



# Colony Farm Stage II Habitat Restoration Project Report

Project # 08.COQ.03



Prepared for  
North Fraser Salmon Assistance Society



Prepared with  
Financial Support of BC Hydro  
Bridge Coastal Fish and Wildlife Restoration Program

November, 2008

**Colony Farm Stage II Habitat Restoration Project Report to  
BC Hydro Bridge Coastal Fish and Wildlife Restoration Program**

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BC Hydro Bridge Coastal Fish and Wildlife Restoration Program

Pacific Salmon Commission, Southern Boundary Restoration & Enhancement Fund

Fisheries and Oceans Canada, OHEB, Resource Restoration

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Fisheries and Oceans Canada, Oceans, Habitat and Enhancement Branch,  
Salmon Enhancement Program- Resource Restoration Unit

Watershed Watch Salmon Society

Kwikwetlem First Nation

Metro Vancouver

City of Coquitlam

North Fraser Salmon Assistance Society

**Photo Credits**

Tony Matahlija, North Fraser Salmon Assistance Society

**Cover Photo**

Jonathon Bulcock, DFO, Setting Elevations for Main Channel Construction

## **Colony Farm Stage II Habitat Restoration Project Report to BC Hydro Bridge Coastal Fish and Wildlife Restoration Program**

### **Executive Summary**

In response to the decline of returns and loss of critical intertidal habitat of Harrison River fall run *Oncorhynchus tshawytscha*, chinook salmon, and lower Fraser R. *O. kisutch*, coho salmon, a partnership was developed to undertake a project to restore these historic habitats in the Coquitlam River floodplain. This project links to and addresses limiting factors identified in BC Hydro's Bridge Coastal Fish and Wildlife Restoration Program Strategic Plan.

North Fraser Salmon Assistance Society (NFSAS) provided project management and Fisheries and Oceans Canada (DFO) provided design and implementation expertise. Financial support from the Bridge Coastal Fish and Wildlife Restoration Program (BCRP) and the Pacific Salmon Commission's (PSC) Southern Boundary Restoration & Enhancement Fund were augmented with significant contributions from Fisheries and Oceans Canada's Salmon Enhancement Program, Resource Restoration Unit. Additional in-kind contributions received from Kwikwetlem Nation, Watershed Watch and Metro Vancouver, the land owner, ensured project success.

The Colony Farm Stage II Habitat Restoration Project has resulted in 3,400m<sup>2</sup> of restored salmonid aquatic habitat that directly and immediately benefited the target species and an additional 5,500m<sup>2</sup> of rehabilitated terrestrial habitat. Also over 20,000 m<sup>2</sup> of habitat was rewet by breaching an agricultural dike. The project also included removing a section of fill within a large, extensive off channel pond and wetland located within the Kwikwetlem FN IR #2 to reduce the opportunity for beaver dams to restrict juvenile salmonid use of areas upstream, especially during the prime over-wintering periods.

The creation of new off channel habitat and the improvement of access to existing off channel habitats, has recovered some of the off-channel salmon rearing habitat that was lost due to the development of the Coquitlam River dam.

Long-term monitoring will inform an adaptive management plan and will provide relevant data for future restoration and rehabilitation works.

**Colony Farm Stage II Habitat Restoration Project Report to  
BC Hydro Bridge Coastal Fish and Wildlife Restoration Program**

**Table of Contents**

	Acknowledgements	ii
	Executive Summary	iii
	Table of Contents	iv
	List of Figures	v
	List of Tables	v
1.0	Introduction	1
2.0	Goals and Objectives	2
3.0	Study Area	3
4.0	Methods	5
5.0	Results	7
6.0	Conclusions and Recommendations	10
7.0	References	11
	<b>Appendices</b>	
A.	Financial Statement and Performance Measures	12
B.	Project Safety and Environment Management Plan	15
C.	Project Photos	19
D.	Planting Plan and Plant List	24
E.	Media and Communications	26
F.	Contacts	28

**Colony Farm Stage II Habitat Restoration Project Report to  
BC Hydro Bridge Coastal Fish and Wildlife Restoration Program**

**List of Figures**

Figure 1	Study Area: Colony Farm Regional Park, Coquitlam BC	3
Figure 2	Project Site: Colony Farm Stage II Habitat Restoration Project	4
Figure 3	Large Tracked Machines on Site	5
Figure 4	Project Orthophoto	8
Figure 5	Project As-Built Drawing	9
Figure 6	Project Site Week 1- Commencement	20
Figure 7	Project Site Week 8- Completion	20
Figure 8	Construction - Main Channel	21
Figure 9	Construction – Keying in Large Woody Debris	21
Figure 10	Construction – Installing Culverts	22
Figure 11	Construction – Installing Bird of Prey Perching Posts and Wildlife Woodpiles	22
Figure 12	Construction – Completing South-facing Reptile and Amphibian Hibernacula	23
Figure 13	Construction – Large Specimen Planting Plan	23

**List of Tables**

<b>Table A</b>	Study Area Description	8
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## Introduction

The BC Hydro Bridge Coastal Fish and Wildlife Restoration Program has provided a \$95,625.00 contribution to the Colony Farm Stage II Habitat Restoration Project located in the Coquitlam River watershed, a tributary of the Fraser R. in southern British Columbia. This project links to and addresses limiting factors identified in BC Hydro's Bridge Coastal Fish and Wildlife Restoration Program Strategic Plan, Chapter 8, Coquitlam Buntzen Watersheds and the limiting factors for fish and wildlife identified in it.

The Colony Farm Stage 2 Habitat Restoration Project addresses the following limiting factors:

1. *Limiting Fish Diversity and Production:*

Limiting factor #2 – Loss of Habitat:

Former rearing and over-wintering areas are permanently lost or seasonally reduced due to inundation by the Coquitlam dam, flow diversions, dykes and urban encroachment along banks of the lower river which have alienated off-channel, riparian and wetland areas. Much of the Coquitlam River watershed wetland and off-channel habitats have been lost. The opportunity to provide additional wetland, over-wintering and riparian habitat for juvenile salmonids in the Coquitlam system is critical.

Limiting factor #4 - Reduced biological productivity:

These off-channel sloughs will improve salmon returns to the Coquitlam River that in turn will increase the amount of marine-derived nutrients entering the system. This will partially compensate for loss of marine nutrients when the Coquitlam dam denied salmon access to the upper watershed.

2. *Factors Limiting Wildlife Diversity and Productivity:*

Limiting factor # 1 – Habitat Changes:

An altered flow regime has detrimentally changed critical riverine and riparian habitats. Wetland habitat in particular has been significantly reduced due to inundation, flow diversions and dyke construction.

Many species of fish and aquatic wildlife will utilize the new slough habitat created by this project, particularly species such as juvenile *Oncorhynchus tshawytscha*, chinook salmon, *O. kisutch* coho salmon and *O. keta*, chum salmon. These species critically depend on this type of habitat during the winter and early spring to successfully prepare for their migration to marine waters in late spring. Adult and juvenile, *O. clarki clarki*, cutthroat and *O. mykiss*, steelhead juveniles would utilize this habitat at higher tides as they forage for small fish and aquatic and terrestrial insect prey.

Turtles and frogs would use the quieter sections of this channel for feeding and reproduction. Beaver, otter and mink can forage and reside along the slough but its depth and tidal nature would discourage dam construction thereby keeping the slough open and unobstructed.

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## **2. Goals and Objectives**

The Colony Farm Stage 2 Habitat Restoration Project's goals and objectives are linked to the BCRP's identified limiting factors and addresses the following program objectives:

Fish Restoration Objective #1 – Conserve and improve fish habitats in the lower Coquitlam River:

- Restore rearing and over-wintering salmonid habitat and provide refuge habitat for fish during flood events and dam spills. This project will have hydraulic characteristics designed to withstand the historic range of discharges in the Coquitlam River.
- Provide greater species diversification, as grasses now dominate the location of the slough. Planting of shrubs that have fish benefits along with coniferous trees and snags will enhance the value of this site as riparian habitat.

Wildlife Restoration Objective #3 – Create or enhance wetlands and riparian habitats for aquatic species:

- Provide benefits to species that rely on tidal slough and wetland habitats. Riparian species expected to benefit from this work include herons, raptors and small mammals in general, north-west salamanders, red legged frogs, painted turtle, kingfishers, mink, and otter.

The goals of this project were to:

- Construct a 2000 m<sup>2</sup> tidal channel within the historic flood plain and water it by breaching an agricultural dike within the Colony Farm Park and to rewet over 20,000 m<sup>2</sup> of adjacent meadows that will be inundated during high tides thus providing organic materials into the tidal channel
- Remove a section of fill within a large, extensive off channel pond and wetland located within the Kwikwetlem FN IR #2 to reduce the opportunity for beaver dams to restrict juvenile salmonid use of areas upstream, especially during the prime over-wintering periods
- Plant 200 square meters of riparian habitat with native, berry-producing plants and other wildlife friendly vegetation
- Install two information signs to provide an educational opportunity and enhance awareness of the salmonid resource, the importance of healthy habitat and acknowledge the partners involved in the restoration project and Colony Farm Regional Park, and
- Strengthen existing partnerships between Fisheries and Oceans Canada, Kwikwetlem Nation, BC Ministry of Environment, City of Coquitlam, Metro Vancouver Parks, watershed stewardship groups and regional industry for the long term management, protection and restoration of the Colony Farm Park and adjacent public lands for the benefit of salmonids and the other species that depend on their continued abundance.

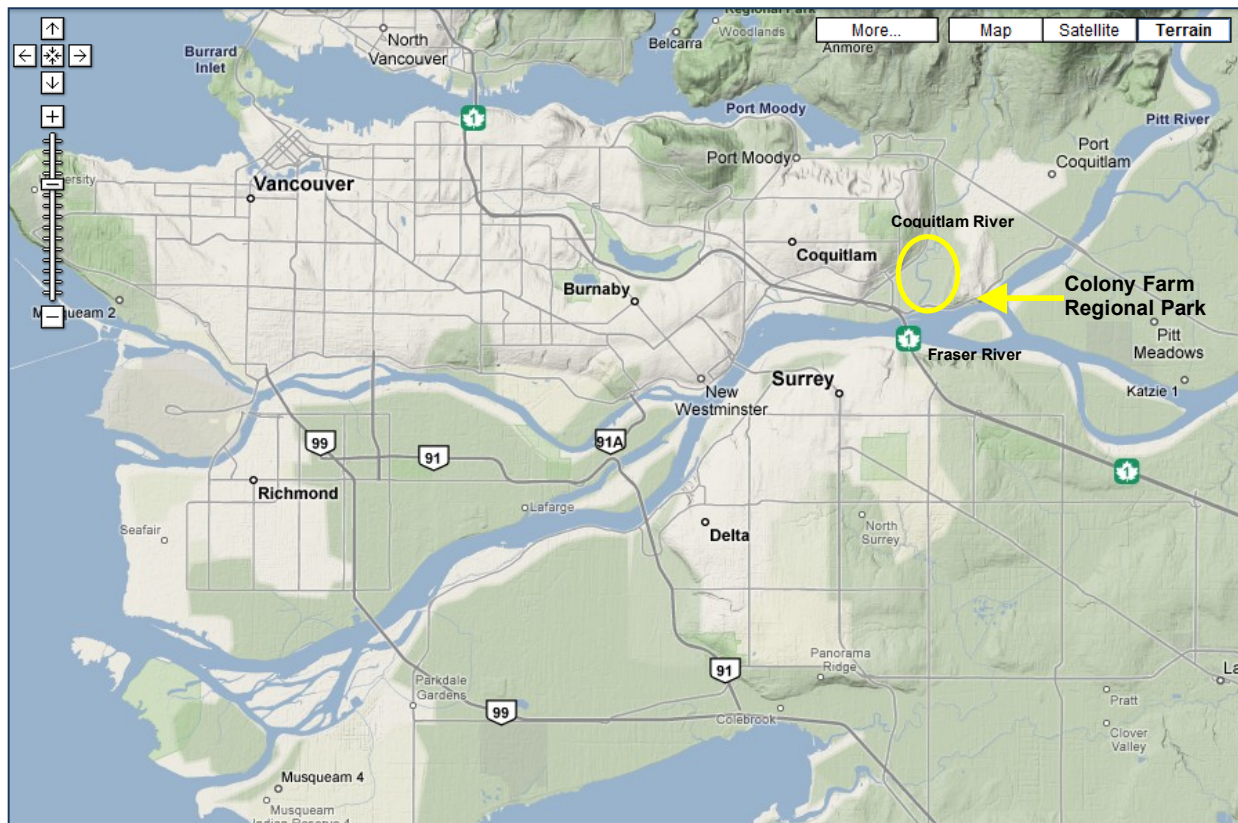
**Colony Farm Stage II Habitat Restoration Project Report to  
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**3.0 Study Area**

Metro Vancouver’s Colony Farm Park is located on the lower floodplain of the Coquitlam R. at its confluence with the Fraser R. This area is impacted from the Coquitlam R. dam footprint as well as being extensively diked, drained and farmed throughout the twentieth century. Prior to this development, all Fraser R. salmonid populations upstream of the Coquitlam R. would have benefited from these tidal habitats during their seaward migration in the spring.

**Table A  
Study Area Description**

<b>Location</b>	Coquitlam River Watershed, Coquitlam BC 2400 metres Upstream of Fraser River Confluence
<b>Watershed Code</b>	100-024500-00000-000000-000-000-000-000-000
<b>Map References</b>	Geodata BC TRIM Map 92G.026 Natural Resources Canada NTS 92G/2
<b>UTM Co-ordinates</b>	Zone 10      5459724mN, 516564mE      NAD 27
<b>Construction Drawings</b>	DFO Projects doc. Coquitlam River 11-179-04
<b>Land Ownership</b>	Metro Vancouver, Colony Farm Regional Park
<b>Land Use</b>	Regional Park, BC Hydro Right of Way Canadian Pacific Railway Right of Way
<b>First Nations Traditional Territory</b>	Kwkwetlem First Nation Primary Territory



**Figure 1  
Study Area: Colony Farm Regional Park, Coquitlam BC**

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Community discussions regarding the protection and restoration of Colony Farm have occurred over the past 13 years since the Park dedication in 1995. Approximately 100 hectares of floodplain that was previously protected by dikes for agricultural use was determined to be suitable for tidal fish habitat restoration and were dedicated for fish and wildlife habitat enhancement in the 1996 Colony Farm Land Use Park Plan.

Currently the site's productivity and biodiversity are reduced by a monoculture of *Phalaris arundinacea*, Reed canarygrass. Salmonid and other fishes habitat is determined to be the highest and best use of the project site and its rehabilitation to open field river delta/freshwater intertidal habitat will increase both of these compromised values.

The first fish habitat restoration project in the park, Sheep Paddock 1 BCRP 04 CO 02, was undertaken in 2004 with wide support from all users. This 2008 project is completing the work begun in 2004 and completes the fish habitat restoration in this area of the Park.



**Figure 2**  
**Project Site: Colony Farm Stage 2 Habitat Restoration Project**

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### 4.0 Methods

This project was developed and implemented through partnerships with BCRP, PSC DFO and regional/watershed stakeholders:

- Kwikwetlem Nation provided advice and guidance for the project with issues relating to aboriginal rights and title. They also undertook the preliminary studies that identified this opportunity to restore the floodplain and provided traditional knowledge about cultural values in the area and were the archeological monitors for the project
- Fisheries and Oceans Canada, Salmon Enhancement Program, Resource Restoration Unit, (DFO) designed and supervised the construction elements of the project. This included topographic surveying and drafting services, in-field construction supervision and as-built drawings. DFO also provided the necessary approvals from the federal government and worked with the Province of BC on the necessary notifications related to the project. These services were in-kind contributions that insured the project fit within watershed and landscape level plans and overarching policies
- North Fraser Salmon Assistance Society managed the project. This included the environment management plan, vegetation management and site restoration, First Nations archeological monitoring and site safety
- Metro Vancouver provided the land and access and will facilitate ongoing public consultations and reviews with park users. They also facilitated land ownership issues and regional constraint resolution
- DFO and NFSAS will be conducting long-term project monitoring
- Keystone Environmental undertook a wildlife study prior to work commencing to ensure no Species at Risk were present.

Salmonid habitat construction commenced on September 23, 2008. Large tracked excavators were used to excavate a channel network within the abandoned agricultural field (Figure 3.) The main channel is 250m in length. Two 125m side channels were also constructed (Figure 4 and Figure 5.)



**Figure 3**  
**Large Tracked Machines on Site**

## **Colony Farm Stage II Habitat Restoration Project Report to BC Hydro Bridge Coastal Fish and Wildlife Restoration Program**

These channels were complexed with 400m<sup>3</sup> of large woody debris (LWD) and 70 yards of gravel. Of 60 logs imported to the site, 28 were secured within the wetted channels.

Wildlife habitat was created by installing bird-of-prey perches constructed from seven erected LWD pieces. Wildlife woodpiles, to increase hibernation and egg incubation habitat for amphibians, were constructed with the remainder LWD pieces. Turtle habitat was created by importing 45 yards of a 50/50 mixture of sand and organic compost and spreading it to a minimum depth of 12 inches in sunny beach locations. Snake and small animal habitat was created with 55 yards of granite that was carefully arranged to create voids with southern exposures.

Spoil materials from the excavation were contoured to provide a diversity of semi-aquatic and terrestrial habitats suitable for the wide range of desirable plant and animal species targeted by this project.

Over 250 large- specimen trees and shrubs (Appendix D) were cluster-planted to provide Year 1 shade, cover for juvenile salmonids and fruits for songbirds and other wildlife. The planting plan was designed to increase both flora and fauna biodiversity. All planted areas have been fenced to reduce browsing and beaver damage.

A section of a remnant abandoned dike was removed within a large, extensive off channel pond and wetland located within IR #2. This agricultural dike was breached and a second one was modified by the placement of a flood control structure which will remain open for much of the year and will be closed only during high summer freshet periods.

A 900 mm diameter by 30 metre long fish friendly culvert was installed between Munday Creek in Sheep Paddock I and this project on Sheep Paddock II. A second 450 mm by 18 metre culvert was installed under the new berm to connect the newly constructed pond to the new side channels. The placement of these two culverts is key in the breaching of the dike and to the success of this project.

### **Safety and Environment Management Plan**

The project environmental management plan was based on current federal and provincial guidelines, regulations and best management practices. Care was taken to ensure no impacts to adjacent lands or downstream habitats.

Sole sourcing machine operators and project personnel with a minimum of 10 years of experience working directly with Fisheries and Oceans greatly reduced the risks associated with this project. Their familiarity and compliance with all Federal and Provincial regulations and guidelines for working in and around water was reaffirmed at a pre-project site meeting. All rates were in accordance with the BC Road Builders & Heavy Construction Association-BC Ministry of Transportation Blue Book Equipment Rental Rate Guide.

The safety plan was agreed to by the landowner and funders (Appendix B).

## Colony Farm Stage II Habitat Restoration Project Report to BC Hydro Bridge Coastal Fish and Wildlife Restoration Program

### 5.0 Results

The North Fraser Salmon Assistance Society, in partnership with the funders and regional support: BCRP, PSC, DFO, Kwikwetlem Nation, Watershed Watch Salmon Society, Metro Vancouver and the City of Coquitlam has successfully completed this project that has restored historic tidal affected marsh habitats within Metro Vancouver's Colony Farm Park.

The Colony Farm Stage 2 Habitat Restoration Project has resulted in 3,400m<sup>2</sup> of restored salmonid aquatic habitat that directly and immediately benefited the target species and an additional 5,500m<sup>2</sup> of rehabilitated terrestrial habitat (Figure 4 and Figure 5.) Over 20,000 m<sup>2</sup> of habitat was rewet by breaching an agricultural dike.

Project habitat restoration and rehabilitation included multi-species specific improvements to benefit reptiles, amphibians, neotropical song birds, resident song birds, birds of prey and small mammals. Over 250 trees and shrubs were planted, perching poles were installed and hibernacula and sunning beaches were constructed (Appendix D.)

Project monitoring in spring of 2006 of the tidal channels in the adjacent Colony Farm Sheep Paddock 1 Wetland Habitat Restoration Project (BCRP 04 CO 02) that was completed in 2004, documented utilization of the newly created habitat by both current target species, as well as *O. keta*, chum, *O. clarki clarki*, cutthroat and *O. mykiss*, steelhead juveniles. It is fully expected that this 2008 project will have similar success.

Long-term project monitoring will be done to determine fish use in the ponds in the fall (November) and winter (mid-February) in 2008, and 2009. This will confirm the use of the developed habitat. This project is downstream of the river reach monitored by the Water Use Planning Committee and therefore will not conflict with this program. Burke Mountain Naturalists and DFO will assist in identifying non-fish species using the new habitat. Long-term maintenance and effectiveness monitoring results will be reported to DFO and Metro Vancouver to support an adaptive management program and inform future project development.

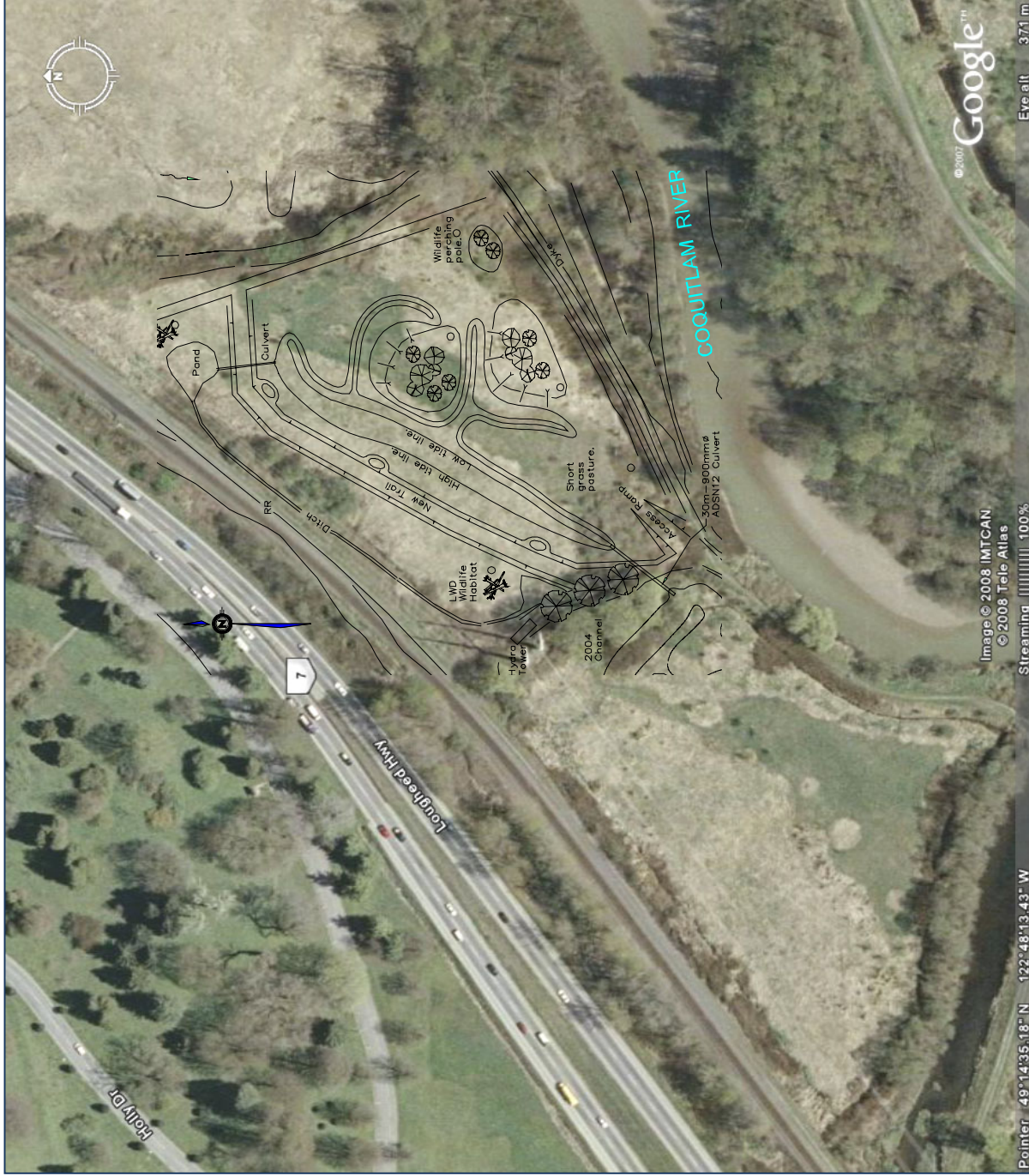
This project is expected to be effective for at least 50 years and may remain productive fish habitat indefinitely. It is expected to produce over 50,000 wild coho smolts over its projected 50-year life span. These smolts, in turn, should produce from 1500 to 5000 adults. Chinook salmon will also benefit with an estimated 1000 adults produced over the project's projected lifespan.

This project is part of an ongoing, ten-year effort to restore a portion of the Colony Farm Park to its historic tidal delta habitat that provided optimum habitat for rearing salmonids during their spring migrations.

The Sheep Paddock fields would remain largely inaccessible to the public and the water barrier provided by the slough would discourage dog and human intrusion into sensitive habitat areas; however access for mowers or emergency vehicles remains.

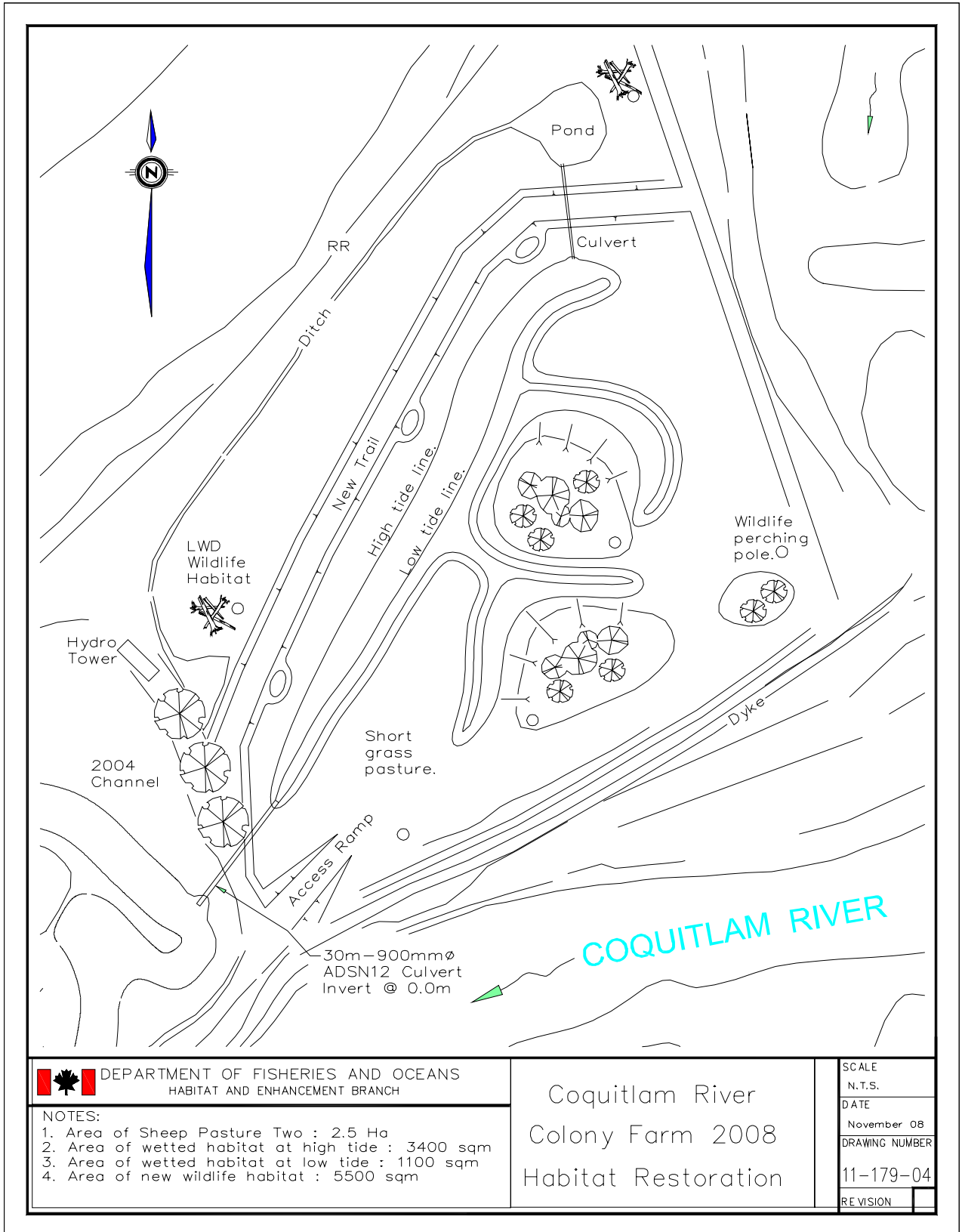
The additional results of this project will be the enhanced public awareness of the value of fish and wildlife habitats. Metro Vancouver Parks are recognized leaders in environmental education and their parks attract thousands of visitors each year. An interpretative sign will be placed along side a well used trail adjacent to the habitat project. Park volunteers will be involved in site re-vegetation and post-construction monitoring where possible. Other partners involved with the project are contributing approximately 40% of the total value of the project through direct and in-kind contributions.

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**Figure 4 Project Orthophoto**

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**Figure 5 Project As-Built Drawing**

## **6.0 Conclusions and Recommendations**

Lack of winter juvenile rearing habitat and cool water summer habitat is thought to limit the productive capacity of most coastal BC coho stocks. The intertidal habitat created in this project provides suitable habitat to address both of these limiting factors.

However, freshwater tidal habitats have been and will continue to be under extreme pressure from urban and industrial development. Projected global warming trends and expected rises in the sea level are expected to inundate and degrade marsh areas at the seaward edges of the Fraser R. delta making the up-river habitats even more critical for the salmonids of the Coquitlam watershed and other out-migrating Fraser R. stocks and for other species dependant of these specific habitats.

Within the lower Fraser R. delta area limited available land for restoration projects and high land costs are an increasing challenge and are limiting the ability of both government and the interested public to recover lost salmon habitat and to rehabilitate it to a productive state.

Metro Vancouver and the interested public are both fortunate to have a willing general public coupled with lands in their area purchased for public good and held as park land. The park land converted for this project has provided intertidal estuary habitat at extremely low cost and maximized benefits to humans and the ecosystem alike.

A much larger area in Colony Farm Park is presently being considered for further estuary habitat restoration, to link to and build upon this current project, and to help address the growing challenge to long-term sustainability of salmonids in the Fraser R. If accepted, the next phase of estuary restoration will be implemented over the next decade.

These restoration works being undertaken in the Coquitlam R. estuary will play a key role in the future sustainable of the targeted Fraser R. coho and chinook stocks.

It is recommend that:

- 1 Additional projects to recover lost critical habitat be undertaken in the near term as the economy declines and significant cost savings can be realized
- 2 Long term monitoring results be captured and reported widely at relevant symposiums and conferences to support communities of practice knowledge transfer, and
- 3 All efforts be made to expand the current partnerships to fund and implement the next 10-year phase of the Colony Farm Land Use Park Plan Estuary Habitat Restoration.

**Colony Farm Stage II Habitat Restoration Project Report to  
BC Hydro Bridge Coastal Fish and Wildlife Restoration Program**

**7.0 References**

BC Hydro's Bridge Coastal Fish and Wildlife Restoration Program Strategic Plan, Chapter 8  
Coquitlam Buntzen Watershed

[http://www.bchydro.com/bcrp/about/strategic\\_plan.html](http://www.bchydro.com/bcrp/about/strategic_plan.html)

BC Hydro's Bridge Coastal Fish and Wildlife Restoration Program  
Colony Farm Sheep Paddock 1 Wetland Habitat Restoration Project (BCRP 04 CO 02)

Pacific Salmon Commission, The Strategic Plan of the Southern Fund Committee, June 2008

[http://fund.psc.org/2009/SF\\_2008\\_Strategic\\_Plan.pdf](http://fund.psc.org/2009/SF_2008_Strategic_Plan.pdf)

Fisheries and Oceans Canada, Pacific Region Operating Statements

[http://www-heb.pac.dfo-mpo.gc.ca/decisionsupport/os/operational\\_statements\\_e.htm](http://www-heb.pac.dfo-mpo.gc.ca/decisionsupport/os/operational_statements_e.htm)

Standards and Best Management Practices for Instream Works (Ministry of Environment)

<http://www.env.gov.bc.ca/wld/documents/bmp/iswstdsbpsmarch2004.pdf>

Colony Farm Land Use Park Plan Colony Farm Park Plan, 1996

**Colony Farm Stage II Habitat Restoration Project Report to  
BC Hydro Bridge Coastal Fish and Wildlife Restoration Program**

**Appendix A**

**Financial Statement  
and  
Performance Measures**

Colony Farm Stage II Habitat Restoration Project Report to  
BC Hydro Bridge Coastal Fish and Wildlife Restoration Program

**Financial Statement**

	<b>Budget</b>		<b>Actual</b>	
	<b>BCRP</b>	<b>Other</b>	<b>BCRP</b>	<b>Other</b>
<b>Income</b>				
BCRP	95,625.00		95,625.00	
Total Income by Source				
Fisheries and Oceans		34,000.00		23,600.00
Pacific Salmon Commission		21,000.00		38,000.00
North Fraser Salmon Assistance		4,510.00		1,550.00
Volunteers				2,240.00
<b>Grand Total Income</b>	<b>95,625.00</b>	<b>59,510.00</b>	<b>95,625.00</b>	<b>65,336.44</b>
<b>Expenses</b>				
<b>Project Personnel</b>	17,800.00	46,800.00	8,000.00	20,000.00
Wages			1,500.00	2,400.00
Consulting Fees	5,000.00	10,000.00	3,563.44	
Kwikwetlem FN			4,000.00	
Volunteers				2,240.00
<b>Total Personnel</b>	<b>22,800.00</b>	<b>56,800.00</b>	<b>17,063.44</b>	<b>24,640.00</b>
<b>Materials and Equipment</b>				
Equipment Rental	41,800.00	61,800.00	41,619.57	25,400.00
Materials Purchased	25,000.00	28,000.00	30,863.43	10,700.00
Travel Expenses				
Permits				
<b>Total Materials and Equip</b>	<b>66,800.00</b>	<b>89,800.00</b>	<b>72,483.00</b>	<b>36,100.00</b>
<b>Administration</b>	5,575.00	7,905.00	6,025.00	4,450.00
Office supplies	250.00	350.00		100.00
Photo copies and Printing	150.00	210.00		100.00
Postage	50.00	70.00		
<b>Total Administration</b>	<b>6,025.00</b>	<b>8,535.00</b>	<b>6,025.00</b>	<b>4,650.00</b>
<b>Total Expenses</b>	<b>95,625.00</b>	<b>155,135.00</b>	<b>95,571.44</b>	<b>65,390.00</b>
<b>Grant Total Expenses</b>	155,135.00			
<b>BCRP + Other</b>	155,135.00			
<b>Balance</b>	0.00		<b>53.56</b>	

**Colony Farm Stage II Habitat Restoration Project Report to  
BC Hydro Bridge Coastal Fish and Wildlife Restoration Program**

Performance Measures													
Project Type	Primary Habitat Benefit targeted By Project	Primary Target Species	Estuarine	Instream Habitat Mainstem	In Stream Habitat Tributary	Riparian	Reservoir	Reservoir Shoreline Complexes	Riverine	Lowland Deciduous	Lowland Coniferous	Upland	Wetland
<b>Impact Mitigation</b>													
Fish Passage Technologies	Area of Habitat Made Available												20,000
Drawdown Zone Re-vegetation	Area Turned into Productive Habitat												
Wildlife Migration	Area of Habitat Made Available to Target Species												
Prevention of Nest Drowning	Area of Wetland Habitat Created Outside Flood Level												
<b>Habitat Conservation</b>													
Habitat Conservation - General	Functional Habitat Conserved/replaced Through Acquisition and Management												
	Functional Habitat Conserved by other Methods												
Designate Rare Species/Special Habitat	Rare/Special Species Protected												
<b>Maintain or Restore Habitat Forming Processes</b>													
Artificial Gravel Recruitment	Area of Stream Habitat Improved												
Artificial Wood Debris Recruitment	Area of Stream Habitat Improved												
Small Scale Complexing	Area of Increased Functional Habitat					500							500
Prescribed Burns	Functional Are of Habitat Improved												
<b>Habitat Development</b>													
New Habitat Created	Functional Habitat Created					200							2,000

**Appendix B**

**Project Safety and Environment Management Plan**

# Colony Farm Stage II Habitat Restoration Project Report to BC Hydro Bridge Coastal Fish and Wildlife Restoration Program



Fisheries and Oceans  
Canada

Pacific Region, Lower Fraser Area  
Habitat and Enhancement Branch  
Resource Restoration  
Unit 3 100 Annacis Parkway  
Delta BC V3M 6A2

Pêches et Océans  
Canada

Région de la Pacifique, Cours inférieur du Fraser  
L'habitat et de la mise en valeur  
Rétablissement des ressources  
100 Annacis Parkway  
Delta (C.-B.) V3M 6A2

Your file

Votre référence

Our file

Notre référence

November 6, 2007

Tony Matahija  
North Fraser Salmon Assistance Society  
Suite 502, 1199 Eastwood St. Coquitlam BC  
V3B 7W7

Dear Tony:

**Subject: Colony Farm Stage 2 Habitat Restoration**

As required by the Bridge Coastal Restoration Program and in support of your project I have composed a Safety Plan Description. The description itemizes our existing safety measures using the format suggested in Appendix A to Schedule D of the standard contribution agreement.

### **Work Description**

The work funded by the Bridge Coastal Restoration Program is predominantly excavating. The project involves heavy hydraulic excavators digging and grading earthworks; placing rock armour, large rounded rock, large woody debris, and other heavy infrastructure. A member of Fisheries and Oceans professional engineering staff will oversee the project and perform periodic inspections. Secondary activities will involve removing invasive plant species, monitoring wildlife, and planting riparian vegetation. The project manager from the NFSAS and DFO technical staff will ensure all works are conducted in a safe manner consistent with WCB regulations and standards.

### **Purpose and Location of Field Trips**

The work requires continuous field activity from beginning to end of each phase of construction. A properly permitted and suitably experienced excavation contractor will execute all construction under the guidance and monitoring of Fisheries and Oceans Canada's professional engineering staff. All trips will be to sites within the bounds of the Work site property.

### **Pre-Field Hazard Assessment**

#### ***Heavy Excavator Operations***

Hydraulic Excavators will be operated by experienced personnel only and will dig and lift from level positions with suitably load-rated rigging.

#### ***Site Location on Active Floodplain***

Work crews will be required to obey all municipal and provincial flood warnings. During peak freshet the work sites will close and will also shut down during heavy rain.

Canada

C:\windows\TEMP\BCRPCoqSafetyPlan-08.doc

## Colony Farm Stage II Habitat Restoration Project Report to BC Hydro Bridge Coastal Fish and Wildlife Restoration Program

### *Channel Excavation and Grading*

All personnel on the site will be required to comply with provincial safety regulations for personal protective equipment. The site supervisor will accompany visitors in proper personal protective equipment when approaching operating machinery.

### *Large Woody Debris Placement and Anchoring*

The equipment operators will position the large wood pieces with heavy hydraulic excavators using the attached hydraulic thumbs or wire-rope chokers where applicable. Portions of the debris may be buried by the machinery. Crew personnel will attach anchor cables to dead man rocks or logs when heavy equipment is idle or otherwise clear of the anchor site.

### *Large Rock Armour Placement*

Personnel will be required to stay clear of rock dumping.

### *Control Structure and Culvert Installation*

The crew will dig trenches, set pipe and backfill, under professional engineering guidance, following WCB regulations and practice.

### **Crew Check-in Procedures**

Crew will be monitored and checked on 3 times a day. Independent check-in is not required.

### **Safety Policy**

#### *Minimum Crew*

Usually 2 people will be active at the work site during construction, including a representative from Fisheries and Oceans Canada or North Fraser Salmon Assistance Society. If a person is to be alone a call in procedure will be implemented.

#### *Emergency Communication*

The contractor or crew leader will be accessible on their CDMA cell phones.

#### *First Aid*

The maximum number of crew active on the work site will be 8. Under Part 33 of the Occupational Safety and Health Regulation, such a work site requires a Level 1 First Aid Attendant with Transportation Endorsement to their certification. All trucks have First Aid Kits.

#### *Wildlife Hazard Precautions*

Transient bears are present throughout April to November. Each crew will carry bear-spray.

#### *Motor Vehicle Use*

While on the construction site, motor vehicles will be limited to travelling 40 km/h

#### *Swift-water Emergency Procedures*

The crew will not work during high-flow river conditions. All personnel will be educated, restricted and equipped as required by Occupational Safety Regulations.

#### *Public Access*

Signage will be displayed to warn the Public of ongoing construction.

### **Emergency Plan**

**Colony Farm Stage II Habitat Restoration Project Report to  
BC Hydro Bridge Coastal Fish and Wildlife Restoration Program**

*Overdue Crew*

In the event the crew does not answer calls, or does not clear the site at the end of a day, the F&O representative will inspect the site for problems.

*On-site Injury or Illness*

If an injury or illness occurs, the crew will call the contractor and inform the North Fraser Salmon Assistance Society Project Manager and F&O engineering staff as described by Occupational Safety Regulations.

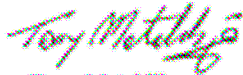
**Emergency Contacts**

Coquitlam Emergency Services 911

If you find this suggested Safety Plan adequate for your needs then please sign and forward on to BC Hydro. If you need any further safety information, please call me at 604-666-3602.

Sincerely,

Harold Beardmore  
Senior Engineer  
Resource Restoration  
Fisheries and Oceans Canada



Tony Matablija  
North Fraser Salmon Assistance Society

**Colony Farm Stage II Habitat Restoration Project Report to  
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**Appendix C**

**Project Photos**

**Colony Farm Stage II Habitat Restoration Project Report to  
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**Figure 6 Project Site Week 1- Commencement**



**Figure 7 Project Site Week 8 Completion**

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**Figure 8 Construction - Main Channel**



**Figure 9 Construction – Keying in Large Woody Debris**

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**Figure 10 Construction – Installing Culverts**



**Figure 11 Construction – Installing Bird of Prey Perching Posts and Wildlife Woodpiles**

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**Figure 12 Construction – Completing South-facing Reptile and Amphibian Hibernacula**

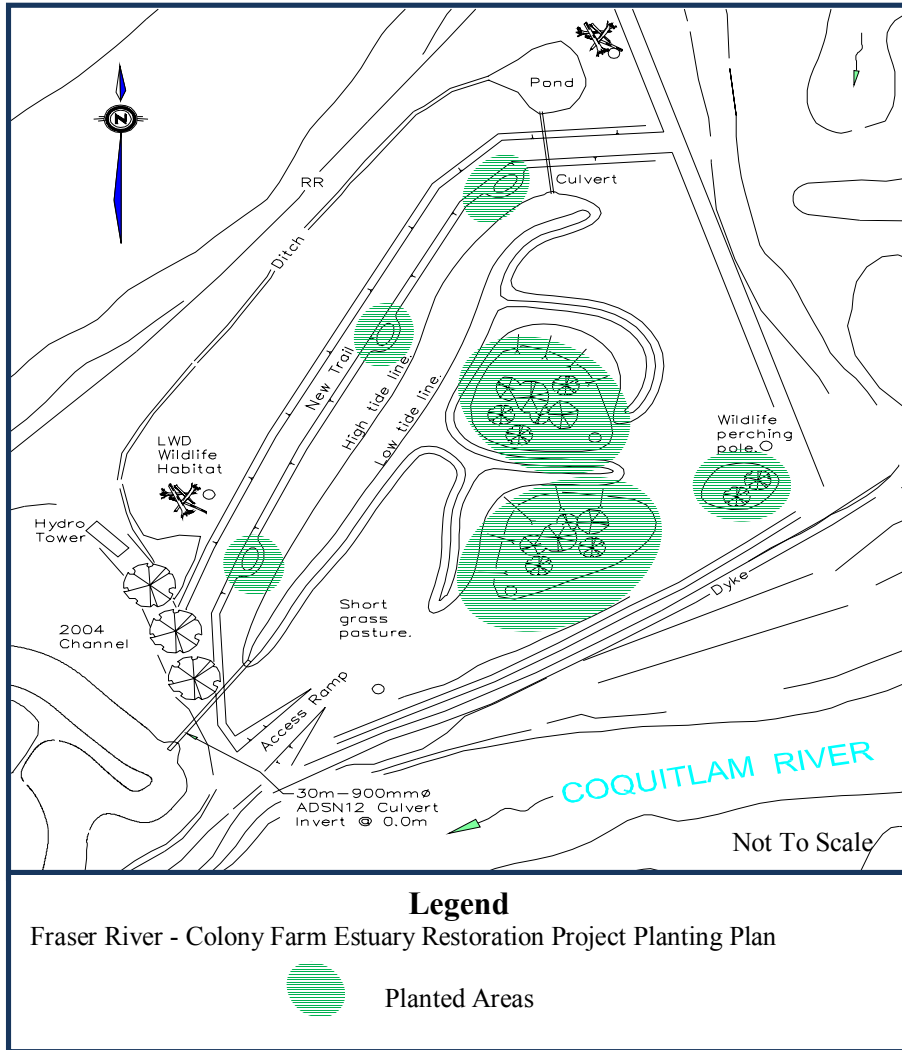


**Figure 13 Construction –Large Specimen Planting**

**Appendix D**

**Planting Plan and Plant List**

**Colony Farm Stage II Habitat Restoration Project Report to  
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**Plant List\***

<i>Picea sitchensis</i>	5	sitka spruce
<i>Thuja plicata</i>	10	western redcedar
<i>Rhamnus purshiana</i>	4	casara
<i>Crataegus douglasii</i>	15	black hawthorn
<i>Cornus sericea</i>	30	red-twigged dogwood
<i>Rosa nutkana</i>	30	nootka rose
<i>Physocarpus capitatus</i>	10	Pacific ninebark
<i>Rubus parviflorus</i>	30	thimbleberry
<i>Rubus spectabilis</i>	40	salmonberry
<i>Sambucus racemosa</i>	20	red elderberry
<i>Carex obnupta</i>	30	slough sedge
<i>Scirpus microcarpus</i>	60	small flowered bulrush
<i>Scirpus lacustris validus</i>	20	soft stemmed bulrush

\* Plants all maximum size to increase competition success against alien- invasive species

**Appendix E**

**Media and Communications**

Publicity and communication are ongoing, as there is a high degree in of community interest in this project. November 4, 2008 more than 12 groups/funders/stakeholders attended the first of several site meetings to promote the project.

12 In-City News Friday, June 20, 2008

# Forced out of fishing, Matablaja gives back

This is the third article in Down To Earth, a summer-long series running every Friday in The Tri-City News profiling people who have a positive environmental impact.

By Lara Gerrits  
THE TRI-CITY NEWS

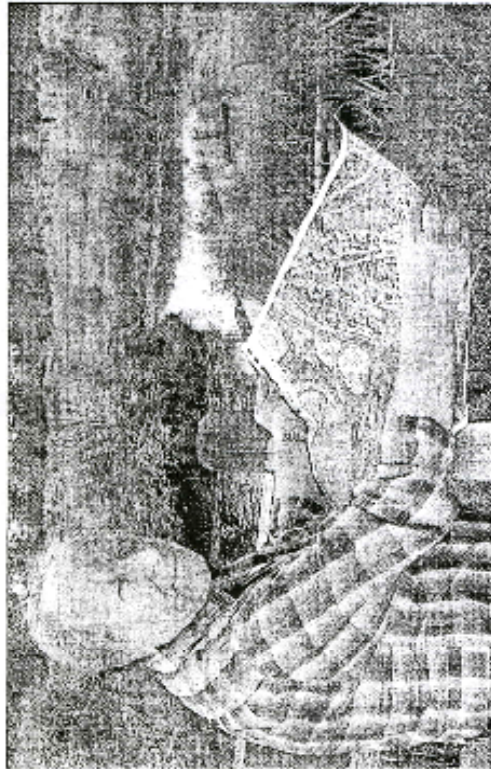
Many Matablaja's hands are thick, strong and worn from decades of hard work. They've supported him during life at sea as a merchant sailor on commercial ships as a hunter, aboard commercial boats as a fisherman and now, ironically, as an advocate for the fish he once caught.

His life story is undeniably interesting. As a young man, he moved from his home country Croatia — then part of the communist Yugoslavia — to start a new life in Canada. He was seeking freedom of speech and religion, and was willing to leave everything behind, even his family to find it. That was 1972.

While working in construction would earn Matablaja his first paycheques, he would eventually begin fishing commercially, which he did for 16 years until 1996, when the West Coast fishery collapsed. Fisheries were temporarily closed by the federal government, which paid fishermen to do reclamation work to earn EI stamps until they could go back to work.

Matablaja never went back on the boats. Instead, he devoted himself to the fish he reeled in and launched his own North Fraser Salmon Assistance Project, a non-profit society dedicated to protecting salmon. His first project was building the hatchery building at Hoy Creek, where for years now people have flocked to welcome fish back to their own, home grounds every fall as part of the Salmon Come Home event.

Then he worked on the Trans Canada trail. That's a building at the Mossom Creek Hatchery in Port Moody. Then the Supperston farm way in New



COLONY FARM AS THE TRI-CITY NEWS  
Tony Matablaja, a former fisherman and construction worker, holds a map of the Colony Farm area, where he has been involved in many different environmental projects.

Westminster. And then an education centre at Poole's Moon's Creek Hatchery. He joined a number of environmental organizations, including the Coquitlam River and the Hoy/Scott watershed societies, and although Matablaja, 60, is focused more on his own society now, he remains an active volunteer with the Maple Creek Streambeavers. Over the last decade, he has worked in watersheds, including the Brunette, Coquitlam, Alouette, Mossom, Noons, Como and Kanaka. "I can go for another half hour," he says in a thick accent.

His most recent projects include Coquitlam off-channel habitat restoration work at several creeks and ponds. The projects, in partnership with BC Hydro, increased habitat

size and improved flood protection, salmon spawning areas and salmonid access affected by beavers.

Later, he began his largest and most ambitious task: helping restore habitat at Colony Farm Regional Park.

Along with several key partners, Matablaja helped transform pasture that was once home to sheep into pond and stream areas, matted with more than 1,000 native plants. Known as Sheep Pasture Slough, the habitat provides a home for wildlife, including juvenile salmon, which use a spawning channel as a sanctuary to adapt to salt water while migrating to the ocean from the Coquitlam River.

As well, garter snakes can be seen hiding on slough rock piles and great blue herons hunting for mollusks and fish. Red-legged frogs can hide in the channel's muddy bottom on



The importance of it dates back more than 100 years when a dam was first built on the Coquitlam River to produce hydroelectricity and supply water to presens, and subsequent reconstruction projects, caused considerable vegetation and fish habitat loss. Some areas were blocked altogether while other habitat was diminished due to reservoir flooding and flow diversions.

"We are trying to bring the fish habitat to what it was 100 years ago," Matablaja says of the restoration work, the first phase of which was completed in 2004 and has since been studied for its successes and failures. There aren't many of the latter and work should commence soon on a second phase with partners including BC Hydro's Bridge Coastal Fish and Wildlife Restoration Program, Metro Vancouver Fisheries and Oceans Canada, the Pacific Salmon Commission and the Kwikwaka'wakw First Nation.

While Matablaja is in charge of the construction components of most of North Fraser Salmon Assistance Project's work, his knowledge about a watershed's needs is vast for a builder-turned-fisherman-turned-environmentalist. He can chime off multiple species of salmon, their presence (or lack of) in specific watersheds and what needs to happen for them to return.

When you have a passion for something, you don't have to go to university to learn it, he says. Now semi-retired, Matablaja plans to "study" for as long as he can. "I traded a living on fish," he says, "and now I am giving back."

lgerrits@tricitynews.com

**Appendix F**

**Contacts**

**Colony Farm Stage II Habitat Restoration Project Report to  
BC Hydro Bridge Coastal Fish and Wildlife Restoration Program**

**Proponent**                    **North Fraser Salmon Assistance Society**  
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V3B 7W7

**Project Manager**        **Tony Matahija**  
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**Project Partners**        **BC Hydro Bridge Coastal Restoration Program**  
Scott Allen, Program Manager  
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604 528-3308

**Pacific Salmon Commission**  
Angus Mackay, Program Manager  
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604 684-8081

**Fisheries and Oceans Canada**  
OHEB Salmon Enhancement Program, Resource Restoration Unit

Matt Foy, Senior Biologist  
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**Metro Vancouver Regional Parks Central**  
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**Watershed Watch Salmon Society**  
Craig Orr, Executive Director  
[corr@telus.net](mailto:corr@telus.net)  
604 936-9474

**Colony Farm Stage II Habitat Restoration Project Report to  
BC Hydro Bridge Coastal Fish and Wildlife Restoration Program**

**Kwikwetlem Nation**  
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Coquitlam, BC  
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604 540-0680

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George Chaffee, Resource Restoration  
[jam\\_jam60@hotmail.com](mailto:jam_jam60@hotmail.com)

Nancy Joe, Archaeological Monitor  
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**Project Resources**

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24555 32nd Avenue,  
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Office: 604-530-9300  
Fax: 604-530-9500  
Michael Campbell, Canadian Sales Manager

**Keystone Environmental**  
Suite 112-9547 152 Street  
Surrey, BC V3R 5Y5  
Tel: 604 588-1333  
Vicki Eng, Contact