Identifying High Risk Coastal Areas

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Methods

Methods for identifying high risk areas were derived from a combination of available data and reasonable assumptions about future water levels and storminess. In other words, to understand what areas might be susceptible to flooding, future climate assumptions were established for the Lucky, Expected, and Perfect Storm climate futures, as defined earlier, using as much publicly available data as possible.

The components of these climate futures help explain how to begin mapping high risk flood areas. There are various flood zones (i.e. A, AE, etc.) within FEMA's FIRMs, and these zones play a role in the composition of each of the climate futures. FIRMs are available as a free download from FEMA's website in digital format. These GIS shapefiles spatially locate where these flood zones are present in any community helping officials identify a community's flood risks. Additionally, it is well-documented that sillwater lake elevations vary often, depending on a number of factors. Historic water levels from GLERL/NOAA are available for discovery at their online dashboard (http://www.glerl.noaa.gov/data/dashboard/GLWLD.html), and provide reasonable stillwater benchmarks (historic high, average, and low) for crafting realistic climate futures. Building data-driven assumptions gets complicated, however, when accounting for potential future storminess.

In order to craft more reliable assumptions regarding potential future storminess, a combination of GLERL/NOAA's hourly and six-minute interval water elevations at their gage stations from January 1970 through June 2016 were first compiled. The data were then checked from each station for normal distribution in order to estimate the water elevation change for .2% and 1% storms – using data from USACOE/FEMA to access the portion attributable to waves. A total storm surge estimate – after also calculating potential wave runup (verified with numerical reports as a function of lake fetch) – was developed for all stretches of Michigan's coast. This pursuit requires quite a bit of scientific and statistical analysis, the rigor of which is probably unlikely for most coastal communities. As such, Figure 4 presents estimates of total storm surge for the entire Michigan portion of the Great Lakes basin, calculated by researchers at Michigan Technological University for this study. These estimates provide a good starting point for employing the methods described in this chapter. That said, it is recommended that communities or planners do their own sensitivity analysis to check potential land cover changes should the storm surge vary by some +/- feet. The reason for this is that if there are dramatic land cover changes in potential coastal flooding discovered during a sensitivity analysis, it may be wise to adapt these estimates to better fit the community in question.
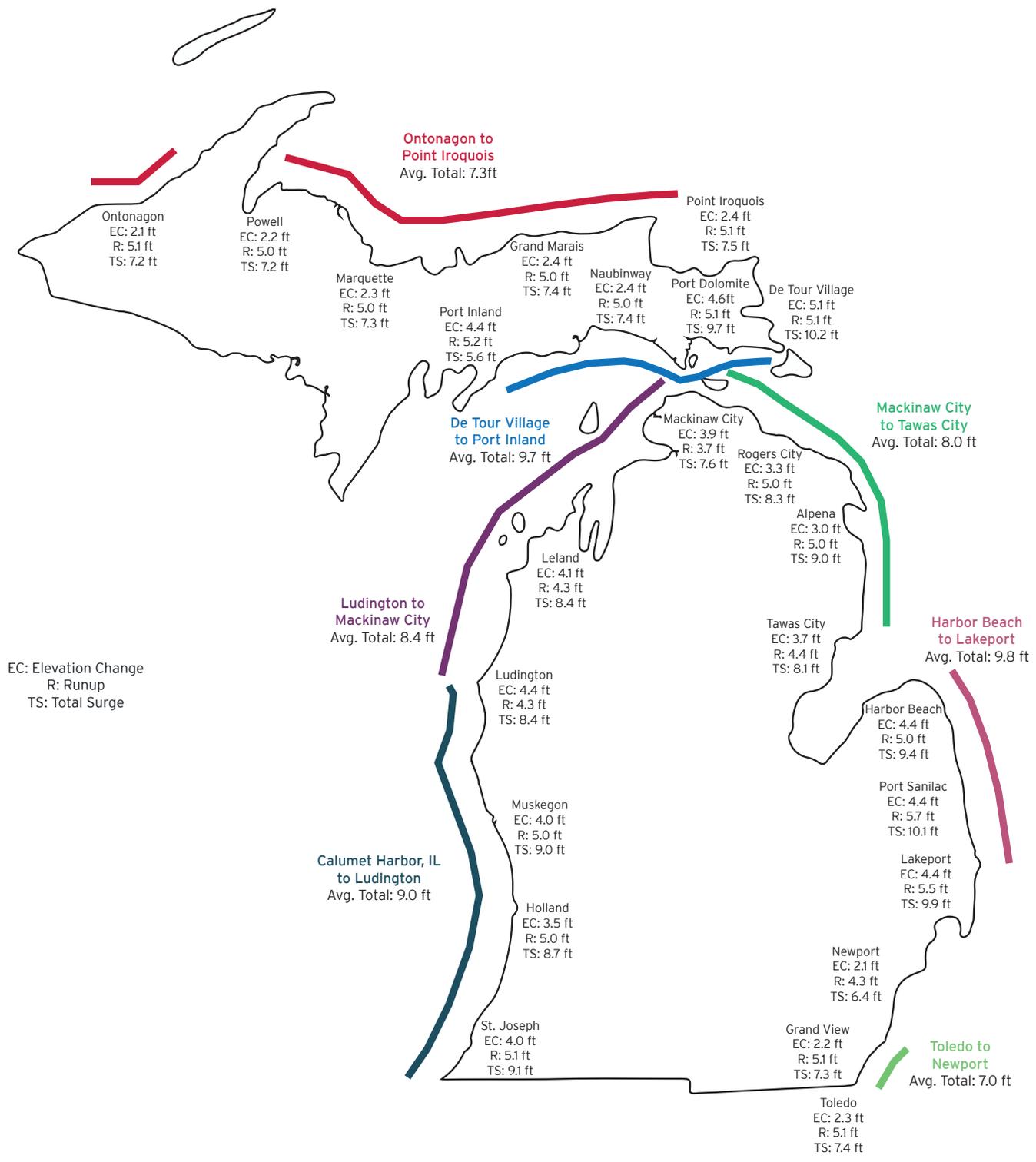
Ontonagon to
Point Iroquois
Avg. Total: 7.3ft

Ontonagon
EC: 2.1 ft
R: 5.1 ft
TS: 7.2 ft

Powell
EC: 2.2 ft
R: 5.0 ft
TS: 7.2 ft

Point Iroquois
EC: 2.4 ft
R: 5.1 ft
TS: 7.5 ft

Grand Marais
EC: 2.4 ft
R: 5.0 ft
TS: 7.4 ft

Naubinway
EC: 2.4 ft
R: 5.0 ft
TS: 7.4 ft

Port Dolomite
EC: 4.6ft
R: 5.1 ft
TS: 9.7 ft

De Tour Village
EC: 5.1 ft
R: 5.1 ft
TS: 10.2 ft

Marquette
EC: 2.3 ft
R: 5.0 ft
TS: 7.3 ft

Port Inland
EC: 4.4 ft
R: 5.2 ft
TS: 5.6 ft

De Tour Village
to Port Inland
Avg. Total: 9.7 ft

Mackinaw City
to Tawas City
Avg. Total: 8.0 ft

Mackinaw City
EC: 3.9 ft
R: 3.7 ft
TS: 7.6 ft

Rogers City
EC: 3.3 ft
R: 5.0 ft
TS: 8.3 ft

Alpena
EC: 3.0 ft
R: 5.0 ft
TS: 9.0 ft

Leland
EC: 4.1 ft
R: 4.3 ft
TS: 8.4 ft

Ludington to
Mackinaw City
Avg. Total: 8.4 ft

Tawas City
EC: 3.7 ft
R: 4.4 ft
TS: 8.1 ft

Harbor Beach
to Lakeport
Avg. Total: 9.8 ft

EC: Elevation Change
R: Runup
TS: Total Surge

Ludington
EC: 4.4 ft
R: 4.3 ft
TS: 8.4 ft

Harbor Beach
EC: 4.4 ft
R: 5.0 ft
TS: 9.4 ft

Port Sanilac
EC: 4.4 ft
R: 5.7 ft
TS: 10.1 ft

Muskegon
EC: 4.0 ft
R: 5.0 ft
TS: 9.0 ft

Lakeport
EC: 4.4 ft
R: 5.5 ft
TS: 9.9 ft

Calumet Harbor, IL
to Ludington
Avg. Total: 9.0 ft

Holland
EC: 3.5 ft
R: 5.0 ft
TS: 8.7 ft

Newport
EC: 2.1 ft
R: 4.3 ft
TS: 6.4 ft

St. Joseph
EC: 4.0 ft
R: 5.1 ft
TS: 9.1 ft

Grand View
EC: 2.2 ft
R: 5.1 ft
TS: 7.3 ft

Toledo to
Newport
Avg. Total: 7.0 ft

Toledo
EC: 2.3 ft
R: 5.1 ft
TS: 7.4 ft

Figure 4: Total storm surge estimates for Michigan portion of Great Lakes basin

Estimated VE Method

Under this method, your community will be able to identify areas of high risk by only using data that is free to the public and is provided by both FEMA and the USGS. The basic assumptions established above for the climate futures guide this identification method. As such, downloading existing FEMA FIRMs, and manipulating the data from these FIRMs using GIS, is the first task in identifying high risk areas. The following provides a step-by-step sequence for mapping high risk areas under the current climate conditions.*****

1. Go to http://msc.fema.gov/portal.

2. Type in the community you are looking to analyze and click "Search".

3. When the new page opens, you will notice that there is a box below the Search Results that says something like "The flood map for the selected area is number _____". Take note of that number. This will be useful for downloading the appropriate dataset.

4. Click on "Show all Products for this area". A new page will open.

5. Click on the "Effective Products" folder. A list of sub-folders will appear.

6. Click on the "NFHL Data-County" folder

7. There may be more than one product in this folder. If so, refer to the number you wrote down earlier. There should be a product that matches the first five digits of that number after the beginning of "NFHL_" under the "Product_ID" column. Click on the Download button for that product.

8. A zipped file will be downloaded to your computer.

9. After download, extract all of the files to an easily accessible location.

10. Open ArcMap, click the "Add Data" button, and search for your newly downloaded files.

11. When you have located your files, you can add everything, or simply add the shapefile titled: "S_FLD_HAZ_AR.shp". This shapefile is the location and attributes for flood insurance risk zones shown on the FIRM and is the only relevant file for this mapping exercise.

12. Right click on the "S_FLD_HAZ_AR" layer and select "Open Attribute Table".

13. After the table opens, right click on the "FLD_Zone" column. Sort Ascending. Select all of the "A" and "AE" attributes under this column. Close the table.

14. Right click on the "S_FLD_HAZ_AR" layer and highlight "Data". Click on the "Export Data" sub-option.

15. Under "Output feature class," click on the button with a folder and an arrow above it to save your new data. A new window will open. Make sure that the "Save as type:" says "Shapefile. Create a new folder in your desired location named with a name for the current climate conditions flood forecast. Click "Save".

16. After this, click "OK" on the original window for "Export Data". It will ask you if you would like to add the new layer to your current ArcMap document. Click "Yes".

17. Your new current climate conditions forecast map is created.

The next steps will provide your community with an opportunity to explore where it may be susceptible to high velocity (VE) wave action (and further explore different climate futures). These zones are labeled as "Estimated VE" zones. To identify the "Estimated VE" zones, it is necessary to access USGS digital elevation data. In particular, you will need to download Digital Elevation Models (DEMs) from the USGS and manipulate that data in GIS. To do this, use the following set of instructions.

Step 1: Download the Digital Elevation Model (DEM)

1. Go to http://viewer.nationalmap.gov/basic/ to access the USGS National Map Viewer.

2. Either use the map on the webpage to zoom to the community of study, or use the "Search" bar at the top of the webpage to search for your community of study and then select "Zoom to" under the appropriate result of the search.

3. On the left side of the screen, there is a list of datasets you can select from. Click on "Elevation Products (3DEP)."

4. The Product Search Filter will appear. Select the 1/3 arc-second DEM. Currently, this option is the best available resolution of all of the currently available DEM products. Better DEM resolutions, such as LiDAR, may be available for your community, but the remaining process remains the same (just with different resolution names).

5. For File Format, Select "ArcGrid"

6. At the top of the Search Options box on the left side of the screen, click the button "Find Products."

7. Confirm that this is the correct product and select Download under the Actions column.

8. A zipped file will be downloaded onto your computer.

9. After download, extract all of the files to an easily accessible location.

10. You are now ready to open the DEM(s) within ArcMap.

Step 2: Convert the DEM to a polygon

1. Open a new ArcMap Document.

2. Save the ArcMap Document with a unique name.

3. Use the "Add Data" button to add your newly downloaded and saved DEM(s). Do not select the thumb.jpg file. After clicking, "Add", a new window may pop up that reads, "This raster data source does not have pyramids or contains insufficient pyramids..." Click "Yes".

4. Once added, the first thing that you need to do is to convert the cell values that compose the DEM to integers. To do this, follow the "Spatial Analyst Tools --> Math --> Int" pathway within the ArcToolbox to open up the appropriate tool to convert the cell values.

5. Under the "Input raster or constant value" dropdown menu find your newly added DEM.

6. Next, use the "Output Raster" file button to save your converted DEM in an easily accessible location. Click "OK" once the saved pathway is determined.

7. It may take a minute or two, but a new raster will appear under your "Layers" table of contents.

8. Once the "Int" tool has completed converting your DEM, you can convert the new raster to a polygon layer. To do this, open ArcToolbox and follow the "Conversion Tools --> From Raster --> Raster to Polygon" pathway to open up the appropriate tool to convert the new raster to a polygon layer.

9. Under the "Input raster" dropdown menu find the new raster layer.

10. Next, use the "Output polygon features" file button to save the new polygon layer to an easily accessible location. Click "OK" once the saved pathway is determined.

11. It may take a few minutes, but a new polygon layer will appear in the Table of Contents under "Layers".

12. Save your ArcMap Document.

Step 3: Clip new polygon layer to community boundaries

1. Add your community's boundary shapefile to your ArcMap file. You may have to project your community's boundary shapefile if it the DEM's datum and the boundary's datum are not the same. Follow the steps in the Projection box on page 29 if you need to project your data. Otherwise, continue to the next step.

2. Once added, use the "Clip" tool under the "Geoprocessing" dropdown menu at the top of the ArcMap Document to clip the converted to polygon layer DEM to the community's boundaries. A new window will open when the "Clip" tool is selected.

3. Use the "Input Features" dropdown menu to add the converted to polygon DEM layer, and the "Clip Features" dropdown menu to add your community's boundary shapefile.

4. Next, use the "Output Feature Class" file button to save the clipped polygon layer to an easily accessible location. Click "OK" once the saved pathway is determined.

5. Your clipped polygon layer will be added under your "Layers" table of contents.

Step 4: Create the coastal zone

1. Go to https://www.census.gov/cgi-bin/geo/shapefiles2014/main to access the TIGER/Line Shapefile database.

2. Under the "Select a layer type" dropdown menu find and select "Coastline". Click "Submit".

3. A new window will appear. Click "Download national file".

4. Once downloaded, unzip or "extract all" of the associated files from the folder to an easily accessible location.

5. In ArcMap, add the TIGER/Line national coastline shapefile. Project it using the Project tool.

6. In terms of future data management, reduce the data to that of just the coastline of the community you are studying. To do this, use the "Select Features" tool (after zooming out a bit) to select the coastline polyline segment that impacts that community of interest.

7. Once the segment is selected and highlighted, right click on the TIGER/Line coastline layer, and highlight the "Selection" option from the dropdown menu. A submenu will appear, and click "Create Layer from Selection".

Projecting Data
1. Open ArcToolbox and follow the "Data Management --> Projections and Transformations --> Project" pathway.
2. Under "Input Dataset," use your community's boundary shapefile. For "Output Dataset," name the output file to be saved in an accessible location.
3. Under "Output Coordinate System," select the button to the right and open the "Spatial Reference Properties" box. Under the "XY Coordinate System" tab, open "Layers" and click the coordinate system you want to project to. Click OK. Click OK again on the "Project" box. Your new projected shapefile will be added to the map.

8. Using the selected coastline layer, create a 1000 ft buffer using the "Analysis Tools --> Proximity --> Buffer" pathway within the ArcToolbox. When the Buffer tool window opens, find the selected coastline layer from the dropdown menu under "Input Features". Save the new feature to an easily accessible location using the "Output Feature Class" file button.

9. Also, using the blank box under "Distance [value or field]" and "Linear unit", type "1000" and find and click "Feet" in the dropdown menu next to the box. Click "OK".

10. A new layer with the 1000 ft buffer will appear under the "Layers" table of contents.

11. Next, use the "Clip" tool under the "Geoprocessing" dropdown menu at the top of the ArcMap window to clip the new buffer layer to the community's boundaries. A new window will open when the "Clip" tool is selected.

12. Use the "Input Features" dropdown menu to add the buffer layer, and the "Clip Features" dropdown menu to add your community's boundary shapefile.

13. Next, use the "Output Feature Class" file button to save the clipped buffer layer to an easily accessible location. Click "OK" once the saved pathway is determined.

14. Your clipped buffer layer will be added under the "Layers" table of contents.

15. The clipped buffer layer of 1000 ft represents the coastal zone for your community.

Step 5: Identify community Still Water Elevations

1. To find Still Water Elevation numbers, go to: http://www.glerl.noaa.gov/data/dashboard/GLWLD.html.

2. A pop-up window entitled "To get started" will appear over surface water elevation graphs for each of the Great Lakes. Close this pop-up window by either clicking "OK" or the "X" in the top, right corner.

3. In the top, right corner of the webpage, there are boxes checked for each of the Great Lakes (and for Lake St. Clair). For easier reading, un-select each

of the lakes that are not relevant to your community. Meaning, if you are located on Lake Superior, un-select "Michigan-Huron," "St. Clair," "Erie," and "Ontario".

4. Once this is done, click the top, left corner button that reads, "To feet". This changes the elevation display from meters to feet. There should be a red, horizontal line in the graph representing the "Average for period of record (1918-present)". The elevation figure associated to this red line is the long term average Still Water Elevation (SWE). This is the SWE to use for the Expected climate future. Expected SWEs for all of the lakes (as of 2016) are listed in Figure 5 on page 32.

5. To find the SWE number for the Lucky climate future, select under the drop-down "Observations" menu the "Record lows (1918-2016)" observation box. This will populate the graph with dashes of the observed record low, so that one can compare the months of the record low year to the months of any other year in which data has been recorded. Placing your cursor over any of the bottom/lowest dashes will reveal when the observed lowest water level took place, as well as the month and year you are currently comparing that water level to, and most importantly, the lowest water level elevation. That is the SWE number to use for the Lucky climate future. Lucky SWEs for all of the lakes (as of 2016) are listed in Figure 5 on page 32.

6. For the Perfect Storm Still Water Elevation, select under the drop-down "Observations" menu the "Record highs (1918-2016)" observation box. The process of finding this number is similar to the one just described for the Lucky climate future. The difference is that you need to place your cursor over any of the top/highest dashes. The elevation listed here is the SWE number for the Perfect Storm climate future. Perfect Storm SWEs for all of the lakes (as of 2016) are listed in Figure 5 on page 32.

7. To note, it may be easier to round your elevation numbers for SWE. Water level fluctuates daily, and so these numbers are not meant to be firm, but rather starting points for crafting scenarios around uncertain futures. Use your discretion to round/simplify SWEs.

Still Water Elevation Levels (1918-2016)			
Lake	Lucky Climate Future Elevation (ft)	Expected Climate Future Elevation (ft)	Perfect Storm Climate Future Elevation (ft)
Lake Superior	599.47	601.7	603.38
Lakes Michigan/ Huron	575.42	578.8	582.35
Lake Erie	568.17	571.32	574.28
Lake Ontario	241.93	245.28	248.56

Figure 5. Still Water Elevation Levels for Climate Futures
The record low, average, and record high still water elevation figures informed the climate future creation. Please note that these figures are accurate as of 2016 and will need to be reviewed depending on when you create your scenario analysis using the methods described in Step 5.

High Risk Flood Areas

Step 6: Manipulate data and clip to coastal zone

1. Right click on the previously converted to polygon DEM layer, and click on "Open Attribute Table".

2. A new window will appear that displays the data (in a table form) that composes the polygon layer. One of the attributes of the table is titled "gridcode". This column represents the elevation of the separate polygon features of the layer itself, but the elevation is in meters. It is easier, for this exercise, to work with elevation in feet.

3. To get the elevation in feet, click on the icon in the top, left of the window, directly under the word "Table". A dropdown menu will appear. Click on "Add Field".

4. A new pop-up window will appear where you are able to specify the "Name" and "Type" of the new field. In the box next to "Name:" type "Elev_Ft". Then, using the "Type:" dropdown menu, select "Double". Click "OK".

5. In doing this, a new column within the attribute table will appear. All of the values, at present, will show "<Null>".

6. Right click on the new "Elev_Ft" column, and select "Field Calculator..." A new pop-up window will appear. Click "Yes".

7. The Field Calculator window will open. This is where you can convert the elevation from meters to feet, and fill in the "Elevation_Feet" column accordingly. To do this, first make sure that the "VB Script" button is selected (with a blue dot).

8. Then, double click on "gridcode" within the box underneath "Fields:". This will populate the box directly underneath "Elev_Ft =".

9. Next, Click on the "*" button just above the same box that just populated with "[gridcode]". This adds the "*" to the box and represents a multiplication symbol.

10. Click directly to the right of the "*" symbol in the box, and type "3.28084". This number represents how many feet are in 1 meter (rounded to the fifth decimal). This equation tells the "Elev_Ft" column how to fill in its currently "<Null>" cells. Once the box reads: "[gridcode] *3.28084" click "OK".

11. The calculation will process, and a box saying "Calculating records..." will appear. Depending on the size of your community, it may take a minute or so to complete.

12. Once the process is complete, you should see numbers within each of the cells of the "Elev_Ft" column.

13. The next step is to select the pertinent polygon fields that are less than or equal to certain elevations. This process is started by going back to the icon near the top, left of the attribute table window and clicking on it. Find and Click on the "Select by Attributes..." item in the dropdown menu.

14. Once done, the "Select by Attributes" window will open. In the "Layer" dropdown menu, select the DEM for your community. Make sure that the "Method:" dropdown menu within the window reads "Create a new selection".

15. Then, double click on "Elev_Ft" in the box underneath "Method:". This will populate the box directly underneath "SELECT * FROM [the name of your layer] WHERE:".

16. Next, click on the "< =" button near the middle, left of the window. This will also populate the same box, and should now read: "Elev_Ft <=".

17. Similar to the "Field Calculator," this selection equation looks for certain attributes. You will be looking to find elevations (in feet) that are less than or equal to certain still water elevations. For purposes of simplifying the methodology, start with the first elevation number for the Perfect Storm flood forecast. Click directly to the right of the "<=" symbol in the box, and type the number for your Perfect Storm Estimated VE Zone.

18. The box should read: "Elev_Ft <=___". Once it does, click "Apply". Doing this will create a selection within the Attribute Table (and those features that met the requirements of the equation will be highlighted). Click on the "X" in the top right corner of the Attribute Table window to close the table. You will notice certain features highlighted on the map itself, and those features are the features currently selected by the rule you have created.

19. Right click on your converted to polygon DEM layer and highlight "Selection" in the dropdown menu. Click on "Create Layer From Selected Features" in the submenu. This will create a new layer in the "Layers" table of contents, which represents all of the areas within your community that have an elevation of the you identified in step 17 (the Perfect Storm VE Zone) or lower.

20. The next step is to clip this new layer to the previously created coastal zone. To do this, use the "Clip" tool under the "Geoprocessing" dropdown menu at the top of the ArcMap document.

21. Use the "Input Features" dropdown menu to add the new layer with the selected elevations, and the "Clip Features" dropdown menu to add your coastal zone layer.

22. Next, use the "Output Feature Class" file button to save the clipped selected elevation layer to an easily accessible location. Click "OK" once the saved pathway is determined.

23. Your clipped selected elevation layer will be added under the "Layers" table of contents, and this represents all of the areas within the coastal zone that have an elevation of the Perfect Storm Estimated VE Zone or lower.

24. This process of selecting attributes based on elevations, creating new layers based on those selections, and then clipping said selections to the coastal zone will need to be replicated to fully complete the creation of Estimated VE Zones for your community. You will need to repeat Steps 13-23 for each of the elevations listed in the table below which is a reference for the appropriate elevations.

The elevation number accurately representing the Estimated VE Zones, for either the Expected or Perfect Storm, is the sum of Still Water Elevation (SWE), Wave Run Up (WRU), and Wave Action (otherwise known as Elevation Change). This number (in feet) is represented Figure 5. For the rest of the manual, the sum of the Wave Run Up and Wave Action (Elevation Change) will simply be referred to as Total Storm Surge.

Average Total Storm Surge numbers for communities across the State of Michigan are denoted in coastal stretches in Figure 4. Use these numbers with NOAA/GLERL's Still Water Elevation numbers (found at their online dashboard) to craft Expected and Perfect Storm Estimated VE elevation numbers for your community.

Pulling these figures together (the Still Water Elevation and Total Storm Surge) the Estimated VE Zones are as follows:
- Expected Climate Future = Expected Still Water Elevation + Total Storm Surge
- Perfect Storm Climate Future = Perfect Storm Still Water Elevation + Total Storm Surge

Step 6: "Ground Truth" Estimated VE Zones

1. In reviewing the new polygon layers that represent Estimated VE Zones, it is important to make sure that the areas where the polygons intersect the coastal zone are logically representative of where communities might experience high velocity wave action. Meaning, if polygon features cover land near the edge of the coastal zone, but not near the shoreline, or are present near the shoreline, but then have gaps in land coverage and are present again near the edge of the coastal zone, those specific polygon features need to be further examined (and potentially removed) from the Estimated VE Zone.

2. There are several different ways to do this, but the Converted to Polygon DEM (clipped to the community) can be used to reference the elevation in the areas where the polygon features are coming into question. If, for example, the elevation shows a bluff of four feet above the elevation used to create the Estimated VE Zones, then you can remove any polygon features that fall landward of that bluff (near the edge of the coastal zone).

3. Removing polygon features can easily be done using the "Edit Features" toolset. It may be necessary for you to first bisect polygon features under this toolset before you are able to remove polygons that do not logically fit into the high velocity wave action premise. Please refer online tutorials and ArcGIS toolset descriptions if further guidance is needed.

4. Once these two processes are completed (downloading and manipulating the FEMA FIRMs, as well as downloading and manipulating the USGS DEMs for "Estimated VE" zones), the different climate futures can be "identified" or mapped fully. To do this, merge the appropriate layers in GIS so that the following zones are represented for each of the climate futures:

   Lucky – Existing FEMA FIRM A & AE zones
   Expected – Existing FEMA FIRM A & AE zones + "Estimated VE" zone using the Expected parameters for stillwater elevation
   Perfect Storm – Existing FEMA FIRM A, AE, & Shaded X zones + "Estimated VE" zone using the Perfect Storm parameters for stillwater elevation.

Other Approaches

There are many possible mapping methods that can help identify high risk flood areas. One of these methods comes directly from FEMA. FEMA created the computer program, HAZUS, to help regions identify where they might be susceptible to natural disasters (flooding being one of the natural disasters that HAZUS analyzes), and the potential costs (clean up, inventory damage, shelter, etc.) of that natural disaster. The positives of using FEMA's HAZUS computer program are twofold: (1) HAZUS could identify high risk flood areas for communities and (2) HAZUS could quantify in detail the cost of flood events that corresponded to the constructed climate futures. HAZUS's capabilities are impressive, if you are able to obtain the right data inputs and have the necessary knowledge to appropriately manipulate the program's stock settings. However, those are two real challenges.

Running a Level 1 analysis with HAZUS can be successful by using stock data (for the most part) to assess the location of flooding and costs of this flooding for a community. However, a more in-depth Level 2 analysis is difficult for multiple reasons. A Level 2 analysis requires more complex datasets that are difficult to access. These datasets are called coastal and riverine flooding depth grids. FEMA has never created them for the State of Michigan, but they are available in other states. Additionally, the scope of a HAZUS analysis was limited to counties and census tracts as of 2015, which made it difficult to analyze specific community boundaries. (This limitation may change with updates to the HAZUS tool). As such, inherent flaws prevented HAZUS from providing reliable city-level or township-level results, only providing numbers that were skewed as a result of the program's limited flexibility. Moreover, in order for HAZUS to provide realistic damage and fiscal impact numbers, users are required to extensively update general building stock data. This effort would be very time-intensive and difficult for a community planning staff to manage.

However, if a community has access to these datasets and wants to learn and run HAZUS, it can produce extremely useful information about not only where the high risk areas are in their community, but also about what different storm events will cost their community.