

UNITED STATES DEPARTMENT OF COMMERCE  
WEATHER BUREAU  
WASHINGTON 25, D. C.

File No. 922

March 7, 1951

O-2.13

MEMORANDUM

TO: Section Centers, Hydroclimatic Inspectors, Field Aides,  
WRPC's, and River Centers.  
(With copies to Regional Offices for Information.)

FROM: Chief, C&HS Division

SUBJECT: Climatological Service Memorandum No. 19.

INSTRUCTIONS

1. WB FORM 5201 (Machine Form 1009): When weekly Forms 1009 were in use, the machine Form 1009 served a very definite purpose as a summarized monthly report. With the return to monthly reporting forms the question has been raised, both by field stations and the Central Office, of whether machine Forms 1009 are necessary. They are no longer needed at the Central Office. In at least one section, only a small percentage of the total number of observers indicate that they want both the machine 1009 and the printed Climatological Data. Considerable time is required at WRPCs to prepare these machine copies and their discontinuance would not only speed up issuance of Climatological Data but would effect a financial saving.

A monthly listing of summarized values, such as appears in Table 2, could be furnished each Section Center and, if desired, each River District Office. Would such a listing plus the original or carbon copy of Form 1009 take care of Section Center and River District Office needs until the Climatological Data is published? Comment on this question is invited from all interested offices.

Machine Forms 1066 will still be prepared at the end of each year for each station.

2. INSTRUCTIONS FOR CHECKING AND PROCESSING EVAPORATION FORMS 1024: The following instructions supersede those in CSM No. 3, Item 18; CSM No. 6, Item 11 and CSM No. 16, Item 3.

GENERAL INSTRUCTIONS

- a. WB Form 1024 will be used by stations making evaporation measurements. This form will be prepared for all months for climatological records regardless of whether evaporation measurements are taken or omitted during the winter season.
- b. The station name as entered on Form 1024 should correspond to the official name as published in Climatological Data. Routing instructions for WB Form 1024 are given in Circular Letter No. 8-50.
- c. Section Centers will be responsible for the collection and the completeness of the form. The following items for the last day of the preceding month should be checked carefully for entry on Form 1024 in the spaces just above the line for the first day of the current month: dry-bulb temperature at complete observation, beginnings and endings of precipitation, anemometer dial reading, gage reading at observation, and gage reading when tank filled or emptied.
- d. Section Directors should encourage all observers to make evaporation readings to two decimal places. We can not object seriously, however, if any observer or cooperating agency wishes to continue to record the readings to three decimal places.
- e. In some instances daily amounts of evaporation are being lost because the observer fails to record the gage reading before and after the tank is filled or emptied. Whenever possible this discrepancy should be reviewed with the observer.

CHECKING INSTRUCTIONS

- f. The WRPC will check, tabulate, and make adjustments or corrections to the original data as received on Form 1024. The Section Center should correct carbon copies to agree with changes made by the WRPC.
- g. Checking Evaporation Amounts. The sum of the daily amounts of evaporation may be quickly checked in the following manner:
  - To gage reading on last day of previous month,
    1. Add gage reading made after tank is filled or emptied.
    2. Add precipitation.

3. Subtract gage reading on last day of current month.
4. Subtract gage readings made just before tank was filled or emptied.

The result is the sum of daily actual amounts of evaporation.

Note: If amount for one day or more is missing, the gage reading for the day before the record is broken is subtracted and the gage reading for the day the record is resumed is added.

- h. Evaporation for two or more days at one reading. When a reading of the evaporation pan is not taken due to freezing or for any other reason the accumulated amount is included on a later day, enter the actual reading on that day and enter asterisks on the days when no readings were made. No attempt should be made to assign particular amounts to separate days unless the period extends into the next month. In this case the form should be held until the next month's daily totals can be obtained, at which time the amounts for separate days should be determined by linear interpolation. The first month's record, in such cases, will need to be published as delayed data. When daily amounts are not obtained but included in a later reading, they should not be considered as missing in determining the monthly evaporation total.
- i. If there are more than 7 days of evaporation record missing in any one month due to freezing or other reason, the monthly total will be omitted.
- j. Adjusted monthly totals. When the record of evaporation is missing for one or as many as 7 days (and not included in a subsequent reading as in Instruction h), the monthly evaporation is obtained by dividing the total of the daily amounts of evaporation by the number of days of record and multiplying by the number of days in the month. This amount should always be larger than the sum of the daily amounts.
- k. Estimated amounts of daily evaporation. All amounts not determined directly from actual measurements should be discarded. If any of the water in the pan is lost by overflowing, by splashing, or if for any other cause an unmeasured amount is lost or added, the actual amount of evaporation should be left blank.

- l. Missing evaporation daily amounts should be tabulated with a dash (-) for each day of missing or estimated record. The difference between a dash and an asterisk (as mentioned in Instruction h) should be carefully reviewed with the person punching or tabulating data from Form 1024.
- m. Negative amounts of evaporation. Due to the inaccuracies that may be found in day-to-day measurements, together with the gain in water to the pan that may occur through condensation, "negative" daily evaporation amounts occasionally result. In these cases, whenever a negative value appears, the accumulated algebraic total of this amount plus the amounts recorded on the previous day and the following day will be published as of the latter date. Thus, if a "negative" amount is recorded on one day, a three-day total will be used; if two consecutive days show negative amounts, a 4-day total will be used, etc. This does not apply if the "negative" amount occurs on the first or last day of the month.

Following are illustrative examples:

	Date of month	<u>EVAPORATION</u>	
		Recorded as	Published as
A.	14	.03	*
	15	-.01	*
	16	.00	.02
B.	1	-.03	*
	2	*	*
	3	*	*
	4	.21	.21
C.	30	.02	*
	31	-.02	.02
D.	12	.04	*
	13	-.01	*
	14	.02	*
	15	-.02	*
	16	.05	.08

Negative daily values of .05 inch or more should be disregarded and the record considered as missing. It is possible that an accumulated total as outlined above may come out negative and, if so, the daily negative value(s) should be considered as "missing" record. In the above cases, it is quite likely that an error has been introduced through a miscalculation in emptying

or filling the pan, or by the fact that the evaporation pan caught more rainfall than the rain gage.

n. Wind movement. Daily wind movement should be tabulated to whole number of miles; asterisks should be used to indicate when no readings were made. The accumulated total for the days without readings will be published when the record is resumed. Missing values will be indicated by dashes (-). Wind movement values will be published only when evaporation readings are also available.

3. LIST OF RIVER AND RAINFALL SUBSTATIONS: In order to keep hydroclimatic inspectors informed in regard to the river and rainfall substations, including reporting instructions of the River District reporting networks, river district officials should furnish each hydroclimatic inspector in their areas with a list of substations similar to the one used in Item 4 of the River District Service Manual.
4. FURNISHING COPIES OF MEMORANDA TO FIELD AIDES: Copies of all memoranda issued by Weather Records Processing Centers, Section Centers, or River Centers relative to the routing or mailing of forms from Weather Bureau first- and second-order, CAA, and SAWR stations should be furnished to the appropriate Field Aides. This action is necessary in order to keep the Field Aide properly informed and will help him toward more efficient operations in the field.
5. WB FORM 1011: Use of this Official Weather Observers Record form is optional with the observer. Some observers may prefer to keep an additional copy of their monthly form instead.

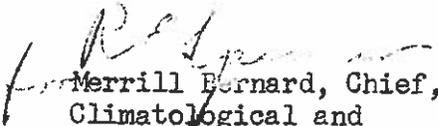
In order to avoid sending these pads to observers who do not want them, it is suggested that they be sent only to those observers who indicate that they are used.

The old style blue covered Form 1011 (2½"x5") entitled "Cooperative Observer's Daily Memoranda" are obsolete, and any stock of these on hand should be discarded.

#### GENERAL

6. REVISION OF NORMALS: For the present we are limiting our normals revision program to first-order stations. Later we plan to prepare instructions from which Section Centers will be able to revise substation normals.

7. WEATHERWISE SUBSCRIPTIONS (REFERENCE: CSM NO. 17, ITEM 5):  
Our Weatherwise subscriptions for cooperative observers have been renewed, and the number increased somewhat, in line with replies to the referenced item.

  
Merrill Bernard, Chief,  
Climatological and  
Hydrologic Services

GUIDE TO CLIMATOLOGICAL SERVICE MEMORANDUM NO. 19.

ITEM NO.

PAGE NO.

INSTRUCTIONS

1.	WB FORM 5201 (Machine Form 1009).....	1
2.	INSTRUCTIONS FOR CHECKING AND PROCESSING EVAPORATION FORMS 1024.....	1-5
3.	LIST OF RIVER AND RAINFALL SUBSTATIONS.....	5
4.	FURNISHING COPIES OF MEMORANDA TO FIELD AIDES.	5
5.	WB FORM 1011.....	5

GENERAL

6.	REVISION OF NORMALS.....	5
7.	WEATHERWISE SUBSCRIPTIONS.....	6