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PART 5: RUNUP2

for transect: YK-05

Station locations shifted by: -3.09 feet from their  
original location to set the shoreline to  
elevation 0 for RUNUP2 input

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RUNUP2 INPUT CONVERSIONS

for transect: YK-05

Incident significant wave height: 3.25 feet

Peak wave period: 6.26 seconds

Mean wave height: 2.04 feet

Local Depth below SWEL: 37.86 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

Deep water wavelength,  $L_0$  (m)

$$L_0 = gT^2/\pi$$

$$L_0 = 32.17 \times 5.32^2 / \pi = 145.06$$

Deep water wave celerity,  $C_0$  (ft/s)

$$C_0 = L_0/T$$

$$C_0 = 145.06 / 5.32 = 27.25$$

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

$$\sigma = \pi/T$$

$$\sigma = 6.28 / 5.32 = 1.18$$

Hunts (1979) approximation for Celerity  $C_{1H}$  (ft/s) at Depth  $D$  (ft)

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

$$y = 1.18 \times 1.18 \times 37.86 / 32.17 = 1.64$$

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

$$C_{1H} = 25.65$$

Shoaling Coefficient  $K_{sH}$

$$K_{sH} = \sqrt{C_0 / C_{1H}}$$

$$K_{sH} = \sqrt{27.25 / 25.65} = 1.03$$

Deepwater Wave Height  $H_{0H}$  (ft)

$$H_{0H} = H / K_{sH}$$

$$H_{0H} = 2.04 / 1.03 = 1.98$$

Deepwater mean wave height: 1.98 feet

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END RUNUP2 CONVERSIONS

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RUNUP2 RESULTS

for transect: YK-05

RUNUP2 SWEL:

9.00  
9.00  
9.00  
9.00  
9.00  
9.00  
9.00  
9.00  
9.00

RUNUP2 deepwater mean wave heights:

1.88

1.88  
1.88  
1.98  
1.98  
1.98  
2.08  
2.08  
2.08

RUNUP2 mean wave periods:

5.06  
5.32  
5.59  
5.06  
5.32  
5.59  
5.06  
5.32  
5.59

RUNUP2 runup above SWEL:

5.33  
5.49  
5.66  
5.66  
5.85  
6.01  
5.96  
6.14  
6.34

RUNUP2 Mean runup height above SWEL: 5.83 feet

RUNUP2 2-percent runup height above SWEL: 12.82 feet

RUNUP2 2-percent runup elevation: 21.82 feet-NAVD88

RUNUP2 Messages:

No Messages

\_\_\_\_\_END RUNUP2 RESULTS\_\_\_\_\_

\_\_\_\_\_ACES BEACH RUNUP\_\_\_\_\_

Incident significant wave height: 3.25 feet

Significant wave height deshoaled using Hunt equation

Deepwater significant wave height: 2.77 feet

Peak wave period: 6.26 seconds

Average beach Slope: 1:4.40 (H:V)

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

ACES Beach 2-percent runup height above SWEL: 8.23 feet

ACES Beach 2-percent runup elevation: 17.23 feet-NAVD88

!!!ACES BEACH RUNUP is NOT valid

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

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