ATTACHMENT A
SCOPE OF WORK

STANISLAUS RIVER
SMOLT SUVIVAL DATA ANALYSIS

Assess reach-specific and river-wide smolt survival in the Stanislaus River based on USFWS 1999 smolt survival experiments. Data to be analyzed were provided to Stillwater Sciences by USFWS on December 1, 1999. The analyses to be completed are described below. For these analyses, reaches are defined as follows:

Reach I = Knights Ferry—RM40
Reach II = RM40—RM38
Reach III = RM38—Caswell

Task 1: Estimate survival (with confidence intervals) in reaches I and II using a multinomial model. This model will treat the Knights Ferry, RM40, and RM38 releases as an interlocking set of three paired-release experiments with recoveries at the Caswell trap. The model does not rely on estimated trap efficiency at Caswell.

Task 2a: Estimate survival (with confidence intervals) in reaches I, II, and III and river-wide survival using the traditional approach that expands recovery based on estimated trap efficiency. This task will rely on recaptures at Caswell and estimated daily trap efficiency (based on the efficiency relationships developed by S.P. Cramer and Associates). For reaches I and II, compare the results of the more traditional estimates to the results of the multinomial modeling completed in Task 1.

Task 2b: Estimate survival (with confidence intervals) in reach I using Oakdale recovery data and the Oakdale efficiency experiment (conducted during the survival releases). Compare this with the reach I survival estimate from tasks 1 and 2a.

Tasks 1 and 2 include funds for outside peer review of the analysis and results.

The work will be performed on a time and materials basis not to exceed $4,990.

Optional Task:

Task 3: Develop a Bayesian model to estimate smolt survival in reaches I, II, and III and river-wide survival. This approach would use recovery data from both traps, and prior distributions for the reach survivals and trap efficiencies constructed from previous years' data; the use of prior information will produce narrower confidence intervals for the survival estimates.

A scope of work and budget for this task could be developed upon request.