

**Summary Report for Chelan Public Utility District
Lake Chelan Relicensing Studies
October 22, 2000**

1. **Stehekin River Investigations**

A Stehekin River Investigation Study Plan was developed between Chelan PUD and the National Park Service (NPS) on January 15, 2000. For details of studies currently being conducted in the Stehekin River drainage, please refer to that document. Study scopes were further refined in a memo from Jeff Osborn (Chelan PUD) to Reed Glesne (NPS) on May 12, 2000. Summaries of ongoing studies are listed below.

a. Fry Emergence Surveys

Please refer to the summary prepared by Chris Fairbanks.

b. Creel Surveys

Per the Study Plan agreement with the National Park Service and Chelan PUD, DE&S was contracted to conduct creel surveys from July 4, 2000 through September 4, in the Stehekin River. Surveys were to be conducted on two consecutive days per week, capturing weekday and weekend effort and significant holidays, from the High Bridge downstream to the mouth of the river.

A total of 21 creel surveys were conducted by whitewater raft from Independence Day until Labor Day, 2000. Eleven surveys were conducted on weekdays while ten were conducted on weekends; the survey period included both the 4th of July and Labor Day holidays.

c. Genetic Analysis of Fish Tissue

DE&S was contracted to collect tissue samples for future DNA analysis from 50 westslope cutthroat trout and 50 rainbow trout. These fish were to be collected below the High Bridge.

To date, approximately 60 tissue samples have been collected, from the creel surveys and from hook and line. Samples were frozen, and collection will continue through 2001.

d. Spawning and Fish Surveys - In cooperation with Chelan PUD and the National Park Service (NPS), DE&S is participating in a habitat mapping and fish population estimation effort on the Stehekin River and its side channels.

The NPS segregated the Stehekin River into 35, 500-m segments from the mouth of the Stehekin River upstream to the High Bridge. They further identified all the side channels to the Stehekin River within this reach with a unique number and mapped the habitat within these side channels.

The NPS randomly selected a beginning segment (1); in that segment and every third segment consecutively up the river. DE&S was contracted to survey for fish in the side channels. Surveys would be conducted three times during the kokanee – chinook spawning period from September 1 until October 15. The purpose of these surveys was to determine the relative abundance of kokanee and chinook spawners during this period, determine a peak for their spawning, and document the presence of other fish species present in the side channels. Additional surveys will be conducted in 2001. Upon completion of the study, the NPS may use some of these side channels as index areas for

future surveys. Chelan PUD will survey the main channel during their regularly scheduled fall spawner surveys.

Table 1 summarizes the three surveys conducted by DE&S in the side channels during the fall season.

DE&S conducted the first spawner and snorkel survey from September 11 – 14. A total of 7,587 m of habitat in 31 separate channel segments was surveyed during this period, as well as the mouth of the Stehekin River. Of these side channels, 17, representing 2,352 m of side channel habitat, were dry or intermittent, with no fish present. River flow was approximately 750 cfs during the surveys.

The second survey was conducted from September 23 – 25. Those side channels which were dry during the first survey were also dry during the second survey. A fall freshet, which peaked at a flow of 1,600 cfs, occurred between the first and second surveys.

The third and final fall survey was conducted from October 8 – 10. Between the second and third surveys, a major storm event in the upper basin resulted in peak flows of nearly 3,800 cfs. Flows dropped to a low of 506 cfs during this last survey.

Burbot were found at the mouth of the Stehekin River and in the first major side channel (s4), while the lake trout were observed immediately upstream of the mouth in the first side channel (s3a). Three burbot died while attempting to ingest whole kokanee, including the one observed in s4.

Species	Sept 12-13	Sept 23 - 25	Oct 8 – 10	Total
Brook trout	1	7	25	33
Burbot	2	1	1	4
Chinook	18	25	26	69
Chinook Juveniles			2	2
Unidentified Fry	117	135	235	487
Kokanee	8,345	18,062	14,075	40,482
Lake Trout	3	0	0	3
Rainbow	74	25	58	157
Cutthroat	4	7	2	13
Total	8,564	18,262	14,424	41,250

The maximum number of kokanee spawners was observed during the September 23 – 25 survey, with substantial numbers of spawners still evident in early October. This indicates that peak spawning most likely occurs near the end of September or the beginning of October. Chinook spawning, although much more limited in number, follows a similar trend.

Flows observed during the surveys (approximately 750 cfs decreasing to about 506 cfs), are consistent with the long term average discharges for the same period of time in the Stehekin River. Sites surveyed with adequate flow, therefore, most likely are representative of those areas which suitable for kokanee and chinook spawning.

2. Lake Chelan Entrainment

DE&S was contracted by Chelan PUD to conduct a limited entrainment study at the dam for the of the Lake Chelan Hydroelectric Project. The objective of the study was to determine whether westslope

cutthroat trout and bull trout, the native species of concern in Lake Chelan, were present in the vicinity of the intakes and the dam spillway and had the potential to be entrained.

We proposed a number of sampling protocols; however, permits were not secured in a timely manner for us to implement those protocols. As a result, we undertook an intensive hook-and-line program in the vicinity of the dam and the intakes. Figure 1 depicts the areas that were sampled.

Sampling took place on 25 days, beginning on June 13 and continuing through August 29, 2000. The most intensive sampling occurred between June 13 and July 19 (22 days).

Species	No. Captured	Minimum (mm)	Maximum (mm)	Mean (mm)
Rainbow T.	290	170	330	254
Smallmouth bass	6	165	348	247

The data from the 2000 sampling period have not been analyzed; it is anticipated that the study will be expanded in 2001. No cutthroat trout or bull trout were observed at the dam, the intake, or in the catch. Observations by the samplers indicated that fish moved upstream, away from the spill gates, when the gates were opened.