



TRINITY RIVER RESTORATION PROGRAM

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MEMORANDUM

TO: TRINITY RIVER FLOW SCHEDULE SUB-GROUP
FROM: ANDREAS KRAUSE
CC:
SUBJECT: WY2005 FLOW RELEASE OPTIONS UNDER CONSIDERATION
DATE: 4-7-05

TRRP will present 4 options for the 2005 release schedule at the flow schedule sub-group meeting on April 11. All Options presume a normal water year type (based on the preliminary March forecast). The official water year forecast / determination will not be received until April 8th. Flow release options 1 through 4 are described below and are shown graphically in Figure 1.

OPTION 1 – ROD NORMAL YEAR HYDROGRAPH

Description:

Follow the release schedule for a normal water year as specified in the ROD. This was the majority opinion expressed at the February and March technical flow scheduling meetings. Total annual water volume = 647,000 Acre-Feet.

Objectives:

- As summarized in chapter 8 of the Trinity River Flow Evaluation Study.

OPTION 2 – ROD NORMAL YEAR HYDROGRAPH DELAYED BY 3 DAYS (TMAG RECOMMENDATION)

Description:

Follow the release schedule for a normal water year as listed in the ROD but shift the entire hydrograph 3 days later. The ROD normal year schedule would increase releases from 500 cfs to 2,000cfs on Friday April 29th which is the opening day of the fishing season. A 3 day delay puts the flow increase to 2,000 cfs on Monday May 2nd so as not to adversely impact the opening weekend of the fishing season. Total annual water volume = 646,200 Acre-Feet.

Objectives:

- Same as for a ROD normal year release.
- Improves public safety by avoiding flow increases on a high recreational usage weekend.

OPTION 3 – EXTENDED SPRING FLOW BENCH

Description:

Flow releases begin on April 15th (a week earlier the ROD Normal Year hydrograph) and the ascending limb has flow benches at 2,500 cfs, 3,000 cfs, and 4,000 cfs. A six day, 6,000 cfs peak flow begins on April 28th (9 days earlier than a ROD normal year release). The descending limb follows the same ramping down rate as under the ROD Normal water year but drops to 1,500 cfs (as opposed to 2,000 cfs). The 1,500 cfs bench flow starts on June 2nd (9 days prior to the 2,000 cfs bench under the ROD normal year schedule) and lasts for 38 days. The duration of the ramp

down from 1,500 cfs to the summer baseflow of 450 cfs was extended from 11 days under a ROD normal water year schedule to 28 days. Total annual water volume = 646,400 Acre-Feet.

Objectives:

- Make sure that flows are early enough in the reproductive life-cycle of the foothill yellow-legged frog such that egg masses and tadpoles are not flushed down the river and out of the system before they can seek shelter as juvenile frogs or adult frogs in gravel/cobble bar edge habits.
- Prevent a delay in timing of the natural schedule of oviposition (i.e., deposition of egg masses), which: (1) retards maturation of eggs into tadpoles and tadpoles into juvenile frogs; (2) causes smaller body size at time of metamorphosis relative to normal oviposition schedules, (3) increases overall vulnerability of eggs and tadpoles to desiccation, and predation, and (4) lowers over-winter survival rates for first year juvenile frogs.

Strategy:

- Increase availability of foothill yellow-legged frog spawning habitat under the existing bermed channel conditions by dropping bench flows from 2,000 cfs to 1,500 cfs.
- Begin the 1,500 cfs bench 10 days early to reduce the potential for desiccation of egg masses associated with early spawning.
- Extend ramp down from 1,500 cfs to 450 cfs to increase availability of warm cobble/gravel edge and backwater habitats for tadpoles, and help insure that there is enough time for tadpoles to complete metamorphosis into juvenile frogs.

OPTION 4 – MODIFIED NORMAL YEAR WITH A 7,000 CFS PEAK RELEASE

Description:

This option has a 4 day peak release of 7,000 cfs and two, 2-day flow benches at 4,500 cfs and 6,000 cfs on both the ascending and descending limb of the hydrograph. The water volume needed to accomplish the 7,000 cfs peak is obtained by steepening the descending limb of the hydrograph between 6,000 cfs and 2,000 cfs. Total annual water volume = 647,000 Acre-Feet.

Objectives:

- The primary objective of the 7,000 cfs peak is to obtain high water mark data to be used for model calibration. The best high water mark data currently available is at 5,000 cfs. Obtaining high water mark data at 7,000 cfs will improve our confidence in model predictions for 8,500 cfs or 11,000 cfs releases. Models that require high water mark data for calibration include: HEC-RAS (used for bank rehab design and identification of needed infrastructure improvements); GSTARS sediment transport model; SALMOD; PHABSIM; river water temperature; etc.
- The flow benches at 4,500 cfs and 6,000 cfs allow for collection of additional high water mark data at these flow rates and facilitate sediment data collection. Extensive sediment data was collected at these flows in 2004 and it would be useful to obtain a second year of data to improve model calibration and better understand sediment transport variability.
- ROD sediment transport, water temperature, and habitat objectives as stated in the Trinity River Flow Evaluation Study should all be met.

Figure 1 - 2005 Flow Release Options for a Normal Water Year Type

