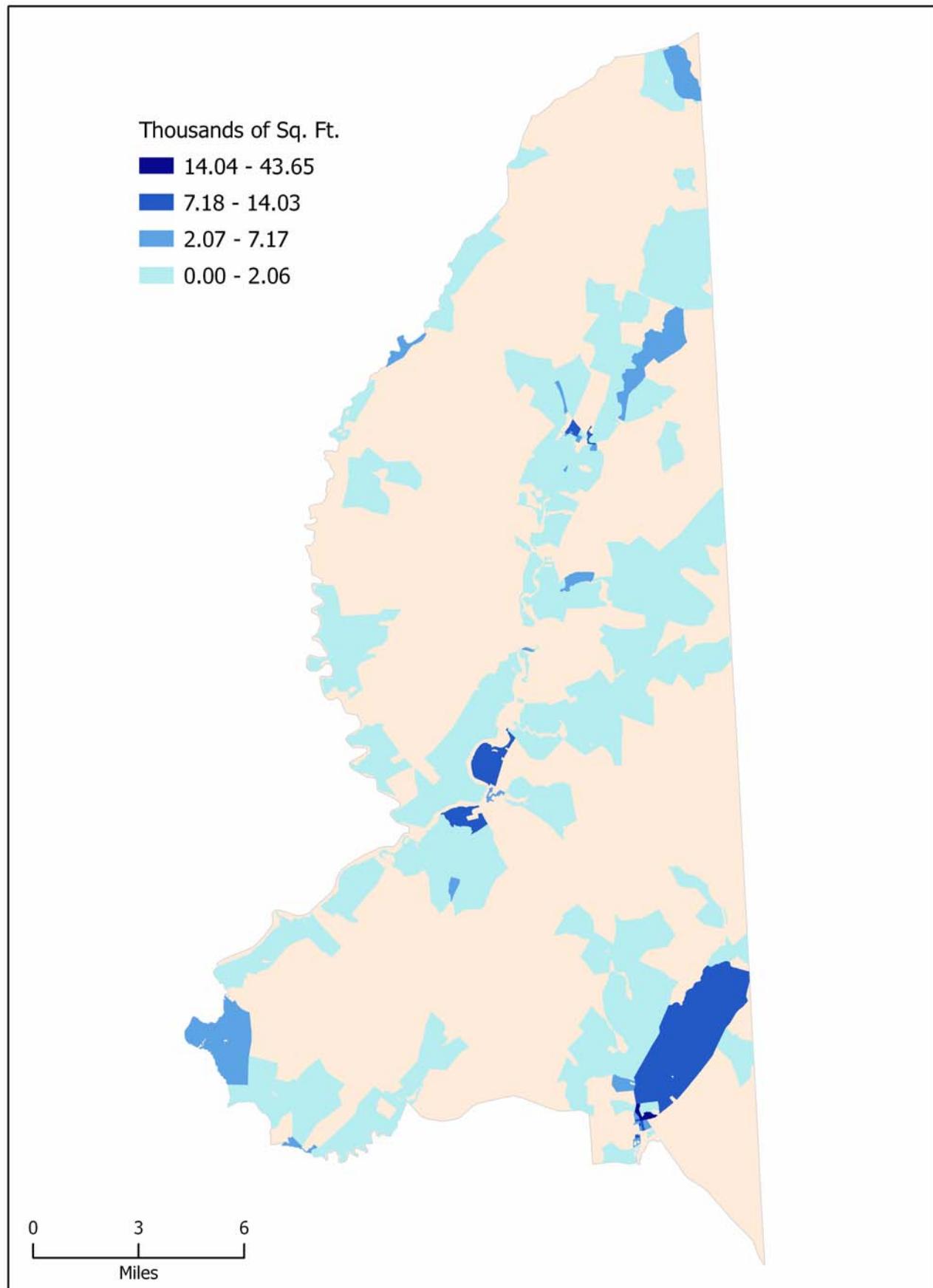
**Map B26.** Topography and modeled 100-year flood boundary in Caroline County



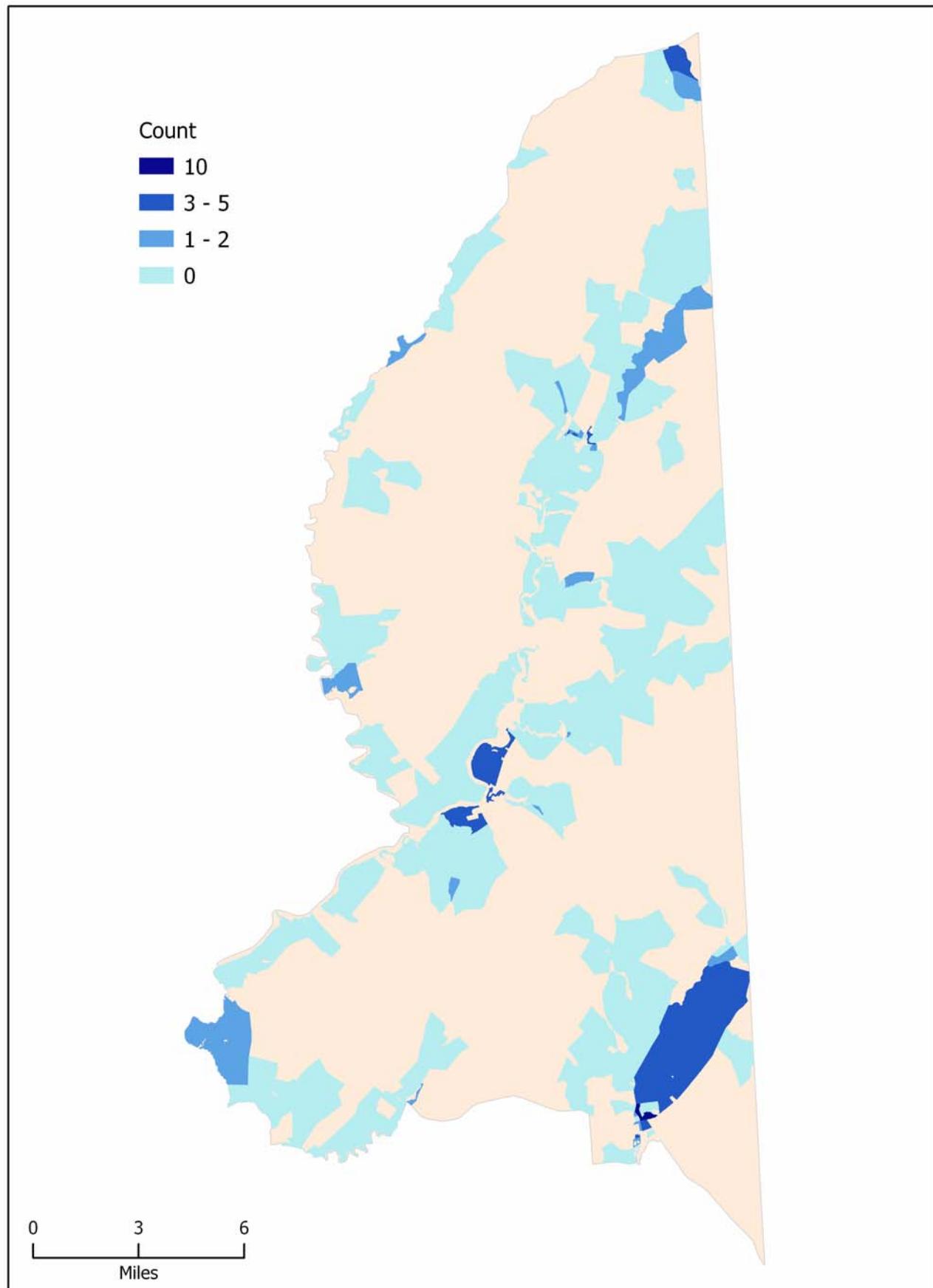
**Map B27.** Modeled 100-year flood depth in Caroline County



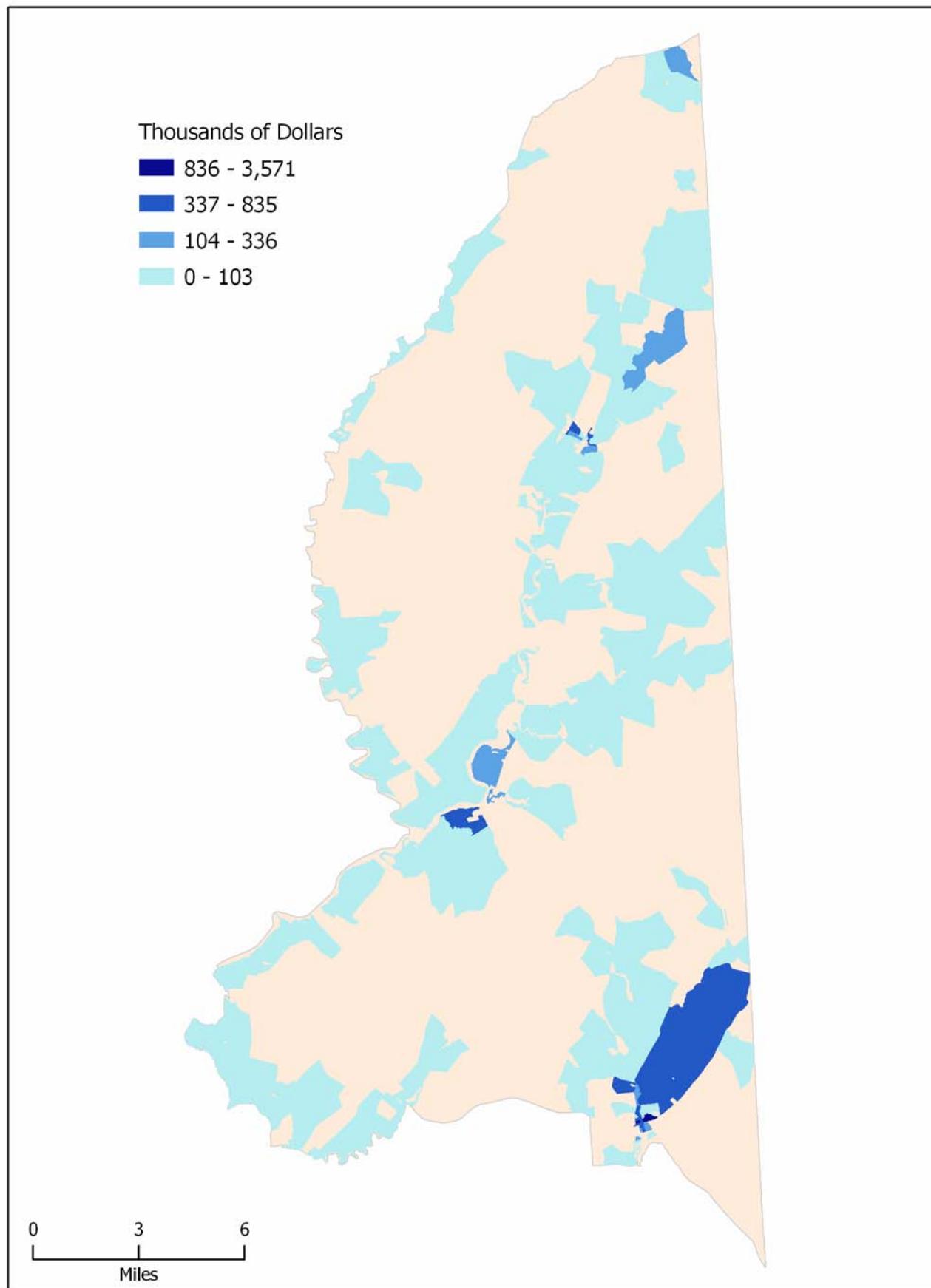
**Map B28.** Predicted amount of building damage in thousands of square feet in Caroline County



**Map B29.** Predicted amount of building damage in numbers of buildings in Caroline County



**Map B30.** Predicted amount of direct economic losses in thousands of dollars in Caroline County



## **Carroll County**

Carroll County is a county of 150,897 people in Central Maryland. The county is 57.0% urban and 43.0% rural. The municipalities are Hampstead, Manchester, Mount Airy, New Windsor, Sykesville, Taneytown, Union Bridge, and Westminster. Carroll County is a rolling, hilly county with elevations ranging from a high of around 1,120 ft to a low of 260 ft (Map B31). It should be considered to have relatively low exposure to flooding as only 0.73% (\$58.2 million) of the state's total building stock flood exposure (\$7.99 billion) is contained within the County (Table 2).

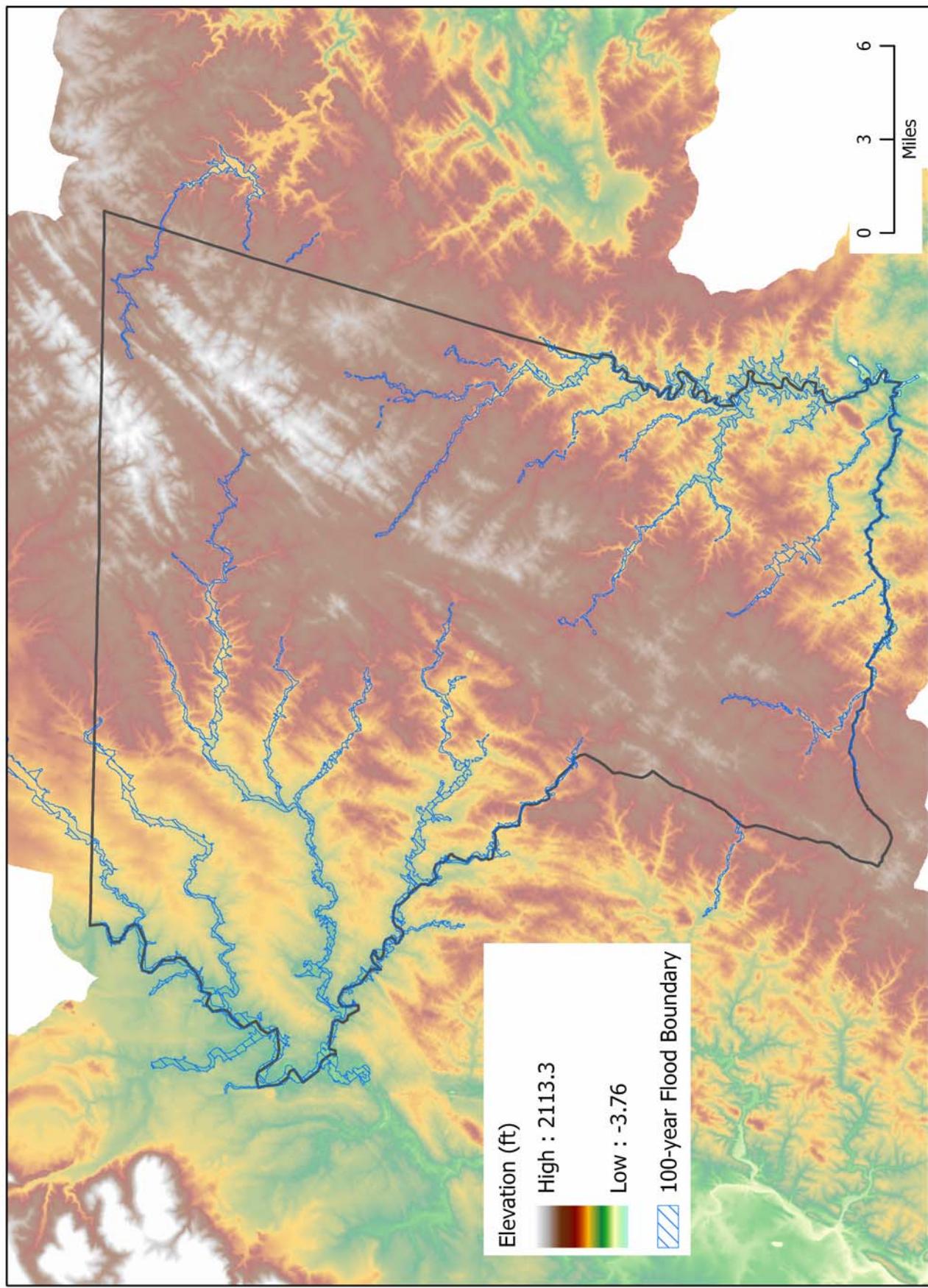
The results of the HAZUS-MH modeling effort report that 20.3 square miles of Carroll County are subject to the 100-year flood, or 4.5% of the county's total land area. The county ranks 22<sup>nd</sup> of 24 subdivisions in the percentage of total land area in flood zone. The floodplain is generally constrained to the river courses, the most significant of which are Monocacy River, Rock Creek, Piney Creek, Big Pipe Creek, Little Pipe Creek, Sams Creek, the North and the South Branch of the Patapsco River, Morgan Run, and Middle Run. The depth of the 100-year flood zone has a maximum of 56.1 ft (Map B32).

With regard to the predicted damage estimates from the HAZUS-MH modeling effort, Carroll County is predicted to have 372,130 square feet of building damage but only 2,890 square feet (0.8% of the total damaged) of substantially damaged buildings. Carroll County is 24<sup>th</sup> of 24 Maryland subdivisions with regard to the amount of square feet of building damage. From the map, we can see that the concentration of damage occurs north and east of Taneytown, east of Union Bridge, south of Lineboro, in Oakland, and in between Eldersburg and Sykesville (Map B33). The rest of the county is predicted to sustain minimal to no damage.

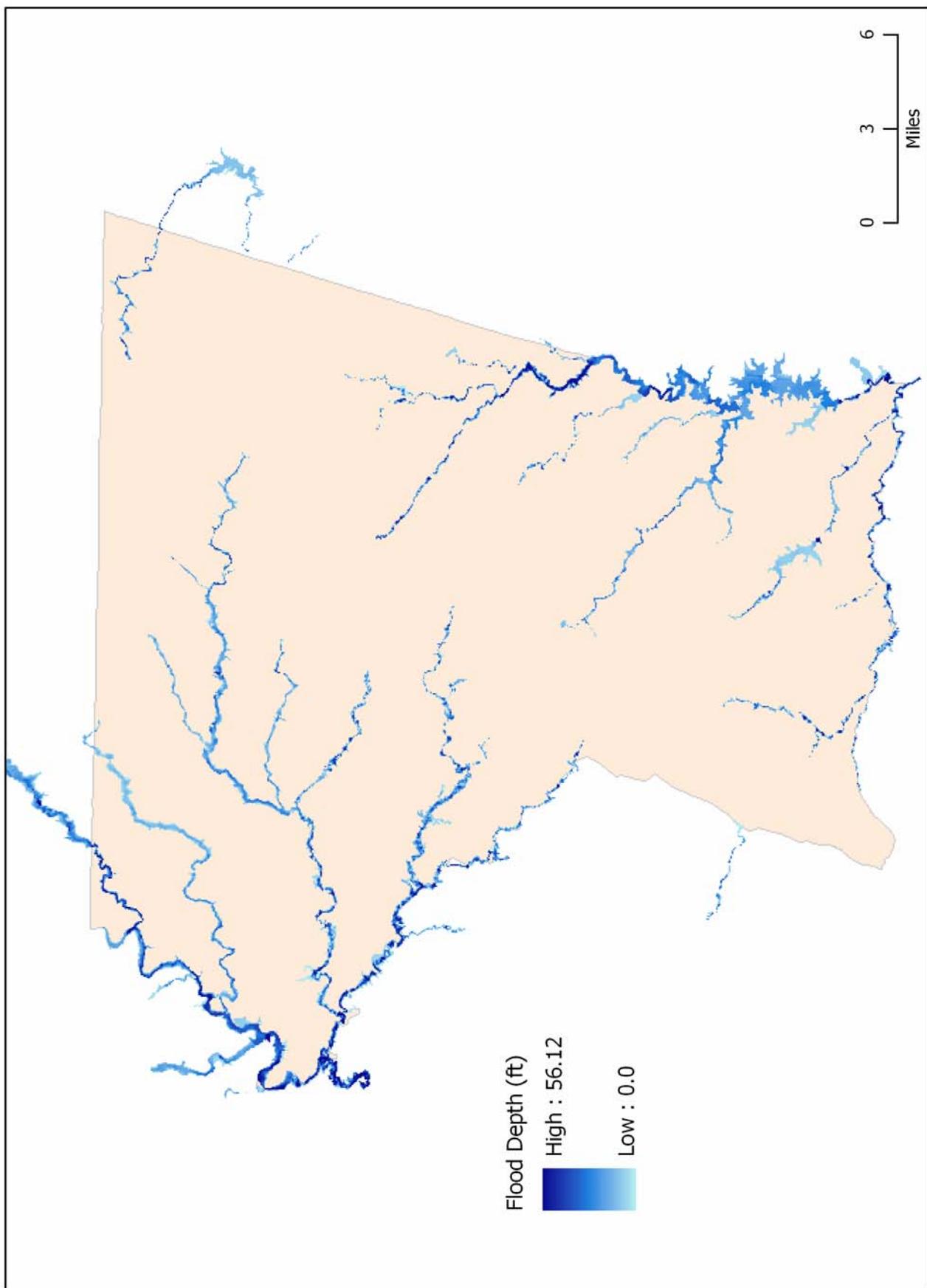
In relation to the potential number of buildings damaged by a 100-year flood predicted by HAZUS-MH, Carroll County has 138 buildings vulnerable to flooding with 1 building to be damaged substantially (0.7% of the total number of buildings damaged). This places the county 23<sup>rd</sup> of 24 Maryland subdivisions in total number of damaged buildings. This distribution of the count of buildings is almost identical to the damaged amount of square feet (Map B34).

Finally, the amount of direct economic losses from building damage in Carroll County is predicted by HAZUS-MH to be \$72,055,000. This amount is 0.9% of the total amount of direct economic losses for the state (\$8,121,065,000), which ranks the County 19<sup>th</sup> out of 24. A majority (83.7%) of the losses come from capital stock losses (structural damage, contents damage, and inventory loss) versus income loss (relocation costs, capital costs, wages lost, and rental income lost). The map shows a much more distributed pattern of vulnerability than the potential damage (discussed above). Almost all parts of the County have some potential for economic loss, even though it is generally at a low level. Areas that are highlighted include those mentioned above as well as Finksburg, Red Oak Hills, Westminster, Pleasant Valley, New Windsor, and Woodbine (Map B35).

**Map B31.** Topography and modeled 100-year flood boundary in Carroll County



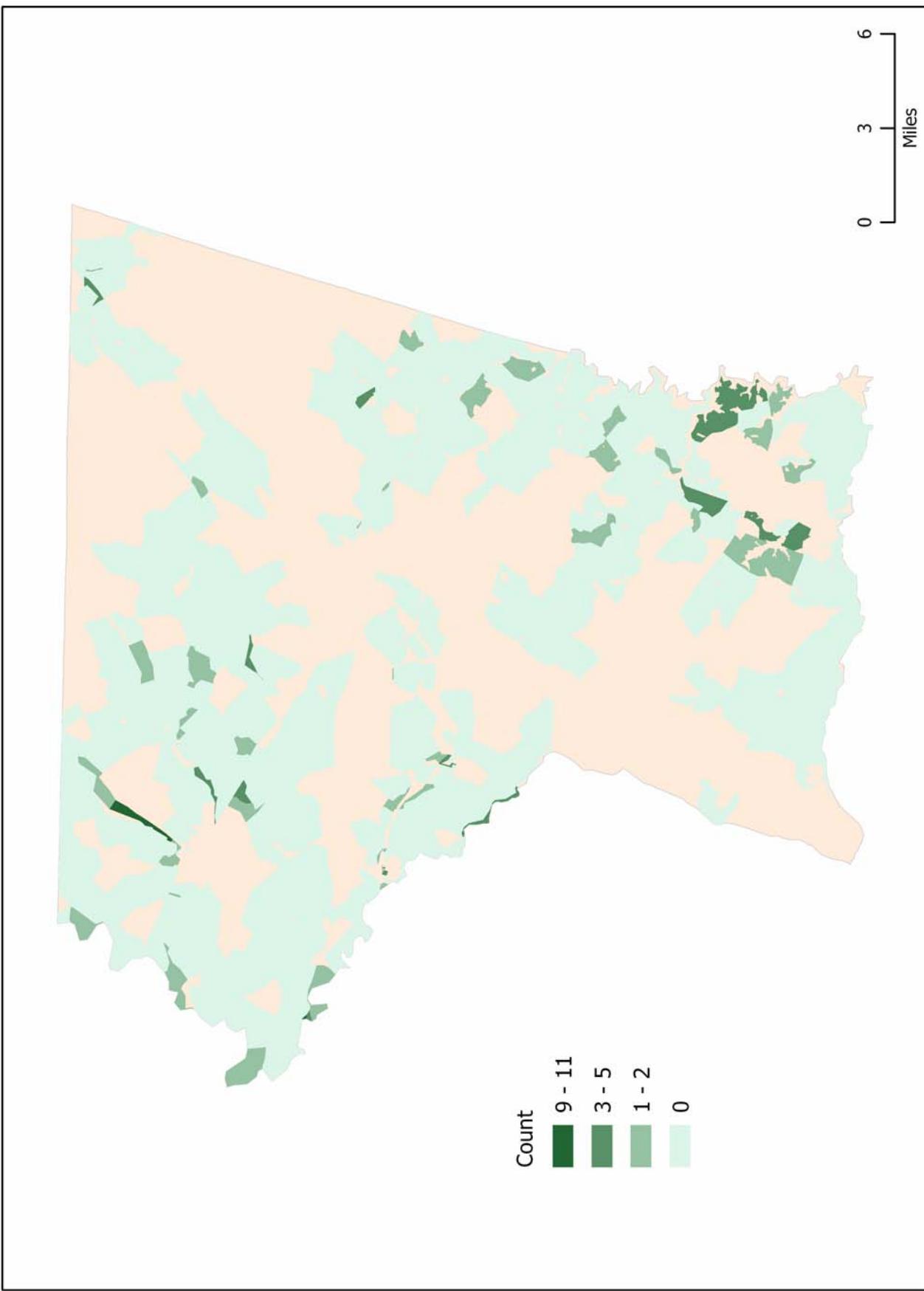
**Map B32.** Modeled 100-year flood depth in Carroll County



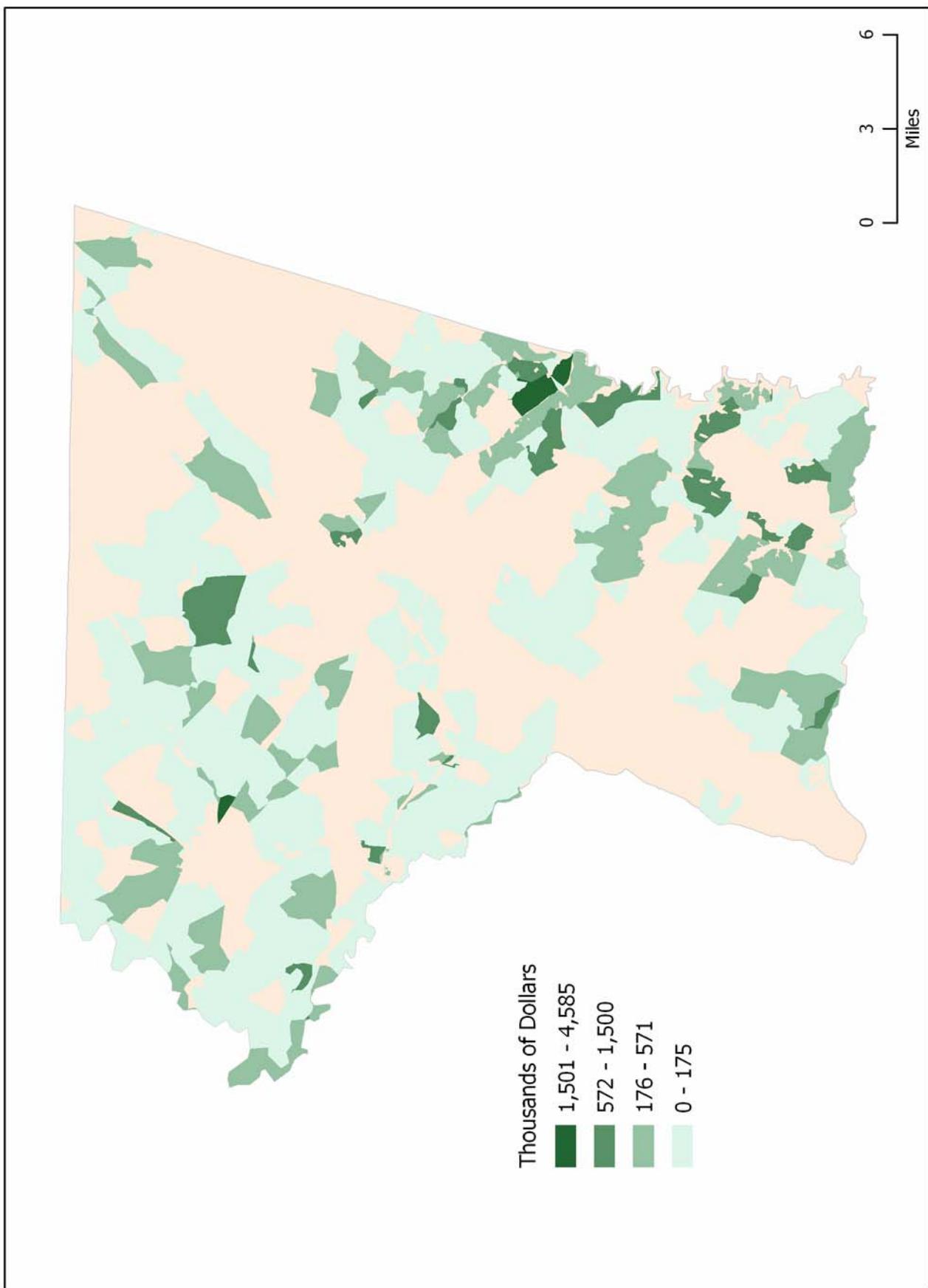
**Map B33.** Predicted amount of building damage in thousands of square feet in Carroll County



**Map B34.** Predicted amount of building damage in numbers of buildings in Carroll County



**Map B35.** Predicted amount of direct economic losses in thousands of dollars in Carroll County



## Cecil County

Cecil County is a county of 85,951 people in northeastern Maryland. The county is 47.6% urban and 52.4% rural. The major municipalities are Cecilton, Charlestown, Chesapeake City, Elkton, North East, Perryville, Port Deposit, and Rising Sun. Cecil County is a combination of rolling hills and flat coastal plain with elevations ranging from a high of 535 ft to a low of 0 ft (Map B36). It should be considered to have a below average exposure to flooding as 2.14% (\$171.2 million) of the state's total building stock flood exposure (\$7.99 billion) is contained within the County (Table 2).

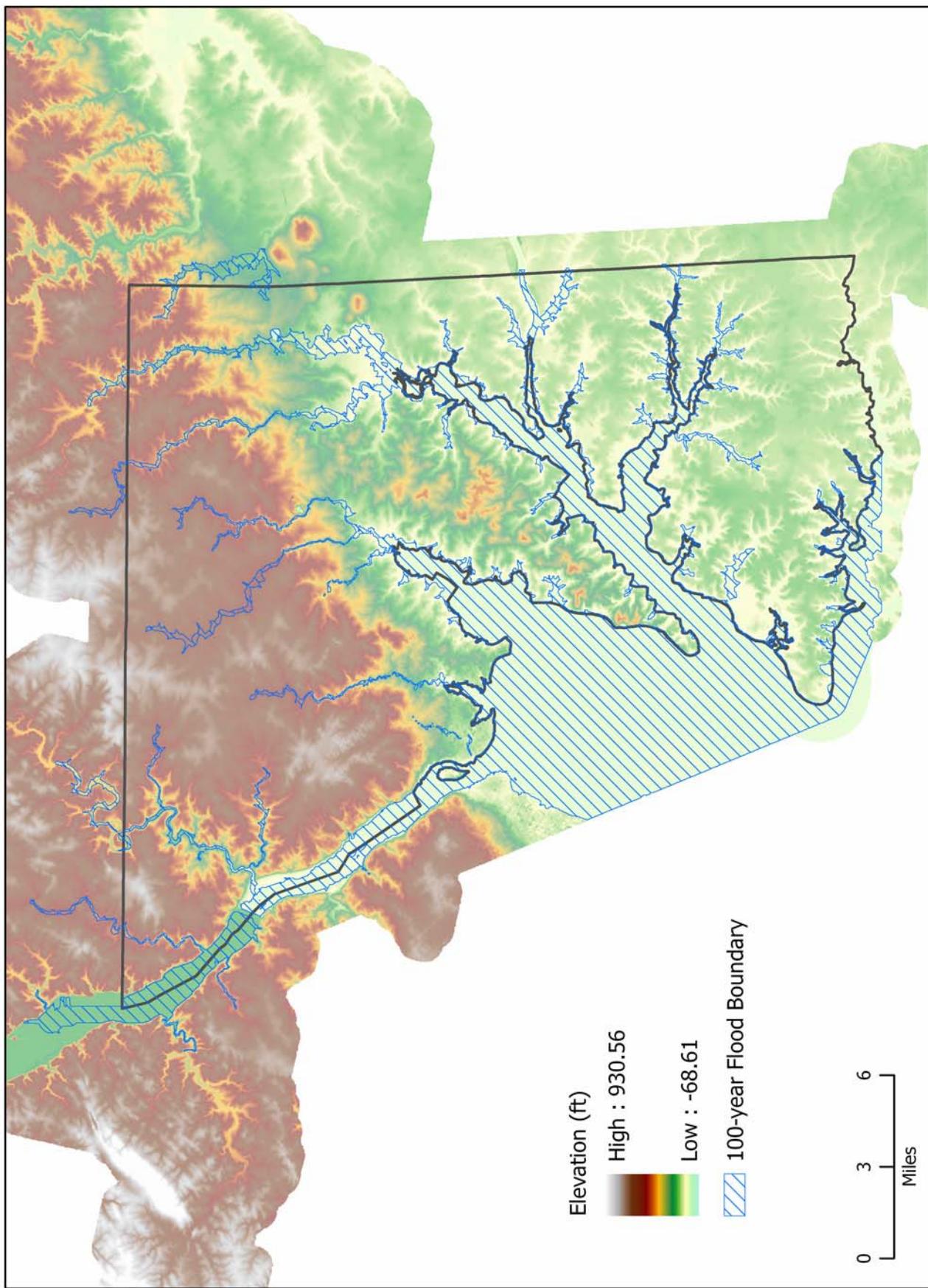
The results of the HAZUS-MH modeling effort report that 25.0 square miles of Cecil County are subject to the 100-year flood, or 7.0% of the county's total land area. The county ranks 12<sup>th</sup> of 24 subdivisions in the percentage of total land area in flood zone. The floodplain is generally constrained to the area along the Chesapeake Bay as well as the river courses, the most significant of which are the Susquehanna River, Principio Creek, the North East River, North East Creek, the Elk River, Big Elk Creek, Little Elk Creek, Back Creek, the Bohemia River, Great Bohemia Creek, Little Bohemia Creek, and the Sassafras River. The depth of the 100-year flood zone has a maximum of 133.2 ft (Map B37).

With regard to the predicted damage estimates from the HAZUS-MH modeling effort, Cecil County is predicted to have 1,691,900 square feet of building damage but only 10,450 square feet (0.7% of the total damaged) of substantially damaged buildings. Cecil County is 17<sup>th</sup> of 24 Maryland subdivisions with regard to the amount of square feet of building damage. From the map, we can see that the heaviest damage occurs in North East and surrounding the North East River, and in Elkton and surrounding the Elk River (Map B38). The rest of the county is predicted to sustain minimal damage.

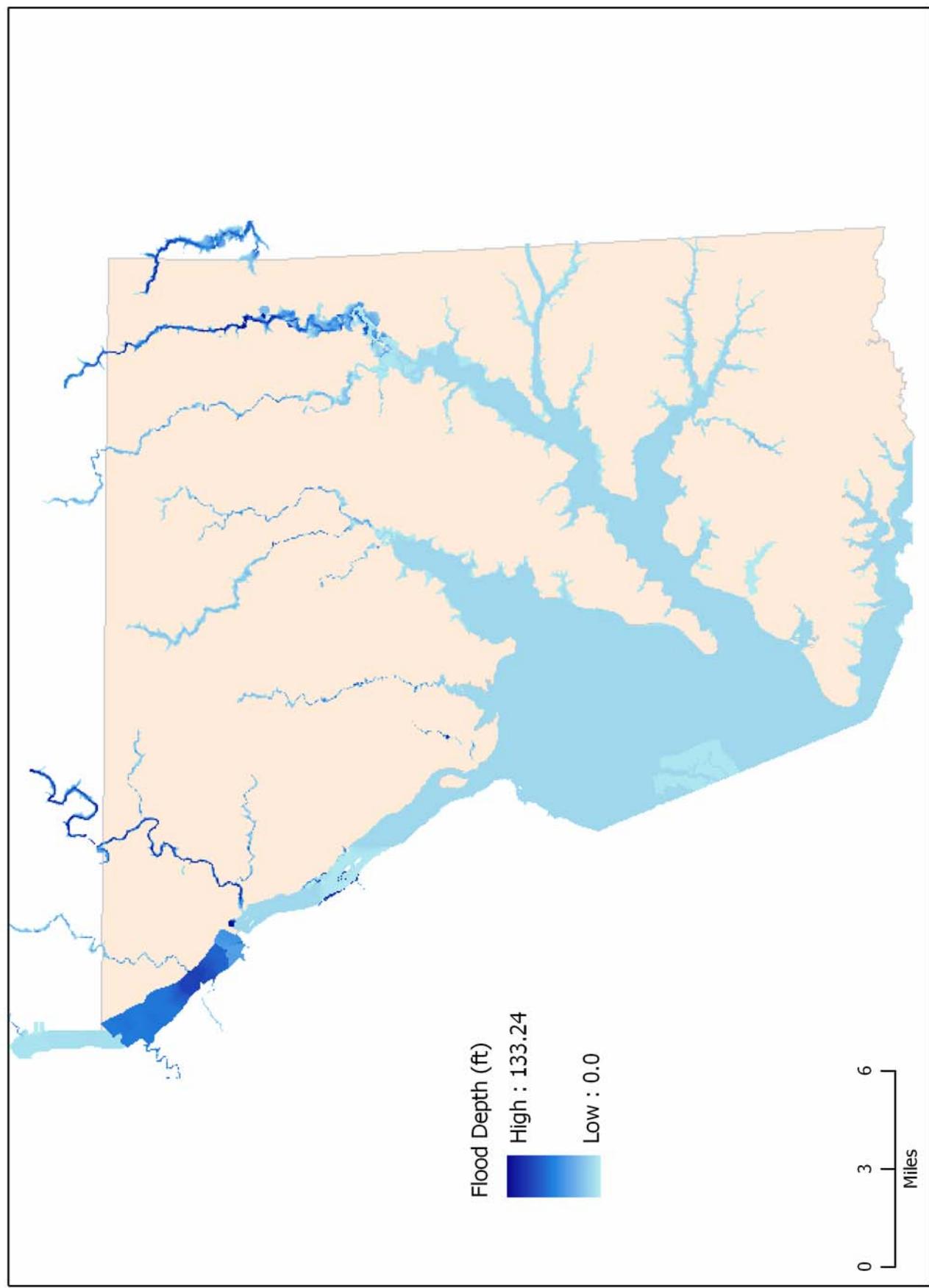
In relation to the potential number of buildings damaged by a 100-year flood predicted by HAZUS-MH, Cecil County has 561 buildings vulnerable to flooding with 4 buildings to be damaged substantially (0.6% of the total number of buildings damaged). This places the county 18<sup>th</sup> of 24 Maryland subdivisions in total number of damaged buildings. This distribution of the count of buildings is similar to the damaged amount of square feet (Map B39). As an exception, more damage appears in Town Point and Hack Point, along the Bohemia River and in Red Point on the Chesapeake Bay.

Finally, the amount of direct economic losses from building damage in Cecil County is predicted by HAZUS-MH to be \$123,120,000. This amount is 1.5% of the total amount of direct economic losses for the state (\$8,121,065,000), which ranks the County 13<sup>th</sup> out of 24. A majority (58.8%) of the losses come from capital stock losses (structural damage, contents damage, and inventory loss) versus income loss (relocation costs, capital costs, wages lost, and rental income lost). The map shows an even more clustered pattern of vulnerability with Elkton, Welch Point, Plum Point, North East, Hance Point, and Port Deposit being highlighted and most of the rest of the affected areas of the county showing minimal losses (Map B40).

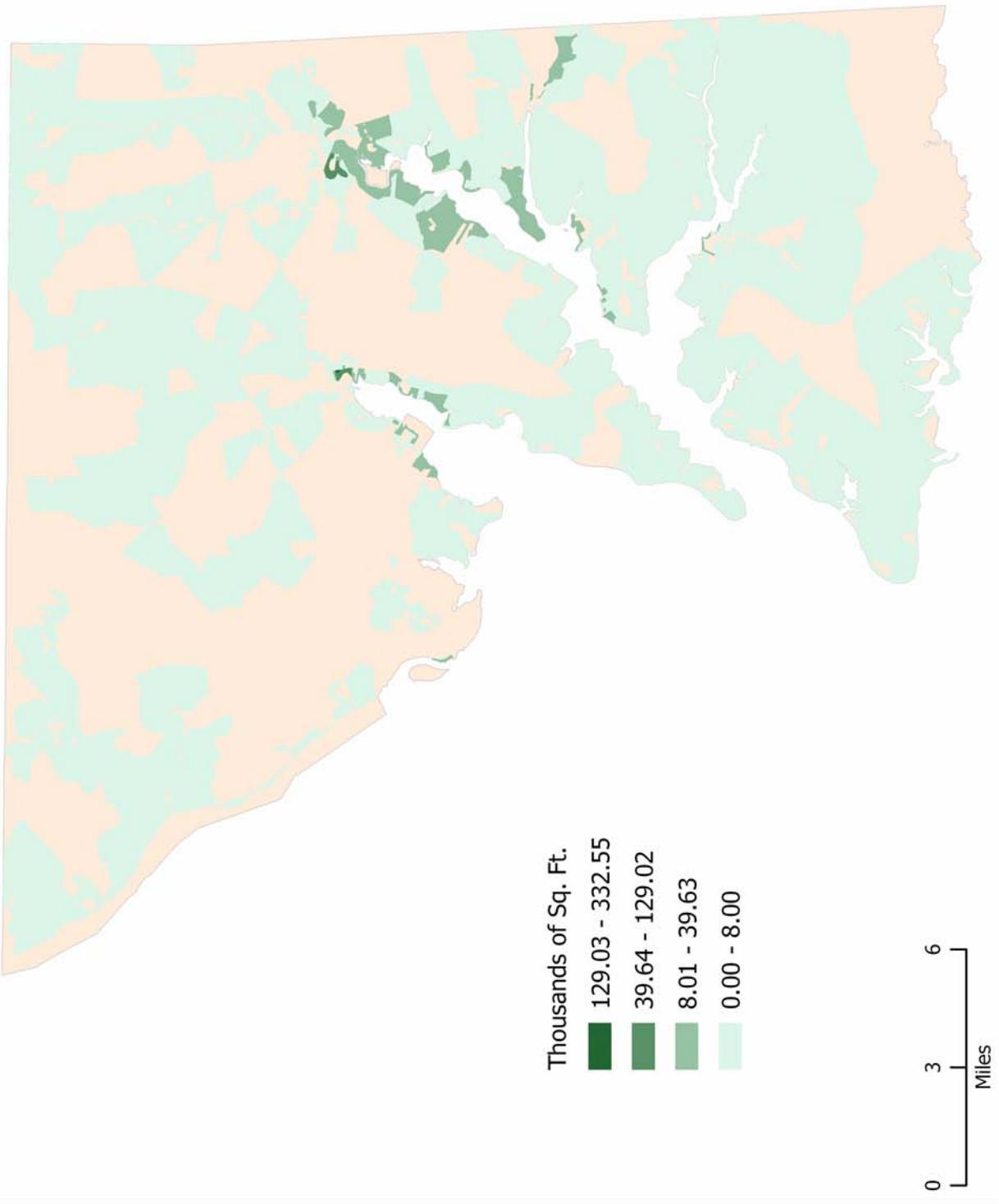
**Map B36.** Topography and modeled 100-year flood boundary in Cecil County



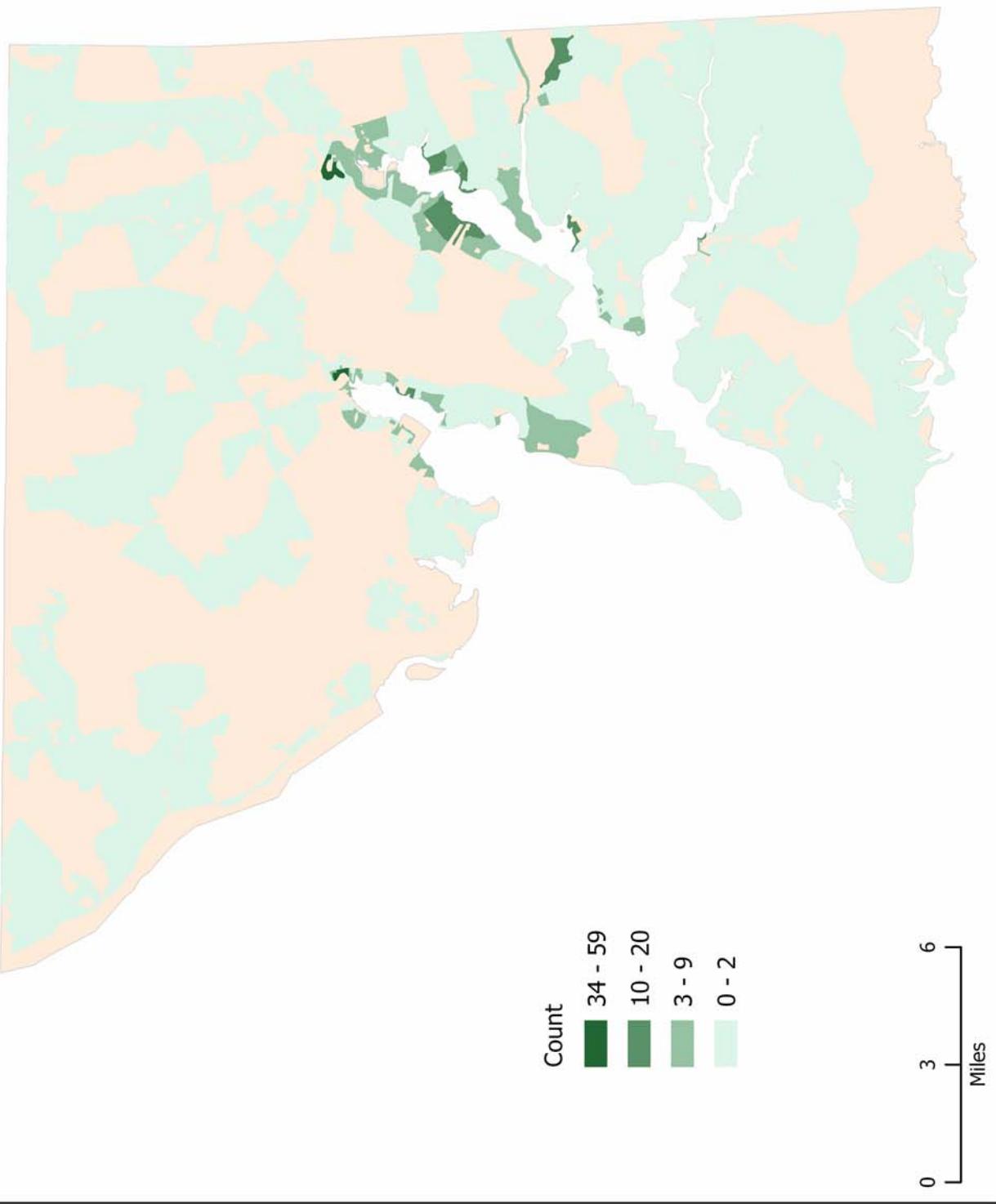
**Map B37.** Modeled 100-year flood depth in Cecil County



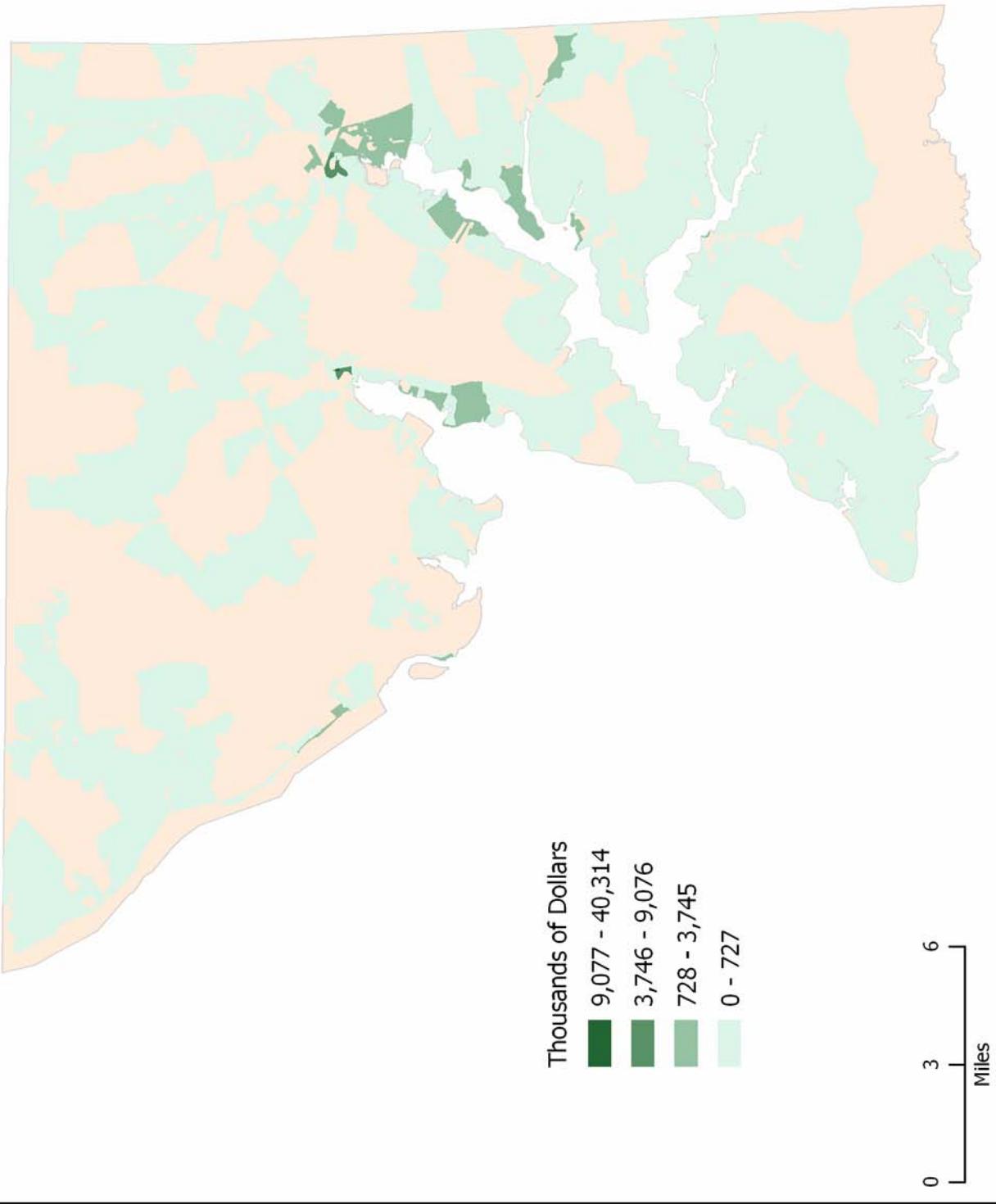
**Map B38.** Predicted amount of building damage in thousands of square feet in Cecil County



**Map B39.** Predicted amount of building damage in numbers of buildings in Cecil County



**Map B40.** Predicted amount of direct economic losses in thousands of dollars in Cecil County



## **Charles County**

Charles County is a county of 120,546 people in Southern Maryland. The county is 66.3% urban and 33.6% rural. The municipalities are Indian Head, La Plata, and Port Tobacco. Charles County is a combination of rolling hills and flat coastal plain with elevations ranging from a high of 235 ft to a low of 0 ft (Map B41). It should be considered to have relatively low exposure to flooding as only 0.96% (\$76.6 million) of the state's total building stock flood exposure (\$7.99 billion) is contained within the County (Table 2).

The results of the HAZUS-MH modeling effort report that 36.6 square miles of Charles County are subject to the 100-year flood, or 7.9% of the county's total land area. The county ranks 10<sup>th</sup> of 24 subdivisions in the percentage of total land area in flood zone. The floodplain is generally constrained to the river courses, the most significant of which are the Potomac River, Mattawoman Creek, Nanjemoy Creek, Port Tobacco River, the Wicomico River, Zekiah Swamp Run and Gilbert Swamp Run. The depth of the 100-year flood zone has a maximum of 30.

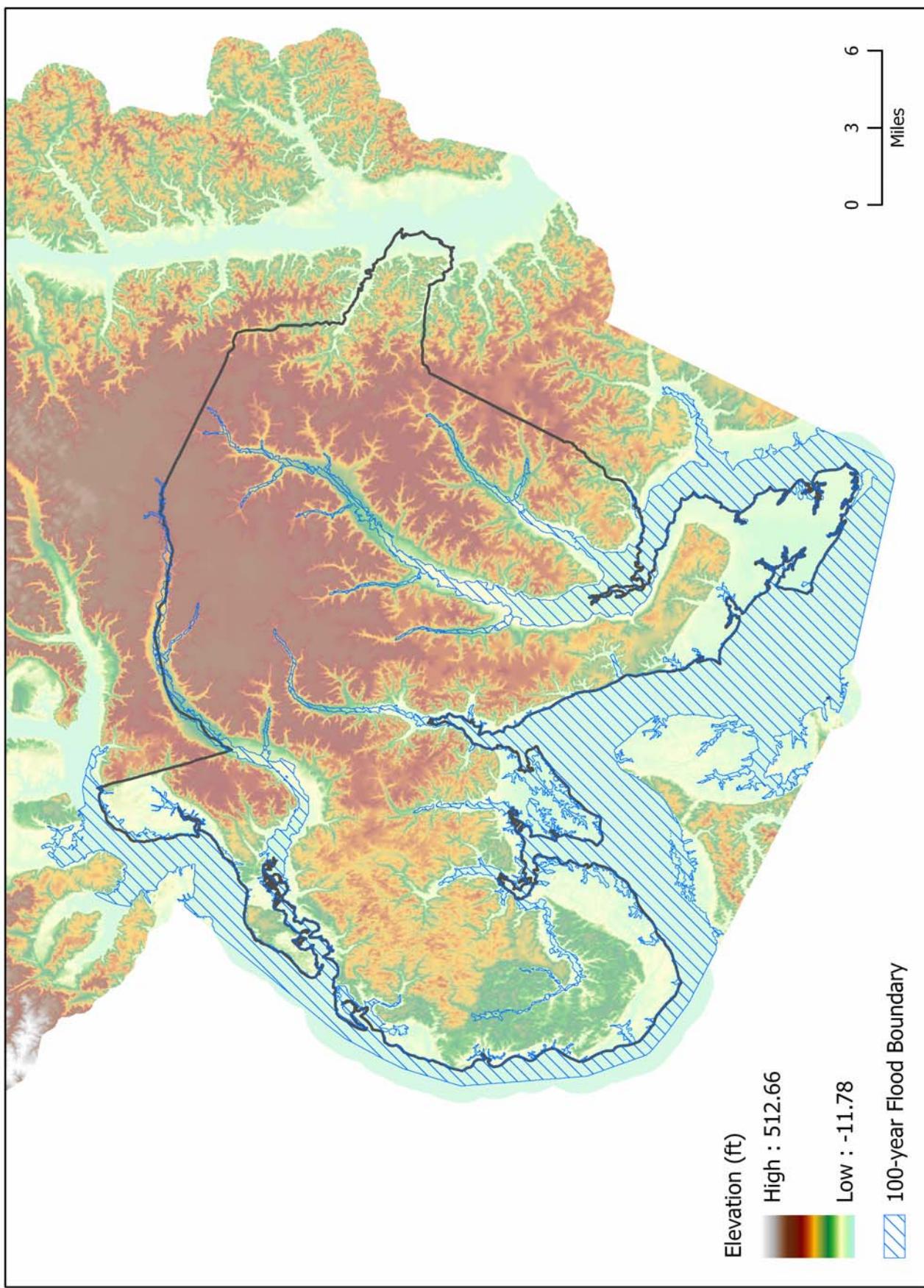
7 ft (Map B42).

With regard to the predicted damage estimates from the HAZUS-MH modeling effort, Charles County is predicted to have 1,153,110 square feet of building damage but only 32,200 square feet (2.8% of the total damaged) of substantially damaged buildings. Charles County is 20<sup>th</sup> of 24 Maryland subdivisions with regard to the amount of square feet of building damage. From the map, we can see that the heaviest damage occurs on Cornwalls Neck, south of Marshall Hall, areas near Bennsville, the outskirts of Waldorf, and Cobb Island (Map B43). The rest of the county is predicted to sustain minimal damage.

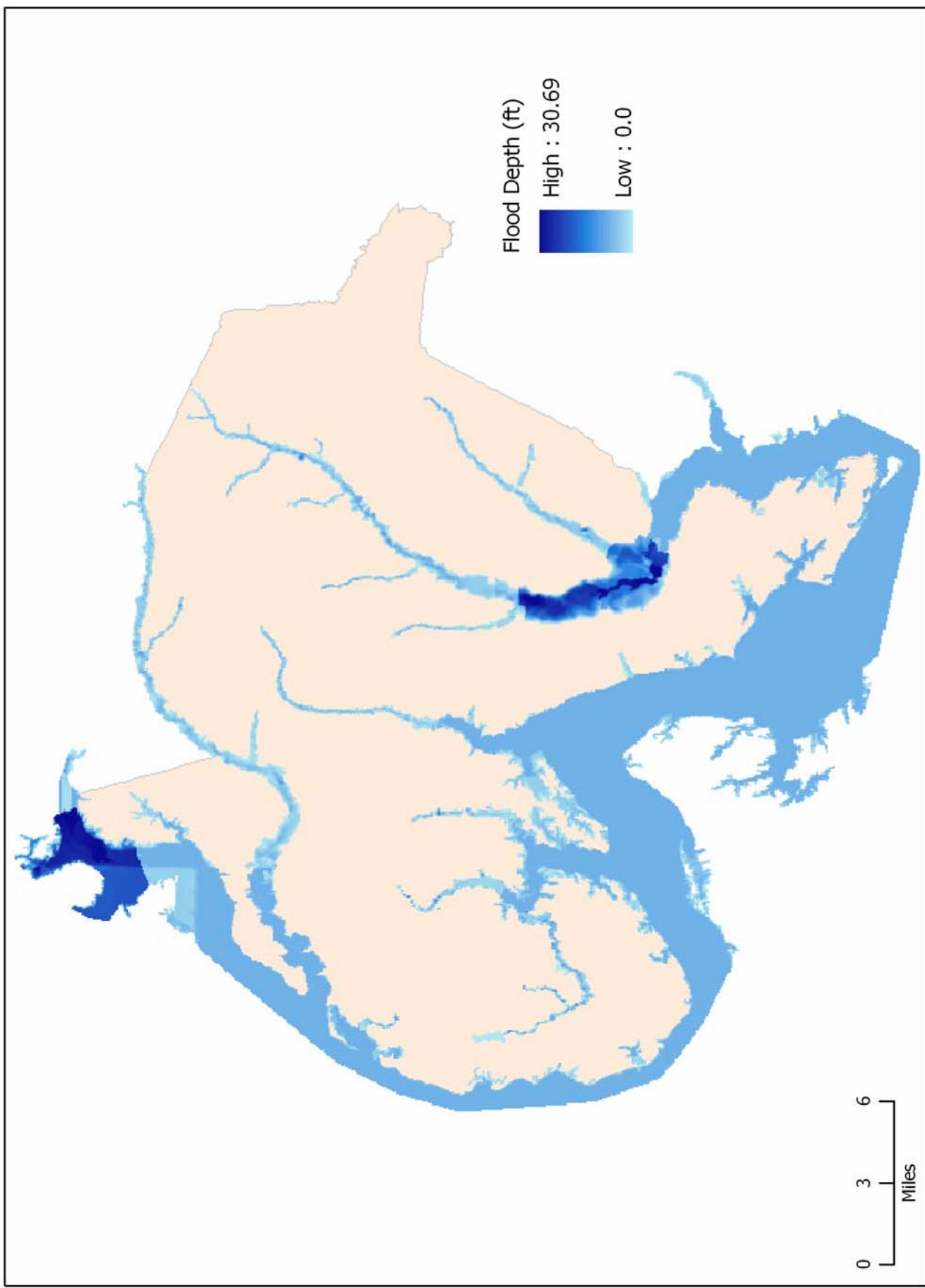
In relation to the potential number of buildings damaged by a 100-year flood predicted by HAZUS-MH, Charles County has 533 buildings vulnerable to flooding with 17 buildings to be damaged substantially (3.2% of the total number of buildings damaged). This places the county 19<sup>th</sup> of 24 Maryland subdivisions in total number of damaged buildings. This distribution of the count of buildings is similar to the damaged amount of square feet (Map B44). As an exception, more damage appears near Wicomico, Newtown, Bryantown, and Bryans Road.

Finally, the amount of direct economic losses from building damage in Charles County is predicted by HAZUS-MH to be \$70,087,000. This amount is 0.9% of the total amount of direct economic losses for the state (\$8,121,065,000), which ranks the County 20<sup>th</sup> out of 24. A majority (78.3%) of the losses come from capital stock losses (structural damage, contents damage, and inventory loss) versus income loss (relocation costs, capital costs, wages lost, and rental income lost). The map shows a pattern of direct economic losses from buildings similar to other measures (see above) with areas east of La Plata and north of Bowlings Alley (along Zekiah Swamp Run showing more potential losses (Map B45).

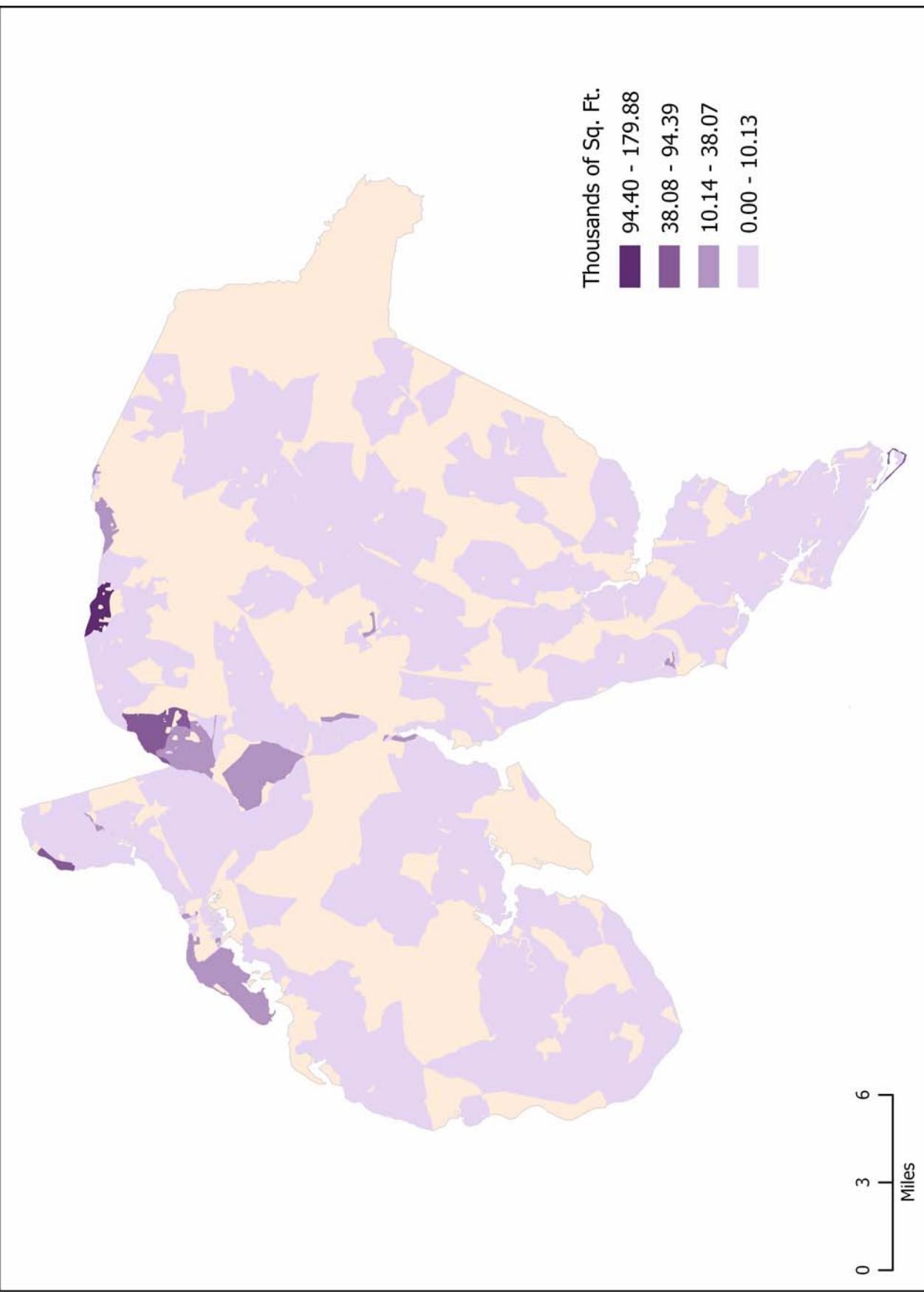
**Map B41.** Topography and modeled 100-year flood boundary in Charles County



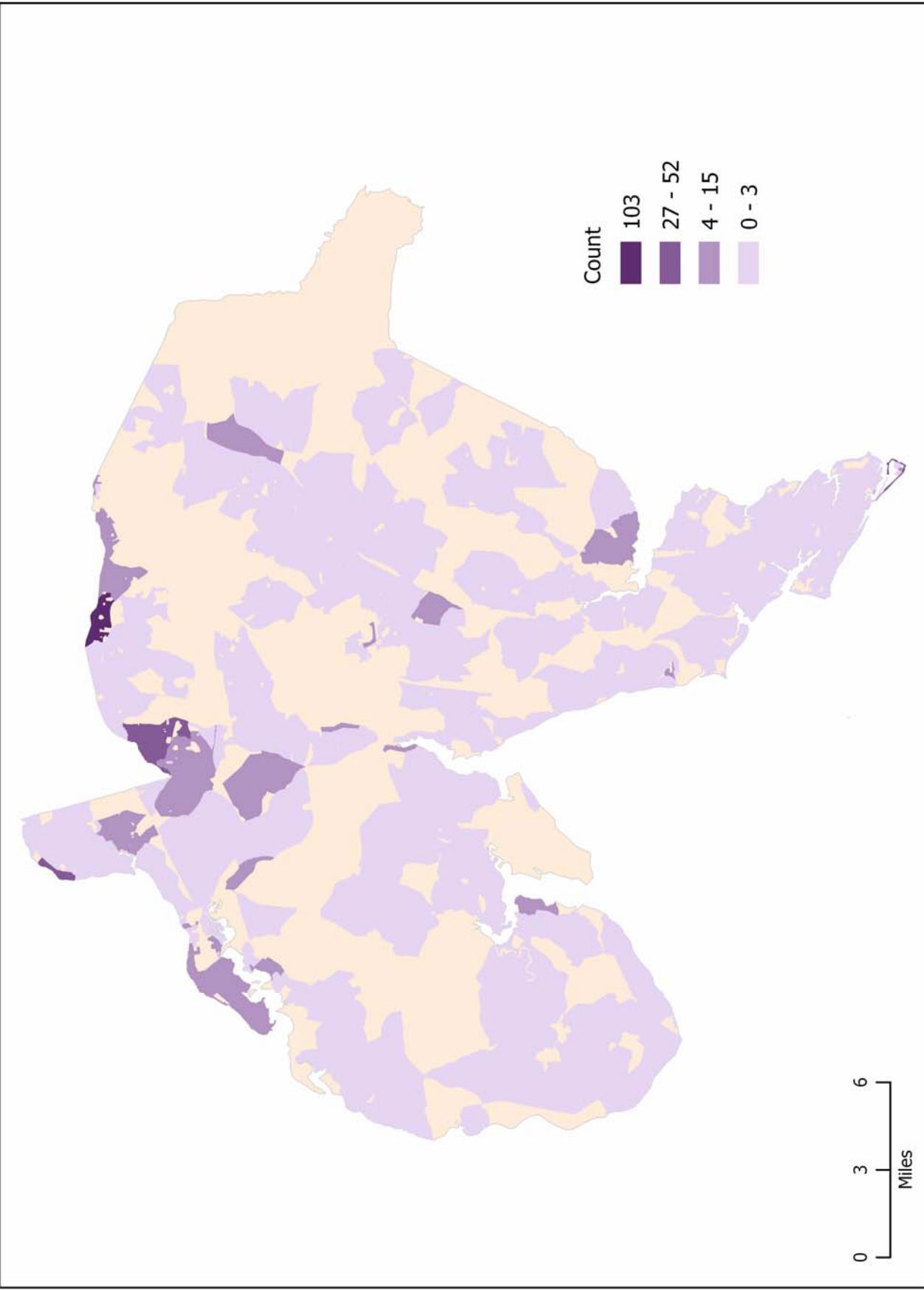
**Map B42.** Modeled 100-year flood depth in Charles County



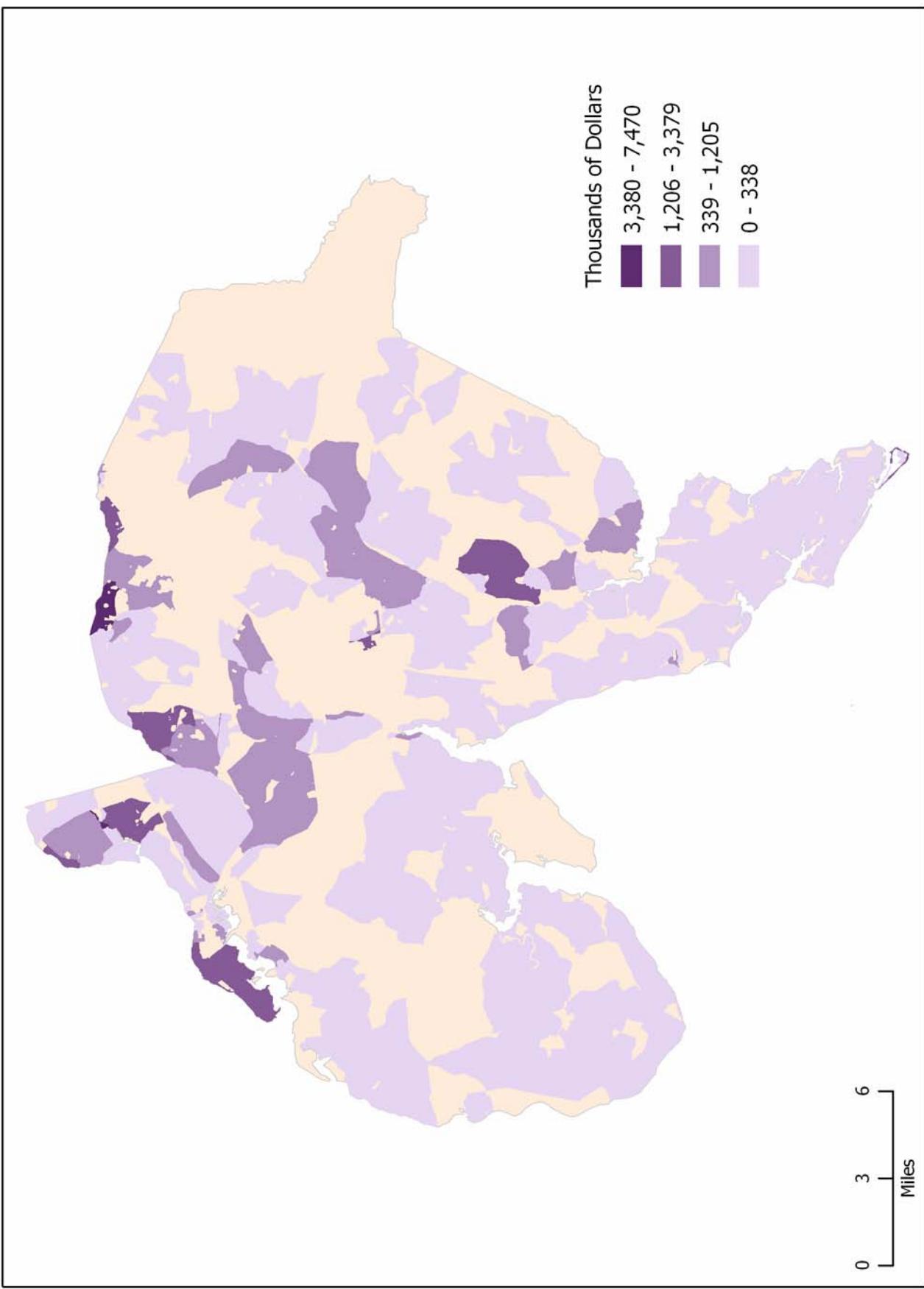
**Map B43.** Predicted amount of building damage in thousands of square feet in Charles County



**Map B44.** Predicted amount of building damage in numbers of buildings in Charles County



**Map B45.** Predicted amount of direct economic losses in thousands of dollars in Charles County



## Dorchester County

Dorchester County is a county of 30,674 people on the Eastern Shore of Maryland. The county is 40.9% urban and 59.1% rural. The municipalities are Brookview, Cambridge, Church Creek, East New Market, Eldorado, Galestown, Hurlock, Secretary, and Vienna. Dorchester County is a flat coastal plain county with elevations ranging from a high of 57 ft to a low of 0 ft (Map B46). It should be considered to have a below average exposure to flooding as 2.98% (\$237.9 million) of the state's total building stock flood exposure (\$7.99 billion) is contained within the County (Table 2).

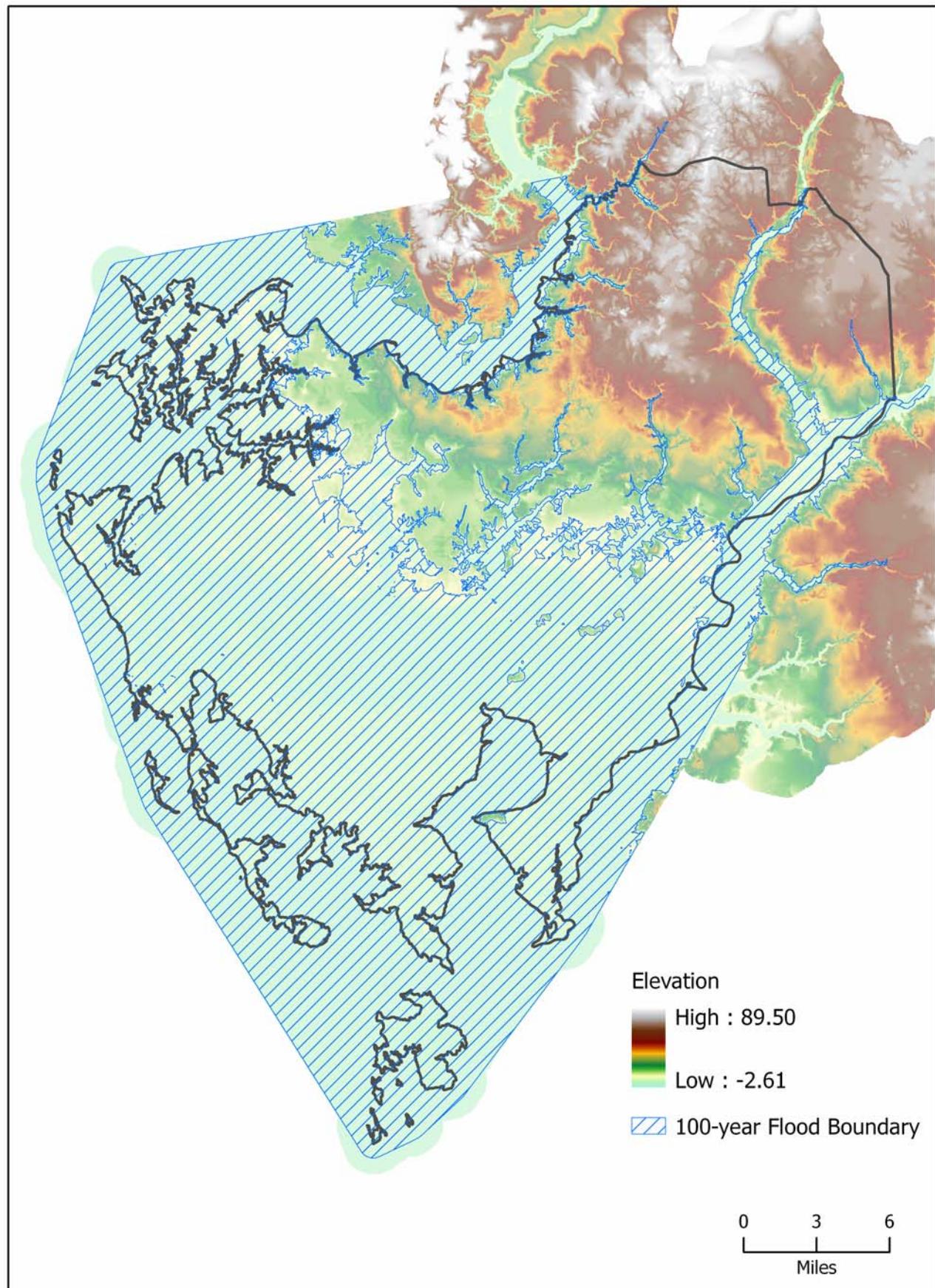
The results of the HAZUS-MH modeling effort report that 353.1 square miles of Dorchester County are subject to the 100-year flood, or 61.0% of the county's total land area. The county ranks 1<sup>st</sup> of 24 subdivisions in the percentage of total land area in flood zone. The floodplain consumes the majority of the county's land surface and is generally found in the area along the Chesapeake Bay as well as the river courses, the most significant of which are the Choptank River, the Honga River, Little Blackwater River, Transquaking River, Chicamicomico River, the Nanticoke River, and Marshyhope Creek. The depth of the 100-year flood zone has a maximum of 10.4 ft (Map B47).

With regard to the predicted damage estimates from the HAZUS-MH modeling effort, Dorchester County is predicted to have 2,708,080 square feet of building damage with 774,140 square feet (28.6% of the total damaged) of substantially damaged buildings. Dorchester County is 11<sup>th</sup> of 24 Maryland subdivisions with regard to the amount of square feet of building damage. From the map, we can see that the heaviest damage occurs in the southern portion of the county, on the necks around Hudson, Hooper's Island, Taylor's Island, Crapo, Bishop's Head, Drawbridge, and the edge of the Choptank around Secretary (Map B48). The northern portion of the county is predicted to sustain minimal damage.

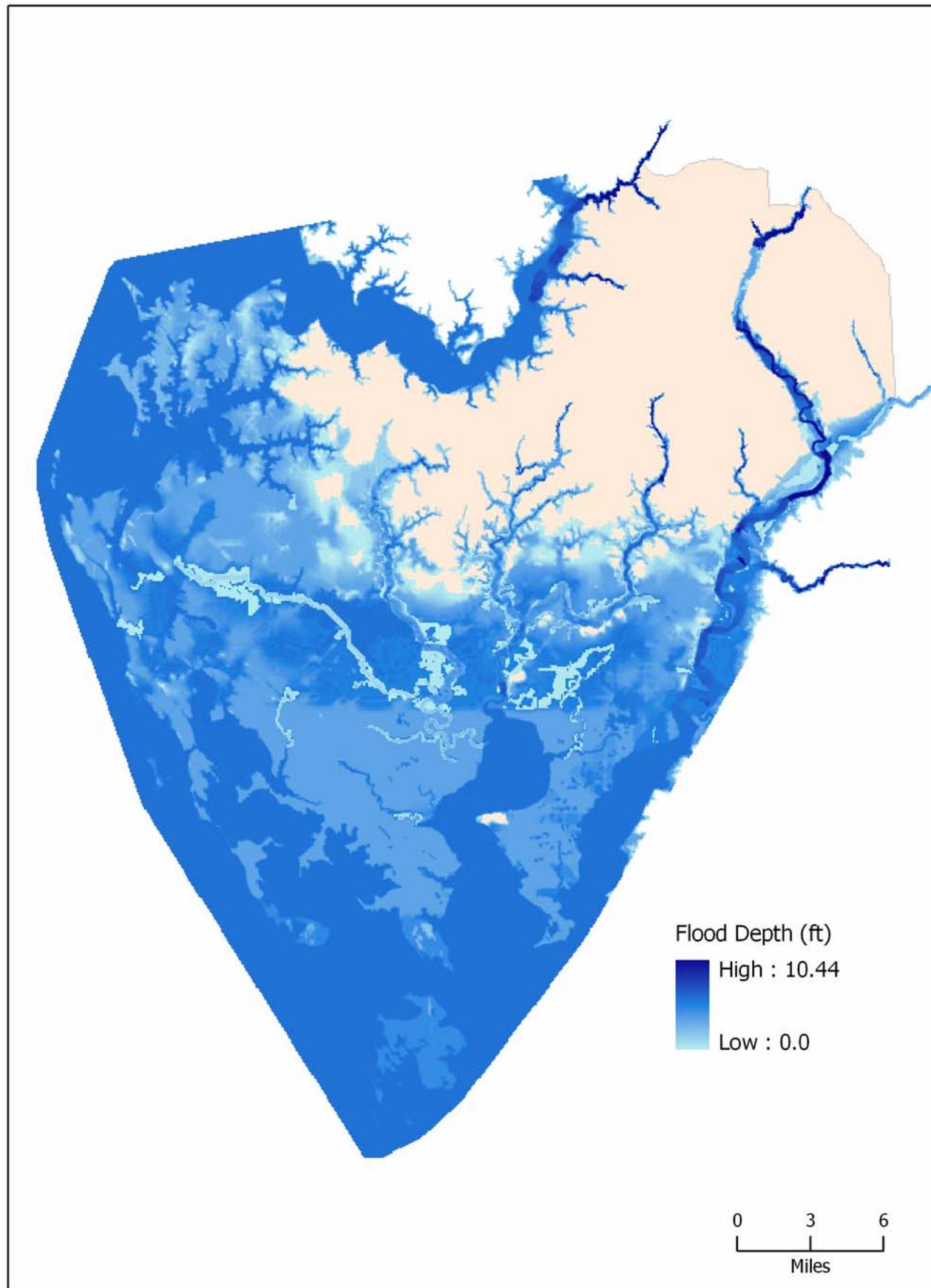
In relation to the potential number of buildings damaged by a 100-year flood predicted by HAZUS-MH, Dorchester County has 1,247 buildings vulnerable to flooding with 424 buildings to be damaged substantially (34.0% of the total number of buildings damaged). This places the county 12<sup>th</sup> of 24 Maryland subdivisions in total number of damaged buildings. This distribution of the count of buildings is similar to the damaged amount of square feet except that it is more concentrated in the portions of the county near the Chesapeake Bay (Map B49).

Finally, the amount of direct economic losses from building damage in Dorchester County is predicted by HAZUS-MH to be \$77,384,000. This amount is 1.0% of the total amount of direct economic losses for the state (\$8,121,065,000), which ranks the County 17<sup>th</sup> out of 24. A majority (80.9%) of the losses come from capital stock losses (structural damage, contents damage, and inventory loss) versus income loss (relocation costs, capital costs, wages lost, and rental income lost). The map of direct economic losses from buildings (Map B50) shows a similar pattern to the amount of square feet in potential damage (Map B48).

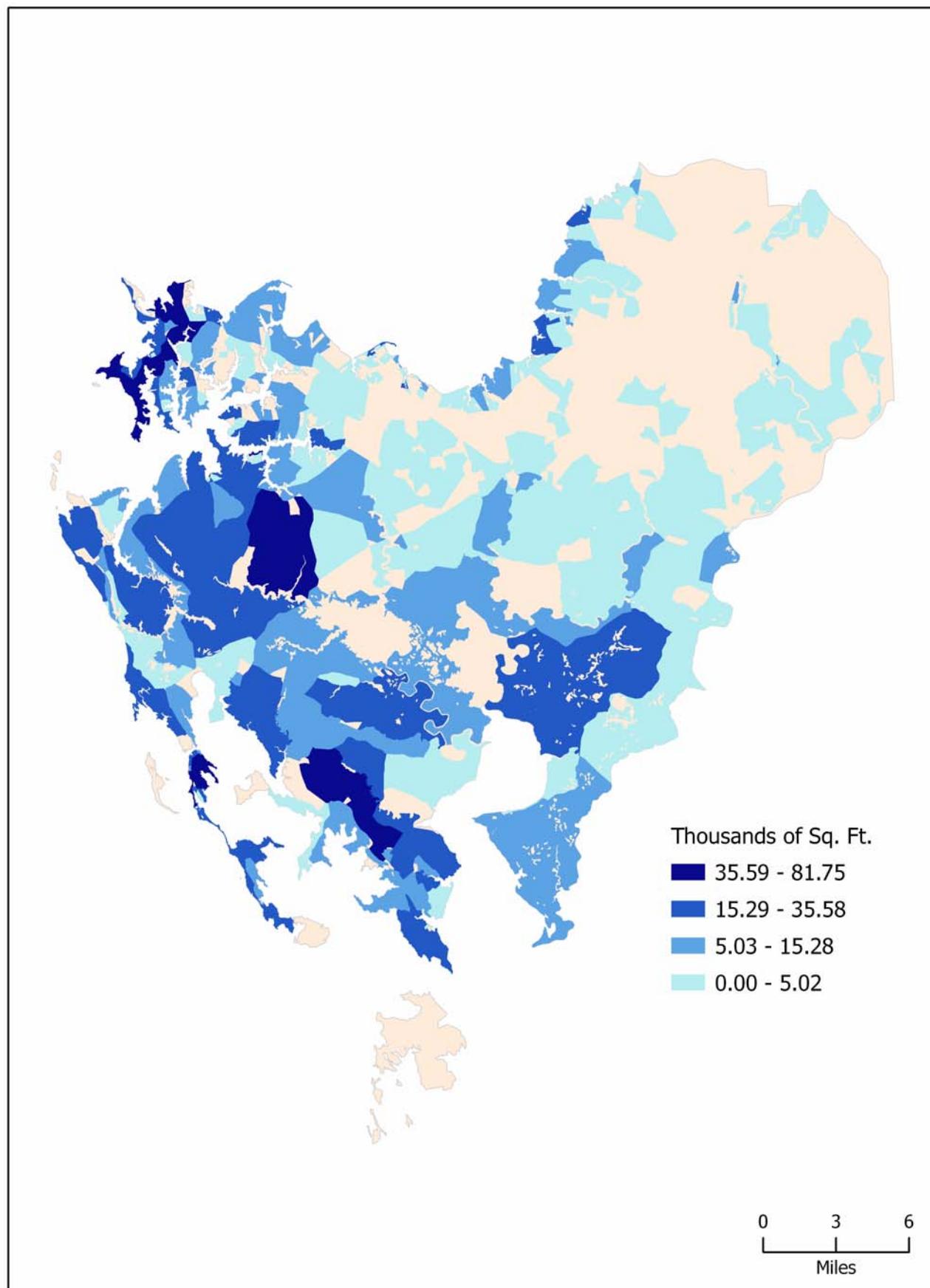
**Map B46.** Topography and modeled 100-year flood boundary in Dorchester County



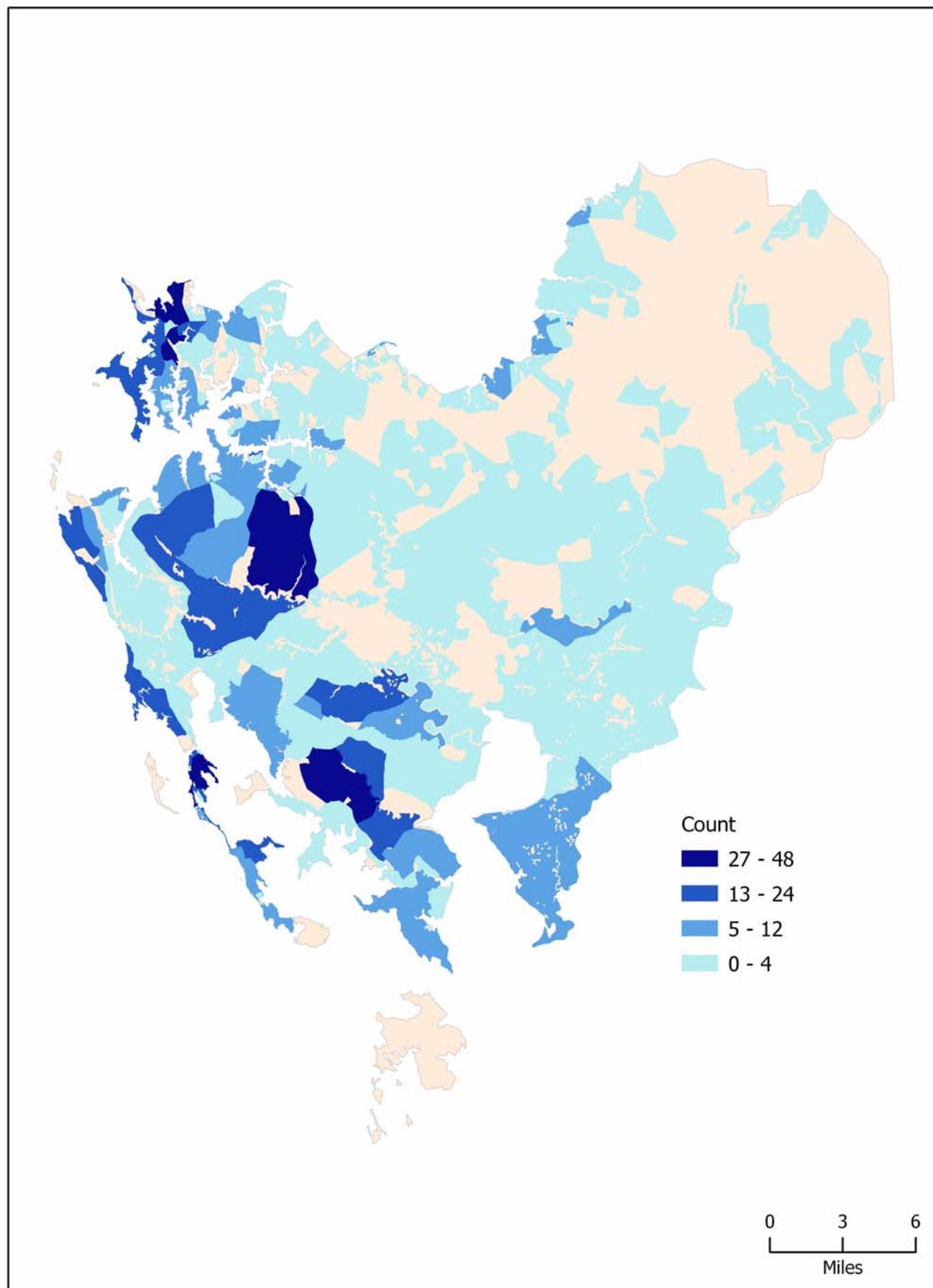
**Map B47.** Modeled 100-year flood depth in Dorchester County



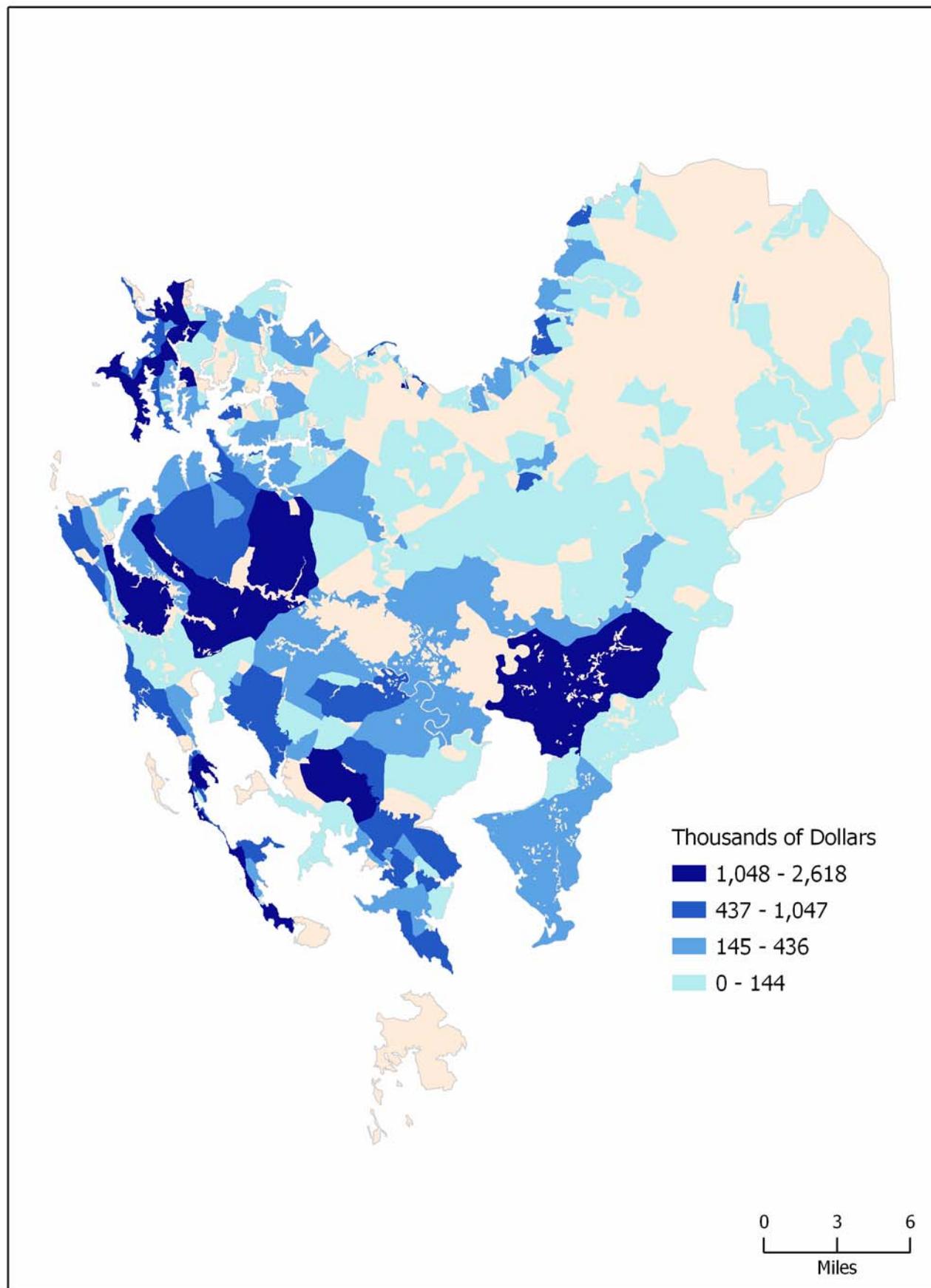
**Map B48.** Predicted amount of building damage in thousands of square feet in Dorchester County



**Map B49.** Predicted amount of building damage in numbers of buildings in Dorchester County



**Map B50.** Predicted amount of direct economic losses in thousands of dollars in Dorchester County



## **Frederick County**

Frederick County is a county of 195,277 people in west central Maryland. The county is 71.4% urban and 28.6% rural. The major municipalities are Brunswick, Burkittsville, Emmitsburg, Frederick, Middletown, Mount Airy, Myersville, New Market, Rosemont, Thurmont, Walkersville, and Woodsboro. Frederick County's topography ranges from rugged to rolling hills with elevations ranging from a high of 1,895 ft to a low of 200 ft (Map B51). It should be considered to have an above average exposure to flooding as 4.58% (\$366.3 million) of the state's total building stock flood exposure (\$7.99 billion) is contained within the County (Table 2).

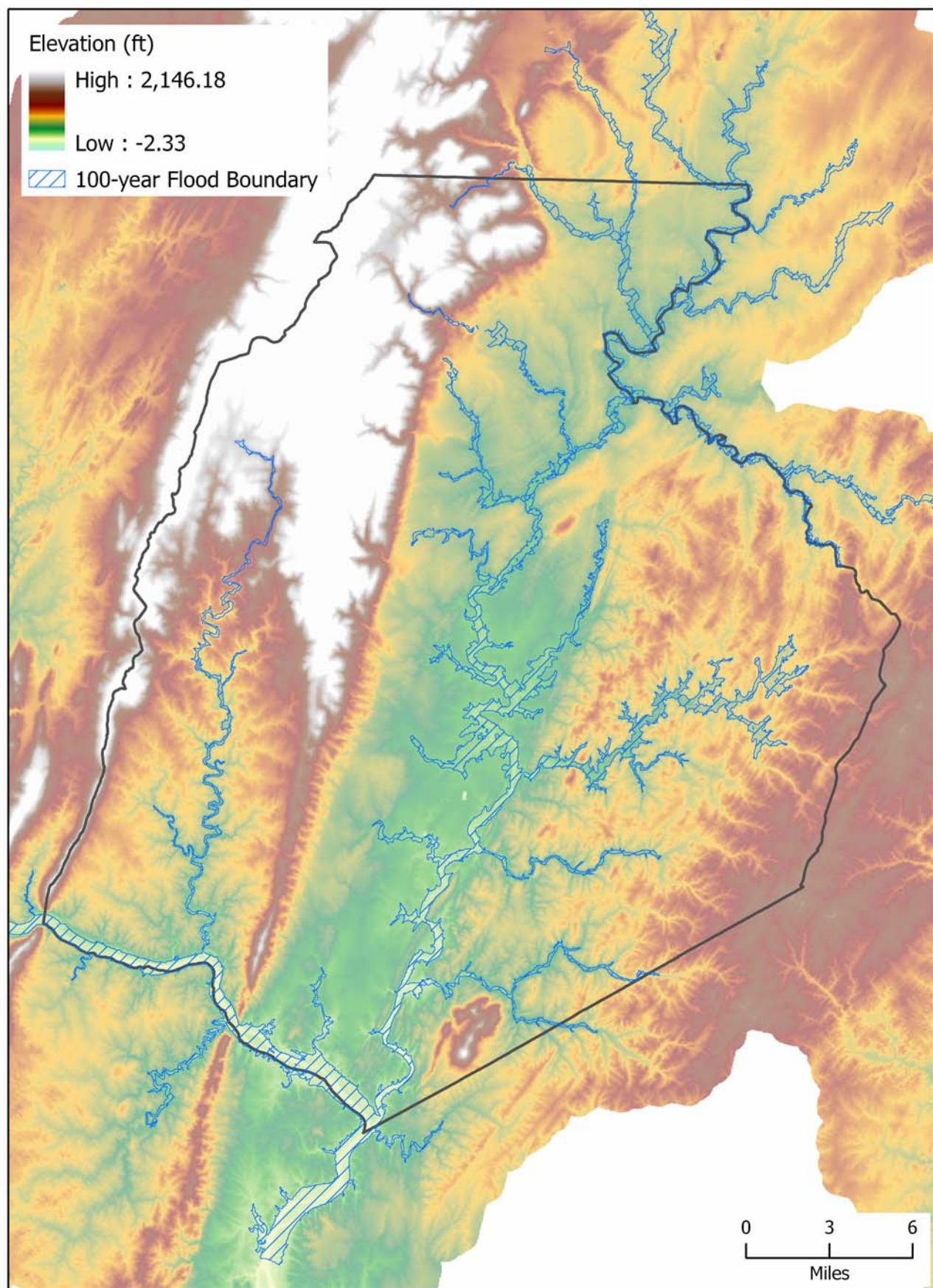
The results of the HAZUS-MH modeling effort report that 41.0 square miles of Frederick County are subject to the 100-year flood, or 6.1% of the county's total land area. The county ranks 19<sup>th</sup> of 24 subdivisions in the percentage of total land area in flood zone. The floodplain is generally constrained to the river courses, the most significant of which are the Potomac River, Catoctin Creek, Monocacy River, Linganore Creek, Israel Creek, and Toms Creek. The depth of the 100-year flood zone has a maximum of 124.3 ft (Map B52).

With regard to the predicted damage estimates from the HAZUS-MH modeling effort, Frederick County is predicted to have 4,295,870 square feet of building damage with 218,610 square feet (5.1% of the total damaged) of substantially damaged buildings. Frederick County is 9<sup>th</sup> of 24 Maryland subdivisions with regard to the amount of square feet of building damage. From the map, we can see that the heaviest damage occurs in and to the east of Frederick, Fort Detrick, and near Buckeystown, all on or near the Monocacy River (Map B53). The rest of the county is predicted to sustain minimal damage.

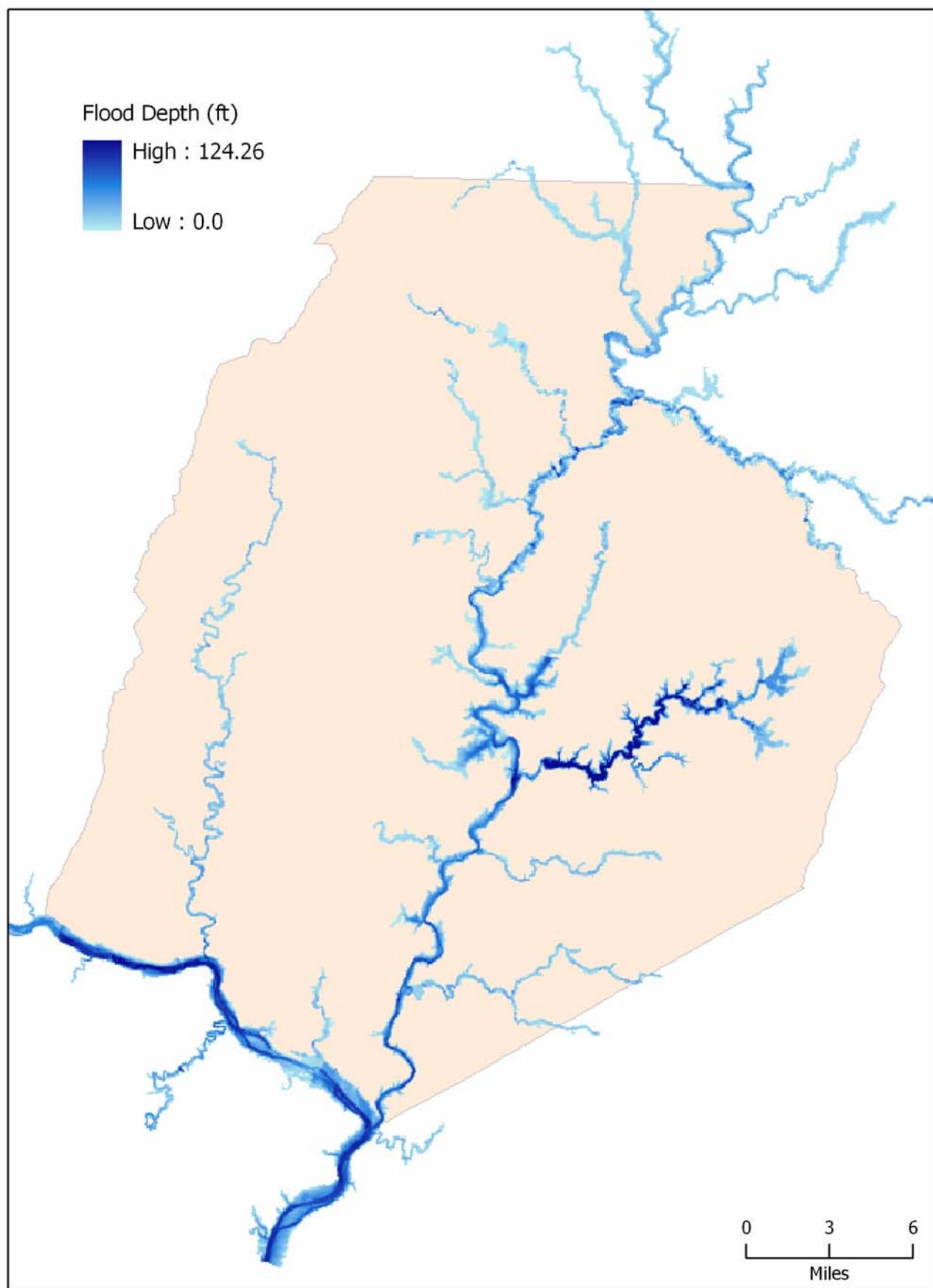
In relation to the potential number of buildings damaged by a 100-year flood predicted by HAZUS-MH, Frederick County has 2,191 buildings vulnerable to flooding with 106 buildings to be damaged substantially (3.8% of the total number of buildings damaged). This places the county 8<sup>th</sup> of 24 Maryland subdivisions in total number of damaged buildings. The distribution of the count of buildings is similar to the damaged amount of square feet (Map B54). As an exception, more damage appears in Libertytown and north of Frederick.

Finally, the amount of direct economic losses from building damage in Frederick County is predicted by HAZUS-MH to be \$447,004,000. This amount is 5.5% of the total amount of direct economic losses for the state (\$8,121,065,000), which ranks the County 9<sup>th</sup> out of 24. A majority (74.3%) of the losses come from capital stock losses (structural damage, contents damage, and inventory loss) versus income loss (relocation costs, capital costs, wages lost, and rental income lost). The map shows a similar pattern of direct economic losses from buildings as the other measures (see above) with the central portion of the county seeing the most potential losses (Map B55).

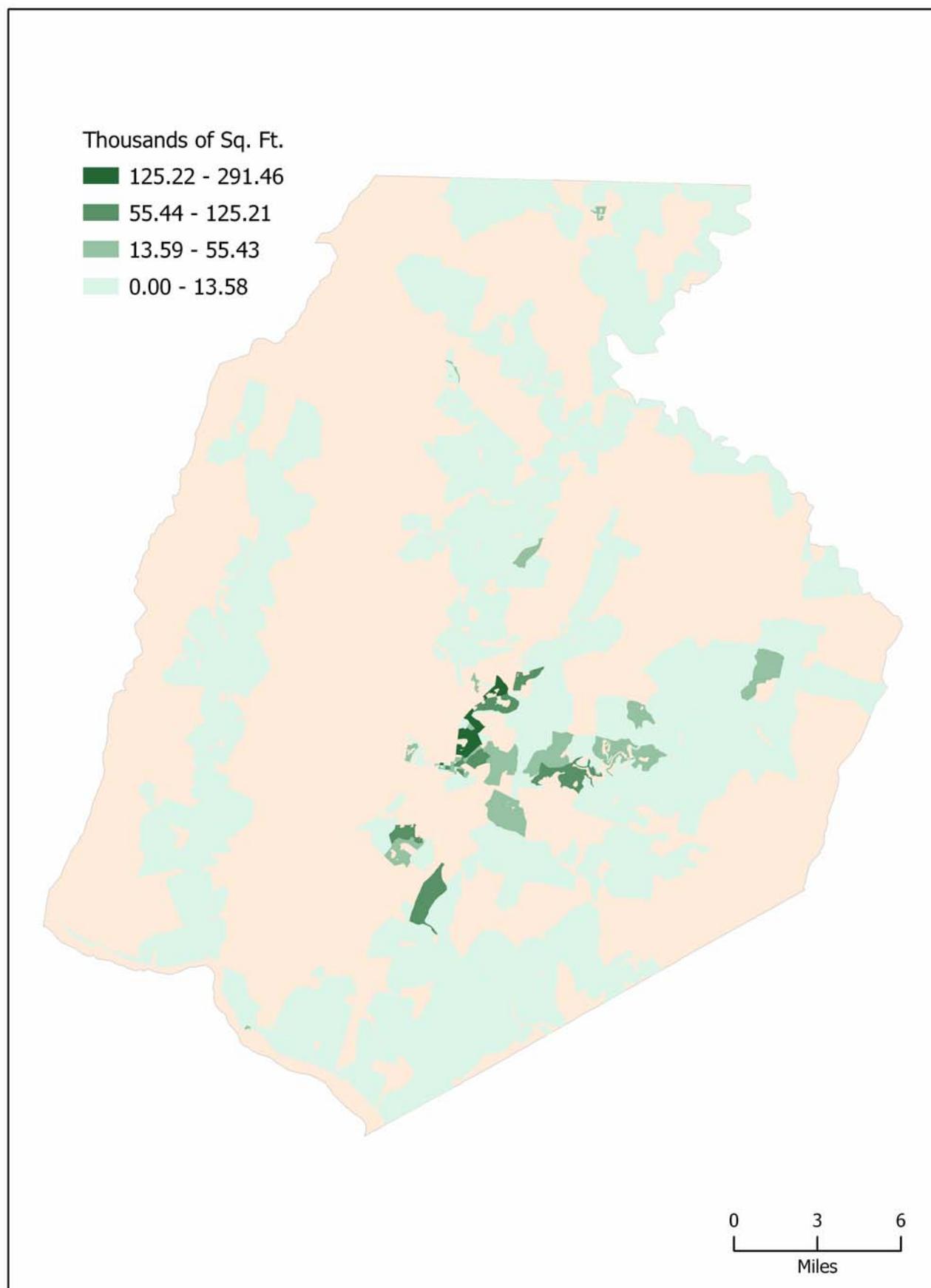
**Map B51.** Topography and modeled 100-year flood boundary in Frederick County



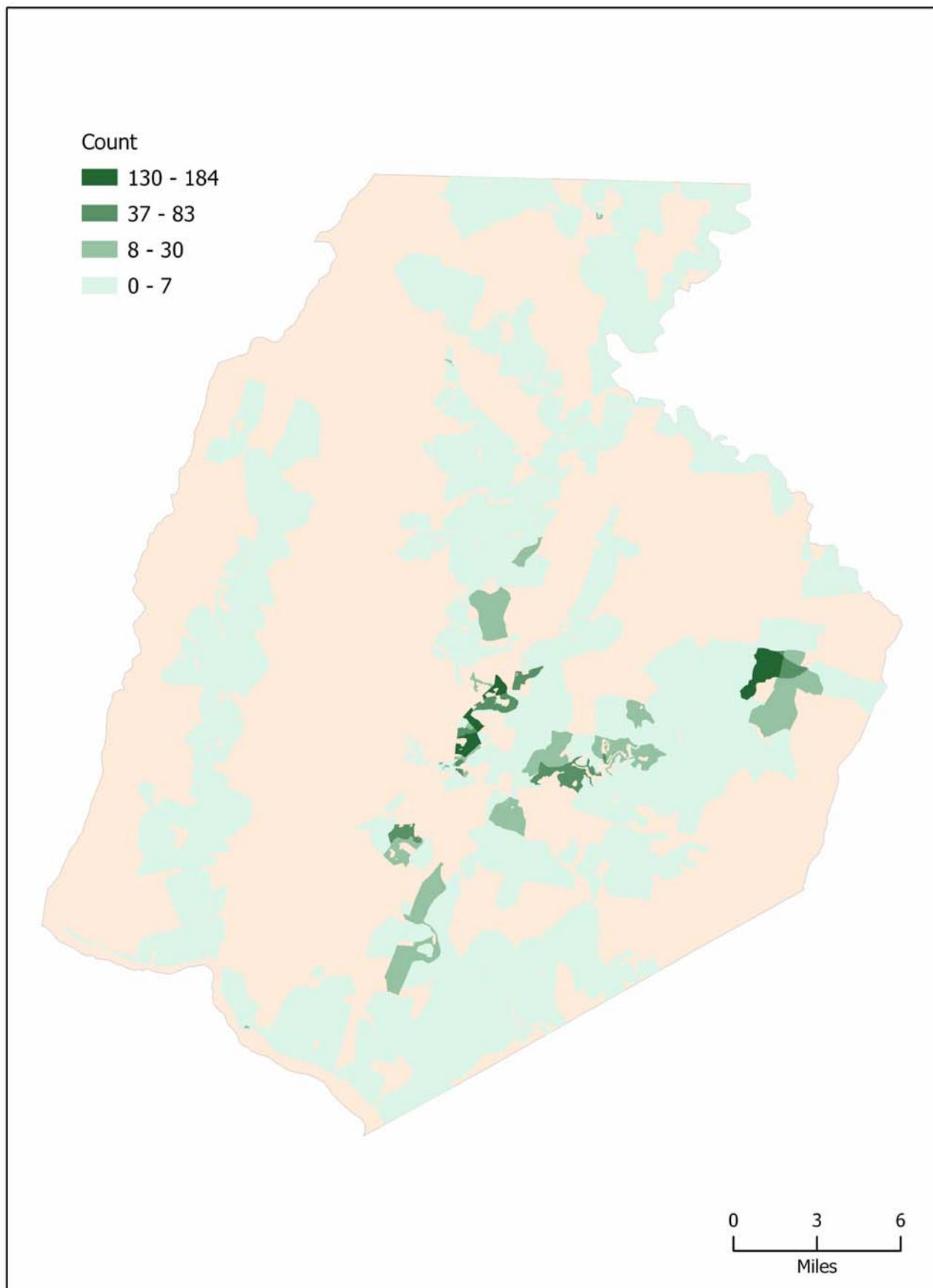
**Map B52.** Modeled 100-year flood depth in Frederick County



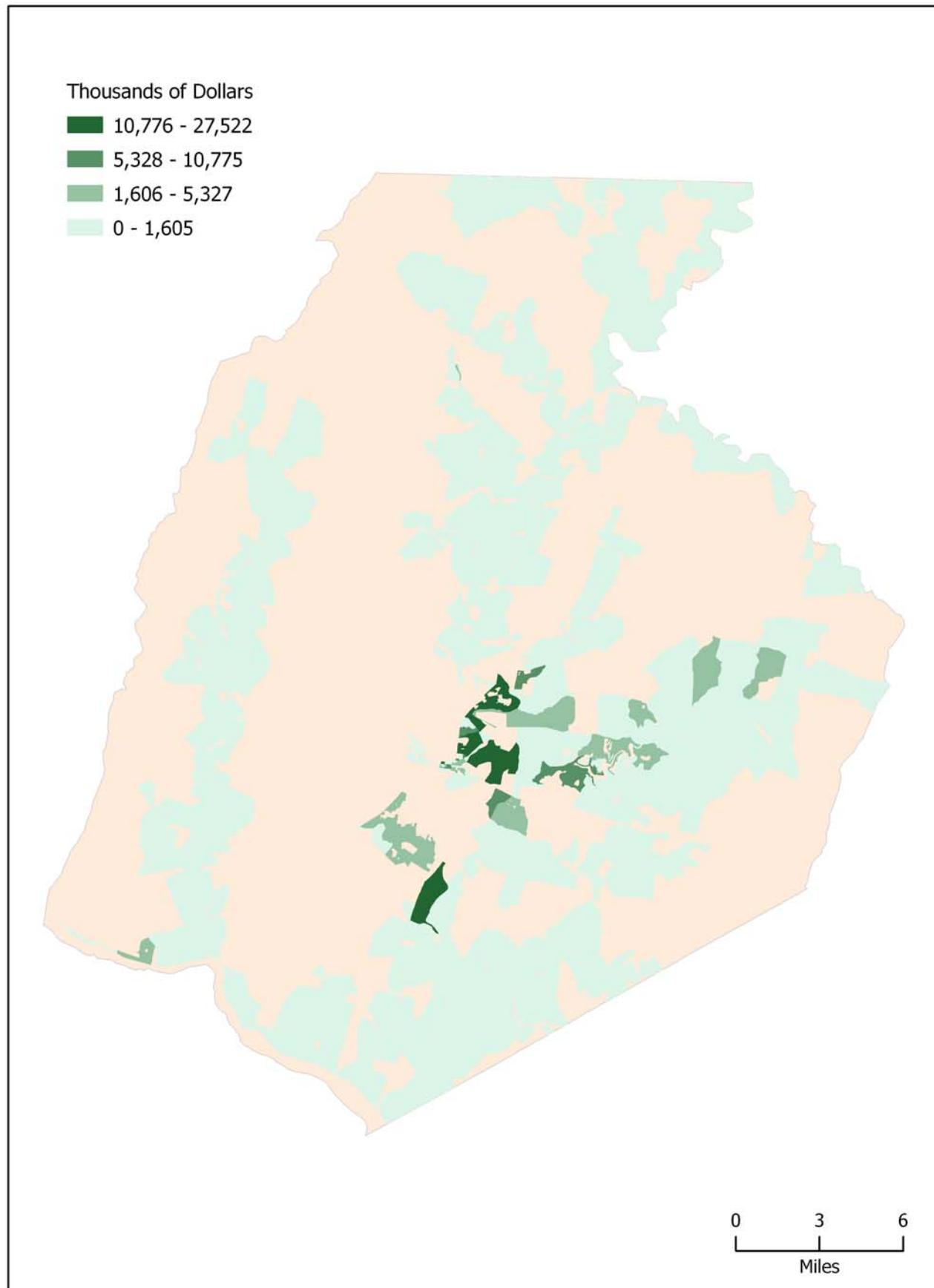
**Map B53.** Predicted amount of building damage in thousands of square feet in Frederick County



**Map B54.** Predicted amount of building damage in numbers of buildings in Frederick County



**Map B55.** Predicted amount of direct economic losses in thousands of dollars in Frederick County



## **Garrett County**

Garrett County is a county of 29,846 people in Western Maryland. The county is 16.9% urban and 83.1% rural. The municipalities are Accident, Deer Park, Friendsville, Grantsville, Kitzmiller, Loch Lynn Heights, Mountain Lake Park, and Oakland. Garrett County is a rugged, hilly county with elevations ranging from a high of 3,360 ft to a low of 960 ft (Map B56). It should be considered to have low exposure to flooding as only 0.53% (\$42.0 million) of the state's total building stock flood exposure (\$7.99 billion) is contained within the County (Table 2).

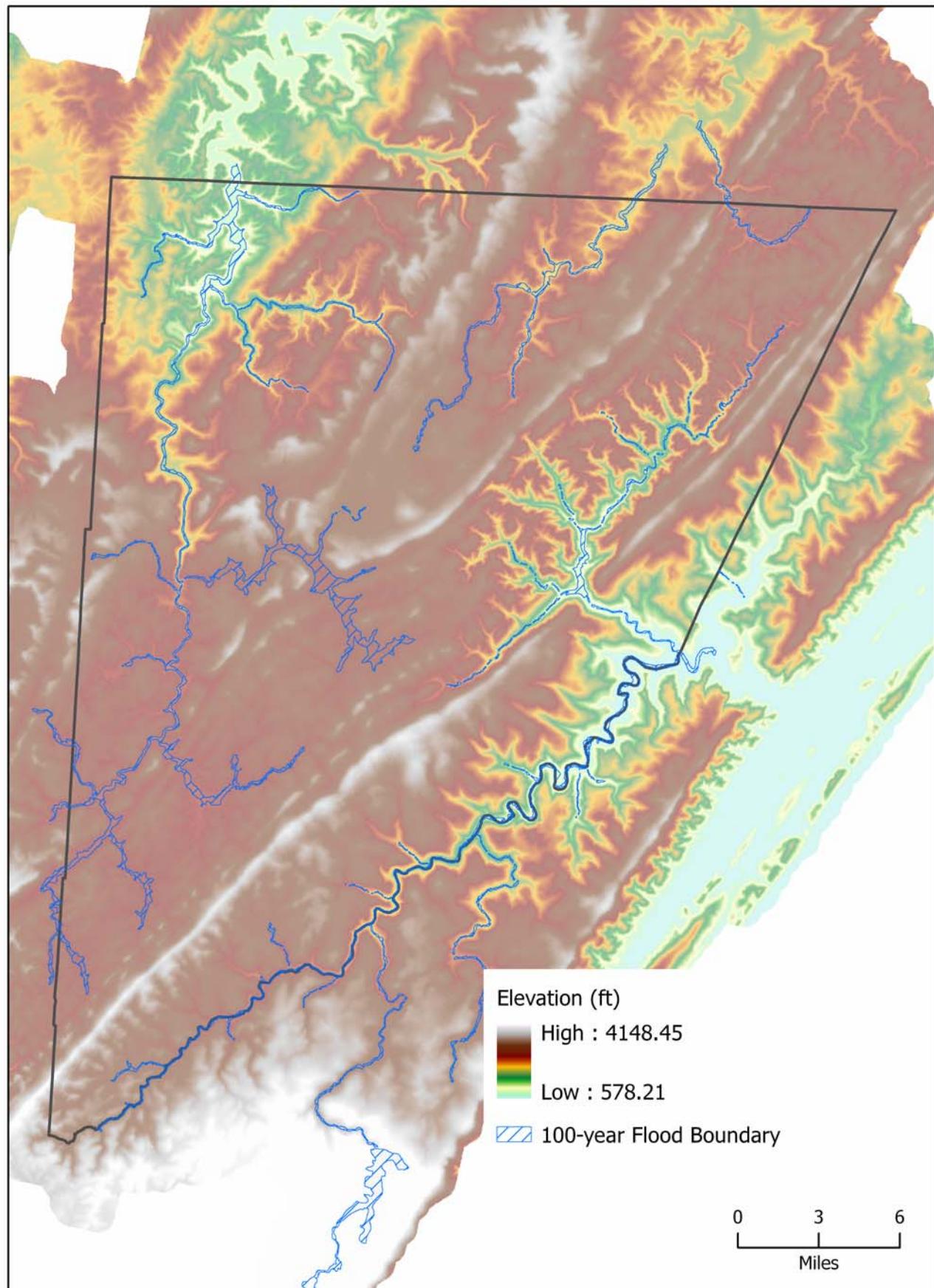
The results of the HAZUS-MH modeling effort report that 19.1 square miles of Garrett County are subject to the 100-year flood, or 2.9% of the county's total land area. The county ranks 24<sup>th</sup> of 24 subdivisions in the percentage of total land area in flood zone. The floodplain is generally constrained to the river courses, the most significant of which are the North Branch of the Potomac River, the Youghiogheny River, the Savage River, and the Casselman River. The depth of the 100-year flood zone has a maximum of 113.4 ft (Map B57).

With regard to the predicted damage estimates from the HAZUS-MH modeling effort, Garrett County is predicted to have 871,830 square feet of building damage but only 127,000 square feet (14.6% of the total damaged) of substantially damaged buildings. Garrett County is 21<sup>st</sup> of 24 Maryland subdivisions with regard to the amount of square feet of building damage. From the map, we can see that the heaviest damage occurs on the shores of Deep Creek Lake, the area in and around Oakland, Bloomington, and Friendsville (Map B58). The rest of the county is predicted to sustain minimal damage.

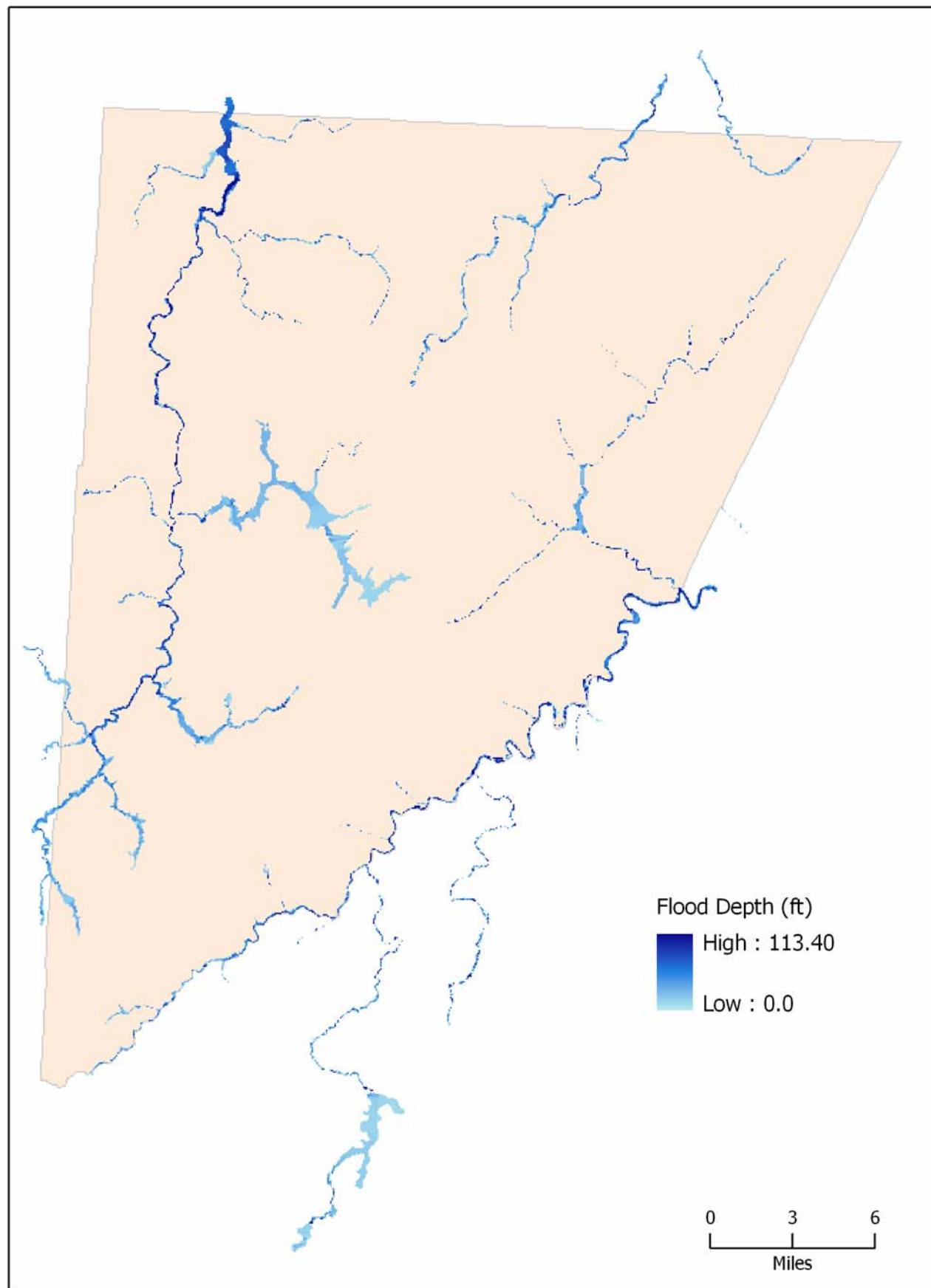
In relation to the potential number of buildings damaged by a 100-year flood predicted by HAZUS-MH, Garrett County has 276 buildings vulnerable to flooding with 35 buildings to be damaged substantially (12.7% of the total number of buildings damaged). This places the county 21<sup>st</sup> of 24 Maryland subdivisions in total number of damaged buildings. The distribution of the count of buildings is almost identical to the damaged amount of square feet (Map B59). As an exception, less damage is displayed in and around Oakland.

Finally, the amount of direct economic losses from building damage in Garrett County is predicted by HAZUS-MH to be \$86,691,000. This amount is 1.1% of the total amount of direct economic losses for the state (\$8,121,065,000), which ranks the County 15<sup>th</sup> out of 24. A majority (52.3%) of the losses come from capital stock losses (structural damage, contents damage, and inventory loss) versus income loss (relocation costs, capital costs, wages lost, and rental income lost). The map shows a very similar pattern of direct economic losses from buildings except for an additional loss area near Grantsville (Map B60).

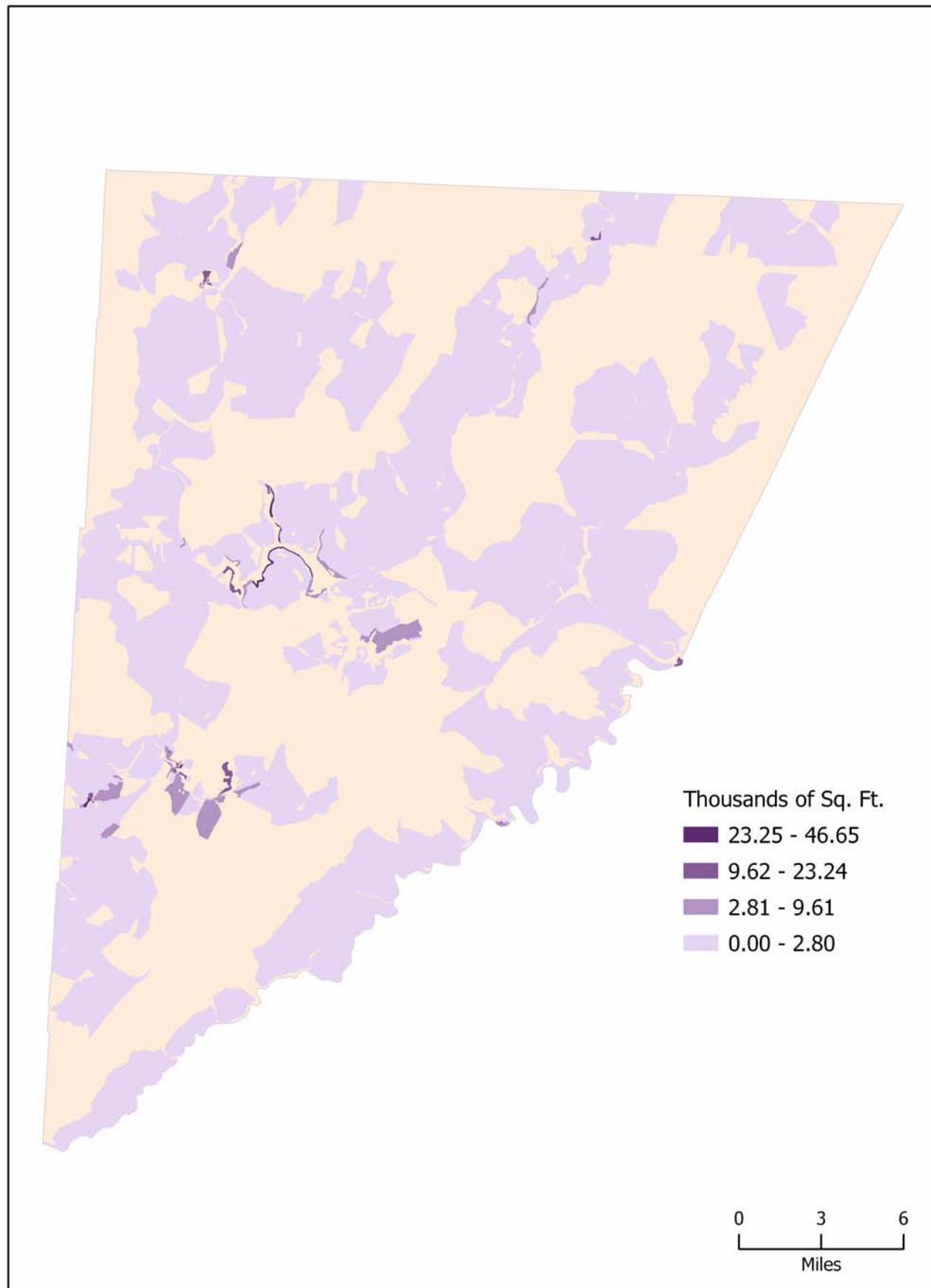
**Map B56.** Topography and modeled 100-year flood boundary in Garrett County



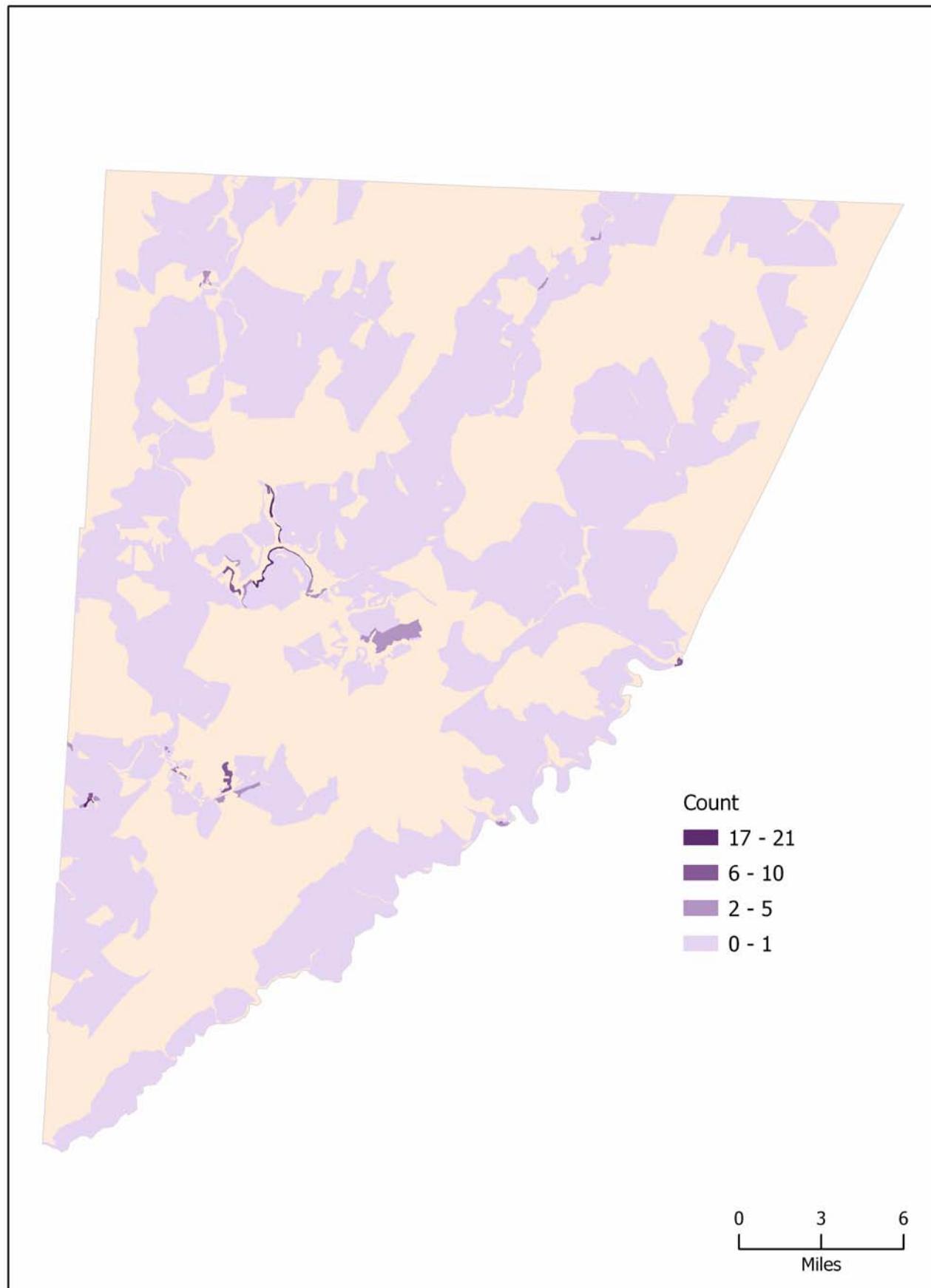
**Map B57.** Modeled 100-year flood depth in Garrett County



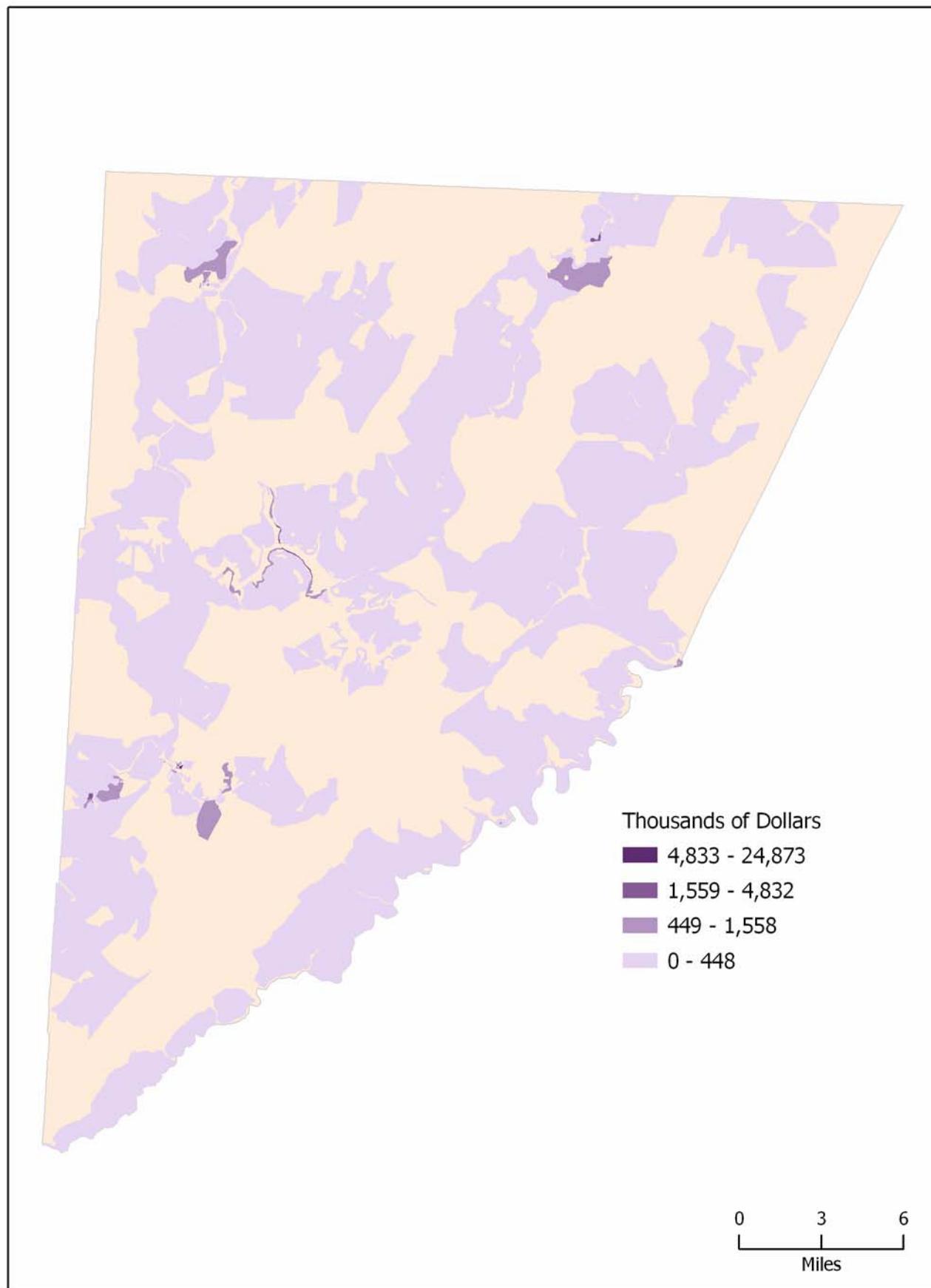
**Map B58.** Predicted amount of building damage in thousands of square feet in Garrett County



**Map B59.** Predicted amount of building damage in numbers of buildings in Garrett County



**Map B60.** Predicted amount of direct economic losses in thousands of dollars in Garrett County



## **Harford County**

Harford County is a county of 218,590 people in central Maryland. The county is 77.7% urban and 22.3% rural. The municipalities are Aberdeen, Bel Air, and Havre de Grace. Harford County is a combination of rolling hills and flat coastal plain with elevations ranging from a high of 803 ft to a low of 0 ft (Map B61). It should be considered to have relatively low exposure to flooding as 2.31% (\$184.6 million) of the state's total building stock flood exposure (\$7.99 billion) is contained within the County (Table 2).

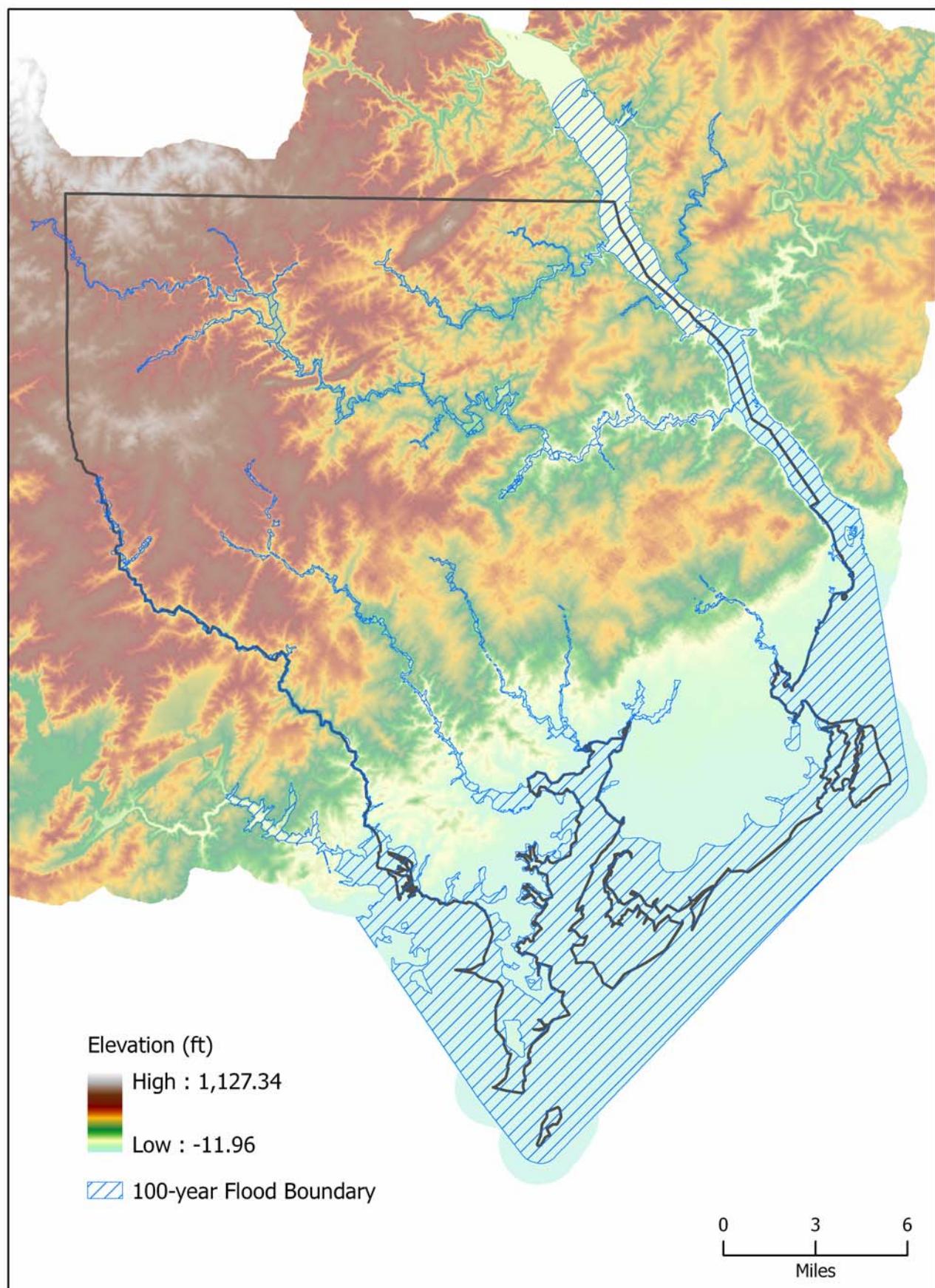
The results of the HAZUS-MH modeling effort report that 47.1 square miles of Harford County are subject to the 100-year flood, or 10.6% of the county's total land area. The county ranks 7<sup>th</sup> of 24 subdivisions in the percentage of total land area in flood zone. The floodplain is generally constrained to the area along the Chesapeake Bay as well as the river courses, the most significant of which are Little Gunpowder Falls, the Gunpowder River, the Bush River, Swan Creek, the Susquehanna River, Deer Creek, Bynum Run, and Winters Run. The depth of the 100-year flood zone has a maximum of 60.5 ft (Map B62).

With regard to the predicted damage estimates from the HAZUS-MH modeling effort, Harford County is predicted to have 3,635,910 square feet of building damage but only 69,830 square feet (1.9% of the total damaged) of substantially damaged buildings. Harford County is 10<sup>th</sup> of 24 Maryland subdivisions with regard to the amount of square feet of building damage. From the map, we can see that the heaviest damage occurs in the southeastern portion of the county (Map B63). Specifically, the areas damaged include the towns along the US 40 corridor such as Joppatowne, Edgewood, Abingdon, Bush, Havre de Grace, as well as the Edgewood Arsenal and an area just north of Bel Air. The rest of the county is predicted to sustain minimal damage.

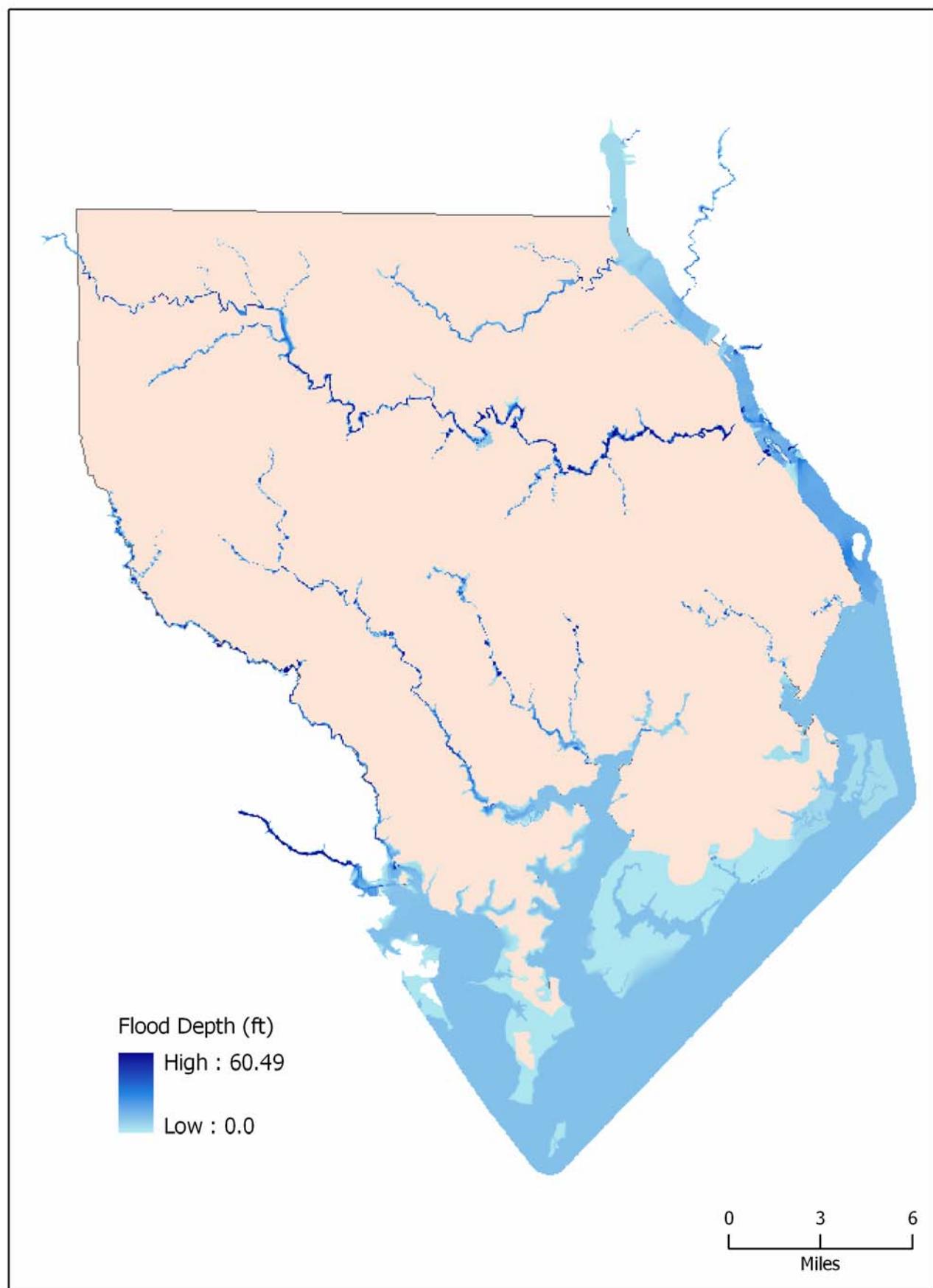
In relation to the potential number of buildings damaged by a 100-year flood predicted by HAZUS-MH, Harford County has 1,631 buildings vulnerable to flooding with 35 buildings to be damaged substantially (2.1% of the total number of buildings damaged). This places the county 11<sup>th</sup> of 24 Maryland subdivisions in total number of damaged buildings. The distribution of the count of buildings is identical to the damaged amount of square feet except for less damage highlighted in Havre de Grace (Map B64).

Finally, the amount of direct economic losses from building damage in Harford County is predicted by HAZUS-MH to be \$301,273,000. This amount is 3.7% of the total amount of direct economic losses for the state (\$8,121,065,000), which ranks the County 10<sup>th</sup> out of 24. A majority (77.5%) of the losses come from capital stock losses (structural damage, contents damage, and inventory loss) versus income loss (relocation costs, capital costs, wages lost, and rental income lost). The map shows a pattern of direct economic losses from buildings similar to the other measures of vulnerability. However, more losses are shown in the Winters Run and Bush Creek watersheds than other measures (Map B65).

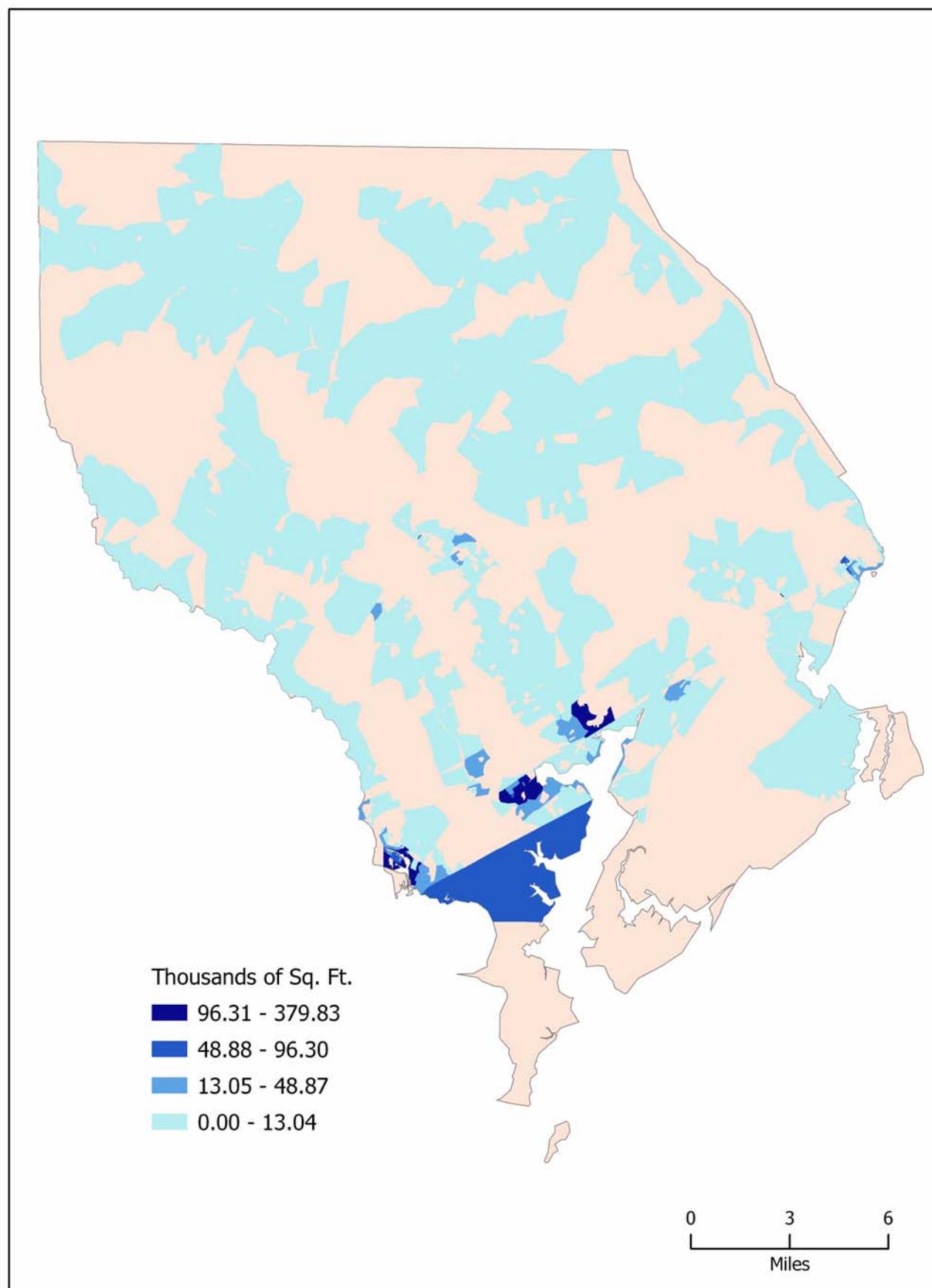
**Map B61.** Topography and modeled 100-year flood boundary in Harford County



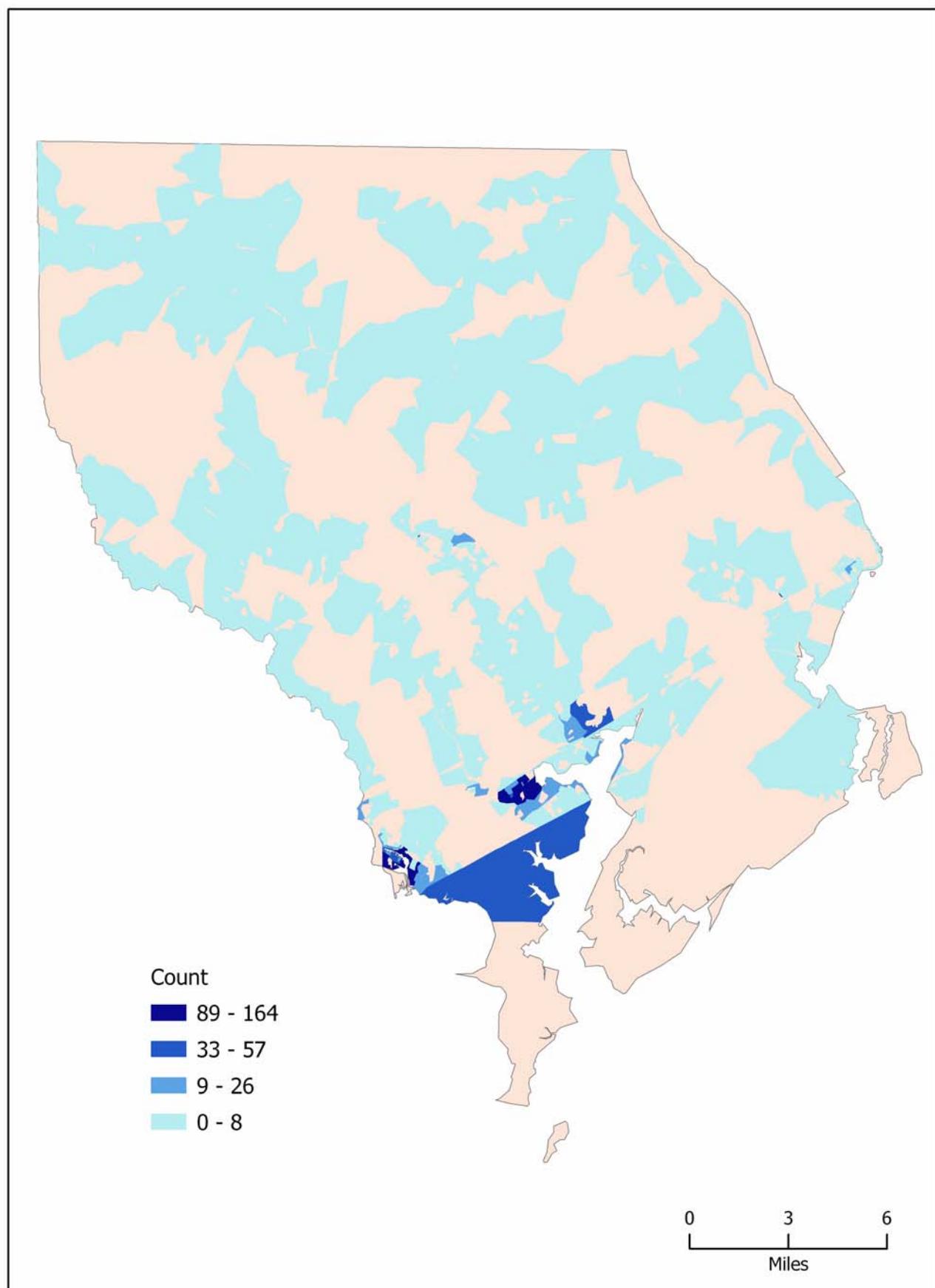
**Map B62.** Modeled 100-year flood depth in Harford County



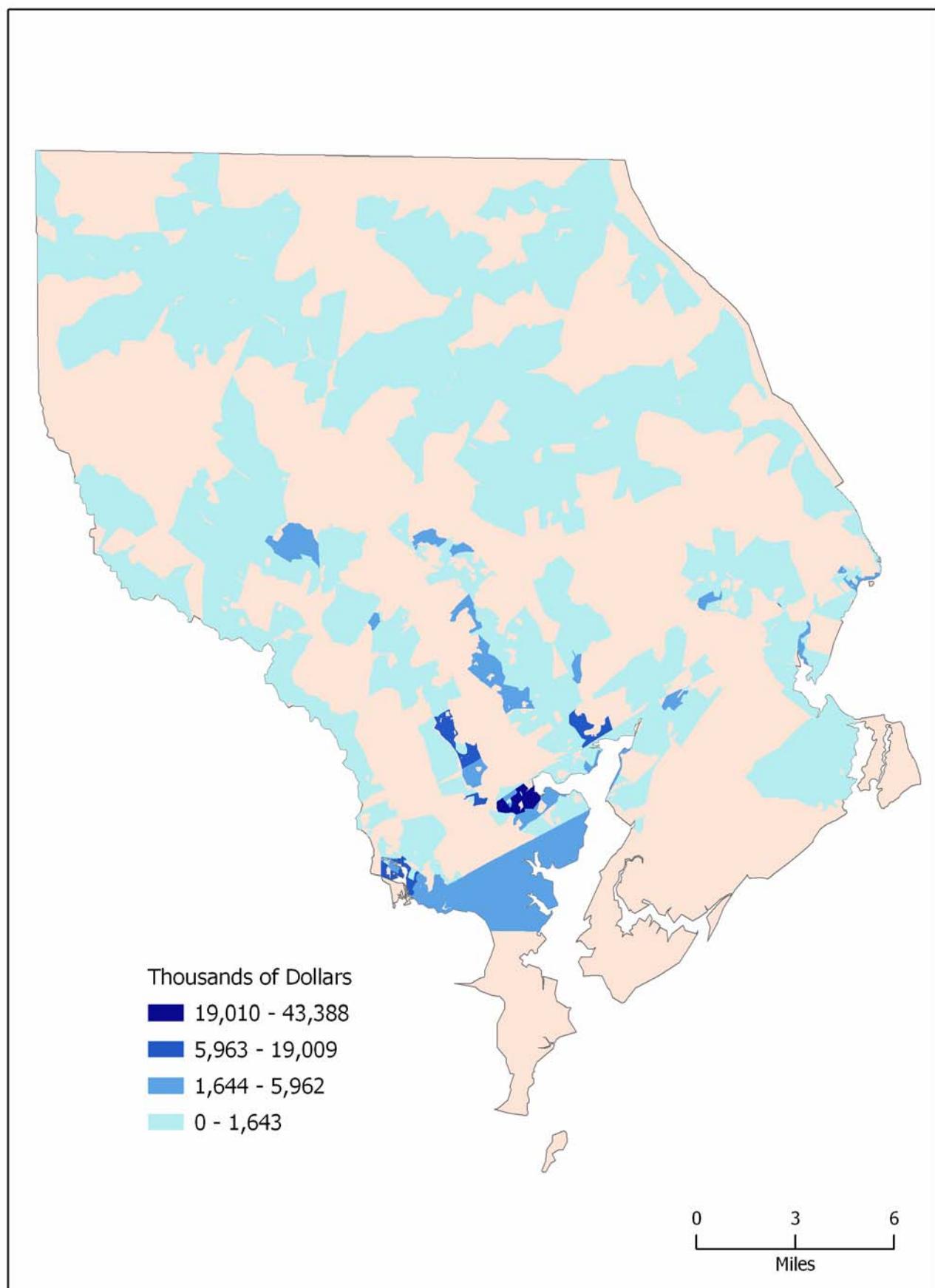
**Map B63.** Predicted amount of building damage in thousands of square feet in Harford County



**Map B64.** Predicted amount of building damage in numbers of buildings in Harford County



**Map B65.** Predicted amount of direct economic losses in thousands of dollars in Harford County



## **Howard County**

Howard County is a county of 247,842 people in central Maryland. The county is 87.4% urban and 12.6% rural. There are no municipalities. Howard County is a rolling, hilly county with elevations ranging from a high of 873 ft to a low of 20 ft (Map B66). It should be considered to have relatively low exposure to flooding as 2.24% (\$179.3 million) of the state's total building stock flood exposure (\$7.99 billion) is contained within the County (Table 2).

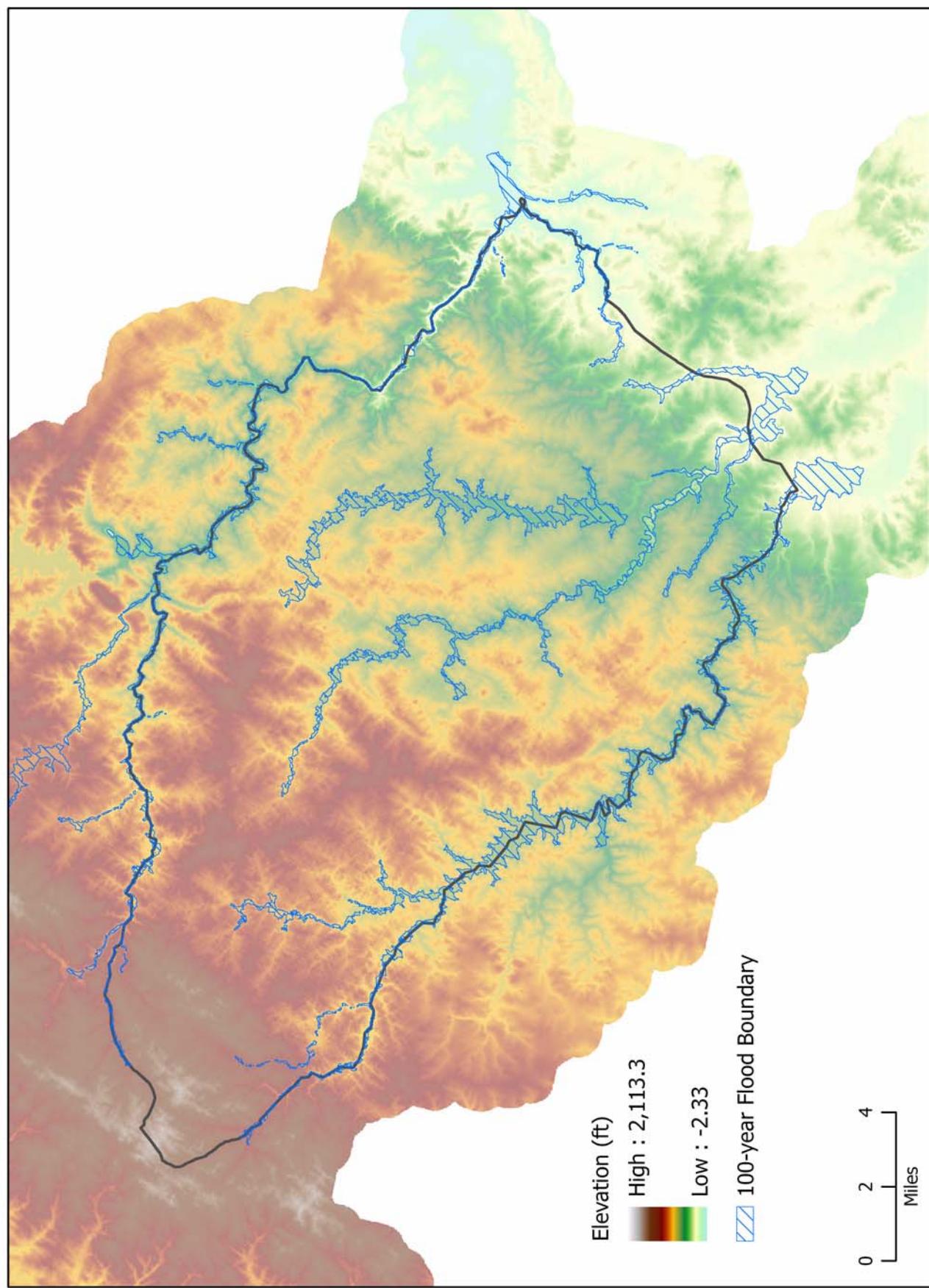
The results of the HAZUS-MH modeling effort report that 13.7 square miles of Howard County are subject to the 100-year flood, or 5.4% of the county's total land area. The county ranks 20<sup>th</sup> of 24 subdivisions in the percentage of total land area in flood zone. The floodplain is generally constrained to the river courses, the most significant of which are the Patuxent River, the Middle Patuxent River, the Little Patuxent River, and the Patapsco River. The depth of the 100-year flood zone has a maximum of 86.8 ft (Map B67).

With regard to the predicted damage estimates from the HAZUS-MH modeling effort, Howard County is predicted to have 2,678,210 square feet of building damage but none of that damage is classified of substantial damage. Howard County is 12<sup>th</sup> of 24 Maryland subdivisions with regard to the amount of square feet of building damage. From the map, we can see that the heaviest damage occurs along the Little Patuxent River including areas north and south of Columbia, Hammond, Waterloo, and Swann Hill (Map B68). The rest of the county is predicted to sustain minimal damage.

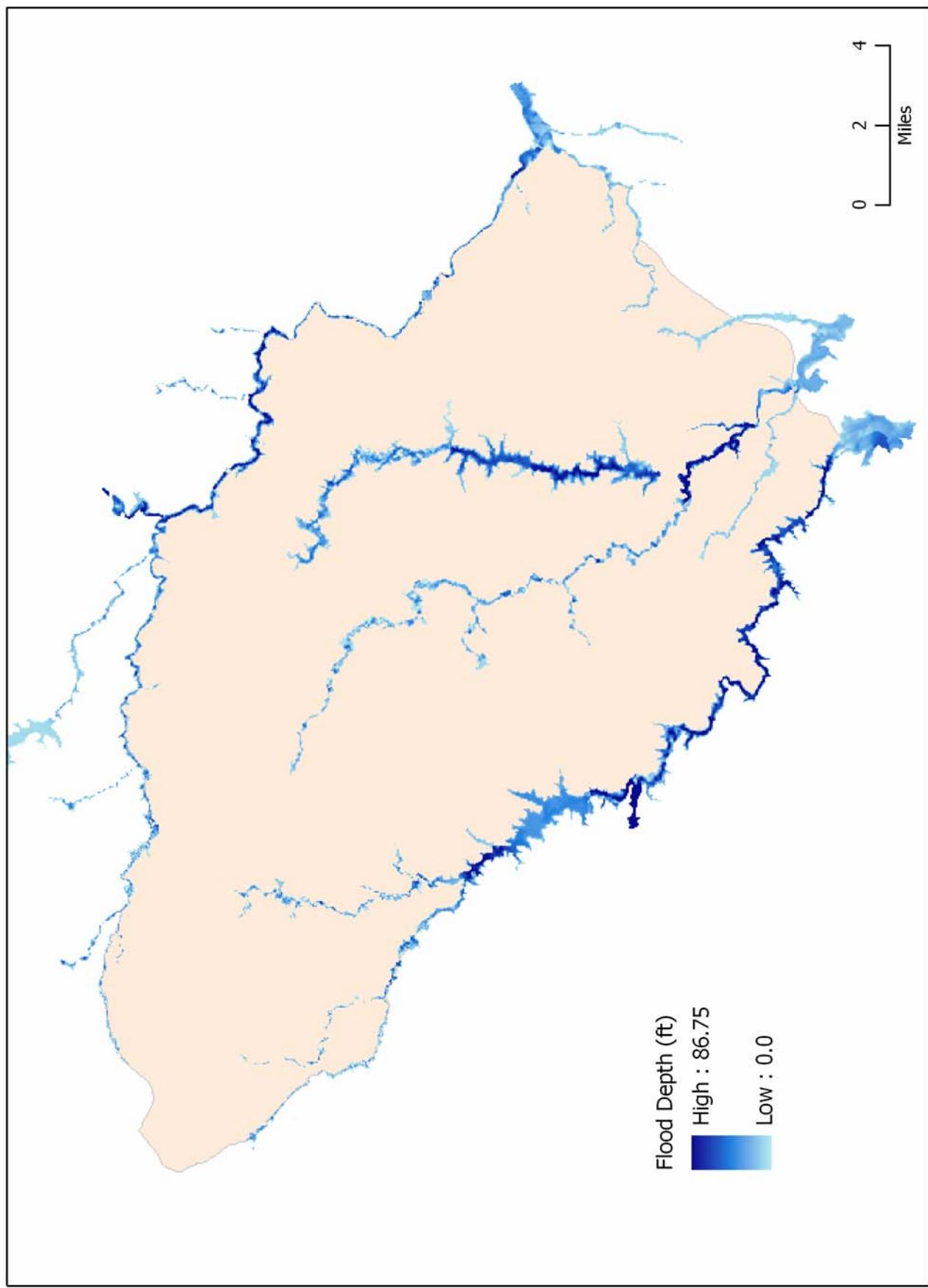
In relation to the potential number of buildings damaged by a 100-year flood predicted by HAZUS-MH, Howard County has 1,633 buildings vulnerable to flooding with no buildings damaged substantially. This places the county 10<sup>th</sup> of 24 Maryland subdivisions in total number of damaged buildings. The distribution of the count of buildings is essentially identical to the damaged amount of square feet (Map B69).

Finally, the amount of direct economic losses from building damage in Howard County is predicted by HAZUS-MH to be \$578,250,000. This amount is 7.1% of the total amount of direct economic losses for the state (\$8,121,065,000), which ranks the County 6<sup>th</sup> out of 24. A majority (64.5%) of the losses come from capital stock losses (structural damage, contents damage, and inventory loss) versus income loss (relocation costs, capital costs, wages lost, and rental income lost). The map shows a pattern of direct economic losses from buildings similar to other measures with some exceptions such increased losses in the Middle Patuxent River watershed. (Map B70).

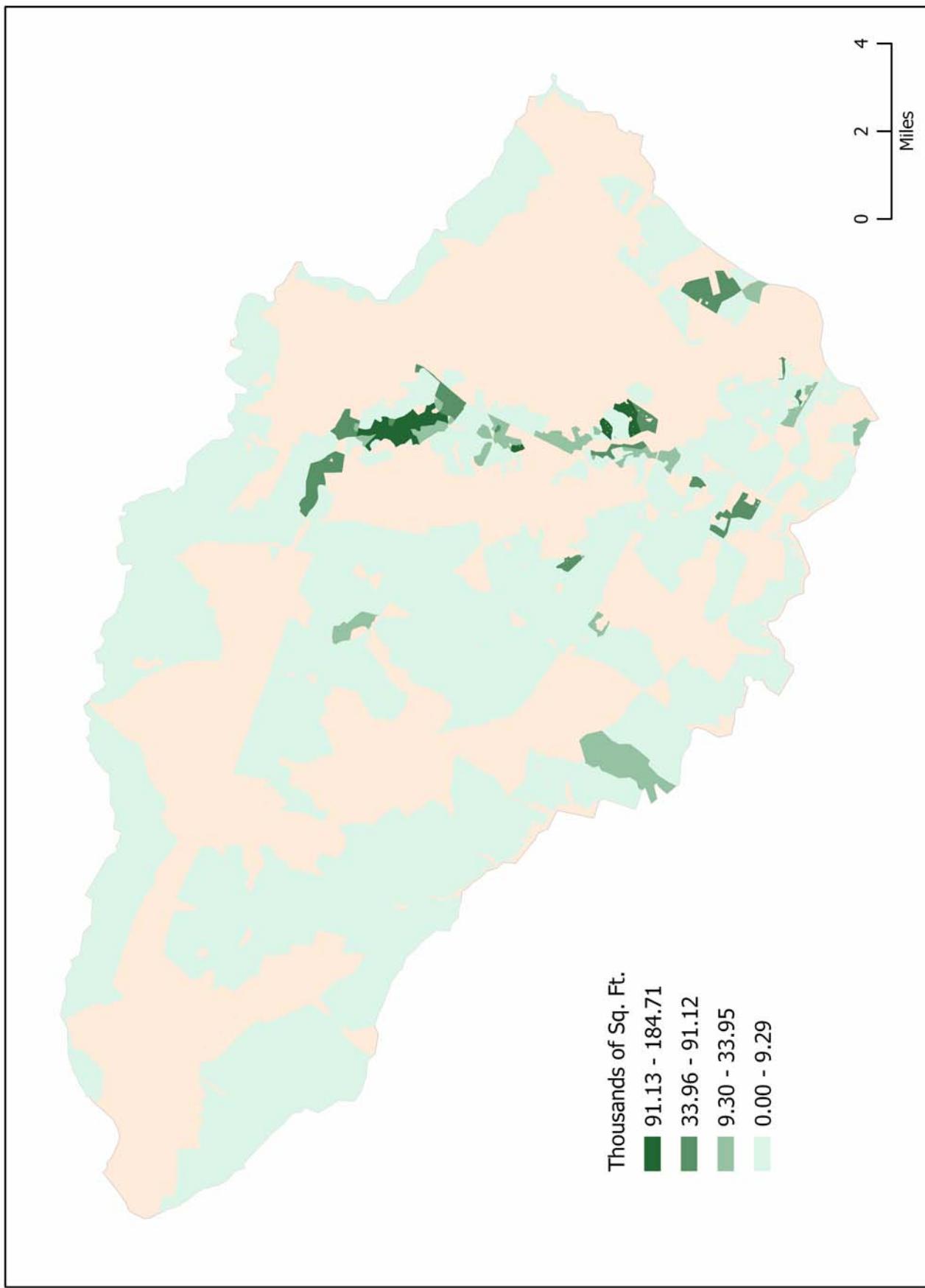
**Map B66.** Topography and modeled 100-year flood boundary in Howard County



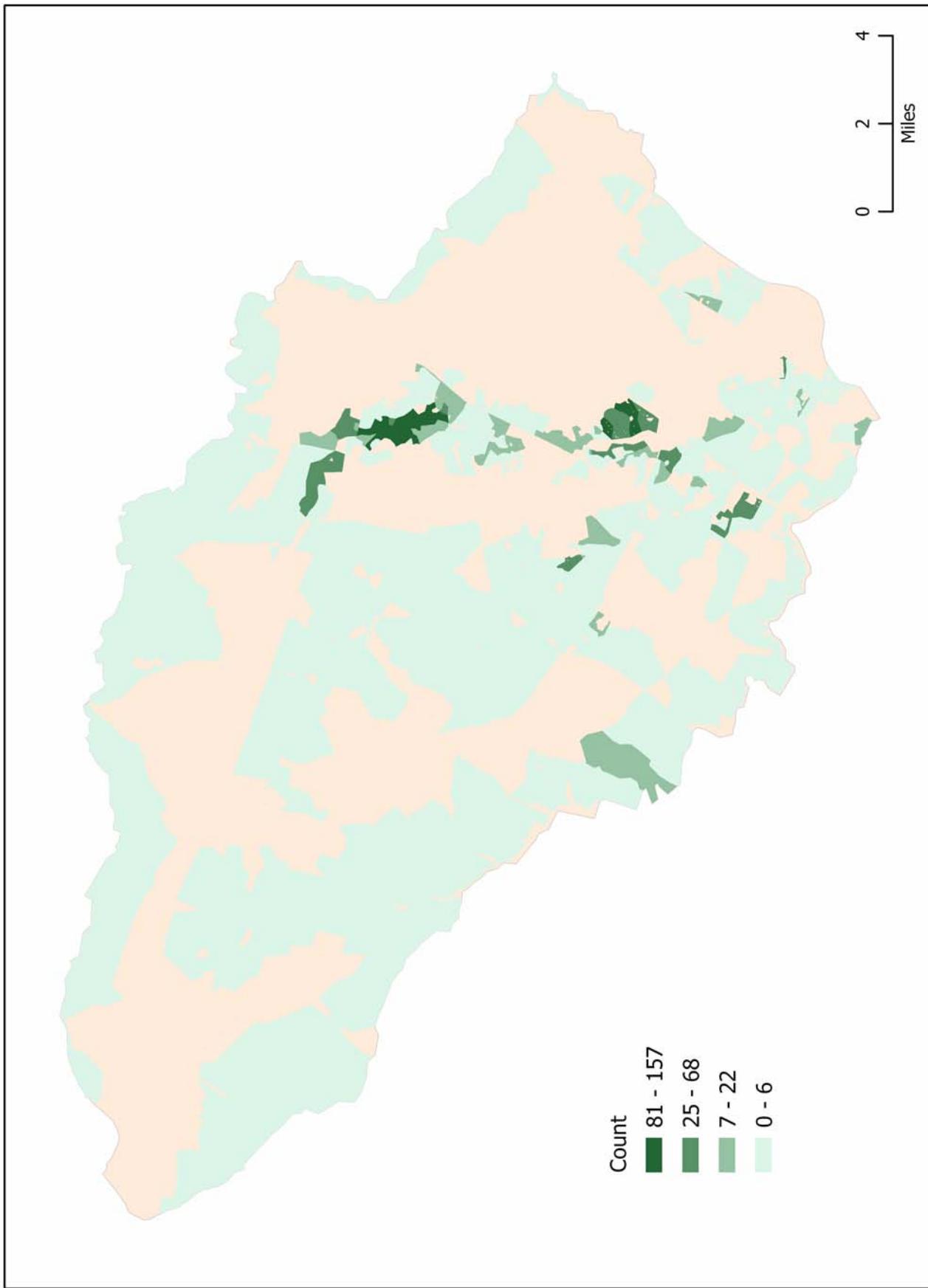
**Map B67.** Modeled 100-year flood depth in Howard County



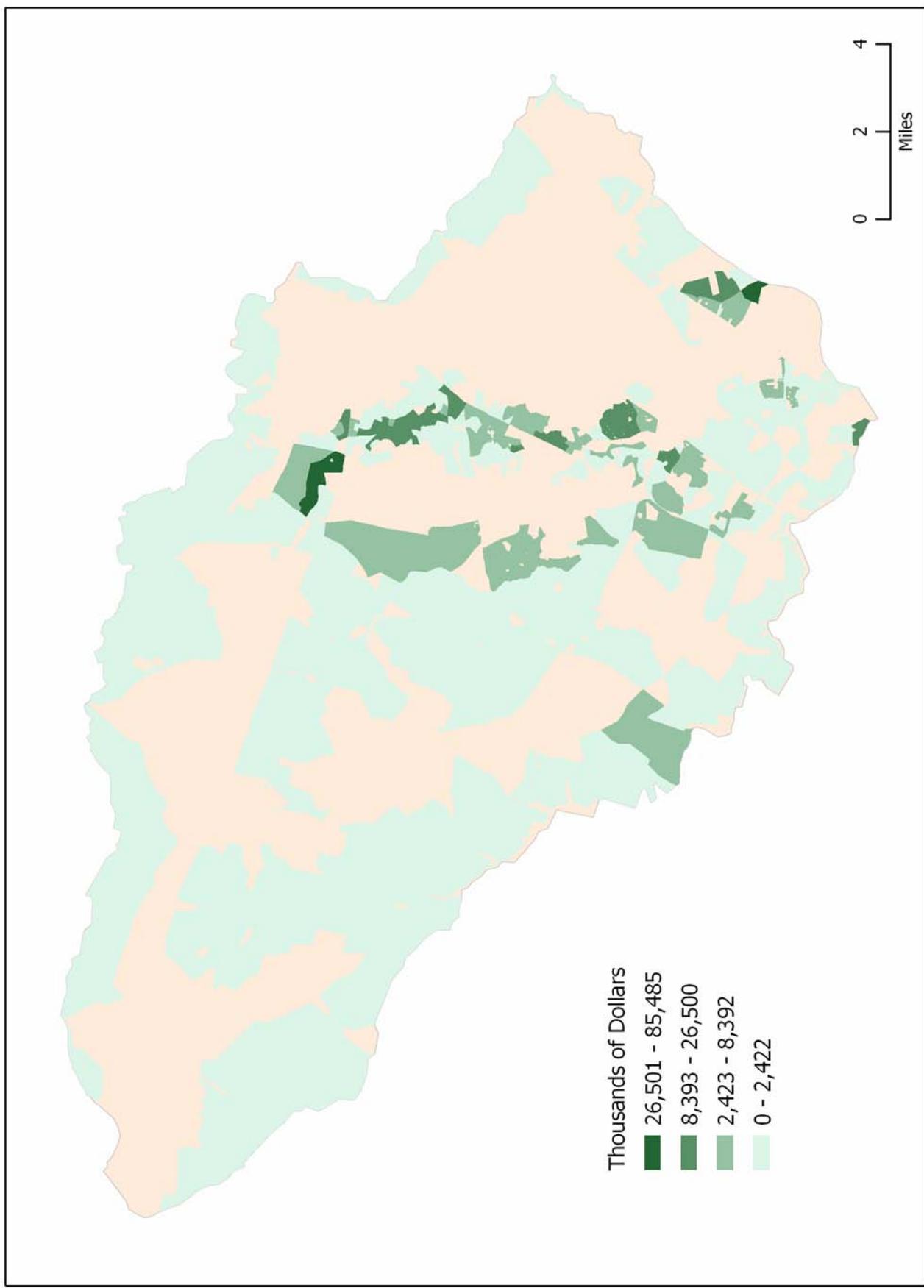
**Map B68.** Predicted amount of building damage in thousands of square feet in Howard County



**Map B69.** Predicted amount of building damage in numbers of buildings in Howard County



**Map B70.** Predicted amount of direct economic losses in thousands of dollars in Howard County



## Kent County

Kent County is a county of 19,197 people on the Eastern Shore of Maryland. The county is 25.1% urban and 74.9% rural. The municipalities are Betterton, Chestertown, Galena, Millington, and Rock Hall. Kent County is a flat coastal plain county with elevations ranging from a high of 102 ft to a low of 0 ft (Map B71). It should be considered to have relative low exposure to flooding as only 1.39% (\$110.8 million) of the state's total building stock flood exposure (\$7.99 billion) is contained within the County (Table 2).

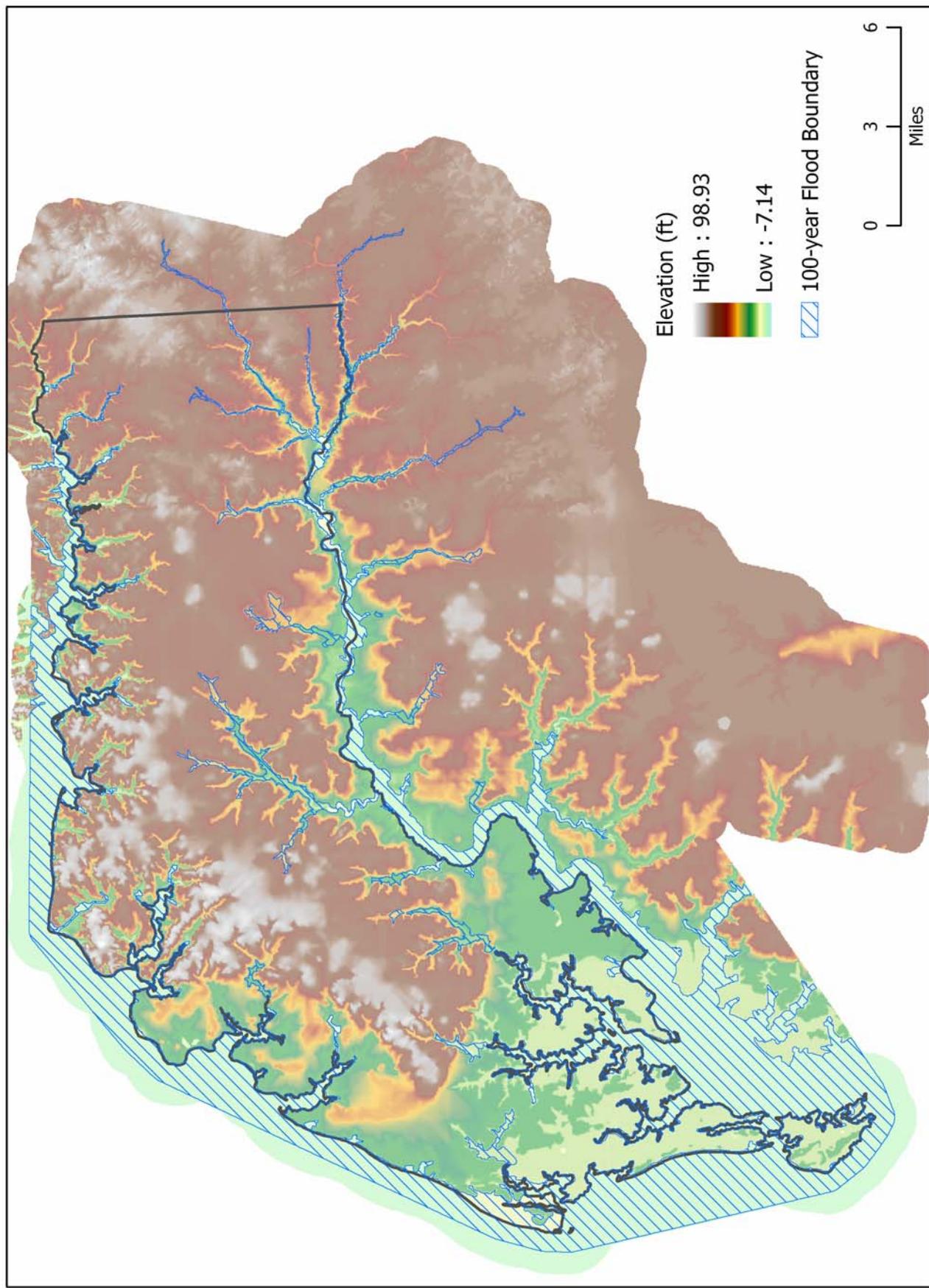
The results of the HAZUS-MH modeling effort report that 17.5 square miles of Kent County are subject to the 100-year flood, or 6.2% of the county's total land area. The county ranks 18<sup>th</sup> of 24 subdivisions in the percentage of total land area in flood zone. The floodplain is generally constrained to the area along the Chesapeake Bay as well as the river courses, the most significant of which are the Sassafras River, the Chester River, Grays Inn Creek, Langford Creek, and Morgan Creek. The depth of the 100-year flood zone has a maximum of 20.6 ft (Map B72).

With regard to the predicted damage estimates from the HAZUS-MH modeling effort, Kent County is predicted to have 477,230 square feet of building damage with 26,860 square feet (5.6% of the total damaged) of substantially damaged buildings. Kent County is 22<sup>nd</sup> of 24 Maryland subdivisions with regard to the amount of square feet of building damage. From the map, we can see that the heaviest damage occurs around the edges of the county and include areas such as Shorewood, Shrewsbury Neck, Kinnairds Point, Chesapeake Landing, Swan Point, Eastern Neck, Quaker Neck, and Chestertown (Map B73). The rest of the county is predicted to sustain minimal damage.

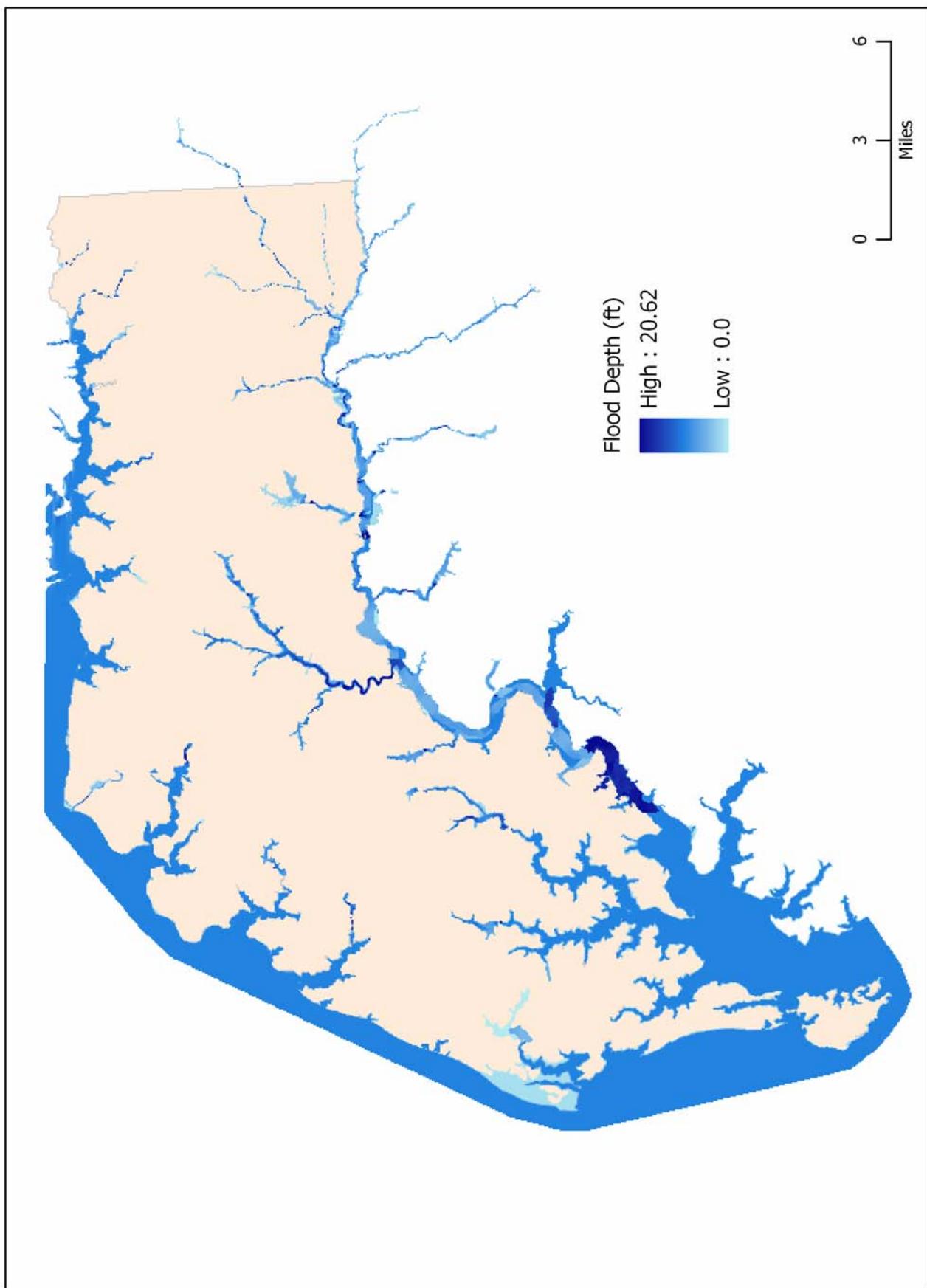
In relation to the potential number of buildings damaged by a 100-year flood predicted by HAZUS-MH, Kent County has 146 buildings vulnerable to flooding with 13 buildings to be damaged substantially (8.9% of the total number of buildings damaged). This places the county 22<sup>nd</sup> of 24 Maryland subdivisions in total number of damaged buildings. The distribution of the count of buildings is more evenly distributed than the damaged amount of square feet (Map B74). However, some of the same high spots exist as in the previous distribution.

Finally, the amount of direct economic losses from building damage in Kent County is predicted by HAZUS-MH to be \$32,450,000. This amount is 0.4% of the total amount of direct economic losses for the state (\$8,121,065,000), which ranks the County 23<sup>rd</sup> out of 24. A majority (71.5%) of the losses come from capital stock losses (structural damage, contents damage, and inventory loss) versus income loss (relocation costs, capital costs, wages lost, and rental income lost). The map shows a pattern of direct economic losses from buildings very similar to the count of potentially damaged buildings (Map B75). Exceptions include a northern area of Chestertown and Hassengers Corner.

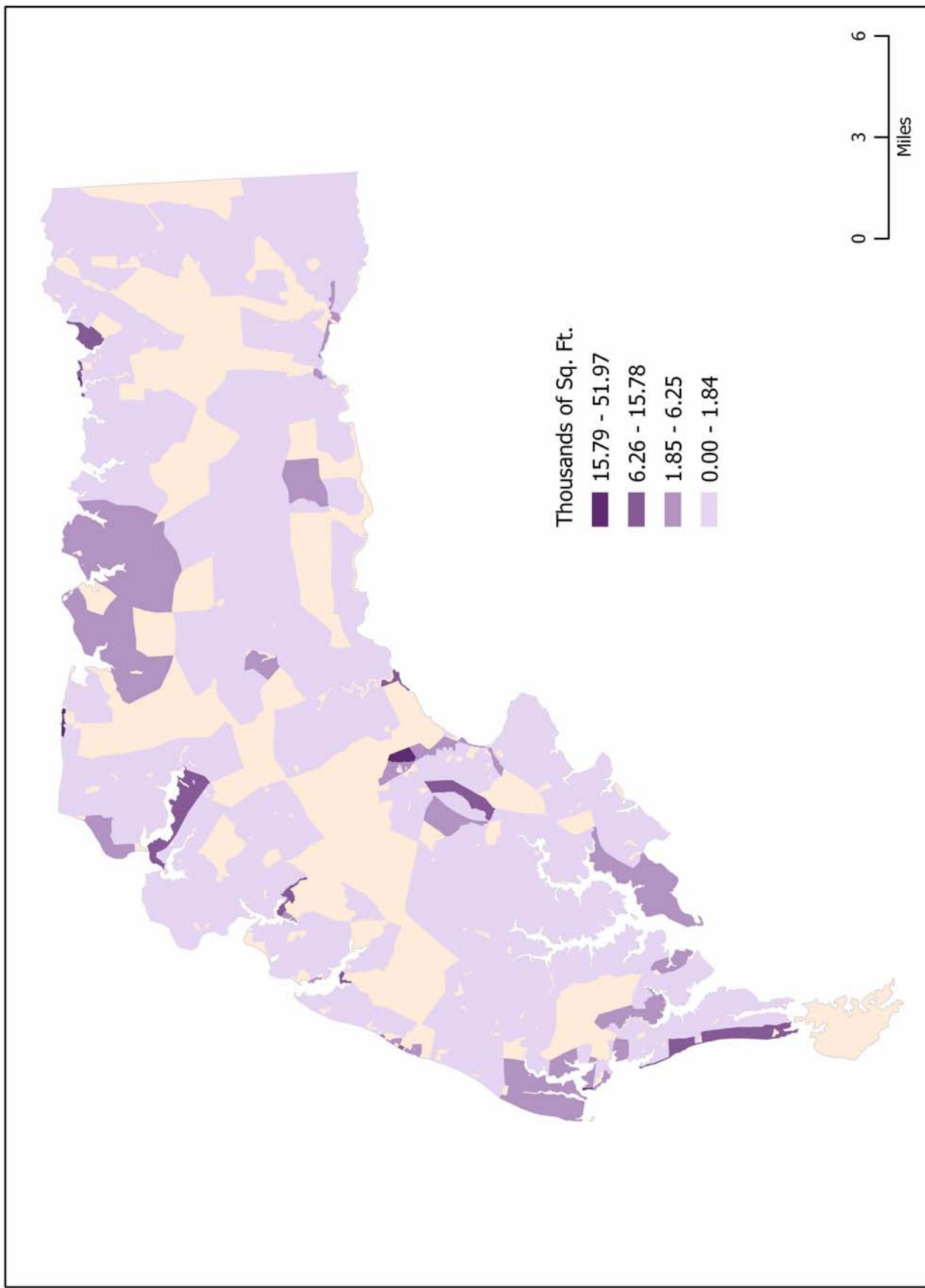
**Map B71.** Topography and modeled 100-year flood boundary in Kent County



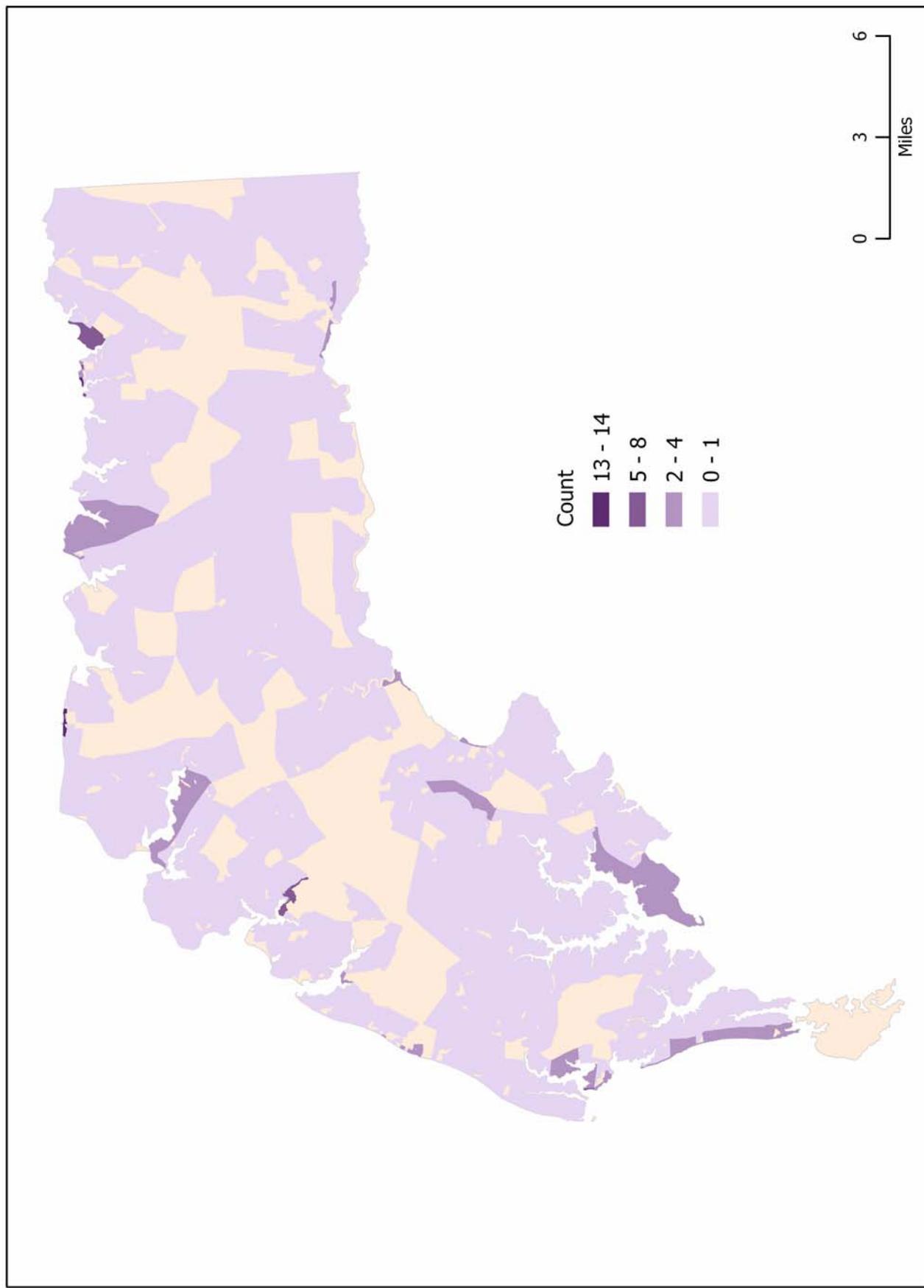
**Map B72.** Modeled 100-year flood depth in Kent County



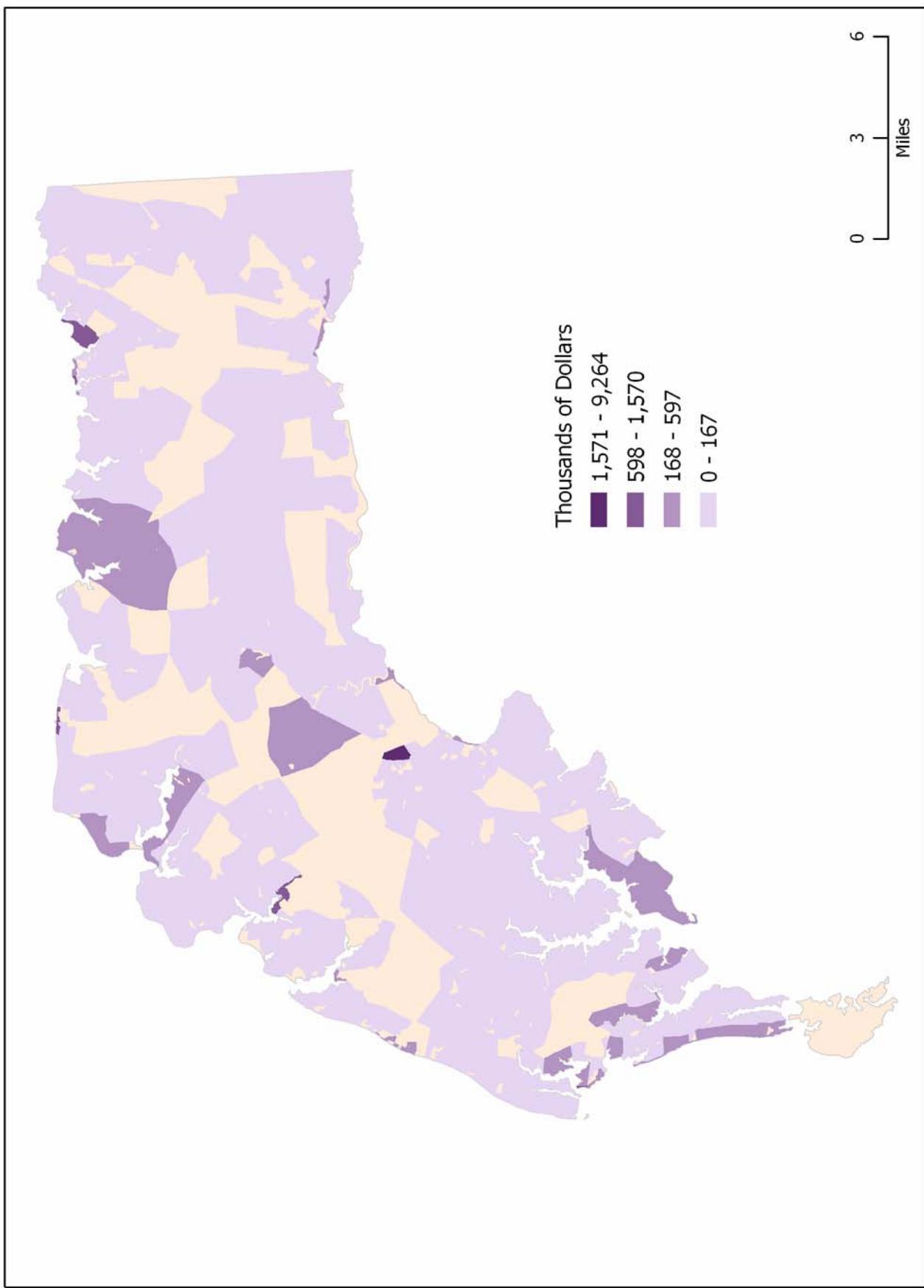
**Map B73.** Predicted amount of building damage in thousands of square feet in Kent County



**Map B74.** Predicted amount of building damage in numbers of buildings in Kent County



**Map B75.** Predicted amount of direct economic losses in thousands of dollars in Kent County



## **Montgomery County**

Montgomery County is a county of 873,341 people in central Maryland. The county is 97.2% urban and 2.8% rural. The municipalities are Barnesville, Brookeville, Town of Chevy Chase, Chevy Chase View, Chevy Chase Village, Village of Chevy Chase, Section 3, Village of Chevy Chase, Section 5, Gaithersburg, Garrett Park, Glen Echo, Kensington, Laytonsville, Martin's Additions, North Chevy Chase, Poolesville, Rockville, Somerset, Takoma Park, and Washington Grove. Montgomery County is a rolling, hilly county with elevations ranging from a high of around 880 ft to a low of 10 ft (Map B76). It should be considered to have relatively high exposure to flooding as only 7.22% (\$577.2 million) of the state's total building stock flood exposure (\$7.99 billion) is contained within the County (Table 2).

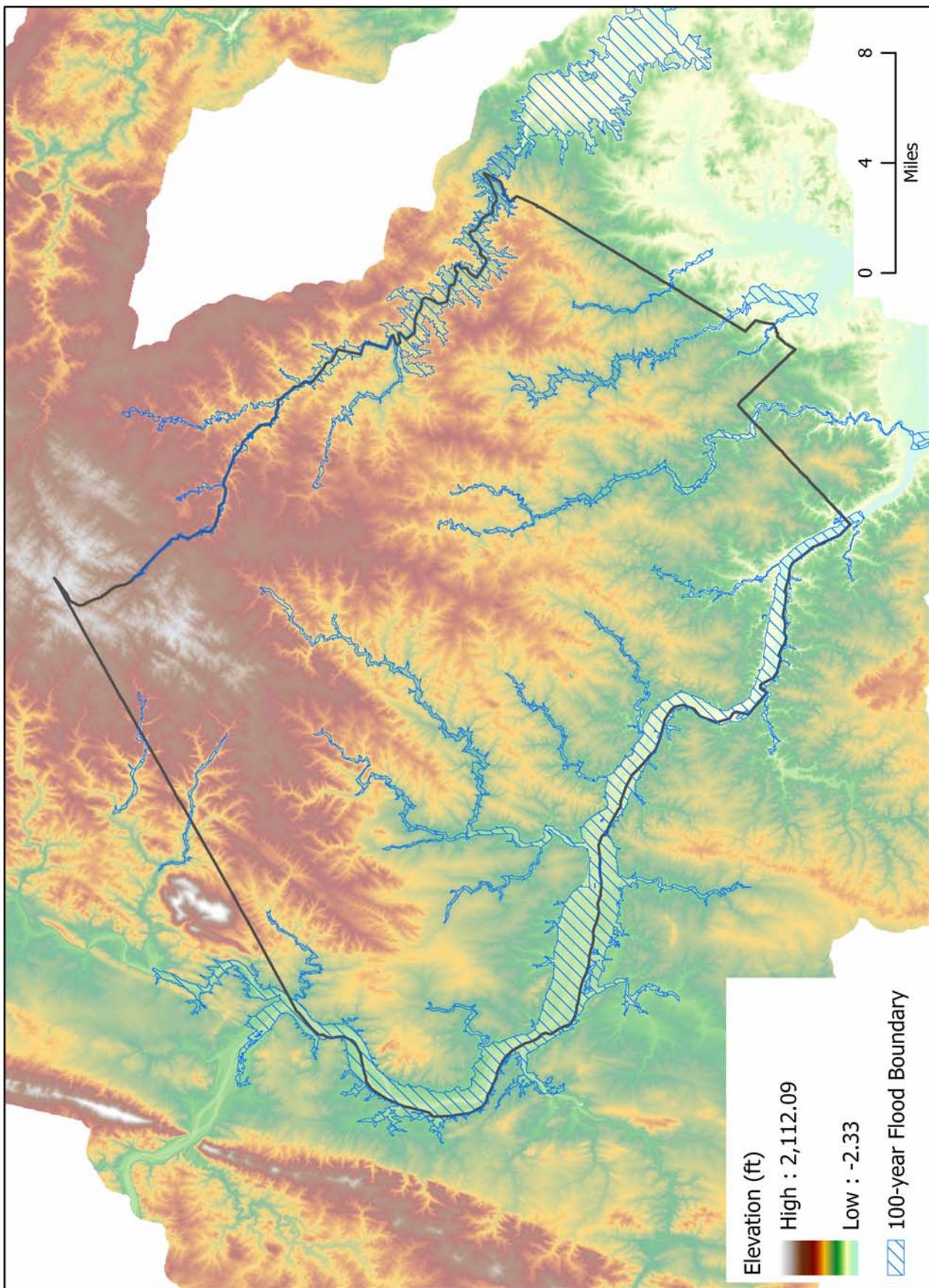
The results of the HAZUS-MH modeling effort report that 84.9 square miles of Montgomery County are subject to the 100-year flood, or 16.7% of the county's total land area. The county ranks 4<sup>th</sup> of 24 subdivisions in the percentage of total land area in flood zone. The floodplain is generally constrained to the river courses, the most significant of which are the Potomac River, Seneca Creek, Rock Creek, Anacostia River (Northwest Branch), and the Patuxent River. The depth of the 100-year flood zone has a maximum of 202.6 ft (Map B77).

With regard to the predicted damage estimates from the HAZUS-MH modeling effort, Montgomery County is predicted to have 4,436,800 square feet of building damage but only 70,820 square feet (1.6% of the total damaged) of substantially damaged buildings. Montgomery County is 8<sup>th</sup> of 24 Maryland subdivisions with regard to the amount of square feet of building damage. From the map, we can see that the heaviest damage occurs in the southeastern part of the county, along the Potomac River, Rock Creek, the Anacostia River, and the Patuxent River (Map B78). Specifically, areas like Potomac, Chevy Chase, Kensington, Silver Spring, Wheaton, Burtonsville, Ashton, Brinklow, and Germantown. The rest of the county is predicted to sustain minimal damage.

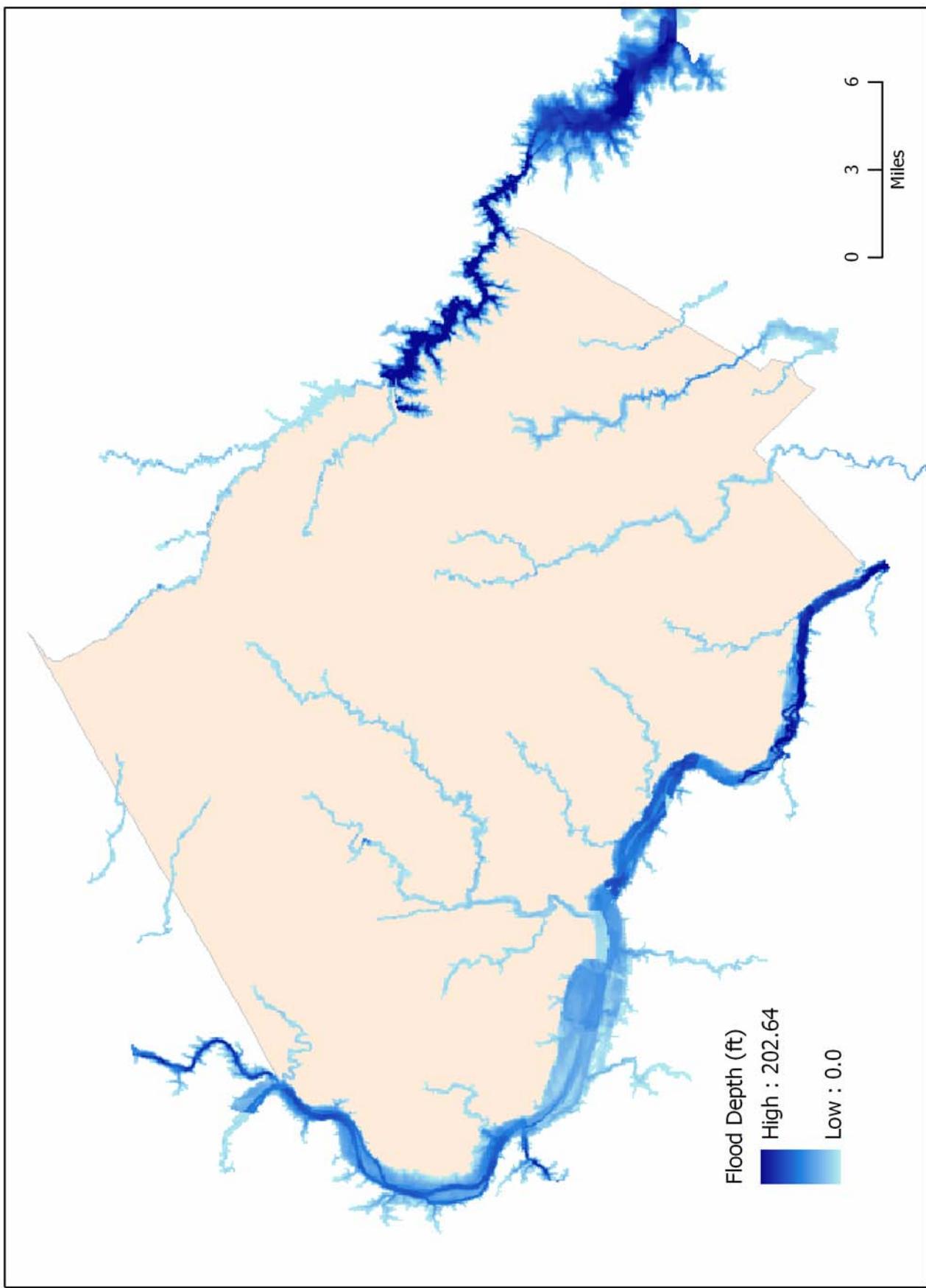
In relation to the potential number of buildings damaged by a 100-year flood predicted by HAZUS-MH, Montgomery County has 2,189 buildings vulnerable to flooding with 40 buildings to be damaged substantially (1.8% of the total number of buildings damaged). This places the county 9<sup>th</sup> of 24 Maryland subdivisions in total number of damaged buildings. The distribution of the count of buildings is virtually identical to the damaged amount of square feet (Map B79).

Finally, the amount of direct economic losses from building damage in Montgomery County is predicted by HAZUS-MH to be \$701,793,000. This amount is 8.6% of the total amount of direct economic losses for the state (\$8,121,065,000), which ranks the County 4<sup>th</sup> out of 24. A majority (72.7%) of the losses come from capital stock losses (structural damage, contents damage, and inventory loss) versus income loss (relocation costs, capital costs, wages lost, and rental income lost). The map shows a pattern of direct economic losses from buildings that is very similar to other measures (Map B80). Exceptions are relatively more losses in Germantown and Tilden Woods and relatively less in Silver Spring and Wheaton.

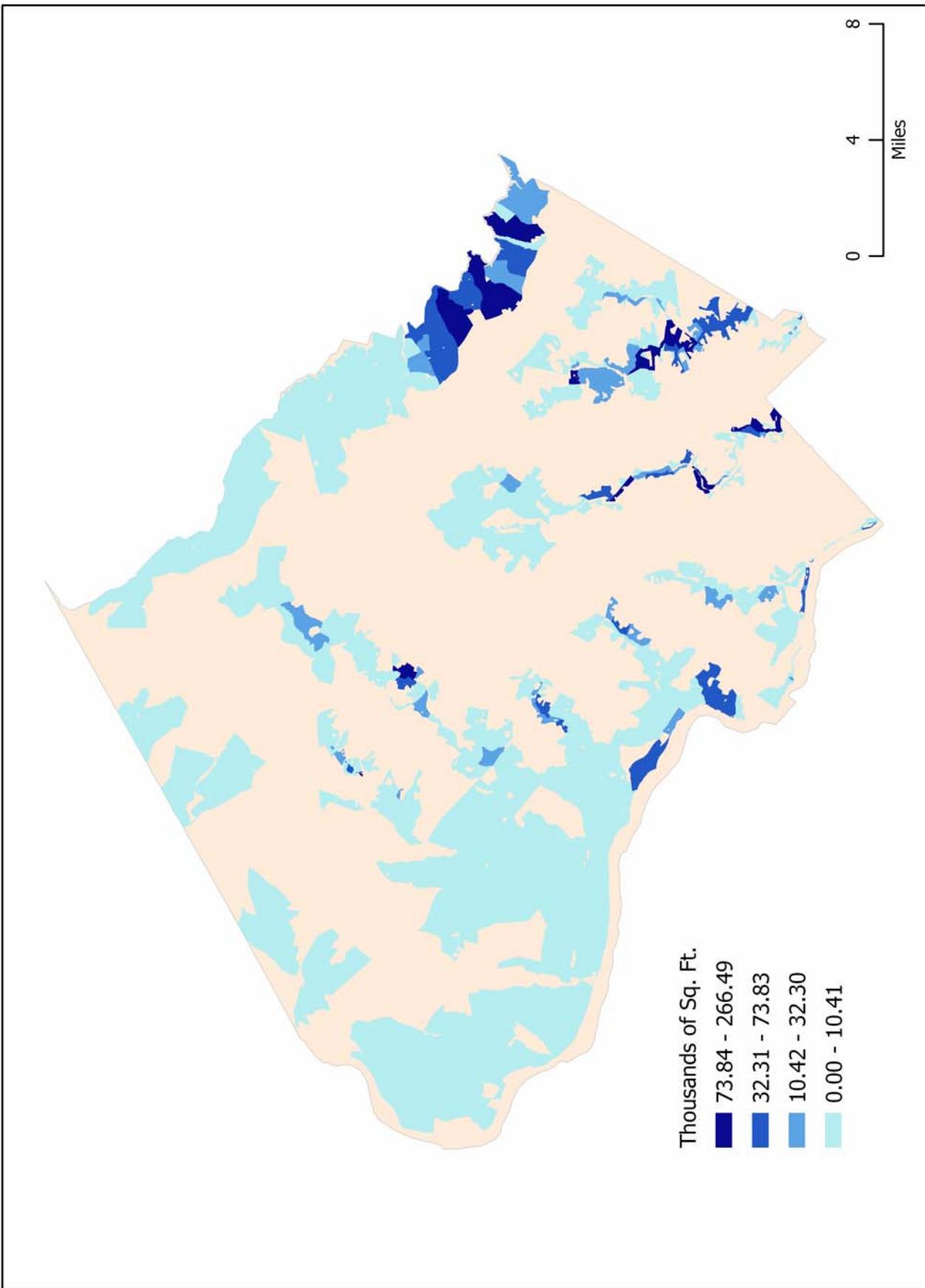
**Map B76.** Topography and modeled 100-year flood boundary in Montgomery County



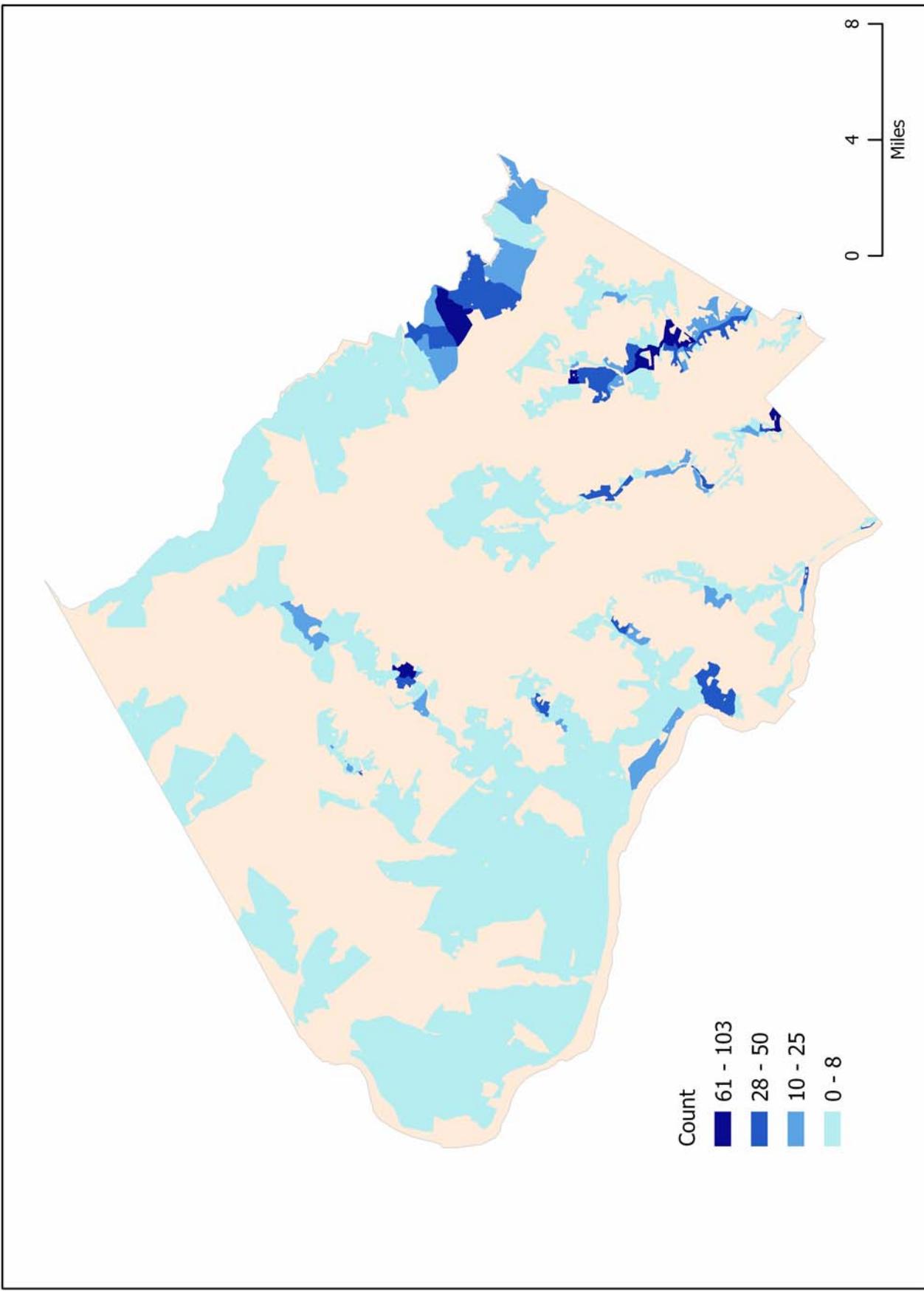
**Map B77.** Modeled 100-year flood depth in Montgomery County



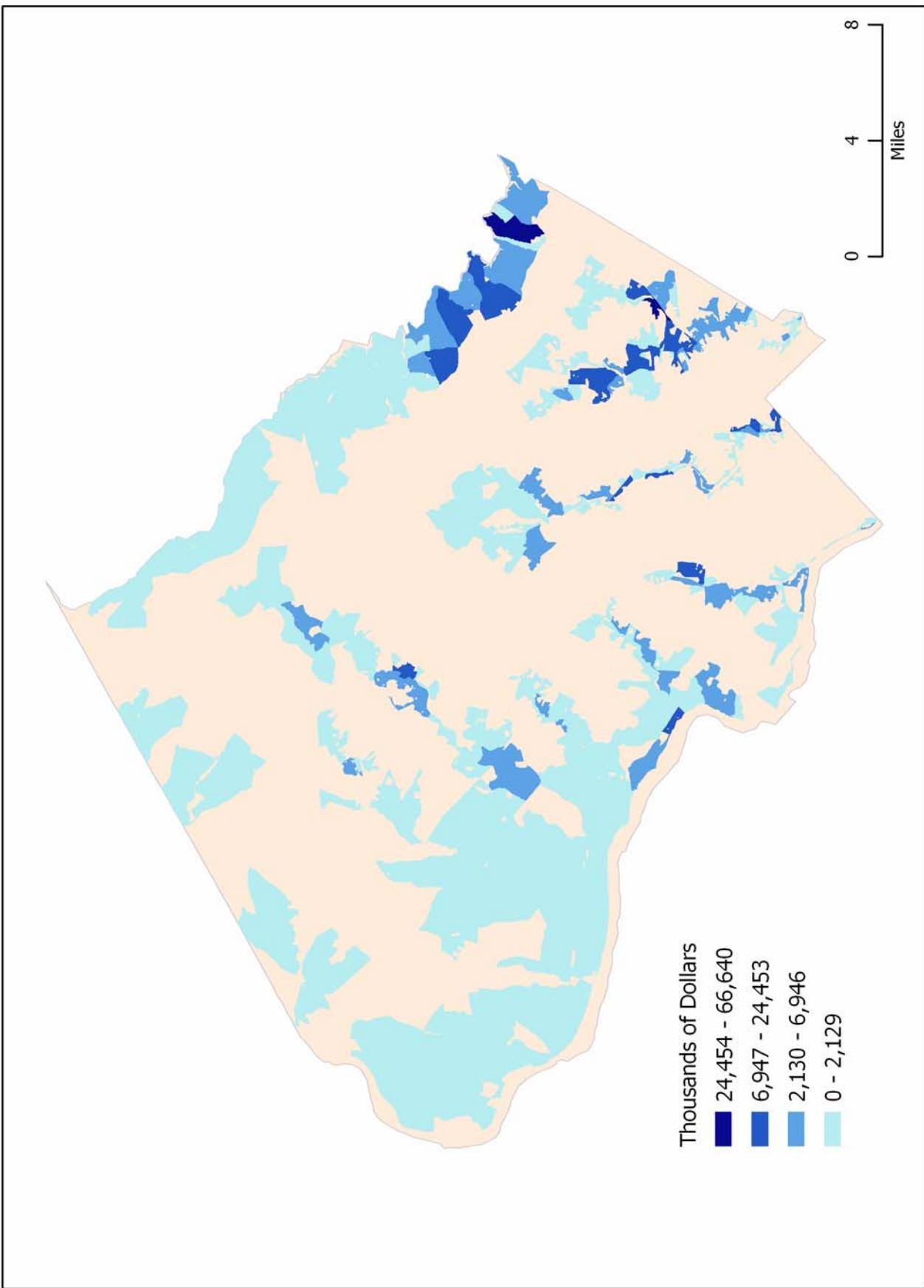
**Map B78.** Predicted amount of building damage in thousands of square feet in Montgomery County



**Map B79.** Predicted amount of building damage in numbers of buildings in Montgomery County



**Map B80.** Predicted amount of direct economic losses in thousands of dollars in Montgomery County



## Prince George's County

Prince George's County is a county of 801,515 people in central Maryland. The county is 97.4% urban and 2.6% rural. The municipalities are Berwyn Heights, Bladensburg, Bowie, Brentwood, Capitol Heights, Cheverly, College Park, Colmar Manor, Cottage City, District Heights, Eagle Harbor, Edmonston, Fairmount Heights, Forest Heights, Glenarden, Greenbelt, Hyattsville, Landover Hills, Laurel, Morningside, Mount Rainier, New Carrollton, North Brentwood, Riverdale Park, Seat Pleasant, University Park, and Upper Marlboro. Prince George's County is a combination of rolling hills and flat coastal plain with elevations ranging from a high of around 440 ft to a low of 0 ft (Map B81). It should be considered to have an above average exposure to flooding as 6.0% (\$479.1 million) of the state's total building stock flood exposure (\$7.99 billion) is contained within the County (Table 2).

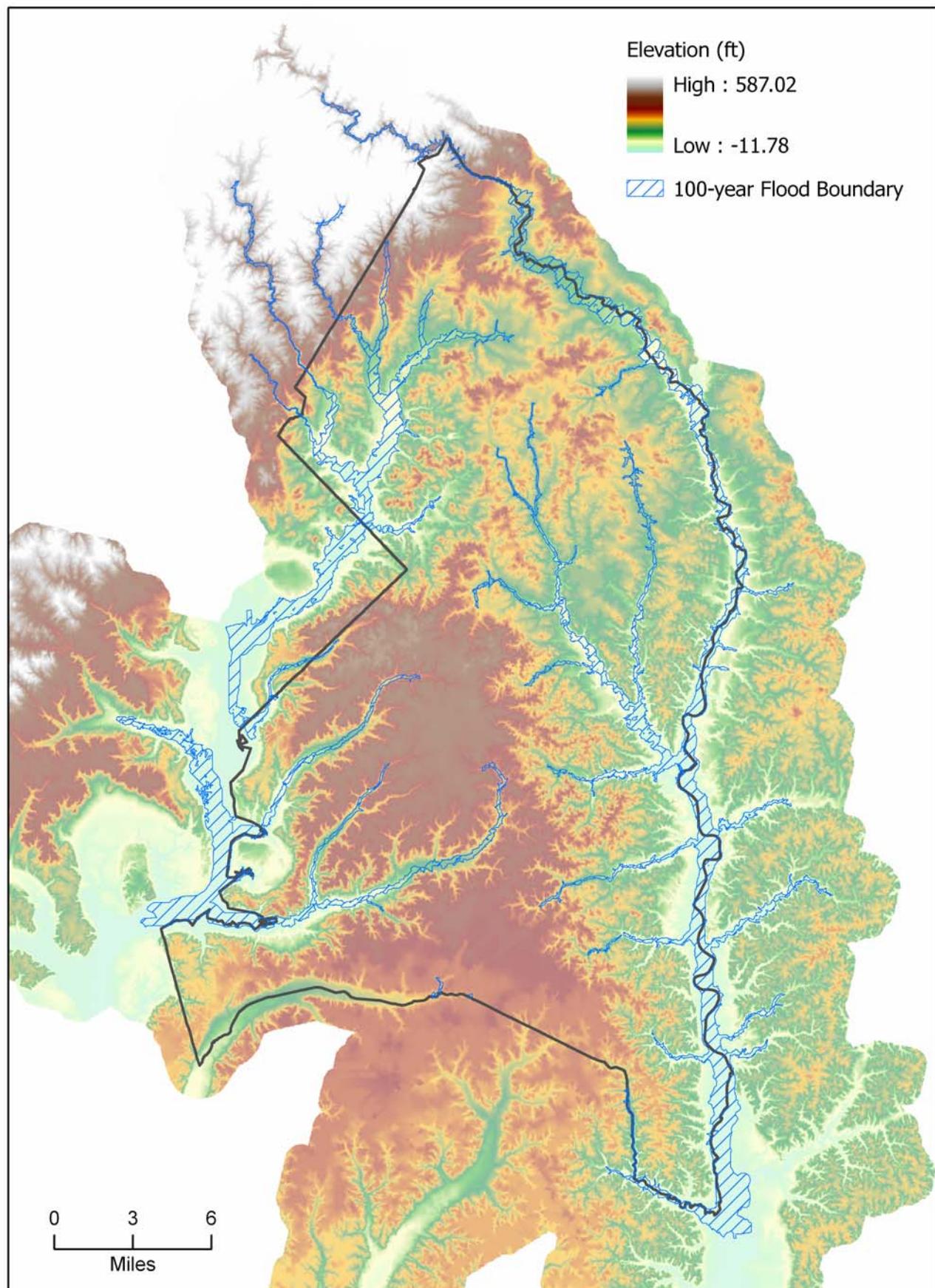
The results of the HAZUS-MH modeling effort report that 33.1 square miles of Prince George's County are subject to the 100-year flood, or 6.8% of the county's total land area. The county ranks 14<sup>th</sup> of 24 subdivisions in the percentage of total land area in flood zone. The floodplain is generally constrained to the river courses, the most significant of which are the Potomac River, Broad Henson Creek, Piscataway Creek, the Anacostia River, the Patuxent River, and Western Branch. The depth of the 100-year flood zone has a maximum of 61.0 ft (Map B82).

With regard to the predicted damage estimates from the HAZUS-MH modeling effort, Prince George's County is predicted to have 11,049,880 square feet of building damage with 364,390 square feet (3.3% of the total damaged) of substantially damaged buildings. Prince George's County is 3<sup>rd</sup> of 24 Maryland subdivisions with regard to the amount of square feet of building damage. From the map, we can see that the heaviest damage occurs in places like Hyattsville, College Park, Pheasant Run, Wells Corner and Palmers Crossing (Map B83). Perhaps most interesting about the pattern in Prince George's County is that while the damage is significant (in comparison to other counties in the state), it is fairly evenly distributed.

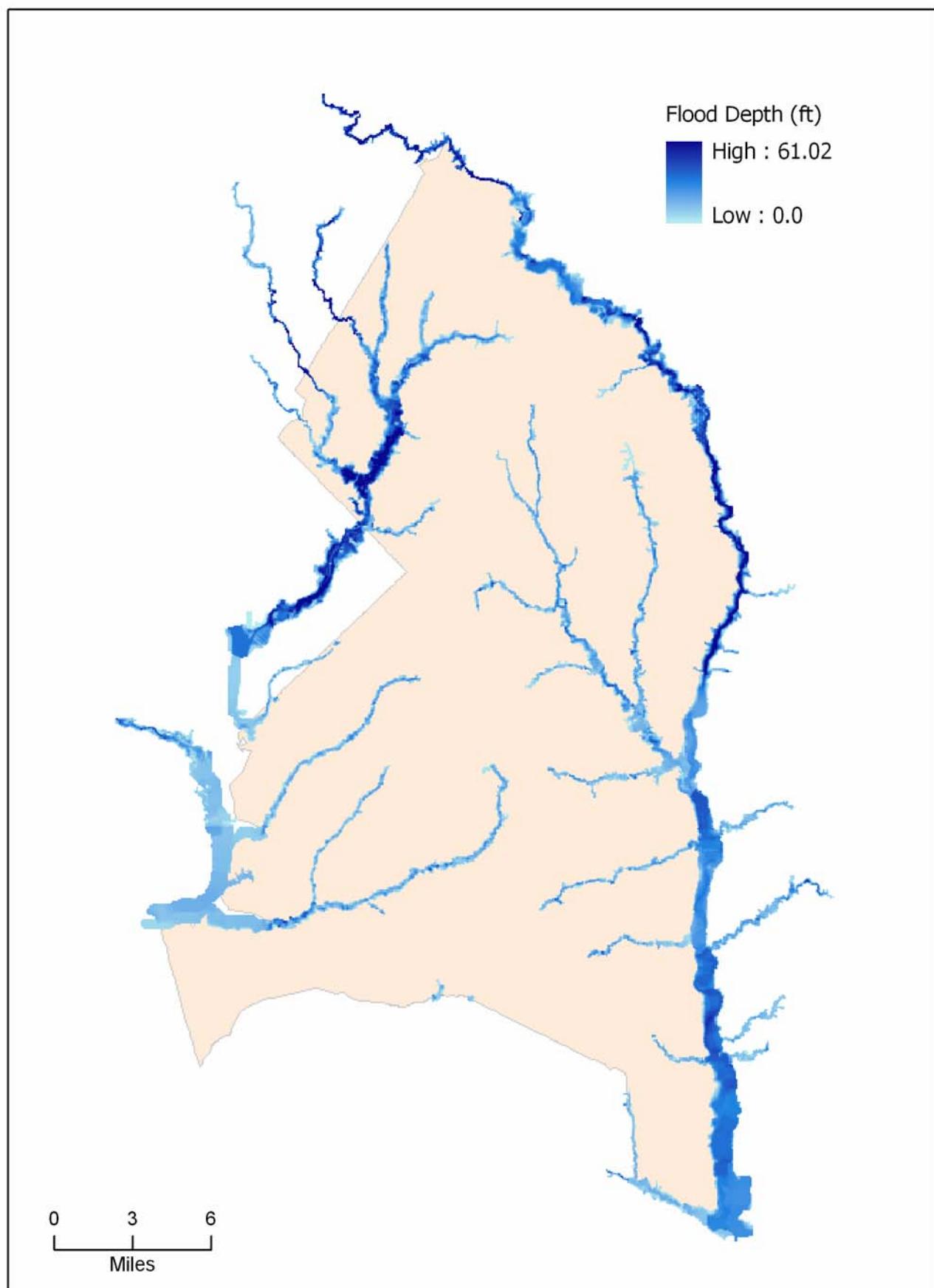
In relation to the potential number of buildings damaged by a 100-year flood predicted by HAZUS-MH, Prince George's County has 3,855 buildings vulnerable to flooding with 146 buildings to be damaged substantially (3.8% of the total number of buildings damaged). This places the county 4<sup>th</sup> of 24 Maryland subdivisions in total number of damaged buildings. The distribution of the count of buildings is nearly identical to the damaged amount of square feet (Map B84).

Finally, the amount of direct economic losses from building damage in Prince George's County is predicted by HAZUS-MH to be \$1,283,402,000. This amount is 15.8% of the total amount of direct economic losses for the state (\$8,121,065,000), which ranks the County 1<sup>st</sup> out of 24. A minority (49.4%) of the losses come from capital stock losses (structural damage, contents damage, and inventory loss) versus income loss (relocation costs, capital costs, wages lost, and rental income lost). The map shows a pattern of direct economic losses from buildings that is extremely similar to other measures of vulnerability with an exception of the appearance of Mitchellville as a hot spot (Map B85).

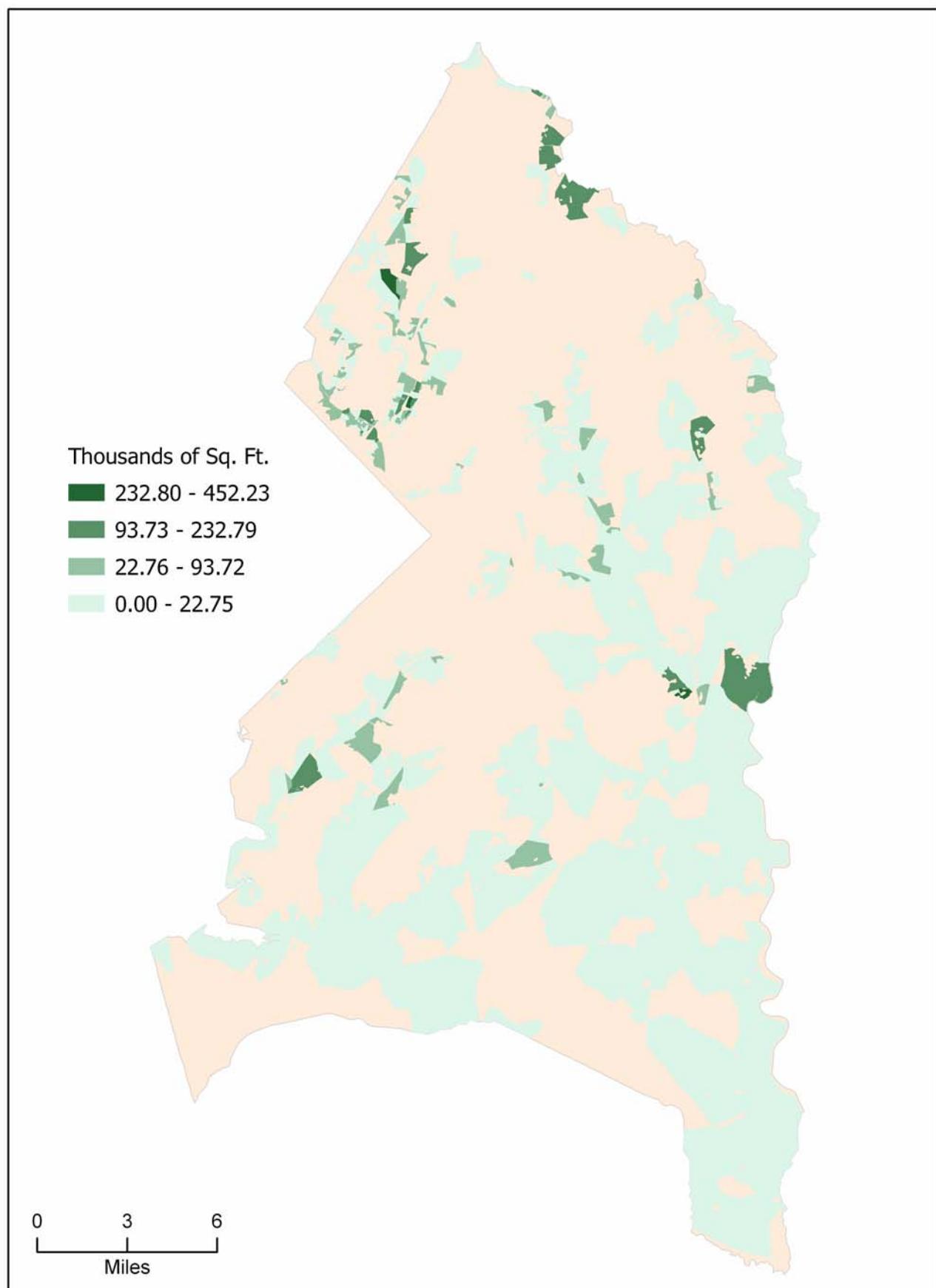
**Map B81.** Topography and modeled 100-year flood boundary in Prince George's County



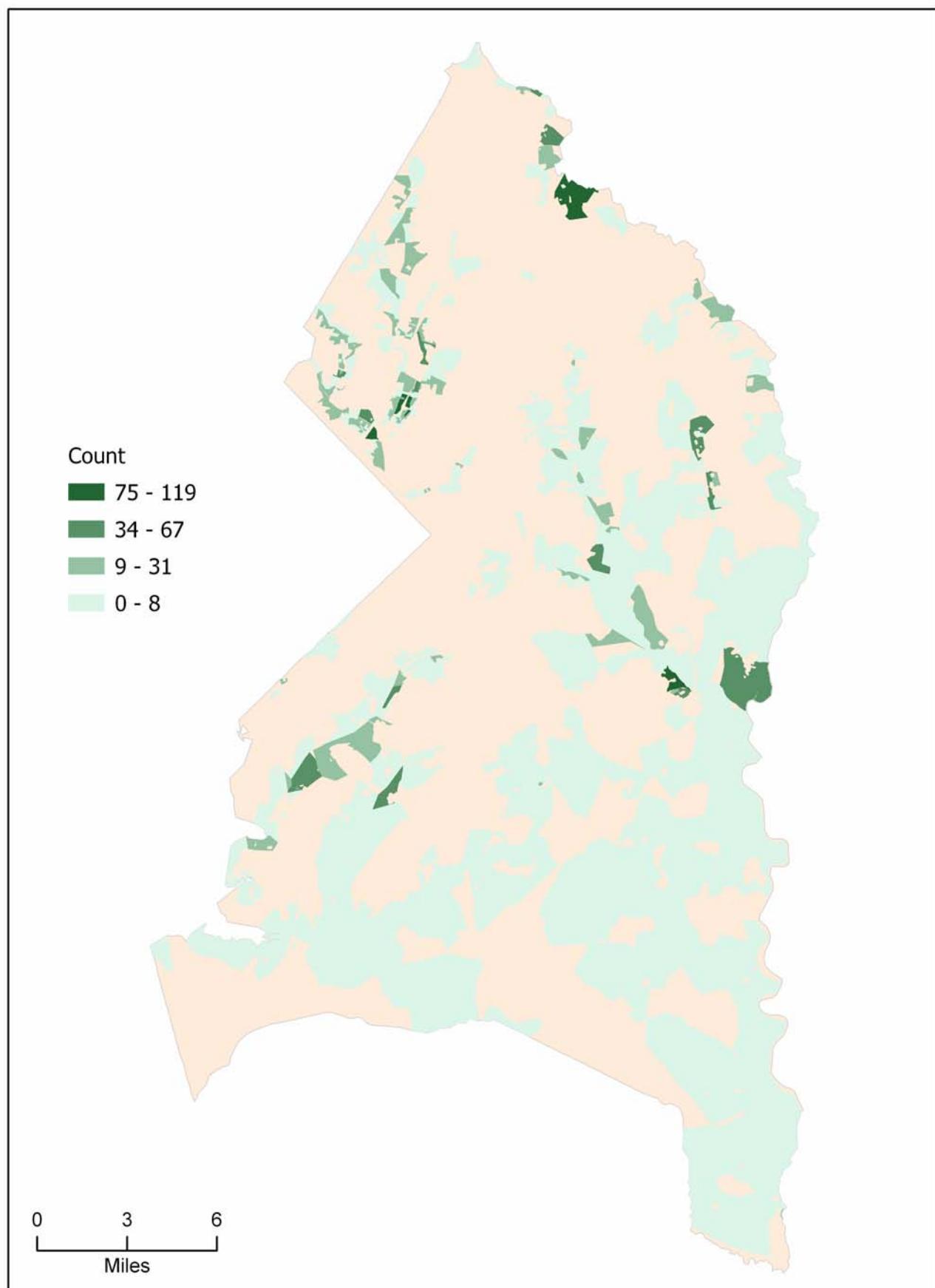
**Map B82.** Modeled 100-year flood depth in Prince George's County



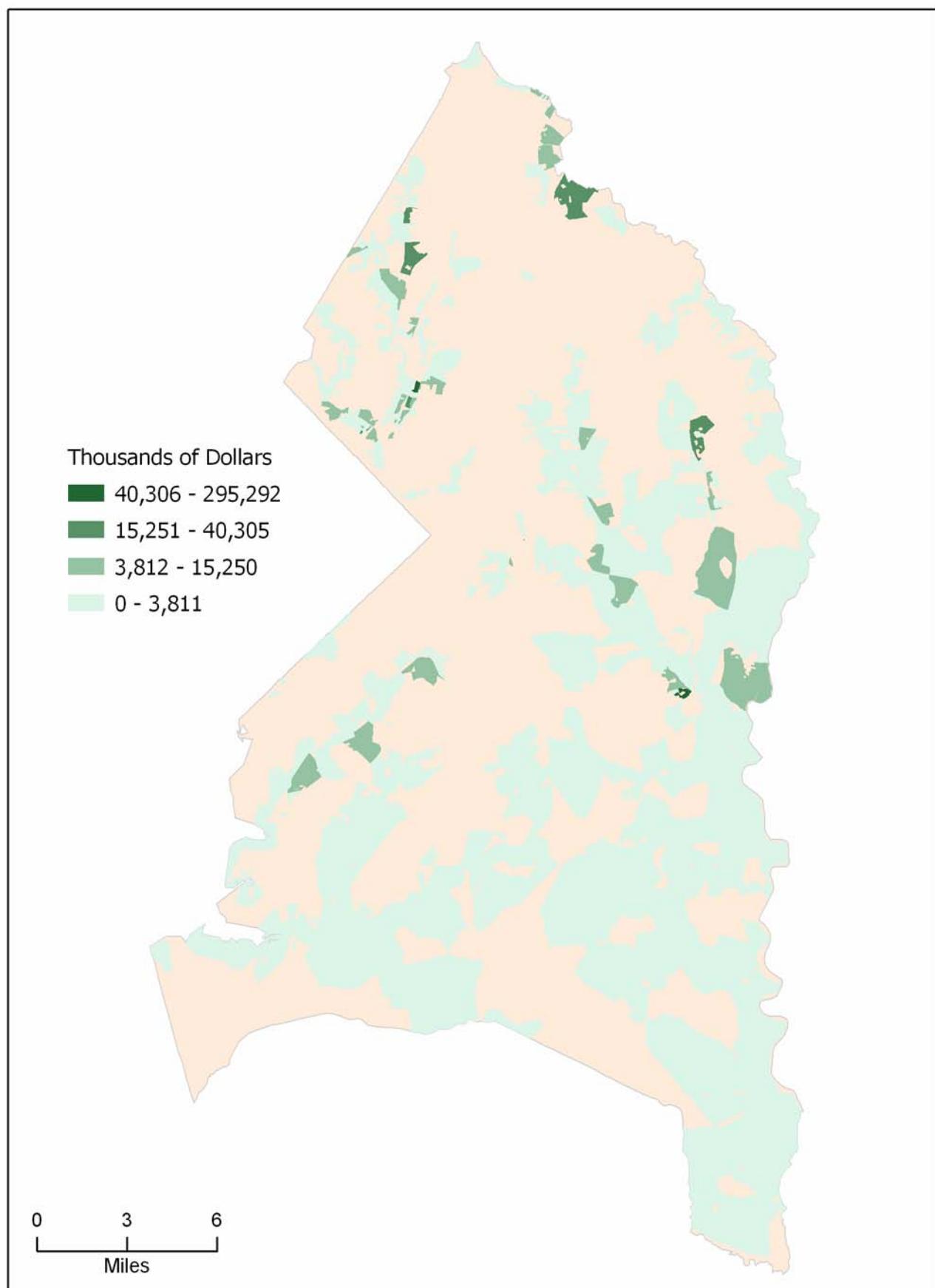
**Map B83.** Predicted amount of building damage in thousands of square feet in Prince George's County



**Map B84.** Predicted amount of building damage in numbers of buildings in Prince George's County



**Map B85.** Predicted amount of direct economic losses in thousands of dollars in Prince George's County



## Queen Anne's County

Queen Anne's County is a county of 40,563 people on the Eastern Shore of Maryland. The county is 39.8% urban and 60.2% rural. The municipalities are Barclay, Centreville, Church Hill, Millington, Queen Anne, Queenstown, Sudlersville, and Templeville. Queen Anne's County is a flat coastal plain county with elevations ranging from a high of 87 ft to a low of 0 ft (Map B86). It should be considered to have an average exposure to flooding as 4.31% (\$344.01 million) of the state's total building stock flood exposure (\$7.99 billion) is contained within the County (Table 2).

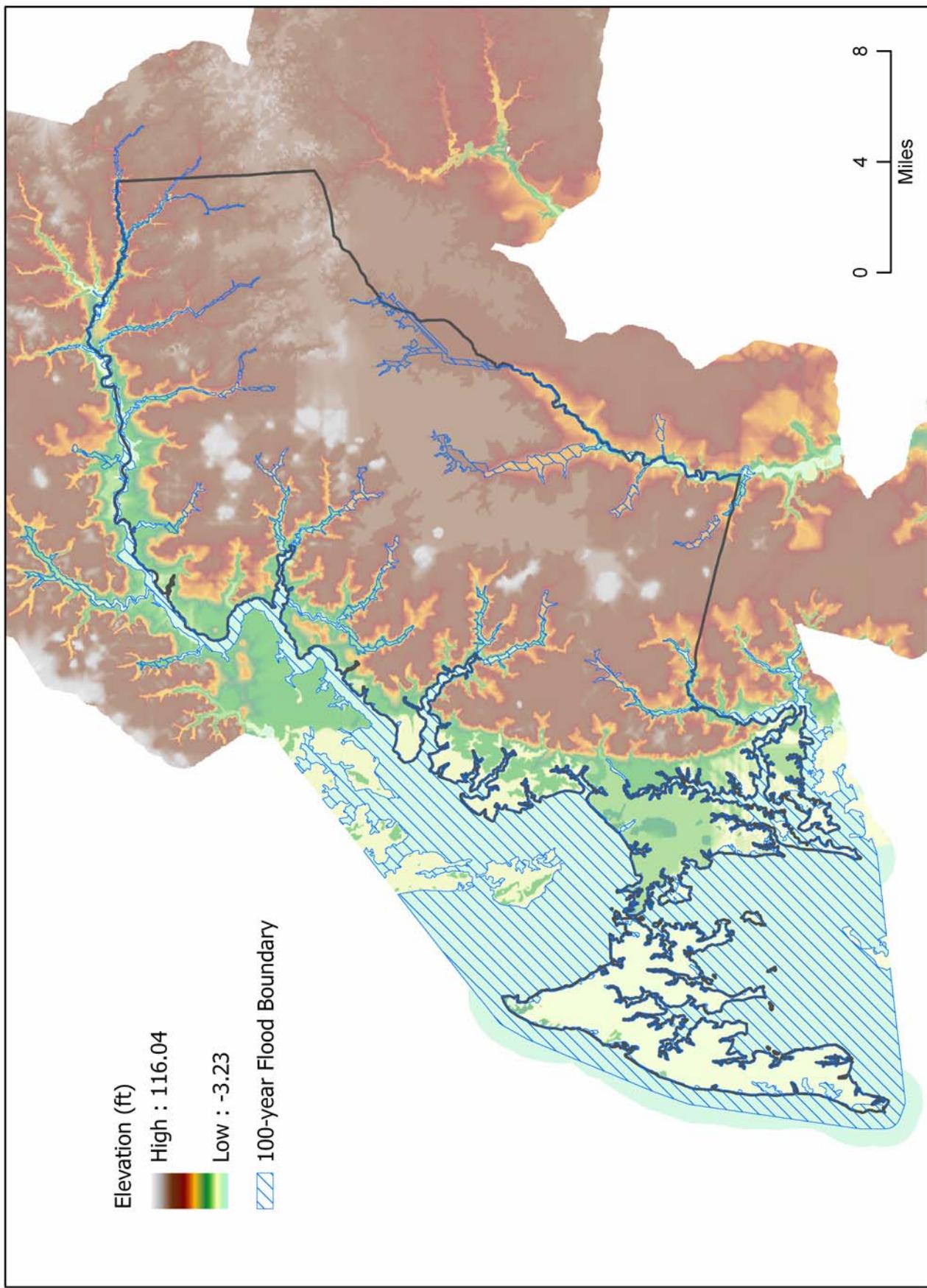
The results of the HAZUS-MH modeling effort report that 23.9 square miles of Queen Anne's County are subject to the 100-year flood, or 6.4% of the county's total land area. The county ranks 16<sup>th</sup> of 24 subdivisions in the percentage of total land area in flood zone. The floodplain is generally constrained to the area along the Chesapeake Bay as well as the river courses, the most significant of which are the Chester River, the Corsica River, Southeast Creek, the Wye River, the East River, Tuckahoe Creek, and German Branch. The depth of the 100-year flood zone has a maximum of 18.7 ft (Map B87).

With regard to the predicted damage estimates from the HAZUS-MH modeling effort, Queen Anne's County is predicted to have 1,477,820 square feet of building damage but only 30,350 square feet (2.1% of the total damaged) of substantially damaged buildings. Queen Anne's County is 18<sup>th</sup> of 24 Maryland subdivisions with regard to the amount of square feet of building damage. From the map, we can see that the heaviest damage occurs in the Kent Island area as well as Piney Neck and Centreville (Map B88). The rest of the county is predicted to sustain minimal damage.

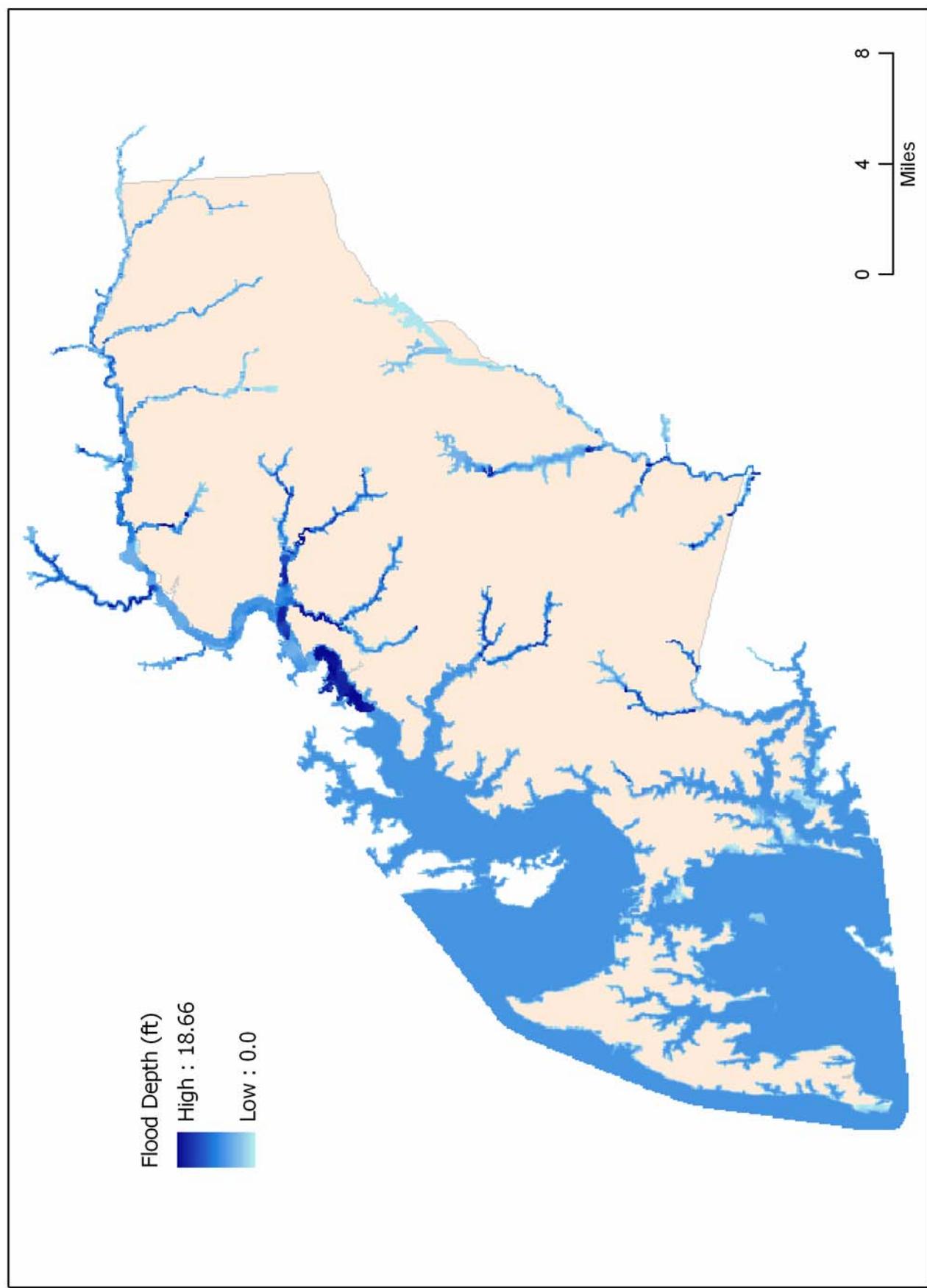
In relation to the potential number of buildings damaged by a 100-year flood predicted by HAZUS-MH, Queen Anne's County has 647 buildings vulnerable to flooding with 14 buildings to be damaged substantially (2.2% of the total number of buildings damaged). This places the county 17<sup>th</sup> of 24 Maryland subdivisions in total number of damaged buildings. The distribution of the count of buildings is identical to the damaged amount of square feet (Map B89).

Finally, the amount of direct economic losses from building damage in Queen Anne's County is predicted by HAZUS-MH to be \$69,793,000. This amount is 0.9% of the total amount of direct economic losses for the state (\$8,121,065,000), which ranks the County 21<sup>st</sup> out of 24. A majority (75.9%) of the losses come from capital stock losses (structural damage, contents damage, and inventory loss) versus income loss (relocation costs, capital costs, wages lost, and rental income lost). The map shows the pattern of direct economic losses from buildings is very similar to other measures of vulnerability although the losses seem more distributed in Kent Island and the appearance of an area northeast of Centreville (Map B90).

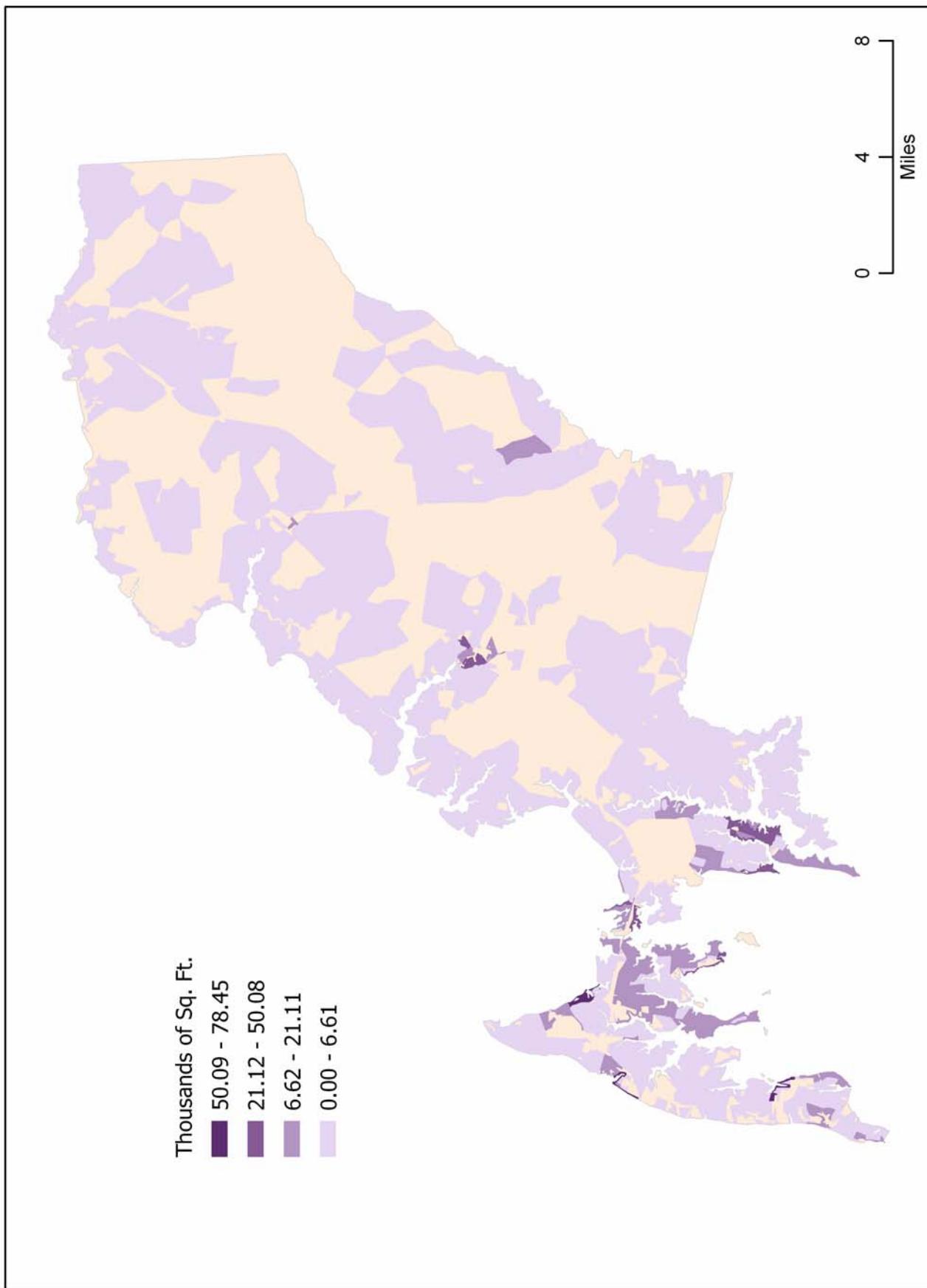
**Map B86.** Topography and modeled 100-year flood boundary in Queen Anne's County



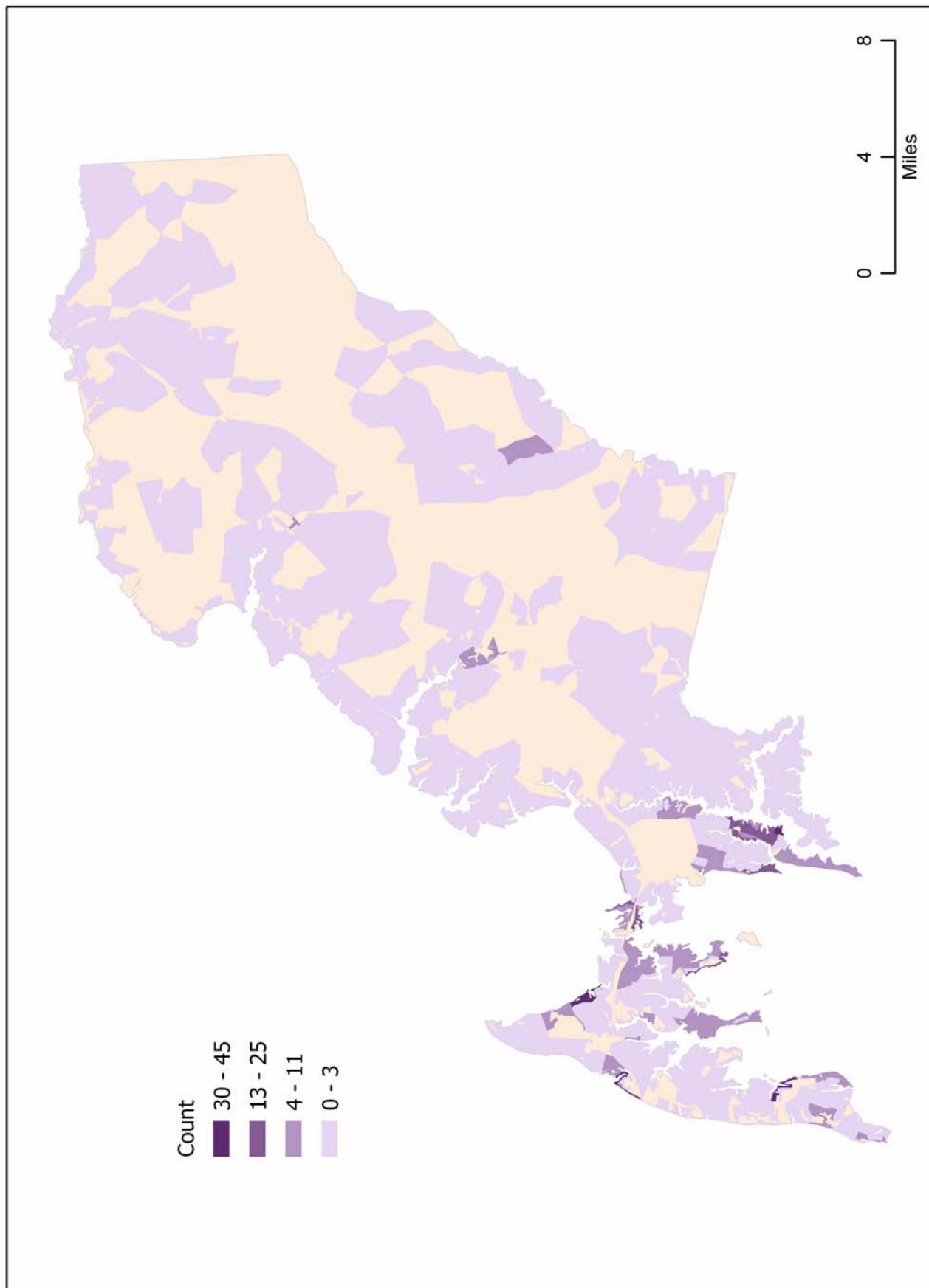
**Map B87.** Modeled 100-year flood depth in Queen Anne's County



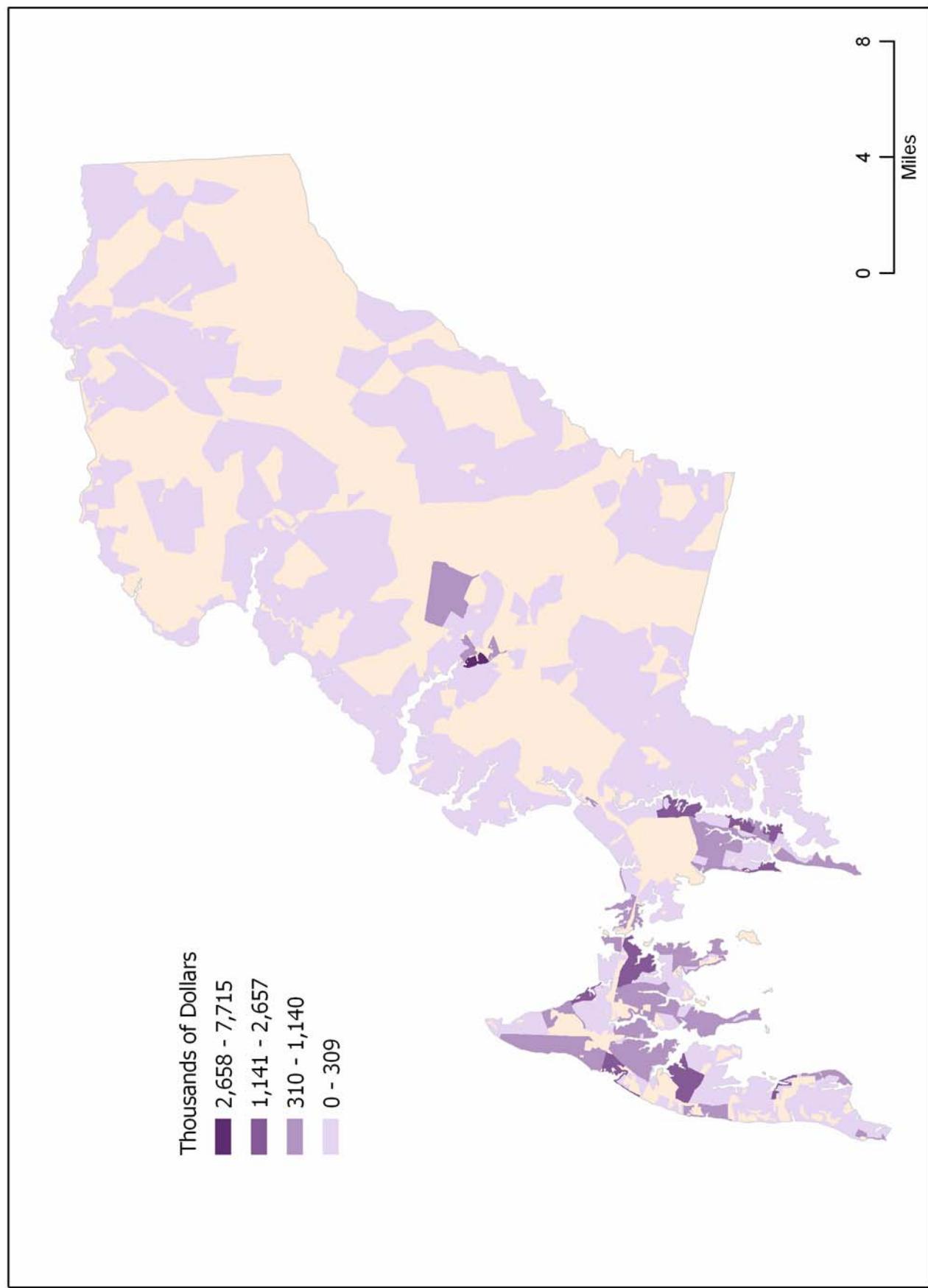
**Map B88.** Predicted amount of building damage in thousands of square feet in Queen Anne's County



**Map B89.** Predicted amount of building damage in numbers of buildings in Queen Anne's County



**Map B90.** Predicted amount of direct economic losses in thousands of dollars in Queen Anne's County



## **St. Mary's County**

St. Mary's County is a county of 86,211 people in southern Maryland. The county is 37.8% urban and 62.2% rural. The one municipality is Leonardtown. St. Mary's County is a combination of rolling hills and flat coastal plain with elevations ranging from a high of 192 ft to a low of 0 ft (Map B91). It should be considered to have relative low exposure to flooding as only 1.37% (\$109.1 million) of the state's total building stock flood exposure (\$7.99 billion) is contained within the County (Table 2).

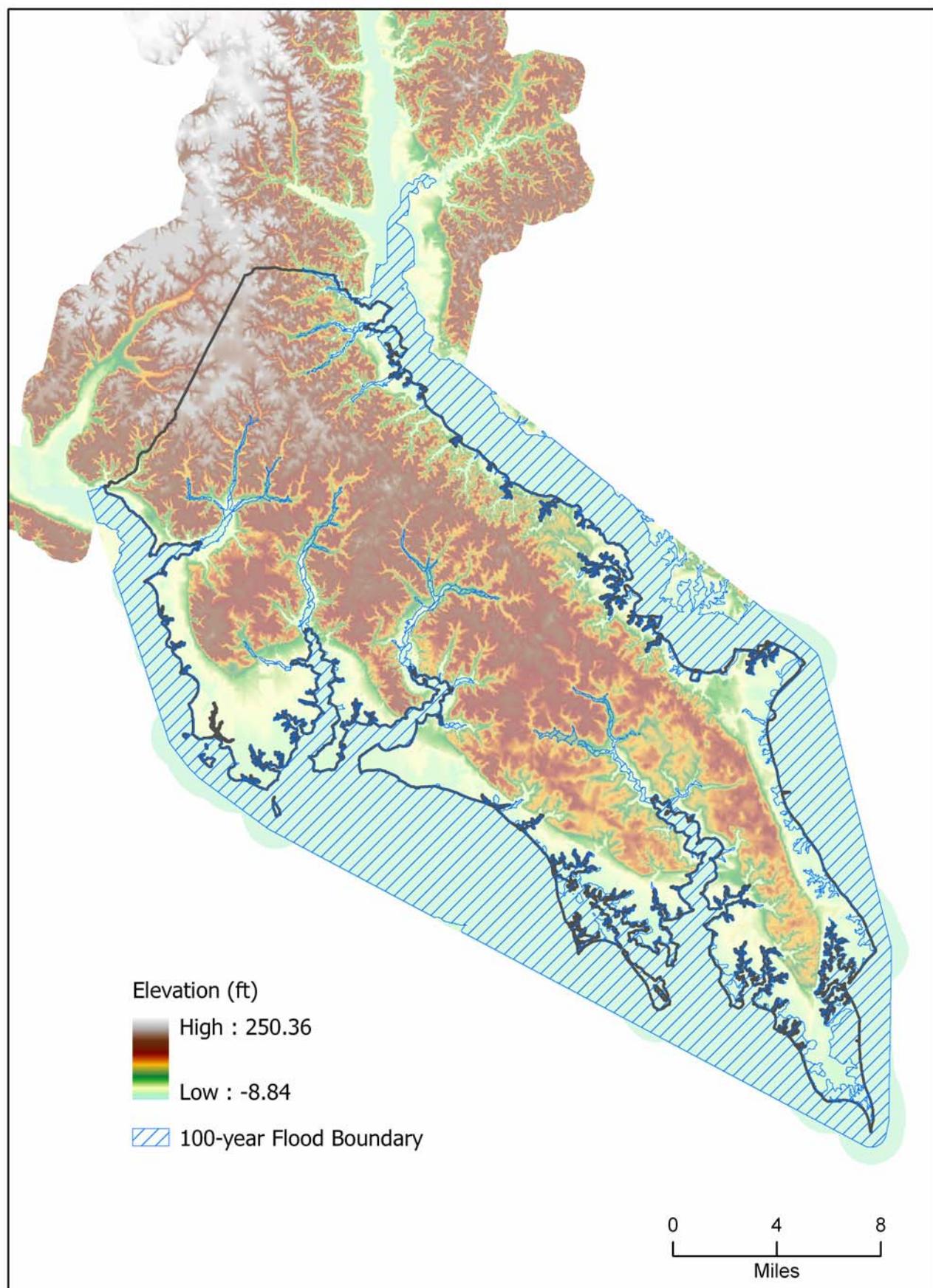
The results of the HAZUS-MH modeling effort report that 28.1 square miles of St. Mary's County are subject to the 100-year flood, or 7.7% of the county's total land area. The county ranks 11<sup>th</sup> of 24 subdivisions in the percentage of total land area in flood zone. The floodplain is generally constrained to the area along the Chesapeake Bay as well as the river courses, the most significant of which are the Potomac River, Chaptico Creek, St. Clements Bay, Breton Bay, the St. Mary's River, St. Jerome Creek, and the Patuxent River. The depth of the 100-year flood zone has a maximum of 14.2 ft (Map B92).

With regard to the predicted damage estimates from the HAZUS-MH modeling effort, St. Mary's County is predicted to have 1,939,650 square feet of building damage with 319,870 square feet (16.5% of the total damaged) of substantially damaged buildings. St. Mary's County is 16<sup>th</sup> of 24 Maryland subdivisions with regard to the amount of square feet of building damage. From the map, we can see that the heaviest damage primarily occurs around the edges of the county (Map B93). Places like Leonardtown, Piney Point, St. Mary's City, Beachville, Scotland Beach, the Patuxent Naval Air Station, Clarks Landing, and Trent Hall. The rest of the county is predicted to sustain minimal damage.

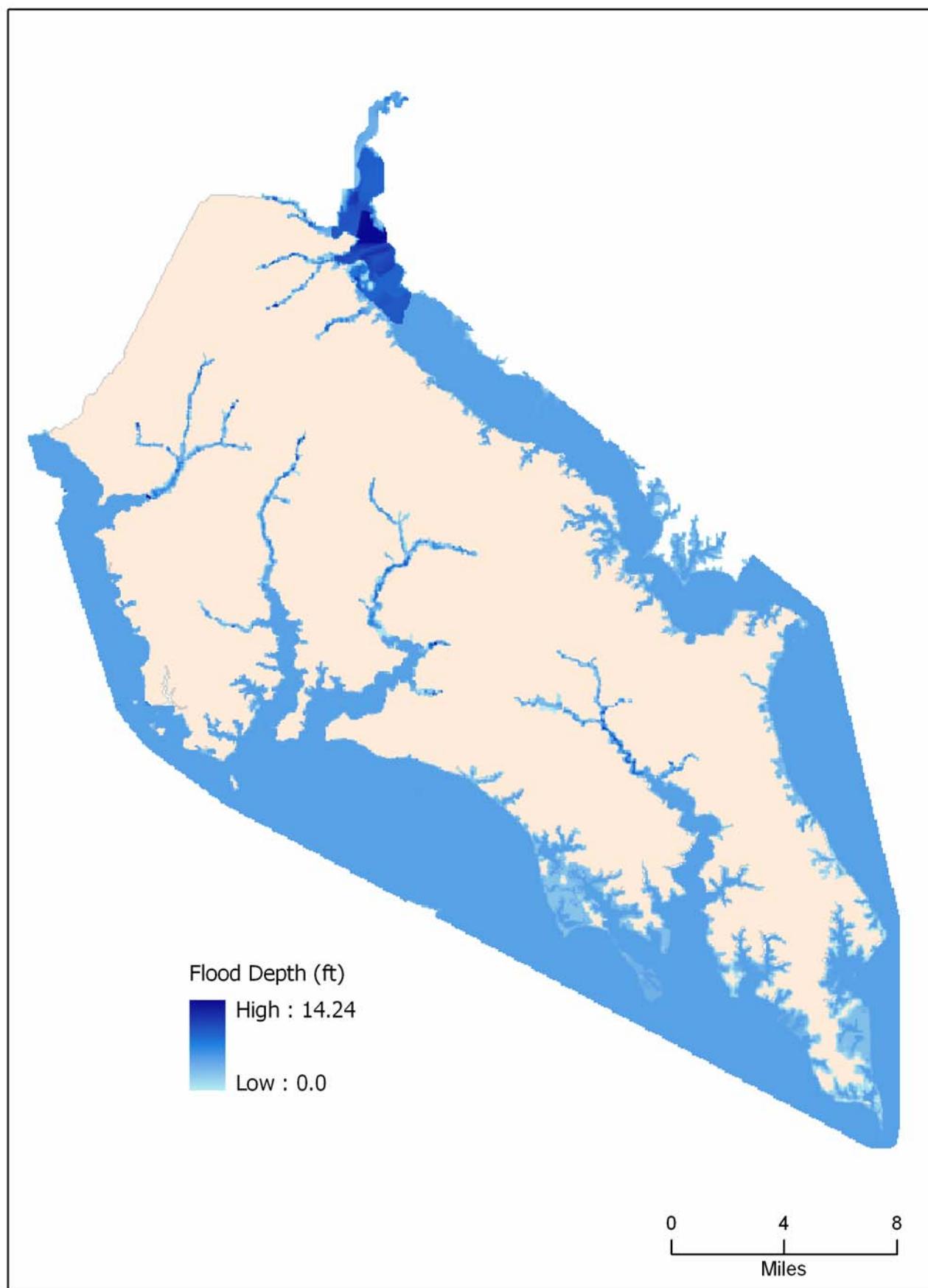
In relation to the potential number of buildings damaged by a 100-year flood predicted by HAZUS-MH, St. Mary's County has 781 buildings vulnerable to flooding with 158 buildings to be damaged substantially (20.2% of the total number of buildings damaged). This places the county 15<sup>th</sup> of 24 Maryland subdivisions in total number of damaged buildings. The distribution of the count of buildings is essentially identical to the damaged amount of square feet (Map B94).

Finally, the amount of direct economic losses from building damage in St. Mary's County is predicted by HAZUS-MH to be \$80,064,000. This amount is 1.0% of the total amount of direct economic losses for the state (\$8,121,065,000), which ranks the County 16<sup>th</sup> out of 24. A majority (74.7%) of the losses come from capital stock losses (structural damage, contents damage, and inventory loss) versus income loss (relocation costs, capital costs, wages lost, and rental income lost). The map shows a similar pattern to the previous measures of vulnerability but Patuxent Naval Air Station really stands out when examining potential economic loss (Map B95).

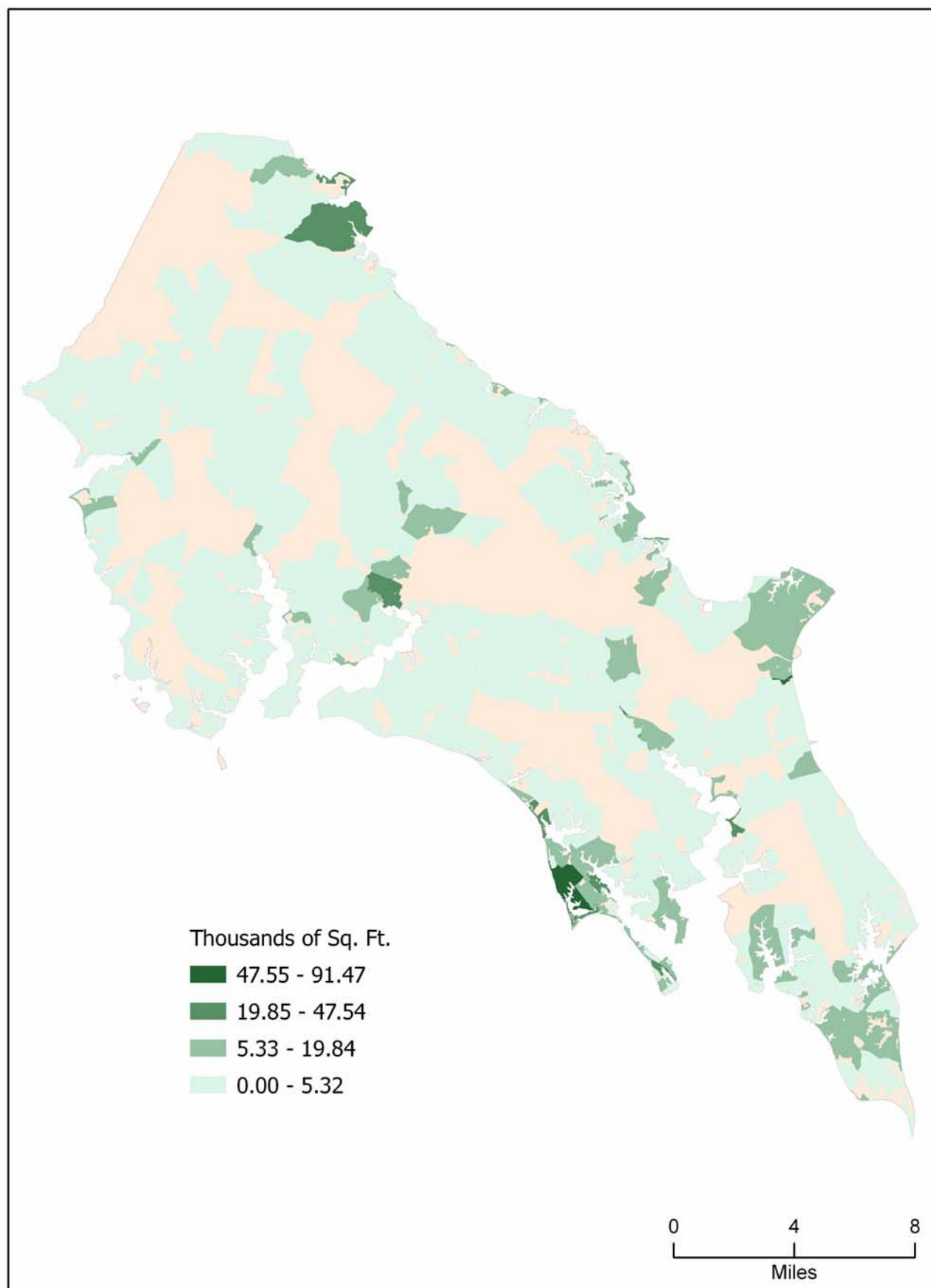
**Map B91.** Topography and modeled 100-year flood boundary in St. Mary's County



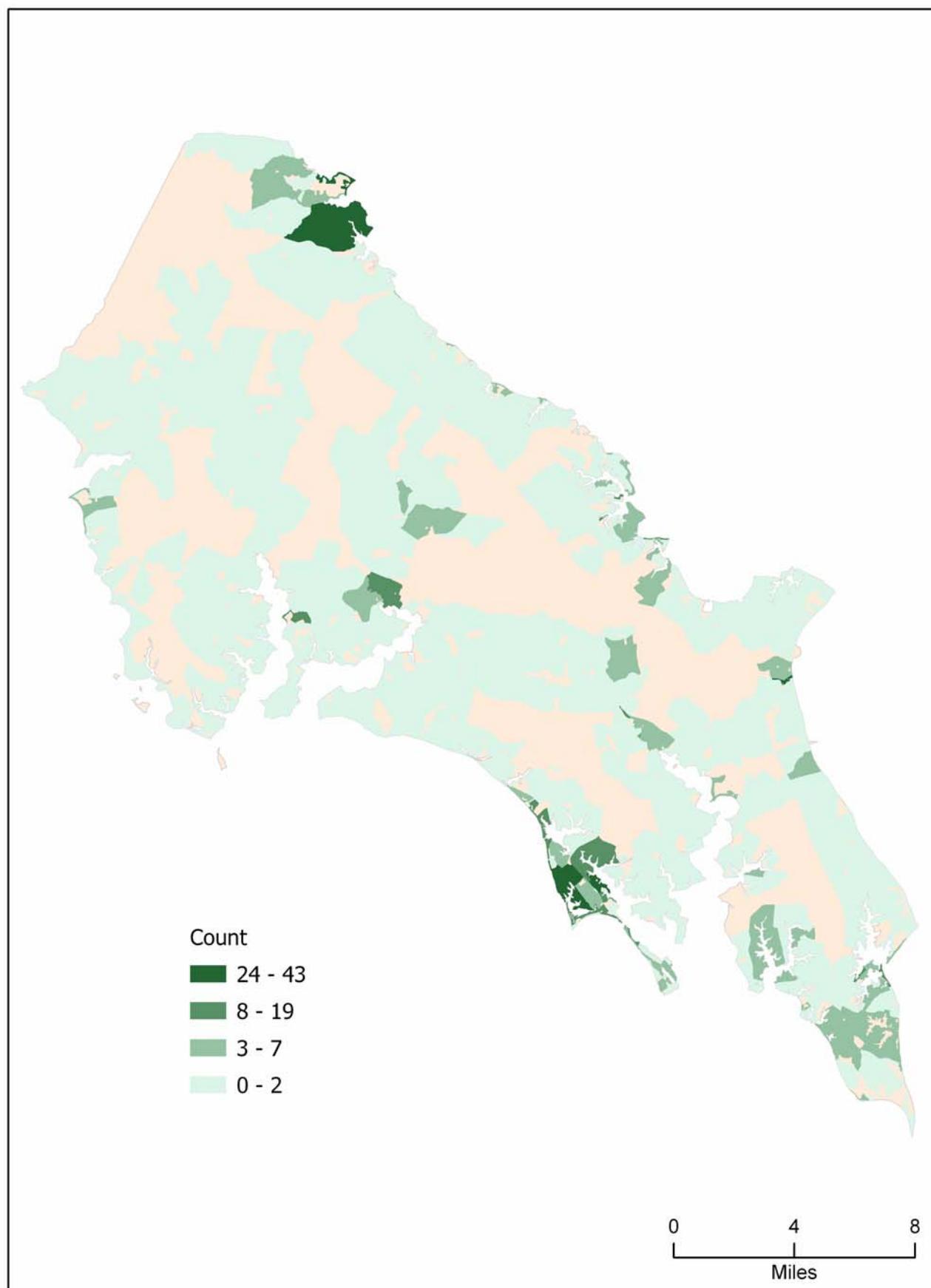
**Map B92.** Modeled 100-year flood depth in St. Mary's County



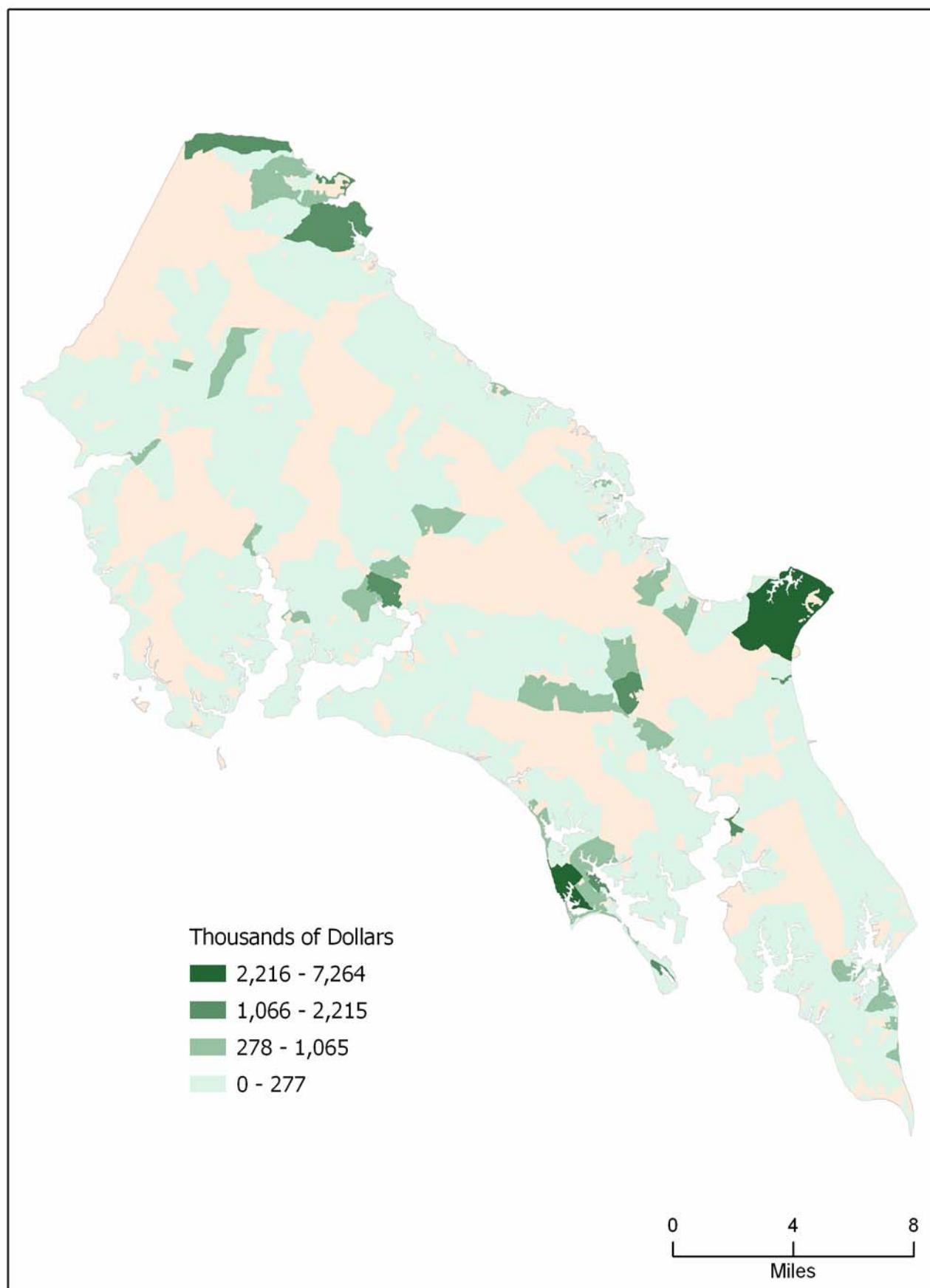
**Map B93.** Predicted amount of building damage in thousands of square feet in St. Mary's County



**Map B94.** Predicted amount of building damage in numbers of buildings in St. Mary's County



**Map B95.** Predicted amount of direct economic losses in thousands of dollars in St. Mary's County



## Somerset County

Somerset County is a county of 24,747 people on the Eastern Shore of Maryland. The county is 48.4% urban and 51.6% rural. The municipalities are Crisfield and Princess Anne. Somerset County is a flat coastal plain county with elevations ranging from a high of 46 ft to a low of 0 ft (Map B96). It should be considered to have below average exposure to flooding as 3.05% (\$243.4 million) of the state's total building stock flood exposure (\$7.99 billion) is contained within the County (Table 2).

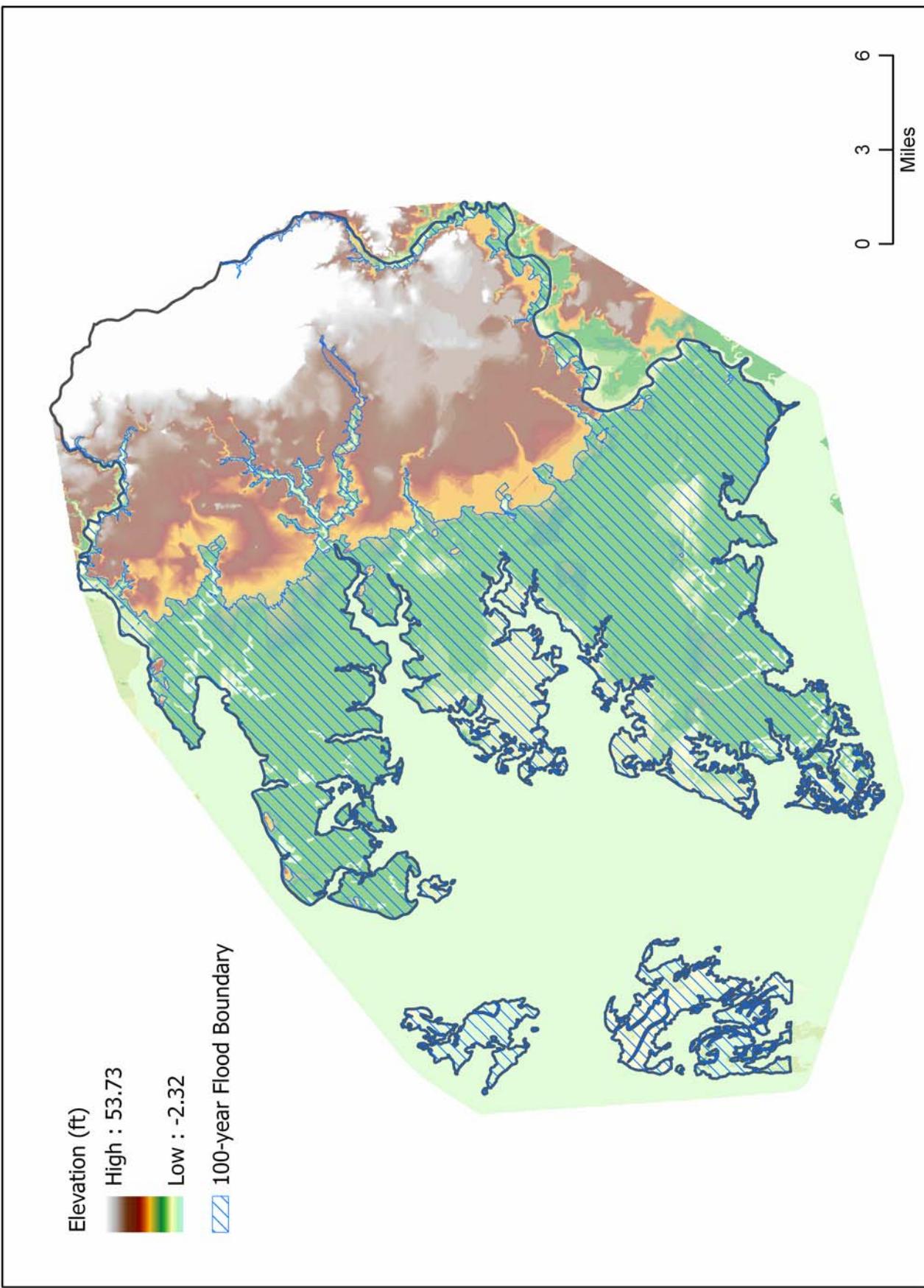
The results of the HAZUS-MH modeling effort report that 191.1 square miles of Somerset County are subject to the 100-year flood, or 58.0% of the county's total land area. The county ranks 2<sup>nd</sup> of 24 subdivisions in the percentage of total land area in flood zone. The floodplain is generally constrained to the area along the Chesapeake Bay as well as the river courses, the most significant of which are the Wicomico River, Wicomico Creek, Monie Creek, Manokin River, and the Pocomoke River. The depth of the 100-year flood zone has a maximum of 57.0 ft (Map B97).

With regard to the predicted damage estimates from the HAZUS-MH modeling effort, Somerset County is predicted to have 5,681,270 square feet of building damage with 3,854,910 square feet (67.9% of the total damaged) of substantially damaged buildings. Somerset County is 6<sup>th</sup> of 24 Maryland subdivisions with regard to the amount of square feet of building damage. From the map, we can see that the heaviest damage occurs in the western portions of the county (Map B98). Areas such as Mt. Vernon, Deal Island, Kings Creek, Upper Fairmont, Crisfield, Westover, Ewell, and Rehobeth are predicted to suffer from higher levels of damage. The rest of the county is predicted to sustain minimal damage.

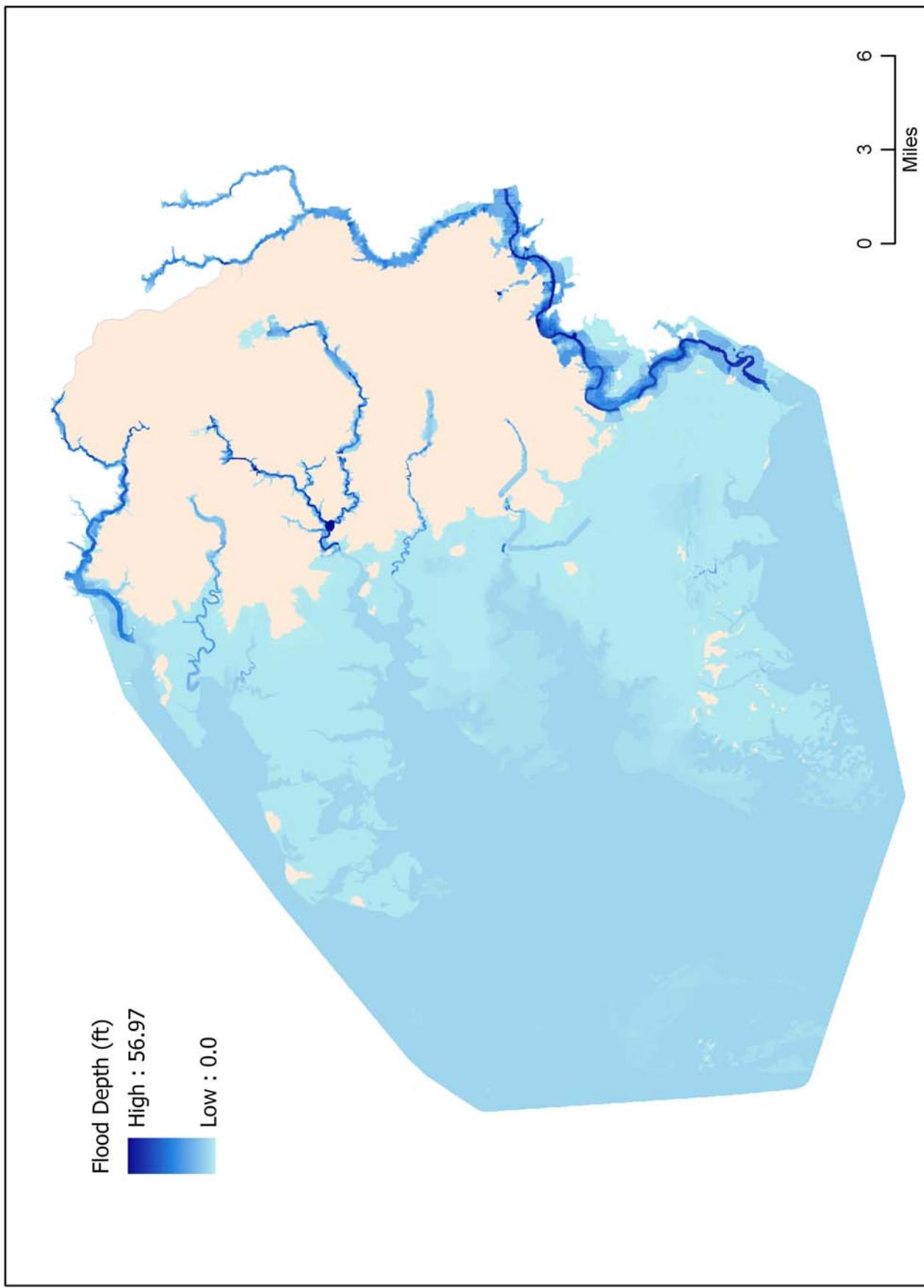
In relation to the potential number of buildings damaged by a 100-year flood predicted by HAZUS-MH, Somerset County has 2,680 buildings vulnerable to flooding with 1,946 buildings to be damaged substantially (72.6% of the total number of buildings damaged). This places the county 6<sup>th</sup> of 24 Maryland subdivisions in total number of damaged buildings. The distribution of the count of buildings is similar to the damaged amount of square feet (Map B99). As an exception, the area along the Pocomoke near Cokesbury is highlighted.

Finally, the amount of direct economic losses from building damage in Somerset County is predicted by HAZUS-MH to be \$194,011,000. This amount is 2.4% of the total amount of direct economic losses for the state (\$8,121,065,000), which ranks the County 11<sup>th</sup> out of 24. A majority (68.9%) of the losses come from capital stock losses (structural damage, contents damage, and inventory loss) versus income loss (relocation costs, capital costs, wages lost, and rental income lost). The map shows the pattern of direct economic losses from buildings as much more clustered than other measures of vulnerability (Map B100). Large losses are concentrated in the areas of Wenona, Dames Quarter, Princess Anne, Upper Fairmount, and Crisfield.

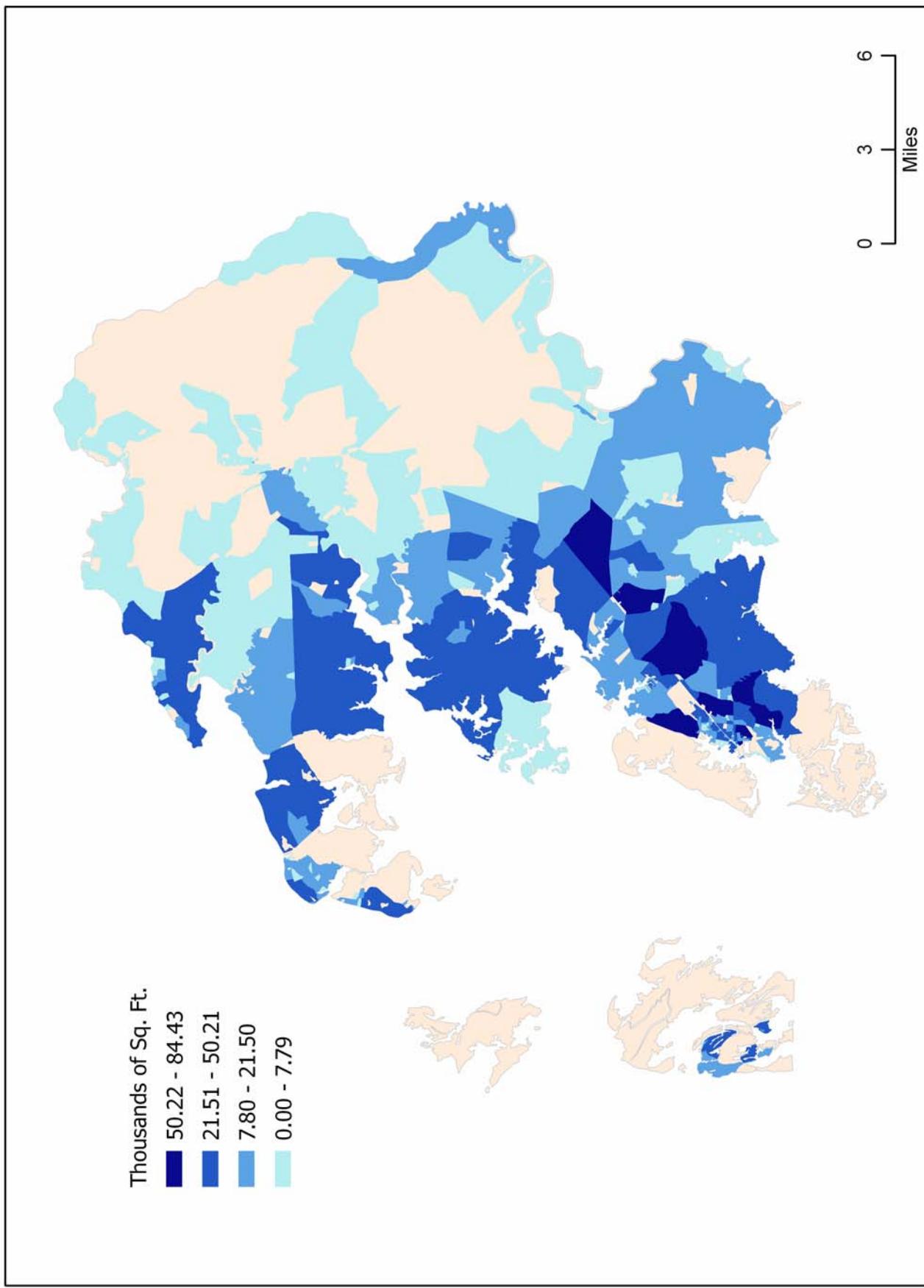
**Map B96.** Topography and modeled 100-year flood boundary in Somerset County



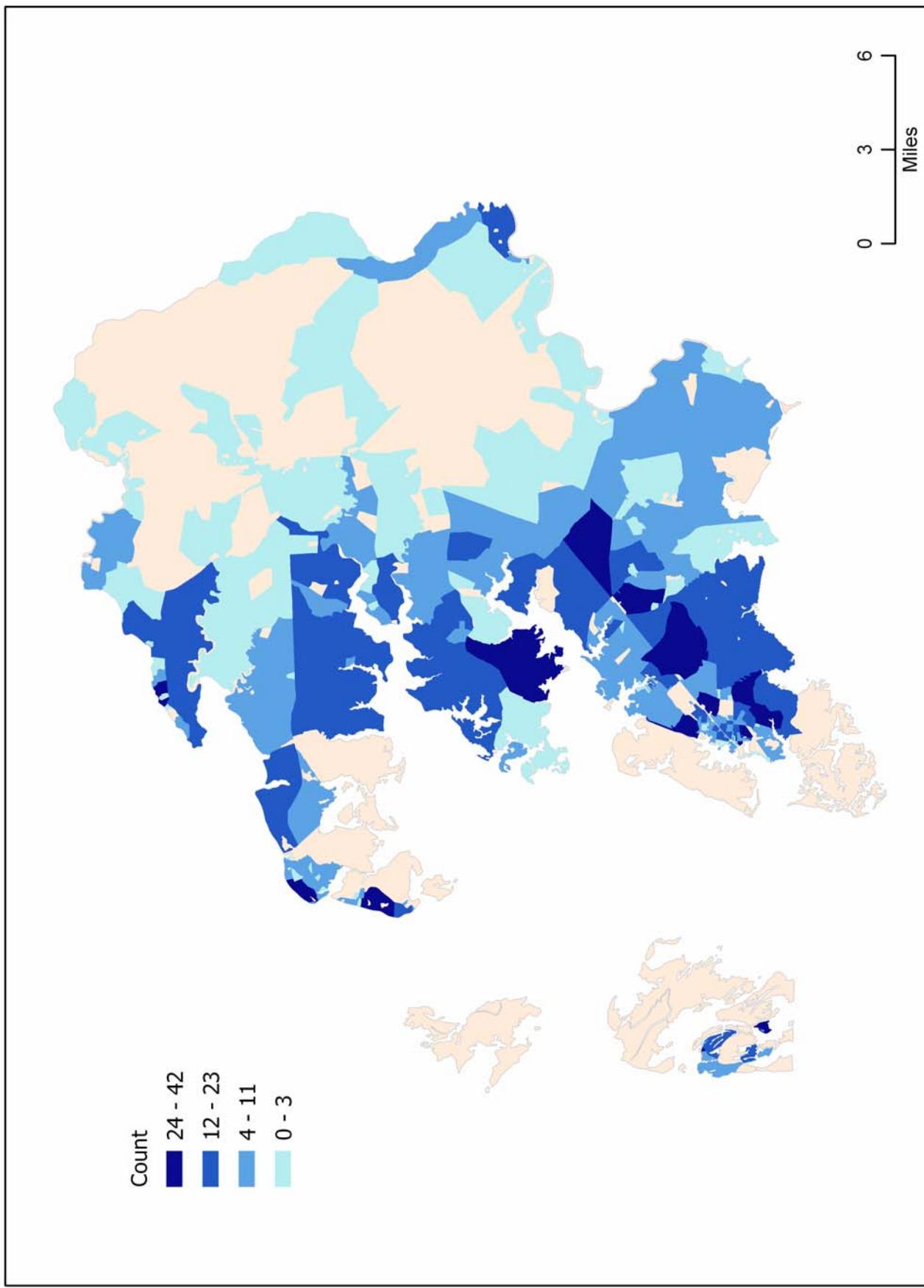
**Map B97.** Modeled 100-year flood depth in Somerset County



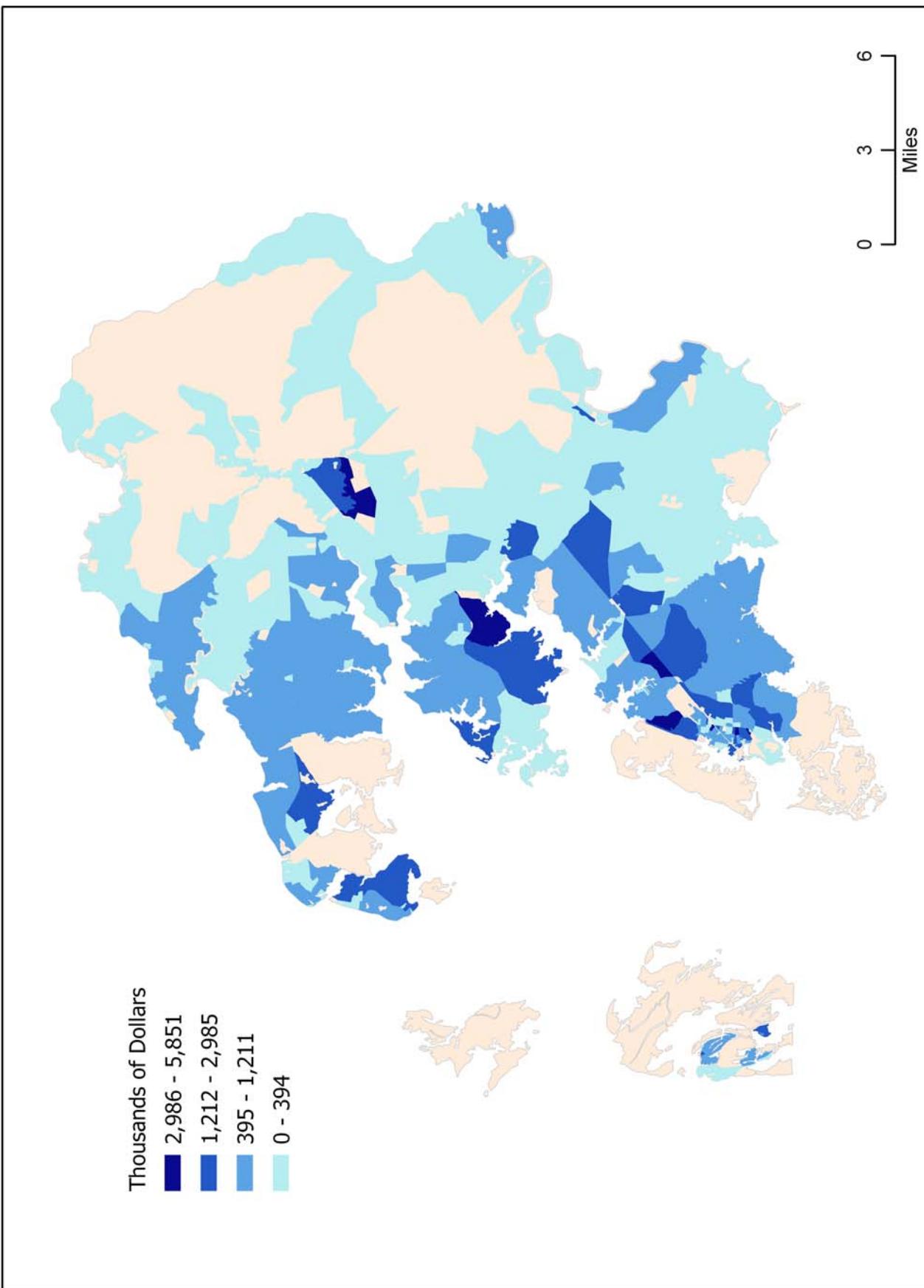
**Map B98.** Predicted amount of building damage in thousands of square feet in Somerset County



**Map B99.** Predicted amount of building damage in numbers of buildings in Somerset County



**Map B100.** Predicted amount of direct economic losses in thousands of dollars in Somerset County



## Talbot County

Talbot County is a county of 33,812 people on the Eastern Shore of Maryland. The county is 37.0% urban and 63.0% rural. The municipalities are Easton, Oxford, Queen Anne, St. Michaels, and Trappe. Talbot County is a flat coastal plain county with elevations ranging from a high of 78 ft to a low of 0 ft (Map B101). It should be considered to have average exposure to flooding as 3.90% (\$311.7 million) of the state's total building stock flood exposure (\$7.99 billion) is contained within the County (Table 2).

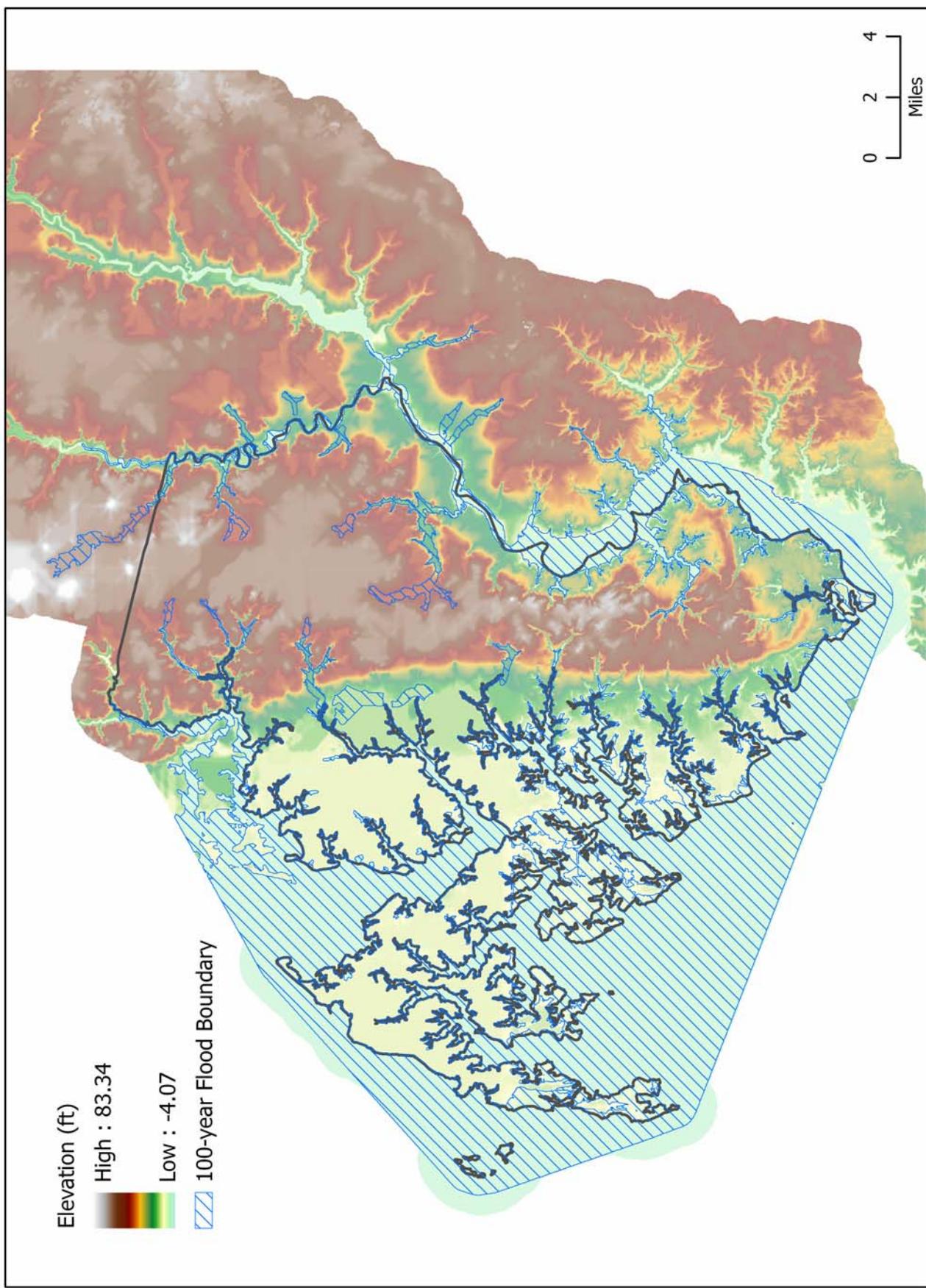
The results of the HAZUS-MH modeling effort report that 43.9 square miles of Talbot County are subject to the 100-year flood, or 16.2% of the county's total land area. The county ranks 6<sup>th</sup> of 24 subdivisions in the percentage of total land area in flood zone. The floodplain is generally constrained to the area along the Chesapeake Bay as well as the river courses, the most significant of which are the Wye River, the Miles River, Harris Creek, Broad Creek, the Tred Avon River, and the Choptank River. The depth of the 100-year flood zone has a maximum of 69.7 ft (Map B102).

With regard to the predicted damage estimates from the HAZUS-MH modeling effort, Talbot County is predicted to have 2,167,700 square feet of building damage with 154,560 square feet (7.1% of the total damaged) of substantially damaged buildings. Talbot County is 15<sup>th</sup> of 24 Maryland subdivisions with regard to the amount of square feet of building damage. From the map, we can see that the heaviest damage occurs in the western portion of the county, particularly those shores that face the Chesapeake Bay to the south (Map B103). Areas such as Taylors Island, Hambleton Point, Change Point, Deep Neck, Ferry Neck, Royal Oak, Oxford Neck, the south side of Easton, Windy Hill, and Highlys Beach. Very little of the county is predicted to sustain no damage.

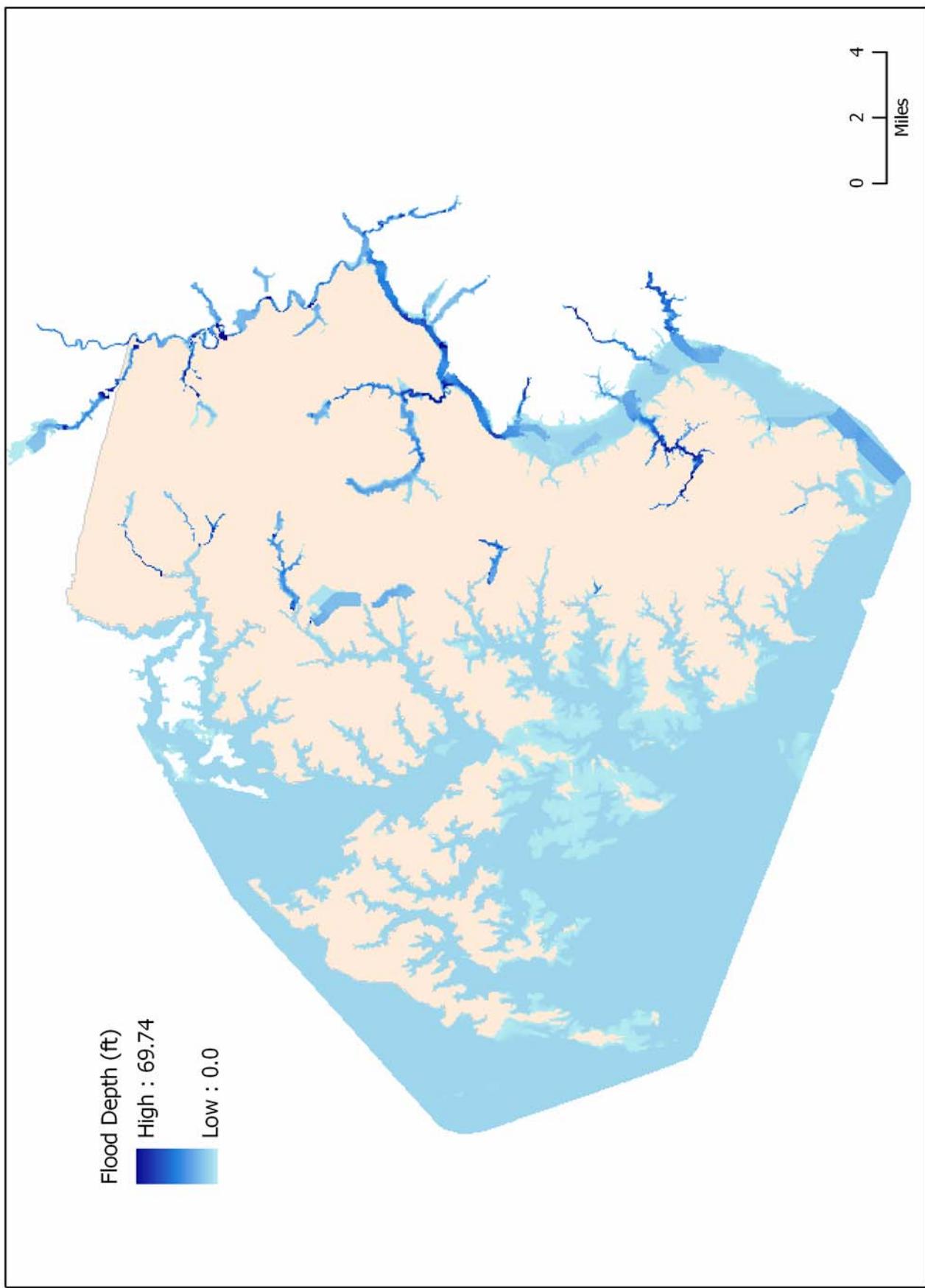
In relation to the potential number of buildings damaged by a 100-year flood predicted by HAZUS-MH, Talbot County has 869 buildings vulnerable to flooding with 61 buildings to be damaged substantially (7.0% of the total number of buildings damaged). This places the county 14<sup>th</sup> of 24 Maryland subdivisions in total number of damaged buildings. The distribution of the count of buildings is essentially identical to the damaged amount of square feet (Map B104).

Finally, the amount of direct economic losses from building damage in Talbot County is predicted by HAZUS-MH to be \$75,454,000. This amount is 0.9% of the total amount of direct economic losses for the state (\$8,121,065,000), which ranks the County 18<sup>th</sup> out of 24. A majority (81.9%) of the losses come from capital stock losses (structural damage, contents damage, and inventory loss) versus income loss (relocation costs, capital costs, wages lost, and rental income lost). The map shows the pattern of direct economic losses from buildings to be very similar to the two other measures of vulnerability (Map B105). Two exceptions are the appearance of the Grubin Neck area and the Wye Mills area as highlights.

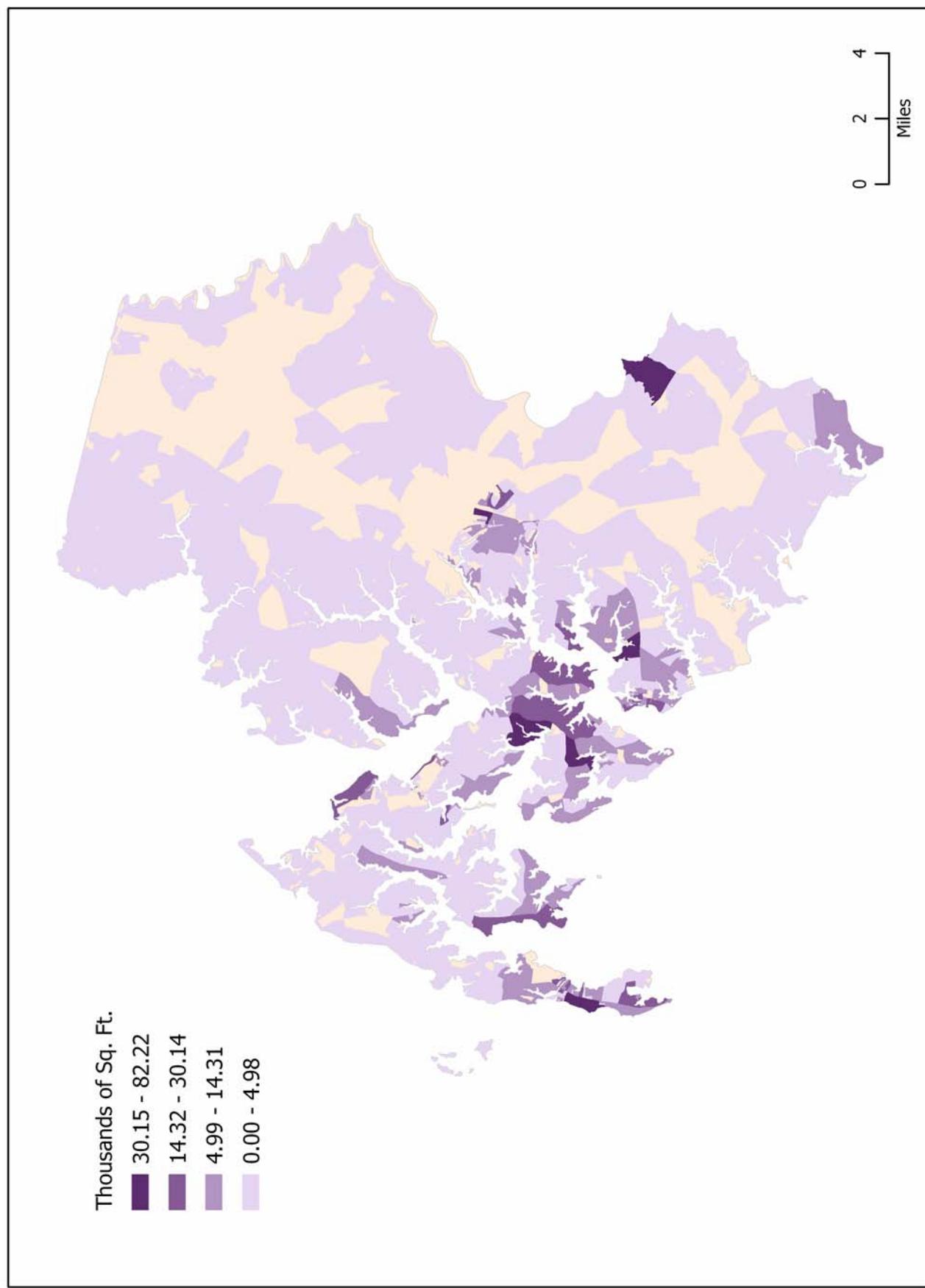
**Map B101.** Topography and modeled 100-year flood boundary in Talbot County



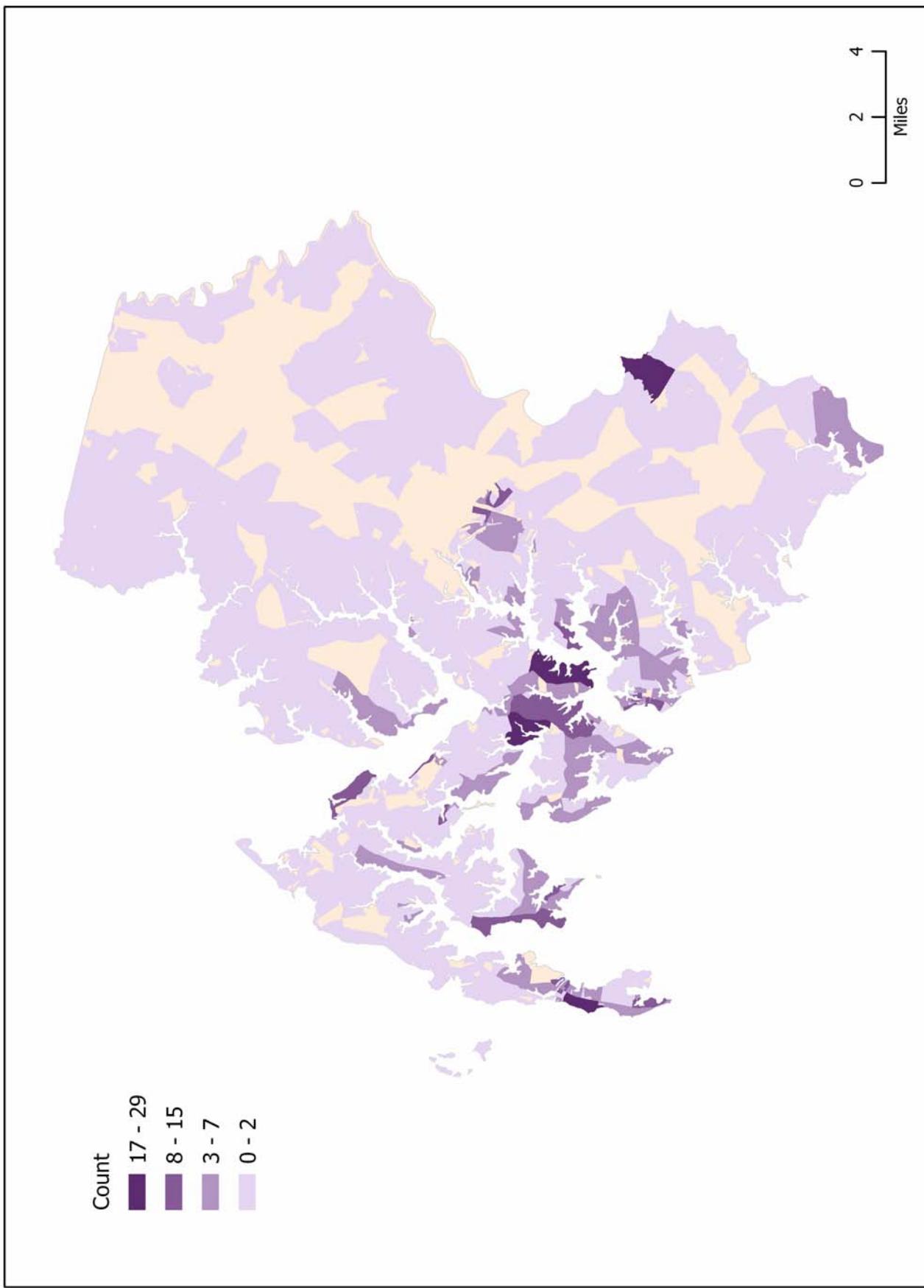
**Map B102.** Modeled 100-year flood depth in Talbot County



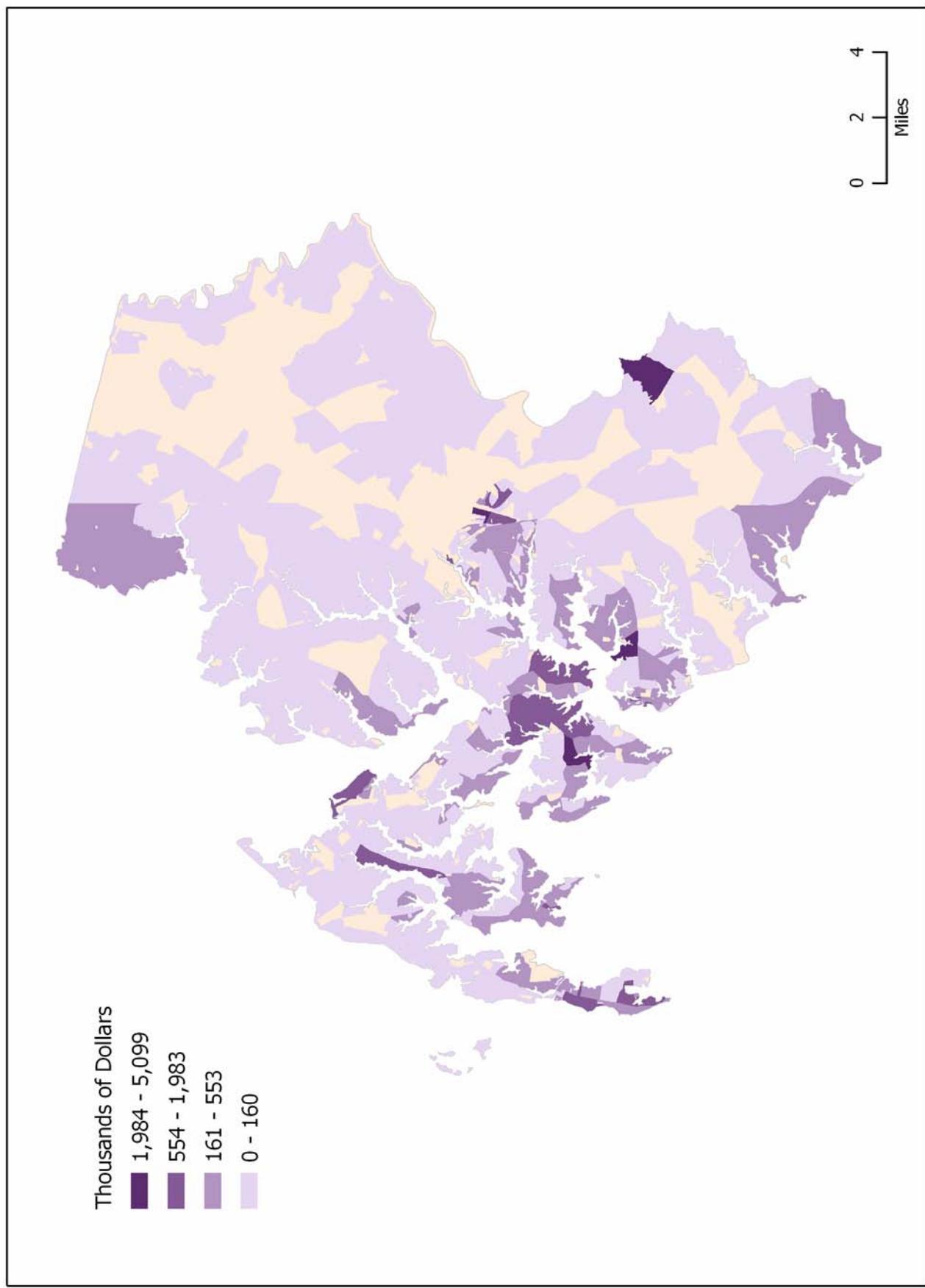
**Map B103.** Predicted amount of building damage in thousands of square feet in Talbot County



**Map B104.** Predicted amount of building damage in numbers of buildings in Talbot County



**Map B105.** Predicted amount of direct economic losses in thousands of dollars in Talbot County



## Washington County

Washington County is a county of 131,923 people in western Maryland. The county is 68.3% urban and 31.7% rural. The municipalities are Boonsboro, Clear Spring, Funkstown, Hagerstown, Hancock, Keedysville, Sharpsburg, Smithsburg, and Williamsport. Washington County is a rugged, hilly county with elevations ranging from a high of 2,140 ft to a low of 250 ft (Map B106). It should be considered to have relative low exposure to flooding as only 1.37% (\$109.6 million) of the state's total building stock flood exposure (\$7.99 billion) is contained within the County (Table 2).

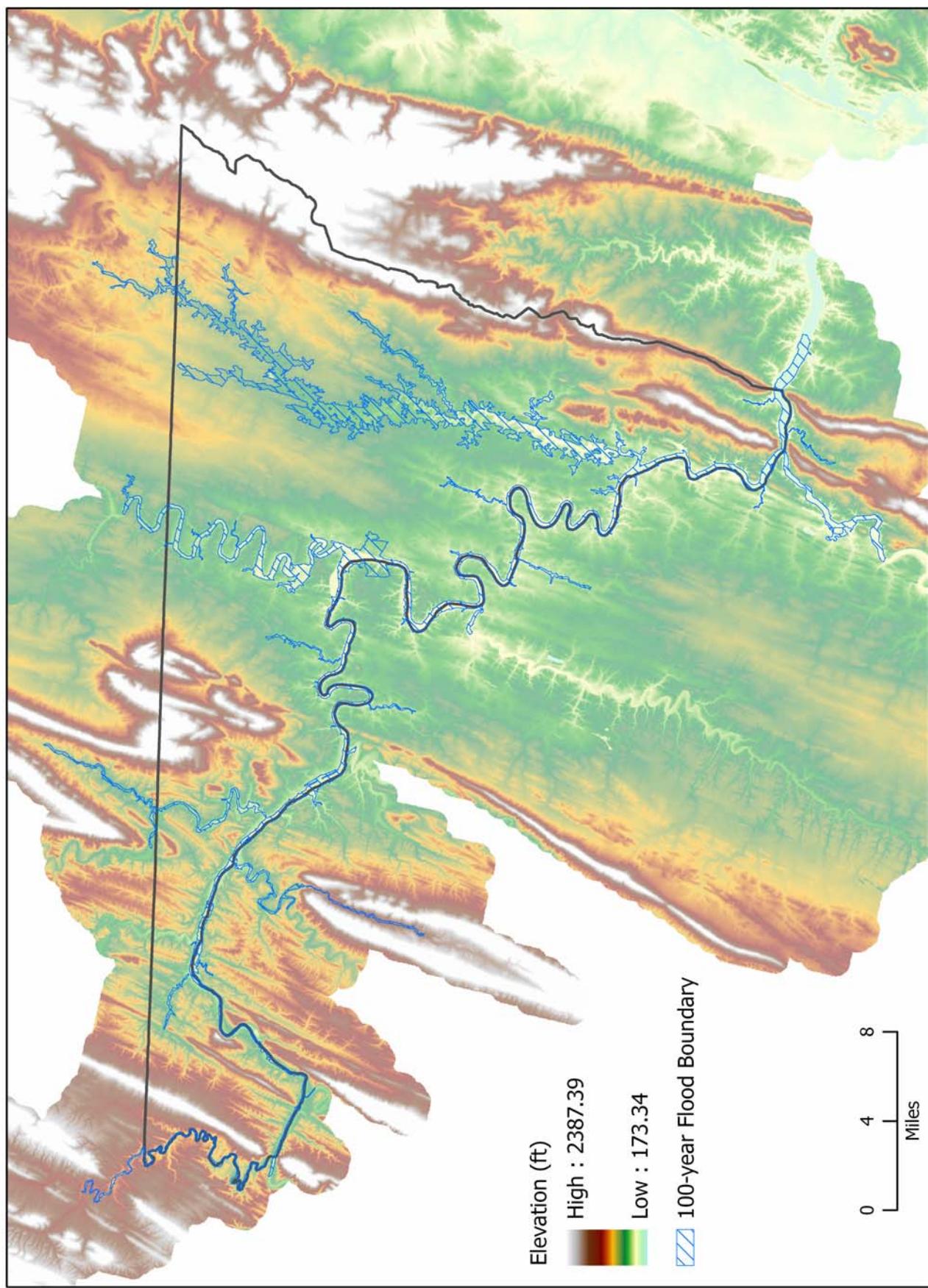
The results of the HAZUS-MH modeling effort report that 43.0 square miles of Washington County are subject to the 100-year flood, or 9.2% of the county's total land area. The county ranks 9<sup>th</sup> of 24 subdivisions in the percentage of total land area in flood zone. The floodplain is generally constrained to the river courses, the most significant of which are the Potomac River, Conococheague Creek, and Antietam Creek. The depth of the 100-year flood zone has a maximum of 343.7 ft. However, it should be obvious from the map that this model run contains a flood depth and extent error at the confluence of the Potomac and Conococheague Creek (Map B107).

With regard to the predicted damage estimates from the HAZUS-MH modeling effort, Washington County is predicted to have 5,472,150 square feet of building damage with 1,009,080 square feet (18.4% of the total damaged) of substantially damaged buildings. Washington County is 7<sup>th</sup> of 24 Maryland subdivisions with regard to the amount of square feet of building damage. From the map, we can see that the heaviest damage occurs in and on the outskirts of Hagerstown, as well as Williamsport, Antietam and Sharpsburg (Map B108). The rest of the county is predicted to sustain minimal or no damage.

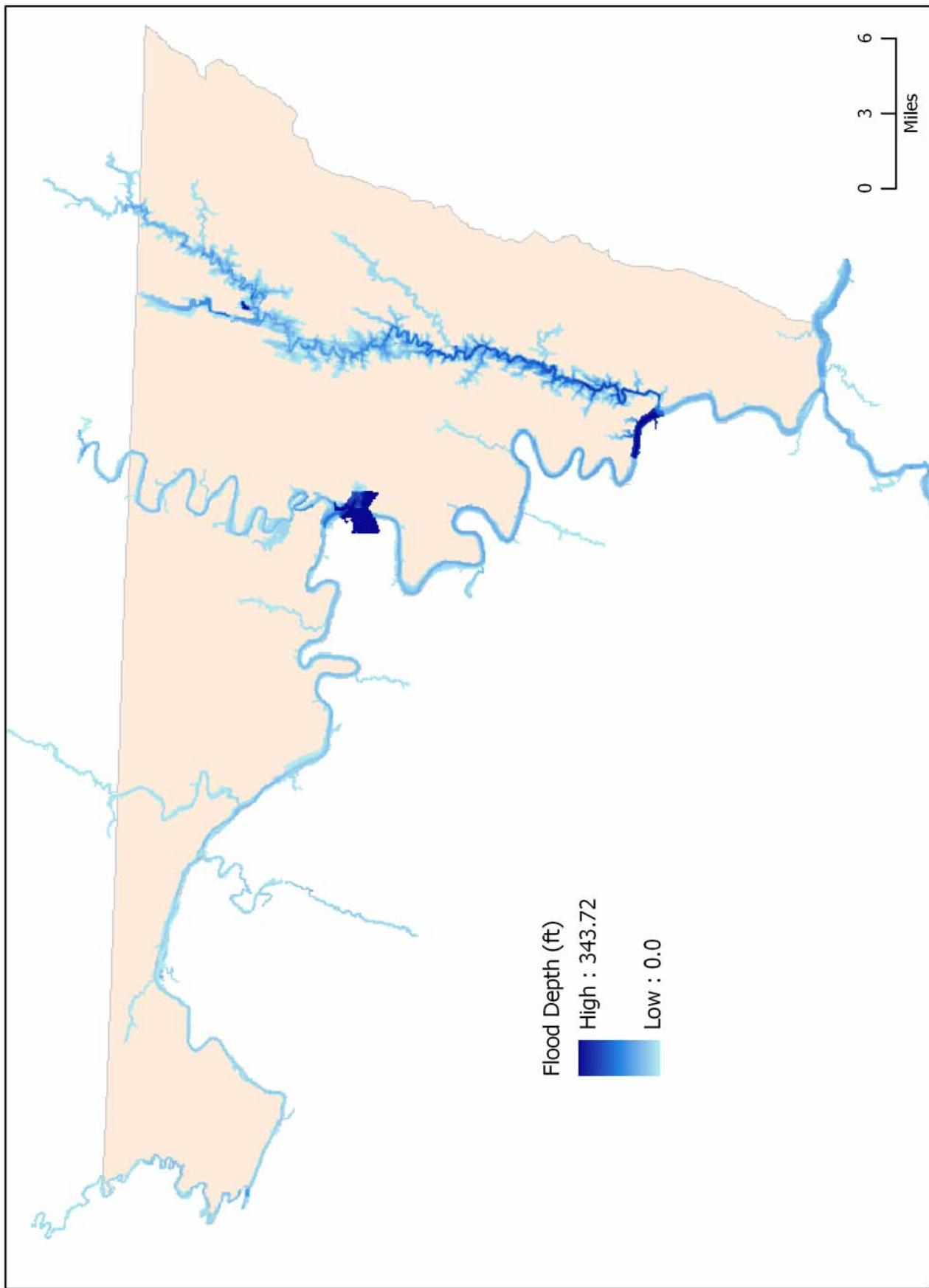
In relation to the potential number of buildings damaged by a 100-year flood predicted by HAZUS-MH, Washington County has 3,623 buildings vulnerable to flooding with 457 buildings to be damaged substantially (12.6% of the total number of buildings damaged). This places the county 5<sup>th</sup> of 24 Maryland subdivisions in total number of damaged buildings. This distribution of the count of buildings is similar to the damaged amount of square feet (Map B109). As an exception, more damage appears across the river from Falling Water, West Virginia.

Finally, the amount of direct economic losses from building damage in Washington County is predicted by HAZUS-MH to be \$594,566,000. This amount is 7.3% of the total amount of direct economic losses for the state (\$8,121,065,000), which ranks the County 5<sup>th</sup> out of 24. A majority (73.9%) of the losses come from capital stock losses (structural damage, contents damage, and inventory loss) versus income loss (relocation costs, capital costs, wages lost, and rental income lost). The map shows the pattern of direct economic losses from buildings to be very similar to the two other measures of vulnerability (Map B110).

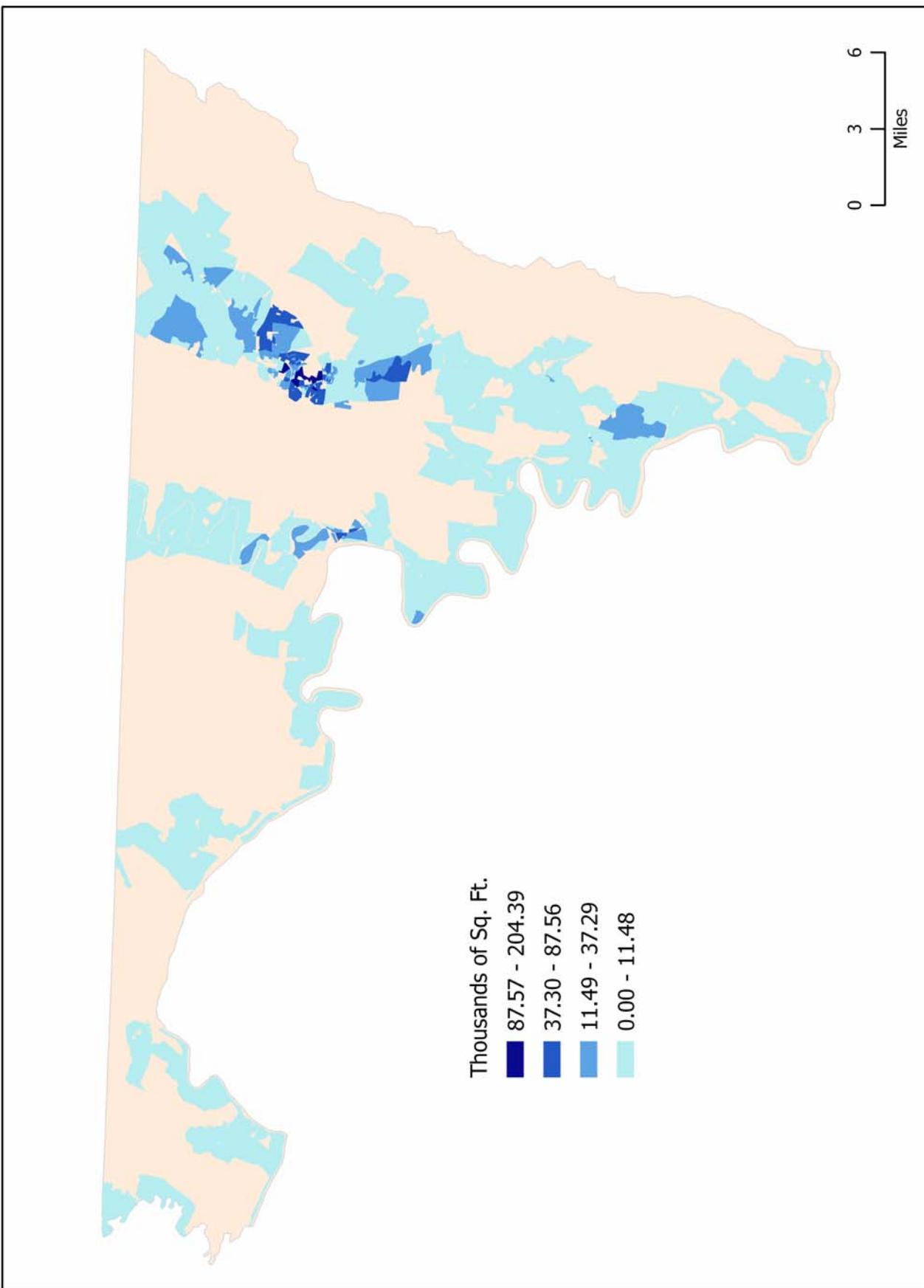
**Map B106.** Topography and modeled 100-year flood boundary in Washington County



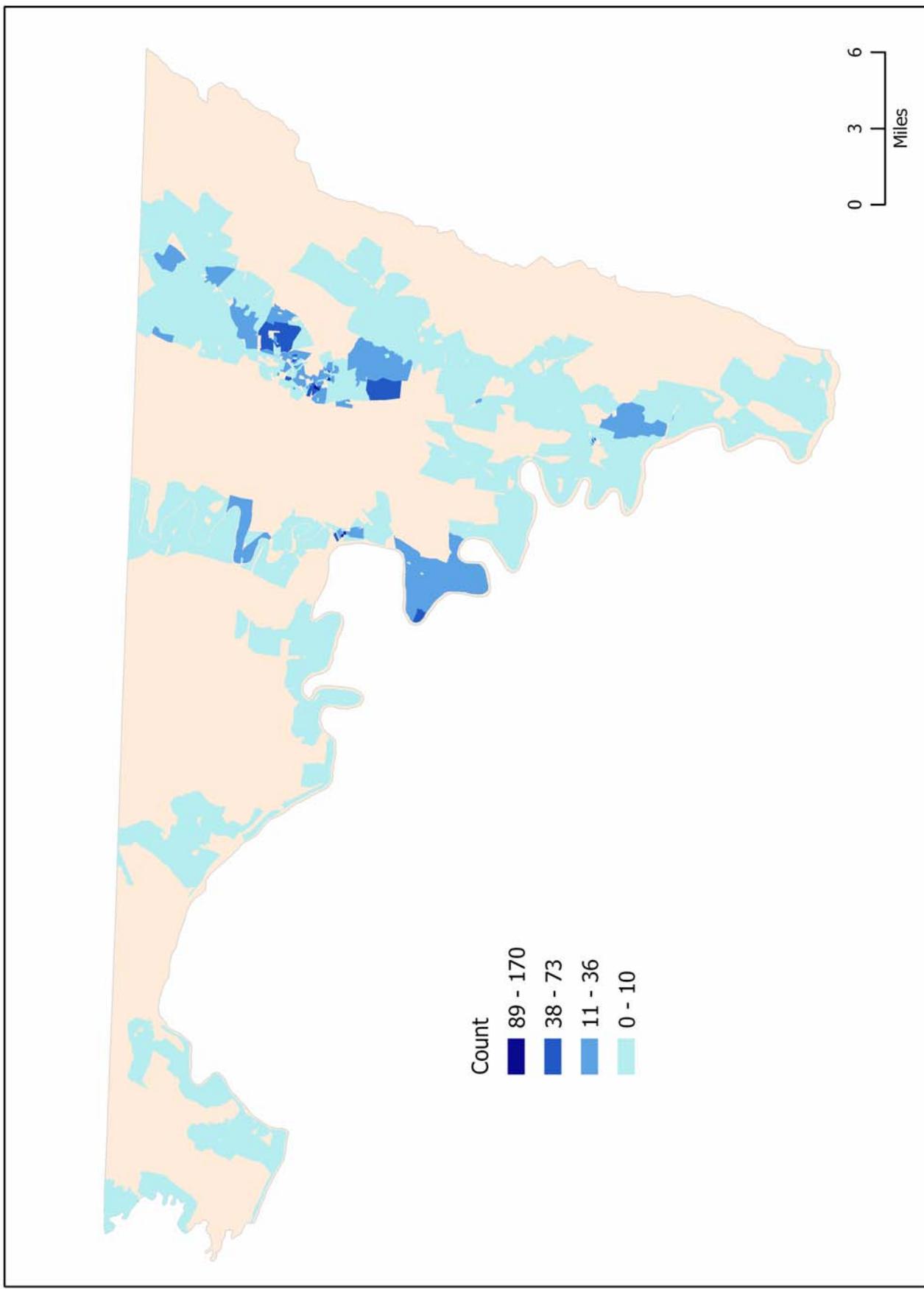
**Map B107.** Modeled 100-year flood depth in Washington County



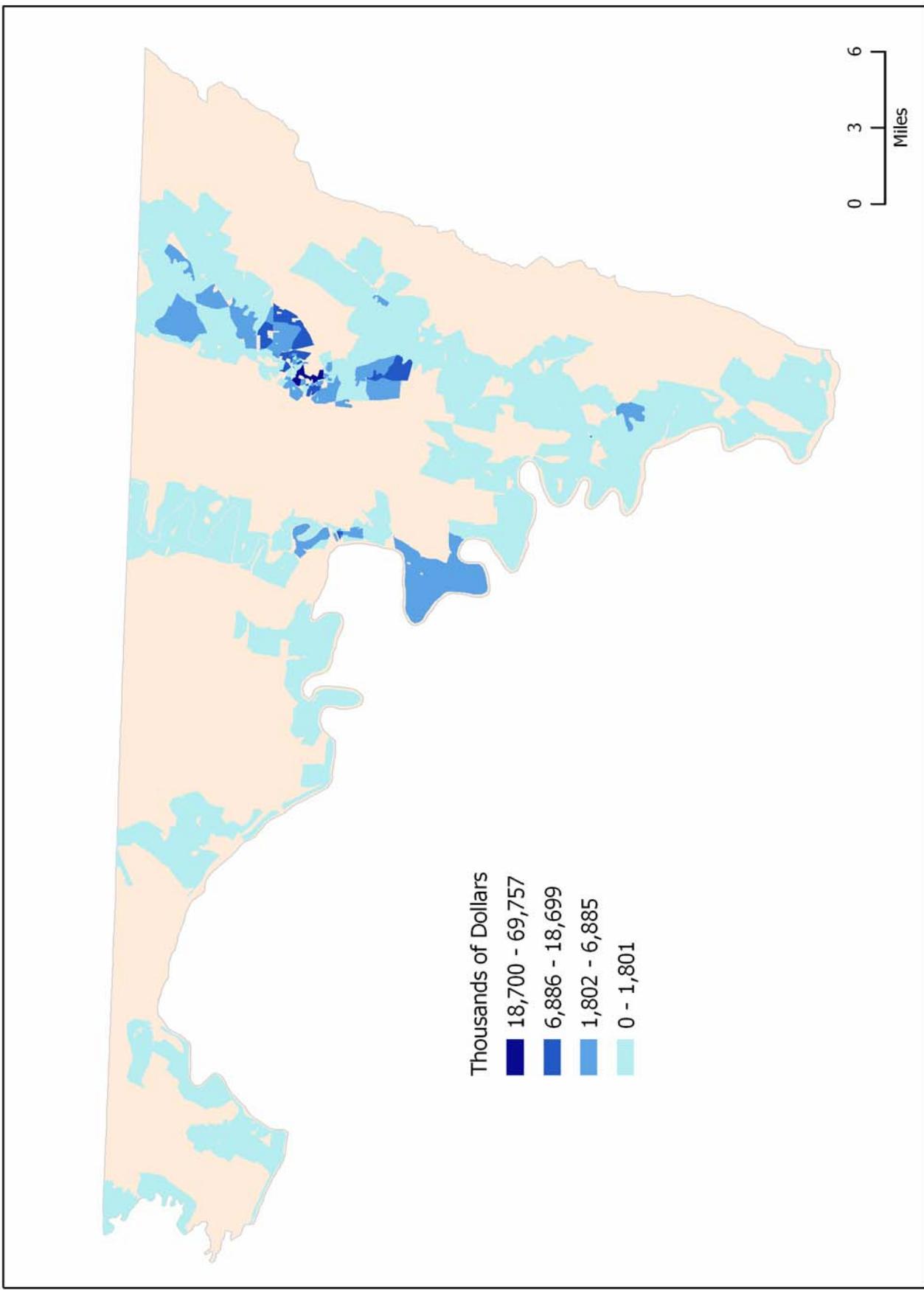
**Map B108.** Predicted amount of building damage in thousands of square feet in Washington County



**Map B109.** Predicted amount of building damage in numbers of buildings in Washington County



**Map B110.** Predicted amount of direct economic losses in thousands of dollars in Washington County



## **Wicomico County**

Wicomico County is a county of 84,644 people on the Eastern Shore of Maryland. The county is 68.5% urban and 31.5% rural. The municipalities are Delmar, Fruitland, Hebron, Mardela Springs, Pittsville, Salisbury, Sharptown, and Willards. Wicomico County is a flat coastal plain county with elevations ranging from a high of 73 ft to a low of 0 ft (Map B111). It should be considered to have relative low exposure to flooding as only 1.38% (\$110.3 million) of the state's total building stock flood exposure (\$7.99 billion) is contained within the County (Table 2).

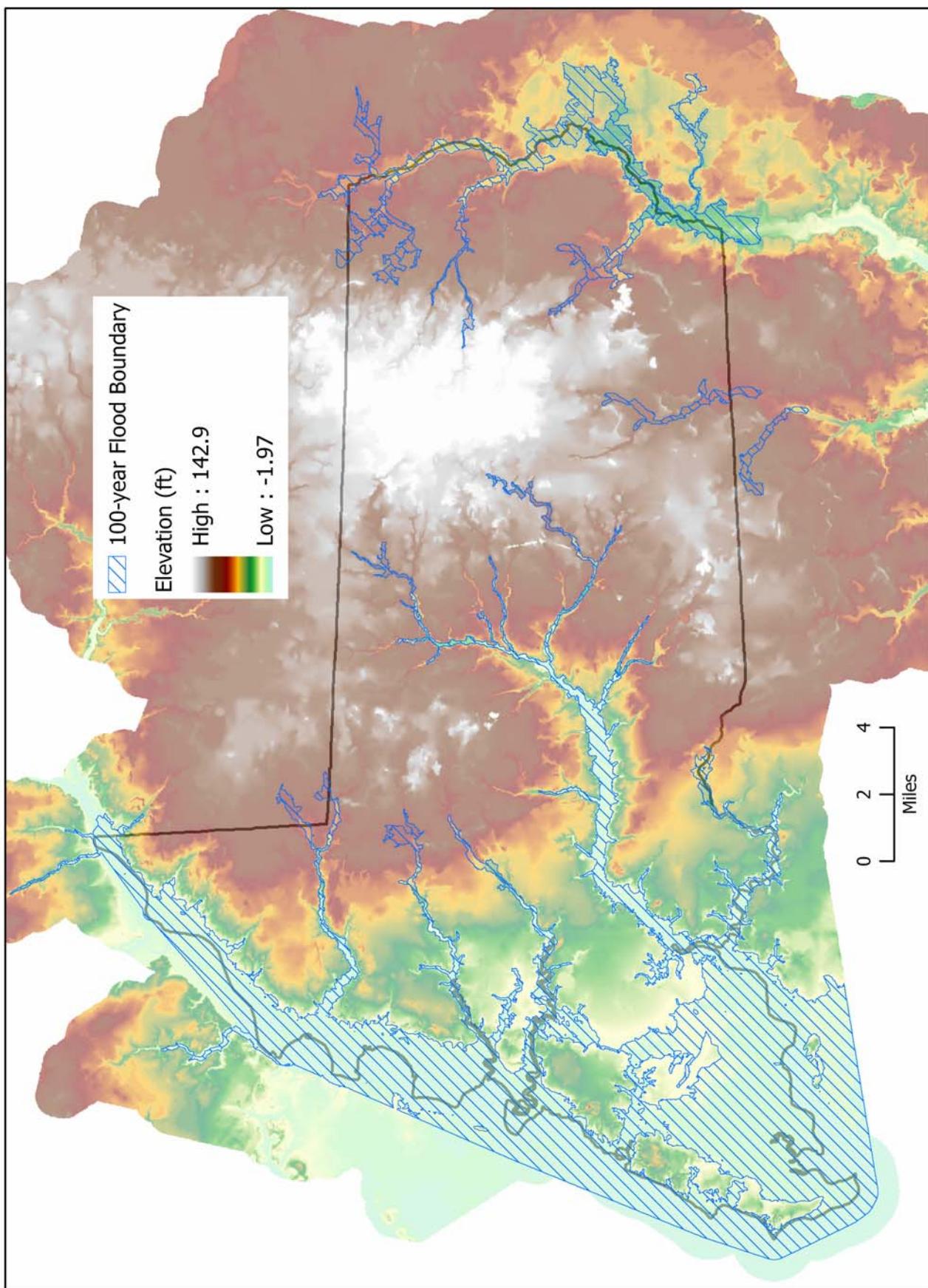
The results of the HAZUS-MH modeling effort report that 63.6 square miles of Wicomico County are subject to the 100-year flood, or 16.7% of the county's total land area. The county ranks 5<sup>th</sup> of 24 subdivisions in the percentage of total land area in flood zone. The floodplain is generally constrained to the area along the Chesapeake Bay as well as the river courses, the most significant of which are the Nanticoke River, Barren Creek, Rewastico Creek, Quantico Creek, the Wicomico River, Wicomico Creek, the Pocomoke River, and Green Run Branch. The depth of the 100-year flood zone has a maximum of 17.7 ft (Map B112).

With regard to the predicted damage estimates from the HAZUS-MH modeling effort, Wicomico County is predicted to have 1,166,660 square feet of building damage with 75,410 square feet (6.5% of the total damaged) of substantially damaged buildings. Wicomico County is 19<sup>th</sup> of 24 Maryland subdivisions with regard to the amount of square feet of building damage. From the map, we can see that the heaviest damage occurs along the Wicomico River and in the county's extreme southwest (Whitehaven, Nanticoke, Jesterville) (Map B113). The rest of the county is predicted to sustain minimal damage.

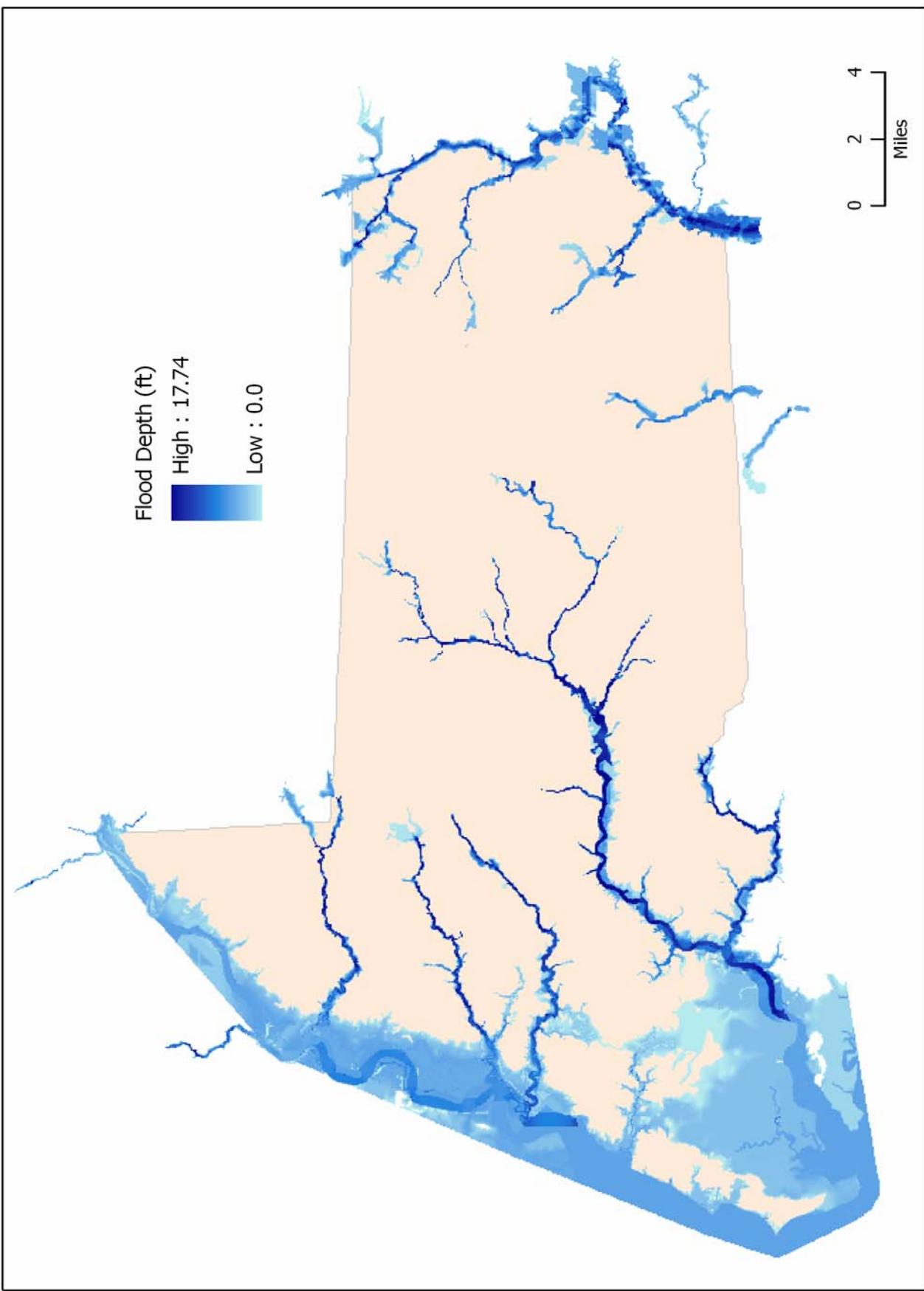
In relation to the potential number of buildings damaged by a 100-year flood predicted by HAZUS-MH, Wicomico County has 438 buildings vulnerable to flooding with 42 buildings to be damaged substantially (9.6% of the total number of buildings damaged). This places the county 20<sup>th</sup> of 24 Maryland subdivisions in total number of damaged buildings. The distribution of the count of buildings is similar to the damaged amount of square feet (Map B114). As an exception, more damage appears in the Athol area.

Finally, the amount of direct economic losses from building damage in Wicomico County is predicted by HAZUS-MH to be \$45,989,000. This amount is 0.6% of the total amount of direct economic losses for the state (\$8,121,065,000), which ranks the County 22<sup>nd</sup> out of 24. A majority (63.7%) of the losses come from capital stock losses (structural damage, contents damage, and inventory loss) versus income loss (relocation costs, capital costs, wages lost, and rental income lost). The map shows the pattern of direct economic losses from buildings to be highly clustered with the heaviest losses coming southwest of Salisbury on the Wicomico River. (Map B115).

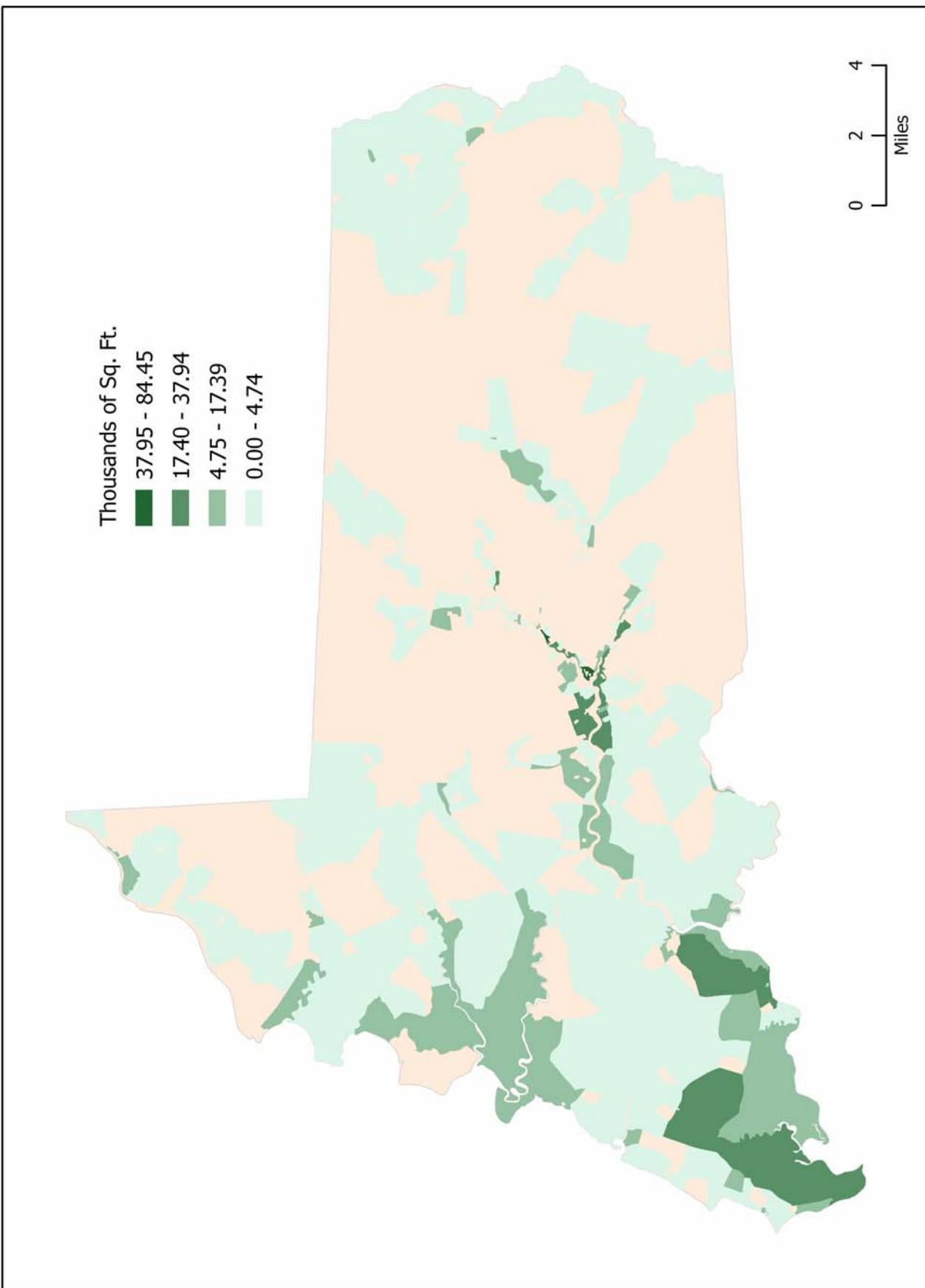
**Map B111.** Topography and modeled 100-year flood boundary in Wicomico County



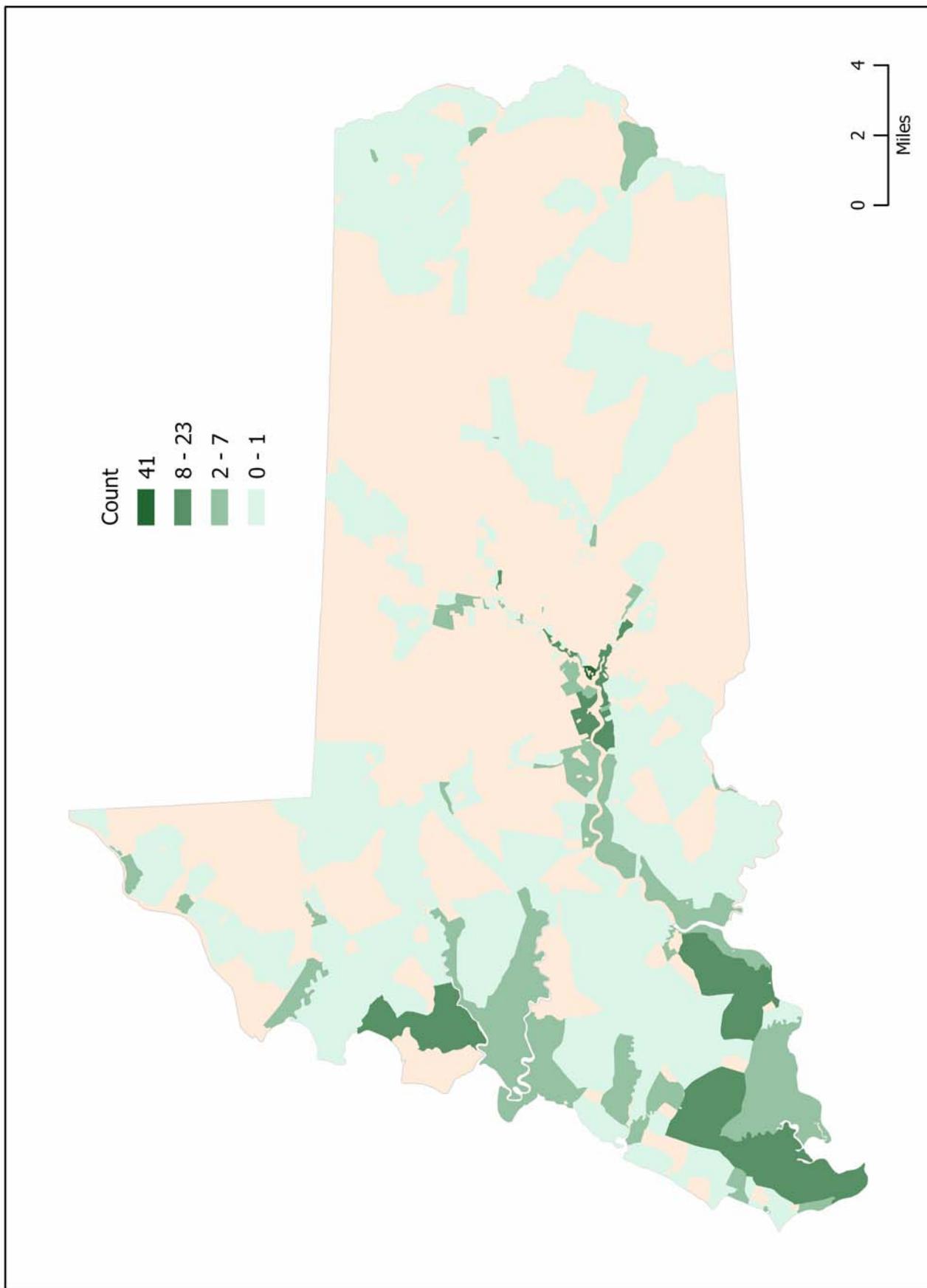
**Map B112.** Modeled 100-year flood depth in Wicomico County



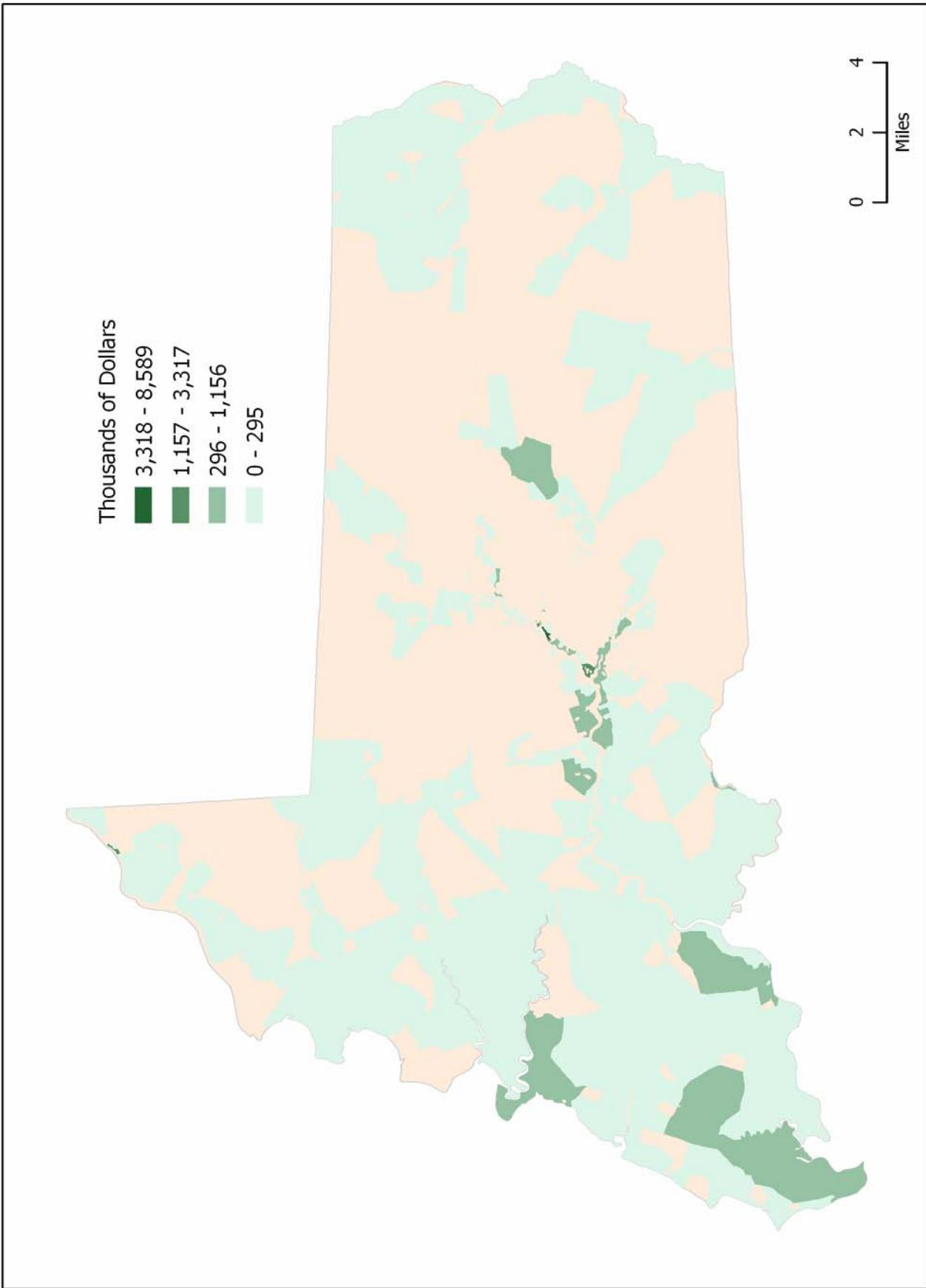
**Map B113.** Predicted amount of building damage in thousands of square feet in Wicomico County



**Map B114.** Predicted amount of building damage in numbers of buildings in Wicomico County



**Map B115.** Predicted amount of direct economic losses in thousands of dollars in Wicomico County



## **Worcester County**

Worcester County is a county of 46,543 people on the Eastern Shore of Maryland. The county is 63.4% urban and 36.6% rural. The municipalities are Berlin, Ocean City, Pocomoke City, and Snow Hill. Worcester County is a flat coastal plain county with elevations ranging from a high of 65 ft to a low of 0 ft (Map B116). It should be considered to have very high exposure to flooding as 25.9% (\$2,068.5 million) of the state's total building stock flood exposure (\$7.99 billion) is contained within the County (Table 2).

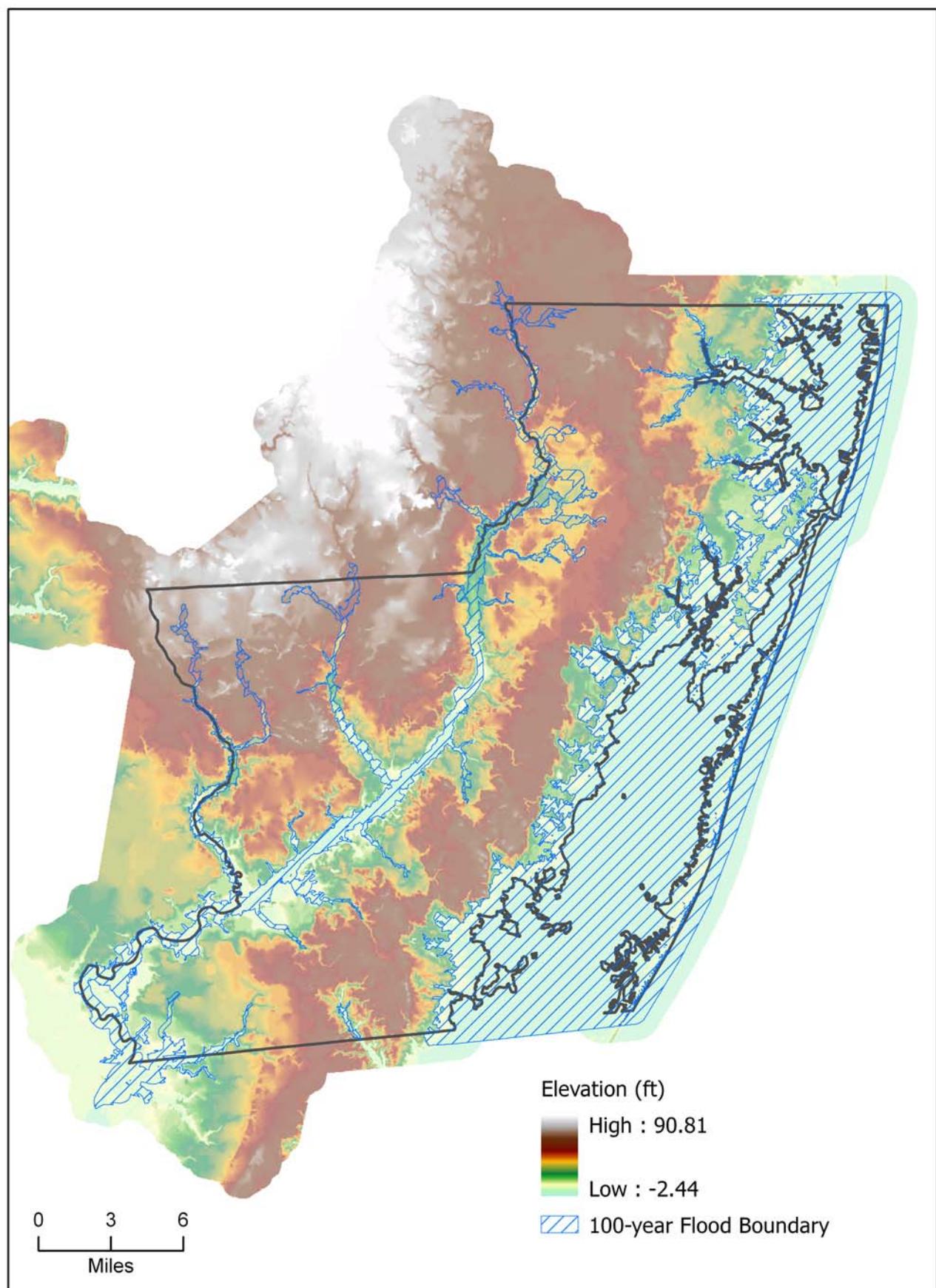
The results of the HAZUS-MH modeling effort report that 108.1 square miles of Worcester County are subject to the 100-year flood, or 22.7% of the county's total land area. The county ranks 3<sup>rd</sup> of 24 subdivisions in the percentage of total land area in flood zone. The floodplain is generally constrained to the area along the Atlantic Ocean and the coastal bays as well as the river courses, the most significant of which are the Pocomoke River, Dividing Creek, Nassawango Creek, St. Martin's River, Turville Creek, Herring Creek, and Trappe Creek. The depth of the 100-year flood zone has a maximum of 15.4 ft (Map B117).

With regard to the predicted damage estimates from the HAZUS-MH modeling effort, Worcester County is predicted to have 21,324,160 square feet of building damage but only 2,371,010 square feet (11.1% of the total damaged) of substantially damaged buildings. Worcester County is 1<sup>st</sup> of 24 Maryland subdivisions with regard to the amount of square feet of building damage. From the map, we can see that the heaviest damage is concentrated in the northeastern portion of the county, with Ocean City, West Ocean City, Ocean Pines, and Lower Sinepuxent Neck areas standing out (Map B118). The rest of the county is predicted to sustain minimal damage.

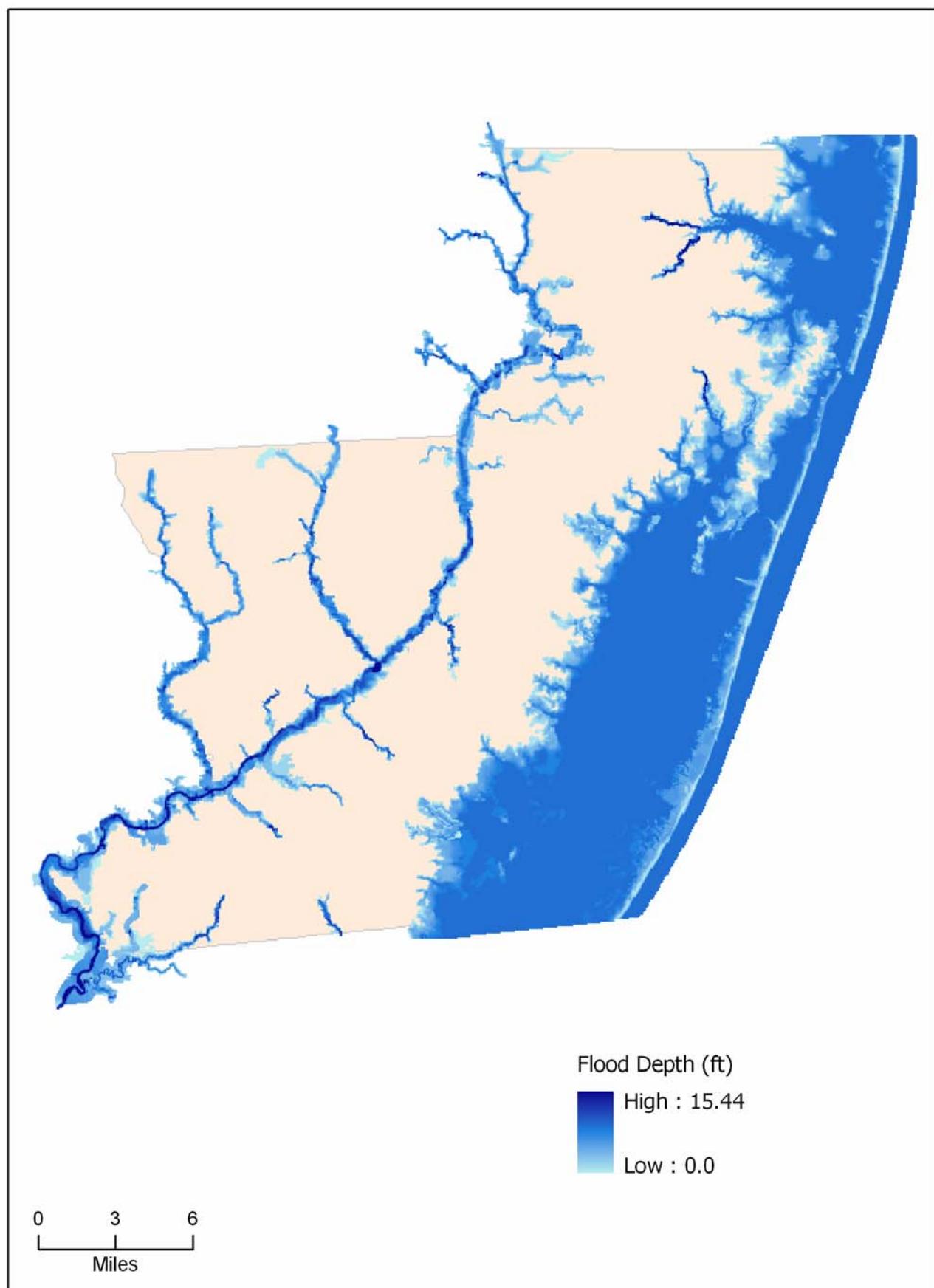
In relation to the potential number of buildings damaged by a 100-year flood predicted by HAZUS-MH, Worcester County has 6,052 buildings vulnerable to flooding with 593 buildings to be damaged substantially (9.8% of the total number of buildings damaged). This places the county 2<sup>nd</sup> of 24 Maryland subdivisions in total number of damaged buildings. The distribution of the count of buildings is very similar to the damaged amount of square feet (Map B119). As an exception, Hayes Landing along Trappe Creek is has higher predicted damaged buildings.

Finally, the amount of direct economic losses from building damage in Worcester County is predicted by HAZUS-MH to be \$1,029,230,000. This amount is 12.7% of the total amount of direct economic losses for the state (\$8,121,065,000), which ranks the County 2<sup>nd</sup> out of 24. A majority (77.5%) of the losses come from capital stock losses (structural damage, contents damage, and inventory loss) versus income loss (relocation costs, capital costs, wages lost, and rental income lost). The map shows a pattern of direct economic losses from buildings that is even more clustered than the previous measures of vulnerability. Ocean City, West Ocean City, and Ocean Pines are exclusively highlighted (Map B120).

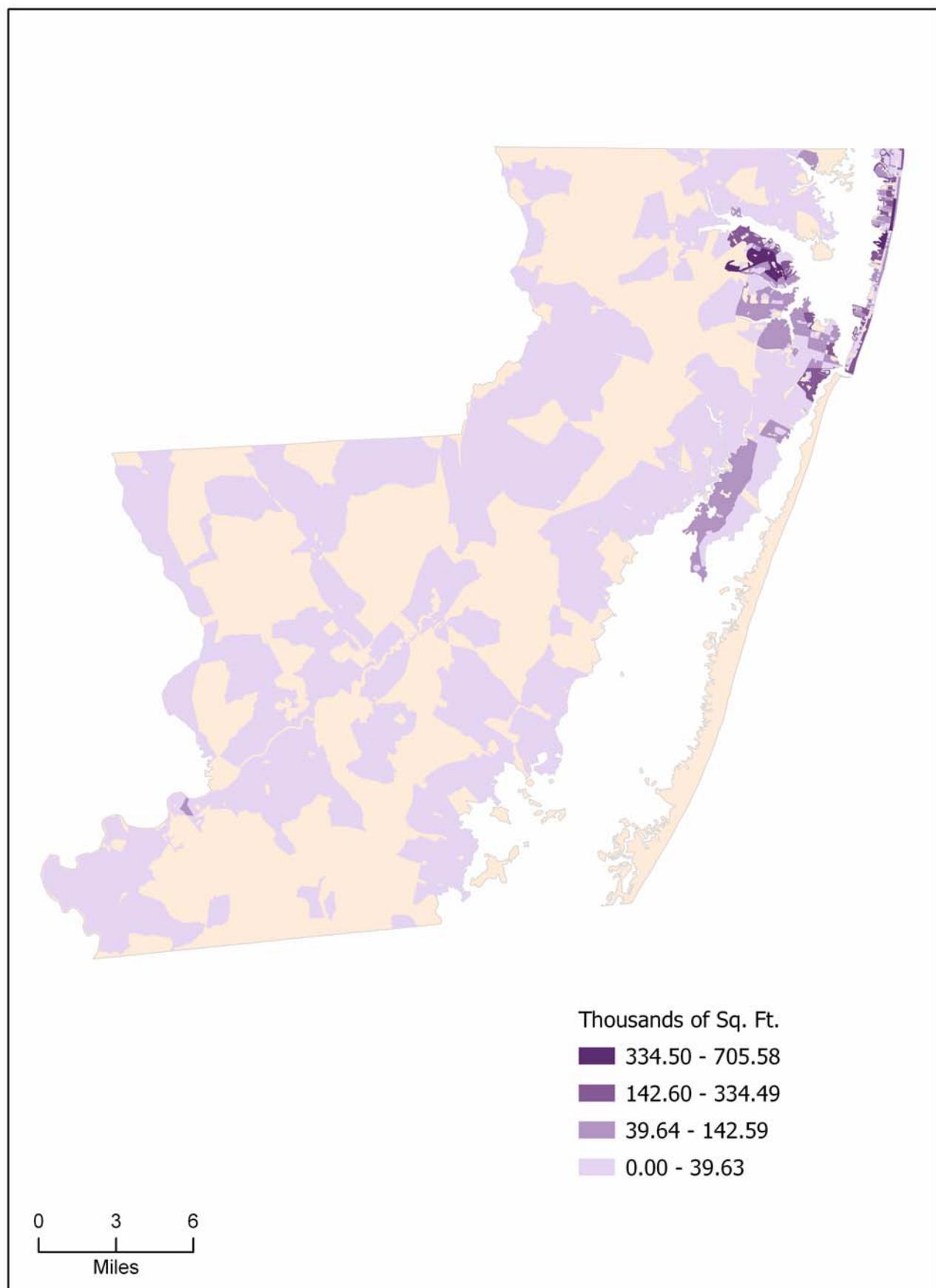
**Map B116.** Topography and modeled 100-year flood boundary in Worcester County



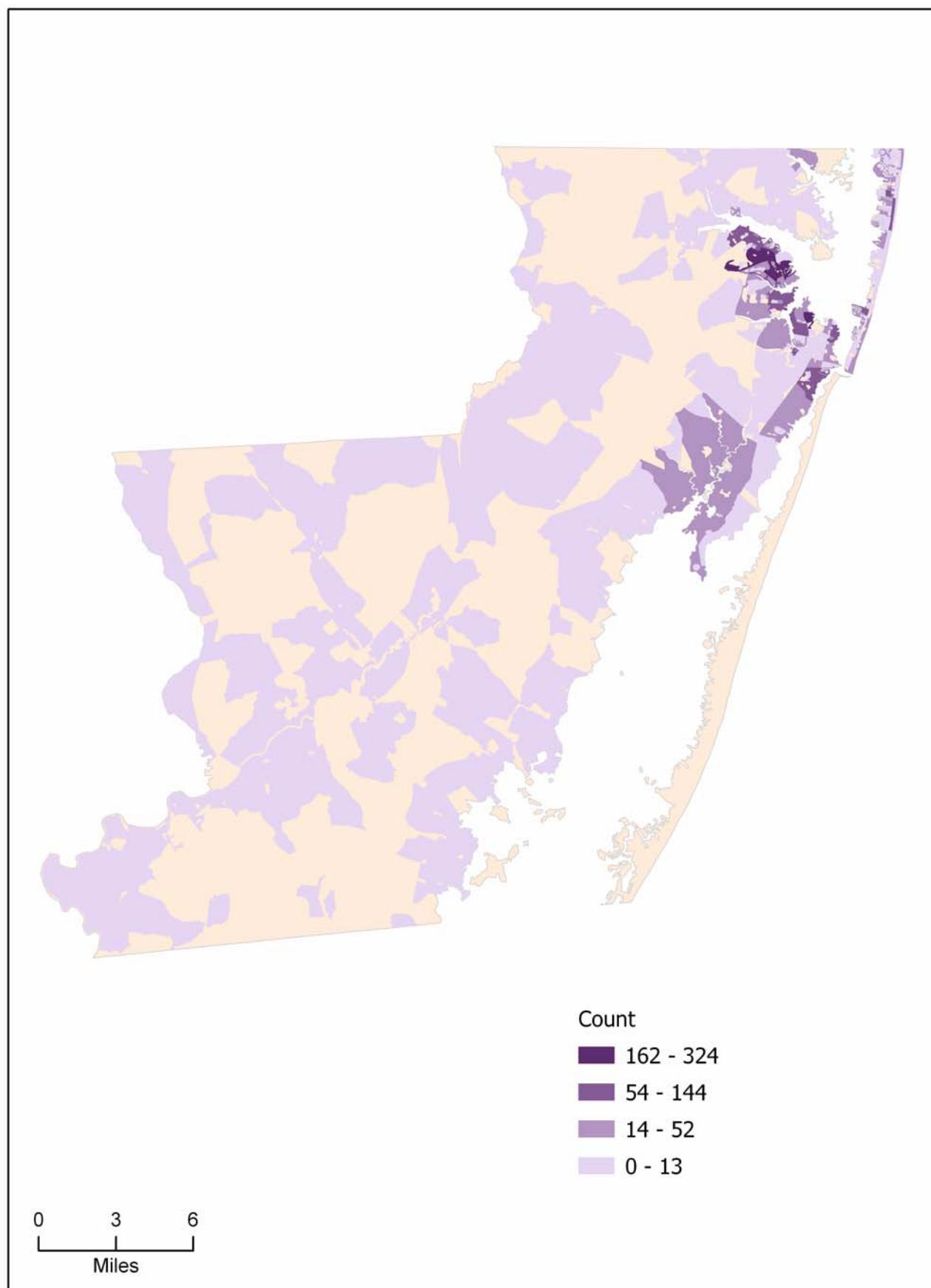
**Map B117.** Modeled 100-year flood depth in Worcester County



**Map B118.** Predicted amount of building damage in thousands of square feet in Worcester County



**Map B119.** Predicted amount of building damage in numbers of buildings in Worcester County



**Map B120.** Predicted amount of direct economic losses in thousands of dollars in Worcester County

