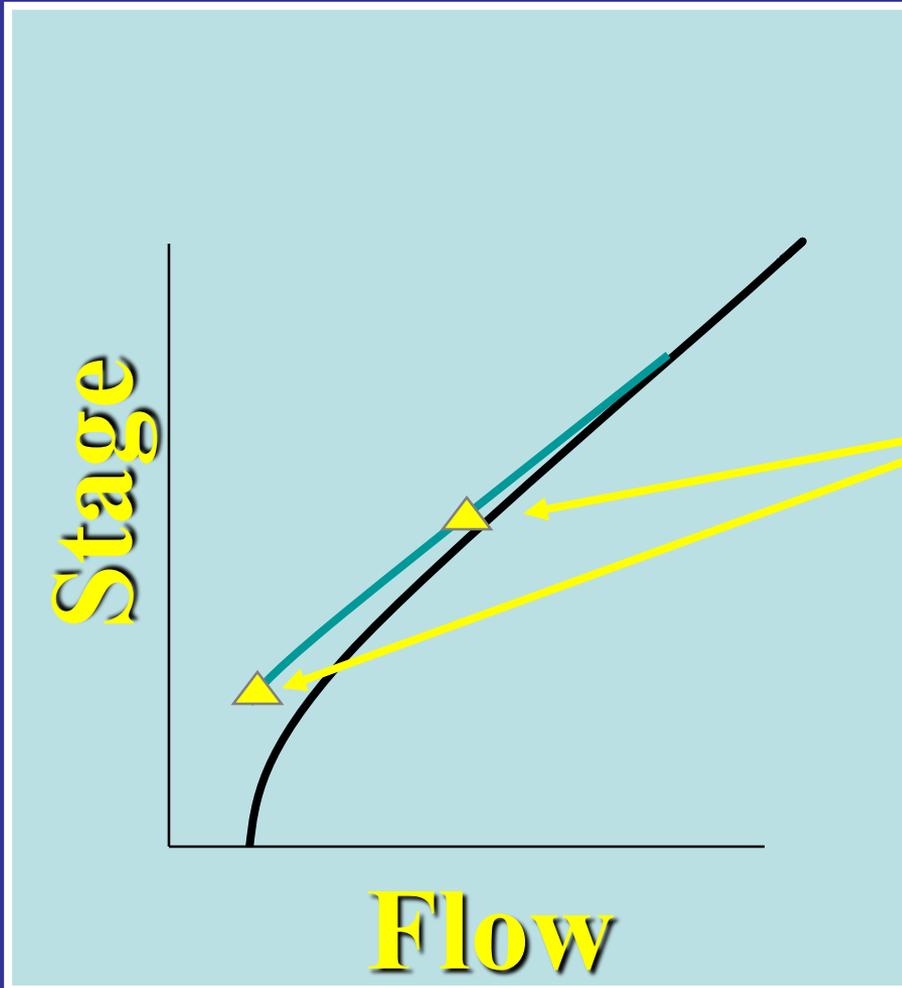


Shifts are changes in ratings that are caused by changes in the control.

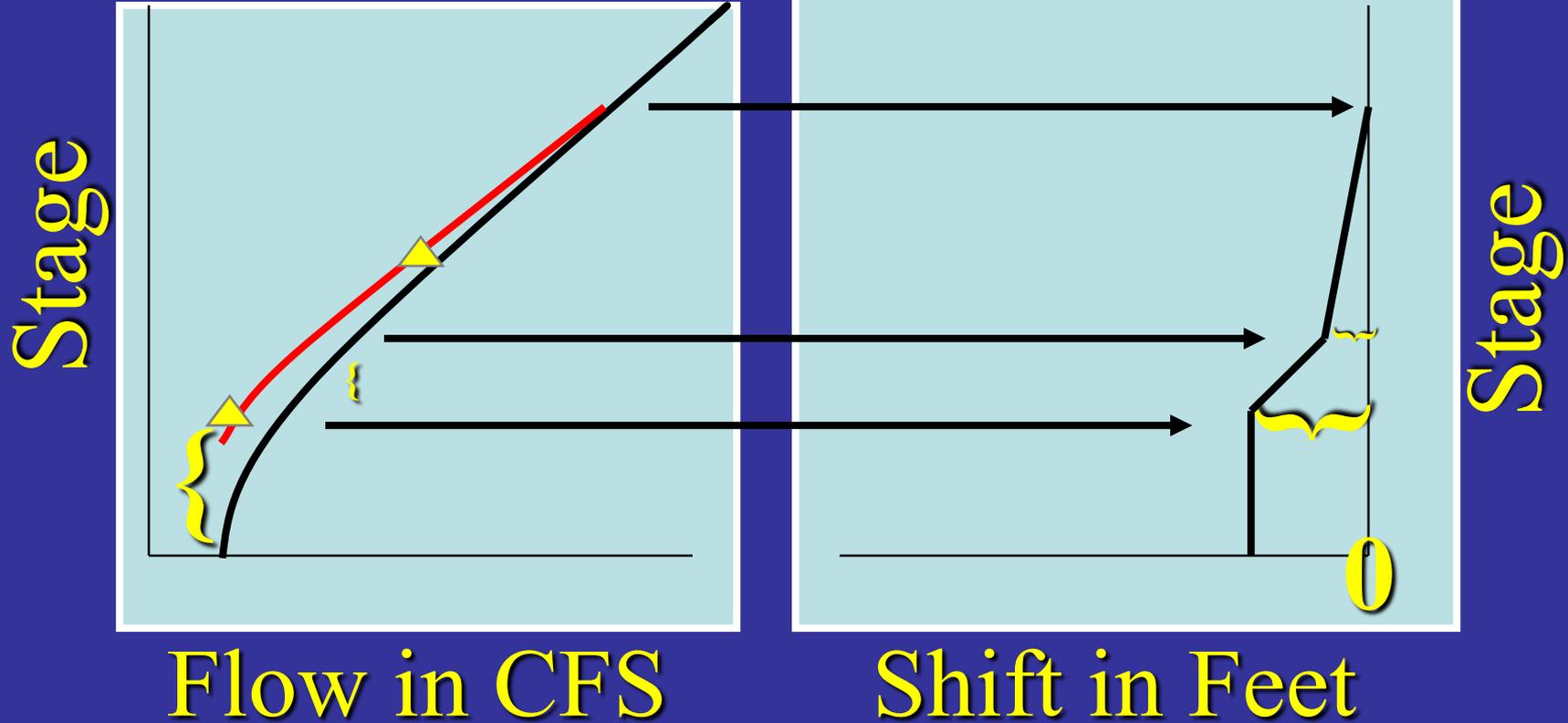


The “shift curve” represents the new “effective” rating. It is based on measured flow and stage data.

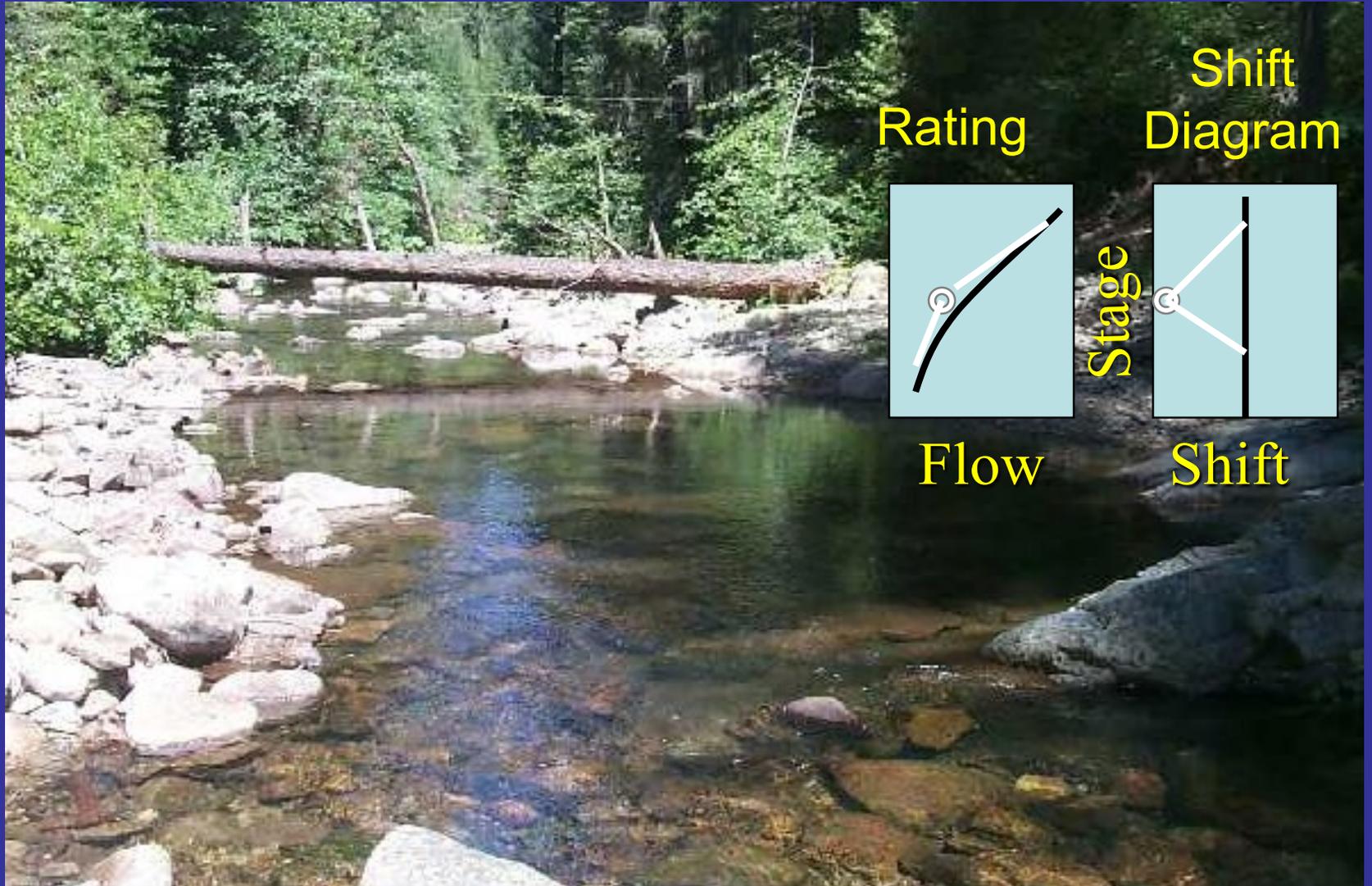


Rating and shift curve

Shift diagram

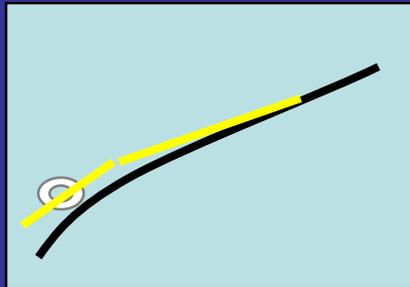
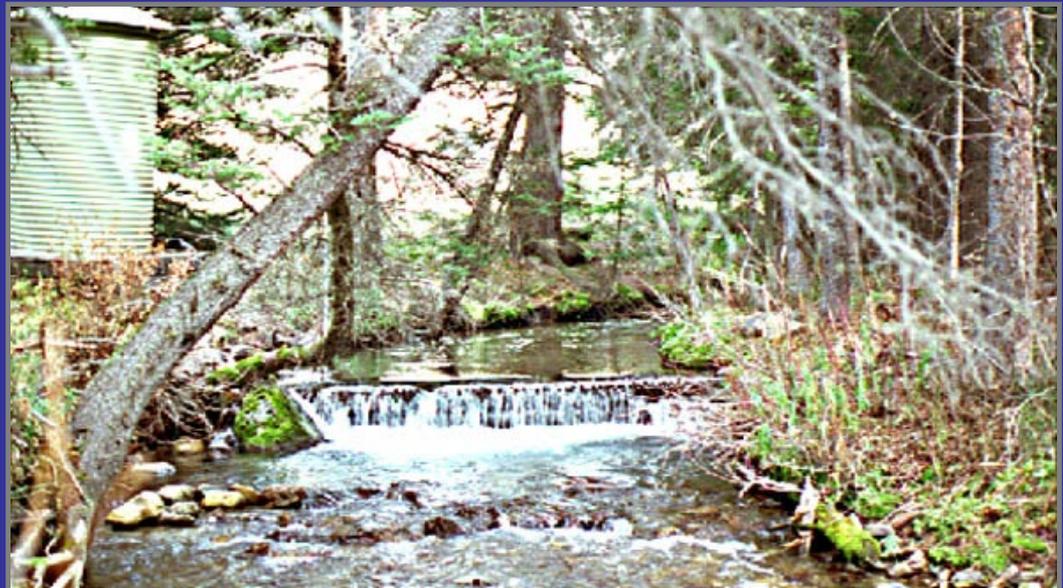


The “shift curve” is the curve representing the departure between the stage at the time of the measurement and the stage required to yield the same flow from the rating. Shifts are digitized as a function of stage and added to the stage record to implement the shift.

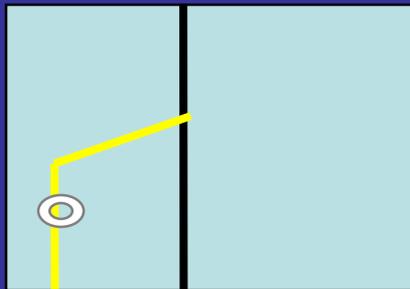


Shifts usually vary as a function of stage.

Shifts also vary with time.

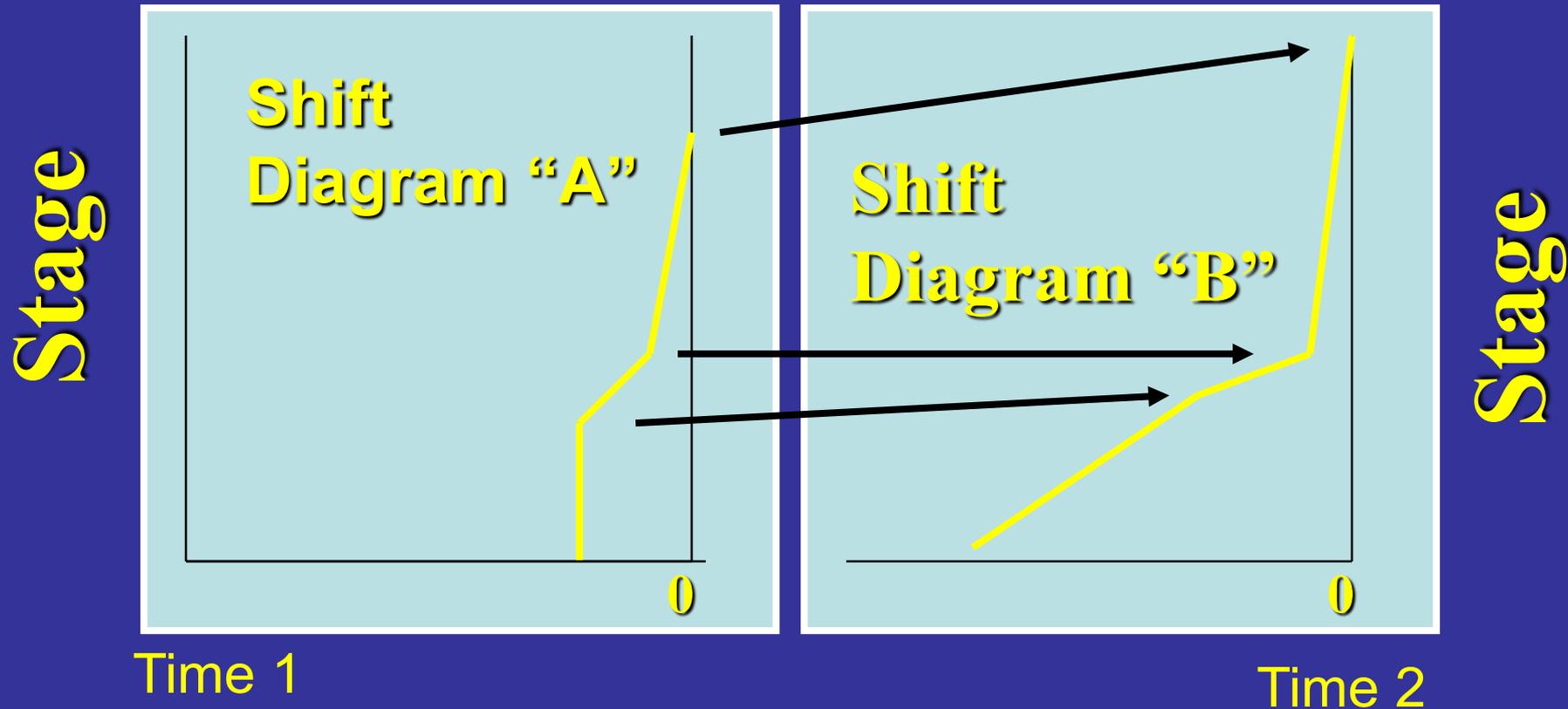


Rating



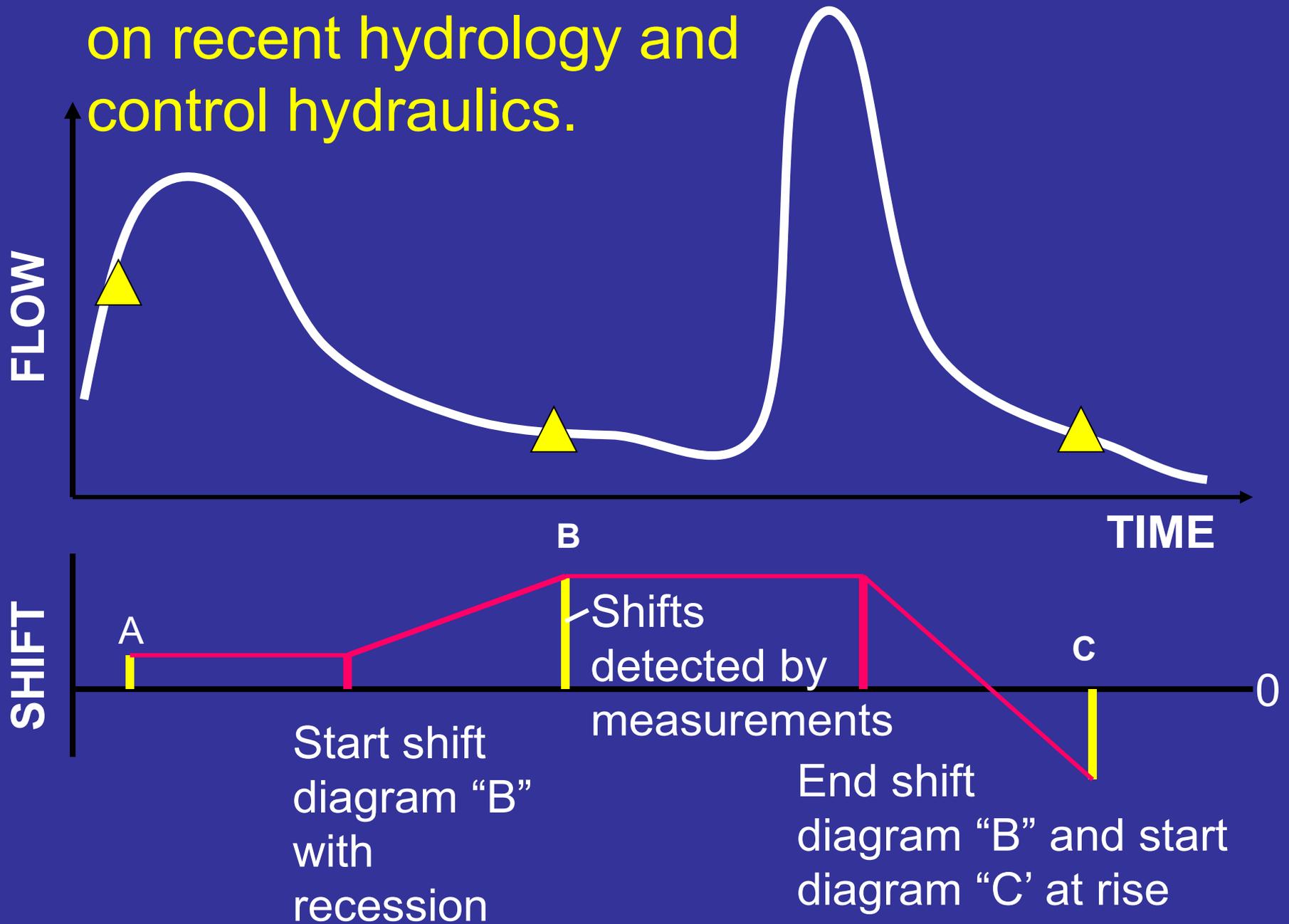
Shift Diagram

Transition of Shift Diagrams



Shift diagrams are transitioned one to another based on linear interpolated through time and stage.

Shift timing and transition should be based on recent hydrology and control hydraulics.



Streamgaging Principals

1. Establish and maintain datums through periodic leveling.
2. Calibrate/check recording gages with base gages.
3. The rating is a hydraulic relation. The shape of the rating is based on hydraulic concepts, not a statistical fitting.
4. Measurements differ in their relevance depending on timing and the portion of control they cover. A measured shift usually applies to only one part of the control, thus, to one part of the rating. Consciously decide on the applicable range and guide the decision on hydraulics.
5. Prove out either the rating (via measurements) or the hydrologic control (via physical observations, leveling, periodic cleaning), or both, and document actions and measurement and control conditions at each visit.

Streamgaging Principals –Con't

6. Explain magnitude, range, and timing of shifts or new ratings in a annual “station analysis” presenting a plausible “story” about the hydrology of the stream (rises, recessions) and hydraulics of the control (scour, fill, vegetation, leaking).
7. Smoothly transition ratings, shifts, stage, and flow through both stage and time. Base transitions on hydrology and hydraulics.
8. Describe equipment (base and recording), control features/stability, measurement needs/ plans, and how plans address FERC “requirements” (bypasses, minimum flows, ramping rates) in a station description.
9. Facilitate local USGS involvement in planning/review by personally asking for their input.
10. Shine light on the data! Archive records and supporting data and broadly share it with the public.