

Coastal Surge Inundation Mapping on the New Jersey Turnpike and Garden State Parkway



New Jersey Turnpike Authority Woodbridge, NJ
Project Location: Cape May, NJ to Fort Lee, NJ and Carney's Point, NJ

After Hurricane Sandy caused widespread disruptions on the New Jersey Turnpike (NJTP) and Garden State Parkway (GSP), the New Jersey Turnpike Authority (NJTA) engaged Michael Baker International (Baker) to assist in developing coastal surge inundation mapping to better prepare for future flooding from coastal events.

Elevation Data:

A 2012 10-foot Digital Elevation Model (DEM) was acquired from the State. Contours were generated for the inundation mapping. LiDAR Last Returns data was also acquired and utilized to identify the elevations of elevated roadways not included in the Bare Earth DEM.

Inundation Mapping:

Coastal models and historic data were reviewed to determine mapping elevations. Coastal surge elevations ranging from 6 to 20 feet were chosen. Each mapped elevation was compared against the NJTP and GSP to determine inundated roadway segments.

Roadway Profile:

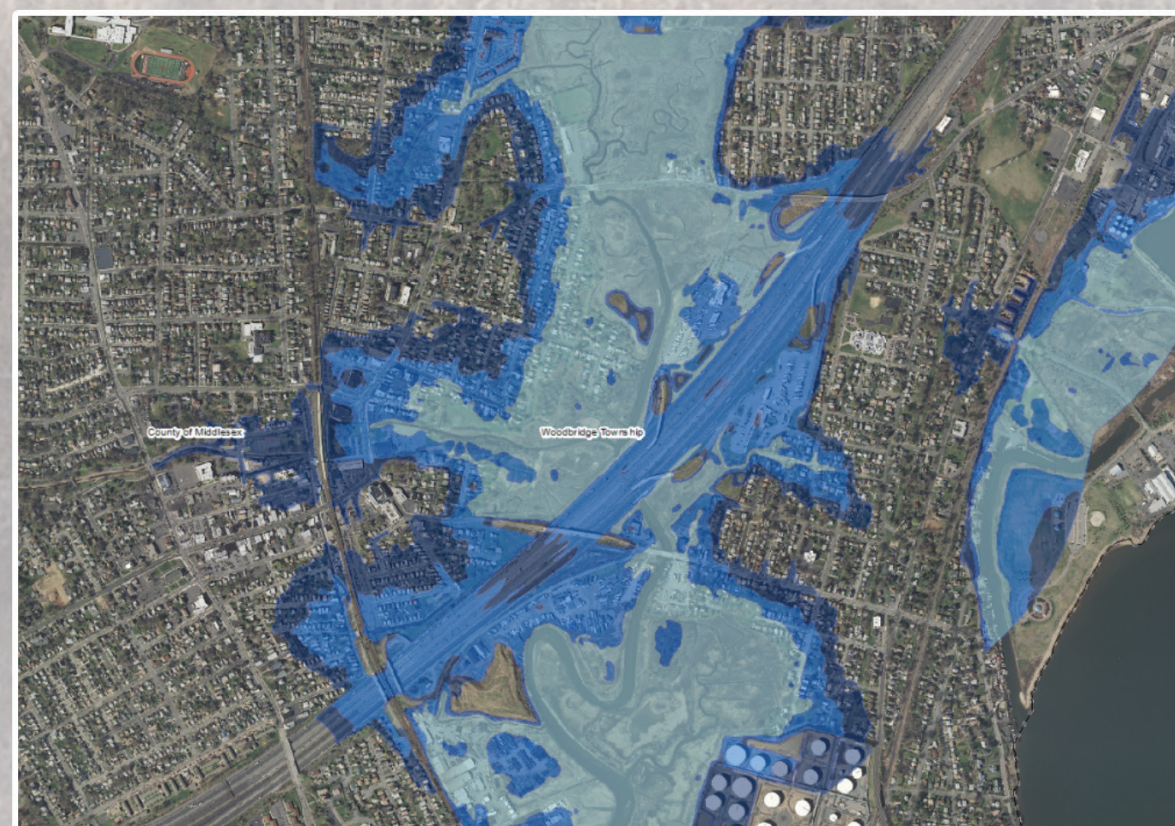
Roadway elevation points were taken every 1/100th of a mile along the NJTP and GSP. Last Returns data was used in the northern part of the state, where there are many elevated sections of the NJTP that are not included in the Bare Earth DEM.

Enhanced GIS Portal:

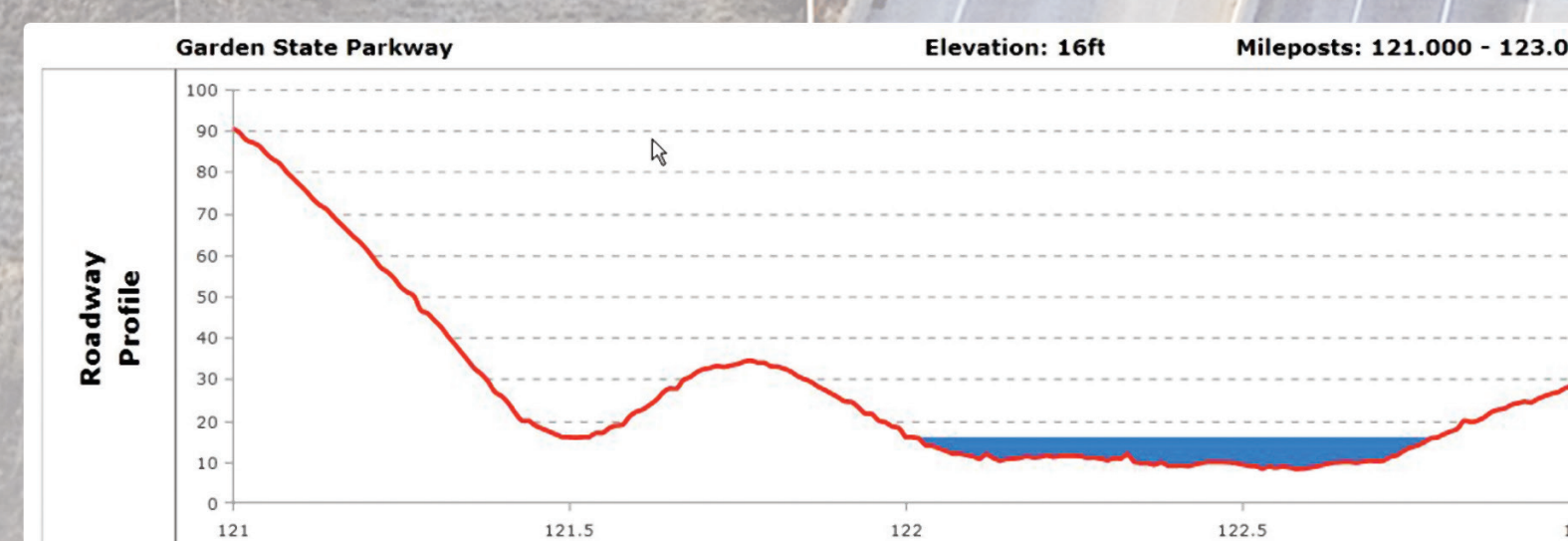
Inundation areas and roadway profiles were added to the Straight Line Diagrams in NJTA's Spatially Enabled Web Portal (SEWP). Inundation levels and roadway sections can be chosen to see the extent and depth of flooding.



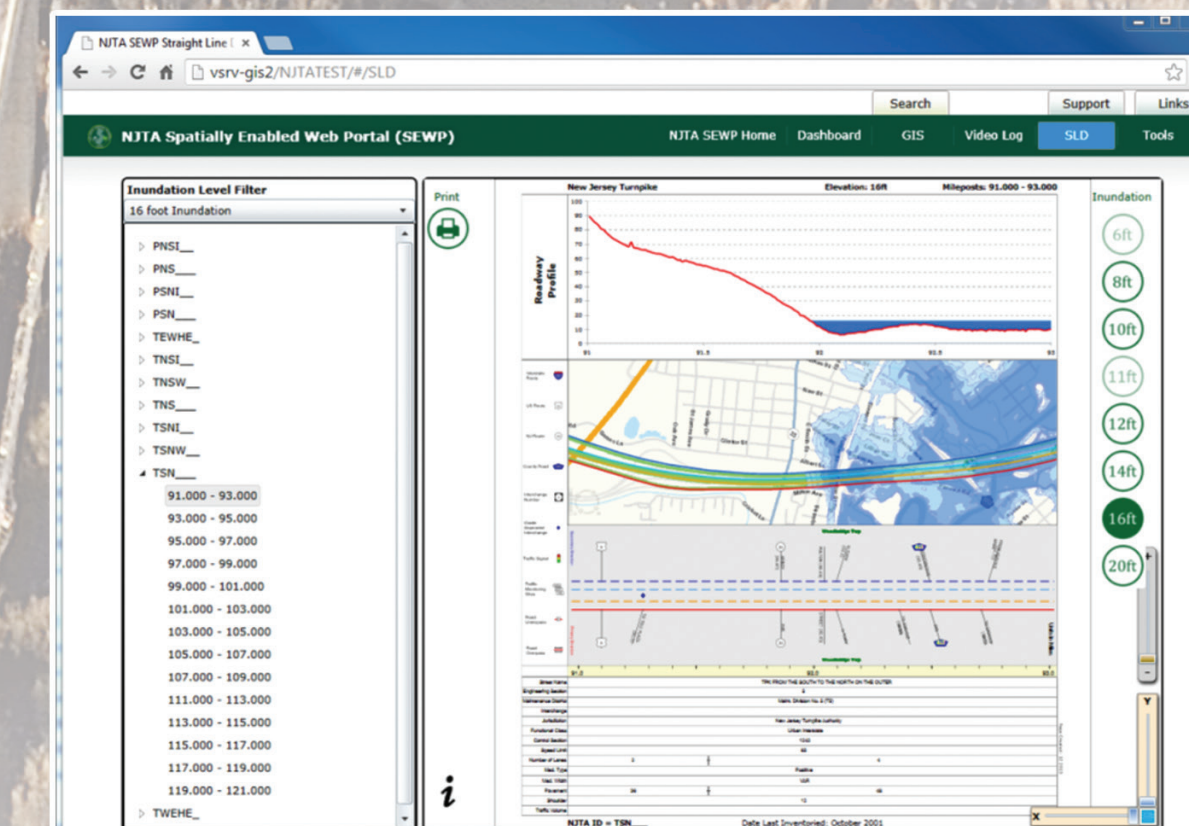
The statewide 10-foot DEM was created from various LiDAR datasets flown at different times.



All lanes of the NJTP in Woodbridge, NJ were covered in several feet of water during Hurricane Sandy.



The roadway profile was plotted by elevation and milepost. Last Returns data included overpasses and vehicles which were removed from the profile points. Inundation areas were added.



NJTA emergency managers can use the SEWP for storm preparations. A PDF was also created for mobile devices.