

**MCINTYRE CREEK
SALMON INCUBATION PROJECT
2002-2003**

**YUKON RIVER SALMON RESTORATION AND ENHANCEMENT FUND
Project # CRE65-02CP**

March 2003 Project Report

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- The McIntyre Creek Salmon Project has been going through a period of transition since the spring of 2002. The Whitehorse Correctional Centre McIntyre Project received funding approval from the Yukon River Panel for 2002-2003. However, after the submission of the proposal, WCC decided to withdraw from the project due to changes in personnel (Gerry Fromme retired) and in programming requirements. Whitehorse Correctional Centre ponded the fry and continued to care for them until mid-May. Meanwhile DFO approached Yukon College about the McIntyre project and the Northern Research Institute (at Yukon College) decided to take over administration of the project. The Renewable Resources program agreed to involve students beginning in September of the 2002-03 academic year. Other organisations and contractors fulfilled most of the project duties, including many changes at the incubation site, from May to September.
- A couple of beavers moved into the channel downstream of the site early in the summer. Dealing with this other unexpected difficulty took considerable time and effort.

Ponding and Rearing: WCC moved fry into Capilano troughs in early April, 2002. They looked after the daily feeding and cleaning until mid-May. High school students from Emilie Tremblay and Wood Street carried out the daily feeding and monitoring at the site from mid-May to the end of June.

In 2003, fry ponding began in March and will be completed in early April. Yukon College students look after the daily feeding and cleaning.

School Visits: Fourteen schools visited the site in the spring of 2002, as part of their fry release field trip. Other school groups also arranged visits that were hosted by WCC. Streamkeepers North Society also held a workshop at the site at the end of April 2002. No open house was held due to difficulty with workload during the period of transition.

Tagging: NRI hired Phyllis Nelson to do the coded wire tagging, and high school students to assist her with clipping and tagging. 7,000 Tatchun fry and 25,000 Takhini fry were tagged in the last week of June. NRI purchased Coded wire tags in preparation for 2003 fry tagging.

Releasing: DFO EC released chinook fry between June 27th and June 29th of 2002. 7,000 fry were released at Tatchun Creek. 21,000 fry were released into the Takhini River, and 4,000 fry were released into Flat Creek (Takhini river tributary.) Public bystanders assisted with the Takhini River release.

Yukon College Studnets, in co-operation with DFO, will release the 2003 fry after tagging in late June or early July.

Site preparation: Several site renovations were planned for the site, prompted in part by the very low survival of the 2001 eggs.

- In July 2002 the Y2C2 and DFO EC worked at the site. A small pipe was installed at the bottom of the sheet metal dam that creates the small reservoir to allow draining (prevent build-up) of organic debris from around the intakes.
- Y2C2 also built a frame to hold a new downstream debris screen for the 2003 rearing season. The fish screen to be installed downstream of the debris screen was not built due to lack of time. The old downstream fish screen was the site of the first beaver dam in the channel in July. In an effort to avoid attracting more beavers, no fish screen will be put in the channel until the 2003 rearing season. The new debris screen and a fish screen that will have maximum surface area and minimum debris accumulation are being constructed.
- DFO EC and Y2C2 removed the original heath stack enclosure, the fish tote incubator, and various concrete pads that had sunk into the muck in the channel. They also disconnected a Capilano trough and moved it down stream. At the site of the old incubators, an 8' x 10' platform was constructed and levelled in the mud using stakes up to 6' long. Drains were placed under the platform to allow seeping groundwater to escape. Y2C2 also built new lids for the Takhini upwelling box and prepared the box for eggs.
- A contractor was hired to build two new heath stack enclosures. Construction took longer than anticipated so these were not ready before egg take time, so installation was very rushed. DFO EC set up the are four heath stacks (two stacks in each shelter, 4 egg trays in each stack) and plumbed them into the water supply. Filter trays were placed at the top of each heath stacks to minimise debris in the eggs. Open cell foam was placed in these trays for filter material, but this will be replaced with foam wool prior to hatch. Some adjustments to the boxes that were not completed before egg take due to lack of time, will be made in October- November, once the eggs are eyed and less vulnerable to disturbance. These include adjusting the doors so that they close tightly, installing another hasp, adding more weather stripping, and putting in heat tape that can be used if necessary. With the new platform, access to the heath stacks is MUCH easier and safer than in previous years.
- NRI purchased insulated tarps for the site. Yukon College students constructed a wood frame over the heath stack platform and the insulated tarps were put on to help maintain ease of access in the winter.
- NRI hired a contractor to install an emergency heat system for the incubation boxes. The system is supposed to be set to come on at 2 degrees Celsius. NRI awaits a design plan and description of the system from the contractor.
- In March, Yukon College students worked with the DFO EC to connect one Capilano trough and to prepare the other two troughs for connection by cleaning, disinfecting, and levelling troughs, and preparing pipes for hook-up. Some Tatchun fry were ponded and insulated tarps were placed over the Capilano trough. Other fry await ponding in early April, as soon as temperatures permit gluing of pipes. Meanwhile, Takhini fish are being fed in the incubation box.
- In March 2003, intakes were replaced with intakes perforated only on the top, in an effort to reduce debris in the incubation and rearing boxes.
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- A second drain will be installed in the dam in summer 2003 to minimize debris collection on the intakes.
- **Security system connection:** Spectrum Security and the DFO EC installed float and intrusion alarms on the new heath stack incubation shelters in early September. Eggs were already in the boxes, so the intrusion alarm wires were placed on the outside of the boxes to minimise disturbance. A float switch was also installed in the channel so that beaver activity that results in water level in the channel rising will trigger an alarm. Spectrum is continuing to monitor the alarm system. Yukon College developed a new alarm callout list including contact numbers for Yukon College students. Spectrum will be scheduled to connect the alarm on the third Capilano trough once it is reconnected in April.

Broodstock collection: In 2003 Chinook broodstock were caught by drift netting at Takhini River between August 17th and August 25th. Chain link pens (4' x 4' x 8') were placed in an eddy to hold the salmon until ripe. 70000 eggs were taken from 13 female chinook. The DFO EC, casual project employees, DFO STAD personnel, and a student volunteer collected broodstock collection at Takhini.

Tatchun Creek broodstock were netted by beach seining between August 17th and August 21st. PVC tubes, 8" in diameter and about 120 cm long, with clothesline barriers at each end, were placed under cover in the creek to hold fish until they were ripe. Water velocity through the tubes was minimised using large rocks when eddies were no sufficient. 40000 eggs were taken from 10 females. Broodstock collection at Tatchun was carried out by the DFO EC, a volunteer biologist, the Habitat Steward from Carmacks, Little Salmon Carmacks fisheries project employees, and DFO HEB volunteers.

(see attached files on Tatchun and Takhini broodstock collection)

Incubation: Takhini River eggs were placed in egg trays in the upwelling box, and in 4 trays of the new heath stack incubators. Portions of several batches of eggs were treated with iodine disinfectant, to determine whether the treatment might effect egg viability. Each batch was fertilised with milt from at least two males and planted into the trays. About 20 eggs from each batch were held in separate isolation baskets and checked after 24-48 hours to determine percent fertilisation. The Whitehorse Rapids Hatchery manager assisted the DFO EC with the initial fertilisation checks. Fertilisation rate estimates were between 60 and 100 %. Procrastination of a fertilisation check led to the discovery that the cell division was much more visible after 48 hours than after 24 hours, so the few subsequent checks were done after 2 days of incubation.

Tatchun eggs were placed in trays in the new heath stacks. Portions of several batches of these eggs were also treated with iodine disinfectant, to determine whether the treatment might have an effect on egg viability. Each batch was fertilised with milt from at least two males and planted into the trays. About 20 eggs from each batch were checked after 24-48 hours to determine percent fertilisation. Fertilisation rate estimates ranges from 30 to 100 %. Most fertilisation checks were done after 24 hours. No difference in fertilisation rates or in survival to pick was found between the eggs disinfected with iodine solution and those not disinfected.

Monitoring and Maintenance:

In July and August beaver activity resulted in flooding at the site on 3 occasions. A high school student volunteered to monitor activity and pull dams as required for a period in July. YTG, DFO, and NRI were also involved with pulling dams at various times over the summer. YTG attempted to shoot the beavers, as recreational use in the nearby area meant trapping would risk catching pets. This method was not effective, so the animal control officer switched to traps and caught one of the beavers in late August.

Yukon College students were hired in late September to monitor the site. They are visiting the site at least every two days to check temperatures and flow, and to clean intakes. Eggs were to be examined weekly, to determine when picking is required, and when hatching occurs. Temperatures were checked with a thermometer, and were also monitored with a **Hoskins Hobo temperature logger**.

Egg Picking:

Yukon College student employees and the DFO EC did pre-eyed picks on the Tatchun eggs between Sept 26th and October 9th. About 12 % of Tatchun eggs and 8% of Takhini eggs were removed during these picks.

Eyed picks were carried out in late October, November, and December. Other dead eggs were removed with egg trays in January. Final numbers for Tatchun were 73 % survival of fertilized eggs, with 55% total survival of eggs. Final numbers for Takhini were 73 % survival of fertilized eggs, with 66 % total survival of eggs.

Some mortality in Tatchun eggs was caused by a flow accident during picking. Other mortality could have been reduced by more frequent picking, particularly in late October. The main difference in survival between the two batches of eggs was due to the difference in egg fertility. This is perhaps due to the longer time between egg take and fertilization of the Tatchun eggs. Plans are in place to compare the survival of eggs fertilized and water hardened in the field with those transported to the incubation site before fertilization.

NRI purchased a cell phone for the site to facilitate communication and to help ensure the safety of workers.

(See attached spreadsheets on Takhini and Tatchun egg survival)

Fry Trapping: Minimal fry trapping was conducted at Flat Creek in the 2002 summer, due to time constraints and lack of trained personnel. Y2C2 went out with the DFO staff on July 11th and 12th. Another Y2C2 crew went out with DFO on August 19th and 20th. Much of the data from the second session was unacceptable, due to lack of DFO time for complete supervision.

Yukon college students will begin fry trapping at Flat Creek in May 2003. Y2C2 will again be asked to carry out fry trapping, but will be guided by DFO and Yukon College students at all times in 2003.

Adult Return Monitoring: The lower reaches of Flat Creek were walked 3 times during spawning season (August 19th and 20th HEB Bio. and Y2C2, August 28th DFO EC and High School student) but no adult salmon were observed. High rainfall prior to the August 28th survey resulted in very turbid water, and water flow around the beaver dam.

Adults could possibly have accessed upstream reaches of Flat Creek during the high water period, but those sections are extremely difficult to monitor.

No coded wire tagged (clipped) fish were caught during broodstock collection at the Takhini River or at Tatchun Creek. Three spaghetti tags were retrieved and given to DFO STAD. Two hearts with spots on them from broodstock at Tatchun were also submitted to STAD for analysis. They proved to be infected with ichthyophonous. The Takhini River was examined for carcasses from the lake down to the rock garden on September 6th. Eighteen LIVE salmon were observed, but it was not possible to determine the presence or absence of fin clips. Only one carcass was observed (water levels did not leave many gravel bars exposed) and it was not tagged. Broodstock collectors will monitor their catch for adipose clipped fish during netting.

Little Salmon Carmacks First Nation employees walked Tatchun Creek for enumeration purposes and reported about 450 chinook seen on August 20th, but they did not report any obvious clipped fins. However these marks are very difficult to see unless the fish is very close and still.

The DFO Habitat Steward walked the stretch of McIntyre Creek between the mouth and Range Road on August 20th. They observed one adult chinook, possibly near a redd. The Habitat Steward and a high school student volunteer walked the creek from the Yukon College ponds to the Yukon River on August 28th, but did not see any salmon.

Posters were given to DFO personnel for posting at Tatchun and in Dawson in August 2002, offering draw prizes for the submission of Coded wire tagged salmon heads. No heads were submitted.

In 2003 posters will be prepared and prizes offered for head recovery again. Posters will be circulated earlier in the season (June and July) and will be distributed more widely than in 2002.

Appendices attached:

1. Tatchun Egg Take 2002
2. Takhini Egg Take 2002
3. Tatchun Eggs 2002 Survival
4. Takhini eggs 2002 Survival
5. McIntyre CWT 2002
6. CWT 2002 Releases McIntyre Project
7. Financial Summary March 2003

Tatchun Egg Take 2002

AUGUST 12TH

Bev and crew walk Tatchun and see 85 fish, not paired up.

August 17th

Trix and John put in holding tubes and net. Al and Steve come in pm to help net.

Water 14 degrees

C.

Caught an ESTIMATED 7 females: 1 spent released; 4 taken; 2 held in tubes

Egg take from 3 full females and 1 part spawn.

Caught over 15 males: used 8 for milt; held 5; released others

August 19th

Trix and Bev

Caught 5 females: 1 spent released; 1 "full ripe"; 2 not ready; 1 part spawn

Took eggs from 3 females: 1 held in tube and two caught.

Two females had spots on heart- one that had water hardened eggs-seemed full, and one that was a partly spawned fish with a gelatinous lining in her abdomen. (to STAD)

Held 3 females (1 hard; 2 nearly ready) and 2 males in tubes.

Male catch number not recorded-est. 12. Used 5 males for milt. Held 2 males. Rest released.

Water 14 deg. C.

August 21st

Trix and Bev and Gerry and Brian. (Also Steve and Al.)

Gerry and Brian walked creek (no polarized glasses) and observed ___ fish. (over 350)

One spaghetti tag found on streambed. One spaghetti tag found on jack. (to STAD)

Took eggs from 4 females. (2 full from holding tubes, and 2 part spawns netted)

Used milt from 8 males (1 from tube; others from creek)

Many males caught had watery milt-looking nearly spent

Caught 5 females: 3 spent; 2 part spawns (took eggs). Released 1 female from tube-hard.

Caught 12 males: 3 recaps; 4 with watery milt.

Takhini River Egg Take 2002

- August 13th Boat in with Ken.
Observed 10 + fish in the netting area- not paired up. Early.
- August 17th
Ken and Doug net.
4 females caught: 1 spent released; 2 part spawns and one full females taken.
12 males caught*: 6 used and released; 6 held
*1 with American yellow spaghetti tag: # 02.01149 ADFGAK
- August 18th
Ian and Trix net.
No females. 11 males released.
- August 19th
Ken and Doug.
2 females caught: 1 spent female released; 1 female taken.
12 males caught: 3 recaps released; 4 held for milt; 5 marked and released.
Used 3 males for milt and released them.
Water 12 deg. C.
- August 20th.
Trix with Jean and Brian.
2 females taken. 3 males caught and released (1 recap.)
Used 4 males from holding pen and released them.
- August 22st
Trix and Ken.
2 females taken. Took milt from 5 males and released them.
17 males caught: 6 recaps released; 2 new held, 9 new sampled and released
saw 1 spent female
- 24-Aug
Trix and Pat and Heather.
4 females caught: 1 spent released; 2 part spawned kept; 1 fresh kept
12 males caught: 4 recaps released; 4 new kept; 4 new sampled and released
- 25-Aug
Trix and Ken.
Caught 7 females: 1 recap (spent) released; 4 spent released; 1 new kept; 1 p.s. kept;
Caught 8 males: 2 clipped and released; 2 kept; 4 recaps released
Lots of fish!! Observed one orange spaghetti tag on a live fish
Took milt from remaining males (6 producers) and released them.
Water 12 deg. C.

Tatchun 2002

egg tray	Female #	Egg vol.	Egg coun	Egg coun #	eggs volume (ml)	EGG PICK DATE										total pick remaining		% fert.	number checked	Using % fertilization			
						26-Sep	9-Oct	16-Oct.	24-Oct	11-Nov	23-Nov	14-Dec	23-Dec	14-Jan						eggs	%survival	live eggs to start	% survival live eggs
A1	1	910	158	40	3594.5	780	198	67									1045	2549.5	70.9278	80	20	2876	88.7
A2	2	980	154	40	3773	104	32	16				304		546			1002	2771	73.4429	80	20	3018	91.8
A3	3	510	169	40	2154.75	426	233	45									704	1450.75	67.328	70	20	1508	96.2
A4	4	1080	215	40	5805	352	55	55			17	1292					1771	4034	69.4918	60	20	3483	115.8
B1	5	1450	199	40	7213.75		193		457								1984	5229.75	72.497	80	20	5771	90.6
B2	6	400	132	40	1320		216		170								916	404	30.6061	80	20	1056	38.3
																	0			0	20	0	0.0
B3	8	1850	171	40	7908.75		130		2503		288		752				3673	4235.75	53.5578	85	20	6722	63.0
B4	9	1450	130	40	4712.5		1250		1019	2478	531						5278	-565.5	-12	70	20	3299	-17.1
C1	10	520	168	40	2184		100		31			308					439	1745	79.8993	100	10	2184	79.9
C2	11	490	130	40	1592.5		730		234			438					1402	190.5	11.9623	30	20	478	39.9
40258.8																18214	22045	54.7577	75.5		30395	72.5	

NOTE:

To update this table with the pick numbers, just fill in the pick date, and then put the number picked from the tray in the appropriate date column and in the appropriate egg tray row. If you need to add more egg pick dates, just insert some columns between the last two egg pick date columns. The total pick, eggs remaining and percent survival will recalculate with the additional data.

Jan 14 mortality due to accident with flow after cleaning trays

Takhini 2002

egg tray	Fert. Date	Female	# eggs pooled	egg pick # date	egg pick date	egg pick date	egg pick date	egg pick date	egg pick date	egg pick date	egg pick date	egg pick date	egg pick date	total pick	# eggs remain	Percent survival	% fert.	number checked	est # live at start	survival of est live eggs		
																						by tray
8	17-Aug	1,3	2828	437	250							850		650	2187	641	22.6553	60	20	1697	37.76	egg dev. arrested after 24 hrs, eggs viewed next day - fert check not so good
7	17-Aug	2	9173	795	300									239	1334	7839	85.457	70	20	6421	122.08	"
6	19-Aug	4	10342	841.5		710			656			800		308	3315.5	7026	67.9402	90	20	9307	75.49	"
1-2	20-Aug	5,6	12808	495	387						1623			1334	3839	8969	70.0254	90	20	11527	77.81	fert check after 24 hours- not SO clear
5	22-Aug	7	5453	170				635						1009	1814	3639	66.7339	100	18	5453	66.73	fert check after 24 hours- not SO clear
3	22-Aug	8	7250	223	264						426			1060	1973	5277	72.7862	100	18	7250	72.79	fert check after 24 hours- not SO clear
c3	24-Aug	9	2744	182				534						752	1468	1276	46.5015	89	18	2439	52.31	-ovidined a portion for 10 minutes -ovidined a portion for 10 minutes
c4	24-Aug	10	3875	128										128	3747	96.6968	89	18	3444	108.78		
4	24-Aug	11	6163	936		600					798			205	2539	3624	58.7992	100	18	6163	58.80	-same survival 1st cell division w/ ovidine -eggs checked for fert. after 40 hours (instead of 24) - much clearer split
d2	25-Aug	12	4700	981			1400							923	3304	1396	29.7021	100	18	4700	29.70	
d1	25-Aug	13	4680	63				1084					608		1755	2925	62.5	100	18	4680	62.50	-same survival 1st cell division w/ ovidine -eggs checked for fert. after 40 hours (instead of 24) - much clearer split
			70014	5251.5											23656.5	46358	66.2118	90.1		63081	73.49	

NOTE:

To update this table with the pick numbers, just fill in the pick date, and then put the number picked from the tray in the appropriate date column and in the appropriate egg tray row. If you need to add more egg pick dates, just insert some columns between the last two egg pick date columns. The total pick, eggs remaining and percent survival will recalculate with the additional data.

PHYLIS DATA SHEET 2002

TATCHUN Tagging 2002 (Broodstock 2001)

DATE	TAG CODE	STOCK	FINISH	START	MORTS	DAILY TOTAL	REJ	CODE ALL		SMALL	DAILY RETENTION	# SAMPLED FOR RETENTION	TOTAL RELEASE		TAGGED RELEASE	ADIPOSE CLIP ONLY RELEASE	UNTAGGED RELEASE
								ACCUM TOTAL	CODES TOTAL				marked	RELEASE			
23-Jun	0201010803	TATCHUI	1266551	1263494		3057		3057	3057	87		94	3144	3057	2873.58	183.42	87
24-Jun			1270510	1266650		3860		6917	6917	212		94	4072	3860	3628.4	231.6	212

7216	6917	6501.98	415.02	299
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post tagging morts:

70	20
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Total Tatchun Release:

post tagging morts adj:

7126	6847	6431.98	415.02	279
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Tagged Tatchun
Morts Gimps
70 20

TAKHINI Tagging 2002 (Broodstock 2001)

DATE	TAG CODE	STOCK	FINISH	START	MORTS	DAILY TOTAL	REJ	CODE ALL		SMALL	DAILY RETENTION	# SAMPLED FOR RETEN for coc all	TOTAL RELEASE		TAGGED RELEASE	ADIPOSE CLIP ONLY RELEASE	UNTAGGED RELEASE	
								ACCUM TOTAL	ACCUM TOTAL				all clipped	RELEASE				
25-Jun	2.01E+08	TAKHINI	1271673	1270579		1094		1094	1094	24		97	1118	1094	1061.18	32.82	24	
26-Jun			1279515	1271727		7788		8882	8882	232		97	8020	7788	7554.36	233.64	232	
27-Jun			1281251	1279648	2	1601		10483	10483	60		97	1661	1601	1552.97	48.03	60	
									10483									
												10799	10483	10168.51	314.49	316		

post tagging morts

60	15
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post tagging morts adj

10724	10423	10108.51	314.49	301
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135

135

27-Jun 2.01E+08 TAKHINI 1287696 1281282 2 6412
 28-Jun 1291316 1287774 3542

6412 16895 202 99
 9954 20437 83 99

6614 6412 6347.88 64.12 202
 3625 3542 3506.58 35.42 83

10374	9954	9854.46	99.54	420
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post tagging morts 40 15

10319	9914	9814.46	99.54	405
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post tagging morts adi

TOTAL RELEASE TO TAKHINI R 21043 20337 19922.97 414.03 706

28-Jun 2.01E+08 TAKHINI 1295582 1291359 0 4223
 to FLAT Creek except smalls went to Takhini River

4223 4223 135 99

4223 4223 4180.77 42.23 0

4223	4223	4180.77	42.23	0
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post tagging morts adi 20

TOTAL RELEASE TO FLAT CRE 4203 4203 4160.77 42.23 0

TOTAL RELEASE OF TAKHINI RIVER FRY: 25246 24540 24083.74 456.26 706

135 taken from Flat Creek batch and put in with Takhini

2002 Update for JTC Table 16. Releases from incubation sites.

Project	Species	Brood Year	Stock	Mark	Release Site	Start Date	End Date	# Tagged	# Ad Only	# un-marked	Total Release	Wt (g.)	Release date
McIntyre Cr.	chinook	2001	Tatchun Cr.	0201010803	Tatchun Cr.	23-Jun-02	24-Jun-02	6432	415	279	7126	1	27-Jun-02
McIntyre Cr.	chinook	2001	Takhini R.	201010804	Takhini R.	25-Jun-02	27-Jun-02	10109	314	301	10724	1	29-Jun-02
McIntyre Cr.	chinook	2001	Takhini R.	201010805	Takhini R.	27-Jun-02	28-Jun-02	9814	100	405	10319	1	29-Jun-02
McIntyre Cr.	chinook	2001	Takhini R.	201010807	Flat Cr.	27-Jun-02	28-Jun-02	4161	42	0	4203	1	28-Jun-02

Financial Summary

McIntyre Creek Fish Hatchery - Salmon Incubation Project - 2002/03

Total Received from Yukon River Panel - Project RE - 65-02 - \$26,000.00

Financial Summary			
I. PERSONNEL COSTS:			
Tagging, Egg Takes			
Site Monitoring/Feeding/Picking	\$6,764.22		
Sub-Total Personnel Costs		\$6,864.22	
II. OPERATING COSTS:			
A. ADMINISTRATION:			
Administration (15%)	\$4,230.00		
B. TRAVEL			
Mileage - egg takes and carcass surveys, boat fuel, etc.	\$1,664.43		
Fry trapping mileage	\$390.00		
Tagging - Travel	\$473.13		
B. MATERIALS, SUPPLIES, MAINTENANCE			
Tags and Tagging Equipment	\$5,814.00		
Construction/Plumbing/Electrical	\$3,685.40		
Electricity	\$2,345.61		
Security (phones, monitoring, wiring)	\$2,015.10		
Fish Food - EWOS	\$529.13		
Sub-Total Operating Costs		\$21,236.80	
TOTAL			\$28,101.02

OTHER SOURCES OF FUNDING, ASSISTANCE, AND/OR INFORMATION:

Assistance Details

Amount of funding

Northern Research Institute: labour, coordination, finance

\$12000 in kind

Y2C2: fry trapping labour, adult stream survey
-5 or 6 person crews for 5 days=25 person days

\$2500 in kind

DFO: technical support and egg take assistance (for school program eggs) egg takes 20 person days

\$4000 in kind

Streamkeepers North Society: equipment loans and Streamkeepers workshop

\$500 in kind