
PART 5: RUNUP2

for transect: CM-138

Station locations shifted by: 0.06 feet from their
original location to set the shoreline to
elevation 0 for RUNUP2 input

RUNUP2 INPUT CONVERSIONS

for transect: CM-138

Incident significant wave height: 9.91 feet

Peak wave period: 11.77 seconds

Mean wave height: 6.20 feet

Local Depth below SWEL: 52.12 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, $D = 52.12$

Period, $T = 10.00$

Waveheight, $H = 6.20$

Deep water wavelength, L_0 (ft)

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

$L_0 = 32.17 \cdot 10.00^2 / 6.28 = 512.42$

Deep water wave celerity, C_0 (ft/s)

$C_0 = L_0 / T$

$C_0 = 512.42 / 10.00 = 51.22$

Angular frequency, σ (rad/s)

$\sigma = 2\pi / T$

$\sigma = 6.28 / 10.00 = 0.63$

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

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

$y = 0.63 \cdot 0.63 \cdot 52.12 / 32.17 = 0.64$

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

$C_{1H} = 36.57$

Shoaling Coefficient K_{sH}

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

$K_{sH} = \sqrt{51.22 / 36.57} = 1.18$

Deepwater Wave Height H_{0_H} (ft)

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

$H_{0_H} = 6.20 / 1.18 = 5.24$

Deepwater mean wave height: 5.24 feet

END RUNUP2 CONVERSIONS

RUNUP2 RESULTS

for transect: CM-138

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:

4.98
4.98
4.98
5.24
5.24
5.24
5.50
5.50
5.50

RUNUP2 mean wave periods:

9.50
10.00
10.50
9.50
10.00
10.50
9.50
10.00
10.50

RUNUP2 runup above SWEL:

2.91
3.19
3.47
3.12
3.48
3.81
3.41
3.74
4.07

RUNUP2 Mean runup height above SWEL: 3.47 feet

RUNUP2 2-percent runup height above SWEL: 7.63 feet

RUNUP2 2-percent runup elevation: 16.43 feet-NAVD88

RUNUP2 Messages:

Nonfatal Error, Check Output

END RUNUP2 RESULTS

ACES BEACH RUNUP

Incident significant wave height: 9.91 feet

Significant wave height deshoaled using Hunt equation

Deepwater significant wave height: 7.34 feet

Peak wave period: 11.77 seconds

Average beach Slope: 1:7.84 (H:V)

ACES RUNUP CALCULATED USING 'Aces_Beach_Runup.m'

ACES Beach 2-percent runup height above SWEL: 16.03 feet

ACES Beach 2-percent runup elevation: 24.83 feet-NAVD88

ACES BEACH RUNUP is valid

_____END ACES BEACH RESULTS_____

PART 5 COMPLETE_____