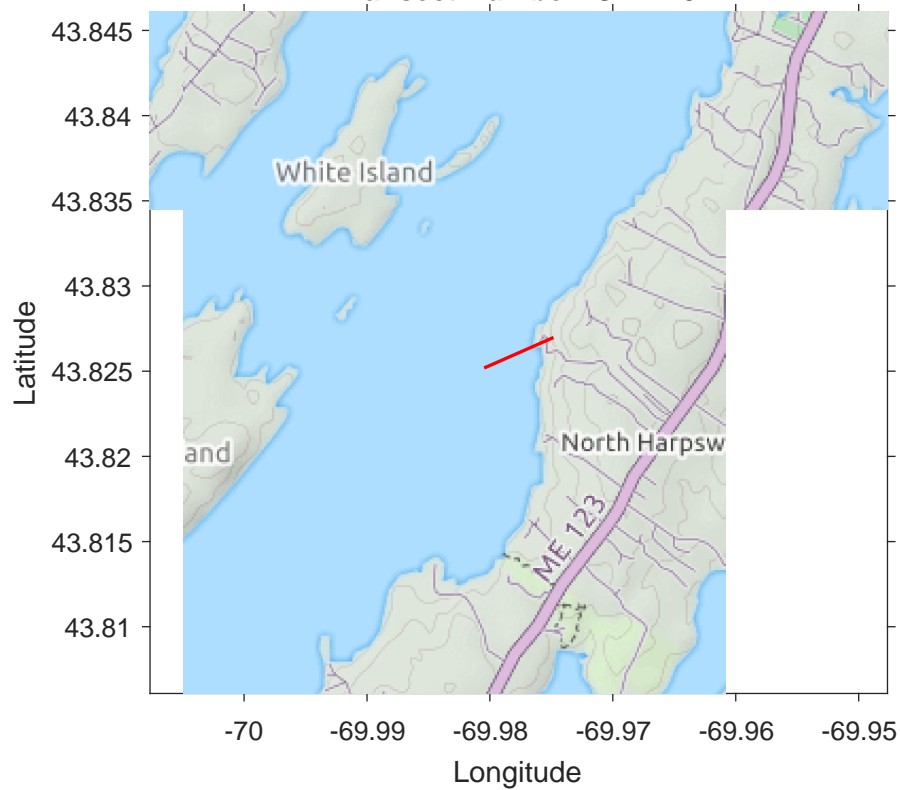
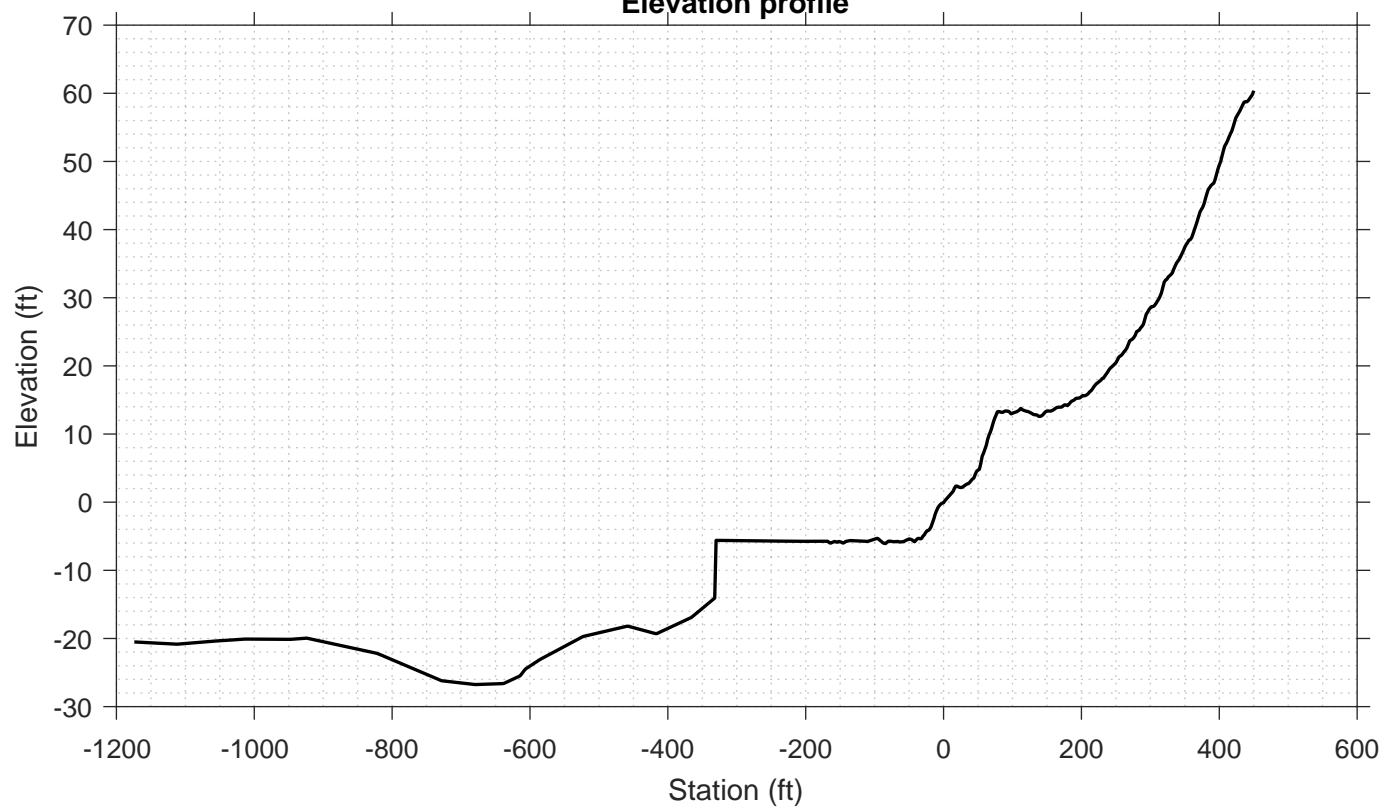


Transect Number: CM-123



Elevation profile



DATA LOG FOR TRANSECT ID: CM-123

PART 1: USER INPUT

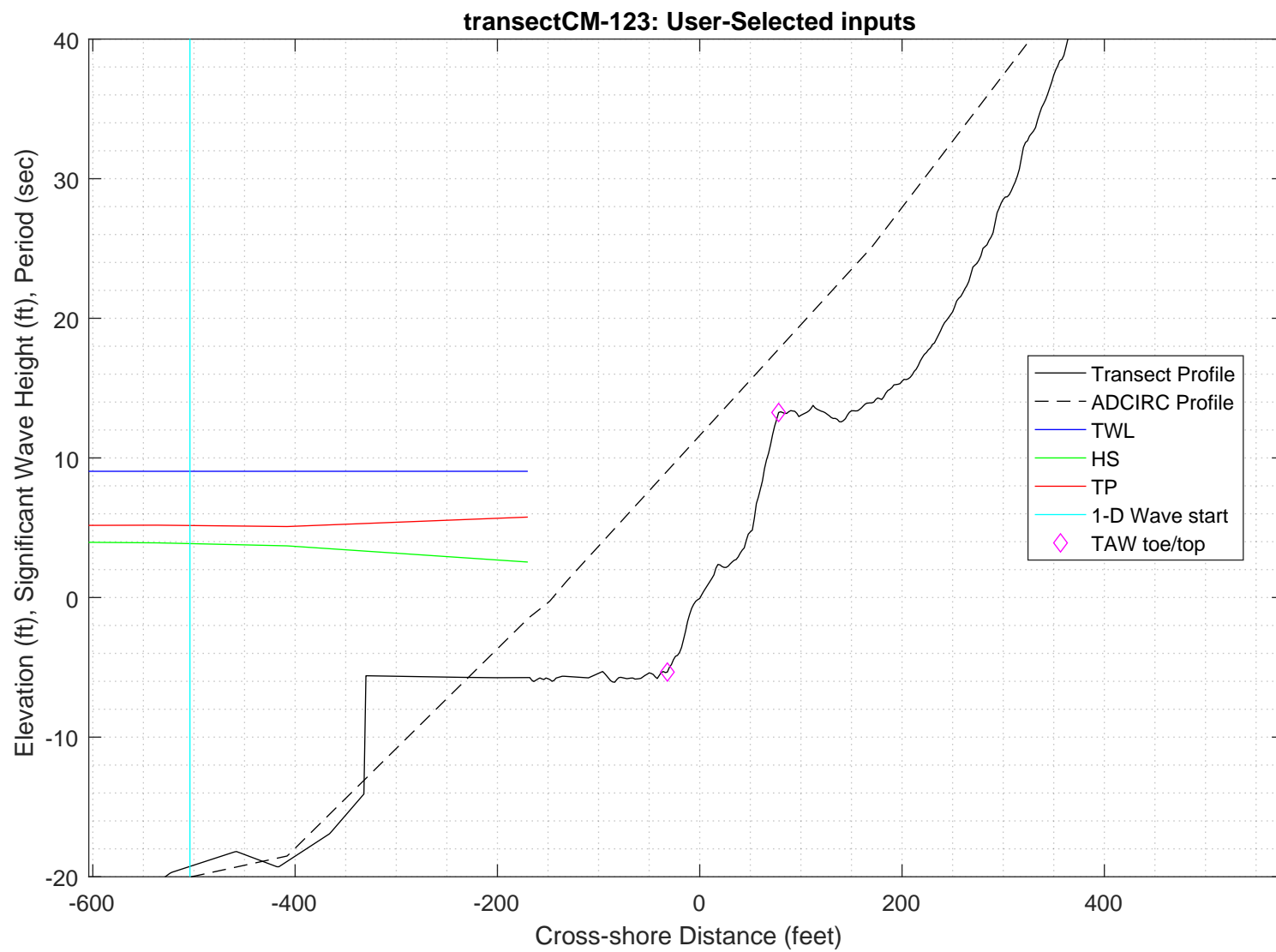
SWAN 1-D / WHAFIS input

station: -504 ft
LON: -69.9781 deg E
LAT: 43.8259 deg N
Bottom ELEV: -19.2597 ft-NAVD88
TWL: 9.0414 ft-NAVD88
HS: 3.862 ft
TP: 5.1585 sec
Wave Direction bin: 0 deg CCW from East (90 deg sector)
Transect Direction: 17.6195 deg CCW from East

TAW/RUNUP input

toe sta: -32 ft
toe elev: -5.338 ft-NAVD88
top sta: 78 ft
top elev: 13.255 ft-NAVD88
Wave and water level conditions at toe to be calculated in SWAN 1-D

PART 1 COMPLETE



PART 2: SWAN 1-D

swan input grid name: 2_swan/gridfiles/CM-123zmeters_xmeters.grd
swan file name: 2_swan/swanfiles/CM-123.swn
swan output name: 2_swan/swanfiles/CM-123.dat

Boundary Conditions:

TWL- 2.7558 meters
HS- 1.1771 meters
PER- 5.1585 seconds

Batch File: 2_swan/swanfiles/runswan.dat

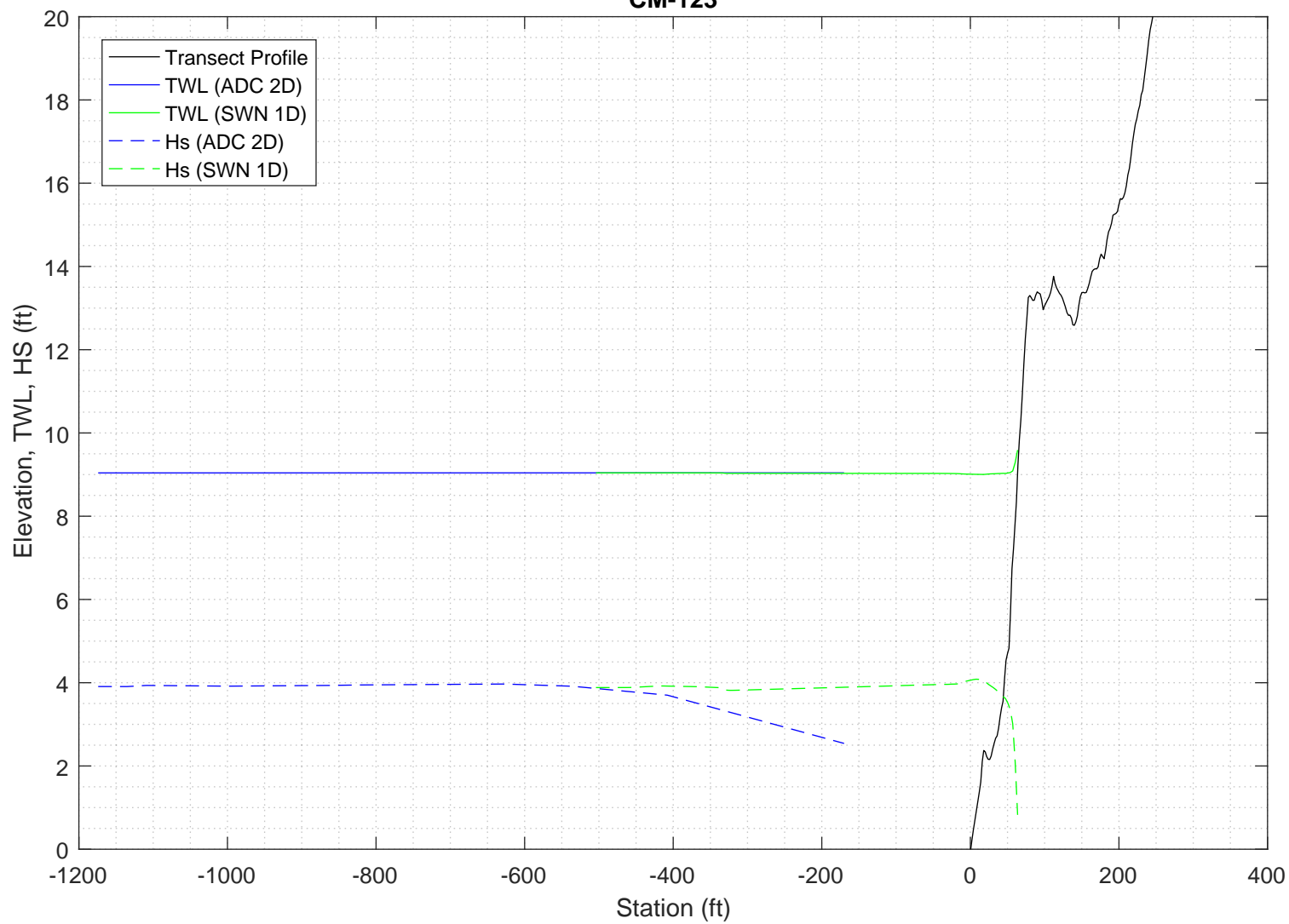
SWAN maximum additional wave setup: 0.5482 feet

SWAN output at toe:

SETUP- -0.013638 feet
HS- 3.9604 feet
PER- 5.1353 seconds

PART 2 COMPLETE

2-D ADCIRC+SWAN and SWAN 1-D results, Transect:
CM-123



Execution started at 20200220.141915

```

-----
                        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      173      0.    173      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      173    0      1      1
!READinp BOTtom [fac] 'fname1' [idla] [nhedf] [FREe|FORmat[form]|UNFormatted]
READ    BOTTOM    -1. './gridfiles/CM-123zeters_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    1.1771    5.1585    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] [edmlpm] [cdrag] [umin] [cfpm]
!-- GEN2 [cf10] [cf20] [cf30] [cf40] [cf50] [cf60] [edmlpm] [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' [xpl] [yp1] <[int] [xp] [yp] >
    CURVE 'curve' 0 0 173 173 0
!TABLE 'sname' < HEADER|NOHEAdER|INDEXed > 'fname' <output parameters> (output time)
    Table 'curve' HEADER 'CM-123.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          174 MYC          1
                   : MCGRD         175
                   : 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 EDMLEPM    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 13.22 % 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 0.58 % 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 14.95 % 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 97.13 % 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 98.86 % 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 99.43 % 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 99.43 % 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 99.43 % 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 99.43 % 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 99.43 % 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 99.43 % 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 100.00 % of wet grid points ( 99.50 % required)
```

STOP

Run: 1

Table:curve

SWAN version:41.20A

Xp [m]	Yp [m]	Hsig [m]	TPsmoo [sec]	RTpeak [sec]	Tm_10 [sec]	Dir [degr]	Dspr [degr]	Depth [m]	Setup [m]
0.	0.	1.18375	5.1272	5.1860	4.6606	360.000	31.5639	8.6300	0.000000
1.	0.	1.18368	5.1273	5.1860	4.6593	360.000	31.5267	8.6000	-0.000012
2.	0.	1.18373	5.1273	5.1860	4.6581	360.000	31.4969	8.5800	-0.000022
3.	0.	1.18376	5.1273	5.1860	4.6569	360.000	31.4636	8.5600	-0.000031
4.	0.	1.18372	5.1273	5.1860	4.6557	360.000	31.4298	8.5300	-0.000044
5.	0.	1.18374	5.1273	5.1860	4.6544	360.000	31.3957	8.5099	-0.000053
6.	0.	1.18370	5.1273	5.1860	4.6532	360.000	31.3617	8.4799	-0.000066
7.	0.	1.18376	5.1273	5.1860	4.6519	360.000	31.3323	8.4599	-0.000075
8.	0.	1.18381	5.1273	5.1860	4.6507	360.000	31.2997	8.4399	-0.000085
9.	0.	1.18378	5.1274	5.1860	4.6495	360.000	31.2665	8.4099	-0.000098
10.	0.	1.18385	5.1274	5.1860	4.6482	360.000	31.2376	8.3899	-0.000108
11.	0.	1.18390	5.1274	5.1860	4.6470	360.000	31.2062	8.3699	-0.000118
12.	0.	1.18388	5.1274	5.1860	4.6457	360.000	31.1748	8.3399	-0.000131
13.	0.	1.18398	5.1274	5.1860	4.6445	360.000	31.1498	8.3199	-0.000141
14.	0.	1.18424	5.1275	5.1860	4.6434	360.000	31.1492	8.2998	-0.000151
15.	0.	1.18508	5.1274	5.1860	4.6424	360.000	31.1858	8.3299	-0.000144
16.	0.	1.18594	5.1274	5.1860	4.6414	360.000	31.2340	8.3499	-0.000140
17.	0.	1.18693	5.1273	5.1860	4.6405	360.000	31.2920	8.3799	-0.000133
18.	0.	1.18794	5.1273	5.1860	4.6397	360.000	31.3515	8.4099	-0.000126
19.	0.	1.18889	5.1272	5.1860	4.6387	360.000	31.4031	8.4399	-0.000119
20.	0.	1.18976	5.1272	5.1860	4.6378	360.000	31.4514	8.4599	-0.000115
21.	0.	1.19073	5.1272	5.1860	4.6368	360.000	31.5040	8.4899	-0.000108
22.	0.	1.19170	5.1271	5.1860	4.6359	360.000	31.5559	8.5199	-0.000101
23.	0.	1.19262	5.1271	5.1860	4.6349	360.000	31.6001	8.5499	-0.000094
24.	0.	1.19346	5.1270	5.1860	4.6339	360.000	31.6418	8.5699	-0.000091
25.	0.	1.19440	5.1270	5.1860	4.6329	360.000	31.6884	8.5999	-0.000084
26.	0.	1.19517	5.1269	5.1860	4.6317	360.000	31.7098	8.6299	-0.000077
27.	0.	1.19539	5.1269	5.1860	4.6304	360.000	31.6897	8.6199	-0.000083
28.	0.	1.19516	5.1269	5.1860	4.6289	360.000	31.6353	8.5799	-0.000099
29.	0.	1.19476	5.1269	5.1860	4.6273	360.000	31.5633	8.5299	-0.000118
30.	0.	1.19435	5.1270	5.1860	4.6256	360.000	31.4910	8.4799	-0.000137
31.	0.	1.19402	5.1270	5.1860	4.6240	360.000	31.4189	8.4398	-0.000154
32.	0.	1.19359	5.1270	5.1860	4.6223	360.000	31.3418	8.3898	-0.000174
33.	0.	1.19316	5.1270	5.1860	4.6207	360.000	31.2635	8.3398	-0.000194
34.	0.	1.19277	5.1271	5.1860	4.6191	360.000	31.1903	8.2898	-0.000215
35.	0.	1.19246	5.1271	5.1860	4.6175	0.000	31.1191	8.2498	-0.000232
36.	0.	1.19207	5.1272	5.1860	4.6158	0.000	31.0437	8.1997	-0.000254
37.	0.	1.19170	5.1272	5.1860	4.6143	0.000	30.9724	8.1497	-0.000275
38.	0.	1.19142	5.1272	5.1860	4.6127	0.000	30.9030	8.1097	-0.000294
39.	0.	1.19105	5.1273	5.1860	4.6111	0.000	30.8300	8.0597	-0.000316
40.	0.	1.19069	5.1274	5.1860	4.6095	0.000	30.7598	8.0097	-0.000338
41.	0.	1.19036	5.1274	5.1860	4.6079	0.000	30.6997	7.9596	-0.000361
42.	0.	1.19003	5.1274	5.1860	4.6062	0.000	30.6301	7.9196	-0.000379
43.	0.	1.18926	5.1275	5.1860	4.6046	0.000	30.5359	7.8396	-0.000414
44.	0.	1.18838	5.1277	5.1860	4.6029	0.000	30.4335	7.7495	-0.000454
45.	0.	1.18760	5.1278	5.1860	4.6013	0.001	30.3322	7.6695	-0.000491
46.	0.	1.18680	5.1279	5.1860	4.5996	0.001	30.2258	7.5895	-0.000529
47.	0.	1.18594	5.1281	5.1860	4.5981	0.001	30.1168	7.4994	-0.000573
48.	0.	1.18516	5.1282	5.1860	4.5965	0.001	30.0070	7.4194	-0.000613
49.	0.	1.18435	5.1284	5.1860	4.5950	0.001	29.8956	7.3293	-0.000660
50.	0.	1.18361	5.1286	5.1860	4.5935	0.001	29.7828	7.2493	-0.000703
51.	0.	1.18285	5.1287	5.1860	4.5921	0.001	29.6688	7.1592	-0.000753
52.	0.	1.17440	5.1288	5.1860	4.5859	0.001	28.2732	7.0792	-0.000821
53.	0.	1.16616	5.1361	5.1860	4.6215	0.002	26.4557	4.6069	-0.003061
54.	0.	1.16424	5.1366	5.1860	4.6218	0.002	25.7712	4.4567	-0.003328
55.	0.	1.16340	5.1365	5.1860	4.6189	0.002	25.5815	4.4667	-0.003317
56.	0.	1.16347	5.1365	5.1860	4.6168	0.002	25.5219	4.4667	-0.003323
57.	0.	1.16382	5.1364	5.1860	4.6149	0.002	25.5062	4.4667	-0.003330
58.	0.	1.16427	5.1364	5.1860	4.6131	0.002	25.5052	4.4667	-0.003336
59.	0.	1.16474	5.1364	5.1860	4.6112	0.003	25.5091	4.4667	-0.003343

60.	0.	1.16522	5.1364	5.1860	4.6094	0.003	25.5147	4.4666	-0.003350
61.	0.	1.16571	5.1364	5.1860	4.6076	0.003	25.5207	4.4666	-0.003357
62.	0.	1.16624	5.1363	5.1860	4.6058	0.003	25.5357	4.4666	-0.003364
63.	0.	1.16669	5.1363	5.1860	4.6037	0.003	25.5539	4.4766	-0.003353
64.	0.	1.16720	5.1363	5.1860	4.6019	0.003	25.5639	4.4766	-0.003360
65.	0.	1.16769	5.1362	5.1860	4.6001	0.004	25.5718	4.4766	-0.003367
66.	0.	1.16819	5.1362	5.1860	4.5983	0.004	25.5789	4.4766	-0.003374
67.	0.	1.16868	5.1362	5.1860	4.5965	0.004	25.5859	4.4766	-0.003381
68.	0.	1.16917	5.1362	5.1860	4.5948	0.004	25.5927	4.4766	-0.003388
69.	0.	1.16966	5.1362	5.1860	4.5930	0.004	25.5995	4.4766	-0.003395
70.	0.	1.17020	5.1361	5.1860	4.5912	0.004	25.6150	4.4766	-0.003402
71.	0.	1.17065	5.1361	5.1860	4.5891	0.005	25.6336	4.4866	-0.003391
72.	0.	1.17116	5.1361	5.1860	4.5874	0.005	25.6441	4.4866	-0.003398
73.	0.	1.17166	5.1361	5.1860	4.5856	0.005	25.6524	4.4866	-0.003405
74.	0.	1.17215	5.1360	5.1860	4.5838	0.005	25.6600	4.4866	-0.003412
75.	0.	1.17264	5.1360	5.1860	4.5821	0.005	25.6673	4.4866	-0.003419
76.	0.	1.17314	5.1360	5.1860	4.5803	0.005	25.6745	4.4866	-0.003426
77.	0.	1.17363	5.1360	5.1860	4.5785	0.006	25.6819	4.4866	-0.003433
78.	0.	1.17412	5.1360	5.1860	4.5768	0.006	25.6891	4.4866	-0.003440
79.	0.	1.17466	5.1359	5.1860	4.5750	0.006	25.7050	4.4866	-0.003447
80.	0.	1.17512	5.1359	5.1860	4.5730	0.006	25.7241	4.4966	-0.003437
81.	0.	1.17563	5.1359	5.1860	4.5712	0.006	25.7349	4.4966	-0.003444
82.	0.	1.17613	5.1358	5.1860	4.5695	0.006	25.7437	4.4965	-0.003451
83.	0.	1.17662	5.1358	5.1860	4.5678	0.006	25.7517	4.4965	-0.003458
84.	0.	1.17712	5.1358	5.1860	4.5660	0.006	25.7594	4.4965	-0.003465
85.	0.	1.17761	5.1358	5.1860	4.5643	0.007	25.7671	4.4965	-0.003472
86.	0.	1.17810	5.1358	5.1860	4.5626	0.007	25.7748	4.4965	-0.003479
87.	0.	1.17860	5.1358	5.1860	4.5608	0.007	25.7825	4.4965	-0.003486
88.	0.	1.17909	5.1357	5.1860	4.5591	0.007	25.7903	4.4965	-0.003493
89.	0.	1.17959	5.1357	5.1860	4.5574	0.007	25.7980	4.4965	-0.003500
90.	0.	1.18013	5.1357	5.1860	4.5557	0.007	25.8143	4.4965	-0.003507
91.	0.	1.18058	5.1357	5.1860	4.5537	0.007	25.8338	4.5065	-0.003497
92.	0.	1.18110	5.1356	5.1860	4.5520	0.007	25.8451	4.5065	-0.003504
93.	0.	1.18160	5.1356	5.1860	4.5503	0.007	25.8543	4.5065	-0.003511
94.	0.	1.18209	5.1356	5.1860	4.5486	0.007	25.8628	4.5065	-0.003518
95.	0.	1.18255	5.1356	5.1860	4.5469	0.007	25.8644	4.5065	-0.003525
96.	0.	1.18310	5.1356	5.1860	4.5455	0.007	25.8633	4.4964	-0.003550
97.	0.	1.18358	5.1356	5.1860	4.5438	0.008	25.8687	4.4964	-0.003557
98.	0.	1.18407	5.1356	5.1860	4.5421	0.008	25.8759	4.4964	-0.003564
99.	0.	1.18456	5.1355	5.1860	4.5404	0.008	25.8837	4.4964	-0.003571
100.	0.	1.18505	5.1355	5.1860	4.5387	0.008	25.8916	4.4964	-0.003578
101.	0.	1.18555	5.1355	5.1860	4.5370	0.008	25.8994	4.4964	-0.003586
102.	0.	1.18630	5.1355	5.1860	4.5355	0.008	25.9583	4.4964	-0.003592
103.	0.	1.18666	5.1353	5.1860	4.5321	0.008	26.0460	4.5565	-0.003496
104.	0.	1.18709	5.1352	5.1860	4.5302	0.008	26.0581	4.5665	-0.003487
105.	0.	1.18779	5.1353	5.1860	4.5297	0.008	26.0396	4.5264	-0.003561
106.	0.	1.18825	5.1353	5.1860	4.5281	0.008	26.0404	4.5264	-0.003568
107.	0.	1.18872	5.1353	5.1860	4.5264	0.008	26.0457	4.5264	-0.003575
108.	0.	1.18944	5.1353	5.1860	4.5249	0.008	26.0964	4.5264	-0.003582
109.	0.	1.18962	5.1351	5.1860	4.5218	0.008	26.1296	4.5765	-0.003505
110.	0.	1.19020	5.1352	5.1860	4.5213	0.008	26.0894	4.5364	-0.003580
111.	0.	1.19076	5.1353	5.1860	4.5208	0.008	26.0414	4.4963	-0.003656
112.	0.	1.19128	5.1354	5.1860	4.5197	0.008	26.0179	4.4763	-0.003699
113.	0.	1.19172	5.1354	5.1860	4.5180	0.008	26.0166	4.4763	-0.003707
114.	0.	1.19224	5.1354	5.1860	4.5164	0.008	26.0304	4.4763	-0.003714
115.	0.	1.19270	5.1353	5.1860	4.5144	0.008	26.0499	4.4863	-0.003703
116.	0.	1.19321	5.1353	5.1860	4.5128	0.008	26.0616	4.4863	-0.003711
117.	0.	1.19376	5.1353	5.1860	4.5112	0.008	26.0800	4.4863	-0.003718
118.	0.	1.19422	5.1352	5.1860	4.5093	0.008	26.1011	4.4963	-0.003707
119.	0.	1.19478	5.1352	5.1860	4.5077	0.008	26.1223	4.4963	-0.003714
120.	0.	1.19513	5.1351	5.1860	4.5058	0.008	26.1225	4.5063	-0.003705
121.	0.	1.19567	5.1352	5.1860	4.5051	0.008	26.0869	4.4762	-0.003765
122.	0.	1.19613	5.1353	5.1860	4.5042	0.008	26.0342	4.4462	-0.003826
123.	0.	1.19667	5.1354	5.1860	4.5037	0.008	25.9749	4.4061	-0.003907
124.	0.	1.19740	5.1355	5.1860	4.5030	0.008	25.9690	4.3760	-0.003970
125.	0.	1.19805	5.1354	5.1860	4.5003	0.008	26.0831	4.4161	-0.003903
126.	0.	1.19873	5.1351	5.1860	4.4966	0.008	26.2740	4.4962	-0.003765

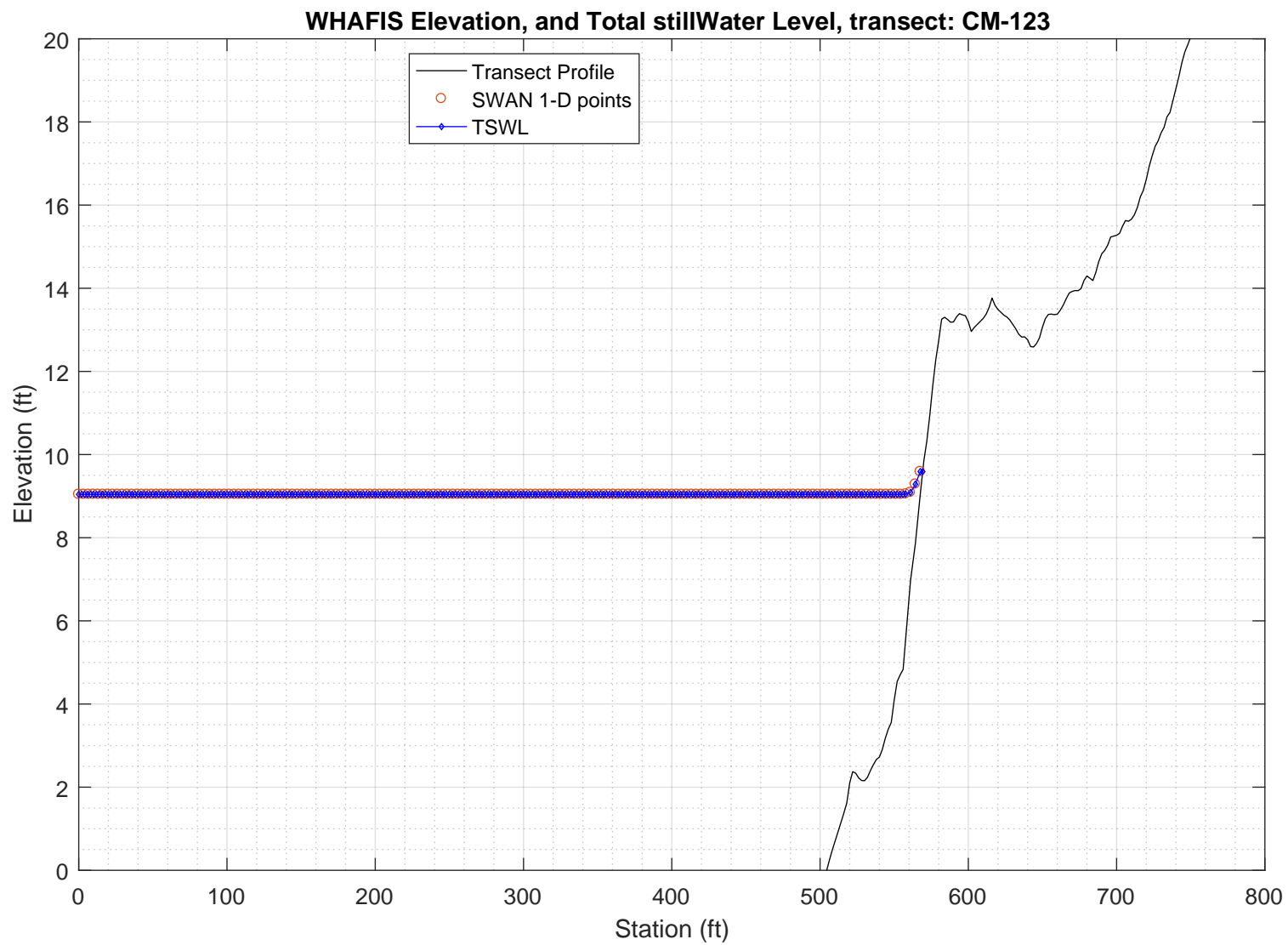
127.	0.	1.19932	5.1348	5.1860	4.4930	0.008	26.4334	4.5764	-0.003635
128.	0.	1.19966	5.1347	5.1860	4.4909	0.008	26.4463	4.5964	-0.003609
129.	0.	1.20044	5.1350	5.1860	4.4917	0.008	26.3828	4.5162	-0.003751
130.	0.	1.20098	5.1350	5.1860	4.4908	0.008	26.3688	4.4962	-0.003793
131.	0.	1.20135	5.1349	5.1860	4.4886	0.008	26.3897	4.5162	-0.003766
132.	0.	1.20180	5.1349	5.1860	4.4871	0.008	26.3938	4.5162	-0.003773
133.	0.	1.20241	5.1349	5.1860	4.4860	0.008	26.4097	4.5062	-0.003797
134.	0.	1.20283	5.1348	5.1860	4.4839	0.008	26.4405	4.5262	-0.003770
135.	0.	1.20327	5.1348	5.1860	4.4824	0.007	26.4411	4.5262	-0.003778
136.	0.	1.20364	5.1349	5.1860	4.4814	0.007	26.3969	4.5062	-0.003820
137.	0.	1.20413	5.1350	5.1860	4.4814	0.007	26.3223	4.4561	-0.003916
138.	0.	1.20466	5.1352	5.1860	4.4810	0.007	26.2669	4.4160	-0.003997
139.	0.	1.20538	5.1352	5.1860	4.4799	0.007	26.3013	4.4060	-0.004022
140.	0.	1.20580	5.1349	5.1860	4.4767	0.007	26.4071	4.4661	-0.003920
141.	0.	1.20589	5.1348	5.1860	4.4742	0.007	26.3946	4.4961	-0.003876
142.	0.	1.20679	5.1352	5.1860	4.4757	0.007	26.3027	4.3959	-0.004063
143.	0.	1.20715	5.1352	5.1860	4.4747	0.007	26.2500	4.3759	-0.004109
144.	0.	1.20714	5.1353	5.1860	4.4735	0.006	26.1287	4.3558	-0.004157
145.	0.	1.20775	5.1357	5.1860	4.4759	0.006	25.8823	4.2256	-0.004425
146.	0.	1.20890	5.1362	5.1860	4.4790	0.005	25.6383	4.0752	-0.004758
147.	0.	1.20921	5.1364	5.1860	4.4792	0.005	25.4085	4.0051	-0.004932
148.	0.	1.20996	5.1369	5.1860	4.4816	0.004	25.0140	3.8647	-0.005294
149.	0.	1.21302	5.1379	5.1860	4.4891	0.003	24.4228	3.5839	-0.006103
150.	0.	1.21881	5.1391	5.1860	4.4956	0.002	23.7565	3.2628	-0.007235
151.	0.	1.22528	5.1400	5.1860	4.4917	0.003	23.1742	3.0217	-0.008272
152.	0.	1.23089	5.1406	5.1860	4.4752	0.003	22.7462	2.8710	-0.008998
153.	0.	1.23478	5.1409	5.1860	4.4495	0.005	22.4358	2.7906	-0.009372
154.	0.	1.23852	5.1414	5.1860	4.4202	0.006	22.1155	2.7103	-0.009736
155.	0.	1.24267	5.1420	5.1860	4.3903	0.002	21.7534	2.5897	-0.010298
156.	0.	1.24490	5.1428	5.1860	4.3575	359.989	21.3787	2.4692	-0.010773
157.	0.	1.24395	5.1438	5.1860	4.3218	359.965	20.9886	2.3590	-0.011029
158.	0.	1.24042	5.1450	5.1860	4.2845	359.924	20.4747	2.2287	-0.011268
159.	0.	1.23690	5.1467	5.1860	4.2408	359.895	20.0008	2.0382	-0.011809
160.	0.	1.22270	5.1477	5.1860	4.1783	359.886	19.8782	2.0498	-0.010160
161.	0.	1.20787	5.1485	5.1860	4.1257	359.884	19.8513	2.0916	-0.008398
162.	0.	1.19562	5.1493	5.1860	4.0897	359.885	19.7220	2.0726	-0.007359
163.	0.	1.18381	5.1504	5.1860	4.0641	359.888	19.4956	2.0033	-0.006739
164.	0.	1.16979	5.1515	5.1860	4.0406	359.891	19.2626	1.9340	-0.005956
165.	0.	1.15281	5.1526	5.1860	4.0168	359.895	18.9803	1.8852	-0.004822
166.	0.	1.13679	5.1540	5.1860	4.0020	359.929	18.5691	1.7657	-0.004281
167.	0.	1.11788	5.1545	5.1860	3.9808	0.031	17.9353	1.6666	-0.003356
168.	0.	1.10412	5.1529	5.1860	3.9607	0.336	17.0658	1.4260	-0.004033
169.	0.	1.06997	5.1527	5.1860	3.9066	0.675	16.2017	1.3088	-0.001161
170.	0.	1.02146	5.1528	5.1860	3.8552	0.777	14.7554	1.0624	0.002397
171.	0.	0.91816	5.1567	5.1860	3.8416	0.567	13.3150	0.6442	0.014202
172.	0.	0.63959	5.1770	5.1860	3.9397	358.518	13.4198	0.4349	0.074912
173.	0.	0.25167	6.6691	6.4550	4.6681	359.805	17.5906	0.1671	0.167092

PART 3: WHAFIS

WHAFIS input: CM-123.dat

WHAFIS output: CM-123.out

PART 3 COMPLETE



WAVE HEIGHT COMPUTATIONS FOR FLOOD INSURANCE STUDIES (WHAFIS VERSION 4.0G, 08_2007)

Executed on: Thu Feb 20 14:57:35 2020

Input file: C:\FEMA-TransectAnalysis\LOMR-TransectAnalysis-Harpswell\3_whafis\whafis4\CM-123.dat

Output file: C:\FEMA-TransectAnalysis\LOMR-TransectAnalysis-Harpswell\3_whafis\whafis4\CM-123.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	-19.259	1.000	1.000	9.041	6.179	5.159	56.140	0.023	0.000
OF	2.000	-19.212	0.000	9.041	0.000	0.000	0.000	0.000	0.023	0.000
OF	4.000	-19.165	0.000	9.041	0.000	0.000	0.000	0.000	0.023	0.000
OF	6.000	-19.118	0.000	9.041	0.000	0.000	0.000	0.000	0.024	0.000
OF	8.000	-19.070	0.000	9.041	0.000	0.000	0.000	0.000	0.024	0.000
OF	10.000	-19.023	0.000	9.041	0.000	0.000	0.000	0.000	0.023	0.000
OF	12.000	-18.976	0.000	9.041	0.000	0.000	0.000	0.000	0.023	0.000
OF	14.000	-18.929	0.000	9.041	0.000	0.000	0.000	0.000	0.024	0.000
OF	16.000	-18.881	0.000	9.041	0.000	0.000	0.000	0.000	0.024	0.000
OF	18.000	-18.834	0.000	9.041	0.000	0.000	0.000	0.000	0.023	0.000
OF	20.000	-18.787	0.000	9.041	0.000	0.000	0.000	0.000	0.023	0.000
OF	22.000	-18.740	0.000	9.041	0.000	0.000	0.000	0.000	0.023	0.000
OF	24.000	-18.693	0.000	9.041	0.000	0.000	0.000	0.000	0.024	0.000
OF	26.000	-18.645	0.000	9.041	0.000	0.000	0.000	0.000	0.024	0.000
OF	28.000	-18.598	0.000	9.041	0.000	0.000	0.000	0.000	0.023	0.000
OF	30.000	-18.551	0.000	9.041	0.000	0.000	0.000	0.000	0.023	0.000
OF	32.000	-18.504	0.000	9.042	0.000	0.000	0.000	0.000	0.023	0.000
OF	34.000	-18.457	0.000	9.042	0.000	0.000	0.000	0.000	0.024	0.000
OF	36.000	-18.409	0.000	9.042	0.000	0.000	0.000	0.000	0.024	0.000
OF	38.000	-18.362	0.000	9.042	0.000	0.000	0.000	0.000	0.023	0.000
OF	40.000	-18.315	0.000	9.042	0.000	0.000	0.000	0.000	0.023	0.000
OF	42.000	-18.268	0.000	9.042	0.000	0.000	0.000	0.000	0.024	0.000
OF	44.000	-18.220	0.000	9.042	0.000	0.000	0.000	0.000	0.019	0.000
OF	46.000	-18.192	0.000	9.042	0.000	0.000	0.000	0.000	-0.007	0.000
OF	48.000	-18.247	0.000	9.042	0.000	0.000	0.000	0.000	-0.027	0.000
OF	50.000	-18.301	0.000	9.042	0.000	0.000	0.000	0.000	-0.027	0.000
OF	52.000	-18.356	0.000	9.042	0.000	0.000	0.000	0.000	-0.027	0.000
OF	54.000	-18.410	0.000	9.042	0.000	0.000	0.000	0.000	-0.027	0.000
OF	56.000	-18.465	0.000	9.042	0.000	0.000	0.000	0.000	-0.027	0.000
OF	58.000	-18.519	0.000	9.042	0.000	0.000	0.000	0.000	-0.027	0.000
OF	60.000	-18.574	0.000	9.042	0.000	0.000	0.000	0.000	-0.027	0.000
OF	62.000	-18.628	0.000	9.042	0.000	0.000	0.000	0.000	-0.027	0.000
OF	64.000	-18.682	0.000	9.042	0.000	0.000	0.000	0.000	-0.027	0.000
OF	66.000	-18.737	0.000	9.042	0.000	0.000	0.000	0.000	-0.027	0.000
OF	68.000	-18.791	0.000	9.042	0.000	0.000	0.000	0.000	-0.027	0.000
OF	70.000	-18.846	0.000	9.042	0.000	0.000	0.000	0.000	-0.027	0.000
OF	72.000	-18.900	0.000	9.042	0.000	0.000	0.000	0.000	-0.027	0.000
OF	74.000	-18.955	0.000	9.042	0.000	0.000	0.000	0.000	-0.027	0.000
OF	76.000	-19.009	0.000	9.042	0.000	0.000	0.000	0.000	-0.027	0.000
OF	78.000	-19.064	0.000	9.042	0.000	0.000	0.000	0.000	-0.027	0.000
OF	80.000	-19.118	0.000	9.042	0.000	0.000	0.000	0.000	-0.027	0.000
OF	82.000	-19.173	0.000	9.042	0.000	0.000	0.000	0.000	-0.027	0.000
OF	84.000	-19.227	0.000	9.042	0.000	0.000	0.000	0.000	-0.027	0.000
OF	86.000	-19.281	0.000	9.042	0.000	0.000	0.000	0.000	-0.014	0.000
OF	88.000	-19.281	0.000	9.042	0.000	0.000	0.000	0.000	0.023	0.000
OF	90.000	-19.187	0.000	9.042	0.000	0.000	0.000	0.000	0.047	0.000
OF	92.000	-19.092	0.000	9.042	0.000	0.000	0.000	0.000	0.047	0.000
OF	94.000	-18.998	0.000	9.042	0.000	0.000	0.000	0.000	0.047	0.000
OF	96.000	-18.903	0.000	9.042	0.000	0.000	0.000	0.000	0.047	0.000
OF	98.000	-18.809	0.000	9.042	0.000	0.000	0.000	0.000	0.047	0.000
OF	100.000	-18.715	0.000	9.042	0.000	0.000	0.000	0.000	0.047	0.000
OF	102.000	-18.620	0.000	9.042	0.000	0.000	0.000	0.000	0.047	0.000
OF	104.000	-18.526	0.000	9.042	0.000	0.000	0.000	0.000	0.047	0.000
OF	106.000	-18.431	0.000	9.042	0.000	0.000	0.000	0.000	0.047	0.000
OF	108.000	-18.337	0.000	9.042	0.000	0.000	0.000	0.000	0.047	0.000
OF	110.000	-18.243	0.000	9.042	0.000	0.000	0.000	0.000	0.047	0.000
OF	112.000	-18.148	0.000	9.042	0.000	0.000	0.000	0.000	0.047	0.000
OF	114.000	-18.054	0.000	9.042	0.000	0.000	0.000	0.000	0.047	0.000
OF	116.000	-17.959	0.000	9.042	0.000	0.000	0.000	0.000	0.047	0.000
OF	118.000	-17.865	0.000	9.042	0.000	0.000	0.000	0.000	0.047	0.000
OF	120.000	-17.771	0.000	9.042	0.000	0.000	0.000	0.000	0.047	0.000
OF	122.000	-17.676	0.000	9.042	0.000	0.000	0.000	0.000	0.047	0.000
OF	124.000	-17.582	0.000	9.042	0.000	0.000	0.000	0.000	0.047	0.000
OF	126.000	-17.487	0.000	9.042	0.000	0.000	0.000	0.000	0.047	0.000
OF	128.000	-17.393	0.000	9.042	0.000	0.000	0.000	0.000	0.047	0.000
OF	130.000	-17.298	0.000	9.042	0.000	0.000	0.000	0.000	0.047	0.000
OF	132.000	-17.204	0.000	9.042	0.000	0.000	0.000	0.000	0.047	0.000
OF	134.000	-17.110	0.000	9.042	0.000	0.000	0.000	0.000	0.047	0.000
OF	136.000	-17.015	0.000	9.042	0.000	0.000	0.000	0.000	0.047	0.000
OF	138.000	-16.921	0.000	9.042	0.000	0.000	0.000	0.000	0.064	0.000
OF	140.000	-16.761	0.000	9.042	0.000	0.000	0.000	0.000	0.082	0.000
OF	142.000	-16.593	0.000	9.042	0.000	0.000	0.000	0.000	0.084	0.000
OF	144.000	-16.425	0.000	9.042	0.000	0.000	0.000	0.000	0.084	0.000
OF	146.000	-16.257	0.000	9.042	0.000	0.000	0.000	0.000	0.084	0.000
OF	148.000	-16.089	0.000	9.042	0.000	0.000	0.000	0.000	0.084	0.000
OF	150.000	-15.921	0.000	9.042	0.000	0.000	0.000	0.000	0.084	0.000
OF	152.000	-15.753	0.000	9.042	0.000	0.000	0.000	0.000	0.084	0.000
OF	154.000	-15.585	0.000	9.042	0.000	0.000	0.000	0.000	0.084	0.000
OF	156.000	-15.417	0.000	9.042	0.000	0.000	0.000	0.000	0.084	0.000
OF	158.000	-15.248	0.000	9.042	0.000	0.000	0.000	0.000	0.084	0.000
OF	160.000	-15.080	0.000	9.042	0.000	0.000	0.000	0.000	0.084	0.000
OF	162.000	-14.912	0.000	9.042	0.000	0.000	0.000	0.000	0.084	0.000
OF	164.000	-14.744	0.000	9.042	0.000	0.000	0.000	0.000	0.084	0.000
OF	166.000	-14.576	0.000	9.042	0.000	0.000	0.000	0.000	0.084	0.000
OF	168.000	-14.408	0.000	9.042	0.000	0.000	0.000	0.000	0.084	0.000
OF	170.000	-14.240	0.000	9.042	0.000	0.000	0.000	0.000	0.084	0.000
OF	172.000	-14.072	0.000	9.042	0.000	0.000	0.000	0.000	2.159	0.000
OF	174.000	-5.603	0.000	9.042	0.000	0.000	0.000	0.000	2.117	0.000
OF	176.000	-5.606	0.000	9.042	0.000	0.000	0.000	0.000	-0.001	0.000
OF	178.000	-5.608	0.000	9.042	0.000	0.000	0.000	0.000	-0.001	0.000
OF	180.000	-5.610	0.000	9.042	0.000	0.000	0.000	0.000	-0.001	0.000
OF	182.000	-5.613	0.000	9.042	0.000	0.000	0.000	0.000	-0.001	0.000
OF	184.000	-5.615	0.000	9.042	0.000	0.000	0.000	0.000	-0.001	0.000

[illegible]

OF	390.000	-5.735	0.000	9.042	0.000	0.000	0.000	0.000	0.000	-0.005	0.000
OF	392.000	-5.745	0.000	9.042	0.000	0.000	0.000	0.000	0.000	-0.004	0.000
OF	394.000	-5.753	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.014	0.000
OF	396.000	-5.688	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.032	0.000
OF	398.000	-5.623	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.032	0.000
OF	400.000	-5.558	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.032	0.000
OF	402.000	-5.493	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.032	0.000
OF	404.000	-5.428	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.032	0.000
OF	406.000	-5.363	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.032	0.000
OF	408.000	-5.298	0.000	9.042	0.000	0.000	0.000	0.000	0.000	-0.020	0.000
OF	410.000	-5.442	0.000	9.042	0.000	0.000	0.000	0.000	0.000	-0.079	0.000
OF	412.000	-5.614	0.000	9.042	0.000	0.000	0.000	0.000	0.000	-0.086	0.000
OF	414.000	-5.787	0.000	9.042	0.000	0.000	0.000	0.000	0.000	-0.086	0.000
OF	416.000	-5.959	0.000	9.042	0.000	0.000	0.000	0.000	0.000	-0.065	0.000
OF	418.000	-6.048	0.000	9.042	0.000	0.000	0.000	0.000	0.000	-0.027	0.000
OF	420.000	-6.066	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.043	0.000
OF	422.000	-5.877	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.082	0.000
OF	424.000	-5.737	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.041	0.000
OF	426.000	-5.715	0.000	9.042	0.000	0.000	0.000	0.000	0.000	-0.003	0.000
OF	428.000	-5.747	0.000	9.042	0.000	0.000	0.000	0.000	0.000	-0.016	0.000
OF	430.000	-5.780	0.000	9.042	0.000	0.000	0.000	0.000	0.000	-0.016	0.000
OF	432.000	-5.812	0.000	9.042	0.000	0.000	0.000	0.000	0.000	-0.003	0.000
OF	434.000	-5.791	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.011	0.000
OF	436.000	-5.769	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.006	0.000
OF	438.000	-5.766	0.000	9.042	0.000	0.000	0.000	0.000	0.000	-0.018	0.000
OF	440.000	-5.841	0.000	9.042	0.000	0.000	0.000	0.000	0.000	-0.016	0.000
OF	442.000	-5.831	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.007	0.000
OF	444.000	-5.813	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.013	0.000
OF	446.000	-5.781	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.034	0.000
OF	448.000	-5.675	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.052	0.000
OF	450.000	-5.574	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.045	0.000
OF	452.000	-5.494	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.045	0.000
OF	454.000	-5.395	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.014	0.000
OF	456.000	-5.437	0.000	9.042	0.000	0.000	0.000	0.000	0.000	-0.029	0.000
OF	458.000	-5.510	0.000	9.042	0.000	0.000	0.000	0.000	0.000	-0.061	0.000
OF	460.000	-5.679	0.000	9.042	0.000	0.000	0.000	0.000	0.000	-0.073	0.000
OF	462.000	-5.802	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.024	0.000
OF	464.000	-5.582	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.109	0.000
OF	466.000	-5.367	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.071	0.000
OF	468.000	-5.299	0.000	9.042	0.000	0.000	0.000	0.000	0.000	-0.002	0.000
OF	470.000	-5.375	0.000	9.042	0.000	0.000	0.000	0.000	0.000	-0.010	0.000
OF	472.000	-5.338	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.095	0.000
OF	474.000	-4.996	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.134	0.000
OF	476.000	-4.802	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.135	0.000
OF	478.000	-4.454	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.148	0.000
OF	480.000	-4.211	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.078	0.000
OF	482.000	-4.141	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.068	0.000
OF	484.000	-3.940	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.141	0.000
OF	486.000	-3.578	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.235	0.000
OF	488.000	-3.001	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.294	0.000
OF	490.000	-2.403	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.322	0.000
OF	492.000	-1.713	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.298	0.000
OF	494.000	-1.211	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.234	0.000
OF	496.000	-0.776	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.181	0.000
OF	498.000	-0.488	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.126	0.000
OF	500.000	-0.273	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.084	0.000
OF	502.000	-0.153	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.051	0.000
OF	504.000	-0.068	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.090	0.000
IF	506.000	0.207	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.132	0.000
IF	508.000	0.459	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.120	0.000
IF	510.000	0.687	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.114	0.000
IF	512.000	0.915	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.114	0.000
IF	514.000	1.143	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.114	0.000
IF	516.000	1.370	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.118	0.000
IF	518.000	1.616	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.183	0.000
IF	520.000	2.103	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.189	0.000
IF	522.000	2.373	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.059	0.000
IF	524.000	2.338	0.000	9.042	0.000	0.000	0.000	0.000	0.000	-0.037	0.000
IF	526.000	2.223	0.000	9.042	0.000	0.000	0.000	0.000	0.000	-0.045	0.000
IF	528.000	2.160	0.000	9.042	0.000	0.000	0.000	0.000	0.000	-0.017	0.000
IF	530.000	2.155	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.020	0.000
IF	532.000	2.239	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.062	0.000
IF	534.000	2.403	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.076	0.000
IF	536.000	2.543	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.066	0.000
IF	538.000	2.666	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.045	0.000
IF	540.000	2.723	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.060	0.000
IF	542.000	2.908	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.113	0.000
IF	544.000	3.176	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.122	0.000
IF	546.000	3.395	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.095	0.000
IF	548.000	3.555	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.174	0.000
IF	550.000	4.092	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.246	0.000
IF	552.000	4.540	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.152	0.000
IF	554.000	4.700	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.072	0.000
IF	556.000	4.829	0.000	9.042	0.000	0.000	0.000	0.000	0.000	0.235	0.000
IF	557.700	5.571	0.000	9.049	0.000	0.000	0.000	0.000	0.000	0.429	0.000
IF	561.000	6.974	0.000	9.088	0.000	0.000	0.000	0.000	0.000	0.348	0.000
IF	564.300	7.865	0.000	9.287	0.000	0.000	0.000	0.000	0.000	0.314	0.000
IF	567.600	9.045	0.000	9.590	0.000	0.000	0.000	0.000	0.000	0.352	0.000
IF	569.200	9.590	0.000	9.590	0.000	0.000	0.000	0.000	0.000	0.340	0.000
ET	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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	END STATION	END ELEVATION	FETCH LENGTH	SURGE 10-YEAR	ELEV 100-YEAR	SURGE 100-YEAR	INITIAL WAVE HEIGHT	INITIAL W. PERIOD		BOTTOM SLOPE	AVERAGE A-ZONES
IE	0.000	-19.259	1.000	1.000	9.041		6.179	5.159	56.140	0.023	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR						BOTTOM SLOPE	AVERAGE A-ZONES
OF	2.000	-19.212	0.000	9.041	0.000	0.000	0.000	0.000	0.000	0.023	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR						BOTTOM SLOPE	AVERAGE A-ZONES
OF	4.000	-19.165	0.000	9.041	0.000	0.000	0.000	0.000	0.000	0.023	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR						BOTTOM SLOPE	AVERAGE A-ZONES

OF	6.000	-19.118	0.000	9.041	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
OF	8.000	-19.070	0.000	9.041	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
OF	10.000	-19.023	0.000	9.041	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
OF	12.000	-18.976	0.000	9.041	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
OF	14.000	-18.929	0.000	9.041	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
OF	16.000	-18.881	0.000	9.041	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
OF	18.000	-18.834	0.000	9.041	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
OF	20.000	-18.787	0.000	9.041	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
OF	22.000	-18.740	0.000	9.041	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
OF	24.000	-18.693	0.000	9.041	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
OF	26.000	-18.645	0.000	9.041	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
OF	28.000	-18.598	0.000	9.041	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
OF	30.000	-18.551	0.000	9.041	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
OF	32.000	-18.504	0.000	9.042	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
OF	34.000	-18.457	0.000	9.042	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
OF	36.000	-18.409	0.000	9.042	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
OF	38.000	-18.362	0.000	9.042	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				</		

OF	74.000	-18.955	0.000	9.042	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
OF	76.000	-19.009	0.000	9.042	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
OF	78.000	-19.064	0.000	9.042	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
OF	80.000	-19.118	0.000	9.042	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
OF	82.000	-19.173	0.000	9.042	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
OF	84.000	-19.227	0.000	9.042	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
OF	86.000	-19.281	0.000	9.042	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
OF	88.000	-19.281	0.000	9.042	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
OF	90.000	-19.187	0.000	9.042	0.000	0.000	0.000	0.000	0.047	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	92.000	-19.092	0.000	9.042	0.000	0.000	0.000	0.000	0.047	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	94.000	-18.998	0.000	9.042	0.000	0.000	0.000	0.000	0.047	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	96.000	-18.903	0.000	9.042	0.000	0.000	0.000	0.000	0.047	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	98.000	-18.809	0.000	9.042	0.000	0.000	0.000	0.000	0.047	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	100.000	-18.715	0.000	9.042	0.000	0.000	0.000	0.000	0.047	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	102.000	-18.620	0.000	9.042	0.000	0.000	0.000	0.000	0.047	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	104.000	-18.526	0.000	9.042	0.000	0.000	0.000	0.000	0.047	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	106.000	-18.431	0.000	9.042	0.000	0.000	0.000	0.000	0.047	0.000
	END	END	NEW SURGE							

OF	142.000	-16.593	0.000	9.042	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
OF	144.000	-16.425	0.000	9.042	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
OF	146.000	-16.257	0.000	9.042	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
OF	148.000	-16.089	0.000	9.042	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
OF	150.000	-15.921	0.000	9.042	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
OF	152.000	-15.753	0.000	9.042	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
OF	154.000	-15.585	0.000	9.042	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
OF	156.000	-15.417	0.000	9.042	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
OF	158.000	-15.248	0.000	9.042	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
OF	160.000	-15.080	0.000	9.042	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
OF	162.000	-14.912	0.000	9.042	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
OF	164.000	-14.744	0.000	9.042	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
OF	166.000	-14.576	0.000	9.042	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
OF	168.000	-14.408	0.000	9.042	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
OF	170.000	-14.240	0.000	9.042	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
OF	172.000	-14.072	0.000	9.042	0.000	0.000	0.000	0.000	2.159	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	174.000	-5.603	0.000	9.042	0.000	0.000	0.000	0.000	2.117	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-Y						

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OF	346.000	-5.762	0.000	9.042	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
OF	348.000	-5.829	0.000	9.042	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
OF	350.000	-5.869	0.000	9.042	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
OF	352.000	-5.764	0.000	9.042	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
OF	354.000	-5.815	0.000	9.042	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
OF	356.000	-5.880	0.000	9.042	0.000	0.000	0.000	0.000	-0.047	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	358.000	-6.003	0.000	9.042	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
OF	360.000	-5.933	0.000	9.042	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
OF	362.000	-5.767	0.000	9.042	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
OF	364.000	-5.725	0.000	9.042	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
OF	366.000	-5.682	0.000	9.042	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
OF	368.000	-5.639	0.000	9.042	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	370.000	-5.639	0.000	9.042	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
OF	372.000	-5.649	0.000	9.042	0.000	0.000	0.000	0.000	-0.005	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	374.000	-5.659	0.000	9.042	0.000	0.000	0.000	0.000	-0.005	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	376.000	-5.668	0.000	9.042	0.000	0.000	0.000	0.000	-0.005	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	378.000	-5.678	0.000	9.042	0.000	0.000	0.000	0.000	-0.005	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	380.000	-5.687	0.000	9.042	0.000	0.000	0.000	0.000	-0.005	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	382.000	-5.697	0.000	9.042	0.000	0.000	0.000	0.000	-0.005	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	384.000	-5.706	0.000	9.042	0.000	0.000	0.000	0.000	-0.005	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	386.000	-5.716	0.000	9.042	0.000	0.000	0.000	0.000	-0.005	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	388.000	-5.726	0.000	9.042	0.000	0.000	0.000	0.000	-0.005	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	390.000	-5.735	0.000	9.042	0.000	0.000	0.000	0.000	-0.005	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	392.000	-5.745	0.000	9.042	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
OF	394.000	-5.753	0.000	9.042	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
OF	396.000	-5.688	0.000	9.042	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
OF	398.000	-5.623	0.000	9.042	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
OF	400.000	-5.558	0.000	9.042	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
OF	402.000	-5.493	0.000	9.042	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
OF	404.000	-5.428	0.000	9.042	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
OF	406.000	-5.363	0.000	9.042	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
OF	408.000	-5.298	0.000	9.042	0.000	0.000	0.000	0.000	-0.020	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	410.000	-5.442	0.000	9.042	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
OF	412.000	-5.614	0.000	9.042	0.000	0.000	0.000	0.000	-0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES

OF	414.000	-5.787	0.000	9.042	0.000	0.000	0.000	0.000	-0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	416.000	-5.959	0.000	9.042	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
OF	418.000	-6.048	0.000	9.042	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
OF	420.000	-6.066	0.000	9.042	0.000	0.000	0.000	0.000	0.043	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	422.000	-5.877	0.000	9.042	0.000	0.000	0.000	0.000	0.082	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	424.000	-5.737	0.000	9.042	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
OF	426.000	-5.715	0.000	9.042	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
OF	428.000	-5.747	0.000	9.042	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
OF	430.000	-5.780	0.000	9.042	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
OF	432.000	-5.812	0.000	9.042	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
OF	434.000	-5.791	0.000	9.042	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	436.000	-5.769	0.000	9.042	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
OF	438.000	-5.766	0.000	9.042	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
OF	440.000	-5.841	0.000	9.042	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
OF	442.000	-5.831	0.000	9.042	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
OF	444.000	-5.813	0.000	9.042	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
OF	446.000	-5.781	0.000	9.042	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	448.000	-5.675	0.000	9.042	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
OF	450.000	-5.574	0.000	9.042	0.000	0.000	0.000	0.000	0.045	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	452.000	-5.494	0.000	9.042	0.000	0.000	0.000	0.000	0.045	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	454.000	-5.395	0.000	9.042	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
OF	456.000	-5.437	0.000	9.042	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
OF	458.000	-5.510	0.000	9.042	0.000	0.000	0.000	0.000	-0.061	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	460.000	-5.679	0.000	9.042	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
OF	462.000	-5.802	0.000	9.042	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
OF	464.000	-5.582	0.000	9.042	0.000	0.000	0.000	0.000	0.109	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	466.000	-5.367	0.000	9.042	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
OF	468.000	-5.299	0.000	9.042	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
OF	470.000	-5.375	0.000	9.042	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
OF	472.000	-5.338	0.000	9.042	0.000	0.000	0.000	0.000	0.095	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	474.000	-4.996	0.000	9.042	0.000	0.000	0.000	0.000	0.134	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	476.000	-4.802	0.000	9.042	0.000	0.000	0.000	0.000	0.135	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	478.000	-4.454	0.000	9.042	0.000	0.000	0.000	0.000	0.148	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	480.000	-4.211	0.000	9.042	0.000	0.000	0.000	0.000	0.078	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES

OF	482.000	-4.141	0.000	9.042	0.000	0.000	0.000	0.000	0.068	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	484.000	-3.940	0.000	9.042	0.000	0.000	0.000	0.000	0.141	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	486.000	-3.578	0.000	9.042	0.000	0.000	0.000	0.000	0.235	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	488.000	-3.001	0.000	9.042	0.000	0.000	0.000	0.000	0.294	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	490.000	-2.403	0.000	9.042	0.000	0.000	0.000	0.000	0.322	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	492.000	-1.713	0.000	9.042	0.000	0.000	0.000	0.000	0.298	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	494.000	-1.211	0.000	9.042	0.000	0.000	0.000	0.000	0.234	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	496.000	-0.776	0.000	9.042	0.000	0.000	0.000	0.000	0.181	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	498.000	-0.488	0.000	9.042	0.000	0.000	0.000	0.000	0.126	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	500.000	-0.273	0.000	9.042	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
OF	502.000	-0.153	0.000	9.042	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
OF	504.000	-0.068	0.000	9.042	0.000	0.000	0.000	0.000	0.090	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	506.000	0.207	0.000	9.042	0.000	0.000	0.000	0.000	0.132	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	508.000	0.459	0.000	9.042	0.000	0.000	0.000	0.000	0.120	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	510.000	0.687	0.000	9.042	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
IF	512.000	0.915	0.000	9.042	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
IF	514.000	1.143	0.000	9.042	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
IF	516.000	1.370	0.000	9.042	0.000	0.000	0.000	0.000	0.118	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	518.000	1.616	0.000	9.042	0.000	0.000	0.000	0.000	0.183	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	520.000	2.103	0.000	9.042	0.000	0.000	0.000	0.000	0.189	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	522.000	2.373	0.000	9.042	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	524.000	2.338	0.000	9.042	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	526.000	2.223	0.000	9.042	0.000	0.000	0.000	0.000	-0.045	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	528.000	2.160	0.000	9.042	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	530.000	2.155	0.000	9.042	0.000	0.000	0.000	0.000	0.020	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	532.000	2.239	0.000	9.042	0.000	0.000	0.000	0.000	0.062	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	534.000	2.403	0.000	9.042	0.000	0.000	0.000	0.000	0.076	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	536.000	2.543	0.000	9.042	0.000	0.000	0.000	0.000	0.066	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	538.000	2.666	0.000	9.042	0.000	0.000	0.000	0.000	0.045	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	540.000	2.723	0.000	9.042	0.000	0.000	0.000	0.000	0.060	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	542.000	2.908	0.000	9.042	0.000	0.000	0.000	0.000	0.113	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	544.000	3.176	0.000	9.042	0.000	0.000	0.000	0.000	0.122	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	546.000	3.395	0.000	9.042	0.000	0.000	0.000	0.000	0.095	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	548.000	3.555	0.000	9.042	0.000	0.000	0.000	0.000	0.174	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES

IF	550.000	4.092	0.000	9.042	0.000	0.000	0.000	0.000	0.246	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	552.000	4.540	0.000	9.042	0.000	0.000	0.000	0.000	0.152	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	554.000	4.700	0.000	9.042	0.000	0.000	0.000	0.000	0.072	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	556.000	4.829	0.000	9.042	0.000	0.000	0.000	0.000	0.235	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	557.700	5.571	0.000	9.049	0.000	0.000	0.000	0.000	0.429	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	561.000	6.974	0.000	9.088	0.000	0.000	0.000	0.000	0.348	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	564.300	7.865	0.000	9.287	0.000	0.000	0.000	0.000	0.314	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	567.600	9.045	0.000	9.590	0.000	0.000	0.000	0.000	0.352	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	569.200	9.590	0.000	9.590	0.000	0.000	0.000	0.000	0.340	0.000
-----END OF TRANSECT-----										

NOTE:

SURGE ELEVATION INCLUDES CONTRIBUTIONS FROM ASTRONOMICAL AND STORM TIDES.

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PART2: CONTROLLING WAVE HEIGHTS, SPECTRAL PEAK WAVE PERIOD, AND WAVE CREST ELEVATIONS			
LOCATION		CONTROLLING	SPECTRAL PEAK
		WAVE HEIGHT	WAVE PERIOD
			WAVE CREST ELEVATION
IE	0.00	6.18	5.16
OF	2.00	6.18	5.16
OF	4.00	6.18	5.16
OF	6.00	6.18	5.16
OF	8.00	6.18	5.16
OF	10.00	6.18	5.16
OF	12.00	6.18	5.16
OF	14.00	6.18	5.16
OF	16.00	6.18	5.16
OF	18.00	6.18	5.16
OF	20.00	6.18	5.16
OF	22.00	6.18	5.16
OF	24.00	6.18	5.16
OF	26.00	6.18	5.16
OF	28.00	6.18	5.16
OF	30.00	6.18	5.16
OF	32.00	6.18	5.16
OF	34.00	6.18	5.16
OF	36.00	6.18	5.16
OF	38.00	6.18	5.16
OF	40.00	6.17	5.16
OF	42.00	6.17	5.16
OF	44.00	6.17	5.16
OF	46.00	6.17	5.16
OF	48.00	6.18	5.16
OF	50.00	6.18	5.16
OF	52.00	6.18	5.16
OF	54.00	6.18	5.16
OF	56.00	6.18	5.16
OF	58.00	6.18	5.16
OF	60.00	6.18	5.16
OF	62.00	6.18	5.16
OF	64.00	6.18	5.16
OF	66.00	6.19	5.16
OF	68.00	6.19	5.16
OF	70.00	6.19	5.16
OF	72.00	6.19	5.16
OF	74.00	6.19	5.16
OF	76.00	6.19	5.16
OF	78.00	6.19	5.16
OF	80.00	6.19	5.16
OF	82.00	6.20	5.16
OF	84.00	6.20	5.16
OF	86.00	6.20	5.16
OF	88.00	6.20	5.16
OF	90.00	6.20	5.16
OF	92.00	6.20	5.16
OF	94.00	6.20	5.16
OF	96.00	6.19	5.16
OF	98.00	6.19	5.16
OF	100.00	6.19	5.16
OF	102.00	6.19	5.16
OF	104.00	6.19	5.16
OF	106.00	6.19	5.16
OF	108.00	6.19	5.16
OF	110.00	6.19	5.16
OF	112.00	6.19	5.16
OF	114.00	6.19	5.16
OF	116.00	6.19	5.16
OF	118.00	6.19	5.16
OF	120.00	6.19	5.16
OF	122.00	6.18	5.16
OF	124.00	6.18	5.16
OF	126.00	6.18	5.16
OF	128.00	6.18	5.16
OF	130.00	6.18	5.16
OF	132.00	6.18	5.16
OF	134.00	6.18	5.16
OF	136.00	6.18	5.16

OF	138.00	6.18	5.16	13.37
OF	140.00	6.18	5.16	13.37
OF	142.00	6.18	5.16	13.37
OF	144.00	6.18	5.16	13.37
OF	146.00	6.18	5.16	13.37
OF	148.00	6.18	5.16	13.36
OF	150.00	6.17	5.16	13.36
OF	152.00	6.17	5.16	13.36
OF	154.00	6.17	5.16	13.36
OF	156.00	6.17	5.16	13.36
OF	158.00	6.17	5.16	13.36
OF	160.00	6.17	5.16	13.36
OF	162.00	6.17	5.16	13.36
OF	164.00	6.17	5.16	13.36
OF	166.00	6.17	5.16	13.36
OF	168.00	6.17	5.16	13.36
OF	170.00	6.17	5.16	13.36
OF	172.00	6.17	5.16	13.36
OF	174.00	6.36	5.16	13.49
OF	176.00	6.36	5.16	13.49
OF	178.00	6.36	5.16	13.49
OF	180.00	6.36	5.16	13.49
OF	182.00	6.36	5.16	13.49
OF	184.00	6.36	5.16	13.49
OF	186.00	6.36	5.17	13.49
OF	188.00	6.36	5.17	13.49
OF	190.00	6.36	5.17	13.49
OF	192.00	6.36	5.17	13.49
OF	194.00	6.36	5.17	13.49
OF	196.00	6.36	5.17	13.49
OF	198.00	6.36	5.17	13.49
OF	200.00	6.36	5.17	13.49
OF	202.00	6.36	5.17	13.49
OF	204.00	6.36	5.17	13.49
OF	206.00	6.36	5.17	13.49
OF	208.00	6.36	5.17	13.49
OF	210.00	6.36	5.17	13.49
OF	212.00	6.36	5.17	13.49
OF	214.00	6.36	5.17	13.49
OF	216.00	6.36	5.17	13.49
OF	218.00	6.36	5.17	13.49
OF	220.00	6.36	5.17	13.49
OF	222.00	6.36	5.17	13.49
OF	224.00	6.36	5.17	13.49
OF	226.00	6.36	5.17	13.49
OF	228.00	6.36	5.17	13.49
OF	230.00	6.36	5.17	13.49
OF	232.00	6.36	5.17	13.49
OF	234.00	6.36	5.17	13.49
OF	236.00	6.36	5.17	13.49
OF	238.00	6.36	5.17	13.49
OF	240.00	6.36	5.17	13.50
OF	242.00	6.36	5.17	13.50
OF	244.00	6.36	5.17	13.50
OF	246.00	6.36	5.17	13.50
OF	248.00	6.36	5.17	13.50
OF	250.00	6.36	5.17	13.50
OF	252.00	6.36	5.17	13.50
OF	254.00	6.36	5.17	13.50
OF	256.00	6.36	5.17	13.50
OF	258.00	6.36	5.17	13.50
OF	260.00	6.36	5.17	13.50
OF	262.00	6.36	5.17	13.50
OF	264.00	6.36	5.17	13.50
OF	266.00	6.36	5.17	13.50
OF	268.00	6.36	5.17	13.50
OF	270.00	6.36	5.17	13.50
OF	272.00	6.36	5.17	13.50
OF	274.00	6.36	5.17	13.50
OF	276.00	6.36	5.17	13.50
OF	278.00	6.36	5.17	13.50
OF	280.00	6.36	5.17	13.50
OF	282.00	6.36	5.17	13.50
OF	284.00	6.36	5.17	13.50
OF	286.00	6.36	5.17	13.50
OF	288.00	6.37	5.17	13.50
OF	290.00	6.37	5.17	13.50
OF	292.00	6.37	5.17	13.50
OF	294.00	6.37	5.17	13.50
OF	296.00	6.37	5.17	13.50
OF	298.00	6.37	5.17	13.50
OF	300.00	6.37	5.17	13.50
OF	302.00	6.37	5.17	13.50
OF	304.00	6.37	5.17	13.50
OF	306.00	6.37	5.17	13.50
OF	308.00	6.37	5.17	13.50
OF	310.00	6.37	5.17	13.50
OF	312.00	6.37	5.17	13.50
OF	314.00	6.37	5.17	13.50
OF	316.00	6.37	5.17	13.50
OF	318.00	6.37	5.17	13.50
OF	320.00	6.37	5.17	13.50
OF	322.00	6.37	5.17	13.50
OF	324.00	6.37	5.17	13.50
OF	326.00	6.37	5.17	13.50
OF	328.00	6.37	5.17	13.50
OF	330.00	6.37	5.17	13.50
OF	332.00	6.37	5.17	13.50
OF	334.00	6.37	5.17	13.50
OF	336.00	6.37	5.17	13.50
OF	338.00	6.36	5.17	13.50
OF	340.00	6.36	5.17	13.49

OF	342.00	6.36	5.17	13.50
OF	344.00	6.37	5.17	13.50
OF	346.00	6.37	5.17	13.50
OF	348.00	6.37	5.17	13.50
OF	350.00	6.37	5.17	13.50
OF	352.00	6.37	5.17	13.50
OF	354.00	6.37	5.17	13.50
OF	356.00	6.37	5.17	13.50
OF	358.00	6.36	5.17	13.49
OF	360.00	6.36	5.17	13.50
OF	362.00	6.37	5.17	13.50
OF	364.00	6.38	5.17	13.50
OF	366.00	6.38	5.17	13.51
OF	368.00	6.38	5.17	13.51
OF	370.00	6.38	5.17	13.51
OF	372.00	6.38	5.17	13.51
OF	374.00	6.38	5.17	13.51
OF	376.00	6.38	5.17	13.51
OF	378.00	6.38	5.17	13.51
OF	380.00	6.38	5.17	13.51
OF	382.00	6.38	5.17	13.51
OF	384.00	6.38	5.17	13.51
OF	386.00	6.38	5.17	13.51
OF	388.00	6.38	5.17	13.51
OF	390.00	6.38	5.17	13.51
OF	392.00	6.38	5.17	13.51
OF	394.00	6.38	5.17	13.51
OF	396.00	6.38	5.17	13.51
OF	398.00	6.39	5.17	13.51
OF	400.00	6.39	5.17	13.51
OF	402.00	6.39	5.17	13.52
OF	404.00	6.40	5.17	13.52
OF	406.00	6.40	5.17	13.52
OF	408.00	6.41	5.17	13.53
OF	410.00	6.40	5.17	13.52
OF	412.00	6.39	5.17	13.51
OF	414.00	6.38	5.17	13.51
OF	416.00	6.37	5.17	13.50
OF	418.00	6.37	5.17	13.50
OF	420.00	6.36	5.17	13.50
OF	422.00	6.37	5.17	13.50
OF	424.00	6.38	5.17	13.51
OF	426.00	6.38	5.17	13.51
OF	428.00	6.38	5.17	13.51
OF	430.00	6.38	5.17	13.51
OF	432.00	6.38	5.17	13.51
OF	434.00	6.38	5.17	13.51
OF	436.00	6.38	5.17	13.51
OF	438.00	6.38	5.17	13.51
OF	440.00	6.38	5.17	13.51
OF	442.00	6.38	5.17	13.51
OF	444.00	6.38	5.17	13.51
OF	446.00	6.38	5.17	13.51
OF	448.00	6.39	5.17	13.51
OF	450.00	6.40	5.17	13.52
OF	452.00	6.40	5.17	13.52
OF	454.00	6.41	5.17	13.53
OF	456.00	6.40	5.17	13.52
OF	458.00	6.40	5.17	13.52
OF	460.00	6.39	5.17	13.52
OF	462.00	6.38	5.17	13.51
OF	464.00	6.40	5.17	13.52
OF	466.00	6.41	5.17	13.53
OF	468.00	6.41	5.17	13.53
OF	470.00	6.41	5.17	13.53
OF	472.00	6.41	5.17	13.53
OF	474.00	6.43	5.17	13.55
OF	476.00	6.45	5.17	13.55
OF	478.00	6.47	5.17	13.57
OF	480.00	6.49	5.17	13.58
OF	482.00	6.49	5.17	13.59
OF	484.00	6.51	5.17	13.60
OF	486.00	6.54	5.17	13.62
OF	488.00	6.59	5.17	13.66
OF	490.00	6.65	5.17	13.70
OF	492.00	6.59	5.17	13.65
OF	494.00	6.50	5.17	13.59
OF	496.00	6.42	5.17	13.54
OF	498.00	6.40	5.17	13.52
OF	500.00	6.43	5.17	13.54
OF	502.00	6.44	5.17	13.55
OF	504.00	6.41	5.17	13.53
IF	506.00	6.24	5.17	13.41
IF	508.00	6.08	5.17	13.29
IF	510.00	5.93	5.17	13.19
IF	512.00	5.78	5.17	13.09
IF	514.00	5.64	5.17	12.99
IF	516.00	5.49	5.17	12.88
IF	518.00	5.33	5.17	12.77
IF	520.00	5.01	5.17	12.55
IF	522.00	4.83	5.17	12.42
IF	524.00	4.82	5.17	12.42
IF	526.00	4.81	5.17	12.41
IF	528.00	4.80	5.17	12.40
IF	530.00	4.80	5.17	12.40
IF	532.00	4.81	5.17	12.41
IF	534.00	4.81	5.17	12.41
IF	536.00	4.71	5.17	12.34
IF	538.00	4.63	5.17	12.28
IF	540.00	4.59	5.17	12.26
IF	542.00	4.47	5.17	12.17
IF	544.00	4.28	5.17	12.04

IF	546.00	4.13	5.17	11.94
IF	548.00	4.02	5.17	11.86
IF	550.00	3.65	5.17	11.60
IF	552.00	3.34	5.17	11.38
IF	554.00	3.22	5.17	11.30
IF	556.00	3.13	5.17	11.24
IF	557.70	2.61	5.17	10.87
IF	561.00	1.61	5.17	10.21
IF	564.30	1.09	5.17	10.05
IF	567.60	0.42	5.17	9.89
IF	569.20	0.01	5.17	9.60

PART3 LOCATION OF AREAS ABOVE 100-YEAR SURGE
NO AREAS ABOVE 100-YEAR SURGE IN THIS TRANSECT

PART4 LOCATION OF SURGE CHANGES			
STATION	10-YEAR SURGE	100-YEAR SURGE	
32.00	1.00	9.04	
557.70	1.00	9.05	
561.00	1.00	9.09	
564.30	1.00	9.29	
567.60	1.00	9.59	

PART5 LOCATION OF V ZONES			
STATION OF GUTTER	LOCATION OF ZONE		
556.43	WINDWARD		

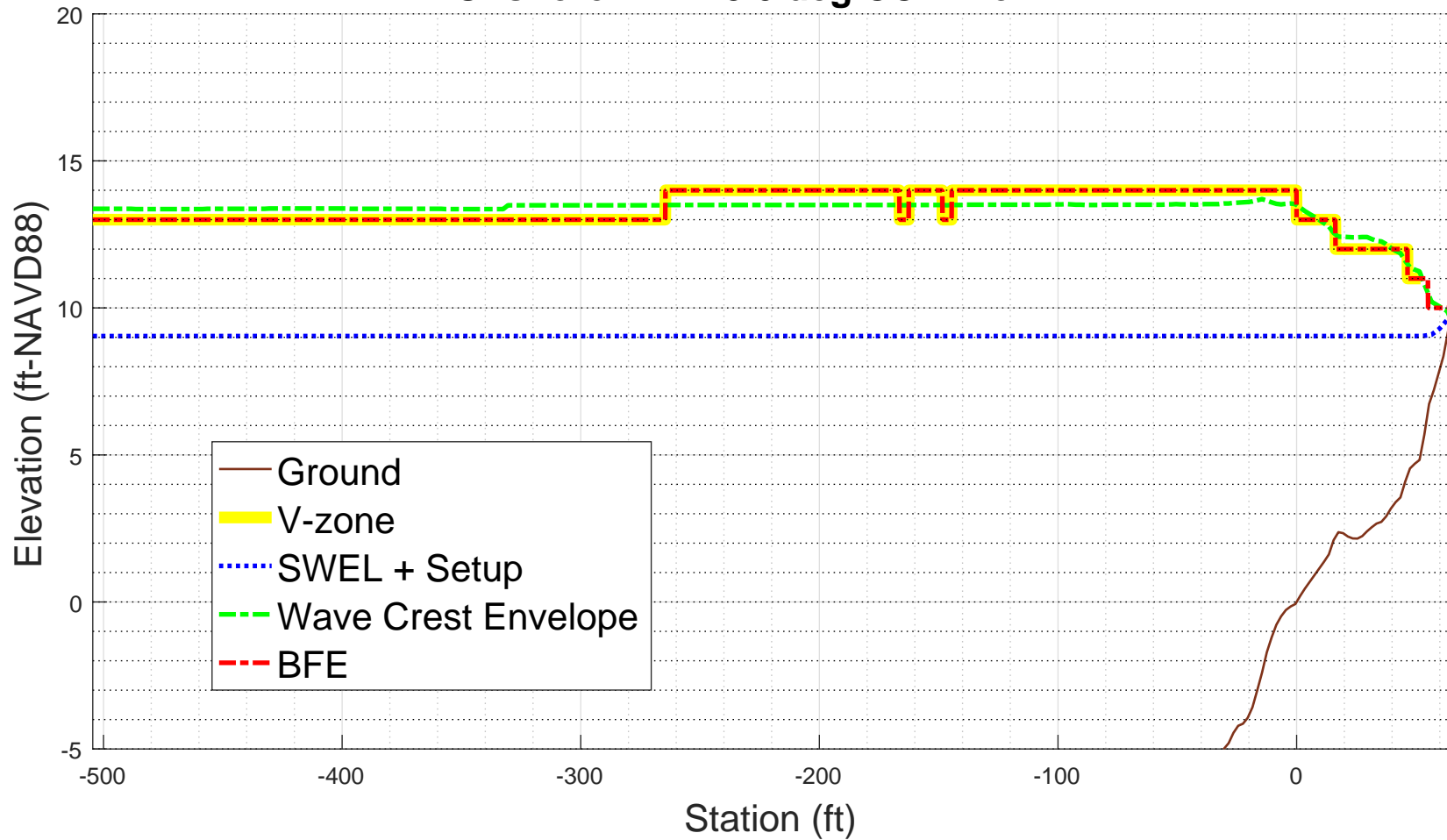
PART6 NUMBERED A ZONES AND V ZONES				
STATION OF GUTTER	ELEVATION	ZONE DESIGNATION	FHF	
0.00	13.37			
		V22 EL=13	120	
30.00	13.36	V22 EL=13	120	
32.00	13.36	V22 EL=13	120	
317.01	13.50	V22 EL=14	120	
336.55	13.50	V22 EL=13	120	
344.79	13.50	V22 EL=14	120	
347.51	13.50	V22 EL=13	120	
350.91	13.50	V22 EL=14	120	
354.46	13.50	V22 EL=13	120	
361.04	13.50	V22 EL=14	120	
416.52	13.50	V22 EL=13	120	
420.76	13.50	V22 EL=14	120	
504.47	13.50	V22 EL=13	120	
520.73	12.50	V22 EL=12	120	
550.89	11.50	V22 EL=11	120	
556.00	11.24	V22 EL=11	120	
556.43	11.15	A18 EL=11	90	
557.70	10.87	A18 EL=11	90	
559.57	10.50	A18 EL=10	90	
561.00	10.21	A18 EL=10	90	
564.30	10.05	A18 EL=10	90	
567.60	9.89	A18 EL=10	90	
569.20	9.60			

ZONE TERMINATED AT END OF TRANSECT
PART 7 POSTSCRIPT NOTES

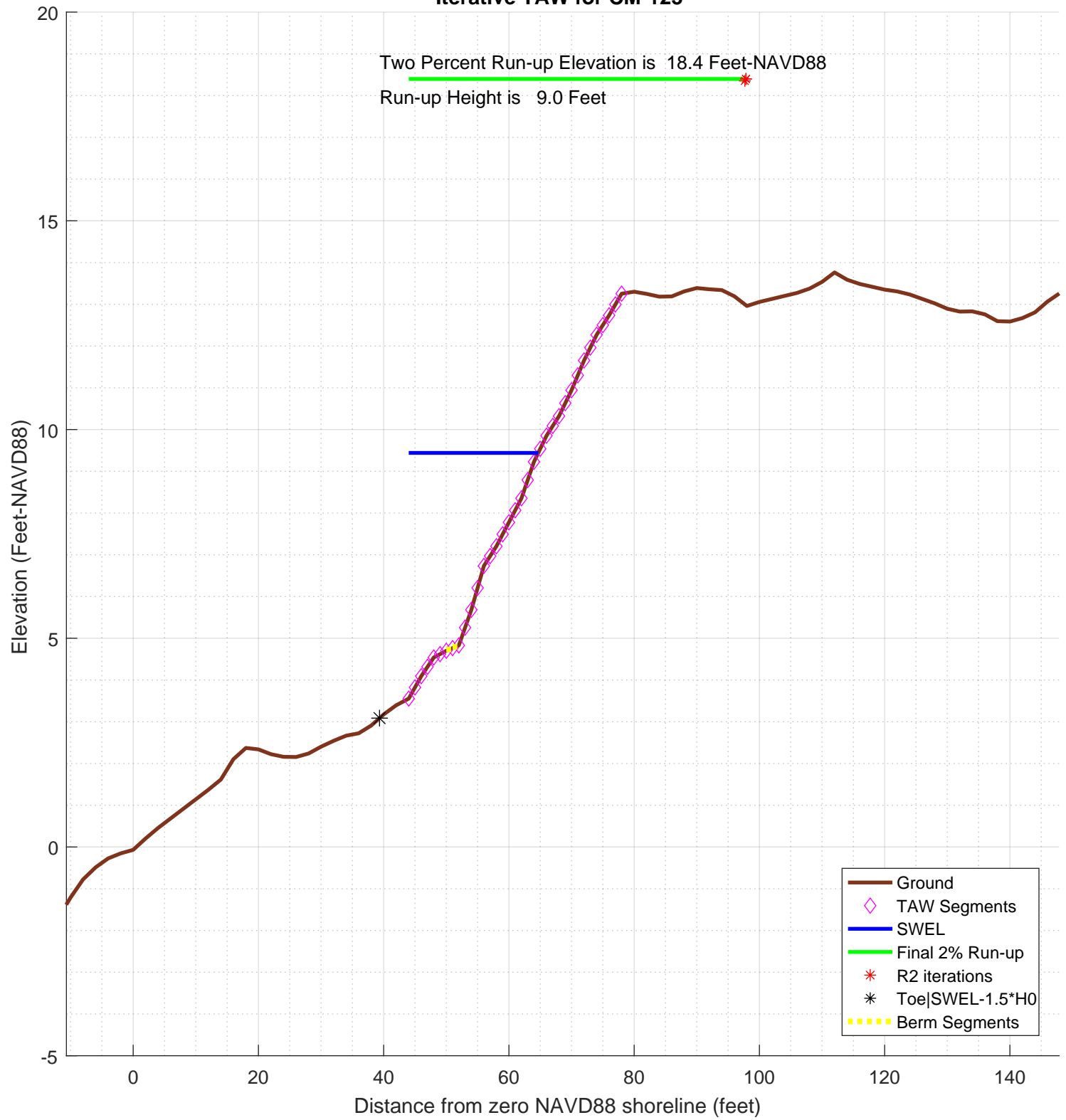
PS# 1 START(421349.0519,4853004.109)
PS# 2 END(421568.3788,4853097.2486)

-1.000000e+00

CM-123
100-year WHAFIS Output
Zero Station: -69.97639335, 43.82648290
Onshore Dir: 23.0 deg CCW from E



Iterative TAW for CM-123



```

diary on          % begin recording

% FEMA appeal for The Town of Harpswell, Cumberland county, Maine
% TRANSECT ID: CM-123
% calculation by SJH, Ransom Consulting, Inc. 20-Feb-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/CM-123sta_ele_include.csv'; % file with station, elevation, include
                                         % third column is 0 for excluded points
imgname='logfiles/CM-123-runup';
SWEL=9.0414; % 100-yr still water level including wave setup.
H0=3.9604; % significant wave height at toe of structure
Tp=5.1353; % peak period, 1/fma,
T0=Tp/1.1;

gamma_berm=0.9877; % this may get changed automatically below
gamma_rough=0.9;
gamma_beta=1;
gamma_perm=1;

setupAtToe=-0.013638;
maxSetup=0.5482; % only used in case of berm/shallow foreshore weighted average

plotTitle='Iterative TAW for CM-123'

plotTitle =

Iterative TAW for CM-123

% END CONFIG
%-----

SWEL=SWEL+setupAtToe

SWEL =

          9.027762

SWEL_fore=SWEL+maxSetup

SWEL_fore =

          9.575962

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

L0 =

          111.51861784993

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

Ztoe =

        3.087162

% 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 =

        14.968362

% 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 =

        39.3367823814856

% 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 =

        84.6140204593708

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

top_sta =

        84.6140204593708

toe_sta

toe_sta =

        39.3367823814856

% 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 97.1 ft landward of toe of slope

ans =

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

ans =

-!!!-      setup is adjusted to 0.40 feet

ans =

-!!!-      SWEL is adjusted to 9.44 feet

k =

1
2
3
4
5
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```
% 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('!!! - - Iribarren number: %6.2f is outside the valid range (0.5-10), TAW NOT VALID - - !!!\n', Irb*gamma_berm)
    TAW_VALID=0;
else
    sprintf('!!! - - Iribarren number: %6.2f is in the valid range (0.5-10), TAW RECOMMENDED - - !!!\n', Irb*gamma_berm)
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 berm')
    % 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
end

```

```

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 =
    3.087162
toe_sta =
    39.3367823814856
top_sta =
    84.6140204593708
Z2 =
    14.968362
H0 =
    3.9604
Tp =
    5.1353
T0 =
    4.66845454545455
R2 =
    11.8812
Z2 =
    21.3216565591781
top_sta =
    109.139380656931
Lslope =
    69.8025982754456
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 7
dh =
    4.70808155917805
rdh_sum =
    0.64611037592851
ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 8
dh =
    4.64353155917805
rdh_sum =
    1.27993187924292
ans =
!----- End Berm Factor Calculation, Iter: 1 -----!
berm_width =
    2
rB =
    0.0286522285618634
rdh_mean =
    0.639965939621458
gamma_berm =
    0.989684221811978
slope =
    0.268935041177936
Irb =
    1.42709063424135
gamma_berm =
    0.989684221811978
gamma_perm =
    1
gamma_beta =
    1
gamma_rough =
    0.9
gamma =
    0.89071579963078
ans =
!!! - - Iribaren number: 1.41 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!

```

```

ans =
!!! - - slope: 1:3.7 V:H is in the valid range (1:8 - 1:1), TAW RECOMMENDED - - !!!
R2_new =
      8.91051960556126
R2del =
      2.97068039443874
Z2 =
      18.3509761647393
ans =
!----- STARTING ITERATION 2 -----!
Ztoe =
      3.087162
toe_sta =
      39.3367823814856
top_sta =
      97.6717860055561
Z2 =
      18.3509761647393
H0 =
      3.9604
Tp =
      5.1353
T0 =
      4.66845454545455
R2 =
      8.91051960556126
Z2 =
      18.3509761647393
top_sta =
      97.6717860055561
Lslope =
      58.3350036240704
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 7
dh =
      4.70808155917805
rdh_sum =
      0.64611037592851
ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 8
dh =
      4.64353155917805
rdh_sum =
      1.27993187924292
ans =
!----- End Berm Factor Calculation, Iter: 2 -----!
berm_width =
      2
rB =
      0.034284732591921
rdh_mean =
      0.639965939621458
gamma_berm =
      0.987656328515938
slope =
      0.27094724740938
Irb =
      1.43776830813047
gamma_berm =
      0.987656328515938
gamma_perm =
      1
gamma_beta =
      1
gamma_rough =
      0.9
gamma =
      0.888890695664344
ans =
!!! - - Iribaren number: 1.42 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans =
!!! - - slope: 1:3.7 V:H is in the valid range (1:8 - 1:1), TAW RECOMMENDED - - !!!
R2_new =
      8.95879471230765
R2del =
      0.0482751067463951
Z2 =
      18.3992512714857
ans =
!----- STARTING ITERATION 3 -----!
Ztoe =
      3.087162
toe_sta =
      39.3367823814856
top_sta =
      97.8581404033418
Z2 =
      18.3992512714857
H0 =
      3.9604

```

```

Tp =
                    5.1353
T0 =
    4.66845454545455
R2 =
    8.95879471230765
Z2 =
    18.3992512714857
top_sta =
    97.8581404033418
Lslope =
    58.5213580218562
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 7
dh =
    4.70808155917805
rdh_sum =
    0.64611037592851
ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 8
dh =
    4.64353155917805
rdh_sum =
    1.27993187924292
ans =
!----- End Berm Factor Calculation, Iter: 3 -----!
berm_width =
    2
rB =
    0.0341755568839167
rdh_mean =
    0.639965939621458
gamma_berm =
    0.987695635489386
slope =
    0.27090802145208
Irb =
    1.43756015750779
gamma_berm =
    0.987695635489386
gamma_perm =
    1
gamma_beta =
    1
gamma_rough =
    0.9
gamma =
    0.888926071940447
ans =
!!! - - Iribaren number: 1.42 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans =
!!! - - slope: 1:3.7 V:H is in the valid range (1:8 - 1:1), TAW RECOMMENDED - - !!!
R2_new =
    8.95785420958756
R2del =
    0.000940502720094827
Z2 =
    18.3983107687656
% final 2% runup elevation
Z2=R2_new+SWEL
Z2 =
    18.3983107687656
diary off
-1.000000e+00
-1.000000e+00

```

PART 5: RUNUP2

for transect: CM-123

Station locations shifted by: 0.49 feet from their
original location to set the shoreline to
elevation 0 for RUNUP2 input

RUNUP2 INPUT CONVERSIONS

for transect: CM-123

Incident significant wave height: 3.86 feet

Peak wave period: 5.16 seconds

Mean wave height: 2.42 feet

Local Depth below SWEL: 28.30 feet

Mean wave height deshoaled using Hunt approximation for
celerity assuming constant wave energy flux.

References: R.G. Dean and R.A. Dalrymple. 2000. Water

Wave Mechanics for Engineers and Scientists. World
Scientific Publishing Company, River Edge New Jersey

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

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

Depth, $D = 28.30$

Period, $T = 4.38$

Waveheight, $H = 2.42$

Deep water wavelength, L_0 (ft)

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

$L_0 = 32.17 \cdot 4.38^2 / 6.28 = 98.45$

Deep water wave celerity, C_0 (ft/s)

$C_0 = L_0 / T$

$C_0 = 98.45 / 4.38 = 22.45$

Angular frequency, σ (rad/s)

$\sigma = 2\pi / T$

$\sigma = 6.28 / 4.38 = 1.43$

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

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

$y = 1.43 \cdot 1.43 \cdot 28.30 / 32.17 = 1.81$

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

$C_{1H} = 21.47$

Shoaling Coefficient K_{sH}

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

$K_{sH} = \sqrt{22.45 / 21.47} = 1.02$

Deepwater Wave Height H_{0_H} (ft)

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

$H_{0_H} = 2.42 / 1.02 = 2.36$

Deepwater mean wave height: 2.36 feet

END RUNUP2 CONVERSIONS

RUNUP2 RESULTS

for transect: CM-123

RUNUP2 SWEL:

9.04

RUNUP2 deepwater mean wave heights:

-9999.00

RUNUP2 mean wave periods:
-9999.00

RUNUP2 runup above SWEL:
-9999.00

RUNUP2 Mean runup height above SWEL: -9999.00 feet

RUNUP2 2-percent runup height above SWEL: -9999.00 feet

RUNUP2 2-percent runup elevation: -9999.00 feet-NAVD88

RUNUP2 Messages:
RUNUP2 Failed

_____END RUNUP2 RESULTS_____

_____ACES BEACH RUNUP_____

Incident significant wave height: 3.86 feet

Significant wave height deshoaled using Hunt equation

Deepwater significant wave height: 3.31 feet

Peak wave period: 5.16 seconds

Average beach Slope: 1:17.90 (H:V)

ACES RUNUP CALCULATED USING 'Aces_Beach_Runup.m'

ACES Beach 2-percent runup height above SWEL: 2.97 feet

ACES Beach 2-percent runup elevation: 12.01 feet-NAVD88

ACES BEACH RUNUP is valid

_____END ACES BEACH RESULTS_____

PART 5 COMPLETE_____

FEMA
RUNUP2 transect: CM-123

sjh

job 2
1

5.00
-19.26 -504.5 0.9
-18.19 -458.5 0.9
-18.19 -394.5 0.9
-16.92 -366.5 0.9
-14.07 -332.5 0.9
-5.60 -330.5 0.9
-5.60 -106.5 0.9
-5.30 -96.5 0.9
-5.30 -32.5 0.9
-3.58 -18.5 0.9
-0.78 -8.5 0.9
-0.07 -0.5 0.9
1.62 13.5 0.9
2.37 17.5 0.9
2.40 29.5 0.9
3.55 43.5 0.9
4.83 51.5 0.9
6.73 55.5 0.9
12.27 73.5 0.9
1 13.26 77.5 0.9
9.0 2.25 4.17
9.0 2.25 4.38
9.0 2.25 4.60
9.0 2.36 4.17
9.0 2.36 4.38
9.0 2.36 4.60
9.0 2.48 4.17
9.0 2.48 4.38
9.0 2.48 4.60

CLIENT- FEMA
PROJECT-RUNUP2 transect: CM-123

** WAVE RUNUP-VERSION 2.0 **

ENGINEERED BY sjh

JOB job 2
RUN 1 PAGE 1

	CROSS SECTION PROFILE				
	LENGTH	ELEV.	SLOPE	ROUGHNESS	
1	-504.0	-19.2			
2	-458.0	-18.1	.00	.90	
3	-394.0	-18.1	FLAT	.90	
4	-366.0	-16.9	23.33	.90	
5	-332.0	-14.0	11.72	.90	
6	-330.5	-5.6	.18	.90	
7	-106.5	-5.6	FLAT	.90	
8	-96.5	-5.3	33.33	.90	
9	-32.5	-5.3	FLAT	.90	
10	-18.5	-3.6	8.14	.90	
11	-8.5	-.8	3.57	.90	
12	-.5	-.1	11.27	.90	
13	13.5	1.6	8.28	.90	
14	17.5	2.4	5.33	.90	
15	29.5	2.4	400.00	.90	
16	43.5	3.6	12.17	.90	
17	51.5	4.8	6.25	.90	
18	55.5	6.7	2.11	.90	
19	73.5	12.3	3.25	.90	
20	77.5	13.3	4.04	.90	
	LAST SLOPE	5.00	LAST ROUGHNESS	.90	

CLIENT- FEMA
PROJECT-RUNUP2 transect: CM-123

** WAVE RUNUP-VERSION 2.0 **

ENGINEERED BY sjh

JOB job 2
RUN 1 PAGE 2

OUTPUT TABLE

INPUT PARAMETERS

WATER LEVEL ABOVE DATUM (FT.)	DEEP WATER WAVE HEIGHT (FT.)	WAVE PERIOD (SEC.)
-------------------------------------	------------------------------------	-----------------------

RUNUP RESULTS

BREAKING SLOPE NUMBER	RUNUP SLOPE NUMBER	RUNUP ABOVE WATER LEVEL (FT.)	BREAKER DEPTH (FT.)
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Runup2 error, see log sheet

