VI.3.3B-DEFINE-STATION   PROGRAM PPINIT COMMAND DEFINE STATION

Purpose

Command DEFINE STATION is used to define or redefine station
parameters.

The following parameter groups can be defined for a station:

  o General (STAN)
  o Precipitation (PCPN)
  o Temperature (TEMP)
  o Potential evaporation (PE)
  o River, Reservoir and Snow (RRS)

A station will always have general parameters defined and must have at
least one of the other parameter groups.

When a station is redefined:
   - any information in the old definition that is not specified in the
     new definition will be deleted; information that is deleted
     includes:
       o Data Entry Source Code entries in control files
       o data groups (PCPN, TEMP, PE and RRS)
       o precipitation characteristics
       o RRS time series
   - any time series with a data time interval that is compatible with
     the old definition will copied to a new time series
   - any time series with a data time interval that is not compatible
     with the old definition will be deleted and recreated

Input Data

The general format of the DEFINE command is described on page
VI.3.3B-DEFINE. The input described here immediately follows the
DEFINE command.

| | | Required/ | | |
Card	Field	Optional 1/	Format	Description
1	1	R	A or A(A)	'STAN' or 'STAN(units)' 2/
	2	R	A8	Station identifier (same identifier as used for the station in SHEF messages) 3/
	3	R #	A20	Descriptive information
	4	R #	A2	State designator (Postal Service 2-character identifier)
	5	R #	R, I or	Latitude 4/

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                    Required/
Card    Field    Optional 1/    Format     Description

                                 I-I

         6         R #         R, I or   Longitude 4/
                                 I-I

         7         R #            R      Elevation in FT or M 5/

         7+        O #            I      Station number: 6/
                                            'NUMBER(number)'

         7+        O #      A({A4,A8})   Data Entry Source Code and
                                         external identifier: 7/
                                            'SOURCE({code,identifier})'

         7+        O #       A({A4})     Data groups or data types not
                                         to be transferred: 7/
                                            'NOGOESTR({code})'

         7+        O #       A({A4})     CDAS data groups or data types
                                         not to be transferred: 7/
                                            'NOCDASTR({code}'

         7+        O #         A(I)      Grid point address: 8/
                                            'GPA(address)'

The following input is used to define PCPN parameters for the
station:

  2      1         R            A       'PCPN'

         2         R #            I      Reporting time interval 9/

         3         R #            A      Processing code: 10/
                                            'NORM' = process normally
                                                     (default)
                                            'ZERO' = set precipitation
                                                     to zero if
                                                     observation is
                                                     missing
                                            'SYN'  = synthetic station

         4         R #            A      MDR usage option: 11/
                                            'MDR'  = can use MDR
                                                     (default)
                                            'NMDR' = can not use MDR

         5         R #          A or     Type of station weights: 12/
                              A({A8,R})     'D2' = 1/d**2 (default)
                                            'SIG({id,wt})'
                                                   = significance

         5+        O #         A({R})     Correction factors: 13/
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Card	Field	Required/ Optional 1/	Format	Description
				'CF(n*R)'
	5+	O #	A(12*R)	Station characteristics: 14/ 'CHAR(12*R)'
	5+	O #	A	Indicator whether station is to be used only to estimate missing data and should not receive any weight in an MAP area: 'NWGT' = do not use as weighting station in MAP areas 'WGT' = use as weighting station in MAP areas (default)

The following input is used to define TEMP parameters for the station:

Card	Field	Required/ Optional 1/	Format	Description
3	1	R	A	'TEMP'
	2	R #	A(12*R)	Mean monthly maximum temperatures in DEGF or DEGC: 15/ 'MX(12*R)'
	3	R #	A(12*R)	Mean monthly minimum temperature in DEGF or DEGC: 15/ 'MN(12*R)'
	4	R #	A	Type of data observed: 16/ 'MXMN' = maximum/minimum only (default) 'INST' = instantaneous 'BOTH' = maximum/minimum and instantaneous 'SYN' = synthetic station
	5	R #	I	Time interval of instantaneous data (default is 6 hours; specified only if type of data observed is 'INST' or 'BOTH') 17/
	5+	O #	A(2*R)	Correction factors in DEGF or DEGC: 18/ 'CF(2*R)'
	5+	O #	A	Indicator whether forecast maximum/minimum data are available: 'FMM' = data available

Card	Field	Required/ Optional 1/	Format	Description
				'NFMM' = data not available (default)
	5+	O #	A(R)	Elevation weighting factor (Fe - see note for description of units): 19/ 'FE(R)'

The following input is used to define PE parameters for the
station:

Card	Field	Required/ Optional 1/	Format	Description
4	1	R	A	'PE'
	2	R #	R	Anemometer height in FT or M 20/
	3	R #	R	B3 parameter 21/
	4	R #	A	Primary type of radiation data to be used: 22/ 'SKY' = sky cover (default) 'SUN' = percent sunshine 'RAD' = solar radiation
	4+	O #	A(R)	Correction factor: 23/ 'CF(R)'

The following input is used to define RRS parameters for the
station:

Card	Field	Required/ Optional 1/	Format	Description
5	1	R	A	'RRS'
	2	R	A4	Data type code 24/
	3	R #	I	Time series data time interval (if negative then a time series will not be created) 25/
	4	R #	I	Minimum days of observed data to be retained on the Preprocessor Data Base 26/
	5	R #	I	Typical number of observations to be held on the Preprocessor Data Base 26/

    Fields 6 through 8 are required only if missing data is not
allowed. 26/

Card	Field	Required/ Optional 1/	Format	Description
	6	O #	A(A)	Missing data option: 27/

Card	Field	Required/ Optional 1/	Format	Description
				'MSNG(YES)' or 'MSNG(NO)' (default is MSNG(YES))
	7	R #	A	Interpolation option: 28/ 'LIN' = use linear interpolation 'RET' = retain observed value
	8	R #	R	Extrapolation recession constant 29/

Fields 9 and 10 are allowed only if the station has mean
discharge data. 30/

| | 9 | O # | A(R) | Minimum discharge below which
fraction of flow typically
occurring during each hour of
the hydrologic day will be
used to distribute flows input
using the following format:
MIN(min) |
| | 10 | O # | A(24*R) | Fraction of flow typically
occurring during each hour of
the hydrologic day (starting
with hour 1) input using the
following format:
DIST(24*R) |

Repeat fields 2 through 10 to define additional RRS data
types.

Repeat cards 1 through 5 to process additional stations.

Notes:

1/ A '#' indicates that the parameter value can be changed when a
station is being redefined.

2/ The units in which the data are being input for the entire station
can be specified in this field.

If the parameters for the station are being input in English units
then the unit code ENGL can be entered. If the parameters for the
station are being input in metric units then the unit code METR
must be entered.

The default unit code is ENGL.

3/ The identifier is used to identify the station throughout the Pre-
processor Component. It is also the identifier that will be used

in most cases to identify the station when writing to or reading
from the Preprocessor Data Base (station number is also allowed
for writing). This identifier should be the identifier that will
be used for the station in any SHEF (Standard Hydrologic Exchange
Format) messages. If this is not true then observed or edited
data in SHEF format cannot be input for the station or SHEF
message data could be written for the wrong station. It is
important that the NWSRFS identifier for a station be the same as
the identifier that will be used for that station in SHEF
messages.

The station identifier cannot begin with the letters W, X, Y or Z
and be followed by all numbers. This is the format used by SHEF
for stranger reports.

4/ The station location can be input in decimal degrees or degrees
and minutes. For example specifying 50.5 indicates decimal
degrees and is equivalent to 50-30 or 5030 which indicates degrees
and minutes. Valid values for minutes are 0 to 59.

If degrees and minutes are input and the optional '-' is omitted
then two characters must always be used to specify the minutes.
For example 5003 would be a valid input field to specify 50
degrees and 3 minutes.

5/ If 'STAN(ENGL)' has been specified then the units of the elevation
must be feet (FT). If 'STAN(METR) has been specified then the
units of the elevation must be meters (M).

6/ The station number can be used for manual data entry. Data can be
written to the Preprocessor Data Base by specifying either the
station identifier or the station number. The station number is
never used to identify the station for Preprocessor parametric
input.

The station number can be any integer number greater than zero and
must be unique.

7/ The Data Entry Source Code is used to make entries in control
files which are used to transfer observed and forecast data from
other data bases. These control files are used by the transfer
programs to determine which data are to be transferred to the
user's Preprocessor Data Base.

The current valid data entry source codes and the corresponding
data source are:

    SA   - Synoptic Airways data from NMC files
    SM   - Synoptic Meteorological data from NMC files
    GHB5 - Geostationary Orbit Earth Satellite data specified by
           NWS Communications Handbook 5 identifier
    GPLT - Geostationary Orbit Earth Satellite data specified by
           platform identifier
    CDAS - Centralized Automatic Data Acquisition System (CADAS)

If a code of 'SA' or 'SM' is entered then the SA or SM station identifier is entered as the next field in the parenthesis. For example,

     SOURCE(SA,SAID)

would define 'SAID' as the SA identifier for the station.

If a code of 'GPLT' is entered then the 8 character platform identifier is the next field in the parenthesis. For example,

     SOURCE(GPLT,PLTFRMID)

would define 'PLTFRMID' as the GOES platform identifier for the station.

If the code 'GHB5' is entered then the 5 character Handbook 5 station identifier is the next field in the parenthesis. For example,

     SOURCE(GHB5,HB5ID)

would define 'HB5ID' as the GOES Handbook 5 identifier for the station.

If the code 'CDAS' is entered then the 5 character CDAS station identifier is the next field in the parenthesis. For example,

     SOURCE(CDAS,CDSID)

would define 'CDSID' as the CADAS identifier for the station.

If 'SAME' is specified as the data entry source code then the station identifier will be used as the source code identifier.

More than one code can be entered for a station. For example,

     SOURCE(SA,SAID,SM,SMID)

would specify that the station has both SA and SM data.

The GHB5 and GPLT Source codes can be specified more than once, each with different identifiers, for a single station. If the other source codes are entered more than once then only the last is used and a warning is printed. A reason for using multiple GHB5 or GPLT source codes for a single station is that multiple DCP's may be used to collect data for what is considered in hydrologic terms to be a single station. An example is a reservoir where one DCP may be used to record pool elevation and another to record tailwater elevation below the dam.

The 'NOGOESTR' and 'NOCDASTR' options are used to specify which data groups (PCPN, TEMP, PE or RRS) or RRS data types are not to be automatically transferred to the Preprocessor Data Base. This option is useful for stations that report data from more than one

source (GOES, CADAS, etc.) and the user does not want certain data
to be automatically transferred. For example,

    NOGOESTR(RRS)

would specify that GOES RRS data are not to be transferred for the
station.

Selected RRS data types can be specified not to be transferred by
inputting the data type code(s). For example,

    NOGOESTR(PELV,TWEL)

would specify that the CDAS RRS data types PELV and TWEL are not
to be transferred.

8/   The grid point address is needed when the WGRFC MARO preprocessor
    function is to be used.

    The address is needed for all stations that fall within a defined
    grid box (see DEFINE GRID). The address is a three or four digit
    number where the first one or two digits are the degree box number
    (one degree latitude by one degree longitude is a degree box), the
    next digit indicates tenths of a degree north of the SE corner of
    the box and the last digit indicates tenths of a degree west of
    the SE corner.

9/   The reporting time interval is how often the station reports
    observed data values.

    Valid values are 1, 3, 6 or 24 hours. Space is always allocated
    for the 24 hour accumulated value. The default is 24 hours.

    Even though the MAP Preprocessor only works with 6 hour time
    intervals, 1 and 3 hour data can be stored in the Preprocessor
    Data Base. The MAP Preprocessor converts any 1 and 3 hour data
    into 6 hour summations before processing the values.

10/ The processing code to used by the MAP Preprocessor to indicate
    how the data observed by the station are to be processed.

    If 'NORM' is specified then any missing observations will be
    estimated from the surrounding stations or from MDR data.

    If 'ZERO' is specified then any missing observation will be set to
    zero.

    If 'SYN' is specified then it indicates a synthetic station that
    has no observed data and the data time interval must be 24 hours.

    The default is 'NORM'.

11/ The MDR usage indicator specifies whether MDR data can ever be
    used to estimate missing data values. The option for actually
    using MDR data to estimate missing data is specified by the user

when the MAP Preprocessor is run. The default is 'MDR'.

12/ The type of station weights specifies whether 1/d**2 or
    significance weights are to be used to estimate missing 24 hours
    precipitation data.

    Significance weights are mainly used in mountainous areas. The
    method used is based on the Colorado River Basin River Forecast
    Center's 'high elevation precipitation estimation' technique.

    If 'SIG' is specified then the identifiers and weights of the
    stations to be used must be input. The list of identifiers and
    weights must be enclosed in parenthesis. The weights can be any
    non-zero positive number. The maximum number of stations with
    significance weights is 10.

    The default is 1/d**2.

13/ The observed precipitation is multiplied by the PCPN correction
    factor to increase or decrease the observed precipitation.

    One or two correction factors can be specified. If one correction
    factor is specified it is used when processing data for any month
    of the year. If there are two factors then the first is used when
    processing winter season data and the second is used when
    processing summer season data.

    The months that begin the summer and winter season can be
    specified when the USER parameter group is defined using the
    DEFINE command.

    The default beginning month for the summer season is 5 (May) and
    for the winter season is 10 (October).

    Correction factors are rounded to the nearest .05 when used. The
    allowable range is 0.5-4.95.

    The default correction factor is 1.0.

14/ Station characteristics are used to determine the long term
    relationships between precipitation stations and are defined as
    mean monthly precipitation values.

    When estimating missing data the ratio of the characteristics
    between the station being estimated and each of the estimators is
    used to account for the long term difference in precipitation at
    each site.

    The use of characteristics can result in an estimated value at a
    station being larger or smaller than the precipitation at any of
    the stations being used as estimators. Characteristics are used
    in the estimation of missing station data whenever the station
    being estimated has characteristics defined. If some of the
    surrounding stations that are being used as estimators do not have
    characteristics defined then a characteristic value equal to the

characteristic of the station being estimated is assigned. In
this case the two stations are assumed to have the same long term
precipitation amounts.

Characteristics should be used for all stations in areas where
long term means vary from site to site and for all stations that
can be used to estimate missing data in these areas.

A warning message will be printed during execution of the NETWORK
command to indicate when a station with characteristics defined
can be estimated from stations that do not have characteristics
defined and vice-versa.

There is one characteristic value for each month starting with
January.

If 'STAN(ENGL)' has been specified then the units of the station
characteristics must be inches. If 'STAN(METR)' has been
specified then the units of the station characteristics must be
millimeters.

15/ One value must be specified for each month starting with January.
    If 'STAN(ENGL)' has been specified then the units of the mean
    temperatures must be degrees Fahrenheit (DEGF). If 'STAN(METR)'
    has been specified then the units of the mean temperatures must be
    degrees Centigrade (DEGC).

16/ The type of data observed by the station specifies the data that
    will be stored in the PPDB and processed by the MAT Preprocessor.

    If 'SYN' is specified then it indicates a synthetic station that
    has no observed data and the station cannot have Forecast
    maximum/minimum data available.

    The default is 'MXMN'.

17/ The reporting time interval of a station with instantaneous
    temperature can be 1, 3 or 6 hours. The default is 6 hours.

    Even though the MAT Preprocessor generates only 6 hour time series
    it can use 1 and 3 hour instantaneous temperature data.

18/ The correction factor is added to the observed data to increase or
    decrease the value.

    Two correction factors must be specified. The first is used to
    correct the values of maximum temperature data and the second to
    correct values of minimum temperature data.

    The default value for both correction factors is 0.

    If 'STAN(ENGL)' has been specified then the units of the
    correction factors must be degrees Fahrenheit (DEGF). If
    'STAN(METR)' has been specified then the units of the correction
    factors must be degrees Centigrade (DEGC).

19/ The elevation weighting factor (Fe) is used to account for the differences in elevation in addition to the distance between stations when estimating missing temperature data.

A larger Fe will give more weight to stations with the smallest difference in elevation and less weight to stations with the largest difference in elevation. The Fe factor is normally used in mountainous areas. The default is 0.

If 'STAN(ENGL)' has been specified then the units for Fe are:

$$\frac{\text{MI between stations}}{1000 \text{ FT change in elevation}}$$

If 'STAN(METR)' has been specified then the units for Fe are:

$$\frac{\text{KM between station}}{1000 \text{ M change in elevation}}$$

A reasonable value for Fe is 20 when English units are used and 100 when using metric units.

20/ If 'STAN(ENGL)' has been specified then the units of the anemometer height must be feet (FT). If 'STAN(METR)' has been specified then the units of the anemometer height must be meters (M).

21/ The B3 constant can be obtained from Figure 1. This map was published in Water Resources Research Volume 12, Number 5 (October 1976, page 860).

22/ The primary type of radiation data specifies the type of data to be used to compute PE data for the station. If 'RAD' or 'SUN' are specified as primary and are not available then 'SKY' is used as the estimate of radiation.

23/ The computed PE data is multiplied by the PE correction factor to increase or decrease the PE value. The default is 1.

24/ The following is a list of the available RRS data types with the compatible SHEF physical element code (if one exists) and description:

RRS Code	SHEF PE Code	Description
Instantaneous Height:		
STG	HG	River stage observed
PELV	HP	Pool elevation observed
LELV	HL	Lake elevation observed
LAKH	HK	Lake height above specified datum
TWEL	HT	Tailwater stage observed
TWSW	HW	Spillway tailwater stage observed
FBEL	HF	Forebay elevation observed

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          RRS        SHEF
          Code       PE Code    Description

          Instantaneous Discharge:
          QIN        QR         River discharge observed
          RQOT       QT         Reservoir outflow observed and projected
          DQIN       QD         Diversion discharge observed and projected
          RQIN       QI         Reservoir inflow observed
          RQSW       QS         Reservoir discharge spillway observed
          PCFD                  Diverted flow from channel percent

          Mean Discharge:
          QME        QR         River discharge observed
          DQME       QD         Diversion discharge observed and projected
          RQME       QT         Reservoir outflow observed and projected
          RQIM       QI         Reservoir inflow observed
          RQGM       QG         Reservoir discharge power generation
                                   observed

          Instantaneous Other Reservoir Data:
          RSTO       LS         Reservoir lake storage observed
          NFBD                  Flash boards down observed and projected
          GATE                  Gate openings observed and projected
          GTCS                  Gate control switch

          Instantaneous Snow and Miscellaneous Data:
          AESC       SA         Snow cover areal extent observed
          FGDP       GD         Frost depth observed
          ICET       IT         Ice thickness observed
          SNWE       SW         Snow cover water-equivalent observed
          SNOG       SD         Snow cover depth observed
          ZELV       HZ         Freezing level

          Mean Snow Data:
          PTPS                  Fraction snowfall
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25/ The time series data time interval specifies the number of hours
    between the time series values written to the Processed Data Base.
    Valid values are 1, 2, 3, 4, 6, 8, 12 and 24.

    If a negative time series data time interval is specified then a
    time series will not be created in the Processed Data Base and the
    RRS Preprocessor will not create a time series from the observed
    data in the Preprocessor Data Base. This allows the data type to
    be defined in the Preprocessor Data Base so that data values can
    be stored and displayed with the Preprocessor Data Base Utility
    Program (see section VI.6.3) but no space is allocated in the
    Processed Data Base.

    When a station is redefined any time series with a data time
    interval that is different than the old definition will be deleted
    and recreated.

26/ The minimum number of days of observed data to be held on the
    Preprocessor Data Base (PPDB) defines the observed period to be

retained even if more than the typical number of observations specified is exceeded.

The typical number of observations is used to size the primary storage area. For types that can contain future data the typical number of both observed and future data values should be used. If this space is too small to store all the observations for the minimum number of days specified then an overflow area will be used to store the data. It is important to pick a reasonable estimate for the typical number of values to be observed during the period to be retained in order to minimize the use of the overflow area but also not allocate a lot of space that will never be used.

The minimum days to be retained and the typical number of observations must be specified if the default values have not been specified with the DEFINE USER command.

27/ The optional field MSNG specifies whether the time series generated from the RRS input data can contain missing values.

MSNG(YES) indicates missing values are allowed in the time series and is the default value.

MSNG(NO) indicates no missing values are allowed and can only be specified for certain data types.

In almost all cases the MSNG(YES) option should be used since the normal place to fill in missing values and produce an updated or adjusted time series is the Forecast Component and not the RRS Preprocessor. In a few cases, such as an upstream boundary point, a time series with no missing values is needed. In these cases the MSNG(NO) option is used and the output data type will be different from the input data type (all input types allow missing data).

The input RRS data types for which MSNG(NO) is allowed and the data type assigned to the generated time series for each are as follows:

RRS input data type	RRS output data type if MSNG=NO
DQIN	DQIE
RQOT	RQIE
DQME	DQMP
RQME	RQMP

28/ The interpolation option is used when the RRS Preprocessor is processing a data type for which missing data is not allowed.

If the 'LIN' option is chosen then linear interpolation will be used to estimate missing values.

If the 'RET' option is chosen then the preceding observed value will be retained until another observed value is found. There is

no default value.

29/ The extrapolation recession constant is used when the RRS
Preprocessor is processing a data type for which missing data are
not allowed.

The recession constant is applied to the last observed value to
estimate missing values for the rest of the period. The value of
the recession constant must be greater than 0 and less than or
equal to 1. A value of 1 will retain last observed value for the
rest of the period to be processed. There is no default value.

The recession amount specified is per 24 hour period.
Extrapolated values are computed according to the following
equation:

$$X_{t+1} = X_t * R**dt/24$$

where X_t = data value at time interval
        dt = data time interval
        R = recession constant

30/ The option to distribute flows can only be used for mean discharge
data types.

If this option is specified then the time interval of the time
series is less than the time interval of the observed data and the
flow is less than the minimum specified then the flows will be
distributed using the specified distribution when the time series
is created. For example the option would be used for a station
that reports reservoir outflows every 24 hours, has daily
fluctuations due to power generation and will have the data
written to a 6 hour time series. The distribution specified would
be based on the typical average hourly flow observed when mean
discharges are below the specified minimum value. The sum of the
fraction of flow typically occurring during each hour of the day
should be 1.0. If not then the values will be normalized.

Sample Input

To define a new station that has the following parameters:

    General Parameters (STAN):
      Identifier = DCA
      Description = WASHINGTON NATL APT
      State = DC
      Latitude = 38.75
      Longitude = 77.0
      Elevation = 200. feet
      Station number = 1
      Data Entry Source Codes: CODE=SA, EXTERNAL ID=DCA

    Precipitation Parameters (PCPN):
      Reporting time interval = 6 hours

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      Processing code = NORM (normal)
      MDR usage option = MDR (can use MDR)
      Type of station weights = D2 (1/d**2)
      Correction factor = 1.1

   Temperature Parameters (TEMP):
     Elevation weighting factor = null-field (non-mountainous)
     Mean monthly temperature (Fahrenheit):
           JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC
       MX  35.  45.  55.  65.  75.  85.  85.  75.  65.  55.  45.  35.
       MN  25.  35.  45.  55.  65.  75.  75.  65.  55.  45.  35.  25.
     Correction factors:  MAX = 0.5 MIN = -1.
     Forecast maximum/minimum indicator = NFMM (none available)

   Potential Evaporation Parameters (PE):
     Anemometer height = 50. feet
     B3 parameter = .25
     Primary type of radiation data to be used = SUN (percent
     sunshine)
     Correction factor = 1.05

   River Reservoir and Snow Parameters (RRS) - define 2 data types:
     Data    Time      Interp.   Extrap.    Min    Typical
     Type    Interval  Option    Constant   Days   Obs
     DQIN       6      LIN        0.9        10      40
     QME       24      (missing allowed)   (obtain from URRS default)

The following input would be used:

   @DEFINE STATION
   $ GENERAL PARAMETERS
   STAN DCA 'WASHINGTON NAT APT' DC 38.75 77.0
        200. NUMBER(1)  SOURCE(SA,DCA)
   $ PRECIPITATION PARAMETERS
   PCPN 6 NORM MDR D2 CF(1.1)
   $ TEMPERATURE PARAMETERS
   TEMP MX(35. 45. 55. 65. 75. 85. 85. 75. 65. 55. 45. 35.)
        MN(25. 35. 45. 55. 65. 75. 75. 65. 55. 45. 35. 25.)
        BOTH  6 CF(0.5, 1.0)
   $ POTENTIAL EVAPORATION PARAMETERS
   PE 50. .25 SUN CF(1.05)
   $ RIVER, RESERVOIR AND SNOW PARAMETERS
   RRS QME 24
       DQIN 6 10 40 MSNG(NO) LIN .9
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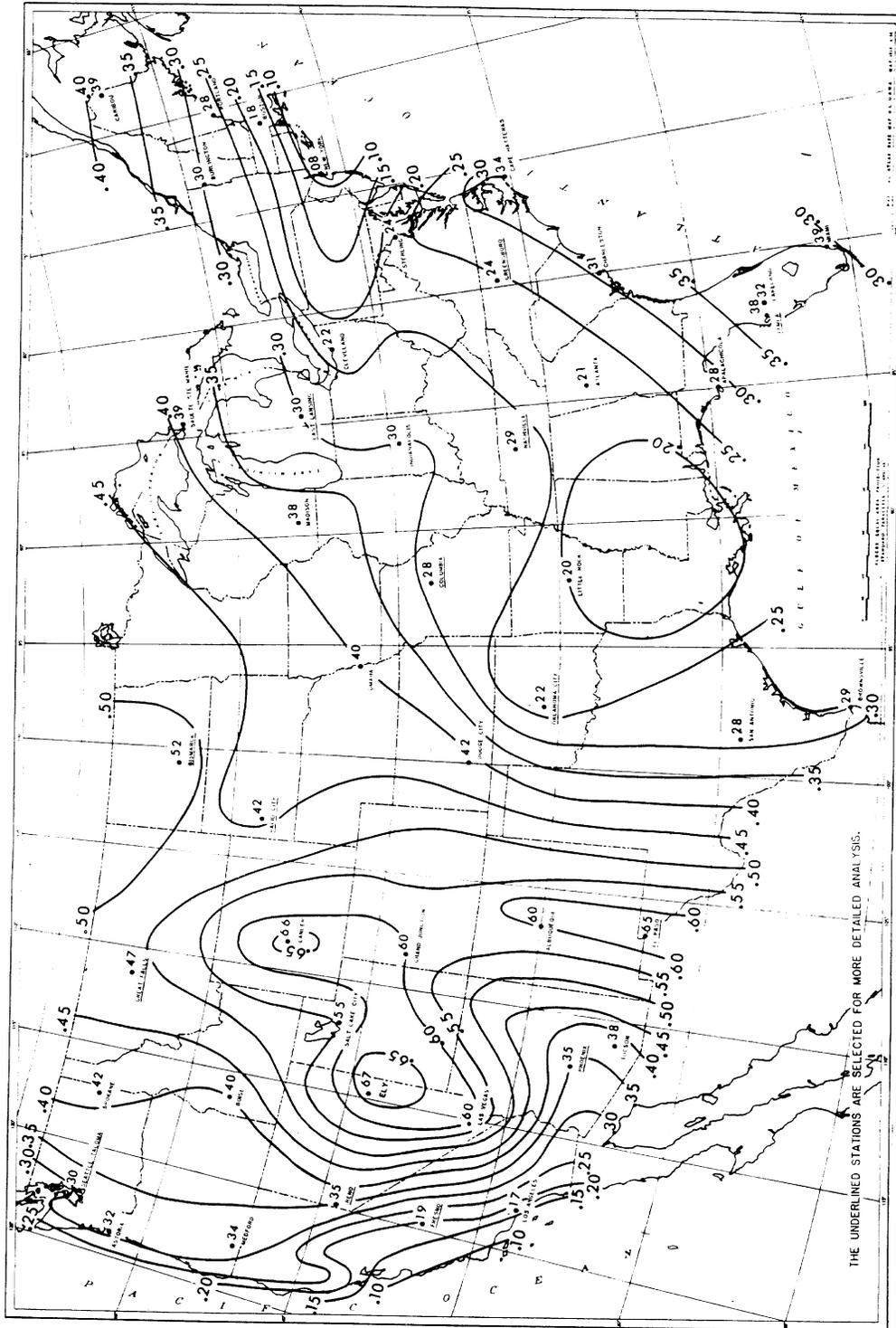
Figure 1. Values of parameter B3

Fig. 1. *B* values in the equation $Y = B + (1 - B)(1 - N)^{0.61}$ when *B* only is selected that minimize the sum of the errors squared for the individual stations (method **D**).

THE UNDERLINED STATIONS ARE SELECTED FOR MORE DETAILED ANALYSIS.