Exxon Valdez Oil Spill
Restoration Project Annual Report

Kametolook River Coho Salmon Subsistence Project

Restoration Project 97247
Annual Report

This annual report has been prepared for peer review as part of the *Exxon Valdez* Oil Spill Trustee Council restoration program for the purpose of assessing project process. Peer review comments have not been addressed in this annual report.

Lisa Hutchinson-Scarbrough[1]
James McCullough[2]

[1]Alaska Department of Fish and Game
Division of Subsistence
333 Raspberry Road
Anchorage, Alaska 99518

[2]Alaska Department of Fish and Game
Division of Commercial Fisheries
211 Mission Road
Kodiak, Alaska 99615

May 1998

Kametolook River Coho Salmon Subsistence Project

Restoration Project 97247
Annual Report

Study History: The legislature of the State of Alaska awarded the Department of Community and Regional Affairs (DCRA) $5 million to fund restoration projects requested by villages in the area impacted by the *Exxon Valdez* oil spill. Perryville's top priority was restoration of the Kametolook River coho salmon run because of its importance to their subsistence way of life. The project began in 1996 with DCRA funding which was used to evaluate restoration alternatives. National Environmental Policy Act (NEPA) compliance was obtained on May 30, 1997.

Abstract: Subsistence users from the remote Alaska Peninsula Native Village of Perryville have noted significant declines in the coho salmon run in the nearby Kametolook River since the *Exxon Valdez* oil spill in 1989. The Trustee Council funded this project with the intent of restoring the coho salmon run. The second year of the project was a continuation of an evaluative phase of the project funded through the EVOS criminal settlement. The project assessment team consisted of 4 specialist staff from ADF&G and up to 4 local assistants from the Native Village of Perryville, to assess the Kametolook River and determine what method would best be suited to restore the river's coho salmon stock to historic levels. This phase ended with the approval of an Environmental Assessment (EA) and a Finding of No Significant Impact (FONSI) by the US Fish and Wildlife Service in May 1997. The EA supported instream incubation boxes as the preferred alternative for this restoration project. Instream incubation boxes have been evaluated and selected as the primary restoration tool. Community involvement and use of local traditional ecological knowledge by the villagers of Perryville is an integral part of restoring Kametolook River coho salmon as a subsistence resource.

Key Words: Alaska Peninsula, coho salmon, community involvement, *Exxon Valdez* oil spill, instream incubation boxes, Kametolook River, Perryville, subsistence, traditional knowledge.

Project Data: Kametolook River coho age-class data as well as genetic and pathological samples have been obtained. Thermograph data have also been collected. For further information not provided in this report regarding data contact Jim McCullough, ADF&G, 211 Mission Road, Kodiak, Alaska. 99518. Phone: (907) 486-1813. E-mail: jimmc@fishgame.state.ak.us or Lisa Scarbrough, ADF&G, 333 Raspberry Road, Anchorage, Alaska. 99518. Phone (907) 243-4975. E-mail: lisas@fishgame.state.ak.us.

Citation:

Hutchinson-Scarbrough, L., and J. McCullough. 1998. Kametolook River coho salmon subsistence project, *Exxon Valdez* Oil Spill Restoration Project Annual Report (Restoration Project 97247), Alaska Department of Fish and Game, Division of Subsistence, Anchorage, Alaska, Division of Commercial Fisheries, Kodiak, Alaska.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF PLATES

LIST OF APPENDICIES

EXECUTIVE SUMMARY

Subsistence users from the remote South Alaska Peninsula Native Village of Perryville have noted declines in the coho salmon (*Oncorhynchus kisutch*) run in the nearby Kametolook River since the *Exxon Valdez* oil spill (EVOS). The Trustee Council began funding this project in Federal Fiscal Year 1997 with the intent of restoring the coho salmon run to historic levels. This project is a continuation of an evaluative phase of the project funded through the EVOS criminal settlement (Grant Agreement Number 2168588). Although limnological, juvenile and adult fisheries data were not available or severely limited before the salmon decline, it was determined through the evaluation phase that instream incubation boxes in conjunction with self imposed harvest limits by subsistence users were the preferred alternatives for restoration of this salmon run. In 1997, the Alaska Department of Fish and Game, Habitat and Restoration Division, aided the project by providing an Environmental Assessment (EA). In May of 1997, a Finding of No Significant Impact (FONSI) was signed for National Environmental Policy Act (NEPA) compliance.

Community involvement and use of traditional and ecological knowledge from the villagers of Perryville is an integral part of restoring the Kametolook River coho as a subsistence resource. Presently, no regulations prohibit subsistence fishing in the Kametolook River; however, starting in 1997 the Perryville Village Council voluntarily closed the upper half of the Kametolook River to subsistence salmon fishing in order to not interfere with spawning. In addition, the Perryville Village Council has hired local assistants who helped ADF&G with identifying critical habitat areas for spawning and historic run timing and escapement information, and received training to assist ADF&G with other fieldwork including: genetic and pathological sampling, incubation box installation, egg takes and incubation techniques, and year-round monitoring of the environment. Also, an aquarium has been set up in the village school where students actively participate in incubating coho salmon from egg to fry stage and releasing the fry into the Kametolook River. In May 1997, about 125 fry from the school aquarium project were released. This project will be repeated in the winter of 1997-1998.

In the fall of 1997, two production type instream incubation boxes were installed in the upper reach of the Kametolook River. These boxes replaced a small test incubation box that had successfully incubated eggs in 1996. In 1997, the Kametolook River coho escapement was an estimated 724 salmon, nearly four times the estimated escapement during 1996. The increased escapement is partially attributed to the self imposed closure of the upper river by the villagers and a commercial fishing closure in marine waters during nearly the entire coho salmon run. All facets of this project should provide sufficient escapement within two coho life cycles for subsistence and spawning requirements. As of September 30, 1997, no salmon had yet been harvested for the project. The egg take will occur in October and November, 1997 when the coho reach the spawning areas and ripen. In 1997, if there are difficulties capturing sufficient ripe coho salmon for the egg take, it is recommended in 1998 that holding pens be used in order to make the recovery of ripe salmon easier.

INTRODUCTION

The remote Native village of Perryville is located approximately 500 air miles southwest of Anchorage on the Pacific side of the Alaska Peninsula (Figure 1). Veniaminof Volcano overlooks the village that is situated directly along the Pacific Ocean coastline with beaches of volcanic black sand (Plate 1). The Kametolook River is located four miles northeast of Perryville, and is easily accessible from the community via ATV, foot, or boat (Plate 5, Fig. 2).

Kametolook River coho salmon have long been a major subsistence food source for the people of Perryville (Fall et al 1995, Hutchinson-Scarbrough and Fall 1996, Morris 1987, Owen and Sarafin 1997 and 1998). This run of coho salmon has been in decline for a number of years and needs to be restored to a level that will be self-sustaining and capable of supporting subsistence needs as it has in the past. Members of the village of Perryville requested the EVOS Trustee Council to fund a restoration project and they asked ADF&G to assist with this project. The cause of the decline in salmon numbers is unknown. A restoration project cannot be successful unless the cause of the decline is understood and the project is "fixing" the "right problem." An appropriate salmon restoration project will hopefully increase Kametolook River coho salmon relied on for subsistence by Perryville people back to historic levels. If more fish are available for subsistence, it will not only provide people with more coho salmon, but it will also take pressure off of other subsistence resources that were hurt by the spill, such as other salmon species, clams, seals and sea lions, as well as recent declines of local caribou.

This subsistence project is designed to restore coho salmon subsistence opportunities in the Alaska Peninsula village of Perryville. The project was initiated during community workshops held by the Subsistence Restoration Planning Team (Fall 1995). Workshops in Perryville took place in September 1994 and May 1995. The project was subsequently endorsed by the Perryville Village Council (Appendix A). The project was also discussed and endorsed by the Chignik Regional Planning Team in the spring of 1995 and again in December 1996 (Appendix B). Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Westward Region staff and the Subsistence Division, have been involved in the planning and development of the project (Appendix C). In addition, an ADF&G biologist in the Norton Sound Region provided technical expertise regarding the use of both instream incubator boxes and recirculating water incubators, which have been successful in the Norton Sound Region. Alaska Department of Fish and Game, Division of Habitat and Restoration staff have also been involved with the project, especially with the development of an Environmental Assessment and field work.

In 1996, funding for the evaluation phase of the project was provided through a grant to the Native Village of Perryville by the Alaska Department of Community and Regional Affairs, using EVOS criminal settlement funds. During consultation about this grant, the State members of the Trustee Council requested that a proposal to the full Trustee Council be prepared to support the implementation of the project in subsequent years. This was accomplished and the Trustee Council began funding this project in Federal Fiscal Year 1997, to ADF&G with a cooperative agreement to the Perryville Village Council (Appendix D). Comments by peer reviewers of the FFY 97 Detailed Project Description were addressed on November 1, 1996

(Appendices E&F). The Environmental Assessment was approved and the resulting FONSI for this project was received by the Trustee Council in May, 1997 (Appendix G).

It has been determined by the assessment team (Principal Investigators, Habitat and Restoration, and Perryville Village Council) that local salmon stock instream incubator boxes are the best method to help restore Kametolook River coho salmon runs, in conjunction with Perryville community involvement activities (Figure 3). Necessary permits (Fish Transport Permits and General Habitat Waterway/Waterbody permit) have been acquired for this project which are good through 2003 (Appendices H & I). Samples of adult coho salmon will continue to be collected for genetic and pathology data until sufficient numbers are obtained (Appendices J & K). The assessment team will work with the Principal Geneticist, Principal Pathologist and Area Management Biologist to have the most safe and satisfactory project possible to help restore coho salmon in the Kametolook River to historic levels.

OBJECTIVES

The primary objectives of the project are to increase the coho salmon runs to the Kametolook River and provide local subsistence salmon opportunities; and to include the people of Perryville through involvement in the project and education. The species of interest for this project is coho salmon. Phase 1 (1996-1997) of the project included a complete assessment of the creeks and rivers habitat in proximity to Perryville and interviews to determine salmon run strength, run timing and physical changes to local drainages. Phase 2 (1996) included installation and testing of a streamside incubation box, continuation of the classroom aquarium and education programs for adults and high school students, and writing Environmental Assessment. Phase 3 (starting in October, 1997) will include installation of large capacity streamside incubation boxes and continuation of the school aquarium and education programs. Annually (through 2002), egg takes for the incubation boxes and the school aquarium, continued education, and habitat and harvest monitoring will occur.

METHODS

The method(s) used to accomplish this were determined in 1996 and 1997 by a team of ADF&G specialists, and local Perryville residents. Funding for the first portion of the project was provided through a grant to the Native Village of Perryville from criminal settlement funds. Beginning in Federal Fiscal Year 1997 funding has been provided by the Trustee Council. Personnel involved with the project have determined that the most appropriate rehabilitation method is through the use of instream incubation boxes. The team has acquired all the necessary permits (with the exception of the Fish Resource Permit which must be submitted to ADF&G for review annually). The Environmental Assessment and a Finding of No Significant Impact by the US Fish and Wildlife Service was approved in May of 1997 (ADF&G 1997). This project has the potential to make restoration of coho salmon in the Kametolook River possible. Similar projects in other regions of Alaska have proven to be successful.

In addition to school and village meetings where salmon life cycle processes were described (Plate 2), instream incubation boxes have been determined to be the preferred restoration method.

A test incubation box was positioned in a head water tributary of the Kametolook River to use the natural flow from the stream to incubate coho salmon eggs (Plates 10-13; Figures 2 &3). This portion of the project has been successful; swimup fry were produced during April, 1997 (Plate 22). In the production phase of this project, genetic integrity of the Kametolook River coho salmon will be assured under the guidance of ADF&G's Principal Geneticist. The potential incubation site has water temperatures consistent with natural spawning sites to insure that fry development and emergence occur at the same time as naturally occurring fry. The small scope of this project is not expected to noticeably add any coho salmon to other common property harvest groups (i.e. commercial fisheries).

From similar projects in Norton Sound, it has been found that improved returns were noticeable in about five years. If the number of coho salmon spawners is sufficient to allow an egg take, instream incubators will be employed. (Fish Transport Permits will require a minimum of 60 naturally spawning pairs before an egg take can occur, and 50% of the escapement above the 60 spawning pairs is available for an egg take and a minimum of 60 spawning pairs are used during an annual egg take.) In 1998 and beyond, salmon holding pens will be used to make the recovery of ripe salmon easier. The incubators are expected to operate annually from 1997 through 2002.

Other restoration methods evaluated included a recirculating water incubation facility in the village, potential habitat manipulation to create or provide access to better spawning and rearing habitats, and a remote incubation facility. All of these alternative methods were rejected in favor of the instream incubators.

The Trustee Council's goal of achieving community involvement and traditional and ecological knowledge in the restoration process is addressed in that Perryville is a partner with ADF&G in this project. This project has been discussed and endorsed by the Chignik Regional Planing Team and the Perryville Village Council. Through project funds, the Perryville Village Council is responsible for hiring local assistants, and providing necessary logistical support for the operation of this project. The community has also contributed much in terms of local knowledge of the environment, including: historic to contemporary salmon run timing and numbers, subsistence harvest levels over time, identifying physical changes to the Kametolook River over time, helping ADF&G identify spawning and rearing areas, and identify potential characteristics of the river, such as where winter freeze over or spring and fall flooding might occur.

Several residents of Perryville have worked with ADF&G during the assessment and implementation phases of the project. In addition, local assistants will continue to monitor the project throughout the year, when ADF&G personnel are not present. Local assistants through hands-on involvement have been trained by ADF&G personnel to monitor temperature and water level stations, to monitor the egg incubation boxes, participate in egg takes for seeding the incubation boxes, transporting eggs to the classroom incubator, and will transport fry to nearby lakes or adjacent rivers (depending on the Fish Transport Permits estimated natural production and modeled lake stocking levels) (Plates 2,3,4,6, 9, 10, 13, 14, 18-23). In addition, in September 1997, two Perryville assistants traveled to a Kodiak hatchery as part of this project to learn about large scale egg harvesting, incubation and rearing techniques.

Perryville residents have been kept informed about the progress of the project through local assistants, the Village Council, and at village meetings (Plate 2; Appendix L). During these meetings residents have been informed about salmon run strengths, harvest levels, and rearing and habitat issues. The community has been encouraged to develop ways that they can contribute toward restoring the coho run. Presently, no regulations prohibit fishing in the Kametolook River; however, starting in 1997 the Perryville Village Council voluntarily closed the upper half of the Kametolook River to subsistence salmon fishing in order to not interfere with spawning (Appendix M).

School children have had opportunities to learn, understand and appreciate the complexities of the growth cycle of salmon through the use of a classroom aquarium that is raising coho salmon from egg to fry stages. The fish resource permit (in 1997) allowed these fry to be released into the Kametolook River (Appendix N). In addition, when allowed by the teachers and parents, older school children have accompanied ADF&G personnel to the Kametolook River and nearby lakes to assist with minnow trapping and biological and habitat sampling. This portion of the project has been in operation for two winters now, and is expected to continue through 2002 and possibly beyond if the school continues to support the program. (Plates 16-21).

RESULTS

May 96 through September 96:
This phase of the project (and portions of field work through May of 1997) were funded through the Criminal Settlement. (See Appendices O & P for detailed field trip reports; Plates 3, 7, 10-12).

October 1996:
Three ADF&G assessment team members traveled to Perryville and joined with local assistants to expand the habitat surveys of drainages adjacent to Perryville, to place fertilized eggs in the experimental stream side incubation box and to initiate a cooperative educational program in the Perryville school. Local guides showed us much of the historic and potentially productive reaches of the Kametolook, Three Star and Long Beach Rivers. Long Beach River, although historically productive, presently had no quality spawning or rearing habitat. Three Star River, smallest of the three drainages, had some stable reaches but about half of the discharge had changed course and currently flows into Long Beach River. Some potential rearing habitat is present while spawning habitat appeared to be limited. Kametolook River currently showed the most salmon spawning and rearing potential. However; this system is dynamic and habitat quantity and quality may change annually. (Plates 4-6, 8, 9).

Minnow trapping was conducted in all three drainages (Tables 1-4). Rearing and spawning habitat in Long Beach River appeared to be negligible. Three Star River had limited high quality slough habitat and supported juvenile coho salmon and Dolly Varden; spawning habitat appeared to be limited to several short stream reaches. Rearing habitat for juvenile coho salmon in the Kametolook River appeared to be quite abundant while upper stream reaches seemed able to support relatively good numbers of spawning salmon. Several high school students assisted with coho fingerling data collection efforts (Plates 18-20).

Table 1. TRAP CATCHES AND AGE-CLASS OF JUVENILE COHO SALMON

Location	Site	No. Traps	Total Trap Hr.	Catch per Trap-Hour Coho	Dolly Varden
Kametolook	Candlefish Slough	4	2.50	36.1	150.5
Kametolook	Fingerling Slough	5	5.40	44.6	10.5
Kametolook	Cross Creek	4	2.16	19.9	34.0
Kametolook	Average			33.4	58.9
Three Star	"Lake"	2	9.09	5.2	16.1
Long Beach	pond	1	0.50	8.0	

Table 2. FINGERLING COHO SALMON AGE-CLASSES FROM THE KAMETOLOOK RIVER COMBINED

	Number	Percent
Age 1.0:	45	45.0
Age 2.0:	55	55.0
Total Samples:	100	100.0

Table 3. AGE-CLASS DISTRIBUTION OF ADULT COHO SALMON FROM THE KAMETOLOOK RIVER

	Number	Percent
Age 1.1:	9	28.1
Age 2.1:	18	56.3
Age 3.1:	2	6.3
Unknown:	3	9.4
Total Samples:	32	100.0

Table 4. ADULT COHO SAMPLES FROM THE KAMETOLOOK RIVER, SEXED FROM INTERNAL OBSERVATION

	Male	Female	Unknown	Total
Number	15	16	1	32
Percent	46.9	50.0	3.1	100.0

A total of 32 adult coho salmon were collected from the Kametolook River during this trip. Few other adult salmon were seen. Genetic and kidney samples, otoliths and scales were taken from each salmon. All observed coho salmon appeared to be recent arrivals to the river and were not ripe; seeding fertilized coho eggs into the incubation box was not possible.

High school students, in addition to assisting with fingerling sampling, also explained the field trip experience to their fellow students. Each presented some aspect of the field studies and the ADF&G team participated by asking questions and explaining details. ADF&G personnel also demonstrated scale reading techniques and presented representative samples of all species collected from the minnow traps. Plans were developed with the science teacher to install and permit a classroom aquarium incubator for coho salmon eggs. (See Appendix Q for detailed field trip report.)

November-December 1996:
Two ADF&G assessment team members traveled to Perryville and joined with local assistants to capture and spawn one pair of coho salmon for the incubation box in the Kametolook River. Gillnetting captured about 20 salmon including 4 sockeye, 13 male coho and 3 female coho salmon. Following standard delayed fertilization techniques, the eggs were fertilized and seeded into the incubation box (Plate 13). A thermograph was deployed in the substrate near the largest group of spawning salmon. Although only a one time event, a survey to enumerate spawning coho was conducted. About 75% of all observed coho were located within 1 mile downstream of the incubation box; the remaining 25% were scattered in small groups throughout the remainder of the drainage. The total observed coho escapement was about 100 salmon and no ocean bright salmon were observed. The subsistence harvest continued after the escapement count, so the observed escapement was possibly higher than the actual spawning escapement. At the high school the ADF&G team assembled the aquarium incubator. When the eggs reach the eyed stage, about 250 eggs from the stream side incubator will be transferred to the classroom incubator. (See Appendix R for a detailed field trip report.)

January-February, 1997:
Two ADF&G team members traveled to Perryville. While waiting in King Salmon for the flight to Perryville they met with the Alaska Peninsula/Becharof National Wildlife Refuge staff to discuss the Kametolook project and review the draft Environmental Assessment. In Perryville, they joined local assistants and checked the thermograph and staff gauge sites, shocked the incubating eggs, discarding dead eggs, and sorted out about 250 eggs which were transported to the school aquarium (Plates 15-17). An approved Fish Resource Permit allowed 250 eggs to be raised in the school aquarium and their release into the Kametolook River. With the assistance of five high school students the team measured physical characteristics of two landlocked lakes as potential coho fry or rainbow trout release sites and collected gravel for alevin habitat in the aquarium (Plate 21). A slide show of the restoration project and discussion of the life cycle of salmon was presented to all Perryville students. ADF&G personnel also attended a meeting sponsored by the Village Council where they presented a similar slide show. At the village meeting the restoration project and the school aquarium were discussed as well as the life cycle of coho salmon, the 1996 coho salmon escapement, and potential production from the escapement (Plate 2). (See Appendix S for a detailed field trip report.)

March-May 1997:
In early April local Perryville assistant, Gerald Kosbruk closed the test incubation project for brood year 1996 progeny. All live alevins (348 fish) were preserved and sent into Kodiak for analysis. From this incubation test no eggs or fish were released, all were sacrificed (Plate 22). The Environment Assessment was drafted and a finding of No Significant Impact (FONSI) granted in May. Also the Habitat and Fish Transport Permits were reviewed and granted. The school teacher reported that 125 feed fry survived from school aquarium and were released into the Kametolook River on May 22, 1997 (Attachment T).

June-August 1997:
The appropriate Fish Transport Permits were received from ADF&G for harvesting salmon eggs and releasing fry from incubation box and school aquarium. Staff purchased materials and constructed two incubation boxes (Plates 24-26). They met with the Chignik Regional Planning Team, Chignik Regional Aquaculture Association and public to development a Western and Perryville Districts coho salmon management plan (Owen and Sarafin 1997). Incubation boxes were shipped to Chignik Bay (ADF&G M/V Resolution) and local Perryville resident transported them to Perryville via fishing boat.

September 1997:
Two Perryville personnel were trained (2 weeks) at Pillar Creek Hatchery (Kodiak) in spawning and incubator maintenance techniques. Two ADF&G staff attempted to travel to Perryville to install the two incubation boxes in Kametolook River, sample salmon and trout for age, length and abundance data, however weather prevented them from traveling beyond Chignik Lake. In late September, two Perryville assistants transported two egg boxes and other necessary equipment up Kametolook River. The two egg boxes will be installed in late October or early November when ADF&G staff returns to Perryville for the egg take. (See Appendix U for a detailed field trip report.)

DISCUSSION

Environmental Assessment/ Other Permits:
ADF&G personnel drafted an Environmental Assessment of the Kametolook River Coho Salmon Restoration Project. A FONSI was developed and in May was signed for NEPA compliance. A Habitat Permit was reviewed and accepted which allows the instream incubation boxes to be deployed. Fish Transport Permits were drafted for review and approved to insure that management, genetic, and pathology concerns are addressed. Approximately 125 coho salmon fry were released into the river of origin (Kametolook) from the school aquarium project.

Egg Incubation Box:
On about April 5, 1997 local Perryville assistant, Gerald Kosbruk closed the test incubation project for brood year 1996 progeny. All live alevins (348 fish) were preserved and sent into Kodiak. From this incubation test no eggs or fish were released, all were sacrificed. From yolk sac observations, it is believed that had they lived, they would have developed into swimup fry in another two to three weeks and volitionally released about 21-30 April. By 25 April the fry would

have had about 528 TU's (temperature units °C). The team will be able to determine the actual TU's once the remote thermographs are downloaded. The team felt that the test project was successful in that it produced alevins. Mortality of eggs in this test was high, and the team would expect lower mortality in a production phase where the eggs were not confined to prevent a fry release. By confining the eggs the water flow was restricted and materials used in confining the eggs, galvanized iron, likely contributed to the high mortality.

Perryville School Aquarium:
Don Preston , Perryville teacher noted that the school aquarium had swimup fry on about 15 April, 1997. They had increased the water temperature to insure that the swimup fry stage would occur prior to early May. The teacher needed to end the project in early May so that the students could concentrate on other school activities. The teacher thought the aquarium fry had about 600 TU's. From the 200 eyed eggs that were placed in the school aquarium, about 125 survived to swimup fry stage. The fry were held and fed until May 22 when they were released into the Kametolook River (Fish Resource Permit P-97-021). The teacher felt that the project provided a good education aid.

FutureGoals:
Annually through the duration of the project (up through 2002): One day every month, one or two trained Perryville researchers will return to the thermometer sites and note the condition of the thermographs. They will also be responsible for reporting their findings to the ADF&G team. ADF&G will continue to supervise the project and continue to take trips to assist with the project. Now that Perryville assistants have been trained by ADF&G, they will take on more responsibility for the project, including but not limited to: conducting escapement surveys, netting salmon for holding in pens, harvesting and fertilizing eggs and transporting to egg boxes, taking samples of harvested salmon for genetic and pathology tests, assisting school children with obtaining eyed eggs for school aquarium project, and releasing fry in spring. (This is necessary because of budget constraints preventing ADF&G from being present at all critical times of this remote project.)

In addition, ADF&G staff will evaluate the Kametolook coho runs annually through subsistence harvest reports, evaluate incubator performance and stocking levels, perform egg takes, stocking, update project plan, review Fish Transport Permits (FTP) and Fish Resource Permits (FRP), provide annual peer review and write annual reports. ADF&G biologists will determine any significant changes to the coho salmon spawning and rearing habitat of the rivers to determine appropriate stocking levels. ADF&G will also evaluate the use of Kametolook River coho salmon as brood stock and the release of fry back into the Kametolook, Three Star, and Long Beach Rivers and other potential stocking sites include Sandy and Sicken Lakes.

CONCLUSIONS

The ADF&G team as well as the Perryville Village Council expects the stream side incubation boxes, in conjunction with some commercial and subsistence fishing restraints, should provide sufficient coho salmon to rehabilitate the run within two to three life cycles. In addition to the Kametolook River, coho fry from the incubation boxes and school aquarium could also be stocked in local landlocked lakes (Sandy and Sicken), as well as nearby Three Star and Long

Beach Rivers (approved by ADF&G FTP reviewers) to help provide additional salmon to other systems for subsistence users.

Perryville community involvement is also essential to help rehabilitate the coho salmon run in the Perryville area through education of villagers to gain a better understanding of the life cycles and conservation of salmon. The ADF&G team will continue to assist with an educational process that focuses on teaching the community through the both the school children and adults. Results from all samples will continue to be shared with the school and community. In addition, the use of local traditional ecological knowledge has been and will continue to be important with lack of scientific data available regarding salmon escapements in the Kametolook River prior to the start of this project.

ACKNOWLEDGMENTS

The authors would like to gratefully acknowledge, the Perryville Village Council and assistants in the project, particularly, Jerry Yagie, the "Project Community Leader" and Gerald Kosbruk and Dennis Shangin, "Community Project Assistants" for assisting ADF&G with the project including: providing information regarding local knowledge of the Kametolook River and habitat, guiding and transportation, installing egg boxes, capturing and harvesting eggs, monitoring thermograph stations, and other year around maintenance of the project. In addition, thank you to all the many Perryville residents that also assisted with many of the duties as just mentioned as well as providing ADF&G staff while working in Perryville on the project with delicious meals of local subsistence foods. Some people that come to mind are: Boris Kosbruk, Frieda Kosbruk, Harry W. Kosbruk, Ignatius Kosbruk, Ivan Kosbruk, Moses Kosbruk, Tim Kosbruk, Andy Shangin, Austin Shangin, Effie Shangin, Cecilia Yagie and Polly Yagie. Thanks to the Perryville School, particularly teacher, Don Preston and the High School students for their participation in the project and providing housing for ADF&G staff.. Cecilia Yagie also deserves special recognition for administering Perryville's cooperative agreement with ADF&G.

Joe Sullivan , and Bill Hauser with ADF&G, Division of Habitat and Restoration deserve a special thanks for providing their expertise to the project including: project planning, preparation, field work and helping keep the project on track. Joe gets an extra pat on the back for preparing the Environmental Assessment for NEPA compliance. Had this not been done the continuation of the project would have not been possible. Jim Seeb and other ADF&G Genetics and Pathology staff deserve recognition for their guidance and lab work for the project. Thanks to Dave Owen, Chignik management area commercial fisheries biologist for providing ADF&G harvest and escapement data. We are grateful to the crew on the ADF&G MV Resolution for transporting the egg incubation boxes to Chignik with no charge to the project; and to Andy Shangin for using his boat to then move them to Perryville, and to ADF&G staff on Kodiak at the Pillar Creek Hatchery for training Perryville assistants, Jerry and Dennis in spawning and incubator maintenance techniques. In addition, we greatly acknowledge Jim Fall Division of Subsistence regional Supervisor, for his editorial comments for the DPD/ budget and this report as well as his time spent to establish the cooperative agreement between ADF&G and Perryville. Also thanks to administrative personnel, Ana Lewis in Subsistence, Melanie Bosch in Habitat and Restoration and Deborah Boyd in Administration and for their assistance with the

cooperative agreement and project budget. Thanks to Rita Miraglia, Subsistence Division oil spill coordinator, for her guidance and participation on one of the field trips.

In addition, thanks to Jeff Adams, Ron Hood, Jim Larson, and Orville Lind of the Alaska Peninsula/Becharof National Wildlife Refuge in King Salmon for their comments and cooperation in preparation of the EA; and to the Chignik Regional Planning Team for their endorsement and continual support of the project. John Gliva with DCRA, needs to be recognized for all of his help administering the project when it was originally funded under EVOS Criminal Settlement money; and last but not least thanks to the EVOS Trustee Council for their support by providing funding to continue with the project.

LITERATURE CITED

Alaska Department of Fish and Game. 1997. Kametolook River coho Salmon Restoration Project, Environmental Assessment. Habitat and Restoration Division, Anchorage, AK.

Fall, James A. 1995. Subsistence Restoration Planning and Implementation, *Exxon Valdez* Oil Spill Restoration Project Final Report (Restoration Projects 94428 and 95428), Alaska Department of Fish and Game, Division of Subsistence, Anchorage, AK. (Copies are available from the Restoration Section of the Division of Habitat and Restoration, ADF&G.)

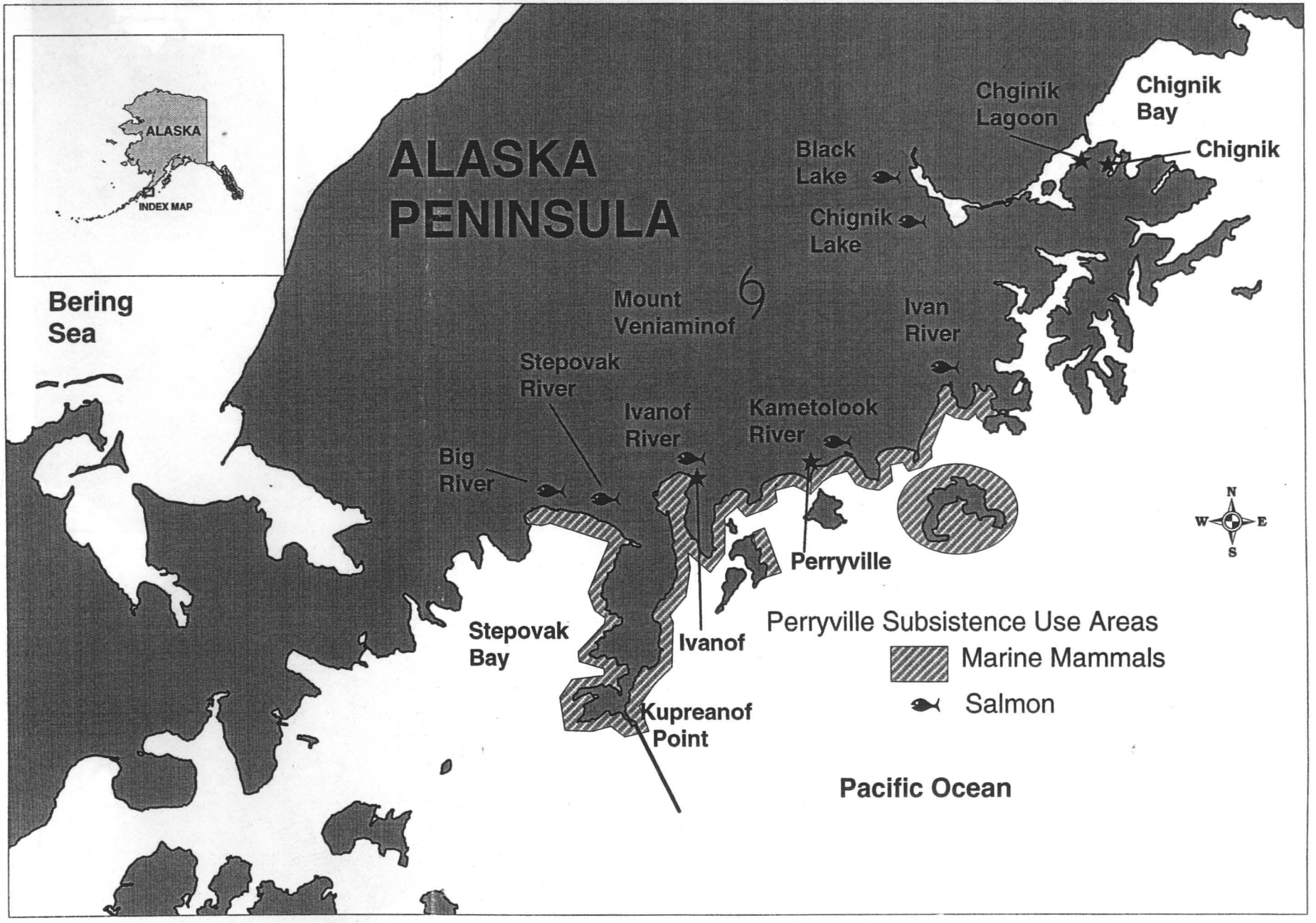
Fall, James A., Lisa B. Hutchinson-Scarbrough, and Philippa A. Coiley. 1995. Fish and Wildlife Harvest and Use in Five Alaska Peninsula communities, 1989: Subsistence Uses in Chignik Bay, Chignik Lagoon, Chignik Lake, Ivanof Bay and Perryville. Technical Paper No. 202. Anchorage, AK.

Hutchinson-Scarbrough, Lisa and James A. Fall. 1996. An Overview of Subsistence Salmon and Other Finfish Fisheries of the Chignik Management Area, Alaska Peninsula. Technical Paper No. 230. Anchorage, AK.

Morris, Judith M. 1987. Fish and Wildlife Uses in Six Alaska Peninsula Communities: Egegik, Chignik, Chignik Lagoon, Chignik Lake, Perryville, and Ivanof Bay. Alaska Department of Fish and Game, Division of Subsistence Technical Paper No. 151. Anchorage, AK.

Owen, David L. and David R. Sarafin. 1997. Chignik Management Area Commercial Salmon Fishery Management Plan, 1997. Alaska Department of Fish and Game, Commercial Fisheries and Management and Development Division, Regional Information Report 4K97-33. Kodiak, AK.

Owen, David L. and David R. Sarafin. 1998. Chignik Management Area Annual Finfish Report, 1995. Alaska Department of Fish and Game, Commercial Fisheries and Management and Development Division, Regional Information Report 4K98-12. Kodiak, AK.



Map of the Alaska Peninsula from Chignik Bay to Stepovak Bay. Figure 1

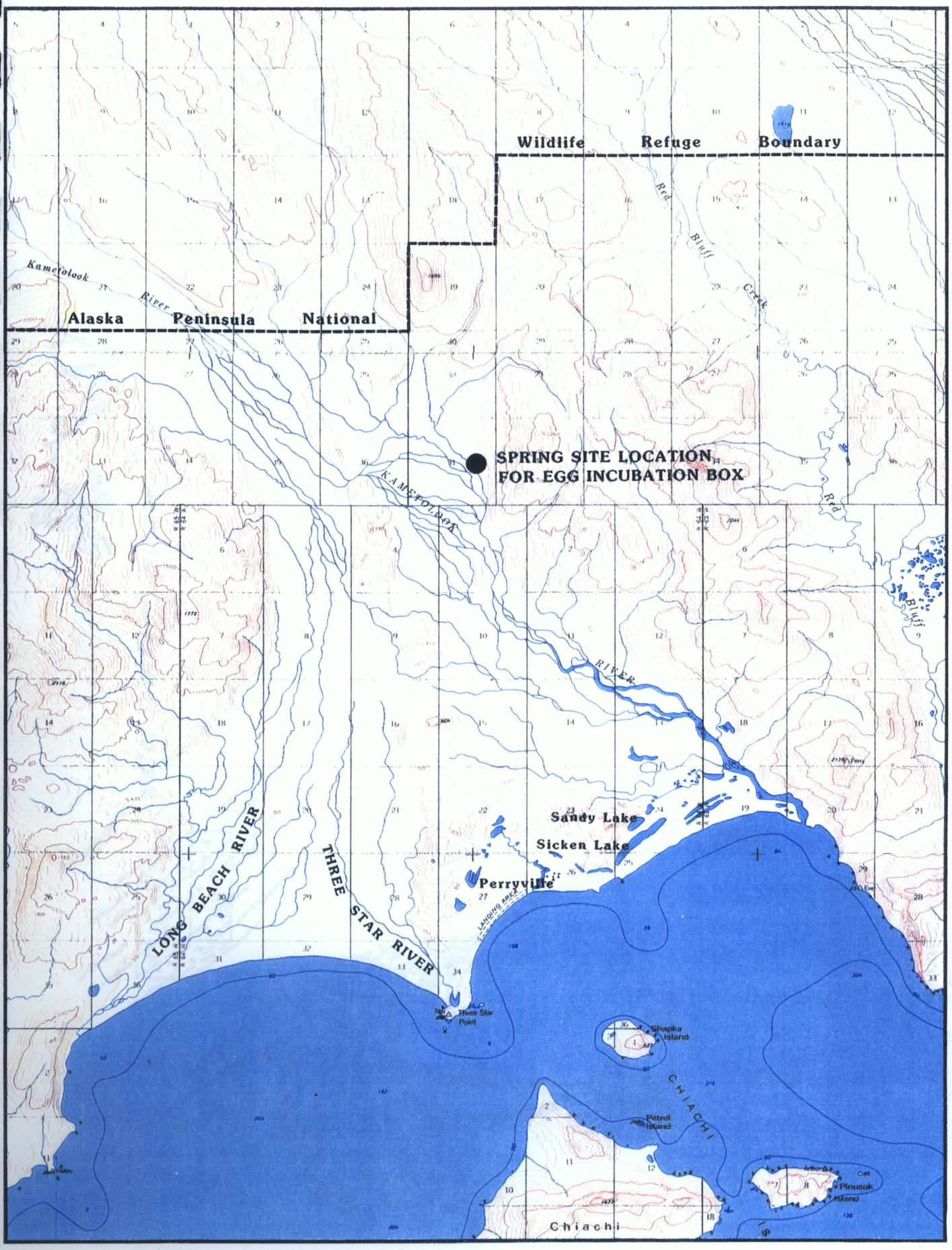


Figure 2 Perryville/Kametolook River Coho Salmon Restoration Project Site

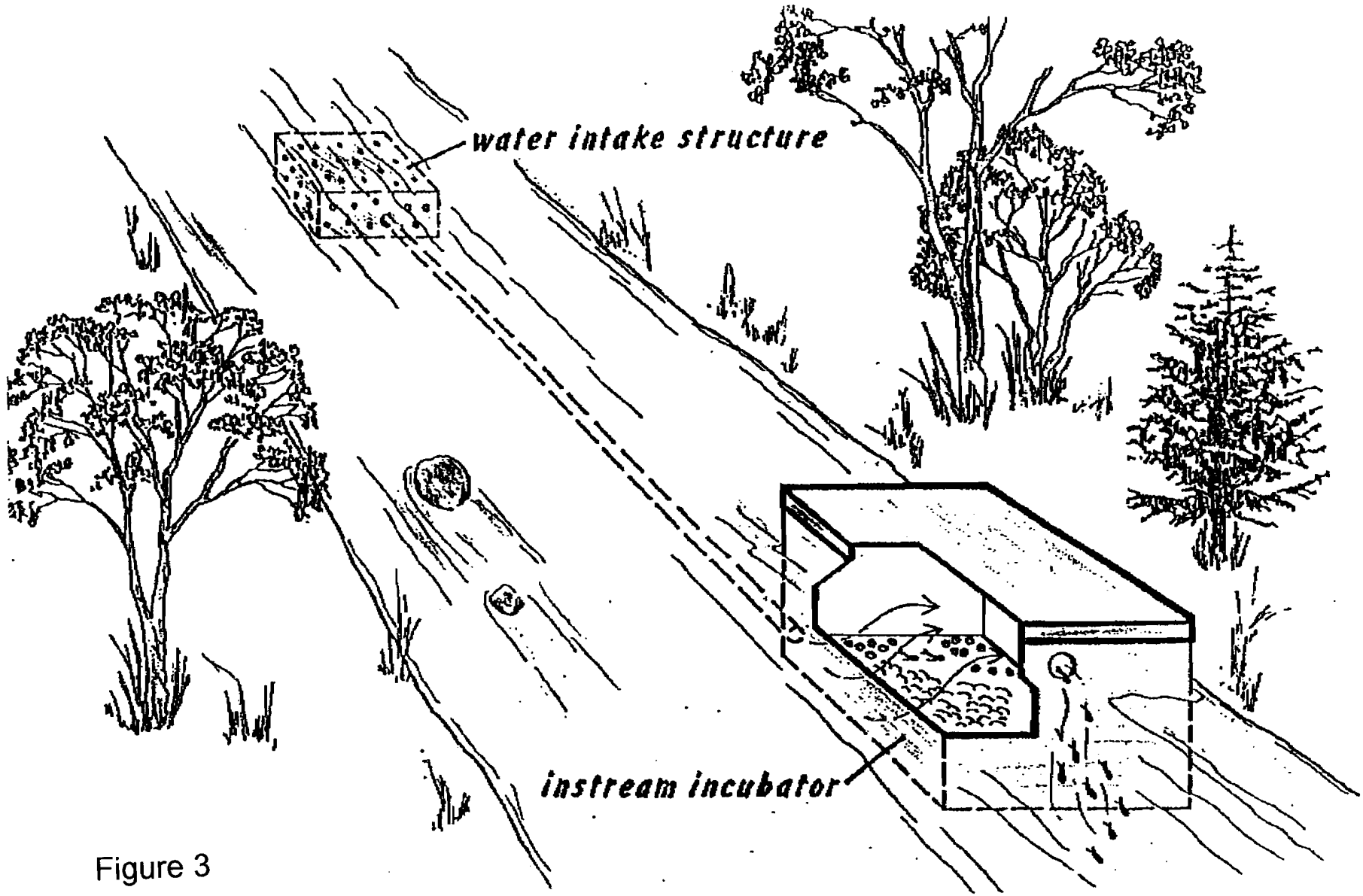


Figure 3

The INSTREAM INCUBATOR (streamside incubator or hatch box) is an incubator designed to incubate salmon eggs and alevins (small fish) under conditions similar to those in natural spawning beds. The incubators are usually positioned in the stream or on the stream bank. Water is directed downstream through a pipeline which supplies the eggs with a continuous flow of oxygen-enriched water. Once fertilized eggs have been placed in the incubator, little maintenance is required. The eggs develop through the winter in a protective environment. In spring the young fry migrate out of the incubator to begin their long migration out to sea before returning as adults.

Plate 1

Plate 2

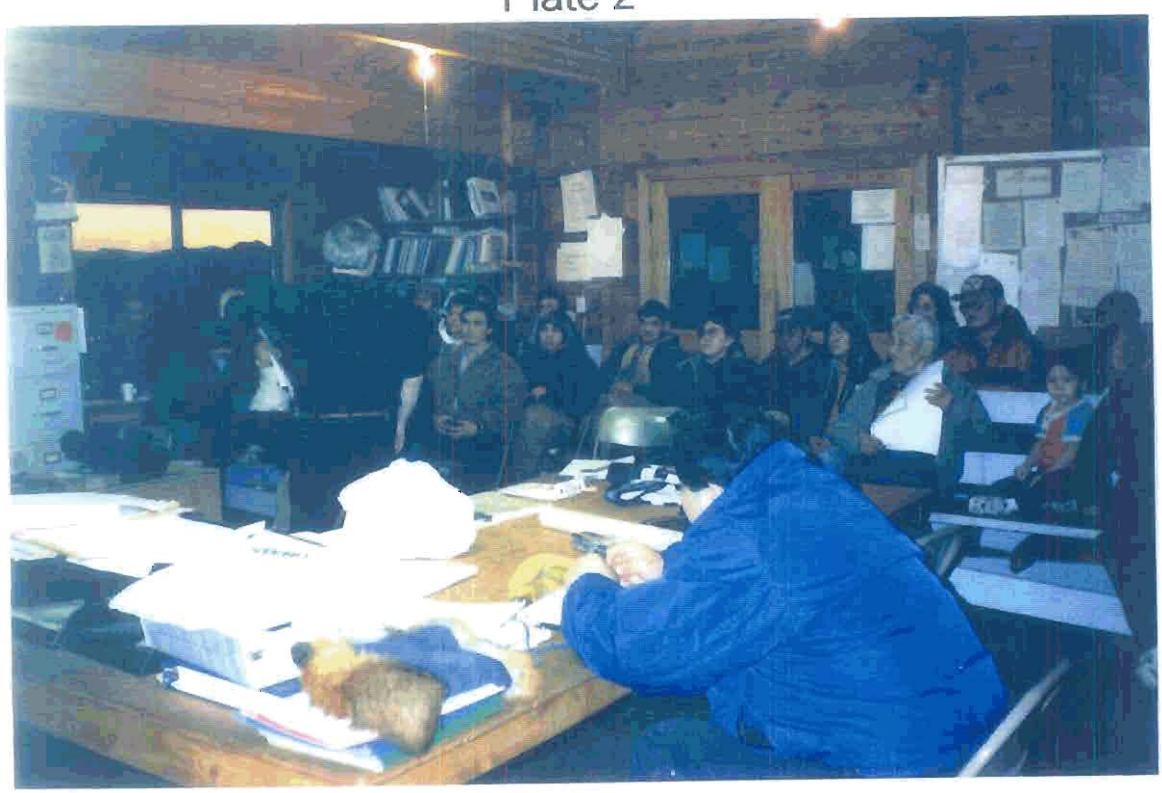


Plate 3

Plate 5

Plate 4

Plate 6

Plate 7

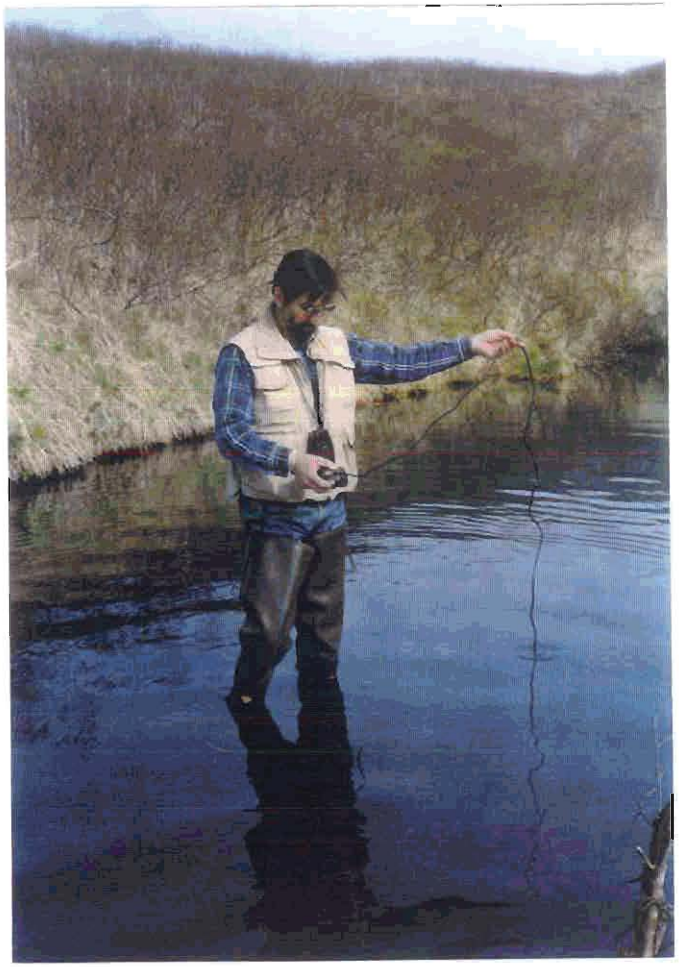


Plate 8

Plate 9

Plate 10

Plate 12

Plate 11

Plate 13

Plate 14

Plate 16

Plate 15

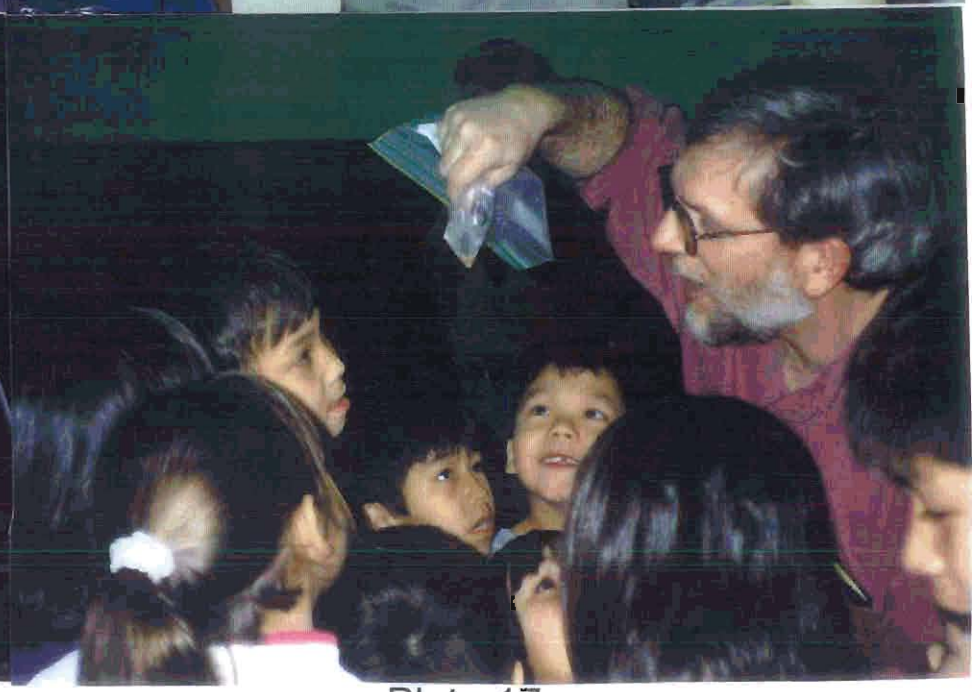


Plate 17

Plate 18

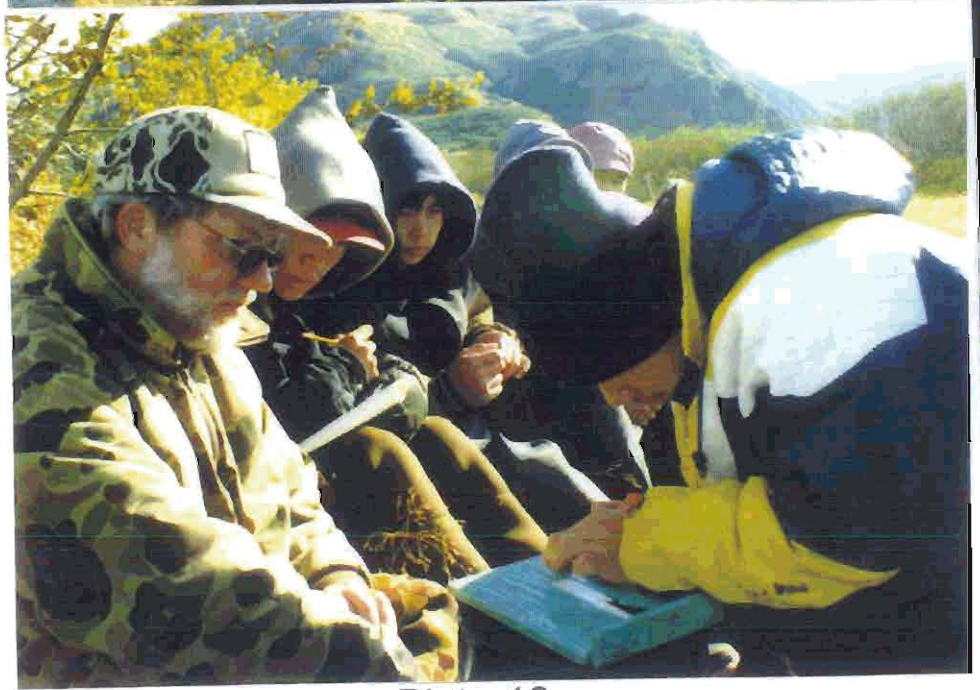


Plate 19

Plate 20

Plate 21

Plate 22

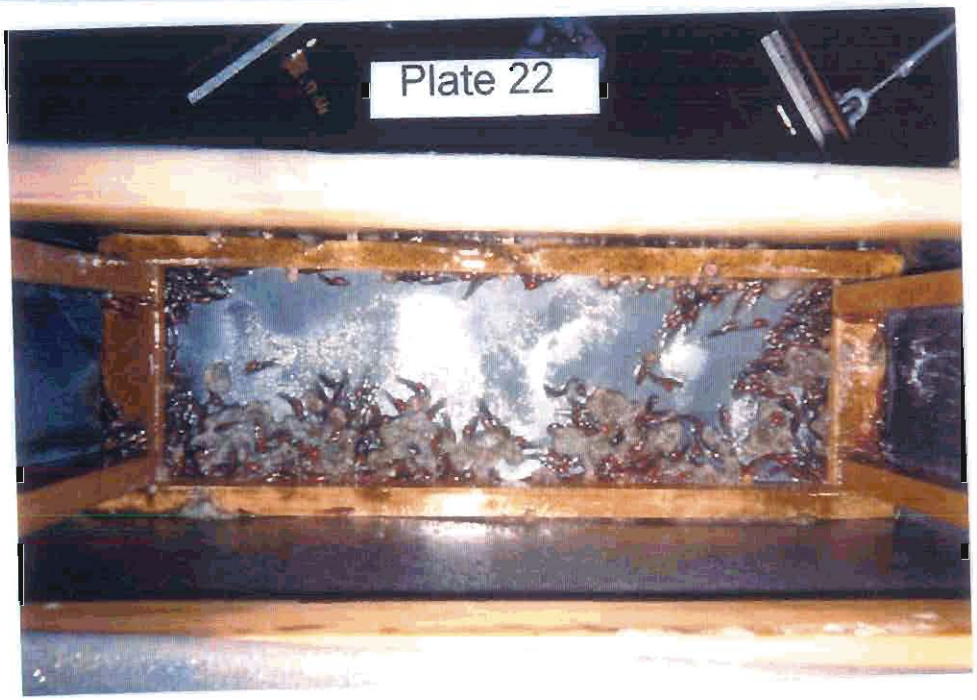


Plate 23

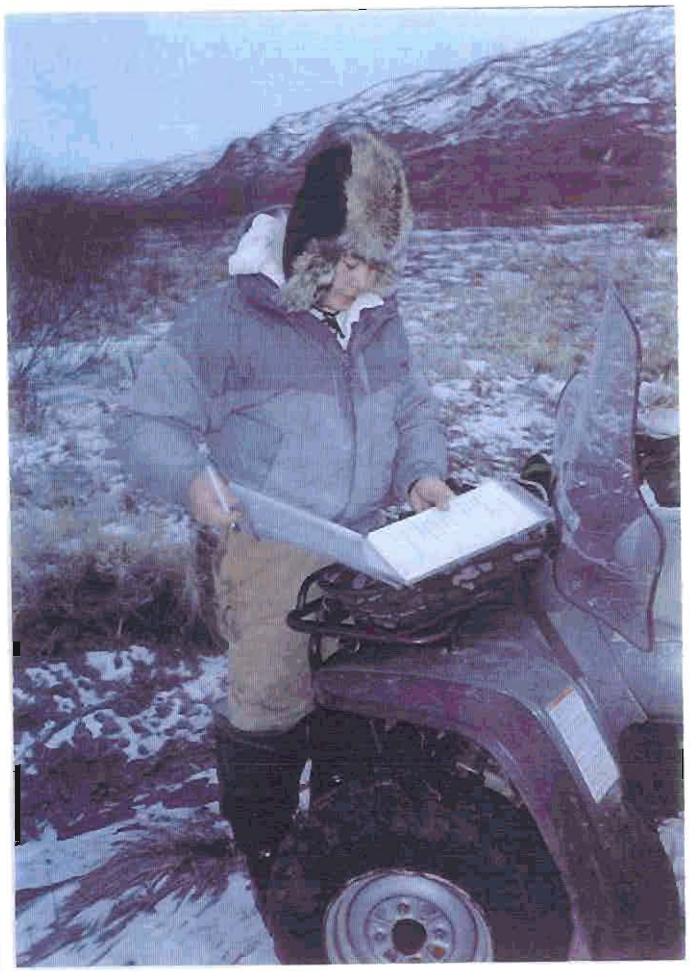


Plate 24

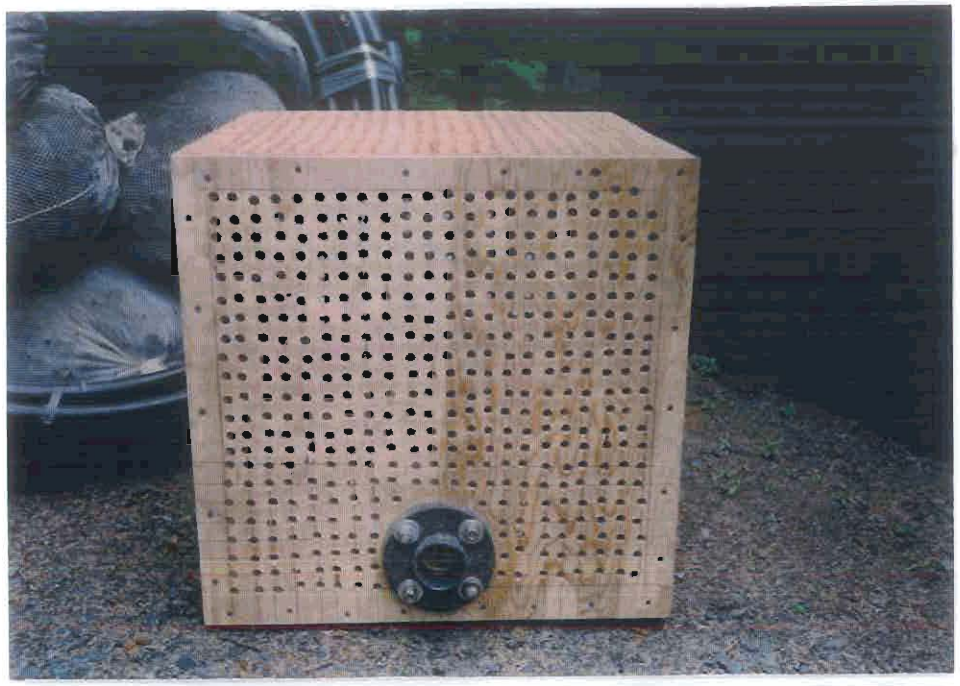


Plate 25

Plate 26

Native Village of Perryville
P.O. Box 101, Perryville, Alaska 99648

February 28, 1996

Mr. James Fall
Regional Program Manager
333 Raspberry Road
Anchorage, Alaska 99518

Dear Mr. Fall

I am writing to on behalf of the Village Council for the Native Village of Perryville.

In regards to the proposal that was sent to from Lisa, on the Coho Enhancement Project in the Kametolook River. The Council has gone over it and approves of the proposal.

Also to let you know, Jerry Yagie will be the Project Co-ordinator for the village. Any questions please feel free to give us a call.

Signed,

Harry W. Kosbruk

Harry W. Kosbruk
Village Council-
Vice President

MEMORANDUM

State of Alaska

DEPARTMENT OF FISH AND GAME

TO: Frank Rue
Commissioner ADF&G
Juneau

DATE: March 22, 1996

FAX NO: 486-1841

TELEPHONE NO: 486-1813

FROM: Jim McCullough
Regional Resource and Development Biologist
Kodiak

SUBJECT: Kametolook River
Coho Subsistence
Project

I wanted to inform you of a subsistence project being proposed through the Alaska Department of Community and Regional Affairs. The Kametolook River coho salmon project is designed to restore coho salmon subsistence opportunities in the Alaska Peninsula village of Perryville. This project is being developed through the Alaska Department of Community and Regional Affairs and the Chignik Regional Planning Team. The Alaska Department of Fish and Game, Division of Commercial Fisheries Management and Development is providing salmon instream incubation technology as well as expertise on fisheries by local management and development staff. The Alaska Department of Fish and Game, Subsistence Division is providing expertise on development of the grant and overall project supervision.

I believe this project will be presented to the Oil Spill Trustee Council in late March. The objective of the proposed project is to increase the depressed coho run in the Kametolook River for subsistence use through instream incubation boxes. If approved, the project would use Kametolook River coho salmon as a water and brood source, and release all fry directly back into the Kametolook River (insuring the genetic integrity of the Kametolook River coho salmon stock).

The Westward Region does not have any objections to the project.

If the Oil Spill Trustee Council approves the project, an application for a Fish Transport Permit will be submitted.

Cc: Pete Probasco
Dave Owen
Jim Fall
Lisa Scarbrough

STATE OF ALASKA

TONY KNOWLES, GOVERNOR

DEPARTMENT OF FISH AND GAME

COMMERCIAL FISHERIES MANAGEMENT
AND DEVELOPMENT DIVISION

P.O. BOX 25526
JUNEAU, ALASKA 99802-5526
PHONE: (907) 465-4210

June 22, 1995

Lisa Scarbrough
ADF&G, Subsistence Division
333 Raspberry Road
Anchorage, AK 99518-1599

Dear Lisa:

The state of Alaska initiated a statewide salmon rehabilitation and enhancement program in the early 1970s to counteract depleted and depressed subsistence, commercial, and sport salmon fisheries. Alaska statutes (AS 16.10.375-470) authorized (1) establishment of designated salmon production regions throughout the state; (2) development of regional planning teams (RPTs) composed of an equal number of representative from the fisheries divisions of ADF&G and qualified regional aquaculture associations (RAAs) as well as ex-officio members from other interested parties; and (3) development and amendment of a comprehensive salmon plan for each region to be undertaken by the respective RPT. The purpose of the comprehensive plan is to identify salmon production goals, objectives, and strategies and generally make recommendations to the commissioner of ADF&G on all salmon-related projects occurring in each region.

As you are aware, the Subsistence Division is one of the many agencies involved Chignik's regional salmon enhancement and rehabilitation program planning, which is at best described as a partnership relationship requiring extensive cooperation among state, federal, regional, and local agencies/organizations. It was through the efforts of you and John Gliva (Department of Community and Regional Affairs planner) that brought the Chignik RPT's attention to the subsistence resource/restoration project funding available to regional communities (i.e., Perryville, Chignik Lagoon, Chignik Lake, and Ivanof Bay) through the auspices of the Exxon Valdez Trust Council. During the fall 1994 meeting of the Chignik RPT in Anchorage, subsistence needs for each community were discussed, and you and Mr. Gliva were made aware that a significant component of the salmon rehabilitation and enhancement program was the acquisition of related scientific data (e.g., run timing, run strength, water quality parameters, etc.) as well as strategies designed to bring depressed runs of wild stocks to their historic high numbers (e.g., instream incubators).

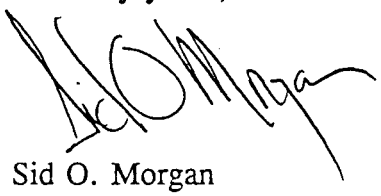
During your report to the Chignik RPT during our spring 1995 meeting in Chignik Bay you noted that the community of Chignik Lake had proposed the following subsistence related projects: (1) extending Chignik River Weir for four weeks in order to get better counts on late run sockeye and coho salmon that are relied on for subsistence use; (2) installing a weather station to acquire needed information concerning juvenile fish habitat during the winter; and (3)

hiring Chignik Lake residents to make winter salmon counts along the Clarks River, which is a major spawning area for late run sockeyes. These proposed projects would provide much needed information that would allow ADF&G to do a better job managing the salmon resource in that area; and, in turn, it would benefit subsistence fishermen during the fall. Additionally, you noted that Perryville residents had proposed (4) an instream incubation project on the Kametolook River to return its run of wild stock cohos to historic highs. This strategy involves using the wild coho stock indigenous to that river system as brood stock, placing their eggs in instream incubation boxes, and increasing egg-to-fry survivals from the approximate 10% that would occur if no intervention had taken place to about 70%. The purpose behind this project is to establish a self-sustaining run of coho salmon into that system.

These project proposals that Chignik Lake and Perryville have submitted to the Exxon Valdez Trust Council are contained in the comprehensive salmon plan for the Chignik region, have been reviewed by CRPT, and have been approved by the commissioner of ADF&G. The public benefit of implementing these projects would primarily accrue to subsistence fishermen in Chignik Lake and Perryville, although benefits would naturally accrue to sport and commercial fishermen as well. For these reasons, at their spring 1995 meeting in Chignik Bay, the Chignik Regional Planning Team extended their support by officially endorsing the four projects.

If you have further questions, please call me at (907) 465-6156 or write me at the address provided above.

Sincerely yours,



Sid O. Morgan
Planner
Planning and Development

cc: Bob Burkett
Kevin Duffy
John Gliva
CRPT members

STATE OF ALASKA

DEPARTMENT OF FISH AND GAME

DIVISION OF ADMINISTRATION

TONY KNOWLES, GOVERNOR

P.O. BOX 25526
JUNEAU, AK 99802-5526
PHONE: (907) 465-6075
FAX: (907) 465-6078

October 22, 1997

Mr. Gerald Kosbruk
Vice President
Native Village of Perryville
P.O. Box 101
Perryville, AK 99648

Dear Mr. Kosbruk:

Enclosed please find a completed copy of the cooperative agreement **#COOP-97-083** between the Native Village of Perryville and the Alaska Department of Fish and Game, Division of Subsistence and Commercial Fisheries Management and Development. The purpose of this agreement is to evaluate the restoration potential for salmon stocks of the Kametolook River. This copy is for your files.

Jim Fall is the Division of Subsistence project representative. He can be contacted at our Anchorage office at (907) 267-2359. James McCullough is the Division of Commercial Fisheries Management and Development project representative. He can be reached at our Kodiak office at (907) 486-1813.

Thank you for your efforts and cooperation on this project.

Sincerely,

Karim Schultz
Secretary

Enclosure

cc: Jim Fall
James McCullough
Pat Stredicke
Ana Lewis
Betty Abel
Melanie Bosch

AMENDMENT 1
to a
Cooperative Agreement
between the Alaska Department of Fish and Game
and the Native Village of Perryville

This agreement is being amended pursuant to Article II and Attachment 1, Item 12 of the original Agreement, dated August 26, 1997.

I. Background

The Exxon Valdez Oil Spill (EVOS) Trustee Council has approved this project and funding for Federal Fiscal Year (FFY) 98. The FFY 98 Detailed Project Description (DPD) has been approved by the Chief Scientist and Trustee Council, and NEPA requirements have been satisfied by a Finding of No Significant Impact by the US Fish and Wildlife Service in May, 1997. The DPD is attached and made a part of this amendment. The following reflect the changes to this agreement for the FFY98 DPD.

II. Period of Performance

The period of performance for work performed on the FFY 98 DPD is October 1, 1997 through September 30, 1998. Contingent upon project and funding approval from the EVOS Trustee Council and subject to authorized appropriation, this agreement may be amended for four additional one year periods. Any additional work will be authorized by written amendments signed by both parties.

III. Covenants of the Native Village of Perryville

Delete Item 6. This item described an activity that took place in FFY 97 (training for project assistants at the Pillar Creek hatchery) which will not be repeated in FFY 98.

IV. Covenants of the Alaska Department of Fish and Game, Division of Commercial Fisheries Management and Development

Delete Item 5. Orientation and instruction in egg take techniques at the Pillar Creek hatchery will not take place in FFY 98.

V. Budget

For FFY 98, as approved by the EVOS Trustee Council, funds in the amount of $4,700 have been allocated to support the activities of the Native Village of Perryville as reflected in the budget in the detailed project description.

VII. Financial Arrangements

For work performed on the FFY 98 DPD, the Native Village of Perryville will be paid an amount not to exceed $4,700.

Invoices shall be submitted separately for work performed on the FFY 97 and FFY 98 DPD's.

All other terms and conditions of the original agreement remain in effect.

This amendment is affirmed by the parties shown below.

For the Native Village of Perryville

Gerald Kosbruk, Vice President

Oct 1, 1997
Date

For the Alaska Department of Fish and Game

Elizabeth Andrews for Mary C. Pete, Director
Division of Subsistence

10-13-97
Date

Robert Clasby, Director
Division of Commercial Fisheries Management
and Development

10/8/97
Date

OK 10/8/97

Kevin Brooks, Director
Division of Administration

10.15.97
Date

APPLIED
marine
SCIENCES

April 1, 1996

Molly McCammon
Executive Director
Exxon Valdez Oil Spill Trustee Council
645 G Street, Suite 401
Anchorage, Alaska 99501

Dear Molly,

At your request I sent the proposed subsistence project "Kametolook River Coho salmon subsistence project" to one of our reviewers. My understanding is that this project is being considered for funding through the criminal fines resulting from the *Exxon Valdez* oil spill. I am providing the attached comments as a preliminary indication of how this proposal might be evaluated if it were to submitted to the trustees of the civil settlement.

Although these comments should be considered preliminary, my impression at this time is that the proposal might be eligible under the civil settlement if concerns about the proposed supplementation of natural runs of Coho salmon are more fully addressed. In particular, the reviewer discusses the potential alteration of the genetic composition of the stock if the take of eggs for the egg boxes is not balanced to reflect the proportional composition of the natural stock with respect to run timing and other possible adaptive characteristics. As the reviewers states, there are no fatal flaws in the proposal; more planning to minimize the genetic consequences of the supplementation could make this a good proposal. Please do not hesitate to call me if you have any further questions.

Sincerely,

Robert B. Spies
Chief Scientist

CC: S. Senner
S. Schubert

3473 Gas Pipeline Court Suite 5 Livermore CA 94550 510.373.7142 FAX 510.373.7834

R25141: *Revised* Kametolook River Coho Subsistence Project Page 1

Statement of qualifications of the reviewer: PhD in fisheries with twenty two years of applicable professional experience. Core education in mathematics and population biology with special emphasis on aquatic ecology and ichthyology. Experienced in evaluation of technologies and analytical methods applied to fisheries stock assessment and identification including hydroacoustics, genetics, morphometrics and tagging. Additional expertise in evaluation of fish passage methods for hydroelectric projects and evaluation of methods for the recovery of endangered salmon populations. Recognized authority on management of Pacific salmon fisheries.

Perryville 96-1: Kametolook River Coho Subsistence Revised Project Proposal

The original proposal left open questions concerning the risks involved in applying the proposed enhancement technology. The specific points of those concerns are provided in the review of March 29, 1996, below. I am satisfied that these risks have been recognized by the proposers, and that appropriate steps to minimize their potential impacts on the outcome of the project have been taken. In so stating, I am partially relying on the genetic expertise of Dr. Jim Seeb, as provided to the project leader, Mr. Jim McCullough. Mr. McCullough has confirmed he intends to implement the advice given by Dr. Seeb in a memorandum he wrote to Dr. Seeb dated November 18, 1996, which was copied to Wayne Donaldson, Bill Hauser, and Joe Sullivan, all of ADF&G.

Review dated March 29, 1996

Within the areas of my expertise, I see no fatal technical problems which would preclude funding this project. There are, however, substantial risks of negative outcomes which need to be understood by the funding entity as part of its deliberation.

The project would apply a salmon enhancement technology, egg incubation boxes, which has been apparently successful at increasing the survival of eggs to the fry stage in other localities. Increased rates of fry production could be expected to translate into increased rates of adult production, assuming that the stream has the rearing capacity for the juveniles prior to emigration. Increasing adult production is the desired outcome, and there is no doubt that increased production of adult coho would benefit the people of Perryville. Technical assistance has been identified and solicited from the Alaska Department of Fish and Game.

Since present natural production of coho salmon is depressed relative to historic levels, it is not unreasonable to assume that sufficient freshwater rearing capacity is available in the Kametolook River. Given lack of knowledge on the extent to which the currently depressed status of the coho population is dependent factors controlling marine survivals, as opposed to factors controlling freshwater survivals, the likelihood of success in producing adult returns is impossible to estimate. Put another way, if increased fry production does not result in increased adult production, there won't be any way to know why.

On the other hand, if increased fry production is followed by increased adult production, there won't be any way to know whether the egg boxes had anything to do with it, as the proposal is now written. Some fraction of the production from the egg boxes should be marked, perhaps by adipose fin clipping, so that the success of the project at producing adults can be determined. The success of the project should not be measured solely in terms of fry production. If the fry produced from the egg boxes happened to have been selected from the "wrong" spawners, as explained below, relatively few would survive to adults, and even fewer would be successful spawners. Unless the egg box fish can be marked in some fashion, the ultimate success of this project could never be determined. The

CC: Joe Sullivan

reviewer is well aware of the rare occurrence of naturally atrophied adipose fins in coho salmon, however if the project is actually successful at producing results, and the fraction clipped is high enough, this should not be a problem.

Even though local brood stock will be used, there is a risk of altering the frequencies of physical traits of adaptive significance in the coho populations, at least in the short term. The spawners selected should be extremely successful at placing their offspring among the spawners of the next generation, thereby putting the offspring of all the other coho spawners at a selective disadvantage (see Ryman and Laikre, about 1991, 1992, I don't have the exact reference handy). If the individual coho for the egg box program are not selected to randomize heritable characters of adaptive significance such as run timing and size at age, then most of the coho in the stream will have the physical characters of those individuals selected for the egg box program after five years. Since the populations are at low levels any way, the risks of enhancing the "wrong" phenotypes are maximized. The wrong phenotypes in this case would be those at a selective disadvantage relative to other members of the population. For example, spawners with late run timing may be at a selective disadvantage relative to earlier spawners, because they are less likely to be able to spawn in water temperatures which promote gamete motility and viability.

And even though samples for evaluating genetic characters are proposed to be taken, these are not likely to provide much information on how the egg box program may be changing the frequencies of those physical characters of the coho population's individuals which permit it to do well in the Kametolook River. Lack of change in the frequencies of a limited number of polymorphic loci does not mean no deleterious changes have occurred in the population. It only means that no changes occurred in the genetic characters measured, and those characters are probably not subject to natural selection, in any event. Also it is my impression that coho are generally less genetically variable than other salmon species. Consequently the low number of polymorphic loci available for analysis would lower the chances of detecting changes in the population by genetic means.

All of this is not to preclude implementing this project, but rather to make sure the Trustee Council and the people of Perryville go into this with their eyes wide open. I assume the State of Alaska permitting process for this egg take would cause the risks to be identified and addressed prior to implementation. I was not successful in my attempts to reach any of the individuals from ADF&G identified in the proposal with questions during the preparation of this review. I have included a few references which should be consulted in preparing a proposal on any project of this nature, at a minimum.

References

Allendorf, F. W. 1986. Genetic drift and the loss of alleles versus heterozygosity. Zoo Biology 5:181-190.

Pages 57-76 in M. Soule, editor. Conservation biology: the science of scarcity and diversity. Sinauer Assoc.

Allendorf, F.W. and N. Ryman. 1986. Genetic management of hatchery stocks. Pages 141-159 *in* N. Ryman and F. Utter, editors. Population genetics and fishery management. University of Washington Press, Seattle, Washington.

Altukhov, Y. and E.A. Salmenkova. 1986. Stock transfer relative to natural organization, management, and conservation of fish populations. Pages 333-344 *in* N. Ryman and F. Utter, editors. Population genetics and fishery management. University of Washington Press, Seattle, Washington.

Barns, R.A. 1976. Survival and propensity for homing as affected by presence or absence of locally adapted paternal genes in two transplanted populations of pink salmon (*Oncorhynchus gorbuscha*). Journal of the Fisheries Research Board of Canada 33:2716-2725.

Cuenco, M.L., T.W.H. Backman, and P.R. Mundy. 1993. The use of supplementation to aid in natural stock restoration. Pages 269 - 293 *in* Cloud, J.G. and G.H. Thorgaard, editors. Genetic Conservation of Salmonid Fishes. Plenum Press, New York.

End of review

Memo to Lisa Scarbrough 1 Nov. 96 fn: lscar001

A. Responses to comments by Reviewers:

1. Stream Rearing Capacity. As indicted by the reviewer, it is a reasonable assumption that there is adequate rearing capacity in the Kametolook River drainage to support a larger population of adult coho salmon because the system was reported to support more during previous years. Although quantification of freshwater rearing habitat for coho salmon is very difficult and expensive to measure, all of the population characteristics that have been measured indicate that there is nothing abnormal about the population structure or the habitat quality (Sanderdock 1991, *in* Groot and Margolis 1991). There are an estimated --- stream miles of suitable habitat available for juvenile coho salmon.

2. Evaluation. Marking and evaluation plans are being developed and evaluated. These include: estimating the numbers of fish that will be required to be marked and recovered, methodology and feasibility of marking the fry under these conditions and mark recovery strategy. It is expected that any marking and recovery program will include the local subsistence users; in part, to elicit their direct involvement, but also, to incorporate an educational opportunity for the people as well.

3. Potential Genetic Alteration. ADF&G is highly sensitive to the importance of this concern and the investigators are aware that a Fish Transfer Permit (FTP) will not be issued unless this concern is addressed. The investigators have been working closely with both the ADF&G Principal Geneticist, Dr. Jim Seeb, and the Pathology Section to obtain tissue samples from the population for genetic and fish disease analyses. The investigators have a continuing dialog with Dr. Seeb to assure that his egg take guidelines and release strategies will be incorporated into plans for this project.

B. Comments about "Supplementation Criteria".

1. Benefits of Supplementation. Successful supplementation of the Kametolook River will be of particular benefit directly to the subsistence users of Perryville. This wild stock population will also benefit directly form the action. The cost of this technology is very reasonable.

2. Genetic Risk. The investigators have continuing dialog with Dr. Seeb to assure that his egg take guidelines and release strategies will be incorporated into plans for this project. (See item 3, above.)

3. Mixed-Stock Fisheries. a) There is no local commercial fishery that targets this stock. There is an unknown, but apparently negligible, likelihood of interception of this stock by commercial fisheries that operate 50 - 100 miles away. b.) The production goal for this project is not commercially significant.

4. Monitoring and Evaluation. An evaluation program is being developed. (See item 2, above.)

5. Economic Criteria. This project is intended to benefit the subsistence users of Perryville, therefore, an economic analysis is not pertinent. As the subsistence harvest of coho salmon continues to diminish, however, the users are relying more heavily on other resources, such as Dolly Varden. An alternative goal of this project is to provide other fish (coho salmon and/or rainbow trout) for growth and harvest as a means to divert some harvest effort away from the

anadromous coho salmon. In addition, as part of this project, the investigators are assisting with a low-key community information and education program.

6. Procedural Criteria. The Regional Planning Team has endorsed this project. The project will not proceed without National Environmental Protection Act (NEPA) compliance and an ADF&G Fish Transport Permit (FTP) - that requires concurrence by ADF&G fishery management divisions, the Principal Geneticist and the Principal Fish Pathologist.

UNITED STATES FISH AND WILDLIFE SERVICE

ENVIRONMENTAL ACTION MEMORANDUM

Within the spirit and intent of the Council on Environmental Quality's regulations for implementing the National Environmental Policy Act and other statutes, orders, and policies that protect fish and wildlife resources, I have established the following administrative record and have determined that the action of restoring the Kametolook River coho salmon stock near Perryville, Alaska:

_____ is a categorical exclusion as provided by 516 DM 6 Appendix 1. No further documentation will be made.

__X__ is found not to have any significant environmental effects as determined by the attached Environmental Assessment and Finding of No Significant Impact.

_____ is found to have special environmental conditions as described in the attached Environmental Assessment. The attached Finding of No Significant Impact will not be final nor any actions taken pending a 30-day period for public review. (40 CFR 1501.4(c)(2)).

_____ is found to have significant effects, and therefore a "Notice of Intent" will be published in the Federal Register to prepare an Environmental Impact Statement before the project is considered further.

_____ is denied because of environmental damage, service policy, or mandate.

_____ is an emergency situation. Only those actions necessary to control the immediate impacts of the emergency will be taken. Other related actions remain subject to NEPA review.

Other supporting documents:

1. Environmental Assessment for the Kametolook River Coho Restoration Project.

2. Amendment #1 to the Kametolook River Coho Restoration Project.

3. Comments received from the US Fish and Wildlife Service.

Acting Regional Director — 5/30/97 Date

Initiator — 5/27/97 Date

Assistant Regional Director — 5/30/97 Date

Regional Environ. Coordinator — 5-30-97 Date

STATE OF ALASKA

TONY KNOWLES, GOVERNOR

DEPARTMENT OF FISH AND GAME

HABITAT AND RESTORATION DIVISION

333 RASPBERRY ROAD
ANCHORAGE, ALASKA 99518-1599
PHONE: (907) 344-0541

FISH HABITAT PERMIT FG 97-II-0195

ISSUED: April 21, 1997
EXPIRES: December 31, 2003

Mr. Jim McCullough
Commercial Fisheries Management and Development Division
Department of Fish and Game
211 Mission Road
Kodiak, Alaska 99615

Dear Mr. McCullough:

Re: Salmon Egg Incubation Box - Kametolook River
Stream № 275-60-10100
Section 3, T. 49 S., R. 64 W., S.M.
SID GC-6

Pursuant to AS 16.05.870(b), the Alaska Department of Fish and Game (ADF&G) has reviewed your proposal to install and operate a low maintenance salmon egg incubation facility at the referenced location. The site is found on a headwaters tributary of the Kametolook River at a site about 4 miles northwest of the Village of Perryville, Alaska. Plans call for installing an 8 cubic foot, plywood head box on the streambed to collect water and direct it into a 1.5 inch diameter, 100 foot long plastic pipe. The 100 foot long pipe will discharge into a pair of plastic fish totes located downstream of the head box. The totes will contain substrate and fertilized salmon eggs and will be stocked annually with eggs harvested from locally captured fish. The water will circulate through the totes and will then discharge directly back into the stream. The fish totes will serve as incubation boxes and will be secured on the streambed using duckbill anchors. Neither the head box nor the incubation boxes span the entire width of the stream, thereby allowing for fish movements both upstream and downstream. Access to the site is provided by existing trails and all terrain vehicles. Vehicles will not be operated in the flowing waters of the Kametolook River. Plans call for incubating up to 100,000 eggs annually through two cycles of the coho salmon life history in an attempt to restore the coho salmon and possibly the chum salmon returns to the Kametolook River and provide local subsistence harvest opportunities for the local residents. At the completion of the project all egg incubation materials will be removed from the river and returned to Perryville for disposal.

11-K107LH

Printed on recycled paper by C.D

injury is the department's negligence.

This permit decision may be appealed in accordance with the provisions of AS 44.62.330--44.62.630.

Sincerely,

Robert G. Bosworth, Deputy Commissioner

C. Wayne Dolezal

By: C. Wayne Dolezal
Habitat Biologist
Habitat and Restoration Division
(907) 267-2285

cc: L. Schwarz, ADF&G
D. Owen, ADF&G
L. Scarbrough, ADF&G
G. Gallis, FWP
G. Folger, FWP
T. Anderson, AEB

RECEIVED APR 1 1 1997

FISH TRANSPORT PERMIT

Applicant	Organization
James N. McCullough	Alaska Dept. Of Fish and Game
Mailing Address	**Phone** / **Species**
211 Mission Rd, Kodiak, AK 99615	(907) 486-1813 / Coho
Stock Origin/Original Donor Stock	**Proposed Stocking Location**
Kametolook River near Perryville	Three Star River near Perryville

Project summary - Summary statement of precisely what is being proposed.

As part of EVOS restoration efforts, coho salmon eggs will be collected (maximum 200,000) from the Kametolook River and raised in two streamside incubation boxes to provide for the stocking of fry into the Kametolook River. If fry are produced in excess to Kametolook River stocking requirements, excess fry will be stocked into Three Star River to provide additional subsistence opportunities.

Permit# EVOS

	For Department Use Only
✓ State Fish Transport Permit	FTP Number 97A0044
Consistent with facility/project plans	Yes ✓ No ____
__ Private Nonprofit Hatchery Fish Transport Permit	
Consistent with PNP permit	Yes ____ No ____
Requires Permit Alteration prior to review	Yes ____ No ____
Continuation of project	Yes ____ No ____
New Project	Yes ____ No ____
Other - ____	Yes ____ No ____

Status

Forms Complete	Yes ✓	No ____	Date 5/6/97
Disease History Complete	Yes ____	No ✓	Date 5/5/97
In review process	DATE Path 5/6 Ro 5/6 Hdq 5/7		
Returned to applicant	DATE 6/24/97		

Samples required at egg take

5 AAC 41.005. PERMIT REQUIRED. (a) No person may transport, posses, export from the state, or release into the waters of the state, any live fish unless the person holds a fish transport permit issued by the Commissioner of his authorized designee.

The Fish Transport Permit (FTP) is the single document, approved by the Commissioner of Alaska Department of Fish and Game (ADF&G), that allows for movements of fish and eggs on an interstate and intrastate basis.

STAFF RECOMMENDATIONS **PERMIT NO. 97A0044**

SIGNATURE PAGE

Comments

	Agree	Disagree	Date	Comments Provided Yes	Comments Provided No
1. Fish Health Services Pathologist - Commercial Fisheries Management and Development Division (CFM&D)					
Signature [signature]	✓		5/9/97	✓	
(I)ncomplete					
2. Regional Resource Development Biologist - CFM&D					
[signature: James McCullough]	✓		5/7/97	✓	
3. Regional Supervisor - CFM&D					
[signature]	✓ *WITH THE FOLLOWING CONDITIONS STATED IN THE COMMENTS		5/12/97	✓	
4. Regional Supervisor - Division of Sport Fish					
[signature] for Doug McBride	✓		6/16/97	✓	
5. Principal Geneticist - CFM&D					
6. Chief, Technology and Development - CFM&D					
[signature]	✓		6/13/97	✓	
7. Director - CFM&D					
[signature]	✓		6/16/97		✓

	Approval	Disapproval	Date
8. Commissioner			
[signature]	✓ [illegible]		6-20-97

FISH TRANSPORT PERMIT

Permit No. 97A0044

Applicant/Organization: James N. McCullough, ADF&G Date: 26 March, 1997

Project Leader: Jim McCullough & Lisa Scarbrough Telephone No. 486-1813

Effective Period: July 1997 - July 2003 (7/1/97 — 7/31/03) Species: Coho

Transport Date(s): Eggs collected September-November; transport April-May

Stock Origin/Original Donor Stock: Kametolook River

Maximal Number Allowed: 200,000 green eggs

Incubation and Rearing Location(s): Streamside incubation box Kametolook

Release Location: Three Star River

Purpose and Benefits: This stocking location would be used if eggs are collected in excess to Kametolook River stocking levels. By stocking Three Star River additional subsistence opportunities would be created in the Perryville area.

Evaluation Plans: Production will be monitored through subsistence harvest permits. A specific report is not required to report evaluation of the production, however, annual review and reports for EVOS projects are required.

Is release site landlocked? No

Native Stocks present, their status, and effects of the proposed action on them: The river contains three spine stickleback, Dolly Varden, and a few pink and coho salmon. In 1996, observers indicated that about 30 adult coho salmon attempted to enter the river. We expect coho stocking will not have a substantial effect on other fish species.

Permit No. 97A0044

History of previous transports of this stock: None

Disease history of stock to be transported: 32 adult coho samples were collected during 9/30/96 - 10/2/96 Pathology report from 11/8/96 is attached.

Description of proposed egg-take methods: The eggtake will be conducted following Statewide salmon culture SOP, which includes individual egg containers (disinfected) per female, spring water which should be free of IHNV, betadine disinfection of each container of fertilized eggs.

Isolation measures planned to control disease during transport, including description of container, water source, and method and plan for transport: Ripe coho salmon eggs and milt will be collected from the Kametolook River within one to two miles downstream of the incubation box location. Eggs will be transported by 4-wheeler to the incubation site where delayed fertilization techniques will be used. Eggs will be seeded into disinfected incubation boxes. During swimup, fry will be collected from the incubation boxes and transported by 4-wheeler to the river in disinfected plastic buckets with an air supply. The water source for all rearing and transportation aspects of the project will be the Kametolook River.

Source of water for rearing and proposed effluent discharge location: Kametolook River

RECEIVED APR 1 1 1997

FISH TRANSPORT PERMIT

Applicant	Organization	
James N. McCullough	Alaska Dept. Of Fish and Game	
Mailing Address	Phone	Species
211 Mission Rd, Kodiak, AK 99615	(907) 486-1813	Coho
Stock Origin/Original Donor Stock	Proposed Stocking Location	
Kametolook River near Perryville	Sicken and Sandy Lakes Perryville	

Project summary - Summary statement of precisely what is being proposed.

As part of EVOS restoration efforts, coho salmon eggs will be collected (maximum 200,000) from the Kametolook River and raised in two streamside incubation boxes to provide for the stocking of fry into the Kametolook River. If fry are produced in excess to Kametolook River stocking requirements, excess fry will be stocked into Sicken and Sandy Lakes (landlocked) to provide additional fishing opportunities.

Permit# EVOS Planning Project

	For Department Use Only	
✓ State Fish Transport Permit	FTP Number 97A0043	
Consistent with facility/project plans	Yes ✓	No
___ Private Nonprofit Hatchery Fish Transport Permit		
Consistent with PNP permit	Yes	No
Requires Permit Alteration prior to review	Yes	No
Continuation of project	Yes	No
New Project	Yes	No
Other -	Yes	No

Status

Forms Complete	Yes ✓	No	Date 5/1/97
Disease History Complete	Yes	No ✓*	Date 5/5/97
In review process	DATE Path Rpt Rec'd 6/4/97		
Returned to applicant	DATE 6/24/97		

*Sample required at egg take

5 AAC 41.005. PERMIT REQUIRED. (a) No person may transport, possess, export from the state, or release into the waters of the state, any live fish unless the person holds a fish transport permit issued by the Commissioner of his authorized designee.

The Fish Transport Permit (FTP) is the single document, approved by the Commissioner of Alaska Department of Fish and Game (ADF&G), that allows for movements of fish and eggs on an interstate and intrastate basis.

97A0043

STAFF RECOMMENDATIONS PERMIT NO. _____

SIGNATURE PAGE

Comments

	Agree	Disagree	Date	Comments Provided Yes	Comments Provided No
1. Fish Health Services Pathologist - Commercial Fisheries Management and Development Division (CFM&D)					
Signature Theodore Rogers	✓		5/5/97	✓	
Incomplete					
2. Regional Resource Development Biologist - CFM&D					
James McCullough	✓		5/7/97		✓
3. Regional Supervisor - CFM&D					
Ed Weber	✓ * WITH THE FOLLOWING CONDITIONS STATED IN THE COMMENTS		5/12/97	✓	
4. Regional Supervisor - Division of Sport Fish					
Larry Peltz for Doug McBride	✓		6/16/97	✓	
5. Principal Geneticist - CFM&D					
Jim Seeb	✓		6/13		
6. Chief, Technology and Development - CFM&D					
7. Director - CFM&D					
Ron Clarke	✓		6/18/97		✓
8. Commissioner	Approval		Disapproval	Date	
	✓			6-20-97	

FISH TRANSPORT PERMIT

Permit No. 97A0043

Applicant/Organization: James N. McCullough, ADF&G Date: 26 March, 1997

Project Leader: Jim McCullough & Lisa Scarbrough Telephone No. 486-1813

Effective Period: July 1997 - July 2003 (7/1/97 – 7/31/03) Species: Coho

Transport Date(s): Eggs collected September-November; transport April-May

Stock Origin/Original Donor Stock: Kametolook River

Maximal Number Allowed: 200,000 green eggs

Incubation and Rearing Location(s): Streamside incubation box Kametolook

Release Location: Sicken and Sandy Lakes

Purpose and Benefits: These stocking locations would be used if eggs are collected in excess to Kametolook River stocking levels. By stocking the lakes fishing opportunity would be created in the Perryville area.

Evaluation Plans: Production will be monitored through subsistence harvest permits. A specific report is not required to report evaluation of the production, however, annual review and reports for EVOS projects are required.

Is release site landlocked? Yes

Native Stocks present, their status, and effects of the proposed action on them:

The lakes currently contain only three spine stickleback. We expect the coho stocking will decrease the numbers of stickleback found in the lakes.

Permit No. 97A0043

History of previous transports of this stock: None

Disease history of stock to be transported: 32 adult coho samples were collected during 9/30/96 - 10/2/96 Pathology report from 11/8/96 is attached.

Description of proposed egg-take methods: The eggtake will be conducted following Statewide salmon culture SOP, which includes individual egg containers (disinfected) per female, spring water which should be free of IHNV, betadine disinfection of each container of fertilized eggs.

Isolation measures planned to control disease during transport, including description of container, water source, and method and plan for transport: Ripe coho salmon eggs and milt will be collected from the Kametolook River within one to two miles downstream of the incubation box location. Eggs will be transported by 4-wheeler to the incubation site where delayed fertilization techniques will be used. Eggs will be seeded into disinfected incubation boxes. During swimup, fry will be collected from the incubation boxes and transported by 4-wheeler to the lakes in disinfected plastic buckets with an air supply. The water source for all rearing and transportation aspects of the project will be the Kametolook River.

Source of water for rearing and proposed effluent discharge location: Kametolook River

FISH TRANSPORT PERMIT

Applicant	Organization	
James N. McCullough	Alaska Dept. Of Fish and Game	
Mailing Address	Phone	Species
211 Mission Rd, Kodiak, AK 99615	(907) 486-1813	Coho
Stock Origin/Original Donor Stock	Proposed Stocking Location	
Kametolook River near Perryville	Long Beach River near Perryville	

Project summary - Summary statement of precisely what is being proposed.

As part of EVOS restoration efforts, coho salmon eggs will be collected (maximum 200,000) from the Kametolook River and raised in two streamside incubation boxes to provide for the stocking of fry into the Kametolook River. If fry are produced in excess to Kametolook River stocking requirements, excess fry will be stocked into Long Beach River to provide additional subsistence opportunities.

Permit# EVOS

For Department Use Only

✓ State Fish Transport Permit — FTP Number 97A0045

Consistent with facility/project plans — Yes ✓ No____

__ Private Nonprofit Hatchery Fish Transport Permit

Consistent with PNP permit — Yes____ No____

Requires Permit Alteration prior to review — Yes____ No____

Continuation of project — Yes____ No____

New Project — Yes____ No____

Other - _____ — Yes____ No____

Status

Forms Complete — Yes ✓ No____ Date 5/1/97

Disease History Complete — Yes____ No ✓ Date 9/5/97

In review process — DATE Both 5/1 Regs 5/1 Hdq 6/17

Returned to applicant — DATE 6/24/97

* Samples required at egg take

5 AAC 41.005. PERMIT REQUIRED. (a) No person may transport, posses, export from the state, or release into the waters of the state, any live fish unless the person holds a fish transport permit issued by the Commissioner of his authorized designee.

The Fish Transport Permit (FTP) is the single document, approved by the Commissioner of Alaska Department of Fish and Game (ADF&G), that allows for movements of fish and eggs on an interstate and intrastate basis.

STAFF RECOMMENDATIONS PERMIT NO. 97A0045

SIGNATURE PAGE

Comments

	Agree	Disagree	Date	Comments Provided Yes	No
1. Fish Health Services Pathologist - Commercial Fisheries Management and Development Division (CFM&D)					
Signature Theodore R Meyers	✓		5/5/97	✓	
Incomplete					
2. Regional Resource Development Biologist - CFM&D					
James McCullough	✓		5/7/97	✓	
3. Regional Supervisor - CFM&D					
	✓	* WITH THE FOLLOWING CONDITIONS STATED IN THE COMMENTS	5/12/97	✓	
4. Regional Supervisor - Division of Sport Fish					
Larry Peltz for Doug McBride	✓		6/16/97	✓	
5. Principal Geneticist - CFM&D					
6. Chief, Technology and Development - CFM&D					
	✓		6/18/97	✓	
7. Director - CFM&D					
	✓		6/18/97		✓

8. Commissioner	Approval	Disapproval	Date
	✓ with conditions as above		6-20-97

FISH TRANSPORT PERMIT

Permit No. 97A0045

Applicant/Organization: James N. McCullough, ADF&G Date: 26 March, 1997

Project Leader: Jim McCullough & Lisa Scarbrough Telephone No. 486-1813

Effective Period: 7/1/97 - 7/31/03 July 1997 - July 2003 Species: Coho

Transport Date(s): Eggs collected September-November; transport April-May

Stock Origin/Original Donor Stock: Kametolook River

Maximal Number Allowed: 200,000 green eggs

Incubation and Rearing Location(s): Streamside incubation box Kametolook

Release Location: Long Beach River

Purpose and Benefits: This stocking location would be used if eggs are collected in excess to Kametolook River stocking levels. By stocking Long Beach River additional subsistence opportunities would be created in the Perryville area.

Evaluation Plans: Production will be monitored through subsistence harvest permits. A specific report is not required to report evaluation of the production, however, annual review and reports for EVOS projects are required.

Is release site landlocked? No

Native Stocks present, their status, and effects of the proposed action on them: The river contains Dolly Varden, and a few coho and chum salmon. In 1996, we observed one chum salmon and about 200 fingerling coho salmon and about 100 Dolly Varden fingerlings in the river. We expect coho stocking would not have a substantial effect on other fish species.

Permit No. 97A0045

History of previous transports of this stock: None

Disease history of stock to be transported: 32 adult coho samples were collected during 9/30/96 - 10/2/96 Pathology report from 11/8/96 is attached.

Description of proposed egg-take methods: The eggtake will be conducted following Statewide salmon culture SOP, which includes individual egg containers (disinfected) per female, spring water which should be free of IHNV, betadine disinfection of each container of fertilized eggs.

Isolation measures planned to control disease during transport, including description of container, water source, and method and plan for transport: Ripe coho salmon eggs and milt will be collected from the Kametolook River within one to two miles downstream of the incubation box location. Eggs will be transported by 4-wheeler to the incubation site where delayed fertilization techniques will be used. Eggs will be seeded into disinfected incubation boxes. During swimup, fry will be collected from the incubation boxes and transported by 4-wheeler to the river in disinfected plastic buckets with an air supply. The water source for all rearing and transportation aspects of the project will be the Kametolook River.

Source of water for rearing and proposed effluent discharge location: Kametolook River

RECEIVED APR 1 1 1997

FISH TRANSPORT PERMIT

Applicant	Organization	
James N. McCullough	Alaska Dept. Of Fish and Game	
Mailing Address	Phone	Species
211 Mission Rd, Kodiak, AK 99615	(907) 486-1813	Coho
Stock Origin/Original Donor Stock	Proposed Stocking Location	
Kametolook River near Perryville	Kametolook River near Perryville	

Project summary - Summary statement of precisely what is being proposed.

As part of EVOS restoration efforts, coho salmon eggs will be collected (maximum 200,000) from the Kametolook River and raised in two streamside incubation boxes to provide for the stocking of fry into the Kametolook River. The resultant adult production from this project is expected to produce up to 3,000 adults for harvest in the subsistence fishery in the Perryville area.

Permit# EVOS Project

For Department Use Only

✓	State Fish Transport Permit	FTP Number	97A0043
	Consistent with facility/project plans	Yes ✓	No
	Private Nonprofit Hatchery Fish Transport Permit		
	Consistent with PNP permit	Yes	No
	Requires Permit Alteration prior to review	Yes	No
	Continuation of project	Yes	No
	New Project	Yes	No
	Other -	Yes	No

Status

Forms Complete	Yes ✓	No	Date 5/1/97
Disease History Complete	Yes	No ✓*	Date 5/5/97
In review process	DATE Path 5/1 Reg 5/6 Hdq 5/7		
Returned to applicant	DATE 6/24/97		

*Samples required at eggtake to complete disease history

5 AAC 41.005. PERMIT REQUIRED. (a) No person may transport, posses, export from the state, or release into the waters of the state, any live fish unless the person holds a fish transport permit issued by the Commissioner of his authorized designee.

The Fish Transport Permit (FTP) is the single document, approved by the Commissioner of Alaska Department of Fish and Game (ADF&G), that allows for movements of fish and eggs on an interstate and intrastate basis.

STAFF RECOMMENDATIONS PERMIT NO. 97A0043

SIGNATURE PAGE

Comments

	Agree	Disagree	Date	Comments Provided Yes	No
1. Fish Health Services Pathologist - Commercial Fisheries Management and Development Division (CFM&D)					
Signature Theodore Burton	✓		5/5/97	✓	
Incomplete					
2. Regional Resource Development Biologist - CFM&D					
James W. Cullow	✓		5/7/97		✓
3. Regional Supervisor - CFM&D					
[signature]	✓* WITH THE FOLLOWING CONDITIONS STATED IN THE COMMENTS		5/12/97	✓	
4. Regional Supervisor - Division of Sport Fish					
Craig Pelot for Doug McBride	✓		6/16/97	✓	
5. Principal Geneticist - CFM&D					
6. Chief, Technology and Development - CFM&D					
[signature]	Conditional		6/17/97	✓	
7. Director - CFM&D					
[signature]	✓		6/16/97		✓

8. Commissioner	Approval	Disapproval	Date
[signature]	✓ with conditions as above		6-20-97

FISH TRANSPORT PERMIT

Permit No. 97A0043

Applicant/Organization: James N. McCullough, ADF&G Date: 26 March, 1997

Project Leader: Jim McCullough & Lisa Scarbrough Telephone No. 486-1813

Effective Period: July 1997 - July 2003 (7/1/97 - 7/31/03) Species: Coho

Transport Date(s): Eggs collected September-November transport not required

Stock Origin/Original Donor Stock: Kametolook River

Maximal Number Allowed: 200,000 green eggs

Incubation and Rearing Location(s): Streamside incubation box Kametolook

Release Location: Kametolook River

Purpose and Benefits: Production of about 3,000 adults for subsistence harvest.

Evaluation Plans: Production will be monitored through subsistence harvest permits. A specific report is not required to report evaluation of the production, however, annual review and reports for EVOS projects are required.

Is release site landlocked? No

Native Stocks present, their status, and effects of the proposed action on them: The Kametolook River contains Dolly Varden and sockeye, coho, pink and chum salmon. All salmon were found downstream of the incubation site, 2 Dolly's were observed above the project site. In 1996, adult salmon estimates included about 100 sockeye, 200 coho, 13,383 pink and 30 chum salmon. This is a restoration project, thus we assume any effect of increased coho numbers will reflect conditions prior to the 1989 oil spill.

Permit No. 97A0042

History of previous transports of this stock: None

Disease history of stock to be transported: 32 adult coho samples were collected during 9/30/96 - 10/2/96 Pathology report from 11/8/96 is attached.

Description of proposed egg-take methods: The eggtake will be conducted following Statewide salmon culture SOP, which includes individual egg containers (disinfected) per female, spring water which should be free of IHNV, betadine disinfection of each container of fertilized eggs.

Isolation measures planned to control disease during transport, including description of container, water source, and method and plan for transport: Ripe coho salmon eggs and milt will be collected from the Kametolook River within one to two miles downstream of the incubation box location. Eggs will be transported by 4-wheeler to the incubation site where delayed fertilization techniques will be used. Eggs will be seeded into disinfected incubation boxes. Fry will voluntary move from the incubation box to the Kametolook River. The water source for all aspects of the project will be the Kametolook River.

Source of water for rearing and proposed effluent discharge location: Kametolook River

ACCESSION NO: 97-0033

ALASKA DEPARTMENT OF FISH AND GAME
FISH PATHOLOGY SECTION, CFM&D DIVISION
333 RASPBERRY ROAD, ANCHORAGE, AK 99518-1599

REPORT OF LABORATORY EXAMINATION

LOT (YEAR, STOCK, SPECIES): Kametolook River coho salmon, Oncorhynchus kisutch

FACILITY: ADFG Anchorage Subsistence

CONTACT PERSON/ADDRESS: Lisa Scarborough, 333 Raspberry Road, Anchorage AK 99518

SAMPLE DATE: 09/30/96 - 10/2/96 **DATE SAMPLE RECEIVED:** 10/04/96

SPECIMEN TYPE: kidneys **LIFE STAGE:** adult **STATE:** frozen

NUMBER IN SAMPLE: 32 **WILD:** Yes

HISTORY/SIGNS:

REASON FOR SUBMISSION: Disease history development

FINAL REPORT DATE: 11/08/96

CLINICAL FINDINGS:

FAT: 0/32 positive for Aeromonas salmonicida
0/32 positive for Yersinia ruckeri Type I
1/32 positive for Yersinia ruckeri Type II, not confirmed in culture

ELISA: 14/32 positive for Renibacterium salmoninarum (Rs). Mean optical density values of ≥ 0.065 were considered positive for the Rs antigen.
Range of OD values - 13/14 positives ≥ 0.065 ≤ 0.146
Fish # 5 OD value = 0.578

COMMENTS/RECOMMENDATIONS: A high prevalence of low-level Rs antigen was detected in the kidney tissues submitted. An exception was one kidney (#5) with a high optical density indicating the presence of greater levels of Rs antigen.

Please submit another 28 kidneys and 60 ovarian fluids to complete the disease history for this stock.

FISH HEALTH INVESTIGATOR(s): Geesin, Burton, Meyers

TECHNICAL ASSISTANCE: Starkey, Short, Lipson

COPIES TO: FY97, Misc., Burkett, Meyers

ACCESSION NO: 98-0043

ALASKA DEPARTMENT OF FISH AND GAME
FISH PATHOLOGY SECTION, CFM&D DIVISION
333 RASPBERRY ROAD, ANCHORAGE, AK 99518-1599

REPORT OF LABORATORY EXAMINATION

LOT (YEAR, STOCK, SPECIES): Kametoolik River coho salmon, Oncorhynchus kisutch

FACILITY: ADFG – Kodiak

CONTACT PERSON/ADDRESS: Jim McCullough, ADFG-CFMD, 211 Mission Road, Kodiak AK 99615

SAMPLE DATE: 11/5/97 – 11/12/97 **DATE SAMPLE RECEIVED:** 11/7/97 – 11/18/97

SPECIMEN TYPE: Kidney tisssues/ovarian fluids **LIFE STAGE:** Adult **STATE:** Unfrozen, refrigerated

NUMBER IN SAMPLE: 17 kidneys, 8 ovarian fluids **WILD:** Yes

REASON FOR SUBMISSION: Update disease history

FINAL REPORT DATE: 1/23/98

CLINICAL FINDINGS:

FAT: 0/17 positive for Aeromonas salmonicida
0/17 positive for Yersinia ruckeri Type I
0/17 positive for Yersinia ruckeri Type II

ELISA: 0/17 positive for Renibacterium salmoninarum (Rs). Mean optical density values ≥ 0.068 were considered positive for the Rs antigen.

VIROLOGY: 0/8 (4 X 2 ovarian fluid pools) positive for virus. Ovarian fluids processed by quantal assay on EPC and CHSE-214 cell lines at 15°C for 14 days and blindpassaged for an additional 14 days. Minimum level of detection = 5 infectious particles/ml of pooled sample. Cells pretreated with PEG to enhance viral infectivity.

COMMENTS/RECOMMENDATIONS: No viral or bacterial pathogens were detected in the samples submitted. Please submit 52 ovarian fluids and 43 kidneys to complete the updated disease history for this fish stock.

FISH HEALTH INVESTIGATOR(s): Burton, Geesin, Follett, Meyers

TECHNICAL ASSISTANCE: Starkey, Short, Van Houten

COPIES TO: FY98, Misc., Meyers, Simpson, Lisa Scarbrough (Subsistence – Anchorage)

Native Village of Perryville
P.O. Box 101
Perryville, AK 99648
Phone: (907) 853-2203
Fax: (907) 853-2230

February 18, 1997

ADF&G
Division of Subsistence
333 Raspberry Road
Anchorage, AK 99518

Dear Lisa and Jim,

The Native Village of Perryville would like to thank you for the presentation that gave the community more knowledge about the ways of salmon. We also continue to support the Kametalook Salmon Enhancement Project. Through attendence of the last meeting, more knowledge was gained on the Salmon population in the area. Through that, maybe, people will choose thier fishing spots more wisely. Again, we thank you very much for coming and you are always welcome here in Perryville.

Sincerely,
Perryville Village Council

Oceanside Corporation
c/o 4015 Northstar St.
Anchorage, AK 99503

September 26, 1997

Native Village of Perryville
P.O. Box 101
Perryville, AK 99648

This notice gives permission to the village of Perryville to post signs on Oceanside land at or around the Kametolook River system. These signs are to prevent fishing in the spawning ground and ensure future populations of fish native to this river system. This is as requested verbally by Gerald Kosbruk, president, Native Village of Perryville, on this date.

Mary Fajen
president

Native Village of Perryville
P.O. Box 101, Perryville, Alaska 99648

November 10, 1997

TO: **Village members of Perryville**

Tentatively a Native Village of Perryville Meeting is set for November 11, 1997 at 6:00 p.m..

AGENDA

1. Kametolook Restoration Project, signs
2. 1997 - 1998 winter fuel oil, gasoline, propane payments
3. Diane Shangin, Health Representative term is up
   Health Representative Meeting at Dillingham on November 17, 1997
   Dillingham needs to know soon as possible who will attend.
4. Water Project - need four more people to be check signers
5. ELECTIONS FOR REPLACING: Patrick E. Kosbruk, Secretary
   Ivan Kosbruk, Member
   Moses A. Kosbruk, Sr., Treasurer
   Ignatius Kosbruk, Member
6. Any other matters that may come before the IRA Tribal Council

ALL village members are welcome to attend.

STATE OF ALASKA

TONY KNOWLES, GOVERNOR

DEPARTMENT OF FISH AND GAME

COMMERCIAL FISHERIES MANAGEMENT AND DEVELOPMENT DIVISION

P.O. BOX 25526
JUNEAU, ALASKA 99802-5526
PHONE: (907) 465-4210

Phone: (907) 465-6149
Fax: (907) 465-4168
Internet: JeriM@fishgame.state.ak.us

January 28, 1997

Mr. Don Preston
Perryville School
Lake-Peninsula School District
1100 School Raod
Perryville, AK 99648

Dear Mr. Preston:

Enclosed is an approved fish resource permit (FRP) which allows you to conduct a classroom incubation project during calendar year 1997. You may obtain up to 250 coho salmon eggs from an egg take conducted at the Kametolook River. The resultant fry may be released back into the Kametolook River or sacrificed. If Sandy or Sicken Lakes are approved at a later date by ADF&G as a release site, you may request an amendment to this permit. A copy of this permit must accompany the fish or egg transport. Please review the permit carefully.

We are very interested in these projects and require the teacher to do miscellaneous reporting. The report must be submitted by the classroom teacher so the department can determine if there are problems they can help solve. A copy of the incubation log and the enclosed forms may be used for this purpose. We welcome pictures of the activities and work done by students which may be used for our headquarters display board. Also, see the enclosed information about a cyberspace display.

If you have questions about the permit or the permitting process, please contact me.

Sincerely,

Jeri Museth
Natural Resource Technician
Development and Planning Program

Enclosure

cc: Jim McCullough Len Schwarz Lisa Scarbrough
Fish and Wildlife Protection

11-K5LH

STATE OF ALASKA
DEPARTMENT OF FISH AND GAME
JUNEAU, ALASKA

Permit No. P-97-021

Expires 12/31/97

FISH RESOURCE PERMIT

This permit authorizes Don Preston, Perryville School, Lake-Peninsula School District (person, agency or organization) of 1100 School Road, Perryville, AK 99648 to conduct the following activities from January 17, to December 31, 1997, in accordance with AS 16.05.930

To obtain and incubate up to 250 coho salmon eggs for the purpose of a classroom incubation. The eggs will be obtained from an egg take conducted by ADF&G on the Kametolook River. The resultant fry may be released back into the Kametolook River at the egg take site or sacrificed. If Sandy or Sicken Lake are approved at a later date by ADF&G as a release site, permittee may request an amendment to this permit.

PURPOSE: To provide students the opportunity to learn, understand and appreciate the complexities of the growth cycle of salmon.

FINAL DISPOSITION: The resultant fry may be released back into the Kametolook River at the egg take site or sacrificed.

AUTHORIZED PERSONNEL: Don Preston, Gerald Kosbruk, and students. ADF&G personnel may assist with this project.

PERMIT CONDITIONS:

The following ADF&G employees at the Kodiak office must be notified prior to initiation of activities: Jim McCullough, CFMD Division (486-1813) or Len Schwarz, Division of Sport Fish (486-1800).

(Continued on the next page)

REPORT DUE January 31, 1998. The report shall include species; numbers; dates and locations of collection and disposition; sex, age and breeding condition; lengths and weights of fish; what was achieved; other information as required.

GENERAL CONDITIONS, EXCEPTIONS AND RESTRICTIONS

1. This permit must be carried by the person(s) specified during approved activities who shall show it on request to persons authorized to enforce Alaska's fish and game laws. This permit is nontransferable and will be revoked or renewal denied by the Commissioner of Fish and Game if the permittee violates any of its conditions, exceptions or restrictions. No redelegation of authority may be allowed under this permit unless specifically noted.

2. Specimens taken under authority hereof may not be sold or bartered. Subpermittees shall not retain possession of live animals or specimens.

3. The permittee shall keep records of all activities conducted under authority of this permit, available for inspection at all reasonable hours upon request of any authorized state enforcement officer.

4. Permits will not be renewed until detailed reports, as specified above, have been received by the Department.

5. UNLESS SPECIFICALLY STATED HEREIN THIS PERMIT DOES NOT AUTHORIZE the exportation of specimens; or the taking of specimens in areas otherwise closed to fishing without appropriate licenses required by State regulations; or during closed seasons; or in any manner, by any means, at any time not permitted by those regulations.

Steven G McGee 1/23/97
Commercial Fisheries Management & Development Division

Commissioner
Alaska Department of Fish and Game

Craig Schwarz 1/23/97
Division of Sport Fish

11-026F (2/95)

MEMORANDUM

State of Alaska

DEPARTMENT OF FISH & GAME

TO: Lisa Scarbrough
Subsistence Division
Anchorage

DATE: May 23, 1996

FILE NO.: Perry.mem

TELEPHONE NO.: 267-2172

SUBJECT: Field Trip
Kametolook River
May 19-21, 1996

FROM: Jim McCullough, Pete Velsko, Bill Hauser
ADF&G
Kodiak, Nome, Anchorage

Jim McCullough, Pete Velsko and Bill Hauser participated in a field trip on May 17 - 22, 1996, to Perryville, AK to assess coho salmon habitat conditions in the Kametolook River Drainage. On Sunday, May 19, we toured the non-glacial portion of the drainage with the assistance of Ignatious Kosbruk, Moses Kosbruk and Jerry Yagie. On Monday, May 20, with the additional assistance of Gerald Kosbruk and Harry Kosbruk, we installed a small test instream incubator and three habitat monitoring sites. During these trips and on various other occasions (e.g., evenings) we discussed the project with these people and others and asked numerous questions about the fish and the area. It was a most cordial and enjoyable experience. The weather was exceptionally good.

Aside from the primary purpose of this trip, two other tasks were completed: 1) While in Perryville salmon subsistence permits were issued and 2) Preliminary investigations were undertaken for possible stocking of Rainbow trout into two lakes in proximity to Perryville.

On Saturday, May 18 Sicken and Sandy Lakes were investigated, at the request of the village council, as potential stocking sites for Rainbow trout. Minnow traps were set in Sicken Lake on May 18 about 4:00 p.m. and retrieved on May 19 about 9:00 a.m. Two traps were set within 50 feet of each other and each captured about 250 three spine sticklebacks. A third trap was set about 200 meters away and caught about 350 three spine sticklebacks. Sicken Lake located about two miles east of Perryville is a typical shallow Alaska Peninsula landlocked lake that covers about 30 acres. Shore vegetation consists of sedges and grasses interspersed with alder thickets. Sandy Lake, north of Sicken Lake, was almost identical to Sicken Lake except smaller, covering about 5 acres. Additional data on land status and physical characteristics of the lakes will be collected by the village council to aid in the determination of potential rainbow stocking in the area.

On Tuesday, May 21, we issued salmon subsistence permits at the village council building and our rental unit. We also toured the power generating facility and the school. At the school we discuss potential education projects such as classroom salmon aquariums and recirculating egg incubators.

Kametolook River Habitat Assessment -

1. Habitat Conditions: The Kametolook River has a typical glacially-fed drainage pattern. Peak flows occur in July (according to Ignatious) and may occur from late May through July (a recent report from Perryville indicates that rivers are presently impassable) when the main stem is high, fast, and glacially-turbid. Large amounts of bed load are transported from the upper drainage and are deposited in reaches of lower gradient. Consequently the main channel, side channels and side-channel sloughs are constantly changing in a "dynamic equilibrium". Peak flows, however, occur in late May through July when warming conditions bring rain and cause the snow pack and ice to melt or during the fall, October through December, when winter storms can bring heavy rains to the area.

a. Migration. Our guides showed us the braided channels, headwater spring spawning reaches and side-channel sloughs. Aside from the natural channel forming and shaping processes, there was no evidence of blockages to adult or smolt migration barriers. Beavers are not present. One side channel that had been reported as blocked was now breached. Blockage and breaching events apparently occur on a scale of about 2-10 years. Approximately 30(+) years ago, however, a major weather or earthquake event caused the destruction of a very strong run of coho salmon one or two drainages to the west.

b. Spawning. Apparently, here is one major spawning area that may have an estimated 75 adult coho salmon and several smaller sites. There is an impression that the upper river may have relatively unstable spawning areas with current conditions improved from prior years but subject to change annually, while in the lower river there were some relatively stable (several years) spawning side channels for pink and chum salmon that may also provide coho salmon spawning reaches in upper tributary areas. Of interest may also be the run timing, spawning in the upper reaches is believed to occur during the early portion of the run (late September through mid October) while latter arriving coho tend to spawn in the lower portion of the river.

c. Rearing. We found young of the year coho salmon fry in many areas. These were still small sized and tightly schooling in still areas. Yearling coho salmon were commonly observed in several slough habitats and in several small ponds (two near "spawning areas", one, low in the drainage and another that was inaccessible at this time. The pond habitats were shared with Dolly Varden, individuals of which, reportedly, could exceed 18-20 inches in length.

d. Overwintering. Overwintering habitat would include these ponds and very deep pools and side-channel sloughs. The streams and ponds apparently do not

freeze solid. Overflow seems to be rare, but it did occur in the lower portion of the Kametolook River during breakup in 1996. Ice and water was reported to be about 5 feet over normal stream flows. Some stream reaches do not freeze; some, only two inches thick. Pond ice may reach 12 inches thick. Snow and ice is transient and elevation-dependent. Air temperatures are rarely lower than -10°F for longer than a day or so but wind chill factors can bring the relative temperature far below -10°F. Winter rain is not uncommon. (As a side note; the Chignik River below Chignik Lake will also rarely forms ice dams but may cause short term but sometimes major localized flooding and bed scouring.)

2. Egg Incubation Box. Earlier discussions about this project led to a suggestion that the use of egg incubation box technology may provide a means to hasten the recovery of the salmon population. Consequently, Pete Velsko was invited to participate in this field trip to evaluate and assess potential incubation sites and, if a suitable site was found, to install a small test unit. Only one acceptable site that appeared to meet all requirements was found near the headwaters of a tributary where coho salmon spawning occurs. With assistance by villagers, a test incubator was installed at this location. Although functional, it operates with a marginal amount of head (approximately 14 inches with a 100 foot pipeline). Normally, a box of this size could accommodate up to about 20,000 eggs, but for a test and evaluation, it is anticipated that eggs from only one female or 3,000 eggs, would be used. An operationally-sized box in this location could potentially accommodate 150,000 or more eggs per box.

3. Monitoring. A total of seven thermographs was left in Perryville at the following locations: Incubation Box - water and air; Rearing Slough ("Candlefish") - water and air; Rearing Slough ("Cross") - water; Perryville - air; and, a "spare" that will be buried in the gravel of a spawning bed. Jerry Yagie will visit each of the locations at approximately monthly intervals to record environmental conditions, measure the water height on a staff gage, make a photographic record and to verify that the thermographs are properly deployed.

4. Other Information:

a. Subsistence harvest methods and, possibly, numbers of fishers apparently have not changed dramatically during the past 20-30 years. Commercial fishing effort, however, has increased, although not directly adjacent to Perryville but in proximity to the Perryville area by both Chignik and Sand Point commercial salmon fleets.

b. Spawning and post-spawned coho salmon ("red fish") are a favored food item and are harvested to produce a dried fish product for human consumption during the winter. Some "running ripe" fish are used, but it is unclear if there is a preference for pre-or post-spawning fish.

c. There is some evidence to suspect that the use of "red fish" may have increased coincident with the increased use of three and four wheelers which made it easier to get to the spawning grounds and to haul more fish carcasses back to the village.

5. Conclusions. This preliminary survey demonstrates that habitat conditions appear to be satisfactory for coho salmon production. Never-the-less, villagers repeatedly told us that during the past 10 years, the strength of the coho salmon run has declined. We were unable to detect any factor that may have caused that decline. Although we saw some dense aggregations of coho salmon fry, they were not widespread, nor were they found in sufficiently large numbers. We found fingerling coho salmon in several locations, but not all suitable-appearing habitat held fingerlings. These observations may suggest a relatively small spawning population, lack of spawning habitat, a high egg to fingerling mortality, or a combination of all of these factors.

6. Future. Future work should entail education, investigations and data analyses and stock restoration.

a. Education. The villagers need to be taught that this is not a static system and population swings must be expected. Harvest cannot happen without successful spawning and reproduction. A classroom incubator would be an excellent tool.

b. Investigations. Thermographs must be retrieved and the data analyzed. Incubator water temperature must be compared with spawning gravel water temperature to determine the correct temperature-unit accumulation. Scale samples from adults should be read to determine the age of smoltification. Before any egg take can occur, a Fish Transport Permit that must be approved by ADF&G staff from Genetics, Pathology and the management divisions will be required. Some sampling for genetic analysis and a disease history may also be required. Potential rearing habitats should also be inventoried more intensively.

c. Stock restoration may happen unaided if the changes in run strength are a result of natural habitat fluctuations. Or, the restoration rate may be accelerated by technological intervention such as an egg incubation project if the spawning and/or rearing conditions have been improving.

7. Other.

- Staffing: Pete Velsko does not expect to be able to dedicate much time for this project in the future.

- Planning: We should begin planning now for the next field trip (e.g., objectives, personnel, schedule, equipment) and for a review meeting in the fall (e.g., when, who, how, what).

cc: Dolezal, Sullivan, Probasco, Donaldson, Schwartz, Owen, Campbell

MEMORANDUM

State of Alaska

DEPARTMENT OF FISH AND GAME

TO: Lisa Scarbrough
Subsistence Division
Anchorage

DATE: .August 1996

FAX NO: 486-1841

TELEPHONE NO: 486-1813

FROM: Jim McCullough
Regional Resource and Development Biologist
Kodiak

SUBJECT: Field Trip to Nome, July 29 - August 2, 1996

Jim McCullough participated in a field trip on July 29 through August 2, 1996, to Nome, AK to assess methods used to determine suitable incubation sites and to capture salmon and take eggs for instream incubation boxes. These methods will be applied this fall to the Kametolook River coho project, Perryville, AK.

I participated in egg takes on the Solomon, Nome and Snake Rivers. Samples were also collected for genetic and disease investigations. Oxygen and nitrogen saturation levels were checked in both spring and stream-side incubation boxes at Shovel, Boulder and Hobson's Creeks which flow into the Solomon, Nome and Snake Rivers.

Pete Velsko and I also visited the weir at the outlet of Salmon Lake and toured several lakes in the Nome area where community restoration projects were increasing and improving available fish habitat. Pete was very helpful in showing me different styles of incubation boxes and the recirculating water incubators located in the Nome school. Pete also instructed me on what to look for in a potential spring/stream-side incubation site and gave me an insulated blanket to install on the Kametolook incubation box.

cc: Probasco, Donaldson, Owen, Velsko, Hauser

STATE OF ALASKA

DEPARTMENT OF FISH AND GAME

Habitat and Restoration Division

TONY KNOWLES, GOVERNOR

333 Raspberry Road
Anchorage, AK 99518-1599
PHONE: (907) 344-0541
FAX: (907) 267-2464

MEMORANDUM

TO: Claudia Slater
ADF&G - H&R
Anchorage

FROM: William J. Hauser
(907)267-2172
fax(907)267-2474
Email: BillH@fishgame.state.ak.us

DATE: 1 November, 1996

SUBJECT: Field trip to Perryville, 29 September - 3 October, 1996

Lisa Scarbrough, Jim McCullough and I made a field trip to Perryville, AK on 29 Sept. to 3 Oct. 1996. The purpose of this memo is to document our data collections and observations. Both Lisa and Jim could/should be co-authors of this report; I am simply the scribe for the team.

The purpose of the trip was to expand the habitat surveys of the adjacent drainages, to place fertilized eggs in the experimental egg box that had been installed last spring and to initiate a cooperative educational program with the Perryville School. The trip was only partially successful, because the coho salmon were not yet in spawning condition. Other accomplishments, however, include:

I. Habitat Surveys: We traveled much of the potentially productive reaches of the Kametolook River, the Three Star River and the Long Beach River. (The Kametolook River enters the Bay approximately 3 miles east of Perryville; the Three Star River enters the Bay approximately 2 miles west of Perryville; and, the Long Beach River enters the Bay approximately 6 miles west of Perryville.)

A. Long Beach River was highly glacial throughout the reach we surveyed. Spawning and rearing habitat appeared negligible. There were no high-quality clearwater side channels or sloughs. The hydrological characteristics were typical of a highly braided, dynamic glacially- fed system. Historically - until approximately 30 years ago - this system was a major source of coho salmon for the villagers. It produced more fish than the Kametolook River. As recent as 8 years ago, it did produce some coho salmon,

however, at approximately that same time-frame, the upper Long Beach River pirated much of the discharge from the upper Three Star River.

B. The Three Star River is the smallest of the three drainages (roughly estimated 30 cfs). It appears to be slightly more stable than the Long Beach River but spawning habitat appears very meager. Some potential rearing habitat is present in the lower reaches. There is little evidence of glacial-fed water source. Apparently, this river does not freeze... which is further evidence of primarily groundwater source of flow.

C. The Kametolook River is clearly - at present - the most stable of the three systems, with several reaches of spawning gravel and rearing habitat that includes side channel sloughs, deep pools and several small "lakes" or ponds. This system, however, is also quite dynamic and habitat quantity and quality may change annually and decadally.

II. Juvenile Studies: Minnow trapping for juvenile coho salmon was conducted in all three drainages. Unfortunately, the quality and quantity of rearing habitat for juvenile coho salmon is very difficult and therefore, expensive to quantify; consequently, much of our assessment of rearing habitat must be subjective.

Among the three rivers, coho salmon rearing habitat in the Long Beach River drainage appeared to be negligible. Although Three Star River was the smallest of the three, it did have some high quality side-channel slough habitat and it does support juvenile coho salmon. The slough does form ice, but apparently does not winter-kill.

Rearing habitat for juvenile coho salmon in the Kametolook River drainage appears to be quite abundant. There are at least three substantial side channel sloughs, several feeder streams and three anadromous "lakes" or ponds. Groups or schools of smaller-sized individuals appear to be more abundant in pockets and coves along the main stem, particularly, those with associated cover. Larger (older?) individuals appear to be more abundant in the slower moving slough-types of habitat. Within the Kametolook drainage, there are several stream-miles of this habitat. Riparian vegetation is typically alder or willow so detailed examination of extensive reaches of any stream channel is difficult.

Trap catches and age-classes of juvenile coho salmon are summarized below:

			Total	Catch per Trap-Hour	
Location	Site	No. Traps	trap hr.	Coho	Dolly Varden
Kametolook R.	Candlefish Slough	4	2.50	36.1	150.5
Kametolook R.	Fingerling Slough	5	5.40	44.6	10.5
Kametolook R.	Cross Creek	4	2.16	19.9	34.0
Kametolook R.	Average			33.4	58.9
Three Star R.	"Lake"	2	9.09	5.2	16.1
Long Beach R.	pond	1	0.5	8.0	

Fingerling coho salmon age-classes from the Kametolook River-Fingerling Slough:

	Number	Percent
Age 1.0:	22	44.0
Age 2.0:	28	56.0
Total Samples:	50	100.0

Fingerling coho salmon age-classes from the Kametolook River-Candlefish Slough:

	Number	Percent
Age 1.0:	23	46.0
Age 2.0:	27	54.0
Total Samples:	50	

Fingerling coho samples from the Kametolook River-Combined:

	Number	Percent
Age 1.0:	45	45.0
Age 2.0:	55	55.0
Total Samples:	100	100.0

III. Adult Fish Data Collections:

A. A total of 32 adult coho salmon was collected from the Kametolook River during this trip. Most were netted by a short piece of subsistence gill net. All were utilized by the subsistence fishers. Few other adult salmon were seen.

Tissue samples, otoliths and scales were taken from each fish. Samples of eyeballs, muscle, heart and kidney were maintained on dry ice for a genetic stock analysis catalog. Kidney samples were kept chilled and were sent to the Pathology Laboratory to determine the incidence of fish diseases.

Age-class distribution of adult coho salmon from the Kametolook River is as follows:

	Number	Percent
Age 1.1:	9	28.1
Age 2.1:	18	56.3
Age 3.1:	2	6.3
Unknown:	3	9.4
Total Samples:	32	100.0

Adult coho samples from the Kametolook River, sexed from internal observation:

	Male	Female	Unknown	Total
Number	15	16	1	32

Percent	46.9	50.0	3.1	100.0

IV. Education:

A. We have concluded that the best means to help the villagers to help themselves is by understanding the life cycle and conservation of the species better. We want to assist with an educational process that will focus on teaching the people of the community through the school children. We plan to work with the teachers and help them with this process.

B. Several high school students assisted with data collections during one day. This included: hands-on involvement with trapping, measuring and counting juvenile coho salmon and removing a scale sample from a representative number of fish; and, dissecting adult fish to collect samples for analysis of genetic characteristics and to assess fish diseases.

C. Several hours during one day, we joined the high school students as they explained field trip experience to their peers and other schoolmates. Each presented some aspect of the field studies and we participated by asking questions and explaining details. Jim McCullough demonstrated scale reading and we examined stomach contents and all of the different fish species that had been collected.

D. We made plans with the teacher, Mr. Don Preston, to order, install, permit and operate a recirculating classroom incubator for coho salmon eggs.

E. Additional community involvement and education has also been accomplished by local hire of two field assistants who monitor study sites on the Kametolook River drainage, including monthly observations of environmental conditions, water height and temperature at the incubation box, spawning habitat and rearing sloughs.

V. Community Involvement:

A. We have assisted the school to purchase and ship a classroom incubation unit and other materials to educate the community through the school children.

B. Whenever possible, we have included local hire to provide assistance as guides, observers and data collectors to enhance community involvement and education.

C. We will meet with all of the villagers to answer questions and educate them about our findings, discuss restoration plans, identify how they can become more involved and, perhaps, establish no-fishing sanctuaries.

Tasks Remaining:

A. Egg take. The fish were not ripe so no egg take could be accomplished. Jim McCullough and Joe Sullivan will travel to Perryville late October to collect eggs to place in the experimental egg box and in the classroom incubator. We provided detailed, written instructions for the local assistants to take the eggs in the event that no one could return when the fish were ready.

B. Calculate temperature-units for the eggs that will be taken to forecast the timing of the eyed-egg stage and the time of hatching.

Other Considerations:

A. Compliance with the National Environmental Protection Act (NEPA) must be attained before monies will be released. For FY 1997 research and monitoring, this should not be difficult, but any expansion of the activities will require at least an Environmental Assessment (EA).

B. The State Principal Geneticist has expressed his concerns about egg take and stocking procedures that will not alter the genetic composition of the local stock. We must maintain a dialogue and information exchange with him to attain a resolution of these concerns before an expanded program can occur.

Recommendations:

1. Return in the spring, 1997 to a) transport the coho salmon fry from the egg box to one of the landlocked lakes and b) to re-survey the rearing slough habitat of Three Star River for the presence of coho fry and Dolly Varden.
2. Plan for at least one more cycle of egg take and fry release into the landlocked lake or the rearing slough of Three Star River. Or, to attempt to accelerate this process to initiate anadromous releases in 1998.
3. Develop a long-range plan for restoration, evaluation and NEPA Compliance (i.e., develop a partnership with a federal agency, plan a schedule and identify a writer and funding).
4. Develop an educational program, including: classroom incubator, students, fish life cycle requirements and the importance of escapement, and the dynamic hydraulics of a glacial system.
5. Consider applying this technology for chum salmon restoration instead of coho salmon.
6. A Draft Time Line is included for these recommendations is attached.

cc: Scarbrough
McCullough
Fall
Sullivan

MEMORANDUM

State of Alaska

DEPARTMENT OF FISH AND GAME

TO: Bill Hauser
Habitat and Restoration
Anchorage

DATE: Oct. 16, 1996

FAX NO: 486-1841

TELEPHONE NO: 486-1813

FROM: Jim McCullough
Regional Resource and Development Biologist
Kodiak

SUBJECT: Field Trip to
Perryville 29
September-3 October,
1996

Enclosed is data I collected during our recent trip to Perryville.

Perryville school: 55°54.709' N, 159°08.639' W

Kametolook River mouth: 55°55.392' N, 159°04.227' W

Kametolook Fingerling Slough: 55°56.094' N, 159°06.076' W
Air Temp: 11.1°C
Water Temp: 3.2°C
DO: 13.2
Traps, soak time equals one hour: #1: located at slough head, 2 coho
#2: located toward main river stem, 44 coho
#3: center of slough, 159 coho & 18 Dolly Varden
#4: junction of slough-main stem, 26 coho & 38 Dolly Varden
#5: cut bank of main stem, 10 coho & 4 Dolly Varden

Kametolook Cross Creek Slough: 55°55.856' N, 159°05.791' W
Traps, soak time equals 1/2 hour: #1: 5 coho
#2: 22 coho, 68 Dolly Varden
#3: 7 coho
#4: 8 coho

Kametolook other (not the spring area) tributary near "island": 55°57.536' N, 159°12.392' W

Kametolook incubation box: 55°59.362' N, 159°12.142' W
Air Temp: 10.2°C
Water Temp: 3.2°C
Water Gauge: 12"
DO: 13.4

Kametolook spring source: 55°59.299' N, 159°12.246' W
Air Temp: 10.2°C
Water Temp: 3.6°C

DO: 12.0

Sandy (Upper) Lake: 55°55.266' N, 159°07.137' W (east shore of lake); smaller of the two lakes near Perryville noted as a possible site of coho or rainbow release, landlocked and mostly mud substrate

Air Temp: 12.2°C
Water Temp: 10.2°C
DO: 10.5
Traps, soak time equals 1/2 hour: #1: 24 threespine stickleback
#2: 55 three spine stickelback

Sicken (Lower) Lake: 55°59.314' N, 159°06.735' W (east shore of lake); larger of the two lakes near Perryville noted as a possible site of coho or rainbow release, landlocked and mostly mud substrate

Air Temp: 10.2°C
Water Temp: 9.6°C
DO: 12.0
Traps, soak time equals 1/2 hour: #1: 36 threespine stickleback
#2: 76 three spine stickelback

Three Star Creek mouth: 55°53.451' N, 159°10.658' W

Three Star Creek about 1 km upstream near side slough/pond: 55°53.931' N, 159°10.885' W
Trap: 38 coho (appeared as if two age classes were present), 87 Dolly Varden

Three Star Creek about 2 km upstream near side slough where two traps were placed: 55°54.409' N, 159°11.541' W
Trap #1: 8 coho, 58 Dolly Varden, 2 sculpin

Long Beach River mouth: 55°53.267' N, 159°16.719' W

Long Beach River where one female chum salmon was captured: 55°54.954' N, 159°15.291' W
Trap with 15 minute soak time: 4 coho, 1 threespine stickleback

Long Beach River about 1/2 way up the river: 55°56.014' N, 159°14.024' W, young-of-the-year coho noted in a small side slough; about 50 young-of-the-year coho noted in small side tributary where the major spawning area on the river was filling in with sand and gravel.

Adult coho samples from the Kametolook River:

	Number	Percent
Age 1.1:	9	28.1
Age 2.1:	18	56.3
Age 3.1:	2	6.3

Unknown:	3	9.4
Total Samples:	32	100.0

Adult coho samples from the Kametolook River, sexed from internal observation:

	Male	Female	Unknown	Total
Number	15	16	1	32
Percent	46.9	50.0	3.1	100.0

Fingerling coho samples from the Kametolook River-Fingerling Slough:

	Number	Percent
Age 1.1:	22	44.0
Age 2.1:	28	56.0
Total Samples:	50	100.0

Fingerling coho samples from the Kametolook River-Candlefish Slough:

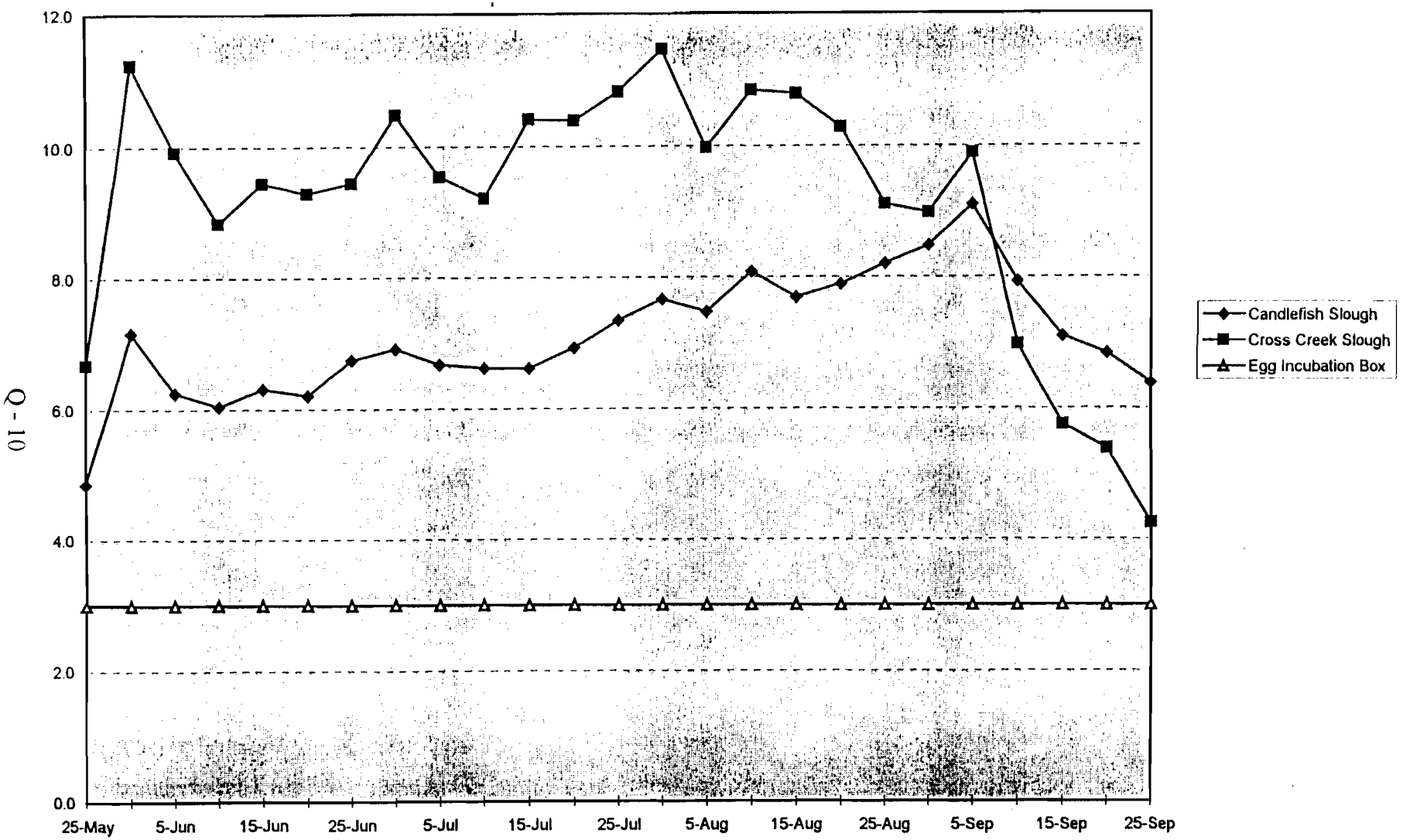
	Number	Percent
Age 1.1:	23	46.0
Age 2.1:	27	54.0
Total Samples:	50	

Fingerling coho samples from the Kametolook River-Combined:

	Number	Percent
Age 1.1:	45	45.0
Age 2.1:	55	55.0
Total Samples:	100	100.0

Sizes of coho salmon fry, Kametolook River, 1 Oct 96									
		Fingerling Slough					Candlefish Slough		
	Length	Sorted	Length	Number		Length	Sorted	Length	Number
Fish No.	(mm)	Lengths	Category	of fish		(mm)	Lengths	Category	of fish
1	87	59	45 - 49	0		90	52	45 - 49	0
2	97	63	50 -54	0		86	53	50 -54	3
3	66	63	55 - 59	1		72	54	55 - 59	4
4	103	65	60 - 64	2		66	58	60 - 64	1
5	88	65	65 - 69	4		74	58	65 - 69	1
6	63	66	70 - 74	1		85	58	70 - 74	7
7	89	69	75 - 79	6		54	59	75 - 79	7
8	93	73	80 - 84	8		80	61	80 - 84	10
9	78	76	85 - 89	14		81	66	85 - 89	10
10	73	77	90 - 94	9		85	70	90 - 94	5
11	91	78	95 - 99	3		52	72	95 - 99	1
12	79	78	100 - 104	2		81	72	100 - 104	1
13	87	79	105 - 109			73	73	105 - 109	
14	88	79				58	73		
15	92	82	sum	50		81	74	sum	50
16	87	83				84	74		
17	99	83				87	75		
18	83	83				53	75		
19	59	83				82	76		
20	76	83				85	76		
21	92	84				87	77		
22	91	84				85	78		
23	69	85				88	79		
24	86	85				73	80		
25	83	86				86	80		
26	90	86				80	81		
27	63	87				93	81		
28	88	87				59	81		
29	85	87				88	81		
30	85	87				79	82		
31	95	88				84	84		
32	65	88				58	84		
33	83	88				90	84		
34	101	88				72	85		
35	86	89				76	85		
36	65	89				96	85		
37	84	90				61	85		
38	78	91				84	86		
39	84	91				77	86		
40	82	91				58	87		
41	83	92				75	87		
42	83	92				94	88		
43	77	93				91	88		
44	89	94				75	90		
45	94	94				81	90		
46	87	95				101	91		
47	88	97				78	93		
48	94	99				74	94		
49	79	101				76	96		
50	91	103				70	101		
Average	89				Average	80			

5-Day Average Water Temperatures in the Kametolook River Drainage, summer, 1996.



MEMORANDUM

State of Alaska

DEPARTMENT OF FISH & GAME

TO: Lisa Scarbrough
Subsistence Division
Anchorage

DATE: November 5, 1996

FILE NO.: lisam005.doc

TELEPHONE NO.: 486-1813

SUBJECT: Field Trip
Perryville, Oct. 30-
Nov. 3, 1996

FROM: Jim McCullough, Joe Sullivan
ADF&G
Kodiak, Anchorage

Jim McCullough and Joe Sullivan participated in a field trip on October 30 through November 3, 1996, to Perryville, AK to collect coho salmon eggs for the Kametolook River stream side incubation box. On Saturday, November 2, with the assistance of Gerald Kosbruk and Jerry Yagie we captured one spawning pair of coho salmon in the upper Kametolook River. Using standard delayed fertilization techniques, green eggs were placed in the stream side test incubation box. Aside from the primary purpose of this trip, three other tasks were completed: 1) installation of a thermograph in the river substrate where most coho salmon were observed spawning, 2) observations of coho spawning locations and an estimate of the coho salmon run strength, 3) a classroom aquarium was installed to accept fertilized eggs from the river incubation box if a requested resource permit is granted.

Egg Collection On Saturday, November 2, Jerry and Gerald fishing a gillnet along the upper portion of the Kametolook River were able to capture 20 salmon. Four of the salmon were sockeye, all others were coho, 13 males and three females. All fish appeared to be in or near spawning condition, all males tested had flowing milt while one female was about 2 days from being ripe, one was spawned out and the third was ripe. Following standard delayed fertilization techniques, the eggs were fertilized and seeded into the stream side incubation box.

Thermograph A thermograph (RF7003267) was placed near the upper most spawning area about 15 inches below the substrate surface. When it is retrieved in the spring, we hope to get a temperature profile to match that of naturally deposited eggs.

Spawning Survey Although this survey was only a one time event and lower river water conditions were considered fair to poor for observing fish, we attempted to enumerate all salmon in the river. About 75% of all observed coho were located within 1 mile downstream of the incubation box; the remaining 25% were scattered in small groups throughout the lower 5 miles of the main stem and side sloughs. The total observed coho escapement was about 100 salmon. All observed salmon looked as if they had been in the river for awhile, fish were red or dark colored and many had white fins and fungus patches. No ocean bright salmon were observed.

Classroom Incubator On Sunday, November 3, we assembled a classroom incubator. A Fish Resource Permit is currently being circulated for this incubator. If the permit is approved, about 250 eyed eggs from the stream side incubator will be transferred to the classroom incubator.

cc : Dolezal, Donaldson, Schwarz, Owen, Slater, Hauser

MEMORANDUM

State of Alaska

DEPARTMENT OF FISH & GAME

TO: Bill Hauser
Habitat and Restoration
Anchorage

DATE: February 10, 1997

FILE NO.: billh002.doc

TELEPHONE NO.: 486-1813

SUBJECT: Field Trip
Perryville, 29 January - 4 February, 1997

FROM: Jim McCullough, Lisa Scarbrough
ADF&G
Kodiak, Anchorage

Lisa Scarbrough and Jim McCullough participated in a field trip on 29 January through 4 February, 1997, to Perryville, AK to transport coho salmon eggs for the Kametolook River stream side incubation box to the school aquarium, to sample lakes in proximity to Perryville as potential coho fry release sites and to meet with residents of Perryville to discuss the incubation box project. Aside from the primary purposes of this trip, six other tasks were completed: 1) we met with the Alaska Peninsula/Becharoff National Wildlife Refuge manager and fisheries resource project leaders in King Salmon to discuss the Kametolook project and review the draft Environmental Assessment, 2) check the school aquarium and add larger gravel for coho alevin habitat, 3) check the thermograph and staff gauge sites, 4) eggs incubating in the stream side box were shocked and dead eggs were removed, 5) a slide show and discussion of the project was presented to all Perryville students and, 6) assist the local ADF&G employee with subsistence surveys.

On Thursday, January 30 we met with Ron Hood, Jim Larson, Jeff Adams and Orville Lind of the Alaska Peninsula/Becharoff National Wildlife Refuges in King Salmon. We showed pictures of Perryville, various aquatic habitats in the Kametolook, Three Star and Long Beach Rivers and the Kametolook stream side incubation box. We discussed Joe Sullivan's draft environmental assessment for the project. Orville Lind indicated that he would like to accompany us on our next trip to Perryville to help with our project.

On Friday, January 31, with the assistance of five Perryville high school students we measured the length, width, depth, DO, and temperature of Sandy and Sicken Lakes to see of the lakes might be able to sustain coho fry released from the school incubator this spring (Table 1). We also collect river gravel of one to three inch diameter and placed the gravel in the school aquarium for alevin habitat.

Friday evening we attended a meeting with the Village of Perryville where we presented a summary aided with slides of the Kametolook River coho salmon restoration project and associated school salmon egg incubator project. Approximately 35 residents attended the meeting. We started off by providing the community with a background of the project reminding them that it is an *Exxon Valdez* subsistence restoration project that their community requested funding for and received. We explained how ADF&G and the community became working partners with the project, and then showed slides of the 1996 assessment phase of the project. We then discussed the life cycle of salmon, and how it applies to the Kametolook River. In addition we explained more completely how the in-stream egg incubation box should work if this first test year proves

successful, comparing "wild" survival rates of fry at 22% vs survival rates of "enhanced" fry at approximately 75%. We also discussed our estimated escapements and subsistence harvest levels. To help demonstrate the need to restore coho in the Kametolook River we told people that we counted approximately 100 coho salmon in the upper reaches of the Kametolook river this fall. Realistically it was probably double that.. If 100 of these 200 coho are females, the estimated return of adult coho in four years would only be 400. The average reported harvest of coho taken from the Kametolook River from 1993-1995 was 552, with 1994 being 852.

At this point we opened the meeting up for discussion encouraging ideas from the community to think of things local subsistence fisherman could do in addition to the egg box that might help ensure that more fish make to the spawning areas which could also give the enhancement effort a boost along with the egg box. Some ideas discussed at the meeting and with individuals after the meeting included: not fishing the upper reaches of the river, not stretching nets from bank to bank while fishing, and those that have bigger boats could offer to take more residents in need of salmon to other areas to fish for a few years. One person thought that commercial fishing efforts might be contributing to the decline of salmon, and should be curbed before asking locals to cut back on their subsistence efforts.

On Saturday, February 1, Jerry Yagie and Gerald Kosbruk and Jim McCullough traveled to the stream side incubation box on the Kametolook River. While traveling upriver we checked the habitat monitoring stations that were established during an earlier trip. Cross Creek thermograph and staff gauge were missing, perhaps due to ice, while the other stations were still recording data. Jerry will move an extra thermograph to Cross Creek in an attempt to gain information concerning this sloughs potential rearing habitat. At the incubation site the air temperature was 0.9°C, the water temperature was 2.9°C and the DO was 14.3 ppm. Inside the incubation box the water temperature was 3.2°C and the DO was 11.2 ppm. At the spring, upstream of the incubation box, the water temperature was 2.9°C and the DO was 13.7 ppm. All eggs were still contained in a sealed minnow trap, the fish transport permit did not allow for release of any progeny. It appeared that the galvanized metal of the minnow trap had acted unfavorably with the eggs, killing all that were in contact with the metal, their mortality appeared to cause excessive fungus growth that also increased the mortality of those eggs not in direct contact with the metal. Live eggs were at the eyed stage. Using standard egg shocking techniques we shocked and sorted the eggs noting that 1,253 dead eggs were removed. To avoid the mortality associated with the metal minnow trap we placed an estimated 450 eggs in a wood-nylon hardware cloth container and placed them back in the incubation box. In a cooler we transported about 250 eggs to the Perryville school aquarium where they were 15 dead eggs were removed and the remainder were placed in the aquarium.

Lisa met with Steven Phillips, who works part time assisting the Division of Subsistence with subsistence salmon, harbor seal and sea lion household surveys.

On Sunday, February 2 weather prevented our departure. We aided Steven Phillips with household subsistence surveys.

On Monday, February 3 weather prevented our departure. We again aided Steven Phillips household subsistence surveys and presented a slide show to all the school children concerning the incubation box and aquarium projects.

On Tuesday, February 4 we continued household subsistence surveys and in the evening traveled home.

cc : Donaldson, Sullivan, Schwarz, Owen, Fall, Miraglia, Gliva

Table 1. Sandy and Sicken Lakes physical characteristics/ January 31, 1997.				
Sandy Lake				
The eastern marsh over flow area, 1,257 linear feet, may provide infrequent habitat				
during high water events.				
Lake length = 1,200 feet = 365.7607 meters				
Total lake length including marsh over flow area = 2,457 feet = 748.8951 meters				
Lake width = 580 feet = 176.7844 meters				
Air Temperature: 5.1° C				
Ice Depth: ten inches				
Lake Volume = 143,159 cubic meters				
Average Lake Depth =2.2140 meters				
West Shore	55° 55.196 N lat, 159° 07.385 W long			
East Shore	55° 55.266 N lat, 159° 07.137 W long			
Sample Site 1	water depth	5' 7"	or	1.7018 meters
water temperature just below ice		1.3° C		
dissolved oxygen level just below ice		14.3 ppm		
water temperature at lake bottom		2.9° C		
dissolved oxygen level at lake bottom		13.6 ppm		
Sample Site 2	water depth	5' 6"	or	1.6764 meters
water temperature just below ice		1.6° C		
dissolved oxygen level just below ice		14.6 ppm		
water temperature at lake bottom		2.6° C		
dissolved oxygen level at lake bottom		11.3 ppm		
Sample Site 3	water depth	8' '7"	or	2.6162 meters
water temperature just below ice		1.3° C		
dissolved oxygen level just below ice		12.6 ppm		
water temperature at lake bottom		2.3° C		
dissolved oxygen level at lake bottom		10.4 ppm		
Sample Site 4	water depth	8' 3"	or	2.5146 meters
water temperature just below ice		1.6° C		
dissolved oxygen level just below ice		12.6 ppm		
water temperature at lake bottom		2.6° C		
dissolved oxygen level at lake bottom		10.4 ppm		
Sample Site 5	water depth	7' 11"	or	2.4130 meters
water temperature just below ice		1.3° C		
dissolved oxygen level just below ice		12.4 ppm		
water temperature at lake bottom		2.3° C		

dissolved oxygen level at lake bottom		11.3 ppm		
Sample Site 6	water depth	6' 3"	or	1.9050 meters
water temperature just below ice		1.6° C		
dissolved oxygen level just below ice		13.1 ppm		
water temperature at lake bottom		2.9° C		
dissolved oxygen level at lake bottom		12.5 ppm		
Sample Site 7; mid North	water depth	8' 4"	or	2.5400 meters
water temperature just below ice		1.3° C		
dissolved oxygen level just below ice		12.7 ppm		
water temperature at lake bottom		2.3° C		
dissolved oxygen level at lake bottom		11.2 ppm		
Sample Site 8; mid South	water depth	7' 8"	or	2.3368 meters
water temperature just below ice		1.3° C		
dissolved oxygen level just below ice		12.8 ppm		
water temperature at lake bottom		2.6° C		
dissolved oxygen level at lake bottom		12.3 ppm		
Sicken Lake				
The eastern marsh over flow area, 206 linear feet, may provide infrequent habitat				
during high water events.				
Lake length = 4,294 feet = 1,308.8138 meters				
Total lake length including marsh over flow area = 4,500 feet = 1,371.6027 meters				
Lake width = widest 534 feet = average 507 feet = 154.5339 meters				
Air Temperature: 5.1° C				
Ice Depth: ten inches				
Lake Volume = 383,372 cubic meters				
Average Lake Depth =1.8955 meters				
West Shore	55° 54.888 N lat, 159° 07.578 W long			
East Shore	55° 59.314 N lat, 159° 06.735 W long			
Sample Site 1	water depth	6'1"	or	1.8542 meters
water temperature just below ice		1.3° C		
dissolved oxygen level just below ice		14.3 ppm		
water temperature at lake bottom		1.3°C		
dissolved oxygen level at lake bottom		14.0 ppm		
Sample Site 2	water depth	6'2"	or	1.8796 meters
water temperature just below ice		1.3° C		
dissolved oxygen level just below ice		14.3 ppm		

water temperature at lake bottom		1.9° C		
dissolved oxygen level at lake bottom		13.8 ppm		
Sample Site 3	water depth	6'4"	or	1.9304 meters
water temperature just below ice		1.3° C		
dissolved oxygen level just below ice		14.4 ppm		
water temperature at lake bottom		1.6° C		
dissolved oxygen level at lake bottom		13.1 ppm		
Sample Site 4	water depth	6'5"	or	1.9558 meters
water temperature just below ice		1.3° C		
dissolved oxygen level just below ice		14.3 ppm		
water temperature at lake bottom		1.3° C		
dissolved oxygen level at lake bottom		13.6 ppm		
Sample Site 5	water depth	6'8"	or	2.0320 meters
water temperature just below ice		1.3° C		
dissolved oxygen level just below ice		14.1 ppm		
water temperature at lake bottom		1.3° C		
dissolved oxygen level at lake bottom		13.7 ppm		
Sample Site 6	water depth	5'10"	or	1.7780 meters
water temperature just below ice		1.3° C		
dissolved oxygen level just below ice		14.2 ppm		
water temperature at lake bottom		1.3° C		
dissolved oxygen level at lake bottom		13.8 ppm		
Sample Site 7	water depth	5'11"	or	1.8034 meters
water temperature just below ice		1.3° C		
dissolved oxygen level just below ice		13.5 ppm		
water temperature at lake bottom		1.6° C		
dissolved oxygen level at lake bottom		12.9 ppm		
Sample Site 8	water depth	6'4"	or	1.9304 meters
water temperature just below ice		1.3° C		
dissolved oxygen level just below ice		14.4 ppm		
water temperature at lake bottom		1.6° C		
dissolved oxygen level at lake bottom		14.0 ppm		

5/23/97

Department of Fish and Game
Fisheries Management Division
P.O. Box 25526
Juneau, Alaska 99802

Attn: Jeri Museth

Perryville School
Classroom Incubation Project Summary

We have just completed our first year of raising salmon in the classroom and are pleased with the results. On May 22, fifteen students, one teacher, and two parents helped in the release of approximately 125 healthy smolt coho salmon back into their river of origin.

Throughout the year students were engaged in a variety of science activities that focused on salmon. Students grades 6-8 created a multi-media computer stack on salmon which included information on salmon habitat, reproduction, species identification, anatomy, and more. Several High School students had the opportunity to assist Jim McCullough and Lisa Scarbrough with their Kametolook River fisheries study. Elementary students got a big kick out of seeing the hatching of the eggs into alevins and watching their growth cycle.

In addition to the student activities involved with the direct incubation of salmon in the classroom the project was a successful means for advertising school activities with community interest. Many adults in the community expressed to me that they were pleased that the students were learning about such an important part of the culture and economic life.

In conclusion, I believe the project has been a complete success and hope that it will continue next year. Although I won't be here in Perryville I have informed the new teacher of the project and left all the information for him to look over. I would especially like to express my thanks along with the students to Jim McCullough and Lisa Scarbrough for their help in setting up the aquarium and willingness to take the students out on field trips. They did a wonderful job with the kids and they should be credited for it.

Sincerely,
Don Preston, Head Teacher

CC: Jim McCullough & Lisa Scarbrough

STATE OF ALASKA
DEPARTMENT OF FISH AND GAME

CLASSROOM INCUBATION PROJECT

Report #2 (Due end of school year)

Don Preston — Perryville School
(Name of Instructor) (Organization or School)

1200 School Rd — Perryville AK. 99648
(Mailing Address) (City, State, Zip Code)

Telephone: (907) 853-2210 (work) _____ (home)

Species: [X] coho [ ] chum [ ] pink [ ] other _____

Eggs Received: ≈250 Estimate % Survival (Live eggs/total received) 95%

Water Exchange Intervals: [ ] weekly [X] monthly
[ ] <1 x/week [ ] <1 x/month

Accumulated Thermal Units to Critical: ~~Data too unreliable to report.~~

Eyed: _____ Alevin (hatch): _____ Emergence (fry): _____

Fish were:
( ) Destroyed at end of project
( ) Sacrificed for experimentation
( ) Released into a landlocked lake
Name of lake: _____
Date released: _____
[X] Released into drainage of origin
Name of stream/river: Kamishlook River
Date released: 5/22/97

Problems experienced during your project: ≈50% mortality of eggs due to Bacteria/Fungus growth.

What educational activities have you done in conjunction with your incubation project since the last reporting period? Explain: See Attach.

I certify that the statements made in this report are true and that I have followed the guidelines as originally specified in my approved permit.

Don Preston — 5/24/97
Signature Date

cc: McCullough

θαζnθκα γληλλα

MEMORANDUM

State of Alaska

DEPARTMENT OF FISH & GAME

TO: Jim Fall
ADF&G
Subsistence Division
Anchorage

DATE: September 8, 1997

FILE NO.: jfall001.doc

TELEPHONE NO.: 486-1813

SUBJECT: Field Trip
Perryville, 3 - 7
September, 1997

FROM: Jim McCullough
ADF&G
Commercial Fisheries Division
Kodiak, Anchorage

Rita Mariglia and Jim McCullough participated in a field trip on 3 through 7 September, 1997, to Perryville, AK to transport and set up salmon incubation boxes for the coho salmon restoration project on the Kametolook River.

Aside from the primary purposes of this trip, other tasks included: 1) meeting with the Alaska Peninsula/Becharoff National Wildlife Refuge fisheries staff in King Salmon to discuss the Kametolook project, 2) check the school aquarium and describing the project to the new teachers, 3) informing villagers of all the FTP requirements that must be fulfilled prior to an eggtake.

On Thursday, 4 September we met with Orville Lind of the Alaska Peninsula/Becharoff National Wildlife Refuges in King Salmon. We discussed the restoration project and although Mr. Lind was unable to accompany us on this trip he may help with the fall eggtake if his schedule allows.

On Thursday we arrived at Chignik Lake. Weather prevent the aircraft from taking us to Perryville and we decided to stay at the ADF&G facility at Chignik weir rather than returning to King Salmon. Weather continued to prevent our traveling to Perryville.

On Saturday, 6 September Jerry Yagie, one of the Perryville technicians, called and mentioned that the Kametolook River water level was very high and it would likely remain high for several days. Weather forecasts were for several more days of high winds and heavy rains which would prevent our moving the incubation boxes upcountry to the project site. We decided to return home.

On Sunday, 7 September the weather improved enough so that we were able returned home.

Jerry Yagie and Gerald Kosbruk are scheduled to work at the Pillar Creek Hatchery the last two weeks of September.

At this point, I suggest that Jerry and Gerald try to move the equipment upcountry via ATV in October or November prior to the eggtake. Joe Sullivan and I will return to Perryville in October or November for the eggtake and at that time we could install the incubation boxes and attempt an eggtake.