HRSEP: 98-VI-HR-204E

FISS: DFO 126

HRSEP 1998/99 Final Report

Category (Check one)	____	*RWS*	*(Resource & Watershed Stewardship)*
	x	*HR*	*(Habitat Restoration)*
	____	*ST*	*(Stock Rebuilding)*
Area (Check One)	x	*VI*	*(Vancouver Island & South Coast)*
	____	*NCC*	*(North & Central Coast and Yukon Territory)*
	____	*FRB*	*(Fraser River Basin)*

Proponent Information

Organization Name	:	Department of Fisheries and Oceans, HEB/RRD Nanaimo
Contact Name	:	Russ Doucet and Mel Sheng
Contact Title	:	Restoration Engineer and Restoration Biologist
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Email :	doucetru@dfo-mpo.gc.ca		

Did you receive DFO input on this project? *Yes/No*

Name of DFO Contact(s): DFO-HEB led project in concert with MacMillan Bloedel

Project Information

Project Title	:	MacBlo Channel 98E2
Start Date	:	July 10, 1998
End Date	:	August 20, 1998
Project Rationale (Problem being addressed)		To create stable off-channel spawning and rearing habitat

Was a feasibility study or pre-assessment done for this project? *Yes*
If yes, please describe.

DFO/HEB provided bio-engineering surveys, test pits and design

Activity Type

Check all that apply

Inventory & Mapping		*Stock Assessment*	
Public Awareness		*Habitat Restoration*	x
Stock Enhancement	x	*Stewardship/Community Planning*	
Other		*Specify*	

Project Objectives (from your proposal and/or agreement)

Objective # 1 :	To create 2000 sq.meters of new habitat for chum salmon spawning and coho salmon spawning and rearing
	This objective was successfully constructed
Objective # 2 :	To install LWD complexing in an existing 4000 sq meter offchannel and pond habitat complex
	This objective was achieved

Partnerships

List and describe the personnel involved in the project.

Track excavator operators (2)
Truck drivers (2)
Labours (2)
Construction supervisor (1)

# of persons trained **2**
# of persons employed **7**
person-days of employment created **100**

# of volunteers involved **nil**
# of volunteer hours

Is the local community involved in this project? List and describe the partnerships involved.

Community Fisheries group are active stewards in the watershed
MacMillan Bloedel provided funding and land (the project is on their private lands)

Project Location
Check all that apply

	(Check)	*(Details – name, code or other)*
Water body / System(s)	____	Englishman River
Watershed(s)	____	92-3800
Marine Statistical Area(s)	____	
Other	____	

Results/Quantifiable Measures

Species Addressed

Coho
Chum

Habitat Addressed

Off-channel

For Mapping & Inventory Projects:
Was your data collected according to the DFO-HEB Info Mgmt. guidelines? (ref. Brad Mason) *Yes/No*
If yes, was it submitted in digital format? _____

Linear metres of area mapped: _____
Other: _____

For Stock Rebuilding Projects:

 # Adult Salmon Enumerated: _____
 # Juvenile Salmon Enumerated: _____
 # Salmon marked/Tagged or released: _____
Other: _____

For Stewardship/Community Planning Projects:

 # Public Presentations/Media Releases: _____
 # Landowners Contacted: _____
Other: _____

For Habitat Restoration Projects:

Fencing: m^2 (fence to bank) and kms protected : _____ _____

Riparian re-planting (# plants/trees and m^2 area): _____ _____

In-channel habitat (m^2 area of section restored) _____

Off-channel habitat (m^2 area created/restored) **6000**

Estuarine habitat (m^2 area created/restored) _____

Lake habitat (m^2 area created/restored) _____

Fish Access:(m^2 or km of habitat made available) _____

Other: _____

Project Description

Please enter a general project description below. Please include an overview of the methods and techniques used. If required, you may attach an additional sheet.

See attached detailed project report.

Follow-up & Monitoring

Please describe the current status of the project. Has the problem being addressed been solved? (see "project rationale") What are the ongoing issues in the area and your recommendations for future work.

The Englishman River is a large unstable system.
A major proportion of the production of salmon occurs in 2 off channel developments.
Further off channel development is recommended

Supporting Documentation

You may attach additional documentation to illustrate your project's results. (optional)

Documentation Attached

_____	*Maps*	_____	*Brochure*
___x___	*Photos*	_____	*News clippings*
____x____	*Data report*	____x____	*Other*

Financial Summary

Please specify project costs according to the following categories for the total budget received from HRSEP. *You may also attach further financial statements in other formats, as produced by your group's financial systems. It is not necessary to forward copies of individual receipts and invoices. As per the terms of our Agreement, please retain these in your files for a minimum period of three years, as DFO reserves the right to audit all HRSEP projects.*

		Projected Amount	***Actual Amount***	*Details*
Wages / Personal Costs	*$*	10,000	10,000	Supervision and labour
Transport / Equipment	*$*	45,000	50,000	Construction equipment
Office / Overhead	*$*	4,000	4,000	Administration
Other Costs	*$*	2,000		Cost to DFO for project feasibility/design
Total Received from HRSEP	*$*		22,000	

Contributions to the total budget may be from other agencies or in-kind contributions from your own organization, please specify:

	Amount	*Details*
Other Contributors to Total Project $	44,000	MacMillan Bloedel

Watershed Code: 92-3800

ENGLISHMAN RIVER

M&B Side-channel (1998)

by
M. Sheng, Bio; R. Doucet, P. Eng; G. Hill, EIT
August 1998

Location: The M&B side-channel is located on the right side of the Englishman River. It is approximately 2.5 km upstream of the Highway 4 bridge and 200m downstream of the power line river crossing.

Construction Drawings: DFO Dwg. # 31-86-1; 31-86-2; 31-86-3

Cost Summary:

M&B	$44,000
DFO (construction costs)	$17,000
DFO (in-kind)	$ 5,000
Total	**$66,000**

Introduction:

Coho smolt production in the Englishman River appears to be limited by over-winter rearing habitat. Results from a downstream trapping program during the spring of 1998 indicate that 30% of the total smolt production in the river is derived from two manmade side-channels (Timberwest and M&B side-channels). Coho smolt production is 0.2 smolts/m^2 in the M&B channel and 0.42 smolts/m^2 in the Timberwest channel. The bio-standard for surface-fed channels is 0.5 smolts/m^2. The low production in M&B Channel is due to poor flow (only 0.5-1 cfs of groundwater flow) and poor habitat complexity.

To improve smolt production, a new spawning and rearing side-channel was built. The new channel diverts surface water from the Englishman River, channels it through 350m of new spawning and rearing side-channel, and flows into the top of the old M&B channel. The existing groundwater channel benefits from the higher surface flow rate, which should increase fish attraction into the channel. Large woody debris was added to the old groundwater channel to provide more rearing habitat for juvenile salmonids. Approximately 20% of the wetted area is spawning habitat and 80% is stable rearing habitat. Coho smolt production in the M&B channel will be assessed next spring.

Project Description:

The project involved the installation of a river intake, excavation of 350m of a new salmonid rearing/spawning channel, and installation of woody debris in 600m of a previously constructed groundwater channel (1990).

The river intake was a steel trash rack cantilevered into the water on an outside bend section of the Englishman River. The trash rack was connected to 60 m of 12" diameter pipe. A gate valve, to facilitate flow control, was attached at the downstream end of the pipe. The intake allows up to 0.2 cms (7 cfs) of water to enter the channel during low flow periods. However, a maximum of 4% of the available river discharge (i.e. 1 cfs if the river discharge is 25cfs) will be diverted into the channel during low summer flow. The valve will be shut off during high flows and will be dependent on groundwater flow during most of the winter months.

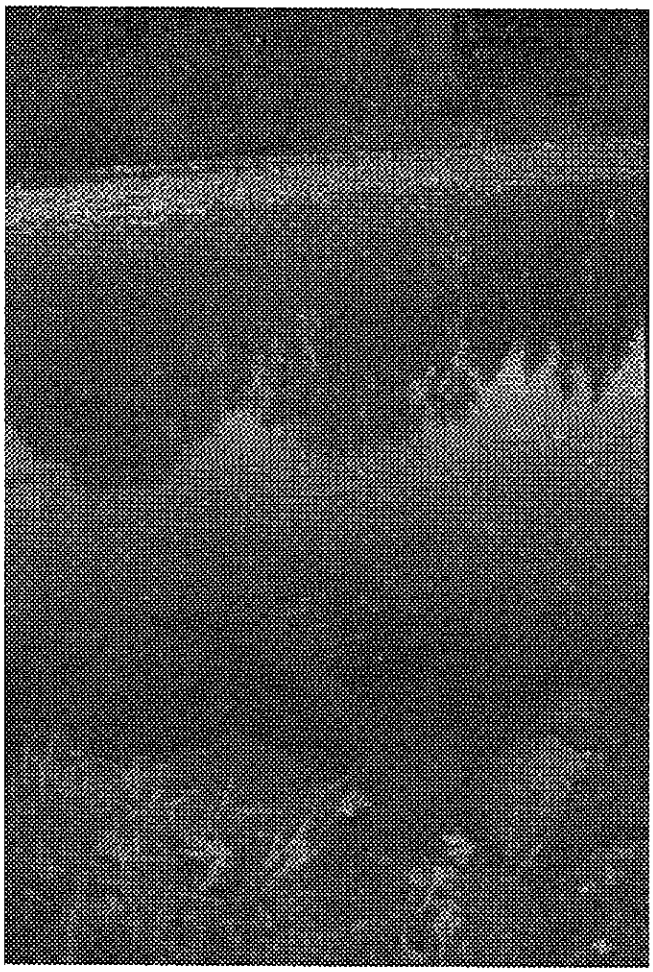


Figure 1. A 0.30m (12") diameter steel pipe with a trash rack on the end was cantilevered into the Englishman River. A space was left under the pipe to reduce the amount of bedload entering the pipe.

The total wetted length of the spawning and rearing channels excavated this summer is 350 m long. The main channel is 225 m long. It has 3 riffle sections with downstream slopes of 5% (1:20). The average slope of the channel is 0.6%. Two back-watered blind-channels extended off of the main channel. The channel width varies from 3.5 to 7 m and the average depth is 0.50 m. Extensive woody debris was placed in the channel.

Figure 2. Before the channel was excavated, M&B cleared the channel right-of-way and selectively logged the nearby areas.

Figure 3. The channel was heavily loaded with LWD to provide optimum overwintering conditions for coho juveniles.

The old groundwater channel was complexed with 25 trees and 175 Douglas Fir root wads. The trees were buried into the banks at intermittent spacing to keep the clustered roots from drifting downstream during floods. Duck-bill anchors and rebar were used to provide additional anchoring of the trees and roots. Two beaver dams were removed and replaced with fish accessible riffles.

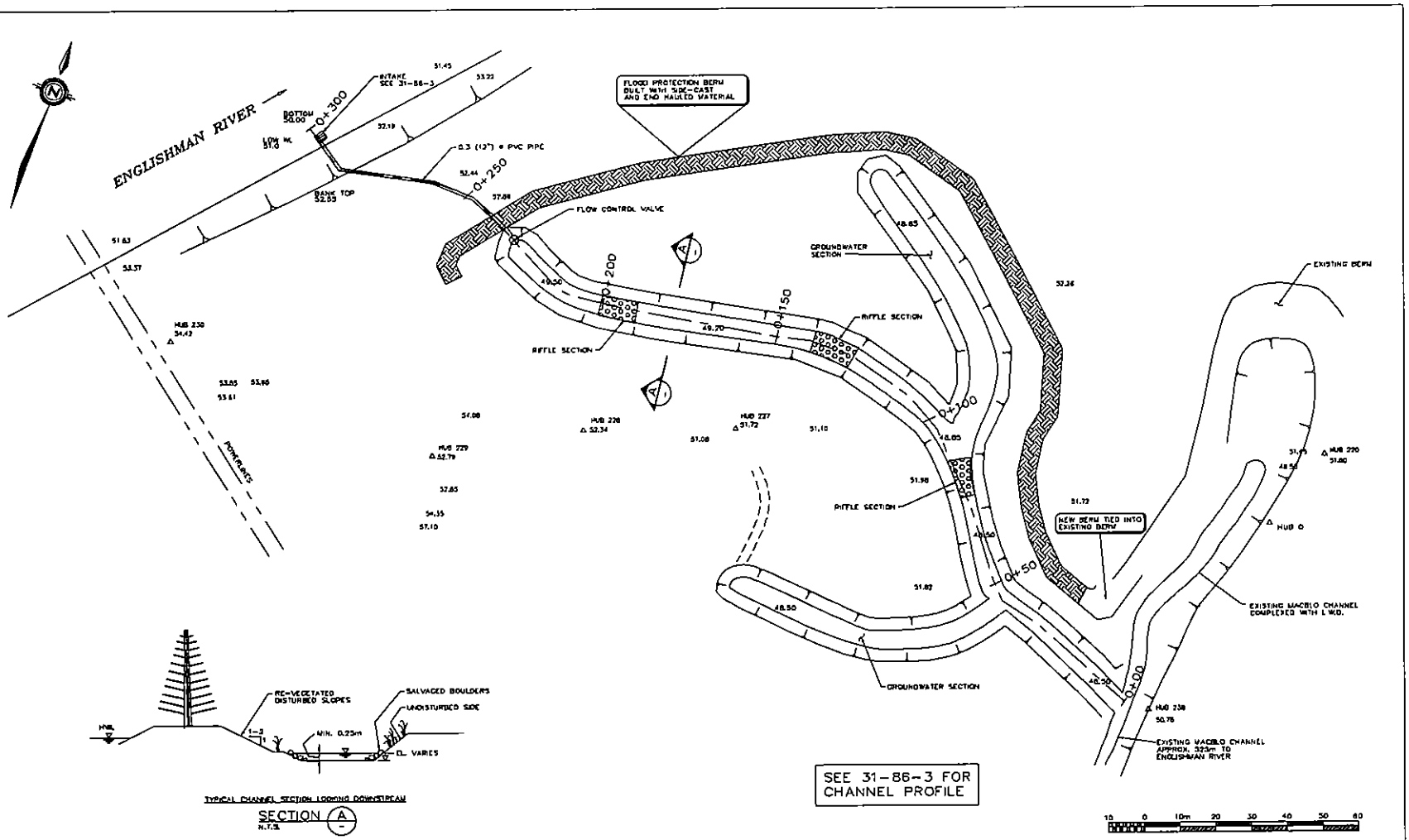
Figure 4. The older groundwater section of the channel had 15 trees and 175 stumps added to it to increase its coho rearing potential.

Estimated Production:

<u>New MB channel:</u>
350 m long x 5.7 m wide = 2000 m^2
Estimated coho smolt production = 2000 smolts

<u>Old M&B groundwater channel:</u>
600 m long x 6.67 m wide = 4000 m^2
Estimated coho smolt production = 4000 smolts

<u>Chum production:</u>
Total Spawning area = 1000 m^2
Chum fry production = 250,000 fry



DEPARTMENT OF FISHERIES AND OCEANS
HABITAT AND ENHANCEMENT BRANCH

DWG NO.	REFERENCE DRAWINGS	NOTES	NO.	DATE	REVISIONS
31-86-3	CHANNEL PROFILE AND INTAKE DETAILS		1	FEB. '99	- AS BUILT

DESIGNED MD/MS/GH
DRAWN GH
CHECKED
RECOMMENDED
APPROVED
APPROVED

ENGLISHMAN RIVER
ENGLISHMAN INTAKE CHANNEL
SITE PLAN

SCALE 1:500
DATE JUNE 1998
DRAWING NUMBER 31-86-2
REVISION 1