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PART 5: RUNUP2

for transect: YK-109

Station locations shifted by: -4.62 feet from their
original location to set the shoreline to
elevation 0 for RUNUP2 input

_____RUNUP2 INPUT CONVERSIONS_____
for transect: YK-109

Incident significant wave height: 7.56 feet

Peak wave period: 13.81 seconds

Mean wave height: 4.73 feet

Local Depth below SWEL: 14.61 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 Jersy

USACE (1985), Direct Methods for Calculating Wavelength, CETN-1-17
US Army Engineer Waterways Experiment Station Coastel Engineering
Research Center, Vicksburg, MS

also see Coastal Engineering Manual Part II-3
for discussion of shoaling coefficient

Depth, D = 14.61
Period, T = 11.74
Waveheight, H = 4.73
Deep water wavelength, L0 (ft)
L0 = g*T*T/twopi
L0 = 32.17*11.74*11.74/6.28 = 705.57
Deep water wave celerity, C0 (ft/s)
C0 = L0/T
C0 = 705.57/11.74 = 60.11
Angular frequency, sigma (rad/s)
sigma = twopi/T
sigma = 6.28/11.74 = 0.54
Hunts (1979) approximation for Celerity C1H (ft/s) at Depth D (ft)
y = sigma.*sigma.*D./g
y = 0.54*0.54*14.61/32.17 = 0.13
C1H = sqrt(g.*D./(y+1./(1 + 0.6522.*y + 0.4622.*y.^2 + 0.0864.*y.^4 +0.0675.*y.^5)))
C1H = 21.21
Shoaling Coefficient KsH
KsH = sqrt(C0/C1H)
KsH = sqrt(60.11/21.21) = 1.68
Deepwater Wave Height H0_H (ft)
H0_H = H/KsH
H0_H = 4.73/1.68 = 2.81

Deepwater mean wave height: 2.81 feet

_____END RUNUP2 CONVERSIONS_____

_____RUNUP2 RESULTS_____
for transect: YK-109

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:
2.67
2.67
2.67
2.81
2.81
2.81
2.95
2.95
2.95

RUNUP2 mean wave periods:
11.15
11.74
12.33
11.15
11.74
12.33
11.15
11.74
12.33

RUNUP2 runup above SWEL:
0.81
0.83
0.85
0.80
0.83
0.84
0.81
0.82
0.84

RUNUP2 Mean runup height above SWEL: 0.83 feet

RUNUP2 2-percent runup height above SWEL: 1.82 feet

RUNUP2 2-percent runup elevation: 10.82 feet-NAVD88

RUNUP2 Messages:
No Messages

_____END RUNUP2 RESULTS_____

_____ACES BEACH RUNUP_____

Incident significant wave height: 7.56 feet

Significant wave height is mean wave height divided by 0.626
Reference: D.2.8.1.2.1 Atlanic and Gulf of Mexico G&S Feb. 2007

Deepwater significant wave height: 4.49 feet

Peak wave period: 13.81 seconds

Average beach Slope: 1:39.94 (H:V)

ACES IRREGULAR WAVE RUNUP ON BEACHES

Reference:
Leenknecht, David A., Andre Szuwaiski, and Ann Sherlock. 1992.
"Automated Coastal Engineering System Technical Reference",
Coastal Engineering Research Center, Department of the Army

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# Waterways Experiments Station, Corps of Eniggneers, 3909 Halls
# Ferry Road, Vicksburg, Mississippi 39180-6199.

INPUTS:

Acceleration Due to Gravity,        g  =   32.174
Deepwater Significant Wave height,  Hs =     4.49
Wave Period,                        T  =    13.81
Beach Slope,                        S  =    0.025

EQUATIONS:

Runup,           R   = Hs * a * Irb^b
Iribarren,       Irb = S/sqrt(Hs/L0)
Wavelength,      L0  = g * T^2 / 2 / pi

COEFFICIENTS:
(Mase, H. 1989, "Random Wave Runup Height on Gentle Slopes,"
j. Waterway, Port, Coastal and Ocean Engineering Division,
ASCE, Vol 115, No. 5, pp 649-661.)

               [Rmax,  R2%, R-1/3, R-1/10, R-mean]
          a = [2.32, 1.86,  1.70,   1.38,   0.88]
          b = [0.77, 0.71,  0.71,   0.70,   0.69]

RESULTS:

       RUNUP = [ 4.8,  4.1,   3.8,    3.1,    2.0]

ACES RUNUP CALCULATED USING 'Aces_Beach_Runup.m'

ACES Beach 2-percent runup height above SWEL: 4.12 feet

ACES Beach 2-percent runup elevation: 13.12 feet-NAVD88

ACES BEACH RUNUP is valid

_____________END ACES BEACH RESULTS_____________________

PART 5 COMPLETE_____________________________________________
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