

# Limit of Moderate Wave Action (LiMWA)

Below is an example of the LiMWA designation on the City's Flood Insurance Rate Map Panel 13051C0256.

## See Other FIRM Panels:

13051C0235 Behind Georgetown area)

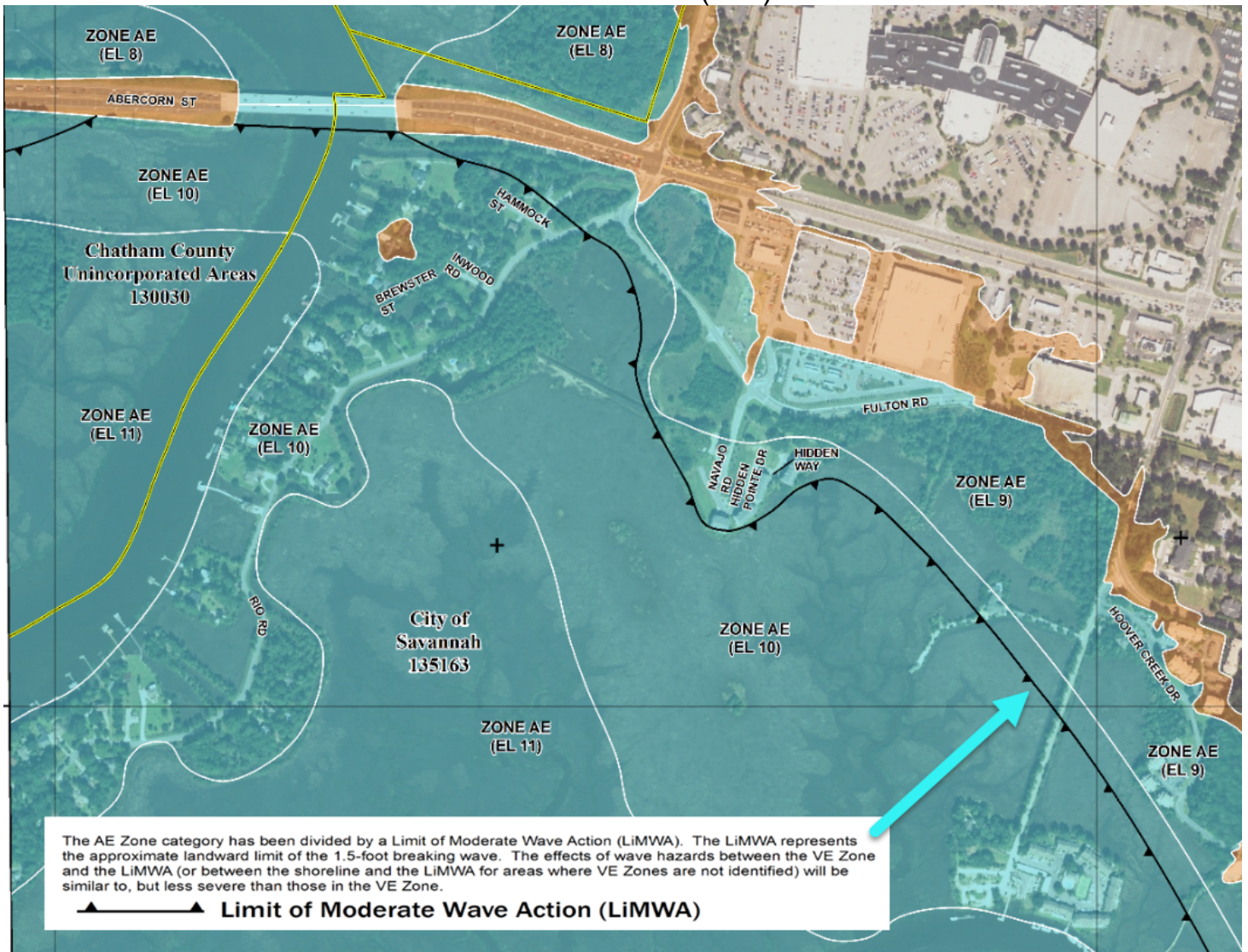
13051C0255 South end of the South West By-Pass

13051C0258 South-side of the City, Windsor Forest, Coffee Bluff

13051C0259 Vernon River

13051C0270 Forest River, Rose Dhu, and Girl Scout Island

For more information Contact: Tom McDonald at (912) 651-6530 X 1895





## Importance of the Limit of Moderate Wave Action (LiMWA)

The coastal population in the United States has increased significantly over the last few decades. With this growth in population, increased coastal development has occurred, putting more buildings at risk from flooding and other coastal action. Low-lying coastal areas are especially vulnerable to damage from erosion, waves, and storm surge. The National Flood Insurance Program (NFIP) depicts two coastal flood hazard zones on its Flood Insurance Rate Maps (FIRMs):

- Zone VE, where the flood elevation includes wave heights *equal to or greater than* 3 feet; and
- Zone AE, where the flood elevation includes wave heights *less than* 3 feet.

Post-storm field visits and laboratory tests throughout coastal flood hazard areas have consistently confirmed that wave heights as low as 1.5 feet can cause significant damage to structures that are constructed without considering coastal hazards. FIRMs recently published also include a line showing the Limit of Moderate Wave Action, or LiMWA, which is the inland limit of the area expected to receive 1.5-foot or greater breaking waves during the 1-percent-annual-chance flood event (see Figure 1).

### Understanding LiMWA

The addition of the LiMWA area to FIRMs allows communities and individuals to better understand the flood risks to their property. The LiMWA area alerts property owners on the seaward side of the line that although their property is in Zone AE, their property may be affected by 1.5-foot or higher breaking waves and may therefore be at significant risk during a 1-percent-annual-chance flood event. While not formally defined in the NFIP regulations or mapped as a flood zone, the area between Zone VE and the LiMWA is called the Coastal A Zone (see Figure 2). This area is subject to flood hazards associated with floating debris and high-velocity flow associated with waves and debris that can erode and scour building foundations and, in extreme cases, cause foundation failure.

### LiMWA QUICK FACTS

- Waves of 1.5 feet or higher have been shown to cause significant damage to structures
- A LiMWA line is shown on some FIRMs for areas along coastlines
- Structural fill should not be used in the Coastal A Zone
- International Codes® require Zone VE construction standards in identified Coastal A Zone areas
- Structures in the Coastal A Zone should be built with piling or column foundations
- Enclosure under elevated structures should be limited to 299 square feet or less within the Coastal A Zone
- Elevation of the lowest horizontal structural member of the lowest floor should be at or above the base flood elevation (BFE) (see <http://www.fema.gov/media-library/assets/documents/3490?id=1718> for more information)
- NFIP free-of-obstruction requirements should apply in the Coastal A Zone
- Communities that adopt Zone VE standards in the Coastal A Zone and reference the LiMWA area receive Community Rating System (CRS) credits, which could lower flood insurance premiums for residents and business owners

For additional background information on LiMWA, please refer to FEMA Procedure Memorandum 50, available at:

<http://www.fema.gov/media-library-data/1388777384290.pdf>

### Effects on Property Owners

Residents and business owners living or working in the Coastal A Zone should be aware of the potential wave action and the accompanying damage that could occur. Property owners are encouraged to build safer and higher to minimize the risk to life and property.



While the risk of damage is higher on the seaward side of the LiMWA than in other parts of Zone AE, NFIP premiums currently do not account for a building's location relative to the LiMWA. The Federal mandatory purchase requirement to carry flood insurance as a condition of obtaining a mortgage applies in mapped special flood hazard areas. Property owners are encouraged to carry coverage equivalent to the replacement cost of their building and include contents coverage.

## After an Event

After a significant event, FEMA may issue revised flood maps. If remapping results in a higher-risk flood zone or a higher base flood elevation (BFE), the property owner should contact his or her insurance agent to discuss possible cost-saving options (e.g., elevating). To learn more about flood insurance and the risks of flooding, and to locate an agent, visit <https://www.floodsmart.gov/floodsmart/>.

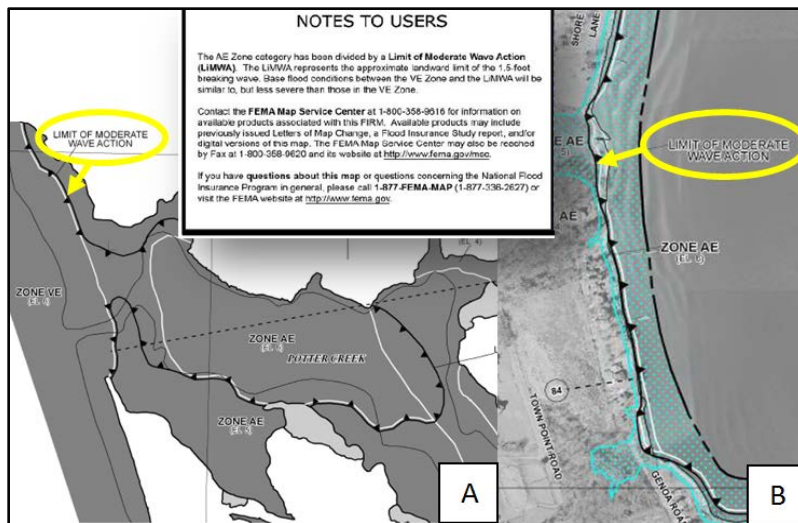


Figure 1: FIRM showing area seaward of the LiMWA

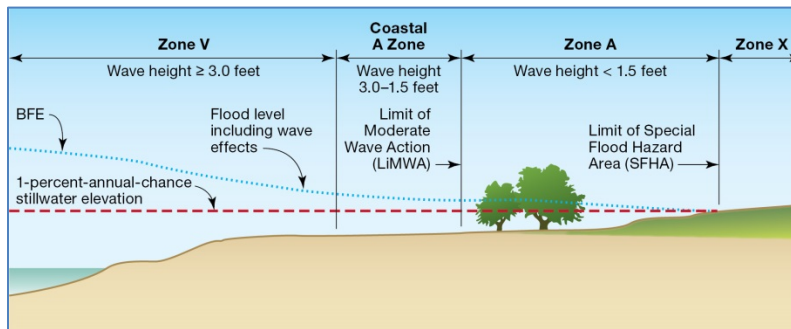


Figure 2: Schematic of coastal flood zones

### FOR MORE INFORMATION

#### FEMA's Floodplain Management Branch

Defines floodplain management and its role in the NFIP: <http://www.fema.gov/fpm>

#### Homebuilder's Guide to Coastal Construction

A series of fact sheets providing information about responsible building practices, including freeboard: <http://www.fema.gov/library/viewRecord.do?id=2138>

#### FloodSmart

Information for consumers about flood insurance and the NFIP: <https://www.floodsmart.gov/>

# Using the Limit of Moderate Wave Action to Build Resilient Coastal Communities

Coastal communities are special places and home to vital resources. What makes them so distinctive also creates a high risk of flooding. Floods are the nation's costliest natural disasters. Coastal areas are dynamic environments that are constantly reshaped by the forces of nature. Coastal communities face a range of flood hazards, including storm surge, waves and erosion. All of these can cause extensive damage to homes, businesses and infrastructure. Waves, in particular, can damage properties farther inland than one would expect.

## Flood Maps in Coastal Areas

Flood maps, or Flood Insurance Rate Maps (FIRMs), show Special Flood Hazard Areas (SFHA) — the areas affected by a 1%-annual-chance flood. Properties in SFHAs have a high risk of flooding. These areas have at least a 26% chance of flooding over the course of a 30-year mortgage. In coastal areas, the SFHAs are designated primarily as Zone VE or AE.

- **Zone VE**, a Coastal High Hazard Area, is where waves and fast-moving water can cause extensive damage during the 1-percent-annual chance flood. Wave heights of 3 feet or higher are expected.
- **Zone AE** is used for areas that have at least a 1% chance of being flooded in any year, but wave heights are expected to be less than 3 feet.

The primary difference between these two flood zones is potential wave damage. Structures in Zone VE have a higher risk of significant damage by the moving water and waves. As a result, buildings in Zone VE must be built to higher standards and may have higher flood insurance premiums.

## What is the Limit of Moderate Wave Action?

FEMA has documented storm damage for decades. Post-storm damage shows that even 1.5-foot waves can cause significant damage to buildings that were not built to withstand them. To highlight this risk on flood maps, FEMA developed the Limit of Moderate Wave Action (LiMWA).

The LiMWA is an informational line that can be found on flood maps for some coastal areas. On a flood map, it is shown as a black line with black arrows that point to areas where wave heights are between 1.5 and 3 feet. It also marks the inland limit of the Coastal A Zone.



**FEMA**



### What are the benefits of adopting higher codes and standards for Coastal A Zones?

- Building to higher standards makes structures and the people inside them safer from wave damage. Communities that adopt higher standards for the Coastal A Zone may have less damage and be able to recover more quickly.
- Communities that adopt higher building codes and standards in the Coastal A Zone may be eligible for discounted flood insurance premium rates through the Community Rating System. More information about the Community Rating system is available [here](#).

## Building Resilience in Coastal Communities

Adopting Zone VE standards in Coastal A Zones is one step communities can take to reduce their risk and build resilience. Communities across the country are exploring more ways to move toward resilience. This may include:

- **Adding freeboard.** Many communities adopt freeboard, a factor of safety usually expressed in feet above the Base Flood Elevation. Communities with freeboard will require structures to be built a few feet above the BFE. Freeboard accounts for the many unknown factors that could contribute to flooding that is higher than the BFE.
- **Planning for future conditions.** One way to keep families, businesses, and neighborhoods safe from natural disasters is long-term planning. Communities that invest in long-term planning and forward-looking projects will see fewer impacts and are more likely to recover quickly after severe events. Preparing for the future today supports growth and health. Learn more [here](#).
- **Incorporating nature-based solutions.** Nature-based solutions weave protective natural features into a community's landscape through planning, design, and engineering. These practices can be applied to a community's built environment (for example, a stormwater park) or its natural areas (for example, land conservation). While nature-based solutions have many hazard mitigation benefits, they can also help a community meet its social, environmental, and economic goals. Learn more [here](#).
- **Thinking beyond flood maps.** FEMA flood mapping data can be used for more than floodplain management ordinances or explaining flood insurance purchase requirements. This [story map](#) highlights four communities that are using these data to reduce risk and build resilience in innovative ways.

### Additional Resources

- To access flood maps for your community, visit the [Map Service Center](#), or contact the Flood Mapping and Insurance eXchange (FMIX) at 877-336-2627 or [FEMA-FMIX@fema.dhs.gov](mailto:FEMA-FMIX@fema.dhs.gov).
- To learn more about flood insurance, visit [www.FloodSmart.gov](http://www.FloodSmart.gov).