
PART 5: RUNUP2

for transect: CM-159

Station locations shifted by: -0.10 feet from their
original location to set the shoreline to
elevation 0 for RUNUP2 input

RUNUP2 INPUT CONVERSIONS

for transect: CM-159

Incident significant wave height: 6.63 feet

Peak wave period: 14.68 seconds

Mean wave height: 4.15 feet

Local Depth below SWEL: 34.12 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, $D = 34.12$

Period, $T = 12.48$

Waveheight, $H = 4.15$

Deep water wavelength, L_0 (ft)

$L_0 = g \cdot T^2 / 2\pi$

$L_0 = 32.17 \cdot 12.48^2 / 6.28 = 797.39$

Deep water wave celerity, C_0 (ft/s)

$C_0 = L_0 / T$

$C_0 = 797.39 / 12.48 = 63.90$

Angular frequency, σ (rad/s)

$\sigma = 2\pi / T$

$\sigma = 6.28 / 12.48 = 0.50$

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

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

$y = 0.50 \cdot 0.50 \cdot 34.12 / 32.17 = 0.27$

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

$C_{1H} = 31.65$

Shoaling Coefficient K_{sH}

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

$K_{sH} = \sqrt{63.90 / 31.65} = 1.42$

Deepwater Wave Height H_{0_H} (ft)

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

$H_{0_H} = 4.15 / 1.42 = 2.92$

Deepwater mean wave height: 2.92 feet

END RUNUP2 CONVERSIONS

RUNUP2 RESULTS

for transect: CM-159

RUNUP2 SWEL:

8.82

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: 6.63 feet

Significant wave height deshoaled using Hunt equation

Deepwater significant wave height: 4.09 feet

Peak wave period: 14.68 seconds

Average beach Slope: 1:14.30 (H:V)

ACES RUNUP CALCULATED USING 'Aces_Beach_Runup.m'

ACES Beach 2-percent runup height above SWEL: 8.40 feet

ACES Beach 2-percent runup elevation: 17.22 feet-NAVD88

ACES BEACH RUNUP is valid

_____END ACES BEACH RESULTS_____

PART 5 COMPLETE_____