

# Generalized Data Exchange Format

for

# Interagency Data Collection and Transfer

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# Generalized Data Exchange Format

## Data Exchange Format - Regular Interval Data

A modified .E format of Standard Hydrologic Exchange Format (SHEF) definition is used as the model. Improvements and enhancements were made based on input from members of the Interagency Data Collection and Transfer workgroup. The workgroup consists of members from the Everglades National Park, US Geological Survey in Miami, South Florida Water Management District Operations Division and Data Management Division, and the US Army Corps of Engineers Water Management and Meteorology Section. The format data message has a moderately high density of data. Each data message, or individual line fully defines the data station identifier (site location), parameter, starting date and time of first data value and time interval of the data values. The exchange format allows for flexibility of implementation by the Data Provider (DP). The DP has the option to implement the generalized format so that the data messages are humanly readable. The exchange format allows the DP to customize codes and include data quality flags along with the data. The data message is limited to 80 columns so as to accommodate viewing of ASCII files by the widest range of potential users. A data message decoding program to parse data into native databases will functionally be required to read and parse one message line at a time.

## Data Message Parameter Definitions: (Figure 1)

### Generalized Rules:

- Message is field delimited by "/" character
- Position of data message parameters is fixed
- Each message starts with ".E/"
- Continuation lines of messages not allowed
- Maximum message line 80 columns
- Four digit years to be used
- Midnight timestamp to be handled by Data Receiver
- Comments start with ":" character and may be used throughout
- Embedded non-printable characters within data message not allowed

### Station Identifier (site location) (Table 1)

- First field in data message following ".E/"
- Data provider defines length
- Recommend limiting station identifier to 8 characters
- Different station identifiers should not be used to internally represent different types of data from the same station

### Parameter - Physical Element (PE) (Table 2)

- Second field in data message following Station Identifier
- User defines own set of PE codes
- Recommend SHEF PE codes - extensions to SHEF PE codes required for certain parameters
- Recommend limiting PE to 5 characters

### Starting Date

- Third field in data message following Physical Element
- Four digit years to be used
- yyymmdd of first data element value of message
- Preceding zeros for months and days less than 10 are required - ex. 940301

### Starting Time

- Fourth field in data message following Starting Date
- Eastern standard time or local time
- hhnn of first data element value of message
  - hh - hour, preceding zero required for hours < 10
  - nn - minutes, optional, preceding zero

### Time Interval (Table 3)

- Fifth field in data message following Starting Time
- Diiii - for regular interval

### Data Elements

- Data Elements follow Time Interval
- Negative numbers preceded by "-" character
- Blank spaces within data elements not allowed
- Data quality flags supported
  - Data quality flags follow data value
  - Any number of data quality flags can be used for a data value
  - Data quality flags can be any number of characters
  - Data quality flags enclosed in parenthesis "(")"
  - No imbedded colons
- Missing data: use data quality flag "(M)"

Other things to consider in future meetings:

Naming standard for files that are transferred:

Should they contain agency identifier, time stamp, julian date?

How much hourly data to transfer in a file (to be determined by agreement between DP and DR)

How to handle periods of non availability (ie. computer is down over the weekend and it takes till Tuesday to fully recover all data before transferring data is even an option)

How to handle updates

Exchange Format for Irregular Interval Data

**.E/Station ID/Parameter/StartDate/StartTime/TimeInterval/Data Elements/**

.E/ssssssss/pcode/yyyymdd/hh[nn]/Diiii/[-][vvvvv][(A)(B)...]/vvvvv/

0000000001111111112222222222333333333344444444445555555555666666666677777777778  
12345678901234567890123456789012345678901234567890123456789012345678901234567890

Example 1: One hour interval data of S10A Headwater Elevation

.E/S10A/HEAD/19940401/1200/DIH1/15.75/15.75/15.74/15.74/15.74/15.74/  
.E/S10A/HEAD/19940401/1800/DIH1/15.74/15.74/15.74/15.73/15.73/15.72/  
.E/S10A/HEAD/19940401/2400/DIH1/15.75/15.75/15.74/15.74/(M)/(M)/  
.E/S10A/HEAD/19940501/0600/DIH1/15.67(?)(>)/15.74/

Example 2: One day interval data of DBHYDRO Key 03780

NOTES:

1. DBKEY 03780 implies or translates to S10A Headwater Elevation but a Physical Element code is included

.E/03780/HS/19940401/2400/DIH01/15.75/15.74/15.72/(M)/15.70/15.72(L)/  
.E/03780/HS/19940407/2400/DIH01/15.74/15.74/15.74/15.73/15.73/15.72/  
.E/03780/HS/19940413/2400/DIH01/15.75/15.75/15.74/15.74/15.74/15.74/  
.E/03780/HS/19940519/2400/DIH01/15.74/15.74/15.74/15.73/15.73/15.72/

Station identifier lists is for example only, not complete or representative of individual agencies area of interest.

<b>STATION IDENTIFIER</b>	<b>:Location</b>	<b>Comments</b>
3273	:E COAST CANALS	3273
40MILE	:ENP	40MILEBEND
ANGELS	:E COAST CANALS	ANGELS
BROWFS	:E COAST CANALS	BROWARD (field station)
CLEWSFS	:OKEECHOBEE	CLEWISTON FS (field station)
FISHEAT	:OKEECHOBEE	FISHEATING CR
HGS2	:OKEECHOBEE	HGS2
HGS6	:OKEECHOBEE	HGS6
HOMEFS	:E COAST CANALS	HOMESTEAD (field station)
HART	:KISSIMMEE	HART
IST	:ISTOKPOGA	ISTOKPOGA
KSS	:KISSIMMEE	KISSIMMEE
KSSFS	:KISSIMMEE	KISSIMMEE FS (field station)
L8	:WCA1	L8
MIAMIFS	:E COAST CANALS	MIAMI (field station)
MYRTLE	:KISSIMMEE	MYRTLE
OKEFS	:OKEECHOBEE	OKEECHOBEE FS (field station)
S10	:WCA1	S10 (use for total structure flow)
S10A	:WCA1	S10A
S10C	:WCA1	S10C
S10D	:WCA1	S10D
S11	:WCA2A	S11 (use for total structure flow)
S11A	:WCA2A	S11A
S11B	:WCA2A	S11B
S11C	:WCA2A	S11C
S127	:OKEECHOBEE	S127
S129	:OKEECHOBEE	S129
S12	:WCA3A	S12 (use for total structure flow)
S12A	:WCA3A	S12A
S12A	:WCA3A	S12A
S12B	:WCA3A	S12B
S12C	:WCA3A	S12C
S12D	:WCA3A	S12D
S131	:OKEECHOBEE	S131
S133	:OKEECHOBEE	S133
S135	:OKEECHOBEE	S135
S140	:WCA3A	S140
S150	:OKEECHOBEE	S150
S151	:WCA3A	S151
S155	:E COAST CANALS	S155
S174	:E COAST CANALS	S174
S175	:E COAST CANALS	S175
S176	:E COAST CANALS	S176
S177	:E COAST CANALS	S177

Table 1. Station Identifier

<b>STATION IDENTIFIER</b>	<b>:Location Comments</b>	
S18C	:E COAST CANALS	S18C
S197	:E COAST CANALS	S197
S30	:E COAST CANALS	S30
S308	:OKEECHOBEE	S308
S31	:WCA3B	S31
S331	:E COAST CANALS	S331
S332	:E COAST CANALS	S332
S333	:E COAST CANALS	S333
S334	:E COAST CANALS	S334
S335	:E COAST CANALS	S335
S336	:E COAST CANALS	S336
S337	:E COAST CANALS	S337
S351	:OKEECHOBEE	S351
S352	:OKEECHOBEE	S352
S354	:OKEECHOBEE	S354
S38	:WCA2A	S38
S39	:WCA1	S39
S4	:OKEECHOBEE	S4
S57	:KISSIMMEE	S57
S58	:KISSIMMEE	S58
S59	:KISSIMMEE	S59
S5A	:WCA1	S5A
S5AE	:WCA1	S5AE
S5AS	:WCA1	S5AS
S5AW	:WCA1	S5AW
S6	:WCA1	S6
S60	:KISSIMMEE	S60
S61	:KISSIMMEE	S61
S62	:KISSIMMEE	S62
S63	:KISSIMMEE	S63
S63A	:KISSIMMEE	S63A
S65	:KISSIMMEE	S65
S65A	:KISSIMMEE	S65A
S65B	:KISSIMMEE	S65B
S65C	:KISSIMMEE	S65C
S65D	:KISSIMMEE	S65D
S65E	:KISSIMMEE	S65E
S68	:ISTOKPOGA	S68
S7	:WCA2A	S7
S77	:OKEECHOBEE	S77
S78	:OKEECHOBEE	S78
S79	:OKEECHOBEE	S79
S8	:WCA3A	S8
S80	:OKEECHOBEE	S80
S9	:WCA3A	S9
S96	:ST JOHNS	S96

Table 1. Station Identifier

<b>STATION IDENTIFIER</b>	<b>:Location</b>	<b>Comments</b>
SITE15	:WCA2A	SITE2-15
SITE17	:WCA2A	SITE2-17
SITE19	:WCA2A	SITE2-19
SITE34	:WCA3B	SITE34
SITE62	:WCA3A	SITE62
SITE63	:WCA3A	SITE63
SITE64	:WCA3A	SITE64
SITE65	:WCA3A	SITE65
SITE66	:WCA3A	SITE66
SITE69	:WCA3B	SITE69
SITE7	:WCA1	SITE1-7
SITE71	:WCA3B	SITE71
SITE76	:WCA3B	SITE76
SITE8C	:WCA1	SITE1-8C
SITE8T	:WCA1	SITE1-8T
SITE9	:WCA1	SITE1-9
SITE99	:WCA2B	SITE99
SEWELL	:E COAST CANALS	SEWELL
TOHOP	:KISSIMMEE	TOHOPEKALIGA
TROUT	:KISSIMMEE	TROUT
TAYLOR	:TAYLOR CR	AT HGS6
WPALMFS	:E COAST CANALS	WEST PALM (field station)

Table 1. Station Identifier

<b>CODES</b>	<b>Explanation (units) : Comments</b>
<u>H</u>	
	<u>Height</u>
HD,PHEAD	Height, Head (ft) : use for pump head or lift distance
HG,STAGE	Height, Stage (ft) : use for stages and headwater stages
HH,ELEV	Elevation, of Reading (NGVD) : use for elevations in NGVD
HN,	Height, Stage (ft) : use for tailwater stages
HS,HEAD	Elevation, Headwater (NGVD) : use for spillway headwater elevations
HW,TAIL	Elevation, Tailwater (NGVD) : use for spillway tailwater elevations
<u>L</u>	
	<u>Lake Data</u>
LA	Lake Surface Area (Acre) :
LC	Lake Storage Volume Change (ACFT) :
LS	Lake Storage Volume (ACFT) :
LR	Lake Storage Rule Curve (ACFT) : Allowable Storage
<u>N</u>	
	<u>Gate Data</u>
NG	Total of Gate Openings (ft) :
N#	Opening of Gate Number # (ft) :
NL,LOCKS	Lockages (#) :
<u>P</u>	
	<u>Pressure and Precipitation</u>
PA	Pressure, Atmospheric (in-Hg) : use for barometric pressure
PC	Precipitation, Accumulated (in) : use for accumulating precip
PP	Precipitation, Incremental (in) : use for daily/hourly incremental precip
<u>Q</u>	
	<u>Discharge</u>
QD	Discharge, Canal Diversion and Lockage Discharges (CFS) :
QE	Discharges, Seepage (CFS) :
QI	Discharge, Inflow (CFS) :
QL	Discharge, Rule Curve (CFS) : Allowable
QP#	Discharge, Pump Number # (CFS) :
Q#,QG#	Discharge, Gate Number # (CFS) :
QS,QT	Discharge, Spillway or Structure (CFS) : Total Structure Discharge
QV	Discharge, Siphon
<u>T</u>	
	<u>Temperature Data</u>
TA	Temperature, Air (DF) : Dry Bulb
TD	Temperature, Dew Point (DF) :
TM	Temperature, Minimum Air (DF) :
TP	Temperature, Pan Water (DF) :
TR	Temperature, Mean Air (DF) :
TW	Temperature, Water (DF) :
TX	Temperature, Maximum Air (DF) :

Table 2. Physical Elements

<u>U</u>	<u>Wind Data</u>
UC	Wind, Accumulated Wind Travel (MI) :
UD	Wind, Direction (Degrees) :
UG	Wind, Peak Gust Speed (MI/HR) :
UL	Wind, Travel Length over Specified Duration (MI) :
US	Wind, Speed (MI/HR) :
UX	Wind, Peak Gust Direction (Degrees) :

<u>V</u>	<u>Voltage Data</u>
VB	Voltage, Battery (Volt) :

<u>W</u>	<u>Water Quality</u>
WC	Water, Conductance or Chloride (UMHOS/CM) :
WT	Water, Turbidity (JTU) :
WD,WTAIL	Water, Turbidity Tailwater (JTU) :
WU,WHEAD	Water, Turbidity Headwater (JTU) :

Table 2. Physical Elements

**CODE UNITS :Definition**

DINnn	:nn Minutes	(0-99)
DIHhh	:hh Hours	(0-99)
DIDdd	:dd Days	(0-99)
DIMmm	:mm Months	(0-99)
DIEmm	:mm Months	(0-99) (use for end of month data only)
DIYyy	:yy Years	(0-99)

Table 3. Time Interval Specifier - Regular Interval Data