MEMORANDUM OF AGREEMENT

BETWEEN

Skagit River System Cooperative
AND
National Marine Fisheries Service, Northwest Fisheries Science Center,
Fish Ecology and Conservation Biology Divisions, U.S. DEPARTMENT OF COMMERCE

Habitat Based Assessment of Juvenile Salmon in WRIA 2 Nearshore
And
Origin of Juvenile Chinook Salmon in WRIA 6 Mixed Stock Rearing Environments

This memorandum of agreement, hereinafter referred to as "Agreement" is entered into between The Skagit River System Cooperative, 11426 Moorage Way, P.O. Box 368, La Conner, WA 98257, hereinafter referred to as "SRSC" and the National Marine Fisheries Service, Northwest Fisheries Science Center, U.S. Department of Commerce (DOC), hereinafter referred to as "NWFSC." The period of performance of this Agreement shall begin August 1, 2008 and end on June 30, 2011. SRSC is the natural resources consortium operating on behalf of the Swinomish and Sauk-Suiattle Indian Tribes.

AUTHORITY

The authorities for SRSC and DOC to enter into this agreement are:

(1) 16 U.S.C. § 661(1) and (2), Fish and Wildlife Coordination Act, authorizing the Secretary to cooperate with Federal, State, and public or private agencies and organizations in the protection of all species of wildlife, resources thereof, and their habitat. 16 U.S.C. § 661(1), and authorizing the Secretary "to make surveys and investigations of wildlife of the public domain, including lands and waters or interests therein acquired or controlled by any agency of the United States
16 U.S.C. § 661(2) and

(2)The Endangered Species Act (ESA), 16 U.S.C 1531, providing a means whereby the ecosystems upon which endangered species and threatened species may be conserved, to provide a program for the conservation of such endangered and threatened.

FUNDING AWARD

Funding for this agreement are:

(1) SRSC has been awarded Project 07-1863N by Washington State's Recreation and Conservation Office (RCO) and Salmon Recovery Funding Board (SRFB) to conduct a project titled, "WRIA2 Habitat Based Assessment of Juvenile Salmon" to acquire fisheries data and/or technical information that collects nearshore fish use in WRIA 2.

(2) SRSC has also been awarded Project 07-1589 N by Washington State's Recreation and Conservation Office (RCO) and Salmon Recovery Funding Board (SRFB) to conduct a project titled, "Origins of

Juvenile Chinook In WRIA 6 Nearshore" to acquire fisheries data and/or technical information that collects nearshore fish use in WRIA 6

In consideration of the terms and conditions contained herein, or attached and incorporated and made a part hereof, the parties agree as follows:

SCOPE OF WORK

The NWFSC, along with SRSC, will conduct a study of fish use and juvenile Chinook salmon genetic variation in nearshore habitats of WRIAs 2 and 6. NWFSC will provide data and analysis to SRSC, as described in the scope of work section of this agreement, to assist in management of WRIA 2 and 6 nearshore habitat for Puget Sound salmon recovery.

All results and interpretation of nearshore fish catch data and genetic analysis of juvenile Chinook salmon in WRIAs 2 and 6, along with appropriate identifying information will be made available on computer disk in Word and Excel or in other agreed electronic format to Eric Beamer at SRSC and any individual Mr. Beamer might designate.

STUDY 1

The following tasks and deliverables are the scope of work for the study of the "Origins of Juvenile Chinook In WRIA 6 Nearshore" (Project 07-1589 N). Details of methods and analysis are described in Attachment 1. Time periods are estimated for each task.

Task 1

Assist SRSC with the development and refinement of the sampling design.

Task 2

Assist in the collection of mixture samples in offshore habitats where applicable per Table 1 and Figure 1. Assist in the collection shoreline samples from area 4. Collection will be dependent upon fish availability, weather, and other issues (e.g., vessel availability). Deliverable is a brief progress report summarizing this effort and inclusion of all data for fish catch, site, environment, and tissue samples collected.

Task 3

Conduct and report results of genetic power analysis using currently available juvenile Chinook tissue data. The deliverable is a progress report for this task explaining the statistical limits of detecting (a) major basins (e.g., Whidbey Basin v. Hood Canal), (b) river of origin (e.g., Skagit v. Nooksack), (c) stock/population (e.g., Suiattle Springs v NF Nooksack Springs) with various sized mixture samples (e.g., 50 fish, 100 fish). The final set of samples selected for mixture analysis will be determined by Eric Beamer and NWFSC collaborators based on the results of the power analysis (i.e., task 3 deliverable) and tissues samples available.

Task 4

Conduct and report initial genotyping of mixture samples. Deliverable is a brief progress report explaining the spatial and temporal stratification used for mixture analysis and the origin composition of juvenile Chinook by spatial and temporal strata (preliminarily shown in Figure 1 and Table 1).

Task 5

Complete entry of all offshore fish catch, habitat type, environmental, and individual fish (e.g., size, weight, marks) data into database. Provide documentation of matching for calendar year 2008. Deliverables includes (1) excel spreadsheet (or other agreed to digital format) of fish catch, habitat type, environmental, and individual fish (e.g., size, weight, marks) data and (2) completed RCO forms documenting match for donated labor, supplies, and equipment as appropriate.

Task 6

Continue genotyping. Deliverable is a brief progress report explaining the spatial and temporal stratification used for mixture analysis and any update in the origin composition of juvenile Chinook by spatial and temporal strata (preliminarily shown in Figure 1 and Table 1).

Task 7

Complete genotyping and report genetic analysis of mixture samples. Deliverable is a final report explaining the spatial and temporal stratification used for mixture analysis and the origin composition of juvenile Chinook by spatial and temporal strata (preliminarily shown in Figure 1 and Table 1).

Task 8

Preparation of final report and manuscripts for publication, if applicable. Provide written documentation of matching for calendar year 2009. Work with SRSC and Island County TAG to update WRIA 6 salmon recovery plan and prioritization process per results of this project. Deliverables include: (1) a final report, jointly authored by SRSC and NWFSC, describing spatial/temporal/habitat type patterns of juvenile salmon (including the origin of juvenile Chinook salmon) using WRIA 6 nearshore, (2) manuscripts for publication (if applicable), (3) one presentation to each of the WRIA 6 salmon recovery technical and policy/citizen groups, and (4) completed RCO forms documenting match for donated labor, supplies, and equipment as appropriate.

Timeline

Task 1: August - December 2008
Task 2: August - October 2008
Task 3: August - October 2008
Task 4: October - December 2008
Task 5: December 2008
Task 6: January - April 2009
Task 7: April - September 2009
Task 8: October- December 2009

Table 1. Draft table of sampling bins for juvenile Chinook origin study in WRIA 6 and the likelihood of obtaining enough tissue for 50 fish mixture samples.

Region	Offshore (from townet)		Shoreline (from beach seine)	
	Early timing (Feb-Apr)	Normal timing (May-Oct)	Early timing (Feb-Apr)	Normal timing (May-Sept)
1	Not likely	Likely	Not likely	Likely
2	Not likely	Likely	Not likely	Likely
3	Not likely	Likely	Not likely	Likely
4	Not likely	Likely	Not likely	Likely
5	Not likely	Likely	Not likely	Likely
6	Not likely	Likely	Not likely	Likely
7	Not likely	Likely	Not likely	Likely
8	Not likely	Likely	Not likely	Likely
9	Not likely	Likely	Likely	Likely
10	Not likely	Likely	Likely	Likely
11	Not likely	Likely	Likely	Likely

The WRIA 6 project will likely catch sufficient numbers of juvenile Chinook to make 30 mixture samples (requires 1,500 vials); the project could possibly catch sufficient numbers of juvenile Chinook to make 44 mixture samples (requires 2,200 vials).

- NOAA (Fresh) – 1,000 vials (all offshore sampling, overseeing region 4 shoreline sampling)
- SRSC (Henderson) – 500 vials (overseeing shoreline sampling for regions 7 – 11)
- Contractor (WFC, Micah) – 300 vials (overseeing shoreline sampling for regions 1 – 4)
- Contractor (Stillaguamish Indian Tribe, Jason) – 200 vials (overseeing shoreline sampling for regions 5 – 6)

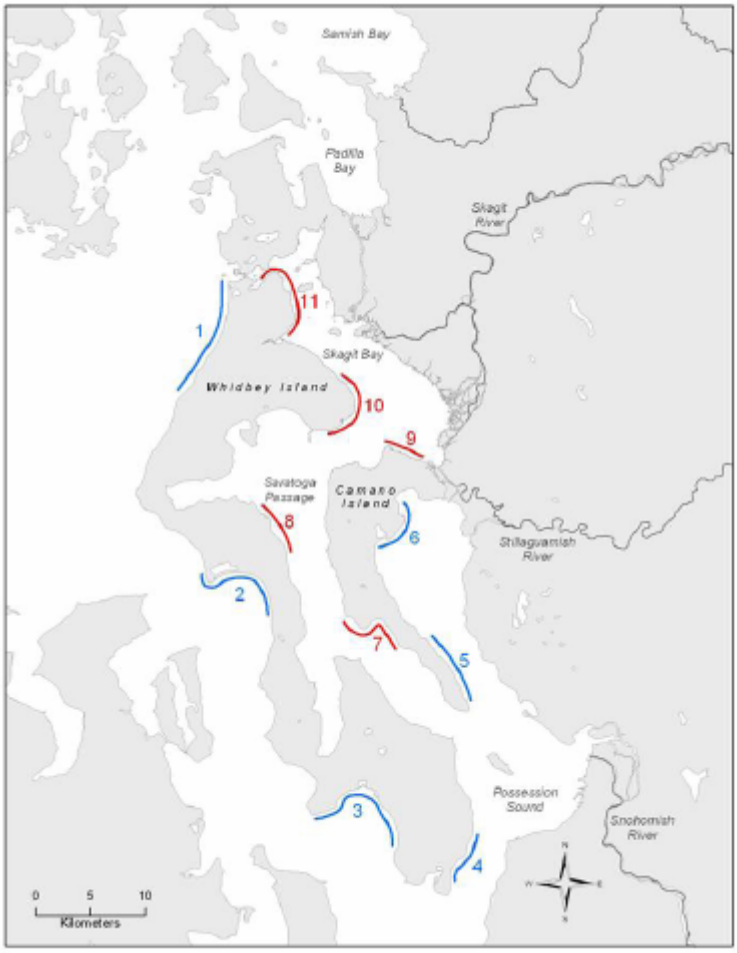

Figure 1. Approximate location of 11 regions for collecting juvenile Chinook tissue samples.

STUDY 2

The following tasks are the scope of work for study 2, entitled "WRIA2 Habitat Based Assessment of Juvenile Salmon" (Project 07-1863N). Details of methods and analysis are described in Attachment 2. Time periods are estimated for each task.

Task 1

Assist SRSC with the development and refinement of the sampling design.

Task 2

Conduct 2008 fish sampling and collect juvenile Chinook salmon tissue samples per Table 2 and Figure 2. Co-manage townet contractor. Oversee region 4 shoreline sampling. Collection of fish tissue samples will be dependent upon fish availability, weather, and other issues (e.g., vessel availability). Deliverable is a brief progress report summarizing this effort and inclusion of all datasheet copies for fish catch, site, environment, and tissue samples.

Task 3

Subtask a. Conduct and report results of genetic power analysis using currently available juvenile Chinook tissue data. The deliverable is a progress report for this task explaining the statistical limits of detecting (a) major basins (e.g., Whidbey Basin v. Hood Canal), (b) river of origin (e.g., Skagit v. Nooksack), (c) stock/population (e.g., Suiattle Springs v NF Nooksack Springs) with various sized mixture samples (e.g., 50 fish, 100 fish). The final set of samples selected for mixture analysis will be determined by Eric Beamer and NWFSC collaborators based on the results of the power analysis (i.e., task 3 deliverable) and tissues samples available.

Subtask b. Conduct and report initial genotyping of mixture samples. Deliverable is a brief progress report explaining the spatial and temporal stratification used for mixture analysis and the origin composition of juvenile Chinook by spatial and temporal strata (preliminarily shown in Figure 2 and Table 2).

Task 4

Complete entry of all offshore fish catch, habitat type, environmental, and individual fish (e.g., size, weight, marks) data into database collected in 2008. Provide documentation of matching for calendar year 2008. Deliverables includes (1) excel spreadsheet (or other agreed to digital format) of fish catch, habitat type, environmental, and individual fish (e.g., size, weight, marks) data and (2) completed RCO forms documenting match for donated labor, supplies, and equipment as appropriate.

Task 5

Subtask 5a. Conduct 2009 fish sampling and collect juvenile Chinook salmon tissue samples per Table 2 and Figure 2. Co-manage townet contractor. Oversee region 4 shoreline sampling. Collection of fish tissue samples will be dependent upon fish availability, weather, and other issues (e.g., vessel availability). Deliverable is a brief progress report summarizing the fish sampling effort and inclusion of all datasheet copies for fish catch, site, environment, and tissue samples.

Subtask 5b. Continue genotyping of mixture samples. Deliverable is a brief progress report explaining the spatial and temporal stratification used for mixture analysis and the origin composition of juvenile Chinook by spatial and temporal strata (preliminarily shown in Figure 2 and Table 2).

Task 6

Complete entry of all 2009 offshore fish catch, habitat type, environmental, and individual fish (e.g., size, weight, marks) data into database. Provide documentation of matching for calendar year 2009. Deliverables includes (1) excel spreadsheet (or other agreed to digital format) of fish catch, habitat type, environmental, and individual fish (e.g., size, weight, marks) data and (2) completed RCO forms documenting match for donated labor, supplies, and equipment as appropriate.

Task 7

Complete genotyping and report genetic analysis of mixture samples. Integrate fish sampling and habitat data. Deliverables include: (1) a final report explaining the spatial and temporal stratification used for mixture analysis and the origin composition of juvenile Chinook by spatial and temporal strata (preliminarily shown in Figure 2 and Table 2), and (2) providing assistance to the SRSC in preparing a progress report summarizing the fish sampling effort by habitat types compared to habitat types available in all of WRIA 2.

Task 8

During calendar year 2010, prepare final report and manuscripts for publication. Provide written documentation of matching for calendar year 2010. Work with SRSC and San Juan Island County TAG to update WRIA 2 salmon recovery plan and prioritization process per results of this project Deliverables include: (1) a final report, jointly authored by SRSC and NWFSC, describing spatial/temporal/habitat type patterns of juvenile salmon (including the origin of juvenile Chinook salmon) using WRIA 2 nearshore, (2) manuscripts for publication (if applicable), (3) one presentation to each of the WRIA 2 salmon recovery technical and policy/citizen groups, and (4) completed RCO forms documenting match for donated labor, supplies, and equipment as appropriate.

Timeline

Task 1: August - December 2008
Task 2: August - October 2008
Task 3: August - November 2008
Task 4: December 2008
Task 5: March - November 2009
Task 6: December 2009
Task 7: January - September 2010
Task 8: September- December 2010

Table 2. Draft table of sampling bins for juvenile Chinook origin study in WRIA 2 and the likelihood of obtaining enough tissue for 50 fish mixture samples.

Region	Offshore (from townet)		Shoreline (from beach seine)	
	Early timing (March-May)	Normal timing (June-Oct)	Early timing (March-May)	Normal timing (June-Sept)
1	Not likely	Likely	Possible	Likely
2	Not likely	Likely	Possible	Likely
3	Not likely	Likely	Possible	Likely
4	Not likely	Likely	Possible	Likely
5	Not likely	Likely	Possible	Likely
6	Not likely	Likely	Possible	Likely
7	Not likely	Likely	Possible	Likely
8	Not likely	Likely	Possible	Likely
9	Not likely	Likely	Possible	Likely
10	Not likely	Likely	Possible	Likely
11	Not likely	Likely	Possible	Likely

The WRIA 2 project will likely catch sufficient numbers of juvenile Chinook to make 33 mixture samples (requires 1,650 vials); the project could possibly catch sufficient numbers of juvenile Chinook to make 44 mixture samples (requires 2,200 vials).

We should plan to collect more juvenile Chinook tissue samples than the minimum 50 fish mixture sample so maybe we should plan on distributing 2,000 vials in the following way:

- NOAA (Fresh,) – 1,000 vials (all offshore sampling, overseeing region 4 shoreline sampling)
- SRSC (Henderson) – 100 vials (overseeing region 1 shoreline sampling)
- Contractor (Tina WE) – 900 vials (overseeing all shoreline sampling except for regions 1 and 4)

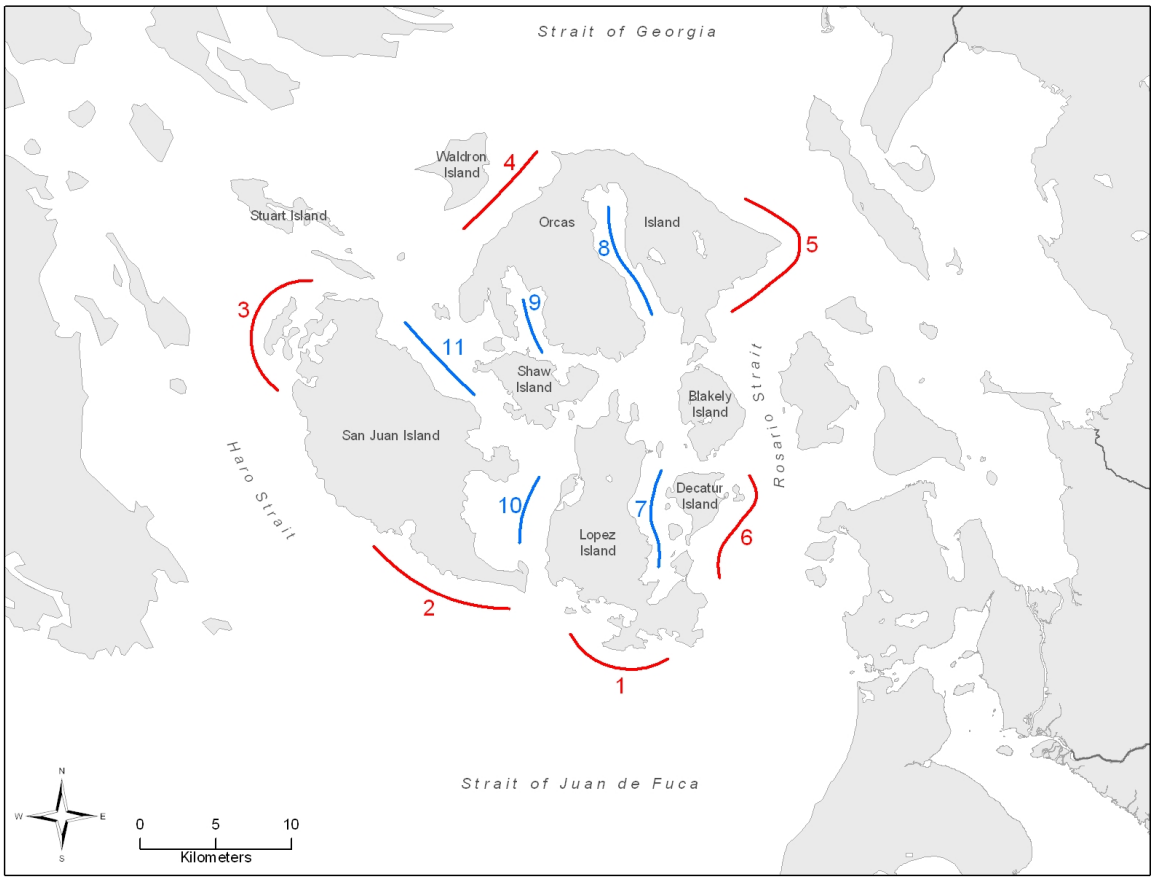

Figure 2. Location of 11 sampling areas in WRIA 2. Approximate locations of each of the 11 strata are shown with solid red or blue lines. Red lines (strata 1 – 6) represent strata located in "exterior" waters of WRIA 2. Blue lines (strata 7 – 11) represent "interior" waters of WRIA 2.

REPORTING PROCEDURES

Reports of the progress of each task described under this memorandum of agreement (see above) will be provided by NWFSC to SRSC by the last working day of each year under this agreement.

NWFSC will provide SRSC at their request a concise written description of any special techniques or procedures used that would affect the interpretation of the results of this study.

AGENCY REPRESENTATIVES

NWFSC designates Kurt Fresh ((206) 860-6793, kurt.fresh@noaa.gov)as its project representative. SRSC designates Eric Beamer (360-466-7241, ebeamer@skagitcoop.org) as its project representative. All invoices from NWFSC to SRSC should be sent c/o Jeff Meyer, SRSC, P.O. Box 368, La Conner, WA 98257 (360-466-1092, jmeyer@skagitcoop.org). Either party retains the right to change the designated project representative upon 30 days written notice. NWFSC's administrative representative will be Doug Dey, Division Coordinator, Fish Ecology Division, Northwest Fisheries Science Center, 2725 Montlake Blvd. East, Seattle, WA 98112.

PAYMENT

SRSC shall pay NWFSC $312,179 over a three year period with three annual payments for work prior to costs incurred to NWFSC. Annual payment to NWFSC has been enabled through a waiver of cost reimbursement requirements for the two Salmon Recovery Funding Board Grants (Contract numbers 07-1589N & 07-1863N) which the scope of work described herein is accomplishing.

SRSC will remit to NWFSC the amount of $122,526 immediately upon execution of this memorandum of agreement by both parties for work to be conducted by NWFSC in calendar year 2008. SRSC will remit to NWFSC the amount of $156,264 on January 15, 2009 for work to be conducted by NWFSC in calendar year 2009. SRSC will remit to NWFSC the amount of $33,389 on January 15, 2009 for work to be conducted by NWFSC in calendar year 2010.

NWFSC agrees that SRSC or any duly authorized representative(s) (by writing) shall, until the expiration of 5 years after the final payment, have access to and the right to examine any directly pertinent books, documents, papers and report of NWFSC relating to this Agreement, to the extent permitted by law.

Any funds not used by NWFSC in year 2008 that are provided by SRSC will be returned within 60 days of the last working day of 2008. Any funds not used by NWFSC in year 2009 that are provided by SRSC will be returned within 60 days of the last working day of 2009. Any funds not used by NWFSC in year 2010 that are provided by SRSC will be returned within 60 days of the last working day of 2010.

CHANGES

Either agency may at any time, by written order, make changes upon mutual written agreement.

EXTRAS

Except as otherwise provided in this Agreement, no payment for extra work shall be made unless such extra work and the price therefore have been authorized in advance, in writing, by mutual agreement.

CONFIDENTIALITY

NWFSC, to the extent not precluded by law, shall instruct its employees to hold and maintain as confidential all information concerning the business of SRSC, its financial affairs, its relations with its clientele and its employees, as well as any other information which may be specifically classified as confidential by SRSC in writing to NWFSC in the same manner as SRSC shall hold and maintain all information which NWFSC regards as confidential, PROVIDED, HOWEVER, that the foregoing shall not apply to:

a. Information which SRSC has released in writing from being maintained in confidence; and

b. Information which at the time of disclosure is in the public domain by having been printed and published and available to the public in libraries or other public places where such data is usually collected.

OTHER

The juvenile Chinook tissue samples shall be the property of NWFSC. Fish catch data from sampling that is overseen by NWFSC shall be made available to the SRSC and other interested parties as appropriate in both electronic and hard copy formats.

All publications referencing knowledge, data and or results collected as part of this Agreement must acknowledge this program is afforded by funds provided through SRSC. NWFSC shall bear no responsibilities or liabilities should SRSC make any use whatsoever of these documents beyond the purpose provided for.

RESOLUTION OF DISAGREEMENTS

Should disagreement arise on the interpretation of the provisions of this agreement, or amendments and/or revisions thereto, that cannot be resolved at the operating level, the area(s) of disagreement shall be stated in writing by each party and presented to the other party for consideration. If agreement on interpretation is not reached within 30 days, the parties shall forward the written presentation of the disagreement to respective higher officials for appropriate resolution.

DURATION OF AGREEMENT, AMENDMENTS, AND MODIFICATIONS

This agreement will become effective August 1, 2008. The agreement will terminate on December 31, 2011, but may be amended at any time by mutual consent of the parties. Any party may terminate this agreement by providing 30 days written notice to the other party.

ENTIRE AGREEMENT

This document contains the entire Agreement between the parties, and no statement, promise, inducement or agreement made by NWFSC or its agents or employees that is not contained in the written Agreement shall be valid or binding. No alteration of modification of any of the terms or conditions of this Agreement will be effective if not in writing and signed by NWFSC and the SRSC Tribes.

NORTHWEST FISHERIES SCIENCE CENTER	SRSC
BY:_____	BY:_____
James W. Balsiger, Ph.D.	Todd Wilbur
TITLE: Assistant Administrator for Fisheries	TITLE: Chairman
DATE:_____	DATE:_____