

# **CLISBAKO RIVER HABITAT RESTORATION EFFECTIVENESS MONITORING**

## **1.0 Introduction**

This report summarizes post restoration findings of the efficacy of fish habitat restoration works conducted in the Clisbako River. The initial Level 1 FHAP was conducted by Carmanah Research Ltd. in September 1997. At this time, 25.3 kms of stream were assessed, and reach 1 was identified as having been impacted by both forestry and agricultural practices (Brydges et al, 1998). Based on these preliminary findings, a Level 2 Fish Habitat Restoration Prescription was then produced by LGL Ltd. During July and August 1999, Erosion Control Inc. (ECI) implemented the restoration prescription. In order to track the effectiveness of these works, ECI conducted a Level 1 FHAP of reach 1 in August 2000. In this report, the findings of this recent FHAP are contrasted to the data recorded during the pre-work FHAP to determine changes in stream morphology, fish habitat, and hydrology.

## **2.0 Discussion and Summary Tables**

During the original FHAP completed in 1997, a sub-sampling ratio was used, with 1/3 of the riffles and glides sampled, and 100% of the pools sampled. In contrast, 100% of all habitat units were sampled during the 2000 assessment. The original FHAP placed the reach break between reaches 1 and 2 at 717m (upstream from the confluence with the Nazko River). For ease of comparison, information was compiled for the entire project length (717m from reach 1, and

the first 209m of reach 2). Combined, reach 1 and the portion of reach 2 equal the project length (930 m). The recent FHAP treated the entire length as a single reach, since this was the area of interest.

Summary Comparative Table – Habitat Unit Data

Habitat Unit	Pre Restoration		Post Restoration		Change
	Number	Length	Number	Length	
Riffles	17	396	14	505	+ 109 m
Glides	16	469	12	463	- 6 m
Pools	3	85	6	87	+ 2 m

LWD Tally by Habitat Type

Habitat Type	Pre Restoration		Post Restoration		Functional Change
	Total	Functional	Total	Functional	
Riffle	48(16 X 3)	12 (4X3)	18	18	+ 6
Pool	22	0	14	11	+ 11
Glide	45 (15X3)	30 (10X3)	42	42	+ 12

<b>TOTALS</b>	115	42	74	71	+ 29
---------------	-----	----	----	----	------

The failure and subsequent removal of the large beaver dam, originally located at 313m upstream from the confluence, is responsible for several significant differences between the two habitat assessments. This feature alone was responsible for 37m of the entire reach pool tally (44% of total pool length).

Also, the beaver dam was the location of 33% of the LWD (none of which was recorded as functional) in the reach.

Although it was a functional pool at the time of the original Level 1 FHAP, the short-term utility of this structure meant that the pre-restoration state of the Clisbako River was actually poorer than the original Level 1 indicates (less LWD and pool length).

Overall, the most significant increases in habitat were riffles (increase of 109m), and LWD (functional increase of 29 pieces). It is reasonable to expect the frequency of pool habitat to increase over time from continued scouring of the substrate associated with the installed structures. It may be of interest to continue monitoring the project over the long-term, in order to improve installation methods.

### **3.0 Literature Cited**

Brydges, K., S. Luzzi, T. Roy, and J. Horchik. 1998. Level 1 Fish Habitat Assessment Procedure of the Clisbako River Sub-basin. Carmanah Research, Victoria, BC. 52 pp + appendices.

LGL Ltd. 1998. Clisbako River Watershed Restoration Program Fish Habitat Prescriptions. LGL Ltd. Environmental Research Associates. Sidney, BC.

## **APPENDIX 1**

### **LEVEL 1 FHAP ASSESSMENTS**

#### **COMPILED FIELD DATA**

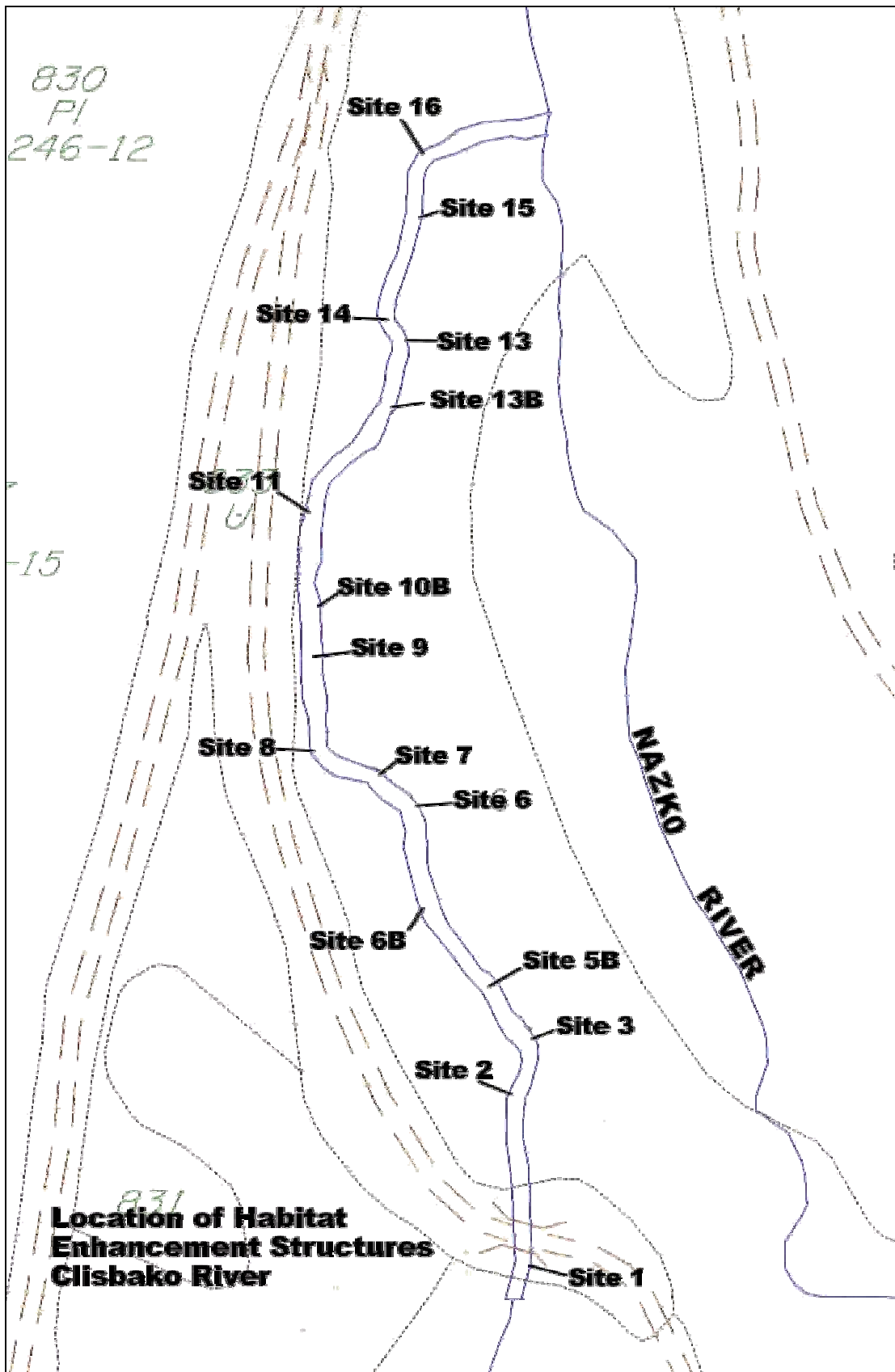
#### **(FORM 4)**



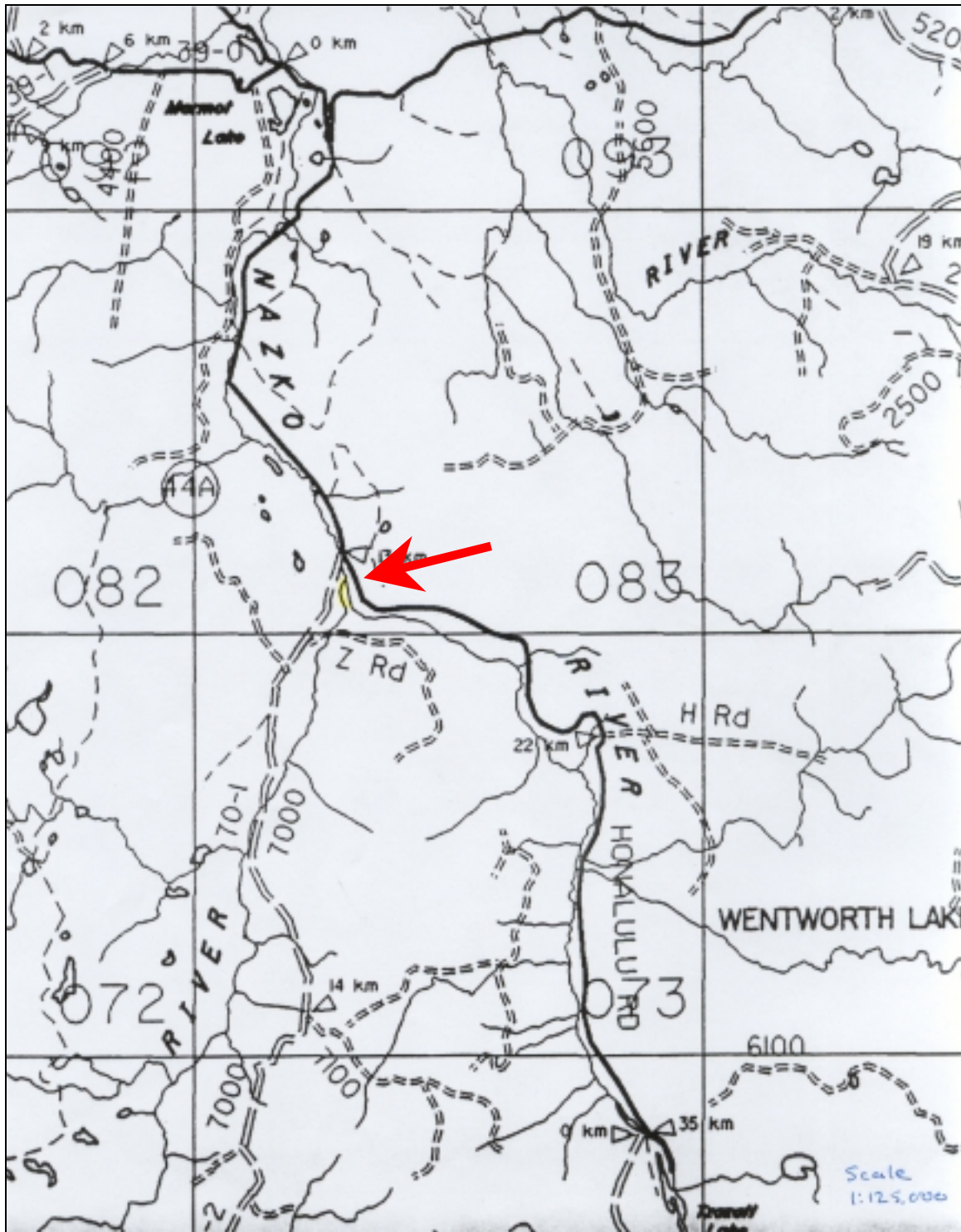


## **APPENDIX 2**

### **SITE LOCATION MAPS**







## **APPENDIX 3**

### **MISCELLANEOUS SITE PHOTOS**

**MAY TO AUGUST**

## SITE 1



Aerial view of site 1 and old bridge crossing. (May 4, 2000)



Close-up view of site 1 – May 5, 2000



## SITE 1



Site 1 – July 11, 2000



Site 1 – August 3, 2000

## SITE 2



Site 2 – May 5, 2000



Site 2 – August 3, 2000



### SITE 3



Site 3 – May 4, 2000



Site 3 – August 3, 2000

### SITE 8



Site 8 – May 4, 2000

### SITES 13B & 14



Sites 13B & 14 – May 4, 2000

# **CLISBAKO RIVER FISH HABITAT RESTORATION PROJECT**

## **EFFECTIVENESS MONITORING SUMMARY**

Submitted to:

Ministry of Environment, Lands and Parks  
400 – 460 Borland St.  
Williams Lake, BC  
V2G 4T1

by

Colin Lake

Erosion Control Inc.  
391 Johnston Ave.  
Quesnel BC  
V2J 3M6

October 2000

## Table of Contents

1.0 INTRODUCTION .....	1
2.0 DISCUSSION AND SUMMARY TABLES .....	1
3.0 LITERATURE CITED .....	3
APPENDIX 1. Level 1 FHAP – Form 4 .....	4
APPENDIX 2. Site Location Maps .....	7
APPENDIX 3. Miscellaneous site photos – May to August .....	10