6-1-1980

Effects of Changes in Surface Water Regime and/or Land Use on the Vertical Distribution of Water Available for Wetland Vegetation: Dynamic Model of the Zone of Aeration (Appendix to Part 1 of Completion Report for Project A-023-ARK)

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APPENDIX
for
DYNAMIC MODEL OF THE ZONE OF AERATION

(Appendix to Part I of Completion Report for Project A-023-ARK)

Documentation of Computer Program

by
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FAYETTEVILLE, ARKANSAS

University of Arkansas
Fayetteville

Appendix to Publication No. 70

1980

Research Project Technical Completion Report

OWRT Project No. A-023-ARK

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June 1980

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REPORT FORMAT

PART I - DYNAMIC MODEL OF THE ZONE OF AERATION
(Included herein)

PART I (Appendix) - DOCUMENTATION OF COMPUTER PROGRAM
(Included as a separate document and available upon request from the Arkansas Water Resources Research Center, University of Arkansas, Fayetteville, AR 72701.

PART II - PORTABLE ENVIRONMENTAL DATA LOGGER AND SENSORS
(Incuded as a separate document)

Each of parts I and II is complete within itself, and may be distributed separately or as a single report.

PART I

APPENDIX

DOCUMENTATION OF COMPUTER PROGRAM

by

Robert N. MacCallum

Principal Investigator

June, 1980

APPENDIX I-A
Documentation of Computer Program

I. Program Information

Origin of Program:

General Office:

Director, Arkansas Water Resources Research Center
University of Arkansas
Fayetteville, AR 72701

Principal Investigator:

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Benton, Arkansas

Purpose of Program:

The program documented here describes the vertical distribution of water in the zone of aeration available for use by vegetation in a wetlands environment.

Problem Statement:

Vegetation is generally thought to be in dynamic equilibrium with the environment. As the environment changes, vegetation can be expected to change until a new balance is approached or achieved. Flood control measures put into effect in

Eastern Arkansas during the last twenty-five years have allowed previously flood-prone areas to be cleared of wetland forests for agriculture. Parts of the remaining wetland forests, which were in equilibrium with environmental conditions typically including extensive annual flooding, are now thought to be out of balance with an environment characterized by reduced flooding or no flooding. A study of relationship between hydrologic change and vegetation change should be invaluable as a planning tool for future use of wetland forest areas.

Areas of Application:

This program may be used to determine the optimum use of wetlands of any region by predicting the impact of proposed flood control and drainage projects on the wetlands environment.

Methods of Computation:

The basic equations are the differential equations which describe isothermal, one-dimensional, unsteady-state, simultaneous flow of water and air in a porous medium. These are a set of two second order, non-linear, partial differential equations. Because of the complexity of these equations, it was necessary to use numerical techniques. The partial differential equations were converted to a finite difference from and solved using an iterative implicit procedure.

Basis for Selection of Method:

Because of the complexity of the partial differential equations, an analytical solution could not be achieved, and the numerical solution was the only available technique.

Limitations and Restrictions:

The Theoretical Development section of the body of the report includes the assumptions which were made in the development of the model.

Equations and Derivations:

Derivation of the basic equations of the model is shown in the Theoretical Development section of the report.

Definition of Technical Terms:

The definition of all variable and constant names used in the computer program is given by comment statements in the main program body.

Physical Constants:

The physical constants and program parameter values used in the model are listed in Appendix I-C.

Functional Information:

The finite difference approximations of the partial differential equations was solved numerically. The depth of the soil column was directed into intervals and the differential terms in each of the partial differential equations were

replaced by finite differences. Essentially a iterative implicit procedure was used to calculate pressures and saturation at each time step, converging after meeting a maximum allowable residual mass or pressure. Briefly, the computation for each time step is:

1. The coefficients of the difference are calculated.
2. The residual mass values are determined.
3. The difference equations are solved by the Gaussian elimination method yielding pressure residuals.
4. New values of pressure are calculated at each grid node.
5. The iteration parameter is advanced by one and the residuals are recalculated. Convergence is checked by comparing residuals to the maximum allowable residuals.
6. If convergence criteria are not met, steps 3, 4 and 5 are repeated. This cyclical process continues until a preset maximum number of iterations is reached. The program continues after an error message if convergence is not attained.
7. New values of saturation are calculated using the capillary pressure-saturation relationship once convergence has been reached.

8. At the end of each time step a material balance calculation is made.

II. Usage Information

Programming Language, Equipment, and Operating System:

The computer program was written in FORTRAN IV for the IBM 360 system. The model requires 24k of 36 bit-word of core storage. It uses a magnetic tape for restart purposes.

Input Requirements:

Data input is by cards, and no special input is necessary.

Secondary Storage Input Format:

None

Input Data Description:

Data input is by punched card. Input requirements and formats are given by comments in the data input subroutine, LNKA.

Program Output:

Sample program output is shown in the example case.

Operator Instructions:

No special instructions are required.

Off-Line Error Messages:

No error messages are generated by the program.

Definition of Technical Terms:

A complete listing of all terms used in the program is given by comment cards in the main program.

Example Case:

An example case is included as Appendix I-D.

Job Processing Time:

Computer time usage varied from less than two minutes per year to about six minutes per year of simulation time.

APPENDIX I-B
Computer Program Listing

```
V G LEVEL  21                    MAIN                    DATE = 74186  .        17/44/00

      C     MNEMONICS
      C
      C     AAAA WETTING PHASE ACCUMULATION IN THE SYSTEM AT EACH TIME
      C     STEP BASED ON SOURCE/SINK TERMS (LBM)
      C     AANTRY NUMBER OF ITERATIONS IN EACH TIME CONSTANT
      C     ACG MATERIAL BALANCE RATIO,NON-WETTING PHASE (FFFF-RESG)/
      C     CDDD
      C     AG (RESG-CDDD) (LBM)
      C     ACW MATERIAL BALANCE RATIO,WETTING PHASE (EEEE-RESW)/CCCC
      C     AIRKG EVAP. MASS-TRANSFER (LBM/SQ.FT/ R) (HR/MILE)**.8(1/PSI)
      C     AKGLEA TRAN. MASS-TRANSFER (LBM/SQ.FT/HR) (HR/MILE)**.8(1/PSI)
      C     AKXML ABS. PERM. MULTIPLYER
      C     AIRRE AIR FILM RESISTANCE AT SOIL SURFACE
      C     APOR AVERAGE POROSITY IN SOIL ROOT ZONE
      C     (CU FT WETTING PHASE/CU FT ROCK)
      C     ASSS CAPILLARY PRESSURE INTERCEPT FOR SW .LE. WILPO
      C     AS(LAYER,NKK) INTERCEPT OF A TANGENT CURVE TO THE CAPILLARY
      C     PRESSURE-WETTING PHASE SATURATION CURVE
      C     AVG NON-WETTING PHASE VISCOSITY AT I-TH GRID POINT (CP)
      C     AVGF NON-WETTING PHASE VISCOSITY AT (I+1) TH GRID POINT (CP)
      C     AVWF WETTING PHASE VISCOSITY AT (I+1) TH GRID POINT (CP)
      C     AVSATL AVERAGE SATURATION IN ROOT ZONE
      C     AVW WETTING PHASE VISCOSITY AT I-TH GRID POINT (CP)
      C     AW (RESW-CCCC) (LBM)
      C     AWSAT AVERAGE SATURATION IN SOIL ROOT ZONE
      C     BBBB NON-WETTING PHASE ACCUMULATED IN THE SYSTEM AT
      C     EACH TIME STEP (LBM)
      C     BSSS CAPILLARY PRESSURE SLOPE FOR SW .LE. WILPO
      C     BS(LAYER,NKK) SLOPE OF A TANGENT TO THE CAPILLARY PRESSURE-
      C     WETTING PHASE SATURATION CURVE
      C     BW(I) DUMMY VARIABLE USED FOR WETTING PHASE SATURATION
      C     (CU.FT. OF WETTING PHASE / CU.FT. PORE)
      C     C(I(N) MATRIX COEFFICIENTS
      C     CCCC TOTAL WETTING PHASE ACCUMULATION BASED ON SOURCE/SINK
      C     TERMS (LBM)
      C     C AND CC MATRIX MULTIPLIERS
      C     DDDD TOTAL NON-WETTING PHASE ACCUMULATION BASED ON SOURCE/
      C     SINK TERMS (LBM)
      C     DG(I) NON-WETTING PHASE DENSITY (LBM PER CU. FT.)
      C     DIPG STARTING POINT COORDINATE ON NON-WETTING PHASE DENSITY-
      C     PRESSURE CURVE
      C     DIPW STARTING POINT COORDINATE ON WETTING PHASE DENSITY-
      C     PRESSURE CURVE
      C     DISKG STARTING POINT COORDINATE ON NON-WETTING PHASE RELATIVE
      C     PERMEABILITY-WETTING PHASE SATURATION CURVE
      C     DISKW STARTING POINT COORDINATE ON WETTING PHASE RELATIVE
      C     PERMEABILITY-WETTING PHASE SATURATION CURVE
      C     DIP STARTING POINT COORDINATE ON VISCOSITY CURVE
      C     DIQW STARTING POINT COORDINATE ON WETTING PHASE INJECTION
      C     CURVE
      C     DISW(LAYER) STARTING POINT ON WETTING PHASE SATURATION-
      C     DP PRESSURE INCREMENT ON VISCOSITY CURVE (PSI)
      C     DLTMAX MAX. SIZE OF TIME STEP
      C     DMGX NON-WETTING PHASE MOBILITY RATIO
      C     DMWX WETTING PHASE MOBILITY RATIO
      C     DPC CAPILLARY PRESSURE INCREMENT (PSI)
      C     DPG PRESSURE INCREMENT ON NON-WETTING PHASE DENSITY-
      C     PRESSURE CURVE (PSI)
```

```
V G LEVEL  21                    MAIN                DATE = 74186 .        17/44/00

      C     DPW PRESSURE INCREMENT ON WETTING PHASE DENSITY-
      C     PRESSURE CURVE (PSI)
      C     DSKG NON-WETTING PHASE SATURATION INCREMENT ON ON-WETTING
      C     PHASE RELATIVE PERMEABILITY CURVE
      C     (CU.FT. / CU.FT. PORE )
      C     DSKW WETTING PHASE SATURATION INCREMENT ON WETTING PHASE
      C     RELATIVE PERMEABILITY CURVE
      C     (CU.FT. / CU.FT. PORE )
      C     DSW STARTING POINT COORDINATE ON WETTING PHASE SATURATION-
      C     CAPILLARY PRESSURE CURVE (PSI)
      C     DSW(LAYER)STARTING POINT COORDINATE ON WETTING PHASE SATURATION-
      C     CAPILLARY PRESSURE CURVE (PSI)
      C     DT TIME INCREMENT (HOUR)
      C     DW(I) WETTING PHASE DENSITY (LBM / CU. FT.)
      C     DX1 AND DX2 SPACE INCREMENTS
      C     EEEE WETTING PHASE INITIALLY IN SYSTEM (LBM)
      C     EKGM CONVERGENCE CRITERIA FOR NON-WETTING PHASE PRESSURE
      C     EKWM CONVERGENCE CRITERIA FOR WETTING PHASE PRESSURE
      C     ESTAR MAX. NUMBER OF TIME STEPS TO BE COMPUTED
      C     EVALEN DISTANCE TO EVAPO. SURFACE (FOOT)
      C     FCONV CONVERSION FACTOR FOR PSI TO PSF
      C     FFFF NON WETTING PHASE INITIALLY IN THE SYSTEM
      C     FINAL KEY VARIABLE FOR TAPE USAGE AND CALL EXIT
      C     GGGG MATERIAL BALANCE RATIO,WETTING PHASE BASED ON AMOUNT
      C     INITIALLY IN PLACE (RESW-CCCC)/EEEE
      C     GRESG MAX. RESIDUAL FOR NON-WETTING PHASE
      C     GRESW MAX. RESIDUAL FOR WETTING PHASE
      C     GSUM AMOUNT OF NON-WETTING PHASE IN MODEL (LBM)
      C     H(N) HEIGHT (FEET)
      C     HHHH MATERIAL BALANCE RATIO,NON-WETTING PHASE BASED ON
      C     AMOUNT INITIALLY IN PLACE (RESG-DDDD)/FFFF
      C     HK(I)  ITERATION PARAMETER
      C     IT IS THE MIN. TIME (SEC) FOR THE RUN TO WRITE ON TAPE AND EXIT
      C     ITSTOP IS NO LONGER USED. REMAINING TIME ROUTINE IS NOW USED.
      C     HOFLEAF HEIGHT OF THE PLANT FROM A DATUM PLANE
      C     IOUTPT KEY TOSPECIFY OUTPUT
      C     INSW =0 , INITIAL SAT. WILLBE AS READ,=1, INITIAL SAT.
      C     WILL BE CALCUATED FROM CAPILLARY CURVE
      C     ITAPE KEY FOR THE USE OF THE RESTAR TAPE
      C     KC ITERATION INDEX
      C     KX(N) ABSOLUTE PERMEABILITY (DARCYS)
      C     LAYER,LAY NUMBER OF SOIL LAYER IN MODEL
      C     MAXG LOCATION OF MAXIMUM NON-WETTING PHASE RESIDUAL
      C     MAXW LOCATION OF MAXIMUM NWETTING PHASE RESIDUAL
      C     MTRY MAX. NUMBER OF ITERATION STEPS
      C     NBUG KEY VARIABLE FOR DEBUGGING PURPOSES
      C     NOLAY NO. OF CAPILLARY PRESSURE CURVE
      C     NHK NUMBER OF ITERATION PARAMETERS IN A CYCLE
      C     NPCC NUMBER OF POINTS ON CAPILLARY PRESSURE-WETTING PHASE
      C     SATURATION CURVE
      C     NSTAR TAPE USAGE INDICATION
      C     NTRY NUMBER OF ITERATION STEPS
      C     NWELLS NUMBER OF SINK (SOURCE)
      C     NX,NA,NL NUMBER OF GRID POINTS
      C     PC(I) CAPILLARY PRESSURE (PSI)
      C     PCI STARTING POINT COORDINATE ON CAPILLARY PRESSURE WETTING
      C     PHASE SATURATION CURVE
      C     PG(N) NON-WETTING PHASE PRESSURE CALCULATED AT OLD TIME STEP
```

```
V G LEVEL  21                    MAIN                DATE = 74186  .        17/44/00

      C      (PSI)
      C      PGA(N) NON-WETTING PHASE PRESSURE CALCULATED AT NEW TIME STEP
      C      (PSI)
      C      PGCFV PER CENT GROUND COVERC BY VEGETATION
      C      PGB(N) NON-WETTING PHASE PRESSURE DIFFERENCE BETWEEN TWO
      C      SATURATIONS (PSI)
      C      PGIN(N) NON-WETTING PHASE PRESSURE AT BOUNDARY OF N-TH GRID
      C      (PSI)
      C      PKEY(N) KEY VARIABLE FOR INJECTION/PRODUCTION FROM A GRID PT.
      C      PLCONDU PLANT CONDUCTIVITY LBM/SQ FT-HR-PSI
      C      POFLAW CRITICAL LEAF POTENTIAL FT-HR-PSI
      C      POR(N) POROSITY
      C      POTCFR WETTING PHASE POTENTIAL AT ROOT SURFACE (PSI)
      C      POTPFL WETTING PHASE POTENTIAL AT LEAF SURFACE (PSI)
      C      PMCHG CONVERGENCE CRITERIA FOR PGB(N)
      C      PMCHW CONVERGENCE CRITERIA FOR PWB(N)
      C      PW(N) WETTING PHASE PRESSURE AT OLD TIME STEP (PSI)
      C      PWA(N) WETTING PHASE PRESSURE AT NEW TIME STEP (PSI)
      C      PWB(N) WETTING PHASE PRESSURE DIFFERENCE BETWEEN TWO
      C      SATURATIONS (PSI)
      C      PWIN(N) WETTING PHASE PRESSURE AT BOUNDARY OF N-TH GRID
      C      (PSI)
      C      QDD IS THE DRAINAGE FUNCTION CONSTANT
      C      QEVA(N) EVAPORATION FROM N-TH CELL (LBM/HR/SQ FT)
      C      QG(N) RATE OF NON-WETTING PHASE IN (OUT) (LBM/HR/FT SQ)
      C      QQEVA CUMULATIVE EVAPORATION (LBM/SQ FT)
      C      QQTRA CUMULATIVE TRANSPIRATION (LBM/SQ FT)
      C      QTA, QTB, AND QTC ARE ALL SEASONAL TRANSPIRATION FUNCTION CONST.
      C      QTRAN(N) TRANSPIRATION FROM N-TH GRID POINT DURING ONE TIME
      C      INTERVAL (LBM/SQ FT/HR)
      C      QTRANT TRANSPIRATION DURING ONE TIME INTERVAL (LBM/SQ FT/HR)
      C      QW(N) RATE OF WETTING PHASE IN (OUT) (LBM/HR/FT SQ)
      C      RWF PRECIPITATION (INCH/DATA POINT INTERVAL)
      C      RESG TOTAL AMOUNT OF NON-WETTING PHASE REMAINING IN SYSTEM
      C      (LBM)
      C      RESTAR TAPE USAGE INDICATOR
      C      RESW TOTAL AMOUNT OF WETTING PHASE REMAINING IN SYSTEM (LBM)
      C      RG NON-WETTING PHASE DENSITY AT I-TH GRID POINT CALCULATED
      C      AT OLD PRESSURE (LBM/CU FT)
      C      RGA NON-WETTING PHASE DENSITY AT I-TH GRID POINT CALCULATED
      C      AT NEW PRESSURE (LBM/CU FT)
      C      RGF NON-WETTING PHASE DENSITY AT (I+1)TH GRID POINT
      C      CALCULATED AT OLD PRESSURE (LBM/CU FT)
      C      RGXB NON-WETTING PHASE DENSITY AT (I+1)TH GRID POINT
      C      CALCULATED AT NEW PRESSURE (LBM/CU FT)
      C      RGXF NON-WETTING PHASE DENSITY AT (I+1)TH GRID POINT
      C      CALCULATED AT NEW PRESSURE (LBM/CU FT)
      C      RKG NON-WETTING PHASE RELATIVE PERMEABILITY
      C      (DIMENSIONLESS)
      C      RKGB NON-WETTING PHASE RELATIVE PERMEABILITY
      C      AT (I+1)TH GRID POINT (DIMENSIONLESS)
      C      RKGC NON-WETTING PHASE RELATIVE PERMEABILITY
      C      AT I-TH GRID POINT (DIMENSIONLESS)
      C      RKGF NON-WETTING PHASE RELATIVE PERMEABILITY
      C      AT (I+1)TH GRID POINT (DIMENSIONLESS)
      C      RKW WETTING PHASE RELATIVE PERMEABILITY (DIMENSIONLESS)
      C      RKWB WETTING PHASE RELATIVE PERMEABILITY AT (I+1)TH GRID
      C      POINT (DIMENSIONLESS)
```

```
C      RKWC WETTING PHASE RELATIVE PERMEABILITY AT I-TH GRID POINT
C      (DIMENSIONLESS)
C      RKWF WETTING PHASE RELATIVE PERMEABILITY AT (I+1)TH GRID
C      POINT (DIMENSIONLESS)
C      RHUM(NN) AIR HUMIDITY
C      RCOTN NUMBER OF GRID POINTS IN WHICH ROOTS PENETRATE
C      RSGA SUM OF NON-WETTING PHASE RESIDUAL
C      RSWA SUM OF WETTING PHASE RESIDUAL
C      RW WETTING PHASE DENSITY AT I-TH GRID POINT CALCULATED AT
C      OLD PRESSURE (LBM/CU FT)
C      RTDEN(NN) ROOT DENSITY (FT ROOT/CU.FT SOIL)
C      RWA WETTING PHASE DENSITY AT I-TH GRID POINT CALCULATED AT
C      OLD PRESSURE (LBM/CU FT)
C      RWF WETTING PHASE DENSITY AT (I+1)TH GRID POINT CALCULATED
C      AT OLD PRESSURE (LBM/ CU FT)
C      RWXB WETTING PHASE DENSITY AT (I+1)TH GRID POINT CALCULATED
C      AT NEW PRESSURE (LBM/ CU FT)
C      RWXF WETTING PHASE DENSITY AT (I+1)TH GRID POINT CALCULATED
C      AT NEW PRESSURE (LBM/ CU FT)
C      S(N) WETTING PHASE SATURATION (CU FT WETTING PHASE/
C      CU FT PORE SPACE)
C      SCALE SAT. MULTIPLYER
C      SGK(N) NON-WETTING PHASE PHASE NORMALIZATION FACTOR
C      SOILPC AVERAGE SOIL POTENTIAL IN ROOT ZONE (PSI)
C      SOILRE SOIL FLOW RESISTANCE IN VAPOR ZONE
C      SRESG SQUARE OF NON-WETTING PHASE RESIDUAL
C      SRESW SQUARE OF WETTING PHASE RESIDUAL
C      STEM(NN) SOIL TEMP. DEGREE F.
C      STAR TAPE USAGE INDICATOR
C      STRP(NN) VAPOR PRESSURE VS. TEMP.
C      SWK WETTING PHASE NORMALIZATION FACTOR
C      TCON MAX. SIMULATION TIME (HOURS)
C      TH(N) THICKNESS (FOOT)
C      TIMA,TIMB PROCESSOR TIME CONTROL
C      TIMEMU TIME STEP SIZE MULTIPLYER
C      TOLG CONVERGENCE CRITERIA FOR GRESG
C      TOLW CONVERGENCE CRITERIA FOR GRESW
C      TTOT CURRENT SIMULATION TIME (HOURS)
C      TIRE TOTAL RESISTANCE
C      VG(I) NON-WETTING PHASE VISCOSITY (CP)
C      VW(I) WETTING PHASE VISCOSITY (CP)
C      WSUM AMOUNT OF WETTING PHASE IN MODEL (LBM)
C      WILPC WILTING SAT. (CF/CF PORE)
C      WINDV WIND VELOCITY (MPH)
C      WHEAD(N) PRECIPITATION IN./MO. OR WATER HEAD (PSI)
C      X(N) SPACE COORDINATE (FOOT)
C      MAINLINE
C
       COMMON PG(50),PW(50),PGA(50),PWA(50),S(50),AS(10,100),BS(10,100)
       COMMON C(12,50),DMWX(50),DMGX(50),QEVA(50)
       COMMON SGK(50),SWK(50),PK(50),D,DD,DT,AAAA,BBBB,CCCC,DDDD,EEEE,FFF
      1F,GGGG,HHHH,ASSS,BSSS
       COMMON SUMPP,SUMNN,DENAMI,ANUMER
       COMMON RKWC,RKWB,RKWF,RKGC,RKGB,RKGF,RW,RWF,RG,RGF,AVW,AVWF,AVG
       COMMON RWA,RWXF,PTC,RGA,RGXF,RGXB,RWXB,AVGF
       COMMON CW(50),QG(50),PWIN(50),PGIN(50),QTRAN(50)
       COMMON WHEAD(998),RTDEN(50),PKEY(50),LAY(50)
       COMMON RHUM(999),ATEM(999),STEM(999),STARP(100),WINDV(999)
```

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V G LEVEL  21                    MAIN                DATE = 74186  .       17/44/00

      COMMCN VW(100),PC(10,100),DW(100),DG(100),RKW(100),RKG(100),VG(100
     1),POR(50),PWB(50),X(50),KX(50),PGB(50),TH(50),H(50)
      COMMCN FCCNV,DSW(10),DISW(10),DPW,DIPW,DPG,DIPG,DP,DIP,DPC,PCI,NX,
     1DISKW,DSKG,DISKG,NHK,LAYER,NPCC,DSKW,DHEAD,DIHEAD
      COMMCN MTRY,KC,NBUG,NTRY,MAXW,MAXG,SRESG,SRESW,GRESW,GRESG,RSWA,RS
     1GA,HOFLEA,AKGLEA,DIWIND,AIRKG,WILPO,PLCOND
      COMMCN RESTAR,STAR,FINAL,TCLW,TOLG,TCCN,PMCHW,PMCHG,EKGM
      COMMCN TTCT,ITAPE,CLTMAX,ESTAR,NSTAR,IOUTPT,IT,TIMA,TIMB,TIMC
      COMMCN CATEM,DIATEM,CSTEM,CISTEM,DSTP,DISTP,DRHUM,DIRHUM,CWIND
      COMMCN PGCBV,SATURA,TIMEMU,QQEVA,QQQEVA,AVSATU,QTRANT,QQQTRA
      COMMCN POFLAW,JCUTPT,CTA,CTB,QTC,QDD,IQT,IQD
      DOUBLE PRECISICN ATEMP,RHL,STEMP,PSTAR,ASTAR,WINDVC,QTRAN
      DOUBLE PRECISION QEVA,TTRE,SOILRE,AIRRE
      DOUBLE PRECISICN PG,PGA,PW,PWA,S,AS,BS,ASSS,BSSS
      DOUBLE PRECISICN C,DMWX,DMGX,SWK,SGK,HK
      DOUBLE PRECISICN RKWC,RKWB,RKWF,RWXB,RGXB,RKGC,RKGB,RKGF,RWXF,RGXB
     1,RW,AVGF,RWF,RG,RGA,RGF,AVW,RWA,AVWF,AVG,PTC,RGXF
      DOUBLE PRECISICN TPT,DT,Q3,Q5,Q9,Q11,AG,RESW,RESG,ACW,GSUM,WSUM
      DOUBLE PRECISICN D,CC,AAAA,BBBB,CCCC,DDDD,EEEE,FFFF,GGGG,HHHH,AW
      DOUBLE PRECISICN SATW,QWF,TTOT,PWIN,PGIN,ACG,QW,QG
      DOUBLE PRECISICN SUMMM,SUMNN,DENAMI,ANUMER
      REAL *KX
C     LNKA IS DATA INPUT LINK
      CALL LNKA
C     LNKB IS MAIN CALCULATICNAL LINK
      CALL LNKB
      STOP
      END

S IN EFFECT*  NCIC,EBCDIC,SOURCE,NOLIST,NODECK,LOAD,NOMAP
S IN EFFECT*  NAME = MAIN     , LINECNT =      60
TICS*    SOURCE STATEMENTS =       31,PROGRAM SIZE =      322
TICS*  NC DIAGNCSTICS GENERATED
```

```
V G LEVEL  21                    LNKA                DATE = 74186      17/44/00

      SUBROUTINE LNKA
C     THIS SUBROUTINE IS A DATA INPUT SUBROUTINE
      COMMON PG(50),PW(50),PGA(50),PWA(50),S(50),AS(10,100),BS(10,100)
      COMMON C(12,50),DMWX(50),DMGX(50),QEVA(50)
      COMMON SGK(50),SWK(50),HK(50),D,DD,DT,AAAA,BBBB,CCCC,DDDD,EEEE,FFF
     1F,GGGG,HHHH,ASSS,BSSS
      COMMON SUMPP,SUMNN,DENAMI,ANUMER
      COMMON RKWC,RKWB,RKWF,RKGC,RKGB,RKGF,RW,RWF,RG,RGF,AVW,AVWF,AVG
      COMMON RWA,RWXF,PTC,RGA,RGXF,RGXB,RWXB,AVGF
      COMMON QW(50),QG(50),PWIN(50),PGIN(50),QTRAN(50)
      COMMON WHEAD(550),RTDEN(50),PKEY(50),LAY(50)
      COMMON RHUM(999),ATEM(999),STEM(999),STARP(100),WINDV(999)
      COMMON VW(100),PC(10,100),CW(100),CG(100),RKW(100),RKG(100),VG(100
     1),POR(50),PWB(50),X(50),KX(50),PGB(50),TH(50),H(50)
      COMMON FCONV,CSW(10),DISW(10),DPW,DIPW,DPG,DIPG,DP,DIP,DPC,PCI,NX,
     1DISKW,DSKG,DISKG,AHK,LAYER,NPCC,DSKW,DHEAD,DIHEAD
      COMMON MTRY,KC,NBUG,NTRY,MAXW,MAXG,SRESG,SRESW,GRESW,GRESG,RSWA,RS
     1GA,HCFLEA,AKGLEA,DIWIND,AIRKG,WILPO,PLCOND
      COMMON RESTAR,STAR,FINAL,TCLW,TCLG,TCON,PMCHW,PMCHG,EKGM
      COMMON TTOT,ITAPE,DLTMAX,ESTAR,NSTAR,IOUTPT,IT,TIMA,TIMB,TIMC
      COMMON DATEM,DIATEM,DSTEM,DISTEM,DSTP,DISTP,DRHUM,DIRHUM,DWIND
      COMMON PGCBV,SATURA,TIMEMU,QQEVA,QQQEVA,AVSATU,QTRANT,QQQTRA
      COMMON POFLAW,JOUTPT,QTA,QTB,QTC,QDD,IQT,IQD
      DIMENSION PCCUM(100), BW(100)
      DOUBLE PRECISION ATEMP,RHU,STEMP,PSTAR,ASTAR,WINDVO,BW,QTRAN
      DOUBLE PRECISION QEVA,TTRE,SOILRE,AIRRE
      DOUBLE PRECISION PG,PGA,PW,PWA,S,AS,BS,ASSS,BSSS
      DOUBLE PRECISION PWTE,PGTE,PWI,PGI
      DOUBLE PRECISION C,DMWX,DMGX,SWK,SGK,HK
      DOUBLE PRECISION RKWC,RKWB,RKWF,RWXB,RGXB,RKGC,RKGB,RKGF,RWXF,RGXB
     1,RW,AVGF,RWF,RG,RGA,RGF,AVW,RWA,AVWF,AVG,PTC,RGXF
      DOUBLE PRECISION TPT,DT,Q3,Q5,Q9,Q11,AG,RESW,RESG,ACW,GSUM,WSUM
      DOUBLE PRECISION D,DD,AAAA,BBBB,CCCC,DDDD,EEEE,FFFF,GGGG,HHHH,AW
      DOUBLE PRECISION SATW,QWF,TTOT,PWIN,PGIN,ACG,QW,QG
      DOUBLE PRECISION SUMPP,SUMNN,DENAMI,ANUMER
      REAL KX
C
C     START
C
      NSTAR=2
      FCONV=1.0/144.0
C
C     IOUTPT CONTROLS OUTPUT OF RESULTS, PW(N), PG(N), S(N) - OUTPUT
C     WILL BE WRITTEN AFTER FIRST TIME STEP AND SUBSEQUENTLY AFTER
C     EACH IOUTPT TIME STEPS
C
      READ (5,320) RESTAR,FINAL,ESTAR,AKXMU,AIRKG,WILPO,POFLAW
C
C     RESTAR = 0, START FROM INITIAL TIME, RESTAR NEQ, START FROM TAPE
C
      WRITE (6,490) RESTAR,FINAL,POFLAW
      WRITE (6,220)
C
C     ESTAR = NUMBER OF TIME STEPS TO BE CALCULATED
C
      WRITE (6,500) AKXMU,ESTAR,AIRKG,WILPO
C
C     NBUG IS A WRITE CONTROL: = -2 WRITE AFTER EACH TIME STEP
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V G LEVEL  21                    LNKA                DATE = 74186 .        17/44/00

C                                    = 0  WRITE AFTER EACH ITERATION
C                                    = 0  WRITE MATRIX SOLN AND PROPERTIES
C     ITAPE IS RESTART TAPE CONTROL: ITAPE =0,NO RESTART; ITAPE =1,RESTA
C     ART
C
      READ (5,290) NBUG,IT,INSW,ITAPE,IOUTPT,IQT,IQD
      WRITE (6,550) NBUG,IT,INSW,ITAPE,IOUTPT,IQT,IQD
C
C
C     INITIAL SAT. WILL BE MODIFIED IF INSW = 1: THE WATER PRESSURE WILL
C     BE SET IN ACCORD. WITH GRAVITY HEAD, WHICH SETS PC AND THUS SW.
C     IF INSW = 0 THEN INITIAL SATURATION WILL BE AS FOLLOWS (SEE
C     RCUTINE THAT FCLLCWS)
C
C
      READ (5,510) DLTMAX,PLCCND,HOFLEA,AKGLEA,ASSS,BSSS,PGCBV,TIMEMU
      WRITE (6,540) DLTMAX,PLCCND,HOFLEA,AKGLEA,ASSS,BSSS,PGCBV,TIMEMU
      ITSTOP=IT
C
C     THE VALUE OF RESTAR IS SAVED FOR TAPE USAGE
C
      STAR=RESTAR
      IF (RESTAR.GT.C.0001) GO TO 190
C
C     READ VISCOSITY TABLES
C     AN = NO. OF PTS. IN TABLE, DP = PRESS. INCR., DIPW = INIT. TABLE
C     VW (N) = WATER VISCOSITY
C     VG (N) = GAS VISCOSITY
C
      READ (5,300) AN,DP,DIP
      WRITE (6,310) AN,DP,DIP
      N=AN
      READ (5,320) (VW(NN),NN=1,N)
      READ (5,320) (VG(NN),NN=1,N)
      DO 10 M=N,100
      VW(M)=VW(N)
10    VG(M)=VG(N)
      WRITE (6,360)
      WRITE (6,310) (VW(NN),NN=1,100)
      WRITE (6,370)
      WRITE (6,310) (VG(NN),NN=1,100)
C
C     READ DENSITY TABLES
C     DW (N) = WATER DENSITY
C     DG (N) = GAS DENSITY
C
C
      READ (5,300) AN,DPW,DIPW
      N=AN
      READ (5,320) (DW(NN),NN=1,N)
      DO 20 M=N,100
20    DW(M)=DW(N)
      WRITE (6,350)
      WRITE (6,310) AN,DPW,DIPW
      WRITE (6,310) (DW(NN),NN=1,100)
      READ (5,300) AN,DPG,DIPG
      N=AN
      READ (5,510) (DG(NN),NN=1,N)
```

```
      DO 30 N=N,100
30    DG(M)=DG(N)
      WRITE (6,340)
      WRITE (6,310) AN,DPG,DIPG
      WRITE (6,310) (DG(NN),NN=1,100)
C
C     READ CAPILLIARY PRESS. DATA - READ SW AT EQUAL INCR. OF CAP. PRESS
C     AN = NO. OF PTS. IN TABLE
C     PCI = INIT. CAP. PRESS. IN TABLE
C     DPC = INCREMENT IN CAP. PRESS.
C     SCALE = SCALE FACTOR - PURPOSE IS TO EASILY SHIFT CAP. PRESS. CUR
C     BW(N) = SW (WATER SATURATION)
C
C     NOLAY = NUMBER OF LAYERS WITH DIFFERENT CAPILLARY PRESS. CURVES
C
      READ (5,290) NCLAY
      DO 40 I=1,NCLAY
      READ (5,300) AN,PCI,DPC,SCALE
      N=AN
      NPCC=N
      WRITE (6,310) AN,PCI,DPC,SCALE
      LAYER=I
      READ (5,510) (BW(NN),NN=1,N)
C
C     CAPILLIARY PRESS. DATA CONVERTED TO EQUAL INCREMENTS OF SATURATION
C     BS(J) AND AS (J) CALCULATED FOR EACH TABLE ENTRY
C     SW = AS(J) + BS(J) * PC
      CALL CAPPR (AN,PCI,DPC,SCALE,LAYER,BW,AS,BS,DSW,DISW,PC)
      WRITE (6,330)
      WRITE (6,310) AN,DSW(LAYER),DISW(LAYER)
      WRITE (6,310) (PC(LAYER,J),J=1,N)
40    CONTINUE
C
C     READ IN GRID DATA
C     PERM., POR(PER CENT), INIT. GAS PRESS., INIT. SAT., THICKNESS
C     X LOCATION, WATER INJECTION RATE, AIR INJECTION RATE, WELL WATER
C     PRESS., WELL GAS PRESS., BOUNDARY CONDITION CONTROL
C     KX(N)=DARCIES
C     WATER AND AIR INJECTION RATES AND BOUNDARY PRESSURES NEED ONLY BE
C     SPECIFIED IN ACCORDANCE WITH PKEY(N)
C
C
      READ (5,290) NX
      WRITE (6,230) NX
      WRITE (6,240)
      LAYCUM=1
      DO 50 II=1,100
50    PCDUM(II)=PC(1,II)
      DO 100 N=1,NX
      READ (5,520) KX(N),LAY(N),POR(N),PG(N),S(N),TH(N),H(N),X(N),QW(N),
     1QG(N),PWIN(N),RTDEN(N),PGIN(N),PKEY(N)
C     POR(N)=POR(N)*0.01
C     S(N)=S(N)/POR(N)
      LAYER=LAY(N)
      KX(N)=KX(N)*AKXMU
      IF (LAYCUM.EQ.LAYER) GO TO 70
      DO 60 II=1,100
60    PCDUM(II)=PC(LAYER,II)
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V G LEVEL  21                    LAKA                DATE = 74186 .        17/44/00

      LAYDUM=LAYER
C     PCDUM IS A DUMMY CAP. PRESS. ARRAY FOR USE IN SUBROUTINE TAB
70    CALL TAB (DSW(LAYER),DISW(LAYER),PCDUM,S(N),PTC)
      PW(N)=PG(N)-PTC
      H(N)=F(N)*FCCNV
      IF (INSW.NE.1) GO TO 90
      PWI=PW(N)
      PGI=PG(N)
80    PWTE=PW(N)
      PGTE=PG(N)
      CALL TAB (DPG,DIPG,DG,PGTE,RG)
      CALL TAB (DPW,DIPW,DW,PWTE,RW)
      PW(N)=PWI-H(N)*RW
      PG(N)=PGI-H(N)*RG
      ABPW=CABS(PW(N))
      ABPG=CABS(PG(N))
      IF (ABPW.LT.0.1) ABPW=0.1
      IF (ABPG.LT.0.1) ABPG=0.1
      IF (CABS(PWTE-PW(N))/ABPW.GT.0.2D-14) GO TO 80
      IF (CABS(PGTE-PG(N))/ABPG.GT.0.2D-14) GO TO 80
      NKK=(PG(N)-PW(N)-PCI)/DPC+1.0
      IF (NKK.GT.NPCC) NKK=NPCC
      IF (NKK.LT.1) NKK=1
      IF ((AS(LAYER,NKK)+BS(LAYER,NKK)*(PG(N)-PW(N))).LT.WILPO) LAYER=10
      AS(10,NKK)=ASSS
      BS(10,NKK)=BSSS
      S(N)=AS(LAYER,NKK)+BS(LAYER,NKK)*(PG(N)-PW(N))
90    HWRT=F(N)/FCCNV
      WRITE (6,530) KX(N),LAY(N),POR(N),PW(N),PG(N),S(N),TH(N),HWRT,X(N)
     1,QW(N),QG(N),PWIN(N),PGIN(N),PKEY(N),RTDEN(N)
C
C     0.2637 IS CONVERGENCE FACTOR FOR DARCY TO CP.FT**2 PSI/HR
C
      KX(N)=KX(N)*.2637
      PWA(N)=PW(N)
      PGA(N)=PG(N)
100   CONTINUE
C
C     READ RELATIVE PERM. DATA
C     DSKG = INCREMENT IN SAT.
C     DISKG = FIRST SAT. IN TABLE
C
      READ (5,300) AN,DSKW,DISKW
      N=AN
      READ (5,510) (RKW(NN),NN=1,N)
      DO 110 M=N,100
110   RKW(M)=RKW(N)
      WRITE (6,380)
      WRITE (6,310) (RKW(NN),NN=1,100)
      WRITE (6,310) AN,DSKW,DISKW
      READ (5,300) AN,DSKG,DISKG
      N=AN
      READ (5,510) (RKG(NN),NN=1,N)
      DO 120 M=N,100
120   RKG(M)=RKG(N)
      WRITE (6,390)
      WRITE (6,310) AN,DSKG,DISKG
      WRITE (6,310) (RKG(NN),NN=1,100)
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IV G LEVEL  21                    LNKA                DATE = 74186.        17/44/00

      C
      C     REAC AIR TEMP. VS. TIME , (F. )
      C
            REAC (5,300) AN,DATEM,DIATEM
            N=AN
            REAC (5,510) (ATEM(NN),NN=1,N)
            CO 130 M=N,100
      130   ATEM(M)=ATEM(N)
      C
      C     REAC SOIL TEMP. VS. TIME , (F.)
      C
            REAC (5,300) AN,DSTEM,DISTEM
            N=AN
            READ (5,510) (STEM(NN),NN=1,N)
            CO 140 M=N,100
      140   STEM(M)=STEM(N)
      C
      C     REAC AIR HUMIDITY VS. TIME
      C
            READ (5,300) AN,DRHUM,DIRHUM
            N=AN
            REAC (5,510) (RHUM(NN),NN=1,N)
            CO 150 M=N,100
      150   RHUM(M)=RHUM(N)
      C
      C     REAC WINC VELCCITY VS. TIME (MPH)
      C
            REAC (5,300) AN,DWIND,DIWIND
            N=AN
            REAC (5,510) (WINDV(NN),NN=1,N)
            CO 160 M=N,100
      160   WINDV(M)=WINDV(N)
            WRITE (6,420)
            WRITE (6,310) AN,CATEM,DIATEM
            WRITE (6,310) (ATEM(NN),NN=1,N)
            WRITE (6,430)
            WRITE (6,310) AN,DSTEM,DISTEM
            WRITE (6,310) (STEM(NN),NN=1,N)
            WRITE (6,410)
            WRITE (6,310) AN,DRHUM,DIRHUM
            WRITE (6,310) (RHUM(NN),NN=1,N)
            WRITE (6,440)
            WRITE (6,310) AN,DWIND,DIWIND
            WRITE (6,310) (WINDV(NN),NN=1,N)
      C
      C     READ VAPOR PRESSURE VS. TEMP
      C
            REAC (5,300) AN,DSTP,DISTP
            N=AN
            REAC (5,510) (STARP(NN),NN=1,N)
            WRITE (6,450)
            WRITE (6,310) AN,DSTP,DISTP
            CO 170 M=N,100
      170   STARP(M)=STARP(N)
            WRITE (6,310) (STARP(NN),NN=1,100)
            WRITE (6,400)
      C     REAC SCHEDULE CF WATER HEAC AT BOUNCARY - FOR VARIABLE HEAD BOUND.
      C     CHEAC = TIME INCREMENT FOR TABLE
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IV G LEVEL  21                    LNKA                DATE = 74186 .        17/44/00

      C       DIHEAD = INITIAL TIME CORRESPONDING TO FIRST TABLE VALUE
              READ (5,300) AN,DHEAD,CIHEAD
              N=AN
              READ (5,510) (WHEAD(NN),NN=1,N)
              DO 180 M=N,100
      180     WHEAD(M)=WHEAD(N)
              WRITE (6,310) AN,DHEAD,CIHEAD
              WRITE (6,310) (WHEAD(NN),NN=1,N)
      C       MTRY = MAX. NO. OF ITERATIONS PER TIME STEP
              READ (5,290) MTRY
              CMIN=MTRY
      C       TSTEP = NO. OF ITERATION PARAMETERS
      C
              READ (5,320) TSTEP
              WRITE (6,460)
              WRITE (6,310) CMIN,TSTEP
              NHK=TSTEP
      C
      C       HK = ITERATION PARAMETERS - WILL BE USED IN CYCLICAL MANNER
              READ (5,320) (HK(I),I=1,NHK)
              WRITE (6,250)
              WRITE (6,310) (HK(I),I=1,NHK)
      C       CONVERGENCE CRITERIA
      C       TOLG IS MAX. GAS PHASE RESIDUAL ALLOWED, TOLW IS MAX. WATER RESID.
      C       PMCHG IS MAX. CHANGE IN GAS PRESS. ALLOWED AT ANY GRID POINT
      C       PMCHW IS MAX. CHANGE IN WATER PRESS. ALLOWED AT ANY GRID POINT
      C
              READ (5,320) TOLW,TOLG,PMCHW,PMCHG
              WRITE (6,260)
              WRITE (6,480) TOLW,TOLG,PMCHW,PMCHG
              WRITE (6,270)
              TTOT=0.0
              GO TO 210
      C
      C       RESTAR FROM TAPE
      C
      190     REWIND 2
              NSTAR=0
      200     READ (2) TOLW,TOLG,AAAA,BBBB,CCCC,DDDD,EEEE,FFFF,GGGG,HHHH,MTRY,NH
             1K,PMCHW,PMCHG,TTOT,NX,D,DC,NPCC,SATURA,QQEVA,AVSATU,QTRANT,QQQTRA
              READ (2) DSW,DISW,PC,DPC,PCI,AS,BS,ASSS,BSSS
              READ (2) DP,CIP,VW,VG
              READ (2) DPW,DIPW,DW,DPG,CIPG,DG
              READ (2) DHEAD,DIHEAD,WHEAD,DSKW,DISKW,RKW,DSKG,DISKG,RKG
              READ (2) LAY,RTDEN,PKEY,QW,QG,PWIN,PGIN
              READ (2) DATEM,DIATEM,DSTEM,CISTEM,DSTP,DISTP,DRHUM,DIRHUM,DWIND
              READ (2) RHUM,ATEM,STEM,STARP,WINDV,DIWIND
              READ (2) (KX(I),POR(I),PG(I),PW(I),PGA(I),PGB(I),PWA(I),PWB(I),X(I
             1),S(I),TH(I),H(I),DMGX(I),DMWX(I),SGK(I),SWK(I),I=1,NX)
              READ (2) NTRY,MAXW,MAXG,SRESW,SRESG,GRESW,GRESG,EKWM,EKGM,RSWA,RSG
             1A,KC,HK(KC),HK,INL,PKEY(INL),CEVA,QQQEVA,JOUTPT,SUMMM,SUMNN
              READ (2) RESTAR,FINAL,DT,TCON,PCTOFR,POTOFL,Q1111,Q2222,TIMA,TIMB,
             1TIMC
              WRITE(6,491) RESTAR,FINAL,DT,TTOT
              AANTRY = NTRY
              IF (RESTAR+0.0001.GE.STAR) GO TO 210
               GO TO 200
      210     READ (5,470) DT,TCON,TIMA,TIMB,TIMC,QTA,QTB,QTC,QDD
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IV G LEVEL  21                    LNKA                    DATE = 74186          17/44/00

      WRITE (6,280) DT,TCCN,TIMA,TIMB,TIMC,QTA,QTB,QTC,QDD
      ESTAR=RESTAR+ESTAR
      RETURN
C
  220 FORMAT (1HO,47HAKXMU IS PERM MULTIPLIER FOR EASY PERM CHANGE  )
  230 FORMAT (1HO,26HNUMBER OF GRID POINTS,NX =,I5)
  240 FORMAT (1HO,3X,4HK(X),4X,5H LAY ,1X,5H POR ,8HWAT. PR.,8HGAS. PR.,
     111H WAT. SAT. ,5H TH  ,6H DEPTH,4X,5H XLOC,2X,5H QW  ,2X,5H  QG ,2
     2X,5H PWIN,5X,4HPGIN,4X,5H PKEY,2X,5HR.DEN,/,126H     DARC      NO.
     3PRC.        PSI        CFT/CFT P.  FT     FT          FT    LBM/DY**2-HR
     4          PSI          NO.   FT/CFT          )
  250 FORMAT (1HO,25HITERATION PARAMETERS - HK)
  260 FORMAT (1HO,20HCONVERGENCE CRITERIA/,4X,4HTOLW,4X,4HTOLG,4X,5HPMCH
     1W,3X,5HPMCHG)
  270 FORMAT (1H ,26HTOLW = MAX WAT PHASE RESID,3X,27HTOLG IS MAX GAS PH
     1ASE RESID/1X,37HPMCHW = MAX CHANGE IN WAT PHASE PRESS,3X,45HPMCHG
     2= MAX CHANGE IN GAS PHASE PRESS ALLOWED)
  280 FORMAT (1HO,16HDELTA TIME(DT) =,F8.4,3X,11HMAX TIME = ,F8.2,3X,7H
     1TIMA = ,F8.2,3X,7HTIMB = ,F8.2,3X,7HTIMC = ,F8.2/5X,81HTIMA SETS T
     1IME LIMIT FOR DT TO BE DLTMAX, TIMB SET TIME LIMIT FOR DO TO BE TI
     1MC.  /47HSEASONAL TRANSPIRATION FUNCTION CONSTANTS, QTA=,F8.4,3X,4
     1HQTB=,F8.4,3X,4HQTC=,F8.4, /32HDRAINAGE FUNCTION CONSTANT, QDD=,F8
     1.4)
  290 FORMAT (8I10)
  300 FORMAT (10F8.4)
  310 FORMAT(1H ,10F12.6)
  320 FORMAT (8F10.3)
  330 FORMAT (1H1,26H CAPILLARY PRESSURE, (PSI))
  340 FORMAT (1HO,27H GAS DENSITY, (LBM/CU. FT.))
  350 FORMAT (1HO,29H WATER DENSITY, (LBM./CU.FT.))
  360 FORMAT (30HOWATER VISCOSITY, (CENTIPOISE))
  370 FORMAT (28HOGAS VISCOSITY, (CENTIPOISE))
  380 FORMAT (28HORELATIVE PERMEABILITY WATER)
  390 FORMAT (26HORELATIVE PERMEABILITY GAS)
  400 FORMAT (40HOPRECIPITATION, (INCH/DATA PT. INTERVAL))
  410 FORMAT (29HORELATIVE HUMIDITY, (PERCENT))
  420 FORMAT (24HOAIR TEMP., (FAHRENHEIT))
  430 FORMAT (25HOSOIL TEMP., (FAHRENHEIT))
  440 FORMAT (32HOWIND VELOCITY, (MILES PER HOUR))
  450 FORMAT (38HOSATURATED WATER VAPOR PRESSURE, (PSI))
  460 FORMAT (7X,19HNTRY          TSTEP)
  470 FORMAT (9F8.4)
  480 FORMAT (1H ,5F8.4,2I8,2F20.4)
  490 FORMAT (1HO,8HRESTART=,F10.1,3X,6HFINAL=,F10.5,3X,7HPOFLAW=,F10.5
     1)
  491 FORMAT(1HO,8HRESTART=,F8.1,3X,6HFINAL=,F8.1,3X,4HDT =,F8.5,3X,7HTT
     1OT = ,F10.2)
  500 FORMAT (8H  AKXMU=,F10.5,10H    ESTAR=,F10.1,7HAIRKG =,F10.4,5HWIL
     1P=,F10.4)
  510 FORMAT (8F10.6)
  520 FORMAT (F5.0,I5,F5.0,F10.0,10F5.0)
  530 FORMAT (1H ,F8.3,I5,13F8.3)
  540 FORMAT (1H ,11H MAX DEL T=,F6.2,2X,19HPLANT CONDUCTIVITY=,F7.5,2X,
     137HHEIGHT OF LEAVES FROM A DATUM PLANE=,F6.2,2X,20HAIR-LEAF EVAP.C
     20EF.=,F7.5,/11H INTERCEPT=,F8.5,2X,6HSLOPE=,F8.5,2X,35HPERCENT GRO
     3UND COVER BY VEGETATION=,F6.2,2X,12HDEL T MULT.=,F5.2)
  550 FORMAT (1HO,20HWRITE CONTROL(NRUG)=,I5,3X,4HIT =,I5,3X,6HINSW =,I5
     1,7HITAPE =,I5,3X,7HICLPT= ,I5,3X,4HIQT=,I8,3X,4HIQD=,I8)
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IV G LEVEL  21                    LNKA                    DATE = 74186 .        17/44/00

     580    FORMAT(1H0,120HRESTAR IT  DELT      TIME     ROOT POT.   LEAF POT.
            1 SUPPLY F.   POT. EVAP  EVAPORATICN TRANSPIRATICN CUM.EVAP. CUM.TR
            2AN./112H  NO.    NO.   CAY       DAY                PSI
            3        LBM/DY-SQ.FT.                                      LBM/)
     600    FORMAT (1H ,F4.0,1X,F3.0,F7.4,F10.2,8(2X,E10.4))
            END

NS IN EFFECT*  NOIC,EBCDIC,SOURCE,NOLIST,NODECK,LOAD,NOMAP
NS IN EFFECT*  NAME = LNKA     , LINECNT =       60
STICS*    SOURCE STATEMENTS =      267,PROGRAM SIZE =    13524
STICS*  NO DIAGNOSTICS GENERATED
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      SUBROUTINE LNKB
      COMMON PG(50),PW(50),PGA(50),PWA(50),S(50),AS(10,100),BS(10,100)
      COMMON C(12,50),CMWX(50),CMGX(50),QEVA(50)
      COMMON SGK(50),SWK(50),HK(50),D,DD,DT,AAAA,BBBB,CCCC,DDDD,EEEE,FFF
     1F,GGGG,HHHH,ASSS,BSSS
      COMMON SUMPP,SUMNN,DENAMI,ANUMER
      COMMON RKWC,RKWB,RKWF,RKGC,RKGB,RKGF,RW,RWF,RG,RGF,AVW,AVWF,AVG
      COMMON RWA,RWXF,PTC,RGA,RGXF,RGXB,RWXB,AVGF
      COMMON QW(50),QG(50),PWIN(50),PGIN(50),QTRAN(50)
      COMMON WHEAD(998),RTDEN(50),PKEY(50),LAY(50)
      COMMON RHUM(999),ATEM(999),STEM(999),STARP(100),WINDV(999)
      COMMON VW(100),PC(10,100),DW(100),DG(100),RKW(100),RKG(100),VG(100
     1),POR(50),PWB(50),X(50),KX(50),PGB(50),TH(50),H(50)
      COMMON FCONV,CSW(10),DISW(10),DPW,DIPW,DPG,DIPG,DP,DIP,DPC,PCI,NX,
     1DISKW,DSKG,DISKG,NHK,LAYER,NPCC,DSKW,DHEAD,DIHEAD
      COMMON NTRY,KC,NBUG,NTRY,MAXW,MAXG,SRESG,SRESW,GRESW,GRESG,RSWA,RS
     1GA,HCFLEA,AKGLEA,DIWIND,AIRKG,WILPO,PLCOND
      COMMON RESTAR,STAR,FINAL,TCLW,TCLG,TCCN,PMCHW,PMCHG,EKGM
      COMMON TTOT,ITAPE,DLTMAX,ESTAR,NSTAR,IOUTPT,IT,TIMA,TIMB,TIMC
      COMMON DATEM,DIATEM,DSTEM,DISTEM,DSTP,DISTP,DRHUM,DIRHUM,CWIND
      COMMON PGCBV,SATURA,TIMEMU,QQEVA,QQQEVA,AVSATU,QTRANT,QQQTRA
      COMMON POFLAW,JOUTPT,CTA,CTB,QTC,QDD,IQT,IQD
      DIMENSION QCTR(50)
      DOUBLE PRECISION ATEMP,RHU,STEMP,PSTAR,ASTAR,WINDVO,QTRAN
      DOUBLE PRECISION QEVA,TTRE,SOILRE,AIRRE
      DOUBLE PRECISION PG,PGA,PW,PWA,S,AS,BS,ASSS,BSSS
      DOUBLE PRECISION C,CMWX,CMGX,SWK,SGK,HK
      DOUBLE PRECISION RKWC,RKWB,RKWF,RWXB,RGXB,RKGC,RKGB,RKGF,RWXF,RGXB
     1,RW,AVGF,RWF,RG,RGA,RGF,AVW,RWA,AVWF,AVG,PTC,RGXF
      DOUBLE PRECISION TPT,DT,Q3,Q5,Q9,Q11,AG,RESW,RESG,ACW,GSUM,WSUM
      DOUBLE PRECISION D,DD,AAAA,BBBB,CCCC,DDDD,EEEE,FFFF,GGGG,HHHH,AW
      DOUBLE PRECISION SATW,QCTR,QWF,TTOT,PWIN,PGIN,ACG,QW,QG
      DOUBLE PRECISION SUMPP,SUMNN,DENAMI,ANUMER,QC21,QC22,QC20,QC23
      DOUBLE PRECISION ACUM0,ACUM1,ACUM2,PPPWA,DABIRI
      REAL KX
      FINAL=0.0
      KC = 1
      ITIM1 = 480
      ITIM2 = 480
      ITIM3 = 480
      WRITE (6,680)
C
C     FOR TAPE RESTART, NSTAR = 0
C
      IF (NSTAR.LT.1) GO TO 130
      IF (ITAPE.EQ.0) GO TO 10
      REWIND 2
   10 QQQEVA=0.
      QTRANT=0.
      QQQTRA=0.
      Q2222=0.
      Q1111=0.
      QQEVA=0.
      NTRY=0
      PCTOFL=0.
      PCTOFR=0.
      AAAA=0.
      BBBB=0.
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' G LEVEL  21                    LNKB                    DATE = 74186          17/44/00

      CCCC=0.
      DDDC=0.
      ACW=0.
      ACG=0.
      DO 15 K=1,NX
      QEVA(K) = 0.0
15    QTRAN(K) = 0.0
      INL=1
      JOUTPT=ICUTPT-1
20    CONTINUE
      IF (QTRANT.EC.0.) GC TO 30
      POTCFR=SRESUL-ANDDEN
      POTCFL=PCTOFR-CTRANT/(FLCCND*PGCBV*.01)
30    CONTINUE
      RESG=0.0
      RESW=C.0
      NXX=NX+100
      GSUM=0.0
      WSUM=0.0
      SATURA=0.
      SOILPC=0.
      ROOTN=0.
      XC=0.C
      XF=0.0
C     DETERMINATION CF MATERIAL BALANCE,INITIAL WATER PRESSURE,AIR
C     PRESSURE AND INITIAL SATURATION
C
      DO 40 N=1,NX
      PWB(N)=0.
      LAYER=LAY(N)
      PG(N)=PGA(N)
      PW(N)=PWA(N)
      NKK=(PG(N)-PW(N)-PCI)/CPC+1.0
      IF (NKK.LT.1) NKK=1
      IF (NKK.GT.NPCC) NKK=NPCC
      IF ((AS(LAYER,NKK)+BS(LAYER,NKK)*(PG(N)-PW(N))).LT.WILPO) LAYER=10
      AS(10,NKK)=ASSS
      BS(10,NKK)=BSSS
      S(N)=AS(LAYER,NKK)+BS(LAYER,NKK)*(PG(N)-PW(N))
      CALL TAB (CPG,CIPG,DG,PG(N),RG)
      CALL TAB (CPW,DIPW,CW,PW(N),RW)
      XB=XC
      XC=XF
      XF=X(N+1)
      IF (N.EQ.1) XB=0.0
      IF (N.EQ.1) XC=0.0
      IF (N.EC.NX) XF=XC
      GSUM=(XF-XB)*C.5*TH(N)*(1.0-S(N))*POR(N)*RG+GSUM
      WSUM=(XF-XB)*C.5*TH(N)*S(N)*POR(N)*RW+WSUM
      IF (RTDEN(N).EC.0.) GC TO 40
      ROOTN=ROOTN+1.
      SATURA=SATURA+S(N)*POR(N)
      SOILPC=SOILPC+PWA(N)+RW*H(N)
40    CONTINUE
C     CALC. OF AVE. SAT. , AVE SOIL WATER POT. IN THE ROOT ZONE
C
      IF (ROOTN.EQ.C.) GO TC 50
      AVSATU=SATURA/ROOTN
```

```
      SOILPC=SCILPC/ROOTN
   50 CQQTRA=QQQTRA+QTRANT*DT
      AANTRY=NTRY
   C  ***********************************
   C  THIS IS ONE OF THE MAIN WRITING STATEMENTS
   C  ***********************************
      WRITE (6,700) RESTAR,AANTRY,DT,TTOT,POTOFR,POTOFL,Q1111,Q2222,QQEV
     1A,QTRANT,QQQEVA,QQQTRA
   C  SET TIME STEP
   C
      DT = DT*(1.+TIMEMU)
      IF (DT.GE.DLTMAX) DT=DLTMAX
      IF(TTOT.GE.TIMA) DT = DLTMAX
      IF(TTOT.GE.TIMB) DT = TIMC
      JOUTPT=JOUTPT+1
      IF (NTRY.GE.(MTRY/3)) DT=DT/10.
      RESG=GSUM
      RESW=WSUM
      CCCC=AAAA+CCCC
      DDDC=BBBB+DDDD
      AW=RESW-CCCC
      AG=RESG-DDDD
      IF (TTOT.EQ..0) EEEE=RESW
      IF (TTOT.EQ.0.) FFFF=RESG
      GGGG=AW/EEEE
      HHHH=AG/FFFF
      IF (TTOT.GE.TCON) GO TO 70
   70 IF(DABS(CCCC).GT.0.0001) ACW=(EEEE-RESW)/CCCC
      IF(DABS(DDDD).GT.0.0001) ACG=(FFFF-RESG)/DDDD
   80 NTRY=0
      IF (TTOT.EQ.0.) GO TO 100
   C
   C  CHECK ON PROCESSOR AND SIMULATION TIME
   C
   C  RTIME GIVES THE REMAINING TIME IN SECONDS
   C  IT IS THE MIN. TIME (SEC) FOR THE RUN TO WRITE ON TAPE AND EXIT
      CALL RTIME(ITIM1)
      IF(IABS(ITIM1).LE.IT) FINAL = 2.
      GO TO 93
   92 FINAL = 2.
   93 CONTINUE
      IF (ESTAR.LE.RESTAR) FINAL=2.
      IF (TTOT.GE.TCON) FINAL=2.
      IF (FINAL.EQ.2.) GO TO 100
   C  CHECK OUTPUT CONTROL
      IF (JOUTPT.EQ.IOUTPT) GO TO 100
      IF(JOUTPT.EQ.2.000*IOUTPT) GO TO 100
      IF(JOUTPT.EQ.3.000*IOUTPT) GO TO 100
      IF(JOUTPT.EQ.4.000*IOUTPT) GO TO 100
      IF(JOUTPT.EQ.5.000*IOUTPT) GO TO 100
      IF (JOUTPT.GE.6.000*IOUTPT) GO TO 100
       GO TO 120
  100 WRITE (6,710)
   C  ***********************************
   C  THIS IS ONE OF THE MAIN WRITING STATEMENTS
   C  ***********************************
      WRITE (6,600) AAAA,RESW,CCCC,AW,EEEE,GGGG,ACW,BBBB,RESG,DDDD,AG,FF
     1FF,HHHH,ACG
```

```
      WRITE (6,640)
      DO 110 I=1,NX
      PGB(I)=POR(I)*S(I)
  110 WRITE (6,650) X(I),PKEY(I),PWIN(I),PGIN(I),QEVA(I),QTRAN(I),QW(I),
     1QG(I),PW(I),PG(I),S(I)
      IF(RESTAR.EQ.C.) WRITE(6,680)
      IF (ITAPE.EQ.0) GO TO 120
      IF(RESTAR.EQ.0.) GO TO 120
      IF(FINAL.EQ.2.) GO TO 111
      IF(JOUTPT.LT.(6.0*ICUTPT)) GO TO 112
  111 WRITE (2) TCLW,TCLG,AAAA,BBBB,CCCC,DDDD,EEEE,FFFF,GGGG,HHHH,MTRY,N
     1HK,PMCHW,PMCHG,TTOT,NX,D,CO,NPCC,SATURA,QQEVA,AVSATU,QTRANT,QQQTRA
      JOUTPT=0
      WRITE (2) DSW,DISW,PC,DPC,PCI,AS,BS,ASSS,BSSS
      WRITE (2) DP,CIP,VW,VG
      WRITE (2) DPW,DIPW,DW,DPG,DIPG,DG
      WRITE (2) DHEAD,DIHEAD,WHEAD,DSKW,DISKW,RKW,DSKG,DISKG,RKG
      WRITE (2) LAY,RTDEN,PKEY,QW,QG,PWIN,PGIN
      WRITE (2) DATEM,DIATEM,DSTEM,DISTEM,CSTP,DISTP,DRHUM,DIRHUM,DWIND
      WRITE (2) RHUM,ATEM,STEM,STARP,WINDV,DIWIND
      WRITE (2)(KX(I),POR(I),PG(I),PW(I),PGA(I),PGB(I),PWA(I),PWB(I),X(I
     1),S(I),TH(I),H(I),DMGX(I),DMWX(I),SGK(I),SWK(I),I=1,NX)
      WRITE (2) NTRY,MAXW,MAXG,SRESW,SRESG,GRESW,GRESG,EKWM,EKGM,RSWA,RS
     1GA,KC,HK(KC),HK,INL,PKEY(INL),QEVA,QQQEVA,JOUTPT,SUMMM,SUMNN
      WRITE(2) RESTAR,FINAL,DT,TCON,POTOFR,POTOFL,Q1111,Q2222,TIMA,TIMB,
     1TIMC
  112 CALL RTIME(ITIM3)
      IF (NBUG.LT.(-4)) GO TO 114
      WRITE (6,820)
      WRITE (6,800)  ITIM1,ITIM2,ITIM3
  114 WRITE (6,680)
  120 IF (FINAL.EQ.2.) CALL EXIT
  130 TTOT=TTOT+DT
      IF (TTOT.GT.TCON) DT=TCON-TTOT+DT
      IF (TTOT.GT.TCON) TTOT=TCON
      RESTAR=RESTAR+1.0
      KC=0
C
C     EVAPORATION CALC.
C
      INL=1
      AIRRE=0.
      SOILRE=0.
      SUMSA=0.
      SUMPOR=0.
      APOR = 0.0
      AWSAT = 0.0
      ABAB = 0.0
      EVALEN = 0.0
      FXPCN = 0.0
      PGCAP=PGA(1)
      PWCAP=PWA(1)
      DO 140 M=1,NX
  140 QEVA(M)=0.
      IRAIN=TTOT/DHEAD+1.
      IATEM=TTOT/DATEM+1.
      ISTEM=TTOT/DSTEM+1.
      IWIND=TTOT/DWIND+1.
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V G LEVEL  21                    LNKB                DATE = 74186          17/44/00

      IRHUM=TTOT/DRHUM+1.
      ATEMP=ATEM(IATEM)
      STEMP=STEM(ISTEM)
      WINDVO=WINDV(IWIND)
      RHU=RHUM(IRHUM)
      IF ((TTOT-DT).LT.FLOAT(IWIND-1)*DWIND) CALL TAB (DWIND,DIWIND,WIND
     1V,(TTOT-DT),WINDVO)
      IF ((TTOT-DT).LT.FLOAT(IRHUM-1)*DRHUM) CALL TAB (DRHUM,DIRHUM,RHUM
     1,(TTOT-DT),RHU)
      IF ((TTOT-DT).LT.FLOAT(IATEM-1)*DATEM) CALL TAB (DATEM,DIATEM,ATEM
     1,(TTOT-DT),ATEMP)
      IF ((TTOT-DT).LT.FLOAT(ISTEM-1)*DSTEM) CALL TAB (DSTEM,DISTEM,STEM
     1,(TTOT-DT),STEMP)
      CALL TAB (DSTP,DISTP,STARP,STEMP,PSTAR)
      CALL TAB (DSTP,DISTP,STARP,ATEMP,ASTAR)
      DABIRI=STEMP
      IF (PGCBV.EQ.100.) GO TO 160
      IF (S(1).GE.WILPC) GO TO 160
      DO 150 NI=1,NX
      STEMP=STEM(ISTEM)
      IF((TTOT-DT).LT.FLOAT(ISTEM-1)*DSTEM) CALL TAB (DSTEM,DISTEM,STEM
     1,TTOT,STEMP)
      IF (S(INL).LT.WILPC) STEMP=(STEMP+ATEMP)/2.
      CALL TAB (DSTP,DISTP,STARP,STEMP,PSTAR)
      FXPCN=DEXP(.0268857*(PGA(INL)-PWA(INL))/(460.+STEMP))
      SRHU=PSTAR/FXPCN
      IF (SRHU.LT.RHU*.01*ASTAR) INL=INL+1
      EVALEN=X(INL)
      IF (INL.EQ.1) EVALEN=X(2)/4.
      PGCAP=PGA(INL)
      PWCAP=PWA(INL)
      IF (INL.LT.NI) GO TO 150
      SUMPOR=SUMPOR+POR(NI)
      SUMSA=SUMSA+S(NI)
      APOR=SUMPOR/FLOAT(NI)
      AWSAT=SUMSA/FLOAT(NI)
      FNI = NI
      FINL = INL
  150 CONTINUE
C
C     SEE REPORT, EQN. (2-12)
C
      ABAB=18.*144.*.62*APOR*(1.-AWSAT)*.853*(((460.+STEMP)/492.)**1.5)
C
C     AIR RESISTANCE
C
      SOILRE=1545.*(460.+STEMP)*EVALEN/ABAB
  160 ACAC=AIRKG*WINDVO**.8
      AIRRE=1./ACAC
      TTRE=AIRRE+SOILRE
      EXOPN=DEXP(.0268857*(PGA(INL)-PWA(INL))/(460.+STEMP))
      QEVA(INL)=((PSTAR/EXOPN-.01*RHU*ASTAR)/TTRE)*.01*(100.-PGCBV)
      QQEVA=QEVA(INL)
      QQQEVA=QQQEVA+QQEVA*DT
  170 IF (NBUG.LT.(-2)) GO TO 180
      WRITE (6,591) RHU,PSTAR,ASTAR,STEMP,APOR,AWSAT,ABAB,EVALEN,SOILRE,
     1AIRRE,TTRE,WINDVO,QEVA(INL),PGCAP,PWCAP,ACAC,SRHU,PLCOND,EXOPN,FXP
     2CN
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/ G LEVEL  21                    LNKB                DATE = 74186        17/44/00

          WRITE (6,596) NTRY,INL,JOUTPT,QTRANT,POTOFR,POTOFL,ATEMP,ROOTN
   180    IF (NTRY.EQ.0) GO TO 220
          IF (NBUG.LT.(-3)) GO TO 190
   C
   C      WRITE THE RESLLTS OF ITERATION
   C
          WRITE (6,671)
          WRITE (6,670) NTRY,MAXW,MAXG,GRESW,GRESG,EKWM,EKGM,HK(KC)
   190    IF (NTRY.GE.MTRY) GO TO 200
          GO TO 210
   200    WRITE (6,690)
   C      ************************
   C      THIS STATEMENT ONLY WRITES IF THERE IS NO CONVERGENCE
   C      ************************
          GO TO 20
   210    IF (ABS(GRESG).GT.TOLG) GO TO 220
          IF (ABS(GRESW).GT.TOLW) GO TO 220
          IF (ABS(EKGM).GT.EMCHG) GO TO 220
          IF (ABS(EKWM).GT.EMCHW) GO TO 220
   C      **********************************
   C
   C      ANSWER WRITING ONLY OCCURS IF THE FLOW RETURNS TO 20 (CONVERGENCE)
   C
   C      **********************************
          GO TO 20
   C      RTIME GIVES THE REMAINING TIME IN SECONDS
   220    CALL RTIME(ITIM2)
          IF(IABS(ITIM2).LE.IT) GO TO 92
          EKWM=0.0
          EKGM=0.0
          GRESG=0.0
          GRESW=0.0
          AAAA=0.0
          BBBB=0.0
          NTRY=NTRY+1
          KC=KC+1
          IF (KC.GT.NHK) KC=1
          SUMMM=0.
          SUMNN=0.
          IF (PGOBV.EQ.0.) GO TO 250
          CALL TAB (DSTP,DISTP,STARP,CABIRI,PSTAR)
   C
   C      TRANSPIRATION CALCULATION
   C
          DO 230 N=1,NX
          NXB=N-1
          NXF=N+1
          IF (N.EQ.1) NXB=NXF
          IF (N.EQ.NX) NXF=NXB
          XP=0.5*(X(NXF)-X(NXB))
          IF (N.EQ.1) XP=0.5*(X(NXF)-X(N))
          IF (N.EQ.NX) XP=0.5*(X(N)-X(NXB))
          CALL TAB (DP,DIP,VW,PW(N),AVW)
          CALL TAB (DPW,DIPW,DW,PW(N),RW)
          CALL TAB (DSKW,DISKW,RKW,S(N),RKWC)
   C      CALCULATION OF F
          SUMMM=SUMMM+RTDEN(N)*XP*RW*RKWC*KX(N)/AVW
   C      CALCULATION OF N
```

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V G LEVEL  21                    LNKB                DATE = 74186 .        17/44/00

      SUMNN=SUMNN+RTDEN(N)*(PWA(N)+RW*H(N))*XP*RW*KX(N)*RKWC/AVW
      QCTR(N)=KX(N)*RW*RKWC*RTDEN(N)*XP/AVW
  230 CONTINUE
      IF (SUMMM.EC.0.) GO TC 250
      Q1111=(SUMNN/SUMMM-POFLAW)/(1./SUMMM+1./PLCOND)
      Q2222=AKGLEA*WINDVO**.8*(PSTAR+PSTAR*(POFLAW-PGIN(1)-DW(1)*HOFLEA/
     1144.)/(37.135*(STEMP+460.))-.01*RHU*ASTAR)
C     CALCULATION OF C
      AANUME=-PGIN(1)-RW*HOFLEA/144.+37.135*(STEMP+460.)*(PSTAR-.01*RHU*
     1ASTAR)/PSTAR
      DDNAMI=37.135*(STEMP+460.)/(PSTAR*AKGLEA*WINDVO**.8)
C
C     CHECK WHETHER SUPPLY FUNCTION IS CONTROLLING OR POT. EVAP. CONT.
C
      IF (Q1111.LE.Q2222) AANUME=-POFLAW
      IF (Q1111.LE.Q2222) DDNAMI=0.
  240 CONTINUE
      ANUMER=SUMNN/SUMMM+AANUME
      DENAMI=SUMMM*(1./SUMMM+1./(PLCOND)+DDNAMI)
      SRESUL=SUMNN/SUMMM
      ANDDEN=ANUMER/DENAMI
  250 CONTINUE
      IF (NBUG.LT.(-2)) GO TO 260
      WRITE (6,592) SUMMM,SUMNN,DENAMI,ANUMER,SRESUL,ANDDEN,AANUME,DDNAM
     1I
  260 QTRANT=0.
C
C     SOLVE THE SIMULTANEOUS DIFFERENCE EQ.
C
      DO 520 NCC=1,NX
      QWF=0.
      N=NCC
      QW(N)=0.
      QTRAN(N)=0.
      LAYER=LAY(N)
      NXB=N-1
      NXF=N+1
      IF (NCC.EQ.1) NXB=NXF
      IF (NCC.EQ.NX) NXF=NXB
      IF (NTRY.NE.1) GO TC 270
      CALL TAB (CPW,DIPW,CW,PW(N),RW)
      CALL TAB (DSKW,DISKW,RKW,S(N),RKWC)
      CALL TAB (DSKW,DISKW,RKW,S(NXF),RKWF)
      CALL TAB (DSKG,DISKG,RKG,S(N),RKGC)
      CALL TAB (DSKG,DISKG,RKG,S(NXB),RKGB)
      CALL TAB (DSKG,DISKG,RKG,S(NXF),RKGF)
      CALL TAB (DSKW,DISKW,RKW,S(NXB),RKWB)
      CALL TAB (DPW,CIPW,DW,PW(NXF),RWF)
      CALL TAB (CPG,DIPG,CG,PG(N),RG)
      CALL TAB (CPG,CIPG,CG,PG(NXF),RGF)
      CALL TAB (DP,CIP,VW,PW(N),AVW)
      CALL TAB (DP,CIP,VG,PG(N),AVG)
      CALL TAB (DP,CIP,VW,PW(NXF),AVWF)
      CALL TAB (DP,DIP,VG,PG(NXF),AVGF)
      DMWX(N)=((RWF*RKWF*KX(NXF)*TH(NXF)/AVWF)+(RW*RKWC*KX(N)*TH(N)/AVW)
     1)
      DMGX(N)=((RGF*RKGF*KX(NXF)*TH(NXF)/AVGF)+(RG*RKGC*KX(N)*TH(N)/AVG)
     1)
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V G LEVEL  21                    LNKB                    DATE = 74186      17/44/00

  270   MBX=NXB
        IF (NCC.EQ.1) MBX=N
        DX1=(X(N)-X(NXB))*(X(NXF)-X(NXB))
        DX2=(X(NXF)-X(N))*(X(NXF)-X(NXB))
        IF (NCC.EQ.1) DX1=2.0*((X(NXF)-X(N))**2)
        IF (NCC.EQ.NX) DX1=2.0*((X(N)-X(NXB))**2)
        IF (NCC.EQ.1) DX2=2.0*((X(NXF)-X(N))**2)
        IF (NCC.EQ.NX) DX2=2.0*((X(N)-X(NXB))**2)
        CALL TAB (DPG,DIPG,DG,PG(N),RG)
        CALL TAB (DPG,DIPG,DG,PG(NXB),RGXB)
        CALL TAB (DPG,DIPG,DG,PG(N),RGA)
        CALL TAB (DPG,DIPG,DG,PG(NXF),RGXF)
        CALL TAB (DPW,DIPW,DW,PW(N),RW)
        CALL TAB (DPW,DIPW,DW,PW(NXB),RWXB)
        CALL TAB (DPW,DIPW,DW,PW(N),RWA)
        CALL TAB (DPW,DIPW,DW,PW(NXF),RWXF)
        CALL TAB (DSKW,DISKW,RKW,S(N),RKWC)
        CALL TAB (DP,DIP,VW,PW(N),AVW)
        IF (RHU.GE.100.) GO TO 280
        PPPWA=PGA(N)+37.135*DLOG(.01*RHU)*(460.+STEMP)
        IF (PWA(N).LT.PPPWA) PWA(N)=PPPWA
  280   PCC=PGA(N)-PWA(N)
        NKK=(PCC-PC1)/DPC+1.0
        IF (NKK.LT.1) NKK=1
        IF (NKK.GT.NPCC) NKK=NPCC
        IF ((AS(LAYER,NKK)+BS(LAYER,NKK)*PCC).LT.WILPO) LAYER=10
        AS(10,NKK)=ASSS
        BS(10,NKK)=BSSS
        TPT=TH(N)*POR(N)/DT
        IF (NCC.GT.NBUG) GO TO 290
        WRITE (6,620) NKK,INL
        WRITE (6,600) AS(LAYER,NKK),BS(LAYER,NKK),PCC
        WRITE (6,620) N,NXB,NXF,NCC,MBX,NTRY
        WRITE (6,610) RKWC,RKWB,RKWF
        WRITE (6,610) RKGC,RKGB,RKGF
        WRITE (6,610) RW,RWF,RG,RGF
        WRITE (6,610) AVW,AVWF,AVG,AVGF
        WRITE (6,610) DX2,X(NXF),X(N),X(NXB)
        WRITE (6,580) DMWX(N),DMGX(N),TPT
  290   CONTINUE
        SWK(N)=DMWX(MBX)+DMWX(N)
        SGK(N)=DMGX(MBX)+DMGX(N)
C
C       CALC. OF RESIDUAL
C
        RSG=DMGX(MBX)*(PGA(NXB)-PGA(N)-RGA*H(N)+RGXB*H(NXB))/DX1+DMGX(N)*(
       1PGA(NXF)-PGA(N)+RGXF*H(NXF)-RGA*H(N))/DX2+TPT*(RGA*(AS(LAYER,NKK)+
       2BS(LAYER,NKK)*(PGA(N)-PWA(N)))-RG*S(N))
        RSW=DMWX(MBX)*(PWA(NXB)-PWA(N)+RWA*H(N)+RWXB*H(NXB))/DX1+DMWX(N)*(
       1PWA(NXF)-PWA(N)+RWXF*H(NXF)-RWA*H(N))/DX2-TPT*(RWA*(AS(LAYER,NKK)+
       2BS(LAYER,NKK)*(PGA(N)-PWA(N)))-RW*S(N))
        CC3=0.0
        QC5=0.0
        QC9=0.0
        QC11=0.0
        QC20=0.
        QC21=0.
        QC22=0.
```

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V G LEVEL  21                    LNKB                DATE = 74186 .        17/44/00

      C
      C     DECISION ON THE BOUNDARIES
      C
            QC23=0.
            IF (PKEY(N).EQ.0.) GO TO 390
            IF (PKEY(N).EQ.1.0) GO TO 350
            IF (PKEY(N).EQ.2.0) GO TO 320
            IF (PKEY(N).EQ.3.0) GO TO 340
            IF (PKEY(N).EQ.5.) GO TO 300
            PGIN(N)=PGA(N)+RGA*H(N)
            PWIN(N)=PWA(N)+RWA*H(N)
            GO TO 330
      300   QG(N)=DMGX(N)*0.5*(PGIN(N)-PGA(NXF)-RGXF*H(NXF))/(X(NXF)-X(N))
            IF (PKEY(N).EQ.5.0) QC11=-DMGX(N)*0.5/(X(NXF)-X(N))
            QWF=WHEAD(IRAIN)
            IF ((TTOT-DT).LT.FLOAT(IRAIN-1)*DHEAD) CALL TAB (DHEAD,DIHEAD,WHEA
           1D,(TTOT-DT),QWF)
      C
      C     DRAINAGE FUNCTION
      C
            IF(IQD.LT.1) GO TO 310
            IF(S(N).LT.(QDD-0.1000))GO TO 310
            QWF=10.0*(QDD-S(N))*CWF
            IF(S(N).GT.QDD)  QWF=0.0
      310   QW(N)=RW*QWF/(12.*DHEAD)
            GO TO 350
      320   CALL TAB (DHEAD,DIHEAD,WHEAD(N),TTOT,PWIN(N))
      330   QW(N)=DMWX(N)*0.5*(PWIN(N)-PWA(NXF)-RWXF*H(NXF))/(X(NXF)-X(N))
            IF (PKEY(N).EQ.2.0) PGIN(N)=PWIN(N)
            QG(N)=DMGX(N)*0.5*(PGIN(N)-PGA(NXF)-RGXF*H(NXF))/(X(NXF)-X(N))
            IF (PKEY(N).EQ.2.0) QC5=-DMWX(N)*0.5/(X(NXF)-X(N))
            IF (PKEY(N).EQ.4.0) QC3=DMWX(N)*0.5/(X(NXF)-X(N))
            IF (PKEY(N).EQ.4.0) QC5=-DMWX(N)*0.5/(X(NXF)-X(N))
            IF (PKEY(N).EQ.2.0) QC11=-DMGX(N)*0.5/(X(NXF)-X(N))
            IF (PKEY(N).EQ.4.0) QC9=DMGX(N)*0.5/(X(NXF)-X(N))
            IF (PKEY(N).EQ.4.0) QC11=-DMGX(N)*0.5/(X(NXF)-X(N))
            IF (PKEY(N).EQ.3.0) QC11=-DMGX(N)*0.5/(X(NXF)-X(N))
            IF (N.NE.NX) GO TO 350
            QW(N)=-QW(N)
            QG(N)=-QG(N)
            QC3=-QC3
            QC5=-QC5
            QC9=-QC9
            QC11=-QC11
            GO TO 350
      340   PWIN(N)=PWA(NXF)+RWXF*H(NXF)
            GO TO 330
      350   XP=0.5*(X(NXF)-X(NXB))
            IF (NCC.EQ.1) XP=0.5*(X(NXF)-X(N))
            IF (NCC.EQ.NX) XP=0.5*(X(N)-X(NXB))
            IF (PGCBV.EQ.0.) GO TO 360
            IF (SUMMM.EQ.0.) GO TO 360
            QTRAN(N)=(RTDEN(N)*RW*RKWC*KX(N)/AVW*XP*(PWA(N)+RW*H(N)-SUMNN/SUMM
           1M+ANUMER/DENAMI))*.01*PGCBV
      C
      C     SEASONAL TRANSPIRATION FUNCTION
      C
            IF(IQT.LT.1) GO TO 360
```

```
V G LEVEL  21                    LNKB              DATE = 74186  .       17/44/00

      QT=(TTOT/360.)*(6.254)-QTA
      QTT=(QTB)*SIN(QT)+QTC
      IF(QTT.GT.1.0)QTT=1.00
      IF(QTT.LT.0.C)QTT=0.050
      QTRAN(N)=QTT*CTRAN(N)
  360 QTRANT=QTRANT+QTRAN(N)
      QW(N)=QW(N)-QTRAN(N)-QEVA(N)
      RSW=RSW+QW(N)/XP
      RSG=RSG+QG(N)/XP
      AAAA=AAAA+QW(N)*DT
      BBBB=BBBB+QG(N)*DT
      ACUMO=0.
      ACUM1=0.
      ACUM2=0.
      IF (PGCBV.EQ.C.) GO TO 380
      IF (SUMMM.EQ.C.) GO TO 38C
      DO 370 ICC=1,NX
      IF (IOC.EQ.N.OR.IOC.EC.NXB.OR.IOC.EQ.NXF) GO TO 370
      ACUM1=ACUMO/SUMMM
  370 CONTINUE
      ACUMO=ACUMO+QCTR(ICC)*PWB(IOC)
      ACUM2=ACUM1-ACUM1/DENAMI
      QC20=.01*PGCBV*QCTR(N)*(QCTR(NXB)/SUMMM-QCTR(NXB)/(SUMMM*DENAMI))
      QC21=-.01*PGCBV*QCTR(N)*(1.-QCTR(N)/SUMMM+QCTR(N)/(SUMMM*DENAMI))
      QC22=.01*PGCBV*QCTR(N)*(QCTR(NXF)/SUMMM-QCTR(NXF)/(SUMMM*DENAMI))
      QC23=-.01*PGCBV*QCTR(N)*ACUM2
  380 IF (NBUG.LT.(-1)) GO TO 390
      WRITE (6,630) X(N),PKEY(N),QW(N),QG(N),PWIN(N),PGIN(N),QEVA(N),QTR
     1AN(N),QWF,QTRANT,DMWX(N),RTDEN(N),PW(N),PWA(N),QC3,QC5,QC9,QC11,H(
     2N),QC20,QC21,QC22,QCTR(N),SUMMM,SUMNN,ANUMER,DENAMI,SRESUL,ANDDEN,
     3QC23,ACUMO,ACUM1,ACUM2,AANUME,DDNAMI
C
C     CALC. THE COEFICIENT OF DIFFERENCE EQ.
C
  390 CONTINUE
      C(1,N)=DMWX(MBX)/DX1
      C(2,N)=C.0
      C(3,N)=-DMWX(N)/DX2
      C(3,N)=C(3,N)-DMWX(MBX)/DX1
      C(3,N)=C(3,N)+TPT*RWA*BS(LAYER,NKK)
      C(3,N)=C(3,N)-HK(KC)*SWK(N)
      C(4,N)=-TPT*RWA*BS(LAYER,NKK)
      C(5,N)=DMWX(N)/DX2
      C(7,N)=DMGX(MBX)/DX1
      C(8,N)=-TPT*RGA*BS(LAYER,NKK)
      C(9,N)=-DMGX(N)/DX2
      C(9,N)=C(9,N)-DMGX(MBX)/DX1
      C(9,N)=C(9,N)+TPT*RGA*BS(LAYER,NKK)
      C(9,N)=C(9,N)-HK(KC)*SGK(N)
      C(10,N)=0.0
      C(11,N)=DMGX(N)/DX2
      RSGS=RSGS+RSG
      RSWS = RSWS + RSW
      RSGA=RSGA+ ABS(RSG)
      RSWA=RSWA+ ABS(RSW)
      IF (NCC.GT.NBUG) GO TO 400
      WRITE (6,660) N,N,(C(I,N),I=1,12)
      WRITE (6,610) RSW,RSG,RSWA,RSGS,RSWS
```

```
  400   CONTINUE
        C(6,N)=-RSW+QC23/XP
        C(12,N)=-RSG
        C(1,N)=C(1,N)+QC20/XP
        C(3,N)=C(3,N)+QC3/XP+QC21/XP
        C(5,N)=C(5,N)+QC5/XP+QC22/XP
        C(9,N)=C(9,N)+QC9/XP
        C(11,N)=C(11,N)+QC11/XP
  C
  C     LOCATE THE LOCATION OF MAX. RESIDUALS
  C
        IF (ABS(GRESW).LT. ABS(RSW)) MAXW=NCC
        IF (ABS(GRESW).LT. ABS(RSW)) GRESW=RSW
        IF (ABS(GRESG).LT. ABS(RSG)) MAXG=NCC
        IF (ABS(GRESG).LT. ABS(RSG)) GRESG=RSG
        IF (NCC.NE.1) GO TO 420
        C(5,N)=C(5,N)+C(1,N)
        C(1,N)=0.0
        IF (C(3,N).EQ.0.0) GO TO 410
        DD=1.0/C(3,N)
        C(3,N)=1.0
        C(4,N)=C(4,N)*DD
        C(5,N)=C(5,N)*DD
        C(6,N)=C(6,N)*DD
  410   CONTINUE
        C(11,N)=C(11,N)+C(7,N)
        C(7,N)=0.0
        GO TO 480
  420   IF (NCC.NE.NX) GO TO 440
        C(1,N)=C(1,N)+C(5,N)
        C(5,N)=0.0
        C(7,N)=C(7,N)+C(11,N)
        C(11,N)=0.0
        C(10,N)=0.0
        IF (N.NE.1) GO TO 430
        WRITE (6,660) N,N,(C(I,N),I=1,12)
  430   CONTINUE
  440   IF (C(1,N).EQ.0.0) GO TO 450
        C(2,N)=-C(4,NXB)*C(1,N)
        C(3,N)=C(3,N)-C(5,NXB)*C(1,N)
        C(6,N)=C(6,N)-C(6,NXB)*C(1,N)
        C(1,N)=0.0
  450   IF (C(2,N).EQ.0.0) GO TO 460
        C(3,N)=C(3,N)-C(10,NXB)*C(2,N)
        C(6,N)=C(6,N)-C(12,NXB)*C(2,N)
        C(2,N)=0.0
  460   IF (C(3,N).EQ.0.0) GO TO 470
        C(4,N)=C(4,N)/C(3,N)
        C(5,N)=C(5,N)/C(3,N)
        C(6,N)=C(6,N)/C(3,N)
        C(3,N)=1.0
  470   IF (C(7,N).EQ.0.0) GO TO 480
        C(8,N)=C(8,N)-C(10,NXB)*C(7,N)
        C(9,N)=C(9,N)-C(11,NXB)*C(7,N)
        C(12,N)=C(12,N)-C(12,NXB)*C(7,N)
        C(7,N)=0.0
  480   IF (C(8,N).EQ.0.0) GO TO 490
        C(9,N)=C(9,N)-C(4,N)*C(8,N)
```

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V G LEVEL  21                    LNKB                DATE = 74186  .      17/44/00

      C(10,N)=C(10,N)-C(5,N)*C(8,N)
      C(12,N)=C(12,N)-C(6,N)*C(8,N)
      C(8,N)=0.0
  490 IF (C(9,N).EQ.0.0) GO TO 500
      D=1.0/C(9,N)
      C(9,N)=1.0
      C(10,N)=C(10,N)*D
      C(11,N)=C(11,N)*D
      C(12,N)=C(12,N)*D
  500 IF (NCC.GT.NBUG) GO TO 510
      WRITE (6,660) N,N,(C(I,N),I=1,12)
  510 CONTINUE
  520 CONTINUE
C
C     BAC SOLUTION ( THOMAS METHOD)
C
      NA=NX
      NL=NX
      PGB(NL)=C(12,NL)
      PWB(NL)=C(6,NL)-C(4,NL)*PGB(NL)
  530 NL=NL-1
      NA=NA-1
      PGB(NL)=C(12,NL)-C(10,NL)*PWB(NL+1)-C(11,NL)*PGB(NL+1)
      PWB(NL)=C(6,NL)-C(4,NL)*PGB(NL)-C(5,NL)*PWB(NL+1)
      IF (ABS(EKGM).LT.ABS(PGB(NL))) EKGM=PGB(NL)
      IF (ABS(EKWM).LT.ABS(PWB(NL))) EKWM=PWB(NL)
      IF (NA.NE.1) GO TO 530
C
C     CALC. NEW PRESSURE
C
      DO 540 I=1,NX
      PGA(I)=PGA(I)+PGB(I)
  540 PWA(I)=PWA(I)+PWB(I)
      IF (NBUG.LT.(0)) GO TO 570
      DO 560 I=1,NX
      LAYER=LAY(I)
      IF (RHU.GE.100.) GO TO 550
      PPPWA=PGA(I)+37.135*DLOG(.01*RHU)*(460.+STEMP)
      IF (PWA(I).LT.PPPWA) PWA(I)=PPPWA
  550 PCC=PGA(I)-PWA(I)
      NKK=(PCC-PCI)/DPC+1.0
      IF (NKK.LT.1) NKK=1
      IF (NKK.GT.NPCC) NKK=NPCC
      IF ((AS(LAYER,NKK)+BS(LAYER,NKK)*PCC).LT.WILPO) LAYER=10
      AS(10,NKK)=ASSS
      BS(10,NKK)=BSSS
C     PGB IS USED TEMPORARILY FOR SATURATION
  560 PGB(I)=(AS(LAYER,NKK)+BS(LAYER,NKK)*PCC)*POR(I)
      WRITE (6,650) (PWA(I),PGA(I),PGB(I),X(I),I=1,NX)
  570 CONTINUE
      GO TO 180
C
  580 FORMAT (1H ,10F11.4)
  590 FORMAT (1HO,2X,10E11.5/)
  595 FORMAT(/,10X,2F3.0,7E11.5/16X,6E11.5)
  591 FORMAT (1HO,4HEVAP,10E11.5/)
  592 FORMAT (1HO,5HTRANS,10E11.5/)
  596 FORMAT (1HO,7X,3I3,4X,5E11.5/)
```

```
V G LEVEL  21                    LNKB                DATE = 74186 .        17/44/00

    600   FORMAT (1HO,16X,107HAAAA (1)        RESW (2)       CCCC (3)
          1     AW (4)          EEEE (5)       GGGG (2-3)/5      ACW (5-2)/3,/,1X
          2,8HW. PHASE,4X,7E16.6,/,17X,107HBBBB (1)        RESG (2)         DD
          3DD (3)           AG (4)          FFFF (5)       HHHH (2-3)/5      ACG
          4(5-2)/3,/,13H ACN W. PHASE,7E16.6)
    610   FORMAT (1H ,10E11.4)
    620   FORMAT (1HO,10I11)
    630   FORMAT (1HO,8F14.5)
    640   FORMAT (1HO,4HXLOC,2X,4HPKEY,2X,4HPWIN,9X,4HPGIN,7X,26HEVAPORATION
          1  TRANSPIRATION,5X,2HCW,11X,2HQG,11X,2HPW,11X,2HPG,6X,10HSATURATIO
          2N/1X,3HFT.,3X,3HNC.,10X,3HPSI,21X,12HLBM/SQ FT-DY44X,3HPSI,12X,10H
          3CFT/CFT P.)
    650   FORMAT (1H ,F5.2,1X,F2.0,9(2X,E11.4))
    660   FORMAT (5HOC(I,,I3,5H) TO ,5HC(I2,,I3,1H),/,1HO,6E18.6,/,1HO,6E18.
          16)
    670   FORMAT (1HO,I3,2I6,9E11.3)
    671   FORMAT (1HO,5X,25HITER. RESULTS - NTRY,ETC./)
    680   FORMAT(1HO,120HRESTAR IT  DELT     TIME     ROOT POT.   LEAF POT.
          1 SUPPLY F.   POT. EVAP  EVAPORATION TRANSPIRATION CUM.EVAP. CUM.TR
          2AN./112H   NO.   NO.  DAY       DAY              PSI
          3        LBM/DY-SQ.FT.                                    LBM/)
    690   FORMAT (1HO,59HNO CONVERGENCE AT THIS TIME STEP. GO TO THE NEXT TI
          1ME STEP.)
     700  FORMAT(1H ,F5.0,1X,F4.0,1X,F7.3,1X,F10.2,8(2X,E10.4))
    710   FORMAT (1HO,51X,24HMATERIAL BALANCE RESULTS)
    800   FORMAT(/15X,14HTIME1 (SEC) = ,I4,5X,14HTIME2 (SEC) = ,I4,5X,14HTIM
          1E3 (SEC) = ,I4)
    810   FORMAT(/2X,5HCHECK,10E11.4)
    820   FORMAT(/110H TIME1.LE.IT SETS FINAL=2. TIME2.LE.IT GOES TO 92 TO S
          1ET FINAL=2. TIME3 GIVES TIME LEFT AFTER TAPE IS WRITTEN.)
    825   FORMAT(/2X,2HH=,E10.4,2X,3HRW=,E10.4,2X,4HPWA=,E10.4,2X,6HRTDEN=,E
          110.4,2X,3HXP=,E10.4)
    830   RETURN
          END

S IN EFFECT*  NOID,EBCDIC,SOURCE,NOLIST,NODECK,LOAD,NOMAP
S IN EFFECT*  NAME = LNKB     , LINECNT =       60
TICS*     SOURCE STATEMENTS =       601,PROGRAM SIZE =     24930
TICS*  NO DIAGNOSTICS GENERATED

TICS*  NO DIAGNOSTICS THIS STEP
```

```
V G LEVEL  21                    CAPPR                DATE = 74186        17/44/00

      SUBROUTINE CAPPR (AN,PCI,DPC,SCALE,LAYER,BW,AS,BS,DSW,DISW,PC)
C
C     THIS SUBROUTINE FITS SECOND DEGREE POLY. THROUGH EACH VALUE
C     OF SW. USES THIS POLY. TO CALCULATE INTERCEPT AND SLOPE OF
C     TANGENT AT THE POINT.
C
      DIMENSION BW(100), AS(10,100), BS(10,100), PC(10,100), DSW(10), DI
     1SW(10)
      DOUBLE PRECISION AS,BS,BW
      N=AN
      MPC=N
      DO 10 NN=1,N
10    BW(NN)=BW(NN)*SCALE
      WRITE (6,70)
      WRITE (6,60) (BW(NN),NN=1,N)
      DISW(LAYER)=BW(N)
      DSW(LAYER)=(BW(1)-BW(N))/(AN-1.0)
      PCC=PCI+DPC*(AN)
      ACC=DISW(LAYER)-DSW(LAYER)
      JJ=N+1
      DO 40 J=1,N
      JJ=JJ-1
      ACC=ACC+DSW(LAYER)
      M=0
20    M=M+1
      IF (M.GE.N-1) GO TO 30
      IF (BW(M).GT.ACC) GO TO 20
      IF (M.EQ.1) M=2
30    IF (N.LT.M+1) M=N-1
      AM=M-2
      PSA=PCI+DPC*AM
      PSB=PSA+DPC
      PSC=PSB+DPC
      C3=(PSC-PSA)/(BW(M+1)-BW(M-1))-(PSB-PSA)/(BW(M)-BW(M-1))
      C3=C3/((BW(M+1)**2-BW(M-1)**2)/(BW(M+1)-BW(M-1))-(BW(M)**2-BW(M-1)
     1**2)/(BW(M)-BW(M-1)))
      C2=(PSB-PSA-C3*(BW(M)**2-BW(M-1)**2))/(BW(M)-BW(M-1))
      C1=PSA-C2*BW(M-1)-C3*(BW(M-1)**2)
      PC(LAYER,J)=C1+(C2+C3*ACC)*ACC
      NN=J
      PCC=PCC-DPC
      IF (JJ.LE.1) GO TO 40
      BS(LAYER,J)=(BW(JJ)-BW(JJ-1))/DPC
      AS(LAYER,J)=BW(JJ)-BS(LAYER,J)*PCC
40    CONTINUE
      AS(LAYER,N)=AS(LAYER,N-1)
      BS(LAYER,N)=BS(LAYER,N-1)
      PCI=PCI+DPC*(AN-1.0)
      DPC=-DPC
      PCC=PCI-DPC
      WRITE (6,80)
      DO 50 J=1,N
      PCC=PCC+DPC
50    WRITE (6,60) PCC,AS(LAYER,J),BS(LAYER,J)
      RETURN
C
60    FORMAT (1H ,6F10.6)
70    FORMAT (1H1,31H  WATER SATURATION (CFT/CFT P.))
```

```
V G LEVEL  21                    CAPPR                DATE = 74186          17/44/00

     80    FORMAT (1HC,10HCAP. PRESS,3X,2HAS,8X,2HBS)
           END

S IN EFFECT*  NOID,EBCDIC,SOURCE,NOLIST,NODECK,LOAD,NOMAP
S IN EFFECT*  NAME = CAPPR    , LINECNT =      60
TICS*     SOURCE STATEMENTS =      52,PROGRAM SIZE =     2076
TICS*   NO DIAGNOSTICS GENERATED
```

```
V G LEVEL  21                    TAB                    DATE = 74186 .        17/44/00

          SUBROUTINE TAB (DP,PF,VIS,PIN,PVZA)
    C     THIS SUBROUTINE IS A TABLE LOOK UP WITH LINEAR INTERPOLATION
    C     DP INCREMENT IN THE INDEPENDENT VARIABLE
    C     PF INITIAL VALUE OF INDEPENDENT VARIABLE
    C     VIS DEPENDENT VARIABLE ARRAY - SPACED AT EQUAL INCREMENTS DP
    C     PIN VALUE OF INDEPENDENT VARIABLE AT WHICH PARTICULAR VIS WANTED
    C     PVZA VALUE OF DEPENDENT VARIABLE AT PIN
          DIMENSION VIS(500)
          DOUBLE PRECISION PVZA,P,PIN,PI
          P=PIN
          P=P-PF
          I=P/DP+1.0
          IF (I.GT.500.OR.I.LT.(-99999)) GO TO 10
          IF (I.GT.500) PVZA=VIS(500)
          IF (I.LT.1) PVZA=VIS(1)
          IF (I.LT.1.OR.I.GT.500) RETURN
          PI=I-1
          PI=PI*DP
          PX=P-PI
          PVZA=VIS(I)+(VIS(I+1)-VIS(I))*PX/DP
          RETURN
    10    PFF=PF+DP*99.0
          WRITE (6,20) DP,PIN,PF,VIS(1),PFF,VIS(100)
          STOP
    C
    20    FORMAT (41H1REQUESTING VALUE NOT WITHIN TABLE RANGE ,/,11HARG. DEL
         1TA=,E16.8,5HARG.=,E16.8,/,11HFIRST ARG.=,E16.8,5HF(X)=,E16.8,/,10H
         2LAST ARG.=,E16.8)
          END

S IN EFFECT*  NOIC,EBCDIC,SOURCE,NOLIST,NODECK,LOAD,NOMAP
S IN EFFECT*  NAME = TAB      , LINECNT =       60
TICS*     SOURCE STATEMENTS =       20,PROGRAM SIZE =     1022
TICS*  NO DIAGNOSTICS GENERATED
```

APPENDIX I-C
Input Data and Program Parameters

```
****CONTINUOUS SYSTEM MODELING PROGRAM****

*** VERSION 1.3 ***

CONSTANT ZERO=1.E-36,Y1=1.9155E 8,Y2=1.0027E-1,Y3=5.1010E-3
FUNCTION CAP1=0.,1.E12,0.0697,49.5,0.07,47.5,0.08,36.,0.09,26.0,...
0.10,16.,0.11,6.,0.12,2.5,0.135,2.,0.15,1.7,0.18,1.5,0.26,1.,0.42,...
0.5,0.6,0.2,0.7,0.1,0.809,0.001,0.9,0.001,1.,0.001
FUNCTION CAP2=0.,1.E12,0.05,1.E6,0.091,89.091,0.095,44.545,0.096,...
40.09,0.10,17.818,0.101,13.364,0.105,8.909,0.11,7.573,0.12,6.682,...
0.15,5.123,0.171,4.455,0.18,4.276,0.19,4.098,0.20,3.965,0.25,3.475,...
0.30,3.207,0.35,3.209,0.40,2.940,0.45,2.855,0.50,2.829,0.55,2.762,...
0.60,2.717,0.65,2.628,0.70,2.483,0.75,2.450,0.80,2.361,0.85,2.272,...
0.87,2.227,0.90,2.138,0.92,2.049,0.94,1.938,0.95,1.849,0.96,1.782,...
0.98,1.336,1.0,0.445
FUNCTION CAP3=0.,1.E12,0.05,1.E6,0.1,1.E4,0.15,1.E3,0.185,89.09,...
0.201,44.55,0.221,40.09,0.251,35.64,0.291,31.18,0.36,26.73,0.40,...
24.95,0.42,24.28,0.45,23.65,0.48,23.16,0.5,22.94,0.55,22.50,0.6,22.5,...
0.7,22.27,0.8,21.38,0.91,17.82,0.972,13.36,0.986,8.91,0.992,4.455,...
1.0,0.445
DYNAMIC
       P1=AFGEN(CAP1,TIME)
       P2=AFGEN(CAP2,TIME)
       P3=AFGEN(CAP3,TIME)
       AR1=1./(P1**3.)
       AR2=1./(P2**3.)
       AR3=1./(P3**3.)
       X1=INTGRL(ZERO,AR1)
       X2=INTGRL(ZERO,AR2)
       X3=INTGRL(ZERO,AR3)
       RK1=X1/Y1
       RK2=X2/Y2
       RK3=X3/Y3
TIMER DELT=0.0001,PRDEL=0.05,OUTDEL=0.05,FINTIM=1.
PRINT RK1,RK2,RK3
PRTPLT RK1,RK2,RK3
END
STOP

VARIABLE SEQUENCE
AR1     X1      P2      AR2     X2      P3      AR3     X3      RK1
RK3

TS     INPUTS    PARAMS  INTEGS + MEM BLKS  FORTRAN  DATA CDS
0)    41(1400)  11(400)   3+  0=  3(300)    13(600)     20


ENDJOB
```

APPENDIX I-D
Sample Print-Out

```
RESTART=       0.0    FINAL=    0.0        POFLAW=-225.00000
AKXMU IS PERM MULTIPLIER FOR EASY PERM CHANGE
 AKXMU=    1.00000     ESTAR=     1C00.0AIRKG =     0.4200WILP=     0.1500
WRITE CONTROL(NBUG)=    -4    IT =   20   INSW =     0ITAPE =     1   IOUPT=      2   IQT=        1   IQD=       1
 MAX DEL T= 15.00  PLANT CONDUCTIVITY=0.14400  HEIGHT OF LEAVES FROM A DATUM PLANE=, 20.00  AIR-LEAF EVAP.COEF.=3.00000
INTERCEPT= 0.23500  SLOPE=-C.02550  PERCENT GRCUND COVER BY VEGETATION= 95.00  DEL T MULT.= 0.10
   24.000000     1.000000   10.COCOCC
WATER VISCOSITY, (CENTIPCISE)
    1.COCOOO     1.000000    1.000000    1.000000    1.000000    1.000000    1.000000    1.000000    1.000000    1.000000
    1.C00000     1.000000    1.C00000    1.C00CCO    1.000000    1.000000    1.000000    1.000000    1.000000    1.000000
    1.CCCCOO     1.000000    1.COCCCC    1.CCOOOO    1.000000    1.000000    1.000000    1.000000    1.000000    1.000000
    1.000000     1.000000    1.000CCO    1.CCOCCO    1.000000    1.000000    1.000000    1.000000    1.000000    1.000000
    1.CCCOOO     1.CCOOOO    1.000CCO    1.000000    1.000000    1.000000    1.000000    1.000000    1.000000    1.000000
    1.000000     1.C00000    1.COOCCC    1.COOCCO    1.000000    1.000000    1.000000    1.000000    1.000000    1.000000
    1.000000     1.000000    1.COOOCO    1.000000    1.000000    1.000000    1.000000    1.000000    1.000000    1.000000
    1.0C0000     1.0C0000    1.000000    1.000000    1.000000    1.000000    1.000000    1.000000    1.000000    1.000000
    1.000000     1.CC0000    1.000CCO    1.C00000    1.000000    1.000000    1.000000    1.000000    1.000000    1.000000
    1.000000     1.000000    1.COOOOO    1.0C00CO    1.000000    1.000000    1.000000    1.000000    1.000000    1.000000
GAS VISCOSITY, (CENTIPOISE)
    0.018000     0.C18000    0.018CCO    C.C18CCO    0.018000    0.018000    0.018000    0.018000    0.018000    0.018000
    0.018000     0.018000    0.018000    0.018000    0.018000    0.018000    0.018000    0.018000    0.018000    0.018000
    0.018000     0.C18000    0.C18CCO    C.C18CCO    0.018000    0.018000    0.018000    0.018000    0.018000    0.018000
    0.018000     0.C18000    0.C18CCO    0.018000    0.018000    0.018000    0.018000    0.018000    0.018000    0.018000
    0.018000     0.018000    0.018000    0.018000    0.018000    0.018000    0.018000    0.018000    0.018000    0.018000
    0.018000     0.C18000    0.018000    C.C18CCO    0.018000    0.018000    0.018000    0.018000    0.018000    0.018000
    0.018000     0.C18000    0.018000    0.C18CCO    0.018000    0.018000    0.018000    0.018000    0.018000    0.018000
    0.018000     0.C18000    0.C18000    0.C18000    0.018000    0.018000    0.018000    0.018000    0.018000    0.018000
    0.018000     0.C18000    0.018CCC    0.C18CCO    0.018000    0.018000    0.018000    0.018000    0.018000    0.018000
    0.018000     0.018000    0.018000    0.C18000    0.018000    0.018000    0.018000    0.018000    0.018000    0.018000
 WATER DENSITY, (LBM./CU.FT.)
   24.000000     1.0C0000   10.C00000
   62.265589    62.269989   62.269989   62.269989   62.269989   62.269989   62.269989   62.269989   62.269989   62.269989
   62.269989    62.269989   62.269989   62.269989   62.269989   62.269989   62.269989   62.269989   62.269989   62.269989
   62.269589    62.269989   62.269989   62.269589   62.269989   62.269589   62.269989   62.269989   62.269989   62.269989
   62.269589    62.269989   62.269989   62.269589   62.269989   62.269989   62.269989   62.269989   62.269989   62.269989
   62.269589    62.269989   62.269989   62.269589   62.269989   62.269989   62.269989   62.269989   62.269989   62.269989
   62.269589    62.269989   62.269989   62.269989   62.269989   62.269989   62.269989   62.269989   62.269989   62.269989
   62.269589    62.269989   62.269989   62.269589   62.269989   62.269989   62.269989   62.269989   62.269989   62.269989
   62.269989    62.269989   62.269589   62.269589   62.269989   62.269989   62.269989   62.269989   62.269989   62.269989
   62.269589    62.269989   62.269589   62.269989   62.269989   62.269989   62.269989   62.269989   62.269989   62.269989
   62.269989    62.269989   62.269589   62.269989   62.269989   62.269989   62.269989   62.269989   62.269989   62.269989
 GAS DENSITY, (LBM/CU. FT.)
   88.0C0000     0.500000    9.C00CC0
    0.045400     0.047900    0.050500    0.C53CC0    0.055500    0.058000    0.060100    0.063100    0.065600    0.068100
    0.070600     0.073200    0.C75700    0.C782C0    0.080000    0.083300    0.085800    0.088300    0.090800    0.093400
    0.095900     0.098400    C.1CCOCC    0.103400    0.106000    0.108500    0.111000    0.113500    0.116100    0.118600
    0.121000     0.123600    0.126200    0.1287C0    0.131200    0.133700    0.136200    0.138800    0.141100    0.143800
    0.146300     0.148900    0.151400    0.153900    0.156400    0.159000    0.161100    0.164000    0.166500    0.169000
    0.171600     0.174100    0.176600    0.179100    0.181100    0.184200    0.186700    0.189200    0.191800    0.194300
    0.196800     0.199300    0.201000    0.204400    0.206900    0.209400    0.211900    0.214500    0.217000    0.219500
    0.222000     0.224600    0.247300    0.249800    0.252300    0.254800    0.257400    0.259900    0.262100    0.264900
    0.267400     0.270000    0.272500    C.275000    0.277500    0.280100    0.282100    0.285100    0.285100    0.285100
    0.285100     0.285100    0.285100    0.285100    0.285100    0.285100    0.285100    0.285100    0.285100    0.285100
  1C0.000000     0.0         1.C0CCCC    1.CCOCCO
```

WATER SATURATION (CFT/CFT P.)

1.010000	1.000000	0.990000	0.980000	0.980000	0.980000
0.986000	0.985000	0.984000	0.983000	0.980000	0.974000
0.962000	0.950000	0.935000	0.915000	0.895000	0.865000
0.825000	0.760000	0.435000	0.390000	0.360000	0.335000
0.315000	0.300000	0.285000	0.275000	0.265000	0.255000
0.245000	0.240000	0.235000	0.230000	0.225000	0.220000
0.215000	0.213000	0.210000	0.207000	0.205000	0.204250
0.203500	0.202750	0.202000	0.201250	0.200500	0.199750
0.199000	0.198250	0.197500	0.196750	0.196000	0.195250
0.194500	0.193750	0.193000	0.192250	0.191500	0.190750
0.190000	0.189250	0.188500	0.187750	0.187000	0.186250
0.185500	0.184750	0.184000	0.183250	0.182500	0.181750
0.181000	0.180250	0.179500	0.178750	0.178000	0.177250
0.176500	0.175750	0.175000	0.174250	0.173500	0.172750
0.172000	0.171250	0.170500	0.169750	0.169000	0.168250
0.167500	0.166750	0.166000	0.165250	0.164500	0.163750
0.163000	0.162250	0.161500	0.160750		

CAP. PRESS	AS	BS
106.919968	0.235000	-0.000694
105.839966	0.235000	-0.000694
104.759964	0.235000	-0.000694
103.679962	0.235000	-0.000694
102.599960	0.235000	-0.000694
101.519958	0.235000	-0.000694
100.439957	0.235000	-0.000694
99.359955	0.235000	-0.000694
98.279953	0.235000	-0.000694
97.199951	0.235000	-0.000694
96.119949	0.235000	-0.000694
95.039948	0.235000	-0.000694
93.959946	0.235000	-0.000694
92.879944	0.235000	-0.000694
91.799942	0.235000	-0.000694
90.719940	0.235000	-0.000694
89.639938	0.235000	-0.000694
88.559937	0.235000	-0.000694
87.479935	0.235000	-0.000694
86.399933	0.235000	-0.000694
85.319931	0.235000	-0.000694
84.239929	0.235000	-0.000694
83.159927	0.235000	-0.000694
82.079926	0.235000	-0.000694
80.999924	0.235000	-0.000694
79.919922	0.235000	-0.000694
78.839920	0.235000	-0.000694
77.759918	0.235000	-0.000694
76.679916	0.235000	-0.000694
75.599915	0.235000	-0.000694
74.519913	0.235000	-0.000694
73.439911	0.235000	-0.000694
72.359909	0.235000	-0.000694
71.279907	0.235000	-0.000694
70.199905	0.235000	-0.000694
69.119904	0.235000	-0.000694
68.039902	0.235000	-0.000694
66.959900	0.235000	-0.000694
65.879898	0.235000	-0.000694
64.799896	0.235000	-0.000694
63.719894	0.235000	-0.000694
62.639893	0.235000	-0.000694

60.479889	0.235000	-0.000694
59.399887	0.235000	-0.000694
58.319885	0.235000	-0.000694
57.239883	0.235000	-0.000694
56.159882	0.235000	-0.000694
55.079880	0.235000	-0.000694
53.999878	0.235000	-0.000694
52.919876	0.235000	-0.000694
51.839874	0.235000	-0.000694
50.759872	0.235000	-0.000694
49.679871	0.235000	-0.000694
48.599869	0.235000	-0.000694
47.519867	0.235000	-0.000694
46.439865	0.235000	-0.000694
45.359863	0.235000	-0.000694
44.279861	0.235000	-0.000694
43.199860	0.285000	-0.001852
42.119858	0.324000	-0.002778
41.039856	0.324000	-0.002778
39.959854	0.287000	-0.001852
38.879852	0.394999	-0.004630
37.799850	0.394999	-0.004630
36.719849	0.394999	-0.004630
35.639847	0.394999	-0.004630
34.559845	0.394999	-0.004630
33.479843	0.394999	-0.004630
32.399841	0.544999	-0.009259
31.319839	0.544999	-0.009259
30.239838	0.544999	-0.009259
29.159836	0.544999	-0.009259
28.079834	0.674998	-0.013889
26.999832	0.674998	-0.013889
25.919830	0.794997	-0.018519
24.839828	0.909996	-0.023148
23.759827	1.019996	-0.027778
22.679825	1.334993	-0.041667
21.599823	6.934952	-0.300926
20.519821	1.994990	-0.060185
19.439819	1.544994	-0.037037
18.359818	1.374995	-0.027778
17.279816	1.214997	-0.018519
16.199814	1.214997	-0.018519
15.119814	1.144998	-0.013889
14.039814	1.105998	-0.011111
12.959814	1.105998	-0.011111
11.879814	1.039999	-0.005556
10.799814	1.010000	-0.002778
9.719814	0.992000	-0.000926
8.639814	0.992000	-0.000926
7.559814	0.992000	-0.000926
6.479815	0.992000	-0.000926
5.399815	0.992000	-0.000926
4.319815	0.992000	-0.000926
3.239815	0.992000	-0.000926
2.159815	1.009998	-0.009259
1.079815	1.009998	-0.009259
-0.000185	1.009998	-0.009259

100.000000	0.008578	0.160750							
106.920013	94.567261	82.214844	69.862061	57.509277	45.156738	40.241013	37.627686	35.774796	33.921906
32.141113	31.308029	30.381592	29.455139	28.528687	27.694031	27.106369	26.526230	25.909821	25.397614
24.961090	24.558380	24.178268	23.833466	23.501099	23.183121	22.884399	22.607162	22.357788	22.131958
21.929672	21.750931	21.594513	21.414581	21.242844	21.079361	20.924072	20.777023	20.638199	20.507599
20.385223	20.271072	20.165146	20.067444	19.977951	19.896698	19.823669	19.758865	19.702286	19.653931
19.613800	19.581894	19.558197	19.542740	19.535507	19.536499	19.545715	19.563156	19.588821	19.622696
19.664810	19.715149	19.773697	19.840500	19.915497	19.998734	20.090195	20.189865	20.297791	20.413910
20.502258	20.375504	20.243729	20.106964	19.965164	19.818344	19.666519	19.509659	19.325821	19.112625
18.884888	18.642609	18.385757	18.103378	17.801102	17.479919	17.112961	16.663513	16.165710	15.702484
15.239258	14.689453	14.044189	13.292480	12.500595	11.613281	8.358154	0.062500	0.926941	0.000595

NUMBER OF GRID POINTS,NX = 10

K(X) CARC	LAY NO.	POR PRC.	WAT. PR. PSI	GAS. PR. PSI	WAT. SAT. CFT/CFT P.	TH FT	DEPTH FT	XLOC FT	QW LBM/DY**2-HR	QG	PWIN PSI	PGIN	PKEY NO.	R.DEN FT/CFT
0.864	1	0.500	-5.678	14.700	0.750	1.000	0.0	0.0	0.0	0.0	0.0	14.700	5.000	15.400
0.864	1	0.500	-5.678	14.701	0.750	1.000	-1.000	1.000	0.0	0.0	0.0	0.0	1.000	15.300
0.864	1	0.500	-5.677	14.701	0.750	1.000	-2.000	2.000	0.0	0.0	0.0	0.0	1.000	11.500
0.864	1	0.500	-5.677	14.702	0.750	1.000	-3.000	3.000	0.0	0.0	0.0	0.0	1.000	11.500
0.864	1	0.500	-5.676	14.702	0.750	1.000	-4.000	4.000	0.0	0.0	0.0	0.0	1.000	7.700
0.864	1	0.500	-5.676	14.703	0.750	1.000	-5.000	5.000	0.0	0.0	0.0	0.0	1.000	7.700
0.864	1	0.500	-5.675	14.703	0.750	1.000	-6.000	6.000	0.0	0.0	0.0	0.0	1.000	3.800
0.864	1	0.500	-5.675	14.704	0.750	1.000	-7.000	7.000	0.0	0.0	0.0	0.0	1.000	3.800
0.864	1	0.500	-5.674	14.704	0.750	1.000	-8.000	8.000	0.0	0.0	0.0	0.0	1.000	1.000
0.864	1	0.500	-5.674	14.705	0.750	1.000	-9.000	9.000	0.0	0.0	0.0	0.0	4.000	0.500

RELATIVE PERMEABILITY WATER

0.000001	0.000001	0.000001	0.000014	0.000171	0.000447	0.000852	0.001407	0.002089	0.002877
0.003712	0.004573	0.005440	0.006321	0.007236	0.008208	0.009338	0.010783	0.012930	0.012930
0.012930	0.012930	0.012930	0.012930	0.012930	0.012930	0.012930	0.012930	0.012930	0.012930
0.012930	0.012930	0.012930	0.012930	0.012930	0.012930	0.012930	0.012930	0.012930	0.012930
0.012930	0.012930	0.012930	0.012930	0.012930	0.012930	0.012930	0.012930	0.012930	0.012930
0.012930	0.012930	0.012930	0.012930	0.012930	0.012930	0.012930	0.012930	0.012930	0.012930
0.012930	0.012930	0.012930	0.012930	0.012930	0.012930	0.012930	0.012930	0.012930	0.012930
0.012930	0.012930	0.012930	0.012930	0.012930	0.012930	0.012930	0.012930	0.012930	0.012930
0.012930	0.012930	0.012930	0.012930	0.012930	0.012930	0.012930	0.012930	0.012930	0.012930
0.012930	0.012930	0.012930	0.012930	0.012930	0.012930	0.012930	0.012930	0.012930	0.012930
19.000000	0.050000	0.050000							

RELATIVE PERMEABILITY GAS

19.000000	0.050000	0.050000							
0.970000	0.940000	0.910000	0.825000	0.700000	0.575000	0.450000	0.325000	0.200000	0.090000
0.050000	0.032500	0.022500	0.016000	0.012000	0.010000	0.007500	0.005000	0.000500	0.000500
0.000500	0.000500	0.000500	0.000500	0.000500	0.000500	0.000500	0.000500	0.000500	0.000500
0.000500	0.000500	0.000500	0.000500	0.000500	0.000500	0.000500	0.000500	0.000500	0.000500
0.000500	0.000500	0.000500	0.000500	0.000500	0.000500	0.000500	0.000500	0.000500	0.000500
0.000500	0.000500	0.000500	0.000500	0.000500	0.000500	0.000500	0.000500	0.000500	0.000500
0.000500	0.000500	0.000500	0.000500	0.000500	0.000500	0.000500	0.000500	0.000500	0.000500
0.000500	0.000500	0.000500	0.000500	0.000500	0.000500	0.000500	0.000500	0.000500	0.000500
0.000500	0.000500	0.000500	0.000500	0.000500	0.000500	0.000500	0.000500	0.000500	0.000500
0.000500	0.000500	0.000500	0.000500	0.000500	0.000500	0.000500	0.000500	0.000500	0.000500

AIR TEMP., (FAHRENHEIT)

600.000000	30.000000	0.0							
45.250000	48.000000	53.549988	63.799988	71.449997	80.099991	82.949997	82.399994	75.899994	65.250000
52.949997	46.149994	45.250000	48.000000	53.549988	63.799988	71.449997	80.199997	82.949997	82.399994
75.899994	65.250000	52.949997	46.149994	45.250000	48.000000	53.549988	63.799988	71.449997	80.099991
82.949997	82.399994	75.899994	65.250000	52.949997	46.149994	45.250000	48.000000	53.549988	63.799988
71.449997	80.199997	82.949997	82.399994	75.899994	65.250000	52.949997	46.149994	45.250000	48.000000
53.549988	63.799988	71.449997	80.099991	82.949997	82.399994	75.899994	65.250000	52.949997	46.149994
45.250000	48.000000	53.549988	63.799988	71.449997	80.199997	82.949997	82.399994	75.899994	65.250000
52.949997	46.149994	45.250000	48.000000	53.549988	63.799988	71.449997	80.099991	82.949997	82.399994
75.899994	65.250000	52.949997	46.149994	45.250000	48.000000	53.549988	63.799988	71.449997	80.199997
82.949997	82.399994	75.899994	65.250000	52.949997	46.149994	45.250000	48.000000	53.549988	63.799988

53.549988	63.799988	71.449997	80.199997	82.949997	82.399994	75.899994	65.250000	[illegible]	
45.250000	48.000000	53.549988	63.799988	71.449997	80.099991	82.949997	82.399994	75.899994	65.250000
52.949997	46.149994	45.250000	48.000000	53.549988	63.799988	71.449997	80.199997	82.949997	82.399994
75.899994	65.250000	52.949997	46.149994	45.250000	48.000000	53.549988	63.799988	71.449997	80.099991
82.949997	82.399994	75.899994	65.250000	52.949997	46.149994	45.250000	48.000000	53.549988	63.799988
71.449997	80.199997	82.949997	82.399994	75.899994	65.250000	52.949997	46.149994	45.250000	48.000000
53.549988	63.799988	71.449997	80.099991	82.949997	82.399994	75.899994	65.250000	52.949997	46.149994
45.250000	48.000000	53.549988	63.799988	71.449997	80.199997	82.949997	82.399994	75.899994	65.250000
52.949997	46.149994	45.250000	48.000000	53.549988	63.799988	71.449997	80.099991	82.949997	82.399994
75.899994	65.250000	52.949997	46.149994	45.250000	48.000000	53.549988	63.799988	71.449997	80.199997
82.949997	82.399994	75.899994	65.250000	52.949997	46.149994	45.250000	48.000000	53.549988	63.799988
71.449997	80.099991	82.949997	82.399994	75.899994	65.250000	52.949997	46.149994	45.250000	48.000000
53.549988	63.799988	71.449997	80.199997	82.949997	82.399994	75.899994	65.250000	52.949997	46.149994
45.250000	48.000000	53.549988	63.799988	71.449997	80.099991	82.949997	82.399994	75.899994	65.250000
52.949997	46.149994	45.250000	48.000000	53.549988	63.799988	71.449997	80.199997	82.949997	82.399994
75.899994	65.250000	52.949997	46.149994	45.250000	48.000000	53.549988	63.799988	71.449997	80.099991
82.949997	82.399994	75.899994	65.250000	52.949997	46.149994	45.250000	48.000000	53.549988	63.799988
71.449997	80.199997	82.949997	82.399994	75.899994	65.250000	52.949997	46.149994	45.250000	48.000000
53.549988	63.799988	71.449997	80.099991	82.949997	82.399994	75.899994	65.250000	52.949997	46.149994
45.250000	48.000000	53.549988	63.799988	71.449997	80.199997	82.949997	82.399994	75.899994	65.250000
52.949997	46.149994	45.250000	48.000000	53.549988	63.799988	71.449997	80.099991	82.949997	82.399994
75.899994	65.250000	52.949997	46.149994	45.250000	48.000000	53.549988	63.799988	71.449997	80.199997
82.949997	82.399994	75.899994	65.250000	52.949997	46.149994	45.250000	48.000000	53.549988	63.799988
71.449997	80.099991	82.949997	82.399994	75.899994	65.250000	52.949997	46.149994	45.250000	48.000000
53.549988	63.799988	71.449997	80.199997	82.949997	82.399994	75.899994	65.250000	52.949997	46.149994
45.250000	48.000000	53.549988	63.799988	71.449997	80.099991	82.949997	82.399994	75.899994	65.250000
52.949997	46.149994	45.250000	48.000000	53.549988	63.799988	71.449997	80.199997	82.949997	82.399994
75.899994	65.250000	52.949997	46.149994	45.250000	48.000000	53.549988	63.799988	71.449997	80.099991
82.949997	82.399994	75.899994	65.250000	52.949997	46.149994	45.250000	48.000000	53.549988	63.799988
71.449997	80.199997	82.949997	82.399994	75.899994	65.250000	52.949997	46.149994	45.250000	48.000000
53.549988	63.799988	71.449997	80.099991	82.949997	82.399994	75.899994	65.250000	52.949997	46.149994
45.250000	48.000000	53.549988	63.799988	71.449997	80.199997	82.949997	82.399994	75.899994	65.250000
52.949997	46.149994	45.250000	48.000000	53.549988	63.799988	71.449997	80.099991	82.949997	82.399994
75.899994	65.250000	52.949997	46.149994	45.250000	48.000000	53.549988	63.799988	71.449997	80.199997
82.949997	82.399994	75.899994	65.250000	52.949997	46.149994	45.250000	48.000000	53.549988	63.799988
71.449997	80.099991	82.949997	82.399994	75.899994	65.250000	52.949997	46.149994	45.250000	48.000000
53.549988	63.799988	71.449997	80.199997	82.949997	82.399994	75.899994	65.250000	52.949997	46.149994
45.250000	48.000000	53.549988	63.799988	71.449997	80.099991	82.949997	82.399994	75.899994	65.250000
52.949997	46.149994	45.250000	48.000000	53.549988	63.799988	71.449997	80.199997	82.949997	82.399994
75.899994	65.250000	52.949997	46.149994	45.250000	48.000000	53.549988	63.799988	71.449997	80.099991
82.949997	82.399994	75.899994	65.250000	52.949997	46.149994	45.250000	48.000000	53.549988	63.799988
71.449997	80.199997	82.949997	82.399994	75.899994	65.250000	52.949997	46.149994	45.250000	48.000000
53.549988	63.799988	71.449997	80.099991	82.949997	82.399994	75.899994	65.250000	52.949997	46.149994
45.250000	48.000000	53.549988	63.799988	71.449997	80.199997	82.949997	82.399994	75.899994	65.250000
52.949997	46.149994	45.250000	48.000000	53.549988	63.799988	71.449997	80.099991	82.949997	82.399994
75.899994	65.250000	52.949997	46.149994	45.250000	48.000000	53.549988	63.799988	71.449997	80.199997
82.949997	82.399994	75.899994	65.250000	52.949997	46.149994	45.250000	48.000000	53.549988	63.799988
71.449997	80.099991	82.949997	82.399994	75.899994	65.250000	52.949997	46.149994	45.250000	48.000000
53.549988	63.799988	71.449997	80.199997	82.949997	82.399994	75.899994	65.250000	52.949997	46.149994

SOIL TEMP., (FAHRENHEIT)

600.000000	30.000000	0.0							
50.250000	53.000000	58.549988	63.799988	68.500000	75.099991	77.000000	77.000000	70.899994	65.250000
55.949997	50.000000	50.250000	53.000000	58.549988	63.799988	68.500000	75.099991	77.000000	77.000000
70.899994	65.250000	55.949997	50.000000	50.250000	53.000000	58.549988	63.799988	68.500000	75.099991
77.000000	77.000000	70.899994	65.250000	55.949997	50.000000	50.250000	53.000000	58.549988	63.799988
68.500000	75.099991	77.000000	77.000000	70.899994	65.250000	55.949997	50.000000	50.250000	53.000000
58.549988	63.799988	68.500000	75.099991	77.000000	77.000000	70.899994	65.250000	55.949997	50.000000
50.250000	53.000000	58.549988	63.799988	68.500000	75.099991	77.000000	77.000000	70.899994	65.250000
55.949997	50.000000	50.250000	53.000000	58.549988	63.799988	68.500000	75.099991	77.000000	77.000000
70.899994	65.250000	55.949997	50.000000	50.250000	53.000000	58.549988	63.799988	68.500000	75.099991

77.000000	77.000000	70.899994	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
68.500000	75.099991	77.000000	77.000000	70.899994	65.250000	55.949997	50.000000	50.250000	53.000000
58.549988	63.799988	68.500000	75.099991	77.000000	77.000000	70.899994	65.250000	55.949997	50.000000
50.250000	53.000000	58.549988	63.799988	68.500000	75.099991	77.000000	77.000000	70.899994	65.250000
55.949997	50.000000	50.250000	53.000000	58.549988	63.799988	68.500000	75.099991	77.000000	77.000000
70.899994	65.250000	55.949997	50.000000	50.250000	53.000000	58.549988	63.799988	68.500000	75.099991
77.000000	77.000000	70.899994	65.250000	55.949997	50.000000	50.250000	53.000000	58.549988	63.799988
68.500000	75.099991	77.000000	77.000000	70.899994	65.250000	55.949997	50.000000	50.250000	53.000000
58.549988	63.799988	68.500000	75.099991	77.000000	77.000000	70.899994	65.250000	55.949997	50.000000
50.250000	53.000000	58.549988	63.799988	68.500000	75.099991	77.000000	77.000000	70.899994	65.250000
55.949997	50.000000	50.250000	53.000000	58.549988	63.799988	68.500000	75.099991	77.000000	77.000000
70.899994	65.250000	55.949997	50.000000	50.250000	53.000000	58.549988	63.799988	68.500000	75.099991
77.000000	77.000000	70.899994	65.250000	55.949997	50.000000	50.250000	53.000000	58.549988	63.799988
68.500000	75.099991	77.000000	77.000000	70.899994	65.250000	55.949997	50.000000	50.250000	53.000000
58.549988	63.799988	68.500000	75.099991	77.000000	77.000000	70.899994	65.250000	55.949997	50.000000
50.250000	53.000000	58.549988	63.799988	68.500000	75.099991	77.000000	77.000000	70.899994	65.250000
55.949997	50.000000	50.250000	53.000000	58.549988	63.799988	68.500000	75.099991	77.000000	77.000000
70.899994	65.250000	55.949997	50.000000	50.250000	53.000000	58.549988	63.799988	68.500000	75.099991
77.000000	77.000000	70.899994	65.250000	55.949997	50.000000	50.250000	53.000000	58.549988	63.799988
68.500000	75.099991	77.000000	77.000000	70.899994	65.250000	55.949997	50.000000	50.250000	53.000000
58.549988	63.799988	68.500000	75.099991	77.000000	77.000000	70.899994	65.250000	55.949997	50.000000
50.250000	53.000000	58.549988	63.799988	68.500000	75.099991	77.000000	77.000000	70.899994	65.250000
55.949997	50.000000	50.250000	53.000000	58.549988	63.799988	68.500000	75.099991	77.000000	77.000000
70.899994	65.250000	55.949997	50.000000	50.250000	53.000000	58.549988	63.799988	68.500000	75.099991
77.000000	77.000000	70.899994	65.250000	55.949997	50.000000	50.250000	53.000000	58.549988	63.799988
68.500000	75.099991	77.000000	77.000000	70.899994	65.250000	55.949997	50.000000	50.250000	53.000000
58.549988	63.799988	68.500000	75.099991	77.000000	77.000000	70.899994	65.250000	55.949997	50.000000
50.250000	53.000000	58.549988	63.799988	68.500000	75.099991	77.000000	77.000000	70.899994	65.250000
55.949997	50.000000	50.250000	53.000000	58.549988	63.799988	68.500000	75.099991	77.000000	77.000000
70.899994	65.250000	55.949997	50.000000	50.250000	53.000000	58.549988	63.799988	68.500000	75.099991
77.000000	77.000000	70.899994	65.250000	55.949997	50.000000	50.250000	53.000000	58.549988	63.799988
68.500000	75.099991	77.000000	77.000000	70.899994	65.250000	55.949997	50.000000	50.250000	53.000000
58.549988	63.799988	68.500000	75.099991	77.000000	77.000000	70.899994	65.250000	55.949997	50.000000
50.250000	53.000000	58.549988	63.799988	68.500000	75.099991	77.000000	77.000000	70.899994	65.250000
55.949997	50.000000	50.250000	53.000000	58.549988	63.799988	68.500000	75.099991	77.000000	77.000000
70.899994	65.250000	55.949997	50.000000	50.250000	53.000000	58.549988	63.799988	68.500000	75.099991
77.000000	77.000000	70.899994	65.250000	55.949997	50.000000	50.250000	53.000000	58.549988	63.799988
68.500000	75.099991	77.000000	77.000000	70.899994	65.250000	55.949997	50.000000	50.250000	53.000000
58.549988	63.799988	68.500000	75.099991	77.000000	77.000000	70.899994	65.250000	55.949997	50.000000
50.250000	53.000000	58.549988	63.799988	68.500000	75.099991	77.000000	77.000000	70.899994	65.250000
55.949997	50.000000	50.250000	53.000000	58.549988	63.799988	68.500000	75.099991	77.000000	77.000000
70.899994	65.250000	55.949997	50.000000	50.250000	53.000000	58.549988	63.799988	68.500000	75.099991
77.000000	77.000000	70.899994	65.250000	55.949997	50.000000	50.250000	53.000000	58.549988	63.799988
68.500000	75.099991	77.000000	77.000000	70.899994	65.250000	55.949997	50.000000	50.250000	53.000000
58.549988	63.799988	68.500000	75.099991	77.000000	77.000000	70.899994	65.250000	55.949997	50.000000
50.250000	53.000000	58.549988	63.799988	68.500000	75.099991	77.000000	77.000000	70.899994	65.250000
55.949997	50.000000	50.250000	53.000000	58.549988	63.799988	68.500000	75.099991	77.000000	77.000000
70.899994	65.250000	55.949997	50.000000	50.250000	53.000000	58.549988	63.799988	68.500000	75.099991
77.000000	77.000000	70.899994	65.250000	55.949997	50.000000	50.250000	53.000000	58.549988	63.799988
68.500000	75.099991	77.000000	77.000000	70.899994	65.250000	55.949997	50.000000	50.250000	53.000000
58.549988	63.799988	68.500000	75.099991	77.000000	77.000000	70.899994	65.250000	55.949997	50.000000

RELATIVE HUMIDITY, (PERCENT)

600.000000	30.000000	0.0							
74.500000	68.000000	66.500000	68.500000	73.000000	71.500000	75.500000	77.000000	79.500000	78.000000
76.500000	80.000000	74.500000	68.000000	66.500000	68.500000	73.000000	71.500000	75.500000	77.000000
79.500000	78.000000	76.500000	80.000000	74.500000	68.000000	66.500000	68.500000	73.000000	71.500000
75.500000	77.000000	79.500000	78.000000	76.500000	80.000000	74.500000	68.000000	66.500000	68.500000
73.000000	71.500000	75.500000	77.000000	79.500000	78.000000	76.500000	80.000000	74.500000	68.000000
66.500000	68.500000	73.000000	71.500000	75.500000	77.000000	79.500000	78.000000	76.500000	80.000000
74.500000	68.000000	66.500000	68.500000	73.000000	71.500000	75.500000	77.000000	79.500000	78.000000
76.500000	80.000000	74.500000	68.000000	66.500000	68.500000	73.000000	71.500000	75.500000	77.000000

79.500000	78.000000	76.500000	[illegible]	[illegible]	[illegible]				
75.500000	77.000000	79.500000	78.000000	76.500000	80.000000	74.500000	68.000000	66.500000	68.500000
73.000000	71.500000	75.500000	77.000000	79.500000	78.000000	76.500000	80.000000	74.500000	68.000000
66.500000	68.500000	73.000000	71.500000	75.500000	77.000000	79.500000	78.000000	76.500000	80.000000
74.500000	68.000000	66.500000	68.500000	73.000000	71.500000	75.500000	77.000000	79.500000	78.000000
76.500000	80.000000	74.500000	68.000000	66.500000	68.500000	73.000000	71.500000	75.500000	77.000000
79.500000	78.000000	76.500000	80.000000	74.500000	68.000000	66.500000	68.500000	73.000000	71.500000
75.500000	77.000000	79.500000	78.000000	76.500000	80.000000	74.500000	68.000000	66.500000	68.500000
73.000000	71.500000	75.500000	77.000000	79.500000	78.000000	76.500000	80.000000	74.500000	68.000000
66.500000	68.500000	73.000000	71.500000	75.500000	77.000000	79.500000	78.000000	76.500000	80.000000
74.500000	68.000000	66.500000	68.500000	73.000000	71.500000	75.500000	77.000000	79.500000	78.000000
76.500000	80.000000	74.500000	68.000000	66.500000	68.500000	73.000000	71.500000	75.500000	77.000000
79.500000	78.000000	76.500000	80.000000	74.500000	68.000000	66.500000	68.500000	73.000000	71.500000
75.500000	77.000000	79.500000	78.000000	76.500000	80.000000	74.500000	68.000000	66.500000	68.500000
73.000000	71.500000	75.500000	77.000000	79.500000	78.000000	76.500000	80.000000	74.500000	68.000000
66.500000	68.500000	73.000000	71.500000	75.500000	77.000000	79.500000	78.000000	76.500000	80.000000
74.500000	68.000000	66.500000	68.500000	73.000000	71.500000	75.500000	77.000000	79.500000	78.000000
76.500000	80.000000	74.500000	68.000000	66.500000	68.500000	73.000000	71.500000	75.500000	77.000000
79.500000	78.000000	76.500000	80.000000	74.500000	68.000000	66.500000	68.500000	73.000000	71.500000
75.500000	77.000000	79.500000	78.000000	76.500000	80.000000	74.500000	68.000000	66.500000	68.500000
73.000000	71.500000	75.500000	77.000000	79.500000	78.000000	76.500000	80.000000	74.500000	68.000000
66.500000	68.500000	73.000000	71.500000	75.500000	77.000000	79.500000	78.000000	76.500000	80.000000
74.500000	68.000000	66.500000	68.500000	73.000000	71.500000	75.500000	77.000000	79.500000	78.000000
76.500000	80.000000	74.500000	68.000000	66.500000	68.500000	73.000000	71.500000	75.500000	77.000000
79.500000	78.000000	76.500000	80.000000	74.500000	68.000000	66.500000	68.500000	73.000000	71.500000
75.500000	77.000000	79.500000	78.000000	76.500000	80.000000	74.500000	68.000000	66.500000	68.500000
73.000000	71.500000	75.500000	77.000000	79.500000	78.000000	76.500000	80.000000	74.500000	68.000000
66.500000	68.500000	73.000000	71.500000	75.500000	77.000000	79.500000	78.000000	76.500000	80.000000
74.500000	68.000000	66.500000	68.500000	73.000000	71.500000	75.500000	77.000000	79.500000	78.000000
76.500000	80.000000	74.500000	68.000000	66.500000	68.500000	73.000000	71.500000	75.500000	77.000000
79.500000	78.000000	76.500000	80.000000	74.500000	68.000000	66.500000	68.500000	73.000000	71.500000
75.500000	77.000000	79.500000	78.000000	76.500000	80.000000	74.500000	68.000000	66.500000	68.500000
73.000000	71.500000	75.500000	77.000000	79.500000	78.000000	76.500000	80.000000	74.500000	68.000000
66.500000	68.500000	73.000000	71.500000	75.500000	77.000000	79.500000	78.000000	76.500000	80.000000
74.500000	68.000000	66.500000	68.500000	73.000000	71.500000	75.500000	77.000000	79.500000	78.000000
76.500000	80.000000	74.500000	68.000000	66.500000	68.500000	73.000000	71.500000	75.500000	77.000000
79.500000	78.000000	76.500000	80.000000	74.500000	68.000000	66.500000	68.500000	73.000000	71.500000
75.500000	77.000000	79.500000	78.000000	76.500000	80.000000	74.500000	68.000000	66.500000	68.500000
73.000000	71.500000	75.500000	77.000000	79.500000	78.000000	76.500000	80.000000	74.500000	68.000000
66.500000	68.500000	73.000000	71.500000	75.500000	77.000000	79.500000	78.000000	76.500000	80.000000
74.500000	68.000000	66.500000	68.500000	73.000000	71.500000	75.500000	77.000000	79.500000	78.000000
76.500000	80.000000	74.500000	68.000000	66.500000	68.500000	73.000000	71.500000	75.500000	77.000000
79.500000	78.000000	76.500000	80.000000	74.500000	68.000000	66.500000	68.500000	73.000000	71.500000
75.500000	77.000000	79.500000	78.000000	76.500000	80.000000	74.500000	68.000000	66.500000	68.500000
73.000000	71.500000	75.500000	77.000000	79.500000	78.000000	76.500000	80.000000	74.500000	68.000000
66.500000	68.500000	73.000000	71.500000	75.500000	77.000000	79.500000	78.000000	76.500000	80.000000
74.500000	68.000000	66.500000	68.500000	73.000000	71.500000	75.500000	77.000000	79.500000	78.000000
76.500000	80.000000	74.500000	68.000000	66.500000	68.500000	73.000000	71.500000	75.500000	77.000000
79.500000	78.000000	76.500000	80.000000	74.500000	68.000000	66.500000	68.500000	73.000000	71.500000
75.500000	77.000000	79.500000	78.000000	76.500000	80.000000	74.500000	68.000000	66.500000	68.500000
73.000000	71.500000	75.500000	77.000000	79.500000	78.000000	76.500000	80.000000	74.500000	68.000000
66.500000	68.500000	73.000000	71.500000	75.500000	77.000000	79.500000	78.000000	76.500000	80.000000

WIND VELOCITY, (MILES PER HOUR)

600.000000 30.000000 0.0

9.250000	9.650000	9.900000	8.900000	7.200000	6.299999	6.700000	5.400000	6.200000	6.799999
8.200000	8.799999	9.250000	9.650000	9.900000	8.900000	7.200000	6.299999	6.700000	5.400000
6.200000	6.799999	8.200000	8.799999	9.250000	9.650000	9.900000	8.900000	7.200000	6.299999
6.700000	5.400000	6.200000	6.799999	8.200000	8.799999	9.250000	9.650000	9.900000	8.900000
7.200000	6.299999	6.700000	5.400000	6.200000	6.799999	8.200000	8.799999	9.250000	9.650000
9.900000	8.900000	7.200000	6.299999	6.700000	5.400000	6.200000	6.799999	8.200000	8.799999
9.250000	9.650000	9.900000	8.900000	7.200000	6.299999	6.700000	5.400000	6.200000	6.799999

8.200000	8.799999	9.250000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6.200000	6.799999	8.200000	8.799999	9.250000	9.650000	9.900000	8.900000	7.200000	6.299999
6.700000	5.400000	6.200000	6.799999	8.200000	8.799999	9.250000	9.650000	9.900000	8.900000
7.200000	6.299999	6.700000	5.400000	6.200000	6.799999	8.200000	8.799999	9.250000	9.650000
9.900000	8.900000	7.200000	6.299999	6.700000	5.400000	6.200000	6.799999	8.200000	8.799999
9.250000	9.650000	9.900000	8.900000	7.200000	6.299999	6.700000	5.400000	6.200000	6.799999
8.200000	8.799999	9.250000	9.650000	9.900000	8.900000	7.200000	6.299999	6.700000	5.400000
6.200000	6.799999	8.200000	8.799999	9.250000	9.650000	9.900000	8.900000	7.200000	6.299999
6.700000	5.400000	6.200000	6.799999	8.200000	8.799999	9.250000	9.650000	9.900000	8.900000
7.200000	6.299999	6.700000	5.400000	6.200000	6.799999	8.200000	8.799999	9.250000	9.650000
9.900000	8.900000	7.200000	6.299999	6.700000	5.400000	6.200000	6.799999	8.200000	8.799999
9.250000	9.650000	9.900000	8.900000	7.200000	6.299999	6.700000	5.400000	6.200000	6.799999
8.200000	8.799999	9.250000	9.650000	9.900000	8.900000	7.200000	6.299999	6.700000	5.400000
6.200000	6.799999	8.200000	8.799999	9.250000	9.650000	9.900000	8.900000	7.200000	6.299999
6.700000	5.400000	6.200000	6.799999	8.200000	8.799999	9.250000	9.650000	9.900000	8.900000
7.200000	6.299999	6.700000	5.400000	6.200000	6.799999	8.200000	8.799999	9.250000	9.650000
9.900000	8.900000	7.200000	6.299999	6.700000	5.400000	6.200000	6.799999	8.200000	8.799999
9.250000	9.650000	9.900000	8.900000	7.200000	6.299999	6.700000	5.400000	6.200000	6.799999
8.200000	8.799999	9.250000	9.650000	9.900000	8.900000	7.200000	6.299999	6.700000	5.400000
6.200000	6.799999	8.200000	8.799999	9.250000	9.650000	9.900000	8.900000	7.200000	6.299999
6.700000	5.400000	6.200000	6.799999	8.200000	8.799999	9.250000	9.650000	9.900000	8.900000
7.200000	6.299999	6.700000	5.400000	6.200000	6.799999	8.200000	8.799999	9.250000	9.650000
9.900000	8.900000	7.200000	6.299999	6.700000	5.400000	6.200000	6.799999	8.200000	8.799999
9.250000	9.650000	9.900000	8.900000	7.200000	6.299999	6.700000	5.400000	6.200000	6.799999
8.200000	8.799999	9.250000	9.650000	9.900000	8.900000	7.200000	6.299999	6.700000	5.400000
6.200000	6.799999	8.200000	8.799999	9.250000	9.650000	9.900000	8.900000	7.200000	6.299999
6.700000	5.400000	6.200000	6.799999	8.200000	8.799999	9.250000	9.650000	9.900000	8.900000
7.200000	6.299999	6.700000	5.400000	6.200000	6.799999	8.200000	8.799999	9.250000	9.650000
9.900000	8.900000	7.200000	6.299999	6.700000	5.400000	6.200000	6.799999	8.200000	8.799999
9.250000	9.650000	9.900000	8.900000	7.200000	6.299999	6.700000	5.400000	6.200000	6.799999
8.200000	8.799999	9.250000	9.650000	9.900000	8.900000	7.200000	6.299999	6.700000	5.400000
6.200000	6.799999	8.200000	8.799999	9.250000	9.650000	9.900000	8.900000	7.200000	6.299999
6.700000	5.400000	6.200000	6.799999	8.200000	8.799999	9.250000	9.650000	9.900000	8.900000
7.200000	6.299999	6.700000	5.400000	6.200000	6.799999	8.200000	8.799999	9.250000	9.650000
9.900000	8.900000	7.200000	6.299999	6.700000	5.400000	6.200000	6.799999	8.200000	8.799999
9.250000	9.650000	9.900000	8.900000	7.200000	6.299999	6.700000	5.400000	6.200000	6.799999
8.200000	8.799999	9.250000	9.650000	9.900000	8.900000	7.200000	6.299999	6.700000	5.400000
6.200000	6.799999	8.200000	8.799999	9.250000	9.650000	9.900000	8.900000	7.200000	6.299999
6.700000	5.400000	6.200000	6.799999	8.200000	8.799999	9.250000	9.650000	9.900000	8.900000
7.200000	6.299999	6.700000	5.400000	6.200000	6.799999	8.200000	8.799999	9.250000	9.650000
9.900000	8.900000	7.200000	6.299999	6.700000	5.400000	6.200000	6.799999	8.200000	8.799999
9.250000	9.650000	9.900000	8.900000	7.200000	6.299999	6.700000	5.400000	6.200000	6.799999
8.200000	8.799999	9.250000	9.650000	9.900000	8.900000	7.200000	6.299999	6.700000	5.400000
6.200000	6.799999	8.200000	8.799999	9.250000	9.650000	9.900000	8.900000	7.200000	6.299999
6.700000	5.400000	6.200000	6.799999	8.200000	8.799999	9.250000	9.650000	9.900000	8.900000
7.200000	6.299999	6.700000	5.400000	6.200000	6.799999	8.200000	8.799999	9.250000	9.650000
9.900000	8.900000	7.200000	6.299999	6.700000	5.400000	6.200000	6.799999	8.200000	8.799999
9.250000	9.650000	9.900000	8.900000	7.200000	6.299999	6.700000	5.400000	6.200000	6.799999
8.200000	8.799999	9.250000	9.650000	9.900000	8.900000	7.200000	6.299999	6.700000	5.400000
6.200000	6.799999	8.200000	8.799999	9.250000	9.650000	9.900000	8.900000	7.200000	6.299999
6.700000	5.400000	6.200000	6.799999	8.200000	8.799999	9.250000	9.650000	9.900000	8.900000
7.200000	6.299999	6.700000	5.400000	6.200000	6.799999	8.200000	8.799999	9.250000	9.650000
9.900000	8.900000	7.200000	6.299999	6.700000	5.400000	6.200000	6.799999	8.200000	8.799999

SATURATED WATER VAPOR PRESSURE, (PSI)

72.000000	2.000000	40.000000							
0.121700	0.131500	0.142000	0.153200	0.165200	0.178000	0.190800	0.206300	0.221900	0.238400
0.256100	0.274900	0.294900	0.316200	0.338800	0.362800	0.388300	0.415300	0.444000	0.474400
0.506700	0.540900	0.577200	0.615300	0.655500	0.698000	0.742900	0.790200	0.840300	0.893000
0.943700	1.007199	1.068899	1.133800	1.202000	1.273999	1.349999	1.429000	1.511999	1.599999
1.691999	1.787999	1.889000	1.995000	2.105000	2.221000	2.342999	2.469999	2.603000	2.742000
2.886999	3.039000	3.198000	3.363000	3.536300	3.716000	3.903999	4.099999	4.304999	4.518000

7.509999	7.849000	7.849000	7.849000	7.849000	7.849000	7.849000	7.849000	7.849000	7.849000
7.849000	7.849000	7.849000	7.849000	7.849000	7.849000	7.849000	7.849000	7.849000	7.849000
7.849000	7.849000	7.849000	7.849000	7.849000	7.849000	7.849000	7.849000	7.849000	7.849000

PRECIPITATION, (INCH/DATA PT. INTERVAL)

600.000000 30.000000 0.0

5.469999	4.750000	5.660000	5.000000	4.549999	3.259999	4.790000	3.080000	3.080000	2.679999
4.440000	5.259999	5.469999	4.750000	5.660000	5.000000	4.549999	3.259999	4.790000	3.080000
3.080000	2.679999	4.440000	5.259999	5.469999	4.750000	5.660000	5.000000	4.549999	3.259999
4.790000	3.080000	3.080000	2.679999	4.440000	5.259999	5.469999	4.750000	5.660000	5.000000
4.549999	3.259999	4.790000	3.080000	3.080000	2.679999	4.440000	5.259999	5.469999	4.750000
5.660000	5.000000	4.549999	3.259999	4.790000	3.080000	3.080000	2.679999	4.440000	5.259999
5.469999	4.750000	5.660000	5.000000	4.549999	3.259999	4.790000	3.080000	3.080000	2.679999
4.440000	5.259999	5.469999	4.750000	5.660000	5.000000	4.549999	3.259999	4.790000	3.080000
3.080000	2.679999	4.440000	5.259999	5.469999	4.750000	5.660000	5.000000	4.549999	3.259999
4.790000	3.080000	3.080000	2.679999	4.440000	5.259999	2.020000	2.110000	3.020000	1.740000
0.930000	0.570000	1.349999	0.530000	0.640000	0.370000	1.459999	1.879999	5.469999	4.750000
5.660000	5.000000	4.549999	3.259999	4.790000	3.080000	3.080000	2.679999	4.440000	5.259999
5.469999	4.750000	5.660000	5.000000	4.549999	3.259999	4.790000	3.080000	3.080000	2.679999
4.440000	5.259999	5.469999	4.750000	5.660000	5.000000	4.549999	3.259999	4.790000	3.080000
3.080000	2.679999	4.440000	5.259999	5.469999	4.750000	5.660000	5.000000	4.549999	3.259999
4.790000	3.080000	3.080000	2.679999	4.440000	5.259999	5.469999	4.750000	5.660000	5.000000
4.549999	3.259999	4.790000	3.080000	3.080000	2.679999	4.440000	5.259999	5.469999	4.750000
5.660000	5.000000	4.549999	3.259999	4.790000	3.080000	3.080000	2.679999	4.440000	5.259999
5.469999	4.750000	5.660000	5.000000	4.549999	3.259999	4.790000	3.080000	3.080000	2.679999
4.440000	5.259999	5.469999	4.750000	5.660000	5.000000	4.549999	3.259999	4.790000	3.080000
3.080000	2.679999	4.440000	5.259999	5.469999	4.750000	5.660000	5.000000	4.549999	3.259999
4.790000	3.080000	3.080000	2.679999	4.440000	5.259999	5.469999	4.750000	5.660000	5.000000
4.549999	3.259999	4.790000	3.080000	3.080000	2.679999	4.440000	5.259999	5.469999	4.750000
5.660000	5.000000	4.549999	3.259999	4.790000	3.080000	3.080000	2.679999	4.440000	5.259999
5.469999	4.750000	5.660000	5.000000	4.549999	3.259999	4.790000	3.080000	3.080000	2.679999
4.440000	5.259999	5.469999	4.750000	5.660000	5.000000	4.549999	3.259999	4.790000	3.080000
3.080000	2.679999	4.440000	5.259999	5.469999	4.750000	5.660000	5.000000	4.549999	3.259999
4.790000	3.080000	3.080000	2.679999	4.440000	5.259999	5.469999	4.750000	5.660000	5.000000
4.549999	3.259999	4.790000	3.080000	3.080000	2.679999	4.440000	5.259999	5.469999	4.750000
5.660000	5.000000	4.549999	3.259999	4.790000	3.080000	3.080000	2.679999	4.440000	5.259999
5.469999	4.750000	5.660000	5.000000	4.549999	3.259999	4.790000	3.080000	3.080000	2.679999
4.440000	5.259999	5.469999	4.750000	5.660000	5.000000	4.549999	3.259999	4.790000	3.080000
3.080000	2.679999	4.440000	5.259999	5.469999	4.750000	5.660000	5.000000	4.549999	3.259999
4.790000	3.080000	3.080000	2.679999	4.440000	5.259999	5.469999	4.750000	5.660000	5.000000
4.549999	3.259999	4.790000	3.080000	3.080000	2.679999	4.440000	5.259999	5.469999	4.750000
5.660000	5.000000	4.549999	3.259999	4.790000	3.080000	3.080000	2.679999	4.440000	5.259999
5.469999	4.750000	5.660000	5.000000	4.549999	3.259999	4.790000	3.080000	3.080000	2.679999
4.440000	5.259999	5.469999	4.750000	5.660000	5.000000	4.549999	3.259999	4.790000	3.080000
3.080000	2.679999	4.440000	5.259999	5.469999	4.750000	5.660000	5.000000	4.549999	3.259999
4.790000	3.080000	3.080000	2.679999	4.440000	5.259999	5.469999	4.750000	5.660000	5.000000
4.549999	3.259999	4.790000	3.080000	3.080000	2.679999	4.440000	5.259999	5.469999	4.750000
5.660000	5.000000	4.549999	3.259999	4.790000	3.080000	3.080000	2.679999	4.440000	5.259999
5.469999	4.750000	5.660000	5.000000	4.549999	3.259999	4.790000	3.080000	3.080000	2.679999
4.440000	5.259999	5.469999	4.750000	5.660000	5.000000	4.549999	3.259999	4.790000	3.080000
3.080000	2.679999	4.440000	5.259999	5.469999	4.750000	5.660000	5.000000	4.549999	3.259999
4.790000	3.080000	3.080000	2.679999	4.440000	5.259999	5.469999	4.750000	5.660000	5.000000
4.549999	3.259999	4.790000	3.080000	3.080000	2.679999	4.440000	5.259999	5.469999	4.750000
5.660000	5.000000	4.549999	3.259999	4.790000	3.080000	3.080000	2.679999	4.440000	5.259999
5.469999	4.750000	5.660000	5.000000	4.549999	3.259999	4.790000	3.080000	3.080000	2.679999

3.080000	2.679999	4.440000	5.259999	5.469999	4.750000	5.660000	5.000000			
4.790000	3.080000	3.080000	2.679999	4.440000	5.259999	5.469999	4.750000	5.660000	5.000000	
4.549999	3.259999	4.790000	3.080000	3.080000	2.679999	4.440000	5.259999	5.469999	4.750000	
5.660000	5.000000	4.549999	3.259999	4.790000	3.080000	3.080000	2.679999	4.440000	5.259999	

MTRY TSTEP

400.000000 5.000000

ITERATION PARAMETERS - HK

1.000000 0.500000 0.250000 0.125000 0.062500

CONVERGENCE CRITERIA

TOLW	TOLG	PMCHW	PMCHG
0.0360	0.0360	0.0360	0.0360

TOLW = MAX WAT PHASE RESID TOLG IS MAX GAS PHASE RESID

PMCHW = MAX CHANGE IN WAT PHASE PRESS PMCHG = MAX CHANGE IN GAS PHASE PRESS ALLOWED

DELTA TIME(DT) = 0.1000 MAX TIME = 18000.00 TIMA = 100.00 TIMB = 999.00 TIMC = 15.00

TIMA SETS TIME LIMIT FOR DT TO BE DTMAX, TIMB SET TIME LIMIT FOR DO TO BE TIMC.

SEASONAL TRANSPIRATION FUNCTION CONSTANTS, QTA= 1.4000 QTB= 2.0000 QTC= 0.6800

DRAINAGE FUNCTION CONSTANT, QDC= 1.0000

RESTAR NC.	IT NO.	DELT DAY	TIME DAY	ROOT PCT. PSI	LEAF PCT.	SUPPLY F.	POT. EVAP LBM/DY-SQ.FT.	EVAPORATION	TRANSPIRATION	CUM.EVAP. LBM	CUM.TRAN.
0.	0.	0.100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

MATERIAL BALANCE RESULTS

	AAAA (1)	RESW (2)	CCCC (3)	AW (4)	EEEE (5)	GGGG (2-3)/5	ACW (5-2)/3
W. PHASE	0.0	0.215355D 03	0.0	0.215355D 03	0.215355D 03	0.100000D 01	0.0
	BBBB (1)	RESG (2)	DDDD (3)	AG (4)	FFFF (5)	HHHH (2-3)/5	ACG (5-2)/3
NON W. PHASE	0.0	0.772975D-01	0.0	0.772975D-01	0.772975D-01	0.100000D 01	0.0

XLOC FT.	PKEY NO.	PWIN PSI	PGIN	EVAPORATION LBM/SQ FT-DY	TRANSPIRATION	QW	QG	PW PSI	PG	SATURATION CFT/CFT P.
0.0	5.	0.0	0.14700 02	0.0	0.0	0.0	0.0	-0.5678D 01	0.1470D 02	0.7685D 00
1.00	1.	0.0	0.0	0.0	0.0	0.0	0.0	-0.5678D 01	0.1470D 02	0.7685D 00
2.00	1.	0.0	0.0	0.0	0.0	0.0	0.0	-0.5677D 01	0.1470D 02	0.7685D 00
3.00	1.	0.0	0.0	0.0	0.0	0.0	0.0	-0.5677D 01	0.1470D 02	0.7685D 00
4.00	1.	0.0	0.0	0.0	0.0	0.0	0.0	-0.5676D 01	0.1470D 02	0.7685D 00
5.00	1.	0.0	0.0	0.0	0.0	0.0	0.0	-0.5676D 01	0.1470D 02	0.7685D 00
6.00	1.	0.0	0.0	0.0	0.0	0.0	0.0	-0.5675D 01	0.1470D 02	0.7685D 00
7.00	1.	0.0	0.0	0.0	0.0	0.0	0.0	-0.5675D 01	0.1470D 02	0.7685D 00
8.00	1.	0.0	0.0	0.0	0.0	0.0	0.0	-0.5674D 01	0.1470D 02	0.7685D 00
9.00	4.	0.0	0.0	0.0	0.0	0.0	0.0	-0.5674D 01	0.1470D 02	0.7685D 00

RESTAR NC.	IT NO.	DELT DAY	TIME DAY	ROOT PCT. PSI	LEAF POT.	SUPPLY F.	POT. EVAP LBM/DY-SQ.FT.	EVAPORATION	TRANSPIRATION	CUM.EVAP. LBM	CUM.TRAN.
1.	4.	0.110	0.11	-.7049E 01	-.7470E 01	0.3082E 02	0.1178E 01	0.8515E-02	0.5763E-01	0.9367E-03	0.6340E-02
2.	3.	0.121	0.23	-.7022E 01	-.7443E 01	0.3083E 02	0.1178E 01	0.8515E-02	0.5763E-01	0.1967E-02	0.1331E-01

MATERIAL BALANCE RESULTS

	AAAA (1)	RESW (2)	CCCC (3)	AW (4)	EEEE (5)	GGGG (2-3)/5	ACW (5-2)/3
W. PHASE	0.100801D 00	0.215540D 03	0.192463D 00	0.215347D 03	0.215355D 03	0.999963D 00	-0.958353D 00
	BBBB (1)	RESG (2)	DDDD (3)	AG (4)	FFFF (5)	HHHH (2-3)/5	ACG (5-2)/3
NON W. PHASE	-0.733516D-04	0.772147D-01	-0.113138D-03	0.773279D-01	0.772975D-01	0.100039D 01	-0.731168D 00

XLOC FT.	PKEY NO.	PWIN PSI	PGIN	EVAPORATION LBM/SQ FT-DY	TRANSPIRATION	QW	QG	PW PSI	PG	SATURATION CFT/CFT P.
0.0	5.	0.0	0.1470D 02	0.8515D-02	0.6519D-01	0.8724D 00	-0.5736D-03	-0.5389D 01	0.1479D 02	0.7805D 00
1.00	1.	0.0	0.0	0.0	0.7502D-01	-0.7502D-01	0.0	-0.5627D 01	0.1476D 02	0.7680D 00

RESTAR IT NO.	NO.	DELT DAY	TIME DAY	PSI		LBM/DY-SQ.FT.			LBM	
51.	3.	15.000	150.62	-.6778E 01	-.1316E 02	0.3083E 02	0.8612E 00	0.6460E-02	0.8726E 00	0.1517E 01	0.1063E 03
52.	3.	15.000	165.62	-.6849E 01	-.1292E 02	0.3080E 02	0.8133E 00	0.6146E-02	0.8298E 00	0.1609E 01	0.1187E 03

MATERIAL BALANCE RESULTS

	AAAA (1)	RESW (2)	CCCC (3)	AW (4)	EEEE (5)	GGGG (2-3)/5	ACW (5-2)/3
W. PHASE	-0.4043720 01	0.2162960 03	-0.5970720 01	0.2222660 03	0.2153550 03	0.1032090 01	0.1575010 00
	BBBB (1)	RESG (2)	DDDD (3)	AG (4)	FFFF (5)	HHHH (2-3)/5	ACG (5-2)/3
NON W. PHASE	0.1714420-02	0.7742940-01	0.1402910-01	0.6340030-01	0.7729750-01	0.8202120 00	-0.9403790-02

XLOC FT.	PKEY NO.	PWIN PSI	PGIN	EVAPORATION LBM/SQ	TRANSPIRATION FT-DY	QW	QG	PW PSI	PG	SATURATION CFT/CFT P.
0.0	5.	0.0	0.1470D 02	0.6146C-02	0.5489D 00	0.8852D-02	-0.8111D-03	-0.6077D 01	0.1470D 02	0.6832D 00
1.00	1.	0.0	0.0	0.0	0.1028D 00	-0.1028D 00	0.0	-0.6329D 01	0.1474D 02	0.5951D 00
2.00	1.	0.0	0.0	0.0	0.4796D-01	-0.4796D-01	0.0	-0.5953D 01	0.1478D 02	0.6957D 00
3.00	1.	0.0	0.0	0.0	0.2942D-01	-0.2942D-01	0.0	-0.5549D 01	0.1485D 02	0.7672D 00
4.00	1.	0.0	0.0	0.0	0.2272D-01	-0.2272D-01	0.0	-0.5116D 01	0.1494D 02	0.7881D 00
5.00	1.	0.0	0.0	0.0	0.2674D-01	-0.2674D-01	0.0	-0.4681D 01	0.1503D 02	0.8087D 00
6.00	1.	0.0	0.0	0.0	0.1767D-01	-0.1767D-01	0.0	-0.4242D 01	0.1513D 02	0.8273D 00
7.00	1.	0.0	0.0	0.0	0.2159D-01	-0.2159D-01	0.0	-0.3802D 01	0.1525D 02	0.8394D 00
8.00	1.	0.0	0.0	0.0	0.9129D-02	-0.9129D-02	0.0	-0.3341D 01	0.1537D 02	0.8519D 00
9.00	4.	-0.6759D 01	0.1550D 02	0.0	0.2970D-02	-0.4494D-03	0.9254D-03	-0.2884D 01	0.1551D 02	0.8639D 00

TIME1.LE.IT SETS FINAL=2. TIME2.LE.IT GOES TO 92 TO SET FINAL=2. TIME3 GIVES TIME LEFT AFTER TAPE IS WRITTEN.

TIME1 (SEC) = 144 TIME2 (SEC) = 144 TIME3 (SEC) = 143

RESTAR IT NO.	DELT NO.	TIME DAY	RCOT PCT. PSI	LEAF PCT.	SUPPLY F.	POT. EVAP LBM/DY-SQ.FT.	EVAPORATION	TRANSPIRATION	CUM.EVAP. LBM	CUM.TRAN.
53.	2.	15.000	180.62	-.6849E 01	-.1168E 02	0.3078E 02	0.6314E 00	0.4898E-02	0.6606E 00	0.1682E 01	0.1287E 03
54.	4.	15.000	195.62	-.6703E 01	-.1024E 02	0.3080E 02	0.4408E 00	0.3590E-02	0.4833E 00	0.1736E 01	0.1359E 03

MATERIAL BALANCE RESULTS

	AAAA (1)	RESW (2)	CCCC (3)	AW (4)	EEEE (5)	GGGG (2-3)/5	ACW (5-2)/3
W. PHASE	0.5114050 01	0.2200300 03	-0.2616970 00	0.2202920 03	0.2153550 03	0.1022920 01	0.1786250 02
	BBBB (1)	RESG (2)	DDDD (3)	AG (4)	FFFF (5)	HHHH (2-3)/5	ACG (5-2)/3
NON W. PHASE	-0.8852490-03	0.7297140-01	0.1304310-01	0.5992830-01	0.7729750-01	0.7752940 00	0.3316760 00

XLOC FT.	PKEY NO.	PWIN PSI	PGIN	EVAPORATION LBM/SQ	TRANSPIRATION FT-DY	QW	QG	PW PSI	PG	SATURATION CFT/CFT P.
0.0	5.	0.0	0.1470D 02	0.3590C-02	0.6950D 00	0.1299D 00	-0.9836D-03	-0.5702D 01	0.1470D 02	0.7670D 00
1.00	1.	0.0	0.0	0.0	0.5892D-02	-0.5892D-02	0.0	-0.6245D 01	0.1475D 02	0.6185D 00
2.00	1.	0.0	0.0	0.0	-0.5640D-01	0.5640D-01	0.0	-0.5877D 01	0.1478D 02	0.7174D 00
3.00	1.	0.0	0.0	0.0	-0.4002D-01	0.4002D-01	0.0	-0.5413D 01	0.1485D 02	0.7753D 00
4.00	1.	0.0	0.0	0.0	-0.3032D-01	0.3032D-01	0.0	-0.4983D 01	0.1494D 02	0.7958D 00
5.00	1.	0.0	0.0	0.0	-0.3431D-01	0.3431D-01	0.0	-0.4552D 01	0.1504D 02	0.8160D 00
6.00	1.	0.0	0.0	0.0	-0.2111D-01	0.2111D-01	0.0	-0.4125D 01	0.1514D 02	0.8314D 00
7.00	1.	0.0	0.0	0.0	-0.2427D-01	0.2427D-01	0.0	-0.3698D 01	0.1526D 02	0.8430D 00
8.00	1.	0.0	0.0	0.0	-0.8751D-02	0.8751D-02	0.0	-0.3287D 01	0.1538D 02	0.8538D 00
9.00	4.	-0.6777D 01	0.1550D 02	0.0	-0.2432D-02	0.1757D-02	0.9246D-03	-0.2867D 01	0.1551D 02	0.8645D 00

TIME1.LE.IT SETS FINAL=2. TIME2.LE.IT GOES TO 92 TO SET FINAL=2. TIME3 GIVES TIME LEFT AFTER TAPE IS WRITTEN.

TIME1 (SEC) = 143 TIME2 (SEC) = 143 TIME3 (SEC) = 140

RESTAR IT NO.	DELT NO.	TIME DAY	RCOT PCT. PSI	LEAF PCT.	SUPPLY F.	POT. EVAP	EVAPORATION	TRANSPIRATION	CUM.EVAP.	CUM.TRAN.

NC.	NC.	DAY	DAY	PSI							
55.	2.	15.000	210.62	-.6643E 01	-.9854E 01	0.3084E 02	0.3999E 00	0.3263E-02	0.4392E 00	0.1785E 01	0.1425E 03
56.	2.	15.000	225.62	-.6610E 01	-.9529E 01	0.3085E 02	0.3630E 00	0.2966E-02	0.3994E 00	0.1829E 01	0.1485E 03

MATERIAL BALANCE RESULTS

	AAAA (1)	RESW (2)	CCCC (3)	AW (4)	EEEE (5)	GGGG (2-3)/5	ACW (5-2)/3
W. PHASE	0.188930D 01	0.222160D 03	0.506756D 01	0.217093D 03	0.215355D 03	0.100807D 01	-0.134286D 01
	BBBB (1)	RESG (2)	DDDD (3)	AG (4)	FFFF (5)	HHHH (2-3)/5	ACG (5-2)/3
NCN W. PHASE	0.158772D-02	0.704020D-01	0.154474D-01	0.549608D-01	0.772975D-01	0.711029D 00	0.445983D 00

XLOC FT.	PKEY NC.	PWIN PSI	PGIN	EVAPORATION	TRANSPIRATION LBM/SQ FT-DY	QW	QG	PW PSI	PG	SATURATION CFT/CFT P.
0.0	5.	0.0	0.1470D 02	0.2966D-02	0.5056D 00	0.2424D-01	-0.7851D-03	-0.5941D 01	0.1470D 02	0.7240D 00
1.00	1.	0.0	0.0	0.0	0.1822D-01	-0.1822D-01	0.0	-0.6148D 01	0.1475D 02	0.6476D 00
2.00	1.	0.0	0.0	0.0	-0.2837D-01	0.2837D-01	0.0	-0.5761D 01	0.1479D 02	0.7507D 00
3.00	1.	0.0	0.0	0.0	-0.1479D-01	0.1479D-01	0.0	-0.5314D 01	0.1486D 02	0.7808D 00
4.00	1.	0.0	0.0	0.0	-0.1466D-01	0.1466D-01	0.0	-0.4884D 01	0.1494D 02	0.8016D 00
5.00	1.	0.0	0.0	0.0	-0.1848D-01	0.1848D-01	0.0	-0.4453D 01	0.1504D 02	0.8218D 00
6.00	1.	0.0	0.0	0.0	-0.1448D-01	0.1448D-01	0.0	-0.4028D 01	0.1514D 02	0.8349D 00
7.00	1.	0.0	0.0	0.0	-0.1958D-01	0.1958D-01	0.0	-0.3605D 01	0.1526D 02	0.8464D 00
8.00	1.	0.0	0.0	0.0	-0.1029D-01	0.1029D-01	0.0	-0.3211D 01	0.1538D 02	0.8565D 00
9.00	4.	-0.6723D 01	0.1550D 02	0.0	-0.3727D-02	-0.7314D-03	0.8909D-03	-0.2814D 01	0.1551D 02	0.8661D 00

TIME1.LE.IT SETS FINAL=2. TIME2.LE.IT GOES TO 52 TO SET FINAL=2. TIME3 GIVES TIME LEFT AFTER TAPE IS WRITTEN.

TIME1 (SEC) = 139 TIME2 (SEC) = 139 TIME3 (SEC) = 138

RESTAR NC.	IT NC.	DELT DAY	TIME DAY	ROOT POT. PSI	LEAF POT.	SUPPLY F.	POT. EVAP LBM/DY-SQ.FT.	EVAPORATION	TRANSPIRATION	CUM.EVAP. LBM	CUM.TRAN.
57.	2.	15.000	240.62	-.6573E 01	-.8554E 01	0.3086E 02	0.2877E 00	0.2421E-02	0.3257E 00	0.1866E 01	0.1534E 03
58.	3.	15.000	255.62	-.6485E 01	-.8211E 01	0.3088E 02	0.2288E 00	0.1993E-02	0.2361E 00	0.1896E 01	0.1569E 03

MATERIAL BALANCE RESULTS

	AAAA (1)	RESW (2)	CCCC (3)	AW (4)	EEEE (5)	GGGG (2-3)/5	ACW (5-2)/3
W. PHASE	0.432471D 01	0.225272D 03	0.123831D 02	0.212889D 03	0.215355D 03	0.988546D 00	-0.800795D 00
	BBBB (1)	RESG (2)	DDDD (3)	AG (4)	FFFF (5)	HHHH (2-3)/5	ACG (5-2)/3
NCN W. PHASE	0.170592D-02	0.666892D-01	0.167221D-01	0.479671D-01	0.772975D-01	0.620553D 00	0.566615D 00

XLOC FT.	PKEY NC.	PWIN PSI	PGIN	EVAPORATION	TRANSPIRATION LBM/SQ FT-DY	QW	QG	PW PSI	PG	SATURATION CFT/CFT P.
0.0	5.	0.0	0.1470D 02	0.1993D-02	0.4263D 00	0.1045D 00	-0.7542D-03	-0.5786D 01	0.1470D 02	0.7620D 00
1.00	1.	0.0	0.0	0.0	-0.1224D-02	0.1224D-02	0.0	-0.6033D 01	0.1475D 02	0.6810D 00
2.00	1.	0.0	0.0	0.0	-0.3030D-01	0.3030D-01	0.0	-0.5622D 01	0.1480D 02	0.7660D 00
3.00	1.	0.0	0.0	0.0	-0.3289D-01	0.3289D-01	0.0	-0.5190D 01	0.1487D 02	0.7876D 00
4.00	1.	0.0	0.0	0.0	-0.2766D-01	0.2766D-01	0.0	-0.4762D 01	0.1495D 02	0.8084D 00
5.00	1.	0.0	0.0	0.0	-0.3189D-01	0.3189D-01	0.0	-0.4331D 01	0.1505D 02	0.8273D 00
6.00	1.	0.0	0.0	0.0	-0.2139D-01	0.2139D-01	0.0	-0.3911D 01	0.1515D 02	0.8391D 00
7.00	1.	0.0	0.0	0.0	-0.2741D-01	0.2741D-01	0.0	-0.3492D 01	0.1526D 02	0.8504D 00
8.00	1.	0.0	0.0	0.0	-0.1280D-01	0.1280D-01	0.0	-0.3108D 01	0.1538D 02	0.8602D 00
9.00	4.	-0.6644D 01	0.1550D 02	0.0	-0.4633D-02	-0.1702D-02	0.8680D-03	-0.2723D 01	0.1551D 02	0.8686D 00

TIME1.LE.IT SETS FINAL=2. TIME2.LE.IT GOES TO 52 TO SET FINAL=2. TIME3 GIVES TIME LEFT AFTER TAPE IS WRITTEN.

TIME1 (SEC) = 138 TIME2 (SEC) = 138 TIME3 (SEC) = 135

RESTAR NC.	IT NC.	DELT DAY	TIME DAY	ROOT POT. PSI	LEAF POT.	SUPPLY F.	POT. EVAP LBM/DY-SQ.FT.	EVAPORATION	TRANSPIRATION	CUM.EVAP. LBM	CUM.TRAN.

59.	7.	15.000	270.62	-.6350E 01	-.7991E 01	0.3092E 02	0.6028E 00	0.4990E-02	0.2244E 00	0.1903E 01	0.1609E 03
60.	18.	15.000	285.62	-.5657E 01	-.6181E 01	0.3101E 02	0.8882E 00	0.6569E-02	0.4441E-01	0.2063E 01	0.1609E 03

MATERIAL BALANCE RESULTS

	AAAA (1)	RESW (2)	CCCC (3)	AW (4)	EEEE (5)	GGGG (2-3)/5	ACW (5-2)/3
W. PHASE	0.6029460 01	0.2330990 03	0.2232140 02	0.2107780 03	0.2153550 03	0.9787450 00	-0.7949290 00
	BBBB (1)	RESG (2)	DDDD (3)	AG (4)	FFFF (5)	HHHH (2-3)/5	ACG (5-2)/3
NON W. PHASE	-0.4934420-02	0.5748490-01	0.1287770-01	0.4460720-01	0.7729750-01	0.5770850 00	0.1538510 01

XLOC FT.	PKEY NO.	PWIN PSI	PGIN	EVAPORATION	TRANSPIRATION	QW	QG	PW PSI	PG	SATURATION CFT/CFT P.
				LBM/SQ FT-DY						
0.0	5.	0.0	0.1470D 02	0.6569D-02	0.1131D 00	0.3439D 00	-0.1071D-02	-0.3175D 01	0.1471D 02	0.8782D 00
1.00	1.	0.0	0.0	0.0	0.2321D-01	-0.2321D-01	0.0	-0.5075D 01	0.1480D 02	0.7991D 00
2.00	1.	0.0	0.0	0.0	-0.1008D-01	0.1008D-01	0.0	-0.5152D 01	0.1486D 02	0.7904D 00
3.00	1.	0.0	0.0	0.0	-0.1969D-01	0.1969D-01	0.0	-0.4866D 01	0.1494D 02	0.8031D 00
4.00	1.	0.0	0.0	0.0	-0.1650D-01	0.1650D-01	0.0	-0.4494D 01	0.1502D 02	0.8207D 00
5.00	1.	0.0	0.0	0.0	-0.1830D-01	0.1830D-01	0.0	-0.4084D 01	0.1511D 02	0.8343D 00
6.00	1.	0.0	0.0	0.0	-0.1045D-01	0.1045D-01	0.0	-0.3702D 01	0.1520D 02	0.8450D 00
7.00	1.	0.0	0.0	0.0	-0.1202D-01	0.1202D-01	0.0	-0.3323D 01	0.1530D 02	0.8553D 00
8.00	1.	0.0	0.0	0.0	-0.3796D-02	0.3796D-02	0.0	-0.2975D 01	0.1541D 02	0.8642D 00
9.00	4.	-0.6514D 01	0.1551D 02	0.0	-0.1098D-02	-0.9526D-02	0.7417D-03	-0.2621D 01	0.1552D 02	0.8711D 00

TIME1.LE.IT SETS FINAL=2. TIME2.LE.IT GOES TO 92 TO SET FINAL=2. TIME3 GIVES TIME LEFT AFTER TAPE IS WRITTEN.

TIME1 (SEC) = 132 TIME2 (SEC) = 132 TIME3 (SEC) = 126

RESTAR NO.	IT NO.	DELT DAY	TIME DAY	ROOT POT. PSI	LEAF PCT.	SUPPLY F.	POT. EVAP LBM/DY-SQ.FT.	EVAPORATION	TRANSPIRATION	CUM.EVAP. LBM	CUM.TRAN.
61.	23.	15.000	300.62	-.4844E 01	-.5208E 01	0.3120E 02	0.1006E 01	0.7372E-02	0.4986E-01	0.2174E 01	0.1617E 03
62.	19.	15.000	315.62	-.3567E 01	-.4357E 01	0.3137E 02	0.1083E 01	0.7883E-02	0.5332E-01	0.2292E 01	0.1625E 03

MATERIAL BALANCE RESULTS

	AAAA (1)	RESW (2)	CCCC (3)	AW (4)	EEEE (5)	GGGG (2-3)/5	ACW (5-2)/3
W. PHASE	0.7584570 01	0.2453820 03	0.3803760 02	0.2073450 03	0.2153550 03	0.9628020 00	-0.7893980 00
	BBBB (1)	RESG (2)	DDDD (3)	AG (4)	FFFF (5)	HHHH (2-3)/5	ACG (5-2)/3
NON W. PHASE	-0.4419520-02	0.4291350-01	0.1941170-02	0.4097230-01	0.7729750-01	0.5300600 00	0.1771310 02

XLOC FT.	PKEY NO.	PWIN PSI	PGIN	EVAPORATION	TRANSPIRATION	QW	QG	PW PSI	PG	SATURATION CFT/CFT P.
				LBM/SQ FT-DY						
0.0	5.	0.0	0.1470D 02	0.7883D-02	0.2091D 00	0.3905D 00	-0.8364D-03	-0.4881D 00	0.1470D 02	0.9337D 00
1.00	1.	0.0	0.0	0.0	0.1081D 00	-0.1081D 00	0.0	-0.2431D 01	0.1488D 02	0.8941D 00
2.00	1.	0.0	0.0	0.0	-0.8745D-02	0.8745D-02	0.0	-0.3201D 01	0.1499D 02	0.8697D 00
3.00	1.	0.0	0.0	0.0	-0.4979D-01	0.4979D-01	0.0	-0.3364D 01	0.1508D 02	0.8619D 00
4.00	1.	0.0	0.0	0.0	-0.4927D-01	0.4927D-01	0.0	-0.3260D 01	0.1516D 02	0.8628D 00
5.00	1.	0.0	0.0	0.0	-0.6035D-01	0.6035D-01	0.0	-0.3035D 01	0.1524D 02	0.8674D 00
6.00	1.	0.0	0.0	0.0	-0.3617D-01	0.3617D-01	0.0	-0.2840D 01	0.1532D 02	0.8750D 00
7.00	1.	0.0	0.0	0.0	-0.4237D-01	0.4237D-01	0.0	-0.2624D 01	0.1540D 02	0.8743D 00
8.00	1.	0.0	0.0	0.0	-0.1336D-01	0.1336D-01	0.0	-0.2504D 01	0.1548D 02	0.8753D 00
9.00	4.	-0.6261D 01	0.1556D 02	0.0	-0.3870D-02	-0.3673D-01	0.5418D-03	-0.2364D 01	0.1557D 02	0.8768D 00

TIME1.LE.IT SETS FINAL=2. TIME2.LE.IT GOES TO 92 TO SET FINAL=2. TIME3 GIVES TIME LEFT AFTER TAPE IS WRITTEN.

TIME1 (SEC) = 126 TIME2 (SEC) = 126 TIME3 (SEC) = 110

RESTAR NO.	IT NO.	DELT DAY	TIME DAY	ROOT PCT. PSI	LEAF PCT.	SUPPLY F.	POT. EVAP LBM/DY-SQ.FT.	EVAPORATION	TRANSPIRATION	CUM.EVAP. LBM	CUM.TRAN.

63.	18.	15.000	330.62	-.3268E 01	-.3618E 01	0.3153E 02	0.8952E 00	0.6529E-02	0.4417E-01	0.2496E 01	0.1639E 03
64.	20.	15.000	345.62	-.2565E 01	-.2888E 01	0.3162E 02	0.8952E 00	0.6529E-02	0.4417E-01	0.2496E 01	0.1639E 03

MATERIAL BALANCE RESULTS

	AAAA (1)	RESW (2)	CCCC (3)	AW (4)	EEEE (5)	GGGG (2-3)/5	ACW (5-2)/3
W. PHASE	0.6273280 C1	0.2533250 C3	0.5054470 02	0.2023800 03	0.2153550 03	0.9397510 00	-0.7451140 00
	BBBB (1)	RESG (2)	DDDD (3)	AG (4)	FFFF (5)	HHHH (2-3)/5	ACG (5-2)/3
NON W. PHASE	-0.2809610-02	0.3333380-01	-0.4040270-02	0.3737410-01	0.7729750-01	0.4835100 00	-0.1088140 02

XLOC FT.	PKEY NO.	PWIN PSI	PGIN	EVAPORATION LBM/SQ FT-DY	TRANSPIRATION	QW	QG	PW PSI	PG	SATURATION CFT/CFT P.
0.0	5.	0.0	0.1470D 02	0.6529D-02	0.1946D 00	0.3523D 00	-0.6161D-03	0.4731D 00	0.1470D 02	0.9474D 00
1.00	1.	0.0	0.0	0.0	0.1201D 00	-0.1201D 00	0.0	-0.1052D 01	0.1493D 02	0.9191D 00
2.00	1.	0.0	0.0	0.0	0.7370D-02	-0.7370D-02	0.0	-0.1580D 01	0.1505D 02	0.9069D 00
3.00	1.	0.0	0.0	0.0	-0.3915D-01	0.3915D-01	0.0	-0.1727D 01	0.1516D 02	0.9023D 00
4.00	1.	0.0	0.0	0.0	-0.4789D-01	0.4789D-01	0.0	-0.1702D 01	0.1526D 02	0.9010D 00
5.00	1.	0.0	0.0	0.0	-0.6658D-01	0.6658D-01	0.0	-0.1615D 01	0.1535D 02	0.9009D 00
6.00	1.	0.0	0.0	0.0	-0.4403D-01	0.4403D-01	0.0	-0.1606D 01	0.1543D 02	0.8995D 00
7.00	1.	0.0	0.0	0.0	-0.5590D-01	0.5590D-01	0.0	-0.1623D 01	0.1551D 02	0.8977D 00
8.00	1.	0.0	0.0	0.0	-0.1872D-01	0.1872D-01	0.0	-0.1789D 01	0.1559D 02	0.8923D 00
9.00	4.	-0.5843D 01	0.1565D 02	0.0	-0.5652D-02	-0.7885D-01	0.4288D-03	-0.1941D 01	0.1566D 02	0.8860D 00

TIME1.LE.IT SETS FINAL=2. TIME2.LE.IT GOES TO 92 TO SET FINAL=2. TIME3 GIVES TIME LEFT AFTER TAPE IS WRITTEN.

TIME1 (SEC) = 104 TIME2 (SEC) = 104 TIME3 (SEC) = 96

RESTART NO.	IT NO.	DELT DAY	TIME DAY	RCOT PCT. PSI	LEAF POT.	SUPPLY F.	POT. EVAP LBM/DY-SQ.FT.	EVAPORATION	TRANSPIRATION	CUM.EVAP. LBM	CUM.TRAN.
65.	13.	15.000	360.62	-.2191E 01	-.2565E 01	0.3169E 02	0.1042E 01	0.7562E-02	0.5117E-01	0.2609E 01	0.1646E 03
66.	10.	15.000	375.62	-.1916E 01	-.2338E 01	0.3174E 02	0.1178E 01	0.8523E-02	0.5768E-01	0.2737E 01	0.1655E 03

53

MATERIAL BALANCE RESULTS

	AAAA (1)	RESW (2)	CCCC (3)	AW (4)	EEEE (5)	GGGG (2-3)/5	ACW (5-2)/3
W. PHASE	0.4642880 C1	0.2568820 03	0.6047780 02	0.1964050 03	0.2153550 03	0.9120030 00	-0.6866500 00
	BBBB (1)	RESG (2)	DDDD (3)	AG (4)	FFFF (5)	HHHH (2-3)/5	ACG (5-2)/3
NON W. PHASE	-0.6044830-03	0.2900200-01	-0.5614600-02	0.3461660-01	0.7729750-01	0.4478360 00	-0.8601770 01

XLOC FT.	PKEY NO.	PWIN PSI	PGIN	EVAPORATION LBM/SQ FT-DY	TRANSPIRATION	QW	QG	PW PSI	PG	SATURATION CFT/CFT P.
0.0	5.	0.0	0.1470D 02	0.8523E-02	0.1747D 00	0.3090D 00	-0.4149D-03	0.7330D 00	0.1470D 02	0.9508D 00
1.00	1.	0.0	0.0	0.0	0.1171D 00	-0.1171D 00	0.0	-0.4950D 00	0.1495D 02	0.9289D 00
2.00	1.	0.0	0.0	0.0	0.1515D-01	-0.1515D-01	0.0	-0.8492D 00	0.1509D 02	0.9199D 00
3.00	1.	0.0	0.0	0.0	-0.2692D-01	0.2692D-01	0.0	-0.8945D 00	0.1520D 02	0.9170D 00
4.00	1.	0.0	0.0	0.0	-0.3887D-01	0.3887D-01	0.0	-0.8194D 00	0.1530D 02	0.9166D 00
5.00	1.	0.0	0.0	0.0	-0.5935D-01	0.5935D-01	0.0	-0.7393D 00	0.1539D 02	0.9162D 00
6.00	1.	0.0	0.0	0.0	-0.4188D-01	0.4188D-01	0.0	-0.7568D 00	0.1549D 02	0.9142D 00
7.00	1.	0.0	0.0	0.0	-0.5639D-01	0.5639D-01	0.0	-0.8589D 00	0.1557D 02	0.9107D 00
8.00	1.	0.0	0.0	0.0	-0.1974D-01	0.1974D-01	0.0	-0.1154D 01	0.1565D 02	0.9038D 00
9.00	4.	-0.5412D 01	0.1571D 02	0.0	-0.6201D-02	-0.1104D 00	0.3746D-03	-0.1499D 01	0.1573D 02	0.8960D 00

TIME1.LE.IT SETS FINAL=2. TIME2.LE.IT GOES TO 92 TO SET FINAL=2. TIME3 GIVES TIME LEFT AFTER TAPE IS WRITTEN.

TIME1 (SEC) = 96 TIME2 (SEC) = 96 TIME3 (SEC) = 87

RESTART NO.	IT NO.	DELT DAY	TIME DAY	RCOT PCT. PSI	LEAF POT.	SUPPLY F.	POT. EVAP LBM/DY-SQ.FT.	EVAPORATION	TRANSPIRATION	CUM.EVAP. LBM	CUM.TRAN.
67.	6.	15.000	390.62	-.1787E 01	-.2269E 01	0.3177E 02	0.1348E 01	0.9728E-02	0.6583E-01	0.2883E 01	0.1665E 03

MATERIAL BALANCE RESULTS

	AAAA (1)	RESW (2)	CCCC (3)	AW (4)	EEEE (5)	GGGG (2-3)/5	ACW (5-2)/3
W. PHASE	0.3064740 01	0.2583830 03	0.6714100 02	0.1912420 03	0.2153550 03	0.8880320 00	-0.6408620 00
	BBBB (1)	RESG (2)	DDDD (3)	AG (4)	FFFF (5)	HHHH (2-3)/5	ACG (5-2)/3
NON W. PHASE	-0.2699150-03	0.2715200-01	-0.6144130-02	0.3329620-01	0.7729750-01	0.4307540 00	-0.8161520 01

XLOC FT.	PKEY NO.	PWIN PSI	PGIN	EVAPORATION LBM/SQ	TRANSPIRATION FT-DY	QW	QG	PW	PG PSI	SATURATION CFT/CFT P.
0.0	5.	0.0	0.1470D 02	0.1108D-01	0.1562D 00	0.2419D 00	-0.3356D-03	0.6291D 00	0.1470D 02	0.9496D 00
1.00	1.	0.0	0.0	0.0	0.1146D 00	-0.1146D 00	0.0	-0.3392D 00	0.1496D 02	0.9317D 00
2.00	1.	0.0	0.0	0.0	0.2119D-01	-0.2119D-01	0.0	-0.5882D 00	0.1509D 02	0.9246D 00
3.00	1.	0.0	0.0	0.0	-0.1727D-01	0.1727D-01	0.0	-0.5765D 00	0.1520D 02	0.9228D 00
4.00	1.	0.0	0.0	0.0	-0.3129D-01	0.3129D-01	0.0	-0.4701D 00	0.1531D 02	0.9228D 00
5.00	1.	0.0	0.0	0.0	-0.5168D-01	0.5168D-01	0.0	-0.3746D 00	0.1541D 02	0.9227D 00
6.00	1.	0.0	0.0	0.0	-0.3831D-01	0.3831D-01	0.0	-0.3845D 00	0.1551D 02	0.9207D 00
7.00	1.	0.0	0.0	0.0	-0.5341D-01	0.5341D-01	0.0	-0.4870D 00	0.1560D 02	0.9171D 00
8.00	1.	0.0	0.0	0.0	-0.1902D-01	0.1902D-01	0.0	-0.7749D 00	0.1568D 02	0.9103D 00
9.00	4.	-0.5011D 01	0.1514D 02	0.0	-0.6009D-02	-0.1128D 00	0.3176D-03	-0.1112D 01	0.1575D 02	0.9028D 00

TIME1.LE.IT SETS FINAL=2. TIME2.LE.IT GOES TO 92 TO SET FINAL=2. TIME3 GIVES TIME LEFT AFTER TAPE IS WRITTEN.

TIME1 (SEC) = 85 TIME2 (SEC) = 85 TIME3 (SEC) = 83

RESTAR NO.	IT NO.	DELT DAY	TIME DAY	RCOT PCT. PSI	LEAF PCT.	SUPPLY F.	POT. EVAP LBM/DY-SQ.FT.	EVAPORATION	TRANSPIRATION	CUM.EVAP. LBM	CUM.TRAN.
69.	10.	15.000	420.62	-.1512E 01	-.2139E 01	0.3182E 02	0.1761E 01	0.1268E-01	0.8579E-01	0.3240E 01	0.1689E 03
70.	28.	15.000	435.62	-.2963E 01	-.9285E 01	0.3162E 02	0.1976E 01	0.1422E-01	0.8649E 00	0.3453E 01	0.1819E 03

54

MATERIAL BALANCE RESULTS

	AAAA (1)	RESW (2)	CCCC (3)	AW (4)	EEEE (5)	GGGG (2-3)/5	ACW (5-2)/3
W. PHASE	-0.7120570 01	0.2551480 03	0.6357050 02	0.1915770 03	0.2153550 03	0.8895870 00	-0.6259590 00
	BBBB (1)	RESG (2)	DDDD (3)	AG (4)	FFFF (5)	HHHH (2-3)/5	ACG (5-2)/3
NON W. PHASE	0.6116400-02	0.3118920-01	-0.4646220-03	0.3165380-01	0.7729750-01	0.4095070 00	-0.9923820 02

XLOC FT.	PKEY NO.	PWIN PSI	PGIN	EVAPORATION LBM/SQ	TRANSPIRATION FT-DY	QW	QG	PW	PG PSI	SATURATION CFT/CFT P.
0.0	5.	0.0	0.1470D 02	0.1422D-01	0.4241D 00	0.2582D-01	-0.1559D-03	-0.2283D 01	0.1464D 02	0.9015D 00
1.00	1.	0.0	0.0	0.0	0.1982D 00	-0.1982D 00	0.0	-0.2380D 01	0.1484D 02	0.8961D 00
2.00	1.	0.0	0.0	0.0	0.9085D-01	-0.9085D-01	0.0	-0.2013D 01	0.1499D 02	0.9001D 00
3.00	1.	0.0	0.0	0.0	0.7727D-01	-0.7727D-01	0.0	-0.1596D 01	0.1515D 02	0.9049D 00
4.00	1.	0.0	0.0	0.0	0.5485D-01	-0.5485D-01	0.0	-0.1158D 01	0.1532D 02	0.9099D 00
5.00	1.	0.0	0.0	0.0	0.4877D-01	-0.4877D-01	0.0	-0.7364D 00	0.1551D 02	0.9142D 00
6.00	1.	0.0	0.0	0.0	0.1645D-01	-0.1645D-01	0.0	-0.3306D 00	0.1570D 02	0.9180D 00
7.00	1.	0.0	0.0	0.0	-0.1180D-01	0.1180D-01	0.0	0.1447D-03	0.1589D 02	0.9207D 00
8.00	1.	0.0	0.0	0.0	-0.2214D-01	0.2214D-01	0.0	0.1620D 00	0.1606D 02	0.9206D 00
9.00	4.	-0.3657D 01	0.1619D 02	0.0	-0.1166D-01	-0.4809D-01	0.5637D-03	0.2276D 00	0.1620D 02	0.9192D 00

TIME1.LE.IT SETS FINAL=2. TIME2.LE.IT GOES TO 92 TO SET FINAL=2. TIME3 GIVES TIME LEFT AFTER TAPE IS WRITTEN.

TIME1 (SEC) = 83 TIME2 (SEC) = 83 TIME3 (SEC) = 68

RESTAR NO.	IT NO.	DELT DAY	TIME DAY	RCOT PCT. PSI	LEAF PCT.	SUPPLY F.	POT. EVAP LBM/DY-SQ.FT.	EVAPORATION	TRANSPIRATION	CUM.EVAP. LBM	CUM.TRAN.
71.	32.	15.000	450.62	-.4670E 01	-.1693E 02	0.3134E 02	0.1770E 01	0.1279E-01	0.1677E 01	0.3645E 01	0.2070E 03
72.	18.	15.000	465.62	-.5424E 01	-.1840E 02	0.3118E 02	0.1526E 01	0.1110E-01	0.1502E 01	0.3811E 01	0.2295E 03

MATERIAL BALANCE RESULTS

	AAAA (1)	RESW (2)	CCCC (3)	AW (4)	EEEE (5)	GGGG (2-3)/5	ACW (5-2)/3
W. PHASE	-0.9439740 01	0.2395530 03	0.4257230 02	0.1970210 03	0.2153550 03	0.9148640 00	-0.5693320 00
	BBBB (1)	RESG (2)	DDDD (3)	AG (4)	FFFF (5)	HHHH (2-3)/5	ACG (5-2)/3
NON W. PHASE	0.5562860-02	0.4581540-01	0.1334310-01	0.3647230-01	0.7729750-01	0.4718440 00	0.2059650 01

XLOC FT.	PKEY NO.	PWIN PSI	PGIN	EVAPORATION LBM/SQ FT-DY	TRANSPIRATION	QW	QG	PW PSI	PG	SATURATION CFT/CFT P.
0.0	5.	0.0	0.1470D 02	0.1110C-01	0.8030D 00	0.5076D-01	-0.5133D-03	-0.4632D 01	0.1470D 02	0.8292D 00
1.00	1.	0.0	0.0	0.0	0.1941D 00	-0.1941D 00	0.0	-0.4911D 01	0.1477D 02	0.8103D 00
2.00	1.	0.0	0.0	0.0	0.9043D-01	-0.9043D-01	0.0	-0.4518D 01	0.1486D 02	0.8272D 00
3.00	1.	0.0	0.0	0.0	0.9010D-01	-0.9010D-01	0.0	-0.4088D 01	0.1497D 02	0.8392D 00
4.00	1.	0.0	0.0	0.0	0.7330D-01	-0.7330D-01	0.0	-0.3643D 01	0.1509D 02	0.8512D 00
5.00	1.	0.0	0.0	0.0	0.7672D-01	-0.7672D-01	0.0	-0.3209D 01	0.1523D 02	0.8622D 00
6.00	1.	0.0	0.0	0.0	0.5635D-01	-0.5635D-01	0.0	-0.2740D 01	0.1538D 02	0.8717D 00
7.00	1.	0.0	0.0	0.0	0.6875D-01	-0.6875D-01	0.0	-0.2286D 01	0.1554D 02	0.8797D 00
8.00	1.	0.0	0.0	0.0	0.3541D-01	-0.3541D-01	0.0	-0.1733D 01	0.1572D 02	0.8900D 00
9.00	4.	-0.5066D 01	0.1552D 02	0.0	0.1349D-01	0.5055D-02	0.8841D-03	-0.1180D 01	0.1592D 02	0.8983D 00

TIME1.LE.IT SETS FINAL=2. TIME2.LE.IT GOES TO 52 TO SET FINAL=2. TIME3 GIVES TIME LEFT AFTER TAPE IS WRITTEN.

TIME1 (SEC) = 57 TIME2 (SEC) = 57 TIME3 (SEC) = 51

RESTART NO.	IT NO.	DELT DAY	TIME DAY	ROOT PCT. PSI	LEAF PCT.	SUPPLY F.	POT. EVAP LBM/DY-SQ.FT.	EVAPORATION	TRANSPIRATION	CUM.EVAP. LBM	CUM.TRAN.
73.	7.	15.000	480.62	-.5643E 01	-.1446E 02	0.3111E 02	0.1216E 01	0.8925E-02	0.1207E 01	0.3945E 01	0.2476E 03
74.	1.	15.000	495.62	-.5637E 01	-.1229E 02	0.3110E 02	0.9038E 00	0.6736E-02	0.9103E 00	0.4046E 01	0.2613E 03

MATERIAL BALANCE RESULTS

55

	AAAA (1)	RESW (2)	CCCC (3)	AW (4)	EEEE (5)	GGGG (2-3)/5	ACW (5-2)/3
W. PHASE	-0.1744630 01	0.2365710 03	0.3515570 02	0.2014150 03	0.2153550 03	0.9352690 00	-0.6034710 00
	BBBB (1)	RESG (2)	DDDD (3)	AG (4)	FFFF (5)	HHHH (2-3)/5	ACG (5-2)/3
NON W. PHASE	0.3482450-02	0.5356970-01	0.2014550-01	0.3342420-01	0.7729750-01	0.4324100 00	0.1177820 01

XLOC FT.	PKEY NO.	PWIN PSI	PGIN	EVAPORATION LBM/SQ FT-DY	TRANSPIRATION	QW	QG	PW PSI	PG	SATURATION CFT/CFT P.
0.0	5.	0.0	0.1470D 02	0.6736D-02	0.7025D 00	0.7777D-01	-0.8171D-03	-0.4861D 01	0.1470D 02	0.8178D 00
1.00	1.	0.0	0.0	0.0	0.8830D-01	-0.8830D-01	0.0	-0.5157D 01	0.1479D 02	0.7944D 00
2.00	1.	0.0	0.0	0.0	0.1377D-01	-0.1377D-01	0.0	-0.4768D 01	0.1489D 02	0.8121D 00
3.00	1.	0.0	0.0	0.0	0.4856D-02	-0.4856D-02	0.0	-0.4340D 01	0.1499D 02	0.8289D 00
4.00	1.	0.0	0.0	0.0	0.1109D-01	-0.1109D-01	0.0	-0.3904D 01	0.1511D 02	0.8406D 00
5.00	1.	0.0	0.0	0.0	0.1538D-01	-0.1538D-01	0.0	-0.3469D 01	0.1525D 02	0.8518D 00
6.00	1.	0.0	0.0	0.0	0.1727D-01	-0.1727D-01	0.0	-0.3023D 01	0.1539D 02	0.8630D 00
7.00	1.	0.0	0.0	0.0	0.2794D-01	-0.2794D-01	0.0	-0.2572D 01	0.1555D 02	0.8717D 00
8.00	1.	0.0	0.0	0.0	0.2057D-01	-0.2057D-01	0.0	-0.2053D 01	0.1572D 02	0.8814D 00
9.00	4.	-0.5395D 01	0.1559D 02	0.0	0.8564D-02	0.5092D-02	0.1049D-02	-0.1527D 01	0.1590D 02	0.8908D 00

TIME1.LE.IT SETS FINAL=2. TIME2.LE.IT GOES TO 52 TO SET FINAL=2. TIME3 GIVES TIME LEFT AFTER TAPE IS WRITTEN.

TIME1 (SEC) = 50 TIME2 (SEC) = 50 TIME3 (SEC) = 47

RESTART NO.	IT NO.	DELT DAY	TIME DAY	ROOT PCT. PSI	LEAF PCT.	SUPPLY F.	POT. EVAP LBM/DY-SQ.FT.	EVAPORATION	TRANSPIRATION	CUM.EVAP. LBM	CUM.TRAN.
75.	3.	15.000	510.62	-.5679E 01	-.1201E 02	0.3109E 02	0.8537E 00	0.6409E-02	0.8658E 00	0.4142E 01	0.2743E 03
76.	3.	15.000	525.62	-.5751E 01	-.1171E 02	0.3107E 02	0.7973E 00	0.6036E-02	0.8150E 00	0.4233E 01	0.2865E 03

MATERIAL BALANCE RESULTS