





## **Explanation of Hazard Mapping**

The maps above are a combination of measurements that include the following:

1) flood hazard areas based on Michigan Tech University's estimates of wave run-up and lake levels, and 2) hazard areas based on FEMA floodplain maps, where we are ~ accelerating the storms within a ~ 20-year planning horizon. That is, the 1% storm is now really the 2% storm because of climate change.

### **Scenario explanations:**

"Lucky" Future: Under the Lucky Climate Future, Great Lakes water levels will stay relatively low. Although there will be wave and wind action, major storm events and wave impacts will not encroach on properties landward of current beaches.

"Expected" Future: Under the Expected Climate Future, Great Lakes water levels will continue to fluctuate according to long-term decadal patterns, including recent extreme storm events incorporated into the Federal Emergency Management Agency's (FEMA) ongoing Great Lakes Coast Flood Study. Given those ongoing fluctuations, this Climate Future accounts for periods when Great Lakes still-water elevations are closer to the long-term average. In addition, this Climate Future anticipates the so-called "100-year storm event" (or 1% storm) becoming more like a 20- or 50-year storm event (i.e., an expected storm within the normal community planning time horizon) because of increased storminess.

"Perfect Storm" Future: Under the Perfect Storm Climate Future, Great Lakes water levels will continue to fluctuate according to decadal patterns, consistent with assumptions made for the Expected Future. However, for this Perfect Storm Climate Future, the estimated stillwater elevation is set higher than the long-term average and closer to the long-term high. In addition, this Climate Future anticipates the occurrence of a so-called "500-year storm event" (or 0.2% storm) occurring within the planning time horizon while lake levels are high.