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PART 5: RUNUP2

for transect: CM-150

Station locations shifted by: 0.26 feet from their  
original location to set the shoreline to  
elevation 0 for RUNUP2 input

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RUNUP2 INPUT CONVERSIONS

for transect: CM-150

Incident significant wave height: 7.30 feet

Peak wave period: 13.55 seconds

Mean wave height: 4.57 feet

Local Depth below SWEL: 18.02 feet

Mean wave height deshoaled using Hunt approximation for  
celerity assuming constant wave energy flux.

References: R.G. Dean and R.A. Dalrymple. 2000. Water

Wave Mechanics for Engineers and Scientists. World  
Scientific Publishing Company, River Edge New Jersey

USACE (1985), Direct Methods for Calculating Wavelength, CETN-1-17  
US Army Engineer Waterways Experiment Station Coastal Engineering  
Research Center, Vicksburg, MS

also see Coastal Engineering Manual Part II-3  
for discussion of shoaling coefficient

Depth,  $D = 18.02$

Period,  $T = 11.52$

Waveheight,  $H = 4.57$

Deep water wavelength,  $L0$  (ft)

$L0 = g \cdot T^2 / 2\pi$

$L0 = 32.17 \cdot 11.52^2 / 6.28 = 679.03$

Deep water wave celerity,  $C0$  (ft/s)

$C0 = L0 / T$

$C0 = 679.03 / 11.52 = 58.97$

Angular frequency,  $\sigma$  (rad/s)

$\sigma = 2\pi / T$

$\sigma = 6.28 / 11.52 = 0.55$

Hunts (1979) approximation for Celerity  $C1H$  (ft/s) at Depth  $D$  (ft)

$y = \sigma \cdot \sigma \cdot D / g$

$y = 0.55 \cdot 0.55 \cdot 18.02 / 32.17 = 0.17$

$C1H = \sqrt{g \cdot D / (y + 1. / (1 + 0.6522 \cdot y + 0.4622 \cdot y^2 + 0.0864 \cdot y^4 + 0.0675 \cdot y^5))}$  )

$C1H = 23.41$

Shoaling Coefficient  $KsH$

$KsH = \sqrt{C0 / C1H}$

$KsH = \sqrt{58.97 / 23.41} = 1.59$

Deepwater Wave Height  $H0\_H$  (ft)

$H0\_H = H / KsH$

$H0\_H = 4.57 / 1.59 = 2.88$

Deepwater mean wave height: 2.88 feet

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END RUNUP2 CONVERSIONS

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RUNUP2 RESULTS

for transect: CM-150

RUNUP2 SWEL:

8.90

8.90

8.90

8.90

8.90  
8.90  
8.90  
8.90  
8.90

RUNUP2 deepwater mean wave heights:

2.74  
2.74  
2.74  
2.88  
2.88  
2.88  
3.02  
3.02  
3.02

RUNUP2 mean wave periods:

10.94  
11.52  
12.09  
10.94  
11.52  
12.09  
10.94  
11.52  
12.09

RUNUP2 runup above SWEL:

12.10  
12.22  
12.40  
12.54  
12.68  
12.78  
13.00  
13.13  
13.25

RUNUP2 Mean runup height above SWEL: 12.68 feet

RUNUP2 2-percent runup height above SWEL: 27.89 feet

RUNUP2 2-percent runup elevation: 36.79 feet-NAVD88

RUNUP2 Messages:

Nonfatal Error, Check Output

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END RUNUP2 RESULTS

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ACES BEACH RUNUP

Incident significant wave height: 7.30 feet

Significant wave height deshoaled using Hunt equation

Deepwater significant wave height: 4.03 feet

Peak wave period: 13.55 seconds

Average beach Slope: 1:34.22 (H:V)

ACES RUNUP CALCULATED USING 'Aces\_Beach\_Runup.m'

ACES Beach 2-percent runup height above SWEL: 4.23 feet

ACES Beach 2-percent runup elevation: 13.13 feet-NAVD88

ACES BEACH RUNUP is valid

\_\_\_\_\_END ACES BEACH RESULTS\_\_\_\_\_

PART 5 COMPLETE\_\_\_\_\_