
PART 5: RUNUP2

for transect: CM-149-1

Station locations shifted by: -0.15 feet from their
original location to set the shoreline to
elevation 0 for RUNUP2 input

RUNUP2 INPUT CONVERSIONS

for transect: CM-149-1

Incident significant wave height: 4.27 feet

Peak wave period: 10.75 seconds

Mean wave height: 2.67 feet

Local Depth below SWEL: 59.13 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, $D = 59.13$

Period, $T = 9.14$

Waveheight, $H = 2.67$

Deep water wavelength, $L0$ (ft)

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

$L0 = 32.17 \cdot 9.14^2 / 6.28 = 427.57$

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

$C0 = L0 / T$

$C0 = 427.57 / 9.14 = 46.79$

Angular frequency, σ (rad/s)

$\sigma = 2\pi / T$

$\sigma = 6.28 / 9.14 = 0.69$

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

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

$y = 0.69 \cdot 0.69 \cdot 59.13 / 32.17 = 0.87$

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

$C1H = 37.27$

Shoaling Coefficient KsH

$KsH = \sqrt{C0 / C1H}$

$KsH = \sqrt{46.79 / 37.27} = 1.12$

Deepwater Wave Height $H0_H$ (ft)

$H0_H = H / KsH$

$H0_H = 2.67 / 1.12 = 2.38$

Deepwater mean wave height: 2.38 feet

END RUNUP2 CONVERSIONS

RUNUP2 RESULTS

for transect: CM-149-1

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:

2.26
2.26
2.26
2.38
2.38
2.38
2.50
2.50
2.50

RUNUP2 mean wave periods:

8.68
9.14
9.59
8.68
9.14
9.59
8.68
9.14
9.59

RUNUP2 runup above SWEL:

5.84
5.89
5.97
6.30
6.36
6.42
6.76
6.82
6.88

RUNUP2 Mean runup height above SWEL: 6.36 feet

RUNUP2 2-percent runup height above SWEL: 13.99 feet

RUNUP2 2-percent runup elevation: 22.89 feet-NAVD88

RUNUP2 Messages:

No Messages

END RUNUP2 RESULTS

ACES BEACH RUNUP

Incident significant wave height: 4.27 feet

Significant wave height deshoaled using Hunt equation

Deepwater significant wave height: 3.34 feet

Peak wave period: 10.75 seconds

Average beach Slope: 1:7.14 (H:V)

ACES RUNUP CALCULATED USING 'Aces_Beach_Runup.m'

ACES Beach 2-percent runup height above SWEL: 9.66 feet

ACES Beach 2-percent runup elevation: 18.56 feet-NAVD88

ACES BEACH RUNUP is valid

_____END ACES BEACH RESULTS_____

PART 5 COMPLETE_____