
PART 5: RUNUP2

for transect: YK-75

Station locations shifted by: -3.27 feet from their
original location to set the shoreline to
elevation 0 for RUNUP2 input

RUNUP2 INPUT CONVERSIONS

for transect: YK-75

Incident significant wave height: 14.78 feet

Peak wave period: 13.63 seconds

Mean wave height: 9.25 feet

Local Depth below SWEL: 27.20 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, $D = 27.20$

Period, $T = 11.58$

Waveheight, $H = 9.25$

Deep water wavelength, $L0$ (ft)

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

$L0 = 32.17 \cdot 11.58^2 / 6.28 = 686.88$

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

$C0 = L0 / T$

$C0 = 686.88 / 11.58 = 59.31$

Angular frequency, σ (rad/s)

$\sigma = 2\pi / T$

$\sigma = 6.28 / 11.58 = 0.54$

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

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

$y = 0.54 \cdot 0.54 \cdot 27.20 / 32.17 = 0.25$

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

$C1H = 28.36$

Shoaling Coefficient KsH

$KsH = \sqrt{C0 / C1H}$

$KsH = \sqrt{59.31 / 28.36} = 1.45$

Deepwater Wave Height $H0_H$ (ft)

$H0_H = H / KsH$

$H0_H = 9.25 / 1.45 = 6.40$

Deepwater mean wave height: 6.40 feet

END RUNUP2 CONVERSIONS

RUNUP2 RESULTS

for transect: YK-75

RUNUP2 SWEL:

8.96

RUNUP2 deepwater mean wave heights:

-9999.00

RUNUP2 mean wave periods:
-9999.00

RUNUP2 runup above SWEL:
-9999.00

RUNUP2 Mean runup height above SWEL: -9999.00 feet

RUNUP2 2-percent runup height above SWEL: -9999.00 feet

RUNUP2 2-percent runup elevation: -9999.00 feet-NAVD88

RUNUP2 Messages:
RUNUP2 Failed

_____END RUNUP2 RESULTS_____

_____ACES BEACH RUNUP_____

Incident significant wave height: 14.78 feet

Significant wave height deshoaled using Hunt equation

Deepwater significant wave height: 8.96 feet

Peak wave period: 13.63 seconds

Average beach Slope: 1:55.35 (H:V)

ACES RUNUP CALCULATED USING 'Aces_Beach_Runup.m'

ACES Beach 2-percent runup height above SWEL: 5.05 feet

ACES Beach 2-percent runup elevation: 14.01 feet-NAVD88

ACES BEACH RUNUP is valid

_____END ACES BEACH RESULTS_____

PART 5 COMPLETE_____