

Topic: Inflow to Export (I:E) Ratio on the San Joaquin River

Region: Delta / San Joaquin Watershed Type of Idea: Operational / Study

Timeframe: April thru May; Above normal and Wet years

Species and Lifestage: Steelhead (Out-Migration)

Current Requirement – Reclamation and DWR shall implement starting in 2012, a minimum of 4:1 for the Vernalis flow-to-combined export ratio (6,000 cfs inflow to 1,500 cfs export), based on a 14-day running average, from April 1st through May 31st, during above normal and wet years.

Idea – With the HORB in place, implement a 1:1 Vernalis flow-to-combined export ratio, based on a 14-day running average, from April 1st through May 31st, during above normal and wet years, when flows at Vernalis are greater than 5,000 or 7,000 cfs.

Past Implementation – Since 2012, it has either been critical dry or dry, as defined by the San Joaquin Valley Classification. Therefore the 4:1 ratio has never been implemented.

Current Science –

- Similar outflows as in Baker and Morhartdt 2001, which indicated that flows over 5,000 to 6,000 cfs were required to move into the linear phase of increasing fish escapement
- Relies on the Mainstem of the San Joaquin as the preferred route to Chipps Island, which is supported by Holbrook, Perry, and Adams 2008, and DWR 2014 Stipulation Study.
- Still awaiting the results from Reclamation's Six- Year Steelhead Acoustic Tag Study, however, the Final 2011 Report indicted while there was some variation in export rates during the tagging study in 2011, there was no apparent relationship between export rates and the probability of remaining in the San Joaquin River at the head of Old River, or, conversely, of entering Old River. Also, preliminary results of Final Six-Year Steelhead Study indicate as Vernalis flows increased, survival increased. Vernalis flows accounted for more of the variation (i.e. had higher coefficients of determination) in steelhead survival than the other variables; exports, inflow/export ratio, flow at the head of Old River, and OMR flows.
- Supported by DWR 2014 Stipulation Study that found that "overall, under the OMR flows tested and the conditions that occurred during the field study, there was little influence of OMR flows on steelhead tag movement during the study."

Modeling Assumptions –

IE Ratio of 1:1 when Vernalis is Greater Than 5,000 or 7,000 cfs

Based on some preliminary draft CalSim modeling, by allowing a 1:1 ratio when flows at Vernalis are greater than 5,000 or 7,000 cfs, the projects experience an increase in water supply. The largest benefits come from the 5,000 cfs limit, since that flow is more typical than 7,000 cfs. Under the 5,000 cfs limit, the projects combined are able to capture an average additional 231 TAF across all water year types. Under the 7,000 cfs limit, the projects would be able to capture more water than the 5,000 cfs but would occur less often.