Appendix D

Listing of Input Data Files for

EFDC 1994-1998 Calibration Run

This appendix contains the key input files for the Christina River Basin EFDC water quality model calibration run. There are three primary input data files: EFDC.INP for the hydrodynamics, WQ3DWC.INP for the water column water quality, and WQ3DSD.INP for the benthic sediment flux submodel. The schematic diagrams on the next two pages indicate the relationship of the various input files to these three primary files. The input files are self-annotated with variable names and brief definitions. More detailed descriptions of the variables and kinetic processes can be found in Sections 4 and 5 of this report. Due to space considerations, only the input files shown in Table D-1 are listed in this appendix.

Table D-1. Key input files listed in this appendix

Page	Filename	Description
D-4	EFDC.INP	main EFDC hydrodynamic model input file
D-	WQ3DWC.INP	water quality model input file
D-	WQ3DSD.INP	sediment flux model input file
D-	KINETICS.INP	spatially variable kinetics for water quality model
D-	ALGAEGRO.INP	spatially variable algae growth/death kinetics for water quality model
D-	ALGAESET.INP	spatially variable algae settling rates for water quality model

Table D-2. Spatial zones used for the water quality model

Zone	Stream Reaches	EFDC grid cell range [I,J] index
1	Christina River (tidal)	[56,13] to [34,13]
2	Brandywine Creek main stem	[54,21] to [54,44]
3	Brandywine Creek East Branch	[54,46] to [54,76]
4	Brandywine Creek West Branch and Buck Run	[49,79] to [6,79] and [33,77] to [33,61]
5	Red Clay Creek West Branch	[41,43] to [24,43]
6	White Clay Creek	[41,18] to [5,18]
7	Christina River (upstream of Smalleys Pond)	[35,13] to [12,13]
8	Red Clay Creek	[43,24] to [43,49]
9	Delaware River	[57,3] to [59,24]
10	White Clay Creek East Branch	[19,21] to [19,32]
11	Smalleys Pond	[32,13]
12	Little Mill Cr., Pike Cr., Mill Cr., Muddy Run	various
13	Grid cells located at dams/control structures	various

EFDC.INP

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*****************************************************************************
*                                                                           *
*   WELCOME TO THE ENVIRONMENTAL FLUID DYNAMICS COMPUTER CODE SERIES        *
*   DEVELOPED BY JOHN M. HAMRICK.                                           *
*                                                                           *
*   THIS IS THE MASTER INPUT FILE efdc.inp, AND SHOULD BE USED WITH THE     *
*   30 AUG 1996 OR LATER VERSIONS OF efdc.f DIRECTLY RELEASED BY DEVELOPER  *
*                                                                           *
*   THIS FILE IS SELF DOCUMENTED WITH DEFINITIONS AND GUIDANCE FOR EACH     *
*   INPUT VARIABLE CONTAINED IN ITS CARD IMAGE SECTION. REFER TO USERS MAN  *
*   AVAILABLE FROM DEVELOPER AT ham@visi.net FOR ADDTIONAL DOCUMENTATION    *
*                                                                           *
*****************************************************************************
C01 TITLE FOR RUN                                                           |
C                                                                           |
C     TITLE OR IDENTIFIER FOR THIS INPUT FILE AND RUN                       |
C                                                                           |
C01 (LIMIT TO 80 CHARACTERS LENGTH)                                         |
 ' Christina River Basin: 10/1/94 - 10/1/95 Calibration '
-----------------------------------------------------------------------------
C02 RESTART, GENERAL CONTROL AND AND DIAGNOSTIC SWITCHES                    |
C                                                                           |
C     ISRESTI: 1 FOR READING INITIAL CONDITIONS FROM FILE  restart.inp      |
C             -1 AS ABOVE BUT ADJUST FOR CHANGING BOTTOM ELEVATION          |
C              2 INTIALIZES A KC LAYER RUN FROM A KC/2 LAYER RUN FOR KC.GE.4 |
C             10 FOR READING IC'S FROM restart.inp WRITTEN BEFORE 8 SEPT 92 |
C     ISRESTO:-1 FOR WRITING RESTART FILE restart.out AT END OF RUN         |
C              N INTEGER.GE.0 FOR WRITING restart.out EVERY N REF TIME PERIODS|
C     ISRESTR: 1 FOR WRITING RESIDUAL TRANSPORT FILE restran.out            |
C     ISLOG:   1 FOR WRITING LOG FILE efdc.log                              |
C     ISPAR:   0 FOR EXECUTION OF CODE ON A SINGLE PROCESSOR MACHINE        |
C              1 FOR PARALLEL EXECUTION, PARALLELIZING PRIMARILY OVER LAYERS |
C              2 FOR PARALLEL EXECUTION, PARALLELIZING PRIMARILY OVER       |
C                NDM HORIZONTAL GRID SUBDOMAINS, SEE CARD CARD C9           |
C     ISDIVEX: 1 FOR WRITING EXTERNAL MODE DIVERGENCE TO SCREEN             |
C     ISNEGH:  1 FOR SEARCHING FOR NEGATIVE DEPTHS AND WRITING TO SCREEN    |
C     ISMMC:   1 FOR WRITING MIN AND MAX VALUES OF SALT AND DYE             |
C                CONCENTRATION TO SCREEN                                    |
C     ISBAL:   1 FOR ACTIVATING MASS, MOMENTUM AND ENERGY BALANCES AND      |
C                WRITING RESULTS TO FILE bal.out                            |
C     ISHP:    1 FOR CALLING HP 9000 S700 VERSIONS OF CERTAIN SUBROUTINES   |
C     ISH0W:   1 TO SHOW PUV&S ON SCREEN, SEE INSTRUCTIONS FOR FILE show.inp |
C                                                                           |
C02 ISRESTI ISRESTO ISRESTR ISPAR ISLOG ISDIVEX ISNEGH ISMMC ISBAL ISHP ISHOW |
    1        1      0       0     2     0       2      0     0     0    1
-----------------------------------------------------------------------------
C03 EXTERNAL MODE SOLUTION OPTION PARAMETERS AND SWITCHES                   |
C                                                                           |
C     RP:        OVER RELAXATION PARAMETER                                  |
C     RSQM:      TRAGET SQUARE RESIDUAL OF ITERATIVE SOLUTION SCHEME        |
C     ITERM:     MAXIMUN NUMBER OF ITERARTIONS                              |
C     IRVEC:   0 STANDARD RED-BLACK SOR SOLUTION                            |
C              1 MORE VECTORIZABLE RED-BLACK SOR (FOR RESEARCH PURPOSES)    |
C              2 RED-BLACK ORDERED CONJUGATE GRADIENT SOLUTION              |
C              3 REDUCED SYSTEM R-B CONJUGATE GRADIENT SOLUTION             |
C              9 NON-DRYING CON GRADIENT SOLUTION WITH MAXIMUM DIAGNOSTICS  |
C     RPADJ:     RELAXATION PARAMETER FOR AUXILLARY POTENTIAL ADJUSTME      |
C                OF THE MEAN MASS TRANSPORT ADVECTION FIELD                 |
C                (FOR RESEARCH PURPOSES)                                    |
C     RSQMADJ:   TRAGET SQUARED RESIDUAL ERROR FOR ADJUSTMENT               |
C                (FOR RESEARCH PURPOSES)                                    |
C     ITRMADJ:   MAXIMUM ITERARTIONS FOR ADJUSTMENT(FOR RESEARCH PURPOSES)  |
C     ITERHPM:   MAXIMUM ITERATIONS FOR STRONGLY NONLINER DRYING AND WETTING |
C                SCHEME (ISDRY=3 OR OR 4)  ITERHPM.LE.4                     |
C     IDRYCK:    ITERATIONS PER DRYING CHECK (ISDRY.GE.1)  2.LE.IDRYCK.LE.20 |
C     ISDSOLV: 1 TO WRITE DIAGNOSTICS FILES FOR EXTERNAL MODE SOLVER        |
C        FILT:   FILTER COEFFICIENT FOR 3 TIME LEVEL EXPLICIT ( 0.0625 )    |
C                    9                                                      |
C03 RP   RSQM  ITERM IRVEC RPADJ RSQMADJ ITRMADJ ITERHPM IDRYCK ISDSOLV  FILT |
    1.8  1.E-16  200   9    1.8   1.E-16  1000     0       20     0    0.0525
-----------------------------------------------------------------------------
C04 LONGTERM MASS TRANSPORT INTEGRATION ONLY SWITCHES                       |
C                                                                           |
C     ISLTMT:  1 FOR LONG-TERM MASS TRANSPORT ONLY (FOR RESEARCH PURPOSES)  |
C     ISSSMMT: 0 WRITES MEAN MASS TRANSPORT TO restran.out AFTER EACH       |
C                AVERAGING PERIOD  (FOR RESEARCH PURPOSES)                  |
C              1 WRITES MEAN MASS TRANSPORT TO restran.out AFTER LAST       |
C                AVERAGING PERIOD  (FOR RESEARCH PURPOSES)                  |
C     ISLTMTS: 0 ASSUMES LONG-TERM TRANSPORT SOLUTION IS TRANSIENT          |
C                (FOR RESEARCH PURPOSES)                                    |
C              1 ASSUMES LONG-TERM TRANSPORT SOLUTION IS ITERATED TOWARD    |
C                STEADY STATE (FOR RESEARCH PURPOSES)                       |
C     ISIA:    1 FOR IMPLICIT LONG-TERM ADVECTION INTEGRATION FOR ZEBRA     |
C                VERTICAL LINE R-B SOR (FOR RESEARCH PURPOSES)              |
C     RPIA:      RELAXATION PARAMETER FOR ZEBRA SOR(FOR RESEARCH PURPOSES)  |
C     RSQMIA:    TRAGET RESIDUAL ERROR FOR ZEBRA SOR (FOR RESEARCH PURPOSES) |
C     ITRMIA:    MAXIMUM ITERATIONS FOR ZEBRA SOR (FOR RESEARCH PURPOSES)   |
C                                                                           |
C04 ISLTMT  ISSSMMT ISLTMTS  ISIA  RPIA  RSQMIA   ITRMIA                    |
    0       0       0        0     1.8   1.E-10   100
-----------------------------------------------------------------------------
C05  MOMENTUM ADVEC AND HORIZ DIFF SWITCHES AND MISC SWITCHES               |
C                                                                           |
C     ISCDMA:  1 FOR CENTRAL DIFFERENCE MOMENTUM ADVECTION                  |
C              0 FOR UPWIND DIFFERENCE MOMENTUM ADVECTION                   |
C              2 FOR EXPERIMENTAL UPWIND DIFF MOM ADV (FOR RESEACH PURPOSES) |
C     ISAHMF:  1 TO ACTIVE HORIZONTAL MOMENTUM DIFFUSION                    |
C     ISDISP:  1 CALCULATE MEAN HORIZONTAL SHEAR DISPERSION TENSOR OVER LAST |
C                MEAN MASS TRANSPORT AVERAGING PERIOD                       |
C     ISWASP: 4 or 5 TO WRITE FILES FOR WASP4 or WASP5 MODEL LINKAGE        |
C     ISDRY:     GREATER THAN 0 TO ACTIVE WETTING & DRYING OF SHALLOW AREAS |
C              1 CONSTANT WETTING DEPTH SPECIFIED BY HWET ON CARD 11        |
C                WITH NONLINEAR ITERATIONS SPECIFIED BY ITERHPM ON CARD C3  |
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C              2 VARIABLE WETTING DEPTH CALCULATED INTERNALLY IN CODE          |
C                WITH NONLINEAR ITERATIONS SPECIFIED BY ITERHPM ON CARD C3     |
C             11 SAME AS 1, WITHOUT NONLINEAR ITERATION                        |
C             12 SAME AS 2, WITHOUT NONLINEAR ITERATION                        |
C              3 DIFFUSION WAVE APPROX, CONSTANT WETTING DEPTH (NOT ACTIVE)    |
C              4 DIFFUSION WAVE APPROX, VARIABLE WETTING DEPTH (NOT ACTIVE)    |
C     ISQQ:    1 TO USE STANDARD TURBULENT INTENSITY ADVECTION SCHEME          |
C     ISRLID:  1 TO RUN IN RIGID LID MODE (NO FREE SURFACE)                    |
C     ISVEG:   1 TO IMPLEMENT VEGETATION RESISTANCE                            |
C              2 IMPLEMENT WITH DIAGNOSTICS TO FILE cbot.log                   |
C     ISVEGL:  1 TO INCLUDE LAMINAR FLOW OPTION IN VEGETATION RESISTANCE       |
C     ISITB:   1 FOR IMPLICIT BOTTOM & VEGETATION RESISTANCE IN EXTERNAL MODE  |
C                FOR SINGLE LAYER APPLICATIONS (KC=1) ONLY                     |
C     ISEVER:  1 TO DEFAULT TO EVERGLADES HYDRO SOLUTION OPTIONS               |
C                                                                              |
C05  ISCDMA ISAHMF ISDISP ISWASP ISDRY ISQQ ISRLID ISVEG ISVEGL ISITB ISEVER   |
     0      0      0      0       0    1    0      0     0      2     0
-------------------------------------------------------------------------------
C06  DISSOLVED AND SUSPENDED CONSTITUENT TRANSPORT SWITCHES                    |
C    TURB INT=0,SAL=1,TEM=2,DYE=3,SFL=4,TOX=5,SED=6,SND=7,CWQ=8                |
C                                                                              |
C     ISTRAN:  1 OR GREATER TO ACTIVATE TRANSPORT                              |
C     ISTOPT:    NONZERO FOR TRANSPORT OPTIONS, SEE USERS MANUAL               |
C     ISCDCA:  0 FOR STANDARD DONOR CELL UPWIND DIFFERENCE ADVECTION           |
C              1 FOR CENTRAL DIFFERENCE ADVECTION FOR THREE TIME LEVEL STEPS   |
C              2 FOR EXPERIMENTAL UPWIND DIFFERENCE ADVECTION (FOR RESEARCH)   |
C     ISADAC:  1 TO ACTIVATE ANTI-NUMERICAL DIFFUSION CORRECTION TO            |
C                STANDARD DONOR CELL SCHEME                                    |
C     ISFCT:   1 TO ADD FLUX LIMITING TO ANTI-NUMERICAL DIFFUSION CORRECTION   |
C     ISPLIT:  1 TO OPERATOR SPLIT HORIZONTAL AND VERTICAL ADVECTION           |
C                (FOR RESEARCH PURPOSES)                                       |
C     ISADAH:  1 TO ACTIVATE ANTI-NUM DIFFUSION CORRECTION TO HORIZONTAL       |
C                SPLIT ADVECTION STANDARD DONOR CELL SCHEME (FOR RESEARCH)     |
C     ISADAV:  1 TO ACTIVATE ANTI-NUM DIFFUSION CORRECTION TO VERTICAL         |
C                SPLIT ADVECTION STANDARD DONOR CELL SCHEME (FOR RESEARCH)     |
C     ISCI:    1 TO READ CONCENTRATION FROM FILE restart.inp                   |
C     ISCO:    1 TO WRITE CONCENTRATION TO FILE restart.out                    |
C                                                                              |
C06  ISTRAN ISTOPT ISCDCA ISADAC ISFCT ISPLIT ISADAH ISADAV ISCI ISCO           |
     1      0      0      0      0      0      0      0      0    0    !turb 0
     1      1      0      1      1      0      0      0      1    1    !sal  1
     1      4      0      1      1      0      0      0      1    1    !tem  2
     0      0      0      1      1      0      0      0      0    0    !dye  3
     0      0      0      1      1      0      0      0      0    0    !sfl  4
     0      0      0      1      1      0      0      0      0    0    !tox  5
     1      1      0      1      1      0      0      0      1    1    !sed  6
     0      0      0      1      1      0      0      0      0    0    !snd  7
     1      1      0      1      1      0      0      0      1    1    !cwq  8
-------------------------------------------------------------------------------
C07 TIME-RELATED INTEGER PARAMETERS                                            |
C                                                                              |
C     NTC:     NUMBER OF REFERENCE TIME PERIODS IN RUN                         |
C     NTSPTC:  NUMBER OF TIME STEPS PER REFERENCE TIME PERIOD                  |
C     NLTC:    NUMBER OF LINEARIZED REFERENCE TIME PERIODS                     |
C     NLTC:    NUMBER OF TRANSITION REF TIME PERIODS TO FULLY NONLINEAR        |
C     NTCPP:   NUMBER OF REFERENCE TIME PERIODS BETWEEN FULL PRINTED OUTPUT    |
C              TO FILE efdc.out                                                |
C     NTSTBC:  NUMBER OF REFERENCE TIME PERIODS BETWEEN TWO TIME LEVEL         |
C              TRAPEZOIDAL CORRECTION TIME STEP                                |
C     NTCNB:   NUMBER OF REFERENCE TIME PERIODS WITH N0 BUOYANCY FORCING       |
C     NTCVB:   NUMBER OF REF TIME PERIODS WITH VARIABLE BUOYANCY FORCING       |
C     NTCMMT:  NUMBER OF NUMBER OF REF TIME TO AVERAGE OVER TO OBTAIN          |
C              RESIDUAL OR MEAN MASS TRANSPORT VARIABLES                       |
C     NFLTMT:  USE 1 (FOR RESEARCH PURPOSES)                                   |
C     NDRYSTP: MIN NO. OF TIME STEPS A CELL REMAINS DRY AFTER INTIAL DYRING    |
C  Time step = TREF/NTSPTC = 86400/1728=50 sec; 86400/1440=60 sec;
C07  NTC NTSPTC NLTC NTTC NTCPP NTSTBC NTCNB NTCVB NTSMMT NFLTMT NDRYSTP       |
     314 1440     0    0    200   4      0     0     1440  1      16
-------------------------------------------------------------------------------
C08 TIME-RELATED REAL PARAMETERS                                               |
C                                                                              |
C     TCON:     CONVERSION MULTIPLIER TO CHANGE TBEGIN TO SECONDS              |
C     TBEGIN:   TIME ORIGIN OF RUN                                             |
C     TREF:     REFERENCE TIME PERIOD IN SEC (ie 44714.16s or 86400s)          |
C     CORIOLIS: CONSTANT CORIOLIS PARAMETER IN 1/SEC                           |
C     ISCORV:   1 TO READ VARIABLE CORIOLIS COEFFICIENT FROM lxly.inp FILE     |
C     ISCCA:    WRITE DIAGNOSTICS FOR MAX CORIOLIS-CURV ACCEL TO FILEefdc.log  |
C     ISCFL:    1 WRITE DIAGNOSTICS OF MAX THEORETICAL TIME STEP TO cfl.out    |
C               GT 1  TIME STEP ONLY AT INTERVAL ISCFL FOR ENTIRE RUN          |
C     ISCFLM:   1  TO MAP LOCATIONS OF MAX TIME STEPS OVER ENTIRE RUN          |
C                                                                              |
C08  TCON     TBEGIN    TREF       CORIOLIS   ISCORV  ISCCA  ISCFL  ISCFLM     |
     86400.   274.0     86400.0    0.0000953    0       0     0       0
-------------------------------------------------------------------------------
C09 SPACE-RELATED AND SMOOTHING  PARAMETERS                                    |
C                                                                              |
C     KC:      NUMBER OF VERTICAL LAYER                                        |
C     IC:      NUMBER OF CELLS IN I DIRECTION                                  |
C     JC:      NUMBER OF CELLS IN J DIRECTION                                  |
C     LC:      NUMBER OF ACTIVE CELLS IN HORIZONTAL + 2                        |
C     LVC:     NUMBER OF VARIABLE SIZE HORIZONTAL CELLS                        |
C     ISCO:    1 FOR CURVILINEAR-ORTHOGONAL GRID (LVC=LC-2)                   |
C     NDM:     NUMBER OF DOMAINS FOR HORIZONTAL DOMAIN DECOMPOSITION           |
C              ( NDM=1, FOR MODEL EXECUTION ON A SINGLE PROCESSOR SYSTEM OR    |
C                NDM=MM*NCPUS, WHERE MM IS AN INTEGER AND NCPUS IS THE NUMBER  |
C                OF AVAILABLE CPU's FOR MODEL EXECUTION ON A PARALLEL          |
C                MULTIPLE PROCESSOR SYSTEM )                                   |
C     LDW:     NUMBER OF WATER CELLS PER DOMAIN                                |
C              ( LDW=(LC-2)/NDM, FOR MULTIPE VECTOR PROCESSORS, LWD MUST BE    |
C                AN INTEGER MULTIPLE OF THE VECTOR LENGTH OR STRIDE NVEC       |
C                THUS CONSTRAINING LC-2 TO BE AN INTEGER MULTIPLE OF NVEC )    |
C     ISMASK:  1 FOR MASKING WATER CELL TO LAND OR ADDING THIN BARRIERS        |
C               USING INFORMATION IN FILE mask.inp                             |
C     ISPGNS:  1 FOR IMPLEMENTING A PERIODIC GRID IN COMP N-S DIRECTION OR     |
C               CONNECTING ARBITRATY CELLS USING INFO IN FILE mappgns.inp      |
C     NSHMAX:  NUMBER OF DEPTH SMOOTHING PASSES                                |
C     NSBMAX:  NUMBER OF INITIAL SALINITY FIELD SMOOTHING PASSES               |
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C     WSMH:    DEPTH SMOOTHING WEIGHT                                          |
C     WSMB:    SALINITY SMOOTHING WEIGHT                                       |
C                                                                              |
C09 KC IC  JC   LC  LVC ISCO NDM LDW ISMASK ISPGNS NSHMX NSBMX   WSMH   WSMB   |
    1  60  82  408  406 1    1   406  1      0     0      0    0.03125  0.0625
-------------------------------------------------------------------------------
C10 LAYER THICKNESS IN VERTICAL                                                |
C                                                                              |
C     THICKNESS OF EACH VERTICAL LAYER, 1 = BOTTOM                             |
C     LAYER THICKNESSES MUST SUM TO 1.0                                        |
C                                                                              |
C10 LAYER NUMBER   DIMESIONLESS LAYER THICKNESSS                               |
        1            1.0
-------------------------------------------------------------------------------
C11 GRID, ROUGHNESS AND DEPTH PARAMETERS                                       |
C                                                                              |
C     DX:       CARTESIAN CELL LENGTH IN X OR I DIRECTION                      |
C     DY:       CARTESION CELL LENGHT IN Y OR J DIRECTION                      |
C     DXYCVT:   MULTIPLY DX AND DY BY TO OBTAIN METERS                         |
C     IMD:      GREATER THAN 0 TO READ MODDXDY.INP FILE                        |
C     ZBRADJ:   LOG BDRY LAYER CONST OR VARIABLE ROUGH HEIGHT ADJ IN METERS    |
C     ZBRCVRT:  LOG BDRY LAYER VARIABLE ROUGHNESS HEIGHT CONVERT TO METERS     |
C     HMIN:     MINIMUM DEPTH OF INPUTS DEPTHS IN METERS                       |
C     HADJ:     ADJUSTMENT TO DEPTH FIELD IN METERS                            |
C     HCVRT:    CONVERTS INPUT DEPTH FIELD TO METERS                           |
C     HDRY:     DEPTH AT WHICH CELL OR FLOW FACE BECOMES DRY                   |
C     HWET:     DEPTH AT WHICH CELL OR FLOW FACE BECOMES WET                   |
C     BELADJ:   ADJUSTMENT TO BOTTOM BED ELEVATION FIELD IN METERS             |
C     BELCVRT:  CONVERTS INPUT BOTTOM BED ELEVATION FIELD TO METERS            |
C                                                                              |
C11 DX  DY  DXYCVT IMD ZBRADJ ZBRCVT HMIN HADJ HCVT HDRY  HWET  BELADJ BELCVT  |
    1.  1.   1.    0   0.020  1.0   0.001 0.00  1.0 0.10  0.15   -0.00  1.0
-------------------------------------------------------------------------------
C12 TURBULENT DIFFUSION PARAMETERS                                             |
C                                                                              |
C     AHO:     CONSTANT HORIZONTAL MOMENTUM AND MASS DIFFUSIVITY M*M/S         |
C     AHD:     DIMESIONLESS HORIZONTAL MOMENTUM DIFFUSIVITY                    |
C     AVO:     BACKGROUND, CONSTANT OR MOLECULAR KINEMATIC VISCOSITY M*M/S     |
C     ABO:     BACKGROUND, CONSTANT OR MOLECULAR DIFFUSIVITY M*M/S             |
C     AVMN:    MINIMUM KINEMATIC EDDY VISCOSITY M*M/S                          |
C     ABMN:    MINIMUM EDDY DIFFUSIVITY M*M/S                                  |
C     AVBCON:  EQUALS ZERO FOR CONSTANT VERTICAL VISCOSITY AND DIFFUSIVITY     |
C                WHICH ARE SET EQUAL TO AVO AND ABO OTHERWISE SET TO 1.0       |
C     ISAVBMN: SET TO 1 TO ACTIVATE MIN VIS AND DIFF OF AVMN AND ABMN          |
C     ISFAVB:  SET TO 1 TO SQRT FILTER AVV AND AVB                             |
C     ISINWV:  SET TO 1 TO ACTIVATE PARAMETERIZATION OF INTERNAL WAVE          |
C                  GENERATED TURBULENCE                                        |
C                                                                              |
C12  AHO   AHD    AVO     ABO   AVMN   ABMN   AVBCON  ISAVBMN ISFAVB ISINWV    |
     0.0   0.0   1.E-6   1.E-8  1.E-6  1.E-8  1.0     0       0      0
-------------------------------------------------------------------------------
C13 TURBULENCE CLOSURE PARAMETERS                                              |
C                                                                              |
C     VKC:    VON KARMAN CONSTANT                                              |
C     CTURB1: TURBULENT CONSTANT (UNIVERSAL)                                   |
C     CTURB2: TURBULENT CONSTANT (UNIVERSAL)                                   |
C     CTE1:   TURBULENT CONSTANT (UNIVERSAL)                                   |
C     CTE2:   TURBULENT CONSTANT (UNIVERSAL)                                   |
C     CTE3:   TURBULENT CONSTANT (UNIVERSAL)                                   |
C     QQMIN:  MINIMUM TURBULENT INTENSITY SQUARED                              |
C     QQLMIN: MINIMUM TURBULENT INTENSITY SQUARED TIME MACRO-SCALE             |
C     DMLMIN: MINIMUM DIMENSIONLESS MACRO-SCALE                                |
C                                                 1.E-8   1.E-12   1.E-4       |
C13 VKC   CTURB1  CTURB2   CTE1   CTE2   CTE3   QQMIN   QQLMIN   DMLMIN        |
    0.4   16.6    10.1     1.8    1.33   0.53   1.E-8   1.E-12   1.E-4
-------------------------------------------------------------------------------
C14 TIDAL & ATMOSPHERIC FORCING, GROUND WATER AND SUBGRID CHANNEL PARAMETERS   |
C                                                                              |
C     MTIDE:   NUMBER OF PERIOD (TIDAL) FORCING CONSTITUENTS                   |
C     NWSER:   NUMBER OF WIND TIME SERIES (0 SETS WIND TO ZERO)                |
C     NASER :  NUMBER OF ATMOSPHERIC CONDITION TIME SERIES (0 SETS ALL  ZERO)  |
C     ISGWI:   1 TO ACTIVATE SOIL MOISTURE BALANCE WITH DRYING AND WETTING     |
C     ISCHAN:  1 ACTIVATE SUBGRID CHANNEL MODEL AND READ MODCHAN.INP           |
C     ISWAVE:  1 FOR WAVE CURRENT BOUNDARY LAYER  REQUIRES FILE wave.inp       |
C              2 FOR WCBL AND WAVE INDUCED CURRENTS REQUIRES FILE wave.inp     |
C                                                                              |
C14 MTIDE  NWSER  NASER   ISGWI  ISCHAN  ISWAVE                                |
     5     1      1       0      0       0
-------------------------------------------------------------------------------
C15 PERIODIC FORCING (TIDAL) CONSTITUENT SYMBOLS AND PERIODS                   |
C                                                                              |
C     SYMBOL:  FORCING SYMBOL (CHARACTER VARIABLE) FOR TIDES, THE NOS SYMBOL   |
C     PERIOD:  FORCING PERIOD IN SECONDS                                       |
C                                                                              |
C15 SYMBOL   PERIOD                                                            |
    'M2'     44714.16
    'S2'     43200.00
    'N2'     45570.05
    'K1'     86164.09
    'O1'     92949.63
-------------------------------------------------------------------------------
C16 SURFACE ELEVATION OR PRESSURE BOUNDARY CONDITION PARAMETERS                |
C                                                                              |
C     NPBS:  NUMBER OF SURFACE ELEVATION OR PRESSURE BOUNDARY CONDITIONS       |
C            CELLS ON SOUTH OPEN BOUNDARIES                                    |
C     NPBW:  NUMBER OF SURFACE ELEVATION OR PRESSURE BOUNDARY CONDITIONS       |
C            CELLS ON WEST OPEN BOUNDARIES                                     |
C     NPBE:  NUMBER OF SURFACE ELEVATION OR PRESSURE BOUNDARY CONDITIONS       |
C            CELLS ON EAST OPEN BOUNDARIES                                     |
C     NPBN:  NUMBER OF SURFACE ELEVATION OR PRESSURE BOUNDARY CONDITIONS       |
C            CELLS ON NORTH OPEN BOUNDARIES                                    |
C     NPFOR: NUMBER OF HARMONIC FORCINGS                                       |
C     NPSER: NUMBER OF TIME SERIES FORCINGS                                    |
C     PDGINIT: ADD THIS CONSTANT ADJUSTMENT GLOBALLY TO THE SURFACE ELEVATION  |
C                                                                              |
C16  NPBS NPBW NPBE NPBN  NPFOR  NPSER  PDGINIT                                |
      2   0     0    3    2       2     0.0
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-----------------------------------------------------------------------------
C17 PERIODIC FORCING (TIDAL) SURF ELEV OR PRESSURE BOUNDARY COND. FORCINGS    |
C                                                                             |
C     NPFOR:      FORCING NUMBER                                              |
C     SYMBOL:     FORCING SYMBOL (FOR REFERENCE HERE ONLY)                    |
C     AMPLITUDE:  AMPLITUDE IN M (PRESSURE DIVIDED BY RHO*G)                  |
C     PHASE:      FORCING PHASE RELATIVE TO TBEGIN IN SECONDS                 |
C                   Adjusted   Adjusted                        original         |
C17 NPFOR  SYMBOL   AMPLITUDE  PHASE                           AMP     PHASE
     1     'M2'     0.9461     8074.305   ! Reedy Point, DE   0.8249  13675.862
     1     'S2'     0.1637    37540.916                       0.1141  43142.473
     1     'N2'     0.2047    33369.533                       0.1562  38971.090
     1     'K1'     0.0639    32532.909                       0.0838  38134.466
     1     'O1'     0.0560    74936.663                       0.0601  80538.220
     2     'M2'     0.8916    15220.442   ! Chester, PA       0.7774  20821.999
     2     'S2'     0.1330     1665.235                       0.0927   7266.792
     2     'N2'     0.1809    39794.887                       0.1380  45396.444
     2     'K1'     0.0709    40709.559                       0.0930  46311.116
     2     'O1'     0.0583    82503.646                       0.0626  88105.203
-----------------------------------------------------------------------------
C18 PERIODIC FORCING (TIDAL) SURF ELEV OR PRESSURE ON SOUTH OPEN BOUNDARIES   |
C                                                                             |
C     IPBS:      I CELL INDEX OF BOUNDARY CELL                                |
C     JPBS:      J CELL INDEX OF BOUNDARY CELL                                |
C     ISPBS:   1 FOR RADIATION-SEPARATION CONDITION                           |
C              0 FOR ELEVATION SPECIFIED                                      |
C     NPFORS:    APPLY HARMONIC FORCING NUMBER NPFORS                         |
C     NPSERS:    APPLY TIME SERIES FORCING NUMBER NPSERS                      |
C                                                                             |
C18 IPBS     JPBS   ISPBS    NPFORS  NPSERS                                   |
     57       3      0        1       1
     59       3      0        1       1
-----------------------------------------------------------------------------
C19 PERIODIC FORCING (TIDAL) SURF ELEV OR PRESSURE ON WEST OPEN BOUNDARIES    |
C                                                                             |
C     IPBW:   SEE CARD 19                                                     |
C     JPBW:                                                                   |
C     ISPBW:                                                                  |
C     NPFORW:                                                                 |
C     NPSERW:                                                                 |
C                                                                             |
C19 IPBW     JPBW   ISPBW    NPFORW  NPSERW                                   |
-----------------------------------------------------------------------------
C20 PERIODIC FORCING (TIDAL) SURF ELEV OR PRESSURE ON EAST OPEN BOUNDARIES    |
C                                                                             |
C     IPBE:   SEE CARD 19                                                     |
C     JPBE:                                                                   |
C     ISPBE:                                                                  |
C     NPFORE:                                                                 |
C     NPSERE:                                                                 |
C                                                                             |
C20 IPBE     JPBE   ISPBE    NPFORE  NPSERE                                   |
-----------------------------------------------------------------------------
C21 PERIODIC FORCING (TIDAL) SURF ELEV OR PRESSURE ON NORTH OPEN BOUNDARIES   |
C                                                                             |
C     IPBN:   SEE CARD 19                                                     |
C     JPBN:                                                                   |
C     ISPBN:                                                                  |
C     NPFORN:                                                                 |
C     NPSERN:                                                                 |
C                                                                             |
C21 IPBN     JPBN   ISPBN    NPFORN  NPSERN                                   |
     57       24      1       2        2
     58       24      1       2        2
     59       24      1       2        2
-----------------------------------------------------------------------------
C22 SPECIFY NUM OF SEDIMENT AMD TOXICS AND NUM OF CONCENTRATION TIME SERIES   |
C                                                                             |
C     NTOX:   NUMBER OF TOXIC CONTAMINANTS (DEFAULT = 1)                      |
C     NSED:   NUMBER OF COHESIVE SEDIMENT SIZE CLASSES (DEFAULT = 1)          |
C     NSND:   NUMBER OF NON-COHESIVE SEDIMENT SIZE CLASSES (DEFAULT = 1)      |
C     NSSER:  NUMBER OF SALINITY TIME SERIES                                  |
C     NTSER:  NUMBER OF TEMPERATURE TIME SERIES                               |
C     NDSER:  NUMBER OF DYE CONCENTRATION TIME SERIES                         |
C     NSFSER: NUMBER OF SHELLFISH LARVAE CONCENTRATION TIME SERIES            |
C     NTXSER: NUMBER OF TOXIC CONTAMINANT CONCENTRATION TIME SERIES           |
C             EACH TIME SERIES MUST HAVE DATA FOR NTOX TOXICICANTS            |
C     NSDSER: NUMBER OF COHESIVE SEDIMENT CONCENTRATION TIME SERIES           |
C             EACH TIME SERIES MUST HAVE DATA FOR NSED COHESIVE SEDIMENTS     |
C     NSNSER: NUMBER OF NONCOHESIVE SEDIMENT CONCENTRATION TIME SERIES        |
C             EACH TIME SERIES MUST HAVE DATA FOR NSND NON-COHESIVE SEDIMENTS |
C     ISSBAL: SET TO 1 FOR SEDIMENT MASS BALANCE                              |
C                                                                             |
C22  NTOX NSED  NSND  NSSER NTSER NDSER NSFSER NTXSER NSDSER NSNSER  ISSBAL   |
     1    1     1     126    79   0     0      0      203    0       0
-----------------------------------------------------------------------------
C23 VELOCITY, VOLUMN SOURCE/SINK, FLOW CONTROL, AND WITHDRAWAL/RETURN DATA    |
C                                                                             |
C     NVBS:   NUMBER OF VELOCITY BC'S ON SOUTH OPEN BOUNDARIES                |
C     NUBW:   NUMBER OF VELOCITY BC'S ON WEST OPEN BOUNDARIES                 |
C     NUBE:   NUMBER OF VELOCITY BC'S ON EAST OPEN BOUNDARIES                 |
C     NVBN:   NUMBER OF VELOCITY BC'S ON NORTH OPEN BOUNDARIES                |
C     NQSIJ:  NUMBER OF CONSTANT AND/OR TIME SERIES SPECIFIED SOURCE/SINK     |
C             LOCATIONS (RIVER INFLOWS,ETC)              .                    |
C     NQJPIJ: NUMBER OF CONSTANT AND/OR TIME SERIES SPECIFIED SOURCE          |
C             LOCATIONS TREATED AS JETS/PLUMES          .                     |
C     NQSER:  NUMBER OF VOLUMN SOURCE/SINK TIME SERIES                        |
C     NQCTL:  NUMBER OF PRESSURE CONTROLED WITHDRAWAL/RETURN PAIRS            |
C     NQCTLT: NUMBER OF PRESSURE CONTROLED WITHDRAWAL/RETURN TABLES           |
C     NQWR:   NUMBER OF CONSTANT OR TIME SERIES SPECIFIED WITHDRAWL/RETURN    |
C             PAIRS                                                           |
C     NQWRSR: NUMBER OF TIME SERIES SPECIFYING WITHDRAWL,RETURN AND           |
C             CONCENTRATION RISE SERIES                                       |
C     ISDIQ:  SET TO 1 TO WRITE DIAGNOSTIC FILE, diaq.out                     |
C                                                                             |
C23 NVBS NUBW NUBE NVBN NQSIJ NQJPIJ NQSER NQCTL NQCTLT NQWR NQWRSR  ISDIQ    |
    0    0    0    0     529    0    236   31     31     28    28        0
```

```
-------------------------------------------------------------------------------
C24 VOLUMETRIC SOURCE/SINK LOCATIONS, MAGNITUDES, AND CONCENTRATION SERIES    |
C                                                                             |
C     IQS:      I CELL INDEX OF VOLUME SOURCE/SINK                            |
C     JQS:      J CELL INDEX OF VOLUME SOURCE/SINK                            |
C     QSSE:     CONSTANT INFLOW/OUTFLOW RATE IN M*M*M/S                       |
C     NQSMUL:   MULTIPLIER SWITCH FOR CONSTANT AND TIME SERIES VOL S/S        |
C               = 0  MULT BY 1. FOR NORMAL IN/OUTFLOW (L*L*L/T)               |
C               = 1  MULT BY DY FOR LATERAL IN/OUTFLOW (L*L/T) ON U FACE      |
C               = 2  MULT BY DX FOR LATERAL IN/OUTFLOW (L*L/T) ON V FACE      |
C               = 3  MULT BY DX+DY FOR LATERAL IN/OUTFLOW (L*L/T) ON U&V FACES|
C     NQSMFF:   IF NON ZERO ACCOUNT FOR VOL S/S MOMENTUM FLUX                 |
C               = 1  MOMENTUM FLUX ON NEG U FACE                              |
C               = 2  MOMENTUM FLUX ON NEG V FACE                              |
C               = 3  MOMENTUM FLUX ON POS U FACE                              |
C               = 4  MOMENTUM FLUX ON POS V FACE                              |
C     NQSERQ:   ID NUMBER OF ASSOCIATED VOLUME FLOW TIME SERIES               |
C     NSSERQ:   ID NUMBER OF ASSOCIATED SALINITY TIME SERIES                  |
C     NTSERQ:   ID NUMBER OF ASSOCIATED TEMPERATURE TIME SERIES               |
C     NDSERQ:   ID NUMBER OF ASSOCIATED DYE CONC TIME SERIES                  |
C     NSFSERQ:  ID NUMBER OF ASSOCIATED SHELL FISH LARVAE RELEASE TIME SERIES |
C     NTXSERQ:  ID NUMBER OF ASSOCIATED TOXIC CONTAMINANT CONC TIME SERIES    |
C     NSDSERQ:  ID NUMBER OF ASSOCIATED COHESIVE SEDIMENT CONC TIME SERIES    |
C     NSNSERQ:  ID NUMBER OF ASSOCIATED NONCOHESIVE SED CONC TIME SERIES      |
C Below are pointers to flow, salinity, sed. series for each HSPF watershed
C24 IQS  JQS   QSSE  NQSMUL NQSMFF NQSERQ NS- NT- ND- NSF- NTX- NSD- NSN-     |
   54   15   0.0000  0      0        1      3 1   0   0    0      3   0 !DE0050962
   54   27   0.0000  0      0        2      4 1   0   0    0      4   0 !DE0021768-001A
   54   37   0.0000  0      0        3      5 1   0   0    0      5   0 !PA0053082
   54   38   0.0000  0      0        4      6 1   0   0    0      6   0 !PA0052663
   54   38   0.0000  0      0        5      7 1   0   0    0      7   0 !PA0055476
   54   38   0.0000  0      0        6      8 1   0   0    0      8   0 !PA0047252
   54   38   0.0000  0      0        7      9 1   0   0    0      9   0 !PA0055085
   54   38   0.0000  0      0        8     10 1   0   0    0     10   0 !PA0055484
   54   39   0.0000  0      0        9     11 1   0   0    0     11   0 !PA0030848
   54   42   0.0000  0      0       10     12 1   0   0    0     12   0 !PA0056120
   54   43   0.0000  0      0       11     13 1   0   0    0     13   0 !PA0031097
   54   43   0.0000  0      0       12     14 1   0   0    0     14   0 !PA0053449
   54   43   0.0000  0      0       13     15 1   0   0    0     15   0 !PA0057011
   54   44   0.0000  0      0       14     16 1   0   0    0     16   0 !PA0036200
   54   44   0.0000  0      0       15     17 1   0   0    0     17   0 !PA0050005
   54   44   0.0000  0      0       16     18 1   0   0    0     18   0 !PA0051497
   54   44   0.0000  0      0       17     19 1   0   0    0     19   0 !PA0056171
   54   52   0.0000  0      0       18     20 1   0   0    0     20   0 !PA0026018
   54   52   0.0000  0      0       19     21 1   0   0    0     21   0 !PA0054747
   54   52   0.0000  0      0       20     22 1   0   0    0     22   0 !PA0057282
   54   53   0.0000  0      0       21     23 1   0   0    0     23   0 !PA0051365
   54   55   0.0000  0      0       22     24 1   0   0    0     24   0 !PA0053937
   54   55   0.0000  0      0       23     25 1   0   0    0     25   0 !PA0056324
   54   55   0.0000  0      0       24     26 1   0   0    0     26   0 !PA0056618
   54   55   0.0000  0      0       25     27 1   0   0    0     27   0 !PA0054305
   54   55   0.0000  0      0       26     28 1   0   0    0     28   0 !PA0053561
   54   57   0.0000  0      0       27     29 1   0   0    0     29   0 !PA0043982
   54   61   0.0000  0      0       28     30 1   0   0    0     30   0 !PA0012815
   54   60   0.0000  0      0       29     31 1   0   0    0     31   0 !PA0026531
   54   61   0.0000  0      0       30     32 1   0   0    0     32   0 !PA0030228
   54   61   0.0000  0      0       31     33 1   0   0    0     33   0 !PA0051918
   54   61   0.0000  0      0       32     34 1   0   0    0     34   0 !PA0053678
   54   61   0.0000  0      0       33     35 1   0   0    0     35   0 !PA0053660
   54   61   0.0000  0      0       34     36 1   0   0    0     36   0 !PA0055531
   54   61   0.0000  0      0       35     37 1   0   0    0     37   0 !PA0057126
   54   65   0.0000  0      0       36     38 1   0   0    0     38   0 !PA0054917
   54   66   0.0000  0      0       37     39 1   0   0    0     39   0 !PA0057045
   54   67   0.0000  0      0       38     40 1   0   0    0     40   0 !PA0027987
   54   67   0.0000  0      0       39     41 1   0   0    0     41   0 !PA0036374
   54   67   0.0000  0      0       40     42 1   0   0    0     42   0 !PA0052949
   54   67   0.0000  0      0       41     43 1   0   0    0     43   0 !PA0057274
   54   70   0.0000  0      0       42     44 1   0   0    0     44   0 !PA0050458
   54   74   0.0000  0      0       43     45 1   0   0    0     45   0 !PA0050229
   54   74   0.0000  0      0       44     46 1   0   0    0     46   0 !PA0050547
   54   74   0.0000  0      0       45     47 1   0   0    0     47   0 !PA0055492
   54   76   0.0000  0      0       46     48 1   0   0    0     48   0 !PA0054691
   46   79   0.0000  0      0       47     49 1   0   0    0     49   0 !PA0056561
   40   79   0.0000  0      0       48     50 1   0   0    0     50   0 !PA0029912
   39   79   0.0000  0      0       49     51 1   0   0    0     51   0 !PA0053996
   29   79   0.0000  0      0       50     52 1   0   0    0     52   0 !PA0053228
   29   79   0.0000  0      0       51     53 1   0   0    0     53   0 !PA0053236
   26   79   0.0000  0      0       52     54 1   0   0    0     54   0 !PA0036897
   24   79   0.0000  0      0       53     55 1   0   0    0     55   0 !PA0026859
   23   79   0.0000  0      0       54     56 1   0   0    0     56   0 !PA0011568-001
   23   79   0.0000  0      0       55     57 1   0   0    0     57   0 !PA0011568-016
   23   79   0.0000  0      0       56     58 1   0   0    0     58   0 !PA0053821
   20   79   0.0000  0      0       57     59 1   0   0    0     59   0 !PA0056073
   20   79   0.0000  0      0       58     60 1   0   0    0     60   0 !PA0012416
   20   79   0.0000  0      0       59     61 1   0   0    0     61   0 !PA0052990
   18   79   0.0000  0      0       60     62 1   0   0    0     62   0 !PA0052728
   16   79   0.0000  0      0       61     63 1   0   0    0     63   0 !PA0055697
    6   79   0.0000  0      0       62     64 1   0   0    0     64   0 !PA0036412
    6   79   0.0000  0      0       63     65 1   0   0    0     65   0 !PA0044776
    6   79   0.0000  0      0       64     66 1   0   0    0     66   0 !PA0057339
   33   61   0.0000  0      0       65     67 1   0   0    0     67   0 !PA0024473
   33   61   0.0000  0      0       66     68 1   0   0    0     68   0 !PA0036161
   33   61   0.0000  0      0       67     69 1   0   0    0     69   0 !PA0057231
   45   13   0.0000  0      0       68     70 1   0   0    0     70   0 !DE0000400-001A
   43    9   0.0000  0      0       69     71 1   0   0    0     71   0 !DE0051004
   14    9   0.0000  0      0       70     72 1   0   0    0     72   0 !MD0022641
   16    9   0.0000  0      0       71     73 1   0   0    0     73   0 !MD0065145
   43   26   0.0000  0      0       72     74 1   0   0    0     74   0 !DE0000221-001
   43   26   0.0000  0      0       73     75 1   0   0    0     75   0 !DE0000221-003
   43   29   0.0000  0      0       74     76 1   0   0    0     76   0 !DE0000230
   43   35   0.0000  0      0       75     77 1   0   0    0     77   0 !DE0021709-001A
   43   37   0.0000  0      0       76     78 1   0   0    0     78   0 !PA0055425
   43   40   0.0000  0      0       77     79 1   0   0    0     79   0 !DE0050067-001A
   43   40   0.0000  0      0       78     80 1   0   0    0     80   0 !DE0000451-002A
   43   44   0.0000  0      0       79     81 1   0   0    0     81   0 !PA0055107
   43   47   0.0000  0      0       80     82 1   0   0    0     82   0 !PA0054755
   32   43   0.0000  0      0       81     83 1   0   0    0     83   0 !PA0053554
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30	43	0.0000	0	0	82	84	1	0	0	0	84	0	!PA0024058	
29	43	0.0000	0	0	83	85	1	0	0	0	85	0	!PA0050679	
28	43	0.0000	0	0	84	86	1	0	0	0	86	0	!PA0057720-001	
28	43	0.0000	0	0	85	87	1	0	0	0	87	0	!PA0057720-002	
32	18	0.0000	0	0	86	88	1	0	0	0	88	0	!DE0000191-001A	
15	18	0.0000	0	0	87	89	1	0	0	0	89	0	!PA0053783	
6	18	0.0000	0	0	88	90	1	0	0	0	90	0	!PA0024066	
19	24	0.0000	0	0	89	91	1	0	0	0	91	0	!PA0052451	
19	26	0.0000	0	0	90	92	1	0	0	0	92	0	!PA0057029	
19	30	0.0000	0	0	91	93	1	0	0	0	93	0	!PA0025488	
19	30	0.0000	0	0	92	94	1	0	0	0	94	0	!PA0052019	
19	30	0.0000	0	0	93	95	1	0	0	0	95	0	!PA0056898	
19	31	0.0000	0	0	94	96	1	0	0	0	96	0	!PA0056952	
19	32	0.0000	0	0	95	97	1	0	0	0	97	0	!PA0029343	
19	32	0.0000	0	0	96	98	1	0	0	0	98	0	!PA0040436	
19	32	0.0000	0	0	97	99	1	0	0	0	99	0	!PA0040665	
41	55	0.0000	0	0	98	100	1	0	0	0	100	0	!DE0000523-001A	
38	55	0.0000	0	0	99	101	1	0	0	0	101	0	!DE0000566	
57	4	0.0000	0	0	100	102	1	0	0	0	102	0	!DE0021555-001A	
57	5	0.0000	0	0	101	103	1	0	0	0	103	0	!DE0000256-601A	
57	5	0.0000	0	0	102	104	1	0	0	0	104	0	!DE0000612-001A	
57	5	0.0000	0	0	103	105	1	0	0	0	105	0	!DE0020001-001A	
57	5	0.0000	0	0	104	106	1	0	0	0	106	0	!DE0050911-001A	
57	15	0.0000	0	0	105	107	1	0	0	0	107	0	!DE0020320-001A	
57	17	0.0000	0	0	106	108	1	0	0	0	108	0	!DE0000051-001A	
57	17	0.0000	0	0	107	109	1	0	0	0	109	0	!DE0000051-002A	
57	17	0.0000	0	0	108	110	1	0	0	0	110	0	!DE0000051-003A	
57	20	0.0000	0	0	109	111	1	0	0	0	111	0	!DE0000655-001A	
57	22	0.0000	0	0	110	112	1	0	0	0	112	0	!PA0012637-002A	
57	22	0.0000	0	0	111	113	1	0	0	0	113	0	!PA0012637-101A	
57	22	0.0000	0	0	112	114	1	0	0	0	114	0	!PA0012637-201A	
57	23	0.0000	0	0	113	115	1	0	0	0	115	0	!PA0027103-001A	
58	21	0.0000	0	0	114	116	1	0	0	0	116	0	!NJ0005405-001A	
59	4	0.0000	0	0	115	117	1	0	0	0	117	0	!NJ0024856-001A	
59	9	0.0000	0	0	116	118	1	0	0	0	118	0	!NJ0021598-001A	
59	12	0.0000	0	0	117	119	1	0	0	0	119	0	!NJ0005100-661A	
59	15	0.0000	0	0	118	120	1	0	0	0	120	0	!NJ0021601-001A	
59	16	0.0000	0	0	119	121	1	0	0	0	121	0	!NJ0024023-001A	
59	17	0.0000	0	0	120	122	1	0	0	0	122	0	!NJ0024635-001A	
59	19	0.0000	0	0	121	123	1	0	0	0	123	0	!NJ0004286-001A	
59	21	0.0000	0	0	122	124	1	0	0	0	124	0	!NJ0027545-001A	
6	79	0.0	0	0	123	125	4	0	0	0	125	0	B02rch.out	1
6	79	0.0	0	0	124	125	5	0	0	0	126	0	B02rch.out	7
7	79	0.0	0	0	124	125	5	0	0	0	126	0	B02rch.out	7
8	79	0.0	0	0	124	125	5	0	0	0	126	0	B02rch.out	7
9	79	0.0	0	0	124	125	5	0	0	0	126	0	B02rch.out	7
10	79	0.0	0	0	124	125	5	0	0	0	126	0	B02rch.out	7
11	79	0.0	0	0	124	125	5	0	0	0	126	0	B02rch.out	7
12	79	0.0	0	0	124	125	5	0	0	0	126	0	B02rch.out	7
13	79	0.0	0	0	125	125	6	0	0	0	127	0	B03swo.out	5
14	79	0.0	0	0	125	125	6	0	0	0	127	0	B03swo.out	5
16	79	0.0	0	0	125	125	6	0	0	0	127	0	B03swo.out	5
17	79	0.0	0	0	125	125	6	0	0	0	127	0	B03swo.out	5
18	79	0.0	0	0	125	125	6	0	0	0	127	0	B03swo.out	5
19	79	0.0	0	0	126	125	7	0	0	0	128	0	B04swo.out	3
20	79	0.0	0	0	126	125	7	0	0	0	128	0	B04swo.out	3
21	79	0.0	0	0	126	125	7	0	0	0	128	0	B04swo.out	3
23	79	0.0	0	0	127	125	8	0	0	0	129	0	B05swo.out	4
24	79	0.0	0	0	127	125	8	0	0	0	129	0	B05swo.out	4
25	79	0.0	0	0	127	125	8	0	0	0	129	0	B05swo.out	4
26	79	0.0	0	0	127	125	8	0	0	0	129	0	B05swo.out	4
27	79	0.0	0	0	128	125	9	0	0	0	130	0	B06swo.out	5
28	79	0.0	0	0	128	125	9	0	0	0	130	0	B06swo.out	5
29	79	0.0	0	0	128	125	9	0	0	0	130	0	B06swo.out	5
30	79	0.0	0	0	128	125	9	0	0	0	130	0	B06swo.out	5
32	79	0.0	0	0	128	125	9	0	0	0	130	0	B06swo.out	5
33	79	0.0	0	0	129	125	10	0	0	0	131	0	B07swo.out	12
34	79	0.0	0	0	129	125	10	0	0	0	131	0	B07swo.out	12
35	79	0.0	0	0	129	125	10	0	0	0	131	0	B07swo.out	12
36	79	0.0	0	0	129	125	10	0	0	0	131	0	B07swo.out	12
38	79	0.0	0	0	129	125	10	0	0	0	131	0	B07swo.out	12
39	79	0.0	0	0	129	125	10	0	0	0	131	0	B07swo.out	12
40	79	0.0	0	0	129	125	10	0	0	0	131	0	B07swo.out	12
41	79	0.0	0	0	129	125	10	0	0	0	131	0	B07swo.out	12
42	79	0.0	0	0	129	125	10	0	0	0	131	0	B07swo.out	12
43	79	0.0	0	0	129	125	10	0	0	0	131	0	B07swo.out	12
44	79	0.0	0	0	129	125	10	0	0	0	131	0	B07swo.out	12
45	79	0.0	0	0	129	125	10	0	0	0	131	0	B07swo.out	12
46	79	0.0	0	0	130	125	11	0	0	0	132	0	B08swo.out	4
47	79	0.0	0	0	130	125	11	0	0	0	132	0	B08swo.out	4
48	79	0.0	0	0	130	125	11	0	0	0	132	0	B08swo.out	4
49	79	0.0	0	0	130	125	11	0	0	0	132	0	B08swo.out	4
54	76	0.0	0	0	131	125	12	0	0	0	133	0	B10rch.out	1
54	76	0.0	0	0	132	125	13	0	0	0	134	0	B10rch.out	9
54	75	0.0	0	0	132	125	13	0	0	0	134	0	B10rch.out	9
54	74	0.0	0	0	132	125	13	0	0	0	134	0	B10rch.out	9
54	73	0.0	0	0	132	125	13	0	0	0	134	0	B10rch.out	9
54	72	0.0	0	0	132	125	13	0	0	0	134	0	B10rch.out	9
54	71	0.0	0	0	132	125	13	0	0	0	134	0	B10rch.out	9
54	70	0.0	0	0	132	125	13	0	0	0	134	0	B10rch.out	9
54	69	0.0	0	0	132	125	13	0	0	0	134	0	B10rch.out	9
54	68	0.0	0	0	132	125	13	0	0	0	134	0	B10rch.out	9
54	67	0.0	0	0	133	125	14	0	0	0	135	0	B11swo.out	3
54	66	0.0	0	0	133	125	14	0	0	0	135	0	B11swo.out	3
54	65	0.0	0	0	133	125	14	0	0	0	135	0	B11swo.out	3
54	64	0.0	0	0	134	125	15	0	0	0	136	0	B12swo.out	3
54	63	0.0	0	0	134	125	15	0	0	0	136	0	B12swo.out	3
54	62	0.0	0	0	134	125	15	0	0	0	136	0	B12swo.out	3
54	61	0.0	0	0	135	125	16	0	0	0	137	0	B13swo.out	6
54	60	0.0	0	0	135	125	16	0	0	0	137	0	B13swo.out	6
54	59	0.0	0	0	135	125	16	0	0	0	137	0	B13swo.out	6
54	58	0.0	0	0	135	125	16	0	0	0	137	0	B13swo.out	6
54	57	0.0	0	0	135	125	16	0	0	0	137	0	B13swo.out	6
54	56	0.0	0	0	135	125	16	0	0	0	137	0	B13swo.out	6
54	55	0.0	0	0	136	125	17	0	0	0	138	0	B14swo.out	8
54	54	0.0	0	0	136	125	17	0	0	0	138	0	B14swo.out	8
54	53	0.0	0	0	136	125	17	0	0	0	138	0	B14swo.out	8

54	52	0.0	0	0	136	125	17	0	0	0	138	0	B14swo.out	8
54	51	0.0	0	0	136	125	17	0	0	0	138	0	B14swo.out	8
54	50	0.0	0	0	136	125	17	0	0	0	138	0	B14swo.out	8
54	49	0.0	0	0	136	125	17	0	0	0	138	0	B14swo.out	8
54	48	0.0	0	0	136	125	17	0	0	0	138	0	B14swo.out	8
54	47	0.0	0	0	137	125	18	0	0	0	139	0	B15swo.out	4
54	46	0.0	0	0	137	125	18	0	0	0	139	0	B15swo.out	4
54	44	0.0	0	0	137	125	18	0	0	0	139	0	B15swo.out	4
54	43	0.0	0	0	137	125	18	0	0	0	139	0	B15swo.out	4
54	42	0.0	0	0	138	125	19	0	0	0	140	0	B16swo.out	4
54	41	0.0	0	0	138	125	19	0	0	0	140	0	B16swo.out	4
54	40	0.0	0	0	138	125	19	0	0	0	140	0	B16swo.out	4
54	39	0.0	0	0	138	125	19	0	0	0	140	0	B16swo.out	4
54	38	0.0	0	0	139	125	20	0	0	0	141	0	B17swo.out	6
54	37	0.0	0	0	139	125	20	0	0	0	141	0	B17swo.out	6
54	36	0.0	0	0	139	125	20	0	0	0	141	0	B17swo.out	6
54	35	0.0	0	0	139	125	20	0	0	0	141	0	B17swo.out	6
54	34	0.0	0	0	139	125	20	0	0	0	141	0	B17swo.out	6
54	33	0.0	0	0	139	125	20	0	0	0	141	0	B17swo.out	6
54	32	0.0	0	0	140	125	21	0	0	0	142	0	B18swo.out	6
54	31	0.0	0	0	140	125	21	0	0	0	142	0	B18swo.out	6
54	30	0.0	0	0	140	125	21	0	0	0	142	0	B18swo.out	6
54	29	0.0	0	0	140	125	21	0	0	0	142	0	B18swo.out	6
54	28	0.0	0	0	140	125	21	0	0	0	142	0	B18swo.out	6
54	27	0.0	0	0	140	125	21	0	0	0	142	0	B18swo.out	6
54	26	0.0	0	0	141	125	22	0	0	0	143	0	B19swo.out	4
54	25	0.0	0	0	141	125	22	0	0	0	143	0	B19swo.out	4
54	24	0.0	0	0	141	125	22	0	0	0	143	0	B19swo.out	4
54	23	0.0	0	0	141	125	22	0	0	0	143	0	B19swo.out	4
33	61	0.0	0	0	142	125	23	0	0	0	144	0	B20rch.out	1
33	61	0.0	0	0	143	125	24	0	0	0	145	0	B20rch.out	13
33	62	0.0	0	0	143	125	24	0	0	0	145	0	B20rch.out	13
33	63	0.0	0	0	143	125	24	0	0	0	145	0	B20rch.out	13
33	64	0.0	0	0	143	125	24	0	0	0	145	0	B20rch.out	13
33	65	0.0	0	0	143	125	24	0	0	0	145	0	B20rch.out	13
33	66	0.0	0	0	143	125	24	0	0	0	145	0	B20rch.out	13
33	67	0.0	0	0	143	125	24	0	0	0	145	0	B20rch.out	13
33	68	0.0	0	0	143	125	24	0	0	0	145	0	B20rch.out	13
33	69	0.0	0	0	143	125	24	0	0	0	145	0	B20rch.out	13
33	70	0.0	0	0	143	125	24	0	0	0	145	0	B20rch.out	13
33	71	0.0	0	0	143	125	24	0	0	0	145	0	B20rch.out	13
33	72	0.0	0	0	143	125	24	0	0	0	145	0	B20rch.out	13
33	73	0.0	0	0	143	125	24	0	0	0	145	0	B20rch.out	13
33	79	0.0	0	0	144	125	25	0	0	0	146	0	B22rch.out	1
33	74	0.0	0	0	145	125	26	0	0	0	147	0	B23swo.out	4
33	75	0.0	0	0	145	125	26	0	0	0	147	0	B23swo.out	4
33	76	0.0	0	0	145	125	26	0	0	0	147	0	B23swo.out	4
33	77	0.0	0	0	145	125	26	0	0	0	147	0	B23swo.out	4
46	79	0.0	0	0	146	125	27	0	0	0	148	0	B25rch.out	1
54	67	0.0	0	0	147	125	28	0	0	0	149	0	B27rch.out	1
54	55	0.0	0	0	148	125	29	0	0	0	150	0	B29rch.out	1
54	61	0.0	0	0	149	125	30	0	0	0	151	0	B30rch.out	1
54	42	0.0	0	0	150	125	31	0	0	0	152	0	B31rch.out	1
13	79	0.0	0	0	151	125	32	0	0	0	153	0	B32rch.out	1
21	79	0.0	0	0	152	125	33	0	0	0	154	0	B33rch.out	1
54	22	0.0	0	0	153	125	34	0	0	0	155	0	B34swo.out	7
54	21	0.0	0	0	153	125	34	0	0	0	155	0	B34swo.out	7
54	20	0.0	0	0	153	125	34	0	0	0	155	0	B34swo.out	7
54	18	0.0	0	0	153	125	34	0	0	0	155	0	B34swo.out	7
54	17	0.0	0	0	153	125	34	0	0	0	155	0	B34swo.out	7
54	16	0.0	0	0	153	125	34	0	0	0	155	0	B34swo.out	7
54	15	0.0	0	0	153	125	34	0	0	0	155	0	B34swo.out	7
24	43	0.0	0	0	154	125	35	0	0	0	156	0	R01rch.out	1
24	43	0.0	0	0	155	125	36	0	0	0	157	0	R01rch.out	6
25	43	0.0	0	0	155	125	36	0	0	0	157	0	R01rch.out	6
26	43	0.0	0	0	155	125	36	0	0	0	157	0	R01rch.out	6
27	43	0.0	0	0	155	125	36	0	0	0	157	0	R01rch.out	6
28	43	0.0	0	0	155	125	36	0	0	0	157	0	R01rch.out	6
29	43	0.0	0	0	155	125	36	0	0	0	157	0	R01rch.out	6
30	43	0.0	0	0	156	125	37	0	0	0	158	0	R02swo.out	12
31	43	0.0	0	0	156	125	37	0	0	0	158	0	R02swo.out	12
32	43	0.0	0	0	156	125	37	0	0	0	158	0	R02swo.out	12
33	43	0.0	0	0	156	125	37	0	0	0	158	0	R02swo.out	12
34	43	0.0	0	0	156	125	37	0	0	0	158	0	R02swo.out	12
35	43	0.0	0	0	156	125	37	0	0	0	158	0	R02swo.out	12
36	43	0.0	0	0	156	125	37	0	0	0	158	0	R02swo.out	12
37	43	0.0	0	0	156	125	37	0	0	0	158	0	R02swo.out	12
38	43	0.0	0	0	156	125	37	0	0	0	158	0	R02swo.out	12
39	43	0.0	0	0	156	125	37	0	0	0	158	0	R02swo.out	12
40	43	0.0	0	0	156	125	37	0	0	0	158	0	R02swo.out	12
41	43	0.0	0	0	156	125	37	0	0	0	158	0	R02swo.out	12
43	49	0.0	0	0	157	125	38	0	0	0	159	0	R03rch.out	1
43	49	0.0	0	0	158	125	39	0	0	0	160	0	R03rch.out	7
43	48	0.0	0	0	158	125	39	0	0	0	160	0	R03rch.out	7
43	47	0.0	0	0	158	125	39	0	0	0	160	0	R03rch.out	7
43	46	0.0	0	0	158	125	39	0	0	0	160	0	R03rch.out	7
43	45	0.0	0	0	158	125	39	0	0	0	160	0	R03rch.out	7
43	44	0.0	0	0	158	125	39	0	0	0	160	0	R03rch.out	7
43	43	0.0	0	0	158	125	39	0	0	0	160	0	R03rch.out	7
43	42	0.0	0	0	159	125	40	0	0	0	161	0	R04swo.out	5
43	41	0.0	0	0	159	125	40	0	0	0	161	0	R04swo.out	5
43	40	0.0	0	0	159	125	40	0	0	0	161	0	R04swo.out	5
43	39	0.0	0	0	159	125	40	0	0	0	161	0	R04swo.out	5
43	38	0.0	0	0	159	125	40	0	0	0	161	0	R04swo.out	5
43	37	0.0	0	0	160	125	41	0	0	0	162	0	R05swo.out	7
43	36	0.0	0	0	160	125	41	0	0	0	162	0	R05swo.out	7
43	35	0.0	0	0	160	125	41	0	0	0	162	0	R05swo.out	7
43	34	0.0	0	0	160	125	41	0	0	0	162	0	R05swo.out	7
43	33	0.0	0	0	160	125	41	0	0	0	162	0	R05swo.out	7
43	32	0.0	0	0	160	125	41	0	0	0	162	0	R05swo.out	7
43	31	0.0	0	0	160	125	41	0	0	0	162	0	R05swo.out	7
40	52	0.0	0	0	161	125	42	0	0	0	163	0	R06rch.out	1
40	52	0.0	0	0	162	125	43	0	0	0	164	0	R06rch.out	10
41	52	0.0	0	0	162	125	43	0	0	0	164	0	R06rch.out	10
42	52	0.0	0	0	162	125	43	0	0	0	164	0	R06rch.out	10
43	52	0.0	0	0	162	125	43	0	0	0	164	0	R06rch.out	10
44	52	0.0	0	0	162	125	43	0	0	0	164	0	R06rch.out	10

45	52	0.0	0	0	162	125	43	0	0	0	164	0	R06rch.out	10
46	52	0.0	0	0	162	125	43	0	0	0	164	0	R06rch.out	10
47	52	0.0	0	0	162	125	43	0	0	0	164	0	R06rch.out	10
48	52	0.0	0	0	162	125	43	0	0	0	164	0	R06rch.out	10
49	52	0.0	0	0	162	125	43	0	0	0	164	0	R06rch.out	10
43	32	0.0	0	0	163	125	44	0	0	0	165	0	R07rch.out	1
43	30	0.0	0	0	164	125	45	0	0	0	166	0	R08swo.out	7
43	29	0.0	0	0	164	125	45	0	0	0	166	0	R08swo.out	7
43	28	0.0	0	0	164	125	45	0	0	0	166	0	R08swo.out	7
43	27	0.0	0	0	164	125	45	0	0	0	166	0	R08swo.out	7
43	26	0.0	0	0	164	125	45	0	0	0	166	0	R08swo.out	7
43	25	0.0	0	0	164	125	45	0	0	0	166	0	R08swo.out	7
43	24	0.0	0	0	164	125	45	0	0	0	166	0	R08swo.out	7
43	23	0.0	0	0	165	125	46	0	0	0	167	0	R09swo.out	1
15	18	0.0	0	0	166	125	47	0	0	0	168	0	W01rch.out	1
5	18	0.0	0	0	167	125	48	0	0	0	169	0	W02rch.out	1
5	18	0.0	0	0	168	125	49	0	0	0	170	0	W02rch.out	5
6	18	0.0	0	0	168	125	49	0	0	0	170	0	W02rch.out	5
7	18	0.0	0	0	168	125	49	0	0	0	170	0	W02rch.out	5
8	18	0.0	0	0	168	125	49	0	0	0	170	0	W02rch.out	5
9	18	0.0	0	0	168	125	49	0	0	0	170	0	W02rch.out	5
10	18	0.0	0	0	169	125	50	0	0	0	171	0	W03swo.out	9
11	18	0.0	0	0	169	125	50	0	0	0	171	0	W03swo.out	9
12	18	0.0	0	0	169	125	50	0	0	0	171	0	W03swo.out	9
13	18	0.0	0	0	169	125	50	0	0	0	171	0	W03swo.out	9
14	18	0.0	0	0	169	125	50	0	0	0	171	0	W03swo.out	9
15	18	0.0	0	0	169	125	50	0	0	0	171	0	W03swo.out	9
16	18	0.0	0	0	169	125	50	0	0	0	171	0	W03swo.out	9
17	18	0.0	0	0	169	125	50	0	0	0	171	0	W03swo.out	9
18	18	0.0	0	0	169	125	50	0	0	0	171	0	W03swo.out	9
19	30	0.0	0	0	170	125	51	0	0	0	172	0	W04rch.out	1
19	32	0.0	0	0	171	125	52	0	0	0	173	0	W06rch.out	1
19	32	0.0	0	0	172	125	53	0	0	0	174	0	W06rch.out	2
19	31	0.0	0	0	172	125	53	0	0	0	174	0	W06rch.out	2
19	30	0.0	0	0	173	125	54	0	0	0	175	0	W07rch.out	1
19	30	0.0	0	0	174	125	55	0	0	0	176	0	W08swo.out	6
19	29	0.0	0	0	174	125	55	0	0	0	176	0	W08swo.out	6
19	28	0.0	0	0	174	125	55	0	0	0	176	0	W08swo.out	6
19	27	0.0	0	0	174	125	55	0	0	0	176	0	W08swo.out	6
19	26	0.0	0	0	174	125	55	0	0	0	176	0	W08swo.out	6
19	25	0.0	0	0	174	125	55	0	0	0	176	0	W08swo.out	6
19	24	0.0	0	0	175	125	56	0	0	0	177	0	W09swo.out	5
19	23	0.0	0	0	175	125	56	0	0	0	177	0	W09swo.out	5
19	22	0.0	0	0	175	125	56	0	0	0	177	0	W09swo.out	5
19	21	0.0	0	0	175	125	56	0	0	0	177	0	W09swo.out	5
19	20	0.0	0	0	175	125	56	0	0	0	177	0	W09swo.out	5
19	18	0.0	0	0	176	125	57	0	0	0	178	0	W10swo.out	3
20	18	0.0	0	0	176	125	57	0	0	0	178	0	W10swo.out	3
21	18	0.0	0	0	176	125	57	0	0	0	178	0	W10swo.out	3
22	18	0.0	0	0	177	125	58	0	0	0	179	0	W11swo.out	5
24	18	0.0	0	0	177	125	58	0	0	0	179	0	W11swo.out	5
25	18	0.0	0	0	177	125	58	0	0	0	179	0	W11swo.out	5
26	18	0.0	0	0	177	125	58	0	0	0	179	0	W11swo.out	5
27	18	0.0	0	0	177	125	58	0	0	0	179	0	W11swo.out	5
28	18	0.0	0	0	178	125	59	0	0	0	180	0	W12swo.out	9
30	18	0.0	0	0	178	125	59	0	0	0	180	0	W12swo.out	9
31	18	0.0	0	0	178	125	59	0	0	0	180	0	W12swo.out	9
32	18	0.0	0	0	178	125	59	0	0	0	180	0	W12swo.out	9
33	18	0.0	0	0	178	125	59	0	0	0	180	0	W12swo.out	9
34	18	0.0	0	0	178	125	59	0	0	0	180	0	W12swo.out	9
35	18	0.0	0	0	178	125	59	0	0	0	180	0	W12swo.out	9
37	18	0.0	0	0	178	125	59	0	0	0	180	0	W12swo.out	9
38	18	0.0	0	0	178	125	59	0	0	0	180	0	W12swo.out	9
39	18	0.0	0	0	179	125	60	0	0	0	181	0	W13swo.out	3
40	18	0.0	0	0	179	125	60	0	0	0	181	0	W13swo.out	3
41	18	0.0	0	0	179	125	60	0	0	0	181	0	W13swo.out	3
43	17	0.0	0	0	180	125	61	0	0	0	182	0	W14swo.out	3
43	16	0.0	0	0	180	125	61	0	0	0	182	0	W14swo.out	3
43	15	0.0	0	0	180	125	61	0	0	0	182	0	W14swo.out	3
22	34	0.0	0	0	181	125	62	0	0	0	183	0	W15rch.out	1
22	34	0.0	0	0	182	125	63	0	0	0	184	0	W15rch.out	10
23	34	0.0	0	0	182	125	63	0	0	0	184	0	W15rch.out	10
24	34	0.0	0	0	182	125	63	0	0	0	184	0	W15rch.out	10
25	34	0.0	0	0	182	125	63	0	0	0	184	0	W15rch.out	10
26	34	0.0	0	0	182	125	63	0	0	0	184	0	W15rch.out	10
27	34	0.0	0	0	182	125	63	0	0	0	184	0	W15rch.out	10
28	34	0.0	0	0	182	125	63	0	0	0	184	0	W15rch.out	10
29	34	0.0	0	0	182	125	63	0	0	0	184	0	W15rch.out	10
30	34	0.0	0	0	182	125	63	0	0	0	184	0	W15rch.out	10
31	34	0.0	0	0	182	125	63	0	0	0	184	0	W15rch.out	10
15	37	0.0	0	0	183	125	64	0	0	0	185	0	W16rch.out	1
15	37	0.0	0	0	184	125	65	0	0	0	186	0	W16rch.out	17
16	37	0.0	0	0	184	125	65	0	0	0	186	0	W16rch.out	17
17	37	0.0	0	0	184	125	65	0	0	0	186	0	W16rch.out	17
18	37	0.0	0	0	184	125	65	0	0	0	186	0	W16rch.out	17
19	37	0.0	0	0	184	125	65	0	0	0	186	0	W16rch.out	17
20	37	0.0	0	0	184	125	65	0	0	0	186	0	W16rch.out	17
21	37	0.0	0	0	184	125	65	0	0	0	186	0	W16rch.out	17
22	37	0.0	0	0	184	125	65	0	0	0	186	0	W16rch.out	17
23	37	0.0	0	0	184	125	65	0	0	0	186	0	W16rch.out	17
24	37	0.0	0	0	184	125	65	0	0	0	186	0	W16rch.out	17
25	37	0.0	0	0	184	125	65	0	0	0	186	0	W16rch.out	17
26	37	0.0	0	0	184	125	65	0	0	0	186	0	W16rch.out	17
27	37	0.0	0	0	184	125	65	0	0	0	186	0	W16rch.out	17
28	37	0.0	0	0	184	125	65	0	0	0	186	0	W16rch.out	17
29	37	0.0	0	0	184	125	65	0	0	0	186	0	W16rch.out	17
30	37	0.0	0	0	184	125	65	0	0	0	186	0	W16rch.out	17
31	37	0.0	0	0	184	125	65	0	0	0	186	0	W16rch.out	17
10	40	0.0	0	0	185	125	66	0	0	0	187	0	W17rch.out	1
10	40	0.0	0	0	186	125	67	0	0	0	188	0	W17rch.out	22
11	40	0.0	0	0	186	125	67	0	0	0	188	0	W17rch.out	22
12	40	0.0	0	0	186	125	67	0	0	0	188	0	W17rch.out	22
13	40	0.0	0	0	186	125	67	0	0	0	188	0	W17rch.out	22
14	40	0.0	0	0	186	125	67	0	0	0	188	0	W17rch.out	22
15	40	0.0	0	0	186	125	67	0	0	0	188	0	W17rch.out	22
16	40	0.0	0	0	186	125	67	0	0	0	188	0	W17rch.out	22
17	40	0.0	0	0	186	125	67	0	0	0	188	0	W17rch.out	22

18	40	0.0	0	0	186	125	67	0	0	0	188	0	W17rch.out	22
19	40	0.0	0	0	186	125	67	0	0	0	188	0	W17rch.out	22
20	40	0.0	0	0	186	125	67	0	0	0	188	0	W17rch.out	22
21	40	0.0	0	0	186	125	67	0	0	0	188	0	W17rch.out	22
22	40	0.0	0	0	186	125	67	0	0	0	188	0	W17rch.out	22
23	40	0.0	0	0	186	125	67	0	0	0	188	0	W17rch.out	22
24	40	0.0	0	0	186	125	67	0	0	0	188	0	W17rch.out	22
25	40	0.0	0	0	186	125	67	0	0	0	188	0	W17rch.out	22
26	40	0.0	0	0	186	125	67	0	0	0	188	0	W17rch.out	22
27	40	0.0	0	0	186	125	67	0	0	0	188	0	W17rch.out	22
28	40	0.0	0	0	186	125	67	0	0	0	188	0	W17rch.out	22
29	40	0.0	0	0	186	125	67	0	0	0	188	0	W17rch.out	22
30	40	0.0	0	0	186	125	67	0	0	0	188	0	W17rch.out	22
31	40	0.0	0	0	186	125	67	0	0	0	188	0	W17rch.out	22
14	9	0.0	0	0	187	125	68	0	0	0	189	0	C01rch.out	1
14	9	0.0	0	0	188	125	69	0	0	0	190	0	C01rch.out	6
15	9	0.0	0	0	188	125	69	0	0	0	190	0	C01rch.out	6
16	9	0.0	0	0	188	125	69	0	0	0	190	0	C01rch.out	6
17	9	0.0	0	0	188	125	69	0	0	0	190	0	C01rch.out	6
18	9	0.0	0	0	188	125	69	0	0	0	190	0	C01rch.out	6
19	9	0.0	0	0	188	125	69	0	0	0	190	0	C01rch.out	6
12	13	0.0	0	0	189	125	70	0	0	0	191	0	C02rch.out	1
12	13	0.0	0	0	190	125	71	0	0	0	192	0	C02rch.out	7
13	13	0.0	0	0	190	125	71	0	0	0	192	0	C02rch.out	7
14	13	0.0	0	0	190	125	71	0	0	0	192	0	C02rch.out	7
15	13	0.0	0	0	190	125	71	0	0	0	192	0	C02rch.out	7
16	13	0.0	0	0	190	125	71	0	0	0	192	0	C02rch.out	7
17	13	0.0	0	0	190	125	71	0	0	0	192	0	C02rch.out	7
18	13	0.0	0	0	190	125	71	0	0	0	192	0	C02rch.out	7
19	13	0.0	0	0	191	125	72	0	0	0	193	0	C03swo.out	5
20	13	0.0	0	0	191	125	72	0	0	0	193	0	C03swo.out	5
21	13	0.0	0	0	191	125	72	0	0	0	193	0	C03swo.out	5
22	13	0.0	0	0	191	125	72	0	0	0	193	0	C03swo.out	5
23	13	0.0	0	0	191	125	72	0	0	0	193	0	C03swo.out	5
32	55	0.0	0	0	192	125	73	0	0	0	194	0	C04rch.out	1
32	55	0.0	0	0	193	125	74	0	0	0	195	0	C04rch.out	8
33	55	0.0	0	0	193	125	74	0	0	0	195	0	C04rch.out	8
34	55	0.0	0	0	193	125	74	0	0	0	195	0	C04rch.out	8
35	55	0.0	0	0	193	125	74	0	0	0	195	0	C04rch.out	8
36	55	0.0	0	0	193	125	74	0	0	0	195	0	C04rch.out	8
37	55	0.0	0	0	193	125	74	0	0	0	195	0	C04rch.out	8
38	55	0.0	0	0	193	125	74	0	0	0	195	0	C04rch.out	8
39	55	0.0	0	0	193	125	74	0	0	0	195	0	C04rch.out	8
40	55	0.0	0	0	194	125	75	0	0	0	196	0	C05swo.out	10
41	55	0.0	0	0	194	125	75	0	0	0	196	0	C05swo.out	10
42	55	0.0	0	0	194	125	75	0	0	0	196	0	C05swo.out	10
43	55	0.0	0	0	194	125	75	0	0	0	196	0	C05swo.out	10
44	55	0.0	0	0	194	125	75	0	0	0	196	0	C05swo.out	10
45	55	0.0	0	0	194	125	75	0	0	0	196	0	C05swo.out	10
46	55	0.0	0	0	194	125	75	0	0	0	196	0	C05swo.out	10
47	55	0.0	0	0	194	125	75	0	0	0	196	0	C05swo.out	10
48	55	0.0	0	0	194	125	75	0	0	0	196	0	C05swo.out	10
49	55	0.0	0	0	194	125	75	0	0	0	196	0	C05swo.out	10
28	13	0.0	0	0	195	125	76	0	0	0	197	0	C06rch.out	1
28	13	0.0	0	0	196	125	77	0	0	0	198	0	C07rch.out	1
24	13	0.0	0	0	197	125	78	0	0	0	199	0	C08swo.out	9
25	13	0.0	0	0	197	125	78	0	0	0	199	0	C08swo.out	9
26	13	0.0	0	0	197	125	78	0	0	0	199	0	C08swo.out	9
27	13	0.0	0	0	197	125	78	0	0	0	199	0	C08swo.out	9
28	13	0.0	0	0	197	125	78	0	0	0	199	0	C08swo.out	9
29	13	0.0	0	0	197	125	78	0	0	0	199	0	C08swo.out	9
30	13	0.0	0	0	197	125	78	0	0	0	199	0	C08swo.out	9
31	13	0.0	0	0	197	125	78	0	0	0	199	0	C08swo.out	9
32	13	0.0	0	0	197	125	78	0	0	0	199	0	C08swo.out	9
34	13	0.0	0	0	198	125	79	0	0	0	200	0	C09swo.out	25
35	13	0.0	0	0	198	125	79	0	0	0	200	0	C09swo.out	25
36	13	0.0	0	0	198	125	79	0	0	0	200	0	C09swo.out	25
37	13	0.0	0	0	198	125	79	0	0	0	200	0	C09swo.out	25
38	13	0.0	0	0	198	125	79	0	0	0	200	0	C09swo.out	25
39	13	0.0	0	0	198	125	79	0	0	0	200	0	C09swo.out	25
40	13	0.0	0	0	198	125	79	0	0	0	200	0	C09swo.out	25
41	13	0.0	0	0	198	125	79	0	0	0	200	0	C09swo.out	25
42	13	0.0	0	0	198	125	79	0	0	0	200	0	C09swo.out	25
43	13	0.0	0	0	198	125	79	0	0	0	200	0	C09swo.out	25
44	13	0.0	0	0	198	125	79	0	0	0	200	0	C09swo.out	25
45	13	0.0	0	0	198	125	79	0	0	0	200	0	C09swo.out	25
46	13	0.0	0	0	198	125	79	0	0	0	200	0	C09swo.out	25
47	13	0.0	0	0	198	125	79	0	0	0	200	0	C09swo.out	25
48	13	0.0	0	0	198	125	79	0	0	0	200	0	C09swo.out	25
49	13	0.0	0	0	198	125	79	0	0	0	200	0	C09swo.out	25
50	13	0.0	0	0	198	125	79	0	0	0	200	0	C09swo.out	25
51	13	0.0	0	0	198	125	79	0	0	0	200	0	C09swo.out	25
52	13	0.0	0	0	198	125	79	0	0	0	200	0	C09swo.out	25
53	13	0.0	0	0	198	125	79	0	0	0	200	0	C09swo.out	25
54	13	0.0	0	0	198	125	79	0	0	0	200	0	C09swo.out	25
55	13	0.0	0	0	198	125	79	0	0	0	200	0	C09swo.out	25
43	9	0.0	0	0	198	125	79	0	0	0	200	0	C09swo.out	25
44	9	0.0	0	0	198	125	79	0	0	0	200	0	C09swo.out	25
45	9	0.0	0	0	198	125	79	0	0	0	200	0	C09swo.out	25
54	17	0.0000	0	0	199	126	1	0	0	0	203	0	!NS=199 CSO3-[54,17]	
54	17	0.0000	0	0	200	126	1	0	0	0	203	0	!NS=200 CSO4a-[54,17]	
54	17	0.0000	0	0	201	126	1	0	0	0	201	0	!NS=201 CSO4b-[54,17]	
54	17	0.0000	0	0	202	126	1	0	0	0	203	0	!NS=202 CSO4c-[54,17]	
54	17	0.0000	0	0	203	126	1	0	0	0	203	0	!NS=203 CSO4d-[54,17]	
54	18	0.0000	0	0	204	126	1	0	0	0	203	0	!NS=204 CSO4e-[54,18]	
54	18	0.0000	0	0	205	126	1	0	0	0	203	0	!NS=205 CSO4f-[54,18]	
52	13	0.0000	0	0	206	126	1	0	0	0	203	0	!NS=206 CSO5-[52,13]	
52	13	0.0000	0	0	207	126	1	0	0	0	203	0	!NS=207 CSO6-[52,13]	
52	13	0.0000	0	0	208	126	1	0	0	0	203	0	!NS=208 CSO7-[52,13]	
53	13	0.0000	0	0	209	126	1	0	0	0	203	0	!NS=209 CSO9a-[53,13]	
55	13	0.0000	0	0	210	126	1	0	0	0	203	0	!NS=210 CSO9c-[55,13]	
53	13	0.0000	0	0	211	126	1	0	0	0	203	0	!NS=211 CSO10-[53,13]	
52	13	0.0000	0	0	212	126	1	0	0	0	203	0	!NS=212 CSO11-[52,13]	
52	13	0.0000	0	0	213	126	1	0	0	0	203	0	!NS=213 CSO12-[52,13]	
52	13	0.0000	0	0	214	126	1	0	0	0	203	0	!NS=214 CSO13-[52,13]	
53	13	0.0000	0	0	215	126	1	0	0	0	203	0	!NS=215 CSO14-[53,13]	
53	13	0.0000	0	0	216	126	1	0	0	0	203	0	!NS=216 CSO15-[53,13]	

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   53   13   0.0000  0      0      217    126  1  0   0    0    203   0 !NS=217 CSO16-[53,13]
   53   13   0.0000  0      0      218    126  1  0   0    0    203   0 !NS=218 CSO17-[53,13]
   54   16   0.0000  0      0      219    126  1  0   0    0    203   0 !NS=219 CSO18-[54,16]
   54   17   0.0000  0      0      220    126  1  0   0    0    203   0 !NS=220 CSO19-[54,17]
   54   17   0.0000  0      0      221    126  1  0   0    0    203   0 !NS=221 CSO20-[54,17]
   54   17   0.0000  0      0      222    126  1  0   0    0    203   0 !NS=222 CSO21a-[54,17]
   54   17   0.0000  0      0      223    126  1  0   0    0    203   0 !NS=223 CSO21b-[54,17]
   54   17   0.0000  0      0      224    126  1  0   0    0    203   0 !NS=224 CSO21c-[54,17]
   54   18   0.0000  0      0      225    126  1  0   0    0    203   0 !NS=225 CSO22b-[54,18]
   54   18   0.0000  0      0      226    126  1  0   0    0    203   0 !NS=226 CSO22c-[54,18]
   54   18   0.0000  0      0      227    126  1  0   0    0    203   0 !NS=227 CSO23-[54,18]
   54   20   0.0000  0      0      228    126  1  0   0    0    203   0 !NS=228 CSO24-[54,20]
   54   20   0.0000  0      0      229    126  1  0   0    0    202   0 !NS=229 CSO25-[54,20]
   54   20   0.0000  0      0      230    126  1  0   0    0    203   0 !NS=230 CSO26-[54,20]
   46   55   0.0000  0      0      231    126  1  0   0    0    203   0 !NS=231 CSO27-[46,55]
   46   55   0.0000  0      0      232    126  1  0   0    0    203   0 !NS=232 CSO28-[46,55]
   45   55   0.0000  0      0      233    126  1  0   0    0    203   0 !NS=233 CSO29-[45,55]
   52   13   0.0000  0      0      234    126  1  0   0    0    203   0 !NS=234 CSO30-[52,13]
   57   15   0.0000  0      0      235    126  1  0   0    0    203   0 !NS=235 CSO31-[57,15]
   54   21   0.0000  0      0      236    126  1  0   0    0    203   0 !NS=236 CSOrr-[54,21]
-------------------------------------------------------------------------------
C25 TIME CONSTANT INFLOW CONCENTRATIONS FOR TIME CONSTANT VOLUMETRIC SOURCES  |
C                                                                             |
C     SAL:  SALT CONCENTRATION CORRESPONDING TO INFLOW ABOVE                  |
C     TEM:  TEMPERATURE CORRESPONDING TO INFLOW ABOVE                         |
C     DYE:  DYE CONCENTRATION CORRESPONDING TO INFLOW ABOVE                   |
C     SFL:  SHELL FISH LARVAE CONCENTRATION CORRESPONDING TO INFLOW ABOVE     |
C     TOX:  NTOX TOXIC CONTAMINANT CONCENTRATIONS CORRESPONDING TO            |
C           INFLOW ABOVE  WRITTEN AS TOXC(N), N=1,NTOX A SINGLE DEFAULT       |
C           VALUE IS REQUIRED EVEN IF TOXIC TRANSPORT IS NOT ACTIVE           |
C                                                                             |
C25 SAL  TEM    DYE   SFL   TOX1                !IQS  JQS                     |
  0.000  20.0   0.0   0.0   0.0                 ! 54   15
  0.000  20.0   0.0   0.0   0.0                 ! 54   27
  0.000  20.0   0.0   0.0   0.0                 ! 54   37
  0.000  20.0   0.0   0.0   0.0                 ! 54   38
  0.000  20.0   0.0   0.0   0.0                 ! 54   38
  0.000  20.0   0.0   0.0   0.0                 ! 54   38
  0.000  20.0   0.0   0.0   0.0                 ! 54   38
  0.000  20.0   0.0   0.0   0.0                 ! 54   38
  0.000  20.0   0.0   0.0   0.0                 ! 54   39
  0.000  20.0   0.0   0.0   0.0                 ! 54   42
  0.000  20.0   0.0   0.0   0.0                 ! 54   43
  0.000  20.0   0.0   0.0   0.0                 ! 54   43
  0.000  20.0   0.0   0.0   0.0                 ! 54   43
  0.000  20.0   0.0   0.0   0.0                 ! 54   44
  0.000  20.0   0.0   0.0   0.0                 ! 54   44
  0.000  20.0   0.0   0.0   0.0                 ! 54   44
  0.000  20.0   0.0   0.0   0.0                 ! 54   44
  0.000  20.0   0.0   0.0   0.0                 ! 54   52
  0.000  20.0   0.0   0.0   0.0                 ! 54   52
  0.000  20.0   0.0   0.0   0.0                 ! 54   52
  0.000  20.0   0.0   0.0   0.0                 ! 54   53
  0.000  20.0   0.0   0.0   0.0                 ! 54   55
  0.000  20.0   0.0   0.0   0.0                 ! 54   55
  0.000  20.0   0.0   0.0   0.0                 ! 54   55
  0.000  20.0   0.0   0.0   0.0                 ! 54   55
  0.000  20.0   0.0   0.0   0.0                 ! 54   55
  0.000  20.0   0.0   0.0   0.0                 ! 54   57
  0.000  20.0   0.0   0.0   0.0                 ! 54   60
  0.000  20.0   0.0   0.0   0.0                 ! 54   60
  0.000  20.0   0.0   0.0   0.0                 ! 54   61
  0.000  20.0   0.0   0.0   0.0                 ! 54   61
  0.000  20.0   0.0   0.0   0.0                 ! 54   61
  0.000  20.0   0.0   0.0   0.0                 ! 54   61
  0.000  20.0   0.0   0.0   0.0                 ! 54   61
  0.000  20.0   0.0   0.0   0.0                 ! 54   61
  0.000  20.0   0.0   0.0   0.0                 ! 54   65
  0.000  20.0   0.0   0.0   0.0                 ! 54   66
  0.000  20.0   0.0   0.0   0.0                 ! 54   67
  0.000  20.0   0.0   0.0   0.0                 ! 54   67
  0.000  20.0   0.0   0.0   0.0                 ! 54   67
  0.000  20.0   0.0   0.0   0.0                ! 54   67
  0.000  20.0   0.0   0.0   0.0                 ! 54   70
  0.000  20.0   0.0   0.0   0.0                 ! 54   74
  0.000  20.0   0.0   0.0   0.0                 ! 54   74
  0.000  20.0   0.0   0.0   0.0                 ! 54   74
  0.000  20.0   0.0   0.0   0.0                 ! 54   76
  0.000  20.0   0.0   0.0   0.0                 ! 46   79
  0.000  20.0   0.0   0.0   0.0                 ! 40   79
  0.000  20.0   0.0   0.0   0.0                 ! 39   79
  0.000  20.0   0.0   0.0   0.0                 ! 29   79
  0.000  20.0   0.0   0.0   0.0                 ! 29   79
  0.000  20.0   0.0   0.0   0.0                 ! 26   79
  0.000  20.0   0.0   0.0   0.0                 ! 24   79
  0.000  20.0   0.0   0.0   0.0                 ! 23   79
  0.000  20.0   0.0   0.0   0.0                 ! 23   79
  0.000  20.0   0.0   0.0   0.0                 ! 23   79
  0.000  20.0   0.0   0.0   0.0                 ! 20   79
  0.000  20.0   0.0   0.0   0.0                 ! 20   79
  0.000  20.0   0.0   0.0   0.0                 ! 20   79
  0.000  20.0   0.0   0.0   0.0                 ! 18   79
  0.000  20.0   0.0   0.0   0.0                 ! 16   79
  0.000  20.0   0.0   0.0   0.0                 !  6   79
  0.000  20.0   0.0   0.0   0.0                 !  6   79
  0.000  20.0   0.0   0.0   0.0                 !  6   79
  0.000  20.0   0.0   0.0   0.0                 ! 33   61
  0.000  20.0   0.0   0.0   0.0                 ! 33   61
  0.000  20.0   0.0   0.0   0.0                 ! 33   61
  0.000  20.0   0.0   0.0   0.0                 ! 45   13
  0.000  20.0   0.0   0.0   0.0                 ! 43    9
  0.000  20.0   0.0   0.0   0.0                 ! 14    9
  0.000  20.0   0.0   0.0   0.0                 ! 16    9
  0.000  20.0   0.0   0.0   0.0                 ! 43   26
  0.000  20.0   0.0   0.0   0.0                 ! 43   26
  0.000  20.0   0.0   0.0   0.0                 ! 43   29
  0.000  20.0   0.0   0.0   0.0                 ! 43   35
```

0.000	20.0	0.0	0.0	0.0	!	43	37
0.000	20.0	0.0	0.0	0.0	!	43	40
0.000	20.0	0.0	0.0	0.0	!	43	40
0.000	20.0	0.0	0.0	0.0	!	43	44
0.000	20.0	0.0	0.0	0.0	!	43	47
0.000	20.0	0.0	0.0	0.0	!	32	43
0.000	20.0	0.0	0.0	0.0	!	30	43
0.000	20.0	0.0	0.0	0.0	!	29	43
0.000	20.0	0.0	0.0	0.0	!	28	43
0.000	20.0	0.0	0.0	0.0	!	28	43
0.000	20.0	0.0	0.0	0.0	!	32	18
0.000	20.0	0.0	0.0	0.0	!	15	18
0.000	20.0	0.0	0.0	0.0	!	6	18
0.000	20.0	0.0	0.0	0.0	!	19	24
0.000	20.0	0.0	0.0	0.0	!	19	26
0.000	20.0	0.0	0.0	0.0	!	19	30
0.000	20.0	0.0	0.0	0.0	!	19	30
0.000	20.0	0.0	0.0	0.0	!	19	30
0.000	20.0	0.0	0.0	0.0	!	19	31
0.000	20.0	0.0	0.0	0.0	!	19	32
0.000	20.0	0.0	0.0	0.0	!	19	32
0.000	20.0	0.0	0.0	0.0	!	19	32
0.000	20.0	0.0	0.0	0.0	!	41	55
0.000	20.0	0.0	0.0	0.0	!	38	55
0.000	20.0	0.0	0.0	0.0	!	57	4
0.000	20.0	0.0	0.0	0.0	!	57	5
0.000	20.0	0.0	0.0	0.0	!	57	5
0.000	20.0	0.0	0.0	0.0	!	57	5
0.000	20.0	0.0	0.0	0.0	!	57	5
0.000	20.0	0.0	0.0	0.0	!	57	15
0.000	20.0	0.0	0.0	0.0	!	57	17
0.000	20.0	0.0	0.0	0.0	!	57	17
0.000	20.0	0.0	0.0	0.0	!	57	17
0.000	20.0	0.0	0.0	0.0	!	57	20
0.000	20.0	0.0	0.0	0.0	!	57	22
0.000	20.0	0.0	0.0	0.0	!	57	22
0.000	20.0	0.0	0.0	0.0	!	57	22
0.000	20.0	0.0	0.0	0.0	!	57	23
0.000	20.0	0.0	0.0	0.0	!	58	21
0.000	20.0	0.0	0.0	0.0	!	59	4
0.000	20.0	0.0	0.0	0.0	!	59	9
0.000	20.0	0.0	0.0	0.0	!	59	12
0.000	20.0	0.0	0.0	0.0	!	59	15
0.000	20.0	0.0	0.0	0.0	!	59	16
0.000	20.0	0.0	0.0	0.0	!	59	17
0.000	20.0	0.0	0.0	0.0	!	59	19
0.000	20.0	0.0	0.0	0.0	!	59	21
0.000	20.0	0.0	0.0	0.0	!	6	79
0.000	20.0	0.0	0.0	0.0	!	6	79
0.000	20.0	0.0	0.0	0.0	!	7	79
0.000	20.0	0.0	0.0	0.0	!	8	79
0.000	20.0	0.0	0.0	0.0	!	9	79
0.000	20.0	0.0	0.0	0.0	!	10	79
0.000	20.0	0.0	0.0	0.0	!	11	79
0.000	20.0	0.0	0.0	0.0	!	12	79
0.000	20.0	0.0	0.0	0.0	!	13	79
0.000	20.0	0.0	0.0	0.0	!	14	79
0.000	20.0	0.0	0.0	0.0	!	16	79
0.000	20.0	0.0	0.0	0.0	!	17	79
0.000	20.0	0.0	0.0	0.0	!	18	79
0.000	20.0	0.0	0.0	0.0	!	19	79
0.000	20.0	0.0	0.0	0.0	!	20	79
0.000	20.0	0.0	0.0	0.0	!	21	79
0.000	20.0	0.0	0.0	0.0	!	23	79
0.000	20.0	0.0	0.0	0.0	!	24	79
0.000	20.0	0.0	0.0	0.0	!	25	79
0.000	20.0	0.0	0.0	0.0	!	26	79
0.000	20.0	0.0	0.0	0.0	!	27	79
0.000	20.0	0.0	0.0	0.0	!	28	79
0.000	20.0	0.0	0.0	0.0	!	29	79
0.000	20.0	0.0	0.0	0.0	!	30	79
0.000	20.0	0.0	0.0	0.0	!	32	79
0.000	20.0	0.0	0.0	0.0	!	33	79
0.000	20.0	0.0	0.0	0.0	!	34	79
0.000	20.0	0.0	0.0	0.0	!	35	79
0.000	20.0	0.0	0.0	0.0	!	36	79
0.000	20.0	0.0	0.0	0.0	!	38	79
0.000	20.0	0.0	0.0	0.0	!	39	79
0.000	20.0	0.0	0.0	0.0	!	40	79
0.000	20.0	0.0	0.0	0.0	!	41	79
0.000	20.0	0.0	0.0	0.0	!	42	79
0.000	20.0	0.0	0.0	0.0	!	43	79
0.000	20.0	0.0	0.0	0.0	!	44	79
0.000	20.0	0.0	0.0	0.0	!	45	79
0.000	20.0	0.0	0.0	0.0	!	46	79
0.000	20.0	0.0	0.0	0.0	!	47	79
0.000	20.0	0.0	0.0	0.0	!	48	79
0.000	20.0	0.0	0.0	0.0	!	49	79
0.000	20.0	0.0	0.0	0.0	!	54	76
0.000	20.0	0.0	0.0	0.0	!	54	76
0.000	20.0	0.0	0.0	0.0	!	54	75
0.000	20.0	0.0	0.0	0.0	!	54	74
0.000	20.0	0.0	0.0	0.0	!	54	73
0.000	20.0	0.0	0.0	0.0	!	54	72
0.000	20.0	0.0	0.0	0.0	!	54	71
0.000	20.0	0.0	0.0	0.0	!	54	70
0.000	20.0	0.0	0.0	0.0	!	54	69
0.000	20.0	0.0	0.0	0.0	!	54	68
0.000	20.0	0.0	0.0	0.0	!	54	67
0.000	20.0	0.0	0.0	0.0	!	54	66
0.000	20.0	0.0	0.0	0.0	!	54	65
0.000	20.0	0.0	0.0	0.0	!	54	64
0.000	20.0	0.0	0.0	0.0	!	54	63
0.000	20.0	0.0	0.0	0.0	!	54	62
0.000	20.0	0.0	0.0	0.0	!	54	61
0.000	20.0	0.0	0.0	0.0	!	54	60
0.000	20.0	0.0	0.0	0.0	!	54	59

```
0.000  20.0   0.0   0.0   0.0                  ! 54   58
0.000  20.0   0.0   0.0   0.0                  ! 54   57
0.000  20.0   0.0   0.0   0.0                  ! 54   56
0.000  20.0   0.0   0.0   0.0                  ! 54   55
0.000  20.0   0.0   0.0   0.0                  ! 54   54
0.000  20.0   0.0   0.0   0.0                  ! 54   53
0.000  20.0   0.0   0.0   0.0                  ! 54   52
0.000  20.0   0.0   0.0   0.0                  ! 54   51
0.000  20.0   0.0   0.0   0.0                  ! 54   50
0.000  20.0   0.0   0.0   0.0                  ! 54   49
0.000  20.0   0.0   0.0   0.0                  ! 54   48
0.000  20.0   0.0   0.0   0.0                  ! 54   47
0.000  20.0   0.0   0.0   0.0                  ! 54   46
0.000  20.0   0.0   0.0   0.0                  ! 54   44
0.000  20.0   0.0   0.0   0.0                  ! 54   43
0.000  20.0   0.0   0.0   0.0                  ! 54   42
0.000  20.0   0.0   0.0   0.0                  ! 54   41
0.000  20.0   0.0   0.0   0.0                  ! 54   40
0.000  20.0   0.0   0.0   0.0                  ! 54   39
0.000  20.0   0.0   0.0   0.0                  ! 54   38
0.000  20.0   0.0   0.0   0.0                  ! 54   37
0.000  20.0   0.0   0.0   0.0                  ! 54   36
0.000  20.0   0.0   0.0   0.0                  ! 54   35
0.000  20.0   0.0   0.0   0.0                  ! 54   34
0.000  20.0   0.0   0.0   0.0                  ! 54   33
0.000  20.0   0.0   0.0   0.0                  ! 54   32
0.000  20.0   0.0   0.0   0.0                  ! 54   31
0.000  20.0   0.0   0.0   0.0                  ! 54   30
0.000  20.0   0.0   0.0   0.0                  ! 54   29
0.000  20.0   0.0   0.0   0.0                  ! 54   28
0.000  20.0   0.0   0.0   0.0                  ! 54   27
0.000  20.0   0.0   0.0   0.0                  ! 54   26
0.000  20.0   0.0   0.0   0.0                  ! 54   25
0.000  20.0   0.0   0.0   0.0                  ! 54   24
0.000  20.0   0.0   0.0   0.0                  ! 54   23
0.000  20.0   0.0   0.0   0.0                  ! 33   61
0.000  20.0   0.0   0.0   0.0                  ! 33   61
0.000  20.0   0.0   0.0   0.0                  ! 33   62
0.000  20.0   0.0   0.0   0.0                  ! 33   63
0.000  20.0   0.0   0.0   0.0                  ! 33   64
0.000  20.0   0.0   0.0   0.0                  ! 33   65
0.000  20.0   0.0   0.0   0.0                  ! 33   66
0.000  20.0   0.0   0.0   0.0                  ! 33   67
0.000  20.0   0.0   0.0   0.0                  ! 33   68
0.000  20.0   0.0   0.0   0.0                  ! 33   69
0.000  20.0   0.0   0.0   0.0                  ! 33   70
0.000  20.0   0.0   0.0   0.0                  ! 33   71
0.000  20.0   0.0   0.0   0.0                  ! 33   72
0.000  20.0   0.0   0.0   0.0                  ! 33   73
0.000  20.0   0.0   0.0   0.0                  ! 33   79
0.000  20.0   0.0   0.0   0.0                  ! 33   74
0.000  20.0   0.0   0.0   0.0                  ! 33   75
0.000  20.0   0.0   0.0   0.0                  ! 33   76
0.000  20.0   0.0   0.0   0.0                  ! 33   77
0.000  20.0   0.0   0.0   0.0                  ! 46   79
0.000  20.0   0.0   0.0   0.0                  ! 54   67
0.000  20.0   0.0   0.0   0.0                  ! 54   55
0.000  20.0   0.0   0.0   0.0                  ! 54   61
0.000  20.0   0.0   0.0   0.0                  ! 54   42
0.000  20.0   0.0   0.0   0.0                  ! 13   79
0.000  20.0   0.0   0.0   0.0                  ! 21   79
0.000  20.0   0.0   0.0   0.0                  ! 54   22
0.000  20.0   0.0   0.0   0.0                  ! 54   21
0.000  20.0   0.0   0.0   0.0                  ! 54   20
0.000  20.0   0.0   0.0   0.0                  ! 54   18
0.000  20.0   0.0   0.0   0.0                  ! 54   17
0.000  20.0   0.0   0.0   0.0                  ! 54   16
0.000  20.0   0.0   0.0   0.0                  ! 54   15
0.000  20.0   0.0   0.0   0.0                  ! 24   43
0.000  20.0   0.0   0.0   0.0                  ! 24   43
0.000  20.0   0.0   0.0   0.0                  ! 25   43
0.000  20.0   0.0   0.0   0.0                  ! 26   43
0.000  20.0   0.0   0.0   0.0                  ! 27   43
0.000  20.0   0.0   0.0   0.0                  ! 28   43
0.000  20.0   0.0   0.0   0.0                  ! 29   43
0.000  20.0   0.0   0.0   0.0                  ! 30   43
0.000  20.0   0.0   0.0   0.0                  ! 31   43
0.000  20.0   0.0   0.0   0.0                  ! 32   43
0.000  20.0   0.0   0.0   0.0                  ! 33   43
0.000  20.0   0.0   0.0   0.0                  ! 34   43
0.000  20.0   0.0   0.0   0.0                  ! 35   43
0.000  20.0   0.0   0.0   0.0                  ! 36   43
0.000  20.0   0.0   0.0   0.0                  ! 37   43
0.000  20.0   0.0   0.0   0.0                  ! 38   43
0.000  20.0   0.0   0.0   0.0                  ! 39   43
0.000  20.0   0.0   0.0   0.0                  ! 40   43
0.000  20.0   0.0   0.0   0.0                  ! 41   43
0.000  20.0   0.0   0.0   0.0                  ! 43   49
0.000  20.0   0.0   0.0   0.0                  ! 43   49
0.000  20.0   0.0   0.0   0.0                  ! 43   48
0.000  20.0   0.0   0.0   0.0                  ! 43   47
0.000  20.0   0.0   0.0   0.0                  ! 43   46
0.000  20.0   0.0   0.0   0.0                  ! 43   45
0.000  20.0   0.0   0.0   0.0                  ! 43   44
0.000  20.0   0.0   0.0   0.0                  ! 43   43
0.000  20.0   0.0   0.0   0.0                  ! 43   42
0.000  20.0   0.0   0.0   0.0                  ! 43   41
0.000  20.0   0.0   0.0   0.0                  ! 43   40
0.000  20.0   0.0   0.0   0.0                  ! 43   39
0.000  20.0   0.0   0.0   0.0                  ! 43   38
0.000  20.0   0.0   0.0   0.0                  ! 43   37
0.000  20.0   0.0   0.0   0.0                  ! 43   36
0.000  20.0   0.0   0.0   0.0                  ! 43   35
0.000  20.0   0.0   0.0   0.0                  ! 43   34
0.000  20.0   0.0   0.0   0.0                  ! 43   33
0.000  20.0   0.0   0.0   0.0                  ! 43   32
0.000  20.0   0.0   0.0   0.0                  ! 43   31
```

```
0.000  20.0   0.0   0.0   0.0                  ! 40   52
0.000  20.0   0.0   0.0   0.0                  ! 40   52
0.000  20.0   0.0   0.0   0.0                  ! 41   52
0.000  20.0   0.0   0.0   0.0                  ! 42   52
0.000  20.0   0.0   0.0   0.0                  ! 43   52
0.000  20.0   0.0   0.0   0.0                  ! 44   52
0.000  20.0   0.0   0.0   0.0                  ! 45   52
0.000  20.0   0.0   0.0   0.0                  ! 46   52
0.000  20.0   0.0   0.0   0.0                  ! 47   52
0.000  20.0   0.0   0.0   0.0                  ! 48   52
0.000  20.0   0.0   0.0   0.0                  ! 49   52
0.000  20.0   0.0   0.0   0.0                  ! 43   32
0.000  20.0   0.0   0.0   0.0                  ! 43   30
0.000  20.0   0.0   0.0   0.0                  ! 43   29
0.000  20.0   0.0   0.0   0.0                  ! 43   28
0.000  20.0   0.0   0.0   0.0                  ! 43   27
0.000  20.0   0.0   0.0   0.0                  ! 43   26
0.000  20.0   0.0   0.0   0.0                  ! 43   25
0.000  20.0   0.0   0.0   0.0                  ! 43   24
0.000  20.0   0.0   0.0   0.0                  ! 43   23
0.000  20.0   0.0   0.0   0.0                  ! 15   18
0.000  20.0   0.0   0.0   0.0                  !  5   18
0.000  20.0   0.0   0.0   0.0                  !  5   18
0.000  20.0   0.0   0.0   0.0                  !  6   18
0.000  20.0   0.0   0.0   0.0                  !  7   18
0.000  20.0   0.0   0.0   0.0                  !  8   18
0.000  20.0   0.0   0.0   0.0                  !  9   18
0.000  20.0   0.0   0.0   0.0                  ! 10   18
0.000  20.0   0.0   0.0   0.0                  ! 11   18
0.000  20.0   0.0   0.0   0.0                  ! 12   18
0.000  20.0   0.0   0.0   0.0                  ! 13   18
0.000  20.0   0.0   0.0   0.0                  ! 14   18
0.000  20.0   0.0   0.0   0.0                  ! 15   18
0.000  20.0   0.0   0.0   0.0                  ! 16   18
0.000  20.0   0.0   0.0   0.0                  ! 17   18
0.000  20.0   0.0   0.0   0.0                  ! 18   18
0.000  20.0   0.0   0.0   0.0                  ! 19   30
0.000  20.0   0.0   0.0   0.0                  ! 19   32
0.000  20.0   0.0   0.0   0.0                  ! 19   32
0.000  20.0   0.0   0.0   0.0                  ! 19   31
0.000  20.0   0.0   0.0   0.0                  ! 19   30
0.000  20.0   0.0   0.0   0.0                  ! 19   30
0.000  20.0   0.0   0.0   0.0                  ! 19   29
0.000  20.0   0.0   0.0   0.0                  ! 19   28
0.000  20.0   0.0   0.0   0.0                  ! 19   27
0.000  20.0   0.0   0.0   0.0                  ! 19   26
0.000  20.0   0.0   0.0   0.0                  ! 19   25
0.000  20.0   0.0   0.0   0.0                  ! 19   24
0.000  20.0   0.0   0.0   0.0                  ! 19   23
0.000  20.0   0.0   0.0   0.0                  ! 19   22
0.000  20.0   0.0   0.0   0.0                  ! 19   21
0.000  20.0   0.0   0.0   0.0                  ! 19   20
0.000  20.0   0.0   0.0   0.0                  ! 19   18
0.000  20.0   0.0   0.0   0.0                  ! 20   18
0.000  20.0   0.0   0.0   0.0                  ! 21   18
0.000  20.0   0.0   0.0   0.0                  ! 22   18
0.000  20.0   0.0   0.0   0.0                  ! 24   18
0.000  20.0   0.0   0.0   0.0                  ! 25   18
0.000  20.0   0.0   0.0   0.0                  ! 26   18
0.000  20.0   0.0   0.0   0.0                  ! 27   18
0.000  20.0   0.0   0.0   0.0                  ! 28   18
0.000  20.0   0.0   0.0   0.0                  ! 30   18
0.000  20.0   0.0   0.0   0.0                  ! 31   18
0.000  20.0   0.0   0.0   0.0                  ! 32   18
0.000  20.0   0.0   0.0   0.0                  ! 33   18
0.000  20.0   0.0   0.0   0.0                  ! 34   18
0.000  20.0   0.0   0.0   0.0                  ! 35   18
0.000  20.0   0.0   0.0   0.0                  ! 37   18
0.000  20.0   0.0   0.0   0.0                  ! 38   18
0.000  20.0   0.0   0.0   0.0                  ! 39   18
0.000  20.0   0.0   0.0   0.0                  ! 40   18
0.000  20.0   0.0   0.0   0.0                  ! 41   18
0.000  20.0   0.0   0.0   0.0                  ! 43   17
0.000  20.0   0.0   0.0   0.0                  ! 43   16
0.000  20.0   0.0   0.0   0.0                  ! 43   15
0.000  20.0   0.0   0.0   0.0                  ! 22   34
0.000  20.0   0.0   0.0   0.0                  ! 22   34
0.000  20.0   0.0   0.0   0.0                  ! 23   34
0.000  20.0   0.0   0.0   0.0                  ! 24   34
0.000  20.0   0.0   0.0   0.0                  ! 25   34
0.000  20.0   0.0   0.0   0.0                  ! 26   34
0.000  20.0   0.0   0.0   0.0                  ! 27   34
0.000  20.0   0.0   0.0   0.0                  ! 28   34
0.000  20.0   0.0   0.0   0.0                  ! 29   34
0.000  20.0   0.0   0.0   0.0                  ! 30   34
0.000  20.0   0.0   0.0   0.0                  ! 31   34
0.000  20.0   0.0   0.0   0.0                  ! 15   37
0.000  20.0   0.0   0.0   0.0                  ! 15   37
0.000  20.0   0.0   0.0   0.0                  ! 16   37
0.000  20.0   0.0   0.0   0.0                  ! 17   37
0.000  20.0   0.0   0.0   0.0                  ! 18   37
0.000  20.0   0.0   0.0   0.0                  ! 19   37
0.000  20.0   0.0   0.0   0.0                  ! 20   37
0.000  20.0   0.0   0.0   0.0                  ! 21   37
0.000  20.0   0.0   0.0   0.0                  ! 22   37
0.000  20.0   0.0   0.0   0.0                  ! 23   37
0.000  20.0   0.0   0.0   0.0                  ! 24   37
0.000  20.0   0.0   0.0   0.0                  ! 25   37
0.000  20.0   0.0   0.0   0.0                  ! 26   37
0.000  20.0   0.0   0.0   0.0                  ! 27   37
0.000  20.0   0.0   0.0   0.0                  ! 28   37
0.000  20.0   0.0   0.0   0.0                  ! 29   37
0.000  20.0   0.0   0.0   0.0                  ! 30   37
0.000  20.0   0.0   0.0   0.0                  ! 31   37
0.000  20.0   0.0   0.0   0.0                  ! 10   40
0.000  20.0   0.0   0.0   0.0                  ! 10   40
0.000  20.0   0.0   0.0   0.0                  ! 11   40
```

```
0.000  20.0   0.0   0.0   0.0                  ! 12   40
0.000  20.0   0.0   0.0   0.0                  ! 13   40
0.000  20.0   0.0   0.0   0.0                  ! 14   40
0.000  20.0   0.0   0.0   0.0                  ! 15   40
0.000  20.0   0.0   0.0   0.0                  ! 16   40
0.000  20.0   0.0   0.0   0.0                  ! 17   40
0.000  20.0   0.0   0.0   0.0                  ! 18   40
0.000  20.0   0.0   0.0   0.0                  ! 19   40
0.000  20.0   0.0   0.0   0.0                  ! 20   40
0.000  20.0   0.0   0.0   0.0                  ! 21   40
0.000  20.0   0.0   0.0   0.0                  ! 22   40
0.000  20.0   0.0   0.0   0.0                  ! 23   40
0.000  20.0   0.0   0.0   0.0                  ! 24   40
0.000  20.0   0.0   0.0   0.0                  ! 25   40
0.000  20.0   0.0   0.0   0.0                  ! 26   40
0.000  20.0   0.0   0.0   0.0                  ! 27   40
0.000  20.0   0.0   0.0   0.0                  ! 28   40
0.000  20.0   0.0   0.0   0.0                  ! 29   40
0.000  20.0   0.0   0.0   0.0                  ! 30   40
0.000  20.0   0.0   0.0   0.0                  ! 31   40
0.000  20.0   0.0   0.0   0.0                  ! 14    9
0.000  20.0   0.0   0.0   0.0                  ! 14    9
0.000  20.0   0.0   0.0   0.0                  ! 15    9
0.000  20.0   0.0   0.0   0.0                  ! 16    9
0.000  20.0   0.0   0.0   0.0                  ! 17    9
0.000  20.0   0.0   0.0   0.0                  ! 18    9
0.000  20.0   0.0   0.0   0.0                  ! 19    9
0.000  20.0   0.0   0.0   0.0                  ! 12   13
0.000  20.0   0.0   0.0   0.0                  ! 12   13
0.000  20.0   0.0   0.0   0.0                  ! 13   13
0.000  20.0   0.0   0.0   0.0                  ! 14   13
0.000  20.0   0.0   0.0   0.0                  ! 15   13
0.000  20.0   0.0   0.0   0.0                  ! 16   13
0.000  20.0   0.0   0.0   0.0                  ! 17   13
0.000  20.0   0.0   0.0   0.0                  ! 18   13
0.000  20.0   0.0   0.0   0.0                  ! 19   13
0.000  20.0   0.0   0.0   0.0                  ! 20   13
0.000  20.0   0.0   0.0   0.0                  ! 21   13
0.000  20.0   0.0   0.0   0.0                  ! 22   13
0.000  20.0   0.0   0.0   0.0                  ! 23   13
0.000  20.0   0.0   0.0   0.0                  ! 32   55
0.000  20.0   0.0   0.0   0.0                  ! 32   55
0.000  20.0   0.0   0.0   0.0                  ! 33   55
0.000  20.0   0.0   0.0   0.0                  ! 34   55
0.000  20.0   0.0   0.0   0.0                  ! 35   55
0.000  20.0   0.0   0.0   0.0                  ! 36   55
0.000  20.0   0.0   0.0   0.0                  ! 37   55
0.000  20.0   0.0   0.0   0.0                  ! 38   55
0.000  20.0   0.0   0.0   0.0                  ! 39   55
0.000  20.0   0.0   0.0   0.0                  ! 40   55
0.000  20.0   0.0   0.0   0.0                  ! 41   55
0.000  20.0   0.0   0.0   0.0                  ! 42   55
0.000  20.0   0.0   0.0   0.0                  ! 43   55
0.000  20.0   0.0   0.0   0.0                  ! 44   55
0.000  20.0   0.0   0.0   0.0                  ! 45   55
0.000  20.0   0.0   0.0   0.0                  ! 46   55
0.000  20.0   0.0   0.0   0.0                  ! 47   55
0.000  20.0   0.0   0.0   0.0                  ! 48   55
0.000  20.0   0.0   0.0   0.0                  ! 49   55
0.000  20.0   0.0   0.0   0.0                  ! 28   13
0.000  20.0   0.0   0.0   0.0                  ! 28   13
0.000  20.0   0.0   0.0   0.0                  ! 24   13
0.000  20.0   0.0   0.0   0.0                  ! 25   13
0.000  20.0   0.0   0.0   0.0                  ! 26   13
0.000  20.0   0.0   0.0   0.0                  ! 27   13
0.000  20.0   0.0   0.0   0.0                  ! 28   13
0.000  20.0   0.0   0.0   0.0                  ! 29   13
0.000  20.0   0.0   0.0   0.0                  ! 30   13
0.000  20.0   0.0   0.0   0.0                  ! 31   13
0.000  20.0   0.0   0.0   0.0                  ! 32   13
0.000  20.0   0.0   0.0   0.0                  ! 34   13
0.000  20.0   0.0   0.0   0.0                  ! 35   13
0.000  20.0   0.0   0.0   0.0                  ! 36   13
0.000  20.0   0.0   0.0   0.0                  ! 37   13
0.000  20.0   0.0   0.0   0.0                  ! 38   13
0.000  20.0   0.0   0.0   0.0                  ! 39   13
0.000  20.0   0.0   0.0   0.0                  ! 40   13
0.000  20.0   0.0   0.0   0.0                  ! 41   13
0.000  20.0   0.0   0.0   0.0                  ! 42   13
0.000  20.0   0.0   0.0   0.0                  ! 43   13
0.000  20.0   0.0   0.0   0.0                  ! 44   13
0.000  20.0   0.0   0.0   0.0                  ! 45   13
0.000  20.0   0.0   0.0   0.0                  ! 46   13
0.000  20.0   0.0   0.0   0.0                  ! 47   13
0.000  20.0   0.0   0.0   0.0                  ! 48   13
0.000  20.0   0.0   0.0   0.0                  ! 49   13
0.000  20.0   0.0   0.0   0.0                  ! 50   13
0.000  20.0   0.0   0.0   0.0                  ! 51   13
0.000  20.0   0.0   0.0   0.0                  ! 52   13
0.000  20.0   0.0   0.0   0.0                  ! 53   13
0.000  20.0   0.0   0.0   0.0                  ! 54   13
0.000  20.0   0.0   0.0   0.0                  ! 55   13
0.000  20.0   0.0   0.0   0.0                  ! 43    9
0.000  20.0   0.0   0.0   0.0                  ! 44    9
0.000  20.0   0.0   0.0   0.0                  ! 45    9
0.000  20.0   0.0   0.0   0.0                  ! 54   17
0.000  20.0   0.0   0.0   0.0                  ! 54   17
0.000  20.0   0.0   0.0   0.0                  ! 54   17
0.000  20.0   0.0   0.0   0.0                  ! 54   17
0.000  20.0   0.0   0.0   0.0                  ! 54   17
0.000  20.0   0.0   0.0   0.0                  ! 54   18
0.000  20.0   0.0   0.0   0.0                  ! 54   18
0.000  20.0   0.0   0.0   0.0                  ! 52   13
0.000  20.0   0.0   0.0   0.0                  ! 52   13
0.000  20.0   0.0   0.0   0.0                  ! 52   13
0.000  20.0   0.0   0.0   0.0                  ! 53   13
```

```
  0.000  20.0   0.0   0.0   0.0                 ! 55   13
  0.000  20.0   0.0   0.0   0.0                 ! 53   13
  0.000  20.0   0.0   0.0   0.0                 ! 52   13
  0.000  20.0   0.0   0.0   0.0                 ! 52   13
  0.000  20.0   0.0   0.0   0.0                 ! 53   13
  0.000  20.0   0.0   0.0   0.0                 ! 53   13
  0.000  20.0   0.0   0.0   0.0                 ! 53   13
  0.000  20.0   0.0   0.0   0.0                 ! 53   13
  0.000  20.0   0.0   0.0   0.0                 ! 54   16
  0.000  20.0   0.0   0.0   0.0                 ! 54   17
  0.000  20.0   0.0   0.0   0.0                 ! 54   17
  0.000  20.0   0.0   0.0   0.0                 ! 54   17
  0.000  20.0   0.0   0.0   0.0                 ! 54   17
  0.000  20.0   0.0   0.0   0.0                 ! 54   17
  0.000  20.0   0.0   0.0   0.0                 ! 54   18
  0.000  20.0   0.0   0.0   0.0                 ! 54   18
  0.000  20.0   0.0   0.0   0.0                 ! 54   18
  0.000  20.0   0.0   0.0   0.0                 ! 54   20
  0.000  20.0   0.0   0.0   0.0                 ! 54   20
  0.000  20.0   0.0   0.0   0.0                 ! 54   20
  0.000  20.0   0.0   0.0   0.0                 ! 46   55
  0.000  20.0   0.0   0.0   0.0                 ! 46   55
  0.000  20.0   0.0   0.0   0.0                 ! 45   55
  0.000  20.0   0.0   0.0   0.0                 ! 52   13
  0.000  20.0   0.0   0.0   0.0                 ! 57   15
  0.000  20.0   0.0   0.0   0.0                 ! 54   21
-------------------------------------------------------------------------------
C26 TIME CONSTANT INFLOW CONCENTRATIONS FOR TIME CONSTANT VOLUMETRIC SOURCES  |
C                                                                             |
C     SED:  NSED COHESIVE SEDIMENT CONCENTRATIONS CORRESPONDING TO            |
C           INFLOW ABOVE  WRITTEN AS SEDC(N), N=1,NSED. I.E., THE FIRST       |
C           NSED VALUES ARE COHESIVE A SINGLE DEFAULT VALUE IS REQUIRED       |
C           EVEN IF COHESIVE SEDIMENT TRANSPORT IS INACTIVE                   |
C     SND:  NSND NON-COHESIVE SEDIMENT CONCENTRATIONS CORRESPONDING TO        |
C           INFLOW ABOVE  WRITTEN AS SND(N), N=1,NSND. I.E., THE LAST         |
C           NSND VALUES ARE NON-COHESIVE. A SINGLE DEFAULT VALUE IS           |
C           REQUIRED EVEN IF NON-COHESIVE SEDIMENT TRANSPORT IS INACTIVE      |
C                                                                             |
C26 SED1  SND1        !IQS  JQS                                               |
    0.0   0.0         ! 54   15
    0.0   0.0         ! 54   27
    0.0   0.0         ! 54   37
    0.0   0.0         ! 54   38
    0.0   0.0         ! 54   38
    0.0   0.0         ! 54   38
    0.0   0.0         ! 54   38
    0.0   0.0         ! 54   38
    0.0   0.0         ! 54   39
    0.0   0.0         ! 54   42
    0.0   0.0         ! 54   43
    0.0   0.0         ! 54   43
    0.0   0.0         ! 54   43
    0.0   0.0         ! 54   44
    0.0   0.0         ! 54   44
    0.0   0.0         ! 54   44
    0.0   0.0         ! 54   44
    0.0   0.0         ! 54   52
    0.0   0.0         ! 54   52
    0.0   0.0         ! 54   52
    0.0   0.0         ! 54   53
    0.0   0.0         ! 54   55
    0.0   0.0         ! 54   55
    0.0   0.0         ! 54   55
    0.0   0.0         ! 54   55
    0.0   0.0         ! 54   55
    0.0   0.0         ! 54   57
    0.0   0.0         ! 54   60
    0.0   0.0         ! 54   60
    0.0   0.0         ! 54   61
    0.0   0.0         ! 54   61
    0.0   0.0         ! 54   61
    0.0   0.0         ! 54   61
    0.0   0.0         ! 54   61
    0.0   0.0         ! 54   61
    0.0   0.0         ! 54   65
    0.0   0.0         ! 54   66
    0.0   0.0         ! 54   67
    0.0   0.0         ! 54   67
    0.0   0.0         ! 54   67
    0.0   0.0         ! 54   67
    0.0   0.0         ! 54   70
    0.0   0.0         ! 54   74
    0.0   0.0         ! 54   74
    0.0   0.0         ! 54   74
    0.0   0.0         ! 54   76
    0.0   0.0         ! 46   79
    0.0   0.0         ! 40   79
    0.0   0.0         ! 39   79
    0.0   0.0         ! 29   79
    0.0   0.0         ! 29   79
    0.0   0.0         ! 26   79
    0.0   0.0         ! 24   79
    0.0   0.0         ! 23   79
    0.0   0.0         ! 23   79
    0.0   0.0         ! 23   79
    0.0   0.0         ! 20   79
    0.0   0.0         ! 20   79
    0.0   0.0         ! 20   79
    0.0   0.0         ! 18   79
    0.0   0.0         ! 16   79
    0.0   0.0         !  6   79
    0.0   0.0         !  6   79
    0.0   0.0         !  6   79
    0.0   0.0         ! 33   61
    0.0   0.0         ! 33   61
    0.0   0.0         ! 33   61
    0.0   0.0         ! 45   13
```

```
0.0   0.0          ! 43    9
0.0   0.0          ! 14    9
0.0   0.0          ! 16    9
0.0   0.0          ! 43   26
0.0   0.0          ! 43   26
0.0   0.0          ! 43   29
0.0   0.0          ! 43   35
0.0   0.0          ! 43   37
0.0   0.0          ! 43   40
0.0   0.0          ! 43   40
0.0   0.0          ! 43   44
0.0   0.0          ! 43   47
0.0   0.0          ! 32   43
0.0   0.0          ! 30   43
0.0   0.0          ! 29   43
0.0   0.0          ! 28   43
0.0   0.0          ! 28   43
0.0   0.0          ! 32   18
0.0   0.0          ! 15   18
0.0   0.0          !  6   18
0.0   0.0          ! 19   24
0.0   0.0          ! 19   26
0.0   0.0          ! 19   30
0.0   0.0          ! 19   30
0.0   0.0          ! 19   30
0.0   0.0          ! 19   31
0.0   0.0          ! 19   32
0.0   0.0          ! 19   32
0.0   0.0          ! 19   32
0.0   0.0          ! 41   55
0.0   0.0          ! 38   55
0.0   0.0          ! 57    4
0.0   0.0          ! 57    5
0.0   0.0          ! 57    5
0.0   0.0          ! 57    5
0.0   0.0          ! 57    5
0.0   0.0          ! 57   15
0.0   0.0          ! 57   17
0.0   0.0          ! 57   17
0.0   0.0          ! 57   17
0.0   0.0          ! 57   20
0.0   0.0          ! 57   22
0.0   0.0          ! 57   22
0.0   0.0          ! 57   22
0.0   0.0          ! 57   23
0.0   0.0          ! 58   21
0.0   0.0          ! 59    4
0.0   0.0          ! 59    9
0.0   0.0          ! 59   12
0.0   0.0          ! 59   15
0.0   0.0          ! 59   16
0.0   0.0          ! 59   17
0.0   0.0          ! 59   19
0.0   0.0          ! 59   21
0.0   0.0          !  6   79
0.0   0.0          !  6   79
0.0   0.0          !  7   79
0.0   0.0          !  8   79
0.0   0.0          !  9   79
0.0   0.0          ! 10   79
0.0   0.0          ! 11   79
0.0   0.0          ! 12   79
0.0   0.0          ! 13   79
0.0   0.0          ! 14   79
0.0   0.0          ! 16   79
0.0   0.0          ! 17   79
0.0   0.0          ! 18   79
0.0   0.0          ! 19   79
0.0   0.0          ! 20   79
0.0   0.0          ! 21   79
0.0   0.0          ! 23   79
0.0   0.0          ! 24   79
0.0   0.0          ! 25   79
0.0   0.0          ! 26   79
0.0   0.0          ! 27   79
0.0   0.0          ! 28   79
0.0   0.0          ! 29   79
0.0   0.0          ! 30   79
0.0   0.0          ! 32   79
0.0   0.0          ! 33   79
0.0   0.0          ! 34   79
0.0   0.0          ! 35   79
0.0   0.0          ! 36   79
0.0   0.0          ! 38   79
0.0   0.0          ! 39   79
0.0   0.0          ! 40   79
0.0   0.0          ! 41   79
0.0   0.0          ! 42   79
0.0   0.0          ! 43   79
0.0   0.0          ! 44   79
0.0   0.0          ! 45   79
0.0   0.0          ! 46   79
0.0   0.0          ! 47   79
0.0   0.0          ! 48   79
0.0   0.0          ! 49   79
0.0   0.0          ! 54   76
0.0   0.0          ! 54   76
0.0   0.0          ! 54   75
0.0   0.0          ! 54   74
0.0   0.0          ! 54   73
0.0   0.0          ! 54   72
0.0   0.0          ! 54   71
0.0   0.0          ! 54   70
0.0   0.0          ! 54   69
0.0   0.0          ! 54   68
0.0   0.0          ! 54   67
0.0   0.0          ! 54   66
```

```
0.0   0.0          ! 54   65
0.0   0.0          ! 54   64
0.0   0.0          ! 54   63
0.0   0.0          ! 54   62
0.0   0.0          ! 54   61
0.0   0.0          ! 54   60
0.0   0.0          ! 54   59
0.0   0.0          ! 54   58
0.0   0.0          ! 54   57
0.0   0.0          ! 54   56
0.0   0.0          ! 54   55
0.0   0.0          ! 54   54
0.0   0.0          ! 54   53
0.0   0.0          ! 54   52
0.0   0.0          ! 54   51
0.0   0.0          ! 54   50
0.0   0.0          ! 54   49
0.0   0.0          ! 54   48
0.0   0.0          ! 54   47
0.0   0.0          ! 54   46
0.0   0.0          ! 54   44
0.0   0.0          ! 54   43
0.0   0.0          ! 54   42
0.0   0.0          ! 54   41
0.0   0.0          ! 54   40
0.0   0.0          ! 54   39
0.0   0.0          ! 54   38
0.0   0.0          ! 54   37
0.0   0.0          ! 54   36
0.0   0.0          ! 54   35
0.0   0.0          ! 54   34
0.0   0.0          ! 54   33
0.0   0.0          ! 54   32
0.0   0.0          ! 54   31
0.0   0.0          ! 54   30
0.0   0.0          ! 54   29
0.0   0.0          ! 54   28
0.0   0.0          ! 54   27
0.0   0.0          ! 54   26
0.0   0.0          ! 54   25
0.0   0.0          ! 54   24
0.0   0.0          ! 54   23
0.0   0.0          ! 33   61
0.0   0.0          ! 33   61
0.0   0.0          ! 33   62
0.0   0.0          ! 33   63
0.0   0.0          ! 33   64
0.0   0.0          ! 33   65
0.0   0.0          ! 33   66
0.0   0.0          ! 33   67
0.0   0.0          ! 33   68
0.0   0.0          ! 33   69
0.0   0.0          ! 33   70
0.0   0.0          ! 33   71
0.0   0.0          ! 33   72
0.0   0.0          ! 33   73
0.0   0.0          ! 33   79
0.0   0.0          ! 33   74
0.0   0.0          ! 33   75
0.0   0.0          ! 33   76
0.0   0.0          ! 33   77
0.0   0.0          ! 46   79
0.0   0.0          ! 54   67
0.0   0.0          ! 54   55
0.0   0.0          ! 54   61
0.0   0.0          ! 54   42
0.0   0.0          ! 13   79
0.0   0.0          ! 21   79
0.0   0.0          ! 54   22
0.0   0.0          ! 54   21
0.0   0.0          ! 54   20
0.0   0.0          ! 54   18
0.0   0.0          ! 54   17
0.0   0.0          ! 54   16
0.0   0.0          ! 54   15
0.0   0.0          ! 24   43
0.0   0.0          ! 24   43
0.0   0.0          ! 25   43
0.0   0.0          ! 26   43
0.0   0.0          ! 27   43
0.0   0.0          ! 28   43
0.0   0.0          ! 29   43
0.0   0.0          ! 30   43
0.0   0.0          ! 31   43
0.0   0.0          ! 32   43
0.0   0.0          ! 33   43
0.0   0.0          ! 34   43
0.0   0.0          ! 35   43
0.0   0.0          ! 36   43
0.0   0.0          ! 37   43
0.0   0.0          ! 38   43
0.0   0.0          ! 39   43
0.0   0.0          ! 40   43
0.0   0.0          ! 41   43
0.0   0.0          ! 43   49
0.0   0.0          ! 43   49
0.0   0.0          ! 43   48
0.0   0.0          ! 43   47
0.0   0.0          ! 43   46
0.0   0.0          ! 43   45
0.0   0.0          ! 43   44
0.0   0.0          ! 43   43
0.0   0.0          ! 43   42
0.0   0.0          ! 43   41
0.0   0.0          ! 43   40
0.0   0.0          ! 43   39
0.0   0.0          ! 43   38
```

```
0.0   0.0          ! 43   37
0.0   0.0          ! 43   36
0.0   0.0          ! 43   35
0.0   0.0          ! 43   34
0.0   0.0          ! 43   33
0.0   0.0          ! 43   32
0.0   0.0          ! 43   31
0.0   0.0          ! 40   52
0.0   0.0          ! 40   52
0.0   0.0          ! 41   52
0.0   0.0          ! 42   52
0.0   0.0          ! 43   52
0.0   0.0          ! 44   52
0.0   0.0          ! 45   52
0.0   0.0          ! 46   52
0.0   0.0          ! 47   52
0.0   0.0          ! 48   52
0.0   0.0          ! 49   52
0.0   0.0          ! 43   32
0.0   0.0          ! 43   30
0.0   0.0          ! 43   29
0.0   0.0          ! 43   28
0.0   0.0          ! 43   27
0.0   0.0          ! 43   26
0.0   0.0          ! 43   25
0.0   0.0          ! 43   24
0.0   0.0          ! 43   23
0.0   0.0          ! 15   18
0.0   0.0          !  5   18
0.0   0.0          !  5   18
0.0   0.0          !  6   18
0.0   0.0          !  7   18
0.0   0.0          !  8   18
0.0   0.0          !  9   18
0.0   0.0          ! 10   18
0.0   0.0          ! 11   18
0.0   0.0          ! 12   18
0.0   0.0          ! 13   18
0.0   0.0          ! 14   18
0.0   0.0          ! 15   18
0.0   0.0          ! 16   18
0.0   0.0          ! 17   18
0.0   0.0          ! 18   18
0.0   0.0          ! 19   30
0.0   0.0          ! 19   32
0.0   0.0          ! 19   32
0.0   0.0          ! 19   31
0.0   0.0          ! 19   30
0.0   0.0          ! 19   30
0.0   0.0          ! 19   29
0.0   0.0          ! 19   28
0.0   0.0          ! 19   27
0.0   0.0          ! 19   26
0.0   0.0          ! 19   25
0.0   0.0          ! 19   24
0.0   0.0          ! 19   23
0.0   0.0          ! 19   22
0.0   0.0          ! 19   21
0.0   0.0          ! 19   20
0.0   0.0          ! 19   18
0.0   0.0          ! 20   18
0.0   0.0          ! 21   18
0.0   0.0          ! 22   18
0.0   0.0          ! 24   18
0.0   0.0          ! 25   18
0.0   0.0          ! 26   18
0.0   0.0          ! 27   18
0.0   0.0          ! 28   18
0.0   0.0          ! 30   18
0.0   0.0          ! 31   18
0.0   0.0          ! 32   18
0.0   0.0          ! 33   18
0.0   0.0          ! 34   18
0.0   0.0          ! 35   18
0.0   0.0          ! 37   18
0.0   0.0          ! 38   18
0.0   0.0          ! 39   18
0.0   0.0          ! 40   18
0.0   0.0          ! 41   18
0.0   0.0          ! 43   17
0.0   0.0          ! 43   16
0.0   0.0          ! 43   15
0.0   0.0          ! 22   34
0.0   0.0          ! 22   34
0.0   0.0          ! 23   34
0.0   0.0          ! 24   34
0.0   0.0          ! 25   34
0.0   0.0          ! 26   34
0.0   0.0          ! 27   34
0.0   0.0          ! 28   34
0.0   0.0          ! 29   34
0.0   0.0          ! 30   34
0.0   0.0          ! 31   34
0.0   0.0          ! 15   37
0.0   0.0          ! 15   37
0.0   0.0          ! 16   37
0.0   0.0          ! 17   37
0.0   0.0          ! 18   37
0.0   0.0          ! 19   37
0.0   0.0          ! 20   37
0.0   0.0          ! 21   37
0.0   0.0          ! 22   37
0.0   0.0          ! 23   37
0.0   0.0          ! 24   37
0.0   0.0          ! 25   37
0.0   0.0          ! 26   37
0.0   0.0          ! 27   37
```

```
0.0   0.0          ! 28   37
0.0   0.0          ! 29   37
0.0   0.0          ! 30   37
0.0   0.0          ! 31   37
0.0   0.0          ! 10   40
0.0   0.0          ! 10   40
0.0   0.0          ! 11   40
0.0   0.0          ! 12   40
0.0   0.0          ! 13   40
0.0   0.0          ! 14   40
0.0   0.0          ! 15   40
0.0   0.0          ! 16   40
0.0   0.0          ! 17   40
0.0   0.0          ! 18   40
0.0   0.0          ! 19   40
0.0   0.0          ! 20   40
0.0   0.0          ! 21   40
0.0   0.0          ! 22   40
0.0   0.0          ! 23   40
0.0   0.0          ! 24   40
0.0   0.0          ! 25   40
0.0   0.0          ! 26   40
0.0   0.0          ! 27   40
0.0   0.0          ! 28   40
0.0   0.0          ! 29   40
0.0   0.0          ! 30   40
0.0   0.0          ! 31   40
0.0   0.0          ! 14    9
0.0   0.0          ! 14    9
0.0   0.0          ! 15    9
0.0   0.0          ! 16    9
0.0   0.0          ! 17    9
0.0   0.0          ! 18    9
0.0   0.0          ! 19    9
0.0   0.0          ! 12   13
0.0   0.0          ! 12   13
0.0   0.0          ! 13   13
0.0   0.0          ! 14   13
0.0   0.0          ! 15   13
0.0   0.0          ! 16   13
0.0   0.0          ! 17   13
0.0   0.0          ! 18   13
0.0   0.0          ! 19   13
0.0   0.0          ! 20   13
0.0   0.0          ! 21   13
0.0   0.0          ! 22   13
0.0   0.0          ! 23   13
0.0   0.0          ! 32   55
0.0   0.0          ! 32   55
0.0   0.0          ! 33   55
0.0   0.0          ! 34   55
0.0   0.0          ! 35   55
0.0   0.0          ! 36   55
0.0   0.0          ! 37   55
0.0   0.0          ! 38   55
0.0   0.0          ! 39   55
0.0   0.0          ! 40   55
0.0   0.0          ! 41   55
0.0   0.0          ! 42   55
0.0   0.0          ! 43   55
0.0   0.0          ! 44   55
0.0   0.0          ! 45   55
0.0   0.0          ! 46   55
0.0   0.0          ! 47   55
0.0   0.0          ! 48   55
0.0   0.0          ! 49   55
0.0   0.0          ! 28   13
0.0   0.0          ! 28   13
0.0   0.0          ! 24   13
0.0   0.0          ! 25   13
0.0   0.0          ! 26   13
0.0   0.0          ! 27   13
0.0   0.0          ! 28   13
0.0   0.0          ! 29   13
0.0   0.0          ! 30   13
0.0   0.0          ! 31   13
0.0   0.0          ! 32   13
0.0   0.0          ! 34   13
0.0   0.0          ! 35   13
0.0   0.0          ! 36   13
0.0   0.0          ! 37   13
0.0   0.0          ! 38   13
0.0   0.0          ! 39   13
0.0   0.0          ! 40   13
0.0   0.0          ! 41   13
0.0   0.0          ! 42   13
0.0   0.0          ! 43   13
0.0   0.0          ! 44   13
0.0   0.0          ! 45   13
0.0   0.0          ! 46   13
0.0   0.0          ! 47   13
0.0   0.0          ! 48   13
0.0   0.0          ! 49   13
0.0   0.0          ! 50   13
0.0   0.0          ! 51   13
0.0   0.0          ! 52   13
0.0   0.0          ! 53   13
0.0   0.0          ! 54   13
0.0   0.0          ! 55   13
0.0   0.0          ! 43    9
0.0   0.0          ! 44    9
0.0   0.0          ! 45    9
0.0   0.0          ! 54   17
0.0   0.0          ! 54   17
0.0   0.0          ! 54   17
0.0   0.0          ! 54   17
0.0   0.0          ! 54   17
```

```
    0.0   0.0         ! 54   18
    0.0   0.0         ! 54   18
    0.0   0.0         ! 52   13
    0.0   0.0         ! 52   13
    0.0   0.0         ! 52   13
    0.0   0.0         ! 52   13
    0.0   0.0         ! 53   13
    0.0   0.0         ! 55   13
    0.0   0.0         ! 53   13
    0.0   0.0         ! 52   13
    0.0   0.0         ! 52   13
    0.0   0.0         ! 53   13
    0.0   0.0         ! 53   13
    0.0   0.0         ! 53   13
    0.0   0.0         ! 53   13
    0.0   0.0         ! 54   16
    0.0   0.0         ! 54   17
    0.0   0.0         ! 54   17
    0.0   0.0         ! 54   17
    0.0   0.0         ! 54   17
    0.0   0.0         ! 54   17
    0.0   0.0         ! 54   18
    0.0   0.0         ! 54   18
    0.0   0.0         ! 54   18
    0.0   0.0         ! 54   20
    0.0   0.0         ! 54   20
    0.0   0.0         ! 54   20
    0.0   0.0         ! 46   55
    0.0   0.0         ! 46   55
    0.0   0.0         ! 45   55
    0.0   0.0         ! 52   13
    0.0   0.0         ! 57   15
    0.0   0.0         ! 54   21
-------------------------------------------------------------------------------
C27 JET/PLUME SOURCE LOCATIONS, GEOMETRY AND ENTRAINMENT PARAMETERS           |
C                                                                             |
C       ID:  ID COUNTER FOR JET/PLUME                                         |
C     ICAL:  1 ACTIVE, 0 BYPASS                                               |
C     IQJP:  I CELL INDEX OF JET/PLUME                                        |
C     JQJP:  J CELL INDEX OF JET/PLUME                                        |
C     KQJP:  K CELL INDEX OF JET/PLUME (DEFAULT, QJET=0 OR JET COMP DIVERGES) |
C     XJET:  LOCAL EAST JET LOCATION RELATIVE TO DISCHARGE CELL CENTER (M)    |
C     YJET:  LOCAL NORTH JET LOCATION RELATIVE TO DISCHARGE CELL CENTER (M)   |
C     ZJET:  ELEVATION OF DISCHARGE (M)                                       |
C    PHJET:  VERTICAL JET ANGLE POSITIVE FROM HORIZONTAL (DEGREES)            |
C    THJET:  HORIZONTAL JET ANGLE POS COUNTER CLOCKWISE FROM EAST (DEGREES)   |
C     DJET:  DIAMETER OF DISCHARGE PORT (M)                                   |
C     CFRD:  ADJUSTMENT FACTOR FOR FROUDE NUMBER                              |
C    DJPER:  ENTRAINMENT ERROR CRITERIA                                       |
C                                                                             |
C27 ID ICAL IQJP JQJP KQJP  XJET  YJET   ZJET  PHJET THJET DJET  CFRD  DJPER  |
-------------------------------------------------------------------------------
C27A JET/PLUME SOLUTION CONTROL AND OUTPUT CONTROL PARAMETERS                 |
C                                                                             |
C       ID:   ID COUNTER FOR JET/PLUME                                        |
C     NJEL:   MAXIMUM NUMBER OF ELEMENTS ALONG JET/PLUME LENGTH               |
C    NJPMX:   MAXIMUM NUMBER OF ITERATIONS                                    |
C    ISENT:   0 USE MAXIMUM OF SHEAR AND FORCED ENTRAINMENT                   |
C             1 USE SUM OF SHEAR AND FORCED ENTRAINMENT                       |
C    ISTJP:   0 STOP AT SPECIFIED NUMBER OF ELEMENTS                          |
C             1 STOP WHEN CENTERLINE PENETRATES BOTTOM OR SURFACE             |
C             2 STOP WITH BOUNDARY PENETRATES BOTTOM OR SURFACE               |
C    NUDJP:  FREQUENCY FOR UPDATING JET/PLUME (NUMBER OF TIME STEPS)          |
C     IOJP:  1 FOR FULL ASCII, 2 FOR COMPACT ASCII OUTPUT AT EACH UPDATE      |
C            3 FOR FULL AND COMPACT ASCII OUTPUT, 4 FOR BINARY OUTPUT         |
C     IPJP:  NUMBER OF SPATIAL PRINT/SAVE POINT IN VERTICAL                   |
C    ISDJP:  1 WRITE DIAGNOSTIS TO jplog__.out                                |
C                                                                             |
C27A ID   NJEL    NJPMX  ISENT ISTJP  NUDJP  IOJP IPJP  ISDJP                 |
-------------------------------------------------------------------------------
C28 JET/PLUME SOURCE PARAMETERS AND DISCHARGE/CONCENTRATION SERIES IDS        |
C                                                                             |
C          ID:  ID COUNTER FOR JET/PLUME                                      |
C        QQJP:  CONSTANT JET/PLUME FLOW RATE IN M*M*M/S                       |
C     NQSERJP:  ID NUMBER OF ASSOCIATED VOLUMN FLOW TIME SERIES               |
C     NSSERJP:  ID NUMBER OF ASSOCIATED SALINITY TIME SERIES                  |
C     NTSERJP:  ID NUMBER OF ASSOCIATED TEMPERATURE TIME SERIES               |
C     NDSERJP:  ID NUMBER OF ASSOCIATED DYE CONC TIME SERIES                  |
C     NSFSERJP: ID NUMBER OF ASSOCIATED SHELL FISH LARVAE RELEASE TIME SERIES |
C     NTXSERJP: ID NUMBER OF ASSOCIATED TOXIC CONTAMINANT CONC TIME SERIES    |
C     NSDSERJP: ID NUMBER OF ASSOCIATED COHEASIVE SEDIMENT CONC TIME SERIES   |
C     NSNSERJP: ID NUMBER OF ASSOCIATED NONCOHEASIVE SED CONC TIME SERIES     |
C                                                                             |
C28  ID   QQJP   NQSERJP NS-  NT-  ND-  NSF-  NTX-  NSD-  NSN-                |
-------------------------------------------------------------------------------
C29 TIME CONSTANT INFLOW CONCENTRATIONS FOR TIME CONSTANT JET/PLUME SOURCES   |
C                                                                             |
C     SAL:  SALT CONCENTRATION CORRESPONDING TO INFLOW ABOVE                  |
C     TEM:  TEMPERATURE CORRESPONDING TO INFLOW ABOVE                         |
C     DYE:  DYE CONCENTRATION CORRESPONDING TO INFLOW ABOVE                   |
C     SFL:  SHELL FISH LARVAE CONCENTRATION CORRESPONDING TO INFLOW ABOVE     |
C     TOX:  NTOX TOXIC CONTAMINANT CONCENTRATIONS CORRESPONDING TO            |
C           INFLOW ABOVE  WRITTEN AS TOXC(N), N=1,NTOX A SINGLE DEFAULT       |
C           VALUE IS REQUIRED EVEN IF TOXIC TRANSPORT IS NOT ACTIVE           |
C                                                                             |
C29 SAL TEM DYE SFL TOX1-20                                                   |
-------------------------------------------------------------------------------
C30 TIME CONSTANT INFLOW CONCENTRATIONS FOR TIME CONSTANT JET/PLUME SOURCES   |
C                                                                             |
C     SED:  NSED COHESIVE SEDIMENT CONCENTRATIONS CORRESPONDING TO            |
C           INFLOW ABOVE  WRITTEN AS SEDC(N), N=1,NSED. I.E., THE FIRST       |
C           NSED VALUES ARE COHESIVE A SINGLE DEFAULT VALUE IS REQUIRED       |
C           EVEN IF COHESIVE SEDIMENT TRANSPORT IS INACTIVE                   |
C     SND:  NSND NON-COHESIVE SEDIMENT CONCENTRATIONS CORRESPONDING TO        |
C           INFLOW ABOVE  WRITTEN AS SND(N), N=1,NSND. I.E., THE LAST         |
C           NSND VALUES ARE NON-COHESIVE. A SINGLE DEFAULT VALUE IS           |
C           REQUIRED EVEN IF NON-COHESIVE SEDIMENT TRANSPORT IS INACTIVE      |
```

```
C                                                                       |
C30 SED1  SND1  SND2   SND3                                             |
-------------------------------------------------------------------------
C31 SURFACE ELEV OR PRESSURE DEPENDENT FLOW INFORMATION                 |
C                                                                       |
C     IQCTLU:   I INDEX OF UPSTREAM OR WITHDRAWAL CELL                  |
C     JQCTLU:   J INDEX OF UPSTREAM OR WITHDRAWAL CELL                  |
C     IQCTLD:   I INDEX OF DOWNSTREAM OR RETURN CELL                    |
C     JQCTLD:   J INDEX OF DOWNSTREAM OR RETURN CELL                    |
C     NQCTYP:   FLOW CONTROL TYPE                                       |
C               = 0  HYDRAULIC STRUCTURE: INSTANT FLOW DRIVEN BY ELEVATION |
C                    OR PRESSURE DIFFERCENCE TABLE                      |
C               = 1  ACCELERATING FLOW THROUGH TIDAL INLET              |
C     NQCTLQ:   ID NUMBER OF CONTROL CHARACTERIZATION TABLE             |
C     NQCMUL:   MULTIPLIER SWITCH FOR FLOWS FROM UPSTREAM CELL          |
C               = 0  MULT BY 1. FOR CONTROL TABLE IN (L*L*L/T)          |
C               = 1  MULT BY DY FOR CONTROL TABLE IN (L*L/T) ON U FACE  |
C               = 2  MULT BY DX FOR CONTROL TABLE IN (L*L/T) ON V FACE  |
C               = 3  MULT BY DX+DY FOR CONTROL TABLE IN (L*L/T) ON U&V FACES |
C     NQCMFU:   IF NON ZERO ACCOUNT FOR FLOW MOMENTUM FLUX IN UPSTREAM CELL |
C               = 1  MOMENTUM FLUX ON NEG U FACE                        |
C               = 2  MOMENTUM FLUX ON NEG V FACE                        |
C               = 3  MOMENTUM FLUX ON POS U FACE                        |
C               = 4  MOMENTUM FLUX ON POS V FACE                        |
C     NQCMFD:  IF NON ZERO ACCOUNT FOR FLOW MOMENTUM FLUX IN DOWNSTREAM CELL |
C               = 1  MOMENTUM FLUX ON NEG U FACE                        |
C               = 2  MOMENTUM FLUX ON NEG V FACE                        |
C               = 3  MOMENTUM FLUX ON POS U FACE                        |
C               = 4  MOMENTUM FLUX ON POS V FACE                        |
C     IQCAX     AUXILLARY DOWNSTREAM CELL I INDEX FOR NOCTYP=2          |
C     JQCAX     AUXILLARY DOWNSTREAM CELL J INDEX FOR NOCTYP=2          |
C                                                                       |
C31 IQCTLU JQCTLU IQCTLD JQCTLD NQCTYP NQCTLQ NQCMUL NQCMFU NQCMFD IQCAX JQCAX|
    32     13     34     13     0      1      0      0      0      0     0 !Smalleys Pond
    54     15     54     13     1      2      0      0      0      0     0 !from Brandywine Cr.
    54     13     54     15     1      3      0      0      0      0     0 ! to Brandywine Cr.
    45      9     45     13     1      4      0      0      0      0     0 !from Nonesuch Cr.
    45     13     45      9     1      5      0      0      0      0     0 ! to Nonesuch Cr.
    43      9     42     13     1      6      0      0      0      0     0 !from Nonesuch Cr.
    42     13     43      9     1      7      0      0      0      0     0 ! to Nonesuch Cr.
    43     15     43     13     1      8      0      0      0      0     0 !from White Clay Cr.
    43     13     43     15     1      9      0      0      0      0     0 ! to White Clay Cr.
    54     20     54     18     0      10     0      0      0      0     0 !Brandywine Dam
    54     46     54     44     0      11     0      0      0      0     0 !Lenape
    49     79     54     47     0      12     0      0      0      0     0 !mouth W.Br Brandywine
    36     79     38     79     0      13     0      0      0      0     0 !Embreeville
    30     79     32     79     0      14     0      0      0      0     0 !Mortonville
    21     79     23     79     0      15     0      0      0      0     0 !South Coatesville
    14     79     16     79     0      16     0      0      0      0     0 !Icedale Lake
    33     77     33     79     0      17     0      0      0      0     0 !mouth Buck Run
    43     23     43     17     0      18     0      0      0      0     0 !mouth Red Clay
    43     44     43     43     0      19     0      0      0      0     0 !PA-DE line dam
    41     43     43     43     0      20     0      0      0      0     0 !mouth W.Br Red Clay
    41     18     43     17     0      21     0      0      0      0     0 !mouth White Clay
    35     18     37     18     0      22     0      0      0      0     0 !Harmony Road
    28     18     30     18     0      23     0      0      0      0     0 !dam
    22     18     24     18     0      24     0      0      0      0     0 !Hopkins Road
    19     20     19     18     0      25     0      0      0      0     0 !mouth E.Br. White Clay
    19      9     19     13     0      26     0      0      0      0     0 !mouth W.Br. Christina
    49     55     49     13     0      27     0      0      0      0     0 !mouth Little Mill Cr.
    49     52     43     35     0      28     0      0      0      0     0 !mouth Burroughs Run
    31     40     43     17     0      29     0      0      0      0     0 !mouth Mill Creek
    31     37     37     18     0      30     0      0      0      0     0 !mouth Pike Creek
    31     34     32     18     0      31     0      0      0      0     0 !mouth Muddy Run
-------------------------------------------------------------------------
C32 FLOW WITHDRAWAL, HEAT OR MATERIAL ADDITION, AND RETURN DATA         |
C                                                                       |
C     IWRU:     I INDEX OF UPSTREAM OR WITHDRAWAL CELL                  |
C     JWRU:     J INDEX OF UPSTREAM OR WITHDRAWAL CELL                  |
C     KWRU:     K INDEX OF UPSTREAM OR WITHDRAWAL LAYER                 |
C     IWRD:     I INDEX OF DOWNSTREAM OR RETURN CELL                    |
C     JWRD:     J INDEX OF DOWNSTREAM OR RETURN CELL                    |
C     KWRD:     K INDEX OF DOWNSTREAM OR RETURN LAYER                   |
C     QWRE:       CONSTANT VOLUME FLOW RATE FROM WITHDRAWAL TO RETURN   |
C     NQWRSERQ: ID NUMBER OF ASSOCIATED VOLUMN WITHDRAWAL-RETURN FLOW AND |
C                  CONCENTRATION RISE TIME SERIES                       |
C                                                                       |
C32 IWRU JWRU KWRU  IWRD  JWRD  KWRD    QWRE  NQWRSERQ                  |
    54   20    1    58     5     1      0.00    1       !DE-01
    54   20    1    58     5     1      0.00    2       !DE-02
    54   20    1    58     5     1      0.00    3       !DE-8
    54   54    1    58     5     1      0.00    4       !PA-4
    54   55    1    58     5     1      0.00    5       !6996-006
    54   55    1    58     5     1      0.00    6       !6996-013
    54   60    1    58     5     1      0.00    7       !6987-004
    54   61    1    58     5     1      0.00    8       !250156-22
    54   61    1    58     5     1      0.00    9       !6990-004
    54   62    1    58     5     1      0.00   10       !PA-3
    54   65    1    58     5     1      0.00   11       !7266-004
    40   79    1    58     5     1      0.00   12       !PA-5
    26   79    1    58     5     1      0.00   13       !7045-004
    21   79    1    58     5     1      0.00   14       !6971-004
    19   79    1    58     5     1      0.00   15       !PA-2
    18   79    1    58     5     1      0.00   16       !450090-2
    18   79    1    58     5     1      0.00   17       !450090-3
    12   79    1    58     5     1      0.00   18       !PA-1
    32   13    1    58     5     1      0.00   19       !DE-05
    32   13    1    58     5     1      0.00   20       !DE-5
    43   30    1    58     5     1      0.00   21       !DE-2
    43   32    1    58     5     1      0.00   22       !DE-4
    43   39    1    58     5     1      0.00   23       !DE-1
    31   43    1    58     5     1      0.00   24       !450088-2
    40   18    1    58     5     1      0.00   25       !DE-04
    28   18    1    58     5     1      0.00   26       !DE-15
    27   18    1    58     5     1      0.00   27       !DE-03
    19   26    1    58     5     1      0.00   28       !7227-005
-------------------------------------------------------------------------
```

```
C33 TIME CONSTANT WITHDRAWAL AND RETURN CONCENTRATION RISES                |
C                                                                          |
C     SAL:   SALTINITY RISE                                                |
C     TEM:   TEMPERATURE RISE                                              |
C     DYE:   DYE CONCENTRATION RISE                                        |
C     SFL:   SHELLFISH LARVAE CONCENTRATION RISE                           |
C     TOX#:  NTOX TOXIC CONTAMINANT CONCENTRATION RISES                    |
C                                                                          |
C33 SALT  TEMP  DYEC  SFLC  TOX1                                           |
    0.0   0.0   0.0   0.0   0.0        !DE-01
    0.0   0.0   0.0   0.0   0.0        !DE-02
    0.0   0.0   0.0   0.0   0.0        !DE-8
    0.0   0.0   0.0   0.0   0.0        !PA-4
    0.0   0.0   0.0   0.0   0.0        !6996-006
    0.0   0.0   0.0   0.0   0.0        !6996-013
    0.0   0.0   0.0   0.0   0.0        !6987-004
    0.0   0.0   0.0   0.0   0.0        !250156-22
    0.0   0.0   0.0   0.0   0.0        !6990-004
    0.0   0.0   0.0   0.0   0.0        !PA-3
    0.0   0.0   0.0   0.0   0.0        !7266-004
    0.0   0.0   0.0   0.0   0.0        !PA-5
    0.0   0.0   0.0   0.0   0.0        !7045-004
    0.0   0.0   0.0   0.0   0.0        !6971-004
    0.0   0.0   0.0   0.0   0.0        !PA-2
    0.0   0.0   0.0   0.0   0.0        !450090-2
    0.0   0.0   0.0   0.0   0.0        !450090-3
    0.0   0.0   0.0   0.0   0.0        !PA-1
    0.0   0.0   0.0   0.0   0.0        !DE-05
    0.0   0.0   0.0   0.0   0.0        !DE-5
    0.0   0.0   0.0   0.0   0.0        !DE-2
    0.0   0.0   0.0   0.0   0.0        !DE-4
    0.0   0.0   0.0   0.0   0.0        !DE-1
    0.0   0.0   0.0   0.0   0.0        !450088-2
    0.0   0.0   0.0   0.0   0.0        !DE-04
    0.0   0.0   0.0   0.0   0.0        !DE-15
    0.0   0.0   0.0   0.0   0.0        !DE-03
    0.0   0.0   0.0   0.0   0.0        !7227-005
-----------------------------------------------------------------------------
C34 TIME CONSTANT WITHDRAWAL AND RETURN CONCENTRATION RISES                |
C                                                                          |
C     SED#:    NSEDC COHESIVE SEDIMENT CONCENTRATION RISE                  |
C     SND#:    NSEDN NONCOHESIVE SEDIMENT CONCENTRATION RISE               |
C                                                                          |
C34 SEDC1  SND1  SND2  SND3  SND4                                          |
    0.0    0.0   0.0   0.0   0.0        !DE-01
    0.0    0.0   0.0   0.0   0.0        !DE-02
    0.0    0.0   0.0   0.0   0.0        !DE-8
    0.0    0.0   0.0   0.0   0.0        !PA-4
    0.0    0.0   0.0   0.0   0.0        !6996-006
    0.0    0.0   0.0   0.0   0.0        !6996-013
    0.0    0.0   0.0   0.0   0.0        !6987-004
    0.0    0.0   0.0   0.0   0.0        !250156-22
    0.0    0.0   0.0   0.0   0.0        !6990-004
    0.0    0.0   0.0   0.0   0.0        !PA-3
    0.0    0.0   0.0   0.0   0.0        !7266-004
    0.0    0.0   0.0   0.0   0.0        !PA-5
    0.0    0.0   0.0   0.0   0.0        !7045-004
    0.0    0.0   0.0   0.0   0.0        !6971-004
    0.0    0.0   0.0   0.0   0.0        !PA-2
    0.0    0.0   0.0   0.0   0.0        !450090-2
    0.0    0.0   0.0   0.0   0.0        !450090-3
    0.0    0.0   0.0   0.0   0.0        !PA-1
    0.0    0.0   0.0   0.0   0.0        !DE-05
    0.0    0.0   0.0   0.0   0.0        !DE-5
    0.0    0.0   0.0   0.0   0.0        !DE-2
    0.0    0.0   0.0   0.0   0.0        !DE-4
    0.0    0.0   0.0   0.0   0.0        !DE-1
    0.0    0.0   0.0   0.0   0.0        !450088-2
    0.0    0.0   0.0   0.0   0.0        !DE-04
    0.0    0.0   0.0   0.0   0.0        !DE-15
    0.0    0.0   0.0   0.0   0.0        !DE-03
    0.0    0.0   0.0   0.0   0.0        !7227-005
-----------------------------------------------------------------------------
C35 SUSPENDED SEDIMENT INITIALIZATION AND BED OPTIONS                      |
C                                                                          |
C    ISEDINT: 0 FOR CONSTANT INITIAL CONDITIONS GIVEN ON C36 AND C37       |
C             1 FOR SPATIALLY VARIABLE WATER COLUMN INITIAL CONDITIONS     |
C             2 FOR SPATIALLY VARIABLE BED INITIAL CONDITIONS              |
C             3 FOR SPATIALLY VARIABLE WATER COL AND BED INITIAL CONDITIONS |
C             ALL INITIAL CONDITIONS FROM FILE sedsnd.inp                  |
C    ISEDVW : 0 FOR CONSTANT COHESIVE SEDIMENT SETTLING VELOCITY           |
C             1 FOR VARIABLE COHESIVE SEDIMENT SETTLING VELOCITY           |
C             2 FOR VARIABLE COHESIVE SEDIMENT SELLTING VELOCITY WITH      |
C               WITH MINIMUM VALUE SPECIFIED BY CONSTANT VELOCITY ON C36   |
C    ISEDBED: 0 FOR ZERO DIMENSIONAL BED (ie mass per unit area)           |
C             1 FOR LAYERED BED WITH FIXED NUMBER OF LAYERS                |
C             2 FOR LAYERED BED WITH VARIABLE NUMBER OF LAYERS             |
C    NSDBDL:  INITIAL NUMBER OF BED LAYERS OR NUMBER OF FIXED LAYERS       |
C    NSDBDLM: MAXIMUM NUMBER OF BED LAYERS FOR VARIABLE LAYERS             |
C    ISDCON:  1 TO ACTIVATE CONSOLIDATION CALCULATION CONSTANT COEFFICIENTS |
C             2 TO ACTIVATE CONSOLIDATION CALCULATION WITH VARIABLE COEFF  |
C    SEDCON1: BED CONSOLIDATION MODEL COEFFICIENT (POROSITY ISDCON=0)      |
C    SEDCON2: BED CONSOLIDATION MODEL COEFFICIENT (NO ERODE BED FRAC ISDCON=0)|
C    SEDCON3: BED CONSOLIDATION MODEL COEFFICIENT                          |
C    SEDCON4: BED CONSOLIDATION MODEL COEFFICIENT                          |
C                                                                          |
C35 ISEDINT ISEDVW ISEDBED NSDBDL NSDBDLM ISDCON SEDCN1 SEDCN2 SEDCN3 SEDCN4  I
      0        0      0      1      1       0      0.6     0.     0.     0.
-----------------------------------------------------------------------------
C36 COHESIVE SUSPENDED SEDIMENT SOURCE/SINK PARAMETERS REPEAT DATA LINE    |
C   FOR EACH SIZE CLASS  ONE LINE OF DATA REQUIRED EVEN IF ISTRAN(7)=0     |
C                                                                          |
C     SEDO:    INITIAL SEDIMENT CONC IN FLUID PHASE (mg/liter=gm/m**3)     |
C     SEDBO:   INITIAL SEDIMENT PER UNIT AREA OR BOTTOM SURFACE (gm/sq meter) |
C     SDEN:    SEDIMENT SPEC VOLUME (1/2.26E6 m**3/gm)                     |
C     SSG:     SEDIMENT SPECIFIC GRAVITY                                   |
C     WSEDO:   CONSTANT OR REFERENCE SEDIMENT SETTLING VELOCITY            |
```

```
C              IN FORMULA WSED=WSEDO*( (SED/SEDSN)**SEXP )                      |
C     SEDN:    NORMALIZING SEDIMENT CONC (COHESIVE SED TRANSPORT) (gm/m**3)     |
C     SEXP:    EXPONENTIAL (COHESIVE SED TRANSPORT)                             |
C     TAUD:    BOUNDARY STRESS BELOW WHICH DEPOSITION TAKES PLACE ACCORDING     |
C              TO (TAUD-TAU)/TAUD                                               |
C     WRSPO:   REF RESUSPENSION RATE (COHESIVE SED TRANS ONLY) IN FORMULA       |
C              WRSP=WRSP0*( ((TAU-TAUR)/TAUN)**TEX ) (gm/m**2-sec)              |
C     TAUR:    BOUNDARY STRESS ABOVE WHICH RESUSPENSION OCCURS (m/s)**2         |
C     TAUN:    NORMALIZING STRESS (EQUAL TO TAUR FOR COHESIVE SED TRANS)        |
C     TEX:     EXPONENTIAL (COH SED)                                            |
C     SDBLV:   CONVERTS SEDIMENT FLUX AT BED TO CHANGE IN BED ELEVATION         |
C              USING BELV(N+1)=BELV(N)-DT*SDBLV*SEDF(L,0) SDBLV=0.58E-6         |
C                                                                               |
C36 SEDO SEDBO SDEN  SSG  WSEDO  SEDN  SEXP TAUD   WRSPO TAUR TAUN TEX SDBLV    |
   15.0  1.0 3.8E-7 2.65 8.0E-07 1.0   0.    7.5E-5 0.2 1.E-4 1.E-4 1.    5.8E-7
--------------------------------------------------------------------------------
C37 NONCOHESIVE SUSPENDED SEDIMENT SOURCE/SINK PARAMETERS REPEAT DATA LINE      |
C   FOR EACH SIZE CLASS  ONE LINE OF DATA REQUIRED EVEN IF ISTRAN(8)=0          |
C                                                                               |
C     SEDO:    INITIAL SEDIMENT CONC IN FLUID PHASE (mg/liter=gm/m**3)          |
C     SEDBO:   INITIAL SEDIMENT PER UNIT AREA OR BOTTOM SURFACE (gm/sq meter)   |
C     SDEN:    SEDIMENT SPEC VOLUME (1/2.26E6 m**3/gm)                          |
C     SSG:     SEDIMENT SPECIFIC GRAVITY                                        |
C     WSEDO:   CONSTANT OR REFERENCE SEDIMENT SETTLING VELOCITY                 |
C     SEDN:    MAX MASS/TOT VOLUME IN BED (NONCOHESIVE SED TRANS) (gm/m**3)     |
C     SEXP:    DIMENSIONLESS RESUSPENSION PARAMETER GAMMA ZERO                  |
C     TAUD:    DUNE BREAK POINT STRESS                                          |
C     WRSPO:   NOT USED                                                         |
C     TAUR:    CRITICAL SHIELDS STRESS  IN (m/s)**2                             |
C     TAUN:    EQUAL TO TAUR FOR NONCHOESIVE SED TRANS                          |
C     TEX:     CRITICAL SHIELDS PARM (NONCOH SED)                               |
C     SDBLV:   CONVERTS SEDIMENT FLUX AT BED TO CHANGE IN BED ELEVATION         |
C              USING BELV(N+1)=BELV(N)-DT*SDBLV*SEDF(L,0) SDBLV=0.58E-6         |
C                                                                               |
C37 SEDO SEDBO SDEN  SSG WSEDO  SEDN  SEXP  TAUD   WRSPO TAUR TAUN TEX SDBLV    |
    0.0  0.0 3.8E-7 2.65 0.050  1.8E6 1.E-3 7.5E-5 0.2 8.E-3 8.E-3 0.015 5.8E-7
--------------------------------------------------------------------------------
C38 TOXIC CONTAMINANT INITIAL CONDITIONS AND PARAMETERS                         |
C   USER MAY CHANGE UNITS OF WATER AND SED PHASE TOX CONCENTRATION              |
C   AND PARTIATION COEFFICIENT ON C38 - C40 BUT CONSISTENT UNITS MUST           |
C   MUST BE USED FOR MEANINGFUL RESULTS                                         |
C                                                                               |
C     NTOXN:   TOXIC CONTAMINANT NUMBER ID (1 LINE OF DATA BY DEFAULT)          |
C    ITXINT:   0 FOR SPATIALLY CONSTANT WATER COL AND BED INITIAL CONDITIONS    |
C              1 FOR SPATIALLY VARIABLE WATER COLUMN INITIAL CONDITIONS         |
C              2 FOR SPATIALLY VARIABLE BED INITIAL CONDITIONS                  |
C              3 FOR SPATIALLY VARIABLE WATER COL AND BED INITIAL CONDITION     |
C   ITXBDUT:   SET TO 0 FOR INITIAL BED CONDITION TOTAL TOX (ugm/litr)          |
C              SET TO 1 FOR INITIAL BED CONDITION MASS TOX/MASS SED(mg/kg)      |
C   TOXINTW:   INIT WATER COLUNM TOT TOXIC VARIABLE CONCENTRATION (ugm/litr)    |
C   TOXINTB:   INIT SED BED TOXIC CONC SEE ITXBDUT                              |
C    RKTOXW:   FIRST ORDER WATER COL DECAY RATE FOR TOX VARIABLE IN 1/SEC       |
C    TKTOXW:   REF TEMP FOR 1ST ORDER WATER COL DECAY DEG C                     |
C    RKTOXB:   FIRST ORDER SED BED DECAY RATE FOR TOX VARIABLE IN 1/SEC         |
C    TKTOXB:   REF TEMP FOR 1ST ORDER SED BED DECAY DEG C                       |
C                        ck blw kevin uses 6.0                                  |
C38 NTOXN ITXINT ITXBDUT TOXINTW TOXINTB RKTOXW TKTOXW RKTOXB TRTOXB COMMENTS   |
     1     0     1       1.0      15.4     0.     0.     0.     0.      ! dummy
--------------------------------------------------------------------------------
C39 ADDITIONAL TOXIC CONTAMINANT PARAMETERS                                     |
C                                                                               |
C     NTOXN:   TOXIC CONTAMINANT NUMBER ID (1 LINE OF DATA BY DEFAULT)          |
C    VOLTOX:   WATER SURFACE VOLITIALIZATION RATE MULTIPLIER (0. OR 1.)         |
C    RMOLTX:   MOLECULAR WEIGHT FOR DETERMINING VOLATILIZATION RATE             |
C    RKTOXP:   REFERENCE PHOTOLOYSIS DECAY RATE 1/SEC                           |
C    SKTOXP:   REFERENCE SOLAR RADIATION FOR PHOTOLOYSIS (WATTS/M**2)           |
C    DIFTOX:   DIFFUSION COEFF FOR TOXICANT IN SED BED PORE WATER (M**2/S)      |
C                                                                               |
C39  NTOXN VOLTOX RMOLTX RKTOXP SKTOXP DIFTOX  COMMENTS                         |
     1     0.     0.     0.     0.     0.     ! dummy
--------------------------------------------------------------------------------
C40 TOXIC CONTAMINANT SEDIMENT INTERACTION PARAMETERS                           |
C                                                                               |
C    NTOXC: TOXIC CONTAMINANT NUMBER ID.  NSEDC+NSEDN LINES OF DATA             |
C             FOR EACH TOXIC CONTAMINANT (DEFAULT = 2)                          |
C NSEDN/NSNDN: FIRST NSED LINES COHESIVE, NEXT NSND LINES NON-COHESIVE.         |
C           REPEATED FOR EACH CONTAMINANT                                       |
C  ITXPARW: EQUAL 1 FOR SOLIDS DEPENDENT PARTITIONING (WC) GIVEN BY             |
C           TOXPAR=PARO*(CSED**CONPAR)                                          |
C  TOXPARW: WATER COLUMN PARO (ITXPARW=1) OR EQUIL TOX CON PART COEFF BETWEEN   |
C           EACH TOXIC IN WATER AND ASSOCIATED SEDIMENT PHASES (liters/mg)      |
C  CONPARW: EXPONENT IN  TOXPAR=PARO*(CSED**CONPARW) IF ITXPARW=1               |
C  ITXPARB: EQUAL 1 FOR SOLIDS DEPENDENT PARTITIONING (BED)                     |
C  TOXPARB: SEDIMENT BED PARO (ITXPARB=1) OR EQUIL TOX CON PART COEFF BETWEEN   |
C           EACH TOXIC IN WATER AND ASSOCIATED SEDIMENT PHASES (liters/mg)      |
C  CONPARB: EXPONENT IN  TOXPAR=PARO*(CSED**CONPARB) IF ITXPARB=1               |
C              1       0.8770  -0.943          0.025                            |
C40 NTOXN NSEDN ITXPARW TOXPARW CONPARW ITXPARB TOXPARB CONPARB  COMMENTS       |
    1     1     1       0.0803  -0.833  0       0.005   0.       !dummy/cohsed 1
    1     1     0       0.      0.      0       0.      0.       !dummy/non-cohsed 1
--------------------------------------------------------------------------------
C41  BUOYANCY, TEMPERATURE, DYE DATA AND CONCENTRATION BC DATA                  |
C                                                                               |
C     BSC:     BUOYANCY INFLUENCE COEFFICIENT 0 TO 1, BSC=1. FOR REAL PHYSICS   |
C     TEMO:    REFERENCE, INITIAL, EQUILIBRUM AND/OR ISOTHERMAL TEMP IN DEG C   |
C     HEQT:    EQUILIBRUM TEMPERTURE TRANSFER COEFFICIENT M/SEC                 |
C     RKDYE:   FIRST ORDER DECAY RATE FOR DYE VARIABLE IN 1/SEC                 |
C     NCBS:    NUMBER OF CONCENTRATION BOUNDARY CONDITIONS ON SOUTH OPEN        |
C              BOUNDARIES                                                       |
C     NCBW:    NUMBER OF CONCENTRATION BOUNDARY CONDITIONS ON WEST OPEN         |
C              BOUNDARIES                                                       |
C     NCBE:    NUMBER OF CONCENTRATION BOUNDARY CONDITIONS ON EAST OPEN         |
C              BOUNDARIES                                                       |
C     NCBN:    NUMBER OF CONCENTRATION BOUNDARY CONDITIONS ON NORTH OPEN        |
C              BOUNDARIES                                                       |
C                0.0E-06                                                        |
C41   BSC  TEMO  HEQT      RKDYE     NCBS  NCBW  NCBE  NCBN                     |
```

```
      1.   22.5  0.5E-04   0.000     2     0      0    3
-----------------------------------------------------------------------------
C42  LOCATION OF CONC BC'S ON SOUTH BOUNDARIES                               |
C                                                                            |
C     ICBS:    I CELL INDEX                                                  |
C     JCBS:    J CELL INDEX                                                  |
C     NTSCRS:  NUMBER OF TIME STEPS TO RECOVER SPECIFIED VALUES ON CHANGE    |
C              TO INFLOW FROM OUTFLOW                                        |
C     NSSERS:  SOUTH BOUNDARY CELL SALINITY TIME SERIES ID NUMBER            |
C     NTSERS:  SOUTH BOUNDARY CELL TEMPERATURE TIME SERIES ID NUMBER         |
C     NDSERS:  SOUTH BOUNDARY CELL DYE CONC TIME SERIES ID NUMBER            |
C     NSFSERS: SOUTH BOUNDARY CELL SHELLFISH LARVAE TIME SERIES ID NUMBER    |
C     NTXSERS: SOUTH BOUNDARY CELL TOXIC CONTAMINANT CONC TIME SERIES ID NUM. |
C     NSDSERS: SOUTH BOUNDARY CELL COHESIVE SED CONC TIME SERIES ID NUMBER   |
C     NSNSERS: SOUTH BOUNDARY CELL NONCOHESIVE SED CONC TIME SERIES ID NUMBER |
C                                                                            |
C42 IBBS  JBBS  NTSCRS NSSERS NTSERS NDSERS NSFSERS NTXSERS NSDSERS NSNSERS  |
     57    3    60     1      2      0      0        0       1       0       |
     59    3    60     1      2      0      0        0       1       0       |
-----------------------------------------------------------------------------
C43 TIME CONSTANT BOTTOM CONC ON SOUTH CONC BOUNDARIES                       |
C                                                                            |
C     SAL:  ULTIMATE INFLOWING BOTTOM LAYER SALINITY                         |
C     TEM:  ULTIMATE INFLOWING BOTTOM LAYER TEMPERATURE                      |
C     DYE:  ULTIMATE INFLOWING BOTTOM LAYER DYE CONCENTRATION                |
C     SFL:  ULTIMATE INFLOWING BOTTOM LAYER SHELLFISH LARVAE CONCENTRAION    |
C     TOX:  NTOX ULTIMATE INFLOWING BOTTOM LAYER TOXIC CONTAMINANT           |
C           CONCENTRATIONS NTOX VALUES TOX(N), N=1,NTOX                      |
C                                                                            |
C43 SAL   TEM   DYE   SFL    TOX1                                            |
    0.0   0.0   0.0   0.0    0.0
    0.0   0.0   0.0   0.0    0.0
-----------------------------------------------------------------------------
C44 TIME CONSTANT BOTTOM CONC ON SOUTH CONC BOUNDARIES                       |
C                                                                            |
C     SED:  NSED ULTIMATE INFLOWING BOTTOM LAYER COHESIVE SEDIMENT           |
C           CONCENTRAIONS  FIRST NSED VALUES SED(N), N=1,NSND                |
C     SND:  NSND ULTIMATE INFLOWING BOTTOM LAYER NONCOHESIVE SEDIMENT        |
C           CONCENTRATIONS LAST NSND VALUES SND(N), N=1,NSND                 |
C                                                                            |
C44  SED1  SND1                                                              |
     0.    0.
     0.    0.
-----------------------------------------------------------------------------
C45 TIME CONSTANT SURFACE CONC ON SOUTH CONC BOUNDARIES                      |
C                                                                            |
C     SAL:  ULTIMATE INFLOWING SURFAC LAYER SALINITY                         |
C     TEM:  ULTIMATE INFLOWING SURFAC LAYER TEMPERATURE                      |
C     DYE:  ULTIMATE INFLOWING SURFAC LAYER DYE CONCENTRATION                |
C     SFL:  ULTIMATE INFLOWING SURFAC LAYER SHELLFISH LARVAE CONCENTRAION    |
C     TOX:  NTOX ULTIMATE INFLOWING SURFAC LAYER TOXIC CONTAMINANT           |
C           CONCENTRATIONS NTOX VALUES TOX(N), N=1,NTOX                      |
C                                                                            |
C45 SAL   TEM   DYE   SFL    TOX1                                            |
    0.0   0.0   0.0   0.0    0.0
    0.0   0.0   0.0   0.0    0.0
-----------------------------------------------------------------------------
C46 TIME CONSTANT SURFACE CONC ON SOUTH CONC BOUNDARIES                      |
C                                                                            |
C     SED:  NSED ULTIMATE INFLOWING SURFAC LAYER COHESIVE SEDIMENT           |
C           CONCENTRAIONS  FIRST NSED VALUES SED(N), N=1,NSND                |
C     SND:  NSND ULTIMATE INFLOWING SURFAC LAYER NONCOHESIVE SEDIMENT        |
C           CONCENTRATIONS LAST NSND VALUES SND(N), N=1,NSND                 |
C                                                                            |
C46  SED1  SND1                                                              |
     0.    0.
     0.    0.
-----------------------------------------------------------------------------
C47 LOCATION OF CONC BC'S ON WEST BOUNDARIES AND SERIES IDENTIFIERS          |
C                                                                            |
C     ICBW:    I CELL INDEX                                                  |
C     JCBW:    J CELL INDEX                                                  |
C     NTSCRW:  NUMBER OF TIME STEPS TO RECOVER SPECIFIED VALUES ON CHANGE    |
C              TO INFLOW FROM OUTFLOW                                        |
C     NSSERW:  WEST BOUNDARY CELL SALINITY TIME SERIES ID NUMBER             |
C     NTSERW:  WEST BOUNDARY CELL TEMPERATURE TIME SERIES ID NUMBER          |
C     NDSERW:  WEST BOUNDARY CELL DYE CONC TIME SERIES ID NUMBER             |
C     NSFSERW: WEST BOUNDARY CELL SHELLFISH LARVAE TIME SERIES ID NUMBER     |
C     NTXSERW: WEST BOUNDARY CELL TOXIC CONTAMINANT CONC TIME SERIES ID NUM. |
C     NSDSERW: WEST BOUNDARY CELL COHESIVE SED CONC TIME SERIES ID NUMBER    |
C     NSNSERW: WEST BOUNDARY CELL NONCOHESIVE SED CONC TIME SERIES ID NUMBER |
C                                                                            |
C47 IBBW  JBBW  NTSCRW NSSERW NTSERW NDSERW NSFSERW NTXSERW NSDSERW NSNSERW  |
-----------------------------------------------------------------------------
C48 TIME CONSTANT BOTTOM CONC ON WEST CONC BOUNDARIES                        |
C                                                                            |
C     SAL:  ULTIMATE INFLOWING BOTTOM LAYER SALINITY                         |
C     TEM:  ULTIMATE INFLOWING BOTTOM LAYER TEMPERATURE                      |
C     DYE:  ULTIMATE INFLOWING BOTTOM LAYER DYE CONCENTRATION                |
C     SFL:  ULTIMATE INFLOWING BOTTOM LAYER SHELLFISH LARVAE CONCENTRAION    |
C     TOX:  NTOX ULTIMATE INFLOWING BOTTOM LAYER TOXIC CONTAMINANT           |
C           CONCENTRATIONS NTOX VALUES TOX(N), N=1,NTOX                      |
C                                                                            |
C48 SAL   TEM   DYE   SFL    TOX1                                            |
-----------------------------------------------------------------------------
C49 TIME CONSTANT BOTTOM CONC ON WEST CONC BOUNDARIES                        |
C                                                                            |
C     SED:  NSED ULTIMATE INFLOWING BOTTOM LAYER COHESIVE SEDIMENT           |
C           CONCENTRAIONS  FIRST NSED VALUES SED(N), N=1,NSND                |
C     SND:  NSND ULTIMATE INFLOWING BOTTOM LAYER NONCOHESIVE SEDIMENT        |
C           CONCENTRATIONS LAST NSND VALUES SND(N), N=1,NSND                 |
C                                                                            |
C49  SED1  SND1   SND2                                                       |
-----------------------------------------------------------------------------
C50 TIME CONSTANT SURFACE CONC ON WEST CONC BOUNDARIES                       |
C                                                                            |
C     SAL:  ULTIMATE INFLOWING SURFAC LAYER SALINITY                         |
```

```
C     TEM:  ULTIMATE INFLOWING SURFAC LAYER TEMPERATURE                        |
C     DYE:  ULTIMATE INFLOWING SURFAC LAYER DYE CONCENTRATION                  |
C     SFL:  ULTIMATE INFLOWING SURFAC LAYER SHELLFISH LARVAE CONCENTRAION      |
C     TOX:  NTOX ULTIMATE INFLOWING SURFAC LAYER TOXIC CONTAMINANT             |
C           CONCENTRATIONS NTOX VALUES TOX(N), N=1,NTOX                        |
C                                                                              |
C50 SAL   TEM   DYE   SFL    TOX1                                              |
-------------------------------------------------------------------------------
C51 TIME CONSTANT SURFACE CONC ON WEST CONC BOUNDARIES                         |
C                                                                              |
C     SED:  NSED ULTIMATE INFLOWING SURFAC LAYER COHESIVE SEDIMENT             |
C           CONCENTRAIONS  FIRST NSED VALUES SED(N), N=1,NSND                  |
C     SND:  NSND ULTIMATE INFLOWING SURFAC LAYER NONCOHESIVE SEDIMENT          |
C           CONCENTRATIONS LAST NSND VALUES SND(N), N=1,NSND                   |
C                                                                              |
C51  SED1  SND1   SND2                                                         |
-------------------------------------------------------------------------------
C52 LOCATION OF CONC BC'S ON EAST BOUNDARIES AND SERIES IDENTIFIERS            |
C                                                                              |
C     ICBE:    I CELL INDEX                                                    |
C     JCBE:    J CELL INDEX                                                    |
C     NTSCRE:  NUMBER OF TIME STEPS TO RECOVER SPECIFIED VALUES ON CHANGE      |
C              TO INFLOW FROM OUTFLOW                                          |
C     NSSERE:  EAST BOUNDARY CELL SALINITY TIME SERIES ID NUMBER               |
C     NTSERE:  EAST BOUNDARY CELL TEMPERATURE TIME SERIES ID NUMBER            |
C     NDSERE:  EAST BOUNDARY CELL DYE CONC TIME SERIES ID NUMBER               |
C     NSFSERE: EAST BOUNDARY CELL SHELLFISH LARVAE TIME SERIES ID NUMBER       |
C     NTXSERE: EAST BOUNDARY CELL TOXIC CONTAMINANT CONC TIME SERIES ID NUM.   |
C     NSDSERE: EAST BOUNDARY CELL COHESIVE SED CONC TIME SERIES ID NUMBER      |
C     NSNSERE: EAST BOUNDARY CELL NONCOHESIVE SED CONC TIME SERIES ID NUMBER   |
C                                                                              |
C52 IBBE  JBBE  NTSCRE NSSERE NTSERE NDSERE NSFSERE NTXSERE NSDSERE NSNSERE    |
-------------------------------------------------------------------------------
C53 TIME CONSTANT BOTTOM CONC ON EAST CONC BOUNDARIES                          |
C                                                                              |
C     SAL:  ULTIMATE INFLOWING BOTTOM LAYER SALINITY                           |
C     TEM:  ULTIMATE INFLOWING BOTTOM LAYER TEMPERATURE                        |
C     DYE:  ULTIMATE INFLOWING BOTTOM LAYER DYE CONCENTRATION                  |
C     SFL:  ULTIMATE INFLOWING BOTTOM LAYER SHELLFISH LARVAE CONCENTRAION      |
C     TOX:  NTOX ULTIMATE INFLOWING BOTTOM LAYER TOXIC CONTAMINANT             |
C           CONCENTRATIONS NTOX VALUES TOX(N), N=1,NTOX                        |
C                                                                              |
C53 SAL   TEM   DYE   SFL    TOX1                                              |
-------------------------------------------------------------------------------
C54 TIME CONSTANT BOTTOM CONC ON EAST CONC BOUNDARIES                          |
C                                                                              |
C     SED:  NSED ULTIMATE INFLOWING BOTTOM LAYER COHESIVE SEDIMENT             |
C           CONCENTRAIONS  FIRST NSED VALUES SED(N), N=1,NSND                  |
C     SND:  NSND ULTIMATE INFLOWING BOTTOM LAYER NONCOHESIVE SEDIMENT          |
C           CONCENTRATIONS LAST NSND VALUES SND(N), N=1,NSND                   |
C                                                                              |
C54  SED1  SND1                                                                |
-------------------------------------------------------------------------------
C55 TIME CONSTANT SURFACE CONC ON EAST CONC BOUNDARIES                         |
C                                                                              |
C     SAL:  ULTIMATE INFLOWING SURFAC LAYER SALINITY                           |
C     TEM:  ULTIMATE INFLOWING SURFAC LAYER TEMPERATURE                        |
C     DYE:  ULTIMATE INFLOWING SURFAC LAYER DYE CONCENTRATION                  |
C     SFL:  ULTIMATE INFLOWING SURFAC LAYER SHELLFISH LARVAE CONCENTRAION      |
C     TOX:  NTOX ULTIMATE INFLOWING SURFAC LAYER TOXIC CONTAMINANT             |
C           CONCENTRATIONS NTOX VALUES TOX(N), N=1,NTOX                        |
C                                                                              |
C55 SAL   TEM   DYE   SFL    TOX1                                              |
-------------------------------------------------------------------------------
C56 TIME CONSTANT SURFACE CONC ON EAST CONC BOUNDARIES                         |
C                                                                              |
C     SED:  NSED ULTIMATE INFLOWING SURFAC LAYER COHESIVE SEDIMENT             |
C           CONCENTRAIONS  FIRST NSED VALUES SED(N), N=1,NSND                  |
C     SND:  NSND ULTIMATE INFLOWING SURFAC LAYER NONCOHESIVE SEDIMENT          |
C           CONCENTRATIONS LAST NSND VALUES SND(N), N=1,NSND                   |
C                                                                              |
C56  SED1  SND1                                                                |
-------------------------------------------------------------------------------
C57 LOCATION OF CONC BC'S ON NORTH BOUNDARIES AND SERIES IDENTIFIERS           |
C                                                                              |
C     ICBN:    I CELL INDEX                                                    |
C     JCBN:    J CELL INDEX                                                    |
C     NTSCRN:  NUMBER OF TIME STEPS TO RECOVER SPECIFIED VALUES ON CHANGE      |
C              TO INFLOW FROM OUTFLOW                                          |
C     NSSERN:  NORTH BOUNDARY CELL SALINITY TIME SERIES ID NUMBER              |
C     NTSERN:  NORTH BOUNDARY CELL TEMPERATURE TIME SERIES ID NUMBER           |
C     NDSERN:  NORTH BOUNDARY CELL DYE CONC TIME SERIES ID NUMBER              |
C     NSFSERN: NORTH BOUNDARY CELL SHELLFISH LARVAE TIME SERIES ID NUMBER      |
C     NTXSERN: NORTH BOUNDARY CELL TOXIC CONTAMINANT CONC TIME SERIES ID NUM.  |
C     NSDSERN: NORTH BOUNDARY CELL COHESIVE SED CONC TIME SERIES ID NUMBER     |
C     NSNSERN: NORTH BOUNDARY CELL NONCOHESIVE SED CONC TIME SERIES ID NUMBER  |
C
C57 IBBN  JBBN  NTSCRN NSSERN NTSERN NDSERN NSFSERN NTXSERN NSDSERN NSNSERN    |
    57     24    60     2      2      0      0        0       2       0
    58     24    60     2      2      0      0        0       2       0
    59     24    60     2      2      0      0        0       2       0
-------------------------------------------------------------------------------
C58 TIME CONSTANT BOTTOM CONC ON NORTH CONC BOUNDARIES                         |
C                                                                              |
C     SAL:  ULTIMATE INFLOWING BOTTOM LAYER SALINITY                           |
C     TEM:  ULTIMATE INFLOWING BOTTOM LAYER TEMPERATURE                        |
C     DYE:  ULTIMATE INFLOWING BOTTOM LAYER DYE CONCENTRATION                  |
C     SFL:  ULTIMATE INFLOWING BOTTOM LAYER SHELLFISH LARVAE CONCENTRAION      |
C     TOX:  NTOX ULTIMATE INFLOWING BOTTOM LAYER TOXIC CONTAMINANT             |
C           CONCENTRATIONS NTOX VALUES TOX(N), N=1,NTOX                        |
C                                                                              |
C58 SAL   TEM   DYE   SFL    TOX1                                              |
    0.0   0.0   0.0   0.0    0.0
    0.0   0.0   0.0   0.0    0.0
    0.0   0.0   0.0   0.0    0.0
-------------------------------------------------------------------------------
C59 TIME CONSTANT BOTTOM CONC ON NORTH CONC BOUNDARIES                         |
```

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C                                                                        |
C     SED:  NSED ULTIMATE INFLOWING BOTTOM LAYER COHESIVE SEDIMENT       |
C           CONCENTRAIONS  FIRST NSED VALUES SED(N), N=1,NSND            |
C     SND:  NSND ULTIMATE INFLOWING BOTTOM LAYER NONCOHESIVE SEDIMENT    |
C           CONCENTRATIONS LAST NSND VALUES SND(N), N=1,NSND             |
C                                                                        |
C59  SED1  SND1                                                          |
      0.     0.
      0.     0.
      0.     0.
--------------------------------------------------------------------------
C60 TIME CONSTANT SURFACE CONC ON NORTH CONC BOUNDARIES                  |
C                                                                        |
C     SAL:  ULTIMATE INFLOWING SURFAC LAYER SALINITY                     |
C     TEM:  ULTIMATE INFLOWING SURFAC LAYER TEMPERATURE                  |
C     DYE:  ULTIMATE INFLOWING SURFAC LAYER DYE CONCENTRATION            |
C     SFL:  ULTIMATE INFLOWING SURFAC LAYER SHELLFISH LARVAE CONCENTRAION |
C     TOX:  NTOX ULTIMATE INFLOWING SURFAC LAYER TOXIC CONTAMINANT       |
C           CONCENTRATIONS NTOX VALUES TOX(N), N=1,NTOX                  |
C                                                                        |
C60 SAL   TEM   DYE   SFL    TOX1                                        |
    0.0   0.0   0.0   0.0    0.0
    0.0   0.0   0.0   0.0    0.0
    0.0   0.0   0.0   0.0    0.0
--------------------------------------------------------------------------
C61 TIME CONSTANT SURFACE CONC ON NORTH CONC BOUNDARIES                  |
C                                                                        |
C     SED:  NSED ULTIMATE INFLOWING SURFAC LAYER COHESIVE SEDIMENT       |
C           CONCENTRAIONS  FIRST NSED VALUES SED(N), N=1,NSND            |
C     SND:  NSND ULTIMATE INFLOWING SURFAC LAYER NONCOHESIVE SEDIMENT    |
C           CONCENTRATIONS LAST NSND VALUES SND(N), N=1,NSND             |
C                                                                        |
C61  SED1  SND1                                                          |
     0.    0.
     0.    0.
     0.    0.
--------------------------------------------------------------------------
C62 DRIFTER DATA (FIRST 4 PARAMETER FOR SUB DRIFER, SECOND 6 FOR SUB LAGRES)  |
C                                                                        |
C     ISPD:   1 TO ACTIVE SIMULTANEOUS RELEASE AND LAGRANGIAN TRANSPORT OF |
C               NEUTRALLY BUOYANT PARTICLE DRIFTERS AT LOCATIONS INPUT ON C44 |
C     NPD:      NUMBER OF PARTICLE DIRIFERS                              |
C     NPDRT:    TIME STEP AT WHICH PARTICLES ARE RELEASED                |
C     NWPD:     NUMBER OF TIME STEPS BETWEEN WRITING TO TRACKING FILE    |
C               drifter.out                                              |
C     ISLRPD: 1 TO ACTIVATE CALCULATION OF LAGRANGIAN MEAN VELOCITY OVER TIME |
C               INTERVAL TREF AND SPATIAL INTERVAL ILRPD1<I<ILRPD2,      |
C               JLRPD1<J<JLRPD2, 1<K<KC, WITH MLRPDRT RELEASES.  ANY AVERGE |
C               OVER ALL RELEASE TIMES IS ALSO CALCULATED                |
C             2 SAME BUT USES A HIGER ORDER TRAJECTORY INTEGRATION       |
C     ILRPD1    WEST BOUNDARY OF REGION                                  |
C     ILRPD2    EAST BOUNDARY OF REGION                                  |
C     JLRPD1    NORTH BOUNDARY OF REGION                                 |
C     JLRPD2    SOUTH BOUNDARY OF REGION                                 |
C     MLRPDRT   NUMBER OF RELEASE TIMES                                  |
C     IPLRPD    1,2,3 WRITE FILES TO PLOT ALL,EVEN,ODD HORIZ LAG VEL VECTORS |
C                                                                        |
C62 ISPD NPD NPDRT NWPD ISLRPD ILRPD1 ILRPD2 JLRPD1  JLRPD2  MLRPDRT IPLRPD |
    0     0   0    12    0     3      28     9        7      12     1
--------------------------------------------------------------------------
C63 INITIAL DRIFTER POSITIONS (FOR USE WITH SUB DRIFTER)                 |
C                                                                        |
C     RI:  I CELL INDEX IN WHICH PARTICLE IS RELEASED IN                 |
C     RJ:  J CELL INDEX IN WHICH PARTICLE IS RELEASED IN                 |
C     RK:  K CELL INDEX IN WHICH PARTICLE IS RELEASED IN                 |
C                                                                        |
C63   RI   RJ   RK                                                       |
--------------------------------------------------------------------------
C64 CONSTANTS FOR CARTESION GRID CELL CENTER LONGITUDE AND LATITUDE      |
C                                                                        |
C     CDLON1:  6 CONSTANTS TO GIVE CELL CENTER LAT AND LON OR OTHER      |
C     CDLON2:    COORDINATES FOR CARTESIAN GRIDS USING THE FORMULAS      |
C     CDLON3:    DLON(L)=CDLON1+(CDLON2*FLOAT(I)+CDLON3)/60.            |
C     CDLAT1:    DLAT(L)=CDLAT1+(CDLAT2*FLOAT(J)+CDLAT3)/60.            |
C     CDLAT2:                                                            |
C     CDLAT3:                                                            |
C                                                                        |
C64 CDLON1  CDLON2   CDLON3   CDLAT1  CDLAT2   CDLAT3                    |
      0.0   0.0      0.0      0.0     0.0      0.0
--------------------------------------------------------------------------
C65 CONTROLS FOR WRITING ASCII OR BINARY DUMP FILES                      |
C                                                                        |
C   ISDUMP: GREATER THAN 0 TO ACTIVATE                                   |
C           1 SCALED ASCII INTERGER (0<VAL<65535)                        |
C           2 SCALED 16BIT BINARY INTEGER (0<VAL<65535) OR (-32768<VAL<32767) |
C           3 UNSCALED ASCII FLOATING POINT                              |
C           4 UNSCALED BINARY FLOATING POINT                             |
C   ISADMP: GREATER THAN 0 TO APPEND EXISTING DUMP FILES                 |
C   NSDUMP: NUMBER OF TIME STEPS BETWEEN DUMPS                           |
C   TSDUMP: STARTING TIME FOR DUMPS (NO DUMPS BEFORE THIS TIME)          |
C   TEDUMP: ENDING TIME FOR DUMPS (NO DUMPS AFTER THIS TIME)             |
C   ISDMPP: GREATER THAN 0 FOR WATER SURFACE ELEVATION DUMP              |
C   ISDMPU: GREATER THAN 0 FOR HORIZONTAL VELOCITY DUMP                  |
C   ISDMPW: GREATER THAN 0 FOR VERTICAL VELOCITY DUMP                    |
C   ISDMPT: GREATER THAN 0 FOR TRANSPORTED VARIABLE DUMPS                |
C  IADJDMP: 0 FOR SCALED BINARY INTEGERS (0<VAL<65535)                   |
C           -32768 FOR SCALED BINARY INTEGERS (-32768<VAL<32767)         |
C                                                                        |
C65 ISDUMP ISADMP NSDUMP TSDUMP TEDUMP ISDMPP ISDMPU ISDMPW ISDMPT IADJDMP |
    0      0      0      0      0     0       0      0      0      -32768
--------------------------------------------------------------------------
C66 CONTROLS FOR HORIZONTAL PLANE SCALAR FIELD CONTOURING                |
C                                                                        |
C     ISSPH:  1 TO WRITE FILE FOR SCALAR FIELD CONTOURING IN HORIZONTAL PLANE |
C     NPSPH:    NUMBER OF WRITES PER REFERENCE TIME PERIOD               |
C     ISRSPH: 1 TO WRITE FILE FOR RESIDUAL SALINITY PLOTTING IN          |
C               HORIZONTAL                                               |
```

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C     ISPHXY: 0 DOES NOT WRITE I,J,X,Y IN ***cnh.out and r***cnh.out FILES     |
C             1 WRITES I,J ONLY IN ***cnh.out and r***cnh.out FILES            |
C             2 WRITES I,J,X,Y  IN ***cnh.out and r***cnh.out FILES            |
C     DATA LINE REPEATS 7 TIMES FOR SAL,TEM,DYE,SFL,TOX,SED,SND                |
C                                                                              |
C66 ISSPH   NPSPH   ISRSPH   ISPHXY                                            |
    1       24      1          2      !SAL
    0       6       0          1      !TEM
    0       6       0          1      !DYE
    0       6       0          1      !SFL
    0       6       0          1      !TOX
    1       24      1          2      !SED
    0       6       0          1      !SND
-------------------------------------------------------------------------------
C67 CONTROLS FOR HORIZONTAL SURFACE ELEVATION OR PRESSURE CONTOURING           |
C                                                                              |
C     ISPPH:  1 TO WRITE FILE FOR SURFACE ELEVATION OR PRESSURE CONTOURING     |
C               IN HORIZONTAL PLANE                                            |
C     NPPPH:    NUMBER OF WRITES PER REFERENCE TIME PERIOD                     |
C     ISRPPH: 1 TO WRITE FILE FOR RESIDUAL SURFACE ELEVATION  CONTOURNG IN     |
C               HORIZONTAL PLANE                                               |
C                                                                              |
C67 ISPPH   NPPPH   ISRPPH                                                     |
    1       1       0
-------------------------------------------------------------------------------
C68 CONTROLS FOR HORIZONTAL PLANE VELOCITY VECTOR PLOTTING                     |
C                                                                              |
C     ISVPH:  1 TO WRITE FILE FOR VELOCITY PLOTTING IN HORIZONTAL PLANE        |
C     NPVPH:    NUMBER OF WRITES PER REFERENCE TIME PERIOD                     |
C     ISRVPH: 1 TO WRITE FILE FOR RESIDUAL VELOCITY PLOTTIN IN                 |
C               HORIZONTAL PLANE                                               |
C                                                                              |
C68 ISVPH   NPVPH   ISRVPH                                                     |
    0       24      0
-------------------------------------------------------------------------------
C69 CONTROLS FOR VERTICAL PLANE SCALAR FIELD CONTOURING                        |
C                                                                              |
C     ISECSPV:  N AN INTEGER NUMBER OF VERTICAL SECTIONS (N.LE.9) TO WRITE     |
C                 N FILES FOR SCALAR  FIELD CONTOURING                         |
C     NPSPV:      NUMBER OF WRITES PER REFERENCE TIME PERIOD                   |
C     ISSPV:    1 TO ACTIVATE INSTANTANEOUS SCALAR FIELDS                      |
C     ISRSPV:   1 TO ACTIVATE FOR RESIDUAL SCALAR FIELDS                       |
C     ISHPLTV:  1 FOR VERTICAL PLANE PLOTTING FOR MSL DATUMS, ZERO OTHERWISE   |
C     DATA LINE REPEATS 7 TIMES FOR SAL,TEM,DYE,SFL,TOX,SED,SND                |
C     ISECSPV IS DETERMINED FOR ALL 7 VARIABLES BY VALUE ON FIRST DATA LINE    |
C                                                                              |
C69 ISECSPV   NPSPV  ISSPV  ISRSPV  ISHPLTV                                    |
    0          6      0      0       1          !SAL
    0          6      0      0       1          !TEM
    0          6      0      0       1          !DYE
    0          6      0      0       1          !SFL
    0          6      0      0       1          !TOX
    0          6      0      0       1          !SED
    0          6      0      0       1          !SND
-------------------------------------------------------------------------------
C70 MORE CONTROLS FOR VERTICAL PLANE SCALAR FIELD CONTOURING                   |
C                                                                              |
C     ISECSPV:  SECTION NUMBER                                                 |
C     NIJSPV:   NUMBER OF CELLS OR I,J PAIRS IN SECTION                        |
C     SEC ID:   CHARACTER FORMAT SECTION TITLE                                 |
C                                                                              |
C70 ISECSPV NIJSPV  SEC ID                                                     |
-------------------------------------------------------------------------------
C71 I,J LOCATIONS FOR VERTICAL PLANE SCALAR FIELD CONTOURING                   |
C                                                                              |
C     ISECSPV: SECTION NUMBER                                                  |
C     ISPV:    I CELL                                                          |
C     JSPV:    J CELL                                                          |
C                                                                              |
C71 ISECSPV ISPV    JSPV                                                       |
-------------------------------------------------------------------------------
C72 CONTROLS FOR VERTICAL PLANE VELOCITY VECTOR PLOTTING                       |
C                                                                              |
C     ISECVPV:  N AN INTEGER NUMBER (N.LE.9) OF VERTICAL SECTIONS              |
C                 TO WRITE N FILES FOR VELOCITY PLOTTING                       |
C     NPVPV:      NUMBER OF WRITES PER REFERENCE TIME PERIOD                   |
C     ISVPV:    1 TO ACTIVATE INSTANTANEOUS VELOCITY                           |
C     ISRSPV:   1 TO ACTIVATE FOR RESIDUAL VELOCITY                            |
C                                                                              |
C72 ISECVPV   NPVPV  ISVPV  ISRSPV                                             |
    0         12     0      0
-------------------------------------------------------------------------------
C73 MORE CONTROLS FOR VERTICAL PLANE VELOCITY VECTOR PLOTTING                  |
C                                                                              |
C     ISCEVPV:  SECTION NUMBER                                                 |
C     NIJVPV:   NUMBER IS CELLS OR I,J PAIRS IN SECTION                        |
C     ANGVPV:   CCW POSITIVE ANGLE FROM EAST TO SECTION NORMAL                 |
C     SEC ID:   CHARACTER FORMAT SECTION TITLE                                 |
C                                                                              |
C73 ISECVPV   NIJVPV  ANGVPV  SEC ID                                           |
-------------------------------------------------------------------------------
C74 CONTROLS FOR VERTICAL PLANE VELOCITY PLOTTING                              |
C                                                                              |
C     ISECVPV:  SECTION NUMBER (REFERENCE USE HERE)                            |
C     IVPV:     I CELL INDEX                                                   |
C     JVPV:     J CELL INDEX                                                   |
C                                                                              |
C74 ISECVPV IVPV    JVPV                                                       |
-------------------------------------------------------------------------------
C75 CONTROLS FOR 3D FIELD OUTPUT                                               |
C                                                                              |
C     IS3DO:  1 TO WRITE TO 3D ASCI INTEGER FORMAT FILES, JS3Dvar.LE.2     SEE |
C             1 TO WRITE TO 3D ASCI FLOAT POINT FORMAT FILES, JS3Dvar.EQ.3 C57|
C             2 TO WRITE TO 3D CHARACTER ARRAY FORMAT FILES (NOT ACTIVE)       |
C             3 TO WRITE TO 3D HDF IMAGE FORMAT FILES (NOT ACTIVE)             |
C             4 TO WRITE TO 3D HDF FLOATING POINT FORMAT FILES (NOT ACTIVE)    |
C     ISR3DO:   SAME AS IS3DO EXCEPT FOR RESIDUAL VARIABLES                    |
```

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C     NP3DO:    NUMBER OF WRITES PER LAST REF TIME PERIOD FOR INST VARIABLES  |
C     KPC:      NUMBER OF UNSTRETCHED PHYSICAL VERTICAL LAYERS                |
C     NWGG:     IF NWGG IS GREATER THAN ZERO, NWGG DEFINES THE NUMBER OF !2877|
C               WATER CELLS IN CARTESIAN 3D GRAPHICS GRID OVERLAY OF THE      |
C               CURVILINEAR GRID. FOR NWGG>0 AND EFDC RUNS ON A CURVILINEAR   |
C               GRID, I3DMI,I3DMA,J3DMI,J3DMA REFER TO CELL INDICES ON THE    |
C               ON THE CARTESIAN GRAPHICS GRID OVERLAY DEFINED BY FILE        |
C               gcell.inp.  THE FILE gcell.inp IS NOT USED BY EFDC, BUT BY    |
C               THE COMPANION GRID GENERATION CODE GEFDC.F.  INFORMATION      |
C               DEFINING THE OVERLAY IS READ BY EFDC.F FROM THE FILE          |
C               gcellmp.inp. IF NWGG EQUALS 0, I3DMI,I3DMA,J3DMI,J3DMA REFER  |
C               TO INDICES ON THE EFDC GRID DEFINED BY cell.inp.              |
C               ACTIVATION OF THE REWRITE OPTION I3DRW=1 WRITES TO THE FULL   |
C               GRID DEFINED BY cell.inp AS IF cell.inp DEFINES A CARTESIAN   |
C               GRID.  IF NWGG EQ 0 AND THE EFDC COMP GRID IS CO, THE REWRITE |
C               OPTION IS NOT RECOMMENDED AND A POST PROCESSOR SHOULD BE USED |
C               TO TRANSFER THE SHORT FORM, I3DRW=0, OUTPUT TO AN APPROPRIATE |
C               FORMAT FOR VISUALIZATION. CONTACT DEVELOPER FOR MORE DETAILS  |
C     I3DMI:    MINIMUM OR BEGINNING I INDEX FOR 3D ARRAY OUTPUT              |
C     I3DMA:    MAXIMUM OR ENDING I INDEX FOR 3D ARRAY OUTPUT                 |
C     J3DMI:    MINIMUM OR BEGINNING J INDEX FOR 3D ARRAY OUTPUT              |
C     J3DMA:    MAXIMUM OR ENDING J INDEX FOR 3D ARRAY OUTPUT                 |
C     I3DRW:  0 FILES WRITTEN FOR ACTIVE CO WATER CELLS ONLY                  |
C             1 REWRITE FILES TO CORRECT ORIENTATION DEFINED BY gcell.inp     |
C               AND gcellmp.inp FOR CO WITH NWGG.GT.O OR BY cell.inp IF THE   |
C               COMPUTATIONAL GRID IS CARTESIAN AND NWGG.EQ.0                 |
C     SELVMAX:  MAXIMUM SURFACE ELEVATION FOR UNSTRETCHING (ABOVE MAX SELV )  |
C     BELVMIN:  MINIMUM BOTTOM ELEVATION FOR UNSTRETCHING (BELOW MIN BELV)    |
C                                                                             |
C75 IS3DO ISR3DO NP3DO KPC NWGG I3DMI I3DMA J3DMI J3DMA I3DRW SELVMAX BELVMIN |
    0     0      6     1   0    1     29    1     14    0     15.0    -315.
-------------------------------------------------------------------------------
C76 OUTPUT ACTIVATION AND SCALES FOR 3D FIELD OUTPUT                          |
C                                                                             |
C     VARIABLE:      DUMMY VARIBLE ID (DO NOT CHANGE ORDER)                   |
C     IS3(VARID):  1 TO ACTIVATE THIS VARIBLES                                |
C     JS3(VARID):  0 FOR NO SCALING OF THIS VARIABLE                          |
C                  1 FOR AUTO SCALING OF THIS VARIABLE OVER RANGE 0<VAL<255   |
C                    AUTO SCALES FOR EACH FRAME OUTPUT IN FILES out3d.dia AND |
C                    rout3d.dia  OUTPUT IN I4 FORMAT                          |
C                  2 FOR SCALING SPECIFIED IN NEXT TWO COLUMNS WITH OUTPUT    |
C                    DEFINED OVER RANGE  0<VAL<255 AND WRITTEN IN I4 FORMAT   |
C                  3 FOR MULTIPLIER SCALING BY MAX SCALE VALUE WITH OUTPUT    |
C                    WRITTEN IN F7.1 FORMAT (IS3DO AND ISR3DO MUST BE 1)      |
C                                                                             |
C76 VARIABLE    IS3D(VARID)  JS3D(VARID)   MAX SCALE VALUE  MIN SCALE VALUE   |
    'U VEL'     0            0              100.0             -1.0
    'V VEL'     0            0              100.0             -1.0
    'W VEL'     0            0             1000.0          -1.0E-3
    'SALINITY'  1            2                1.0              0.0
    'TEMP'      0            3                1.0             10.0
    'DYE'       0            0             1000.0              0.0
    'COH SED'   0            0             1000.0              0.0
    'NCH SED'   0            0                1.0              0.0
    'TOX CON'   0            3             1000.0              0.0
-------------------------------------------------------------------------------
C77 INPLACE HARMONIC ANALYSIS PARAMETERS                                      |
C                                                                             |
C     ISLSHA:  1 FOR IN PLACE LEAST SQUARES HARMONIC ANALYSIS                 |
C     MLLSHA:  NUMBER OF LOCATIONS FOR LSHA                                   |
C     NTCLSHA: LENGTH OF LSHA IN INTEGER NUMBER OF REFERENCE TIME PERIODS     |
C     ISLSTR:  1 FOR TREND REMOVAL                                            |
C     ISHTA :  1 FOR SINGLE TREF PERIOD SURFACE ELEV ANALYSIS                 |
C                                                                             |
C77 ISLSHA  MLLSHA   NTCLSHA  ISLSTR  ISHTA                                   |
     1       2         2      0       0
-------------------------------------------------------------------------------
C78 HARMONIC ANALYSIS LOCATIONS AND SWITCHES                                  |
C                                                                             |
C     ILLSHA:   I CELL INDEX                                                  |
C     JLLSHA:   J CELL INDEX                                                  |
C     LSHAP:  1 FOR ANALYSIS OF SURFACE ELEVATION                             |
C     LSHAB:  1 FOR ANALYSIS OF SALINITY                                      |
C     LSHAUE: 1 FOR ANALYSIS OF EXTERNAL MODE HORIZONTAL VELOCITY             |
C     LSHAU:  1 FOR ANALYSIS OF HORIZONTAL VELOCITY IN EVERY LAYER            |
C     CLSL:     LOCATION AS A CHARACTER VARIALBLE                             |
C                                                                             |
C78 ILLSHA   JLLSHA   LSHAP  LSHAB  LSHAUE LSHAU  CLSL                        |
     56       13       1      0       1      0    'Port of Wilmington'
     45       13       1      0       1      0    'Christina R. Newport'
-------------------------------------------------------------------------------
C79 CONTROLS FOR WRITING TO TIME SERIES FILES                                 |
C                                                                             |
C     ISTMSR:  1 OR 2 TO WRITE TIME SERIES OF SURF ELEV, VELOCITY, NET        |
C              INTERNAL AND EXTERNAL MODE VOLUME SOURCE-SINKS, AND            |
C              CONCENTRATION VARIABLES,  2 APPENDS EXISTING TIME SERIES FILES |
C     MLTMSR:  NUMBER HORIZONTAL LOCATIONS TO WRITE TIME SERIES OF SURF ELEV, |
C              VELOCITY, AND CONCENTRATION VARIABLES,  MAXIMUM LOCATIONS = 9  |
C     NBTMSR:  TIME STEP TO BEGIN WRITING TO TIME SERIES FILES                |
C     NSTMSR:  TIME STEP TO STOP WRITING TO TIME SERIES FILES                 |
C     NWTSER:  WRITE INTERVAL FOR WRITING TO TIME SERIES FILES                |
C    NTSSTSP:  NUMBER OF TIME SERIES START-STOP SCENARIOS,  1 OR GREATER      |
C     TCTMSR:  UNIT CONVERSION FOR TIME SERIES TIME.  FOR SECONDS, MINUTES,   |
C              HOURS,DAYS USE 1.0, 60.0, 3600.0, 86400.0 RESPECTIVELY         |
C       IDUM:  2 DUMMY INTEGER VARIABLES REQUIRED, BOTH = 0                   |
C                                      72 = hourly                            |
C79 ISTMSR  MLTMSR  NBTMSR  NSTMSR  NWTMSR  NTSSTSP  TCTMSR   IDUM  IDUM      |
    1       28      1      1000000  1440     1       86400.
-------------------------------------------------------------------------------
C80 CONTROLS FOR WRITING TO TIME SERIES FILES                                 |
C                                                                             |
C    ITSSS:    START-STOP SCENARIO NUMBER 1.GE.ISSS.LE.NTSSTSP                |
C  MTSSTSP:    NUMBER OF STOP-START PAIRS FOR SCENARIO ISSS                   |
C                                                                             |
C80 ITSSS  MTSSTSP                                                            |
      1      1    !FULL SAVE
-------------------------------------------------------------------------------
```

```
C81 CONTROLS FOR WRITING TO TIME SERIES FILES                                |
C                                                                            |
C    ITSSS:    START-STOP SCENARIO NUMBER 1.GE.ISSS.LE.NTSSTSP               |
C    MTSSS:    NUMBER OF STOP-START PAIRS FOR SCENARIO ISSS                  |
C   TSSTRT:    STARTING TIME FOR SCENARIO ITSSS, SAVE INTERVAL MTSSS         |
C   TSSTOP:    STOPING TIME FOR SCENARIO ITSSS, SAVE INTERVAL MTSSS          |
C                                                                            |
C81 ISSS   MTSSS    TSSTRT    TSSTOP     USER COMMENT                        |
      1      1      -1000.    99999.     ! FULL SAVE
-----------------------------------------------------------------------------
C82 CONTROLS FOR WRITING TO TIME SERIES FILES                                |
C                                                                            |
C     ILTS:    I CELL INDEX                                                  |
C     JLTS:    J CELL INDEX                                                  |
C   NTSSSS:    WRITE SCENARIO FOR THIS LOCATION                              |
C     MTSP:  1 FOR TIME SERIES OF SURFACE ELEVATION                          |
C     MTSC:  1 FOR TIME SERIES OF TRANSPORTED CONCENTRATION VARIABLES        |
C     MTSA:  1 FOR TIME SERIES OF EDDY VISCOSITY AND DIFFUSIVITY             |
C     MTSUE: 1 FOR TIME SERIES OF EXTERNAL MODE HORIZONTAL VELOCITY          |
C     MTSUT: 1 FOR TIME SERIES OF EXTERNAL MODE HORIZONTAL TRANSPORT         |
C     MTSU:  1 FOR TIME SERIES OF HORIZONTAL VELOCITY IN EVERY LAYER         |
C     MTSQE: 1 FOR TIME SERIES OF NET EXTERNAL MODE VOLUME SOURCE/SINK       |
C     MTSQ:  1 FOR TIME SERIES OF NET EXTERNAL MODE VOLUME SOURCE/SINK       |
C     CLTS:    LOCATION AS A CHARACTER VARIALBLE                             |
C                                                                            |
C82 ILTS JLTS NTSSSS MTSP MTSC MTSA MTSUE MTSUT MTSU MTSQE MTSQ  CLTS        |
     57   5    1      1    1    0    1     1    1     0    0  '57,5  Delaware South'
     58  23    1      1    1    0    1     1    1     0    0  '58,23 Delaware North'
     56  13    1      1    1    0    1     1    1     0    0  '56,13 Christina Mouth'
     45  13    1      1    1    0    1     1    1     0    0  '45,13 Christina Newport'
      7  79    1      1    1    0    1     1    1     0    0  ' 7,79 01480300'
     29  79    1      1    1    0    1     1    1     0    0  '29,79 01480617'
     54  76    1      1    1    0    1     1    1     0    0  '54,76 01480650'
     54  62    1      1    1    0    1     1    1     0    0  '54,62 BrandyEB'
     54  61    1      1    1    0    1     1    1     0    0  '54,61 BrandyEB'
     54  60    1      1    1    0    1     1    1     0    0  '54,60 BrandyEB'
     54  59    1      1    1    0    1     1    1     0    0  '54,59 BrandyEB'
     54  56    1      1    1    0    1     1    1     0    0  '54,56 BrandyEB'
     19  79    1      1    1    0    1     1    1     0    0  '19,79 BrandyWB'
     20  79    1      1    1    0    1     1    1     0    0  '20,79 BrandyWB'
     21  79    1      1    1    0    1     1    1     0    0  '21,79 BrandyWB'
     23  79    1      1    1    0    1     1    1     0    0  '23,79 BrandyWB'
     24  79    1      1    1    0    1     1    1     0    0  '24,79 BrandyWB'
     25  79    1      1    1    0    1     1    1     0    0  '25,79 BrandyWB'
     26  79    1      1    1    0    1     1    1     0    0  '26,79 BrandyWB'
     19  31    1      1    1    0    1     1    1     0    0  '19,31 WhiteClE'
     19  30    1      1    1    0    1     1    1     0    0  '19,32 WhiteClE'
     19  29    1      1    1    0    1     1    1     0    0  '19,33 WhiteClE'
     19  28    1      1    1    0    1     1    1     0    0  '19,34 WhiteClE'
     25  43    1      1    1    0    1     1    1     0    0  '25,43 RedClayW'
     27  43    1      1    1    0    1     1    1     0    0  '27,43 RedClayW'
     29  43    1      1    1    0    1     1    1     0    0  '29,43 RedClayW'
     31  43    1      1    1    0    1     1    1     0    0  '31,43 RedClayW'
     33  43    1      1    1    0    1     1    1     0    0  '33,43 RedClayW'
-----------------------------------------------------------------------------
C83 CONTROLS FOR EXTRACTING INSTANTANEOUS VERTICAL SCALAR FIELD PROFILES     |
C                                                                            |
C     ISVSFP: 1 FOR EXTRACTING INSTANTANEOUS VERTICAL FIELD PROFILES         |
C     MDVSFP:   MAXIMUM NUMBER OF DEPTHS FOR SAMPLING VALUES                 |
C     MLVSFP:   NUMBER OF HORIZONTAL SPACE-TIME LOCATION PAIRS TO BE SAMPLED |
C     TMVSFP:   MULTIPLIER TO CONVERT SAMPLING TIMES TO SECONDS              |
C     TAVSFP:   ADDITIVE ADJUSTMENT TO SAMPLING TIME BEFORE CONVERSION TO SEC |
C                                                                            |
C83 ISVSFP  MDVSFP  MLVSFP  TMVSFP  TAVSFP                                   |
      0       0     0       3600.   0.0
-----------------------------------------------------------------------------
C84 SAMPLING DEPTHS FOR EXTRACTING INST VERTICAL SCALAR FIELD PROFILES       |
C                                                                            |
C     MMDVSFP:  Mth SAMPLING DEPTH                                           |
C     DMSFP:    SAMPLING DEPTH BELOW SURFACE, IN METERS                      |
C                                                                            |
C84 MMDVSFP  DMVSFP                                                          |
-----------------------------------------------------------------------------
C85 HORIZONTAL SPACE-TIME LOCATIONS FOR SAMPLING                             |
C                                                                            |
C     MMLVSFP:  Mth SPACE TIME SAMPLING LOCATION                             |
C     TIMVSFP:  MAXIMUM NUMBER OF DEPTHS FOR SAMPLING VALUES                 |
C     IVSFP:    I HORIZONTAL LOCATON INDEX                                   |
C     JVSFP:    J HORIZONTAL LOCATON INDEX                                   |
C                                                                            |
C85 MMLVSFP  TIMVSFP  IVSFP  JVSFP                                           |
*****************************************************************************
*****************************************************************************
*****************************************************************************
```

WQ3DWC.INP

```
# <-- set first character to "#" to use extended annotation in this file
C-----------------------------------------------------------------------------
C01  MAIN TITLE CARDS
C
C  TITLE(M), M=1,3
C
C01 THREE TITLE CARDS FOLLOW:
': Christina River Basin Water Quality Model'
': Variable stream flow and variable NPDES discharges'
': 10/01/1994 to 10/01/1998 Calibration'
C-----------------------------------------------------------------------------
C02 I/O CONTROL VARIABLE CARD
C
C02 ONE TITLE CARD FOLLOWS:
$$ C02 I/O control variables $$
C02
C    NWQV = number of water quality water column variables
C    NWQZ = max. number of spatial zones having varying water quality parameters
C   NWQPS = max. number of water quality point source locations
C   NWQTD = number of data points in the temperature lookup table
C   NWQTS = max. number of water quality time-series output locations
C  NTSWQV = max. number of water quality time-series output variables
C    NSMG = number of sediment model groups (= 3)
C    NSMZ = max. number of sediment model spatial variation zones
C  NTSSMV = max. number of sediment model time-series output variables
C   NSMTS = not used
C NWQKDPT = number of kinetic updates per transport update
C
C02 NWQV NWQZ NWQPS NWQTD NWQTS NTSWQV NSMG NSMZ NTSSMV NSMTS NWQKDPT
    21   13   529   550   30    21     3    20   3      30    1
C-----------------------------------------------------------------------------
C03
C  IWQDT   = number of water quality time steps per hydrodynamic time step (=2)
C  IWQM    = full or reduced model switch (1=full model; 2=reduced model)
C  IWQBEN  = benthic flux model switch (0=specified flux; 1=predictive flux)
C  IWQSI   = switch to activate silica state variables (0=off; 1=activated)
C  IWQFCB  = switch to activate fecal coliform bacteria (0=off; 1=activated)
C  IWQSRP  = switch for sediment sorption (1=TAM sorption; 2=sediment sorption)
C  IWQSTOX = cyanobacteria salinity toxicity switch (0=no toxicity; 1=toxicity)
C  IWQKA   = reaeration option
C          = 0, constant reaeration (WQKRO), no wind reaeration
C          = 1, constant reaeration (WQKRO) plus wind reaeration
C          = 2, use O'Connor-Dobbins (1958) formula
C          = 3, use Owens & Gibbs (1964) formula
C          = 4, modified Owens & Gibbs (1964) formula (for Christina River)
C  IWQVLIM = option for velocity limitation of macroalgae growth
C          = 0, macroalgae growth is not limited by stream velocity
C          = 1, macroalgae growth limited using Michaelis-Menton formula
C          = 2, macroalgae growth limited using 5-parameter Logistic Function
C
C03 IWQDT   IWQM    IWQBEN  IWQSI   IWQFCB  IWQSRP  IWQSTOX  IWQKA IWQVLIM
     2       1       1       1       1       2       0        4     2
C-----------------------------------------------------------------------------
C04
C     IWQZ = number of zones for spatially varying WQ parameters
C    IWQNC = switch to save negative concentrations to WQ3DNC.LOG (0=OFF; 1=ON)
C   IWQRST = switch to save WQ restart data to WQWCRST.OUT (0=OFF; 1=ON)
C    NDMWQ = number of horizontal spatial domains for decomposition calc. (=1)
C    LDMWQ = number of horizontal cells in the WQ computational domain (=LC-2)
C  NDDOAVG = no longer used
C  NDLTAVG = no longer used
C IDNOTRVA = ID number of macroalgae water quality variable
C
C04 IWQZ    IWQNC   IWQRST  NDMWQ   LDMWQ   NDDOAVG  NDLTAVG IDNOTRVA
    13      1       1       1       406     0        91      22
C-----------------------------------------------------------------------------
C05
C   IWQICI = initial condition switch
C            0=spatially constant initial conditions (card C44)
C            1=read initial condition file ICIFN (see card C51)
C            2=read initial conditions from restart file WQWCRST.INP
C   IWQAGR = algae growth kinetics switch
C            0=use constant kinetics on card C45
C            1=read spatial/time-varying kinetics from file AGRFN (card C51)
C   IWQSTL = settling velocity switch
C            0=use spatially/temporally constant settling velocities (card C46)
C            1=use spatial/time-varying settling vel. from STLFN (card C51)
C   IWQSUN = solar radiation switch
C            0=use constant solar radiation (I0) and FD from card C10
C            1=use daily average solar rad. and FD from file SUNDAY.INP
C            2=use hourly solar rad. from ASER.INP file
C   IWQPSL = point source load switch
C            0=use constant point source loads
C            1=use time-variable point source loads from file WQPSL.INP
C   IWQNPL = not used
C isDIURDO = switch for saving diurnal D.O. data
C            0=do not save diurnal D.O. data to file
C            1=save diurnal D.O. data to binary file WQDIURDO.BIN (overwrite)
C            2=save diurnal D.O. data to binary file WQDIURDO.BIN (append)
```

```
C  WQDIUDT = time interval for writing to diurnal D.O. file (hours)
C   IWQKIN = switch for using spatially-varying kinetic rate constants
C            0=do not use spatially-varying kinetics
C            1=use spatially-varying kinetics in file KINETICS.INP
C              Only applies to IWQKA, KRO, KTR, REAC, KDC, KDCALGm, KHRm
C              DOPTm, KCD, and KHCOD.
C
C05 IWQICI  IWQAGR  IWQSTL  IWQSUN  IWQPSL  IWQNPL  isDIURDO WQDIUDT IWQKIN
     2       1       1       2       1       0       2       24.0     1
C-----------------------------------------------------------------------------
C06
C    IWQTS = number of time-series locations to output to ASCII file WQWCTS.OUT
C   TWQTSB = beginning time for recording time-series data (Julian Day)
C   TWQTSE = ending    time for recording time-series data (Julian Day)
C   WQTSDT = write interval (hours), also averaging interval for binary files
C            use 24.0 hours for daily averages (solar day)
C            use 24.8412 hours to average over the M2 tide period (lunar day)
C  isWQAVG = switch to save WQ averages to binary file WQWCAVG.BIN (0=OFF; 1=OVERWRITE; 2=APPEND)
C  isWQMIN = switch to save WQ minimums to binary file WQWCMIN.BIN (0=OFF; 1=OVERWRITE; 2=APPEND)
C  isWQMAX = switch to save WQ minimums to binary file WQWCMAX.BIN (0=OFF; 1=OVERWRITE; 2=APPEND)
C   isCOMP = switch to save DO components to file WQDOCOMP.BIN (0=OFF; 1=OVERWRITE; 2=APPEND)
C
C06 IWQTS   TWQTSB  TWQTSE  WQTSDT  isWQAVG isWQMIN isWQMAX  isCOMP
     3      0.0    10000.0  24.0     2       2       2        2
C-----------------------------------------------------------------------------
C07  TIME-SERIES WRITE CONTROLS
C    CHL = total chlorophyll
C    TOC = total organic carbon
C    DOC = dissolved organic carbon
C     TP = total phosphorus
C    DOP = dissolved organic phosphorus
C   PO4t = total orthophosphate
C   PO4d = dissolved orthophosphate
C    APC = algae phosphorus-to-carbon ratio
C     TN = total nitrogen
C    DON = dissolved organic nitrogen
C    NH4 = ammonia nitrogen
C    NO3 = nitrite + nitrate nitrogen
C    TSI = total silica
C     SU = unavailable dissolved silica
C     SA = total available biogenic dissolved silica
C    SAd = dissolved available biogenic dissolved silica
C    COD = chemical oxygen demand
C    TAM = total active metal
C   TAMp = total active metal
C    FCB = fecal coliform bacteria
C     Fm = macroalgae
C
C   ICWQTS(NW,M), NW=1,NTSWQV, M=1,IWQTS
C
C07  Two title cards follow:
$I   J    CHL  TOC  DOC  TP   DOP  PO4t PO4d APC  TN   DON  NH4  NO3  TSI
$         SU   SA   SAd  COD  O2   TAM  TAMp FCB  Fm
26  79    1    1    1    1    1    1    1    1    1    1    1    1    1
          1    1    1    1    1    1    1    1    1
54  38    1    1    1    1    1    1    1    1    1    1    1    1    1
          1    1    1    1    1    1    1    1    1
54  55    1    1    1    1    1    1    1    1    1    1    1    1    1
          1    1    1    1    1    1    1    1    1
C-----------------------------------------------------------------------------
C08 ONE TITLE CARD FOLLOWS:
$$ C08 constant parameters for ALGAE (see Table 3-1) $$
C08
C    KHNc = nitrogen half-saturation for cyanobacteria (mg/L)
C    KHNd = nitrogen half-saturation for algae diatoms (mg/L)
C    KHNg = nitrogen half-saturation for algae greens algae (mg/L)
C    KHNm = nitrogen half-saturation for macroalgae (mg/L)
C    KHPc = phosphorus half-saturation for cyanobacteria (mg/L)
C    KHPd = phosphorus half-saturation for algae diatoms (mg/L)
C    KHPg = phosphorus half-saturation for algae greens algae (mg/L)
C    KHPm = phosphorus half-saturation for macroalgae (mg/L)
C     KHS = silica half-saturation for algae diatoms (mg/L)
C    STOX = salinity at which microsystis growth is halved for cyanobacteria
C
C08 KHNc   KHNd   KHNg   KHNm   KHPc   KHPd   KHPg   KHPm   KHS   STOX
    0.013  0.01   0.01   0.025  0.0013 0.001  0.001  0.132  0.035 1.0
C-----------------------------------------------------------------------------
C09 constant parameters for ALGAE (see Table 3-1)
C   KeTSS = light extinction for total suspended solids (1/m per g/m3)
C   KeCHL = light extinction for total suspended chlorophyll (1/m per g/m3)
C     Note: if KeCHL is negative, the Riley (1956) formula is used to
C           compute the extinction coefficient due to chlorophyll:
C             KeCHL = 0.054*CHL^0.6667 + 0.0088*CHL
C             where CHL = total chloryphyll concentration (ug/L)
C   CChlc = carbon-to-chlorophyll ratio for cyanobacteria (mg C / ug Chl)
C   CChld = carbon-to-chlorophyll ratio for algae diatoms (mg C / ug Chl)
C   CChlg = carbon-to-chlorophyll ratio for algae greens (mg C / ug Chl)
C   CChlm = carbon-to-chlorophyll ratio for macroalgae (mg C / ug Chl)
C   DOPTc = optimal depth (m) for cyanobacteria growth
C   DOPTd = optimal depth (m) for algae diatoms growth
C   DOPTg = optimal depth (m) for algae greens growth
C   DOPTm = optimal depth (m) for macroalgae growth
C
```

```
C09 KeTSS  KeChl  CChlc  CChld  CChlg  CChlm  DOPTc  DOPTd DOPTg DOPTm
    0.015  0.041  0.040  0.065  0.060  0.150  1.0    1.0   1.0   1.00
C-----------------------------------------------------------------------
C10 constant parameters for ALGAE (see Table 3-1)
C      I0 = initial solar radiation (Langley/day) at water surface
C   IsMIN = minimum optimum solar radiation (Langley/day)
C      FD = fraction of day that is daylight
C     CIa = weighting factor for solar radiation at current day
C     CIb = weighting factor for solar radiation at (-1) days
C     CIc = weighting factor for solar radiation at (-2) days
C     CIm = not used
C     Rea = global reaeration adjustment factor
C  PARadj = solar radiation multiplied by this factor to get the
C           photoactive available radiation (PAR) for algae growth
C
C10  I0    IsMIN  FD     CIa    CIb    CIc    CIm    Rea   PARadj
    350.0  40.0  0.5     0.7    0.2    0.1    0.7    1.0   0.43
C-----------------------------------------------------------------------
C11 constant parameters for ALGAE (see Table 3-1)
C    TMc1 = lower optimal temperature for cyanobacteria growth (degC)
C    TMc2 = upper optimal temperature for cyanobacteria growth (degC)
C    TMd1 = lower optimal temperature for algae diatoms growth (degC)
C    TMd2 = upper optimal temperature for algae diatoms growth (degC)
C    TMg1 = lower optimal temperature for algae greens growth (degC)
C    TMg2 = upper optimal temperature for algae greens growth (degC)
C    TMm1 = lower optimal temperature for macroalgae growth (degC)
C    TMm2 = upper optimal temperature for macroalgae growth (degC)
C    TMp1 = lower optimal temperature for diatom predation (degC)
C    TMp2 = upper optimal temperature for diatom predation (degC)
C
C11 TMc1  TMc2   TMd1   TMd2   TMg1   TMg2   TMm1   TMm2   TMp1   TMp2
    16.0  20.0   18.0   24.0   16.0   22.0   20.0   22.0   16.0   26.0
C-----------------------------------------------------------------------
C12 constant parameters for ALGAE (see Table 3-1)
C   KTG1c = suboptimal   temperature effect coef. for cyanobacteria growth
C   KTG2c = superoptimal temperature effect coef. for cyanobacteria growth
C   KTG1d = suboptimal   temperature effect coef. for algae diatoms growth
C   KTG2d = superoptimal temperature effect coef. for algae diatoms growth
C   KTG1g = suboptimal   temperature effect coef. for algae greens growth
C   KTG2g = superoptimal temperature effect coef. for algae greens growth
C   KTG1m = suboptimal   temperature effect coef. for macroalgae growth
C   KTG2m = superoptimal temperature effect coef. for macroalgae growth
C   KTG1p = suboptimal   temperature effect coef. for diatom predation growth
C   KTG2p = superoptimal temperature effect coef. for diatom predation growth
C
C12 KTG1c KTG2c  KTG1d  KTG2d  KTG1g  KTG2g  KTG1m  KTG2m  KTG1p  KTG2p
   0.1000 0.0005 0.0001 0.0001 0.0050 0.0001 0.0070 0.0050 0.0100 0.0001
C-----------------------------------------------------------------------
C13 constant parameters for ALGAE (see Table 3-1)
C     TRc = reference temperature for cyanobacteria metabolism (degC)
C     TRd = reference temperature for algae diatoms metabolism (degC)
C     TRg = reference temperature for algae greens metabolism (degC)
C     TRm = reference temperature for macroalgae metabolism (degC)
C    KTBc = temperature effect coef. for cyanobacteria metabolism
C    KTBd = temperature effect coef. for algae diatoms metabolism
C    KTBg = temperature effect coef. for algae greens metabolism
C    KTBm = temperature effect coef. for macroalgae metabolism
C
C13 TRc   TRd   TRg   TRm   KTBc   KTBd   KTBg   KTBm
    20.0  20.0  20.0  20.0  0.069  0.069  0.069  0.069
C-----------------------------------------------------------------------
C14 ONE TITLE CARD FOLLOWS:
$$ C14 constant parameters for CARBON (see Table 3-2) $$
C14
C    FCRP = carbon distribution coef. for algae predation: refractory POC
C    FCLP = carbon distribution coef. for algae predation: labile POC
C    FCDP = carbon distribution coef. for algae predation: DOC
C    FCDc = carbon distribution coef. for cyanobacteria metabolism
C    FCDd = carbon distribution coef. for algae diatoms metabolism
C    FCDg = carbon distribution coef. for algae greens metabolism
C    KHRc = half-sat. constant (gO2/m3) for cyanobacteria DOC excretion
C    KHRd = half-sat. constant (gO2/m3) for algae diatoms DOC excretion
C    KHRg = half-sat. constant (gO2/m3) for algae greens  DOC excretion
C Note:  FCRP + FCLP + FCDP = 1.0
C
C14 FCRP   FCLP   FCDP   FCDc  FCDd   FCDg   KHRc  KHRd  KHRg
    0.25   0.25   0.50   0.0   0.2    0.2    0.5   0.5   0.5
C-----------------------------------------------------------------------
C15 ONE TITLE CARD FOLLOWS:
$$ C15 constant parameters for CARBON (macroalgae)
C15
C   FCRPm = carbon distribution coef. for macroalgae predation: refractory POC
C   FCRPm = carbon distribution coef. for macroalgae predation: labile POC
C   FCRPm = carbon distribution coef. for macroalgae predation: DOC
C    FCDm = carbon distribution coef. for macroalgae metabolism
C    KHRm = half-sat. constant (gO2/m3) for macroalgae DOC excretion
C Note:  FCRPm + FCLPm + FCDPm = 1.0
C
C15 FCRPm  FCLPm  FCDPm  FCDm  KHRm
    0.15   0.15   0.70   0.2   2.0
C-----------------------------------------------------------------------
C16 constant parameters for CARBON (see Table 3-2)
C     KRC = minimum dissolution rate (1/day) of refractory POC
```

```
C     KLC = minimum dissolution rate (1/day) of labile POC
C     KDC = minimum dissolution rate (1/day) of DOC
C  KRCalg = constant relating refractory POC dissolution rate to total chla
C  KLCalg = constant relating labile POC dissolution rate to total chla
C  KDCalg = constant relating DOC dissolution rate to total chla
C KDCalgm = constant relating DOC dissolution rate to macroalgae
C   0.020   0.150
C16 KRC     KLC     KDC     KRCalg  KLCalg  KDCalg KDCalgm
    0.005   0.075   1.000   0.0     0.0     0.0    0.025
C-----------------------------------------------------------------------------
C17 constant parameters for CARBON (see Table 3-2)
C   TRHDR = reference temperature for hydrolysis (degC)
C   TRMNL = reference temperature for mineralization (degC)
C   KTHDR = temperature effect constant for hydrolysis
C   KTMNL = temperature effect constant for mineralization
C  KHORDO = oxic respiration half-sat. constant for D.O. (gO2/m3)
C   KHDNN = half-sat. constant for denitrification (gN/m3)
C   AANOX = ratio of denitrification rate to oxic DOC respiration rate
C
C17 TRHDR   TRMNL   KTHDR   KTMNL   KHORDO  KHDNN   AANOX
    20.0    20.0    0.069   0.069   0.1     0.1     0.5
C-----------------------------------------------------------------------------
C18 ONE TITLE CARD FOLLOWS:
$$ C18 constant parameters for PHOSPHORUS (see Table 3-3) $$
C18
C    FPRP = phos. distribution coef. for algae predation: refractory POP
C    FPLP = phos. distribution coef. for algae predation: labile POP
C    FPDP = phos. distribution coef. for algae predation: DOP
C    FPIP = phos. distribution coef. for algae predation: Inorganic P
C    FPRc = phos. distribution coef. of RPOP for cyanobacteria metabolism
C    FPRd = phos. distribution coef. of RPOP for algae diatoms metabolism
C    FPRg = phos. distribution coef. of RPOP for algae greens metabolism
C    FPLc = phos. distribution coef. of LPOP for cyanobacteria metabolism
C    FPLd = phos. distribution coef. of LPOP for algae diatoms metabolism
C    FPLg = phos. distribution coef. of LPOP for algae greens metabolism
C Note, the following must sum to 1.0:
C         FPRP + FPLP + FPDP + FPIP = 1.0
C         FPRc + FPLc + FPDc + FPIc = 1.0
C         FPRd + FPLd + FPDd + FPId = 1.0
C         FPRg + FPLg + FPDg + FPIg = 1.0
C
C18 FPRP FPLP  FPDP  FPIP  FPRc  FPRd FPRg FPLc FPLd FPLg
    0.30 0.30  0.20  0.20  0.3   0.3  0.3  0.2  0.2  0.2
C-----------------------------------------------------------------------------
C19 ONE TITLE CARD FOLLOWS:
$$ C19 constant parameters for PHOSPHORUS (macroalgae)
C19
C   FPRPM = phos. distribution coef. for macroalgae predation: RPOP
C   FPLPM = phos. distribution coef. for macroalgae predation: LPOP
C   FPDPM = phos. distribution coef. for macroalgae predation: DOP
C   FPIPM = phos. distribution coef. for macroalgae predation: Inorganic P
C    FPRm = phos. distribution coef. of RPOP for macroalgae metabolism
C    FPLm = phos. distribution coef. of LPOP for macroalgae metabolism
C    APCM = factor to modify APC for macroalgae
C Note, the following must sum to 1.0:
C         FPRPM + FPLPM + FPDPM + FPIPM = 1.0
C         FPRm + FPLm + FPDm + FPIm = 1.0
C
C19 FPRPM  FPLPM  FPDPM  FPIPM   FPRm   FPLm   APCM
    0.30   0.30   0.2    0.2     0.2    0.3    0.50
C-----------------------------------------------------------------------------
C20 constant parameters for PHOSPHORUS (see Table 3-3)
C    FPDc = phosphorus distribution coef. of DOP for cyanobacteria metabolism
C    FPDd = phosphorus distribution coef. of DOP for algae diatoms metabolism
C    FPDg = phosphorus distribution coef. of DOP for algae greens metabolism
C    FPDm = phosphorus distribution coef. of DOP for macroalgae metabolism
C    FPIc = phosphorus distribution coef. of P4T for cyanobacteria metabolism
C    FPId = phosphorus distribution coef. of P4T for algae diatoms metabolism
C    FPIg = phosphorus distribution coef. of P4T for algae greens metabolism
C    FPIm = phosphorus distribution coef. of P4T for macroalgae metabolism
C   KPO4p = partition coefficient for sorbed/dissolved PO4
C
C Notes, the following must sum to 1.0:
C         FPRc + FPLc + FPDc + FPIc = 1.0
C         FPRd + FPLd + FPDd + FPId = 1.0
C         FPRg + FPLg + FPDg + FPIg = 1.0
C
C20 FPDc   FPDd   FPDg   FPDm    FPIc   FPId   FPIg   FPIm   KPO4p
    0.4    0.4    0.4    0.3     0.1    0.1    0.1    0.2    0.01
C-----------------------------------------------------------------------------
C21 constant parameters for PHOSPHORUS (see Table 3-3)
C     KRP = minimum hydrolysis rate (1/day) of RPOP
C     KLP = minimum hydrolysis rate (1/day) of LPOP
C     KDP = minimum hydrolysis rate (1/day) of DOP
C  KRPalg = constant relating hydrolysis rate of RPOP to algae
C  KLPalg = constant relating hydrolysis rate of LPOP to algae
C  KDPalg = constant relating hydrolysis rate of DOP to algae
C  CPprm1 = constant used in determining algae Phos-to-Carbon ratio
C  CPprm2 = constant used in determining algae Phos-to-Carbon ratio
C  CPprm3 = constant used in determining algae Phos-to-Carbon ratio
C
C21 KRP    KLP    KDP    KRPalg  KLPalg KDPalg CPprm1 CPprm2 CPprm3
    0.010  0.075  0.050  0.0     0.0    0.5    42.0   50.0   350.0
```

```
C-----------------------------------------------------------------------------
C22 ONE TITLE CARD FOLLOWS:
$$ C22 constant parameters for NITROGEN (see Table 3-4) $$
C22
C    FNRP = nitrogen distribution coef. for algae predation: RPON
C    FNLP = nitrogen distribution coef. for algae predation: LPON
C    FNDP = nitrogen distribution coef. for algae predation: DON
C    FNIP = nitrogen distribution coef. for algae predation: Inorganic N
C    FNRc = nitrogen distribution coef. of RPON for cyanobacteria metabolism
C    FNRd = nitrogen distribution coef. of RPON for algae diatoms metabolism
C    FNRg = nitrogen distribution coef. of RPON for algae greens  metabolism
C    FNLc = nitrogen distribution coef. of LPON for cyanobacteria metabolism
C    FNLd = nitrogen distribution coef. of LPON for algae diatoms metabolism
C    FNLg = nitrogen distribution coef. of LPON for algae greens  metabolism
C
C22 FNRP  FNLP  FNDP  FNIP  FNRc  FNRd  FNRg FNLc  FNLd  FNLg
    0.3   0.5   0.1   0.1   0.2   0.20  0.2  0.4   0.4   0.4
C-----------------------------------------------------------------------------
C23 ONE TITLE CARD FOLLOWS:
$$ C23  constant parameters for NITROGEN (MACROALGAE)
C23
C   FNRPM = nitrogen distribution coef. for marcoalgae predation: RPON
C   FNLPM = nitrogen distribution coef. for marcoalgae predation: LPON
C   FNDPM = nitrogen distribution coef. for marcoalgae predation: DON
C   FNIPM = nitrogen distribution coef. for marcoalgae predation: Inorganic N
C    FNRm = nitrogen distribution coef. of RPON for macroalgae metabolism
C    FNLm = nitrogen distribution coef. of LPON for macroalgae metabolism
C
C23 FNRPM FNLPM  FNDPM  FNIPM  FNRm  FNLm
    0.4   0.5    0.1    0.0    0.3   0.5
C-----------------------------------------------------------------------------
C24 constant parameters for NITROGEN (see Table 3-4)
C    FNDc = nitrogen distribution coef. of DON for cyanobacteria metabolism
C    FNDd = nitrogen distribution coef. of DON for algae diatoms metabolism
C    FNDg = nitrogen distribution coef. of DON for algae greens  metabolism
C    FNDm = nitrogen distribution coef. of DON for macroalgae    metabolism
C    FNIc = nitrogen distribution coef. of DIN for cyanobacteria metabolism
C    FNId = nitrogen distribution coef. of DIN for algae diatoms metabolism
C    FNIg = nitrogen distribution coef. of DIN for algae greens  metabolism
C    FNIm = nitrogen distribution coef. of DIN for macroalgae    metabolism
C    ANCc = nitrogen-to-carbon ratio for cyanobacteria
C    ANCd = nitrogen-to-carbon ratio for algae diatoms
C    ANCg = nitrogen-to-carbon ratio for algae greens
C    ANCm = nitrogen-to-carbon ratio for macroalgae
C Note: FNRx + FNLx + FNDx + FNIx = 1.0
C
C24 FNDc  FNDd  FNDg  FNDm  FNIc  FNId  FNIg  FNIm  ANCc  ANCd  ANCg  ANCm
    0.2   0.2   0.2   0.1   0.2   0.2   0.2   0.1   0.167 0.176 0.176 0.176
C-----------------------------------------------------------------------------
C25 constant parameters for NITROGEN (see Table 3-4)
C    ANDC = mass NO3 reduces per DOC oxidized (gN/gC)
C   rNitM = maximum nitrification rate (gN/m3/day)
C KHNitDO = nitrification half-sat. constant for D.O.
C  KHNitN = nitrification half-sat. constant for NH4
C    TNit = reference temperature for nitrification (degC)
C   KNit1 = suboptimal   temperature effect constant for nitrification
C   Knit2 = superoptimal temperature effect constant for nitrification
C
C   0.933   0.99    0.1     0.1     20.0    0.0045  0.0045
C25 ANDC    rNitM   KHNitDO KHNitN  TNit    KNit1   KNit2
    0.933   1.00    2.0     0.0001  22.0    0.0045  0.0045
C-----------------------------------------------------------------------------
C26 constant parameters for NITROGEN (see Table 3-4)
C     KRN = minimum hydrolysis rate (1/day) of RPON
C     KLN = minimum hydrolysis rate (1/day) of LPON
C     KDN = minimum hydrolysis rate (1/day) of DON
C  KRNalg = constant relating hydrolysis rate of RPON to algae
C  KLNalg = constant relating hydrolysis rate of LPON to algae
C  KDNalg = constant relating hydrolysis rate of DON to algae
C
C26 KRN     KLN     KDN     KRNalg  KLNalg  KDNalg
    0.005   0.075   0.015   0.0     0.0     0.0
C-----------------------------------------------------------------------------
C27 ONE TITLE CARD FOLLOWS:
$$ C27 constant parameters for SILICA (see Table 3-5) $$
C27
C    FSPP = silica distribution coef. for diatom predation
C    FSIP = silica distribution coef. for diatom predation
C    FSPd = silica distribution coef. for diatom metabolism
C    FSId = silica distribution coef. for diatom metabolism
C    ASCd = silica-to-carbon ratio for algae diatoms
C    KSAp = partition coef. for sorbed/dissolved SA
C     KSU = dissolution rate (1/day) of particulate silica (PSi)
C   TRSUA = reference temperature (degC) for PSi dissolution
C   KTSUA = temperature effect on PSi dissolution
C
C27 FSPP    FSIP    FSPd    FSId    ASCd    KSAp    KSU     TRSUA   KTSUA
    1.0     0.0     1.0     0.0     0.36    0.16    0.05    20.0    0.092
C-----------------------------------------------------------------------------
C28 ONE TITLE CARD FOLLOWS:
$$ C28 constant parameters for COD & DO (see Table 3-6) $$
C28
C    AOCR = stoichiometric algae oxygen-to-carbon ratio (gO2/gC)
```

```
C    AONT = stoichiometric algae oxygen=to-nitrate ratio (gO2/gN)
C     KRO = reaeration constant (3.933 for OConnor-Dobbins; 5.32 for Owen-Gibbs)
C     KTR = temperature rate constant for reaeration
C   KHCOD = oxygen half-saturation constant for COD decay (mg/L O2)
C     KCD = COD decay rate (per day)
C   TRCOD = reference temperature for COD decay (degC)
C   KTCOD = temperature rate constant for COD decay
C  AOCRpm = macroalgae photosynthesis oxygen-to-carbon ratio
C  AOCRrm = macroalgae respiration oxygen-to-carbon ratio
C                          1.024
C28 AOCR    AONT    KRO     KTR     KHCOD   KCD     TRCOD   KTCOD AOCRpm AOCRrm
    2.67    4.33    5.32    0.940   1.5     2.50    20.0    0.041 2.67   2.67
C-----------------------------------------------------------------------------
C29 ONE TITLE CARD FOLLOWS:
$$ C29 constant parameters for TAM & FCB (see Table 3-7) $$
C29
C   KHbmf = D.O. concentration where TAM release is half the anoxic rate
C   BFTAM = anoxic release rate of TAM (mol/m2/day)
C    Ttam = reference temperature for TAM release (degC)
C    Ktam = temperature effect constant for TAM release
C  TAMdmx = TAM solubility at anoxic conditions (mol/m3)
C  Kdotam = constant relating TAM solubility to D.O.
C    KFCB = first-order fecal coliform bacteria decay rate (1/day)
C    TFCB = temperature effect constant for KFCB decay rate
C
C29 KHbmf   BFTAM   Ttam    Ktam    TAMdmx  Kdotam  KFCB    TFCB
    0.5     0.1     20.0    0.2     0.015   1.0     0.1     1.07
C-----------------------------------------------------------------------------
C30 SIX TITLE CARDS FOLLOW:
$$ C30 CONCENTRATION TIME SERIES DATA $$
$$ NUMBER OF TIME SERIES FOR EACH STATE VARIABLE
$  B  B  B  R  L  D  R  L  D  P  R  L  D  N  N  S  S  C  D  T  F
$  c  d  g  P  P  O  P  P  O  O  P  P  O  H  O  U  A  O  O  A  C
$           O  O  C  O  O  P  4  O  O  N  4  3        D     M
$           C  C     P  P     t  N  N
   1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
C-----------------------------------------------------------------------------
C31 ONE TITLE CARD FOLLOWS:
$$ C31 parameters for OPEN BDRY CONDITIONS $$
C31
C  NWQOBS = number of WQ open boundary cells on SOUTH boundary
C  NWQOBW = number of WQ open boundary cells on WEST boundary
C  NWQOBE = number of WQ open boundary cells on EAST boundary
C  NWQOBN = number of WQ open boundary cells on NORTH boundary
C
C31 NWQOBS  NWQOBW  NWQOBE  NWQOBN
    2       0       0       3
C-----------------------------------------------------------------------------
C32 SIX TITLE CARDS FOLLOW:
$$ C32 SOUTH OPEN BOUNDARY $$
$$ TIME SERIES ID'S FOR EACH STATE VARIABLE
$  I   J   B  B  B  R  L  D  R  L  D  P  R  L  D  N  N  S  S  C  D  T  F
$          c  d  g  P  P  O  P  P  O  O  P  P  O  H  O  U  A  O  O  A  C
$                   O  O  C  O  O  P  4  O  O  N  4  3        D     M
$                   C  C     P  P     t  N  N
  57   3   1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
  59   3   1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
C-----------------------------------------------------------------------------
C33 FIVE TITLE CARDS FOLLOW:
$$ C33 SOUTH OPEN BOUNDARY $$
$$ CONSTANT BOTTOM CONCENTRATION BC'S
$  I   J   Bc      Bd      Bg      RPOC    LPOC    DOC
$           RPOP    LPOP    DOP     PO4t    RPON    LPON    DON
$           NH4     NO3     SU      SA      COD     DO      TAM     FCB
  57   3   0.0     0.0     0.0     0.0     0.0     0.0
           0.0     0.0     0.0     0.0     0.0     0.0     0.0
           0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  59   3   0.0     0.0     0.0     0.0     0.0     0.0
           0.0     0.0     0.0     0.0     0.0     0.0     0.0
           0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
C-----------------------------------------------------------------------------
C34 FIVE TITLE CARDS FOLLOW:
$$ C34 SOUTH OPEN BOUNDARY $$
$$ CONSTANT SURFACE CONCENTRATION BC'S
$  I   J   Bc      Bd      Bg      RPOC    LPOC    DOC
$           RPOP    LPOP    DOP     PO4t    RPON    LPON    DON
$           NH4     NO3     SU      SA      COD     DO      TAM     FCB
  57   3   0.0     0.0     0.0     0.0     0.0     0.0
           0.0     0.0     0.0     0.0     0.0     0.0     0.0
           0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  59   3   0.0     0.0     0.0     0.0     0.0     0.0
           0.0     0.0     0.0     0.0     0.0     0.0     0.0
           0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
C-----------------------------------------------------------------------------
C35 SIX TITLE CARDS FOLLOW:
$$ C35 WEST OPEN BOUNDARY $$
$$ TIME SERIES ID'S FOR EACH STATE VARIABLE
$  I   J   B  B  B  R  L  D  R  L  D  P  R  L  D  N  N  S  S  C  D  T  F
$          c  d  g  P  P  O  P  P  O  O  P  P  O  H  O  U  A  O  O  A  C
$                   O  O  C  O  O  P  4  O  O  N  4  3        D     M
$                   C  C     P  P     t  N  N
C-----------------------------------------------------------------------------
C36 FIVE TITLE CARDS FOLLOW:
```

```
$$ C36 WEST OPEN BOUNDARY $$
$$ CONSTANT BOTTOM CONCENTRATION BC'S
$  I   J   Bc      Bd      Bg      RPOC    LPOC    DOC
$           RPOP    LPOP    DOP     PO4t    RPON    LPON    DON
$           NH4     NO3     SU      SA      COD     DO      TAM     FCB
C-------------------------------------------------------------------------
C37 FIVE TITLE CARDS FOLLOW:
$$ C37 WEST OPEN BOUNDARY $$
$$ CONSTANT SURFACE CONCENTRATION BC'S
$  I   J   Bc      Bd      Bg      RPOC    LPOC    DOC
$           RPOP    LPOP    DOP     PO4t    RPON    LPON    DON
$           NH4     NO3     SU      SA      COD     DO      TAM     FCB
C-------------------------------------------------------------------------
C38 SIX TITLE CARDS FOLLOW:
$$ C38 EAST OPEN BOUNDARY $$
$$ TIME SERIES ID'S FOR EACH STATE VARIABLE
$  I   J   B  B  B  R  L  D  R  L  D  P  R  L  D  N  N  S  S  C  D  T  F
$          c  d  g  P  P  O  P  P  O  O  P  P  O  H  O  U  A  O  O  A  C
$                   O  O  C  O  O  P  4  O  O  N  4  3        D     M
$                   C  C     P  P     t  N  N
C-------------------------------------------------------------------------
C39 FIVE TITLE CARDS FOLLOW:
$$ C39 EAST OPEN BOUNDARY $$
$$ CONSTANT BOTTOM CONCENTRATION BC'S
$  I   J   Bc      Bd      Bg      RPOC    LPOC    DOC
$           RPOP    LPOP    DOP     PO4t    RPON    LPON    DON
$           NH4     NO3     SU      SA      COD     DO      TAM     FCB
C-------------------------------------------------------------------------
C40 FIVE TITLE CARDS FOLLOW:
$$ C40 EAST OPEN BOUNDARY $$
$$ CONSTANT SURFACE CONCENTRATION BC'S
$  I   J   Bc      Bd      Bg      RPOC    LPOC    DOC
$           RPOP    LPOP    DOP     PO4t    RPON    LPON    DON
$           NH4     NO3     SU      SA      COD     DO      TAM     FCB
C-------------------------------------------------------------------------
C41 SIX TITLE CARDS FOLLOW:
$$ C41 NORTH OPEN BOUNDARY $$
$$ TIME SERIES ID'S FOR EACH STATE VARIABLE
$  I   J   B  B  B  R  L  D  R  L  D  P  R  L  D  N  N  S  S  C  D  T  F
$          c  d  g  P  P  O  P  P  O  O  P  P  O  H  O  U  A  O  O  A  C
$                   O  O  C  O  O  P  4  O  O  N  4  3        D     M
$                   C  C     P  P     t  N  N
  57  24   1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
  58  24   1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
  59  24   1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
C-------------------------------------------------------------------------
C42 FIVE TITLE CARDS FOLLOW:
$$ C42 NORTH OPEN BOUNDARY $$
$$ CONSTANT BOTTOM CONCENTRATION BC'S
$  I   J   Bc      Bd      Bg      RPOC    LPOC    DOC
$           RPOP    LPOP    DOP     PO4t    RPON    LPON    DON
$           NH4     NO3     SU      SA      COD     DO      TAM     FCB
  57  24   0.0     0.0     0.0     0.0     0.0     0.0
           0.0     0.0     0.0     0.0     0.0     0.0     0.0
           0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  58  24   0.0     0.0     0.0     0.0     0.0     0.0
           0.0     0.0     0.0     0.0     0.0     0.0     0.0
           0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  59  24   0.0     0.0     0.0     0.0     0.0     0.0
           0.0     0.0     0.0     0.0     0.0     0.0     0.0
           0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
C-------------------------------------------------------------------------
C43 FIVE TITLE CARDS FOLLOW:
$$ C43 NORTH OPEN BOUNDARY $$
$$ CONSTANT SURFACE CONCENTRATION BC'S
$  I   J   Bc      Bd      Bg      RPOC    LPOC    DOC
$           RPOP    LPOP    DOP     PO4t    RPON    LPON    DON
$           NH4     NO3     SU      SA      COD     DO      TAM     FCB
  57  24   0.0     0.0     0.0     0.0     0.0     0.0
           0.0     0.0     0.0     0.0     0.0     0.0     0.0
           0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  58  24   0.0     0.0     0.0     0.0     0.0     0.0
           0.0     0.0     0.0     0.0     0.0     0.0     0.0
           0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  59  24   0.0     0.0     0.0     0.0     0.0     0.0
           0.0     0.0     0.0     0.0     0.0     0.0     0.0
           0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
C-------------------------------------------------------------------------
C44 ONE TITLE CARD FOLLOWS:
$$ C44 constant ICs (g/m^3): TAM(mol/m^3), FCB(MPN/100mL) $$
C44
C Definitions:
C   Bc = cyanobacteria
C   Bd = algae diatoms
C   Bg = algae greens
C RPOC = refractory particulate carbon
C LPOC = labile particulate carbon
C  DOC = dissolved organic carbon
C RPOP = refractory particulate organic phosphorus
C LPOP = labile particulate organic phosphorus
C  DOP = dissolved organic phosphorus
C PO4t = total orthophosphate
C RPON = refractory particulate organic nitrogen
```

```
C LPON = labile particulate organic nitrogen
C  DON = dissolved organic nitrogen
C  NH4 = ammonia nitrogen
C  NO3 = nitrite + nitrate nitrogen
C   SU = unavailable silica
C   SA = available biogenic silica
C  COD = chemical oxygen demand
C   DO = dissolved oxygen
C  TAM = total active metal
C  FCB = fecal coliform bacteria
C   Bm = macroalgae
C Bmin = minimum macroalgae biomass
C
C  Bc      Bd      Bg      RPOC    LPOC    DOC
C  RPOP    LPOP    DOP     PO4t    RPON    LPON    DON
C  NH4     NO3     SU      SA      COD     DO      TAM     FCB   Bm  Bmin
   0.000   0.00    2.40    0.055   0.024   1.200
   0.011   0.017   0.030   0.050   0.050   0.050   0.070
   0.065   0.040   0.100   1.200   4.280   7.920   0.1     3.030 2.0  0.2
C-----------------------------------------------------------------------------
C45 ONE TITLE CARD FOLLOWS:
$$ C45 spatially/temporally constant ALGAL PARAMETERS (/d except Keb in /m) $$
C45
C    PMc = max. growth rate for cyanobacteria (1/day)
C    PMd = max. growth rate for algae diatoms (1/day)
C    PMg = max. growth rate for algae greens  (1/day)
C    PMm = max. growth rate for macroalgae    (1/day)
C   BMRc = basal metabolism rate for cyanobacteria (1/day)
C   BMRd = basal metabolism rate for algae diatoms (1/day)
C   BMRg = basal metabolism rate for algae greens  (1/day)
C   BMRm = basal metabolism rate for macroalgae    (1/day)
C   PRRc = predation rate on cyanobacteria (1/day)
C   PRRd = predation rate on algae diatoms (1/day)
C   PRRg = predation rate on algae greens  (1/day)
C   PRRm = predation rate on macroalgae    (1/day)
C    Keb = background light extinction coefficient (1/m)
C
C45   PMc  PMd  PMg  PMm BMRc BMRd  BMRg  BMRm PRRc  PRRd  PRRg  PRRm Keb
    0.0  0.0  3.0  2.0 0.05 0.010 0.010 0.10 0.28  0.10  0.10  0.33 0.475
C-----------------------------------------------------------------------------
C46 ONE TITLE CARD FOLLOWS:
$$ C46 spatially/temporally constant SETTLING VELOCITIES (m/d) $$
C46
C    WSc = settling velocity for cyanobacteria (m/day)
C    WSd = settling velocity for algae diatoms (m/day)
C    WSg = settling velocity for algae greens  (m/day)
C   WSrp = settling velocity for refractory POM (m/day)
C   WSlp = settling velocity for labile POM (m/day)
C    WSs = settling velocity for particles sorbed to TAM (m/day)
C    WSM = settling velocity for macroalgae (m/day = 0.0)
C   REAC = reaeration adjustment factor
C
C46 WSc     WSd     WSg     WSrp    WSlp    WSs     WSM   REAC
    0.0     0.25    0.25    1.00    1.00    0.50    0.0   1.00
C-----------------------------------------------------------------------------
C47 ONE TITLE CARD FOLLOWS:
$$ C47 constant benthic flux rates (g/m^2/d) $$
C47
C   FPO4 = benthic flux rate of phosphate
C   FNH4 = benthic flux rate of ammonia nitrogen
C   FNO3 = benthic flux rate of nitrite+nitrite nitrogen
C   FSAD = benthic flux rate of silica
C   FCOD = benthic flux rate of chemical oxygen demand
C    SOD = sediment oxygen demand rate
C
C47  FPO4    FNH4    FNO3    FSAD    FCOD    SOD
     0.002   0.020   0.004   0.048   2.00   -1.75
C-----------------------------------------------------------------------------
C48 ONE TITLE CARD FOLLOWS:
$$ C48 const PS (kg/d): PSQ(m^3/s),DO(g/m^3),TAM(kmol/d),FCB(MPN/100mL)
C48
C   IWQPS = number of point sources
C NPSTMSR = number of point source time series
C
C48 const PS (kg/d): PSQ(m^3/s),DO(g/m^3),TAM(kmol/d),FCB(MPN/100mL)
C IWQPS   NPSTMSR
   529      236
C  I   J  K  N   PSQ     Bc      Bd      Bg      RPOC    LPOC    DOC
C            S   RPOP    LPOP    DOP     PO4t    RPON    LPON    DON
C            R   NH4     NO3     SU      SA      COD     DO      TAM     FCB
  54  15  1   1  0.0     0.0     0.0     0.0     0.0     0.0     0.0 !DE0050962
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  54  27  1   2  0.0     0.0     0.0     0.0     0.0     0.0     0.0 !DE0021768-001A
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  54  37  1   3  0.0     0.0     0.0     0.0     0.0     0.0     0.0 !PA0053082
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  54  38  1   4  0.0     0.0     0.0     0.0     0.0     0.0     0.0 !PA0052663
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  54  38  1   5  0.0     0.0     0.0     0.0     0.0     0.0     0.0 !PA0055476
```

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                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0     0.0
54  38  1   6  0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0047252
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0     0.0
54  38  1   7  0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0055085
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0     0.0
54  38  1   8  0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0055484
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0     0.0
54  39  1   9  0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0030848
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0     0.0
54  42  1  10  0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0056120
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0     0.0
54  43  1  11  0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0031097
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0     0.0
54  43  1  12  0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0053449
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0     0.0
54  43  1  13  0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0057011
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0     0.0
54  44  1  14  0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0036200
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0     0.0
54  44  1  15  0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0050005
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0     0.0
54  44  1  16  0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0051497
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0     0.0
54  44  1  17  0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0056171
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0     0.0
54  52  1  18  0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0026018
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0     0.0
54  52  1  19  0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0054747
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0     0.0
54  52  1  20  0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0057282
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0     0.0
54  53  1  21  0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0051365
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0     0.0
54  55  1  22  0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0053937
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0     0.0
54  55  1  23  0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0056324
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0     0.0
54  55  1  24  0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0056618
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0     0.0
54  55  1  25  0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0054305
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0     0.0
54  55  1  26  0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0053561
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0     0.0
54  57  1  27  0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0043982
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0     0.0
54  61  1  28  0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0012815
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0     0.0
54  60  1  29  0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0026531
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0     0.0
54  61  1  30  0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0030228
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0     0.0
54  61  1  31  0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0051918
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0     0.0
54  61  1  32  0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0053678
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0     0.0
54  61  1  33  0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0053660
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0     0.0
54  61  1  34  0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0055531
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0     0.0
54  61  1  35  0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0057126
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0     0.0
54  65  1  36  0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0054917
```

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                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
54  66  1  37   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0057045
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
54  67  1  38   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0027987
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
54  67  1  39   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0036374
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
54  67  1  40   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0052949
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
54  67  1  41   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0057274
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
54  70  1  42   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0050458
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
54  74  1  43   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0050229
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
54  74  1  44   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0050547
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
54  74  1  45   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0055492
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
54  76  1  46   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0054691
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
46  79  1  47   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0056561
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
40  79  1  48   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0029912
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
39  79  1  49   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0053996
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
29  79  1  50   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0053228
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
29  79  1  51   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0053236
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
26  79  1  52   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0036897
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
24  79  1  53   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0026859
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
23  79  1  54   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0011568-001
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
23  79  1  55   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0011568-016
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
23  79  1  56   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0053821
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
20  79  1  57   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0056073
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
20  79  1  58   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0012416
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
20  79  1  59   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0052990
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
18  79  1  60   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0052728
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
16  79  1  61   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0055697
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
 6  79  1  62   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0036412
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
 6  79  1  63   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0044776
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
 6  79  1  64   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0057339
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
33  61  1  65   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0024473
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
33  61  1  66   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0036161
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
33  61  1  67   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0057231
```

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                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
45  13  1  68   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !DE0000400-001A
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
43   9  1  69   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !DE0051004
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
14   9  1  70   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !MD0022641
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
16   9  1  71   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !MD0065145
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
43  26  1  72   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !DE0000221-001
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
43  26  1  73   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !DE0000221-003
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
43  29  1  74   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !DE0000230
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
43  35  1  75   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !DE0021709-001A
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
43  37  1  76   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0055425
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
43  40  1  77   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !DE0050067-001A
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
43  40  1  78   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !DE0000451-002A
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
43  44  1  79   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0055107
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
43  47  1  80   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0054755
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
32  43  1  81   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0053554
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
30  43  1  82   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0024058
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
29  43  1  83   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0050679
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
28  43  1  84   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0057720-001
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
28  43  1  85   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0057720-002
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
32  18  1  86   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !DE0000191-001A
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
15  18  1  87   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0053783
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
 6  18  1  88   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0024066
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
19  24  1  89   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0052451
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
19  26  1  90   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0057029
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
19  30  1  91   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0025488
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
19  30  1  92   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0052019
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
19  30  1  93   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0056898
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
19  31  1  94   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0056952
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
19  32  1  95   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0029343
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
19  32  1  96   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0040436
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
19  32  1  97   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0040665
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
41  55  1  98   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !DE0000523-001A
```

```
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
38  55  1  99   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !DE0000566
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
57   4  1 100   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !DE0021555-001A
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
57   5  1 101   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !DE0000256-601A
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
57   5  1 102   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !DE0000612-001A
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
57   5  1 103   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !DE0020001-001A
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
57   5  1 104   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !DE0050911-001A
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
57  15  1 105   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !DE0020320-001A
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
57  17  1 106   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !DE0000051-001A
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
57  17  1 107   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !DE0000051-002A
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
57  17  1 108   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !DE0000051-003A
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
57  20  1 109   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !DE0000655-001A
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
57  22  1 110   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0012637-002A
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
57  22  1 111   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0012637-101A
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
57  22  1 112   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0012637-201A
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
57  23  1 113   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !PA0027103-001A
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
58  21  1 114   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !NJ0005405-001A
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
59   4  1 115   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !NJ0024856-001A
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
59   9  1 116   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !NJ0021598-001A
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
59  12  1 117   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !NJ0005100-661A
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
59  15  1 118   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !NJ0021601-001A
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
59  16  1 119   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !NJ0024023-001A
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
59  17  1 120   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !NJ0024635-001A
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
59  19  1 121   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !NJ0004286-001A
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
59  21  1 122   0.0      0.0      0.0      0.0      0.0      0.0      0.0 !NJ0027545-001A
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
 6  79  1 123   0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
 6  79  1 124   0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
 7  79  1 124   0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
 8  79  1 124   0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
 9  79  1 124   0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
10  79  1 124   0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
11  79  1 124   0.0      0.0      0.0      0.0      0.0      0.0      0.0
```

				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	79	1	124	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	79	1	125	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	79	1	125	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	79	1	125	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	79	1	125	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	79	1	125	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	79	1	126	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	79	1	126	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	79	1	126	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	79	1	127	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	79	1	127	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	79	1	127	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	79	1	127	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	79	1	128	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	79	1	128	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	79	1	128	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	79	1	128	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32	79	1	128	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
33	79	1	129	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34	79	1	129	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
35	79	1	129	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36	79	1	129	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
38	79	1	129	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
39	79	1	129	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40	79	1	129	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
41	79	1	129	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
42	79	1	129	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	79	1	129	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44	79	1	129	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45	79	1	129	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
46	79	1	130	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

```
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
47  79  1 130    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
48  79  1 130    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
49  79  1 130    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  76  1 131    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  76  1 132    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  75  1 132    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  74  1 132    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  73  1 132    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  72  1 132    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  71  1 132    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  70  1 132    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  69  1 132    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  68  1 132    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  67  1 133    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  66  1 133    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  65  1 133    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  64  1 134    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  63  1 134    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  62  1 134    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  61  1 135    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  60  1 135    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  59  1 135    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  58  1 135    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  57  1 135    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  56  1 135    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  55  1 136    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  54  1 136    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  53  1 136    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  52  1 136    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  51  1 136    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  50  1 136    0.0     0.0     0.0     0.0     0.0     0.0     0.0
```

```
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  49  1 136    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  48  1 136    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  47  1 137    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  46  1 137    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  44  1 137    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  43  1 137    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  42  1 138    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  41  1 138    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  40  1 138    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  39  1 138    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  38  1 139    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  37  1 139    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  36  1 139    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  35  1 139    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  34  1 139    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  33  1 139    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  32  1 140    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  31  1 140    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  30  1 140    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  29  1 140    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  28  1 140    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  27  1 140    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  26  1 141    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  25  1 141    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  24  1 141    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  23  1 141    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
33  61  1 142    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
33  61  1 143    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
33  62  1 143    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
33  63  1 143    0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
33  64  1 143    0.0     0.0     0.0     0.0     0.0     0.0     0.0
```

```
                0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
33  65  1 143   0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
33  66  1 143   0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
33  67  1 143   0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
33  68  1 143   0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
33  69  1 143   0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
33  70  1 143   0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
33  71  1 143   0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
33  72  1 143   0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
33  73  1 143   0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
33  79  1 144   0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
33  74  1 145   0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
33  75  1 145   0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
33  76  1 145   0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
33  77  1 145   0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
46  79  1 146   0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  67  1 147   0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  55  1 148   0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  61  1 149   0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  42  1 150   0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
13  79  1 151   0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
21  79  1 152   0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  22  1 153   0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  21  1 153   0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  20  1 153   0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  18  1 153   0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  17  1 153   0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  16  1 153   0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
54  15  1 153   0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
24  43  1 154   0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
24  43  1 155   0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0
                0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
25  43  1 155   0.0     0.0     0.0     0.0     0.0     0.0     0.0
```

				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	43	1	155	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	43	1	155	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	43	1	155	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	43	1	155	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	43	1	156	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	43	1	156	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32	43	1	156	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
33	43	1	156	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34	43	1	156	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
35	43	1	156	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36	43	1	156	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
37	43	1	156	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
38	43	1	156	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
39	43	1	156	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40	43	1	156	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
41	43	1	156	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	49	1	157	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	49	1	158	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	48	1	158	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	47	1	158	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	46	1	158	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	45	1	158	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	44	1	158	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	43	1	158	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	42	1	159	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	41	1	159	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	40	1	159	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	39	1	159	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	38	1	159	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	37	1	160	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	36	1	160	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	35	1	160	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	34	1	160	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	33	1	160	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	32	1	160	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	31	1	160	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40	52	1	161	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40	52	1	162	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
41	52	1	162	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
42	52	1	162	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	52	1	162	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44	52	1	162	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45	52	1	162	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
46	52	1	162	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
47	52	1	162	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
48	52	1	162	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
49	52	1	162	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	32	1	163	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	30	1	164	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	29	1	164	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	28	1	164	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	27	1	164	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	26	1	164	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	25	1	164	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	24	1	164	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	23	1	165	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	18	1	166	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	18	1	167	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	18	1	168	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	18	1	168	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	18	1	168	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	18	1	168	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	18	1	168	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	18	1	169	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	18	1	169	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	18	1	169	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	18	1	169	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	18	1	169	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	18	1	169	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	18	1	169	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	18	1	169	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	18	1	169	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	30	1	170	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	32	1	171	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	32	1	172	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	31	1	172	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	30	1	173	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	30	1	174	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	29	1	174	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	28	1	174	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	27	1	174	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	26	1	174	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	25	1	174	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	24	1	175	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	23	1	175	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	22	1	175	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	21	1	175	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	20	1	175	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	18	1	176	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	18	1	176	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	18	1	176	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	18	1	177	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	18	1	177	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	18	1	177	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	18	1	177	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	18	1	177	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	18	1	178	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	18	1	178	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	18	1	178	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32	18	1	178	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
33	18	1	178	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34	18	1	178	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
35	18	1	178	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
37	18	1	178	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
38	18	1	178	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
39	18	1	179	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40	18	1	179	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
41	18	1	179	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	17	1	180	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	16	1	180	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	15	1	180	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	34	1	181	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	34	1	182	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	34	1	182	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	34	1	182	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	34	1	182	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	34	1	182	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	34	1	182	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	34	1	182	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	34	1	182	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	34	1	182	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	34	1	182	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	37	1	183	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	37	1	184	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	37	1	184	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	37	1	184	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	37	1	184	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	37	1	184	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	37	1	184	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	37	1	184	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	37	1	184	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	37	1	184	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	37	1	184	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	37	1	184	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	37	1	184	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	37	1	184	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	37	1	184	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	37	1	184	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	37	1	184	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	37	1	184	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	40	1	185	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	40	1	186	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	40	1	186	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	40	1	186	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	40	1	186	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	40	1	186	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	40	1	186	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	40	1	186	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	40	1	186	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	40	1	186	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	40	1	186	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	40	1	186	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	40	1	186	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	40	1	186	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	40	1	186	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	40	1	186	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	40	1	186	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	40	1	186	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	40	1	186	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	40	1	186	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	40	1	186	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	40	1	186	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	40	1	186	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	9	1	187	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	9	1	188	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	9	1	188	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	9	1	188	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	9	1	188	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	9	1	188	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	9	1	188	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	13	1	189	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	13	1	190	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	13	1	190	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	13	1	190	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	13	1	190	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	13	1	190	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	13	1	190	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	13	1	190	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	13	1	191	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	13	1	191	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	13	1	191	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	13	1	191	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	13	1	191	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32	55	1	192	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32	55	1	193	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
33	55	1	193	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34	55	1	193	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
35	55	1	193	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36	55	1	193	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
37	55	1	193	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
38	55	1	193	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
39	55	1	193	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40	55	1	194	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
41	55	1	194	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
42	55	1	194	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	55	1	194	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44	55	1	194	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45	55	1	194	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
46	55	1	194	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
47	55	1	194	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
48	55	1	194	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
49	55	1	194	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	13	1	195	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	13	1	196	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	13	1	197	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	13	1	197	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	13	1	197	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	13	1	197	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	13	1	197	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	13	1	197	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	13	1	197	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	13	1	197	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32	13	1	197	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34	13	1	198	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
35	13	1	198	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36	13	1	198	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
37	13	1	198	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

```
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
38  13  1 198    0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
39  13  1 198    0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
40  13  1 198    0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
41  13  1 198    0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
42  13  1 198    0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
43  13  1 198    0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
44  13  1 198    0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
45  13  1 198    0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
46  13  1 198    0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
47  13  1 198    0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
48  13  1 198    0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
49  13  1 198    0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
50  13  1 198    0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
51  13  1 198    0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
52  13  1 198    0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
53  13  1 198    0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
54  13  1 198    0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
55  13  1 198    0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
43   9  1 198    0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
44   9  1 198    0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
45   9  1 198    0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
54  17  1 199    0.0      0.0      0.0      0.0      0.0      0.0      0.0  !NS=199 CSO3-[54,17]
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
54  17  1 200    0.0      0.0      0.0      0.0      0.0      0.0      0.0  !NS=200 CSO4a-[54,17]
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
54  17  1 201    0.0      0.0      0.0      0.0      0.0      0.0      0.0  !NS=201 CSO4b-[54,17]
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
54  17  1 202    0.0      0.0      0.0      0.0      0.0      0.0      0.0  !NS=202 CSO4c-[54,17]
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
54  17  1 203    0.0      0.0      0.0      0.0      0.0      0.0      0.0  !NS=203 CSO4d-[54,17]
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
54  18  1 204    0.0      0.0      0.0      0.0      0.0      0.0      0.0  !NS=204 CSO4e-[54,18]
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
54  18  1 205    0.0      0.0      0.0      0.0      0.0      0.0      0.0  !NS=205 CSO4f-[54,18]
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
52  13  1 206    0.0      0.0      0.0      0.0      0.0      0.0      0.0  !NS=206 CSO5-[52,13]
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
52  13  1 207    0.0      0.0      0.0      0.0      0.0      0.0      0.0  !NS=207 CSO5-[52,13]
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0
                 0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
52  13  1 208    0.0      0.0      0.0      0.0      0.0      0.0      0.0  !NS=208 CSO6-[52,13]
```

```
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  52  13  1 209  0.0     0.0     0.0     0.0     0.0     0.0     0.0  !NS=209 CSO7-[52,13]
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  55  13  1 210  0.0     0.0     0.0     0.0     0.0     0.0     0.0  !NS=210 CSO9c-[55,13]
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  53  13  1 211  0.0     0.0     0.0     0.0     0.0     0.0     0.0  !NS=211 CS10-[53,13]
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  52  13  1 212  0.0     0.0     0.0     0.0     0.0     0.0     0.0  !NS=212 CSO11-[52,13]
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  52  13  1 213  0.0     0.0     0.0     0.0     0.0     0.0     0.0  !NS=213 CSO12-[52,13]
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  52  13  1 214  0.0     0.0     0.0     0.0     0.0     0.0     0.0  !NS=214 CSO13-[52,13]
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  53  13  1 215  0.0     0.0     0.0     0.0     0.0     0.0     0.0  !NS=215 CSO14-[53,13]
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  53  13  1 216  0.0     0.0     0.0     0.0     0.0     0.0     0.0  !NS=216 CSO15-[53,13]
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  53  13  1 217  0.0     0.0     0.0     0.0     0.0     0.0     0.0  !NS=217 CSO16-[53,13]
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  53  13  1 218  0.0     0.0     0.0     0.0     0.0     0.0     0.0  !NS=218 CSO17-[53,13]
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  54  16  1 219  0.0     0.0     0.0     0.0     0.0     0.0     0.0  !NS=219 CSO18-[54,16]
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  54  17  1 220  0.0     0.0     0.0     0.0     0.0     0.0     0.0  !NS=220 CSO19-[54,17]
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  54  17  1 221  0.0     0.0     0.0     0.0     0.0     0.0     0.0  !NS=221 CSO20-[54,17]
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  54  17  1 222  0.0     0.0     0.0     0.0     0.0     0.0     0.0  !NS=222 CSO21a-[54,17]
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  54  17  1 223  0.0     0.0     0.0     0.0     0.0     0.0     0.0  !NS=223 CSO21b-[54,17]
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  54  17  1 224  0.0     0.0     0.0     0.0     0.0     0.0     0.0  !NS=224 CSO21c-[54,17]
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  54  18  1 225  0.0     0.0     0.0     0.0     0.0     0.0     0.0  !NS=225 CSO22b-[54,18]
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  54  18  1 226  0.0     0.0     0.0     0.0     0.0     0.0     0.0  !NS=226 CSO22c-[54,18]
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  54  18  1 227  0.0     0.0     0.0     0.0     0.0     0.0     0.0  !NS=227 CSO23-[54,18]
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  54  20  1 228  0.0     0.0     0.0     0.0     0.0     0.0     0.0  !NS=228 CSO24-[54,20]
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  54  20  1 229  0.0     0.0     0.0     0.0     0.0     0.0     0.0  !NS=229 CSO25-[54,20]
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  54  20  1 230  0.0     0.0     0.0     0.0     0.0     0.0     0.0  !NS=230 CSO26-[54,20]
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  46  55  1 231  0.0     0.0     0.0     0.0     0.0     0.0     0.0  !NS=231 CSO27-[46,55]
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  46  55  1 232  0.0     0.0     0.0     0.0     0.0     0.0     0.0  !NS=232 CSO28-[46,55]
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  45  55  1 233  0.0     0.0     0.0     0.0     0.0     0.0     0.0  !NS=233 CSO29-[45,55]
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  52  13  1 234  0.0     0.0     0.0     0.0     0.0     0.0     0.0  !NS=234 CSO30-[52,13]
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  57  15  1 234  0.0     0.0     0.0     0.0     0.0     0.0     0.0  !NS=235 CSO31-[57,15]
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  54  21  1 236  0.0     0.0     0.0     0.0     0.0     0.0     0.0  !NS=236 CSOrr-[54,21]
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0
                 0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
C-----------------------------------------------------------------------------
C49 FOUR TITLE CARDS FOLLOW:
$$ C49 Constant Dry Atmospheric Deposition (g/m2/day; MPN/m2/day)
$ DSQ       Bc        Bd        Bg        RPOC      LPOC      DOC
$ RPOP      LPOP      DOP       PO4t      RPON      LPON      DON
$ NH4       NO3       SU        SA        COD       DO        TAM       FCB
  0.0       0.0       0.0       0.0       0.000387  0.000387  0.000773
```

```
  0.0       0.0       0.000054  0.000019  0.000530  0.000530  0.000771
  0.000214  0.000393  0.0       0.000247  0.0       0.0       0.0       1.0e07
C-----------------------------------------------------------------------------
C50 FOUR TITLE CARDS FOLLOW:
$$ C50 Wet Atmospheric Deposition concentrations (mg/L; MPN/L)
$           Bc        Bd        Bg        RPOC      LPOC      DOC
$ RPOP      LPOP      DOP       PO4t      RPON      LPON      DON
$ NH4       NO3       SU        SA        COD       DO        TAM       FCB
            0.0       0.0       0.0       0.325     0.325     0.650
  0.0       0.0       0.045     0.016     0.0       0.0       0.140
  0.222     0.332     0.0       0.0       0.0       0.0       0.0       0.0
C-----------------------------------------------------------------------------
C51 ONE TITLE CARD FOLLOWS:
$$ C51 File names for spatially/temporally varying parameters: lower case only $$
Restart file for end spatial distribution = none
File for initial conditions (ICIFN)       = none
File for algal growth, resp, pred (AGRFN) = algaegro.inp
File for settling of algae, POM (STLFN)   = algaeset.inp
Input file for Io, FD, KT, Te (SUNFN)     = none
Input file for benthic fluxes (BENFN)     = none
Input file for point source input (PSLFN) = none
File for NPS input inc/atm input (NPLFN)  = none
Diagnostic file-negative conc. (NCOFN)    = wq3dnc.log
```

WQ3DSD.INP

```
# <-- first character "#" signifies this is an extended annotation file
C WQ3DSD.INP
C-----------------------------------------------------------------------------
C01  MAIN TITLE CARDS
C
C  TITLE(M), M=1,3
C
C01 THREE TITLE CARDS FOLLOW:
': CHRISTINA RIVER MODEL'
': Input for Sediment Model parameters'
': Opened and used only when IWQBEN=1'
C-----------------------------------------------------------------------------
C02 PROGRAM CONTROL SWITCHES
C
C   ONE TITLE CARD FOLLOWS:
$ C02  I/O control varaibles $
C02
C    iSMZ = number of zones for spatially varying parameters in sediment
C           processes model
C    iICI = initial conditions switch
C           =0, constant ICs specified on Cards 17 and 18 below
C           =1, ICs read from file WQSDICI.INP
C           =2, ICs read from restart file WQSDRST.INP
C    iRST = write final spatial distributions to restart file WQSDRST.OUT
C           =0, do not write to restart file
C           =1, write to restart file
C   iHyst = activate hysteresis in benthic mixing
C           =0, not activated
C           =1, activated
C     iZB = activate diagnostic output for FUNCTION ZBRENT to file ZBRENT.LOG
C           =0, not activated
C           =1, activated
C
C02 iSMZ    iICI    iRST    iHyst   iZB
    13       2       1       1       1
C-----------------------------------------------------------------------------
C03  OUTPUT CONTROL VARIABLES
C   ISMTS = number of time series output locations; ISMTS should be
C           less than or equal to NWQTS on Card C02 in file WQ3DWC.INP.
C  TSMTSB = begin writing output time-series data on this day
C  TSMTSE = end writing output time-series data on this day
C  SMTSDT = write to output time-series file at this interval (hours)
C           =24.0 for daily averages (solar day)
C           =24.8412 for average over M2 tide (lunar day)
C isSDBIN = switch to activate writing benthic flux rates to a binary output
C           file WQSDTS.BIN.  All cells in model domain are saved to this file.
C           =0, not activated
C           =1, activated, overwrite an existing WQSDTS.BIN file
C           =2, activated, append to an existing WQSDTS.BIN file
C
C03 ISMTS   TSMTSB  TSMTSE   SMTSDT   isSDBIN
      3      0.0    99999.9  24.00    2
C-----------------------------------------------------------------------------
C04  LOCATIONS OF OUTPUT CELLS
C  These cells will be written to the ASCII files WQSDTS1.OUT and WQSDTS2.OUT
C  ISMTSI = I-cell indes number
C  JSMTSJ = J-cell index number
C      OM =
C     IOM =
C      BF =
C
C04 ONE TITLE CARD FOLLOWS:
$   ISMTSI  ISMTSJ    OM      IOM     BF
     54      38       1       1       1
     54      55       1       1       1
     26      79       1       1       1
C-----------------------------------------------------------------------------
C05  DIFFUSION COEFFICIENT
C    DifT = diffusion coefficient for sediment temperature (m2/sec)
C
C05  DifT
     1.8E-7
C-----------------------------------------------------------------------------
C06  ONE TITLE CARD FOLLOWS:
$ C06 Spatially constant parameters to split depositional fluxes to Gi classes $
C06
C   FNBc1 = fraction of PON from Cyanobacteria routed to G1 class
C   FNBc2 = fraction of PON from Cyanobacteria routed to G2 class
C   FNBc3 = fraction of PON from Cyanobacteria routed to G3 class
C           Note:  FNBc1 + FNBc2 + FNBc3 = 1.0
C   FNBd1 = fraction of PON from diatom algae group routed to G1 class
C   FNBd2 = fraction of PON from diatom algae group routed to G2 class
C   FNBd3 = fraction of PON from diatom algae group routed to G3 class
C           Note:  FNBd1 + FNBd2 + FNBd3 = 1.0
C   FNBg1 = fraction of PON from green algae group routed to G1 class
C   FNBg2 = fraction of PON from green algae group routed to G2 class
C   FNBg3 = fraction of PON from green algae group routed to G3 class
C           Note:  FNBg1 + FNBg2 + FNBg3 = 1.0
C
```

```
C06 FNBc1   FNBc2   FNBc3   FNBd1   FNBd2   FNBd3   FNBg1   FNBg2   FNBg3
    0.60    0.30    0.10    0.60    0.30    0.10    0.60    0.30    0.10
C-----------------------------------------------------------------------
C07
C   FPBc1 = fraction of POP from Cyanobacteria routed to G1 class
C   FPBc2 = fraction of POP from Cyanobacteria routed to G2 class
C   FPBc3 = fraction of POP from Cyanobacteria routed to G3 class
C           Note:  FPBc1 + FPBc2 + FPBc3 = 1.0
C   FPBd1 = fraction of POP from diatom algae group routed to G1 class
C   FPBd2 = fraction of POP from diatom algae group routed to G2 class
C   FPBd3 = fraction of POP from diatom algae group routed to G3 class
C           Note:  FPBd1 + FPBd2 + FPBd3 = 1.0
C   FPBg1 = fraction of POP from green algae group routed to G1 class
C   FPBg2 = fraction of POP from green algae group routed to G2 class
C   FPBg3 = fraction of POP from green algae group routed to G3 class
C           Note:  FPBd1 + FPBd2 + FPBd3 = 1.0
C
C07 FPBc1   FPBc2   FPBc3   FPBd1   FPBd2   FPBd3   FPBg1   FPBg2   FPBg3
    0.60    0.30    0.10    0.65    0.255   0.095   0.65    0.255   0.095
C-----------------------------------------------------------------------
C08
C   FCBc1 = fraction of POC from Cyanobacteria routed to G1 class
C   FCBc2 = fraction of POC from Cyanobacteria routed to G2 class
C   FCBc3 = fraction of POC from Cyanobacteria routed to G3 class
C           Note:  FCBc1 + FCBc2 + FCBc3 = 1.0
C   FCBd1 = fraction of POC from diatom algae group routed to G1 class
C   FCBd2 = fraction of POC from diatom algae group routed to G2 class
C   FCBd3 = fraction of POC from diatom algae group routed to G3 class
C           Note:  FCBd1 + FCBd2 + FCBd3 = 1.0
C   FCBg1 = fraction of POC from green algae group routed to G1 class
C   FCBg2 = fraction of POC from green algae group routed to G2 class
C   FCBg3 = fraction of POC from green algae group routed to G3 class
C           Note:  FCBd1 + FCBd2 + FCBd3 = 1.0
C
C08 FCBc1   FCBc2   FCBc3   FCBd1   FCBd2   FCBd3   FCBg1   FCBg2   FCBg3
    0.69    0.30    0.01    0.69    0.30    0.01    0.69    0.30    0.01
C-----------------------------------------------------------------------
C09 ONE TITLE CARD FOLLOWS:
$ C09 Spatially constant parameters for diagenesis $
C09
C   KPON1 = Decay rate of PON at 20 degC in Layer 2 for G1 class (1/day)
C   KPON2 = Decay rate of PON at 20 degC in Layer 2 for G2 class (1/day)
C   KPON3 = Decay rate of PON at 20 degC in Layer 2 for G3 class (1/day)
C   KPOP1 = Decay rate of POP at 20 degC in Layer 2 for G1 class (1/day)
C   KPOP2 = Decay rate of POP at 20 degC in Layer 2 for G2 class (1/day)
C   KPOP3 = Decay rate of POP at 20 degC in Layer 2 for G3 class (1/day)
C   KPOC1 = Decay rate of POC at 20 degC in Layer 2 for G1 class (1/day)
C   KPOC2 = Decay rate of POC at 20 degC in Layer 2 for G2 class (1/day)
C   KPOC3 = Decay rate of POC at 20 degC in Layer 2 for G3 class (1/day)
C
C09 KPON1   KPON2   KPON3   KPOP1   KPOP2   KPOP3   KPOC1   KPOC2   KPOC3
    0.035   0.0018  0.0     0.035   0.0018  0.0     0.035   0.0018  0.0001
C-----------------------------------------------------------------------
C10
C   ThKN1 = Constant for temperature adjustment for KPON1 (unitless)
C   ThKN2 = Constant for temperature adjustment for KPON2 (unitless)
C   ThKN3 = Constant for temperature adjustment for KPON3 (unitless)
C   ThKP1 = Constant for temperature adjustment for KPOP1 (unitless)
C   ThKP2 = Constant for temperature adjustment for KPOP2 (unitless)
C   ThKP3 = Constant for temperature adjustment for KPOP3 (unitless)
C   ThKC1 = Constant for temperature adjustment for KPOC1 (unitless)
C   ThKC2 = Constant for temperature adjustment for KPOC2 (unitless)
C   ThKC3 = Constant for temperature adjustment for KPOC3 (unitless)
C
C10 ThKN1   ThKN2   ThKN3   ThKP1   ThKP2   ThKP3   ThKC1   ThKC2   ThKC3
    1.1     1.15    1.0     1.1     1.15    1.0     1.1     1.15    1.0
C-----------------------------------------------------------------------
C11 ONE TITLE CARD FOLLOWS:
$ C11 Spatially constant parameters common to sediment flux $
C11
C     rM1 = Solid concentrations in Layer 1 (Kg/L)
C     rM2 = Solid concentrations in Layer 2 (Kg/L)
C    ThDd = Constant for temperature adjustment for Dd (unitless)
C    ThDp = Constant for temperature adjustment for Dp (unitless)
C   GPOCr = Reference concentration for GPOC(1) (gC/m3)
C    KMDp = Particle mixing half-saturation constant for oxygen (mg/L)
C     KST = First-order decay rate for accumulated benthic stress (1/day)
C   DpMIN = Minimum diffusion coefficient for particle mixing (m^2/d)
C   RBIBT = Ratio of bio-irrigation to bioturbation (unitless)
C
C11 rM1     rM2     ThDd    ThDp    GPOCr   KMDp    KST     DpMIN   RBIBT
    0.5     0.5     1.08    1.117   100.0   4.0     0.03    6.0E-6  0.0
C-----------------------------------------------------------------------
C12
C   O2BSc = Critical overlying oxygen concentration below which benthic
C           hysteresis occurs (mg/L)
C   TDMBS = Time duration for which the maximum or minimum stress is
C           retained (days)
C   TCMBS = Critical hypoxia duration; if less than this value, no
C           hysteresis occurs (days)
C
C12 O2BSc   TDMBS   TCMBS
    3.0     90.0    7.0
```

```
C-----------------------------------------------------------------------------
C13 ONE TITLE CARD FOLLOWS:
$ C13 Spatially constant parameters for NH4, NO3 & PO4 flux $
C13
C   P1NH4 = Partition coefficient, ratio of particulate to dissolved NH4
C           in layer 1 (L/Kg)
C   P2NH4 = Partition coefficient, ratio of particulate to dissolved NH4
C           in layer 2 (L/Kg)
C   KMNH4 = Nitrification half-sat. constant for ammonium (gN/m^3)
C KMNH4O2 = Nitrification half-sat. constant for dissolved oxygen (gO2/m^3)
C   ThNH4 = Constant for temperature adjustment for KNH4 (unitless)
C   ThNO3 = Constant for temperature adjustment for KNO31 and KNO32 (unitless)
C   P2PO4 = Partition coefficient, ratio of particulate to dissolved PO4
C            in layer 2 (L/Kg)
C  DOcPO4 = Critical dissolved oxygen for PO4 sorption (mg/L)
C           Note: increase this value to increase PO4 flux to water column
C
C13 P1NH4   P2NH4   KMNH4   KMNH4O2 ThNH4   ThNO3   P2PO4   DOcPO4
    1.0     1.0     0.728   0.37    1.125   1.08    100.0   2.0
C-----------------------------------------------------------------------------
C14 ONE TITLE CARD FOLLOWS:
$ C14 Spatially constant parameters for H2S/CH4 flux and SOD $
C14
C   P1H2S = Partition coefficient for H2S in Layer 1 (L/Kg)
C   P2H2S = Partition coefficient for H2S in Layer 2 (L/Kg)
C  KH2Sd1 = Reaction velocity for dissolved sulfide oxidation in
C           Layer 1 at 20 degC (m/day)
C  KH2Sp1 = Reaction velocity for particulate sulfide oxidation in
c           Layer 1 at 20 degC (m/day)
C   ThH2S = Constant for temperature adjustment for KH2Sd1 and KH2Sp1 (unitless)
C   KMH2S = Constant to normalize the sulfide oxidation rate for oxygen (mgO2/L)
C    KCH4 = Reaction velocity for methane oxidation in layer 1 at 20 degC (m/day)
C   ThCH4 = Constant for temperature adjustment for KCH4 (unitless)
C  cSHSCH = Critical salinity; less than this value CH4 is produced,
C           above this value H2S is produced (g/L)
C                   0.6     1.2     1.17            0.2             1.0
C14 P1H2S   P2H2S   KH2Sd1  KH2Sp1  ThH2S   KMH2S   KCH4    ThCH4   cSHSCH
    100.0   100.0   0.2     0.4     1.08    4.0     0.1     1.08    0.25
C-----------------------------------------------------------------------------
C15
C    aO2C = Stoichiometric coefficient for carbon diagenesis consumed
C           by H2S oxidation (gO2/gC)
C  aO2NO3 = Stoichiometric coefficient for carbon diagenesis consumed
C           by denitritrification (gO2/gN)
C  aO2NH4 = Stoichiometric coefficient for carbon diagenesis consumed
C           by nitrification (gO2/gN)
C
C15 aO2C     aO2NO3   aO2NH4
    2.66667  2.85714  4.33
C-----------------------------------------------------------------------------
C16 ONE TITLE CARD FOLLOWS:
$ C16 Spatially constant parameters for SILICA $
C16
C     KSi = First order dissolution rate for particulate biogenic silica
C           (PSi) at 20 degC in layer 2 (1/day)
C    ThSi = Constant for temperature adjustment of KSi (unitless)
C   KMPSi = Silica dissolution half-saturation constant for PSi (g Si/m^3)
C   SiSat = Saturation concentration of silica in pore water (g Si/m^3)
C    P2Si = Partition coefficient for Si in Layer 2, controls sorption
C           of dissolved silica to solids (L/Kg)
C   DP1Si = factor that enhances sorption of silica in layer 1 when D.O.
C           exceeds DOcSi (unitless)
C   DOcSi = Critical dissolved oxygen for silica sorption in layer 1 (mg/L)
C DetFPSi = Detrital flux of particulate biogenic silica from sources
C           other than diatom algae (gSi/m^2/d)
C
C16  KSi     ThSi    KMPSi   SiSat   P2Si    DP1Si   DOcSi   DetFPSi
     0.5     1.1     5.0E4   40.0    100.0   10.0    1.0     0.1
C-----------------------------------------------------------------------------
C17 ONE TITLE CARD FOLLOWS:
$ C17 Spatially constant ICs $
C17
C   CPON1 = Conc. Particulate Org. Nitrogen in G-class 1 (g/m3)
C   CPON2 = Conc. Particulate Org. Nitrogen in G-class 2 (g/m3)
C   CPON3 = Conc. Particulate Org. Nitrogen in G-class 3 (g/m3)
C   CPOP1 = Conc. Particulate Org. Phosphorus in G-class 1 (g/m3)
C   CPOP2 = Conc. Particulate Org. Phosphorus in G-class 2 (g/m3)
C   CPOP3 = Conc. Particulate Org. Phosphorus in G-class 3 (g/m3)
C   CPOC1 = Conc. Particulate Org. Carbon in G-class 1 (g/m3)
C   CPOC2 = Conc. Particulate Org. Carbon in G-class 2 (g/m3)
C   CPOC3 = Conc. Particulate Org. Carbon in G-class 3 (g/m3)
C
C17 ONE TITLE CARD FOLLOWS:
$  CPON1   CPON2   CPON3   CPOP1   CPOP2   CPOP3   CPOC1   CPOC2   CPOC3
   50.00  150.00  250.00   20.00  100.00  150.00  1000.0  3000.0  5000.0
C-----------------------------------------------------------------------------
C18 Spatially constant initial conditions
C   C1NH4 = Conc. NH4-N in layer 1 (g/m3)
C   C2NH4 = Conc. NH4-N in layer 2 (g/m3)
C   C2NO3 = Conc. NO3-N in layer 2 (g/m3)
C   C2PO4 = Conc. PO4-P in layer 2 (g/m3)
C   C2H2S = Conc. Sulfide (H2S) in layer 2 (g/m3)
C    CPSi = Conc. Particulate biogenic silica in layer 2 (g/m3)
```

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C    C2Si = Conc. Dissolved available silica in layer 2 (g/m3)
C    CBSt = Initial accumulated benthic stress (days)
C      GT = Initial sediment temperature (degC)
C
C18 ONE TITLE CARD FOLLOWS:
$  C1NH4   C2NH4   C2NO3   C2PO4   C2H2S  CPSi    C2Si    CBSt   GT
   2.00    4.00    1.0     250.0   250.0  5000.0  500.0   20.0   20.0
C-----------------------------------------------------------------------------
C19 ONE TITLE CARD FOLLOWS:
$ C19 Spatially varying parameters: physical and rate velocity $
C19
C    ISMz = zone for spatially variable parameters in SPM
C    Hsed = Layer 1 sediment thickness (meters)
C      W2 = sediment burial rate (cm/year)
C      Dd = diffusion coefficient in pore water (m2/day)
C      Dp = apparent diffusion coefficient for particle mixing (m2/day)
C    KNH4 = optimal reaction velocity for nitrification at 20 degC (m/day)
C   KNO31 = reaction velocity for denitrification in layer 1 at 20 degC (m/day)
C   KNO32 = reaction velocity for denitrification in layer 2 at 20 degC (m/day)
C  DP1PO4 = factor to enhance sorption of PO4 in layer 1 when DO is
C           greater than DOcPO4 (unitless)
C           Note: decrease DP1PO4 and/or increase DOcPO4 to increase the
C                 benthic flux of PO4 to the water column
C SODmult = factor to enhance magnitude of sediment oxygen demand (unitless)
C
C Sediment zones for this application are:
C  1 = Christina River (tidal)
C  2 = Brandywine Creek main stem
C  3 = Brandywine Creek East Branch
C  4 = Brandywine Creek West Branch and Buck Run
C  5 = Red Clay Creek West Branch (near Kennett Square STP)
C  6 = White Clay Creek
C  7 = Christina River (nontidal)
C  8 = Red Clay Creek (main stem)
C  9 = Delaware River (tidal)
C 10 = White Clay Creek East Branch
C 11 = Smalleys Pond
C 12 = Small tribs (e.g., Little Mill Creek, etc.)
C 13 = for dead-end grid cells at dam structures
C
C19 ONE TITLE CARD FOLLOWS:
$   ISMZ  Hsed   W2      Dd      Dp      KNH4    KNO31   KNO32   DP1PO4 SODmult
    1     0.15   0.25    0.0005  0.6E-4  0.131   0.125   0.250   175.0  0.95
    2     0.15   0.10    0.0025  2.5E-4  0.140   0.125   0.250    50.0  0.90
    3     0.15   0.10    0.0025  2.5E-4  0.750   0.300   0.600    75.0  1.00
    4     0.15   0.10    0.0025  2.5E-4  0.750   0.125   0.250    75.0  1.00
    5     0.15   0.10    0.0025  2.5E-4  0.100   0.100   0.200    75.0  1.00
    6     0.15   0.10    0.0025  2.5E-4  0.300   0.125   0.250    25.0  0.85
    7     0.15   0.10    0.0025  2.5E-4  0.140   0.125   0.250   175.0  1.50
    8     0.15   0.10    0.0025  2.5E-4  0.140   0.125   0.125    50.0  1.00
    9     0.10   0.25    0.0005  0.6E-4  0.131   0.450   0.900   175.0  0.55
    10    0.15   0.10    0.0025  2.5E-4  0.750   0.150   0.300    75.0  0.90
    11    0.15   0.10    0.0025  2.5E-4  0.140   0.125   0.250   175.0  0.80
    12    0.15   0.10    0.0025  2.5E-4  0.140   0.125   0.125    50.0  0.80
    13    0.10   0.25    0.0005  0.6E-4  0.131   0.450   0.900   175.0  0.60
C-----------------------------------------------------------------------------
C20 ONE TITLE CARD FOLLOWS:
$ C20 Spatially varying parameters: distribution coefficients for RPOM $
C20
C    ISMZ = zone index for spatially variable parameters
C   FNRP1 = fraction of water column refractory PON routed to G-class 1
C   FNRP2 = fraction of water column refractory PON routed to G-class 2
C   FNRP3 = fraction of water column refractory PON routed to G-class 3
C           Note:  FNRP1 + FNRP2 + FNRP3 = 1.0
C   FPRP1 = fraction of water column refractory POP routed to G-class 1
C   FPRP2 = fraction of water column refractory POP routed to G-class 2
C   FPRP3 = fraction of water column refractory POP routed to G-class 3
C           Note:  FPRP1 + FPRP2 + FPRP3 = 1.0
C   FCRP1 = fraction of water column refractory POC routed to G-class 1
C   FCRP2 = fraction of water column refractory POC routed to G-class 2
C   FCRP3 = fraction of water column refractory POC routed to G-class 3
C           Note:  FCRP1 + FCRP2 + FCRP3 = 1.0
C   1      0.65    0.25    0.10    0.65    0.20    0.15    0.65    0.20    0.15
C20 ONE TITLE CARD FOLLOWS:
$   ISMZ   FNRP1   FNRP2   FNRP3   FPRP1   FPRP2   FPRP3   FCRP1   FCRP2   FCRP3
    1      0.10    0.40    0.50    0.10    0.40    0.50    0.10    0.40    0.50
    2      0.0     0.80    0.20    0.10    0.73    0.17    0.05    0.88    0.07
    3      0.0     0.70    0.30    0.10    0.73    0.17    0.05    0.88    0.07
    4      0.0     0.70    0.30    0.10    0.73    0.17    0.05    0.88    0.07
    5      0.0     0.80    0.20    0.0     0.73    0.27    0.05    0.88    0.07
    6      0.0     0.80    0.20    0.0     0.73    0.27    0.05    0.88    0.07
    7      0.0     0.80    0.20    0.10    0.73    0.17    0.05    0.88    0.07
    8      0.0     0.80    0.20    0.0     0.73    0.27    0.05    0.88    0.07
    9      0.65    0.25    0.10    0.65    0.20    0.15    0.65    0.20    0.15
    10     0.0     0.80    0.20    0.0     0.73    0.27    0.05    0.88    0.07
    11     0.0     0.80    0.20    0.10    0.73    0.17    0.05    0.88    0.07
    12     0.0     0.80    0.20    0.0     0.73    0.27    0.05    0.88    0.07
    13     0.65    0.25    0.10    0.65    0.20    0.15    0.65    0.20    0.15
```

KINETICS.INP

```
C KINETICS.INP
C Spatially-varying kinetic rate constants for Christina River Model
C
C   IWQKA = reaeration option
C         = 0, constant reaeration (WQKRO), no wind reaeration
C         = 1, constant reaeration (WQKRO) plus wind reaeration
C         = 2, use O'Connor-Dobbins (1958) formula
C         = 3, use Owens & Gibbs (1964) formula
C         = 4, modified Owens & Gibbs (1964) formula (for Christina River)
C     KRO = reaeration constant (3.933 for OConnor-Dobbins; 5.32 for Owen-Gibbs)
C     KTR = temperature rate constant for reaeration
C    REAC = reaeration adjustment factor (applied to the sum of the wind
C           and velocity reaeration terms)
C     KDC = minimum dissolution rate (1/day) of DOC
C KDCalgm = constant relating DOC dissolution rate to macroalgae
C    KHRm = half-sat. constant (gO2/m3) for macroalgae DOC excretion
C   DOPTm = optimal depth (m) for macroalgae growth
C     KCD = COD decay rate (per day)
C   KHCOD = oxygen half-saturation constant for COD decay (mg/L O2)
C
C Zone 1 = Christina River (tidal)
C      2 = Brandywine Creek main stem
C      3 = Brandywine Creek East Branch
C      4 = Brandywine Creek West Branch and Buck Run
C      5 = Red Clay Creek West Branch
C      6 = White Clay Creek main stem
C      7 = Christina River (non-tidal)
C      8 = Red Clay Creek (main stem and upper West Branch)
C      9 = Delaware River
C     10 = White Clay Creek East Branch
C     11 = Smalleys Pond
C     12 = small tribs (Little Mill Cr., Burroughs Run, etc.)
C     13 = for dead-end grid cells at dam structures
C
CZONE IWQKA   KRO    KTR  REAC    KDC KDCalgm  KHRm DOPTm   KCD KHCOD SLOPE
  1     1    1.30  1.024  1.00  0.025   0.006   2.0  1.50   2.5   1.5 0.001
  2     4    5.32  0.940  0.85  0.250   0.010   2.0  1.00   2.5   1.5 0.001
  3     4    5.32  0.940  0.85  0.240   0.010   2.0  1.00   2.5   1.5 0.001
  4     4    5.32  0.940  0.95  0.250   0.010   2.0  1.00   2.5   1.5 0.001
  5     4    5.32  0.940  0.65  0.250   0.025   4.0  1.00   3.3   1.5 0.001
  6     4    5.32  0.960  1.00  0.250   0.010   2.0  1.00   2.5   1.5 0.001
  7     4    5.32  0.940  1.00  0.250   0.015   2.0  1.00   3.0   1.5 0.001
  8     4    5.32  0.940  1.00  0.250   0.010   2.0  1.00   2.0   1.5 0.001
  9     1    2.00  1.008  1.00  0.025   0.001   2.0  1.50   2.5   1.5 0.001
 10     4    5.32  0.960  1.00  0.250   0.015   2.0  1.00   1.0   1.5 0.001
 11     4    5.32  1.024  1.00  0.250   0.025   2.0  1.00   3.0   1.5 0.001
 12     4    5.32  0.940  0.90  0.250   0.025   2.0  1.00   1.0   1.5 0.001
 13     1    2.00  1.008  1.00  0.025   0.001   2.0  1.00   2.5   1.5 0.001
```

ALGAEGRO.INP

```
c ALGAEGRO.INP - for Christina River water quality zones
c Time and spatially varying ALGAL GROWTH PARAMETERS
c 1=CRtidal; 2=BCmain; 3=BCEB; 4=BCWB; 5=RCWB; 6=WCC; 7=CRup; 8=RCC; 9=DelRiv;
c 10=WCEB; 11=Smalley; 12=LMC; 13=atDams
cIZ PMc  PMd  PMg  PMm  BMRc BMRd  BMRg  BMRm PRRc  PRRd  PRRg  PRRm Keb
 1  0.0  2.2  2.2  1.40 0.05 0.070 0.070 0.04 0.10  0.25  0.27  0.04 0.200
 2  0.0  0.0  1.5  1.25 0.05 0.025 0.250 0.04 0.10  0.10  0.45  0.09 0.300
 3  0.0  0.0  2.2  1.25 0.05 0.025 0.090 0.09 0.10  0.10  0.20  0.09 0.200
 4  0.0  0.0  2.2  1.25 0.05 0.025 0.070 0.09 0.10  0.10  0.25  0.09 0.200
 5  0.0  0.0  3.1  1.25 0.05 0.025 0.070 0.09 0.10  0.10  0.20  0.09 0.200
 6  0.0  0.0  2.0  1.25 0.05 0.025 0.090 0.09 0.10  0.10  0.40  0.09 0.200
 7  0.0  0.0  2.2  1.25 0.05 0.025 0.060 0.09 0.10  0.10  0.20  0.09 0.200
 8  0.0  0.0  1.8  1.25 0.05 0.025 0.070 0.04 0.10  0.10  0.30  0.18 0.200
 9  0.0  2.2  2.0  1.4  0.05 0.070 0.070 0.20 0.10  0.20  0.22  0.30 0.200
10  0.0  0.0  2.0  1.25 0.05 0.025 0.090 0.04 0.10  0.10  0.40  0.14 0.200
11  0.0  0.0  2.2  1.25 0.05 0.025 0.060 0.09 0.10  0.10  0.20  0.09 0.200
12  0.0  0.0  2.0  1.25 0.05 0.025 0.060 0.09 0.10  0.10  0.20  0.09 0.200
13  0.0  0.0  2.0  1.25 0.05 0.025 0.060 0.09 0.10  0.10  0.20  0.09 0.200
      0 END
```

ALGAESET.INP

```
c ALGAESET.INP - for Christina River water quality zones
c Time and spatially varying ALGAL SETTLING RATES (m/day)
c 1=CRtidal; 2=BCmain; 3=BCEB; 4=BCWB; 5=RCWB; 6=WCC; 7=CRup; 8=RCC; 9=DelRiv;
c 10=WCEB; 11=Smalley; 12=LMC; 13=atDams
c IZ   WSc     WSd     WSg     WSrp    WSlp    WSs     WSM
   1   0.0     0.20    0.20    1.20    1.20    0.50    0.0
   2   0.0     0.25    0.25    1.00    1.00    0.50    0.0
   3   0.0     0.25    0.20    1.00    1.00    0.50    0.0
   4   0.0     0.25    0.20    1.00    1.00    0.50    0.0
   5   0.0     0.25    0.10    1.00    1.00    0.50    0.0
   6   0.0     0.25    0.15    1.00    1.00    0.50    0.0
   7   0.0     0.25    0.15    1.00    1.00    0.50    0.0
   8   0.0     0.25    0.33    1.00    1.00    0.50    0.0
   9   0.0     0.20    0.20    1.00    1.00    0.50    0.0
  10   0.0     0.25    0.10    1.00    1.00    0.50    0.0
  11   0.0     0.25    0.15    1.00    1.00    0.50    0.0
  12   0.0     0.25    0.15    1.00    1.00    0.50    0.0
  13   0.0     0.20    0.15    1.00    1.00    0.50    0.0
      0 END
```