the Proposed Rule, the logistic equation corresponding to the 1968 line in Figure 1 would serve as the criteria's sliding scale correlating the number of days of meeting the 2 ppt salinity value with annual unimpaired flow. As described below, however, this annual sliding scale must still be transformed into monthly sliding scales.

(iii) *Moving to Monthly Compliance.* EPA has also refined the final rule to restate the Estuarine Habitat criteria on a month-by-month basis, rather than as a single number of days of compliance covering the entire February to June period.

EPA received comments suggesting that the number of days of meeting the 2 ppt salinity value at Chipps and Roe Islands should be stated solely, or largely, in reference to the patterns of precipitation that could directly affect estuarine habitat during the period intended for protection. For example, criteria that are designed to protect conditions in the February-June period should reference only the unimpaired flows of February-June (or, possibly, January–June). Including precipitation in months outside of this February-June period could lead to inaccuracies in the criteria for February–June that could unnecessarily affect water project operations or inadequately protect the designated uses. This same problem could exist within the February–June period. For example, if in a given year the precipitation in February is substantial, but the following months are very dry, the overall period of February–June would be considered very dry and, using the sliding scale for the entire February-June period, the number of days of compliance with the 2 ppt salinity value at Chipps or Roe Island would be very low. This result may contradict the actual natural hydrological cycle, which under this

scenario would have provided at least one high water period for the estuarine habitat uses.

A related issue raised by the comments and in the CUWA scientific workshops was the problem of how to develop compliance strategies for a given year based on a forecast of hydrological conditions expected during the following months. EPA agrees that this forecasting is unreliable, especially for the critical February and March months which are typically the months of most variable precipitation. Sliding scales such as Figure 1 (for Roe Island), which apply to the entire February to June period of protection, still require the project operators to forecast future hydrological conditions to meet the expected number of days of attainment with the 2 ppt criteria. For example, if February and March are wet, project operators have to forecast weather patterns for April to June to determine whether they should operate their projects to meet a substantial number of days of attaining the 2 ppt salinity value at Chipps or Roe Island (forecasting that the whole period will continue to be wet) or a lesser number of days (forecasting that the remaining months will be dry). Thus, the annual or five month approach described above and shown for Roe Island in Figure 1 would not address the issue of unreliable forecasts.

To address this uncertainty in forecasting long range hydrology, and to provide criteria that more closely reflect the natural hydrology actually affecting the estuarine habitat, EPA is in the final rule restating the Estuarine Habitat criteria on a month-by-month basis. That is, the final criteria define the required number of days of compliance for a particular month solely by reference to the hydrological conditions of the previous month. This approach more precisely ties the salinity conditions affecting Estuarine Habitat with natural hydrological cycles reflecting the time when the estuary attained its designated uses, and is therefore consistent with EPA's overall approach to protecting the Estuarine Habitat designated use.

Developing monthly sliding scales. EPA's analysis indicated that the required number of days of compliance with the 2 ppt criteria in a given month could be quite accurately predicted from logistic models using unimpaired flows of any of (a) the current month, (b) the previous month, (c) the previous two months, or (d) the previous and current month. Including the actual unimpaired flows of the current month, however, did not improve model performance and, in practice, the actual unimpaired flow of the current month cannot be known accurately until the month is over. EPA has, therefore, restated the criteria using the logistic equations described above, but only for one month at a time based on the preceding month's unimpaired flow.

For example, the measured unimpaired flow in January would be used to set the number of days of compliance with the 2 ppt criteria at the Chipps and Roe Island locations. Similarly, measured unimpaired flow in February is used to set March's requirement. This approach has been labeled the "Previous Month's 8-River Index'' (PMI) approach. To make this approach work, the sliding scales exemplified (for Roe Island) in Figure 1 have been transformed into monthly sliding scales. These monthly logistic equations for both Chipps and Roe islands are shown graphically in Figure 3.

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