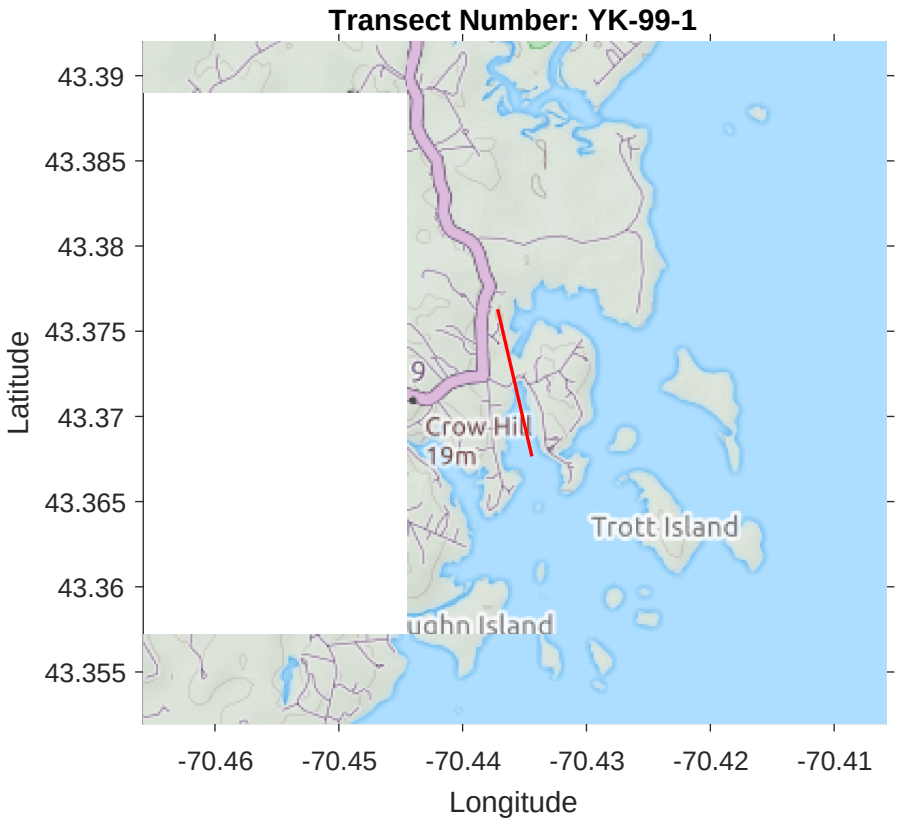
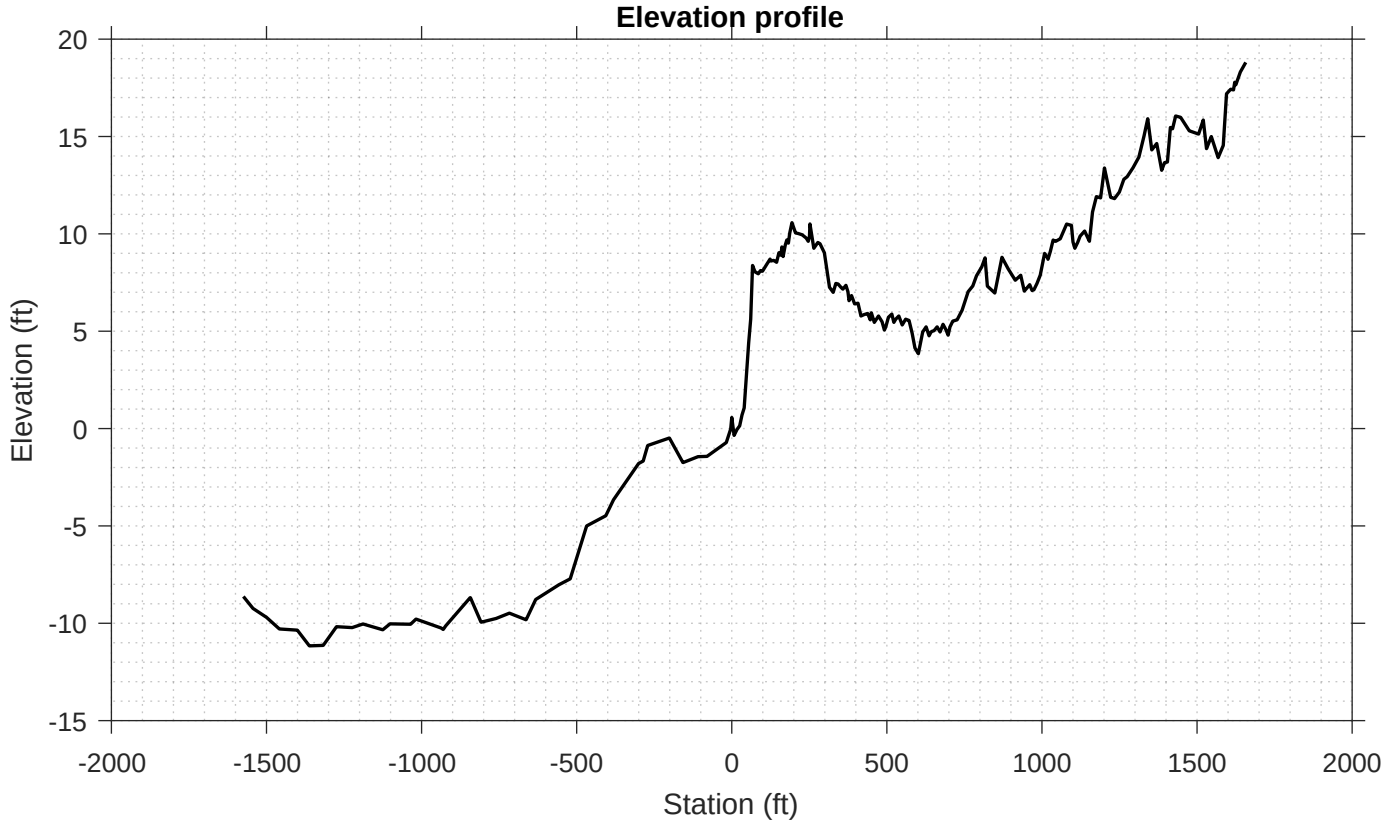

Transect Number: YK-99-1
Latitude
Longitude
43.39
43.385
43.38
43.375
43.37
43.365
43.36
43.355
-70.46
-70.45
-70.44
-70.43
-70.42
-70.41
Crow Hill
19m
Trott Island


Elevation profile
Elevation (ft)
Station (ft)
20
15
10
5
0
-5
-10
-15
-2000
-1500
-1000
-500
0
500
1000
1500
2000

DATA LOG FOR TRANSECT ID: YK-99-1

PART 1: USER INPUT

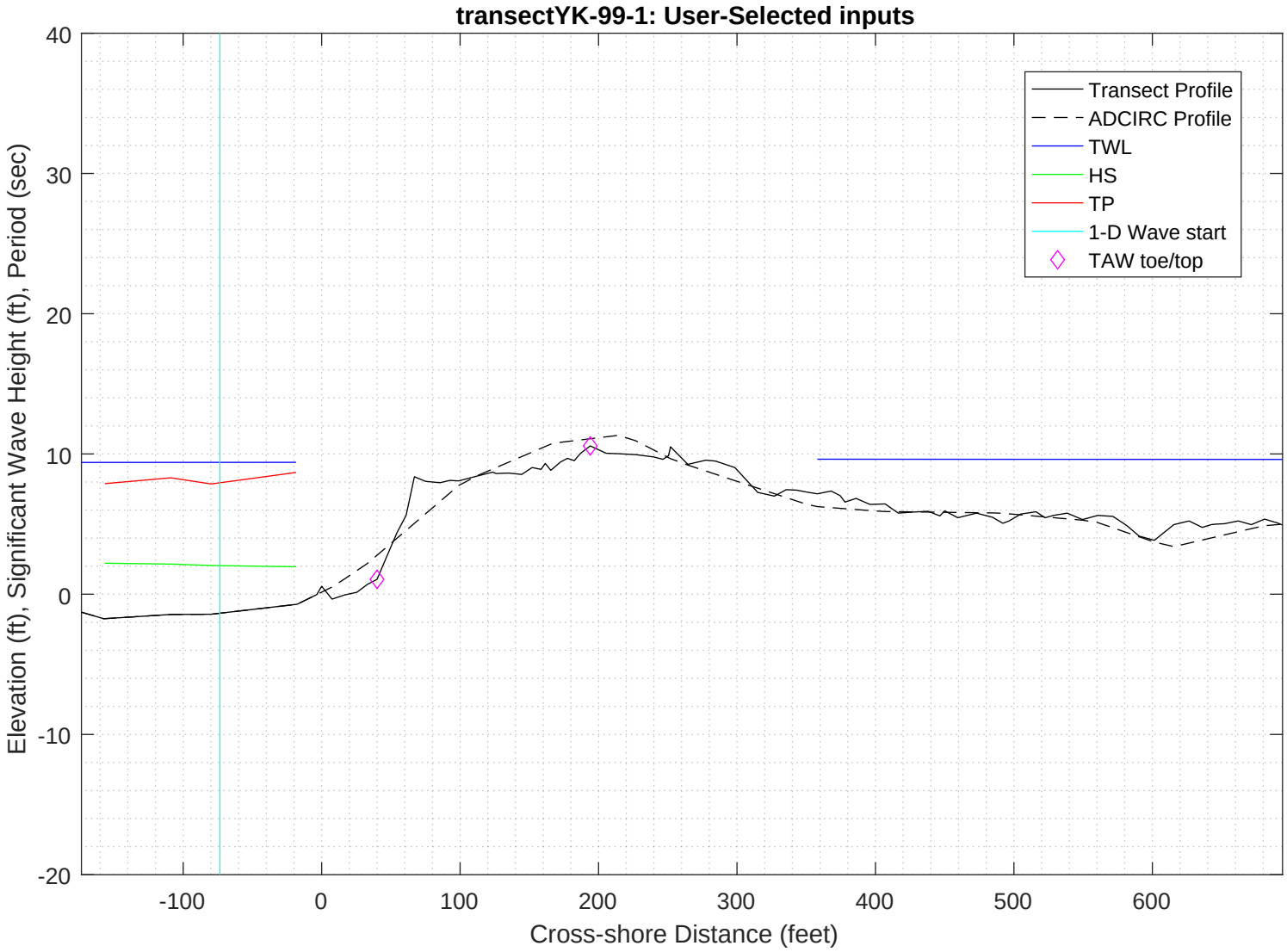
SWAN 1-D / WHAFIS input

station: -73.5 ft
LON: -70.4357 deg E
LAT: 43.3717 deg N
Bottom ELEV: -1.3558 ft-NAVD88
TWL: 9.4014 ft-NAVD88
HS: 2.0382 ft
TP: 7.945 sec
Wave Direction bin: 90 deg CCW from East (90 deg sector)
Transect Direction: 107.7246 deg CCW from East

TAW/RUNUP input

toe sta: 40 ft
toe elev: 1.0597 ft-NAVD88
top sta: 194 ft
top elev: 10.5741 ft-NAVD88
Wave and water level conditions at toe to be calculated in SWAN 1-D

PART 1 COMPLETE


transectYK-99-1: User-Selected inputs
Transect Profile
ADCIRC Profile
TWL
HS
TP
1-D Wave start
TAW toe/top
Elevation (ft), Significant Wave Height (ft), Period (sec)
Cross-shore Distance (feet)
40
30
20
10
0
-10
-20
-100
0
100
200
300
400
500
600

PART 2: SWAN 1-D

swan input grid name: 2_swan/gridfiles/YK-99-1zmeters_xmeters.grd
swan file name: 2_swan/swanfiles/YK-99-1.swn
swan output name: 2_swan/swanfiles/YK-99-1.dat

Boundary Conditions:
    TWL- 2.8655 meters
    HS- 0.62125 meters
    PER- 7.945 seconds

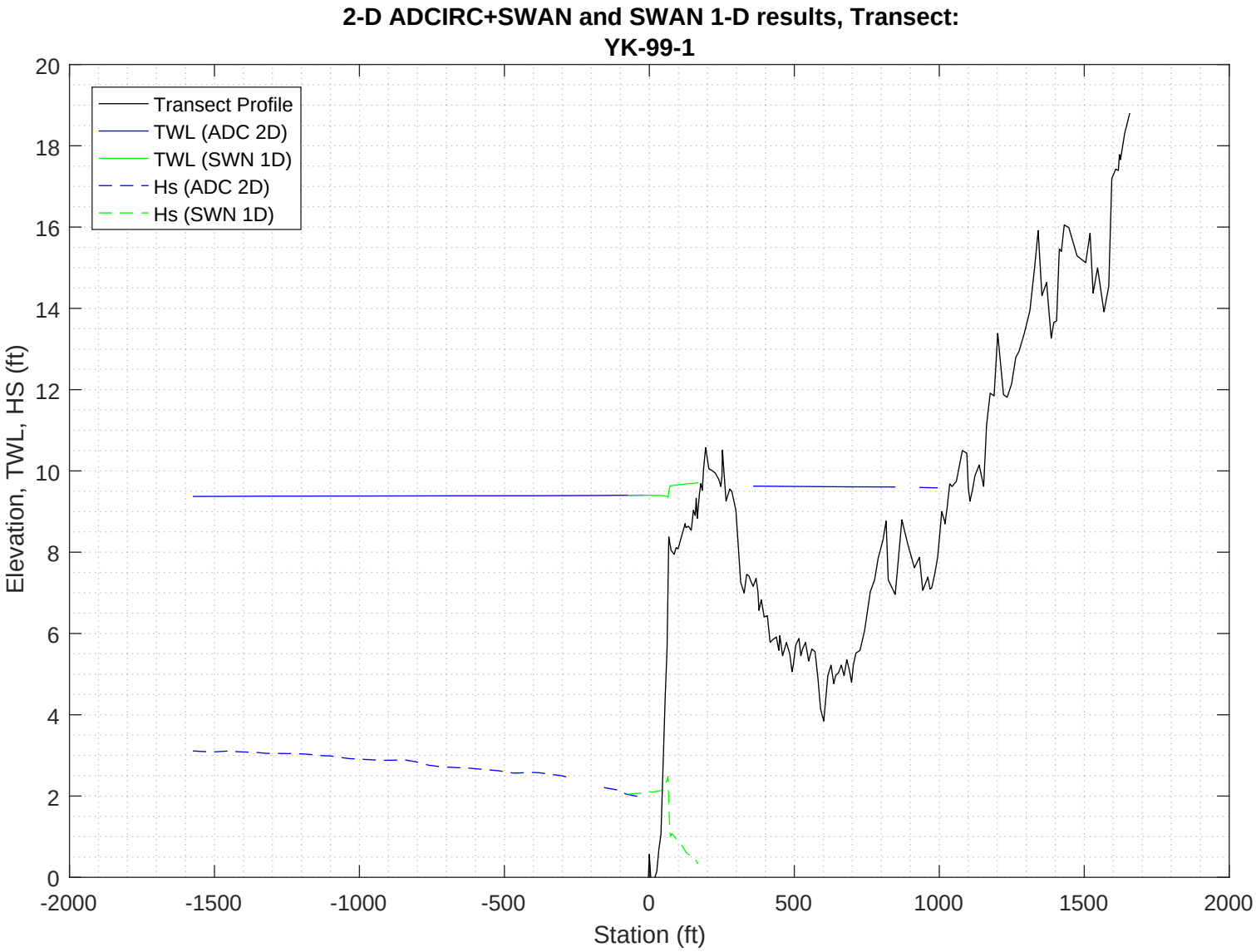
Batch File: 2_swan/swanfiles/runswan.dat

SWAN maximum additional wave setup: 0.30665 feet
SWAN output at toe:
    SETUP- -0.0047506 feet
    HS-   2.142 feet
    PER-   7.9359 seconds

PART 2 COMPLETE

SWAN maximum additional wave setup: 0.30665 feet
SWAN output at toe:
    SETUP- -0.0047506 feet
    HS-   2.142 feet
    PER-   7.9359 seconds

PART 2 COMPLETE


2-D ADCIRC+SWAN and SWAN 1-D results, Transect:
YK-99-1
Transect Profile
TWL (ADC 2D)
TWL (SWN 1D)
Hs (ADC 2D)
Hs (SWN 1D)
Elevation, TWL, HS (ft)
Station (ft)
20
18
16
14
12
10
8
6
4
2
0
-2000
-1500
-1000
-500
0
500
1000
1500
2000

1

```
                    Execution started at 20200401.174317


                    ---------------------------------------
                                    SWAN
                    SIMULATION OF WAVES IN NEAR SHORE AREAS
                             VERSION NUMBER 41.20A
                    ---------------------------------------


 PROJECT '2018FemaAppeal' '1'
    '100-year Wind and Wave conditions'
 ! -- SET commands ------------------------------------------------------
  SET DEPMIN=0.01 MAXMES=999 MAXERR=3 PWTAIL=4
  SET LEVEL 0
  SET CARTESIAN
 ! -- MODE commands -----------------------------------------------------
  MODE STATIONARY ONED
 !-- COORDINATES commands-----------------------------------------------
 COORDINATES CART
 !
 !  --  computational (CGRID) grid commands -------------------------------------
 !                                   xlenc=length of grid in meters
 !  mxc = number of mesh cells (one less than number of grid points)
 !CGRID REGular [xpc]  [ypc]  [alpc]  [xlenc]   [ylenc]  [mxc]  [myc] &
 !      [ CIRcle|SECtor[dir1] [dir2] ] [mdc] [flow] [fhigh] [msc]
  CGRID REGULAR   0      0       0      74       0.   74     0    &
        CIRCLE                          36    0.03    0.8     30
 Resolution in sigma-space: df/f =  0.1157
 ! -- READgrid ---- not used in 1-D mode ----------------------------------
 ! -- INPgrid commands  -------------------------------------------------------
 !INPgrid BOTtom REGular [xpinp] [ypinp] [alpinp] [mxinp] [myinp] [dxinp] [dyinp]
 !
  INPGRID BOTTOM REGULAR    0       0        0      74   0      1       1
 !READinp BOTtom [fac]  'fname1'  [idla]  [nhedf]  [FREe|FORmat[form]|UNFormatted]
  READ    BOTTOM   -1. '../gridfiles/YK-99-1zmeters_xmeters.grd'    1      0       FREE
 !-------------------------------------------------------------------------
 ! -- WIND [vel] [dir]
 WIND      25.1  0
 ! -- BOUnd SHAPespec
 BOUND SHAPE JONSWAP 3.3  PEAK DSPR POWER
 ! -- BOUndspec
 ! BOU SIDE W CCW CON FILE 'swanspec.txt' 1
 BOUN SIDE W CCW CONSTANT PAR   0.62125     7.945     0  2
 !-- BOUndnest1  - optional for boundary from parent run
 !-- BOUndnest2
 !-- BOUndnest3
 !-- INITial -- usest to specify initial values
 !
```

```
!---------------- P H Y S I C S ------------------------
!-- GEN1 [cf10] [cf20] [cf30] [cf40] [edm1pm] [cdrag] [umin] [cfpm]
!-- GEN2 [cf10] [cf20] [cf30] [cf40] [cf50] [cf60] [edm1pm] [cdrag] [umin] [cfpm]
    GEN3 KOMEN
!   whitecapping ( on by default)
!-- WCAPping KOMen [cds2] [stpm] [powst] [delta] [powk]
    WCAP KOM
!   quadruplet wave interactions
!-- QUADrupl [iquad] [lambda] [Cn14] [Csh1] [Csh2]
! -- BREaking CONstant [alpha] [gamma]
     BREAK    CON       1.      0.73
!-- FRICtion JONswap CONstant [cfjon]
    FRIC     JONSWAP CON       0.038
!-- TRIad [itriad] [trfac] [cutfr]   [a]  [b]  [urcrit] [urslim]
! TRIAD        1      0.65    2.5    0.95 -0.75  0.2       0.01
  TRIAD
!-- VEGEtation [height] [diamtr] [nstems] [drag]
!-- MUD [layer] [rhom] [viscm]
!- LIMiter [ursell] [qb] deactivates quadruplets with Ursell number exceeds ursell
!-- OBSTacle -- not in 1-D
!-- SETUP [supcor]
   SETUP    0
!
! ----------------- N U M E R I C S -----------------------------
!
!-- PROP  can use BBST or GSE instead of default
! -- NUMeric -- lots of options
!     NUM ACCUR npnts=100. stat 30
     NUMeric STOPC
!
! -------------------O U T P U T ------------------------------
!
!OUTPut OPTIons "comment' (TABLE [field]) (BLOck [ndec] [len]) (SPEC [ndec])
 OUTPUT OPTIONS '%' TABLE 16
 $BLOCK 9 1000 SPEC 8
!CURve 'sname' [xp1] [yp1] <[int]   [xp]   [yp] >
 CURVE 'curve' 0     0      74  74    0
!TABLe 'sname' < HEADer|NOHEADer|INDexed > 'fname' <output parameters> (output time)
 Table 'curve'   HEADER 'YK-99-1.dat' XP YP HSIGN TPS RTP TMM10 DIR &
 DSPR DEPTH SETUP
!QUANTITY XP hexp=99999
!
!-----------------------------------------------
COMPUTE STATIONARY
------------------------------------------------------------------
                 COMPUTATIONAL PART OF SWAN
------------------------------------------------------------------
```

```
One-dimensional mode of SWAN is activated
Gridresolution       : MXC              75 MYC              1
                     : MCGRD            76
                     : MSC              31 MDC             36
                     : MTC               1
                     : NSTATC            0 ITERMX          50
Propagation flags    : ITFRE             1 IREFR            1
Source term flags    : IBOT              1 ISURF            1
                     : IWCAP             1 IWIND            3
                     : ITRIAD            1 IQUAD            2
                     : IVEG              0 ITURBV           0
                     : IMUD              0
Spatial step         : DX       0.1000E+01 DY      0.1000E+01
Spectral bin         : df/f     0.1157E+00 DDIR    0.1000E+02
Physical constants   : GRAV     0.9810E+01 RHO     0.1025E+04
Wind input           : WSPEED   0.2510E+02 DIR     0.0000E+00
Tail parameters      : E(f)     0.4000E+01 E(k)    0.2500E+01
                     : A(f)     0.5000E+01 A(k)    0.3000E+01
Accuracy parameters  : DREL     0.1000E-01 NPNTS   0.9950E+02
                     : DHABS    0.0000E+00 CURVAT  0.5000E-02
                     : GRWMX    0.1000E+00
Drying/flooding      : LEVEL    0.0000E+00 DEPMIN  0.1000E-01
The Cartesian convention for wind and wave directions is used
Scheme for geographic propagation is SORDUP
Scheme geogr. space  : PROPSC            2 ICMAX            7
Scheme spectral space: CSS      0.5000E+00 CDD     0.5000E+00
Current is off
Quadruplets          : IQUAD             2
                     : LAMBDA   0.2500E+00 CNL4    0.3000E+08
                     : CSH1     0.5500E+01 CSH2    0.8330E+00
                     : CSH3    -0.1250E+01
Maximum Ursell nr for Snl4 :    0.1000E+02
Triads               : ITRIAD            1 TRFAC   0.8000E+00
                     : CUTFR    0.2500E+01 URCRI   0.2000E+00
Minimum Ursell nr for Snl3 :    0.1000E-01
JONSWAP (‘73)        : GAMMA    0.3800E-01
Vegetation is off
Turbulence is off
Fluid mud is off
W-cap Komen (‘84)    : EMPCOF (CDS2):   0.2360E-04
W-cap Komen (‘84)    : APM (STPM)   :   0.3020E-02
W-cap Komen (‘84)    : POWST        :   0.2000E+01
W-cap Komen (‘84)    : DELTA        :   0.1000E+01
W-cap Komen (‘84)    : POWK         :   0.1000E+01
Wind drag is fit
Snyder/Komen wind input
Battjes&Janssen (‘78): ALPHA    0.1000E+01 GAMMA   0.7300E+00
Set-up               : SUPCOR   0.0000E+00
Diffraction is off
Janssen (‘89,‘90)    : ALPHA    0.1000E-01 KAPPA   0.4100E+00
Janssen (‘89,‘90)    : RHOA     0.1280E+01 RHOW    0.1025E+04

1st and 2nd gen. wind: CF10     0.1880E+03 CF20    0.5900E+00
                     : CF30     0.1200E+00 CF40    0.2500E+03
                     : CF50     0.2300E-02 CF60   -0.2230E+00
                     : CF70     0.0000E+00 CF80   -0.5600E+00
                     : RHOAW    0.1249E-02 EDMLPM  0.3600E-02
                     : CDRAG    0.1230E-02 UMIN    0.1000E+01
                     : LIM_PM   0.1300E+00

 ---------------------------------------------------------------
 First guess by 2nd generation model flags for first iteration:
 ITER       1 GRWMX      0.1000E+23 ALFA       0.0000E+00
 IWIND      2 IWCAP      0 IQUAD      0
 ITRIAD     1 IBOT       1 ISURF      1
 IVEG       0 ITURBV     0 IMUD       0
 ---------------------------------------------------------------
iteration    1; sweep 1
iteration    1; sweep 2
iteration    1; sweep 3
iteration    1; sweep 4
not possible to compute, first iteration

 ---------------------------------------------------------------
 Options given by user are activated for proceeding calculation:
 ITER       2 GRWMX      0.1000E+00 ALFA       0.0000E+00
 IWIND      3 IWCAP      1 IQUAD      2
 ITRIAD     1 IBOT       1 ISURF      1
 IVEG       0 ITURBV     0 IMUD       0
 ---------------------------------------------------------------
iteration    2; sweep 1
iteration    2; sweep 2
iteration    2; sweep 3
iteration    2; sweep 4
accuracy OK in  56.00 % of wet grid points ( 99.50 % required)

iteration    3; sweep 1
iteration    3; sweep 2
iteration    3; sweep 3
```

```
iteration    3; sweep 4
accuracy OK in   1.34 % of wet grid points ( 99.50 % required)

iteration    4; sweep 1
iteration    4; sweep 2
iteration    4; sweep 3
iteration    4; sweep 4
accuracy OK in  50.67 % of wet grid points ( 99.50 % required)

iteration    5; sweep 1
iteration    5; sweep 2
iteration    5; sweep 3
iteration    5; sweep 4
accuracy OK in  76.00 % of wet grid points ( 99.50 % required)

iteration    6; sweep 1
iteration    6; sweep 2
iteration    6; sweep 3
iteration    6; sweep 4
accuracy OK in  84.00 % of wet grid points ( 99.50 % required)

iteration    7; sweep 1
iteration    7; sweep 2
iteration    7; sweep 3
iteration    7; sweep 4
accuracy OK in  86.67 % of wet grid points ( 99.50 % required)

iteration    8; sweep 1
iteration    8; sweep 2
iteration    8; sweep 3
iteration    8; sweep 4
accuracy OK in  92.00 % of wet grid points ( 99.50 % required)

iteration    9; sweep 1
iteration    9; sweep 2
iteration    9; sweep 3
iteration    9; sweep 4
accuracy OK in  93.34 % of wet grid points ( 99.50 % required)

iteration   10; sweep 1
iteration   10; sweep 2
iteration   10; sweep 3
iteration   10; sweep 4
accuracy OK in  93.34 % of wet grid points ( 99.50 % required)

iteration   11; sweep 1
iteration   11; sweep 2
iteration   11; sweep 3
iteration   11; sweep 4
accuracy OK in  93.34 % of wet grid points ( 99.50 % required)

iteration   12; sweep 1
iteration   12; sweep 2
iteration   12; sweep 3
iteration   12; sweep 4
accuracy OK in  94.67 % of wet grid points ( 99.50 % required)

iteration   13; sweep 1
iteration   13; sweep 2
iteration   13; sweep 3
iteration   13; sweep 4
accuracy OK in  96.00 % of wet grid points ( 99.50 % required)

iteration   14; sweep 1
iteration   14; sweep 2
iteration   14; sweep 3
iteration   14; sweep 4
accuracy OK in 100.00 % of wet grid points ( 99.50 % required)


STOP
```

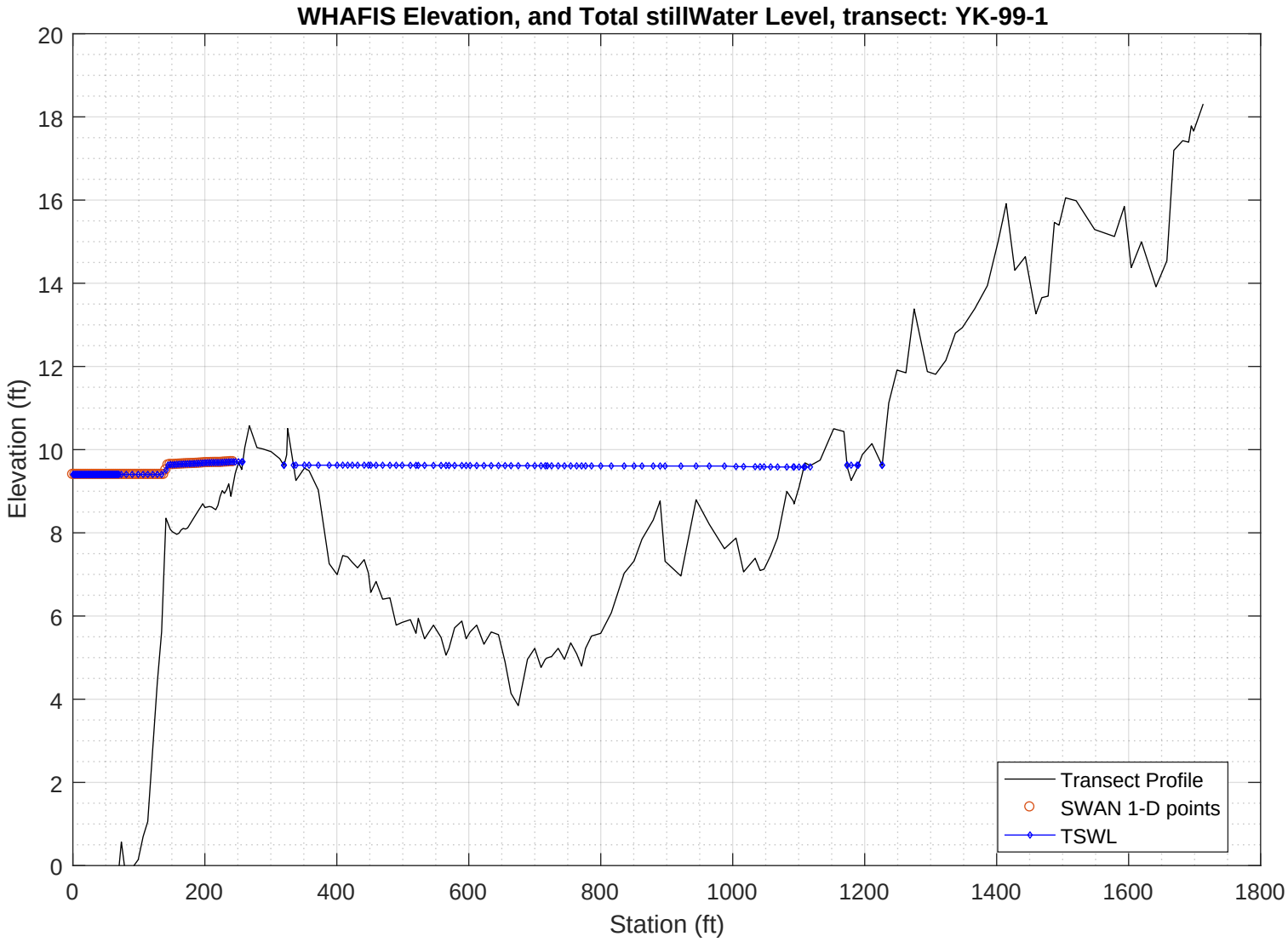
%
%
% Run:1 Table:curve SWAN version:41.20A
%
% Xp Yp Hsig TPsmoo RTpeak Tm_10 Dir Dspr Depth Setup
% [m] [m] [m] [sec] [sec] [sec] [degr] [degr] [m] [m]
%
0. 0. 0.62444 7.9224 8.0345 7.1834 359.999 31.5352 3.2800 0.000000
1. 0. 0.62494 7.9228 8.0345 7.1647 359.999 31.4489 3.2700 -0.000011
2. 0. 0.62533 7.9231 8.0345 7.1462 359.999 31.3361 3.2600 -0.000023
3. 0. 0.62602 7.9235 8.0345 7.1283 360.000 31.2151 3.2400 -0.000047
4. 0. 0.62648 7.9238 8.0345 7.1103 360.000 31.1219 3.2299 -0.000058
5. 0. 0.62697 7.9242 8.0345 7.0926 360.000 31.0539 3.2199 -0.000070
6. 0. 0.62747 7.9245 8.0345 7.0751 360.000 30.9897 3.2099 -0.000081
7. 0. 0.62797 7.9248 8.0345 7.0579 360.000 30.9264 3.1999 -0.000092
8. 0. 0.62847 7.9252 8.0345 7.0410 360.000 30.8632 3.1899 -0.000104
9. 0. 0.62887 7.9255 8.0345 7.0244 360.000 30.7774 3.1799 -0.000116
10. 0. 0.62958 7.9258 8.0345 7.0084 360.000 30.6854 3.1599 -0.000140
11. 0. 0.63005 7.9262 8.0345 6.9919 360.000 30.6139 3.1498 -0.000152
12. 0. 0.63054 7.9265 8.0345 6.9757 360.000 30.5485 3.1398 -0.000165
13. 0. 0.63104 7.9268 8.0345 6.9598 360.000 30.4855 3.1298 -0.000178
14. 0. 0.63155 7.9271 8.0345 6.9440 360.000 30.4232 3.1198 -0.000191
15. 0. 0.63206 7.9274 8.0345 6.9284 360.000 30.3614 3.1098 -0.000204
16. 0. 0.63248 7.9277 8.0345 6.9131 360.000 30.2783 3.0998 -0.000218
17. 0. 0.63297 7.9281 8.0345 6.8984 0.000 30.1240 3.0798 -0.000244
18. 0. 0.63385 7.9285 8.0345 6.8847 0.001 29.8823 3.0397 -0.000300
19. 0. 0.63499 7.9289 8.0345 6.8711 0.001 29.5930 2.9896 -0.000373
20. 0. 0.63620 7.9294 8.0345 6.8566 0.001 29.2934 2.9395 -0.000451
21. 0. 0.63701 7.9299 8.0345 6.8412 0.001 28.8372 2.8895 -0.000535
22. 0. 0.64134 7.9307 8.0345 6.8292 0.008 28.4983 2.7592 -0.000765
23. 0. 0.64243 7.9312 8.0345 6.8055 0.007 28.7946 2.7692 -0.000751
24. 0. 0.64068 7.9312 8.0345 6.7762 0.005 29.4840 2.8895 -0.000548
25. 0. 0.63958 7.9313 8.0345 6.7537 359.999 29.7558 2.9596 -0.000436
26. 0. 0.64079 7.9316 8.0345 6.7400 359.999 29.6706 2.9295 -0.000483
27. 0. 0.64158 7.9322 8.0345 6.7262 0.013 29.4608 2.8995 -0.000530
28. 0. 0.64244 7.9325 8.0345 6.7122 0.008 29.2595 2.8694 -0.000580
29. 0. 0.64305 7.9328 8.0345 6.6973 0.006 29.0869 2.8494 -0.000614
30. 0. 0.64329 7.9331 8.0345 6.6823 0.005 28.7974 2.8294 -0.000649
31. 0. 0.64495 7.9336 8.0345 6.6709 0.003 28.3584 2.7592 -0.000774
32. 0. 0.64665 7.9341 8.0345 6.6581 0.003 27.8995 2.6891 -0.000908
33. 0. 0.64865 7.9346 8.0345 6.6435 0.003 27.4834 2.6189 -0.001051
34. 0. 0.64971 7.9352 8.0345 6.6259 0.002 26.9795 2.5688 -0.001162
35. 0. 0.65289 7.9359 8.0345 6.6121 0.002 26.1215 2.4486 -0.001448
36. 0. 0.66127 7.9372 8.0345 6.6003 0.001 24.8982 2.2179 -0.002107
37. 0. 0.67154 7.9388 8.0345 6.5755 0.001 23.5360 1.9870 -0.002964
38. 0. 0.68438 7.9408 8.0345 6.5327 0.001 22.1392 1.7559 -0.004102
39. 0. 0.70022 7.9435 8.0345 6.4665 0.001 20.7233 1.5244 -0.005647
40. 0. 0.71440 7.9466 8.0345 6.3751 0.001 19.3964 1.3327 -0.007269
41. 0. 0.72702 7.9497 8.0345 6.2403 0.001 17.3804 1.1409 -0.009149
42. 0. 0.75942 7.9503 8.0345 6.0342 359.953 14.6177 0.6742 -0.015810
43. 0. 0.52523 8.0143 8.0345 6.4653 358.763 14.8969 0.3527 0.032660
44. 0. 0.33655 9.8296 10.0005 6.4108 356.311 14.9364 0.4293 0.069292
45. 0. 0.30861 9.8925 10.0005 5.6230 355.210 13.8720 0.4731 0.073122
46. 0. 0.32780 9.9098 10.0005 4.5049 357.096 13.0492 0.4918 0.071828
47. 0. 0.32055 9.9181 10.0005 4.1778 357.313 13.1244 0.5030 0.073038
48. 0. 0.31036 9.9313 10.0005 4.0712 357.392 13.1939 0.5143 0.074300
49. 0. 0.30132 9.9411 10.0005 4.0122 357.469 13.0984 0.5052 0.075239
50. 0. 0.29284 9.9506 10.0005 3.9844 357.499 12.9269 0.4860 0.076025
51. 0. 0.28380 9.9606 10.0005 3.9675 357.501 12.8181 0.4668 0.076845
52. 0. 0.27370 9.9721 10.0005 3.9344 357.496 12.7851 0.4778 0.077847
53. 0. 0.26629 9.9829 10.0005 3.9223 357.502 12.6594 0.4685 0.078478
54. 0. 0.25956 9.9928 10.0005 3.9228 357.535 12.4281 0.4490 0.079000
55. 0. 0.25230 10.0023 10.0005 3.9360 357.596 12.1225 0.4195 0.079543
56. 0. 0.24344 10.0181 10.0005 3.9485 357.651 11.8104 0.3903 0.080264
57. 0. 0.23326 10.0305 10.0005 3.9562 357.719 11.4913 0.3712 0.081174
58. 0. 0.22303 10.0374 10.0005 3.9782 357.804 11.1708 0.3421 0.082075
59. 0. 0.21149 10.0425 10.0005 3.9938 357.908 10.8427 0.3232 0.083180

60.	0.	0.19995	4.1586	4.1664	4.0217	357.973	10.6808	0.2943	0.084291
61.	0.	0.18664	4.1560	4.1664	3.9955	358.022	10.8312	0.3257	0.085722
62.	0.	0.17996	4.1538	4.1664	3.9908	358.072	10.8294	0.3263	0.086320
63.	0.	0.17524	4.1518	4.1664	3.9958	358.108	10.8193	0.3167	0.086709
64.	0.	0.17011	4.1500	4.1664	3.9812	358.139	10.9542	0.3272	0.087178
65.	0.	0.16639	4.1486	4.1664	3.9643	358.161	11.1393	0.3375	0.087509
66.	0.	0.16360	8.0478	8.0345	3.9460	358.215	11.1164	0.3477	0.087747
67.	0.	0.16337	8.0444	8.0345	3.9677	358.319	10.6430	0.3177	0.087689
68.	0.	0.16183	8.0384	8.0345	4.0480	358.462	9.9539	0.2476	0.087627
69.	0.	0.15180	8.0342	8.0345	4.1188	358.643	9.6247	0.2086	0.088621
70.	0.	0.13811	8.0444	8.0345	4.0995	358.839	9.4903	0.2302	0.090156
71.	0.	0.13157	8.0381	8.0345	4.1407	359.015	9.0884	0.2007	0.090745
72.	0.	0.12158	8.0321	8.0345	4.2289	359.110	9.4130	0.1618	0.091816
73.	0.	0.10496	8.0293	8.0345	4.1640	359.217	9.7247	0.2535	0.093466
74.	0.	0.10693	8.0270	8.0345	4.2303	359.329	9.6838	0.1732	0.093193

PART 3: WHAFIS

WHAFIS input: YK-99-1.dat
WHAFIS output: YK-99-1.out

PART 3 COMPLETE


WHAFIS Elevation, and Total stillWater Level, transect: YK-99-1
Elevation (ft)
Station (ft)
0
2
4
6
8
10
12
14
16
18
20
0
200
400
600
800
1000
1200
1400
1600
1800
Transect Profile
SWAN 1-D points
TSWL

WAVE HEIGHT COMPUTATIONS FOR FLOOD INSURANCE STUDIES (WHAFIS VERSION 4.0G, 08_2007)
Executed on: Thu Apr 2 11:05:19 2020
Input file: C:\FEMA-TransectAnalysis\LOMR-TransectAnalysis-Kennebunkport\3_whafis\whafis4\YK-99-1.dat
Output file: C:\FEMA-TransectAnalysis\LOMR-TransectAnalysis-Kennebunkport\3_whafis\whafis4\YK-99-1.out

header

THIS IS A 100-YEAR CASE
THE FOLLOWING NON-DEFAULT WIND SPEEDS ARE BEING USED
WINDIF 56.14 WINDOF 56.14 WINDVH 60.00

PART1 INPUT

IE	0.000	-1.356	1.000	1.000	9.401	3.261	7.945	56.140	0.011	0.000
OF	1.000	-1.344	0.000	9.401	0.000	0.000	0.000	0.000	0.011	0.000
OF	2.000	-1.333	0.000	9.401	0.000	0.000	0.000	0.000	0.012	0.000
OF	3.000	-1.321	0.000	9.401	0.000	0.000	0.000	0.000	0.011	0.000
OF	4.000	-1.310	0.000	9.401	0.000	0.000	0.000	0.000	0.011	0.000
OF	5.000	-1.299	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
OF	6.000	-1.287	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
OF	7.000	-1.276	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
OF	8.000	-1.264	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
OF	9.000	-1.253	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
OF	10.000	-1.242	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
OF	11.000	-1.230	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
OF	12.000	-1.219	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
OF	13.000	-1.207	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
OF	14.000	-1.196	0.000	9.402	0.000	0.000	0.000	0.000	0.012	0.000
OF	15.000	-1.184	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
OF	16.000	-1.173	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
OF	17.000	-1.161	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
OF	18.000	-1.150	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
OF	19.000	-1.138	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
OF	20.000	-1.127	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
OF	21.000	-1.116	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
OF	22.000	-1.104	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
OF	23.000	-1.093	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
OF	24.000	-1.081	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
OF	25.000	-1.070	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
OF	26.000	-1.059	0.000	9.402	0.000	0.000	0.000	0.000	0.012	0.000
OF	27.000	-1.047	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
OF	28.000	-1.036	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
OF	29.000	-1.024	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
OF	30.000	-1.013	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
OF	31.000	-1.001	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
OF	32.000	-0.990	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
OF	33.000	-0.979	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
OF	34.000	-0.967	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
OF	35.000	-0.956	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
OF	36.000	-0.944	0.000	9.403	0.000	0.000	0.000	0.000	0.012	0.000
OF	37.000	-0.933	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
OF	38.000	-0.921	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
OF	39.000	-0.910	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
OF	40.000	-0.898	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
OF	41.000	-0.887	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
OF	42.000	-0.876	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
OF	43.000	-0.864	0.000	9.403	0.000	0.000	0.000	0.000	0.012	0.000
OF	44.000	-0.853	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
OF	45.000	-0.841	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
OF	46.000	-0.830	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
OF	47.000	-0.818	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
OF	48.000	-0.807	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
OF	49.000	-0.795	0.000	9.403	0.000	0.000	0.000	0.000	0.012	0.000
OF	50.000	-0.784	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
OF	51.000	-0.773	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
OF	52.000	-0.761	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
OF	53.000	-0.750	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
OF	54.000	-0.738	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
OF	55.000	-0.727	0.000	9.403	0.000	0.000	0.000	0.000	0.015	0.000
OF	56.000	-0.708	0.000	9.403	0.000	0.000	0.000	0.000	0.034	0.000
OF	57.000	-0.660	0.000	9.403	0.000	0.000	0.000	0.000	0.049	0.000
OF	58.000	-0.610	0.000	9.403	0.000	0.000	0.000	0.000	0.049	0.000
OF	59.000	-0.562	0.000	9.403	0.000	0.000	0.000	0.000	0.049	0.000
OF	60.000	-0.513	0.000	9.403	0.000	0.000	0.000	0.000	0.049	0.000
OF	61.000	-0.464	0.000	9.403	0.000	0.000	0.000	0.000	0.049	0.000
OF	62.000	-0.415	0.000	9.403	0.000	0.000	0.000	0.000	0.049	0.000
OF	63.000	-0.366	0.000	9.403	0.000	0.000	0.000	0.000	0.049	0.000
OF	64.000	-0.317	0.000	9.403	0.000	0.000	0.000	0.000	0.049	0.000
OF	65.000	-0.269	0.000	9.403	0.000	0.000	0.000	0.000	0.049	0.000
OF	66.000	-0.220	0.000	9.403	0.000	0.000	0.000	0.000	0.049	0.000
OF	67.000	-0.171	0.000	9.403	0.000	0.000	0.000	0.000	0.049	0.000
OF	68.000	-0.122	0.000	9.403	0.000	0.000	0.000	0.000	0.049	0.000
OF	69.000	-0.073	0.000	9.403	0.000	0.000	0.000	0.000	0.049	0.000
OF	70.000	-0.024	0.000	9.403	0.000	0.000	0.000	0.000	0.142	0.000
IF	73.500	0.568	0.000	9.403	0.000	0.000	0.000	0.000	-0.030	0.000
OF	81.000	-0.351	0.000	9.403	0.000	0.000	0.000	0.000	-0.038	0.000
OF	90.000	-0.056	0.000	9.403	0.000	0.000	0.000	0.000	0.027	0.000
IF	99.000	0.141	0.000	9.403	0.000	0.000	0.000	0.000	0.046	0.000
IF	106.500	0.699	0.000	9.403	0.000	0.000	0.000	0.000	0.063	0.000
IF	113.500	1.060	0.000	9.403	0.000	0.000	0.000	0.000	0.145	0.000
IF	121.000	2.799	0.000	9.403	0.000	0.000	0.000	0.000	0.231	0.000
IF	128.000	4.406	0.000	9.403	0.000	0.000	0.000	0.000	0.209	0.000
IF	134.500	5.620	0.000	9.403	0.000	0.000	0.000	0.000	0.301	0.000
IF	141.100	8.352	0.000	9.509	0.000	0.000	0.000	0.000	0.262	0.000
IF	144.400	8.218	0.000	9.629	0.000	0.000	0.000	0.000	-0.041	0.000
IF	147.600	8.083	0.000	9.641	0.000	0.000	0.000	0.000	-0.030	0.000
IF	150.900	8.025	0.000	9.637	0.000	0.000	0.000	0.000	-0.014	0.000
IF	154.200	7.995	0.000	9.641	0.000	0.000	0.000	0.000	-0.009	0.000
IF	157.500	7.964	0.000	9.645	0.000	0.000	0.000	0.000	-0.001	0.000
IF	160.800	7.991	0.000	9.648	0.000	0.000	0.000	0.000	0.016	0.000
IF	164.000	8.068	0.000	9.651	0.000	0.000	0.000	0.000	0.018	0.000
IF	167.300	8.107	0.000	9.653	0.000	0.000	0.000	0.000	0.003	0.000
IF	170.600	8.090	0.000	9.657	0.000	0.000	0.000	0.000	0.002	0.000
IF	173.900	8.116	0.000	9.659	0.000	0.000	0.000	0.000	0.017	0.000
IF	177.200	8.201	0.000	9.661	0.000	0.000	0.000	0.000	0.026	0.000
IF	180.400	8.285	0.000	9.662	0.000	0.000	0.000	0.000	0.026	0.000

IF	183.700	8.370	0.000	9.665	0.000	0.000	0.000	0.000	0.026	0.000
IF	187.000	8.454	0.000	9.668	0.000	0.000	0.000	0.000	0.025	0.000
IF	190.300	8.536	0.000	9.671	0.000	0.000	0.000	0.000	0.025	0.000
IF	193.600	8.618	0.000	9.674	0.000	0.000	0.000	0.000	0.025	0.000
IF	196.800	8.700	0.000	9.678	0.000	0.000	0.000	0.000	-0.002	0.000
IF	200.100	8.608	0.000	9.683	0.000	0.000	0.000	0.000	-0.012	0.000
IF	203.400	8.620	0.000	9.685	0.000	0.000	0.000	0.000	0.004	0.000
IF	206.700	8.632	0.000	9.686	0.000	0.000	0.000	0.000	0.001	0.000
IF	210.000	8.623	0.000	9.687	0.000	0.000	0.000	0.000	-0.007	0.000
IF	213.300	8.589	0.000	9.689	0.000	0.000	0.000	0.000	-0.010	0.000
IF	216.500	8.555	0.000	9.689	0.000	0.000	0.000	0.000	0.011	0.000
IF	219.800	8.659	0.000	9.689	0.000	0.000	0.000	0.000	0.048	0.000
IF	223.100	8.875	0.000	9.689	0.000	0.000	0.000	0.000	0.054	0.000
IF	226.400	9.014	0.000	9.692	0.000	0.000	0.000	0.000	0.011	0.000
IF	229.700	8.948	0.000	9.697	0.000	0.000	0.000	0.000	0.003	0.000
IF	232.900	9.034	0.000	9.699	0.000	0.000	0.000	0.000	0.035	0.000
IF	236.200	9.177	0.000	9.703	0.000	0.000	0.000	0.000	-0.024	0.000
IF	239.500	8.878	0.000	9.708	0.000	0.000	0.000	0.000	-0.004	0.000
IF	242.800	9.154	0.000	9.707	0.000	0.000	0.000	0.000	0.084	0.000
IF	246.000	9.426	0.000	9.707	0.000	0.000	0.000	0.000	0.065	0.000
IF	251.000	9.688	0.000	9.707	0.000	0.000	0.000	0.000	0.010	0.000
IF	256.000	9.524	0.000	9.707	0.000	0.000	0.000	0.000	0.003	0.000
IF	257.600	9.707	0.000	9.707	0.000	0.000	0.000	0.000	0.114	0.000
AS	319.600	9.626	0.000	9.626	0.000	0.000	0.000	0.000	-0.025	0.000
IF	320.000	9.616	0.000	9.626	0.000	0.000	0.000	0.000	0.000	0.000
IF	320.200	9.626	0.000	9.626	0.000	0.000	0.000	0.000	0.050	0.000
AS	334.300	9.626	0.000	9.626	0.000	0.000	0.000	0.000	-0.099	0.000
IF	338.000	9.259	0.000	9.626	0.000	0.000	0.000	0.000	-0.004	0.000
IF	351.000	9.557	0.000	9.626	0.000	0.000	0.000	0.000	0.012	0.000
IF	358.000	9.491	0.000	9.626	0.000	0.000	0.000	0.000	-0.025	0.000
IF	372.000	9.029	0.000	9.626	0.000	0.000	0.000	0.000	-0.073	0.000
IF	388.500	7.257	0.000	9.626	0.000	0.000	0.000	0.000	-0.071	0.000
IF	400.500	6.995	0.000	9.626	0.000	0.000	0.000	0.000	0.010	0.000
IF	409.000	7.454	0.000	9.626	0.000	0.000	0.000	0.000	0.027	0.000
IF	416.500	7.421	0.000	9.626	0.000	0.000	0.000	0.000	-0.011	0.000
IF	423.500	7.290	0.000	9.626	0.000	0.000	0.000	0.000	-0.018	0.000
IF	431.500	7.159	0.000	9.626	0.000	0.000	0.000	0.000	0.004	0.000
IF	441.500	7.356	0.000	9.626	0.000	0.000	0.000	0.000	-0.008	0.000
IF	448.000	7.028	0.000	9.625	0.000	0.000	0.000	0.000	-0.079	0.000
IF	451.500	6.568	0.000	9.625	0.000	0.000	0.000	0.000	-0.017	0.000
IF	459.500	6.831	0.000	9.625	0.000	0.000	0.000	0.000	-0.009	0.000
IF	469.500	6.404	0.000	9.624	0.000	0.000	0.000	0.000	-0.019	0.000
IF	480.500	6.437	0.000	9.624	0.000	0.000	0.000	0.000	-0.030	0.000
IF	490.000	5.781	0.000	9.623	0.000	0.000	0.000	0.000	-0.032	0.000
IF	499.000	5.846	0.000	9.623	0.000	0.000	0.000	0.000	0.006	0.000
IF	511.500	5.912	0.000	9.622	0.000	0.000	0.000	0.000	-0.013	0.000
IF	520.000	5.584	0.000	9.621	0.000	0.000	0.000	0.000	0.003	0.000
IF	523.500	5.945	0.000	9.621	0.000	0.000	0.000	0.000	-0.010	0.000
IF	533.000	5.453	0.000	9.621	0.000	0.000	0.000	0.000	-0.007	0.000
IF	546.500	5.781	0.000	9.620	0.000	0.000	0.000	0.000	0.001	0.000
IF	558.000	5.486	0.000	9.619	0.000	0.000	0.000	0.000	-0.038	0.000
IF	565.500	5.059	0.000	9.619	0.000	0.000	0.000	0.000	-0.022	0.000
IF	570.000	5.223	0.000	9.618	0.000	0.000	0.000	0.000	0.051	0.000
IF	578.500	5.715	0.000	9.618	0.000	0.000	0.000	0.000	0.034	0.000
IF	589.500	5.879	0.000	9.618	0.000	0.000	0.000	0.000	-0.015	0.000
IF	596.000	5.453	0.000	9.617	0.000	0.000	0.000	0.000	-0.021	0.000
IF	602.000	5.617	0.000	9.617	0.000	0.000	0.000	0.000	0.021	0.000
IF	612.000	5.781	0.000	9.617	0.000	0.000	0.000	0.000	-0.014	0.000
IF	623.000	5.321	0.000	9.616	0.000	0.000	0.000	0.000	-0.007	0.000
IF	634.000	5.617	0.000	9.616	0.000	0.000	0.000	0.000	0.010	0.000
IF	645.000	5.551	0.000	9.615	0.000	0.000	0.000	0.000	-0.034	0.000
IF	655.000	4.895	0.000	9.615	0.000	0.000	0.000	0.000	-0.074	0.000
IF	664.000	4.140	0.000	9.614	0.000	0.000	0.000	0.000	-0.052	0.000
IF	675.000	3.845	0.000	9.613	0.000	0.000	0.000	0.000	0.033	0.000
IF	689.000	4.961	0.000	9.613	0.000	0.000	0.000	0.000	0.055	0.000
IF	700.000	5.223	0.000	9.612	0.000	0.000	0.000	0.000	-0.010	0.000
IF	709.500	4.764	0.000	9.612	0.000	0.000	0.000	0.000	-0.016	0.000
IF	716.000	4.961	0.000	9.611	0.000	0.000	0.000	0.000	0.024	0.000
IF	719.000	4.993	0.000	9.611	0.000	0.000	0.000	0.000	0.007	0.000
IF	725.500	5.026	0.000	9.611	0.000	0.000	0.000	0.000	0.014	0.000
IF	735.500	5.223	0.000	9.610	0.000	0.000	0.000	0.000	-0.003	0.000
IF	745.000	4.961	0.000	9.610	0.000	0.000	0.000	0.000	0.007	0.000
IF	754.500	5.354	0.000	9.609	0.000	0.000	0.000	0.000	0.007	0.000
IF	763.500	5.092	0.000	9.609	0.000	0.000	0.000	0.000	-0.034	0.000
IF	771.000	4.797	0.000	9.609	0.000	0.000	0.000	0.000	0.010	0.000
IF	777.000	5.223	0.000	9.609	0.000	0.000	0.000	0.000	0.048	0.000
IF	786.000	5.518	0.000	9.608	0.000	0.000	0.000	0.000	0.016	0.000
IF	800.000	5.584	0.000	9.608	0.000	0.000	0.000	0.000	0.019	0.000
IF	816.000	6.076	0.000	9.608	0.000	0.000	0.000	0.000	0.041	0.000
IF	835.500	7.028	0.000	9.607	0.000	0.000	0.000	0.000	0.036	0.000
IF	850.500	7.323	0.000	9.607	0.000	0.000	0.000	0.000	0.030	0.000
IF	862.500	7.848	0.000	9.607	0.000	0.000	0.000	0.000	0.034	0.000
IF	879.500	8.307	0.000	9.606	0.000	0.000	0.000	0.000	0.033	0.000
IF	890.000	8.766	0.000	9.606	0.000	0.000	0.000	0.000	-0.055	0.000
IF	897.500	7.316	0.000	9.606	0.000	0.000	0.000	0.000	-0.057	0.000
IF	921.500	6.962	0.000	9.605	0.000	0.000	0.000	0.000	0.032	0.000
IF	944.500	8.796	0.000	9.605	0.000	0.000	0.000	0.000	0.029	0.000
IF	964.500	8.205	0.000	9.605	0.000	0.000	0.000	0.000	-0.027	0.000
IF	987.500	7.618	0.000	9.605	0.000	0.000	0.000	0.000	-0.008	0.000
IF	1005.000	7.874	0.000	9.594	0.000	0.000	0.000	0.000	-0.019	0.000
IF	1016.500	7.060	0.000	9.592	0.000	0.000	0.000	0.000	-0.017	0.000
IF	1034.000	7.389	0.000	9.589	0.000	0.000	0.000	0.000	0.001	0.000
IF	1041.500	7.093	0.000	9.587	0.000	0.000	0.000	0.000	-0.019	0.000
IF	1047.500	7.126	0.000	9.586	0.000	0.000	0.000	0.000	0.023	0.000
IF	1057.500	7.454	0.000	9.584	0.000	0.000	0.000	0.000	0.037	0.000
IF	1068.000	7.881	0.000	9.583	0.000	0.000	0.000	0.000	0.063	0.000
IF	1082.000	8.996	0.000	9.583	0.000	0.000	0.000	0.000	0.037	0.000
IF	1092.000	8.760	0.000	9.583	0.000	0.000	0.000	0.000	-0.027	0.000
IF	1093.000	8.694	0.000	9.583	0.000	0.000	0.000	0.000	0.039	0.000
IF	1100.500	9.094	0.000	9.583	0.000	0.000	0.000	0.000	0.059	0.000
IF	1108.000	9.583	0.000	9.583	0.000	0.000	0.000	0.000	0.065	0.000
AS	1173.300	9.626	0.000	9.626	0.000	0.000	0.000	0.000	-0.198	0.000

IF	1173.500	9.587	0.000	9.626	0.000	0.000	0.000	0.000	-0.059	0.000
IF	1179.500	9.259	0.000	9.626	0.000	0.000	0.000	0.000	-0.002	0.000
IF	1188.500	9.554	0.000	9.626	0.000	0.000	0.000	0.000	0.034	0.000
IF	1190.300	9.626	0.000	9.626	0.000	0.000	0.000	0.000	0.040	0.000
AS	1226.300	9.626	0.000	9.626	0.000	0.000	0.000	0.000	-0.034	0.000
IF	1226.500	9.619	0.000	9.626	0.000	0.000	0.000	0.000	-0.034	0.000
ET	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

1

	END STATION	END ELEVATION	FETCH LENGTH	SURGE ELEV 10-YEAR	SURGE ELEV 100-YEAR	INITIAL WAVE HEIGHT	INITIAL W. PERIOD		BOTTOM SLOPE	AVERAGE A-ZONES
IE	0.000	-1.356	1.000	1.000	9.401	3.261	7.945	56.140	0.011	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	1.000	-1.344	0.000	9.401	0.000	0.000	0.000	0.000	0.011	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	2.000	-1.333	0.000	9.401	0.000	0.000	0.000	0.000	0.012	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	3.000	-1.321	0.000	9.401	0.000	0.000	0.000	0.000	0.011	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	4.000	-1.310	0.000	9.401	0.000	0.000	0.000	0.000	0.011	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	5.000	-1.299	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	6.000	-1.287	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	7.000	-1.276	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	8.000	-1.264	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	9.000	-1.253	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	10.000	-1.242	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	11.000	-1.230	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	12.000	-1.219	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	13.000	-1.207	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	14.000	-1.196	0.000	9.402	0.000	0.000	0.000	0.000	0.012	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	15.000	-1.184	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	16.000	-1.173	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	17.000	-1.161	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	18.000	-1.150	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	19.000	-1.138	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	20.000	-1.127	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	21.000	-1.116	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	22.000	-1.104	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	23.000	-1.093	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	24.000	-1.081	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	25.000	-1.070	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	26.000	-1.059	0.000	9.402	0.000	0.000	0.000	0.000	0.012	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	27.000	-1.047	0.000	9.402	0.000	0.000	0.000	0.000	0.011	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	28.000	-1.036	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	29.000	-1.024	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	30.000	-1.013	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE

	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	31.000	-1.001	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	32.000	-0.990	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	33.000	-0.979	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	34.000	-0.967	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	35.000	-0.956	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	36.000	-0.944	0.000	9.403	0.000	0.000	0.000	0.000	0.012	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	37.000	-0.933	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	38.000	-0.921	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	39.000	-0.910	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	40.000	-0.898	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	41.000	-0.887	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	42.000	-0.876	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	43.000	-0.864	0.000	9.403	0.000	0.000	0.000	0.000	0.012	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	44.000	-0.853	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	45.000	-0.841	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	46.000	-0.830	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	47.000	-0.818	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	48.000	-0.807	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	49.000	-0.795	0.000	9.403	0.000	0.000	0.000	0.000	0.012	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	50.000	-0.784	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	51.000	-0.773	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	52.000	-0.761	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	53.000	-0.750	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	54.000	-0.738	0.000	9.403	0.000	0.000	0.000	0.000	0.011	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	55.000	-0.727	0.000	9.403	0.000	0.000	0.000	0.000	0.015	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	56.000	-0.708	0.000	9.403	0.000	0.000	0.000	0.000	0.034	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	57.000	-0.660	0.000	9.403	0.000	0.000	0.000	0.000	0.049	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	58.000	-0.610	0.000	9.403	0.000	0.000	0.000	0.000	0.049	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	59.000	-0.562	0.000	9.403	0.000	0.000	0.000	0.000	0.049	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	60.000	-0.513	0.000	9.403	0.000	0.000	0.000	0.000	0.049	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	61.000	-0.464	0.000	9.403	0.000	0.000	0.000	0.000	0.049	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	62.000	-0.415	0.000	9.403	0.000	0.000	0.000	0.000	0.049	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	63.000	-0.366	0.000	9.403	0.000	0.000	0.000	0.000	0.049	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	64.000	-0.317	0.000	9.403	0.000	0.000	0.000	0.000	0.049	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE

	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	65.000	-0.269	0.000	9.403	0.000	0.000	0.000	0.000	0.049	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	66.000	-0.220	0.000	9.403	0.000	0.000	0.000	0.000	0.049	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	67.000	-0.171	0.000	9.403	0.000	0.000	0.000	0.000	0.049	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	68.000	-0.122	0.000	9.403	0.000	0.000	0.000	0.000	0.049	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	69.000	-0.073	0.000	9.403	0.000	0.000	0.000	0.000	0.049	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	70.000	-0.024	0.000	9.403	0.000	0.000	0.000	0.000	0.142	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	73.500	0.568	0.000	9.403	0.000	0.000	0.000	0.000	-0.030	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	81.000	-0.351	0.000	9.403	0.000	0.000	0.000	0.000	-0.038	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	90.000	-0.056	0.000	9.403	0.000	0.000	0.000	0.000	0.027	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	99.000	0.141	0.000	9.403	0.000	0.000	0.000	0.000	0.046	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	106.500	0.699	0.000	9.403	0.000	0.000	0.000	0.000	0.063	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	113.500	1.060	0.000	9.403	0.000	0.000	0.000	0.000	0.145	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	121.000	2.799	0.000	9.403	0.000	0.000	0.000	0.000	0.231	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	128.000	4.406	0.000	9.403	0.000	0.000	0.000	0.000	0.209	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	134.500	5.620	0.000	9.403	0.000	0.000	0.000	0.000	0.301	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	141.100	8.352	0.000	9.509	0.000	0.000	0.000	0.000	0.262	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	144.400	8.218	0.000	9.629	0.000	0.000	0.000	0.000	-0.041	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	147.600	8.083	0.000	9.641	0.000	0.000	0.000	0.000	-0.030	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	150.900	8.025	0.000	9.637	0.000	0.000	0.000	0.000	-0.014	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	154.200	7.995	0.000	9.641	0.000	0.000	0.000	0.000	-0.009	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	157.500	7.964	0.000	9.645	0.000	0.000	0.000	0.000	-0.001	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	160.800	7.991	0.000	9.648	0.000	0.000	0.000	0.000	0.016	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	164.000	8.068	0.000	9.651	0.000	0.000	0.000	0.000	0.018	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	167.300	8.107	0.000	9.653	0.000	0.000	0.000	0.000	0.003	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	170.600	8.090	0.000	9.657	0.000	0.000	0.000	0.000	0.002	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	173.900	8.116	0.000	9.659	0.000	0.000	0.000	0.000	0.017	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	177.200	8.201	0.000	9.661	0.000	0.000	0.000	0.000	0.026	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	180.400	8.285	0.000	9.662	0.000	0.000	0.000	0.000	0.026	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	183.700	8.370	0.000	9.665	0.000	0.000	0.000	0.000	0.026	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	187.000	8.454	0.000	9.668	0.000	0.000	0.000	0.000	0.025	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	190.300	8.536	0.000	9.671	0.000	0.000	0.000	0.000	0.025	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	193.600	8.618	0.000	9.674	0.000	0.000	0.000	0.000	0.025	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	196.800	8.700	0.000	9.678	0.000	0.000	0.000	0.000	-0.002	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	200.100	8.608	0.000	9.683	0.000	0.000	0.000	0.000	-0.012	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE

	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	203.400	8.620	0.000	9.685	0.000	0.000	0.000	0.000	0.004	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	206.700	8.632	0.000	9.686	0.000	0.000	0.000	0.000	0.001	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	210.000	8.623	0.000	9.687	0.000	0.000	0.000	0.000	-0.007	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	213.300	8.589	0.000	9.689	0.000	0.000	0.000	0.000	-0.010	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	216.500	8.555	0.000	9.689	0.000	0.000	0.000	0.000	0.011	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	219.800	8.659	0.000	9.689	0.000	0.000	0.000	0.000	0.048	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	223.100	8.875	0.000	9.689	0.000	0.000	0.000	0.000	0.054	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	226.400	9.014	0.000	9.692	0.000	0.000	0.000	0.000	0.011	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	229.700	8.948	0.000	9.697	0.000	0.000	0.000	0.000	0.003	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	232.900	9.034	0.000	9.699	0.000	0.000	0.000	0.000	0.035	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	236.200	9.177	0.000	9.703	0.000	0.000	0.000	0.000	-0.024	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	239.500	8.878	0.000	9.708	0.000	0.000	0.000	0.000	-0.004	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	242.800	9.154	0.000	9.707	0.000	0.000	0.000	0.000	0.084	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	246.000	9.426	0.000	9.707	0.000	0.000	0.000	0.000	0.065	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	251.000	9.688	0.000	9.707	0.000	0.000	0.000	0.000	0.010	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	256.000	9.524	0.000	9.707	0.000	0.000	0.000	0.000	0.003	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	257.600	9.707	0.000	9.707	0.000	0.000	0.000	0.000	0.114	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
AS	319.600	9.626	0.000	9.626	0.000	0.000	0.000	0.000	-0.025	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	320.000	9.616	0.000	9.626	0.000	0.000	0.000	0.000	0.000	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	320.200	9.626	0.000	9.626	0.000	0.000	0.000	0.000	0.050	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
AS	334.300	9.626	0.000	9.626	0.000	0.000	0.000	0.000	-0.099	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	338.000	9.259	0.000	9.626	0.000	0.000	0.000	0.000	-0.004	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	351.000	9.557	0.000	9.626	0.000	0.000	0.000	0.000	0.012	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	358.000	9.491	0.000	9.626	0.000	0.000	0.000	0.000	-0.025	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	372.000	9.029	0.000	9.626	0.000	0.000	0.000	0.000	-0.073	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	388.500	7.257	0.000	9.626	0.000	0.000	0.000	0.000	-0.071	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	400.500	6.995	0.000	9.626	0.000	0.000	0.000	0.000	0.010	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	409.000	7.454	0.000	9.626	0.000	0.000	0.000	0.000	0.027	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	416.500	7.421	0.000	9.626	0.000	0.000	0.000	0.000	-0.011	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	423.500	7.290	0.000	9.626	0.000	0.000	0.000	0.000	-0.018	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	431.500	7.159	0.000	9.626	0.000	0.000	0.000	0.000	0.004	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	441.500	7.356	0.000	9.626	0.000	0.000	0.000	0.000	-0.008	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	448.000	7.028	0.000	9.625	0.000	0.000	0.000	0.000	-0.079	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	451.500	6.568	0.000	9.625	0.000	0.000	0.000	0.000	-0.017	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE

	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	459.500	6.831	0.000	9.625	0.000	0.000	0.000	0.000	-0.009	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	469.500	6.404	0.000	9.624	0.000	0.000	0.000	0.000	-0.019	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	480.500	6.437	0.000	9.624	0.000	0.000	0.000	0.000	-0.030	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	490.000	5.781	0.000	9.623	0.000	0.000	0.000	0.000	-0.032	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	499.000	5.846	0.000	9.623	0.000	0.000	0.000	0.000	0.006	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	511.500	5.912	0.000	9.622	0.000	0.000	0.000	0.000	-0.013	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	520.000	5.584	0.000	9.621	0.000	0.000	0.000	0.000	0.003	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	523.500	5.945	0.000	9.621	0.000	0.000	0.000	0.000	-0.010	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	533.000	5.453	0.000	9.621	0.000	0.000	0.000	0.000	-0.007	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	546.500	5.781	0.000	9.620	0.000	0.000	0.000	0.000	0.001	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	558.000	5.486	0.000	9.619	0.000	0.000	0.000	0.000	-0.038	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	565.500	5.059	0.000	9.619	0.000	0.000	0.000	0.000	-0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	570.000	5.223	0.000	9.618	0.000	0.000	0.000	0.000	0.051	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	578.500	5.715	0.000	9.618	0.000	0.000	0.000	0.000	0.034	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	589.500	5.879	0.000	9.618	0.000	0.000	0.000	0.000	-0.015	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	596.000	5.453	0.000	9.617	0.000	0.000	0.000	0.000	-0.021	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	602.000	5.617	0.000	9.617	0.000	0.000	0.000	0.000	0.021	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	612.000	5.781	0.000	9.617	0.000	0.000	0.000	0.000	-0.014	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	623.000	5.321	0.000	9.616	0.000	0.000	0.000	0.000	-0.007	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	634.000	5.617	0.000	9.616	0.000	0.000	0.000	0.000	0.010	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	645.000	5.551	0.000	9.615	0.000	0.000	0.000	0.000	-0.034	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	655.000	4.895	0.000	9.615	0.000	0.000	0.000	0.000	-0.074	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	664.000	4.140	0.000	9.614	0.000	0.000	0.000	0.000	-0.052	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	675.000	3.845	0.000	9.613	0.000	0.000	0.000	0.000	0.033	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	689.000	4.961	0.000	9.613	0.000	0.000	0.000	0.000	0.055	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	700.000	5.223	0.000	9.612	0.000	0.000	0.000	0.000	-0.010	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	709.500	4.764	0.000	9.612	0.000	0.000	0.000	0.000	-0.016	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	716.000	4.961	0.000	9.611	0.000	0.000	0.000	0.000	0.024	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	719.000	4.993	0.000	9.611	0.000	0.000	0.000	0.000	0.007	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	725.500	5.026	0.000	9.611	0.000	0.000	0.000	0.000	0.014	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	735.500	5.223	0.000	9.610	0.000	0.000	0.000	0.000	-0.003	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	745.000	4.961	0.000	9.610	0.000	0.000	0.000	0.000	0.007	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	754.500	5.354	0.000	9.609	0.000	0.000	0.000	0.000	0.007	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	763.500	5.092	0.000	9.609	0.000	0.000	0.000	0.000	-0.034	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE

	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	771.000	4.797	0.000	9.609	0.000	0.000	0.000	0.000	0.010	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	777.000	5.223	0.000	9.609	0.000	0.000	0.000	0.000	0.048	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	786.000	5.518	0.000	9.608	0.000	0.000	0.000	0.000	0.016	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	800.000	5.584	0.000	9.608	0.000	0.000	0.000	0.000	0.019	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	816.000	6.076	0.000	9.608	0.000	0.000	0.000	0.000	0.041	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	835.500	7.028	0.000	9.607	0.000	0.000	0.000	0.000	0.036	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	850.500	7.323	0.000	9.607	0.000	0.000	0.000	0.000	0.030	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	862.500	7.848	0.000	9.607	0.000	0.000	0.000	0.000	0.034	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	879.500	8.307	0.000	9.606	0.000	0.000	0.000	0.000	0.033	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	890.000	8.766	0.000	9.606	0.000	0.000	0.000	0.000	-0.055	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	897.500	7.316	0.000	9.606	0.000	0.000	0.000	0.000	-0.057	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	921.500	6.962	0.000	9.605	0.000	0.000	0.000	0.000	0.032	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	944.500	8.796	0.000	9.605	0.000	0.000	0.000	0.000	0.029	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	964.500	8.205	0.000	9.605	0.000	0.000	0.000	0.000	-0.027	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	987.500	7.618	0.000	9.605	0.000	0.000	0.000	0.000	-0.008	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	1005.000	7.874	0.000	9.594	0.000	0.000	0.000	0.000	-0.019	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	1016.500	7.060	0.000	9.592	0.000	0.000	0.000	0.000	-0.017	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	1034.000	7.389	0.000	9.589	0.000	0.000	0.000	0.000	0.001	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	1041.500	7.093	0.000	9.587	0.000	0.000	0.000	0.000	-0.019	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	1047.500	7.126	0.000	9.586	0.000	0.000	0.000	0.000	0.023	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	1057.500	7.454	0.000	9.584	0.000	0.000	0.000	0.000	0.037	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	1068.000	7.881	0.000	9.583	0.000	0.000	0.000	0.000	0.063	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	1082.000	8.996	0.000	9.583	0.000	0.000	0.000	0.000	0.037	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	1092.000	8.760	0.000	9.583	0.000	0.000	0.000	0.000	-0.027	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	1093.000	8.694	0.000	9.583	0.000	0.000	0.000	0.000	0.039	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	1100.500	9.094	0.000	9.583	0.000	0.000	0.000	0.000	0.059	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	1108.000	9.583	0.000	9.583	0.000	0.000	0.000	0.000	0.065	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
AS	1173.300	9.626	0.000	9.626	0.000	0.000	0.000	0.000	-0.198	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	1173.500	9.587	0.000	9.626	0.000	0.000	0.000	0.000	-0.059	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	1179.500	9.259	0.000	9.626	0.000	0.000	0.000	0.000	-0.002	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	1188.500	9.554	0.000	9.626	0.000	0.000	0.000	0.000	0.034	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	1190.300	9.626	0.000	9.626	0.000	0.000	0.000	0.000	0.040	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
AS	1226.300	9.626	0.000	9.626	0.000	0.000	0.000	0.000	-0.034	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	1226.500	9.619	0.000	9.626	0.000	0.000	0.000	0.000	-0.034	0.000

----------END OF TRANSECT----------

NOTE:
SURGE ELEVATION INCLUDES CONTRIBUTIONS FROM ASTRONOMICAL AND STORM TIDES.
1

PART2: CONTROLLING WAVE HEIGHTS, SPECTRAL PEAK WAVE PERIOD, AND WAVE CREST ELEVATIONS

	LOCATION	CONTROLLING WAVE HEIGHT	SPECTRAL PEAK WAVE PERIOD	WAVE CREST ELEVATION
IE	0.00	3.26	7.95	11.68
OF	1.00	3.26	7.95	11.68
OF	2.00	3.26	7.95	11.69
OF	3.00	3.27	7.95	11.69
OF	4.00	3.27	7.95	11.69
OF	5.00	3.27	7.95	11.69
OF	6.00	3.27	7.95	11.69
OF	7.00	3.27	7.95	11.69
OF	8.00	3.27	7.95	11.69
OF	9.00	3.28	7.95	11.69
OF	10.00	3.28	7.95	11.70
OF	11.00	3.28	7.95	11.70
OF	12.00	3.28	7.95	11.70
OF	13.00	3.28	7.95	11.70
OF	14.00	3.28	7.95	11.70
OF	15.00	3.29	7.95	11.70
OF	16.00	3.29	7.95	11.70
OF	17.00	3.29	7.95	11.70
OF	18.00	3.29	7.95	11.71
OF	19.00	3.29	7.95	11.71
OF	20.00	3.29	7.95	11.71
OF	21.00	3.30	7.95	11.71
OF	22.00	3.30	7.95	11.71
OF	23.00	3.30	7.95	11.71
OF	24.00	3.30	7.95	11.71
OF	25.00	3.30	7.95	11.71
OF	26.00	3.30	7.95	11.71
OF	27.00	3.31	7.95	11.72
OF	28.00	3.31	7.95	11.72
OF	29.00	3.31	7.95	11.72
OF	30.00	3.31	7.95	11.72
OF	31.00	3.31	7.95	11.72
OF	32.00	3.31	7.95	11.72
OF	33.00	3.32	7.95	11.72
OF	34.00	3.32	7.95	11.72
OF	35.00	3.32	7.95	11.73
OF	36.00	3.32	7.95	11.73
OF	37.00	3.32	7.95	11.73
OF	38.00	3.32	7.95	11.73
OF	39.00	3.33	7.95	11.73
OF	40.00	3.33	7.95	11.73
OF	41.00	3.33	7.95	11.73
OF	42.00	3.33	7.95	11.73
OF	43.00	3.33	7.95	11.74
OF	44.00	3.33	7.95	11.74
OF	45.00	3.34	7.95	11.74
OF	46.00	3.34	7.95	11.74
OF	47.00	3.34	7.95	11.74
OF	48.00	3.34	7.95	11.74
OF	49.00	3.34	7.95	11.74
OF	50.00	3.34	7.95	11.74
OF	51.00	3.35	7.95	11.75
OF	52.00	3.35	7.95	11.75
OF	53.00	3.35	7.95	11.75
OF	54.00	3.35	7.95	11.75
OF	55.00	3.35	7.95	11.75
OF	56.00	3.36	7.95	11.75
OF	57.00	3.36	7.95	11.76
OF	58.00	3.37	7.95	11.76
OF	59.00	3.37	7.95	11.76
OF	60.00	3.38	7.95	11.77
OF	61.00	3.38	7.95	11.77
OF	62.00	3.39	7.95	11.78
OF	63.00	3.40	7.95	11.78
OF	64.00	3.40	7.95	11.79
OF	65.00	3.41	7.95	11.79
OF	66.00	3.42	7.95	11.79
OF	67.00	3.42	7.95	11.80
OF	68.00	3.43	7.95	11.80
OF	69.00	3.43	7.95	11.81
OF	70.00	3.44	7.95	11.81
IF	73.50	3.52	7.95	11.87
OF	81.00	3.41	7.95	11.79
OF	90.00	3.45	7.95	11.82
IF	99.00	3.48	7.95	11.84
IF	106.50	3.55	7.95	11.89
IF	113.50	3.61	7.95	11.93
IF	121.00	3.83	7.95	12.09
IF	128.00	3.60	7.95	11.93
IF	134.50	2.90	7.95	11.43
IF	141.10	0.90	7.95	10.14
IF	144.40	0.95	7.95	10.29
IF	147.60	0.97	7.95	10.32
IF	150.90	0.98	7.95	10.33
IF	154.20	0.99	7.95	10.34
IF	157.50	1.00	7.95	10.35
IF	160.80	1.01	7.95	10.35
IF	164.00	1.00	7.95	10.35
IF	167.30	1.00	7.95	10.35
IF	170.60	1.01	7.95	10.36
IF	173.90	1.01	7.95	10.36
IF	177.20	1.00	7.95	10.36
IF	180.40	0.99	7.95	10.35
IF	183.70	0.98	7.95	10.35
IF	187.00	0.94	7.95	10.33

IF	190.30	0.88	7.95	10.29
IF	193.60	0.82	7.95	10.25
IF	196.80	0.76	7.95	10.21
IF	200.10	0.78	7.95	10.23
IF	203.40	0.78	7.95	10.23
IF	206.70	0.79	7.95	10.24
IF	210.00	0.79	7.95	10.24
IF	213.30	0.80	7.95	10.25
IF	216.50	0.81	7.95	10.26
IF	219.80	0.80	7.95	10.25
IF	223.10	0.63	7.95	10.13
IF	226.40	0.53	7.95	10.06
IF	229.70	0.55	7.95	10.08
IF	232.90	0.52	7.95	10.06
IF	236.20	0.41	7.95	9.99
IF	239.50	0.46	7.95	10.03
IF	242.80	0.43	7.95	10.01
IF	246.00	0.22	7.95	9.86
IF	251.00	0.01	7.95	9.72
IF	256.00	0.14	7.95	9.80
IF	257.60	0.01	7.95	9.71
AS	319.60	0.00	0.00	9.63
IF	320.00	0.01	0.13	9.63
IF	320.20	0.01	0.14	9.63
AS	334.30	0.00	0.00	9.63
IF	338.00	0.04	0.22	9.65
IF	351.00	0.05	0.36	9.66
IF	358.00	0.08	0.40	9.68
IF	372.00	0.16	0.47	9.74
IF	388.50	0.21	0.53	9.77
IF	400.50	0.24	0.57	9.79
IF	409.00	0.26	0.59	9.81
IF	416.50	0.27	0.61	9.82
IF	423.50	0.29	0.63	9.83
IF	431.50	0.30	0.65	9.84
IF	441.50	0.33	0.67	9.85
IF	448.00	0.34	0.68	9.86
IF	451.50	0.34	0.69	9.87
IF	459.50	0.36	0.70	9.88
IF	469.50	0.38	0.72	9.89
IF	480.50	0.40	0.74	9.90
IF	490.00	0.42	0.75	9.91
IF	499.00	0.43	0.77	9.93
IF	511.50	0.45	0.79	9.94
IF	520.00	0.47	0.80	9.95
IF	523.50	0.47	0.80	9.95
IF	533.00	0.49	0.82	9.96
IF	546.50	0.51	0.84	9.98
IF	558.00	0.53	0.85	9.99
IF	565.50	0.54	0.86	10.00
IF	570.00	0.55	0.87	10.00
IF	578.50	0.56	0.88	10.01
IF	589.50	0.58	0.89	10.02
IF	596.00	0.59	0.90	10.03
IF	602.00	0.60	0.90	10.04
IF	612.00	0.61	0.91	10.05
IF	623.00	0.63	0.93	10.06
IF	634.00	0.64	0.94	10.07
IF	645.00	0.66	0.95	10.08
IF	655.00	0.67	0.96	10.09
IF	664.00	0.69	0.97	10.09
IF	675.00	0.70	0.98	10.10
IF	689.00	0.72	0.99	10.12
IF	700.00	0.73	1.00	10.13
IF	709.50	0.75	1.01	10.14
IF	716.00	0.76	1.02	10.14
IF	719.00	0.76	1.02	10.14
IF	725.50	0.77	1.02	10.15
IF	735.50	0.78	1.03	10.16
IF	745.00	0.79	1.04	10.17
IF	754.50	0.81	1.05	10.17
IF	763.50	0.82	1.06	10.18
IF	771.00	0.83	1.06	10.19
IF	777.00	0.83	1.07	10.19
IF	786.00	0.84	1.07	10.20
IF	800.00	0.86	1.09	10.21
IF	816.00	0.88	1.10	10.22
IF	835.50	0.88	1.11	10.22
IF	850.50	0.88	1.12	10.22
IF	862.50	0.82	1.13	10.18
IF	879.50	0.72	1.14	10.11
IF	890.00	0.54	1.15	9.98
IF	897.50	0.61	1.16	10.03
IF	921.50	0.67	1.17	10.08
IF	944.50	0.53	1.19	9.97
IF	964.50	0.59	1.20	10.02
IF	987.50	0.66	1.21	10.07
IF	1005.00	0.69	1.22	10.07
IF	1016.50	0.74	1.23	10.11
IF	1034.00	0.76	1.24	10.12
IF	1041.50	0.78	1.25	10.14
IF	1047.50	0.79	1.25	10.14
IF	1057.50	0.80	1.25	10.14
IF	1068.00	0.80	1.26	10.14
IF	1082.00	0.41	1.27	9.87
IF	1092.00	0.44	1.27	9.89
IF	1093.00	0.44	1.27	9.89
IF	1100.50	0.35	1.28	9.83
IF	1108.00	0.01	1.28	9.59
AS	1173.30	0.00	0.00	9.63
IF	1173.50	0.01	0.12	9.64
IF	1179.50	0.05	0.26	9.66

IF	1188.50	0.05	0.35	9.66
IF	1190.30	0.01	0.36	9.63
AS	1226.30	0.00	0.00	9.63
IF	1226.50	0.01	0.12	9.63

PART3 LOCATION OF AREAS ABOVE 100-YEAR SURGE

BETWEEN 257.60 AND 319.60
BETWEEN 320.20 AND 334.30
BETWEEN 1108.00 AND 1173.30
BETWEEN 1190.30 AND 1226.30

PART4 LOCATION OF SURGE CHANGES

STATION	10-YEAR SURGE	100-YEAR SURGE
5.00	1.00	9.40
28.00	1.00	9.40
141.10	1.00	9.51
144.40	1.00	9.63
147.60	1.00	9.64
150.90	1.00	9.64
154.20	1.00	9.64
157.50	1.00	9.65
160.80	1.00	9.65
164.00	1.00	9.65
167.30	1.00	9.65
170.60	1.00	9.66
173.90	1.00	9.66
177.20	1.00	9.66
180.40	1.00	9.66
183.70	1.00	9.66
187.00	1.00	9.67
190.30	1.00	9.67
193.60	1.00	9.67
196.80	1.00	9.68
200.10	1.00	9.68
203.40	1.00	9.69
206.70	1.00	9.69
210.00	1.00	9.69
213.30	1.00	9.69
226.40	1.00	9.69
229.70	1.00	9.70
232.90	1.00	9.70
236.20	1.00	9.70
239.50	1.00	9.71
242.80	1.00	9.71
319.60	1.00	9.63
448.00	1.00	9.62
469.50	1.00	9.62
490.00	1.00	9.62
511.50	1.00	9.62
520.00	1.00	9.62
546.50	1.00	9.62
558.00	1.00	9.62
570.00	1.00	9.62
596.00	1.00	9.62
623.00	1.00	9.62
645.00	1.00	9.61
664.00	1.00	9.61
675.00	1.00	9.61
700.00	1.00	9.61
716.00	1.00	9.61
735.50	1.00	9.61
754.50	1.00	9.61
786.00	1.00	9.61
835.50	1.00	9.61
879.50	1.00	9.61
921.50	1.00	9.60
1005.00	1.00	9.59
1016.50	1.00	9.59
1034.00	1.00	9.59
1041.50	1.00	9.59
1047.50	1.00	9.59
1057.50	1.00	9.58
1068.00	1.00	9.58
1173.30	1.00	9.63

PART5 LOCATION OF V ZONES

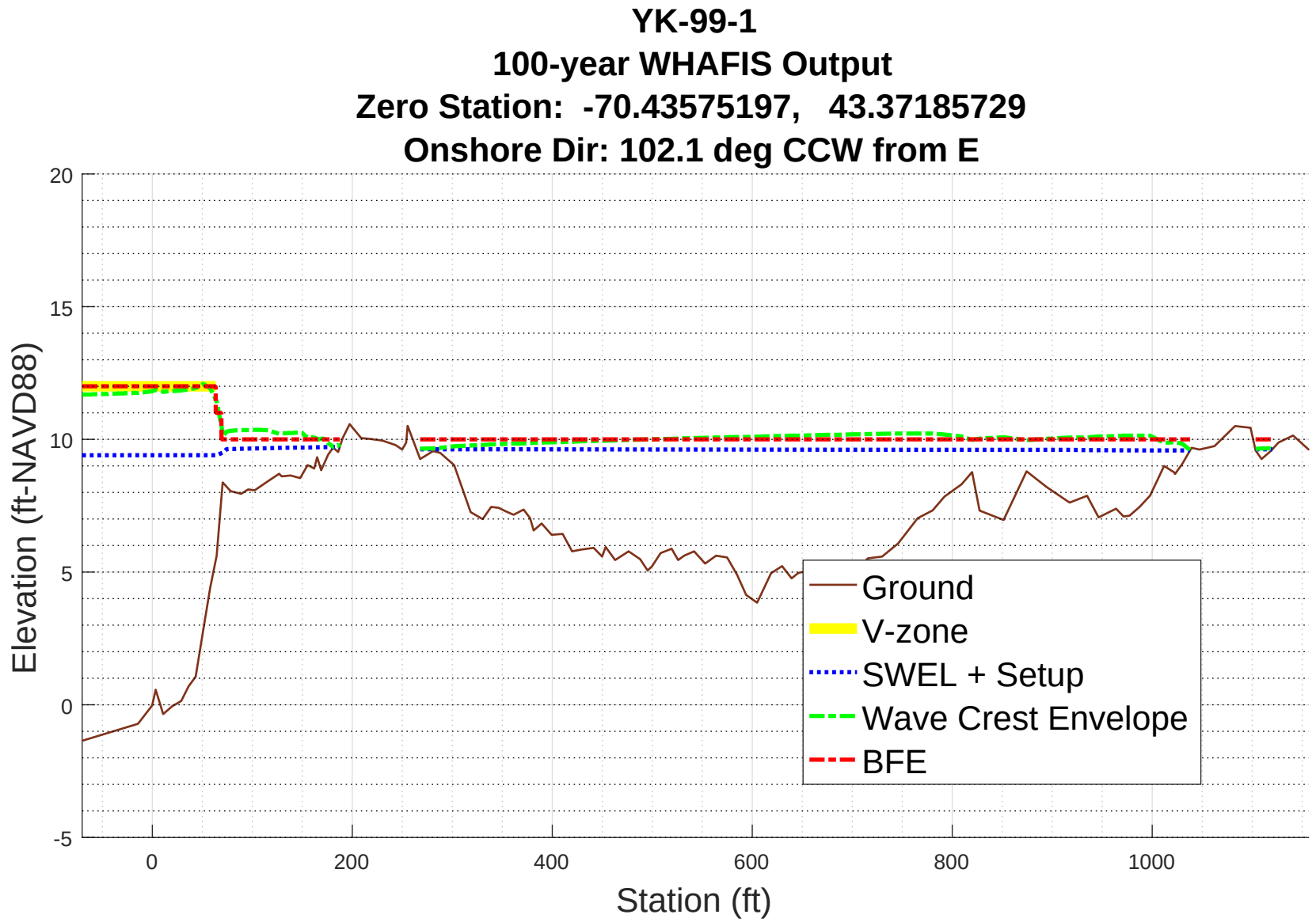
STATION OF GUTTER	LOCATION OF ZONE
133.55	WINDWARD

PART6 NUMBERED A ZONES AND V ZONES

STATION OF GUTTER	ELEVATION	ZONE DESIGNATION		FHF
0.00	11.68			
		V23	EL=12	130
4.00	11.69			
		V23	EL=12	130
5.00	11.69			
		V23	EL=12	130
27.00	11.72			
		V23	EL=12	130
28.00	11.72			
		V23	EL=12	130
133.55	11.50			
		A18	EL=12	90
133.59	11.50			
		A18	EL=11	90
134.50	11.43			
		A18	EL=11	90
139.25	10.50			
		A18	EL=10	90
141.10	10.14			
		A18	EL=10	90
144.40	10.29			
		A18	EL=10	90
147.60	10.32			
		A18	EL=10	90
150.90	10.33			

154.20	10.34	A18	EL=10	90
157.50	10.35	A18	EL=10	90
160.80	10.35	A18	EL=10	90
164.00	10.35	A18	EL=10	90
167.30	10.35	A18	EL=10	90
170.60	10.36	A18	EL=10	90
173.90	10.36	A18	EL=10	90
177.20	10.36	A18	EL=10	90
180.40	10.35	A18	EL=10	90
183.70	10.35	A18	EL=10	90
187.00	10.33	A18	EL=10	90
190.30	10.29	A18	EL=10	90
193.60	10.25	A18	EL=10	90
196.80	10.21	A18	EL=10	90
200.10	10.23	A18	EL=10	90
203.40	10.23	A18	EL=10	90
206.70	10.24	A18	EL=10	90
210.00	10.24	A18	EL=10	90
213.30	10.25	A18	EL=10	90
223.10	10.13	A18	EL=10	90
226.40	10.06	A18	EL=10	90
229.70	10.08	A18	EL=10	90
232.90	10.06	A18	EL=10	90
236.20	9.99	A18	EL=10	90
239.50	10.03	A18	EL=10	90
242.80	10.01	A18	EL=10	90
257.60	9.71			
319.60	9.63	A18	EL=10	90
320.20	9.63			
334.30	9.63	A18	EL=10	90
441.50	9.85	A18	EL=10	90
448.00	9.86	A18	EL=10	90
459.50	9.88	A18	EL=10	90
469.50	9.89	A18	EL=10	90
480.50	9.90	A18	EL=10	90
490.00	9.91	A18	EL=10	90
499.00	9.93	A18	EL=10	90
511.50	9.94	A18	EL=10	90
520.00	9.95	A18	EL=10	90
533.00	9.96	A18	EL=10	90
546.50	9.98	A18	EL=10	90
558.00	9.99	A18	EL=10	90
565.50	10.00	A18	EL=10	90
570.00	10.00	A18	EL=10	90
589.50	10.02	A18	EL=10	90
596.00	10.03	A18	EL=10	90
612.00	10.05	A18	EL=10	90
623.00	10.06	A18	EL=10	90
634.00	10.07	A18	EL=10	90
645.00	10.08	A18	EL=10	90
655.00	10.09	A18	EL=10	90
664.00	10.09			

```
                                                                A18  EL=10      90
                                675.00          10.10
                                                                A18  EL=10      90
                                689.00          10.12
                                                                A18  EL=10      90
                                700.00          10.13
                                                                A18  EL=10      90
                                709.50          10.14
                                                                A18  EL=10      90
                                716.00          10.14
                                                                A18  EL=10      90
                                725.50          10.15
                                                                A18  EL=10      90
                                735.50          10.16
                                                                A18  EL=10      90
                                745.00          10.17
                                                                A18  EL=10      90
                                754.50          10.17
                                                                A18  EL=10      90
                                777.00          10.19
                                                                A18  EL=10      90
                                786.00          10.20
                                                                A18  EL=10      90
                                816.00          10.22
                                                                A18  EL=10      90
                                835.50          10.22
                                                                A18  EL=10      90
                                862.50          10.18
                                                                A18  EL=10      90
                                879.50          10.11
                                                                A18  EL=10      90
                                897.50          10.03
                                                                A18  EL=10      90
                                921.50          10.08
                                                                A18  EL=10      90
                                987.50          10.07
                                                                A18  EL=10      90
                               1005.00          10.07
                                                                A18  EL=10      90
                               1016.50          10.11
                                                                A18  EL=10      90
                               1034.00          10.12
                                                                A18  EL=10      90
                               1041.50          10.14
                                                                A18  EL=10      90
                               1047.50          10.14
                                                                A18  EL=10      90
                               1057.50          10.14
                                                                A18  EL=10      90
                               1068.00          10.14
                                                                A18  EL=10      90
                               1108.00           9.59
                               1173.30           9.63
                                                                A18  EL=10      90
                               1190.30           9.63
                               1226.30           9.63
                                                                A18  EL=10      90
                               1226.50           9.63
                                    ZONE TERMINATED AT END OF TRANSECT
                                    PART 7   POSTSCRIPT NOTES
                    PS#  1   START(383686.1918,4803090.2879)
                    PS#  2   END(383576.4041,4803600.7391)
-1.000000e+00
```


YK-99-1
100-year WHAFIS Output
Zero Station: -70.43575197, 43.37185729
Onshore Dir: 102.1 deg CCW from E
Elevation (ft-NAVD88)
Station (ft)
20
15
10
5
0
-5
0
200
400
600
800
1000
Ground
V-zone
SWEL + Setup
Wave Crest Envelope
BFE

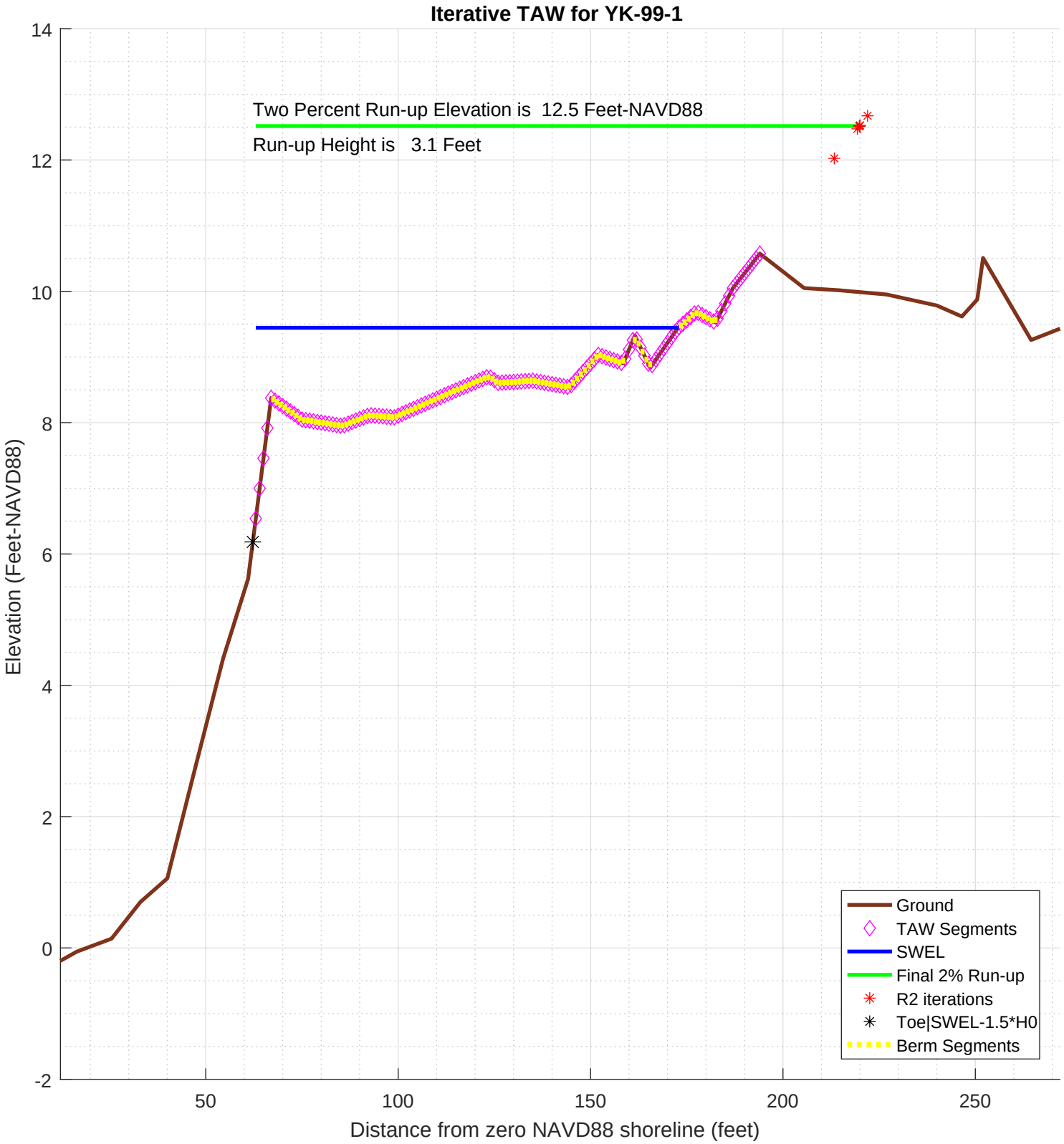
```
_____________________________________________________________
PART 4: TAW

Input Paramters:
    TWL- 9.4014 feet
    HS-  2.142 feet
    PER- 7.9359 seconds
    TOE- x: 40 , z: 1.0597 feet
    TOP- x: 194 , z: 10.5741 feet
    GBERM-   0.6
    GGROUGH- 1
    GBETA-   1
    GPERM-   1

RUNNING TAW:
...
MATLAB DIARY: /4_taw/logfiles/YK-99-1-DIARY.txt

CHECKING VALIDITY:
...
TAW method is not valid!
Runup elevation to be calculated using another method

PART 4 COMPLETE_____________________________________________
```


Iterative TAW for YK-99-1
Two Percent Run-up Elevation is 12.5 Feet-NAVD88
Run-up Height is 3.1 Feet
Elevation (Feet-NAVD88)
Distance from zero NAVD88 shoreline (feet)
14
12
10
8
6
4
2
0
-2
50
100
150
200
250
Ground
TAW Segments
SWEL
Final 2% Run-up
R2 iterations
Toe|SWEL-1.5*H0
Berm Segments

```
diary on         % begin recording

% FEMA appeal for The Town of Kennebunkport, York county, Maine
% TRANSECT ID: YK-99-1
% calculation by SJH, Ransom Consulting, Inc. 02-Apr-2020
% 100-year wave runup using TAW methodology
% including berm and weighted average with foreshore if necessary
%
% chk nld 20200220
%
% This script assumes that the incident wave conditions provided
% as input in the configuration section below are the
% appropriate values located at the end of the foreshore
% or toe of the slope on which the run-up is being calculated
% the script does not attempt to apply a depth limit or any other
% transformation to the incident wave conditions other than
% conversion of the peak wave period to the spectral mean wave
% as recommended in the references below
%
% references:
%
% Van der Meer, J.W., 2002. Technical Report Wave Run-up and
% Wave Overtopping at Dikes. TAW Technical Advisory Committee on
% Flood Defence, The Netherlands.
%
% FEMA. 2007,  Atlantic Ocean and Gulf of Mexico Coastal Guidelines Update
%
%
%

%-------------------------------------------------------------------------
% CONFIG
%-------------------------------------------------------------------------
fname='inpfiles/YK-99-1sta_ele_include.csv';   % file with station, elevation, include
                                    % third colunm is 0 for excluded points
imgname='logfiles/YK-99-1-runup';
SWEL=9.4014;  % 100-yr still water level including wave setup.
H0=2.142;    % significant wave height at toe of structure
Tp=7.9359;    % peak period, 1/fma,
T0=Tp/1.1;

gamma_berm=1;   % this may get changed automatically below
gamma_rough=1;
gamma_beta=1;
gamma_perm=1;

setupAtToe=-0.0047506;
maxSetup=0.30665;   % only used in case of berm/shallow foreshore weighted average

plotTitle='Iterative TAW for YK-99-1'

plotTitle =

Iterative TAW for YK-99-1



% END CONFIG
%------------------------------

SWEL=SWEL+setupAtToe

SWEL =

                9.3966494

SWEL_fore=SWEL+maxSetup

SWEL_fore =

                9.7032994



% FIND WAVELENGTH USING DEEPWATER DISPERSION RELATION
% using English units
L0=32.15/(2*pi)*T0^2

L0 =

          266.322655115062


% Find Hb (Munk, 1949)
%Hb=H0/(3.3*(H0/L0)^(1/3))
%Db=-Hb/.78+SWEL;  % depth at breaking

% The toe elevation here is only used to determine the average
% structure slope, it is not used to depth limit the wave height.
% Any depth limiting or other modification of the wave height
```

```
% to make it consitent with TAW guidance should be performed
% prior to the input of the significant wave height given above.
Ztoe=SWEL-1.5*H0

Ztoe =

                 6.1836494


% read the transect
[sta,dep,inc] = textread(fname,'%n%n%n%*[^\n]','delimiter',',','headerlines',0);

% remove unselected points
k=find(inc==0);
sta(k)=[];
dep(k)=[];

sta_org=sta;  % used for plotting purposes
dep_org=dep;


% initial guess at maximum run-up elevation to estimate slope
Z2=SWEL+1.5*H0

Z2 =

               12.6096494


% determine station at the max runup and -1.5*H0 (i.e. the toe)
top_sta=-999;
toe_sta=-999;
for kk=1:length(sta)-1
    if ((Z2 > dep(kk)) & (Z2 <= dep(kk+1)))    % here is the intersection of z2 with profile
       top_sta=interp1(dep(kk:kk+1),sta(kk:kk+1),Z2)
    end
    if  ((Ztoe > dep(kk)) & (Ztoe <= dep(kk+1)))    % here is the intersection of Ztoe with profile
       toe_sta=interp1(dep(kk:kk+1),sta(kk:kk+1),Ztoe)
    end
end

toe_sta =

           62.226972657228

% check to make sure we got them, if not extend the end slopes outward
S=diff(dep)./diff(sta);
if toe_sta==-999
   dy=dep(1)-Ztoe;
   toe_sta=sta(1)-dy/S(1)
end
if top_sta==-999
   dy=Z2-dep(end);
   top_sta=sta(end)+dy/S(end)
end

top_sta =

          221.143651153487


% just so the reader can tell the values aren't -999 anymore
top_sta

top_sta =

          221.143651153487

toe_sta

toe_sta =

           62.226972657228




% check for case where the toe of slope is below SWL-1.5*H0
% in this case interpolate setup from the setupAtToe(really setup as first station), and the max setup
% also un-include points seaward of SWL-1.5*H0
if Ztoe > dep(1)
   dd=SWEL_fore-dep;
   k=find(dd<0,1); % k is index of first land point
   staAtSWL=interp1(dep(k-1:k),sta(k-1:k),SWEL_fore);
   dsta=staAtSWL-sta(1);
   dsetup=maxSetup-setupAtToe;
   dsetdsta=dsetup/dsta;
   setup=setupAtToe+dsetdsta*(toe_sta-sta(1));
   sprintf('-!!- Location of SWEL-1.5*H0 is %4.1f ft landward of toe of slope',dsta)
   sprintf('-!!- Setup is interpolated between setup at toe of slope and max setup')
```

```
   sprintf('-!!-       setup is adjusted to %4.2f feet',setup)
   SWEL=SWEL-setupAtToe+setup;
   sprintf('-!!-       SWEL is adjusted to %4.2f feet',SWEL)
   k=find(dep < SWEL-1.5*H0)
   sta(k)=[];
   dep(k)=[];
else
   sprintf('-!!- The User has selected a starting point that is %4.2f feet above the elevation of SWEL-1.5H0\n',dep(1
   sprintf('-!!- This may be reasonable for some cases.  However the user may want to consider:\n')
   sprintf('-!!-   1) Selecting a starting point that is at or below %4.2f feet elevation, or\n', Ztoe)
   sprintf('-!!-   2) Reducing the incident wave height to a depth limited condition.\n')
end

ans =

-!!- Location of SWEL-1.5*H0 is 144.0 ft landward of toe of slope


ans =

-!!- Setup is interpolated between setup at toe of slope and max setup


ans =

-!!-       setup is adjusted to 0.04 feet


ans =

-!!-       SWEL is adjusted to 9.44 feet


k =

     1
     2
     3
     4
     5
     6
     7
     8
     9
    10
    11
    12
    13
    14
    15
    16
    17
    18
    19
    20
    21
    22
    23



% now iterate converge on a runup elevation
tol=0.01;  % convergence criteria
R2del=999;
R2_new=3*H0; %initial guess
R2=R2_new;
iter=0;
R2_all=[];
topStaAll=[];
Berm_Segs=[];
TAW_ALWAYS_VALID=1;
while(abs(R2del) > tol && iter <= 25)
    iter=iter+1;
    sprintf ('!----------------- STARTING ITERATION %d -----------------!',iter)
    % elevation of toe of slope
    Ztoe
    % station of toe slope (relative to 0-NAVD88 shoreline
    toe_sta
    % station of top of slope/extent of 2% run-up
    top_sta
    % elevation of top of slope/extent of 2% run-up
    Z2
    % incident significant wave height
    H0
    % incident spectral peak wave period
    Tp
    % incident spectral mean wave period
    T0
```

```
R2=R2_new
Z2=R2+SWEL
% determine slope for this iteration
top_sta=-999;
for kk=1:length(sta)-1
   if ((Z2 > dep(kk)) & (Z2 <= dep(kk+1)))    % here is the intersection of z2 with profile
      top_sta=interp1(dep(kk:kk+1),sta(kk:kk+1),Z2)
      break;
   end
end
if top_sta==-999
   dy=Z2-dep(end);
   top_sta=sta(end)+dy/S(end)
end

% get the length of the slope (not accounting for berm)
Lslope=top_sta-toe_sta

% loop over profile segments to determine berm factor
% re-calculate influence of depth of berm based on this run-up elevation
% check for berm, berm width, berm height
berm_width=0;
rdh_sum=0;
Berm_Segs=[];
Berm_Heights=[];
for kk=1:length(sta)-1
   ddep=dep(kk+1)-dep(kk);
   dsta=sta(kk+1)-sta(kk);
   s=ddep/dsta;
   if  (s < 1/15)     % count it as a berm if slope is flatter than 1:15 (see TAW manual)
      sprintf ('Berm Factor Calculation: Iteration %d, Profile Segment: %d',iter,kk)
      berm_width=berm_width+dsta;   % tally the width of all berm segments
      % compute the rdh for this segment and weight it by the segment length
      dh=SWEL-(dep(kk)+dep(kk+1))/2
      if  dh < 0
          chi=R2;
      else
          chi=2* H0;
      end
      if (dh <= R2 & dh >=-2*H0)
         rdh=(0.5-0.5*cos(3.14159*dh/chi)) ;
      else
         rdh=1;
      end
      rdh_sum=rdh_sum + rdh * dsta
      Berm_Segs=[Berm_Segs, kk];
      Berm_Heights=[Berm_Heights, (dep(kk)+dep(kk+1))/2];
   end
   if dep(kk) >= Z2  % jump out of loop if we reached limit of run-up for this iteration
      break
   end
end
sprintf ('!------- End Berm Factor Calculation, Iter: %d ---------!',iter)
berm_width
rB=berm_width/Lslope
if (berm_width > 0)
   rdh_mean=rdh_sum/berm_width
else
   rdh_mean=1
end
gamma_berm=1- rB * (1-rdh_mean)
if gamma_berm > 1
   gamma_berm=1
end
if gamma_berm < 0.6
   gamma_berm =0.6
end
% Iribarren number
slope=(Z2-Ztoe)/(Lslope-berm_width)
Irb=(slope/(sqrt(H0/L0)))
% runup height
gamma_berm
gamma_perm
gamma_beta
gamma_rough
gamma=gamma_berm*gamma_perm*gamma_beta*gamma_rough

% check validity
TAW_VALID=1;
if (Irb*gamma_berm < 0.5 | Irb*gamma_berm > 10 )
   sprintf('!!! - - Iribaren number: %6.2f is outside the valid range (0.5-10), TAW NOT VALID - - !!!\n', Irb*gam
   TAW_VALID=0;
else
   sprintf('!!! - - Iribaren number: %6.2f is in the valid range (0.5-10), TAW RECOMMENDED - - !!!\n', Irb*gamma_
end
islope=1/slope;
if (slope < 1/8 | slope > 1)
   sprintf('!!! - - slope: 1:%3.1f V:H is outside the valid range (1:8 - 1:1), TAW NOT VALID - - !!!\n', islope)
   TAW_VALID=0;
else
```

```
        sprintf('!!! - - slope: 1:%3.1f V:H is in the valid range (1:8 - 1:1), TAW RECOMMENDED - - !!!\n', islope)
    end
    if TAW_VALID == 0
        TAW_ALWAYS_VALID=0;
    end

    if (Irb*gamma_berm < 1.8)
        R2_new=gamma*H0*1.77*Irb
    else
        R2_new=gamma*H0*(4.3-(1.6/sqrt(Irb)))
    end


    % check to see if we need to evaluate a shallow foreshore
    if berm_width > 0.25 * L0;
        disp ('!   Berm_width is greater than 1/4 wave length')
        disp ('!   Runup will be weighted average with foreshore calculation assuming depth limited wave height on ber
        % do the foreshore calculation
        fore_H0=0.78*(SWEL_fore-min(Berm_Heights))
        % get upper slope
        fore_toe_sta=-999;
        fore_toe_dep=-999;
        for kk=length(dep)-1:-1:1
            ddep=dep(kk+1)-dep(kk);
            dsta=sta(kk+1)-sta(kk);
            s=ddep/dsta;
            if s < 1/15
                break
            end
            fore_toe_sta=sta(kk);
            fore_toe_dep=dep(kk);
            upper_slope=(Z2-fore_toe_dep)/(top_sta-fore_toe_sta)
        end
        fore_Irb=upper_slope/(sqrt(fore_H0/L0));
        fore_gamma=gamma_perm*gamma_beta*gamma_rough;
        if (fore_Irb < 1.8)
            fore_R2=fore_gamma*fore_H0*1.77*fore_Irb;
        else
            fore_R2=fore_gamma*fore_H0*(4.3-(1.6/sqrt(fore_Irb)));
        end
        if berm_width >= L0
            R2_new=fore_R2
            disp ('berm is wider than one wavelength, use full shallow foreshore solution');
        else
            w2=(berm_width-0.25*L0)/(0.75*L0)
            w1=1-w2
            R2_new=w2*fore_R2 + w1*R2_new
        end
    end % end berm width check
    % convergence criterion
    R2del=abs(R2-R2_new)
    R2_all(iter)=R2_new;
    % get the new top station (for plot purposes)
    Z2=R2_new+SWEL
    top_sta=-999;
    for kk=1:length(sta)-1
        if ((Z2 > dep(kk)) & (Z2 <= dep(kk+1)))    % here is the intersection of z2 with profile
            top_sta=interp1(dep(kk:kk+1),sta(kk:kk+1),Z2)
            break;
        end
    end
    if top_sta==-999
        dy=Z2-dep(end);
        top_sta=sta(end)+dy/S(end);
    end
    topStaAll(iter)=top_sta;
end
ans =
!----------------- STARTING ITERATION 1 -----------------!
Ztoe =
                6.1836494
toe_sta =
         62.226972657228
top_sta =
        221.143651153487
Z2 =
              12.6096494
H0 =
                   2.142
Tp =
                  7.9359
T0 =
        7.21445454545455
R2 =
                   6.426
Z2 =
        15.8707037567363
top_sta =
        264.630174113033
Lslope =
```

```
          202.403201455805
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 5
dh =
           1.0892242567363
rdh_sum =
          0.151202837587871
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 6
dh =
           1.1302347567363
rdh_sum =
          0.313335777760792
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 7
dh =
           1.1712452567363
rdh_sum =
          0.486704385326514
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 8
dh =
           1.2122557567363
rdh_sum =
          0.671604063627069
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 9
dh =
           1.2532662567363
rdh_sum =
          0.868319787377875
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 10
dh =
           1.2942767567363
rdh_sum =
           1.07712584493842
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 11
dh =
           1.3352872567363
rdh_sum =
           1.29828559024764
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 12
dh =
           1.3762977567363
rdh_sum =
           1.53205120464829
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 13
dh =
           1.4014897567363
rdh_sum =
           1.77368049172652
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 14
dh =
           1.4108637567363
rdh_sum =
           2.01825852347265
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 15
dh =
           1.4202377567363
rdh_sum =
           2.2657973698659
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 16
dh =
           1.4296117567363
rdh_sum =
           2.51630896097204
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 17
dh =
           1.4389857567363
rdh_sum =
           2.76980508637963
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 18
dh =
           1.4483592567363
rdh_sum =
           3.02629723452129
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 19
dh =
           1.4577327567363
rdh_sum =
```

```
          3.28579691114652
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 20
dh =
           1.4671067567363
rdh_sum =
          3.54831564123295
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 21
dh =
           1.4764807567363
rdh_sum =
          3.81386464697113
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 22
dh =
           1.4858547567363
rdh_sum =
          4.08245500735574
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 23
dh =
           1.4870262567363
rdh_sum =
          4.35142622761641
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 24
dh =
           1.4717937567363
rdh_sum =
          4.61545870169228
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 25
dh =
           1.4483592567363
rdh_sum =
          4.87195084983394
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 26
dh =
           1.4249247567363
rdh_sum =
          5.12097458609211
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 27
dh =
           1.4014902567363
rdh_sum =
          5.36260403012914
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 28
dh =
           1.3780557567363
rdh_sum =
          5.59691548532961
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 29
dh =
           1.3546212567363
rdh_sum =
          5.82398741626599
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 30
dh =
           1.3383067567363
rdh_sum =
          6.04606683764641
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 31
dh =
           1.3362337567363
rdh_sum =
          6.26751472001163
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 32
dh =
           1.3412812567363
rdh_sum =
          6.49050144379266
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 33
dh =
           1.3463287567363
rdh_sum =
          6.71503080434821
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 34
dh =
           1.3513762567363
rdh_sum =
```

```
          6.94110657590136
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 35
dh =
           1.3564237567363
rdh_sum =
          7.16873251148779
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 36
dh =
           1.3614712567363
rdh_sum =
          7.39791234290438
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 37
dh =
           1.3511057567363
rdh_sum =
          7.62390514555731
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 38
dh =
           1.3253277567363
rdh_sum =
          7.84204115327452
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 39
dh =
           1.2995497567363
rdh_sum =
          8.05242108825342
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 40
dh =
           1.2737717567363
rdh_sum =
           8.2551484442717
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 41
dh =
           1.2479937567363
rdh_sum =
          8.45032944970455
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 42
dh =
           1.2222157567363
rdh_sum =
          8.63807302956468
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 43
dh =
           1.1964377567363
rdh_sum =
          8.81849076657866
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 44
dh =
           1.1706597567363
rdh_sum =
          8.99169686131365
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 45
dh =
           1.1448817567363
rdh_sum =
          9.15780809136853
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 46
dh =
           1.1191037567363
rdh_sum =
          9.31694376964425
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 47
dh =
           1.0933257567363
rdh_sum =
          9.46922570170817
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 48
dh =
           1.0675477567363
rdh_sum =
          9.61477814226764
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 49
dh =
           1.0417697567363
rdh_sum =
```

```
          9.75372775076844
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 50
dh =
           1.0159917567363
rdh_sum =
          9.88620354613386
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 51
dh =
         0.990604256736299
rdh_sum =
          10.0124319492909
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 52
dh =
         0.965607256736298
rdh_sum =
          10.1326356195752
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 53
dh =
         0.940610256736299
rdh_sum =
          10.2469421757321
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 54
dh =
           0.9156132567363
rdh_sum =
          10.3554812180484
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 55
dh =
         0.890616256736299
rdh_sum =
          10.4583842848048
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 56
dh =
         0.865619256736299
rdh_sum =
          10.5557848080761
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 57
dh =
         0.840622756736298
rdh_sum =
          10.6478181748891
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 58
dh =
         0.815626256736298
rdh_sum =
          10.7346214642595
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 59
dh =
         0.790629256736299
rdh_sum =
          10.8163334120985
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 60
dh =
           0.7656322567363
rdh_sum =
          10.8930945710975
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 61
dh =
         0.756727256736298
rdh_sum =
          10.9681263186944
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 62
dh =
         0.780005756736298
rdh_sum =
           11.047716954516
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 63
dh =
         0.819375756736299
rdh_sum =
          11.1352959522884
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 64
dh =
         0.837237756736299
rdh_sum =
```

```
          11.2266130033956
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 65
dh =
         0.833592256736299
rdh_sum =
          11.3171614297328
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 66
dh =
          0.8299472567363
rdh_sum =
          11.4069442624037
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 67
dh =
         0.826301756736299
rdh_sum =
          11.4959643279439
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 68
dh =
         0.822656256736298
rdh_sum =
          11.5842245635611
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 69
dh =
         0.819010756736299
rdh_sum =
          11.6717279118934
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 70
dh =
          0.8153652567363
rdh_sum =
          11.7584773209881
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 71
dh =
         0.811720256736299
rdh_sum =
          11.8444758470799
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 72
dh =
          0.8080747567363
rdh_sum =
          11.9297263457666
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 73
dh =
          0.8114322567363
rdh_sum =
          12.0156656688532
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 74
dh =
         0.821792756736301
rdh_sum =
          12.1037463564099
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 75
dh =
          0.8321532567363
rdh_sum =
          12.1939921862321
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 76
dh =
         0.842513756736299
rdh_sum =
          12.2864268111333
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 77
dh =
          0.8528742567363
rdh_sum =
          12.3810737575803
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 78
dh =
         0.863235256736299
rdh_sum =
           12.477956532794
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 79
dh =
          0.8735957567363
rdh_sum =
```

```
          12.5770982991415
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 80
dh =
         0.883956256736299
rdh_sum =
          12.6785221959238
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 81
dh =
         0.894316756736298
rdh_sum =
          12.7822512307076
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 82
dh =
         0.885682756736299
rdh_sum =
          12.8840576675476
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 83
dh =
           0.8390602567363
rdh_sum =
          12.9757600737699
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 84
dh =
           0.7734432567363
rdh_sum =
          13.0540530435747
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 85
dh =
         0.707826756736299
rdh_sum =
          13.1199129152626
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 86
dh =
         0.642210256736298
rdh_sum =
          13.1743447033655
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 87
dh =
         0.576593256736299
rdh_sum =
           13.218379802676
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 88
dh =
         0.510976256736299
rdh_sum =
          13.2530737671592
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 89
dh =
           0.4453592567363
rdh_sum =
          13.2795037754089
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 90
dh =
           0.4226457567363
rdh_sum =
           13.303327722907
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 91
dh =
         0.442835756736299
rdh_sum =
           13.329461693213
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 92
dh =
         0.463025756736299
rdh_sum =
          13.3580095635588
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 93
dh =
           0.4832157567363
rdh_sum =
          13.3890746820197
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 94
dh =
         0.503405256736301
rdh_sum =
```

```
          13.4227597787067
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 95
dh =
           0.5235947567363
rdh_sum =
          13.4591670704896
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 96
dh =
         0.503194756736299
rdh_sum =
          13.4928243224003
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 99
dh =
         0.183576256736298
rdh_sum =
          13.4973482653468
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 100
dh =
         0.240307256736299
rdh_sum =
          13.5050919855488
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 101
dh =
         0.363338756736299
rdh_sum =
          13.5227358070771
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 102
dh =
         0.486370256736299
rdh_sum =
          13.5542035216754
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 103
dh =
           0.5575527567363
rdh_sum =
          13.5954183319647
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 111
dh =
       -0.0336427432637016
rdh_sum =
          13.5954859605948
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 112
dh =
       -0.0861362432637005
rdh_sum =
          13.5959292274424
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 113
dh =
        -0.138629743263699
rdh_sum =
          13.5970771277448
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 114
dh =
          -0.1911232432637
rdh_sum =
          13.5992581926854
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 115
dh =
        -0.222291243263701
rdh_sum =
          13.6022078720858
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 116
dh =
        -0.210808243263701
rdh_sum =
          13.6048609396571
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 117
dh =
          -0.1780002432637
rdh_sum =
           13.606752955123
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 118
dh =
        -0.145191743263702
rdh_sum =
```

```
          13.6080120517493
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 119
dh =
          -0.1123832432637
rdh_sum =
          13.6087665382036
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 120
dh =
          -0.1169402432637
rdh_sum =
          13.6095834351459
ans =
!------- End Berm Factor Calculation, Iter: 1 ---------!
berm_width =
   107
rB =
         0.528647764612378
rdh_mean =
         0.127192368552765
gamma_berm =
         0.538592196698795
gamma_berm =
                       0.6
slope =
         0.101538042842554
Irb =
          1.13219989629533
gamma_berm =
                       0.6
gamma_perm =
     1
gamma_beta =
     1
gamma_rough =
     1
gamma =
                       0.6
ans =
!!! - - Iribaren number:   0.68 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans =
!!! - - slope: 1:9.8 V:H is outside the valid range (1:8 - 1:1), TAW NOT VALID - - !!!
R2_new =
          2.57553285289221
!   Berm_width is greater than 1/4 wave length
!   Runup will be weighted average with foreshore calculation assuming depth limited wave height on berm
fore_H0 =
                1.361585082
upper_slope =
        0.0749899999999997
upper_slope =
         0.074990013768382
upper_slope =
        0.0749900271627767
upper_slope =
        0.0749900267988116
upper_slope =
        0.0749900396667073
upper_slope =
         0.074990039149069
upper_slope =
        0.0749900515263559
upper_slope =
        0.0755198983560698
upper_slope =
        0.0760364374959384
upper_slope =
        0.0765401640840408
upper_slope =
        0.0770315489959536
w2 =
         0.202357731345444
w1 =
         0.797642268654556
R2_new =
          2.57975154372212
R2del =
          3.84624845627788
Z2 =
          12.0244553004584
ans =
!----------------- STARTING ITERATION 2 -----------------!
Ztoe =
                6.1836494
toe_sta =
           62.226972657228
top_sta =
         213.340022675802
Z2 =
```

```
          12.0244553004584
H0 =
                     2.142
Tp =
                    7.9359
T0 =
          7.21445454545455
R2 =
          2.57975154372212
Z2 =
          12.0244553004584
top_sta =
          213.340022675802
Lslope =
          151.113050018574
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 5
dh =
           1.0892242567363
rdh_sum =
         0.151202837587871
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 6
dh =
           1.1302347567363
rdh_sum =
         0.313335777760792
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 7
dh =
           1.1712452567363
rdh_sum =
         0.486704385326514
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 8
dh =
           1.2122557567363
rdh_sum =
         0.671604063627069
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 9
dh =
           1.2532662567363
rdh_sum =
         0.868319787377875
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 10
dh =
           1.2942767567363
rdh_sum =
          1.07712584493842
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 11
dh =
           1.3352872567363
rdh_sum =
          1.29828559024764
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 12
dh =
           1.3762977567363
rdh_sum =
          1.53205120464829
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 13
dh =
           1.4014897567363
rdh_sum =
          1.77368049172652
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 14
dh =
           1.4108637567363
rdh_sum =
          2.01825852347265
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 15
dh =
           1.4202377567363
rdh_sum =
           2.2657973698659
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 16
dh =
           1.4296117567363
rdh_sum =
          2.51630896097204
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 17
dh =
```

```
           1.4389857567363
rdh_sum =
           2.76980508637963
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 18
dh =
           1.4483592567363
rdh_sum =
           3.02629723452129
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 19
dh =
           1.4577327567363
rdh_sum =
           3.28579691114652
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 20
dh =
           1.4671067567363
rdh_sum =
           3.54831564123295
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 21
dh =
           1.4764807567363
rdh_sum =
           3.81386464697113
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 22
dh =
           1.4858547567363
rdh_sum =
           4.08245500735574
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 23
dh =
           1.4870262567363
rdh_sum =
           4.35142622761641
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 24
dh =
           1.4717937567363
rdh_sum =
           4.61545870169228
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 25
dh =
           1.4483592567363
rdh_sum =
           4.87195084983394
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 26
dh =
           1.4249247567363
rdh_sum =
           5.12097458609211
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 27
dh =
           1.4014902567363
rdh_sum =
           5.36260403012914
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 28
dh =
           1.3780557567363
rdh_sum =
           5.59691548532961
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 29
dh =
           1.3546212567363
rdh_sum =
           5.82398741626599
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 30
dh =
           1.3383067567363
rdh_sum =
           6.04606683764641
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 31
dh =
           1.3362337567363
rdh_sum =
           6.26751472001163
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 32
dh =
```

```
           1.3412812567363
rdh_sum =
          6.49050144379266
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 33
dh =
           1.3463287567363
rdh_sum =
          6.71503080434821
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 34
dh =
           1.3513762567363
rdh_sum =
          6.94110657590136
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 35
dh =
           1.3564237567363
rdh_sum =
          7.16873251148779
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 36
dh =
           1.3614712567363
rdh_sum =
          7.39791234290438
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 37
dh =
           1.3511057567363
rdh_sum =
          7.62390514555731
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 38
dh =
           1.3253277567363
rdh_sum =
          7.84204115327452
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 39
dh =
           1.2995497567363
rdh_sum =
          8.05242108825342
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 40
dh =
           1.2737717567363
rdh_sum =
           8.2551484442717
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 41
dh =
           1.2479937567363
rdh_sum =
          8.45032944970455
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 42
dh =
           1.2222157567363
rdh_sum =
          8.63807302956468
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 43
dh =
           1.1964377567363
rdh_sum =
          8.81849076657866
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 44
dh =
           1.1706597567363
rdh_sum =
          8.99169686131365
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 45
dh =
           1.1448817567363
rdh_sum =
          9.15780809136853
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 46
dh =
           1.1191037567363
rdh_sum =
          9.31694376964425
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 47
dh =
```

```
           1.0933257567363
rdh_sum =
          9.46922570170817
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 48
dh =
           1.0675477567363
rdh_sum =
          9.61477814226764
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 49
dh =
           1.0417697567363
rdh_sum =
          9.75372775076844
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 50
dh =
           1.0159917567363
rdh_sum =
          9.88620354613386
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 51
dh =
         0.990604256736299
rdh_sum =
          10.0124319492909
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 52
dh =
         0.965607256736298
rdh_sum =
          10.1326356195752
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 53
dh =
         0.940610256736299
rdh_sum =
          10.2469421757321
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 54
dh =
           0.9156132567363
rdh_sum =
          10.3554812180484
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 55
dh =
         0.890616256736299
rdh_sum =
          10.4583842848048
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 56
dh =
         0.865619256736299
rdh_sum =
          10.5557848080761
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 57
dh =
         0.840622756736298
rdh_sum =
          10.6478181748891
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 58
dh =
         0.815626256736298
rdh_sum =
          10.7346214642595
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 59
dh =
         0.790629256736299
rdh_sum =
          10.8163334120985
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 60
dh =
           0.7656322567363
rdh_sum =
          10.8930945710975
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 61
dh =
         0.756727256736298
rdh_sum =
          10.9681263186944
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 62
dh =
```

```
         0.780005756736298
rdh_sum =
          11.047716954516
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 63
dh =
         0.819375756736299
rdh_sum =
          11.1352959522884
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 64
dh =
         0.837237756736299
rdh_sum =
          11.2266130033956
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 65
dh =
         0.833592256736299
rdh_sum =
          11.3171614297328
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 66
dh =
          0.8299472567363
rdh_sum =
          11.4069442624037
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 67
dh =
         0.826301756736299
rdh_sum =
          11.4959643279439
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 68
dh =
         0.822656256736298
rdh_sum =
          11.5842245635611
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 69
dh =
         0.819010756736299
rdh_sum =
          11.6717279118934
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 70
dh =
          0.8153652567363
rdh_sum =
          11.7584773209881
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 71
dh =
         0.811720256736299
rdh_sum =
          11.8444758470799
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 72
dh =
          0.8080747567363
rdh_sum =
          11.9297263457666
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 73
dh =
          0.8114322567363
rdh_sum =
          12.0156656688532
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 74
dh =
         0.821792756736301
rdh_sum =
          12.1037463564099
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 75
dh =
          0.8321532567363
rdh_sum =
          12.1939921862321
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 76
dh =
         0.842513756736299
rdh_sum =
          12.2864268111333
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 77
dh =
```

```
           0.8528742567363
rdh_sum =
          12.3810737575803
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 78
dh =
         0.863235256736299
rdh_sum =
           12.477956532794
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 79
dh =
           0.8735957567363
rdh_sum =
          12.5770982991415
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 80
dh =
         0.883956256736299
rdh_sum =
          12.6785221959238
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 81
dh =
         0.894316756736298
rdh_sum =
          12.7822512307076
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 82
dh =
         0.885682756736299
rdh_sum =
          12.8840576675476
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 83
dh =
           0.8390602567363
rdh_sum =
          12.9757600737699
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 84
dh =
           0.7734432567363
rdh_sum =
          13.0540530435747
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 85
dh =
         0.707826756736299
rdh_sum =
          13.1199129152626
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 86
dh =
         0.642210256736298
rdh_sum =
          13.1743447033655
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 87
dh =
         0.576593256736299
rdh_sum =
           13.218379802676
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 88
dh =
         0.510976256736299
rdh_sum =
          13.2530737671592
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 89
dh =
           0.4453592567363
rdh_sum =
          13.2795037754089
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 90
dh =
           0.4226457567363
rdh_sum =
           13.303327722907
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 91
dh =
         0.442835756736299
rdh_sum =
           13.329461693213
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 92
dh =
```

```
         0.463025756736299
rdh_sum =
          13.3580095635588
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 93
dh =
           0.4832157567363
rdh_sum =
          13.3890746820197
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 94
dh =
         0.503405256736301
rdh_sum =
          13.4227597787067
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 95
dh =
           0.5235947567363
rdh_sum =
          13.4591670704896
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 96
dh =
         0.503194756736299
rdh_sum =
          13.4928243224003
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 99
dh =
         0.183576256736298
rdh_sum =
          13.4973482653468
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 100
dh =
         0.240307256736299
rdh_sum =
          13.5050919855488
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 101
dh =
         0.363338756736299
rdh_sum =
          13.5227358070771
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 102
dh =
         0.486370256736299
rdh_sum =
          13.5542035216754
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 103
dh =
           0.5575527567363
rdh_sum =
          13.5954183319647
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 111
dh =
       -0.0336427432637016
rdh_sum =
          13.5958379028196
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 112
dh =
       -0.0861362432637005
rdh_sum =
           13.598586156761
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 113
dh =
        -0.138629743263699
rdh_sum =
          13.6056944342812
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 114
dh =
          -0.1911232432637
rdh_sum =
          13.6191762645875
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 115
dh =
        -0.222291243263701
rdh_sum =
          13.6373847674904
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 116
dh =
```

```
        -0.210808243263701
rdh_sum =
          13.6537707294956
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 117
dh =
          -0.1780002432637
rdh_sum =
          13.6654717365485
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 118
dh =
        -0.145191743263702
rdh_sum =
          13.6732670820121
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 119
dh =
          -0.1123832432637
rdh_sum =
          13.6779423703512
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 120
dh =
          -0.1169402432637
rdh_sum =
          13.6830038460605
ans =
!------- End Berm Factor Calculation, Iter: 2 ---------!
berm_width =
   107
rB =
         0.708079149926812
rdh_mean =
         0.127878540617387
gamma_berm =
         0.382468978407429
gamma_berm =
                       0.6
slope =
         0.132405396997012
Irb =
          1.47638631346688
gamma_berm =
                       0.6
gamma_perm =
     1
gamma_beta =
     1
gamma_rough =
     1
gamma =
                       0.6
ans =
!!! - - Iribaren number:   0.89 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans =
!!! - - slope: 1:7.6 V:H is in the valid range (1:8 - 1:1), TAW RECOMMENDED - - !!!
R2_new =
          3.35848949141971
!   Berm_width is greater than 1/4 wave length
!   Runup will be weighted average with foreshore calculation assuming depth limited wave height on berm
fore_H0 =
                1.361585082
upper_slope =
        0.0749899999999997
upper_slope =
        0.0749900468603061
upper_slope =
        0.0749900895254236
upper_slope =
        0.0749900856897194
upper_slope =
        0.0749901232537879
upper_slope =
        0.0749901183897912
upper_slope =
        0.0749901518601576
upper_slope =
        0.0765139928837686
upper_slope =
        0.0779302940482169
upper_slope =
        0.0792500512406242
upper_slope =
        0.0804828106607154
w2 =
         0.202357731345444
w1 =
         0.797642268654556
R2_new =
```

```
          3.22781036235442
R2del =
         0.648058818632296
Z2 =
          12.6725141190907
ans =
!----------------- STARTING ITERATION 3 -----------------!
Ztoe =
                6.1836494
toe_sta =
          62.226972657228
top_sta =
          221.981959182434
Z2 =
          12.6725141190907
H0 =
                     2.142
Tp =
                    7.9359
T0 =
          7.21445454545455
R2 =
          3.22781036235442
Z2 =
          12.6725141190907
top_sta =
          221.981959182434
Lslope =
          159.754986525206
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 5
dh =
           1.0892242567363
rdh_sum =
         0.151202837587871
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 6
dh =
           1.1302347567363
rdh_sum =
         0.313335777760792
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 7
dh =
           1.1712452567363
rdh_sum =
         0.486704385326514
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 8
dh =
           1.2122557567363
rdh_sum =
         0.671604063627069
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 9
dh =
           1.2532662567363
rdh_sum =
         0.868319787377875
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 10
dh =
           1.2942767567363
rdh_sum =
          1.07712584493842
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 11
dh =
           1.3352872567363
rdh_sum =
          1.29828559024764
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 12
dh =
           1.3762977567363
rdh_sum =
          1.53205120464829
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 13
dh =
           1.4014897567363
rdh_sum =
          1.77368049172652
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 14
dh =
           1.4108637567363
rdh_sum =
          2.01825852347265
ans =
```

```
Berm Factor Calculation: Iteration 3, Profile Segment: 15
dh =
           1.4202377567363
rdh_sum =
           2.2657973698659
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 16
dh =
           1.4296117567363
rdh_sum =
          2.51630896097204
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 17
dh =
           1.4389857567363
rdh_sum =
          2.76980508637963
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 18
dh =
           1.4483592567363
rdh_sum =
          3.02629723452129
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 19
dh =
           1.4577327567363
rdh_sum =
          3.28579691114652
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 20
dh =
           1.4671067567363
rdh_sum =
          3.54831564123295
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 21
dh =
           1.4764807567363
rdh_sum =
          3.81386464697113
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 22
dh =
           1.4858547567363
rdh_sum =
          4.08245500735574
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 23
dh =
           1.4870262567363
rdh_sum =
          4.35142622761641
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 24
dh =
           1.4717937567363
rdh_sum =
          4.61545870169228
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 25
dh =
           1.4483592567363
rdh_sum =
          4.87195084983394
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 26
dh =
           1.4249247567363
rdh_sum =
          5.12097458609211
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 27
dh =
           1.4014902567363
rdh_sum =
          5.36260403012914
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 28
dh =
           1.3780557567363
rdh_sum =
          5.59691548532961
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 29
dh =
           1.3546212567363
rdh_sum =
          5.82398741626599
ans =
```

```
Berm Factor Calculation: Iteration 3, Profile Segment: 30
dh =
           1.3383067567363
rdh_sum =
          6.04606683764641
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 31
dh =
           1.3362337567363
rdh_sum =
          6.26751472001163
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 32
dh =
           1.3412812567363
rdh_sum =
          6.49050144379266
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 33
dh =
           1.3463287567363
rdh_sum =
          6.71503080434821
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 34
dh =
           1.3513762567363
rdh_sum =
          6.94110657590136
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 35
dh =
           1.3564237567363
rdh_sum =
          7.16873251148779
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 36
dh =
           1.3614712567363
rdh_sum =
          7.39791234290438
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 37
dh =
           1.3511057567363
rdh_sum =
          7.62390514555731
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 38
dh =
           1.3253277567363
rdh_sum =
          7.84204115327452
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 39
dh =
           1.2995497567363
rdh_sum =
          8.05242108825342
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 40
dh =
           1.2737717567363
rdh_sum =
           8.2551484442717
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 41
dh =
           1.2479937567363
rdh_sum =
          8.45032944970455
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 42
dh =
           1.2222157567363
rdh_sum =
          8.63807302956468
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 43
dh =
           1.1964377567363
rdh_sum =
          8.81849076657866
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 44
dh =
           1.1706597567363
rdh_sum =
          8.99169686131365
ans =
```

```
Berm Factor Calculation: Iteration 3, Profile Segment: 45
dh =
           1.1448817567363
rdh_sum =
          9.15780809136853
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 46
dh =
           1.1191037567363
rdh_sum =
          9.31694376964425
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 47
dh =
           1.0933257567363
rdh_sum =
          9.46922570170817
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 48
dh =
           1.0675477567363
rdh_sum =
          9.61477814226764
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 49
dh =
           1.0417697567363
rdh_sum =
          9.75372775076844
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 50
dh =
           1.0159917567363
rdh_sum =
          9.88620354613386
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 51
dh =
         0.990604256736299
rdh_sum =
          10.0124319492909
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 52
dh =
         0.965607256736298
rdh_sum =
          10.1326356195752
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 53
dh =
         0.940610256736299
rdh_sum =
          10.2469421757321
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 54
dh =
           0.9156132567363
rdh_sum =
          10.3554812180484
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 55
dh =
         0.890616256736299
rdh_sum =
          10.4583842848048
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 56
dh =
         0.865619256736299
rdh_sum =
          10.5557848080761
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 57
dh =
         0.840622756736298
rdh_sum =
          10.6478181748891
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 58
dh =
         0.815626256736298
rdh_sum =
          10.7346214642595
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 59
dh =
         0.790629256736299
rdh_sum =
          10.8163334120985
ans =
```

```
Berm Factor Calculation: Iteration 3, Profile Segment: 60
dh =
           0.7656322567363
rdh_sum =
          10.8930945710975
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 61
dh =
          0.756727256736298
rdh_sum =
          10.9681263186944
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 62
dh =
          0.780005756736298
rdh_sum =
           11.047716954516
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 63
dh =
          0.819375756736299
rdh_sum =
          11.1352959522884
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 64
dh =
          0.837237756736299
rdh_sum =
          11.2266130033956
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 65
dh =
          0.833592256736299
rdh_sum =
          11.3171614297328
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 66
dh =
           0.8299472567363
rdh_sum =
          11.4069442624037
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 67
dh =
          0.826301756736299
rdh_sum =
          11.4959643279439
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 68
dh =
          0.822656256736298
rdh_sum =
          11.5842245635611
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 69
dh =
          0.819010756736299
rdh_sum =
          11.6717279118934
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 70
dh =
           0.8153652567363
rdh_sum =
          11.7584773209881
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 71
dh =
          0.811720256736299
rdh_sum =
          11.8444758470799
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 72
dh =
           0.8080747567363
rdh_sum =
          11.9297263457666
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 73
dh =
           0.8114322567363
rdh_sum =
          12.0156656688532
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 74
dh =
          0.821792756736301
rdh_sum =
          12.1037463564099
ans =
```

```
Berm Factor Calculation: Iteration 3, Profile Segment: 75
dh =
           0.8321532567363
rdh_sum =
          12.1939921862321
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 76
dh =
          0.842513756736299
rdh_sum =
          12.2864268111333
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 77
dh =
           0.8528742567363
rdh_sum =
          12.3810737575803
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 78
dh =
          0.863235256736299
rdh_sum =
           12.477956532794
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 79
dh =
           0.8735957567363
rdh_sum =
          12.5770982991415
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 80
dh =
          0.883956256736299
rdh_sum =
          12.6785221959238
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 81
dh =
          0.894316756736298
rdh_sum =
          12.7822512307076
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 82
dh =
          0.885682756736299
rdh_sum =
          12.8840576675476
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 83
dh =
           0.8390602567363
rdh_sum =
          12.9757600737699
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 84
dh =
           0.7734432567363
rdh_sum =
          13.0540530435747
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 85
dh =
          0.707826756736299
rdh_sum =
          13.1199129152626
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 86
dh =
          0.642210256736298
rdh_sum =
          13.1743447033655
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 87
dh =
          0.576593256736299
rdh_sum =
           13.218379802676
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 88
dh =
          0.510976256736299
rdh_sum =
          13.2530737671592
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 89
dh =
           0.4453592567363
rdh_sum =
          13.2795037754089
ans =
```

```
Berm Factor Calculation: Iteration 3, Profile Segment: 90
dh =
           0.4226457567363
rdh_sum =
           13.303327722907
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 91
dh =
          0.442835756736299
rdh_sum =
           13.329461693213
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 92
dh =
          0.463025756736299
rdh_sum =
           13.3580095635588
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 93
dh =
           0.4832157567363
rdh_sum =
           13.3890746820197
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 94
dh =
          0.503405256736301
rdh_sum =
           13.4227597787067
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 95
dh =
           0.5235947567363
rdh_sum =
           13.4591670704896
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 96
dh =
          0.503194756736299
rdh_sum =
           13.4928243224003
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 99
dh =
          0.183576256736298
rdh_sum =
           13.4973482653468
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 100
dh =
          0.240307256736299
rdh_sum =
           13.5050919855488
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 101
dh =
          0.363338756736299
rdh_sum =
           13.5227358070771
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 102
dh =
          0.486370256736299
rdh_sum =
           13.5542035216754
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 103
dh =
           0.5575527567363
rdh_sum =
           13.5954183319647
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 111
dh =
         -0.0336427432637016
rdh_sum =
           13.5956863518373
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 112
dh =
         -0.0861362432637005
rdh_sum =
           13.5974424163652
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 113
dh =
          -0.138629743263699
rdh_sum =
           13.6019868196658
ans =
```

```
Berm Factor Calculation: Iteration 3, Profile Segment: 114
dh =
          -0.1911232432637
rdh_sum =
          13.6106125789783
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 115
dh =
        -0.222291243263701
rdh_sum =
          13.6222692080817
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 116
dh =
        -0.210808243263701
rdh_sum =
          13.6327567588217
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 117
dh =
          -0.1780002432637
rdh_sum =
          13.6402415152792
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 118
dh =
        -0.145191743263702
rdh_sum =
          13.6452255837132
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 119
dh =
          -0.1123832432637
rdh_sum =
           13.648213669594
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 120
dh =
          -0.1169402432637
rdh_sum =
          13.6514487278381
ans =
!------- End Berm Factor Calculation, Iter: 3 ---------!
berm_width =
   107
rB =
         0.669775650371437
rdh_mean =
          0.12758363297045
gamma_berm =
         0.415676760378097
gamma_berm =
                       0.6
slope =
         0.123000026092138
Irb =
          1.37151172986248
gamma_berm =
                       0.6
gamma_perm =
     1
gamma_beta =
     1
gamma_rough =
     1
gamma =
                       0.6
ans =
!!! - - Iribaren number:   0.82 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans =
!!! - - slope: 1:8.1 V:H is outside the valid range (1:8 - 1:1), TAW NOT VALID - - !!!
R2_new =
          3.11992036913809
!   Berm_width is greater than 1/4 wave length
!   Runup will be weighted average with foreshore calculation assuming depth limited wave height on berm
fore_H0 =
               1.361585082
upper_slope =
        0.0749899999999996
upper_slope =
        0.0749900333533904
upper_slope =
        0.0749900645536965
upper_slope =
        0.0749900625352556
upper_slope =
          0.074990090958817
upper_slope =
        0.0749900882821374
upper_slope =
```

```
        0.0749901143446532
upper_slope =
        0.0761479691864119
upper_slope =
        0.0772432067484291
upper_slope =
        0.0782807728482262
upper_slope =
        0.0792651058052282
w2 =
         0.202357731345444
w1 =
         0.797642268654556
R2_new =
          3.02921212729136
R2del =
         0.198598235063055
Z2 =
          12.4739158840277
ans =
!----------------- STARTING ITERATION 4 -----------------!
Ztoe =
                6.1836494
toe_sta =
           62.226972657228
top_sta =
          219.333629604316
Z2 =
          12.4739158840277
H0 =
                     2.142
Tp =
                    7.9359
T0 =
          7.21445454545455
R2 =
          3.02921212729136
Z2 =
          12.4739158840277
top_sta =
          219.333629604316
Lslope =
          157.106656947088
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 5
dh =
           1.0892242567363
rdh_sum =
         0.151202837587871
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 6
dh =
           1.1302347567363
rdh_sum =
         0.313335777760792
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 7
dh =
           1.1712452567363
rdh_sum =
         0.486704385326514
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 8
dh =
           1.2122557567363
rdh_sum =
         0.671604063627069
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 9
dh =
           1.2532662567363
rdh_sum =
         0.868319787377875
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 10
dh =
           1.2942767567363
rdh_sum =
          1.07712584493842
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 11
dh =
           1.3352872567363
rdh_sum =
          1.29828559024764
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 12
dh =
           1.3762977567363
rdh_sum =
```

```
          1.53205120464829
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 13
dh =
           1.4014897567363
rdh_sum =
          1.77368049172652
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 14
dh =
           1.4108637567363
rdh_sum =
          2.01825852347265
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 15
dh =
           1.4202377567363
rdh_sum =
           2.2657973698659
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 16
dh =
           1.4296117567363
rdh_sum =
          2.51630896097204
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 17
dh =
           1.4389857567363
rdh_sum =
          2.76980508637963
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 18
dh =
           1.4483592567363
rdh_sum =
          3.02629723452129
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 19
dh =
           1.4577327567363
rdh_sum =
          3.28579691114652
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 20
dh =
           1.4671067567363
rdh_sum =
          3.54831564123295
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 21
dh =
           1.4764807567363
rdh_sum =
          3.81386464697113
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 22
dh =
           1.4858547567363
rdh_sum =
          4.08245500735574
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 23
dh =
           1.4870262567363
rdh_sum =
          4.35142622761641
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 24
dh =
           1.4717937567363
rdh_sum =
          4.61545870169228
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 25
dh =
           1.4483592567363
rdh_sum =
          4.87195084983394
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 26
dh =
           1.4249247567363
rdh_sum =
          5.12097458609211
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 27
dh =
           1.4014902567363
rdh_sum =
```

```
          5.36260403012914
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 28
dh =
           1.3780557567363
rdh_sum =
          5.59691548532961
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 29
dh =
           1.3546212567363
rdh_sum =
          5.82398741626599
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 30
dh =
           1.3383067567363
rdh_sum =
          6.04606683764641
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 31
dh =
           1.3362337567363
rdh_sum =
          6.26751472001163
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 32
dh =
           1.3412812567363
rdh_sum =
          6.49050144379266
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 33
dh =
           1.3463287567363
rdh_sum =
          6.71503080434821
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 34
dh =
           1.3513762567363
rdh_sum =
          6.94110657590136
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 35
dh =
           1.3564237567363
rdh_sum =
          7.16873251148779
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 36
dh =
           1.3614712567363
rdh_sum =
          7.39791234290438
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 37
dh =
           1.3511057567363
rdh_sum =
          7.62390514555731
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 38
dh =
           1.3253277567363
rdh_sum =
          7.84204115327452
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 39
dh =
           1.2995497567363
rdh_sum =
          8.05242108825342
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 40
dh =
           1.2737717567363
rdh_sum =
          8.2551484442717
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 41
dh =
           1.2479937567363
rdh_sum =
          8.45032944970455
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 42
dh =
           1.2222157567363
rdh_sum =
```

```
          8.63807302956468
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 43
dh =
           1.1964377567363
rdh_sum =
          8.81849076657866
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 44
dh =
           1.1706597567363
rdh_sum =
          8.99169686131365
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 45
dh =
           1.1448817567363
rdh_sum =
          9.15780809136853
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 46
dh =
           1.1191037567363
rdh_sum =
          9.31694376964425
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 47
dh =
           1.0933257567363
rdh_sum =
          9.46922570170817
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 48
dh =
           1.0675477567363
rdh_sum =
          9.61477814226764
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 49
dh =
           1.0417697567363
rdh_sum =
          9.75372775076844
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 50
dh =
           1.0159917567363
rdh_sum =
          9.88620354613386
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 51
dh =
         0.990604256736299
rdh_sum =
          10.0124319492909
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 52
dh =
         0.965607256736298
rdh_sum =
          10.1326356195752
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 53
dh =
         0.940610256736299
rdh_sum =
          10.2469421757321
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 54
dh =
           0.9156132567363
rdh_sum =
          10.3554812180484
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 55
dh =
         0.890616256736299
rdh_sum =
          10.4583842848048
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 56
dh =
         0.865619256736299
rdh_sum =
          10.5557848080761
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 57
dh =
         0.840622756736298
rdh_sum =
```

```
          10.6478181748891
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 58
dh =
         0.815626256736298
rdh_sum =
          10.7346214642595
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 59
dh =
         0.790629256736299
rdh_sum =
          10.8163334120985
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 60
dh =
          0.7656322567363
rdh_sum =
          10.8930945710975
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 61
dh =
         0.756727256736298
rdh_sum =
          10.9681263186944
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 62
dh =
         0.780005756736298
rdh_sum =
           11.047716954516
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 63
dh =
         0.819375756736299
rdh_sum =
          11.1352959522884
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 64
dh =
         0.837237756736299
rdh_sum =
          11.2266130033956
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 65
dh =
         0.833592256736299
rdh_sum =
          11.3171614297328
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 66
dh =
          0.8299472567363
rdh_sum =
          11.4069442624037
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 67
dh =
         0.826301756736299
rdh_sum =
          11.4959643279439
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 68
dh =
         0.822656256736298
rdh_sum =
          11.5842245635611
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 69
dh =
         0.819010756736299
rdh_sum =
          11.6717279118934
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 70
dh =
          0.8153652567363
rdh_sum =
          11.7584773209881
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 71
dh =
         0.811720256736299
rdh_sum =
          11.8444758470799
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 72
dh =
          0.8080747567363
rdh_sum =
```

```
          11.9297263457666
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 73
dh =
           0.8114322567363
rdh_sum =
          12.0156656688532
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 74
dh =
         0.821792756736301
rdh_sum =
          12.1037463564099
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 75
dh =
           0.8321532567363
rdh_sum =
          12.1939921862321
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 76
dh =
         0.842513756736299
rdh_sum =
          12.2864268111333
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 77
dh =
           0.8528742567363
rdh_sum =
          12.3810737575803
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 78
dh =
         0.863235256736299
rdh_sum =
           12.477956532794
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 79
dh =
           0.8735957567363
rdh_sum =
          12.5770982991415
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 80
dh =
         0.883956256736299
rdh_sum =
          12.6785221959238
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 81
dh =
         0.894316756736298
rdh_sum =
          12.7822512307076
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 82
dh =
         0.885682756736299
rdh_sum =
          12.8840576675476
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 83
dh =
           0.8390602567363
rdh_sum =
          12.9757600737699
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 84
dh =
           0.7734432567363
rdh_sum =
          13.0540530435747
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 85
dh =
         0.707826756736299
rdh_sum =
          13.1199129152626
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 86
dh =
         0.642210256736298
rdh_sum =
          13.1743447033655
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 87
dh =
         0.576593256736299
rdh_sum =
```

```
           13.218379802676
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 88
dh =
          0.510976256736299
rdh_sum =
           13.2530737671592
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 89
dh =
           0.4453592567363
rdh_sum =
           13.2795037754089
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 90
dh =
           0.4226457567363
rdh_sum =
           13.303327722907
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 91
dh =
          0.442835756736299
rdh_sum =
           13.329461693213
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 92
dh =
          0.463025756736299
rdh_sum =
           13.3580095635588
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 93
dh =
           0.4832157567363
rdh_sum =
           13.3890746820197
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 94
dh =
          0.503405256736301
rdh_sum =
           13.4227597787067
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 95
dh =
           0.5235947567363
rdh_sum =
           13.4591670704896
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 96
dh =
          0.503194756736299
rdh_sum =
           13.4928243224003
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 99
dh =
          0.183576256736298
rdh_sum =
           13.4973482653468
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 100
dh =
          0.240307256736299
rdh_sum =
           13.5050919855488
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 101
dh =
          0.363338756736299
rdh_sum =
           13.5227358070771
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 102
dh =
          0.486370256736299
rdh_sum =
           13.5542035216754
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 103
dh =
           0.5575527567363
rdh_sum =
           13.5954183319647
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 111
dh =
         -0.0336427432637016
rdh_sum =
```

```
          13.5957226434831
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 112
dh =
       -0.0861362432637005
rdh_sum =
          13.5977163566135
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 113
dh =
        -0.138629743263699
rdh_sum =
          13.6028751040111
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 114
dh =
          -0.1911232432637
rdh_sum =
          13.6126651400801
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 115
dh =
        -0.222291243263701
rdh_sum =
          13.6258933179201
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 116
dh =
        -0.210808243263701
rdh_sum =
           13.637795435817
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 117
dh =
          -0.1780002432637
rdh_sum =
          13.6462909006194
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 118
dh =
        -0.145191743263702
rdh_sum =
          13.6519486374239
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 119
dh =
          -0.1123832432637
rdh_sum =
          13.6553409126061
ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 120
dh =
          -0.1169402432637
rdh_sum =
          13.6590135263059
ans =
!------- End Berm Factor Calculation, Iter: 4 ---------!
berm_width =
   107
rB =
         0.681065984594379
rdh_mean =
          0.12765433202155
gamma_berm =
         0.405875038731616
gamma_berm =
                       0.6
slope =
          0.12553754066391
Irb =
          1.39980628483498
gamma_berm =
                       0.6
gamma_perm =
     1
gamma_beta =
     1
gamma_rough =
     1
gamma =
                       0.6
ans =
!!! - - Iribaren number:   0.84 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans =
!!! - - slope: 1:8.0 V:H is in the valid range (1:8 - 1:1), TAW RECOMMENDED - - !!!
R2_new =
          3.18428493596774
!   Berm_width is greater than 1/4 wave length
!   Runup will be weighted average with foreshore calculation assuming depth limited wave height on berm
fore_H0 =
```

```
              1.361585082
upper_slope =
        0.0749899999999997
upper_slope =
         0.074990036584969
upper_slope =
        0.0749900705874969
upper_slope =
        0.0749900681811293
upper_slope =
        0.0749900989001326
upper_slope =
        0.0749900957437753
upper_slope =
        0.0749901237102064
upper_slope =
        0.0762399688901144
upper_slope =
        0.0774170081829483
upper_slope =
        0.0785274231687968
upper_slope =
        0.0795767148923705
w2 =
         0.202357731345444
w1 =
         0.797642268654556
R2_new =
          3.08267737234194
R2del =
        0.0534652450505795
Z2 =
          12.5273811290782
ans =
!----------------- STARTING ITERATION 5 -----------------!
Ztoe =
                6.1836494
toe_sta =
           62.226972657228
top_sta =
          220.046594600323
Z2 =
          12.5273811290782
H0 =
                     2.142
Tp =
                    7.9359
T0 =
          7.21445454545455
R2 =
          3.08267737234194
Z2 =
          12.5273811290782
top_sta =
          220.046594600323
Lslope =
          157.819621943095
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 5
dh =
           1.0892242567363
rdh_sum =
         0.151202837587871
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 6
dh =
           1.1302347567363
rdh_sum =
         0.313335777760792
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 7
dh =
           1.1712452567363
rdh_sum =
         0.486704385326514
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 8
dh =
           1.2122557567363
rdh_sum =
         0.671604063627069
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 9
dh =
           1.2532662567363
rdh_sum =
         0.868319787377875
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 10
dh =
```

```
           1.2942767567363
rdh_sum =
          1.07712584493842
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 11
dh =
           1.3352872567363
rdh_sum =
          1.29828559024764
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 12
dh =
           1.3762977567363
rdh_sum =
          1.53205120464829
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 13
dh =
           1.4014897567363
rdh_sum =
          1.77368049172652
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 14
dh =
           1.4108637567363
rdh_sum =
          2.01825852347265
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 15
dh =
           1.4202377567363
rdh_sum =
           2.2657973698659
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 16
dh =
           1.4296117567363
rdh_sum =
          2.51630896097204
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 17
dh =
           1.4389857567363
rdh_sum =
          2.76980508637963
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 18
dh =
           1.4483592567363
rdh_sum =
          3.02629723452129
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 19
dh =
           1.4577327567363
rdh_sum =
          3.28579691114652
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 20
dh =
           1.4671067567363
rdh_sum =
          3.54831564123295
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 21
dh =
           1.4764807567363
rdh_sum =
          3.81386464697113
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 22
dh =
           1.4858547567363
rdh_sum =
          4.08245500735574
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 23
dh =
           1.4870262567363
rdh_sum =
          4.35142622761641
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 24
dh =
           1.4717937567363
rdh_sum =
          4.61545870169228
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 25
dh =
```

```
           1.4483592567363
rdh_sum =
           4.87195084983394
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 26
dh =
           1.4249247567363
rdh_sum =
           5.12097458609211
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 27
dh =
           1.4014902567363
rdh_sum =
           5.36260403012914
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 28
dh =
           1.3780557567363
rdh_sum =
           5.59691548532961
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 29
dh =
           1.3546212567363
rdh_sum =
           5.82398741626599
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 30
dh =
           1.3383067567363
rdh_sum =
           6.04606683764641
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 31
dh =
           1.3362337567363
rdh_sum =
           6.26751472001163
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 32
dh =
           1.3412812567363
rdh_sum =
           6.49050144379266
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 33
dh =
           1.3463287567363
rdh_sum =
           6.71503080434821
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 34
dh =
           1.3513762567363
rdh_sum =
           6.94110657590136
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 35
dh =
           1.3564237567363
rdh_sum =
           7.16873251148779
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 36
dh =
           1.3614712567363
rdh_sum =
           7.39791234290438
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 37
dh =
           1.3511057567363
rdh_sum =
           7.62390514555731
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 38
dh =
           1.3253277567363
rdh_sum =
           7.84204115327452
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 39
dh =
           1.2995497567363
rdh_sum =
           8.05242108825342
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 40
dh =
```

```
           1.2737717567363
rdh_sum =
           8.2551484442717
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 41
dh =
           1.2479937567363
rdh_sum =
          8.45032944970455
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 42
dh =
           1.2222157567363
rdh_sum =
          8.63807302956468
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 43
dh =
           1.1964377567363
rdh_sum =
          8.81849076657866
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 44
dh =
           1.1706597567363
rdh_sum =
          8.99169686131365
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 45
dh =
           1.1448817567363
rdh_sum =
          9.15780809136853
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 46
dh =
           1.1191037567363
rdh_sum =
          9.31694376964425
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 47
dh =
           1.0933257567363
rdh_sum =
          9.46922570170817
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 48
dh =
           1.0675477567363
rdh_sum =
          9.61477814226764
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 49
dh =
           1.0417697567363
rdh_sum =
          9.75372775076844
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 50
dh =
           1.0159917567363
rdh_sum =
          9.88620354613386
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 51
dh =
         0.990604256736299
rdh_sum =
          10.0124319492909
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 52
dh =
         0.965607256736298
rdh_sum =
          10.1326356195752
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 53
dh =
         0.940610256736299
rdh_sum =
          10.2469421757321
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 54
dh =
           0.9156132567363
rdh_sum =
          10.3554812180484
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 55
dh =
```

```
         0.890616256736299
rdh_sum =
          10.4583842848048
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 56
dh =
         0.865619256736299
rdh_sum =
          10.5557848080761
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 57
dh =
         0.840622756736298
rdh_sum =
          10.6478181748891
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 58
dh =
         0.815626256736298
rdh_sum =
          10.7346214642595
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 59
dh =
         0.790629256736299
rdh_sum =
          10.8163334120985
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 60
dh =
           0.7656322567363
rdh_sum =
          10.8930945710975
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 61
dh =
         0.756727256736298
rdh_sum =
          10.9681263186944
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 62
dh =
         0.780005756736298
rdh_sum =
           11.047716954516
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 63
dh =
         0.819375756736299
rdh_sum =
          11.1352959522884
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 64
dh =
         0.837237756736299
rdh_sum =
          11.2266130033956
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 65
dh =
         0.833592256736299
rdh_sum =
          11.3171614297328
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 66
dh =
           0.8299472567363
rdh_sum =
          11.4069442624037
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 67
dh =
         0.826301756736299
rdh_sum =
          11.4959643279439
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 68
dh =
         0.822656256736298
rdh_sum =
          11.5842245635611
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 69
dh =
         0.819010756736299
rdh_sum =
          11.6717279118934
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 70
dh =
```

```
           0.8153652567363
rdh_sum =
          11.7584773209881
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 71
dh =
         0.811720256736299
rdh_sum =
          11.8444758470799
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 72
dh =
           0.8080747567363
rdh_sum =
          11.9297263457666
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 73
dh =
           0.8114322567363
rdh_sum =
          12.0156656688532
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 74
dh =
         0.821792756736301
rdh_sum =
          12.1037463564099
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 75
dh =
           0.8321532567363
rdh_sum =
          12.1939921862321
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 76
dh =
         0.842513756736299
rdh_sum =
          12.2864268111333
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 77
dh =
           0.8528742567363
rdh_sum =
          12.3810737575803
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 78
dh =
         0.863235256736299
rdh_sum =
           12.477956532794
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 79
dh =
           0.8735957567363
rdh_sum =
          12.5770982991415
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 80
dh =
         0.883956256736299
rdh_sum =
          12.6785221959238
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 81
dh =
         0.894316756736298
rdh_sum =
          12.7822512307076
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 82
dh =
         0.885682756736299
rdh_sum =
          12.8840576675476
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 83
dh =
           0.8390602567363
rdh_sum =
          12.9757600737699
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 84
dh =
           0.7734432567363
rdh_sum =
          13.0540530435747
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 85
dh =
```

```
         0.707826756736299
rdh_sum =
          13.1199129152626
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 86
dh =
         0.642210256736298
rdh_sum =
          13.1743447033655
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 87
dh =
         0.576593256736299
rdh_sum =
           13.218379802676
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 88
dh =
         0.510976256736299
rdh_sum =
          13.2530737671592
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 89
dh =
           0.4453592567363
rdh_sum =
          13.2795037754089
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 90
dh =
           0.4226457567363
rdh_sum =
           13.303327722907
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 91
dh =
         0.442835756736299
rdh_sum =
           13.329461693213
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 92
dh =
         0.463025756736299
rdh_sum =
          13.3580095635588
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 93
dh =
           0.4832157567363
rdh_sum =
          13.3890746820197
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 94
dh =
         0.503405256736301
rdh_sum =
          13.4227597787067
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 95
dh =
           0.5235947567363
rdh_sum =
          13.4591670704896
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 96
dh =
         0.503194756736299
rdh_sum =
          13.4928243224003
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 99
dh =
         0.183576256736298
rdh_sum =
          13.4973482653468
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 100
dh =
         0.240307256736299
rdh_sum =
          13.5050919855488
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 101
dh =
         0.363338756736299
rdh_sum =
          13.5227358070771
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 102
dh =
```

```
         0.486370256736299
rdh_sum =
          13.5542035216754
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 103
dh =
           0.5575527567363
rdh_sum =
          13.5954183319647
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 111
dh =
        -0.0336427432637016
rdh_sum =
          13.5957121802295
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 112
dh =
        -0.0861362432637005
rdh_sum =
          13.5976373801105
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 113
dh =
         -0.138629743263699
rdh_sum =
          13.6026190302111
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 114
dh =
          -0.1911232432637
rdh_sum =
          13.6120734839766
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 115
dh =
         -0.222291243263701
rdh_sum =
          13.6248487351997
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 116
dh =
         -0.210808243263701
rdh_sum =
           13.636343153669
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 117
dh =
          -0.1780002432637
rdh_sum =
          13.6445472887743
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 118
dh =
         -0.145191743263702
rdh_sum =
          13.6500108296017
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 119
dh =
          -0.1123832432637
rdh_sum =
          13.6532865830673
ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 120
dh =
          -0.1169402432637
rdh_sum =
          13.6568330570931
ans =
!------- End Berm Factor Calculation, Iter: 5 ---------!
berm_width =
   107
rB =
         0.677989204907491
rdh_mean =
         0.127633953804609
gamma_berm =
         0.408545237951696
gamma_berm =
                       0.6
slope =
         0.124828392784613
Irb =
          1.39189893175902
gamma_berm =
                       0.6
gamma_perm =
     1
gamma_beta =
```

```
     1
gamma_rough =
     1
gamma =
                      0.6
ans =
!!! - - Iribaren number:   0.84 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans =
!!! - - slope: 1:8.0 V:H is outside the valid range (1:8 - 1:1), TAW NOT VALID - - !!!
R2_new =
         3.16629725756114
!   Berm_width is greater than 1/4 wave length
!   Runup will be weighted average with foreshore calculation assuming depth limited wave height on berm
fore_H0 =
                1.361585082
upper_slope =
         0.0749899999999997
upper_slope =
         0.0749900356549523
upper_slope =
         0.0749900688548871
upper_slope =
         0.0749900665632834
upper_slope =
          0.074990096628955
upper_slope =
         0.0749900936136906
upper_slope =
         0.0749901210412159
upper_slope =
         0.0762137934656641
upper_slope =
         0.0773676347160195
upper_slope =
         0.0784574565346839
upper_slope =
         0.0794884431578102
w2 =
          0.202357731345444
w1 =
          0.797642268654556
R2_new =
           3.06772757778519
R2del =
         0.0149497945567498
Z2 =
           12.5124313345215
ans =
!----------------- STARTING ITERATION 6 -----------------!
Ztoe =
                6.1836494
toe_sta =
           62.226972657228
top_sta =
          219.847237425277
Z2 =
          12.5124313345215
H0 =
                     2.142
Tp =
                    7.9359
T0 =
          7.21445454545455
R2 =
          3.06772757778519
Z2 =
          12.5124313345215
top_sta =
          219.847237425277
Lslope =
          157.620264768049
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 5
dh =
           1.0892242567363
rdh_sum =
          0.151202837587871
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 6
dh =
           1.1302347567363
rdh_sum =
          0.313335777760792
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 7
dh =
           1.1712452567363
rdh_sum =
          0.486704385326514
ans =
```

```
Berm Factor Calculation: Iteration 6, Profile Segment: 8
dh =
           1.2122557567363
rdh_sum =
         0.671604063627069
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 9
dh =
           1.2532662567363
rdh_sum =
         0.868319787377875
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 10
dh =
           1.2942767567363
rdh_sum =
          1.07712584493842
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 11
dh =
           1.3352872567363
rdh_sum =
          1.29828559024764
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 12
dh =
           1.3762977567363
rdh_sum =
          1.53205120464829
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 13
dh =
           1.4014897567363
rdh_sum =
          1.77368049172652
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 14
dh =
           1.4108637567363
rdh_sum =
          2.01825852347265
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 15
dh =
           1.4202377567363
rdh_sum =
           2.2657973698659
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 16
dh =
           1.4296117567363
rdh_sum =
          2.51630896097204
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 17
dh =
           1.4389857567363
rdh_sum =
          2.76980508637963
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 18
dh =
           1.4483592567363
rdh_sum =
          3.02629723452129
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 19
dh =
           1.4577327567363
rdh_sum =
          3.28579691114652
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 20
dh =
           1.4671067567363
rdh_sum =
          3.54831564123295
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 21
dh =
           1.4764807567363
rdh_sum =
          3.81386464697113
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 22
dh =
           1.4858547567363
rdh_sum =
          4.08245500735574
ans =
```

```
Berm Factor Calculation: Iteration 6, Profile Segment: 23
dh =
           1.4870262567363
rdh_sum =
          4.35142622761641
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 24
dh =
           1.4717937567363
rdh_sum =
          4.61545870169228
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 25
dh =
           1.4483592567363
rdh_sum =
          4.87195084983394
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 26
dh =
           1.4249247567363
rdh_sum =
          5.12097458609211
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 27
dh =
           1.4014902567363
rdh_sum =
          5.36260403012914
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 28
dh =
           1.3780557567363
rdh_sum =
          5.59691548532961
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 29
dh =
           1.3546212567363
rdh_sum =
          5.82398741626599
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 30
dh =
           1.3383067567363
rdh_sum =
          6.04606683764641
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 31
dh =
           1.3362337567363
rdh_sum =
          6.26751472001163
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 32
dh =
           1.3412812567363
rdh_sum =
          6.49050144379266
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 33
dh =
           1.3463287567363
rdh_sum =
          6.71503080434821
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 34
dh =
           1.3513762567363
rdh_sum =
          6.94110657590136
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 35
dh =
           1.3564237567363
rdh_sum =
          7.16873251148779
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 36
dh =
           1.3614712567363
rdh_sum =
          7.39791234290438
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 37
dh =
           1.3511057567363
rdh_sum =
          7.62390514555731
ans =
```

```
Berm Factor Calculation: Iteration 6, Profile Segment: 38
dh =
           1.3253277567363
rdh_sum =
          7.84204115327452
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 39
dh =
           1.2995497567363
rdh_sum =
          8.05242108825342
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 40
dh =
           1.2737717567363
rdh_sum =
           8.2551484442717
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 41
dh =
           1.2479937567363
rdh_sum =
          8.45032944970455
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 42
dh =
           1.2222157567363
rdh_sum =
          8.63807302956468
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 43
dh =
           1.1964377567363
rdh_sum =
          8.81849076657866
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 44
dh =
           1.1706597567363
rdh_sum =
          8.99169686131365
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 45
dh =
           1.1448817567363
rdh_sum =
          9.15780809136853
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 46
dh =
           1.1191037567363
rdh_sum =
          9.31694376964425
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 47
dh =
           1.0933257567363
rdh_sum =
          9.46922570170817
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 48
dh =
           1.0675477567363
rdh_sum =
          9.61477814226764
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 49
dh =
           1.0417697567363
rdh_sum =
          9.75372775076844
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 50
dh =
           1.0159917567363
rdh_sum =
          9.88620354613386
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 51
dh =
         0.990604256736299
rdh_sum =
          10.0124319492909
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 52
dh =
          0.965607256736298
rdh_sum =
          10.1326356195752
ans =
```

```
Berm Factor Calculation: Iteration 6, Profile Segment: 53
dh =
          0.940610256736299
rdh_sum =
           10.2469421757321
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 54
dh =
           0.9156132567363
rdh_sum =
           10.3554812180484
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 55
dh =
          0.890616256736299
rdh_sum =
           10.4583842848048
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 56
dh =
          0.865619256736299
rdh_sum =
           10.5557848080761
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 57
dh =
          0.840622756736298
rdh_sum =
           10.6478181748891
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 58
dh =
          0.815626256736298
rdh_sum =
           10.7346214642595
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 59
dh =
          0.790629256736299
rdh_sum =
           10.8163334120985
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 60
dh =
           0.7656322567363
rdh_sum =
           10.8930945710975
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 61
dh =
          0.756727256736298
rdh_sum =
           10.9681263186944
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 62
dh =
          0.780005756736298
rdh_sum =
            11.047716954516
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 63
dh =
          0.819375756736299
rdh_sum =
           11.1352959522884
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 64
dh =
          0.837237756736299
rdh_sum =
           11.2266130033956
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 65
dh =
          0.833592256736299
rdh_sum =
           11.3171614297328
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 66
dh =
           0.8299472567363
rdh_sum =
           11.4069442624037
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 67
dh =
          0.826301756736299
rdh_sum =
           11.4959643279439
ans =
```

```
Berm Factor Calculation: Iteration 6, Profile Segment: 68
dh =
         0.822656256736298
rdh_sum =
          11.5842245635611
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 69
dh =
         0.819010756736299
rdh_sum =
          11.6717279118934
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 70
dh =
          0.8153652567363
rdh_sum =
          11.7584773209881
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 71
dh =
         0.811720256736299
rdh_sum =
          11.8444758470799
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 72
dh =
          0.8080747567363
rdh_sum =
          11.9297263457666
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 73
dh =
          0.8114322567363
rdh_sum =
          12.0156656688532
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 74
dh =
         0.821792756736301
rdh_sum =
          12.1037463564099
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 75
dh =
          0.8321532567363
rdh_sum =
          12.1939921862321
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 76
dh =
         0.842513756736299
rdh_sum =
          12.2864268111333
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 77
dh =
          0.8528742567363
rdh_sum =
          12.3810737575803
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 78
dh =
         0.863235256736299
rdh_sum =
           12.477956532794
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 79
dh =
          0.8735957567363
rdh_sum =
          12.5770982991415
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 80
dh =
         0.883956256736299
rdh_sum =
          12.6785221959238
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 81
dh =
         0.894316756736298
rdh_sum =
          12.7822512307076
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 82
dh =
         0.885682756736299
rdh_sum =
          12.8840576675476
ans =
```

```
Berm Factor Calculation: Iteration 6, Profile Segment: 83
dh =
           0.8390602567363
rdh_sum =
          12.9757600737699
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 84
dh =
           0.7734432567363
rdh_sum =
          13.0540530435747
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 85
dh =
         0.707826756736299
rdh_sum =
          13.1199129152626
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 86
dh =
         0.642210256736298
rdh_sum =
          13.1743447033655
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 87
dh =
         0.576593256736299
rdh_sum =
           13.218379802676
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 88
dh =
         0.510976256736299
rdh_sum =
          13.2530737671592
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 89
dh =
           0.4453592567363
rdh_sum =
          13.2795037754089
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 90
dh =
           0.4226457567363
rdh_sum =
           13.303327722907
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 91
dh =
         0.442835756736299
rdh_sum =
           13.329461693213
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 92
dh =
         0.463025756736299
rdh_sum =
          13.3580095635588
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 93
dh =
           0.4832157567363
rdh_sum =
          13.3890746820197
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 94
dh =
         0.503405256736301
rdh_sum =
          13.4227597787067
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 95
dh =
           0.5235947567363
rdh_sum =
          13.4591670704896
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 96
dh =
         0.503194756736299
rdh_sum =
          13.4928243224003
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 99
dh =
         0.183576256736298
rdh_sum =
          13.4973482653468
ans =
```

```
Berm Factor Calculation: Iteration 6, Profile Segment: 100
dh =
         0.240307256736299
rdh_sum =
          13.5050919855488
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 101
dh =
         0.363338756736299
rdh_sum =
          13.5227358070771
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 102
dh =
         0.486370256736299
rdh_sum =
          13.5542035216754
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 103
dh =
          0.5575527567363
rdh_sum =
          13.5954183319647
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 111
dh =
       -0.0336427432637016
rdh_sum =
          13.5957150509144
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 112
dh =
       -0.0861362432637005
rdh_sum =
          13.5976590482675
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 113
dh =
        -0.138629743263699
rdh_sum =
          13.6026892885245
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 114
dh =
          -0.1911232432637
rdh_sum =
          13.6122358195303
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 115
dh =
        -0.222291243263701
rdh_sum =
          13.6251353485881
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 116
dh =
        -0.210808243263701
rdh_sum =
           13.636741633821
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 117
dh =
          -0.1780002432637
rdh_sum =
          13.6450257032442
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 118
dh =
        -0.145191743263702
rdh_sum =
          13.6505425258127
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 119
dh =
          -0.1123832432637
rdh_sum =
          13.6538502488505
ans =
Berm Factor Calculation: Iteration 6, Profile Segment: 120
dh =
          -0.1169402432637
rdh_sum =
           13.657431331368
ans =
!------- End Berm Factor Calculation, Iter: 6 ---------!
berm_width =
   107
rB =
         0.678846721628462
rdh_mean =
```

```
         0.127639545152972
gamma_berm =
         0.407800965148781
gamma_berm =
                       0.6
slope =
         0.125024670722706
Irb =
          1.39408752881026
gamma_berm =
                       0.6
gamma_perm =
     1
gamma_beta =
     1
gamma_rough =
     1
gamma =
                       0.6
ans =
!!! - - Iribaren number:   0.84 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans =
!!! - - slope: 1:8.0 V:H is in the valid range (1:8 - 1:1), TAW RECOMMENDED - - !!!
R2_new =
          3.17127588688769
!   Berm_width is greater than 1/4 wave length
!   Runup will be weighted average with foreshore calculation assuming depth limited wave height on berm
fore_H0 =
               1.361585082
upper_slope =
        0.0749899999999997
upper_slope =
        0.0749900359102045
upper_slope =
        0.0749900693307287
upper_slope =
        0.0749900670078763
upper_slope =
        0.0749900972534412
upper_slope =
        0.0749900941996931
upper_slope =
        0.0749901217758419
upper_slope =
        0.0762210014987774
upper_slope =
          0.077381236900161
upper_slope =
        0.0784767400942829
upper_slope =
        0.0795127813981428
w2 =
          0.202357731345444
w1 =
          0.797642268654556
R2_new =
           3.07186474320676
R2del =
        0.0041371654215645
Z2 =
          12.5165684999431
% final 2% runup elevation
Z2=R2_new+SWEL
Z2 =
          12.5165684999431
diary off
-1.000000e+00
```

PART 5: RUNUP2

for transect: YK-99-1

Station locations shifted by: -3.36 feet from their
original location to set the shoreline to
elevation 0 for RUNUP2 input

RUNUP2 INPUT CONVERSIONS
for transect: YK-99-1

Incident significant wave height: 2.04 feet

Peak wave period: 7.94 seconds

Mean wave height: 1.28 feet

Local Depth below SWEL: 10.76 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 = 10.76
Period, T = 6.75
Waveheight, H = 1.28
Deep water wavelength, L0 (ft)
L0 = g*T*T/twopi
L0 = 32.17*6.75*6.75/6.28 = 233.53
Deep water wave celerity, C0 (ft/s)
C0 = L0/T
C0 = 233.53/6.75 = 34.58
Angular frequency, sigma (rad/s)
sigma = twopi/T
sigma = 6.28/6.75 = 0.93
Hunts (1979) approximation for Celerity C1H (ft/s) at Depth D (ft)
y = sigma.*sigma.*D./g
y = 0.93*0.93*10.76/32.17 = 0.29
C1H = sqrt(g.*D./(y+1./(1 + 0.6522.*y + 0.4622.*y.^2 + 0.0864.*y.^4 +0.0675.*y.^5)))
C1H = 17.71
Shoaling Coefficient KsH
KsH = sqrt(C0/C1H)
KsH = sqrt(34.58/17.71) = 1.40
Deepwater Wave Height H0_H (ft)
H0_H = H/KsH
H0_H = 1.28/1.40 = 0.91

Deepwater mean wave height: 0.91 feet

END RUNUP2 CONVERSIONS

RUNUP2 RESULTS
for transect: YK-99-1

RUNUP2 SWEL:
9.40
9.40
9.40
9.40

9.40
9.40
9.40
9.40
9.40

RUNUP2 deepwater mean wave heights:
0.87
0.87
0.87
0.91
0.91
0.91
0.96
0.96
0.96

RUNUP2 mean wave periods:
6.42
6.75
7.09
6.42
6.75
7.09
6.42
6.75
7.09

RUNUP2 runup above SWEL:
0.14
0.16
0.18
0.15
0.16
0.18
0.16
0.18
0.19

RUNUP2 Mean runup height above SWEL: 0.17 feet

RUNUP2 2-percent runup height above SWEL: 0.37 feet

RUNUP2 2-percent runup elevation: 9.77 feet-NAVD88

RUNUP2 Messages:
Nonfatal Error, Check Output

_____END RUNUP2 RESULTS_____

_____ACES BEACH RUNUP_____

Incident significant wave height: 2.04 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: 1.46 feet

Peak wave period: 7.94 seconds

Average beach Slope: 1:22.42 (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 =     1.46
Wave Period,                        T  =     7.94
Beach Slope,                        S  =    0.045

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 = [ 2.5,  2.0,   1.9,    1.5,    1.0]

ACES RUNUP CALCULATED USING 'Aces_Beach_Runup.m'

ACES Beach 2-percent runup height above SWEL: 2.03 feet

ACES Beach 2-percent runup elevation: 11.43 feet-NAVD88

ACES BEACH RUNUP is valid

_____________END ACES BEACH RESULTS_____________________

PART 5 COMPLETE_____________________________________________
```

```
  FEMA                                                  sjh           job 2
  RUNUP2 transect: YK-99-1                                              1
14.0
  -1.36 -70.1  1.0
  -0.71 -14.1  1.0
  -0.02 -0.1   1.0
  0.57  3.4    1.0
  0.57  28.9   1.0
  0.70  36.4   1.0
  1.06  43.4   1.0
  4.41  57.9   1.0
  5.62  64.4   1.0
  8.38  70.4   1.0
  8.38  102.4  1.0
  8.44  116.4  1.0
  8.70  126.9  1.0
  8.70  147.9  1.0
  9.03  155.4  1.0
  9.03  161.9  1.0
  9.33  164.9  1.0
  9.43  175.9  1.0
  9.69  185.9  1.0
1 10.57 197.4  1.0
 9.4   0.87  6.42
 9.4   0.87  6.75
 9.4   0.87  7.09
 9.4   0.91  6.42
 9.4   0.91  6.75
 9.4   0.91  7.09
 9.4   0.96  6.42
 9.4   0.96  6.75
 9.4   0.96  7.09
```

****

CROSS SECTION PROFILE

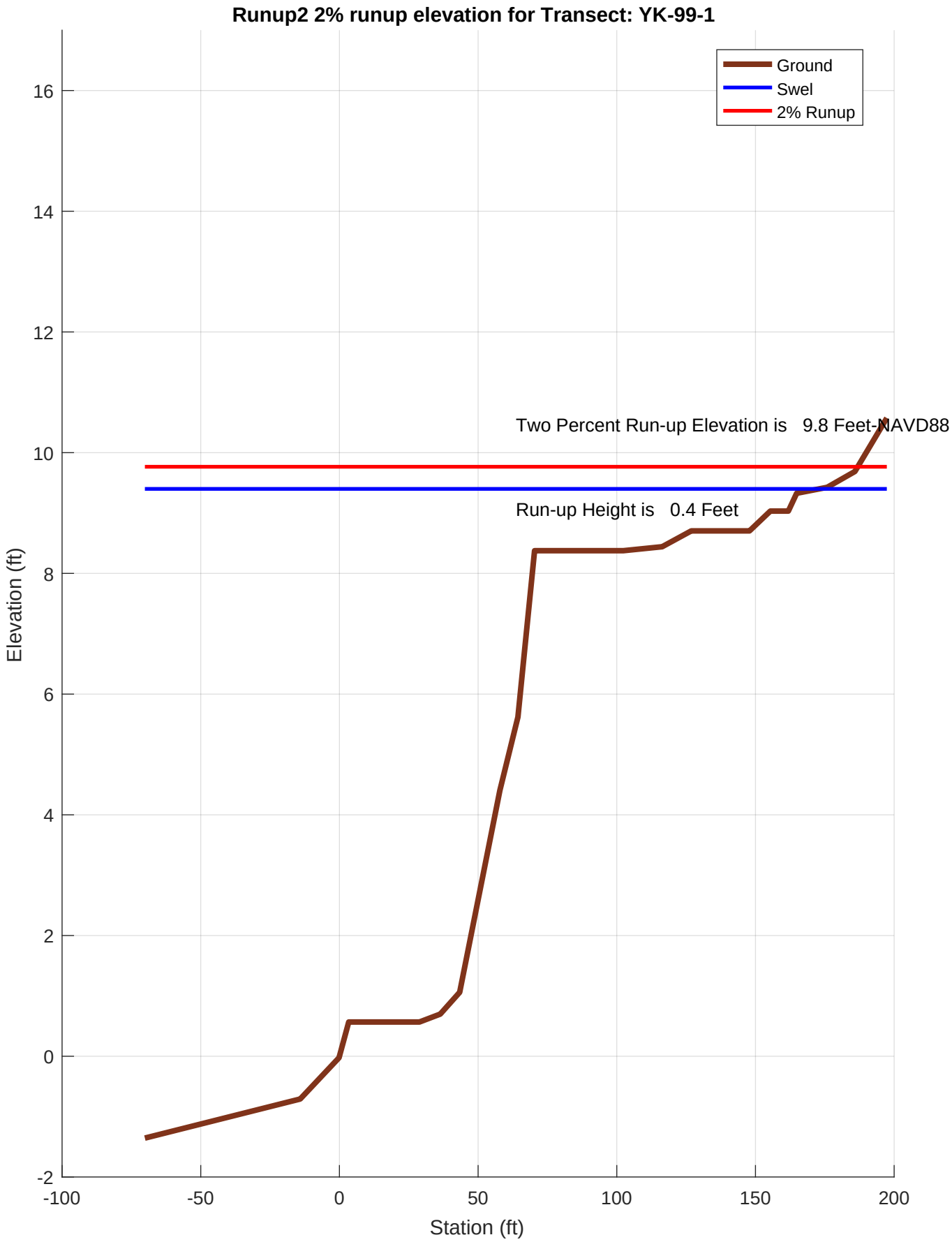
	LENGTH	ELEV.	SLOPE	ROUGHNESS
1	-70.1	-1.4		
			.00	1.00
2	-14.1	-.7		
			20.29	1.00
3	-.1	.0		
			5.93	1.00
4	3.4	.6		
			FLAT	1.00
5	28.9	.6		
			57.69	1.00
6	36.4	.7		
			19.44	1.00
7	43.4	1.1		
			4.33	1.00
8	57.9	4.4		
			5.37	1.00
9	64.4	5.6		
			2.17	1.00
10	70.4	8.4		
			FLAT	1.00
11	102.4	8.4		
			233.33	1.00
12	116.4	8.4		
			40.38	1.00
13	126.9	8.7		
			FLAT	1.00
14	147.9	8.7		
			22.73	1.00
15	155.4	9.0		
			FLAT	1.00
16	161.9	9.0		
			10.00	1.00
17	164.9	9.3		
			110.00	1.00
18	175.9	9.4		
			38.46	1.00
19	185.9	9.7		
			13.07	1.00
20	197.4	10.6		

LAST SLOPE 14.00 LAST ROUGHNESS 1.00

****

OUTPUT TABLE

INPUT PARAMETERS			RUNUP RESULTS			
WATER LEVEL ABOVE DATUM (FT.)	DEEP WATER WAVE HEIGHT (FT.)	WAVE PERIOD (SEC.)	BREAKING SLOPE NUMBER	RUNUP SLOPE NUMBER	RUNUP ABOVE WATER LEVEL (FT.)	BREAKER DEPTH (FT.)
9.40	.87	6.42	9	18	.14	1.51
COMPOSITE SLOPE USED BUT WAVE MAY REFLECT, NOT BREAK						
9.40	.87	6.75	9	18	.16	1.55
COMPOSITE SLOPE USED BUT WAVE MAY REFLECT, NOT BREAK						
9.40	.87	7.09	9	18	.18	1.59
COMPOSITE SLOPE USED BUT WAVE MAY REFLECT, NOT BREAK						
9.40	.91	6.42	9	18	.15	1.56
COMPOSITE SLOPE USED BUT WAVE MAY REFLECT, NOT BREAK						
9.40	.91	6.75	9	18	.16	1.60
COMPOSITE SLOPE USED BUT WAVE MAY REFLECT, NOT BREAK						
9.40	.91	7.09	9	18	.18	1.64
COMPOSITE SLOPE USED BUT WAVE MAY REFLECT, NOT BREAK						
9.40	.96	6.42	9	18	.16	1.62
COMPOSITE SLOPE USED BUT WAVE MAY REFLECT, NOT BREAK						
9.40	.96	6.75	9	18	.18	1.66
COMPOSITE SLOPE USED BUT WAVE MAY REFLECT, NOT BREAK						
9.40	.96	7.09	9	18	.19	1.71
COMPOSITE SLOPE USED BUT WAVE MAY REFLECT, NOT BREAK						


Runup2 2% runup elevation for Transect: YK-99-1
Ground
Swel
2% Runup
Two Percent Run-up Elevation is 9.8 Feet-NAVD88
Run-up Height is 0.4 Feet
Elevation (ft)
Station (ft)
16
14
12
10
8
6
4
2
0
-2
-100
-50
0
50
100
150
200