PART 5: RUNUP2

        for transect: YK-99-2

Station locations shifted by: 49.28 feet from their
original location to set the shoreline to
elevation 0 for RUNUP2 input

_____RUNUP2 INPUT CONVERSIONS_____
        for transect: YK-99-2

Incident significant wave height: 4.45 feet

Peak wave period: 11.62 seconds

Mean wave height: 2.79 feet

Local Depth below SWEL: 25.56 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 = 25.56
    Period, T = 9.87
    Waveheight, H = 2.79
Deep water wavelength, L0 (ft)
    L0 = g*T*T/twopi
    L0 = 32.17*9.87*9.87/6.28 = 499.12
Deep water wave celerity, C0 (ft/s)
    C0 = L0/T
    C0 = 499.12/9.87 = 50.56
Angular frequency, sigma (rad/s)
    sigma = twopi/T
    sigma = 6.28/9.87 = 0.64
Hunts (1979) approximation for Celerity C1H (ft/s) at Depth D (ft)
    y = sigma.*sigma.*D./g
    y = 0.64*0.64*25.56/32.17 = 0.32
    C1H = sqrt(g.*D./(y+1./(1 + 0.6522.*y + 0.4622.*y.^2 + 0.0864.*y.^4 +0.0675.*y.^5)))
    C1H = 27.15
Shoaling Coefficient KsH
    KsH = sqrt(C0/C1H)
    KsH = sqrt(50.56/27.15) = 1.36
Deepwater Wave Height H0_H (ft)
    H0_H = H/KsH
    H0_H = 2.79/1.36 = 2.04

Deepwater mean wave height: 2.04 feet

_____END RUNUP2 CONVERSIONS_____

_____RUNUP2 RESULTS_____
        for transect: YK-99-2

RUNUP2 SWEL:
9.30
9.30
9.30
9.30

```
9.30
9.30
9.30
9.30
9.30

RUNUP2 deepwater mean wave heights:
1.94
1.94
1.94
2.04
2.04
2.04
2.15
2.15
2.15

RUNUP2 mean wave periods:
9.38
9.87
10.37
9.38
9.87
10.37
9.38
9.87
10.37

RUNUP2 runup above SWEL:
4.27
4.35
4.42
4.08
4.20
4.26
3.96
4.00
4.06

RUNUP2 Mean runup height above SWEL: 4.18 feet

RUNUP2 2-percent runup height above SWEL: 9.19 feet

RUNUP2 2-percent runup elevation: 18.49 feet-NAVD88

RUNUP2 Messages:
No Messages

_____END RUNUP2 RESULTS_____


_____ACES BEACH RUNUP_____

Incident significant wave height: 4.45 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: 3.26 feet

Peak wave period: 11.62 seconds

Average beach Slope: 1:9.82 (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
```

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 =    3.26
Wave Period,                        T  =   11.62
Beach Slope,                        S  =    0.102
```

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 = [10.2,  8.0,   7.3,    5.9,    3.8]
```

ACES RUNUP CALCULATED USING 'Aces_Beach_Runup.m'

ACES Beach 2-percent runup height above SWEL: 8.02 feet

ACES Beach 2-percent runup elevation: 17.32 feet-NAVD88

ACES BEACH RUNUP is valid

_____END ACES BEACH RESULTS_____

PART 5 COMPLETE_____