

COMPUTATION OF LOCAL RUNOFF

1. The quantity of water which is additional to Metropolitan's importation will be computed from a water balance pursuant to attached Procedure 1. All water imported through the San Diego Canal to the Reservoir will be gaged by an acoustical flowmeter. Exports from the Reservoir will be measured at several locations, including San Diego Pipelines 3 and 4. Releases made through the two bottom Dam outlets to Tucalota Creek will also be gaged. The Discharge Capacity of the two bottom Dam outlets as a function of Reservoir elevation is shown on attached Graph 1. In addition to these outlet facilities, emergency outflows from the Reservoir may occur over the Dam spillway and through the Dam's emergency discharge pipeline. Releases through these two facilities can be estimated because their Discharge Capacities are rated in terms of Reservoir stage pursuant to attached Graphs 2 and 3. The Dam's emergency discharge pipeline will be used only in rare events requiring rapid dewatering. Dam spillway discharge will occur only on rare occasions during exceptionally large flood events.

2. Metropolitan has installed a weather station at Lake Skinner, including a rain gage and an evaporation pan which make it possible to determine rainfall and evaporative loss on the Reservoir surface. Additionally, recording devices at the Reservoir keep a constant record of water surface elevation.

3. Determination of the quantity of water to be released into Tucalota Creek downstream is further complicated by the fact that the available water in Lake Skinner has been increased by virtue of the fact that a water surface now exists where previously there was a semi-arid valley. The average annual rainfall for the 52-square mile Drainage Basin is 16.9 inches.<sup>1/</sup> This would result in 47,000 acre-feet of annual Local Runoff if 100 percent of the

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<sup>1/</sup> W. A. Wahler & Associates. Preliminary Design Report--Auld Valley Reservoir--Part C.

rainfall actually ran off; however, the average annual Local Runoff from the Drainage Basin into the Reservoir is only 2,400 acre-feet or approximately 5.2 percent of the rainfall that falls in the Basin. Since the 1,140-acre Reservoir surface has an effective Local Runoff of 100 percent, the 16.9 inches of annual rainfall will yield 1,600 acre-feet of Local Runoff, instead of the 83.5 acre-feet the same area would have yielded had the Reservoir not been created.

4. Due to the fact that the Judgment does not explicitly apportion specific quantities of water, Metropolitan does not now intend to exercise any of the specific water rights applicable to the approximately 4,450 acres of riparian land which it has purchased for the Project. However, precipitation which falls on the Reservoir surface, including that portion which would have run off in the absence of the Reservoir will be credited to Metropolitan. As indicated in paragraph 3 above, the average annual volume of Local Runoff is only 5.2 percent of the annual precipitation on the Drainage Basin.

5. An inherent problem exists in the computation of Local Runoff by the method outlined in Procedure 1. A very small error in one gage reading could result in a substantial error in the Local Runoff calculations for moderate-duration, low-intensity rainfall. It has been observed that during small storm events that Local Runoff enters Lake Skinner only from Rawson Creek. Metropolitan will construct a Parshall flume in Rawson Creek so as to accurately measure Local Runoff from this subdrainage basin. Additionally, small earth dikes will be constructed in each major inlet channel to Lake Skinner. The readings obtained from the recording device on the flume will be used as a measure of Local Runoff to Lake Skinner in lieu of the quantity calculated in Procedure 1, provided the earth dikes are undisturbed in all other inlet channels. This method should provide much greater accuracy in establishing Local Runoff for moderate-duration, low-intensity rainfall.

Attachment D

PROCEDURE 1

Procedure for determining quantity and rate of water accumulated in Lake Skinner, which is additional to Metropolitan's importation, for each 24-hour period.

Definitions:

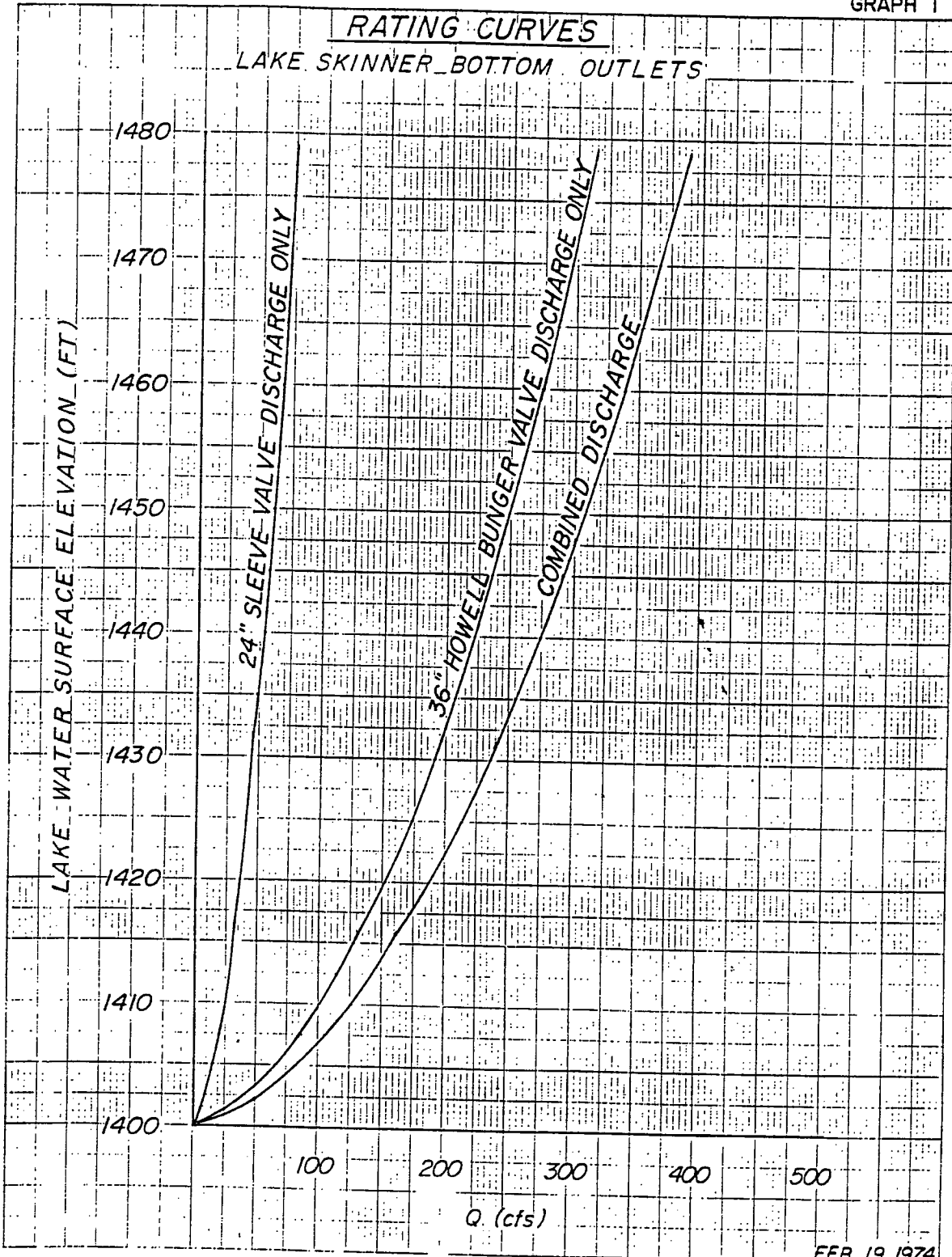
- I = Import from San Diego Canal in acre-feet
- O = Export through outlet conduit to San Diego Pipelines 3 and 4 in acre-feet
- D = Release through outlet works to Tocalota Creek in acre-feet
- E = Evaporation from Reservoir surface in acre-feet
- ✓S = Change in Reservoir Storage Content in acre-feet
- Q = External accumulation in acre-feet
- R = Rate of accumulation (24-hour\* average in cfs)

Calculations:

$$Q = \overset{\checkmark}{S} + \overset{\checkmark}{O} + \overset{\checkmark}{D} + E - \overset{\checkmark}{I}$$
$$R = 0.504 Q$$

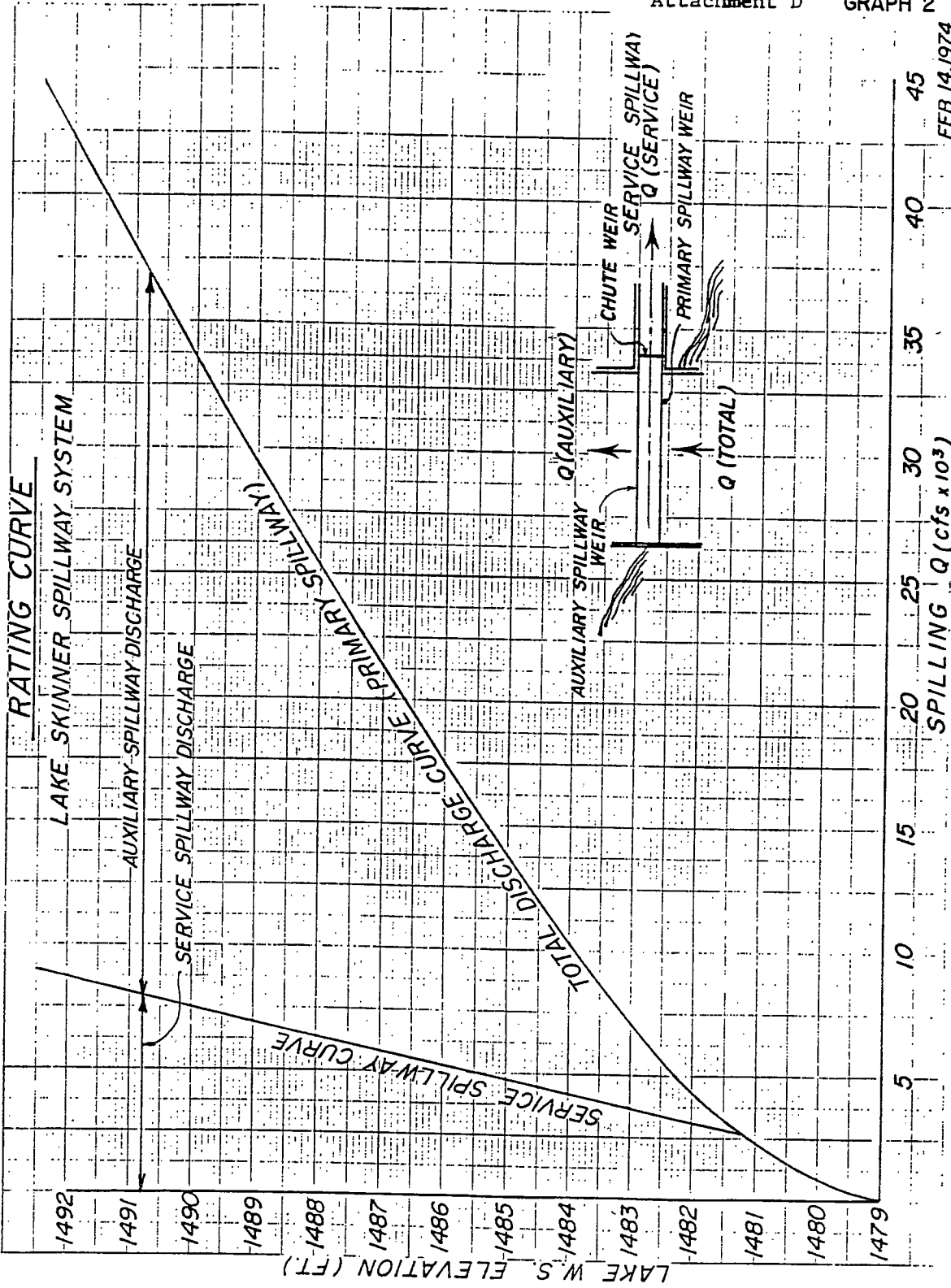
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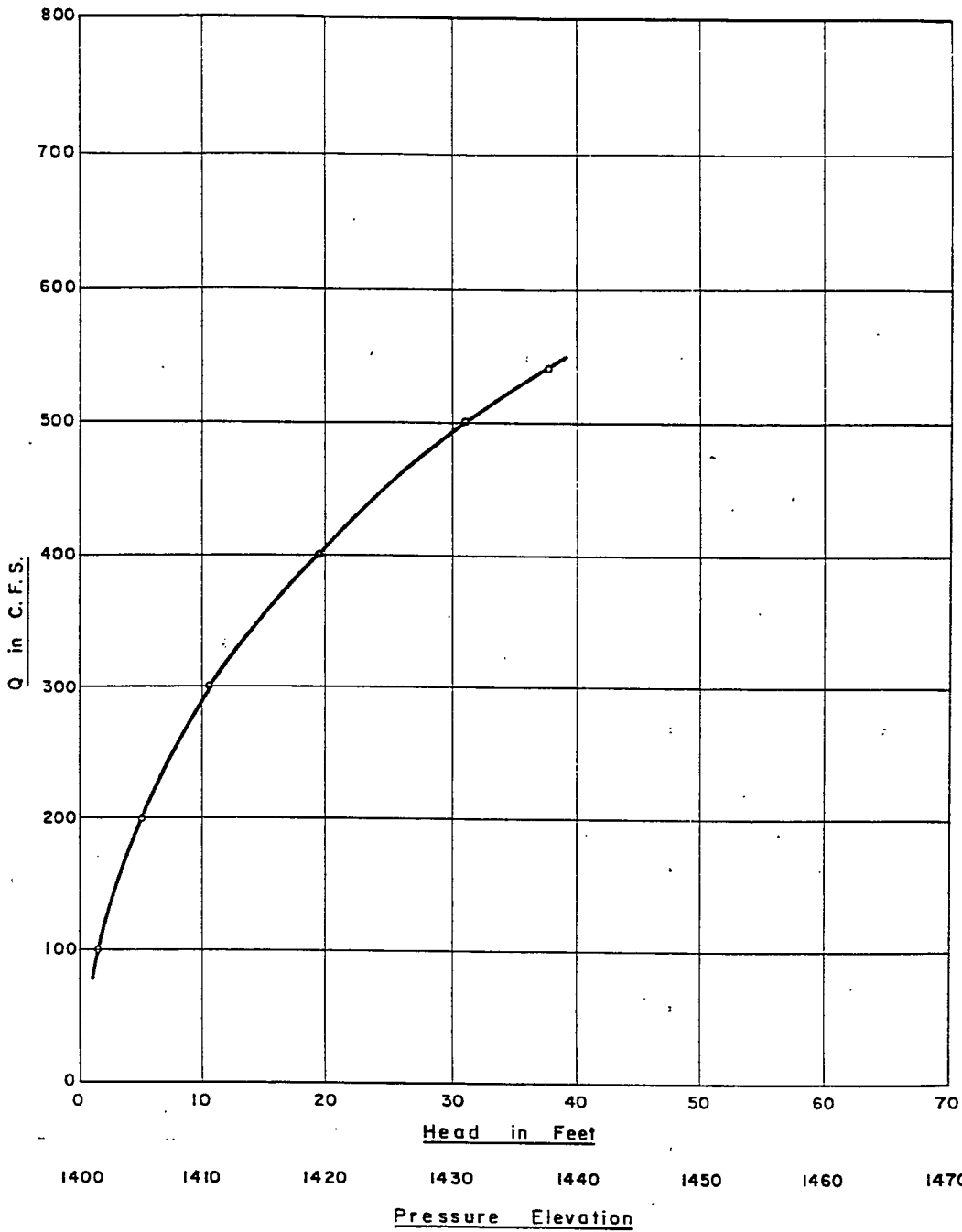
\*The period of calculation is to be the 24 hours starting and ending at 0700 hours.



FEB. 19, 1974

FEB. 14, 1974





RATING CURVE  
60" EMERGENCY DISCHARGE OUTLET  
LAKE SKINNER