Waterfall Creek Stream Rehabilitation Survey Report 2000-2001

Project Final Report
Station/Waterfall Creek Stream Rehabilitation Survey
Project # 00-06-23

Submitted to:
Nadina Community Futures
and
Fisheries Renewal B. C.

Submitted by:
Chicago Creek Community
Environmental Enhancement Society

March 31, 2001

Contents

Attachments:

-Performance and Expenditure Reports
-Kingston, K. Report to Chicago Creek Community Environmental Enhancement Society (March 30, 2001)
-Kingston, K. Engineering Plans (March 30, 2001)
-Nortec Consulting. Report to District of New Hazelton (March 31, 2001)

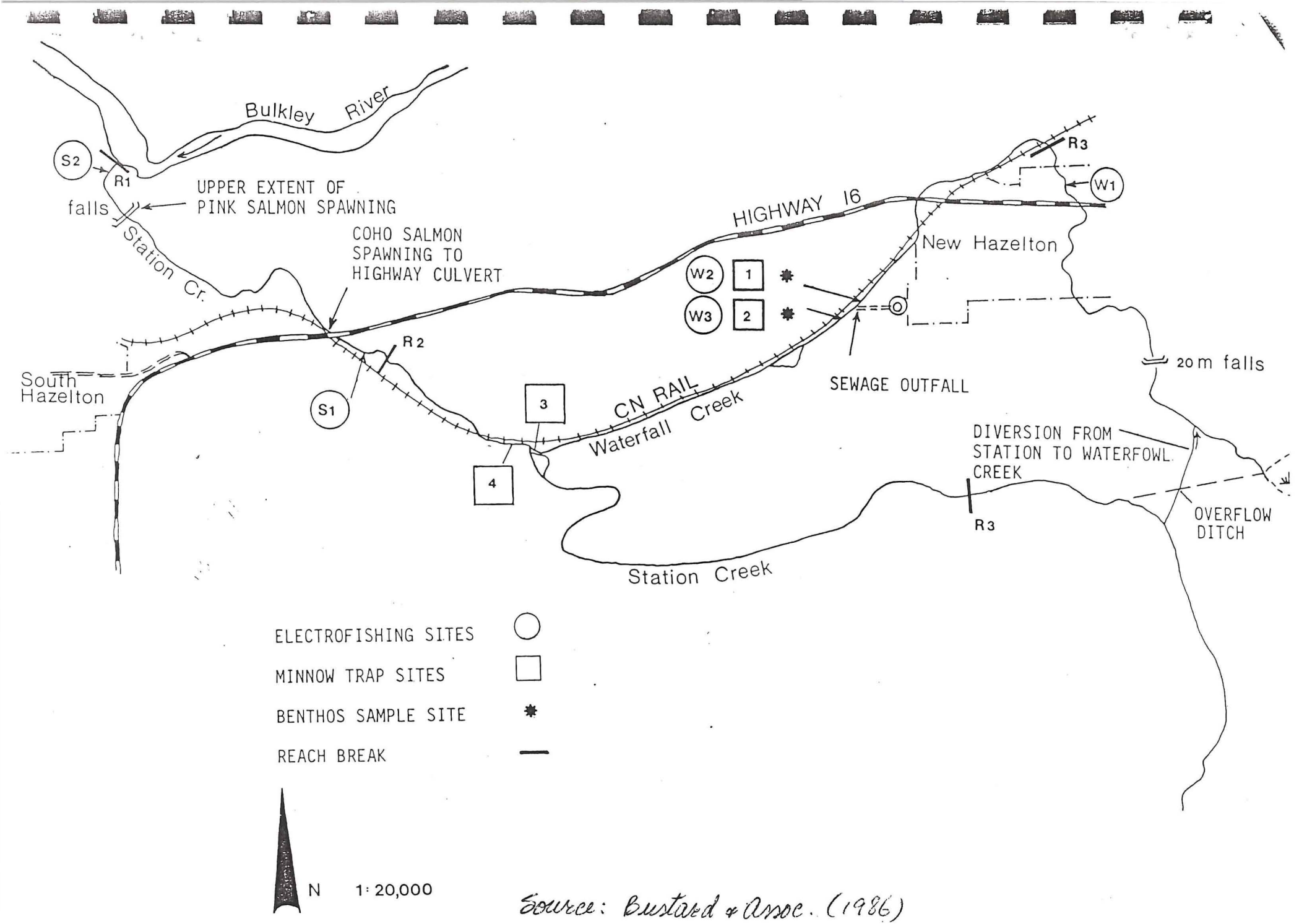
A. Project Background:

Waterfall Creek is a portion of the Mission/Station/Waterfall Creek system that flows through New Hazelton, B.C. Identification of portions of the watershed suffers from some confusion due to alternative names applied by different agencies dealing with the system. The District of New Hazelton and the Ministry of Forests refer to the portion of the system that runs through New Hazelton as Waterfall Creek and the remainder as Station Creek, to the confluence with the Bulkley River. (Ref. Map Figure 1, taken from Bustard, 1986) The Ministry of Highways refers to the two upper arms of the system as Waterfall and Station Creeks, respectively, but the portion downstream of the juncture of these two streams is designated as Mission Creek by that Ministry. This project was undertaken in the section all parties designate as "Waterfall Creek", so that name has been applied for clarity.

Since 1990, the system has been the subject of attempts to rehabilitate portions of the watershed highly impacted by human activity and to reintroduce coho salmon to the watershed. Runs of coho, steelhead, and other anadromous species were wiped out by improper installation of a culvert under Highway 16 over a decade earlier. Since 1995, coho juveniles and fry reared in Chicago Creek Hatchery have been released into the system to enhance returns and ensure ongoing survival of coho stocks in the system until restoration and rehabilitation efforts can be completed.

In 2000, through the efforts of the local Watershed Steward, the Mission Creek Steering Committee was formed. It brought together representatives from the District of New Hazelton, the Village of Hazelton, the Department of Fisheries and Oceans, the Ministry of Environment, the Ministry of Highways, Canadian National Railways, the Gitxsan Watershed Authority, and the Chicago Creek Society. A meeting of the steering committee held in October 2000 decided that any discussion of options for correcting problems within the section of the stream along the CNR tracks to the district sewage outfall required a detailed engineering study supported by legal surveys and a biological rationale.

The group recommended that application be made to the Bulkley Morice Salmonid Preservation Group for funds to complete such a survey. As the only group at the table capable of obtaining authorization from its directors by the deadline for Fisheries Renewal proposals in November 2000, the Chicago Creek Society agreed to act as lead proponent for the project. In this capacity, it was given considerable assistance by the District of New Hazelton and Nortec Consulting, through coordination of efforts with their project (#00-06-18).



Source: Bustard & Assoc. (1986)

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FIGURE 1: LOCATION OF SAMPLE SITES ON STATION AND WATERFALL CREEKS

Photos
1 & 2

Above: Site 1 Viewed from downstream, near foot of Thirteenth Avenue, looking upstream.
Below: Site 1 Viewed from culverts under CN tracks at Twelfth Avenue, looking downstream.

B. Project Objectives:

The overall objective of the project was to explore options for restoring and enhancing coho habitat in the target section of the watershed. These options were thought to include:

-restoration of the stream to its original channel;
-dredging or deepening the existing channel;
-creating pools and spawning beds to replace those lost due to channelization and other human impact;
-removing unnecessary culverts and replacing those which may negatively impact survival of salmonids.

The target section of the stream is most heavily impacted by industrial and transportation corridors. The stream has been moved from its original meander pattern into a straight, shallow channel that runs along the CNR tracks (see cover photo) and through several sets of culverts. This channel is subject to intermittent defoliation in the riparian corridor to control growth of trees along the railway right-of-way, and abrupt changes of water level caused by regular removal of beaver dams.

As the targeted section of the stream included a mix of privately owned property, municipal land, and CNR right-of-way, legal surveys were required to determine which type of ownership was affected by each of the prescriptions. Despite a late start in the working season for the survey portion of the project, it was successfully completed. As a result, it was found that 3 of 4 sites for which prescriptions have been developed are on land owned by the District of New Hazelton, avoiding problems in getting approval from private landowners to work on those sites.

In addition, it was originally felt that installation and monitoring of a staff gauge to accurately measure water flows in the target section of the stream would be desirable. This was later determined to be redundant, due to gauge installations and flow monitoring activities undertaken by the District of New Hazelton, and this element of the project was abandoned. Construction of a flow measurement weir was included in prescriptions for Site 2 to provide for more accurate measurement of water flows than can be currently provided by current staff gauges, however.

Overall, we have been able to meet the project objectives and, with coordination of efforts with the Waterfall Creek Enhancement Project, have been able to eliminate duplication of effort and achieve efficiencies that have resulted in our objectives being met without spending the entire amount budgeted.

Photos
3 & 4

Above: Site 2 Viewed from culverts at Eleventh Avenue, looking upstream.

Below: Site 2 Viewed from Highway 16, looking downstream.

C. Project Activities:

The society assumed responsibility for survey work already underway under the New Town/Nortec project (FsRBC # 00-06-18)at the time of approval of our more detailed survey in November. Joint consultations between both projects' proponents on November 22, 2001 clarified the objectives of the new project and expanded the survey work underway at that time.

At that meeting, arrangements were made for test pits to be dug in target areas to test suitability of substrate for stream channel relocation or other work. Use of backhoe and operator were donated by District of New Hazelton. (Note: Costs of this work were not cited in the Performance and Expenditure reports for this project due to concern about possible 'double counting'.) Work in areas not accessible by machine were done by hand using volunteers. A further test pit was dug in the area which became Site 1 in December.

Survey work was completed by December and the results forwarded to Kris Kingston, the project engineer. A preliminary report was made to partners of the Mission Creek Steering Committee on December 12, 2000.

Kris Kingston was involved on-site through November and December, and worked with other staff of Kingston and Associates on prescriptions for over-wintering pools, spawning beds, and other habitat improvements through the period from January to March.

Mr. Kingston's report was made available in draft form on March 21, 2001. It was the subject of a meeting between Kris Kingston, Brenda Donas (Community Advisor, DFO Smithers) and Greig Houlden (Secretary, Chicago Creek Society) at the Department of Fisheries and Oceans office in Smithers. Ms. Donas made a number of recommendations designed to help target the recommended work to the type of habitat preferred by Coho salmon. These suggestions were incorporated into the final report and plans, where feasible.

Final copies of the plans (drawings) and the supporting written summary, hydrological data, site prescription details and draft Section 9 applications were forwarded by Mr. Kingston on March 30, 2001. The supporting rationale, recommendations and prioritization of proposed work was included in the Nortec Consulting Report to the District of New Hazelton on March 31, 2001, at no charge to this project. Copies of all of these documents are attached to this report.

Photos
5 & 6

Above: Site 3 Viewed from Highway 16, looking upstream.

Below: Site 3 Viewed from culverts to be retained, looking downstream.

D. Project Results:

The project was extremely successful in achieving its main objectives, a thorough analysis of viable options for habitat restoration in the target section of Waterfall Creek and detailed prescriptions for restoration projects in the four sites identified within the target section.

Overall, it was determined through the test pits mentioned previously that the sites which had been considered for possible relocation of the stream to its original meander pattern consisted of an extensive layer of organic materials which would not supply a stable channel for the stream if relocation was attempted. Prescriptions for stream restoration work focused instead on potential sites within the existing stream channel.

Descriptions of the sites identified for restoration work are included in Mr. Kingston's report to the Society (attached) and will not be repeated here. Readers may wish to refer to the photos included in this report for visual reference to the sites described by Mr. Kingston, as well as the engineering drawings produced by Mr. Kingston (also attached). Similarly, the rationale and recommended priority for the work proposed are included in Nortec Consulting's report to the District of New Hazelton (also attached) and can be reviewed in Section 4 of that report.

As indicated earlier, installation of an additional staff gauge, as included in our proposal, was considered to be of no additional benefit and was not done. The engineer's recommendation was that a flow measurement weir be installed in the section identified as Site 2 to permit more accurate measurements on a permanent basis. Details of its location and construction can be viewed in Sheets 3 and 8 (respectively) of the attached engineering drawings.

Our success in this project was due, in part, to good luck with weather conditions which allowed survey work to be completed at a time of year when it could not normally be expected to continue. The effort of project staff, consultants, support personnel, volunteers, and District of New Hazelton employees was crucial to our success and is greatly appreciated.

Photos
7 & 8

Above: Site 3 Showing culverts to be removed at bulk plant, looking downstream.

Below: Site 4 Showing site of proposed pool at former bulk plant, looking upstream.

E. Project Follow-up:

There was some consideration of submitting applications for work based on the draft plans being developed by Mr. Kingston by the February 23rd deadline for the initial round of submissions to the Bulkley-Morice Salmonid Preservation Group. Discussions with Gord Wadley (Nortec), Brenda Donas (DFO), and Bridie O'Brien (Watershed Steward) resulted in a consensus to wait for Kris' final report, and to take that to the Mission Creek Stewardship Committee at a meeting in April. A joint public meeting to present the plans and allow for public input and feedback was also suggested at the March 21, 2000 review of draft plans. This will be suggested to the Mission Creek partners at their April meeting.

We will seek endorsement and partner funding before submitting any proposal to BMSPG/FsRBC. Thus we would likely be looking at the second proposal deadline (June) for beginning actual work. The report submitted by Nortec to the District of New Hazelton (attached) suggests a priority for work on the various sites, or sections of them.

There will need to be discussion of who the lead proponent would be for work on the various sites. The location of work on Site 4 (privately owned land and CN Rail right-of-way) make it unlikely that any proponent other than CN would be able to proceed with work in this area. Sites 1-3 are located on municipal or crown land, and clearances would be required for another proponent to proceed with work in these areas.

Photos
9 & 10

Above: Site 4 View from culverts under CN tracks, looking upstream.

Below: Site 4 Showing a temporary weir at midpoint, looking downstream.

Photos
11 & 12

Above: Site 4 View from weirs at midpoint, looking upstream.

Below: Site 4 View from upper end, looking downstream.

F. References:

Attachments:

-Kingston, K. Report to Chicago Creek Community Environmental Enhancement Society. (March 30, 2001)

-Kingston, K. Engineering Plans. (March 30, 2001)

-Nortec Consulting. Report to District of New Hazelton. (March 31, 2001)

Previous studies of Waterfall Creek:

-Bustard, D. Assessment of Fish Populations in Waterfall and Station Creeks Near New Hazelton, B. C. (1986)

-Donas, B. Mission Creek Coho Fence Reports (1998 & 1999)

-Donas, B. and Houlden, G. Mission Creek Coho Fence Report (November, 2000)

-Donas, B. and Joe, T. Mission Creek Stream Survey Report. (January, 2000)

-Mitchell, S. Station/Waterfall Creeks Environmental Assessment. (1998)

-Saimoto, R. and Donas, B. Upper Bulkley River and Toboggan Creek Overwintering Study. (July, 2000)

SALMONID RENEWAL PROJECT
PREPARED BY CONTRACTOR/PROPONENT

Performance Report
SUBMITTED TO PARTNER GROUP

Instructions
- *Please submit your final report within 30 days of project completion.*
- *This report should be prepared based on actual results from the past year. The information collected will be used to assess specific and overall achievements of the program.*
- *Feel free to attach additional pages with comments or other information if space is too limited here.*

PART I - IDENTIFICATION

A. Proponent/Contractor Name

Chicago Creek Community Environmental Enhancement Society

B. Proponent/Contractor Address

Box 152
South Hazelton, B.C.
V0J 2R0
842-5164 (phone)
842-2164
(Phone/Fax)
ghoulden@cmsd.bc.ca
(Email)

PART II - PROJECT DESCRIPTION

A. Project Number and Name

Station/Waterfall Creek Stream Rehabilitation Survey 00-06-23

B. Project Location

Station/Waterfall Creek, New Hazelton, B.C.
(Specific Stream/Watershed/etc. as applicable latitude and longitude, UTM and watershed code)

C. Project Life

Nov 1, 2000 *(Start Date* to **March 31, 2001** *End Date)*

D. Project Type *(Check all that apply and indicate amount allocated for each category)*

	Type	Amount
Inventory & Mapping	X	5,510
Stock Assessment		
Stock Enhancement		
Habitat Restoration	X	21,990
Education & Public Awareness	X	226
Stewardship/Community Planning	X	
Other (Specify)		

E. Project Results

Which of your project objectives did you achieve? What deliverables were produced? Include details (i.e, habitat type and species).

The project was successful in:

1. Completing legal surveys of the target area;
2. Developing prescriptions for rehabilitation work at 4 sites in the target area;
3. Providing detailed cost estimates for prescribed work in the 4 sites;
4. Drafting Section 9 applications for the prescribed work;
5. Reporting results to watershed steering committee members.

PART III - PERFORMANCE REPORTING

A. Environmental Account

	Actual Results
1. a. Habitat Restoration *Total kilometres of stream treated:*	1.2 km.
b. Stock & Habitat Assessment *Total kilometres of stream assessed:*	
c. Inventory & Mapping *Total linear metres of area mapped:*	1160 m.
d. Stock Enhancement *Total number of smolts released:*	
e. Other *Specify quantifiable measure:*	

2. What project design and/or assessment standards were used and how were they employed? List relevant certification or other qualification of experts or specialists involved.
   Site prescriptions were developed by a professional engineer (K. Kingston) in consultation with firm doing habitat restoration for the District of New Hazelton (Nortec Consulting). Plans were reviewed by a fisheries biologist and revised to maximize benefits to coho habitat (DFO Smithers).
   -Kris Kingston, P. Eng.
   -Gord Wadley, Nortec Consulting
   -Brenda Donas, DFO, Smithers

3. Description. *Describe how the project was successful, what problems were encountered, any lessons learned and recommendations for work in the future.*

   The project was successful in meeting all major objectives within the target time frame and within its budget. The proposed installation of an additional staff gauge was not acted on, on the advice of the project engineer.

B. Economic Development Account

	Actual Results	
	Head Count	*Person Days*
1. Employment (*Total # of jobs)*	8	62
2. Volunteer Labour *(Total # of volunteers):*	2	12
3. Employment Equity (may include counting an individual more than once, e.g., a young woman is counted in both a & c)		
a. *Total # women employed:*	2	10
b. *Total # Aboriginal persons employed:*	1	4
c. *Total # youth (aged 15-24) employed:*		
d. *Total # former fisheries workers employed (interpret broadly to include all forms of fisheries related*		

employment):

4. Training
# of individuals certified by program:

Program Name	*Head Count*

5. Local Economic Activity — *$*

a. Expenditures in Partner Group area: 30,206

b. Expenditures elsewhere in BC:

c. Expenditures in other areas:

6. Description. *In what other ways did local communities benefit from the SRP projects?*

C. Planning & Partnerships Account

1. Planning
The work was supplementary to the project undertaken by The District of New Hazelton and focused on sites and options, which were not part of that proposal. Consultants and staff for District of New Hazelton were involved in the completion of this proposal and work was closely coordinated between the two projects.

2. Partnerships
Ministry of Transportation and Highways - Ralph Turner, Area Manager
CN Rail - Luanne Patterson, Environmental Protection Officer
Lakes District Maintenance - Richard Brown, Road Crew
Village of Hazelton - Diane Ready, Village Clerk
District of New Hazelton - Allan Berg, Public Works Foreman
Chicago Creek Community Environmental Enhancement Society - Greig Houlden, Secretary
Fisheries and Oceans - Brenda Donas, Community Advisor; Tom Pendray, Habitat Biologist
Gitxsan Watershed Authority - Bridie O'Brien, Upper Skeena Habitat Steward

3. Public awareness
Report to Mission Creek Steering Committee, April 12, 2001
Public Watershed Meeting (planned), May 22, 2001

D. Financial Account

($)

1. Total FsRBC Project Funding: 27,726

2. Leverage: Other funding

(corporation/funding agency)

(corporation/funding agency)

Total Funding 27,726

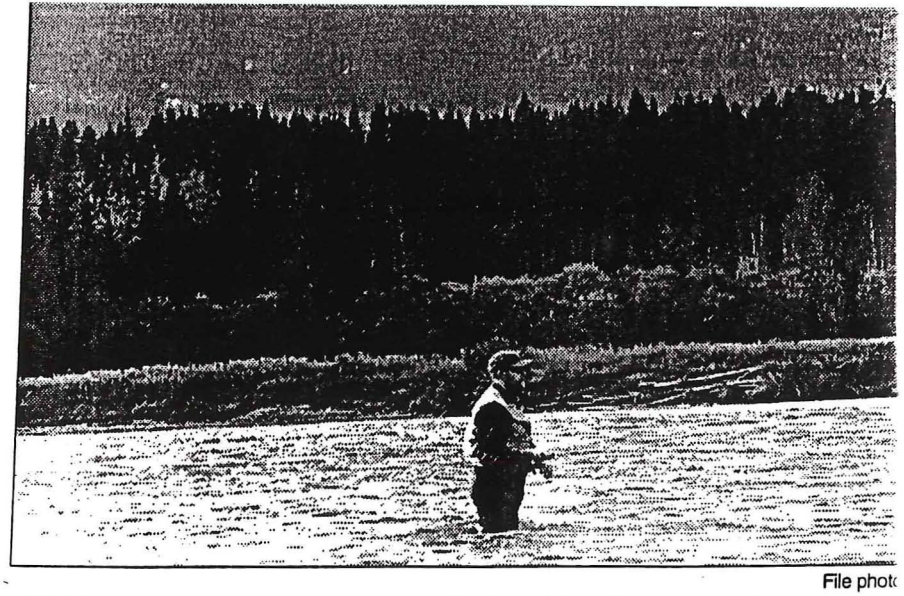
In-kind contributions (Total) 5,680
estimated $ value

3. Description. *Was the project done on time? On budget?*
Project was completed on time and under budget. Cost efficiencies were achieved by combining biological reporting with project #00-06-18 and eliminating installation of staff gauge (deemed redundant).

4. Certification by administrative applicant that all terms and conditions of agreement with proponent have been met.

Signature of Administrative Applicant

Date



File phot

RESTORE BALANCE: Communities like New Hazelton are working to restore waterways that once supported large numbers of fish, and may once again.

INTERIOR NEWS Wed., Nov 22/00 Page A1

Bringing back the fish

Community works to restore habitat

By Gretel Miles
The Interior News

A steering committee has formed to work on developing a plan that will continue to revive New Hazeltons Mission Creek, so it can become the perfect fish habitat it once was.

The creek, also known as Station Creek and Falls, or Waterfall Creek, was home to a healthy coho population and also has steelhead, Dolly Varden, cutthroat trout, and pink salmon.

For ten years, school and community groups like the Chicago Creek Hatchery have worked to raise community awareness of the waterways and transported coho past an old highway culvert that blocks their return, as well as incubating, rearing and releasing coho to build up the stock.

A meeting of interested groups on October 5 was hosted by Bridie O'Brien, Upper Skeena Habitat Steward. She was hired in May, and is employed by the Northwest Stewardship Society of Terrace and the Gitxsan Watershed Authority and funded by the Department of Fisheries and Oceans, Canada.

Her role is to support fish advocate groups, develop partnerships groups and provide technical support and community education about fish and fish habitat.

All industries, municipalities and other government agencies that conduct activities have a stake in the future health of the fish habitat and were invited to the meeting and O'Brien was pleased with the turnout of 15.

"Everyone was enthusiastic and eager to work together, maybe with the efforts of this group we can make a difference and re-establish a healthy, self-sustaining fish population in Mission Creek."

There was a willingness to work together, sharing in-house resources and expertise, says O'Brien, and it was a good opportunity to share goals and objectives around any activity around the waterway, with the common concern [illegible] protecting the fish and their environment.

The September 13 removal of a beaver dam in the creek beside the CN rail tracks left water levels dangerously low, threatening the winter home of young coho.

O'Brien and Brenda Donas, community advisor for the Ministry of Fisheries and Oceans built a temporary weir to replace the dam while allowing water to still flow, and the levels will be monitored to maintain a safe habitat.

They will be working with New Hazelton on the enhancement and beautification of the stream area, as part of the new community plan.

Hazeltons fish work underway

Work has begun on a plan that will continue to revive New Hazeltons Mission Creek so it can become the perfect fish habitat it once was.

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"Everyone was enthusiastic and eager to work together," O Brien said. "Maybe with the efforts of this group we can make a difference and re-establish a health, self-sustaining fish population in Mission Creek.

There was a willingness to work together, sharing in-house resources and expertise, says O'Brien, and it was a good opportunity to share goals and objectives around any activity around the waterway, with the common concern of protecting the fish and their environment.

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Fisheries Renewal BC
Project Budget

Partner Group Name: CHICAGO CREEK COMMUNITY ENVIRON. ENHANCEMENT SOCIETY

Name and Number of Project: WATERFALL CREEK STREAM REHABILITATION SURVEY

note: please verify calculations within this spreadsheet; formulas may not be accurate

Time frame: 11/01/00 (mm / dd / yy) to 03/31/01 (mm / dd / yy)

Labour

Wages & Salaries

Position	# of crew	# of work days including stats	hrs per day	rate per hour	Total (FsRBC + in-kind + cash)	-	In-Kind + Cash	FsRBC Amount
Biologist	1	6	8	35	1,680		1,680	-
GWA Steward	1	4	8	25	800		800	-
Project Coordinator	1	8	8	25	1,600		1,600	-
					-			-
					-			-
					-			-
					-			-
Person Days (# of crew x work days)		18		**sub total**	4,080		4,080	-

Labour - Employer Costs (percent of wages subtotal amount)

rate	13%	**sub total**				-

Subcontractors & Consultants	# of crew	# of work days	hrs per day	rate per hour			
Precision Survey					5,510		5,510
Kingston and Associates					21,990		21,990
					-		-
					-		-
WCB if applicable (not covered by own policy)	rate	N/A					
				sub total	27,500	-	27,500

Volunteer Labour	# of crew	# of work days	hrs per day	rate per hour			

Total labour costs	31,580	4,080	27,500

Site / Project costs

	Detail (use additional page for details if needed)			
Travel (do not include to & from work)				-
Small Tools & Equipment				-
Site Supplies & Materials				-
Equipment Rental				-
Work & Safety Gear				-
Safety Training & Supplies				-
Repairs & Maintenace				-
Permits				-
Technical Monitoring				-
Other site costs				-
			-	-

Fisheries Renewal BC
Project Budget

Partner Group Name: Chicago Creek Community Environm. Enhancement Soc.

Name of Project: Waterfall Creek Stream Rehabilitation Survey

Training	Detail (use additional page for details if needed)	**Total (FsRBC + in-kind + cash)**	-	**In-Kind + Cash**	**FsRBC Amount**
Safety / 1st Aid					-
					-
					-
					-
					-
	Total Training	-		-	-

Overhead	Detail (use additional page for details if needed)			
Office space; including utilities, etc.	5 months @ 100/month	500	500	-
Insurance				-
Office supplies				-
Telephone & long Distance				-
Photocopies & printing		226		226
Other overhead costs	Bookkeeping, reporting, invoicing	600	600	-
	Use of computers, scanner, camera	500	500	-
				-
				-
	Total Overhead	1,826	1,600	226

Capital Costs / Assets (*subject to FsRBC policy*)

				-
				-
				-
				-
				-
	Total Capital Costs	-	-	
	Project Total	33,406	5,680	27,726

Budget Summary
(FsRBC + in-kind + cash)

Labour	31,580
Project / Site Costs	-
Training Costs	-
Overhead Costs	1,826
Capital Costs	-
Total	33,406