



FLORIDA STATEWIDE REGIONAL EVACUATION STUDY PROGRAM



STORM TIDE ATLAS

BROWARD

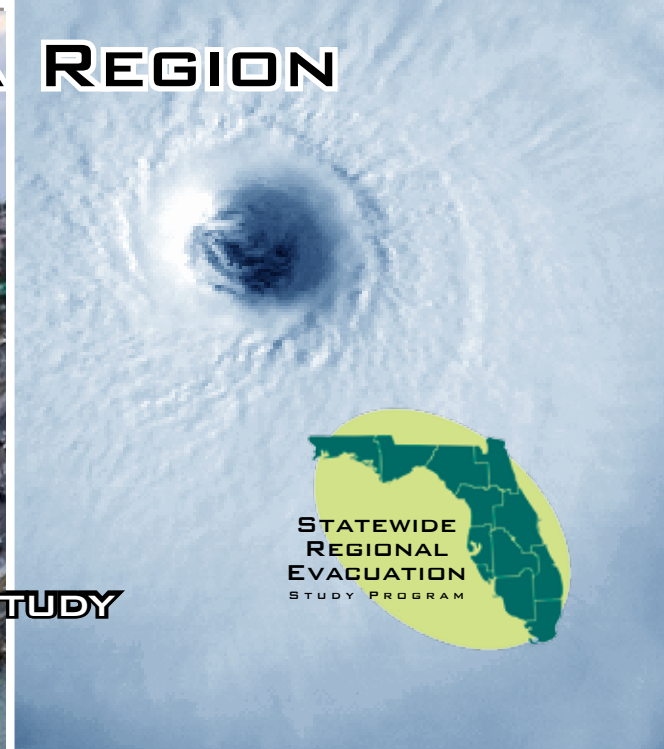


VOLUME 7-1 1
BOOK 1 OF 3
FLORIDA DIVISION OF
EMERGENCY MANAGEMENT
SOUTH FLORIDA
REGIONAL PLANNING COUNCIL

SOUTH FLORIDA REGION



INCLUDES HURRICANE EVACUATION STUDY





SOUTH FLORIDA STORM TIDE ATLAS

Volume 7-11 Book 1 Broward County

This Book is part of Volume 7 of the *Statewide Regional Evacuation Study Program* (SRESP), and one of three county books in the *South Florida Storm Tide Atlas* series. Book 1 covers Broward County; Book 2 covers Miami-Dade County; and Book 3 covers Monroe County. The Atlas maps identify those areas subject to potential storm tide flooding from the five categories of hurricane on the Saffir-Simpson Hurricane Wind Scale, as determined by the National Oceanic and Atmospheric Administration (NOAA) numerical storm surge model, Sea, Lake and Overland Surges from Hurricanes (SLOSH), updated in 2009.

The *Storm Tide Atlas* is the foundation of the hazards analysis for storm tide and a key component of the SRESP. The *Technical Data Report* (Volume 1-11) builds upon this analysis and includes the revised evacuation zones and population estimates, results of the evacuation behavioral data, shelter analysis and evacuation transportation analyses. The study, which provides vital information to state and local emergency management, forms the basis for county evacuation plans. The final documents with summary information are available on the Internet at www.sfrpc.com/sresp.htm.

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VOLUME 7-11 SOUTH FLORIDA

STORM TIDE ATLAS

Book 1 Broward County

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A. Introduction

A comprehensive emergency management program requires attention to four key inter-related components: preparedness, response, recovery and mitigation. Preparing and avoiding or reducing potential loss of life and property damage – **preparedness and mitigation** – requires accurate and precise hazard and vulnerability analyses. These analyses are the foundation for evacuation and disaster response planning, as well as the development of local mitigation strategies designed to reduce the community’s overall risk to disasters. This Atlas series provides information to state, county and local emergency management officials and planners for use in hurricane preparedness and coastal management in the South Florida Region, including Broward, Miami-Dade and Monroe Counties (Figure 1). It is part of a statewide effort to enhance our ability to respond to a hurricane threat, facilitate the evacuation of vulnerable residents to a point of relative safety and mitigate our vulnerability in the future. The *Statewide Regional Evacuation Study Program* provides a consistent, coordinated and improved approach to addressing the state and regional vulnerability to the hurricane threat.

The specific purpose of this Atlas is to provide maps that depict storm tide heights and the extent of stillwater, storm surge coastal flooding inundation from hurricanes of five different intensities in the South Florida area. The Atlas was prepared by the South Florida Regional Planning Council as part of the *Statewide Regional Evacuation Study Program*. The Study is a cooperative effort of the Florida Department of Community Affairs, Division of Emergency Management, the Florida Regional Planning Councils and the county emergency management agencies.

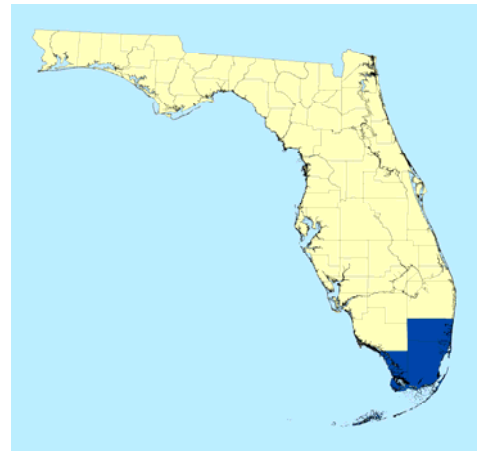
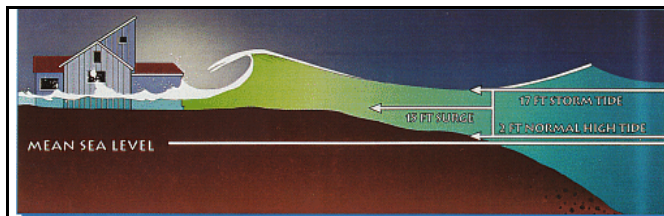


Figure 1 The South Florida Region

B. The SLOSH Model

The principal tool utilized in this study for analyzing the expected hazards from potential hurricanes affecting the study area is the Sea, Lake and Overland Surges from Hurricanes (**SLOSH**) numerical storm surge prediction model. The SLOSH computerized model predicts the storm tide heights that result from hypothetical hurricanes with selected various combinations of pressure, size, forward



speed, track and winds. Originally developed for use by the National Hurricane Center (NHC) as a tool to give geographically specific warnings of expected surge heights during the approach of hurricanes, the SLOSH model is utilized in regional studies for several key hazard and vulnerability analyses.

The SLOSH modeling system consists of the model source code and the model basin or grid. SLOSH model grids must be developed for each specific geographic coastal area, individually

incorporating the unique local bay and river configuration, water depths, bridges, roads and other physical features. In addition to open coastline heights, one of the most valuable outputs of the SLOSH model for evacuation planning is its predictions of surge heights over land into inland areas.

The Tampa Bay SLOSH model basin completed in 1979 represented the first application of SLOSH storm surge dynamics to a major coastal area of the United States. The model was developed by the Techniques Development Lab of the National Oceanic and Atmospheric Administration (NOAA), under the direction of the late Dr. Chester P. Jelesnianski. In December 1990 the National Hurricane Center updated the SLOSH model. A major improvement to the model was the incorporation of wind speed degradation overland as the simulated storms moved inland. This duplicated the pressure "filling" and increases in the radii of maximum winds (RMW) as the hurricanes weaken after making landfall. The grid configuration also provided more detail and additional information.

The newest generation of the SLOSH model basin incorporated in the 2010 Statewide Regional Evacuation Study Program reflects major improvements, including higher resolution basin data and grid configurations. Faster computer speeds allowed additional hypothetical storms to be run for creation of the MOMs¹ or the maximum potential storm tide values for each category of storm.

1. Hypothetical Storm Simulations

Surge height depends strongly on the specifics of a given storm including, forward speed, angle of approach, intensity or maximum wind speed, storm size, storm shape, and landfall location. The SLOSH model was used to develop data for various combinations of hurricane strength, wind speed, and direction of movement. Storm strength was modeled using the central pressure (defined as the difference between the ambient sea level pressure and the minimum value in the storm's center), the storm eye size and the radius of maximum winds using the five categories of hurricane intensity as depicted in the Saffir-Simpson Hurricane Wind Scale (see Table 1).

Table 1 Saffir-Simpson Hurricane Wind Scale

| Category | Wind Speeds | Potential Damage |
|------------|--------------------------------------|--|
| Category 1 | Sustained winds 74-95 mph | <i>Very dangerous winds will produce some damage</i> |
| Category 2 | Sustained winds 96-110 mph | <i>Extremely dangerous winds will cause extensive damage</i> |
| Category 3 | Sustained winds 111-130 mph | <i>Devastating damage will occur</i> |
| Category 4 | Sustained winds 131-155 mph | <i>Catastrophic damage will occur</i> |
| Category 5 | Sustained winds of 156 mph and above | <i>Catastrophic damage will occur</i> |

¹ Maximum of MEOWs or Maximum of Maximums

The modeling for each tropical storm/hurricane category was conducted using the mid-range pressure difference (Δp , millibars) for that category. The model also simulates the storm filling (weakening upon landfall) and radius of maximum winds (RMW) increase.

Ten storm track headings (E, ENE, NE, NNE, N, NNW, NW, WNW, W, and WSW) were selected as being representative of storm behavior in the South Florida region, based on observations by forecasters at the National Hurricane Center. And for each set of tracks in a specific direction storms were run at forward speeds of 5, 15 and 25 mph. And, for each direction, at each speed, storms were run at two different sizes (30 statute miles radius of maximum winds and 45 statute miles radius of maximum winds). Finally, each scenario was run at both mean tide and high tide. Both tide levels are now referenced to North American Vertical Datum of 1988 (NAVD88) as opposed to the National Geodetic Vertical Datum of 1929 (NGVD29) used in previous studies.

A total of 14,700 runs were made, consisting of the different parameters shown in Table 2.

Table 2 Biscayne Bay Basin Hypothetical Storm Parameters

Directions, speeds, sizes, (Saffir/Simpson) intensities, number of tracks and the number of runs.

| Direction | Speeds (mph) | Size (Radius of Maximum Winds) | Intensity | Tides | Tracks | Runs |
|-----------|---------------|------------------------------------|-------------|-----------|--------|--------|
| E | 5, 15, 25 mph | 30 statute miles, 45 statute miles | 1 through 5 | Mean/High | 28 | 1,680 |
| ENE | 5, 15, 25 mph | 30 statute miles, 45 statute miles | 1 through 5 | Mean/High | 27 | 1,620 |
| NE | 5, 15, 25 mph | 30 statute miles, 45 statute miles | 1 through 5 | Mean/High | 22 | 1,320 |
| NNE | 5, 15, 25 mph | 30 statute miles, 45 statute miles | 1 through 5 | Mean/High | 19 | 1,140 |
| N | 5, 15, 25 mph | 30 statute miles, 45 statute miles | 1 through 5 | Mean/High | 21 | 1,260 |
| NNW | 5, 15, 25 mph | 30 statute miles, 45 statute miles | 1 through 5 | Mean/High | 23 | 1,380 |
| NW | 5, 15, 25 mph | 30 statute miles, 45 statute miles | 1 through 5 | Mean/High | 28 | 1,680 |
| WNW | 5, 15, 25 mph | 30 statute miles, 45 statute miles | 1 through 5 | Mean/High | 25 | 1,500 |
| W | 5, 15, 25 mph | 30 statute miles, 45 statute miles | 1 through 5 | Mean/High | 26 | 1,560 |
| WSW | 5, 15, 25 mph | 30 statute miles, 45 statute miles | 1 through 5 | Mean/High | 26 | 1,560 |
| TOTAL | | | | | | 14,700 |

2. The Grid for the Biscayne Bay SLOSH Model

Figure 2 illustrates the area covered by the grid for the Biscayne Bay SLOSH Model. To determine the surge values the SLOSH model uses a telescoping elliptical grid as its unit of analysis with 124 arc lengths ($1 < I < 124$) and 189 radials ($1 < J < 189$). Use of the grid configuration allows for individual calculations per grid square, which is beneficial in two ways: (1) it provides increased resolution of the storm surge at the coastline and inside the harbors, bays and rivers, while decreasing the resolution in the deep water where detail is not as important; and (2) it allows economy in computation.

The grid size for the Biscayne Bay Model varies from approximately 0.02 square mile or 19 acres closest to the pole ($i = 1$) to the grids on the outer edges where each grid is approximately 4.83 square miles.

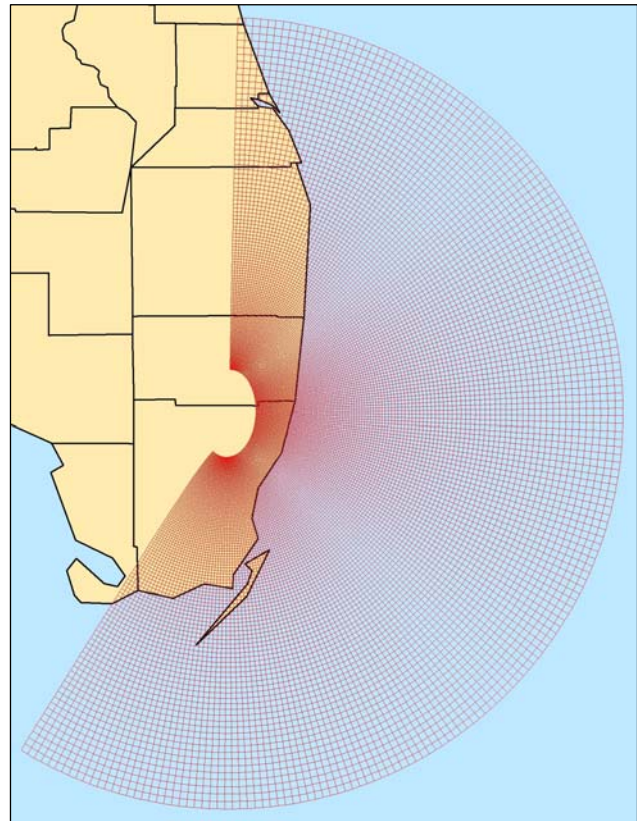


Figure 2 Biscayne Bay Basin Grid

3. Storm Scenario Determinations

As indicated, the SLOSH model is the basis for the "hazard analysis" portion of coastal hurricane evacuation plans. Thousands of hypothetical hurricanes are simulated with various Saffir-Simpson Wind categories, forward speeds, landfall directions, and landfall locations. An envelope of high water containing the maximum value a grid cell attains is generated at the end of each model run. These envelopes are combined by the NHC into various composites which depict the possible flooding. One useful composite is the MEOW (Maximum Envelopes of Water), which incorporates all the envelopes for a particular category, speed, and landfall direction. Once surge heights have been determined for the appropriate grids, the maximum surge heights are plotted by storm track and tropical storm/hurricane category.

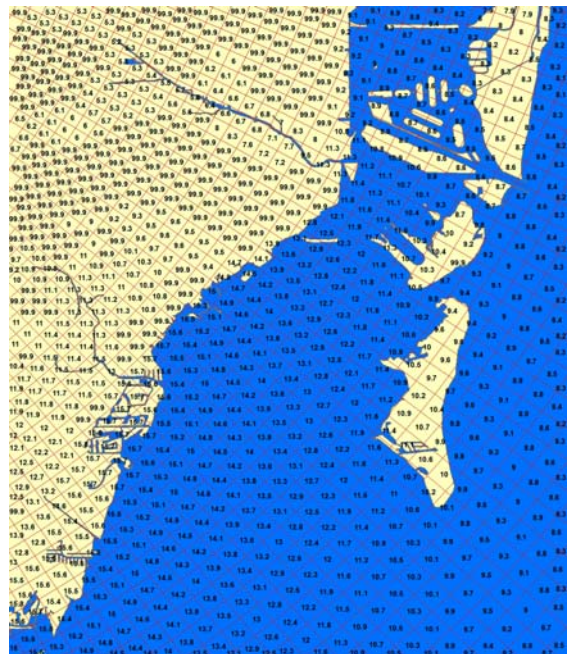


Figure 3 SLOSH Grid with Surge Values

These plots of maximum surge heights for a given storm category and track are referred to as Maximum Envelopes of Water (MEOWs). The MEOWs, or Reference Hurricanes, can be used in evacuation decision-making when and if sufficient forecast information is available to project storm track or type of storm (different landfalling, paralleling, or exiting storms).

The MEOWs provide information to the emergency managers in evacuation decision-making. However, in order to determine a scenario which may confront the county in a hurricane threat 24-48 hours before a storm is expected, a further compositing of the MEOWs into Maximums of the Maximums (MOMs) is usually required.

The MOM (Maximum of the MEOWs) combines all the MEOWs of a particular category. The MOMs represent the maximum surge expected to occur at any given location, regardless of the specific storm track/direction of the hurricane. The only variable is the intensity of the hurricane represented by category strength (Category 1-5).

The MOM surge heights, which were furnished by the National Hurricane Center, have 2 values, mean tide and high tide. Mean tide has 0' tide correction. High tide has a 1' tide correction added to it. The Storm Tide limits include the adjustment for mean high tide. All elevations are now referenced to the NAVD88 datum.

These surge heights were provided within the SLOSH grid system as illustrated on Figure 2. The range of maximum surge heights (low to high) for each scenario is provided for each category of storm (MOM) in Table 3. **It should be noted again that these surge heights represent the maximum surge height recorded in the county from the storm tide analysis, including inland and back bay areas where the surge can be magnified dependent upon storm parameters.**

Table 3 Potential Storm Tide Heights by County
(In feet above NAVD88)

| *Storm Strength | Broward | Miami-Dade | Monroe |
|-----------------|------------|-------------|-------------|
| Category 1 | Up to 3.1' | Up to 5.0' | Up to 7.9' |
| Category 2 | Up to 4.7' | Up to 8.2' | Up to 12.2' |
| Category 3 | Up to 6.2' | Up to 11.4' | Up to 16.4' |
| Category 4 | Up to 8.3' | Up to 14.2' | Up to 20.0' |
| Category 5 | Up to 9.5' | Up to 16.5' | Up to 23.3' |

**Based on the category of storm on the Saffir-Simpson Hurricane Wind Scale
 ** Surge heights represent the maximum values from SLOSH MOMs.*

C. Creation of the Storm Tide Zones

The maps in this atlas depict SLOSH-modeled heights of storm tide and extent of flood inundation for hurricanes of five different intensities. As indicated above, the storm tide was modeled using the Maximum of Maximums (MOMs) representing the potential flooding from the five categories of storm intensity of the Saffir-Simpson Hurricane Wind Scale.

1. Determining Storm Tide Height and Flooding Depth

SLOSH and SLOSH-related products reference storm tide heights relative to the model vertical datum, NAVD88. In order to determine the inundation depth of surge flooding at a particular location the ground elevation (relative to NAVD88) at that location must be subtracted from the potential surge height.²

Surge elevation, or water height, is the output of the SLOSH model. At each SLOSH grid point, the maximum surge height is computed at that point.

Within the SLOSH model an average elevation is assumed within each grid square. Height of water above terrain was not calculated using the SLOSH average grid elevation because terrain height may vary significantly within a SLOSH grid square. For example, the altitude of a 1-mile grid square may be assigned a value of 1.8 meters (6 feet), but this value represents an average of land heights that may include values ranging from 0.9 to 2.7 meters (3 to 9 feet).

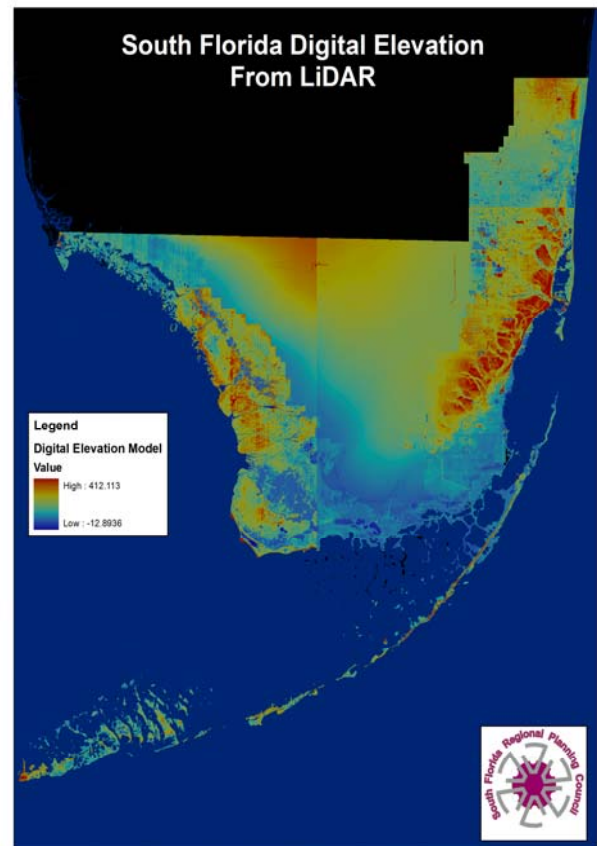


Figure 4 Digital Elevation from LIDAR

In this case, a surge value of 2.5 meters (8 feet) in this square would imply a 0.7 meters (2 feet) average depth of water over the grid's terrain. However, in reality within the grid area portion of the grid would be "dry" and other parts could experience as much as 1.5 meters (5 feet) of inundation. Therefore, in order to determine the storm tide limits, the depth of surge flooding above terrain at a specific site in the grid square is the result of subtracting the terrain height determined by remote sensing from the model-generated storm tide height in that grid square.³

² It is important to note that one must use a consistent vertical datum when post-processing SLOSH storm surge values.

³ Note: This represents the regional post-processing procedure. When users view SLOSH output within the SLOSH Display Program, the system uses average grid cell height when subtracting land.

2. Storm Tide Post-Processing

The Atlas was created using a Toolset wrapped into ESRI's ArcGIS mapping application, ArcMap. The surge tool was developed for the Statewide Regional Evacuation Study Program by the Tampa Bay Regional Planning Council, which had used a similar tool for the previous Evacuation Study Update (2006). This tool enabled all regions within the state of Florida to process the SLOSH and elevation data with a consistent methodology.

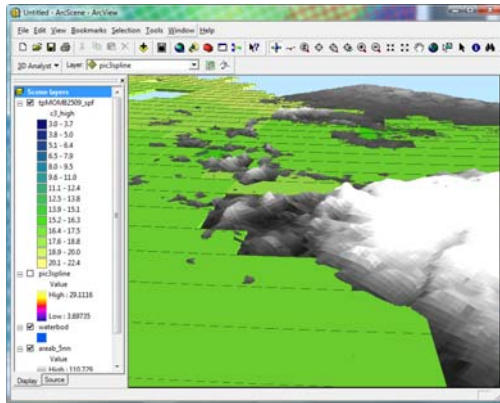


Figure 5 SLOSH Display

The tool basically performs the operation of translating the lower resolution SLOSH grid data into a smooth surface resembling actual storm tide and terrain, processing it with the high resolution elevation data derived from LiDAR. The image on the left represents how the data would look as it appears directly from SLOSH Model output.

Processing all the data in the raster realm, the tool is able to digest large amounts of data and output detailed representations of surge inundation.

The program first interpolates the SLOSH height values for each category into a raster surface using spline interpolation. This type of interpolation is best for smooth surfaces, such as water and slow changing terrain. The result is a raster surface representing the surge height for a category that can be processed against the raster Digital Elevation Model from the LIDAR. The "dry" values (represented as 99.9 in the SLOSH Model) are replaced by an average of the inundated grids surrounding the current processed grid. An algorithm performs this action utilizing the range of values in the current category of storm being processed.

Using this methodology, once the elevation is subtracted from the projected storm tide, the storm tide limits are determined. The output of the tool is a merged polygon file holding all the maximum inundation zones for Category 1 through Category 5. The output depicted in this Storm Tide Atlas is determined consistent with the coastal areas throughout the state. Figure 7 presents a compilation of the *Storm Tide Atlas* for the region.

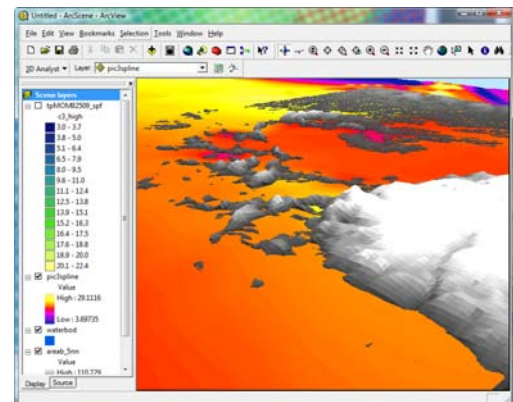
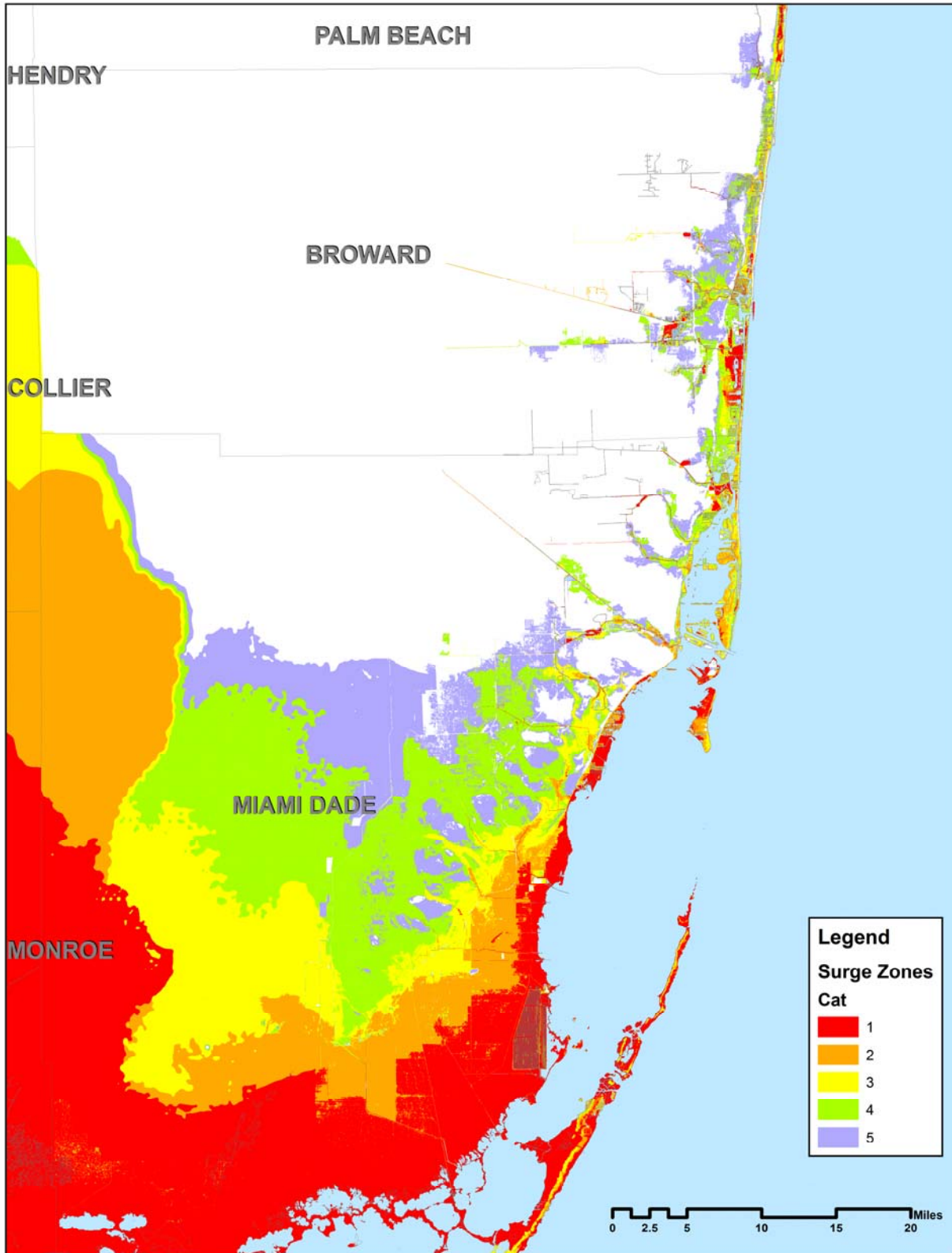


Figure 6 SLOSH Display Post-Processing

Figure 7 Storm Tide Limits for the South Florida Region
Biscayne Bay Basin



D. Variations to Consider

Variations between modeled versus actual measured storm tide elevations are typical of current technology in coastal storm surge modeling. In interpreting the data emergency planners should recognize the uncertainties characteristic of mathematical models and severe weather systems such as hurricanes. The storm tide elevations developed for this study and presented in the *Storm Tide Atlas* should be used as guideline information for planning purposes.

1. Storm Tide and Wave Height

Regarding interpretation of the data, it is important to understand that the configuration and depth (bathymetry) of the Ocean or Gulf bottom will have a bearing on surge and wave heights.

A narrow shelf, or one that drops steeply from the shoreline and subsequently produces deep water in close proximity to the shoreline tends to produce a lower surge but a higher and more powerful wave. Those regions that have a gently sloping shelf and shallower normal water depths, can expect a higher surge but smaller waves. The reason this occurs is because a surge in deeper water can be dispersed down and out away from the hurricane. However, once that surge reaches a shallow gently sloping shelf it can no longer be dispersed away from the hurricane, consequently water “piles up” as it is driven ashore by the wind stresses of the hurricane. Wave height is NOT calculated by the SLOSH model and is not reflected within the storm tide delineations.

2. Forward Speed

Under actual storm conditions it may be expected that a hurricane moving at a slower speed could have higher coastal storm tides than those depicted from model results. At the same time, a fast moving hurricane would have less time to move storm surge water up river courses to more inland areas. For example, a minimal hurricane or a storm further off the coast, such as Hurricane Elena (1985), which stalled 90 miles off the Tampa Bay coast for several tidal cycles, could cause extensive beach erosion and move large quantities of water into interior lowland areas. In the newest version of the SLOSH model, for each set of tracks in a specific direction, storms were run at forward speeds of 5, 15 and 25 mph.

3. Radius of Maximum Winds

As indicated previously, the size of the storm or radius of maximum winds (RMW) can have a significant impact on storm surge especially in bay areas and along the Gulf of Mexico. All of the hypothetical storms were run at two different sizes, 30 nautical mile radius of maximum winds and 45 nautical mile radius of maximum winds.

4. Astronomical Tides

Surge heights were provided by NOAA for both mean tide and high tide. Both tide levels are referenced to North American Vertical Datum of 1988. The storm tide limits reflect high tide in the region.

5. Accuracy

As part of the Statewide Regional Evacuation Study, all coastal areas, as well as areas surrounding Lake Okeechobee, were mapped using remote-sensing laser terrain mapping (LiDAR⁴) providing the most comprehensive, accurate and precise topographic data for this analysis. As a general rule, the vertical accuracy of the laser mapping is within a 15 centimeter tolerance. However, it should be noted that the accuracy of these elevations is limited to the precision and tolerance in which the horizontal accuracy for any given point is recorded. Other factors such as artifact removal algorithms (that remove buildings and trees) can affect the recorded elevation in a particular location. For the purposes of this study, the horizontal accuracy cannot be assumed to be greater than that of a standard USGS 7.5-minute quadrangle map, or a scale of 1:24,000.

E. Points of Reference

County emergency management agencies selected reference points, which include key facilities or locations critical for emergency operations. The table below includes the map identification number, descriptions of the selected points, and the elevation of the site. The elevation is based on the digital elevation data provided by the LiDAR. It should be noted that if the site is large, elevations may vary significantly. The table also provides the storm tide value from the SLOSH value and the depth of inundation (storm tide value minus the ground elevation) at the site.

⁴ Light Imaging Detection and Ranging

Table 4 Selected Points of Reference – Broward County

| Map ID | Name | Elevation | C1 DPTH ⁵ | C2 DPT H | C3 DPT H | C4 DPT H | C5 DPT H | C1 SURGE ⁶ | C2 SURGE | C3 SURGE | C4 SURGE | C5 SURGE |
|--------|---|-----------|----------------------|----------|----------|----------|----------|-----------------------|----------|----------|----------|----------|
| 1 | HOLLYWOOD BLVD. & A1A. | 3.459 | 0.000 | 0.000 | 0.941 | 3.309 | 4.372 | 2.311 | 3.342 | 4.400 | 6.768 | 7.832 |
| 2 | YOUNG CIRCLE. | 7.954 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.340 | 2.190 | 3.121 | 4.699 | 7.698 |
| 3 | HOLLYWOOD BLVD. & I-95. | 7.598 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.340 | 2.190 | 2.860 | 3.704 | 4.296 |
| 4 | JOHNSON ST.& I-95. | 5.348 | 0.000 | 0.000 | 0.000 | 0.000 | 2.181 | 1.340 | 2.190 | 2.860 | 4.181 | 7.529 |
| 5 | JOHNSON ST.& U.S. 1. | 9.932 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.340 | 2.182 | 2.879 | 3.942 | 3.926 |
| 6 | JOHNSON ST.& INTRA. W'TRY & WESTLAKE. | 5.288 | 0.000 | 0.000 | 0.000 | 1.409 | 2.655 | 2.312 | 3.403 | 4.400 | 6.698 | 7.943 |
| 7 | SHERIDAN ST.& INTRA. WATERWAY. | 0.000 | 2.403 | 3.400 | 4.400 | 6.695 | 8.106 | 2.403 | 3.400 | 4.400 | 6.695 | 8.106 |
| 8 | SHERIDAN ST.& U.S. 1. | 10.064 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.340 | 2.206 | 2.885 | 3.967 | 5.242 |
| 9 | SHERIDAN ST.& I-95. | 6.772 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.340 | 2.190 | 2.860 | 5.084 | 6.001 |
| 10 | STIRLING RD.& I-95. | 7.646 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.346 | 2.197 | 2.868 | 4.614 | 4.750 |
| 11 | STIRLING RD.& U.S. 1. | 9.069 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.451 | 2.380 | 3.173 | 5.163 | 7.718 |
| 12 | WESTLAKE. DANIA CUTOFF & INTRA. WATERWAY. | 0.000 | 2.408 | 3.400 | 4.400 | 6.886 | 8.010 | 2.408 | 3.400 | 4.400 | 6.886 | 8.010 |
| 13 | DANIA CUTOFF & GRIFFIN & US 1. | -0.830 | 3.121 | 3.788 | 4.780 | 7.494 | 8.351 | 2.291 | 2.958 | 3.950 | 6.664 | 7.521 |
| 14 | GRIFFIN & I-95. | 8.789 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 2.051 | 2.767 | 3.739 | 5.444 | 5.715 |
| 15 | FORT LAUDERDALE AIRPORT. | 6.315 | 0.000 | 0.000 | 0.000 | 0.000 | 1.185 | 1.479 | 2.269 | 2.989 | 3.978 | 7.500 |
| 16 | SOUTH ANDREWS AVE. & US 1. | 4.609 | 0.000 | 0.000 | 0.000 | 0.924 | 3.291 | 1.340 | 2.192 | 2.868 | 5.532 | 7.900 |
| 17 | PORT EXPANSION. | 9.788 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.680 | 2.711 | 3.591 | 7.000 | 8.100 |
| 18 | PORT & STRANAHAN RIVER. | 0.000 | 2.340 | 3.756 | 4.966 | 7.960 | 9.255 | 2.340 | 3.756 | 4.966 | 7.960 | 9.255 |
| 19 | PORT & US 1 & SR 84. | 8.349 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.332 | 2.175 | 2.840 | 5.317 | 7.687 |
| 20 | I-95 & NEW RIVER. | -0.350 | 2.089 | 3.057 | 3.659 | 5.391 | 7.669 | 1.739 | 2.707 | 3.309 | 5.041 | 7.319 |
| 21 | US 441 & SR 84. | 25.312 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.601 | 2.601 | 3.401 | 4.201 | 5.001 |
| 22 | DAVIE BLVD. & US 1.(;SE 3 AVE & 17 ST). | 7.306 | 0.000 | 0.000 | 0.000 | 0.000 | 0.595 | 1.383 | 2.262 | 2.952 | 4.804 | 7.900 |
| 23 | LAS OLAS BLVD & NEW RIVER. | 0.000 | 2.310 | 3.607 | 4.951 | 5.791 | 8.163 | 2.310 | 3.607 | 4.951 | 5.791 | 8.163 |
| 24 | VICTORIA PARK RD. | 7.353 | 0.000 | 0.000 | 0.000 | 0.000 | 0.773 | 2.132 | 3.440 | 4.376 | 5.685 | 8.126 |

⁵ DPTH refers to the depth of inundation at the site (storm surge value minus the ground elevation)

⁶ SURGE refers to the storm surge value from the SLOSH Model

| Map ID | Name | Elevation | C1 DPTH ⁵ | C2 DPT H | C3 DPT H | C4 DPT H | C5 DPT H | C1 SURGE ⁶ | C2 SURGE | C3 SURGE | C4 SURGE | C5 SURGE |
|--------|--|-----------|----------------------|----------|----------|----------|----------|-----------------------|----------|----------|----------|----------|
| 26 | BROWARD BLVD. & US 1. S ANDREWS AVE. & NEW RIVER | 4.738 | 0.000 | 0.000 | 0.000 | 0.854 | 3.113 | 1.827 | 2.930 | 3.789 | 5.591 | 7.850 |
| 27 | CANAL. | 0.269 | 2.007 | 3.290 | 4.112 | 5.286 | 7.524 | 2.276 | 3.559 | 4.382 | 5.556 | 7.794 |
| 28 | BROWARD BLVD. & I-95. | 7.760 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 2.395 | 3.684 | 4.091 | 5.315 | 7.376 |
| 29 | SUNRISE BLVD. & POWERLINE RD. | 5.873 | 0.000 | 0.000 | 0.000 | 0.000 | 1.742 | 1.351 | 2.220 | 2.899 | 4.861 | 7.615 |
| 30 | SUNRISE BLVD. & ANDREWS AVE. SUNRISE BLVD. & INTRA. | 6.120 | 0.000 | 0.000 | 0.000 | 0.000 | 1.456 | 1.337 | 2.201 | 2.872 | 4.991 | 7.575 |
| 31 | WATERWAY. | 0.000 | 2.345 | 3.729 | 5.001 | 5.675 | 8.000 | 2.345 | 3.729 | 5.001 | 5.675 | 8.000 |
| 32 | NE 19TH ST. & US. 1. MIDDLE RIVER & RAILROAD | 2.810 | 0.000 | 0.000 | 0.647 | 1.921 | 4.088 | 1.510 | 2.502 | 3.457 | 4.731 | 6.899 |
| 33 | TRACKS. | -1.046 | 2.386 | 3.234 | 3.903 | 4.932 | 6.984 | 1.339 | 2.188 | 2.856 | 3.886 | 5.938 |
| 34 | MIDDLE RIVER & POWERLINE RD. OAKLAND PARK BLVD. & | -1.256 | 2.596 | 3.446 | 4.116 | 4.877 | 7.021 | 1.340 | 2.190 | 2.860 | 3.621 | 5.765 |
| 35 | POWERLINE RD. OAKLAND PARK BLVD. & DIXIE | 5.112 | 0.000 | 0.000 | 0.000 | 0.000 | 0.895 | 1.340 | 2.190 | 2.860 | 3.620 | 6.007 |
| 36 | HWY. OAKLAND PARK BLVD. & INTRA. | 7.245 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.340 | 2.190 | 2.860 | 3.619 | 5.994 |
| 37 | WATERWAY. COMMERCIAL BLVD. & INTRA. | 0.000 | 2.356 | 3.843 | 4.938 | 5.510 | 7.121 | 2.356 | 3.843 | 4.938 | 5.510 | 7.121 |
| 38 | WATERWAY. | 0.000 | 2.266 | 3.761 | 4.556 | 5.477 | 7.079 | 2.266 | 3.761 | 4.556 | 5.477 | 7.079 |
| 39 | FLORANADA RD & NE 45 @ US 1. | 12.397 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.400 | 2.294 | 2.973 | 3.972 | 5.492 |
| 40 | DIXIE HWY. & NW 44 ST. | 5.900 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.340 | 2.190 | 2.860 | 3.620 | 5.209 |
| 41 | DIXIE HWY. & NW 62ND ST. | 7.346 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.340 | 2.190 | 2.860 | 3.810 | 6.505 |
| 42 | IMPERIAL POINT & US 1. | 5.501 | 0.000 | 0.000 | 0.000 | 0.000 | 1.515 | 1.572 | 2.764 | 3.458 | 5.314 | 7.016 |
| 43 | CYPRESS RD & ATLANTIC BLVD. | 11.403 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.342 | 2.251 | 2.897 | 3.971 | 6.113 |
| 44 | US 1 & POMPANO CANAL. INTRA. WATERWAY & ATLANTIC | -0.236 | 2.148 | 4.272 | 4.974 | 5.769 | 7.379 | 1.912 | 4.036 | 4.738 | 5.533 | 7.142 |
| 45 | BLVD. | 0.000 | 2.356 | 3.879 | 5.028 | 6.401 | 8.057 | 2.356 | 3.879 | 5.028 | 6.401 | 8.057 |
| 46 | INTRA. WATERWAY & NE 14TH ST. | 0.000 | 2.304 | 3.775 | 5.280 | 6.494 | 7.811 | 2.304 | 3.775 | 5.280 | 6.494 | 7.811 |
| 47 | US 1 & COPANS ROAD. | 10.688 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.655 | 2.763 | 3.726 | 5.288 | 5.778 |
| 48 | HILLSBORO BRIDGE. | 0.000 | 2.402 | 3.858 | 5.285 | 6.530 | 7.906 | 2.402 | 3.858 | 5.285 | 6.530 | 7.906 |
| 49 | LIGHTHOUSE POINT @ US 1. TOWN OF HILLSBORO BEACH @ | 10.734 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.495 | 2.477 | 3.734 | 4.880 | 5.050 |
| 50 | A1A. | 5.454 | 0.000 | 0.000 | 0.000 | 1.159 | 2.461 | 2.311 | 3.707 | 5.183 | 6.614 | 7.915 |
| 51 | A1A & HILLSBORO. | 9.540 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.972 | 3.234 | 4.472 | 6.125 | 7.834 |
| 52 | HILLSBORO CANAL & P.B. COUNTY | 0.482 | 0.988 | 1.930 | 2.725 | 4.243 | 6.825 | 1.470 | 2.412 | 3.207 | 4.724 | 7.307 |

| Map ID | Name | Elevation | C1 DPTH ⁵ | C2 DPT H | C3 DPT H | C4 DPT H | C5 DPT H | C1 SURGE ⁶ | C2 SURGE | C3 SURGE | C4 SURGE | C5 SURGE |
|--------|--|-----------|----------------------|----------|----------|----------|----------|-----------------------|----------|----------|----------|----------|
| | LINE. | | | | | | | | | | | |
| 53 | GULFSTREAM PARK (DADE LINE). HALLANDALE BEACH BLVD & | 1.943 | 0.000 | 0.238 | 1.211 | 3.919 | 5.255 | 1.333 | 2.181 | 3.154 | 5.863 | 7.198 |
| 54 | INTRA. WTRWY. | 0.000 | 2.332 | 3.534 | 4.637 | 6.449 | 7.638 | 2.332 | 3.534 | 4.637 | 6.449 | 7.638 |
| 55 | HALLANDALE BEACH BLVD & US 1. | 5.442 | 0.000 | 0.000 | 0.000 | 0.844 | 1.964 | 1.338 | 2.188 | 3.551 | 6.286 | 7.406 |
| 56 | HALLANDALE BEACH BLVD & I-95. | 7.449 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.340 | 2.190 | 2.860 | 3.614 | 3.245 |
| 57 | PEMBROKE RD & I-95. | 9.156 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.340 | 2.190 | 2.860 | 3.620 | 2.890 |
| 58 | PEMBROKE RD & US 1. | 9.273 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.340 | 2.190 | 2.944 | 4.307 | 7.096 |
| 59 | GRIFFIN RD & US 441. | 6.938 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.517 | 2.443 | 3.130 | 3.979 | 5.603 |
| 60 | UNIVERSITY DRIVE & SR 84. US 1 & Green Rd (NE 48 St) | 29.323 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.700 | 2.900 | 4.000 | 4.700 | 4.901 |
| 61 | Pompano Beach | 8.300 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.561 | 2.548 | 3.486 | 4.952 | 5.729 |
| 62 | US 1 & NE 10 St: Pompano Beach N Dixie Hwy & Atlantic Blvd: | 8.667 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.955 | 3.225 | 4.220 | 6.026 | 6.668 |
| 63 | Pompano Beach N Dixie Hwy & McNab Rd: Pompano | 12.318 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.340 | 2.195 | 2.850 | 3.833 | 5.996 |
| 64 | Beach Andrews Av & Prospect Rd: Oakland | 5.995 | 0.000 | 0.000 | 0.000 | 0.000 | 0.915 | 1.340 | 2.185 | 2.856 | 4.537 | 6.909 |
| 65 | Pk | 5.921 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.340 | 2.190 | 2.860 | 3.620 | 4.114 |
| 66 | NE 6 AV & 56 St: Oakland Pk Broward Blvd & SW 4 Av: Ft | 4.712 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.340 | 2.190 | 2.860 | 3.614 | 4.249 |
| 67 | Lauderdale | 4.996 | 0.000 | 0.000 | 0.000 | 0.509 | 2.756 | 1.770 | 2.835 | 3.848 | 5.505 | 7.752 |
| 68 | NE 15 AV & 13 St; Ft Lauderdale Oakland Pk Blvd & NW 27 AV: | 8.544 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.344 | 2.216 | 3.097 | 5.139 | 7.825 |
| 69 | Oakland Pk | 4.075 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.340 | 2.191 | 2.860 | 3.620 | 3.739 |
| 70 | NW 27 AV & 6 St: Ft Lauderdale | 5.813 | 0.000 | 0.000 | 0.000 | 0.000 | 1.454 | 2.050 | 3.304 | 4.180 | 4.944 | 7.267 |
| 71 | SW 17 ST & 9 AVE: Ft Lauderdale | 4.121 | 0.000 | 0.000 | 0.000 | 1.406 | 3.505 | 1.606 | 2.557 | 3.251 | 5.526 | 7.625 |
| 72 | NW 1 ST & Bryan Rd: Dania Beach | 3.514 | 0.000 | 0.000 | 0.000 | 2.160 | 2.200 | 1.624 | 2.466 | 3.207 | 5.674 | 5.714 |
| 73 | Tyler St & 9 AV: Hollywood | 0.576 | 1.763 | 2.819 | 3.824 | 6.158 | 7.289 | 2.339 | 3.395 | 4.400 | 6.734 | 7.865 |
| 74 | Moffett St & NE 14 AV: Hallandale | 1.113 | 0.446 | 1.343 | 3.229 | 5.604 | 6.533 | 1.559 | 2.456 | 4.342 | 6.716 | 7.646 |
| 75 | NE 6 ST & 8 AV: Hallandale | 3.579 | 0.000 | 0.000 | 0.458 | 2.938 | 3.987 | 1.337 | 2.187 | 4.037 | 6.517 | 7.566 |

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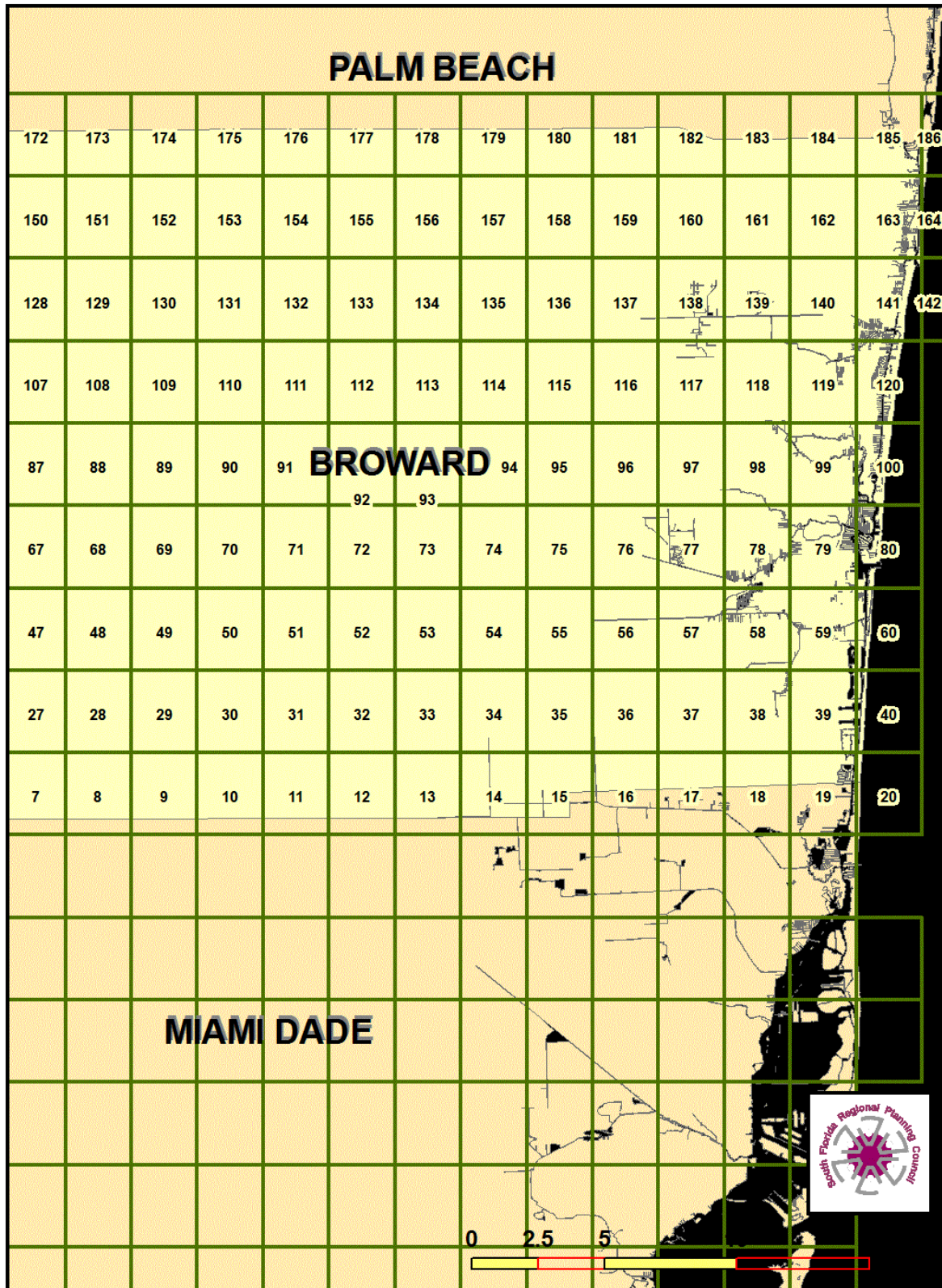
F. Storm Tide Atlas

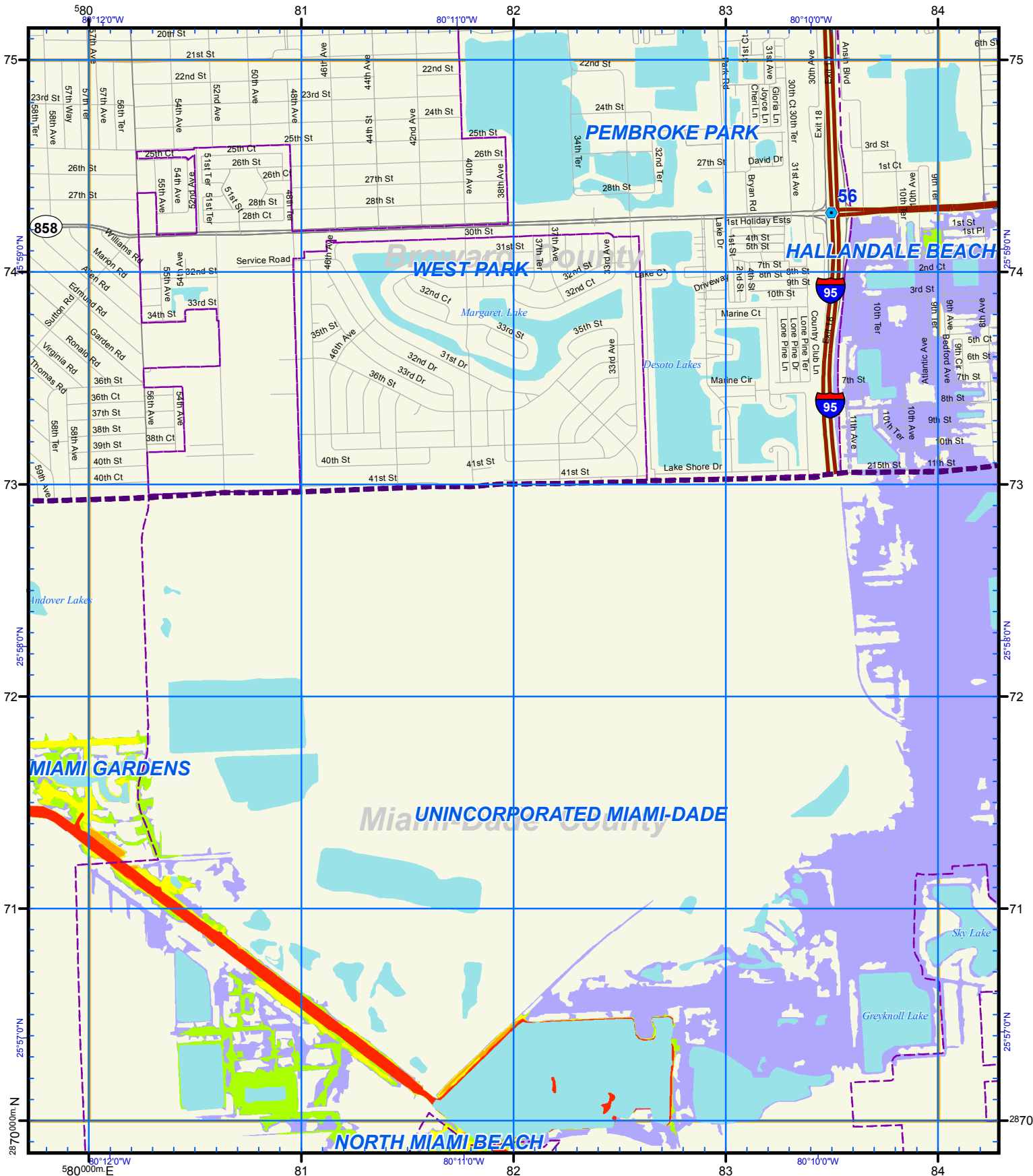
The surge inundation limits (MOM surge heights minus the ground elevations) are provided as GIS shape files and graphically displayed on maps in the *Hurricane Storm Tide Atlas for the South Florida Region*. The *Atlas* was prepared by the South Florida Regional Planning Council under contract to the State of Florida, Division of Emergency Management, as part of this study effort. The maps prepared for the *Atlas* consist of base maps (1:24000) including topographic, hydrographic and highway files (updated using 2008 county and state highway data). Detailed shoreline and storm tide limits for each category of storm were determined using the region's geographic information system (GIS).

The purpose of the maps contained in this Atlas is to reflect a “worst probable” scenario of the hurricane storm tide inundation and to provide a basis for the hurricane evacuation zones and study analyses. While the storm tide delineations include the addition of an astronomical mean high tide and tidal anomaly, it should be noted that the data reflects only stillwater saltwater flooding. **Local processes such as waves, rainfall and flooding from overflowing rivers, are usually included in observations of storm tide height, but are not surge and are not calculated by the SLOSH model. It is incumbent upon local emergency management officials and planners to estimate the degree and extent of freshwater flooding, as well as to determine the magnitude of the waves that will accompany the surge.**

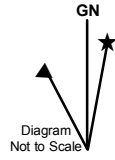
Figure 8 provides an index of the map series for Broward County.

Figure 8 Atlas Map Index





US National Grid
 100,000-m Square ID
NJ
 Grid Zone Designation
17R
 Datum = NAD 1983, 1,000-m USNG



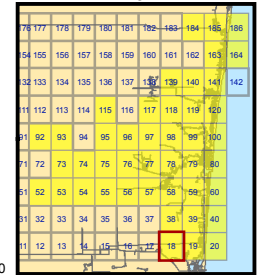
Notes:
 1. Surge limits are based on still water storm tide height elevation above NAVD88 at high tide with no wave setup.
 2. Total Storm Tide limits were derived from Maximum of Maximums surge heights over LIDAR based digital elevation.
 3. The Points of Reference are locations determined to be relevant to emergency management officials.

ATLAS LEGEND

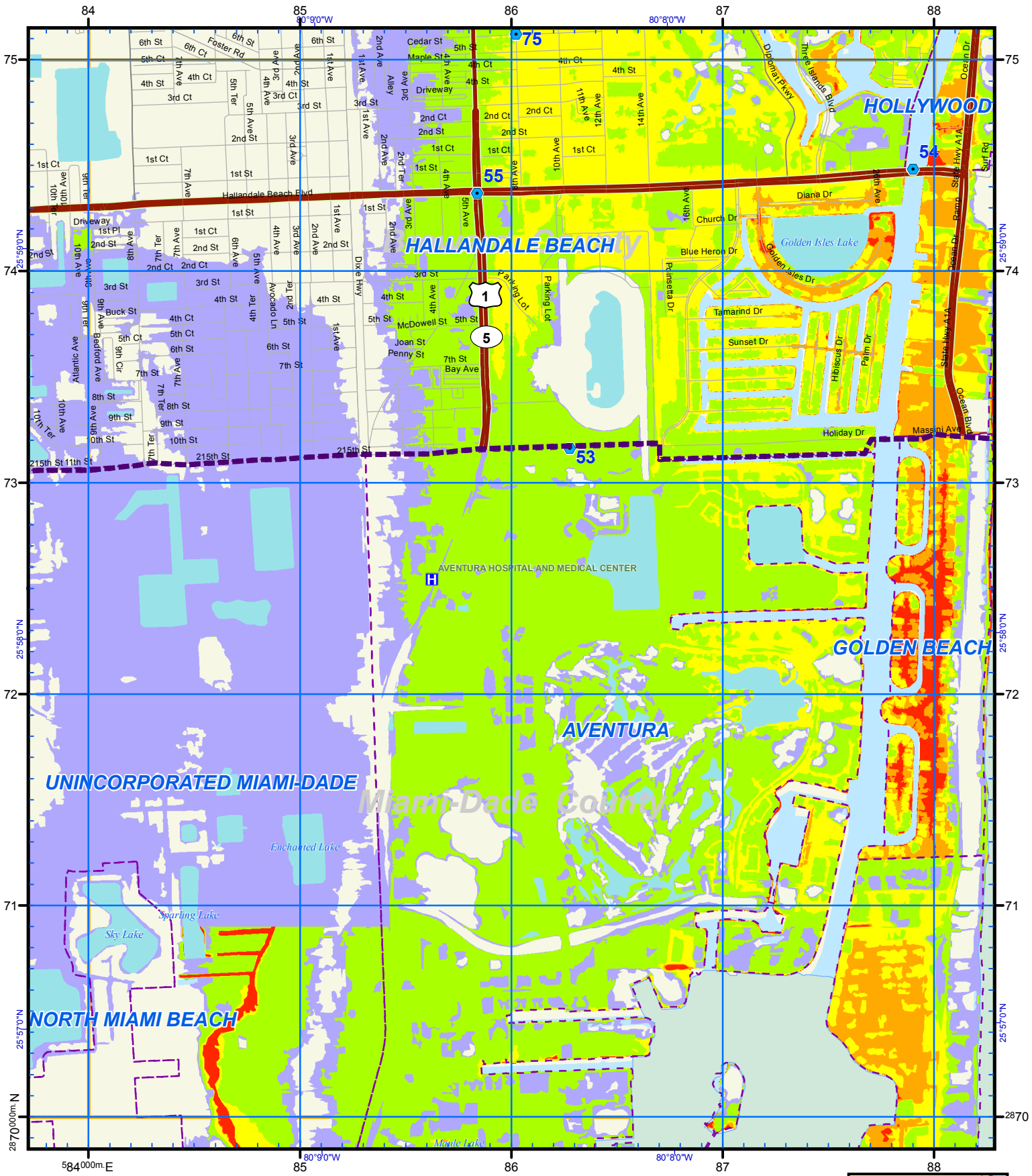
| | | |
|--|----------------------------|------------|
| | HOSPITAL | Cat |
| | Points of Reference | |
| | Evacuation Route | |
| | City Limits | |
| | NHD Lakes | |
| | NHD Major Water | |

Storm Tide Zones
Broward County, 2010
 Scale - 1:24,000

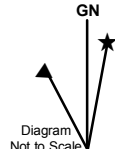
 USNG Page **17R NJ 80 70**
 Map Plate **18**



This map is for reference & planning purposes only. Hurricane evacuation decision-making and growth management implementation are local responsibilities. Please consult with local authorities.



US National Grid
100,000-m Square ID
NJ
Grid Zone Designation
17R
Datum = NAD 1983, 1,000-m USNG



Notes:
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2. Total Storm Tide limits were derived from Maximum of Maximum surge heights over LIDAR based digital elevation.
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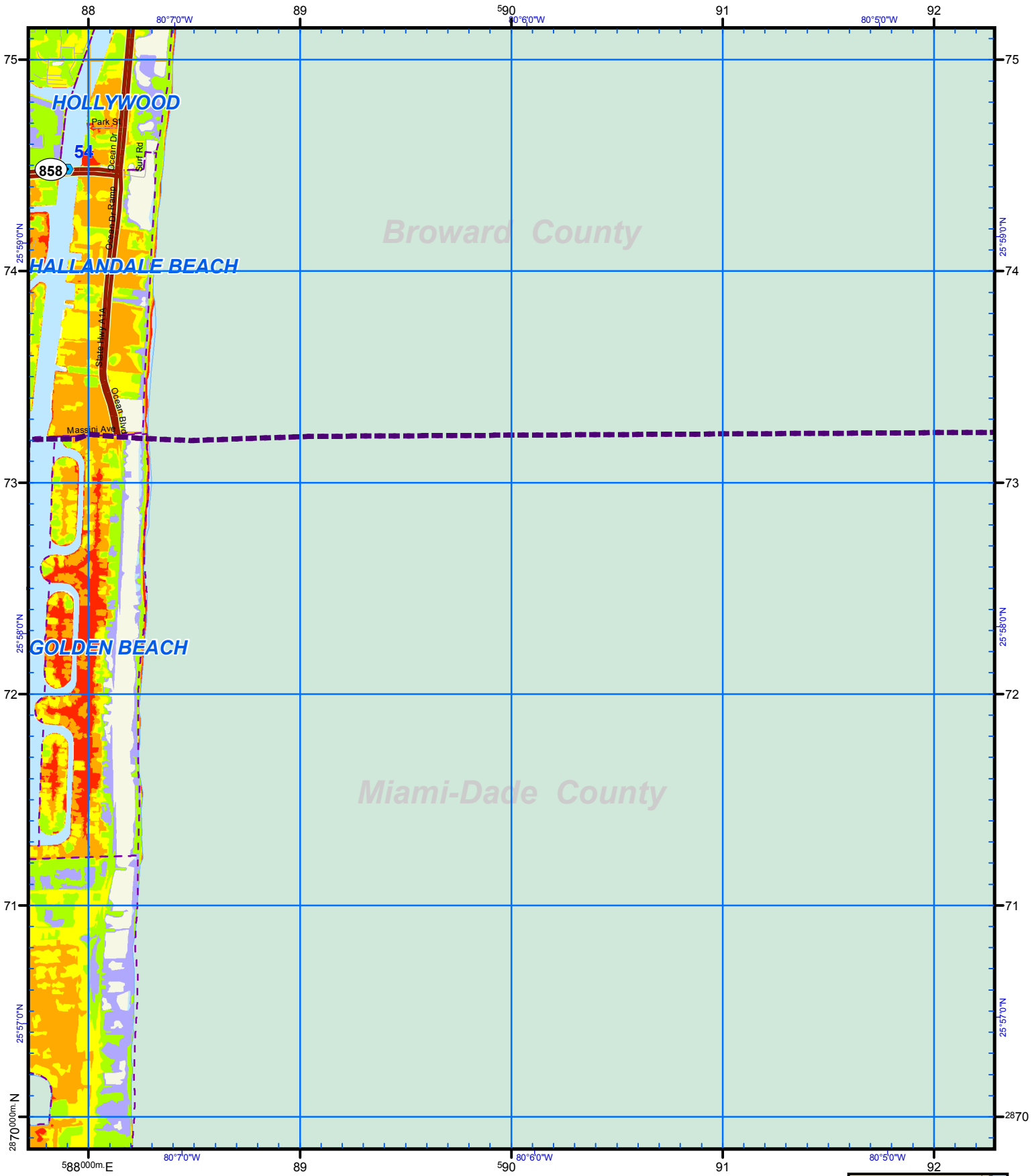
ATLAS LEGEND

| | | | | | |
|----------|---------------------|------------------|-------------|-----------|-----------------|
| HOSPITAL | Points of Reference | Evacuation Route | City Limits | NHD Lakes | NHD Major Water |
| Cat 1 | Cat 2 | Cat 3 | Cat 4 | Cat 5 | |

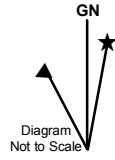
Storm Tide Zones
Broward County, 2010
Scale - 1:24,000 Feet
0 2,000
USNG Page 17R NJ 84 70
Map Plate 19

| | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 74 | 177 | 178 | 179 | 180 | 181 | 182 | 183 | 184 | 185 | 186 |
| 54 | 155 | 156 | 157 | 158 | 159 | 160 | 161 | 162 | 163 | 164 |
| 32 | 133 | 134 | 135 | 136 | 137 | 138 | 139 | 140 | 141 | 142 |
| 11 | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | |
| 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 | |
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | |
| 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |

This map is for reference & planning purposes only. Hurricane evacuation decision-making and growth management implementation are local responsibilities. Please consult with local authorities.



US National Grid
100,000-m Square ID
NJ
Grid Zone Designation
17R
Datum = NAD 1983, 1,000-m USNG

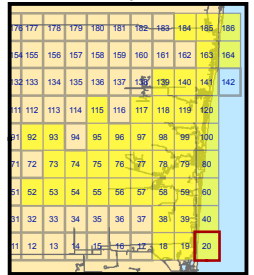


Notes:
1. Surge limits are based on still water storm tide height elevation above NAVD88 at high tide with no wave setup.
2. Total Storm Tide limits were derived from Maximum of Maximums surge heights over LIDAR based digital elevation.
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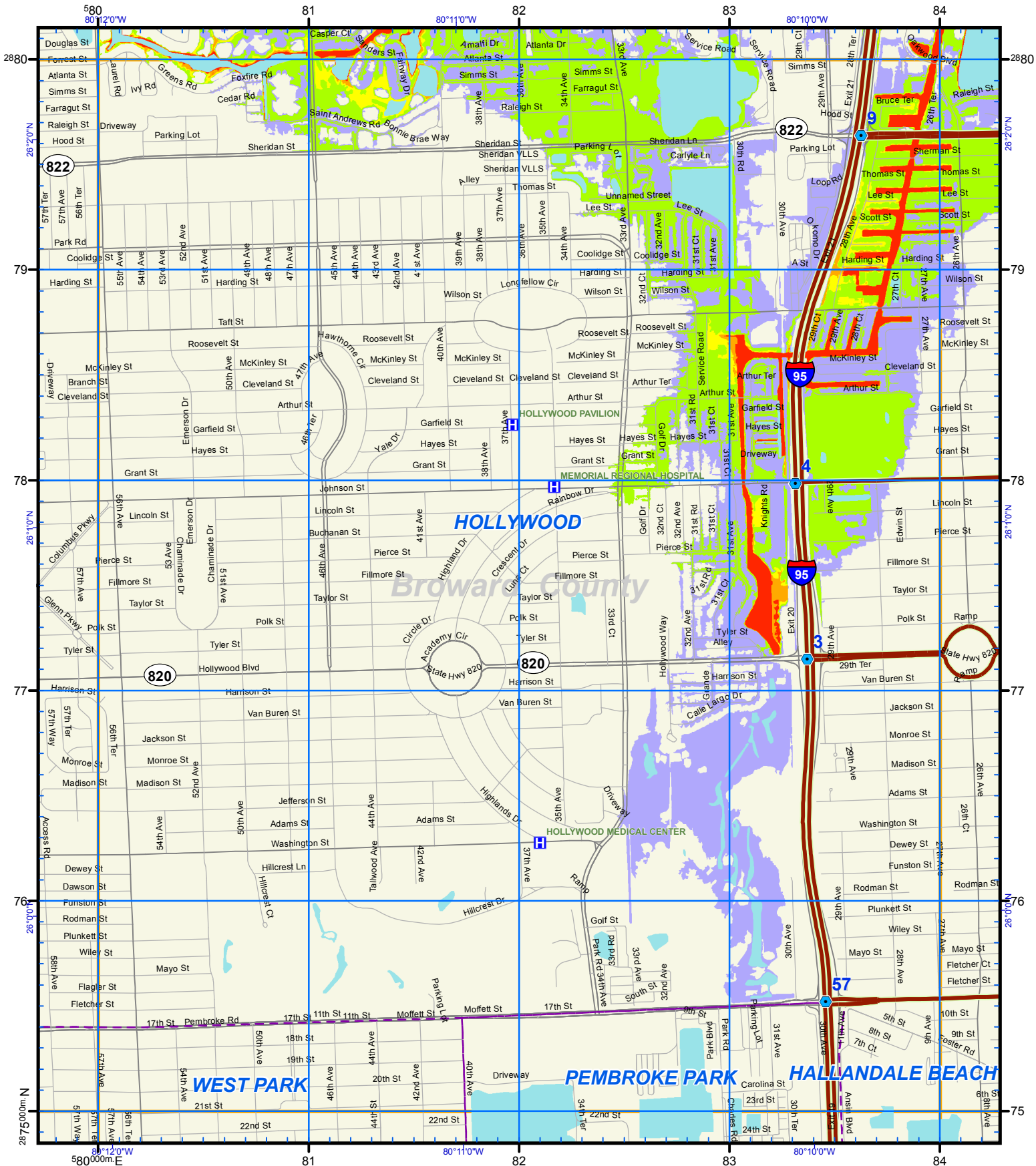
ATLAS LEGEND

| | |
|---------------------|-------|
| HOSPITAL | Cat 1 |
| Points of Reference | Cat 2 |
| Evacuation Route | Cat 3 |
| City Limits | Cat 4 |
| NHD Lakes | Cat 5 |
| NHD Major Water | |

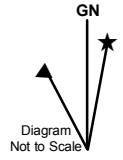
Storm Tide Zones
Broward County, 2010
Scale - 1:24,000
0 2,000 Feet
USNG Page **17R NJ 88 70**
Map Plate **20**



This map is for reference & planning purposes only. Hurricane evacuation decision-making and growth management implementation are local responsibilities. Please consult with local authorities.



US National Grid
 100,000-m Square ID
NJ
 Grid Zone Designation
17R
 Datum = NAD 1983, 1,000-m USNG



Notes:

1. Surge limits are based on still water storm tide height elevation above NAVD88 at high tide with no wave setup.
2. Total Storm Tide limits were derived from Maximum of Maximum surge heights over LIDAR based digital elevation.
3. The Points of Reference are locations determined to be relevant to emergency management officials.

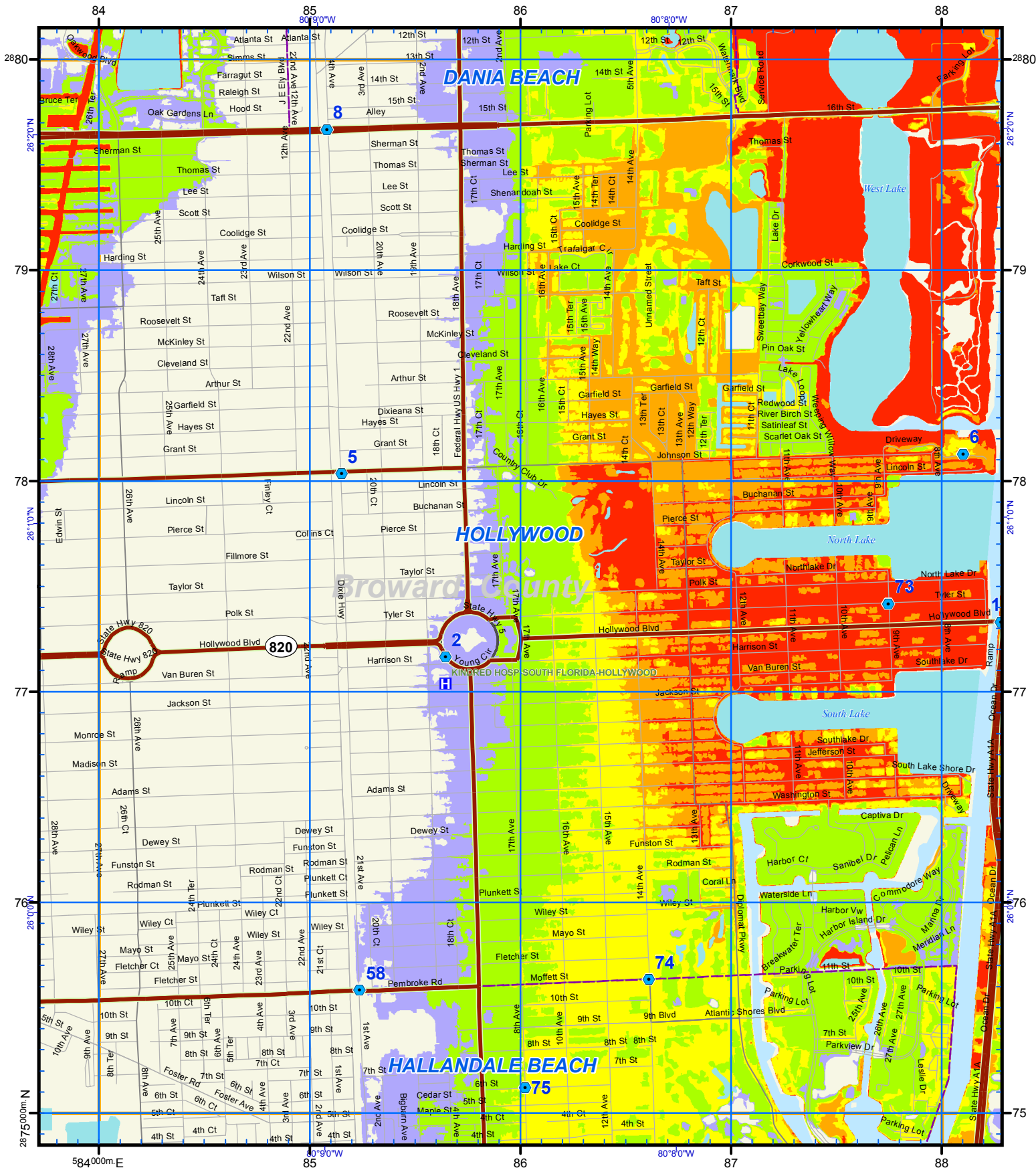
ATLAS LEGEND

| | | | |
|--|----------------------------|------------|---|
| | HOSPITAL | Cat | |
| | Points of Reference | | 1 |
| | Evacuation Route | | 2 |
| | City Limits | | 3 |
| | NHD Lakes | | 4 |
| | NHD Major Water | | 5 |

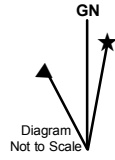
Storm Tide Zones
Broward County, 2010
 Scale - 1:24,000 Feet
 0 2,000
 USNG Page 17R NJ 80 75
 Map Plate 38

| | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|-----|----|
| 74 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 |
| 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 |
| 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 | |
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | |
| 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |

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US National Grid
100,000-m Square ID
NJ
Grid Zone Designation
17R
Datum = NAD 1983, 1,000-m USNG



- Notes:**
1. Surge limits are based on still water storm tide height elevation above NAVD88 at high tide with no wave setup.
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 3. The Points of Reference are locations determined to be relevant to emergency management officials.

ATLAS LEGEND

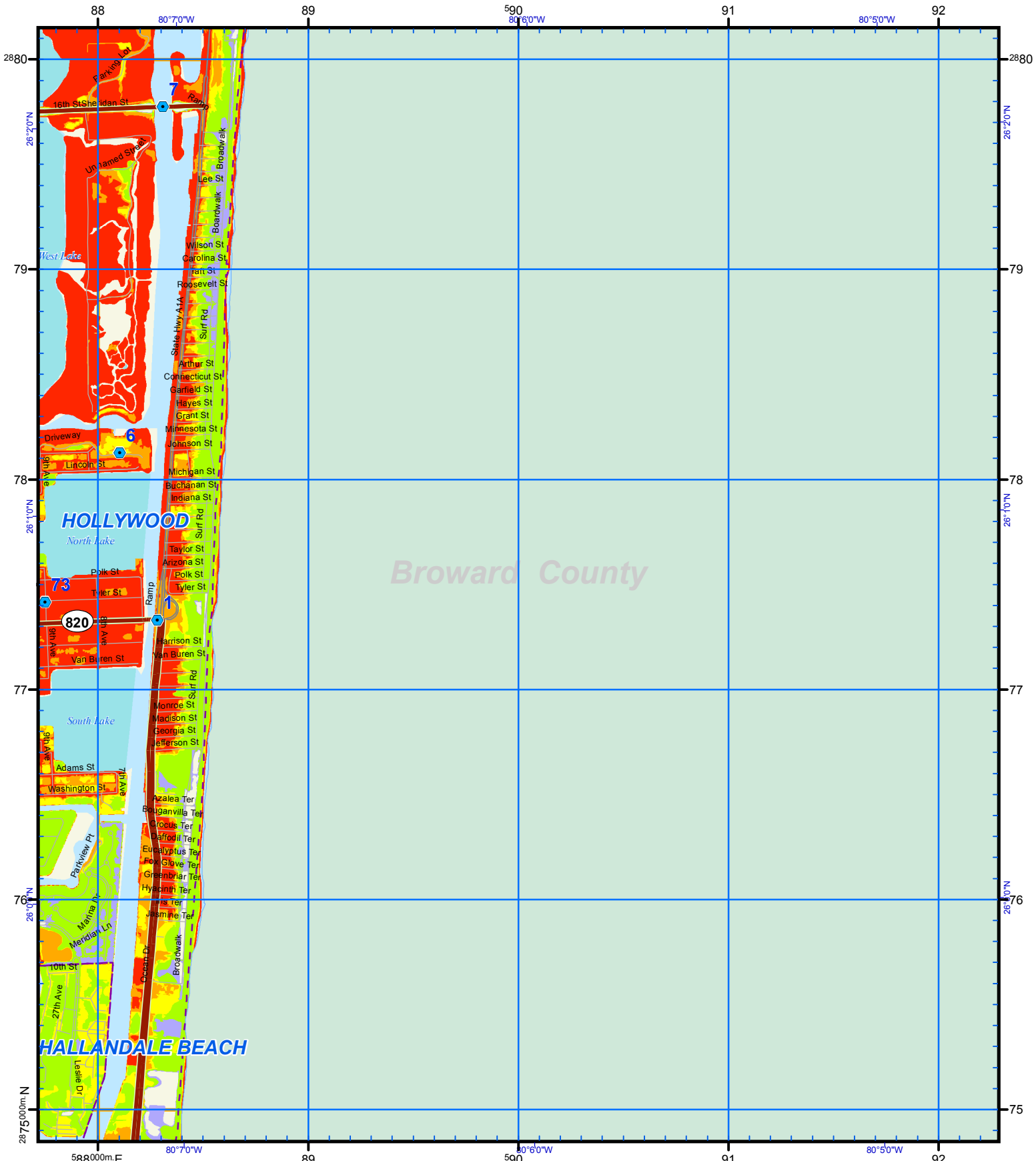
- HOSPITAL
- Points of Reference
- Evacuation Route
- City Limits
- NHD Lakes
- NHD Major Water

Cat

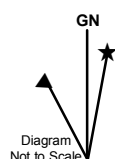
- 1
- 2
- 3
- 4
- 5

Storm Tide Zones
Broward County, 2010
Scale - 1:24,000 Feet
0 2,000
USNG Page 17R NJ 84 75
Map Plate 39

| | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 17 | 177 | 178 | 179 | 180 | 181 | 182 | 183 | 184 | 185 | 186 |
| 84 | 155 | 156 | 157 | 158 | 159 | 160 | 161 | 162 | 163 | 164 |
| 32 | 133 | 134 | 135 | 136 | 137 | 138 | 139 | 140 | 141 | 142 |
| 11 | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 121 |
| 81 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 | |
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | |
| 61 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | |
| 51 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | |
| 41 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |



US National Grid
 100,000-m Square ID
NJ
 Grid Zone Designation
17R
 Datum = NAD 1983, 1,000-m USNG



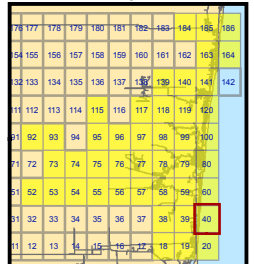
Notes:
 1. Surge limits are based on still water storm tide height elevation above NAVD88 at high tide with no wave setup.
 2. Total Storm Tide limits were derived from Maximum of Maximums surge heights over LIDAR based digital elevation.
 3. The Points of Reference are locations determined to be relevant to emergency management officials.

ATLAS LEGEND

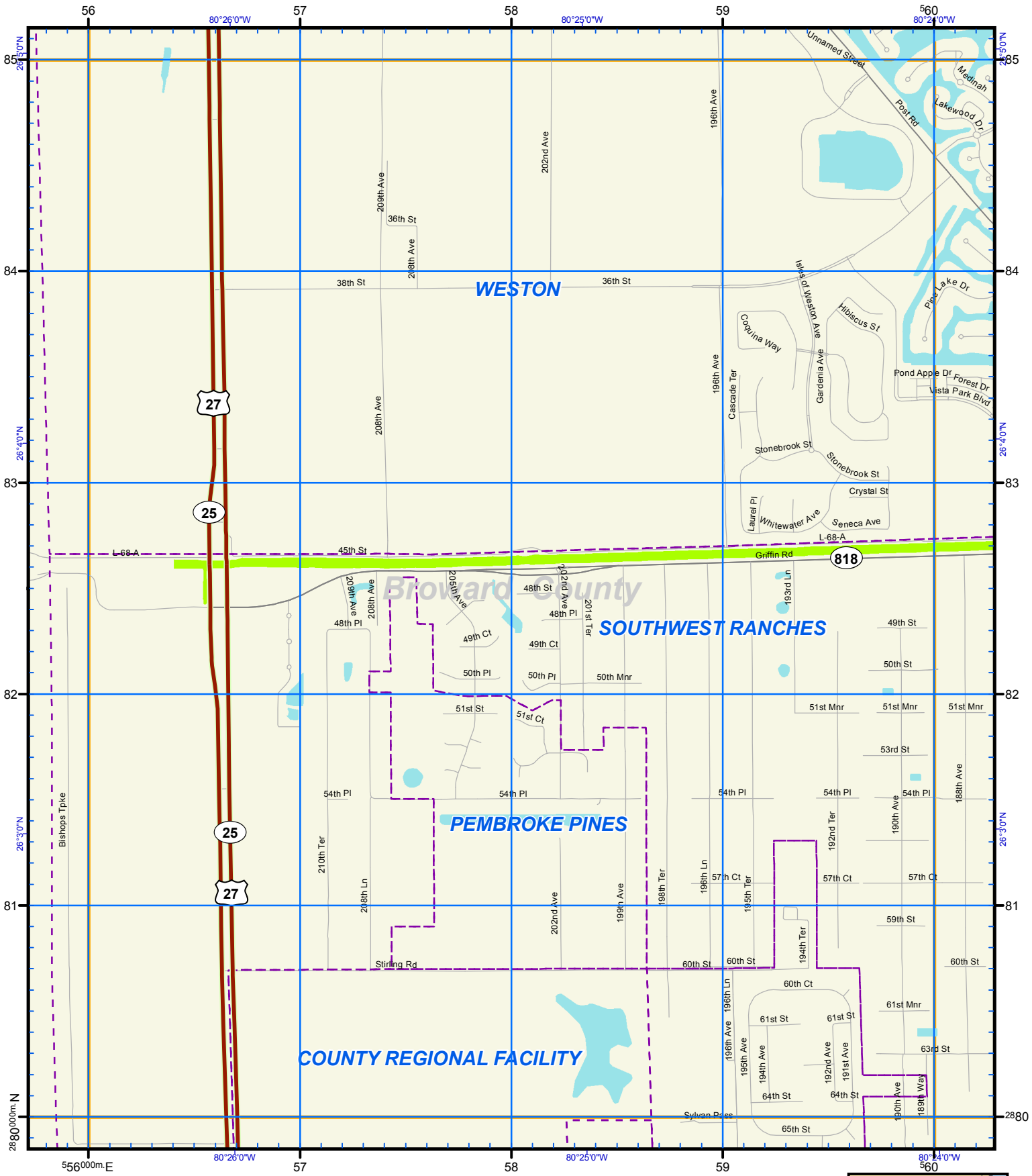
| | |
|---------------------|-------|
| HOSPITAL | Cat 1 |
| Points of Reference | Cat 2 |
| Evacuation Route | Cat 3 |
| City Limits | Cat 4 |
| NHD Lakes | Cat 5 |
| NHD Major Water | |

Storm Tide Zones
Broward County, 2010
 Scale - 1:24,000

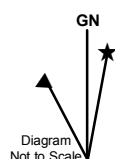
 USNG Page **17R NJ 88 75**
 Map Plate **40**



This map is for reference & planning purposes only. Hurricane evacuation decision-making and growth management implementation are local responsibilities. Please consult with local authorities.



US National Grid
 100,000-m Square ID
NJ
 Grid Zone Designation
17R
 Datum = NAD 1983, 1,000-m USNG



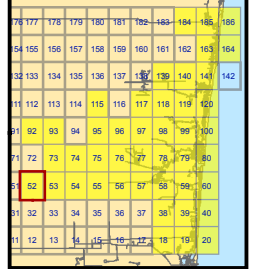
Notes:
 1. Surge limits are based on still water storm tide height elevation above NAVD88 at high tide with no wave setup.
 2. Total Storm Tide limits were derived from Maximum of Maximums surge heights over LIDAR based digital elevation.
 3. The Points of Reference are locations determined to be relevant to emergency management officials.

ATLAS LEGEND

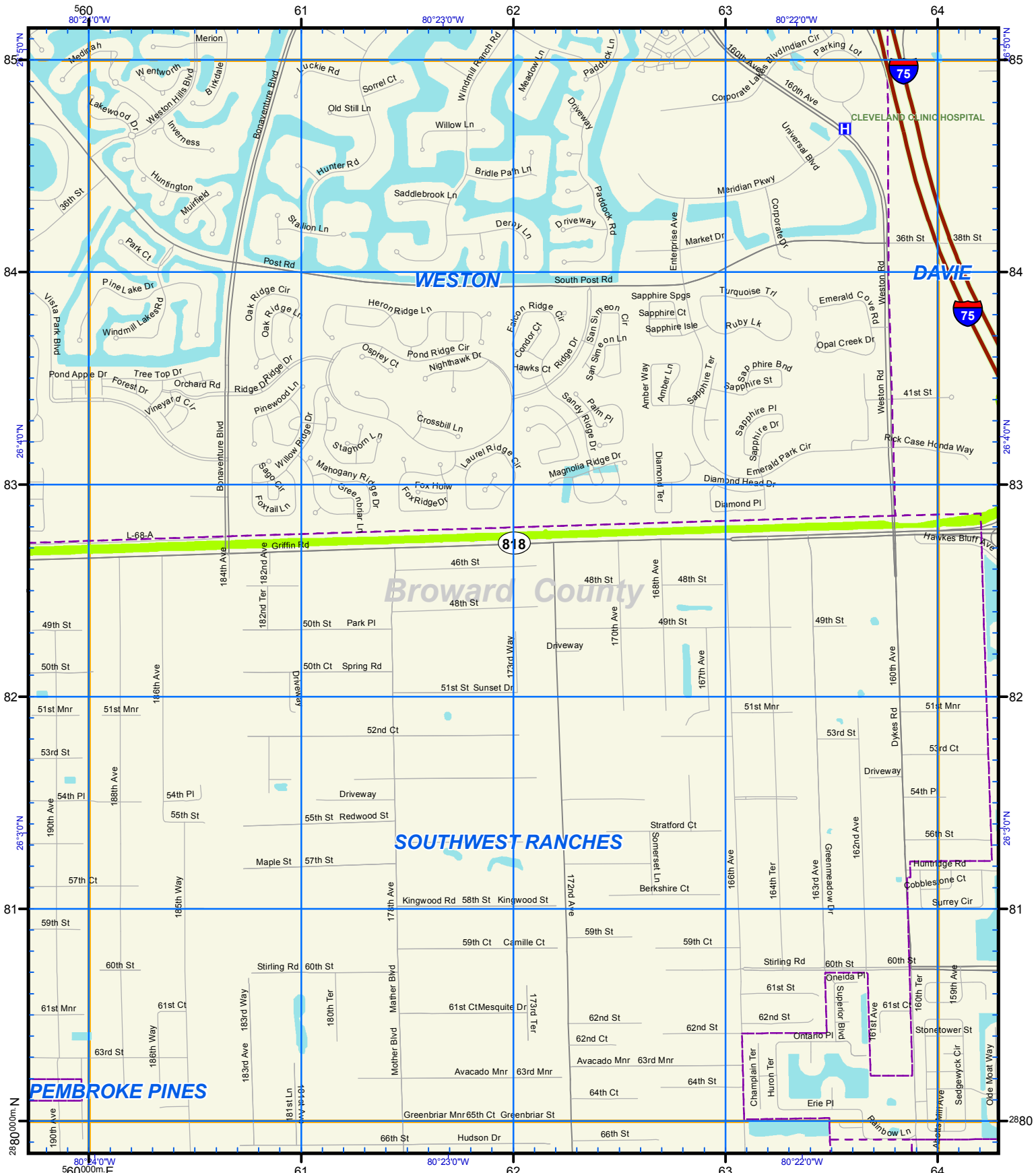
| | |
|---------------------|-------|
| HOSPITAL | Cat 1 |
| Points of Reference | Cat 2 |
| Evacuation Route | Cat 3 |
| City Limits | Cat 4 |
| NHD Lakes | Cat 5 |
| NHD Major Water | |

Storm Tide Zones
 Broward County, 2010
 Scale - 1:24,000

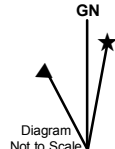
 USNG Page **17R NJ 56 80**
 Map Plate **52**



This map is for reference & planning purposes only. Hurricane evacuation decision-making and growth management implementation are local responsibilities. Please consult with local authorities.



US National Grid
 100,000-m Square ID
NJ
 Grid Zone Designation
17R
 Datum = NAD 1983, 1,000-m USNG



Notes:

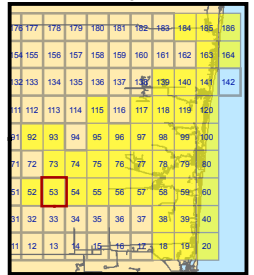
1. Surge limits are based on still water storm tide height elevation above NAVD88 at high tide with no wave setup.
2. Total Storm Tide limits were derived from Maximum of Maximums surge heights over LIDAR based digital elevation.
3. The Points of Reference are locations determined to be relevant to emergency management officials.

ATLAS LEGEND

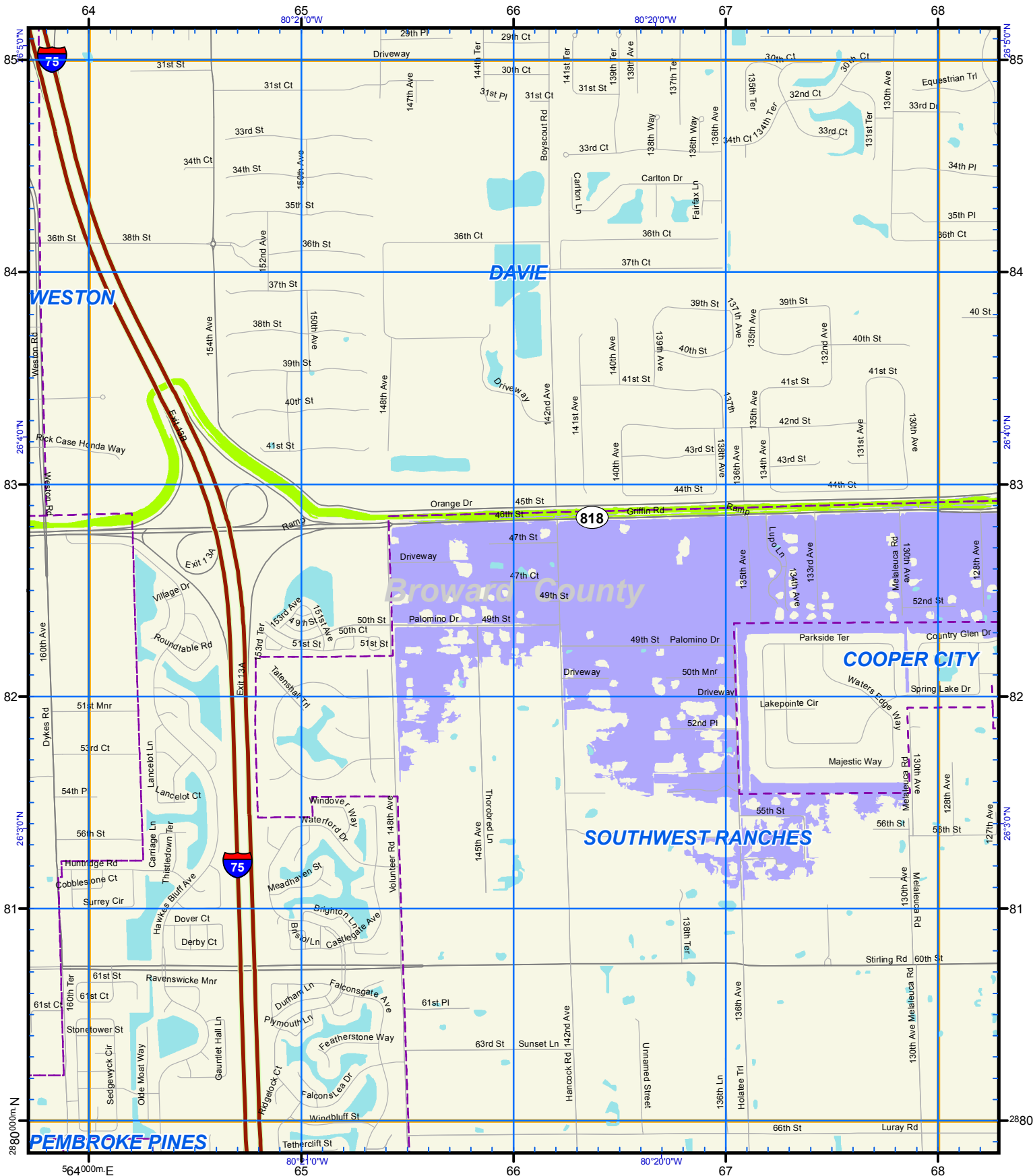
| | | | | |
|--|----------------------------|------------|---|---|
| | HOSPITAL | Cat | | 1 |
| | Points of Reference | | 2 | |
| | Evacuation Route | | 3 | |
| | City Limits | | 4 | |
| | NHD Lakes | | 5 | |
| | NHD Major Water | | | |

Storm Tide Zones
Broward County, 2010
 Scale - 1:24,000 Feet

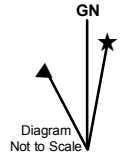
 USNG Page **17R NJ 60 80**
 Map Plate **53**



This map is for reference & planning purposes only. Hurricane evacuation decision-making and growth management implementation are local responsibilities. Please consult with local authorities.



US National Grid
 100,000-m Square ID
NJ
 Grid Zone Designation
17R
 Datum = NAD 1983, 1,000-m USNG

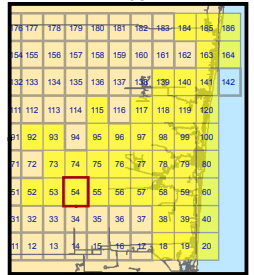


- Notes:
1. Surge limits are based on still water storm tide height elevation above NAVD88 at high tide with no wave setup.
 2. Total Storm Tide limits were derived from Maximum of Maximums surge heights over LIDAR based digital elevation.
 3. The Points of Reference are locations determined to be relevant to emergency management officials.

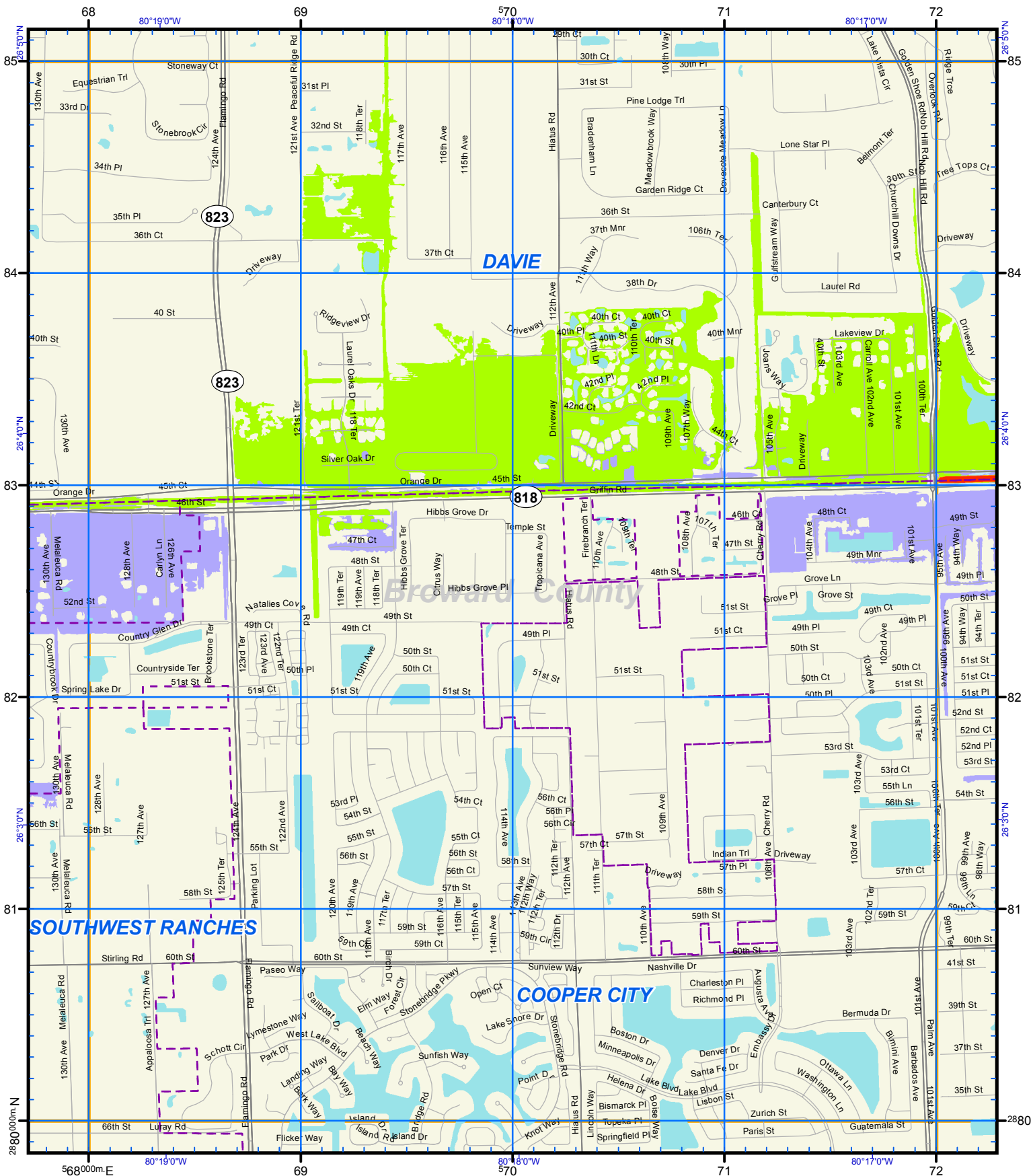
ATLAS LEGEND

| | |
|---------------------|------------|
| HOSPITAL | Cat |
| Points of Reference | 1 |
| Evacuation Route | 2 |
| City Limits | 3 |
| NHD Lakes | 4 |
| NHD Major Water | 5 |

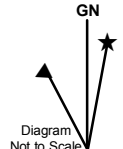
Storm Tide Zones
 Broward County, 2010
 Scale - 1:24,000
 0 2,000 Feet
 USNG Page 17R NJ 64 80
 Map Plate 54



This map is for reference & planning purposes only. Hurricane evacuation decision-making and growth management implementation are local responsibilities. Please consult with local authorities.



US National Grid
 100,000-m Square ID
NJ
 Grid Zone Designation
17R
 Datum = NAD 1983, 1,000-m USNG



Notes:

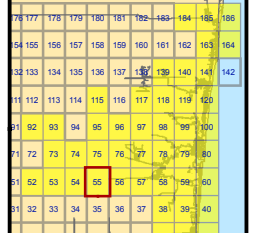
1. Surge limits are based on still water storm tide height elevation above NAVD88 at high tide with no wave setup.
2. Total Storm Tide limits were derived from Maximum of Maximums surge heights over LIDAR based digital elevation.
3. The Points of Reference are locations determined to be relevant to emergency management officials.

ATLAS LEGEND

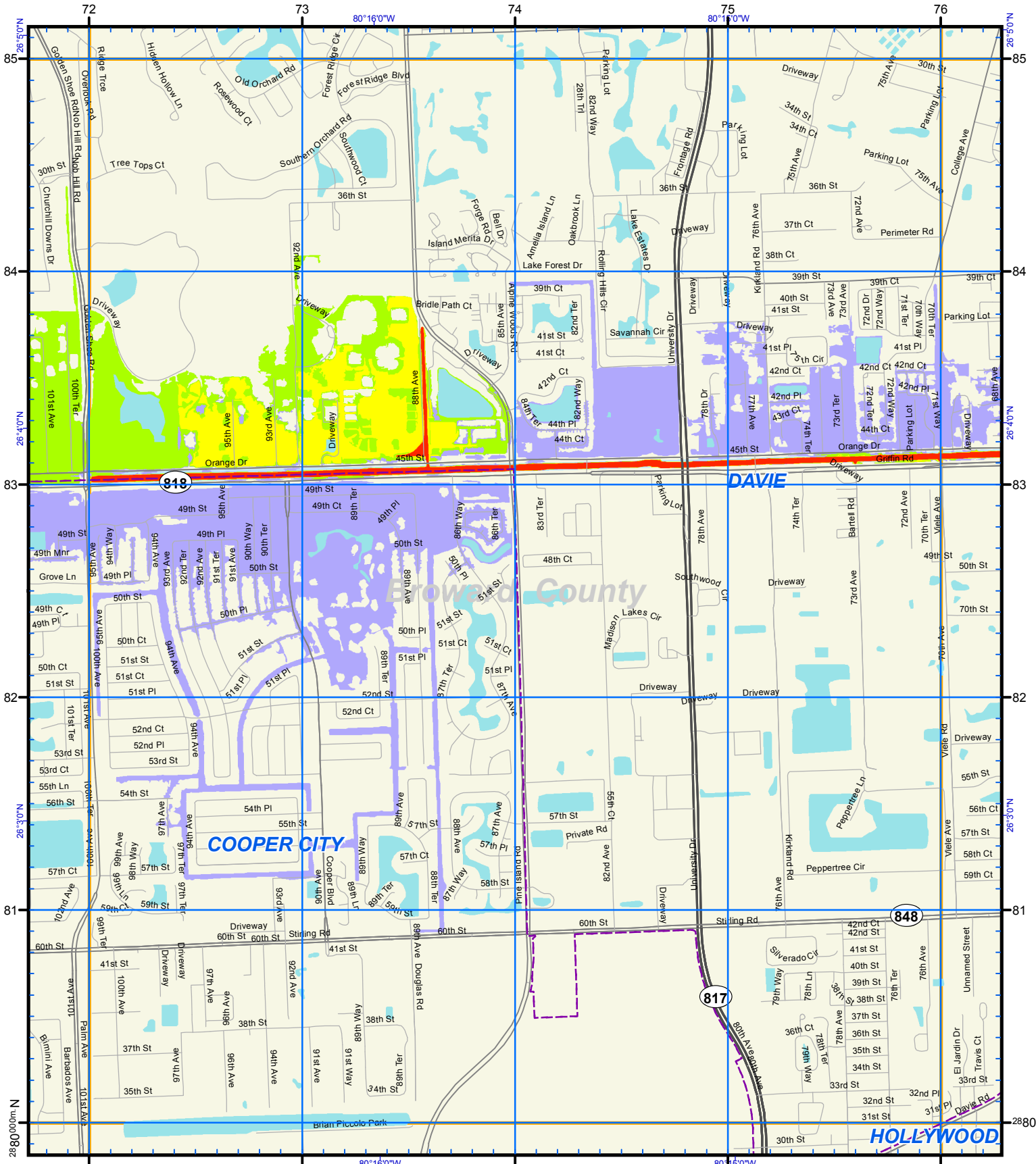
| | | |
|---------------------|------------|---|
| HOSPITAL | Cat | 1 |
| Points of Reference | 2 | 3 |
| Evacuation Route | 4 | 5 |
| City Limits | NHD Lakes | |
| NHD Major Water | | |

Storm Tide Zones
 Broward County, 2010
 Scale - 1:24,000

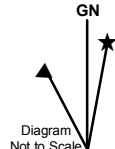
 USNG Page **17R NJ 68 80**
 Map Plate **55**



This map is for reference & planning purposes only. Hurricane evacuation decision-making and growth management implementation are local responsibilities. Please consult with local authorities.



US National Grid
100,000-m Square ID
NJ
Grid Zone Designation
17R
Datum = NAD 1983, 1,000-m USNG

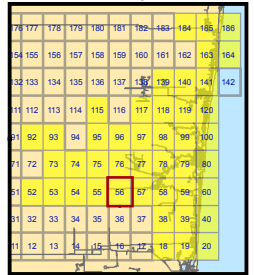


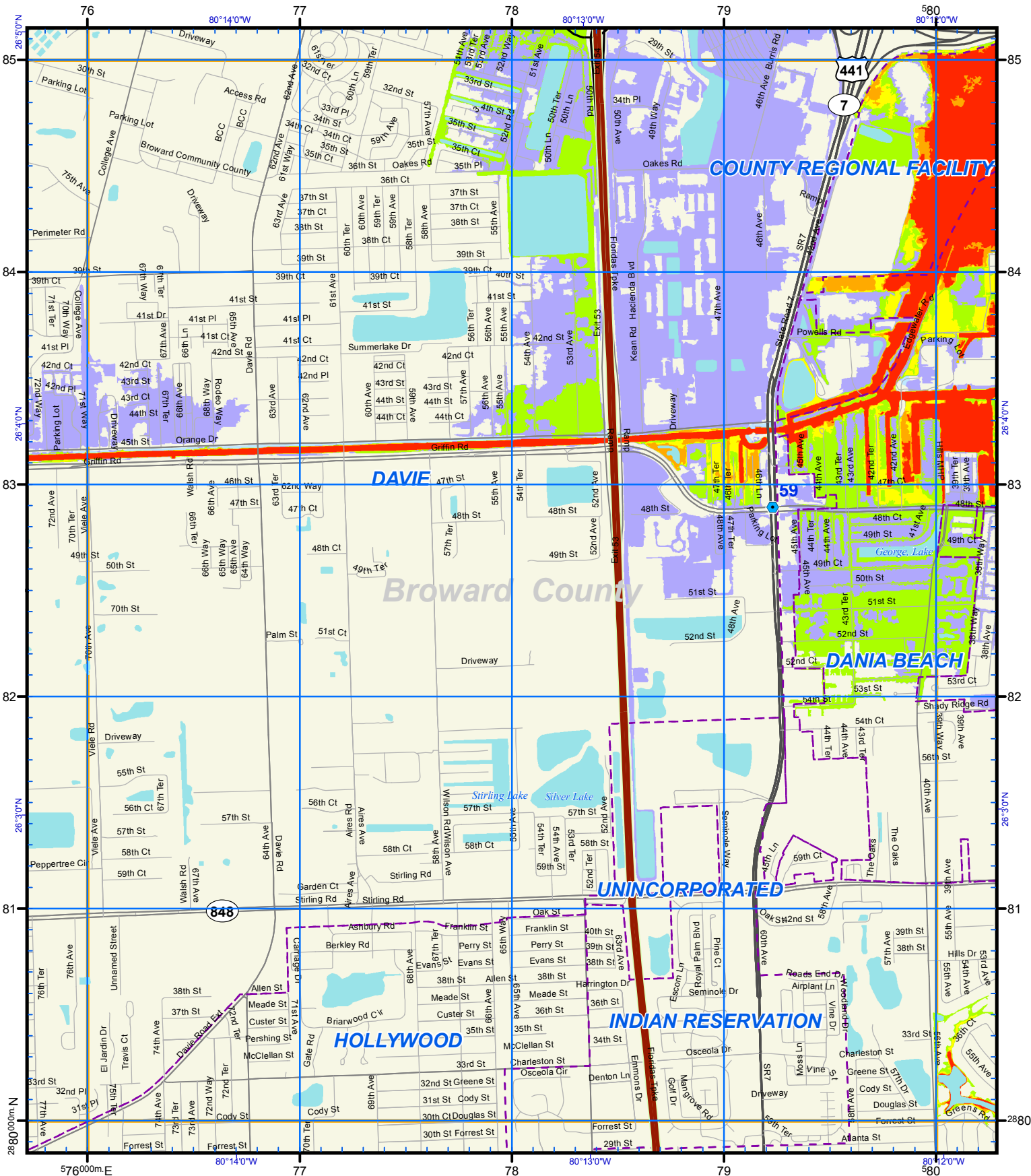
- Notes:**
1. Surge limits are based on still water storm tide height elevation above NAVD88 at high tide with no wave setup.
 2. Total Storm Tide limits were derived from Maximum of Maximums surge heights over LIDAR based digital elevation.
 3. The Points of Reference are locations determined to be relevant to emergency management officials.

ATLAS LEGEND

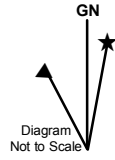
| | | | |
|--|----------------------------|------------|---|
| | HOSPITAL | Cat | |
| | Points of Reference | | 1 |
| | Evacuation Route | | 2 |
| | City Limits | | 3 |
| | NHD Lakes | | 4 |
| | NHD Major Water | | 5 |

Storm Tide Zones
Broward County, 2010
Scale - 1:24,000 Feet
0 2,000
USNG Page 17R NJ 72 80
Map Plate 56





US National Grid
100,000-m Square ID
NJ
Grid Zone Designation
17R
Datum = NAD 1983, 1,000-m USNG



- Notes:**
1. Surge limits are based on still water storm tide height elevation above NAVD88 at high tide with no wave setup.
 2. Total Storm Tide limits were derived from Maximum of Maximum surge heights over LIDAR based digital elevation.
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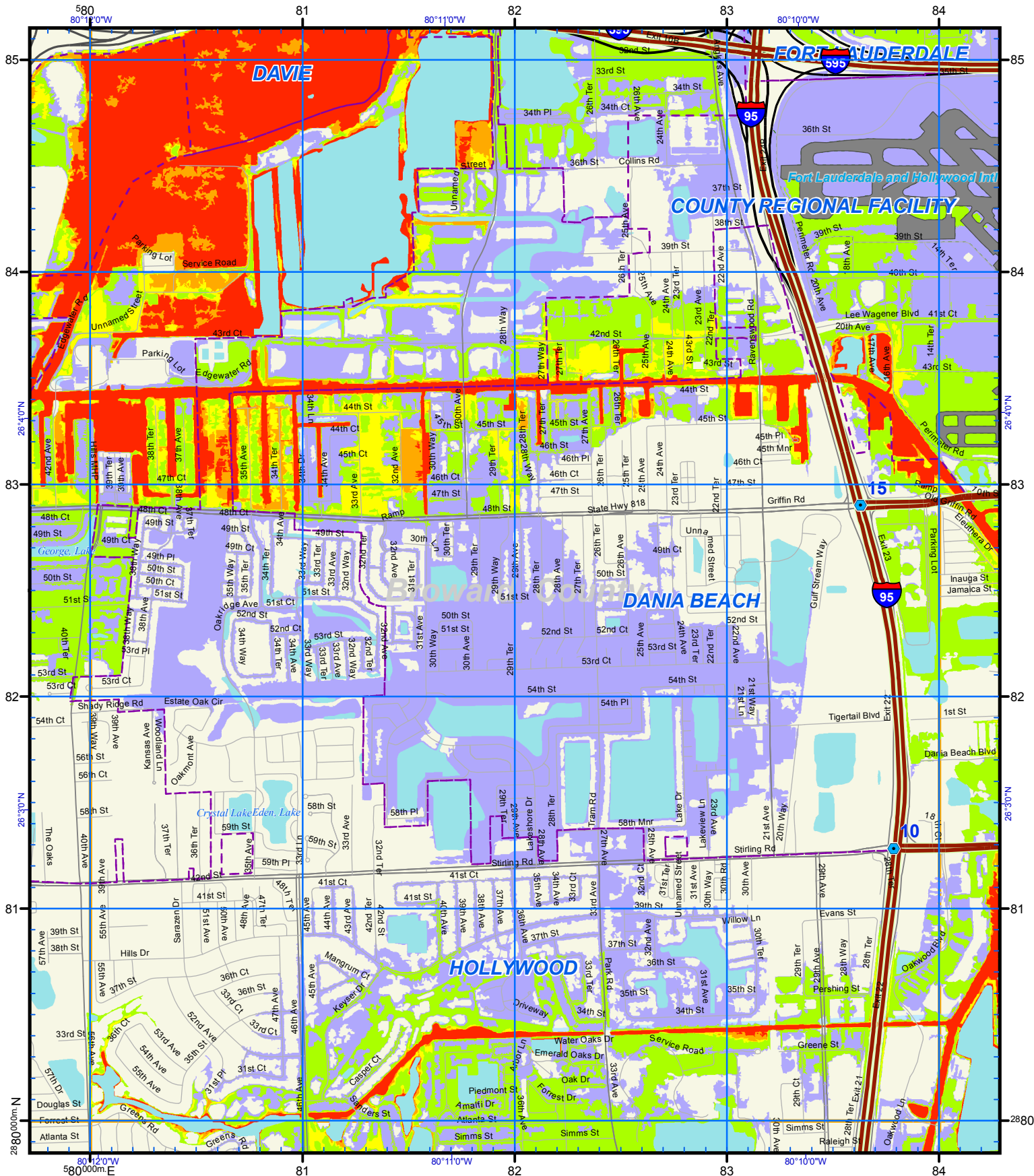
ATLAS LEGEND

| | | | |
|--|----------------------------|------------|----------|
| | HOSPITAL | Cat | |
| | Points of Reference | | 1 |
| | Evacuation Route | | 2 |
| | City Limits | | 3 |
| | NHD Lakes | | 4 |
| | NHD Major Water | | 5 |

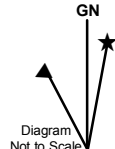
Storm Tide Zones
Broward County, 2010
Scale - 1:24,000 Feet
0 2,000
USNG Page 17R NJ 76 80
Map Plate 57

| | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 |
| 84 | 155 | 156 | 157 | 158 | 159 | 160 | 161 | 162 | 163 | 164 | 165 |
| 83 | 133 | 134 | 135 | 136 | 137 | 138 | 139 | 140 | 141 | 142 | 143 |
| 82 | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 121 | 122 |
| 81 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 | 101 | 102 |
| 80 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 |
| 79 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 |
| 78 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 |
| 77 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |

This map is for reference & planning purposes only. Hurricane evacuation decision-making and growth management implementation are local responsibilities. Please consult with local authorities.



US National Grid
100,000-m Square ID
NJ
Grid Zone Designation
17R
Datum = NAD 1983, 1,000-m USNG



Notes:
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3. The Points of Reference are locations determined to be relevant to emergency management officials.

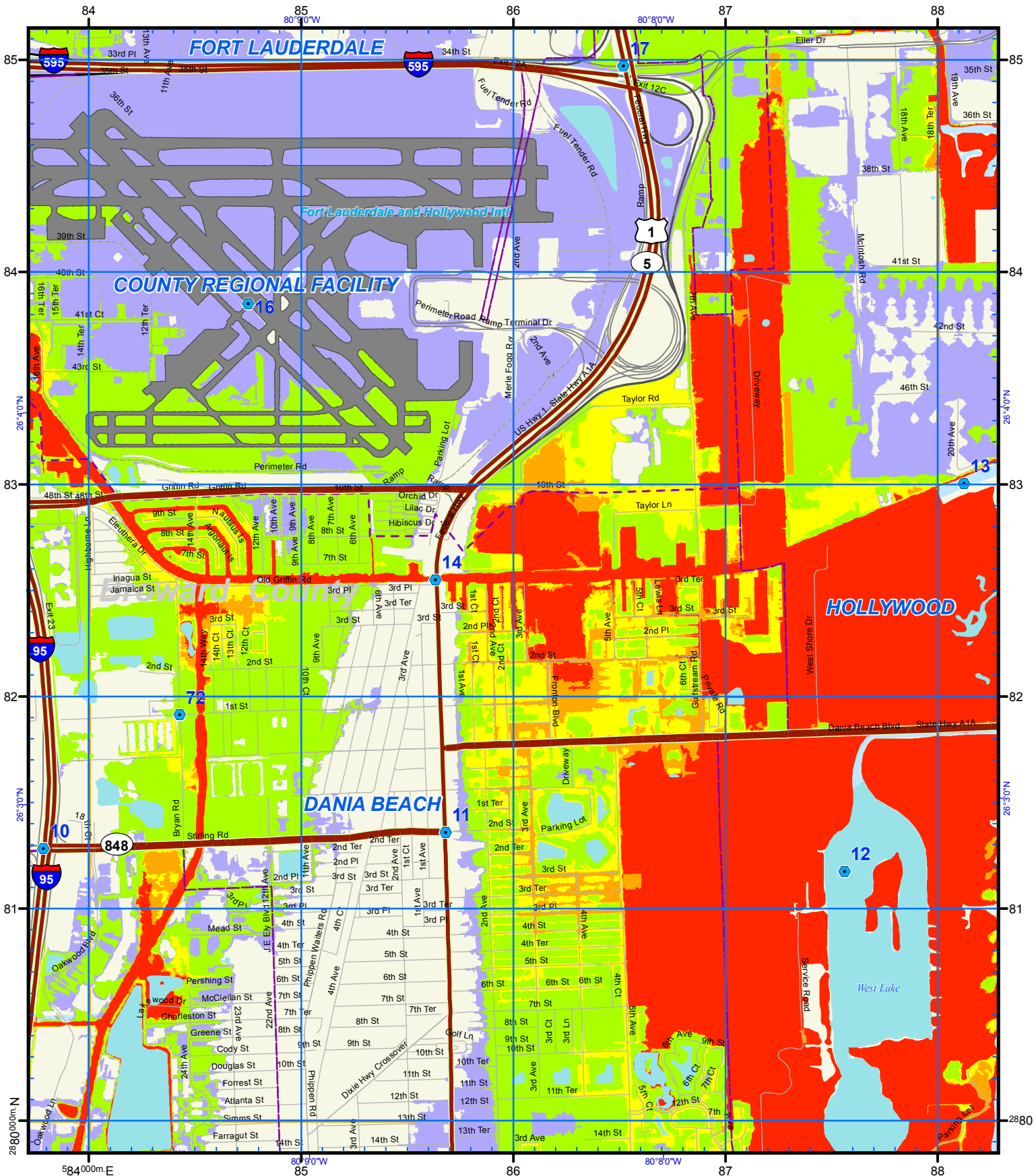
ATLAS LEGEND

| | |
|---------------------|------------|
| HOSPITAL | Cat |
| Points of Reference | 1 |
| Evacuation Route | 2 |
| City Limits | 3 |
| NHD Lakes | 4 |
| NHD Major Water | 5 |

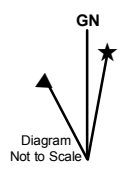
Storm Tide Zones
Broward County, 2010
Scale - 1:24,000 Feet
0 2,000
USNG Page 17R NJ 80 80
Map Plate 58

| | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 17 | 177 | 178 | 179 | 180 | 181 | 182 | 183 | 184 | 185 | 186 | |
| 80 | 84 | 155 | 156 | 157 | 158 | 159 | 160 | 161 | 162 | 163 | 164 |
| 81 | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 121 | |
| 82 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 | 101 | |
| 83 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | |
| 84 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | |
| 85 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | |
| 86 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | |

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US National Grid
100,000-m Square ID
NJ
Grid Zone Designation
17R
Datum = NAD 1983, 1,000-m USNG



Notes:
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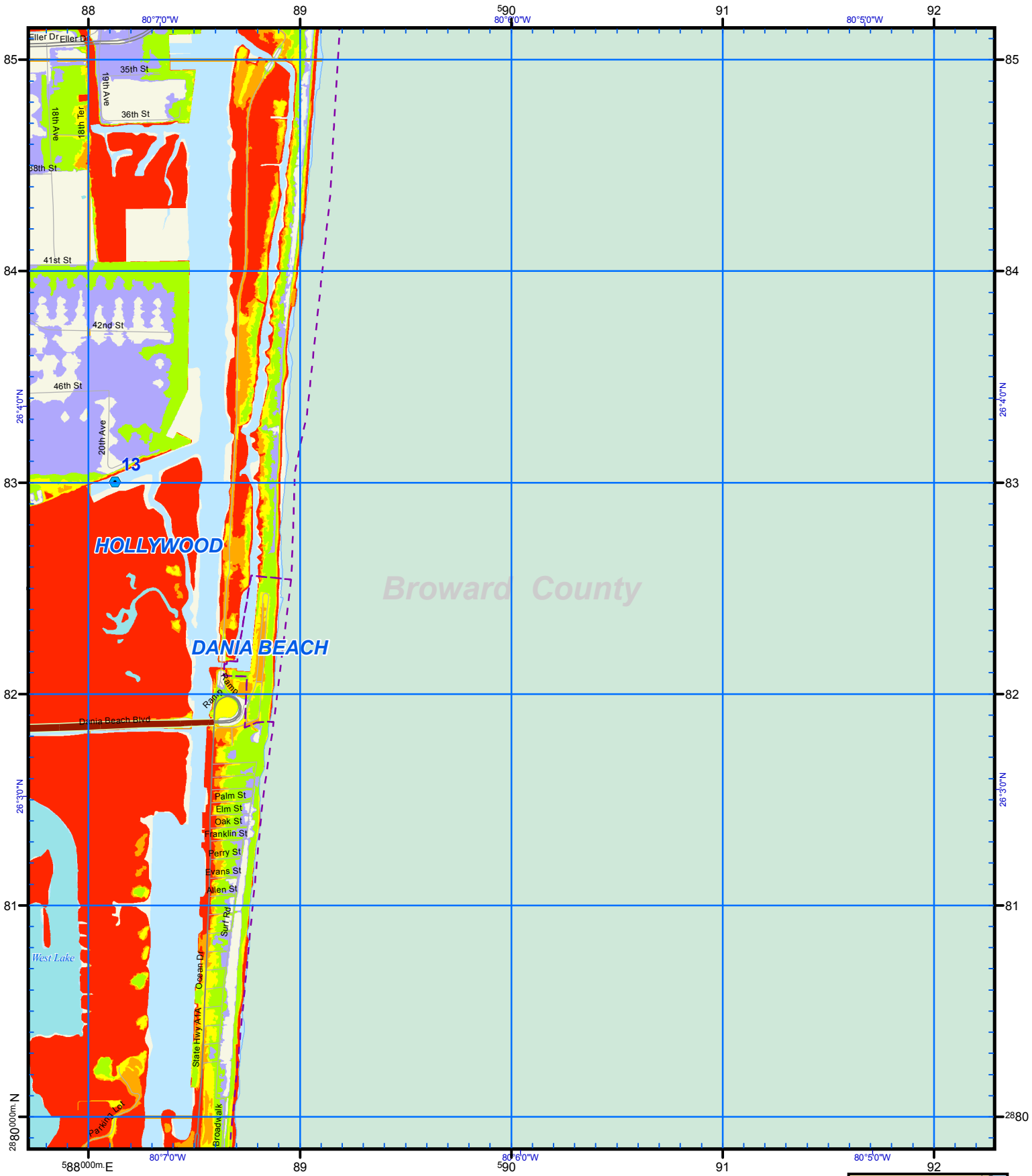
ATLAS LEGEND

| | | |
|---------------------|------------|---|
| HOSPITAL | Cat | 1 |
| Points of Reference | 2 | 3 |
| Evacuation Route | 4 | 5 |
| City Limits | NHD Lakes | |
| NHD Major Water | | |

Storm Tide Zones
Broward County, 2010
Scale - 1:24,000 Feet
0 2,000
USNG Page 17R NJ 84 80
Map Plate 59

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 |
| 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 |
| 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |
| 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 | 109 | 110 |
| 111 | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 |
| 121 | 122 | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 130 |
| 131 | 132 | 133 | 134 | 135 | 136 | 137 | 138 | 139 | 140 |
| 141 | 142 | 143 | 144 | 145 | 146 | 147 | 148 | 149 | 150 |
| 151 | 152 | 153 | 154 | 155 | 156 | 157 | 158 | 159 | 160 |
| 161 | 162 | 163 | 164 | 165 | 166 | 167 | 168 | 169 | 170 |
| 171 | 172 | 173 | 174 | 175 | 176 | 177 | 178 | 179 | 180 |

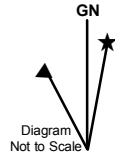
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US National Grid
100,000-m Square ID
NJ

Grid Zone Designation
17R

Datum = NAD 1983, 1,000-m USNG



Notes:

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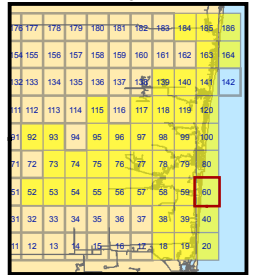
ATLAS LEGEND

| | |
|---------------------|-------|
| HOSPITAL | Cat 1 |
| Points of Reference | Cat 2 |
| Evacuation Route | Cat 3 |
| City Limits | Cat 4 |
| NHD Lakes | Cat 5 |
| NHD Major Water | |

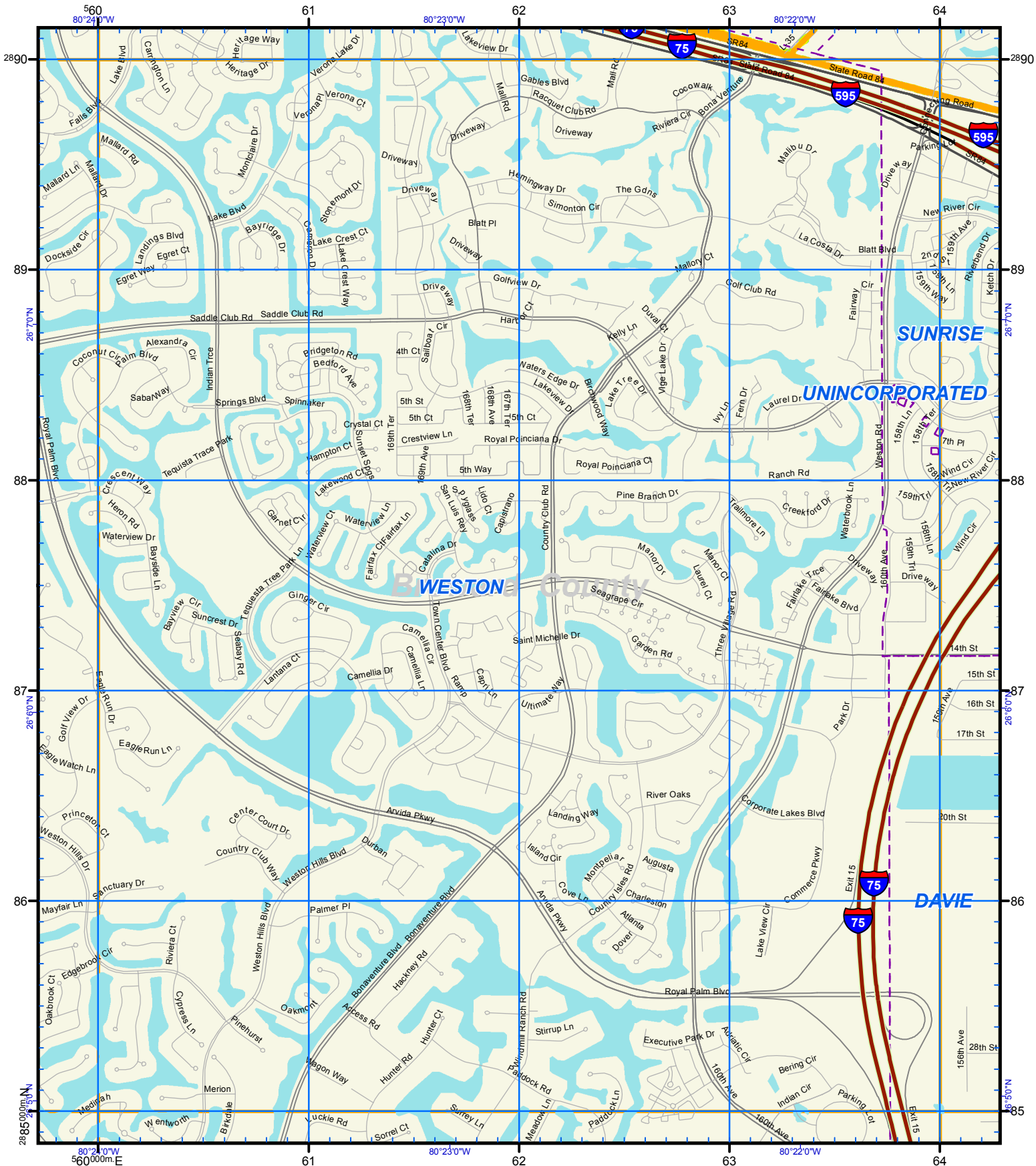
Storm Tide Zones
Broward County, 2010

Scale - 1:24,000

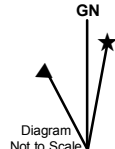
USNG Page **17R NJ 88 80**
Map Plate **60**



This map is for reference & planning purposes only. Hurricane evacuation decision-making and growth management implementation are local responsibilities. Please consult with local authorities.



US National Grid
100,000-m Square ID
NJ
Grid Zone Designation
17R
Datum = NAD 1983, 1,000-m USNG



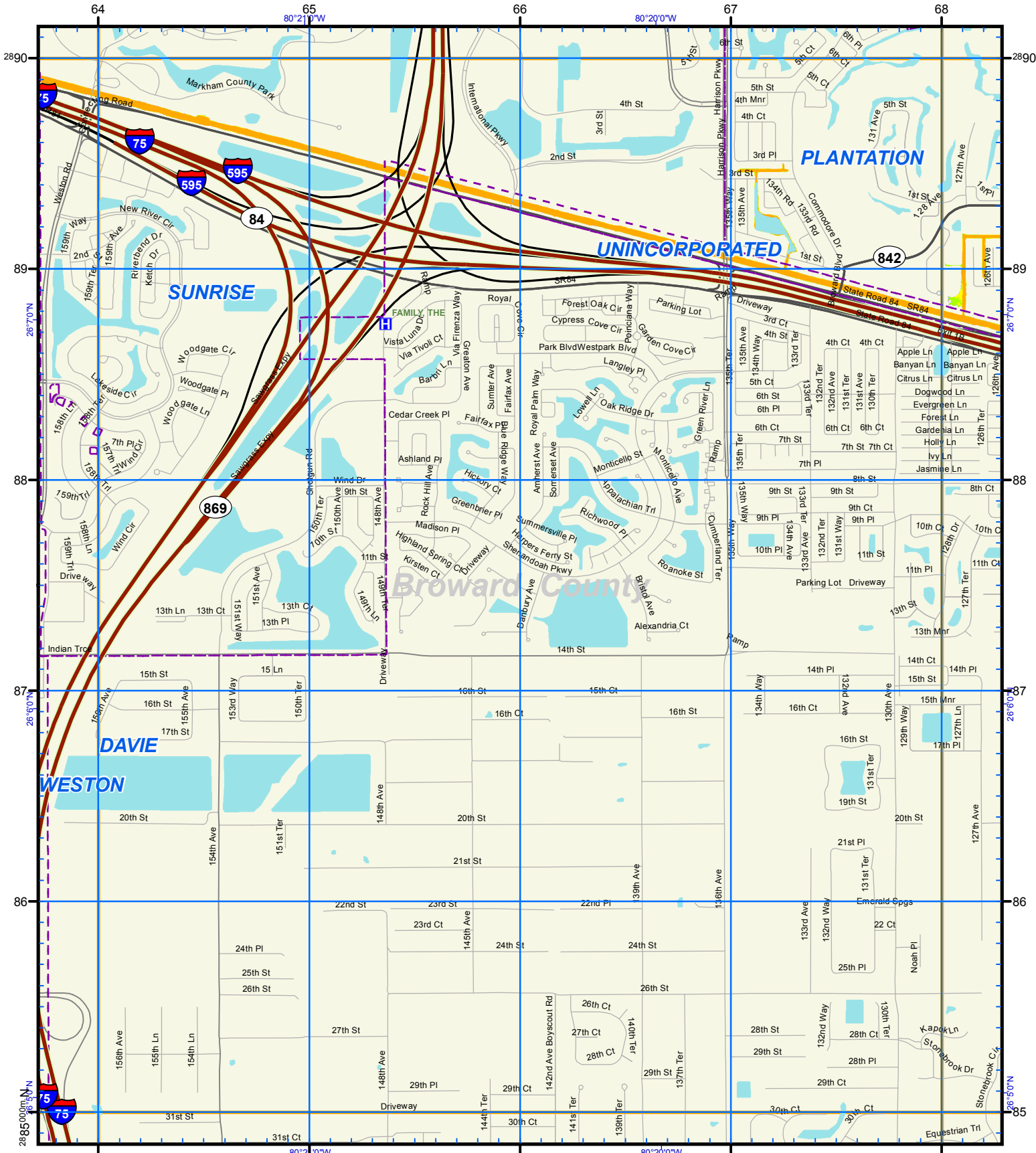
- Notes:**
1. Surge limits are based on still water storm tide height elevation above NAVD88 at high tide with no wave setup.
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 3. The Points of Reference are locations determined to be relevant to emergency management officials.

ATLAS LEGEND

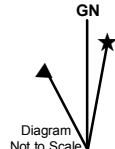
| | |
|---------------------|------------|
| HOSPITAL | Cat |
| Points of Reference | 1 |
| Evacuation Route | 2 |
| City Limits | 3 |
| NHD Lakes | 4 |
| NHD Major Water | 5 |

Storm Tide Zones
Broward County, 2010
Scale - 1:24,000 Feet
0 2,000
USNG Page **17R NJ 60 85**
Map Plate **73**

This map is for reference & planning purposes only. Hurricane evacuation decision-making and growth management implementation are local responsibilities. Please consult with local authorities.



US National Grid
100,000-m Square ID
NJ
Grid Zone Designation
17R
Datum = NAD 1983, 1,000-m USNG



- Notes:
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 2. Total Storm Tide limits were derived from Maximum of Maximums surge heights over LIDAR based digital elevation.
 3. The Points of Reference are locations determined to be relevant to emergency management officials.

ATLAS LEGEND

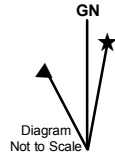
| | | |
|--|----------------------------|------------|
| | HOSPITAL | Cat |
| | Points of Reference | |
| | Evacuation Route | |
| | City Limits | |
| | NHD Lakes | |
| | NHD Major Water | |

Storm Tide Zones
Broward County, 2010
Scale - 1:24,000 Feet
0 2,000
USNG Page **17R NJ 64 85**
Map Plate **74**

| | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 74 | 177 | 178 | 179 | 180 | 181 | 182 | 183 | 184 | 185 | 186 |
| 84 | 155 | 156 | 157 | 158 | 159 | 160 | 161 | 162 | 163 | 164 |
| 94 | 133 | 134 | 135 | 136 | 137 | 138 | 139 | 140 | 141 | 142 |
| 104 | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 121 |
| 114 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 | 101 |
| 124 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 |
| 134 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 |
| 144 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 |
| 154 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 |



US National Grid
 100,000-m Square ID
NJ
 Grid Zone Designation
17R
 Datum = NAD 1983, 1,000-m USNG



Notes:

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3. The Points of Reference are locations determined to be relevant to emergency management officials.

ATLAS LEGEND

| | | | |
|---------------------|------------|---|---|
| HOSPITAL | Cat | | 1 |
| Points of Reference | | 2 | |
| Evacuation Route | | 3 | |
| City Limits | | 4 | |
| NHD Lakes | | 5 | |
| NHD Major Water | | | |

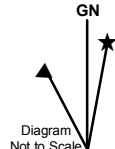
Storm Tide Zones
 Broward County, 2010
 Scale - 1:24,000 Feet
 0 2,000
 USNG Page 17R NJ 68 85
 Map Plate 75

| | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 177 | 178 | 179 | 180 | 181 | 182 | 183 | 184 | 185 | 186 | |
| 84 | 155 | 156 | 157 | 158 | 159 | 160 | 161 | 162 | 163 | 164 |
| 32 | 133 | 134 | 135 | 136 | 137 | 138 | 139 | 140 | 141 | 142 |
| 11 | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | |
| 81 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 | |
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | |
| 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |

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US National Grid
100,000-m Square ID
NJ
Grid Zone Designation
17R
Datum = NAD 1983, 1,000-m USNG



- Notes:**
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 2. Total Storm Tide limits were derived from Maximum of Maximums surge heights over LIDAR based digital elevation.
 3. The Points of Reference are locations determined to be relevant to emergency management officials.

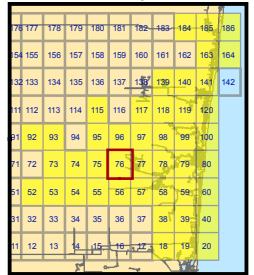
ATLAS LEGEND

- HOSPITAL
- Points of Reference
- Evacuation Route
- City Limits
- NHD Lakes
- NHD Major Water

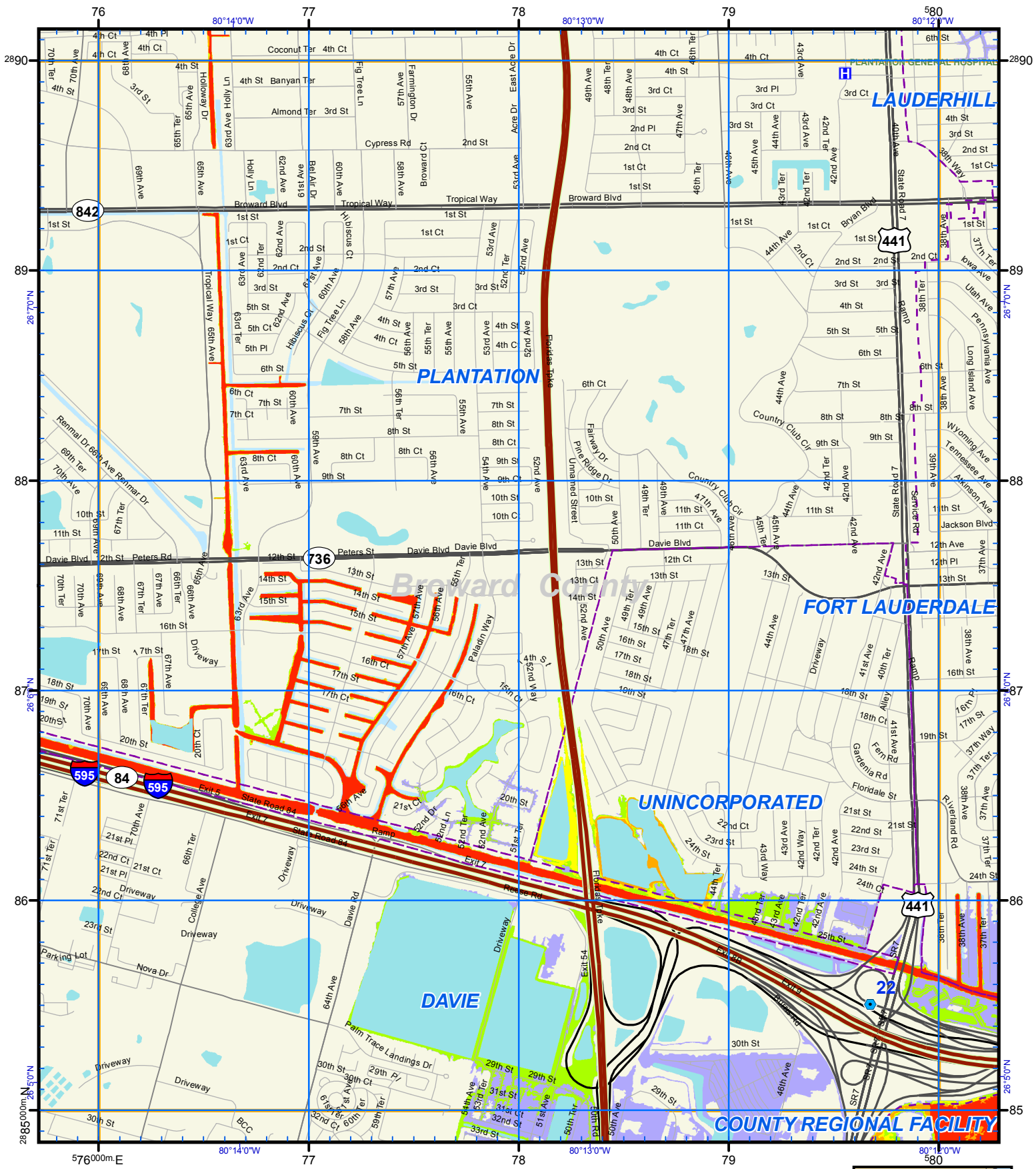
Cat

- 1
- 2
- 3
- 4
- 5

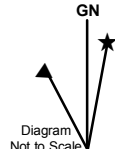
Storm Tide Zones
Broward County, 2010
Scale - 1:24,000
0 2,000 Feet
USNG Page 17R NJ 72 85
Map Plate 76



This map is for reference & planning purposes only. Hurricane evacuation decision-making and growth management implementation are local responsibilities. Please consult with local authorities.



US National Grid
100,000-m Square ID
NJ
Grid Zone Designation
17R
Datum = NAD 1983, 1,000-m USNG



- Notes:
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 2. Total Storm Tide limits were derived from Maximum of Maximums surge heights over LIDAR based digital elevation.
 3. The Points of Reference are locations determined to be relevant to emergency management officials.

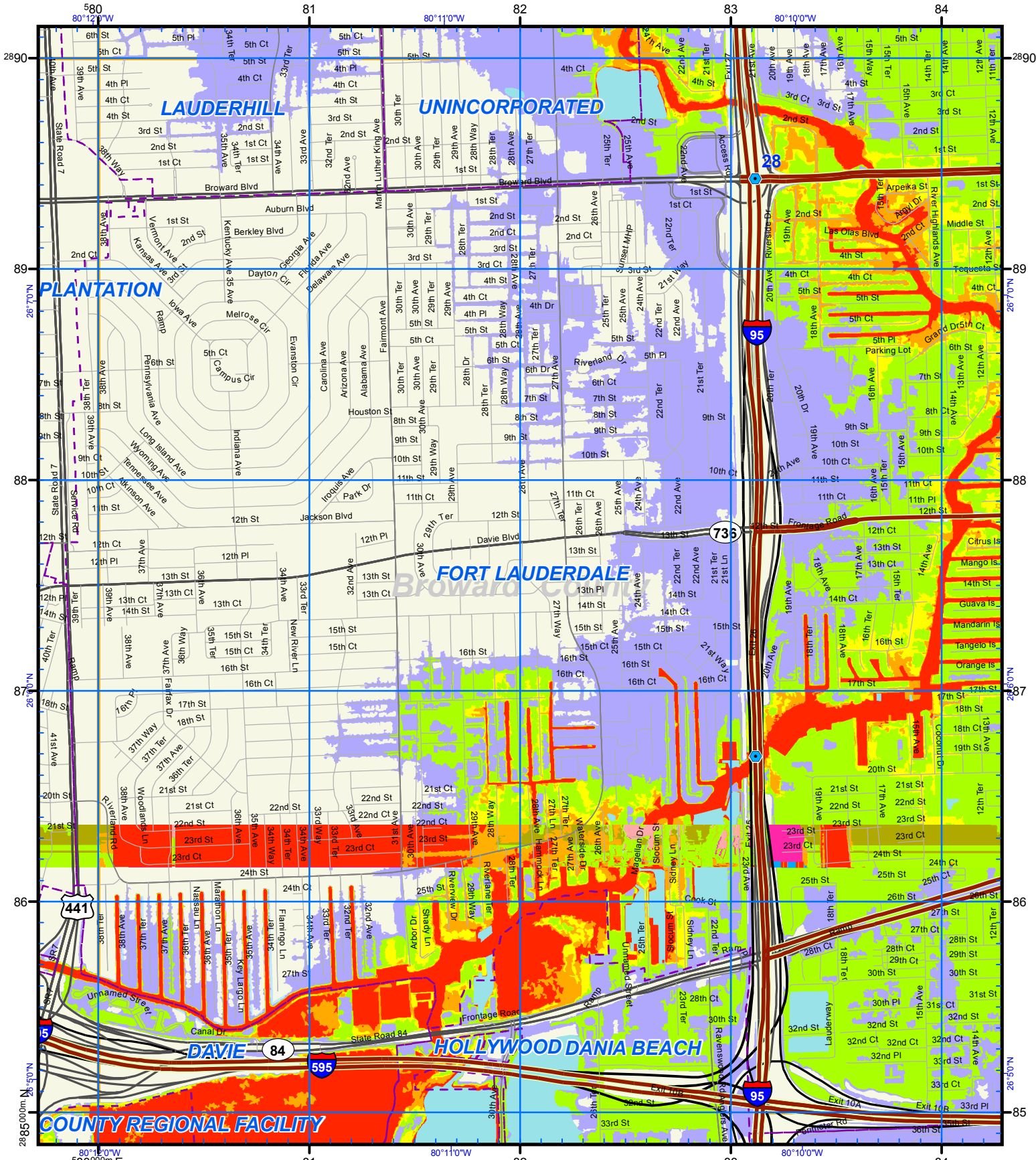
ATLAS LEGEND

| | | |
|--|----------------------------|------------|
| | HOSPITAL | Cat |
| | Points of Reference | 1 |
| | Evacuation Route | 2 |
| | City Limits | 3 |
| | NHD Lakes | 4 |
| | NHD Major Water | 5 |

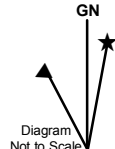
Storm Tide Zones
Broward County, 2010
Scale - 1:24,000
0 2,000 Feet
USNG Page 17R NJ 76 85
Map Plate 77

| | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 177 | 178 | 179 | 180 | 181 | 182 | 183 | 184 | 185 | 186 | |
| 84 | 155 | 156 | 157 | 158 | 159 | 160 | 161 | 162 | 163 | 164 |
| 81 | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | |
| 81 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 | |
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | |
| 61 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | |
| 51 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | |
| 41 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |

This map is for reference & planning purposes only. Hurricane evacuation decision-making and growth management implementation are local responsibilities. Please consult with local authorities.



US National Grid
100,000-m Square ID
NJ
Grid Zone Designation
17R
Datum = NAD 1983, 1,000-m USNG



Notes:
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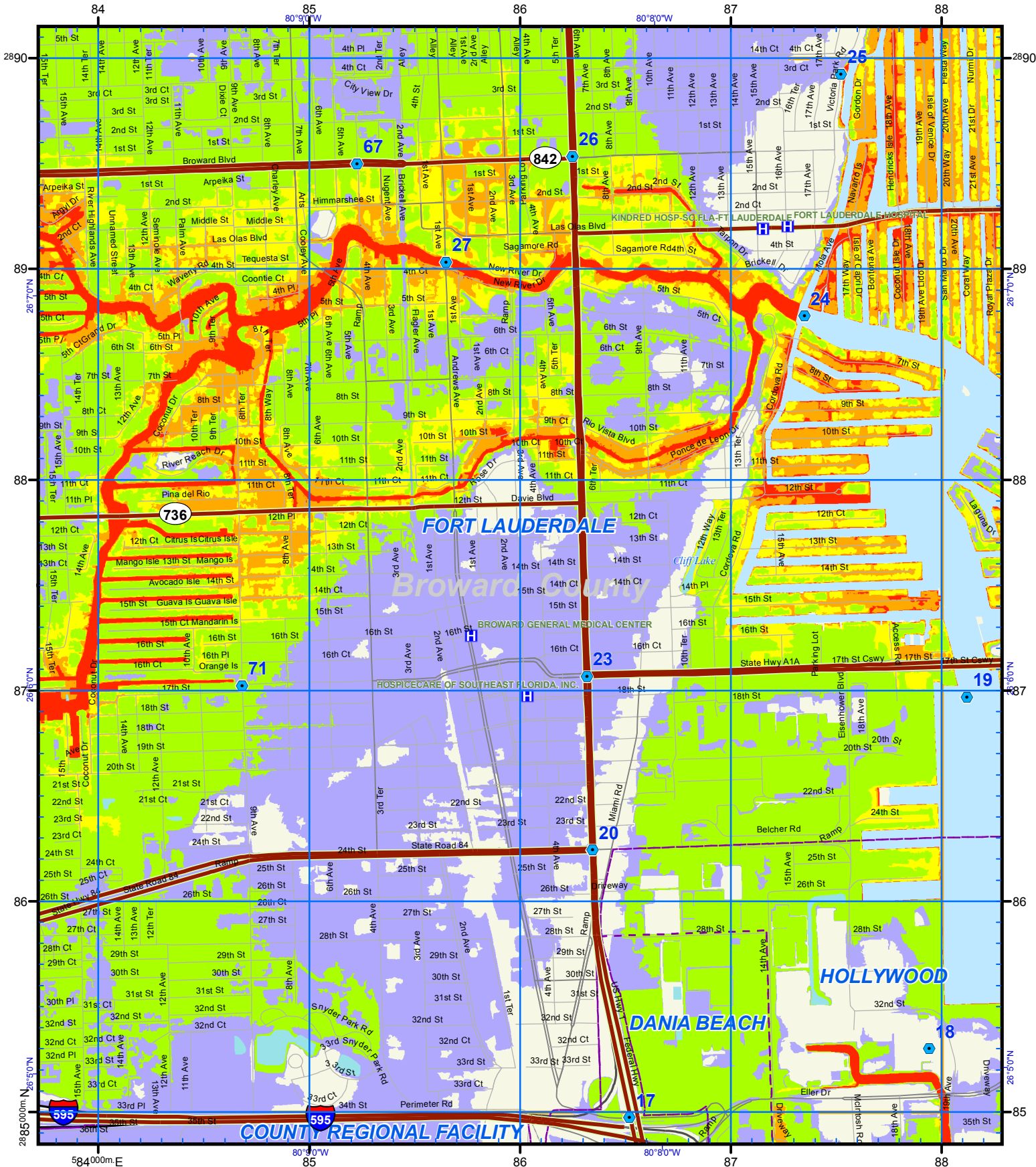
ATLAS LEGEND

| | |
|---------------------|------------|
| HOSPITAL | Cat |
| Points of Reference | 1 |
| Evacuation Route | 2 |
| City Limits | 3 |
| NHD Lakes | 4 |
| NHD Major Water | 5 |

Storm Tide Zones
Broward County, 2010
Scale - 1:24,000 Feet
0 2,000
USNG Page 17R NJ 80 85
Map Plate 78

| | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 177 | 178 | 179 | 180 | 181 | 182 | 183 | 184 | 185 | 186 | |
| 94 | 155 | 156 | 157 | 158 | 159 | 160 | 161 | 162 | 163 | 164 |
| 32 | 133 | 134 | 135 | 136 | 137 | 138 | 139 | 140 | 141 | 142 |
| 11 | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 121 |
| 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 | |
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | |
| 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |

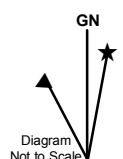
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US National Grid
100,000-m Square ID
NJ

Grid Zone Designation
17R

Datum = NAD 1983, 1,000-m USNG



- Notes:
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ATLAS LEGEND

- HOSPITAL
- Points of Reference
- Evacuation Route
- City Limits
- NHD Lakes
- NHD Major Water

Cat

- 1
- 2
- 3
- 4
- 5

Storm Tide Zones
Broward County, 2010

Scale - 1:24,000 Feet

0 2,000

USNG Page 17R NJ 84 85

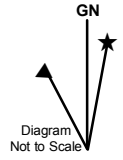
Map Plate 79

| | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| 74 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 88 |
| 84 | 155 | 156 | 157 | 158 | 159 | 160 | 161 | 162 | 163 | 164 | |
| 82 | 133 | 134 | 135 | 136 | 137 | 138 | 139 | 140 | 141 | 142 | |
| 81 | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | | |
| 81 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 | | |
| 81 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | | |
| 81 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | | |
| 81 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | | |
| 81 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | | |

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US National Grid
100,000-m Square ID
NJ
Grid Zone Designation
17R
Datum = NAD 1983, 1,000-m USNG



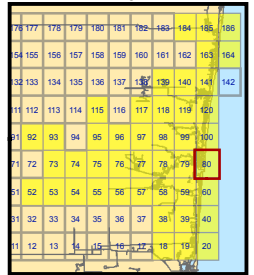
Notes:
1. Surge limits are based on still water storm tide height elevation above NAVD88 at high tide with no wave setup.
2. Total Storm Tide limits were derived from Maximum of Maximums surge heights over LIDAR based digital elevation.
3. The Points of Reference are locations determined to be relevant to emergency management officials.

ATLAS LEGEND

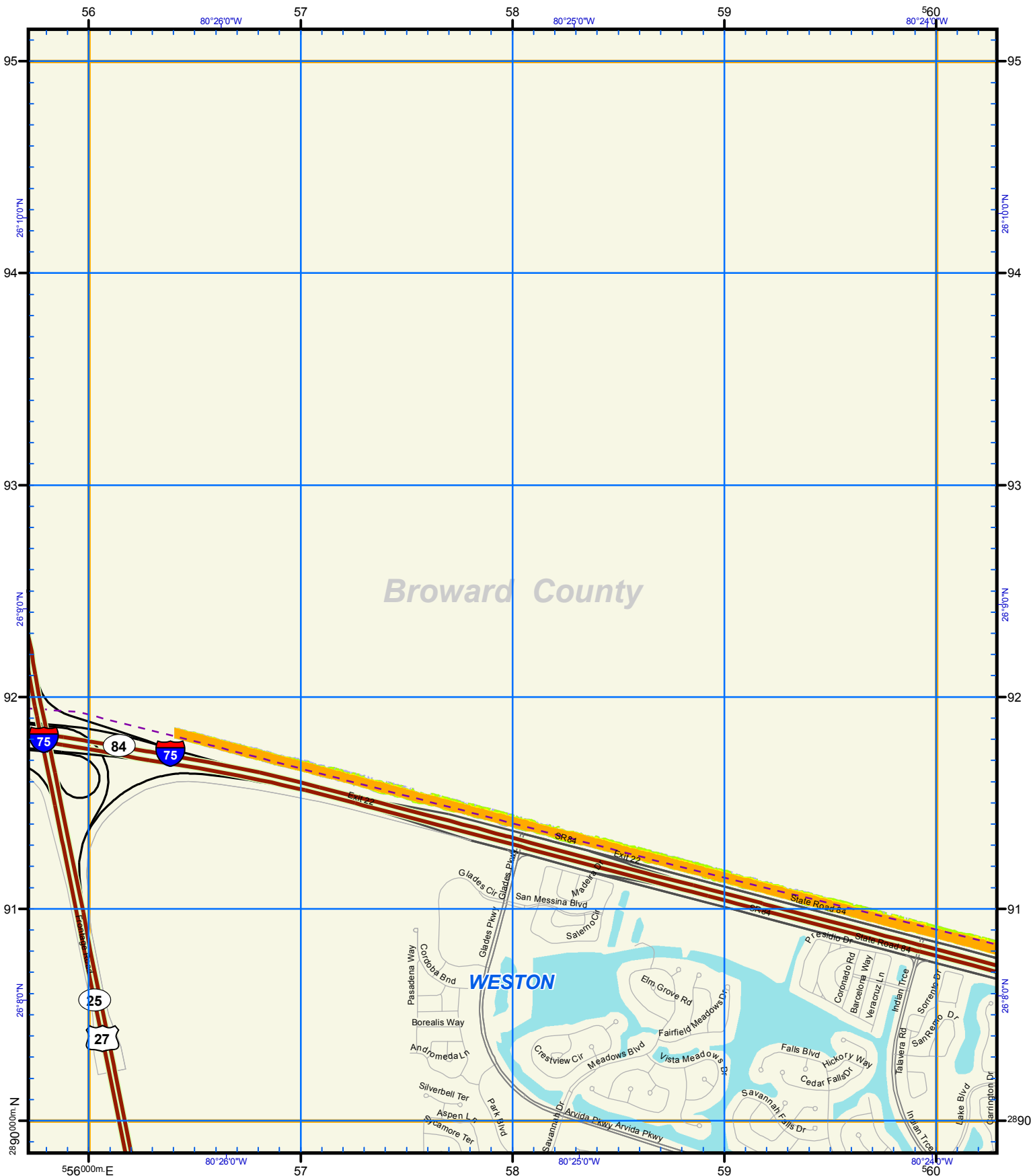
| | | |
|------------------|---------------------|-------|
| HOSPITAL | Points of Reference | Cat 1 |
| Evacuation Route | Cat 2 | Cat 3 |
| City Limits | Cat 4 | Cat 5 |
| NHD Lakes | | |
| NHD Major Water | | |

Storm Tide Zones
Broward County, 2010
Scale - 1:24,000

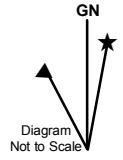
USNG Page **17R NJ 88 85**
Map Plate **80**



This map is for reference & planning purposes only. Hurricane evacuation decision-making and growth management implementation are local responsibilities. Please consult with local authorities.



US National Grid
 100,000-m Square ID
NJ
 Grid Zone Designation
17R
 Datum = NAD 1983, 1,000-m USNG



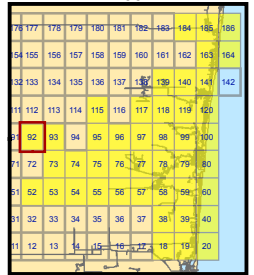
Notes:

1. Surge limits are based on still water storm tide height elevation above NAVD88 at high tide with no wave setup.
2. Total Storm Tide limits were derived from Maximum of Maximums surge heights over LIDAR based digital elevation.
3. The Points of Reference are locations determined to be relevant to emergency management officials.

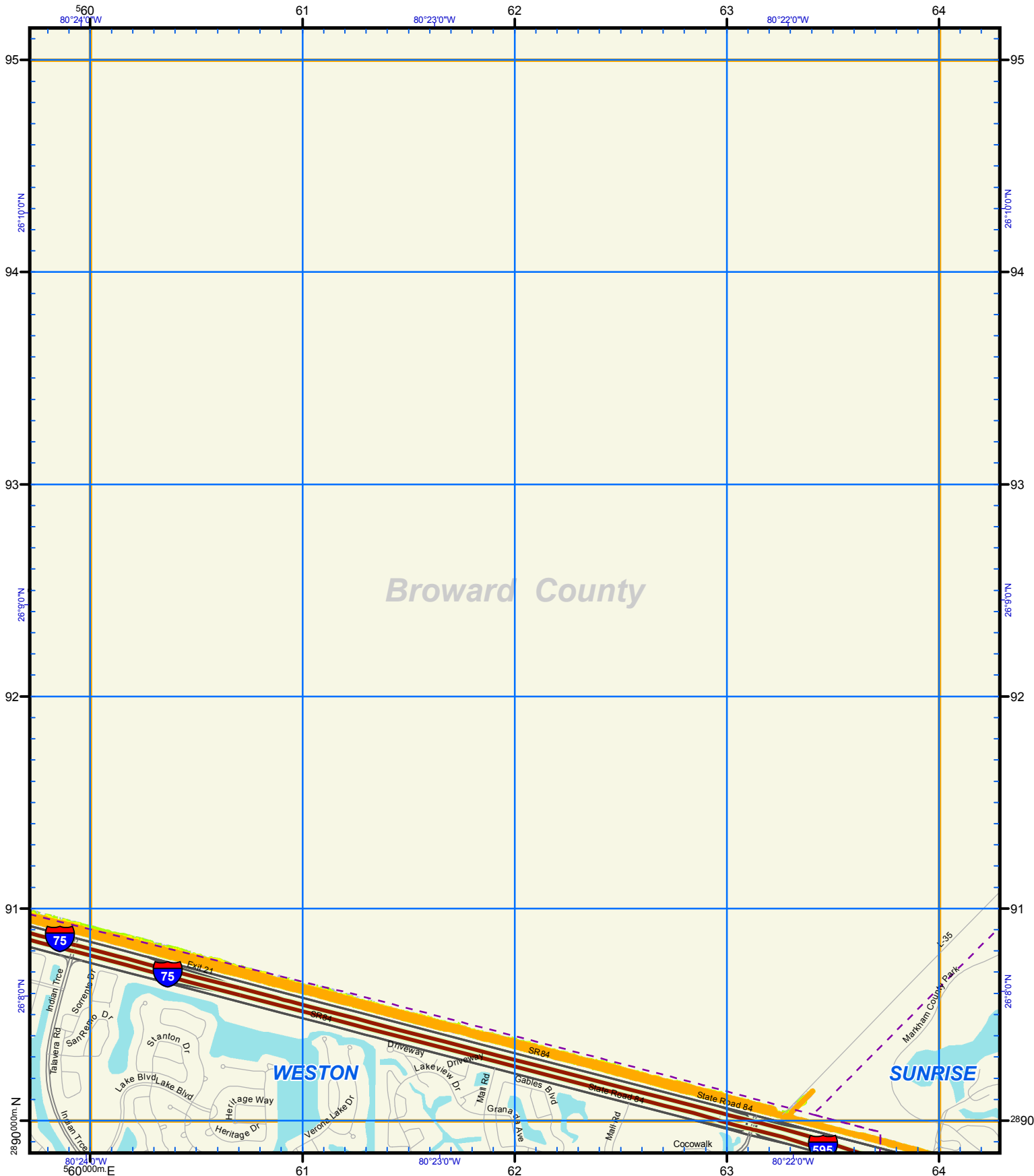
ATLAS LEGEND

| | |
|---------------------|------------|
| HOSPITAL | Cat |
| Points of Reference | 1 |
| Evacuation Route | 2 |
| City Limits | 3 |
| NHD Lakes | 4 |
| NHD Major Water | 5 |

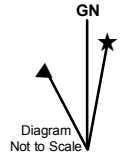
Storm Tide Zones
 Broward County, 2010
 Scale - 1:24,000
 0 2,000 Feet
 USNG Page 17R NJ 56 90
 Map Plate 92



This map is for reference & planning purposes only. Hurricane evacuation decision-making and growth management implementation are local responsibilities. Please consult with local authorities.



US National Grid
 100,000-m Square ID
NJ
 Grid Zone Designation
17R
 Datum = NAD 1983, 1,000-m USNG



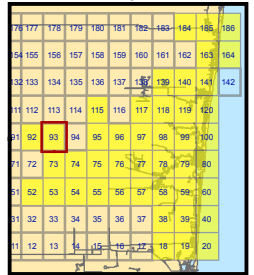
Notes:
 1. Surge limits are based on still water storm tide height elevation above NAVD88 at high tide with no wave setup.
 2. Total Storm Tide limits were derived from Maximum of Maximums surge heights over LIDAR based digital elevation.
 3. The Points of Reference are locations determined to be relevant to emergency management officials.

ATLAS LEGEND

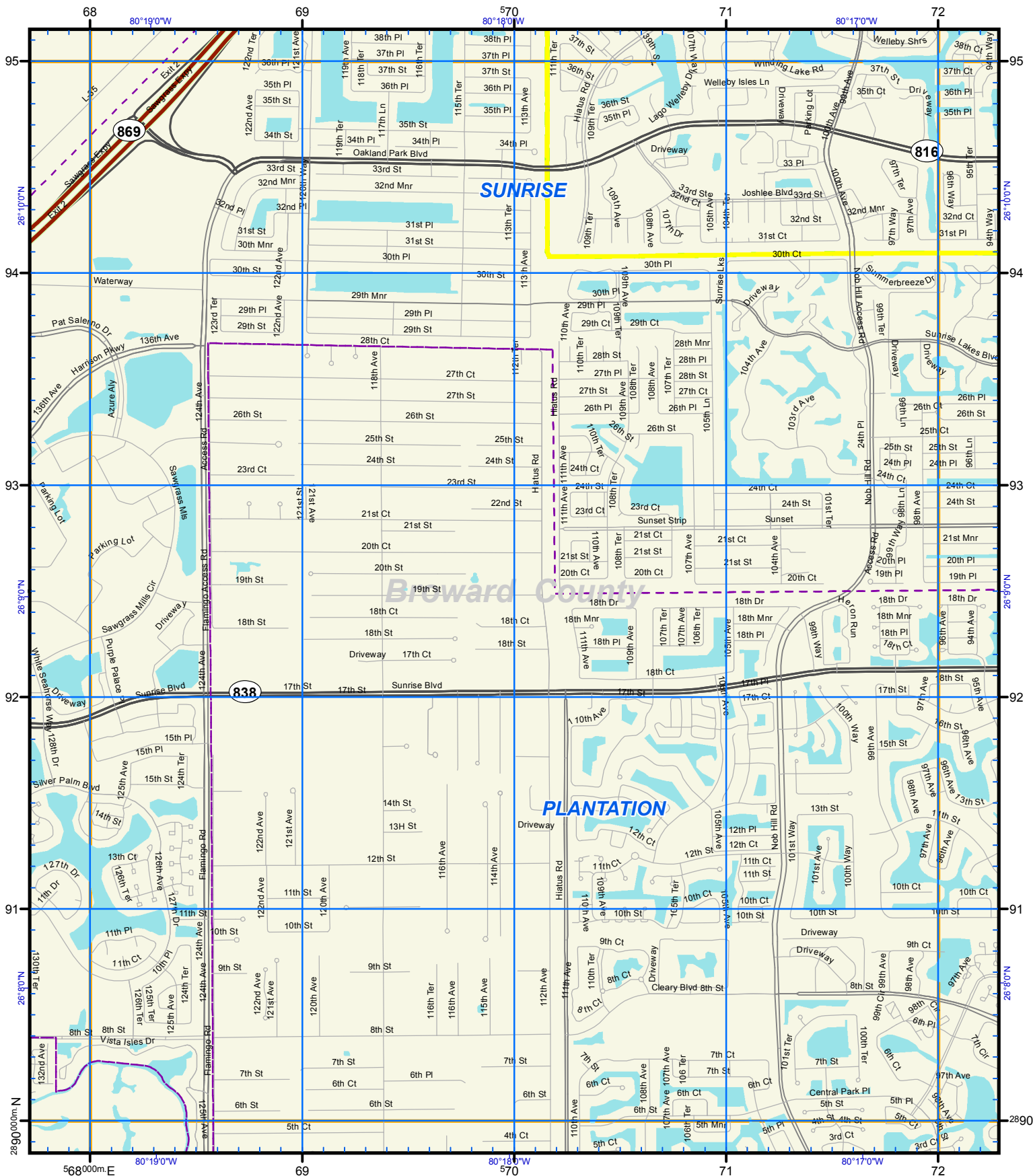
| | |
|---------------------|-------|
| HOSPITAL | Cat 1 |
| Points of Reference | Cat 2 |
| Evacuation Route | Cat 3 |
| City Limits | Cat 4 |
| NHD Lakes | Cat 5 |
| NHD Major Water | |

Storm Tide Zones
Broward County, 2010
 Scale - 1:24,000

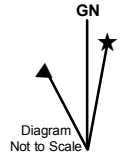
 USNG Page **17R NJ 60 90**
 Map Plate **93**



This map is for reference & planning purposes only. Hurricane evacuation decision-making and growth management implementation are local responsibilities. Please consult with local authorities.



US National Grid
 100,000-m Square ID
NJ
 Grid Zone Designation
17R
 Datum = NAD 1983, 1,000-m USNG



Notes:

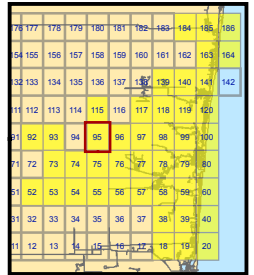
1. Surge limits are based on still water storm tide height elevation above NAVD88 at high tide with no wave setup.
2. Total Storm Tide limits were derived from Maximum of Maximums surge heights over LIDAR based digital elevation.
3. The Points of Reference are locations determined to be relevant to emergency management officials.

ATLAS LEGEND

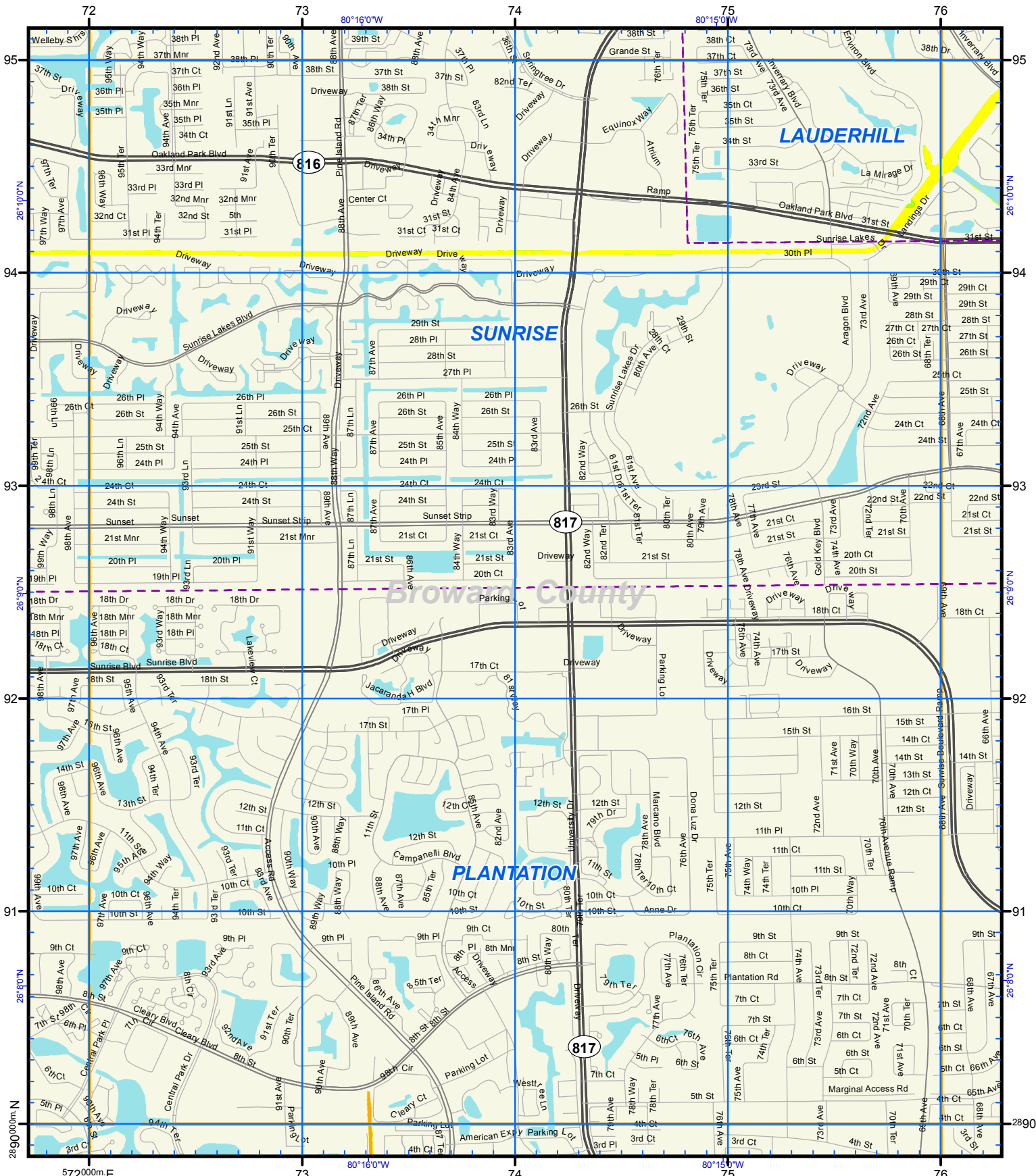
| | |
|---------------------|------------|
| HOSPITAL | Cat |
| Points of Reference | 1 |
| Evacuation Route | 2 |
| City Limits | 3 |
| NHD Lakes | 4 |
| NHD Major Water | 5 |

Storm Tide Zones
Broward County, 2010
 Scale - 1:24,000 Feet

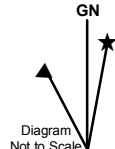
 USNG Page 17R NJ 68 90
 Map Plate 95



This map is for reference & planning purposes only. Hurricane evacuation decision-making and growth management implementation are local responsibilities. Please consult with local authorities.



US National Grid
100,000-m Square ID
NJ
Grid Zone Designation
17R
Datum = NAD 1983, 1,000-m USNG



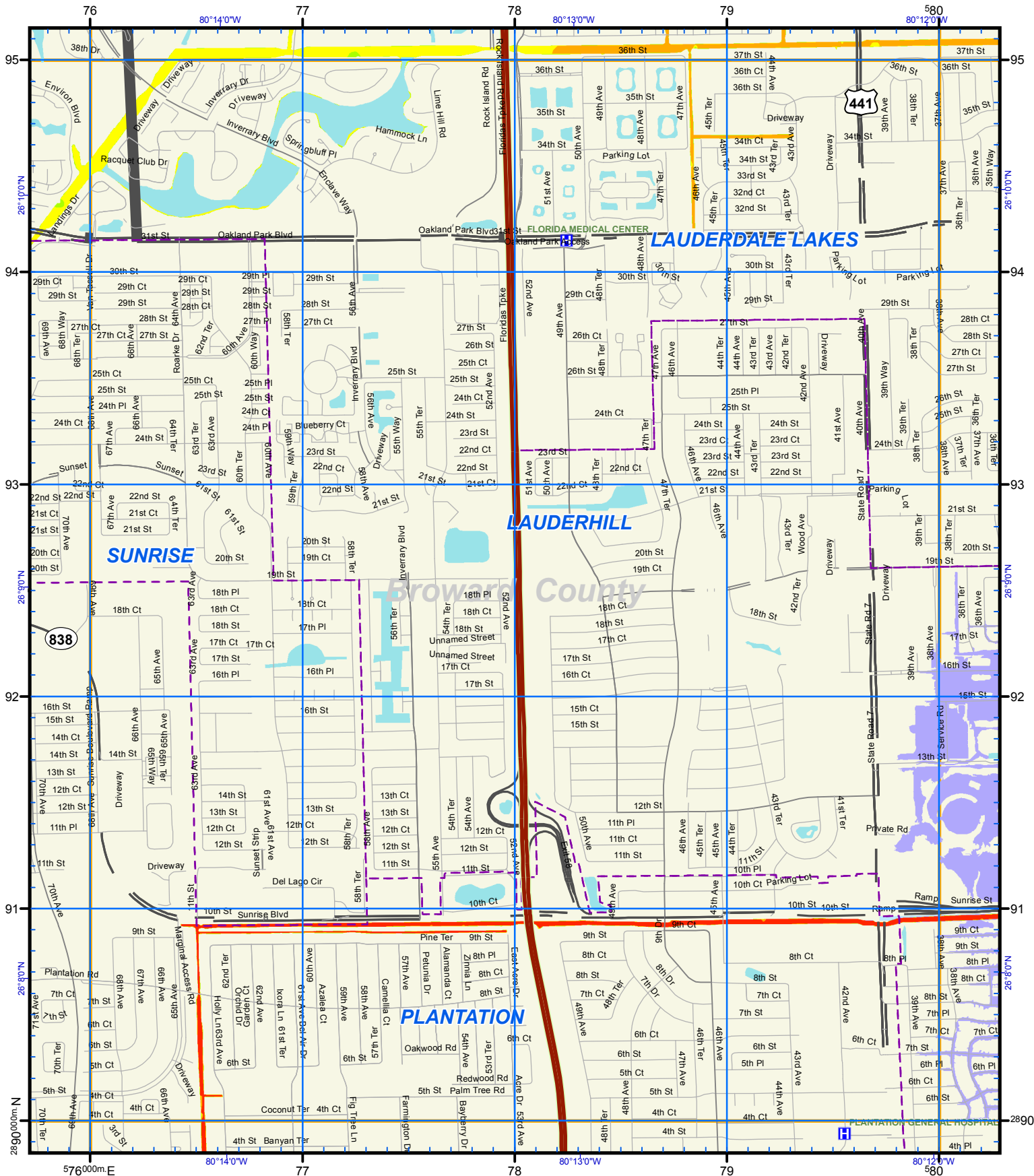
- Notes:**
1. Surge limits are based on still water storm tide height elevation above NAVD88 at high tide with no wave setup.
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ATLAS LEGEND

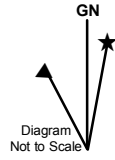
| | | | |
|--|----------------------------|------------|---|
| | HOSPITAL | Cat | |
| | Points of Reference | | 1 |
| | Evacuation Route | | 2 |
| | City Limits | | 3 |
| | NHD Lakes | | 4 |
| | NHD Major Water | | 5 |

Storm Tide Zones
Broward County, 2010
Scale - 1:24,000 Feet
0 2,000
USNG Page 17R NJ 72 90
Map Plate 96

This map is for reference & planning purposes only. Hurricane evacuation decision-making and growth management implementation are local responsibilities. Please consult with local authorities.



US National Grid
100,000-m Square ID
NJ
Grid Zone Designation
17R
Datum = NAD 1983, 1,000-m USNG

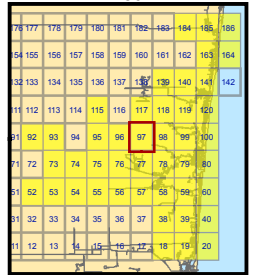


- Notes:
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 2. Total Storm Tide limits were derived from Maximum of Maximums surge heights over LIDAR based digital elevation.
 3. The Points of Reference are locations determined to be relevant to emergency management officials.

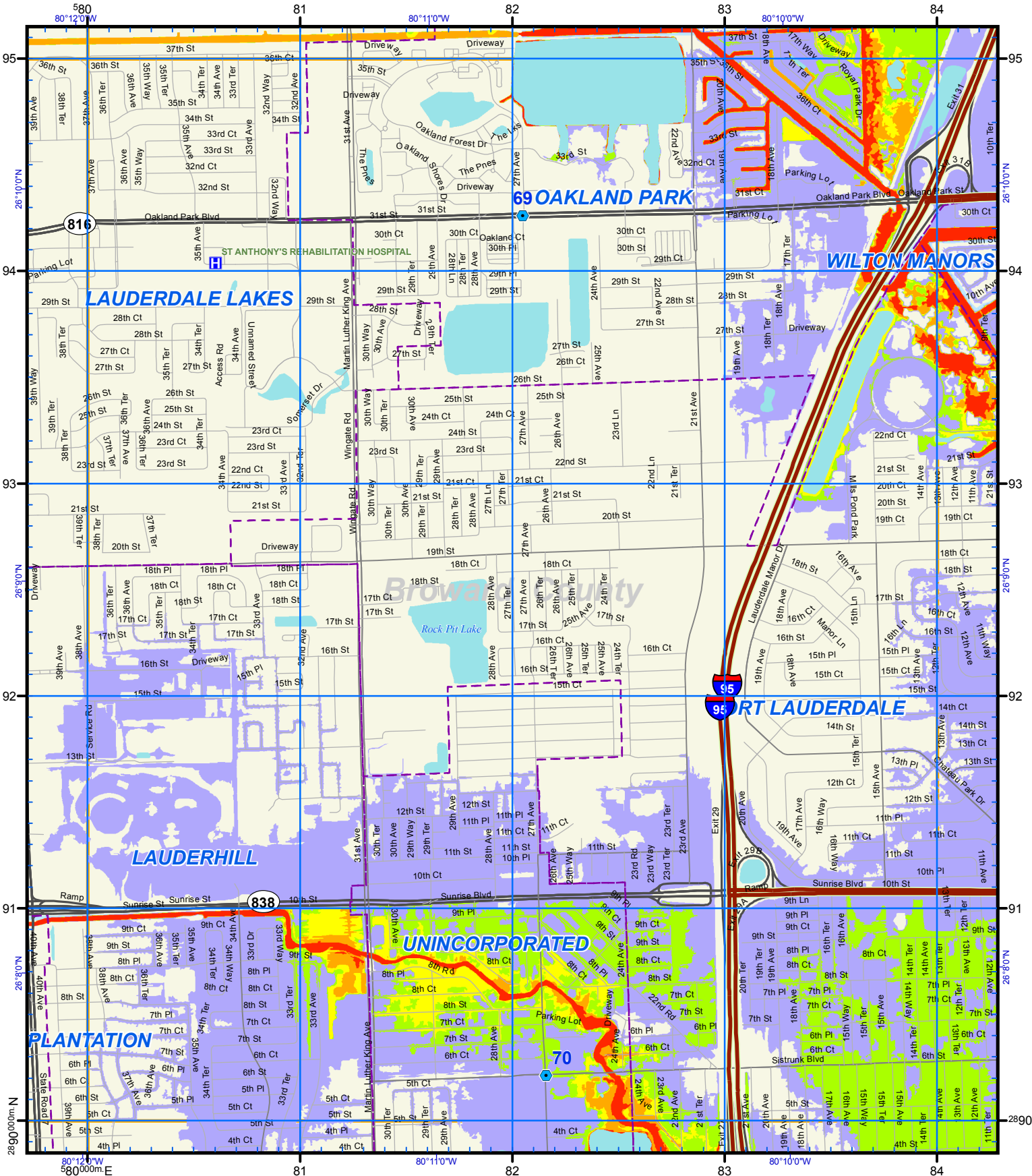
ATLAS LEGEND

| | | | | | |
|----------|---------------------|------------------|-------------|-----------|-----------------|
| HOSPITAL | Points of Reference | Evacuation Route | City Limits | NHD Lakes | NHD Major Water |
| Cat 1 | Cat 2 | Cat 3 | Cat 4 | Cat 5 | |

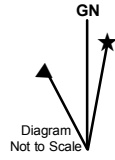
Storm Tide Zones
Broward County, 2010
Scale - 1:24,000
0 2,000 Feet
USNG Page 17R NJ 76 90
Map Plate 97



This map is for reference & planning purposes only. Hurricane evacuation decision-making and growth management implementation are local responsibilities. Please consult with local authorities.



US National Grid
100,000-m Square ID
NJ
Grid Zone Designation
17R
Datum = NAD 1983, 1,000-m USNG



- Notes:
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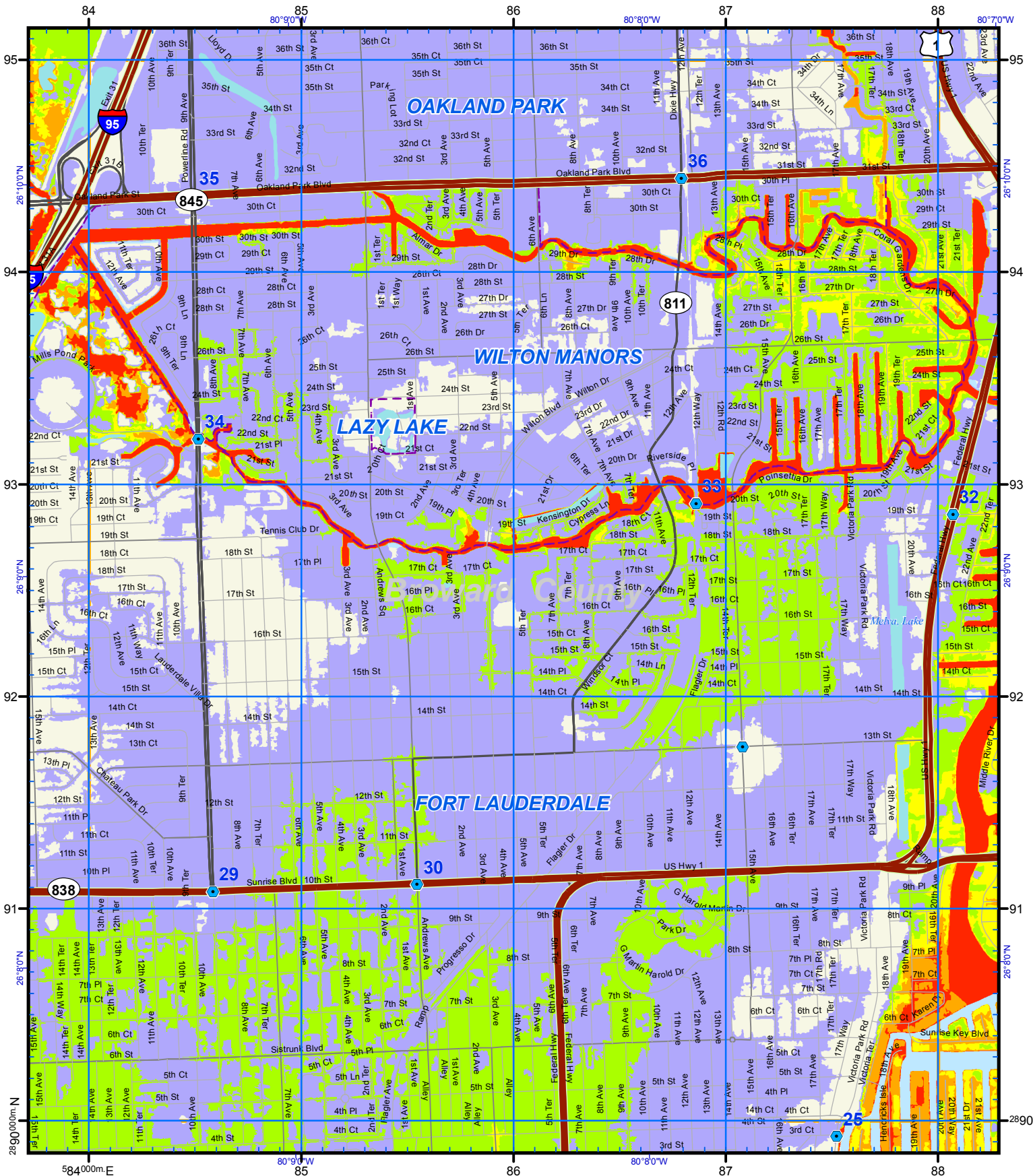
ATLAS LEGEND

| | | |
|--|----------------------------|------------|
| | HOSPITAL | Cat |
| | Points of Reference | 1 |
| | Evacuation Route | 2 |
| | City Limits | 3 |
| | NHD Lakes | 4 |
| | NHD Major Water | 5 |

Storm Tide Zones
Broward County, 2010
Scale - 1:24,000
0 2,000 Feet
USNG Page 17R NJ 80 90
Map Plate 98

| | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 17 | 177 | 178 | 179 | 180 | 181 | 182 | 183 | 184 | 185 | 186 |
| 84 | 155 | 156 | 157 | 158 | 159 | 160 | 161 | 162 | 163 | 164 |
| 32 | 133 | 134 | 135 | 136 | 137 | 138 | 139 | 140 | 141 | 142 |
| 11 | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 121 |
| 81 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 | |
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | |
| 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |

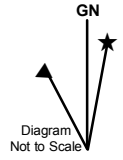
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US National Grid
100,000-m Square ID
NJ

Grid Zone Designation
17R

Datum = NAD 1983, 1,000-m USNG



- Notes:**
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ATLAS LEGEND

- HOSPITAL
- Points of Reference
- Evacuation Route
- City Limits
- NHD Lakes
- NHD Major Water

Cat

- 1
- 2
- 3
- 4
- 5

Storm Tide Zones
Broward County, 2010

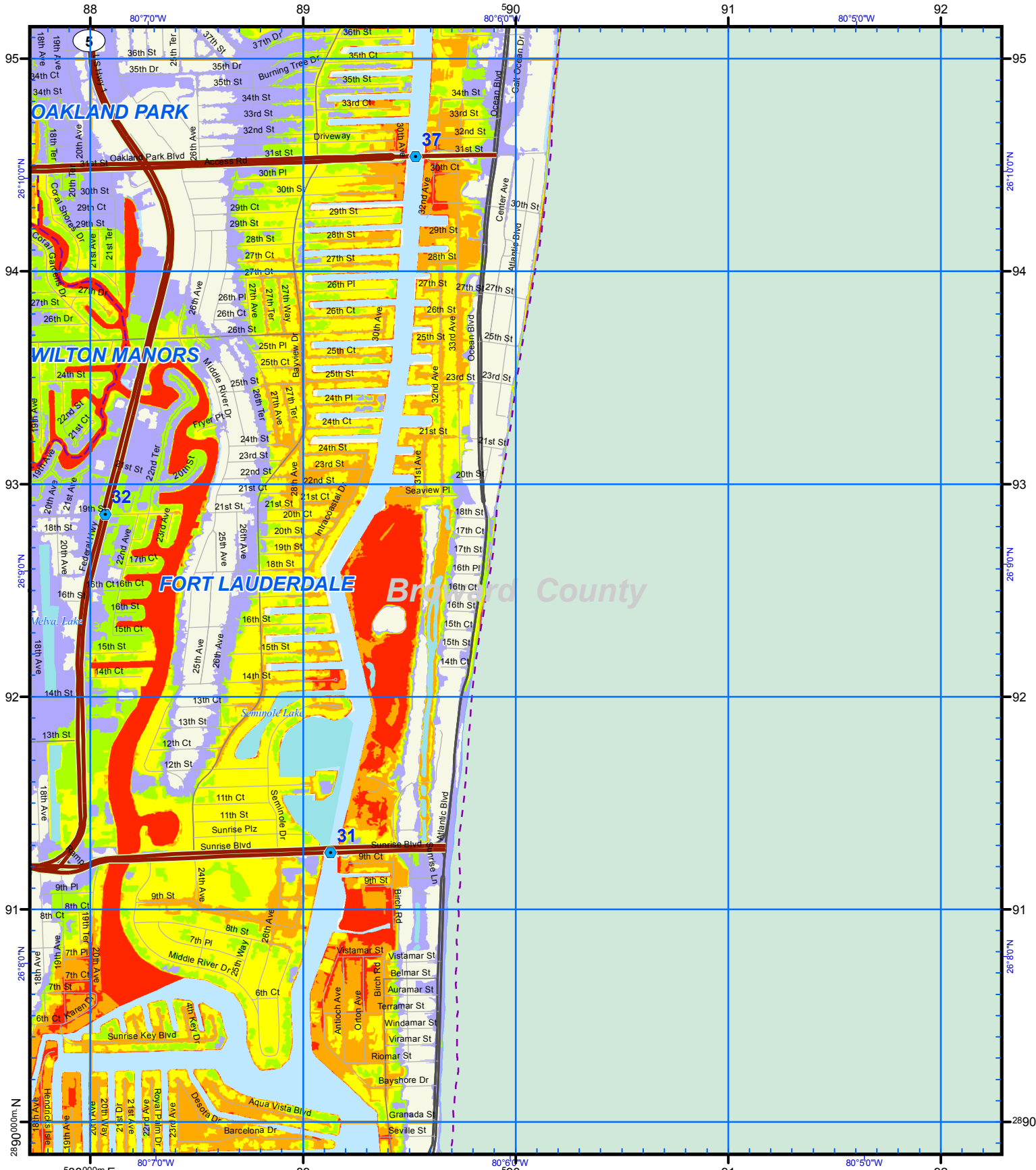
Scale - 1:24,000

USNG Page 17R NJ 84 90

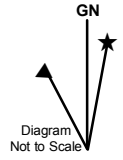
Map Plate 99

| | | | | | | | | | | |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 17 177 | 178 | 179 | 180 | 181 | 182 | 183 | 184 | 185 | 186 | |
| 94 | 155 | 156 | 157 | 158 | 159 | 160 | 161 | 162 | 163 | 164 |
| 32 | 133 | 134 | 135 | 136 | 137 | 138 | 139 | 140 | 141 | 142 |
| 11 | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 121 |
| 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 | |
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | |
| 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |

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US National Grid
100,000-m Square ID
NJ
Grid Zone Designation
17R
Datum = NAD 1983, 1,000-m USNG

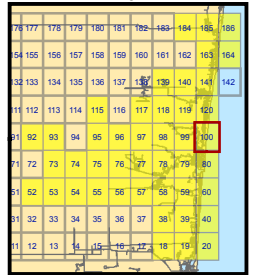


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1. Surge limits are based on still water storm tide height elevation above NAVD88 at high tide with no wave setup.
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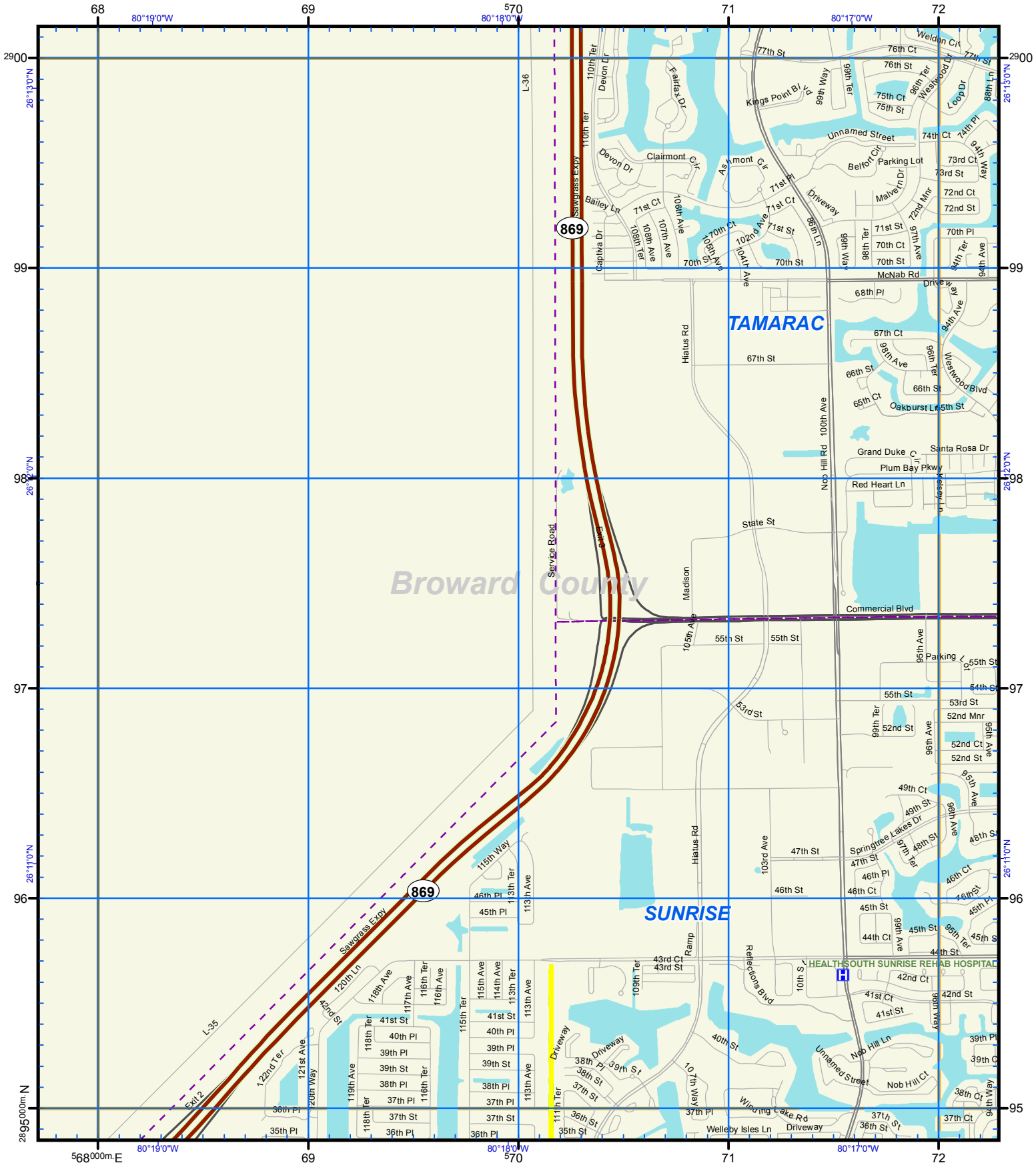
ATLAS LEGEND

| | |
|---------------------|------------|
| HOSPITAL | Cat |
| Points of Reference | 1 |
| Evacuation Route | 2 |
| City Limits | 3 |
| NHD Lakes | 4 |
| NHD Major Water | 5 |

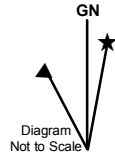
Storm Tide Zones
Broward County, 2010
Scale - 1:24,000
0 2,000 Feet
USNG Page **17R NJ 88 90**
Map Plate **100**



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US National Grid
 100,000-m Square ID
NJ
 Grid Zone Designation
17R
 Datum = NAD 1983, 1,000-m USNG



Notes:
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 3. The Points of Reference are locations determined to be relevant to emergency management officials.

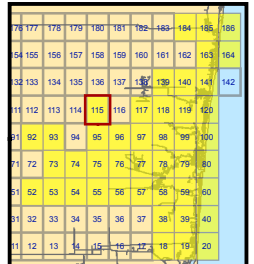
ATLAS LEGEND

- HOSPITAL
- Points of Reference
- Evacuation Route
- City Limits
- NHD Lakes
- NHD Major Water

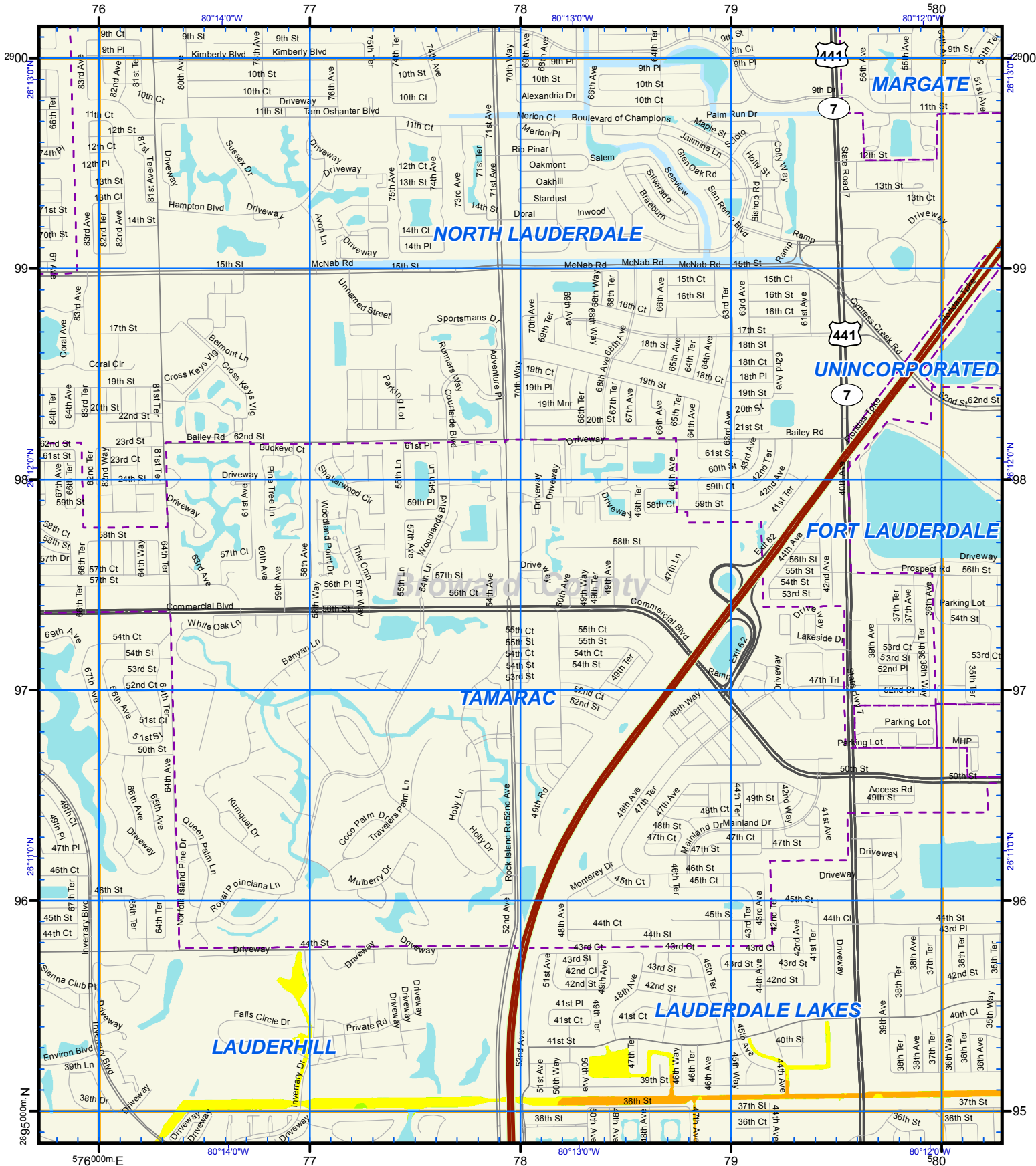
Cat

- 1
- 2
- 3
- 4
- 5

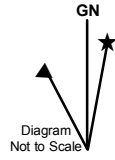
Storm Tide Zones
Broward County, 2010
 Scale - 1:24,000 Feet
 0 2,000
 USNG Page **17R NJ 68 95**
 Map Plate **115**



This map is for reference & planning purposes only. Hurricane evacuation decision-making and growth management implementation are local responsibilities. Please consult with local authorities.



US National Grid
100,000-m Square ID
NJ
Grid Zone Designation
17R
Datum = NAD 1983, 1,000-m USNG



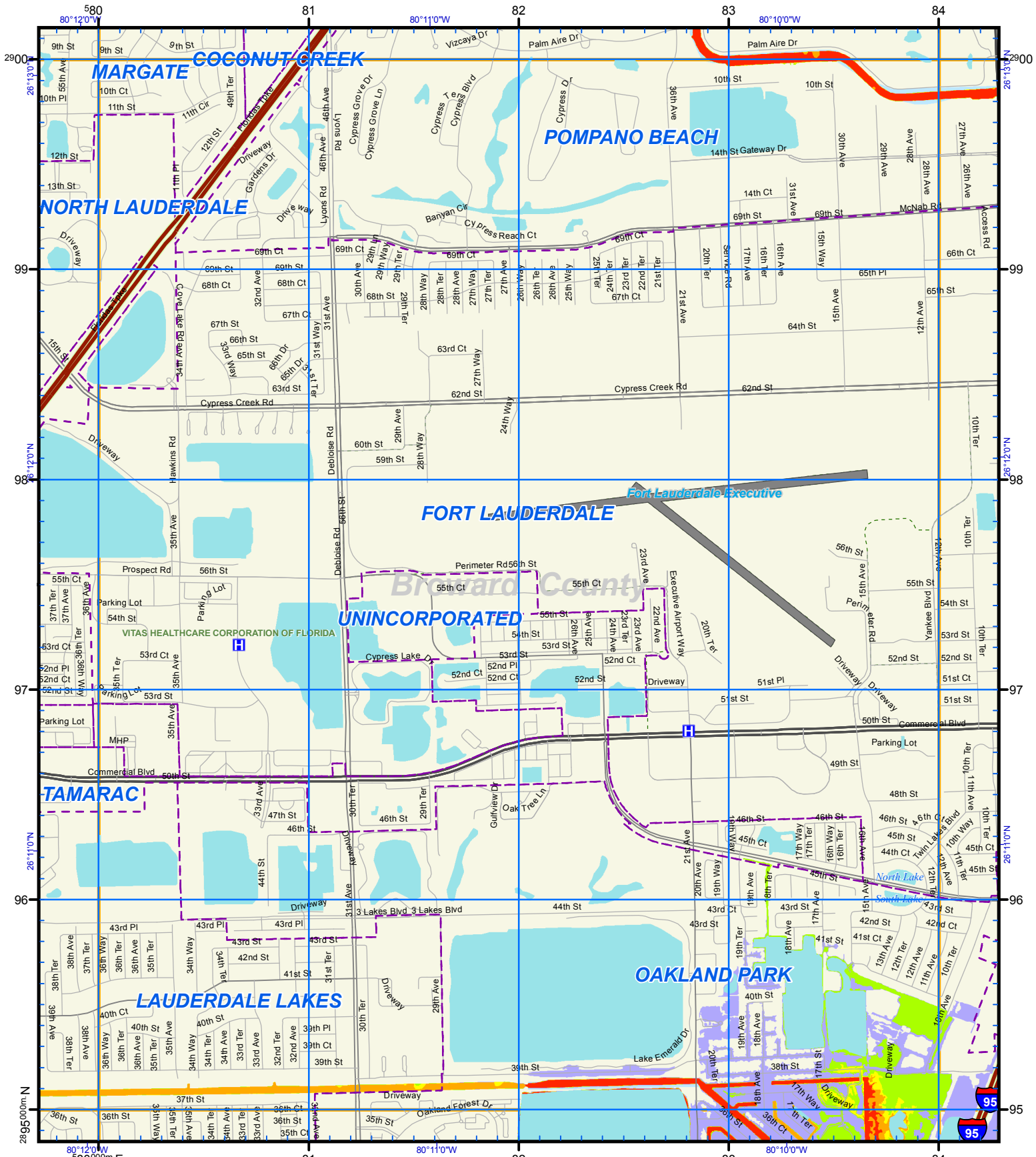
- Notes:
1. Surge limits are based on still water storm tide height elevation above NAVD88 at high tide with no wave setup.
 2. Total Storm Tide limits were derived from Maximum of Maximum surge heights over LIDAR based digital elevation.
 3. The Points of Reference are locations determined to be relevant to emergency management officials.

ATLAS LEGEND

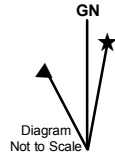
| | | | |
|--|----------------------------|------------|---|
| | HOSPITAL | Cat | |
| | Points of Reference | | 1 |
| | Evacuation Route | | 2 |
| | City Limits | | 3 |
| | NHD Lakes | | 4 |
| | NHD Major Water | | 5 |

Storm Tide Zones
Broward County, 2010
Scale - 1:24,000 Feet
0 2,000
USNG Page 17R NJ 76 95
Map Plate 117

This map is for reference & planning purposes only. Hurricane evacuation decision-making and growth management implementation are local responsibilities. Please consult with local authorities.



US National Grid
100,000-m Square ID
NJ
Grid Zone Designation
17R
Datum = NAD 1983, 1,000-m USNG



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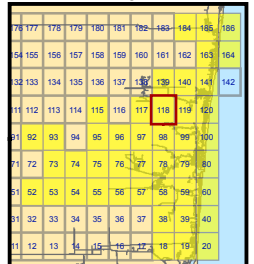
ATLAS LEGEND

- HOSPITAL
- Points of Reference
- Evacuation Route
- City Limits
- NHD Lakes
- NHD Major Water

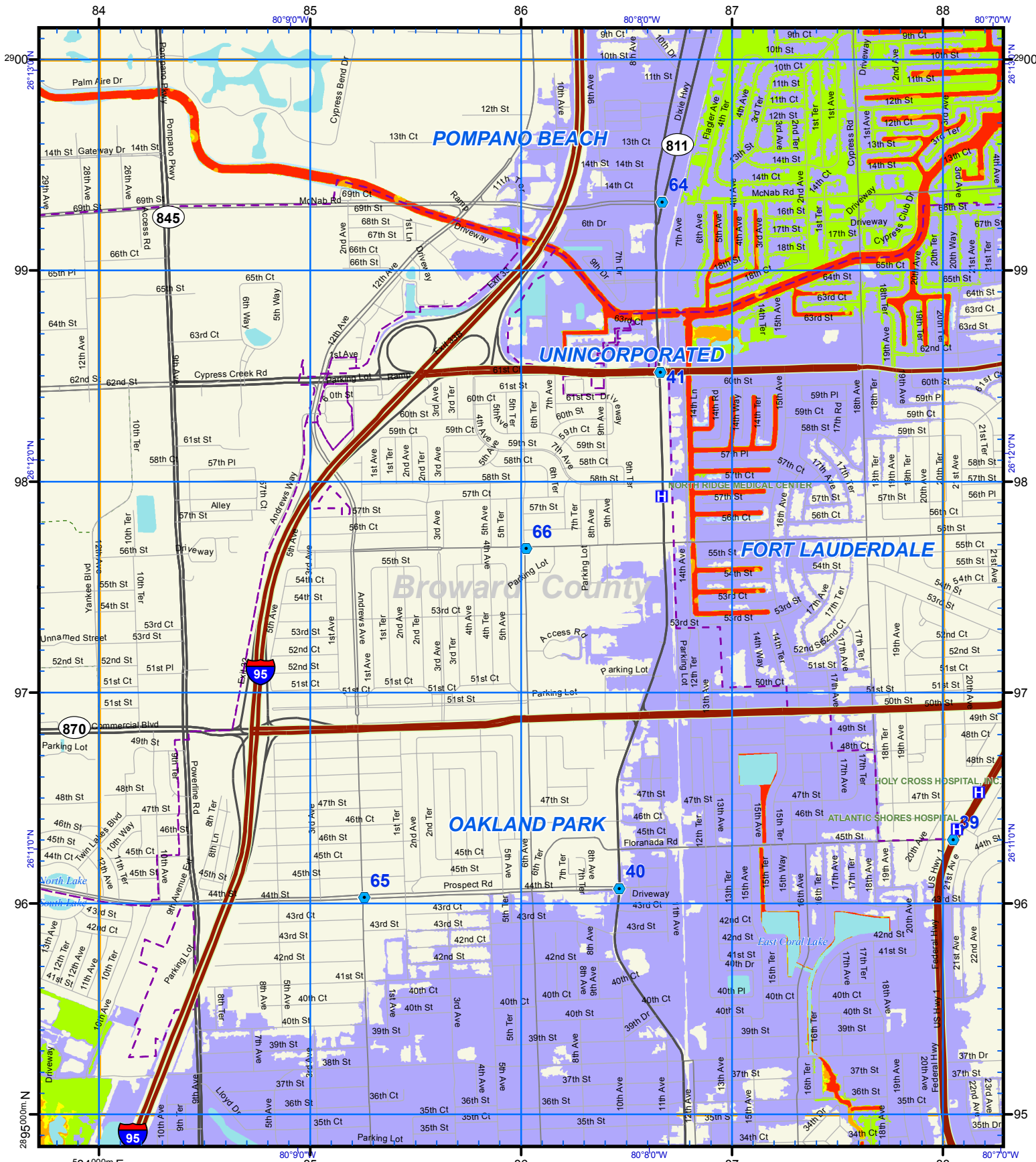
Cat

- 1
- 2
- 3
- 4
- 5

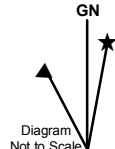
Storm Tide Zones
Broward County, 2010
Scale - 1:24,000 Feet
0 2,000
USNG Page **17R NJ 80 95**
Map Plate **118**



This map is for reference & planning purposes only. Hurricane evacuation decision-making and growth management implementation are local responsibilities. Please consult with local authorities.



US National Grid
 100,000-m Square ID
NJ
 Grid Zone Designation
17R
 Datum = NAD 1983, 1,000-m USNG



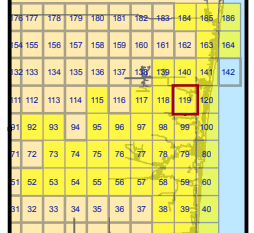
- Notes:**
1. Surge limits are based on still water storm tide height elevation above NAVD88 at high tide with no wave setup.
 2. Total Storm Tide limits were derived from Maximum of Maximums surge heights over LIDAR based digital elevation.
 3. The Points of Reference are locations determined to be relevant to emergency management officials.

ATLAS LEGEND

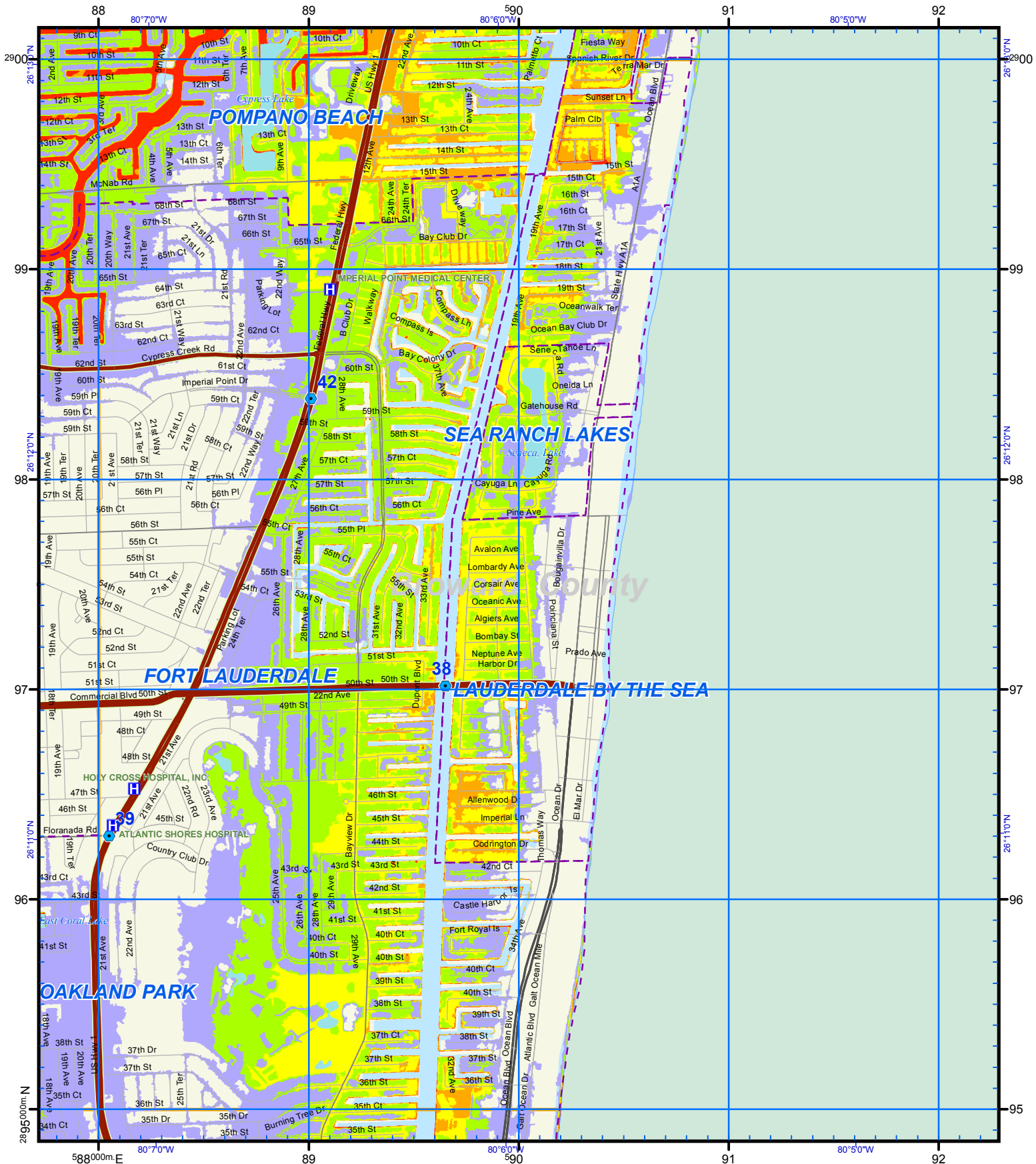
| | | |
|--|----------------------------|------------|
| | HOSPITAL | Cat |
| | Points of Reference | |
| | Evacuation Route | |
| | City Limits | |
| | NHD Lakes | |
| | NHD Major Water | |

Storm Tide Zones
Broward County, 2010
 Scale - 1:24,000

 USNG Page **17R NJ 84 95**
 Map Plate **119**



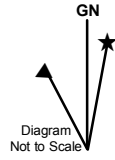
This map is for reference & planning purposes only. Hurricane evacuation decision-making and growth management implementation are local responsibilities. Please consult with local authorities.



US National Grid
100,000-m Square ID
NJ

Grid Zone Designation
17R

Datum = NAD 1983, 1,000-m USNG



- Notes:
1. Surge limits are based on still water storm tide height elevation above NAVD88 at high tide with no wave setup.
 2. Total Storm Tide limits were derived from Maximum of Maximums surge heights over LIDAR based digital elevation.
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ATLAS LEGEND

- HOSPITAL
- Points of Reference
- Evacuation Route
- City Limits
- NHD Lakes
- NHD Major Water

Cat

- 1
- 2
- 3
- 4
- 5

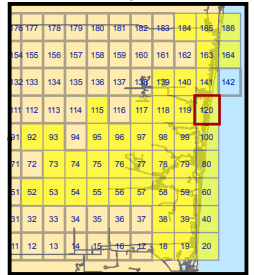
Storm Tide Zones
Broward County, 2010

Scale - 1:24,000

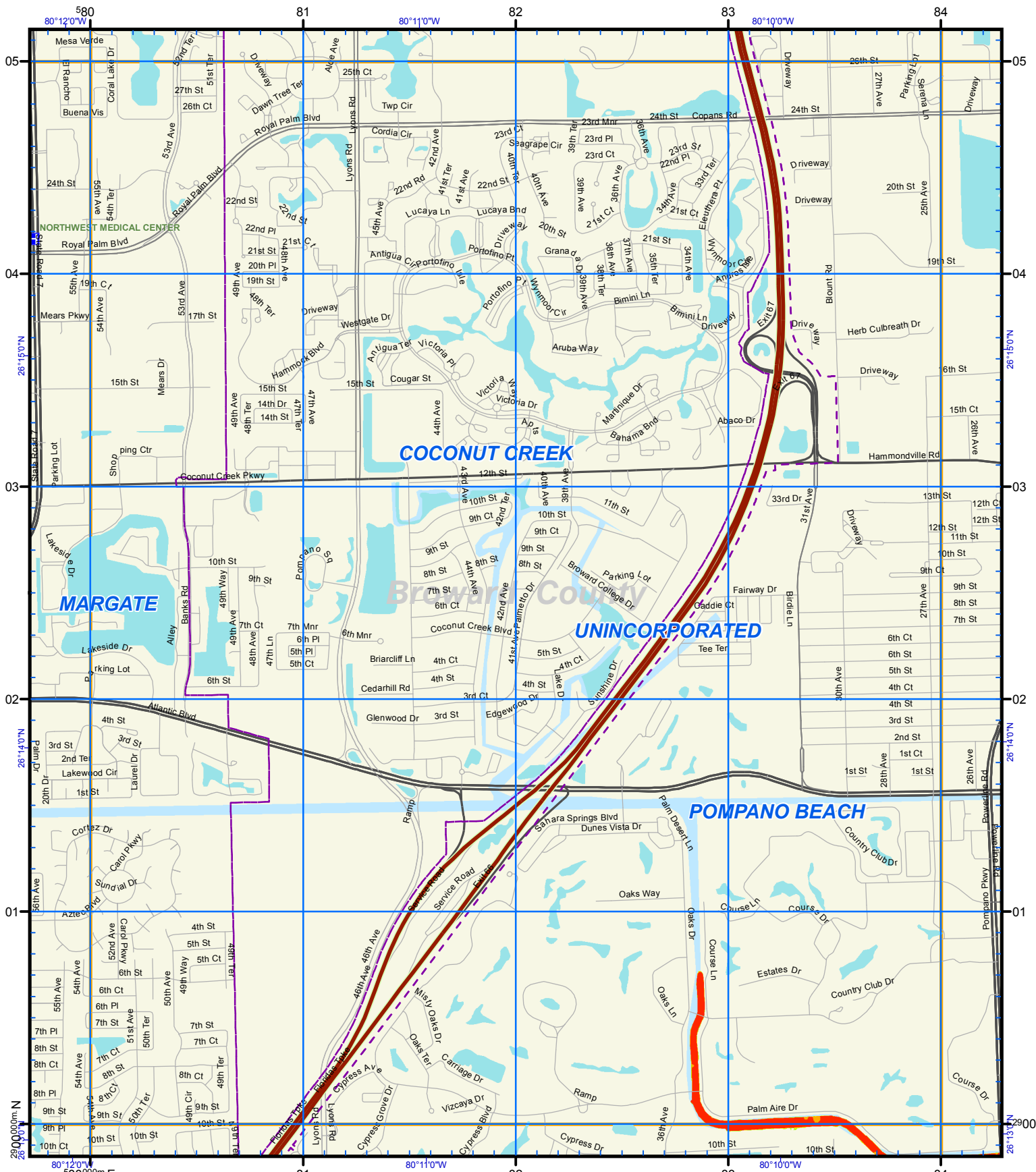
0 2,000 Feet

USNG Page 17R NJ 88 95

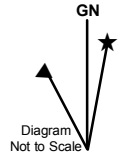
Map Plate 120



This map is for reference & planning purposes only. Hurricane evacuation decision-making and growth management implementation are local responsibilities. Please consult with local authorities.



US National Grid
 100,000-m Square ID
NK
 Grid Zone Designation
17R
 Datum = NAD 1983, 1,000-m USNG



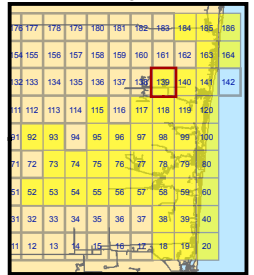
Notes:

1. Surge limits are based on still water storm tide height elevation above NAVD88 at high tide with no wave setup.
2. Total Storm Tide limits were derived from Maximum of Maximums surge heights over LIDAR based digital elevation.
3. The Points of Reference are locations determined to be relevant to emergency management officials.

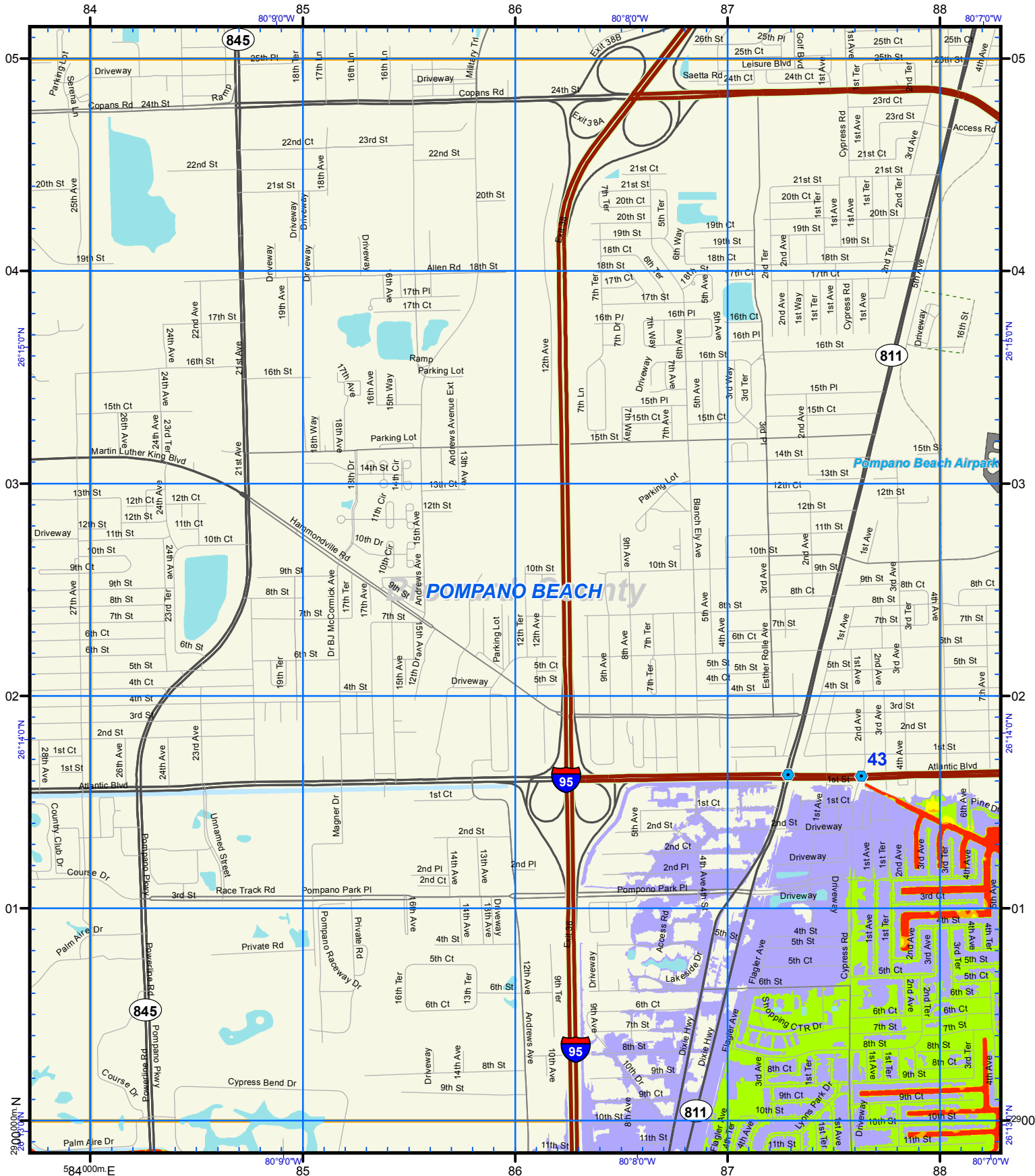
ATLAS LEGEND

| | |
|---------------------|------------|
| HOSPITAL | Cat |
| Points of Reference | 1 |
| Evacuation Route | 2 |
| City Limits | 3 |
| NHD Lakes | 4 |
| NHD Major Water | 5 |

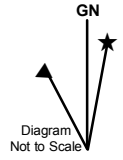
Storm Tide Zones
 Broward County, 2010
 Scale - 1:24,000
 0 2,000 Feet
 USNG Page 17R NK 80 00
 Map Plate 139



This map is for reference & planning purposes only. Hurricane evacuation decision-making and growth management implementation are local responsibilities. Please consult with local authorities.



US National Grid
100,000-m Square ID
NK
Grid Zone Designation
17R
Datum = NAD 1983, 1,000-m USNG

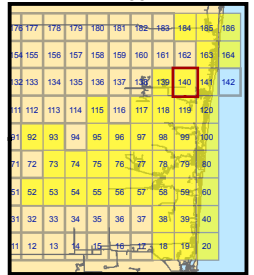


Notes:
1. Surge limits are based on still water storm tide height elevation above NAVD88 at high tide with no wave setup.
2. Total Storm Tide limits were derived from Maximum of Maximums surge heights over LIDAR based digital elevation.
3. The Points of Reference are locations determined to be relevant to emergency management officials.

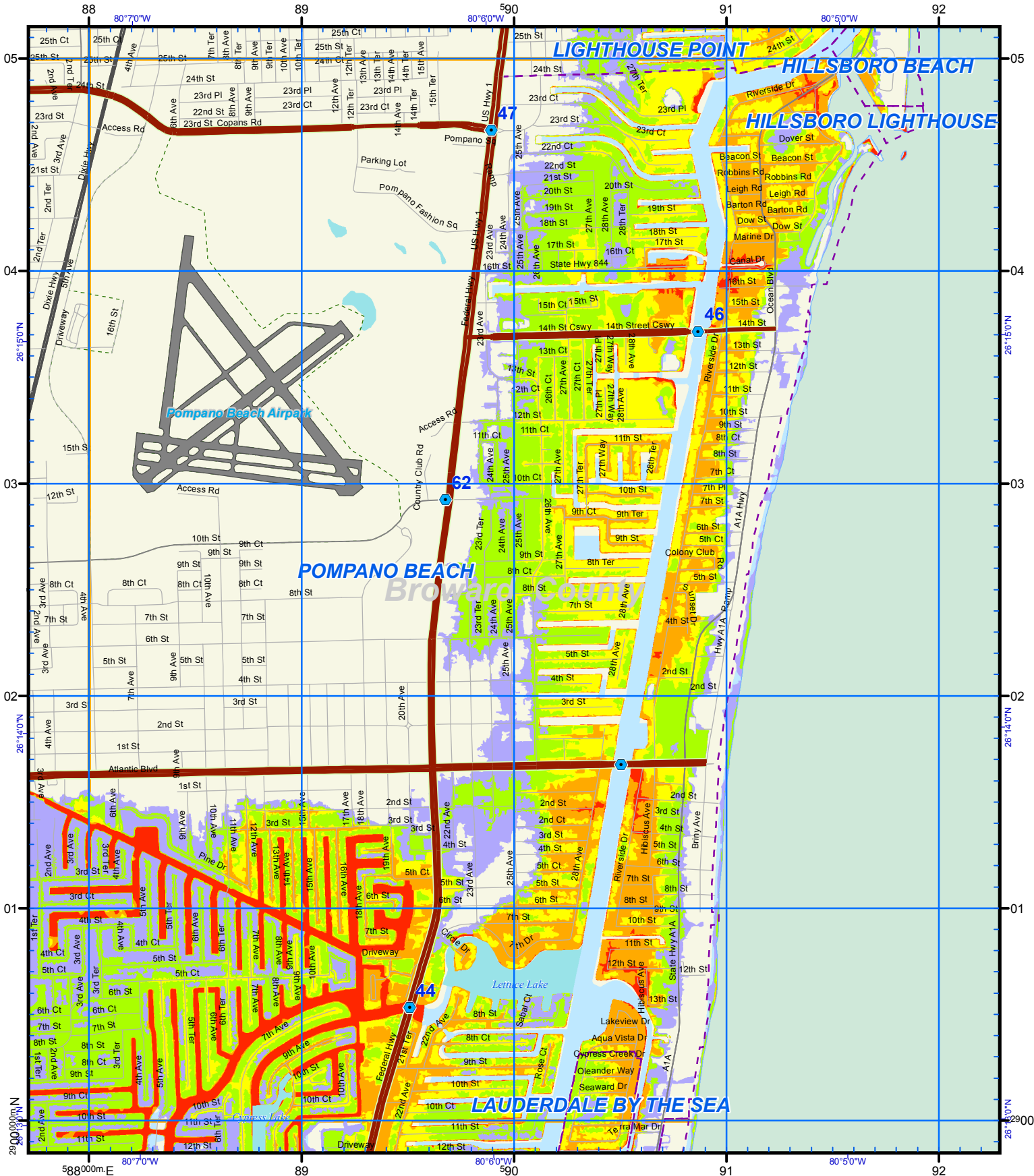
ATLAS LEGEND

| | |
|---------------------|------------|
| HOSPITAL | Cat |
| Points of Reference | 1 |
| Evacuation Route | 2 |
| City Limits | 3 |
| NHD Lakes | 4 |
| NHD Major Water | 5 |

Storm Tide Zones
Broward County, 2010
Scale - 1:24,000 Feet
0 2,000
USNG Page 17R NK 84 00
Map Plate 140



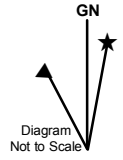
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US National Grid
100,000-m Square ID
NK

Grid Zone Designation
17R

Datum = NAD 1983, 1,000-m USNG



Notes:

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2. Total Storm Tide limits were derived from Maximum of Maximums surge heights over LIDAR based digital elevation.
3. The Points of Reference are locations determined to be relevant to emergency management officials.

ATLAS LEGEND

| | |
|---------------------|------------|
| HOSPITAL | Cat |
| Points of Reference | 1 |
| Evacuation Route | 2 |
| City Limits | 3 |
| NHD Lakes | 4 |
| NHD Major Water | 5 |

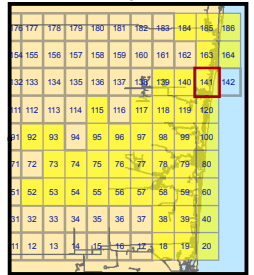
Storm Tide Zones
Broward County, 2010

Scale - 1:24,000

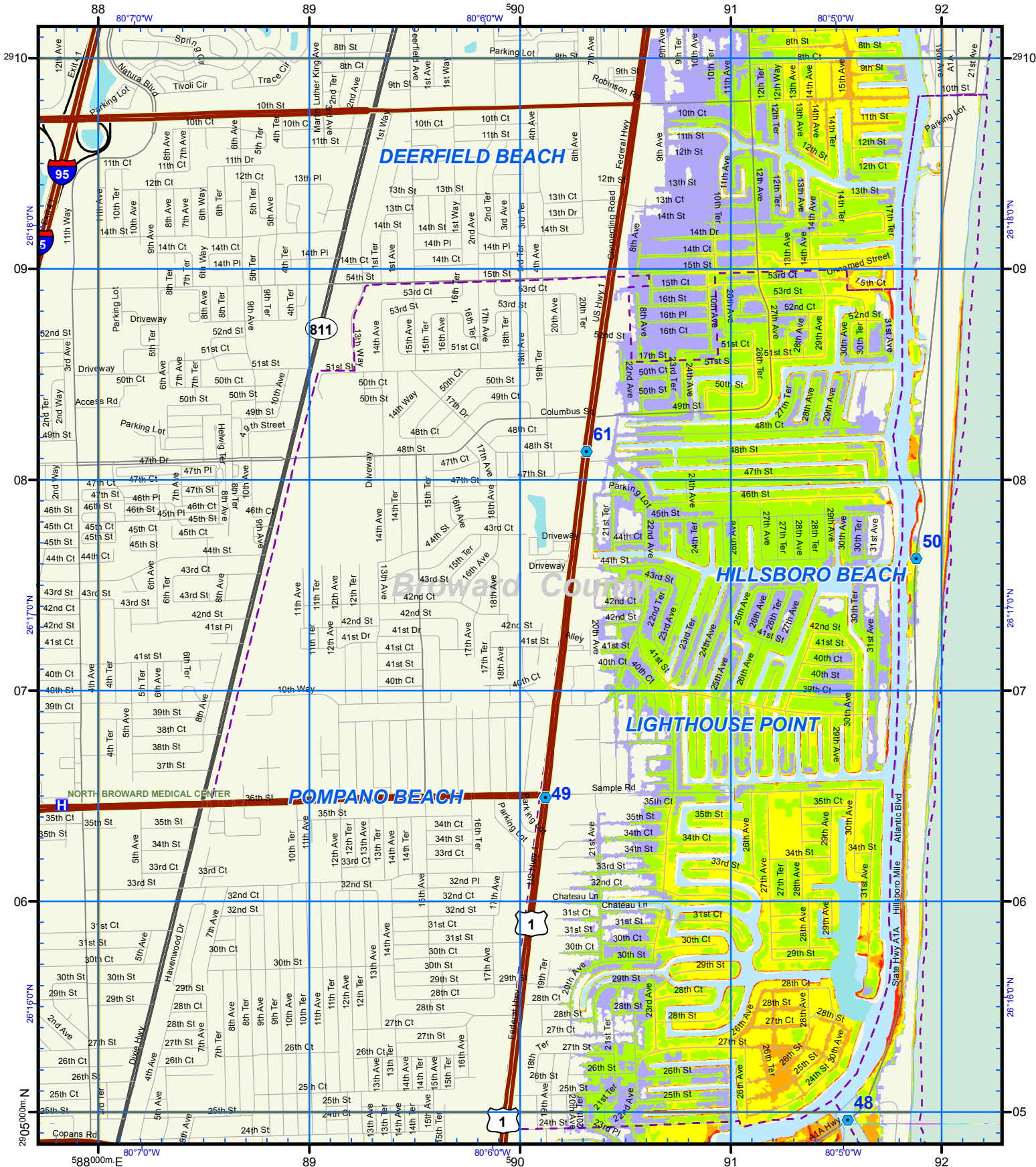
0 2,000 Feet

USNG Page 17R NK 88 00

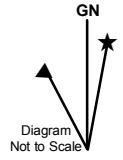
Map Plate 141



This map is for reference & planning purposes only. Hurricane evacuation decision-making and growth management implementation are local responsibilities. Please consult with local authorities.



US National Grid
100,000-m Square ID
NK
Grid Zone Designation
17R
Datum = NAD 1983, 1,000-m USNG

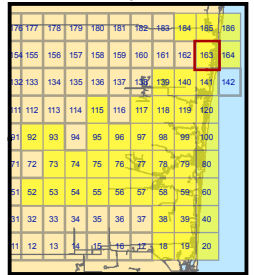


- Notes:**
1. Surge limits are based on still water storm tide height elevation above NAVD88 at high tide with no wave setup.
 2. Total Storm Tide limits were derived from Maximum of Maximums surge heights over LIDAR based digital elevation.
 3. The Points of Reference are locations determined to be relevant to emergency management officials.

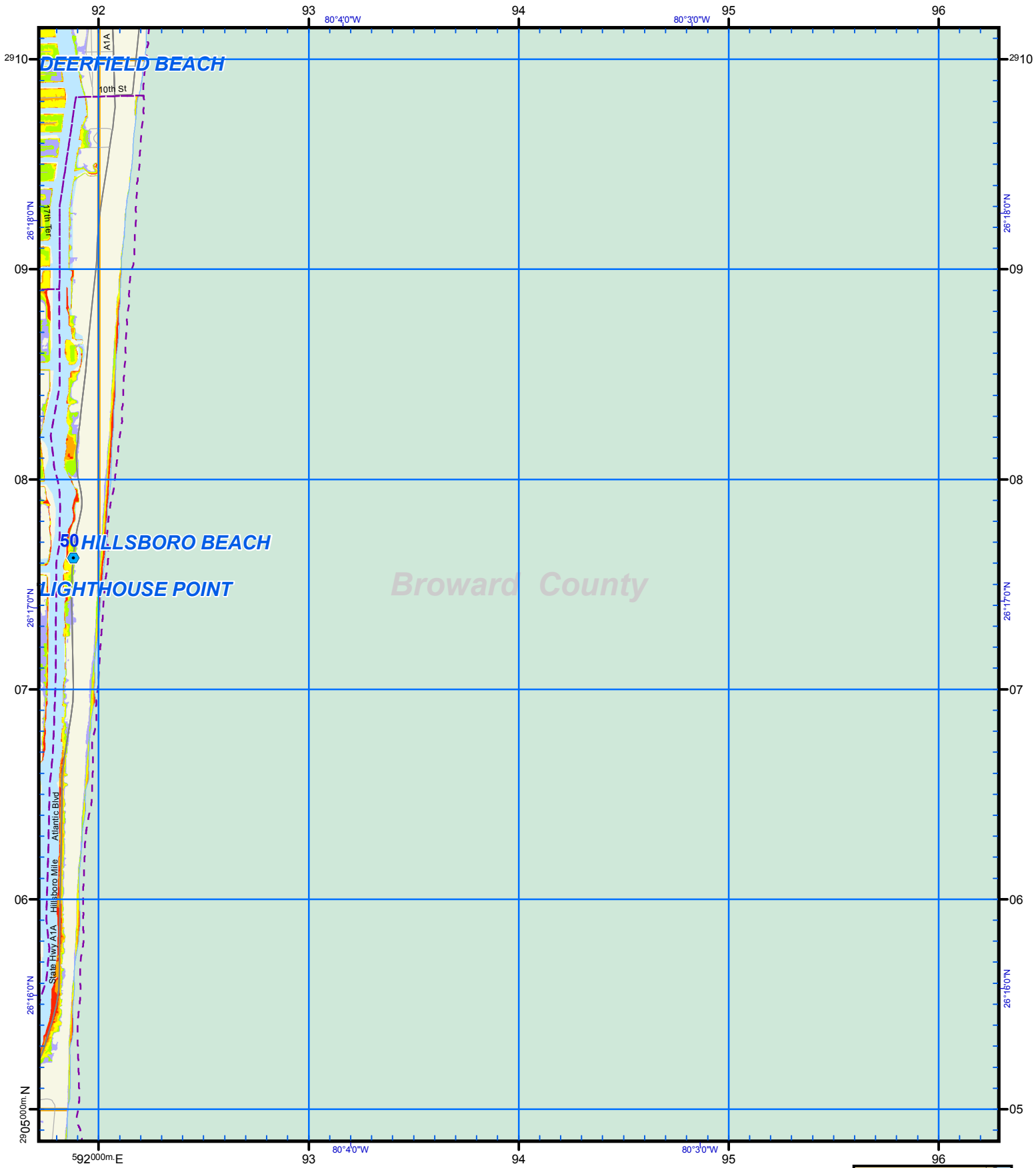
ATLAS LEGEND

| | |
|---------------------|-------|
| HOSPITAL | Cat 1 |
| Points of Reference | Cat 2 |
| Evacuation Route | Cat 3 |
| City Limits | Cat 4 |
| NHD Lakes | Cat 5 |
| NHD Major Water | |

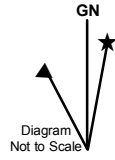
Storm Tide Zones
Broward County, 2010
Scale - 1:24,000
0 2,000 Feet
USNG Page 17R NK 88 05
Map Plate 163



This map is for reference & planning purposes only. Hurricane evacuation decision-making and growth management implementation are local responsibilities. Please consult with local authorities.



US National Grid
 100,000-m Square ID
NK
 Grid Zone Designation
17R
 Datum = NAD 1983, 1,000-m USNG



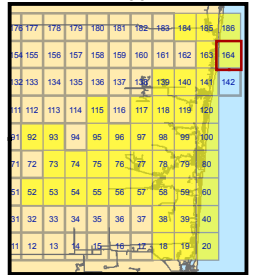
Notes:
 1. Surge limits are based on still water storm tide height elevation above NAVD88 at high tide with no wave setup.
 2. Total Storm Tide limits were derived from Maximum of Maximums surge heights over LIDAR based digital elevation.
 3. The Points of Reference are locations determined to be relevant to emergency management officials.

ATLAS LEGEND

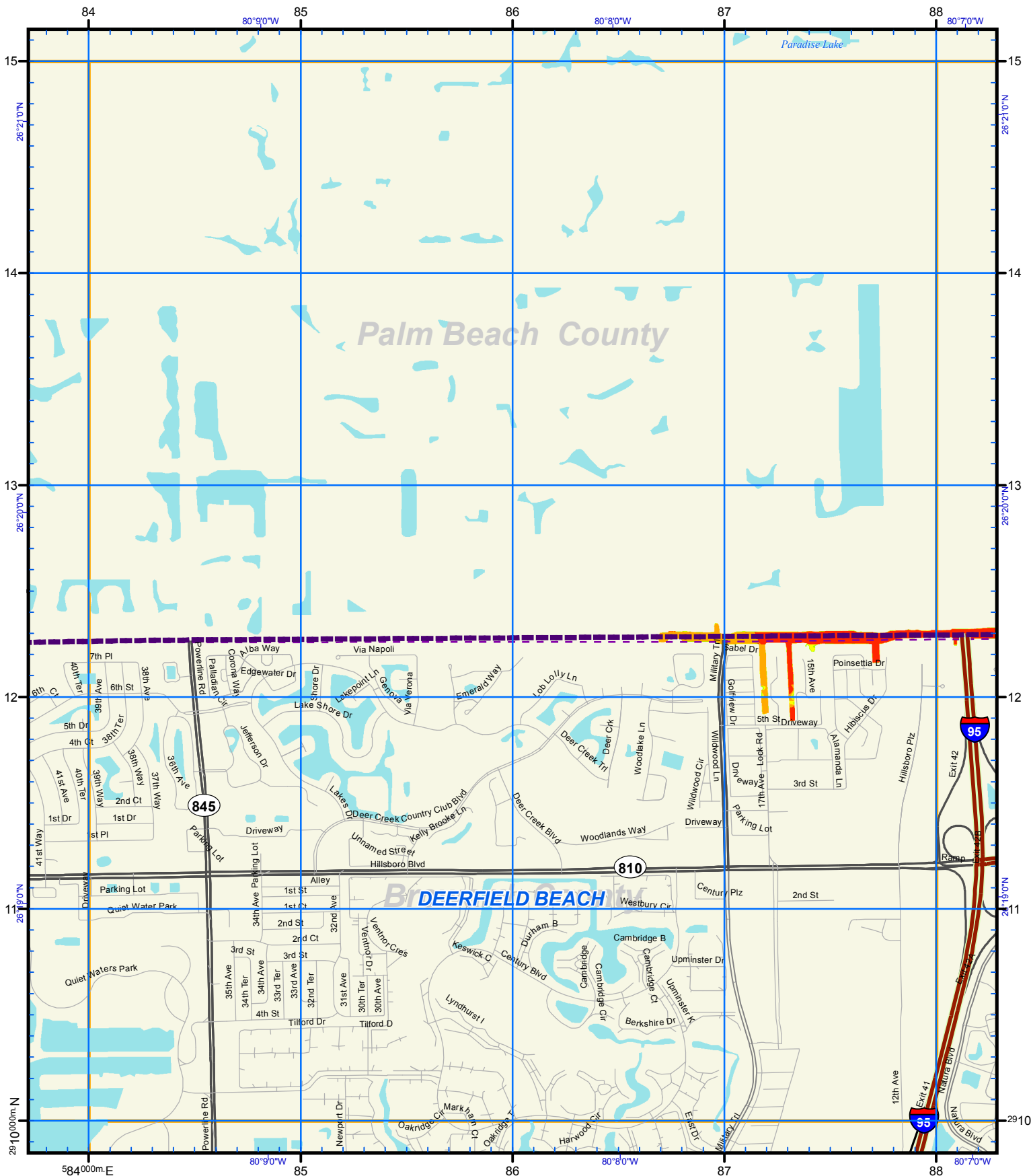
| | |
|---------------------|-------|
| HOSPITAL | Cat 1 |
| Points of Reference | Cat 2 |
| Evacuation Route | Cat 3 |
| City Limits | Cat 4 |
| NHD Lakes | Cat 5 |
| NHD Major Water | |

Storm Tide Zones
Broward County, 2010
 Scale - 1:24,000

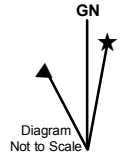
 USNG Page **17R NK 92 05**
 Map Plate **164**



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US National Grid
100,000-m Square ID
NK
Grid Zone Designation
17R
Datum = NAD 1983, 1,000-m USNG

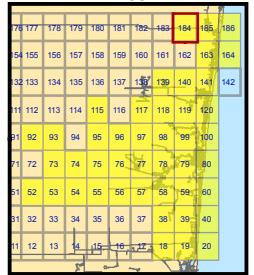


Notes:
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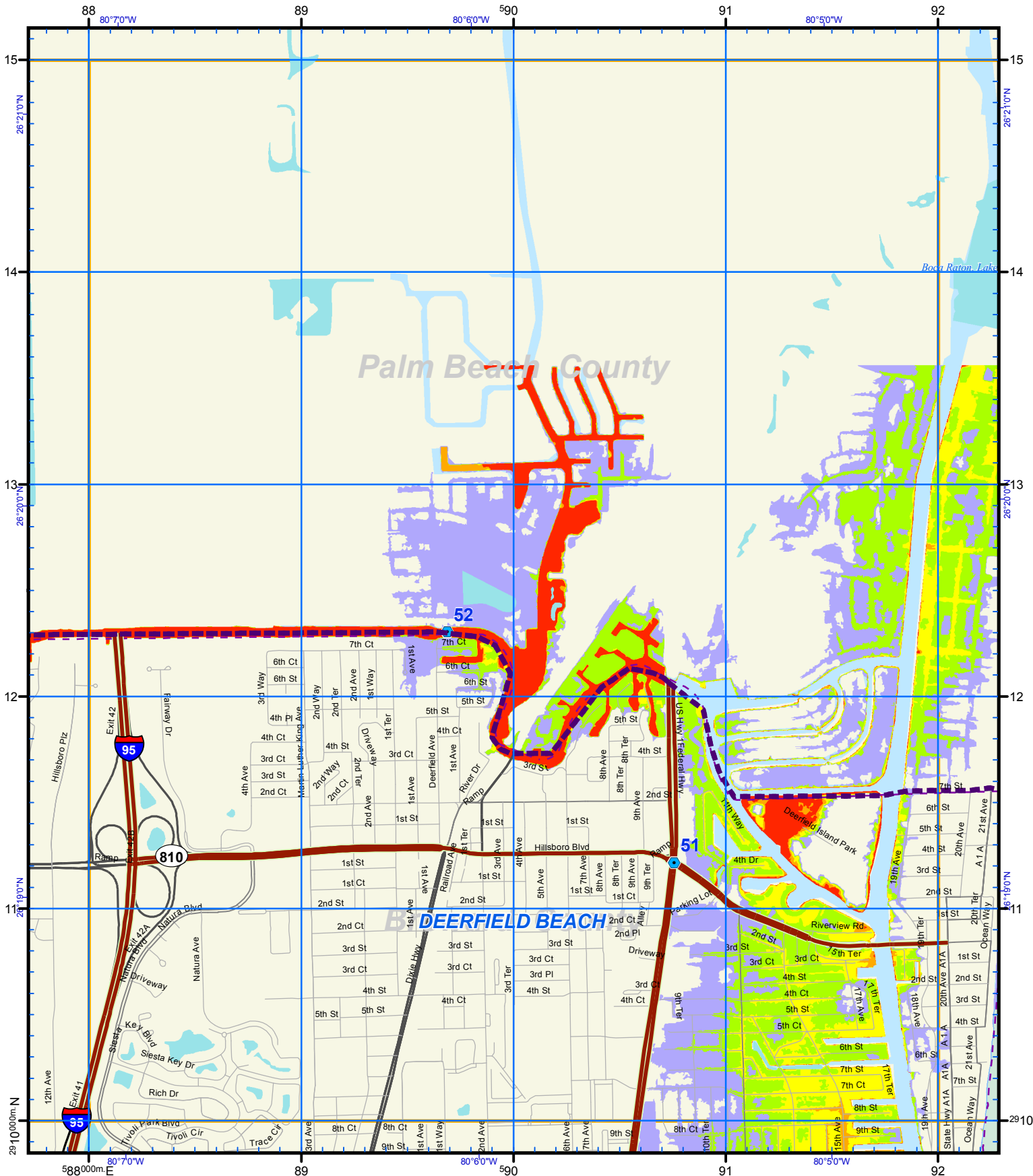
ATLAS LEGEND

| | |
|---------------------|------------|
| HOSPITAL | Cat |
| Points of Reference | 1 |
| Evacuation Route | 2 |
| City Limits | 3 |
| NHD Lakes | 4 |
| NHD Major Water | 5 |

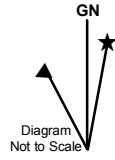
Storm Tide Zones
Broward County, 2010
Scale - 1:24,000
0 2,000 Feet
USNG Page 17R NK 84 10
Map Plate 184



This map is for reference & planning purposes only. Hurricane evacuation decision-making and growth management implementation are local responsibilities. Please consult with local authorities.



US National Grid
 100,000-m Square ID
NK
 Grid Zone Designation
17R
 Datum = NAD 1983, 1,000-m USNG



Notes:

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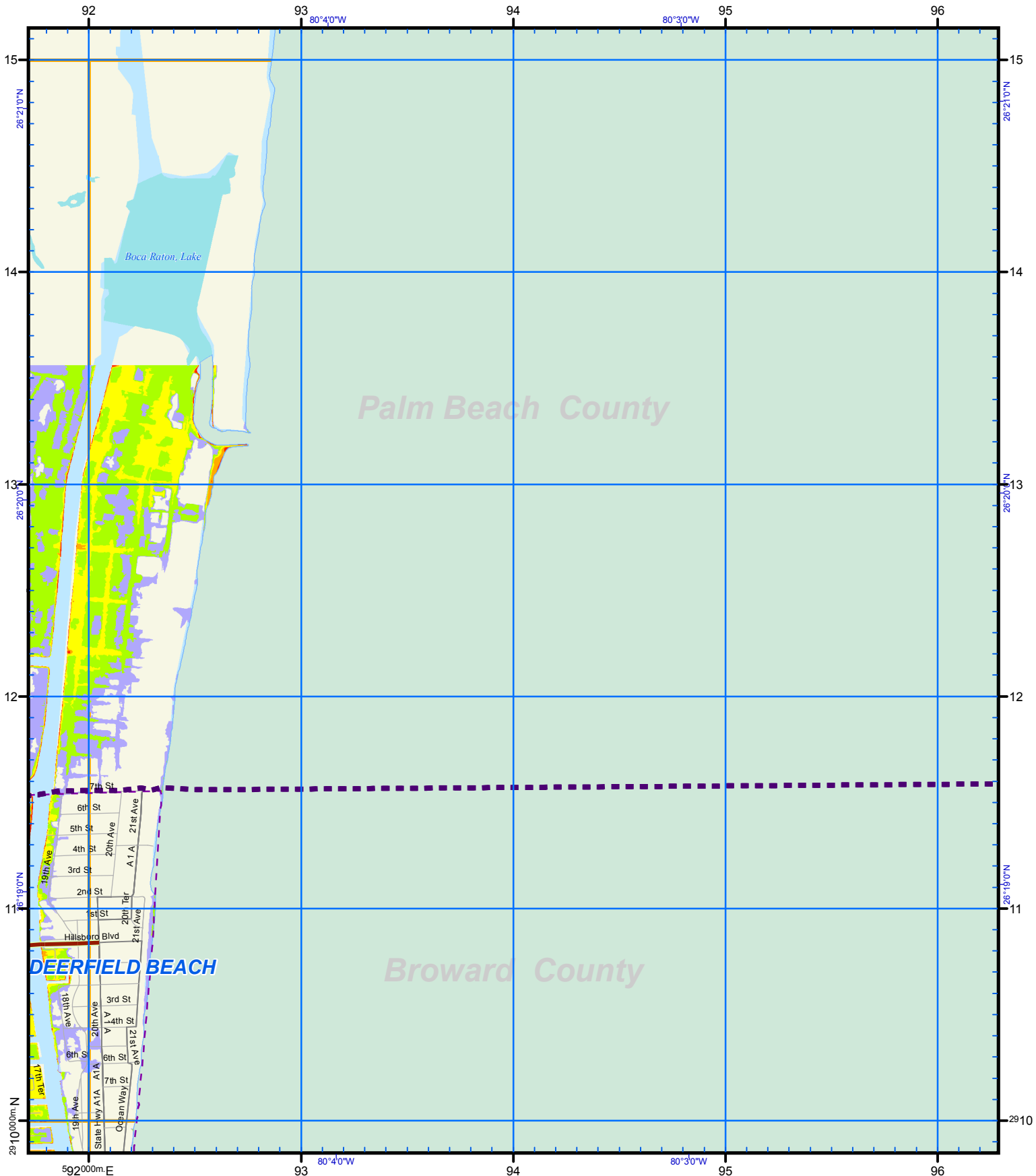
ATLAS LEGEND

| | |
|---------------------|-------|
| HOSPITAL | Cat 1 |
| Points of Reference | Cat 2 |
| Evacuation Route | Cat 3 |
| City Limits | Cat 4 |
| NHD Lakes | Cat 5 |
| NHD Major Water | |

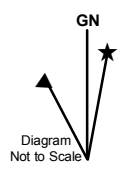
Storm Tide Zones
 Broward County, 2010
 Scale - 1:24,000
 0 2,000 Feet
 USNG Page 17R NK 88 10
 Map Plate 185

| | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 17 | 177 | 178 | 179 | 180 | 181 | 182 | 183 | 184 | 185 | 186 | |
| 88 | 84 | 155 | 156 | 157 | 158 | 159 | 160 | 161 | 162 | 163 | 164 |
| 11 | 32 | 133 | 134 | 135 | 136 | 137 | 138 | 139 | 140 | 141 | 142 |
| 12 | 11 | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 121 |
| 13 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 | 101 |
| 14 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 |
| 15 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 |
| 16 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 |
| 17 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 |

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US National Grid
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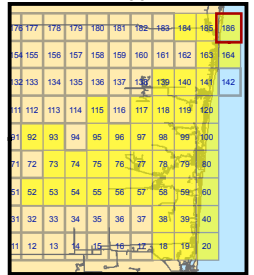


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ATLAS LEGEND

| | |
|---------------------|-------|
| HOSPITAL | Cat 1 |
| Points of Reference | Cat 2 |
| Evacuation Route | Cat 3 |
| City Limits | Cat 4 |
| NHD Lakes | Cat 5 |
| NHD Major Water | |

Storm Tide Zones
 Broward County, 2010
 Scale - 1:24,000
 0 2,000 Feet
 USNG Page 17R NK 92 10
 Map Plate 186



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Funding was provided by the Florida Legislature with funding from the Federal Emergency Management Agency (FEMA) through the Florida Division of Emergency Management. Local match was provided by the South Florida Regional Planning Council and the counties of Broward, Miami-Dade and Monroe.

Florida Division of Emergency Management
David Halstead, Director
2255 Shumard Oak Boulevard
Tallahassee, Florida 32399



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Statewide Program Manager: Jeffery Alexander, Northeast Florida Regional Council