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PART 5: RUNUP2

for transect: CM-149

Station locations shifted by: 0.49 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-149

Incident significant wave height: 10.34 feet

Peak wave period: 13.61 seconds

Mean wave height: 6.47 feet

Local Depth below SWEL: 46.14 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,  $D = 46.14$

Period,  $T = 11.57$

Waveheight,  $H = 6.47$

Deep water wavelength,  $L0$  (ft)

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

$L0 = 32.17 \cdot 11.57^2 / 6.28 = 684.90$

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

$C0 = L0 / T$

$C0 = 684.90 / 11.57 = 59.22$

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

$\sigma = 2\pi / T$

$\sigma = 6.28 / 11.57 = 0.54$

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

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

$y = 0.54 \cdot 0.54 \cdot 46.14 / 32.17 = 0.42$

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

$C1H = 35.82$

Shoaling Coefficient  $KsH$

$KsH = \sqrt{C0 / C1H}$

$KsH = \sqrt{59.22 / 35.82} = 1.29$

Deepwater Wave Height  $H0\_H$  (ft)

$H0\_H = H / KsH$

$H0\_H = 6.47 / 1.29 = 5.03$

Deepwater mean wave height: 5.03 feet

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END RUNUP2 CONVERSIONS

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RUNUP2 RESULTS

for transect: CM-149

RUNUP2 SWEL:

8.80

8.80

8.80

8.80

8.80  
8.80  
8.80  
8.80  
8.80

RUNUP2 deepwater mean wave heights:

4.78  
4.78  
4.78  
5.03  
5.03  
5.03  
5.28  
5.28  
5.28

RUNUP2 mean wave periods:

10.99  
11.57  
12.14  
10.99  
11.57  
12.14  
10.99  
11.57  
12.14

RUNUP2 runup above SWEL:

7.09  
8.03  
8.87  
7.73  
8.65  
9.64  
8.36  
9.29  
10.29

RUNUP2 Mean runup height above SWEL: 8.66 feet

RUNUP2 2-percent runup height above SWEL: 19.05 feet

RUNUP2 2-percent runup elevation: 27.85 feet-NAVD88

RUNUP2 Messages:

No Messages

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END RUNUP2 RESULTS

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ACES BEACH RUNUP

Incident significant wave height: 10.34 feet

Significant wave height deshoaled using Hunt equation

Deepwater significant wave height: 7.05 feet

Peak wave period: 13.61 seconds

Average beach Slope: 1:9.14 (H:V)

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

ACES Beach 2-percent runup height above SWEL: 15.52 feet

ACES Beach 2-percent runup elevation: 24.32 feet-NAVD88

ACES BEACH RUNUP is valid

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

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