



# Coastal Hazard Analysis Modeling Program (CHAMP) Database Interpretation

## Overview

FEMA is committed to continuing the recovery process in New Jersey by providing the best available flood risk assessments to help guide communities in their efforts to reduce the impact of flood events and protect lives and property from future damages. To accomplish this, FEMA is implementing a comprehensive outreach initiative to share data and to ensure that affected communities are fully engaged and informed throughout the Flood Insurance Rate Map (FIRM) development process.

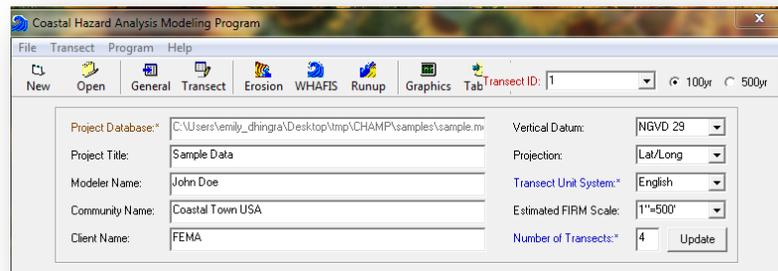
FEMA has prepared a series of fact sheets that provide important information regarding the specific types of data that communities will receive. In addition to describing the data, these fact sheets provide guidance on how communities can use the data to better understand their own flood risk, as a tool in the decision making process, and to plan for mitigation activities. Other fact sheets available in this series include:

- Transect Data and Field Reconnaissance: Important Mapping Process Inputs
- Storm Surge GIS Data: Important Mapping Process Input
- New Jersey Preliminary Work Map Interpretation

## Coastal Hazard Analysis Modeling Program (CHAMP)

The Coastal Hazard Analysis Modeling Program (CHAMP) is a software program used by coastal engineers to conduct coastal flood hazard assessments for Flood Insurance Studies. The program allows users to enter data, perform coastal engineering analyses, view and tabulate results, and collect summary information for representative transect locations along a coastline. To use the model, the modeler needs an understanding of the input and output data in addition to coastal engineering and mapping principles. The model requires starting wave conditions (significant wave height and wave period), stillwater elevation (SWEL) data, terrain (topography and bathymetry) data, and the obstructions to waves.

Using CHAMP, coastal engineers evaluate storm-induced erosion, wave height and wave runup analyses, plot summary graphics of the results, and create summary tables and reports. The graphic below shows the graphical user interface with the “Erosion,” “WHAFIS,” and “Runup” tabs at the top.



CHAMP Graphical User Interface

## Key Terms

### Stillwater Elevation (SWEL)

Projected elevation flood waters would rise to in the absence of waves which is determined when modeling coastal storm surge.

### Wave Runup

The rush of water that extends inland when waves come ashore.

### Wave Height

The vertical distance between the wave crest and the wave trough.

### Bathymetry

The measurement of ocean, sea, or lake bottom elevation.

### WHAFIS

A model used to perform a coastal flood study which incorporates the effects of wind-borne wave action for communities along the Atlantic and Gulf Coasts.



The model output lists the wave height and the final Base Flood Elevation (BFE) which will be included on the FIRM. This data is listed in tabular form with a list of the station locations (along the transect), the controlling (final) wave height, and the wave crest elevation (which is the BFE). Below is an example of the model output.

PART2: CONTROLLING WAVE HEIGHTS, SPECTRAL PEAK WAVE PERIOD, AND WAVE CREST ELEVATIONS

LOCATION	CONTROLLING WAVE HEIGHT	SPECTRAL PEAK WAVE PERIOD	WAVE CREST ELEVATION
-23.00	9.45	12.70	19.01
.00	7.95	12.70	17.97
101.25	5.92	12.70	16.54
202.50	3.86	12.70	15.10
225.00	3.40	12.70	14.78
317.00	1.55	12.70	13.49
319.00	.01	12.70	12.41
590.00	.00	.00	12.40
650.00	.23	.57	12.52
700.00	.35	.69	12.57
800.00	.54	.86	12.63

Controlling wave height. The transition between greater than 3 ft. to less than 3 ft. is the transition between Zones VE and AE.

Base Flood Elevation (BFE)

Station location along transect

### Why this Data is Important

The results of the CHAMP modeling are a key component to the final BFEs shown on the FIRMs. The breaking wave height is what determines the difference between a Zone VE and Zone AE within the coastal Special Flood Hazard Area (SHFA), which changes the way a structure has to be built to be compliant with minimum flood plain regulation.

### How the Data can be Used

CHAMP allows the coastal engineer to visualize the profile data and modeling results. It can also be used by others to verify the erosion analysis and obstruction data used in the models, although specialized knowledge of coastal processes is needed to review and interpret the model input and output files.

### Where to Go for More Information

The New Jersey Department of Environmental Protection in coordination with FEMA will be hosting a series of webinars and community meetings to further explain the data that is received and answer questions about next steps. Please visit <http://www.Region2Coastal.com> for more information on FEMA's data sharing initiative with New Jersey's coastal communities.

### More Key Terms

#### Zone AE

An area of high flood risk subject to inundation by the 1% annual-chance flood (or Base Flood). Mandatory flood insurance purchase requirements and floodplain management standards apply within Zone AE on effective FIRMs.

#### Zone VE

An area of high flood risk with BFEs which is subject to inundation by the 1% annual-chance flood (or Base Flood) with additional hazards due to storm-induced velocity wave action. Zone VE is subject to more stringent building requirements and different flood insurance rates than other flood zones because these areas are exposed to a higher level of risk.