



TRINITY FISHERIES CONSULTING

ANADROMOUS FISHERIES RESTORATION

POST OFFICE BOX 820, ARCATA, CALIFORNIA 95521

FISH HABITAT INVENTORY FOR LOWER LOST MAN CREEK

SEPTEMBER 18, 1990

Keith Barnard

TRINITY FISHERIES CONSULTING

ARCATA, CALIFORNIA

Introduction

Removal of an old concrete dam on lower Lost Man Creek was undertaken by Redwood National Park (RNP) during the summer, 1989. As a part of the evaluation of that removal, Trinity Fisheries Consulting (TFC) was contracted to provide an inventory of the fish habitat types of lower Lost Man Creek. The present survey was conducted on September 17 and 18, 1990 and represents the third overall and the first post-project habitat inventory of the creek.

Methods

The fish habitat of Lost Man Creek from the mouth at Prairie Creek (station 00+00 meters) to the Lost Man Creek picnic area bridge at station 20+50 meters was inventoried using the habitat typing method of Bisson et al (1981). Habitat typing was performed by Keith Barnard at a discharge of approximately 1.3 cfs, representing the summer baseflow conditions. The parameters measured followed the methods used during the summer and winter, 1988 surveys (TFC 1988) and include, for each discrete unit, the number, habitat type, length, average width, surface area, average depth, maximum depth, volume, pool tail crest depth and a two part shelter rating. The present survey also includes a substrate coding for each habitat unit which identifies the dominant and subdominant particle size classes using the following system:

<u>Code</u>	<u>Size</u>	<u>Code</u>	<u>Size</u>
1	Silt	6	Large cobble (5"-10")
2	Sand	7	Small boulder (10"-20")
3	Small gravel (.08"-1")	8	Large boulder (>20")
4	Large gravel (1"-2")	9	Bedrock
5	Small cobble (2"-5")		

Summary and analysis of the 1990 data followed the same criteria as the pre-project surveys (TFC 1988). The stream reach was separated into two strata: the lower 1430 meters considered under the influence of the dam; and the upper stratum from station 14+30 to 20+50 at the picnic area bridge. Data are presented in summary tables, pie charts and histograms of key parameters for the two strata (Appendix A). A brief comparison is made between the habitat conditions prior to and following the dam removal.

Results

A comparison of the distribution of habitat types by surface area between the summer 1988 survey (TFC 1988) and the present summer 1990 survey demonstrates a distinct change in the lower section. The area distribution pie charts for both

surveys (Figure 1) clearly indicate that there was little change in the riffle:run:pool ratio over time in the upper section while in the lower section, pool area decreased from 51.5% of the total to 36.7% and riffle area increased from 19.8% to 31.9%.

Examination of the summary tables of the lower section for 1988 and 1990 reveals a decrease of pools over time in the percentage of units (49.5% to 37.9%), the percentage of the surface area, and the percentage of the volume of the section (76.0% to 57.4%). Along with these decreases comes a corresponding increase in riffles over time throughout the lower section. The average width per unit decreased from 5.7 meters to 5.4 m.

The upper section (14+50 to 20+50 m) exhibited less of a change during the study period. Most of the changes were in the decline of the unit numbers and surface area of runs and secondary channel pools. Average width per unit decreased from 5.5 m to 5.0 m

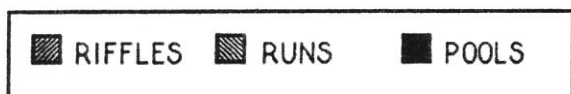
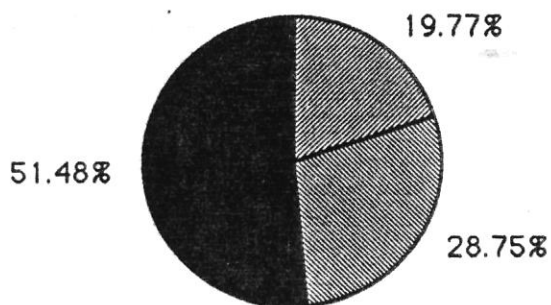
Conclusions

The changes in fish habitat in the lower section of Lost Man Creek between summer, 1988 and summer, 1990 are likely a response to the removal of the concrete dam during the summer, 1989.

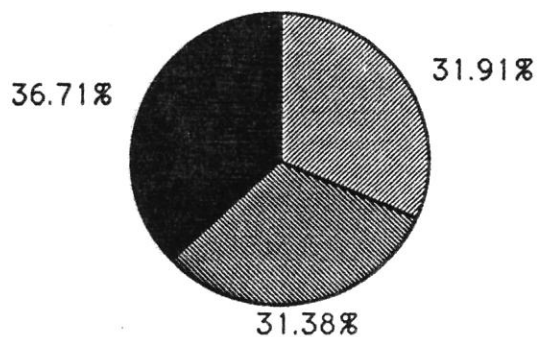
Study of the impact of the apparent habitat type shift to the fisheries was not within the scope or budget of the post-project habitat typing. The direct observation and electrofishing conducted during the summer, 1988 was not repeated for this post-project monitoring. Nonetheless, some observations are noted.

The removal of the dam has clearly improved access to the upper sections of Lost Man Creek for spawning adult salmonids. Assuming that chinook salmon fry tend to move out of the spawning tributaries as young of the year in this region, the decrease in pool habitat will likely have little effect on chinook fry survival. On the other hand, coho salmon, which rear at least one year in tributaries, and steelhead, which rear for one to two years, use pools for much of their rearing periods. The apparent reduction of pool habitat in the lower 1450 meters will likely impact coho salmon and steelhead by causing a temporary decrease in the carrying capacity of lower Lost Man Creek for the summer and winter rearing stages.

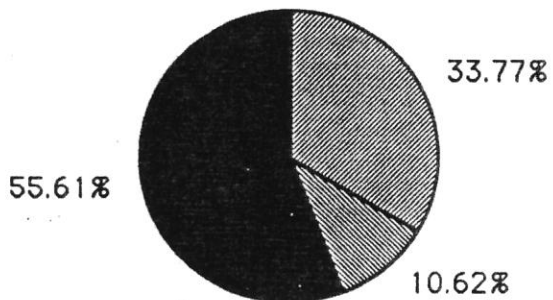
**LOWER LOST MAN CREEK
AREA DISTRIBUTION
SUMMER BASEFLOW, 1988**



**LOWER LOST MAN CREEK
AREA DISTRIBUTION
SUMMER BASEFLOW, 1990**



**UPPER LOST MAN CREEK
AREA DISTRIBUTION
SUMMER BASEFLOW, 1988**



**UPPER LOST MAN CREEK
AREA DISTRIBUTION
SUMMER BASEFLOW, 1990**

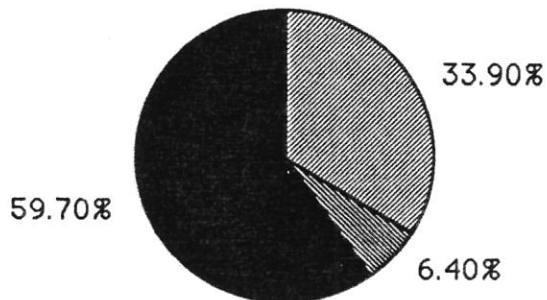
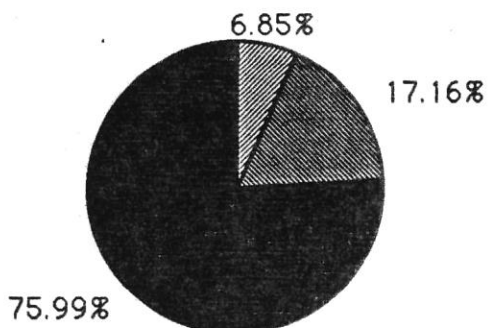


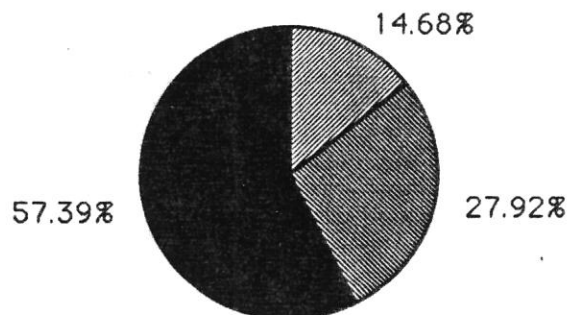
Figure 1. Comparison of surface area distribution of fish habitat for lower Lost Man Creek between 1988 and 1990.

**LOWER LOST MAN CREEK
VOLUME DISTRIBUTION
SUMMER BASEFLOW, 1988**



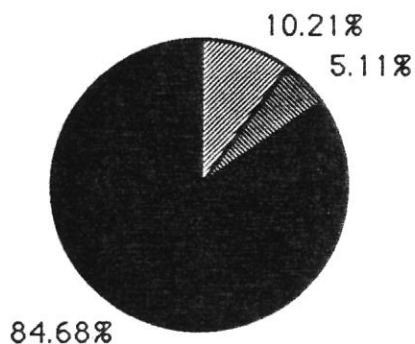
RIFFLES RUNS POOLS

**LOWER LOST MAN CREEK
VOLUME DISTRIBUTION
SUMMER BASEFLOW, 1990**



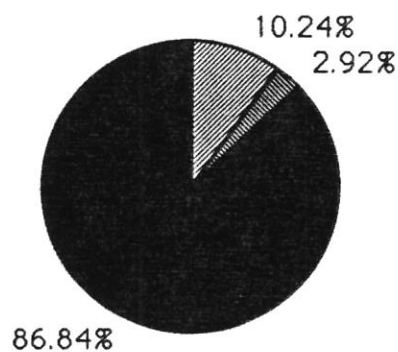
RIFFLES RUNS POOLS

**UPPER LOST MAN CREEK
VOLUME DISTRIBUTION
SUMMER BASEFLOW, 1988**



RIFFLES RUNS POOLS

**UPPER LOST MAN CREEK
VOLUME DISTRIBUTION
SUMMER BASEFLOW, 1990**



RIFFLES RUNS POOLS

Figure 2. Comparison of volume distribution of fish habitat for lower Lost Man Creek between 1988 and 1990.

References

Bisson, P.A., J.L. Nielsen, R.A. Palmason and L.E. Grove.
1981. A system of naming habitat types in small streams,
with examples of habitat utilization by salmonids during
low streamflow. Symposium Proceedings: Acquisition and
Utilization of Aquatic Habitat Inventory Information.
Western Division American Fisheries Society.

Trinity Fisheries Consulting. 1988. Baseline documentation
of the physical and biological aquatic ecosystem of Lost
Man Creek. Investigation Report to Redwood National
Park.

UNITS: METRIC

UPPER LOST MAN CREEK (1433 - 2050m.): PHYSICAL SUMMARY

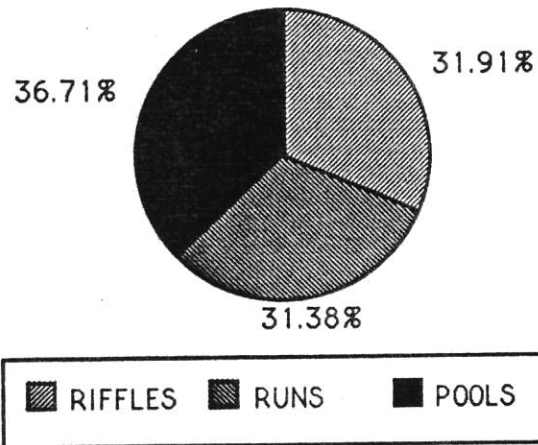
SEPTEMBER 17-18, 1990

SEPTEMBER 17-18, 1990																			
HABITAT DESCRIPTIONS	HABITAT TYPES	UNITS		LENGTH		WIDTH		AREA		DEPTH		VOLUME		SHELTER RATING					
		% OF TOTAL	TOTAL	% OF TOTAL	TOTAL	AVG./UNIT	AVG./UNIT	% OF TOTAL	TOTAL	AVG./UNIT	MAXI-MUM	AVG. MAX.	TOTAL	% OF TOTAL	TOTAL	AVG./UNIT	WEIGHTED VALUE		
																		% COVER	AVG./UNIT
RIFLES																			
LO GRAD. RIFLES	1	16	40.0%	236.2	37.2%	14.8	4.5	1,143.5	33.9%	71.5	0.1	0.3	0.2	111.8	10.2%	7.0	6.6%	1.2	0.1
TOTAL/AVG.	1	16	40.0%	236.2	37.2%	14.8	4.5	1,143.5	33.9%	71.5	0.1	0.3	0.2	111.8	10.2%	7.0	6.6	1.2	0.1
RUNS																			
GLIDE	14	2	5.0%	27.7	4.4%	13.9	5.9	162.8	4.8%	81.4	0.1	0.3	0.2	22.1	2.0%	11.1	5.0%	1.0	0.1
RUN	15	1	2.5%	10.8	1.7%	10.8	4.9	53.0	1.6%	53.0	0.2	0.3	0.3	9.8	0.9%	9.8	5.0%	2.0	0.1
TOTAL/AVG.	2	3	7.5%	38.5	6.1%	12.8	5.6	215.8	6.4%	71.9	0.1	0.3	0.3	31.9	2.9%	10.6	5.0	1.3	0.1
POOLS																			
2 nd CHANNEL POOL	4	1	2.5%	7.7	1.2%	7.7	4.3	33.1	1.0%	33.1	0.5	1.0	1.0	16.3	1.5%	16.3	60.0%	3.0	1.8
BCKWTR./LOD	7	1	2.5%	6.8	1.1%	6.8	5.5	37.5	1.1%	37.5	0.4	0.7	0.7	15.0	1.4%	15.0	35.0%	3.0	1.1
LAT. SCOUR/LOD	10	7	17.5%	95.2	15.0%	13.6	5.4	519.5	15.4%	74.2	0.4	1.4	0.9	263.9	24.2%	37.7	25.0%	2.7	0.7
LAT. SCOUR/RTWD.	11	7	17.5%	106.9	16.8%	15.3	5.0	578.6	17.2%	82.7	0.3	0.9	0.6	174.1	15.9%	24.9	15.7%	2.6	0.4
LAT. SCOUR/BDRK.	12	4	10.0%	105.3	16.6%	26.3	5.8	608.2	18.0%	152.1	0.5	1.7	1.1	348.1	31.9%	87.0	26.3%	2.8	0.7
LAT. SCOUR/BOUL.	20	1	2.5%	38.5	6.1%	38.5	6.2	236.7	7.0%	236.7	0.6	1.3	1.3	131.1	12.0%	131.1	15.0%	3.0	0.5
TOTAL/AVG.	6	21	52.5%	360.3	56.7%	17.2	5.3	2,013.6	59.7%	95.9	0.4	1.7	0.8	948.5	86.8%	45.2	23.8	2.7	0.7
SHELTER RATING																			

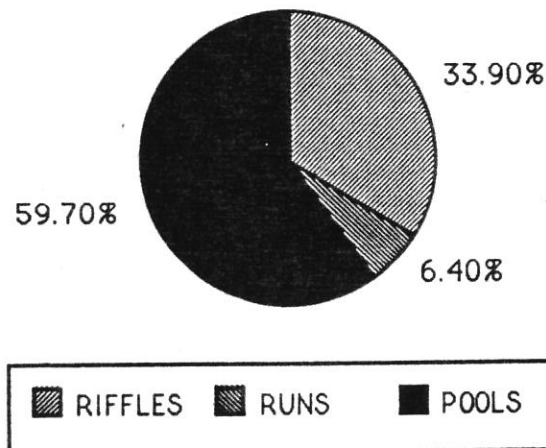
UNIT: METRIC
LOWER LOST MAN CREEK (0 - 1433 m.): PHYSICAL SUMMARY
SEPTEMBER 17-18, 1990

SEPTEMBER 17-18, 1990																			
HABITAT DESCRIPTIONS	HABITAT TYPES	UNITS		LENGTH		WIDTH		AREA		DEPTH		VOLUME		SHELTER RATING					
		TOTAL	% OF TOTAL	AVG. / UNIT	% OF TOTAL	AVG. / UNIT	AVG. / UNIT	MAXI-MUM	AVG. / UNIT	TOTAL	% OF TOTAL	AVG. / UNIT	% COVER	VALUE	WEIGHTED VALUE				
RIFFLES																			
LO GRAD. RIFFLES	1	31	35.6%	482.3	31.6%	15.6	5.2	2,789.0	31.6%	90.0	0.1	0.4	0.2	368.1	14.6%	11.9	7.6%	1.5	0.1
"CHUTE"	23	1	1.1%	4.6	0.3%	4.6	6.2	28.4	0.3%	28.4	0.1	0.1	0.1	0.9	0.0%	0.9	0.0%	0.0	0.0
TOTAL/AVG.	2	32	36.8%	486.9	31.9%	15.2	5.2	2,817.4	31.9%	88.0	0.1	0.4	0.2	369.0	14.7%	11.5	7.3	1.4	0.1
RUNS																			
GLIDE	14	5	5.7%	85.9	5.6%	17.2	7.0	632.0	7.2%	126.4	0.1	0.4	0.3	86.3	3.4%	17.3	7.0%	1.0	0.1
RUN	15	17	19.5%	377.3	24.7%	22.2	5.1	2,138.8	24.2%	125.8	0.2	0.5	0.3	615.5	24.5%	36.2	7.4%	1.5	0.1
TOTAL/AVG.	2	22	25.3%	463.2	30.3%	21.1	5.5	2,770.8	31.4%	125.9	0.2	0.5	0.3	701.8	27.9%	31.9	7.3	1.4	0.1
POOLS																			
2 nd CHANNEL POOL	4	2	2.3%	22.2	1.5%	11.1	3.5	82.4	0.9%	41.2	0.4	0.7	0.6	25.2	1.0%	12.6	15.0%	2.5	0.4
BCKWTR./BOUL.	5	1	1.1%	8.6	0.6%	8.6	11.0	92.8	1.1%	92.8	0.2	0.7	0.7	20.0	0.8%	20.0	5.0%	2.0	0.1
PLUNGE POOL	9	1	1.1%	14.8	1.0%	14.8	12.0	181.8	2.1%	181.8	0.9	1.2	1.2	156.6	6.2%	156.6	20.0%	3.0	0.6
LAT. SCOUR/LOD	10	12	13.8%	222.1	14.5%	18.5	6.1	1,338.1	15.2%	111.5	0.4	1.7	0.8	635.9	25.3%	53.0	27.1%	3.0	0.8
LAT. SCOUR/RTWD.	11	4	4.6%	36.7	2.4%	9.2	3.8	154.5	1.7%	38.6	0.3	0.7	0.5	60.7	2.4%	15.2	11.3%	3.0	0.3
LAT. SCOUR/BDRK.	12	1	1.1%	27.7	1.8%	27.7	3.7	102.2	1.2%	102.2	0.2	0.5	0.5	22.0	0.9%	22.0	15.0%	2.0	0.3
LAT. SCOUR/BOUL.	20	10	11.5%	224.2	14.7%	22.4	4.9	1,207.3	13.7%	120.7	0.4	1.2	0.7	488.0	19.4%	48.8	16.5%	3.0	0.5
CORNER POOL	22	2	2.3%	20.9	1.4%	10.5	4.2	82.9	0.9%	41.5	0.4	0.7	0.7	34.0	1.4%	17.0	15.0%	2.5	0.4
TOTAL/AVG.	8	33	37.9%	577.2	37.8%	17.5	5.4	3,242.0	36.7%	98.2	0.4	1.7	0.7	1,442.4	57.4%	43.7	19.2	2.9	0.6
SHELTER RATING																			
HABITAT DESCRIPTIONS	HABITAT TYPES	UNITS		LENGTH		WIDTH		AREA		DEPTH		VOLUME		SHELTER RATING					
		TOTAL	% OF TOTAL	AVG. / UNIT	% OF TOTAL	AVG. / UNIT	AVG. / UNIT	MAXI-MUM	AVG. / UNIT	TOTAL	% OF TOTAL	AVG. / UNIT	% COVER	VALUE	WEIGHTED VALUE				
RIFFLES	2	32	36.8%	486.9	31.9%	15.2	5.2	2,817.4	31.9%	88.0	0.1	0.4	0.2	369.0	14.7%	11.5	7.3%	1.4	0.1
RUNS	2	22	25.3%	463.2	30.3%	21.1	5.5	2,770.8	31.4%	125.9	0.2	0.5	0.3	701.8	27.9%	31.9	7.3%	1.4	0.1
POOLS	8	33	37.9%	577.2	37.8%	17.5	5.4	3,242.0	36.7%	98.2	0.4	1.7	0.7	1,442.4	57.4%	43.7	19.2%	2.9	0.6
SHELTER RATING																			
TOTAL/AVG.	12	87	100.0%	1527.3	100.0%	17.6	5.4	8,830.2	100.0%	101.5	0.2	1.7	0.4	2,513.2	100.0%	28.9	11.8%	2.0	0.3

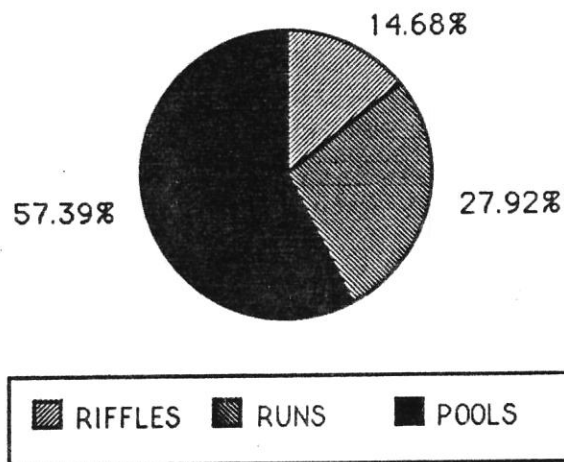
**LOWER LOST MAN CREEK
AREA DISTRIBUTION
SUMMER BASEFLOW, 1990**



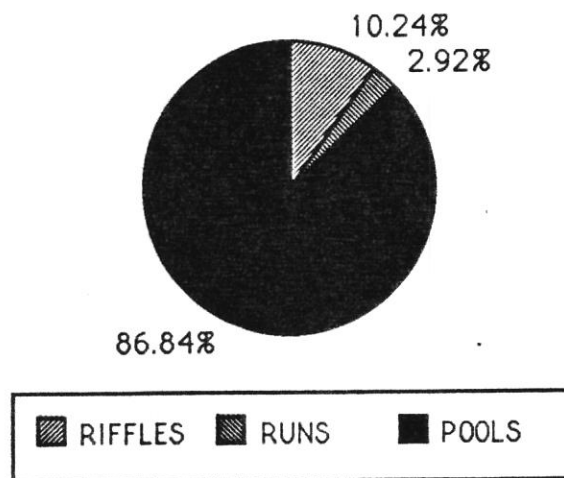
**UPPER LOST MAN CREEK
AREA DISTRIBUTION
SUMMER BASEFLOW, 1990**



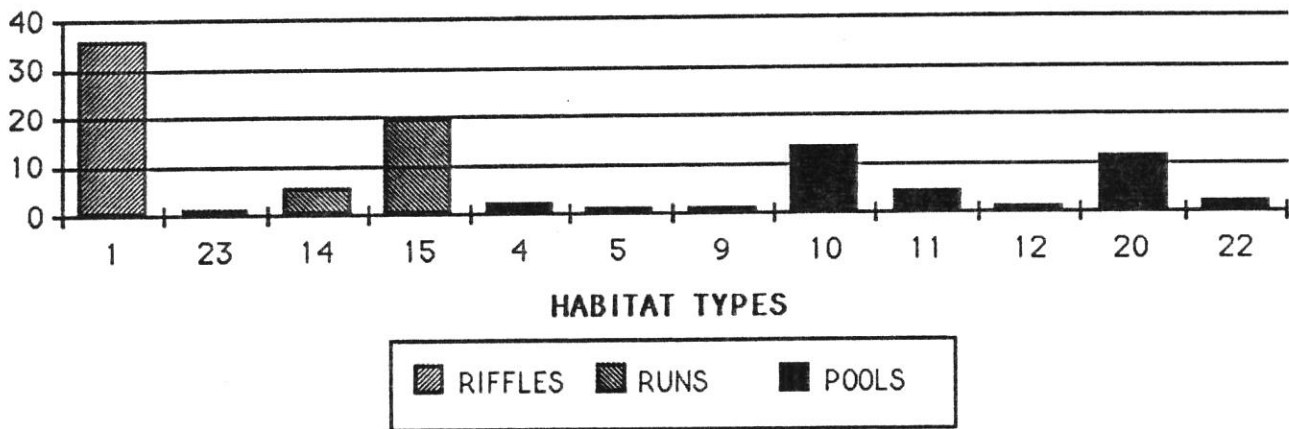
**LOWER LOST MAN CREEK
VOLUME DISTRIBUTION
SUMMER BASEFLOW, 1990**



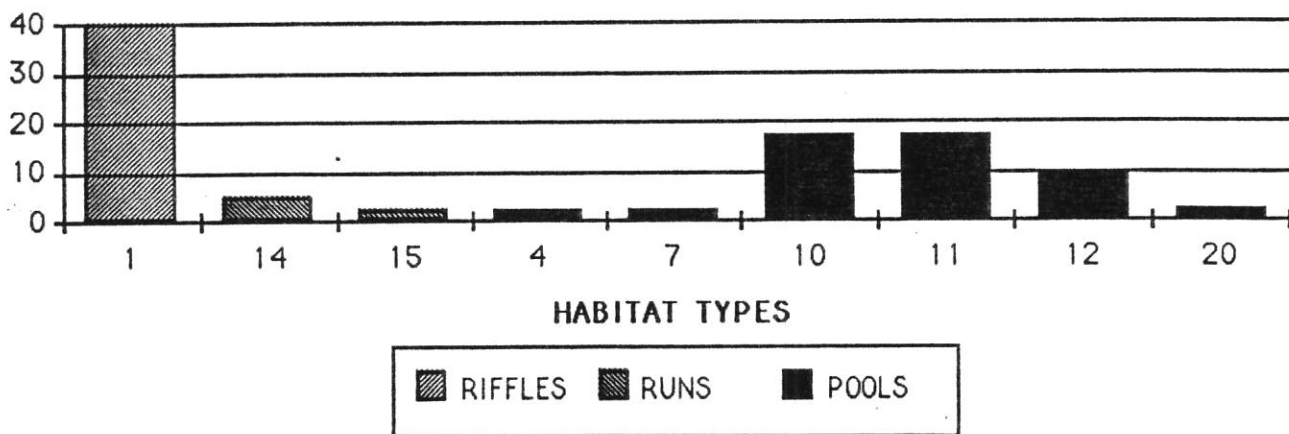
**UPPER LOST MAN CREEK
VOLUME DISTRIBUTION
SUMMER BASEFLOW, 1990**



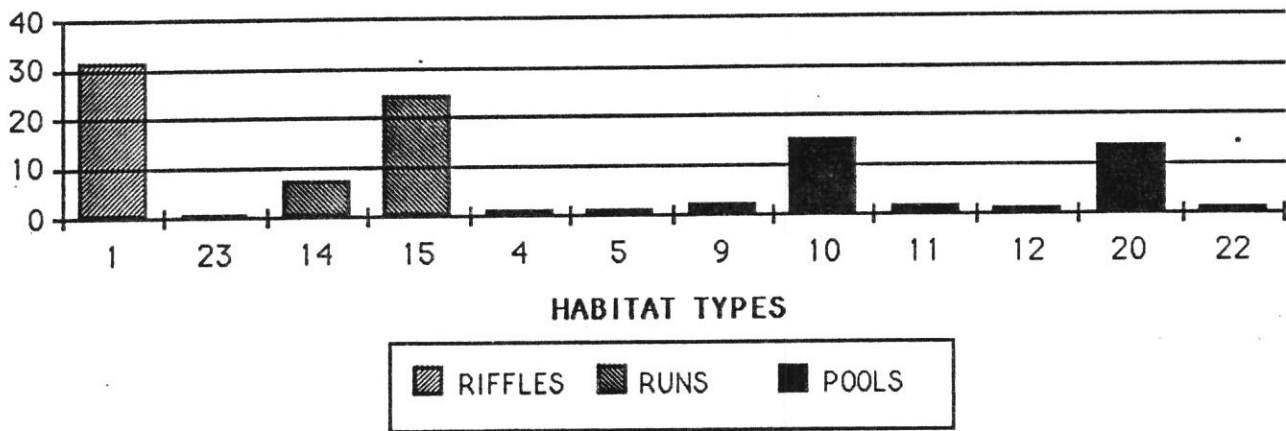
**LOWER LOST MAN CREEK (0-1433 m.)
PERCENTAGE OF TOTAL NUMBER OF UNITS
BY HABITAT TYPE
SUMMER BASE FLOW, 1990**



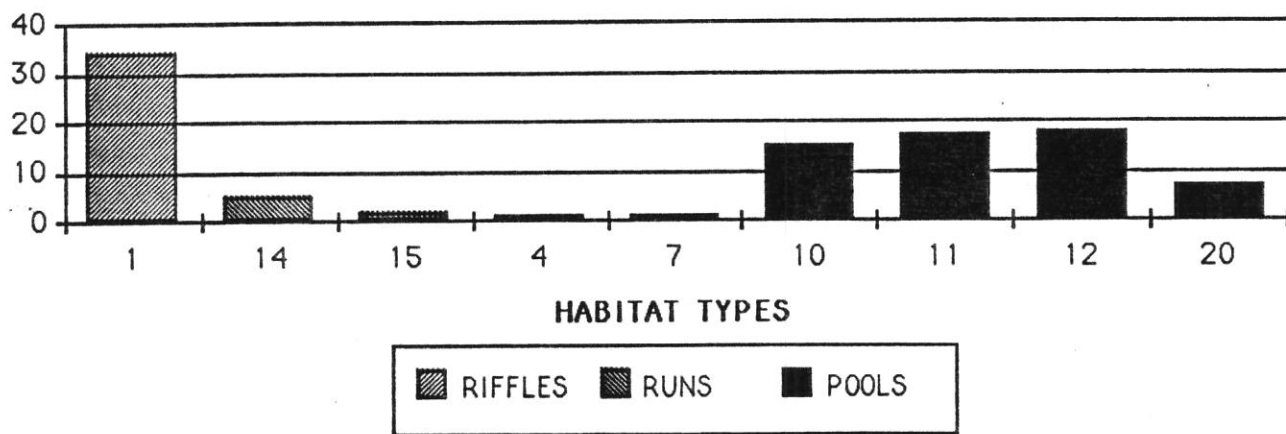
**UPPER LOST MAN CREEK (1433-2050 m.)
PERCENTAGE OF TOTAL NUMBER OF UNITS
BY HABITAT TYPE
SUMMER BASE FLOW, 1990**



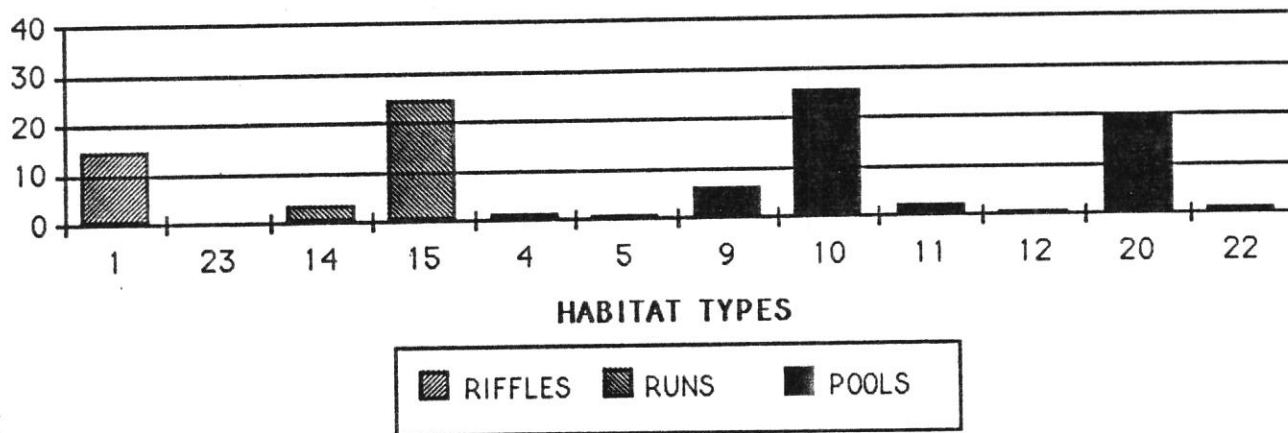
LOWER LOST MAN CREEK (0-1433 m.)
PERCENTAGE OF TOTAL SURFACE AREA
BY HABITAT TYPE
SUMMER BASE FLOW, 1990



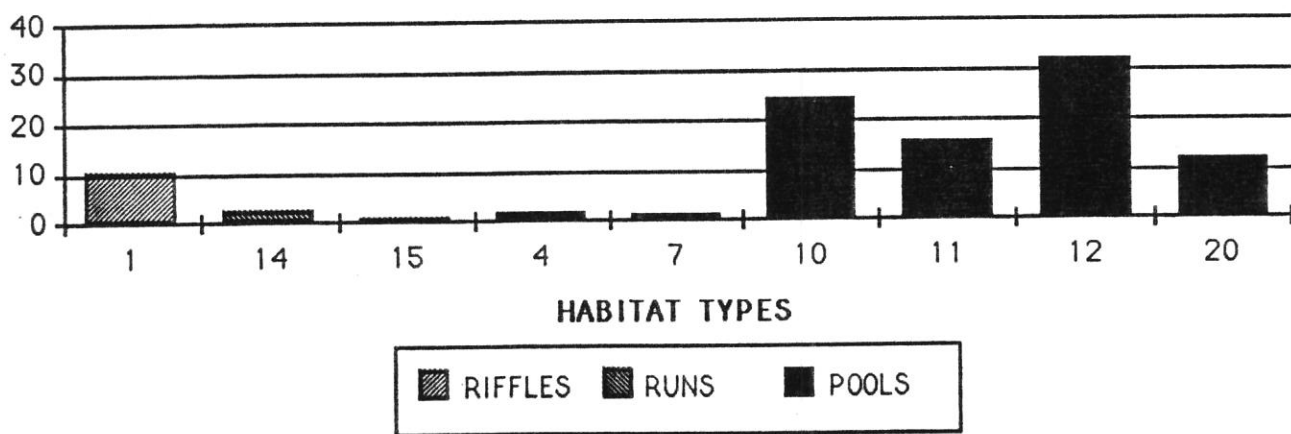
UPPER LOST MAN CREEK (1433-2050 m.)
PERCENTAGE OF TOTAL SURFACE AREA
BY HABITAT TYPE
SUMMER BASE FLOW, 1990



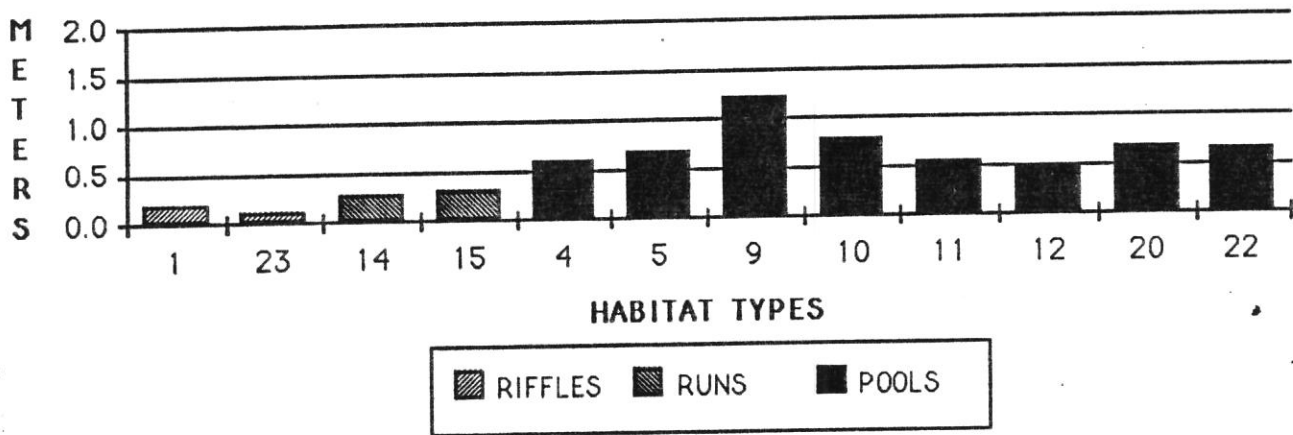
LOWER LOST MAN CREEK (0-1433 m.)
PERCENTAGE OF TOTAL VOLUME
BY HABITAT TYPE
SUMMER BASE FLOW, 1990



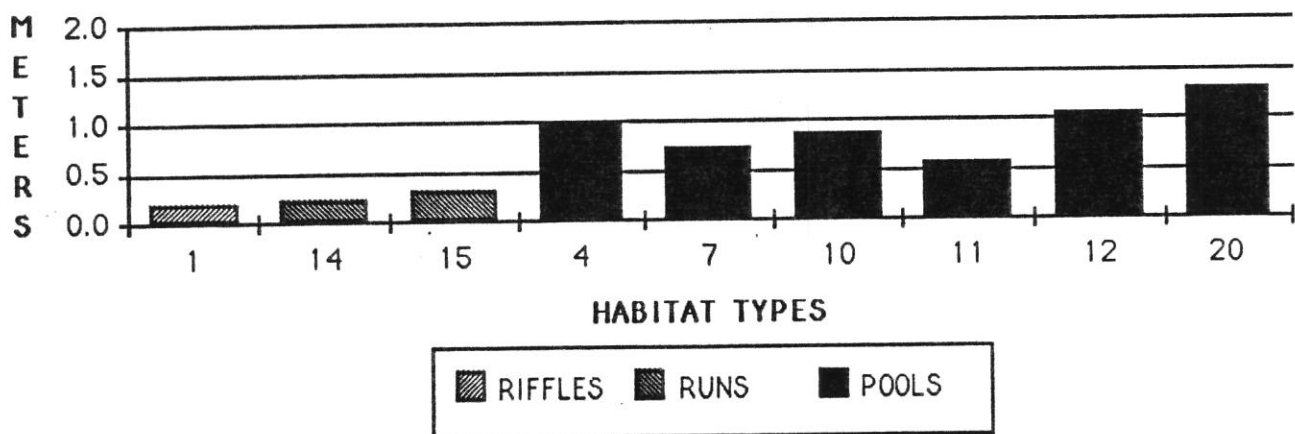
UPPER LOST MAN CREEK (1433-2050 m.)
PERCENTAGE OF TOTAL VOLUME
BY HABITAT TYPE
SUMMER BASE FLOW, 1990



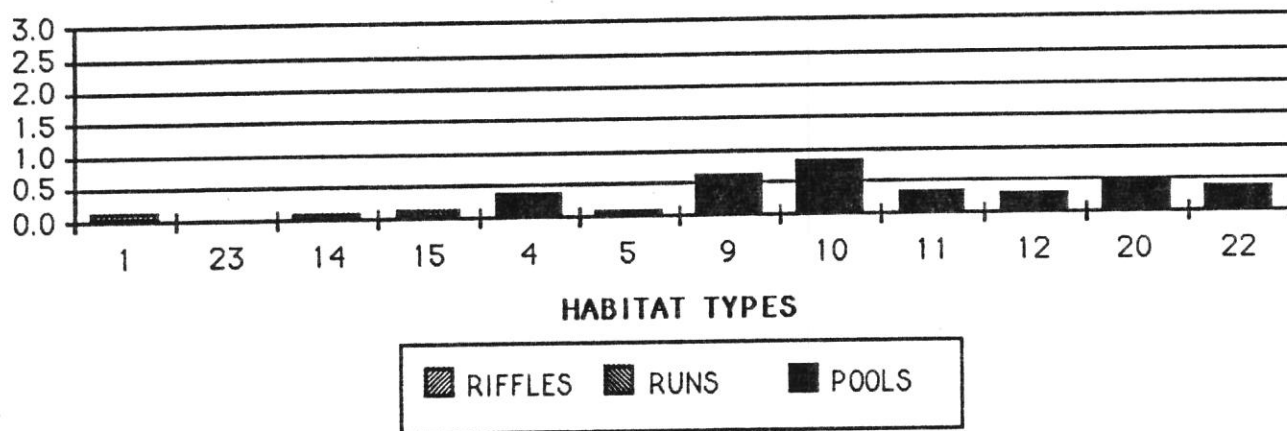
LOWER LOST MAN CREEK (0-1433 m.)
AVERAGE MAXIMUM DEPTH PER UNIT
BY HABITAT TYPE
SUMMER BASE FLOW, 1990



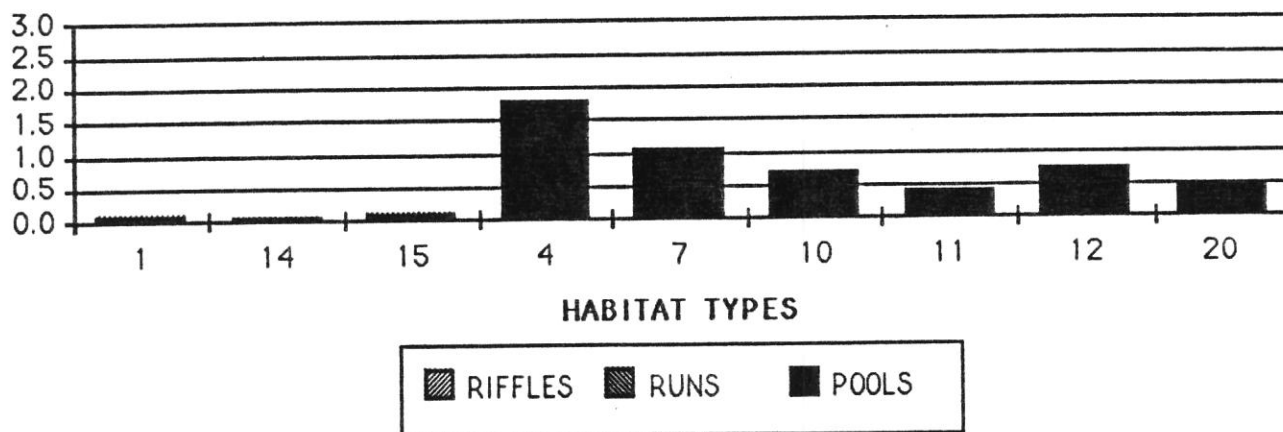
UPPER LOST MAN CREEK (1433-2050 m.)
AVERAGE MAXIMUM DEPTH PER UNIT
BY HABITAT TYPE
SUMMER BASE FLOW, 1990



LOWER LOST MAN CREEK (0-1433 m.)
 AVERAGE WEIGHTED SHELTER RATING
 BY HABITAT TYPE
 SUMMER BASE FLOW, 1990



UPPER LOST MAN CREEK (1433-2050 m.)
 AVERAGE WEIGHTED SHELTER RATING
 BY HABITAT TYPE
 SUMMER BASE FLOW, 1990



STATION: LOWEY
MEASURE: meters (0.1)

SURVEYOR: BARNARD

HABITAT TYPE FIELD DATA

STREAM TYPE: C3																					
UNIT	HAB	L	W	AREA	DEPTH	AREA	AVG	MAX	VOLUME	VOLUME	POOL	CREST	%	COVER	VALUE	SHELT.	DOM	SUB	NUMBER	STATION	NOTES
UNIT	TYPE																				NOTES
1	1	20.0	4.0	80.0	0.1	0.4	0.1	0.4	4.1	0.1	0.1	10	2	20	2	20	4	3	00+00		
2	15	33.8	6.2	208.3	0.2	0.4	0.2	0.4	6.3	0.1	0.1	10	3	30	3	30	3	2			
3	1	16.6	6.2	102.2	0.1	0.2	0.1	0.2	6.2	0.0	0.0	5	2	10	2	10	3	4	00+55	TOP OF UNIT	
4	14	13.2	6.2	81.4	0.2	0.2	0.2	0.2	6.3	0.1	0.1	15	1	15	1	15	4	3			
5	20	8.6	3.7	31.8	0.2	0.4	0.2	0.4	3.9	0.1	0.1	20	3	60	3	60	3	4		Dwnstrm of 101 bridge	
6	1	9.2	2.5	22.7	0.1	0.2	0.1	0.2	2.6	0.0	0.0	10	3	30	3	30	3	5		Under bridge	
7	1	10.5	2.5	25.8	0.1	0.3	0.1	0.3	2.6	0.0	0.0	5	1	5	1	5	3	4		Adjacent to unit 6	
8	20	24.6	4.9	121.2	0.3	0.6	0.3	0.6	5.3	0.1	0.1	15	3	45	3	45	6	3		Lots of salmonids	
9	22	6.2	4.6	28.4	0.4	0.6	0.4	0.6	5.0	0.1	0.1	10	2	20	2	20	3	2			
10	1	12.3	9.8	121.2	0.1	0.2	0.1	0.2	9.9	0.0	0.0	5	2	10	2	10	3	4		Small trib on RB	
11	14	20.0	9.2	184.6	0.2	0.3	0.2	0.3	9.4	0.1	0.1	5	1	5	1	5	3	4		Hatchery outflow	
12	20	33.8	6.2	208.3	0.6	1.0	0.6	1.0	6.7	0.1	0.1	20	3	60	3	60	2	6		Includes plunge pool	
13	20	63.1	6.8	427.0	0.4	0.7	0.4	0.7	7.2	0.1	0.1	20	3	60	3	60	3	5		Under new footbridge	
14	1	11.7	3.7	43.2	0.1	0.2	0.1	0.2	3.8	0.0	0.0	10	3	30	3	30	3	4			
15	9	14.8	12.3	181.8	64.0	1.2	0.1	1.2	76.3	0.1	0.1	20	3	60	3	60	3	2		2.2' plunge	
16	23	4.6	6.2	28.4	0.0	0.1	0.0	0.1	6.2	0.0	0.0	0	0	0	0	0	0	2		Concrete apron	
17	20	7.7	6.8	52.1	0.7	1.2	0.7	1.2	7.5	0.0	0.0	15	3	45	3	45	3	2			
18	14	16.9	6.8	114.6	0.1	0.2	0.1	0.2	6.8	0.1	0.1	10	2	20	2	20	3	2	03+15	Top of unit	
19	20	13.8	4.3	59.6	0.4	0.7	0.4	0.7	4.7	0.1	0.1	25	3	75	3	75	3	2			
20	1	8.0	4.3	34.5	0.1	0.1	0.1	0.1	4.4	0.0	0.0	0	0	0	0	0	3	4			
21	14	11.1	4.9	54.5	0.2	0.4	0.2	0.4	5.1	0.1	0.1	0	0	0	0	0	3	4			
22	20	11.7	3.7	43.2	0.3	0.6	0.3	0.6	4.0	0.1	0.1	15	3	45	3	45	4	3	03+50	Top of unit	
23	15	17.2	3.7	63.6	0.2	0.3	0.2	0.3	3.9	0.1	0.1	10	3	30	3	30	3	4			
24	10	9.2	9.2	85.2	0.7	1.1	0.7	1.1	9.9	0.1	0.1	50	3	150	2	150	2	3	04+00	Top of unit	
25	1	22.2	2.2	47.7	0.1	0.3	0.1	0.3	2.3	0.0	0.0	10	3	30	2	30	2	3			
26	11	4.6	2.5	11.4	0.3	0.4	0.3	0.4	2.7	0.1	0.1	15	2	45	2	45	2	3			
27	5	8.6	10.8	92.8	0.2	0.7	0.2	0.7	11.0	0.0	0.0	5	2	10	1	10	1	3		Adjacent to 26, culvert	
28	10	24.6	5.5	136.3	0.4	0.7	0.4	0.7	6.0	0.0	0.0	20	3	60	3	60	3	2		Includes weir	
29	1	14.8	6.2	90.9	1.5	0.3	1.5	0.3	7.7	0.0	0.0	5	3	15	3	15	4	3	04+40	Top of unit	
30	10	27.7	3.7	102.2	0.3	0.6	0.3	0.6	4.0	0.1	0.1	10	3	30	3	30	4	3		Live alders on RB cause scour	
31	1	6.2	1.8	11.4	0.1	0.2	0.1	0.2	2.0	0.0	0.0	5	2	10	4	10	4	3			
32	10	6.2	1.5	9.5	0.3	0.5	0.3	0.5	1.8	0.1	0.1	40	3	120	3	120	3	2			
33	1	3.7	1.8	6.8	0.2	0.2	0.2	0.2	2.0	0.0	0.0	50	3	150	3	150	3	2			
34	15	13.8	1.8	25.6	0.2	0.5	0.2	0.5	2.1	0.1	0.1	10	2	20	2	20	3	1	05+00	Short riffles and pockets	
35	10	40.0	6.2	246.2	0.5	1.0	0.5	1.0	6.6	0.1	0.1	15	3	45	3	45	3	2			
36	22	14.8	3.7	54.5	0.4	0.7	0.4	0.7	4.1	0.1	0.1	20	3	60	2	60	2	4	05+55	Rootwad jam LB	
37	1	15.4	5.5	85.2	0.1	0.3	0.1	0.3	5.6	0.0	0.0	0	0	0	0	0	4	3			
38	10	16.0	6.2	98.5	0.3	0.6	0.3	0.6	6.5	0.1	0.1	10	3	30	3	30	4	3			
39	15	9.5	4.9	47.0	0.2	0.3	0.2	0.3	5.1	0.1	0.1	5	2	10	2	10	5	4			
40	1	6.8	4.3	29.2	0.1	0.1	0.1	0.1	4.4	0.0	0.0	15	1	15	1	15	4	5	06+00	Top of unit	
41	15	22.8	4.6	105.1	0.2	0.3	0.2	0.3	4.8	0.1	0.1	5	2	10	2	10	5	4			
42	1	18.5	3.7	68.2	0.1	0.2	0.1	0.2	3.8	0.0	0.0	5	1	5	1	5	4	3			
43	15	7.1	4.6	32.7	0.2	0.2	0.2	0.2	4.8	0.1	0.1	5	1	5	1	5	3	5	06+48	Top of unit	
44	15	24.6	5.5	136.3	1.8	0.3	1.8	0.3	7.4	0.1	0.1	5	1	5	1	5	3	4		43 & 44 sparated by short riff.	
45	10	7.7	8.6	66.3	0.3	0.6	0.3	0.6	8.9	0.1	0.1	10	3	30	3	30	3	2		"LM pool E"	
46	1	3.1	3.7	11.4	0.1	0.1	0.1	0.1	3.8	0.0	0.0	0	0	0	0	0	3	4		RB channel	
47	15	8.6	3.1	26.5	0.2	0.2	0.2	0.2	3.3	0.1	0.1	5	1	5	1	5	3	2			

48	10	24.0	0.8	100.0	0.9	1.7	1.0	0.0	15	3	45	1	2	Residual 2° channel adj to 48
49	4	9.2	2.5	22.7	0.5	0.7	2.9	0.0	15	3	45	1	2	
50	15	14.2	4.6	65.3	0.2	0.2	4.8	0.1	5	1	5	4	3	
51	1	14.8	5.5	81.8	0.1	0.1	5.6	0.0	0	0	0	3	4	
52	14	24.6	8.0	196.9	0.1	0.2	8.1	0.1	5	1	5	3	2	07+65
53	10	23.1	5.5	127.8	0.2	0.6	5.8	0.1	10	3	30	4	2	
54	1	18.5	4.9	90.9	0.1	0.1	5.0	0.0	10	2	20	4	3	08+02
55	15	21.8	6.8	147.9	0.1	0.1	6.9	0.1	10	2	20	4	3	Start 9/18/90
56	1	9.5	6.8	64.6	0.1	0.1	6.8	0.0	5	1	5	4	3	
57	11	6.2	4.6	28.4	0.3	0.6	4.9	0.1	10	3	30	4	2	08+50 Top of unit
58	1	15.4	8.6	132.5	0.1	0.2	8.7	0.0	10	2	20	4	5	No flow into pool
59	4	12.9	4.6	59.6	0.2	0.5	4.9	0.0	15	2	30	3	4	09+20
60	15	52.3	6.8	354.1	0.2	0.5	7.0	0.1	10	2	20	4	3	
61	1	10.2	8.0	81.2	0.1	0.1	8.1	0.0	5	1	5	3	4	
62	12	27.7	3.7	102.2	0.2	0.5	3.9	0.1	15	2	30	3	4	09+55 RB channel, riffly near top
63	15	27.7	4.3	119.3	0.2	0.2	4.5	0.1	5	1	5	3	2	LB channel, adjacent to 62
64	10	18.5	8.6	159.1	0.5	1.1	9.1	0.1	10	3	30	3	2	
65	1	61.5	7.4	454.4	0.1	0.2	7.4	0.0	5	1	5	4	3	10+50
66	15	38.5	6.8	260.4	0.2	0.2	6.9	0.1	5	1	5	4	3	Channel splits for lower half
67	1	7.1	8.6	61.0	0.1	0.1	8.7	0.0	5	2	10	4	5	11+02 Top of unit
68	11	16.6	5.5	92.0	0.5	0.7	6.0	0.1	5	3	15	5	2	
69	1	21.5	3.1	66.3	0.1	0.1	3.1	0.0	5	1	5	5	4	RB channel
70	20	12.9	3.1	39.8	0.2	0.5	3.3	0.1	5	3	15	5	4	RB channel
71	1	19.1	8.0	152.6	0.1	0.2	8.1	0.0	5	2	10	5	4	RB channel
72	1	9.2	4.3	39.8	0.1	0.1	4.4	0.0	5	1	5	5	6	LB channel Adj to 69
73	20	32.3	4.3	139.2	0.3	0.5	4.6	0.1	15	3	45	4	3	LB channel Adj to 69 & 70
74	1	18.8	3.1	57.8	0.1	0.2	3.2	0.0	5	1	5	5	4	LB channel Adj to 71
75	11	9.2	2.5	22.7	0.3	0.4	2.7	0.1	15	3	45	4	2	LB channel Alder tree fell LB
76	15	43.1	7.4	318.1	0.2	0.3	7.5	0.1	5	1	5	3	5	XS8 top of run
77	1	29.5	14.5	427.2	0.1	0.3	14.6	0.0	5	1	5	5	6	12+70 Top of unit
78	15	11.7	6.2	72.0	0.2	0.2	6.3	0.1	10	1	10	5	4	
79	1	23.1	6.2	142.0	0.1	0.2	6.2	0.0	10	1	10	5	6	13+05
80	20	15.4	5.5	85.2	0.3	0.6	5.9	0.1	15	3	45	5	6	Rip rap LB
81	15	11.7	3.7	43.2	0.2	0.2	3.9	0.1	15	1	15	6	5	Rip rap LB
82	1	14.8	3.1	45.4	0.1	0.2	3.2	0.0	10	1	10	5	6	13+50
83	15	18.5	6.2	113.6	0.2	0.4	6.4	0.0	5	1	5	5	2	
84	1	24.6	3.7	90.9	0.1	0.3	3.8	0.0	10	1	10	5	4	14+00
85	10	7.4	4.9	36.4	0.5	0.6	5.4	0.1	70	3	210	4	2	LWD jam
86	1	5.5	3.7	20.4	0.1	0.1	3.8	0.0	5	1	5	4	5	
87	10	16.9	6.2	104.1	0.4	0.8	6.6	0.1	25	3	75	3	4	
88	1	22.2	3.1	68.2	0.1	0.2	3.2	0.0	5	1	5	4	5	14+54
89	11	10.8	4.6	49.7	0.2	0.4	4.9	0.1	10	2	20	4	2	
90	1	10.8	3.7	39.8	0.1	0.1	3.8	0.0	0	0	0	4	3	
91	11	4.9	2.5	12.1	0.2	0.5	2.7	0.1	35	3	105	2	3	Adjacent to 90 on RB
92	1	4.9	3.1	15.1	0.1	0.1	3.2	0.0	0	0	0	3	4	Adjacent to 90 on RB
93	10	18.5	6.2	113.6	0.7	1.3	6.8	0.1	30	3	90	3	4	Log over stream (BM#2)
94	1	10.8	3.7	39.8	0.1	0.1	3.8	0.0	5	1	5	4	3	15+05
95	12	30.8	4.6	142.0	0.3	0.7	4.9	0.1	25	3	75	4	5	Conglomerate bedrock LB
96	10	12.3	3.1	37.9	0.3	0.5	3.4	0.1	25	3	75	4	5	15+50 Rootwad near LB
97	1	14.2	6.8	95.8	0.1	0.3	6.8	0.0	5	3	15	5	4	
98	12	30.8	8.0	246.2	0.8	1.7	8.8	0.1	25	2	50	2	3	Live alder
99	11	8.0	5.5	44.3	0.3	0.6	5.8	0.1	20	3	60	5	4	16+05
100	1	13.5	4.3	58.3	0.1	0.3	4.4	0.0	10	1	10	5	6	Bldr LB
101	20	38.5	6.2	236.7	0.6	1.3	6.7	0.1	15	3	45	3	2	16+50 Near bottom of uit, 17+05 at 1
102	1	50.8	7.7	390.5	0.1	0.2	7.8	0.0	5	1	5	3	4	

