HATCHERY AND GENETIC MANAGEMENT PLAN (HGMP)

Hatchery Program:	North Toutle Spring Chinook Program
Species or Hatchery Stock:	Chinook (*Onchorynchus tshawytscha*) Cowlitz River
Agency/Operator:	Washington Department of Fish and Wildlife
Watershed and Region:	Toutle River (trib to Cowlitz River) Lower Columbia River
Date Submitted:	July 18, 2001
Date Last Updated:	July 13, 2001

SECTION 1. GENERAL PROGRAM DESCRIPTION

1.1) Name of hatchery or program.

North Toutle Spring Chinook Program

1.2) Species and population (or stock) under propagation, and ESA status.

Cowlitz River Spring Chinook (*Onchorynchus tshawytscha*)

1.3) Responsible organization and individuals

Name (and title):	Chuck Johnson, Region 5 Operations Manager Mark Johnson, Complex Manager	
Agency or Tribe:	Washington Department of Fish and Wildlife	
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Other agencies, Tribes, co-operators, or organizations involved, including contractors, and extent of involvement in the program:

The Cowlitz Salmon Hatchery, owned, funded and maintained by Tacoma Public Utilities (TPU), does the brood collection, spawning, incubating and rearing of this stock to approxiamately 9 fish per pound (fpp). Then they are transported to the N. Toutle Hatchery.

1.4) Funding source, staffing level, and annual hatchery program operational costs.

The N. Toutle Hatchery is federally funded by Mitchell Act funds via the National Marine Fisheries Service (NMFS) and operated by WDFW. This facility is manned by 1 FHS 4, 1 FHS3 and 2 FHS 2's.

1.5) Location(s) of hatchery and associated facilities.

North Toutle Hatchery:	Located on the Green River (26.0323), a tributary to the Toutle River (26.0227) at RM 0.5. The Toutle River is a tributary to the Cowlitz River (26.0002).
Cowlitz Salmon Hatchery:	Located on the Cowlitz River (26.0002) at RM 49.

1.6) Type of program.

Integrated harvest

1.7) Purpose (Goal) of program.

Augmentation.

To expand and enhance a successful sport fishery on the Cowlitz River, North Toutle and Green Rivers.

1.8) Justification for the program.

The program will be operated to provide fish for harvest while minimizing adverse effects on listed fish (integrated or isolated harvest programs) by:

1. Hatchery fish being released as smolts at a time to minimize or eliminate adverse interactions with listed stocks.

2. Hatchery fish being externally marked to distinguish them from wild fish.

3. Hatchery fish being acclimated before release when possible.

4. Hatchery fish being propagated using appropriate fish culture methods and consistent with the Co-Manager's Disease Policy and state and federal water quality standards.

5. These hatchery fish being harvested at a rate that does not adversely effect wild fish. -selective harvest regulations-

6. Juvenile fish produced in excess to production goals not being released in anadromous waters.

1.9) List of program "Performance Standards".

1.10) List of program "Performance Indicators", designated by "benefits" and "risks."

Performance Standards and Indicators for lower Columbia River **Integrated Harvest** Chinook programs.

Performance Standard	Performance Indicator	Monitoring and Evaluation Plan

Produce adult fish for harvest	Survival and contribution rates	Monitor catch and measuring survivals by periodical CWT data.
Meet hatchery production goals	Number of juvenile fish released	Estimating number of fish planted (weighing / counting fish), monitoring proximity to hatchery production goals, number released recorded on hatchery divisions "plant reports", data available on WDFW data base. Future Brood Document (FBD).
Manage for adequate escapement	Hatchery and wild return rates Catch rates	Monitoring hatchery/wild return rates through trapping (at the hatchery or at weir), spawning ground surveys plus catch records.

Minimize interactions with listed fish through proper broodstock management	Total number of broodstock collected	Measuring number of fish actually spawned and killed to meet egg take goal at the hatchery. Hatchery records.
	Sex ratios	Hatchery records
	Timing of adult collection	Start trapping prior to historical start of the run, continue trapping throughout the run, dates and times are recorded on hatchery divisions "adult reports", data available on WDFW data base.
	Number of listed fish passed upstream	
	Hatchery stray rate	Hatchery records. CWT data and spawning ground surveys
	Number wild fish used in broodstock	Hatchery records
	Return timing of hatchery / wild adults	Hatchery records
	Adherence to spawning guidelines	Spawning guidelines

Minimize interactions with listed fish through proper rearing and release strategies	Juveniles released as smolts	FBD and hatchery records
	Outmigration timing of listed fish / hatchery fish	Hatchery records and historical natural out-migrant data
	Size, time and area of release	FBD and hatchery records
	Hatchery stray rates	CWT data and mark / unmarked ratios of adults
Maintain stock integrity and genetic diversity	Effective population size	
	Hatchery-Origin Recruit spawners	Spawner surveys
Maximize in-hatchery survival of broodstock and their progeny; and Limit the impact of pathogens associated with hatchery stocks, on listed fish	Fish pathologists will monitor the health of hatchery stocks on a monthly basis and recommend preventative actions / strategies to maintain fish health	Co-Managers Disease Policy Fish Health Exam Reports
	Fish pathologists will diagnose fish health problems and minimize their impact	
	Vaccines will be administered when appropriate to protect fish health	
	A fish health database will be maintained to identify trends in fish health and disease and implement fish health management plans based on findings	

	Fish health staff will present workshops on fish health issues to provide continuing education to hatchery staff.	
Ensure hatchery operations comply with state and federal water quality standards through proper environmental monitoring	NPDES compliance	Monthly NPDES records

1.11) Expected size of program.

1.11.1) Proposed annual broodstock collection level (maximum number of adult fish).

No broodstock collected at this facility.

1.11.2) Proposed annual fish release levels (maximum number) by life stage and location.

Life Stage	Release Location	Annual Release Level
Eyed Eggs		
Unfed Fry		
Fry		
Fingerling		
Yearling	N. Toutle Hatchery on Green River at RM 0.5 (26.0323)	110,000

1.12) Current program performance, including estimated smolt-to-adult survival rates, adult production levels, and escapement levels. Indicate the source of these data.

1.13) Date program started (years in operation), or is expected to start.

1.14) Expected duration of program.

Ongoing.

1.15) Watersheds targeted by program.

Cowlitz River (26.0002)
-Toutle River (26.0227)
-Green River (26.0323)

1.16) Indicate alternative actions considered for attaining program goals, and reasons why those actions are not being proposed.

Goals of program are attained if eggs/fish are available from the Cowlitz Hatchery.

SECTION 2. PROGRAM EFFECTS ON ESA-LISTED SALMONID POPULATIONS.

2.1) List all ESA permits or authorizations in hand for the hatchery program.

None.

2.2) Provide descriptions, status, and projected take actions and levels for ESA-listed natural populations in the target area.

2.2.1) Description of ESA-listed salmonid population(s) affected by the program.

The ESA-listed populations in the basin that may be affected by the program are fall chinook, winter steelhead, and possibly chum. Spring chinook juveniles are released from the hatchery as yearling and are ready to out-migrate as soon as they are released. They return to the basin in April through early June and spawn in late August and early September.

- Identify the ESA-listed population(s) that will be directly affected by the program.

- Identify the ESA-listed population(s) that may be incidentally affected by the program.

Lower Columbia Chinook, Steelhead and Chum, Mid Columbia Steelhead, Upper Columbia Steelhead and Spring Chinook, Snake River Sockeye, Chinook and Steelhead, Upper Willamette Steelhead and Chinook, Columbia River Bull Trout.

2.2.2) Status of ESA-listed salmonid population(s) affected by the program.

- Describe the status of the listed natural population(s) relative to "critical" and "viable" population thresholds (*see definitions in "Attachment 1").*

Critical and viable population thresholds have not been established for the above ESU's and the populations within them. NMFS has formed a Lower Columbia River/Willamette River Technical Review Team to review population status within these ESU's and

develop critical and viable population thresholds.

The SASSI report (WDFW) describes the status of spring chinook in the Cowlitz River as "healthy".

- Provide the most recent 12 year (e.g. 1988-present) progeny-to-parent ratios, survival data by life-stage, or other measures of productivity for the listed population. Indicate the source of these data.

This data is not available. When the data becomes available, it will be provided.

- Provide the most recent 12 year (e.g. 1988-1999) annual spawning abundance estimates, or any other abundance information. Indicate the source of these data.

Cowlitz River spring chinook natural spawning escapement:

Year	Abundance estimate
1988	172
1989	563
1990	278
1991	149
1992	266
1993	214
1994	159
1995	282
1996	34
1997	437
1998	262
1999	235

Also, for abundance estimates see tables 3 through 6 in the Lower Columbia River Fisheries Management and Evaluation Plan (FMEP).

- Provide the most recent 12 year (e.g. 1988-1999) estimates of annual proportions of direct hatchery-origin and listed natural-origin fish on natural spawning grounds, if known.

To date, coded-wire tags from Cowlitz hatchery-origin spring chinook have been recovered on the spawning grounds. However, estimates of annual proportions of direct hatchery-origin and listed natural-origin fish on the spawning grounds have not been made. This is planned to be done in the future.

2.2.3) Describe hatchery activities, including associated monitoring and evaluation and research programs, that may lead to the take of listed fish in the target area, and provide estimated annual levels of take *(see "Attachment 1" for definition of*

"take").

- Describe hatchery activities that may lead to the take of listed salmonid populations in the target area, including how, where, and when the takes may occur, the risk potential for their occurrence, and the likely effects of the take.

- Provide information regarding past takes associated with the hatchery program, (if known) including numbers taken, and observed injury or mortality levels for listed fish.

Unknown

- Provide projected annual take levels for listed fish by life stage (juvenile and adult) quantified (to the extent feasible) by the type of take resulting from the hatchery program (e.g. capture, handling, tagging, injury, or lethal take).

See "take" tables at end of document.

- Indicate contingency plans for addressing situations where take levels within a given year have exceeded, or are projected to exceed, take levels described in this plan for the program.

Take was modeled as a "worst case" scenario and we do not expect to exceed these levels. However, should this happen, NMFS would be consulted immediately.

SECTION 3. RELATIONSHIP OF PROGRAM TO OTHER MANAGEMENT OBJECTIVES

3.1) Describe alignment of the hatchery program with any ESU-wide hatchery plan (e.g. *Hood Canal Summer Chum Conservation Initiative*) or other regionally accepted policies (e.g. the NPPC *Annual Production Review* Report and Recommendations - NPPC document 99-15). Explain any proposed deviations from the plan or policies.

The integration of hatchery and harvest programs can be found in the WDFW's Lower Columbia River FMEP , where selective fisheries for hatchery salmon and steelhead are consistent, with wild salmon and steelhead recovery.

3.2) List all existing cooperative agreements, memoranda of understanding, memoranda of agreement, or other management plans or court orders under which program operates.

The program is authorized under the Columbia River Fisheries Development Program, Columbia River Fish Management Plan and U.S. vs. Oregon.

3.3) Relationship to harvest objectives.

Harvest of salmon and steelhead in the Lower Columbia Management Area is managed to meet wild salmon and steelhead escapement objectives and to meet the objectives of artificial propagation programs. To manage harvest to meet these goals, WDFW has developed escapement objectives for all hatchery populations, and some wild populations; interim maximum harvest rates have been established for the remaining wild stocks. Fishing seasons are then established based on a forecast of salmon and steelhead returning to the LCMA. In years where run size to the tributaries is forecast to be below escapement requirements, harvest in tributaries is eliminated, or reduced to limited mortality from wild salmon or steelhead release. Harvest reductions are accomplished by time and area closures, gear restrictions, or changes in the daily catch limits. When forecasts are not made, conservative harvest rates are established. These rates are less than the estimated maximum sustainable yield (MSY) harvest rates under low ocean productivity or Recovery Exploitation Rates established by the National Marine Fisheries Service (NMFS). To the extent possible, WDFW uses selective fisheries to maximize harvest rates on hatchery stocks while setting wild stock harvest rates consistent with wild stock protection and/or rebuilding. Artificial propagation programs within the LCMA have three purposes: 1) rebuild wild populations that are at risk and/or re-establish wild populations that have been extirpated, 2) determine the benefits and risks of artificial propagation programs have on wild populations through research and develop strategies that maximize benefits and minimize risks, and 3) provide for harvest opportunity.

3.3.1) Describe fisheries benefitting from the program, and indicate harvest levels and rates for program-origin fish for the last twelve years (1988-99), if available.

Benefitting from this program are the ocean commercial, sport and tribal fisheries as well as the Cowlitz and lower Columbia River sport and commercial in-river fisheries (fisheries in-river begin in February and peak from mid-April through mid-June).

The maximum harvest rate for spring chinook in the Cowlitz River from 1980 to 1999 was 34% (mainstem Columbia River commercial and sport fisheries rate has been at or below 2% annually since 1995). This rate will be used as maximum interception rate once selective fisheries begin in 2001 (mass marking of spring chinook began at Cowlitz in 1997). However, due to recent poor hatchery returns and the implementation of selective fisheries (2001) this interception rate is expected to be 10% or less.

3.4) Relationship to habitat protection and recovery strategies.

The 1980 eruption of Mount St. Helens severely impacted salmonid populations and their habitat. Yet, most stream systems are naturally recovering from the disturbance. The North Fork Toutle is one exception were recovery has lagged behind. TAG members attributed the slow recovery to the Sediment Retention Structure (SRS) that has altered natural recovery processes.

A number of habitat constraints still limit production within the subbasin including; limited floodplain, off-channel, and pool habitat, high width-to-depth ratios and poor riparian conditions that contribute to elevated stream temperatures, lack of instream cover

and LWD, and unstable substrate conditions. Hydrologic immaturity and high road densities within the subbasin contribute to increased peak flows and additional channel instability. High road densities and numerous stream adjacent roads also contribute excessive amounts of fine sediment to stream channels.

Recommendations for addressing limiting factors in the Toutle River Subbasin:

- Removal or alteration of the SRS would facilitate natural recovery of the North Fork Toutle and downstream systems.
- Water quantity and water quality problems within the Silver Lake watershed need to be addressed.
- Reduce road densities and the miles of stream adjacent roads within the subbasin, and assess the condition of abandoned roads in the upper Toutle subbasin.
- Replant degraded riparian areas with native conifers.
- Look for opportunities to enhance or restore off-channel rearing habitat.

3.5) Ecological interactions.

Spring chinook smolts are released from the hatchery as yearlings and are ready to out-migrate as soon as they are released. Interactions with juveniles of listed species would be limited to incounters during the spring chinook outmigration. This may occur to some extent before the young of the year of fall chinook, winter steelhead, and chum have all emerged from the gravel. Spring chinook adults begin entering the basin in April and finish spawning in September. Winter steelhead are spawning during part of this timeframe (March - June), but the spring chinook should have no effect on the spawning behavior of winter steelhead. Fall chinook adults will be in the basin before the spring chinook have all spawned, but they will not spawn until the spring chinook have finished, so there will be no effect on the fall chinook.

SECTION 4. WATER SOURCE

4.1) Provide a quantitative and narrative description of the water source (spring, well, surface), water quality profile, and natural limitations to production attributable to the water source.

The hatchery is supplied by surface river water via a gravity intake. It supplies the hatchery with 3,000 gallons per minute (gpm) of which 900 gpm flows to Beaver Slough Pond 28 for rearing needs.

4.2) Indicate risk aversion measures that will be applied to minimize the likelihood for the take of listed natural fish as a result of hatchery water withdrawal, screening, or effluent discharge.

The North Toutle Hatchery intake does conform with NMFS screening guidelines to minimize the risk of entrainment of listed juvenile fish. The hatcheries waste discharge conforms to NPDES criteria and guidelines.

SECTION 5. FACILITIES

5.1) Broodstock collection facilities (or methods).

NA (broodstock/eggs collected at Cowlitz Salmon Hatchery when available).

5.2) Fish transportation equipment (description of pen, tank truck, or container used).

The juveniles are transported by tank trucks of various sizes.

5.3) Broodstock holding and spawning facilities.

NA

5.4) Incubation facilities

NA

5.5) Rearing facilities.

These fish are reared and acclimated in Beaver Slough Pond 28. This is a 1/4 acre earthen pond which is supplied with 900 gpm of river water. This pond is covered with a bird to reduce bird predation.

5.6) Acclimation/release facilities.

See section 5.5 above.

5.7) Describe operational difficulties or disasters that led to significant fish mortality.

To date no significant fish mortality has occurred.

5.8) Indicate available back-up systems, and risk aversion measures that will be applied, that minimize the likelihood for the take of listed natural fish that may result from equipment failure, water loss, flooding, disease transmission, or other events that could lead to injury or mortality.

The intake and pond 28 are both equipped with a low water alarm system to prevent a fish loss due to loss of water from plugged screens or water line failure.

SECTION 6. BROODSTOCK ORIGIN AND IDENTITY

Describe the origin and identity of broodstock used in the program, its ESA-listing status, annual collection goals, and relationship to wild fish of the same species/population.

6.1) Source.

Fish returning to the Cowlitz Salmon Hatchery trap.

6.2) Supporting information.

6.2.1) History.

Cowlitz River spring chinook have been collected for brood stock at Cowlitz Salmon Hatchery since 1967.

6.2.2) Annual size.

29 females and 29 males are needed to accomplish this program.

6.2.3) Past and proposed level of natural fish in broodstock.

Not known.

6.2.4) Genetic or ecological differences.

None known.

6.2.5) Reasons for choosing.

Indigenous stock.

6.3) Indicate risk aversion measures that will be applied to minimize the likelihood for adverse genetic or ecological effects to listed natural fish that may occur as a result of broodstock selection practices.

NA

SECTION 7. BROODSTOCK COLLECTION

7.1) Life-history stage to be collected (adults, eggs, or juveniles).

Adults (at Cowlitz Salmon Hatchery)

7.2) Collection or sampling design.

NA

7.3) Identity.

As of the 1997 broodyear, all hatchery-origin spring chinook are marked. Either with an adipose-fin clip only or adipose-fin clip/coded-wire tag.

7.4) Proposed number to be collected:

7.4.1) Program goal (assuming 1:1 sex ratio for adults):

No broodstock collected at this facility.

7.4.2) Broodstock collection levels for the last twelve years (e.g. 1988-99), or for most recent years available:

Year	Adults				
	Females	Males	Jacks	Eggs	Juveniles
1988					
1989					
1990					
1991					
1992					
1993					
1994					
1995					
1996					
1997					
1998					
1999					

Data source: (Link to appended Excel spreadsheet using this structure. Include hyperlink to main database)

7.5) Disposition of hatchery-origin fish collected in surplus of broodstock needs.

NA

7.6) Fish transportation and holding methods.

Juvenile fish are transported by tanker trucks and are in transit for up to 1 1/2 hours

7.7) Describe fish health maintenance and sanitation procedures applied.

In the cases of increased fish mortality or pre-release certification, the Fish Health

Specilist is contacted. He or she will diagnose and may or may not recommend treatments for the increased mortality. For pre-release, he or she will certify or not the stock to be released for migration. This acclimation pond is isolated and has it's own water source and rearing equipment. This stock is monitored and mortality picked daily by hatchery staff.

7.8) Disposition of carcasses.

NA

7.9) Indicate risk aversion measures that will be applied to minimize the likelihood for adverse genetic or ecological effects to listed natural fish resulting from the broodstock collection program.

NA

SECTION 8. MATING

Describe fish mating procedures that will be used, including those applied to meet performance indicators identified previously.

8.1) Selection method.

NA

8.2) Males.

NA

8.3) Fertilization.

NA

8.4) Cryopreserved gametes.

NA

8.5) Indicate risk aversion measures that will be applied to minimize the likelihood for adverse genetic or ecological effects to listed natural fish resulting from the mating scheme.

NA

SECTION 9. INCUBATION AND REARING -

Specify any management *goals* (e.g. "egg to smolt survival") that the hatchery is currently operating under for the hatchery stock in the appropriate sections below. Provide data on the success of meeting the desired hatchery goals.

9.1) Incubation:

9.1.1) Number of eggs taken and survival rates to eye-up and/or ponding.

NA

9.1.2) Cause for, and disposition of surplus egg takes.

NA

9.1.3) Loading densities applied during incubation.

NA

9.1.4) Incubation conditions.

NA

9.1.5) Ponding.

NA

9.1.6) Fish health maintenance and monitoring.

NA

9.1.7) Indicate risk aversion measures that will be applied to minimize the likelihood for adverse genetic and ecological effects to listed fish during incubation.

NA

9.2) Rearing:

9.2.1) Provide survival rate data (*average program performance*) by hatchery life stage (fry to fingerling; fingerling to smolt) for the most recent twelve years (1988-99), or for years dependable data are available..

% survival from 10 fish per pound (fpp) yearlings to 7 fpp smolts:

Brood 1996: 99.33%
1997: 98.97%

9.2.2) Density and loading criteria (goals and actual levels).

Goals: Less than 10 lbs fish/gpm, less than 0.1 lbs fish/ft3 rearing volume.
Actual levels: 15 lbs/gpm, 0.05 lbs fish/ft3 rearing volume. Due to the low density index and the colder temperatures the spring chinook seem to do very well considering the high level of fish lbs./ gpm.

9.2.3) Fish rearing conditions

This stock is monitored and mortality picked daily by hatchery staff. Temperatures very from a low of 32 to a high of about 48 degrees Fahrenheit during acclimation.

9.2.4) Indicate biweekly or monthly fish growth information (*average program performance*), including length, weight, and condition factor data collected during rearing, if available.

	Nov.	Dec.	Jan.	Feb.
Length:	165.952	171.108	174.928	181.982
Weight:	9	8	7	7
Condition Factor:	1.128	1.091	1.187	1.140

9.2.5) Indicate monthly fish growth rate and energy reserve data (*average program performance*), if available.

Not available.

9.2.6) Indicate food type used, daily application schedule, feeding rate range (e.g. % B.W./day and lbs/gpm inflow), and estimates of total food conversion efficiency during rearing (*average program performance*).

Moore Clark New Age 3.5 mm feed is used and fed at 1.0 to 1.5 % B. W./day and fed 3 to 5 times per week depending on the water quality, temperature and fish size. An approximate food conversion is 2.2:1.

9.2.7) Fish health monitoring, disease treatment, and sanitation procedures.

In the cases of an increased fish mortality or pre-release certification, the Fish Health Specilist is contacted. He or she will diagnose and may or may not recommend treatments for the increased mortality. For pre-release, he or she will certify or not the stock to be released for migration

9.2.8) Smolt development indices (e.g. gill ATPase activity), if applicable.

NA

9.2.9) Indicate the use of "natural" rearing methods as applied in the program.

This stock is reared in a natural earthen pond and are 100% volitionally released for this pond.

9.2.10) Indicate risk aversion measures that will be applied to minimize the likelihood for adverse genetic and ecological effects to listed fish under propagation.

NA

SECTION 10. RELEASE

Describe fish release levels, and release practices applied through the hatchery program.

10.1) Proposed fish release levels.

	Maximum Number	Size (fpp)	Release Date	Location
Eggs				
Unfed Fry				
Fry				
Fingerling				
Yearling	110,000	7	March-May	Green River

10.2) Specific location(s) of proposed release(s).

Stream, river, or watercourse: Green River (26.0323)
Release point: RM 0.5
Major watershed: Toutle and Cowlitz River
Basin or Region: Lower Columbia River

10.3) Actual numbers and sizes of fish released by age class through the program.

Release year	Eggs/ Unfed Fry	Avg size	Fry	Avg size	Fingerling	Avg size	Yearling	Avg size
1988								
1989								
1990								
1991								
1992								
1993								
1994								
1995								
1996								

Release year	Eggs/ Unfed Fry	Avg size	Fry	Avg size	Fingerling	Avg size	Yearling	Avg size
1997					112,733	10		
1998					212,302	8		
1999					99,289	6		
Average					141,441	8		

Data source: (Link to appended Excel spreadsheet using this structure. Include hyperlink to main database)

10.4) Actual dates of release and description of release protocols.

This stock is 100% volitionally released starting March 1st or the first full staff working day. This long volitional release gives this stock time to voluntarily release and not reside in the Green River.

10.5) Fish transportation procedures, if applicable.

These fish are not transported off-station.

10.6) Acclimation procedures.

These fish are received in late October or November at 10 fish per pound (fpp) and are acclimated until volitional release in March at 7 fpp.

10.7) Marks applied, and proportions of the total hatchery population marked, to identify hatchery adults.

As of the 1997 brood year, all hatchery-origin spring chinook are marked. Either with an adipose-fin clip only or adipose-fin clip/coded-wire tag.

10.8) Disposition plans for fish identified at the time of release as surplus to programmed or approved levels.

We receive 110,000 fish for acclimation and 110,000 is our release goal. This is so we do not exceed the program release goal of 110,000 fish.

10.9) Fish health certification procedures applied pre-release.

The Fish Health Specialist will inspect and certify, or not, before the release of any fish stock.

10.10) Emergency release procedures in response to flooding or water system failure.

In a flooding emergency, the acclimation pond will be consumed by the flooding waters and some fish will swim away and some will still reside in the pond.

10.11) Indicate risk aversion measures that will be applied to minimize the likelihood for adverse genetic and ecological effects to listed fish resulting from fish releases.

SECTION 11. MONITORING AND EVALUATION OF PERFORMANCE INDICATORS

11.1) Monitoring and evaluation of "Performance Indicators" presented in Section 1.10.

11.1.1) Describe plans and methods proposed to collect data necessary to respond to each "Performance Indicator" identified for the program.

See section 1.10.

11.1.2) Indicate whether funding, staffing, and other support logistics are available or committed to allow implementation of the monitoring and evaluation program.

11.2) Indicate risk aversion measures that will be applied to minimize the likelihood for adverse genetic and ecological effects to listed fish resulting from monitoring and evaluation activities.

SECTION 12. RESEARCH

12.1) Objective or purpose.

12.2) Cooperating and funding agencies.

12.3) Principle investigator or project supervisor and staff.

12.4) Status of stock, particularly the group affected by project, if different than the stock(s) described in Section 2.

12.5) Techniques: include capture methods, drugs, samples collected, tags applied.

12.6) Dates or time period in which research activity occurs.

12.7) Care and maintenance of live fish or eggs, holding duration, transport methods.

12.8) Expected type and effects of take and potential for injury or mortality.

12.9) Level of take of listed fish: number or range of fish handled, injured, or killed by sex, age, or size, if not already indicated in Section 2 and the attached "take table" (Table 1).

12.10) Alternative methods to achieve project objectives.

12.11) List species similar or related to the threatened species; provide number and causes of mortality related to this research project.

12.12) Indicate risk aversion measures that will be applied to minimize the likelihood for adverse ecological effects, injury, or mortality to listed fish as a result of the proposed research activities.

SECTION 13. ATTACHMENTS AND CITATIONS

IHOT (Integrated Hatchery Operations Team). 1995. Operation plans for anadromous fish production facilities in the Columbia River basin. Volume III-Washington. Annual Report 1995. Bonneville Power Administration, Portland Or. Project Number 92-043. 536 pp.

Washington Department of Fisheries (WDF) and Washington Department of Wildlife (WDW). 1993. 1992 Washington State salmon and steelhead stock inventory - Appendix three Columbia River stocks. Washington Dept. Fish and Wildlife, 600 Capitol Way N, Olympia, WA. 98501-1091. 580 pp.

Washington Department of Fisheries (WDF), Washington Department of Wildlife (WDW), and Western Washington Treaty Indian Tribes (WWTIT). 1992. 1992 Washington State salmon and steelhead stock inventory (SASSI). Washington Dept. Fish and Wildlife, 600 Capitol Way N, Olympia, WA. 98501-1091 . 212 pp.

Washington Department of Fish and Wildlife and Western Washington Treaty Indian Tribes. 1998. Co-managers of Washington fish health policy. Fish Health Division, Hatcheries Program. Washington Dept. Fish and Wildlife, Olympia

SECTION 14. CERTIFICATION LANGUAGE AND SIGNATURE OF RESPONSIBLE PARTY

"I hereby certify that the foregoing information is complete, true and correct to the best of my knowledge and belief. I understand that the information provided in this HGMP is submitted for the purpose of receiving limits from take prohibitions specified under the Endangered Species Act of 1973 (16 U.S.C.1531-1543) and regulations promulgated thereafter for the proposed hatchery program, and that any false statement may subject me to the criminal penalties of 18 U.S.C. 1001, or penalties provided under the Endangered Species Act of 1973."

Name, Title, and Signature of Applicant:

Certified by_____ Date:_____

Table 1. Estimated listed salmonid take levels of by hatchery activity.

Listed species affected: Chinook ESU/Population: Lower Columbia Activity: Hatchery Rearing Operation				
Location of hatchery activity: N. Toutle Hatchery (Green R.) Dates of activity: October-May Hatchery program operator: WDFW				
Type of Take	**Annual Take of Listed Fish By Life Stage *(Number of Fish)***			
	Egg/Fry	Juvenile/Smolt	Adult	Carcass
Observe or harass a)				
Collect for transport b)				
Capture, handle, and release c)				
Capture, handle, tag/mark/tissue sample, and release d)				
Removal (e.g. broodstock) e)				
Intentional lethal take f)				
Unintentional lethal take g)	Unknown	Unknown		
Other Take (specify) h)				

a. Contact with listed fish through stream surveys, carcass and mark recovery projects, or migrational delay at weirs.
b. Take associated with weir or trapping operations where listed fish are captured and transported for release.
c. Take associated with weir or trapping operations where listed fish are captured, handled and released upstream or downstream.
d. Take occurring due to tagging and/or bio-sampling of fish collected through trapping operations prior to upstream or downstream release, or through carcass recovery programs.
e. Listed fish removed from the wild and collected for use as broodstock.
f. Intentional mortality of listed fish, usually as a result of spawning as broodstock.
g. Unintentional mortality of listed fish, including loss of fish during transport or holding prior to spawning or prior to release into the wild, or, for integrated programs, mortalities during incubation and rearing.
h. Other takes not identified above as a category.

Instructions:

1. An entry for a fish to be taken should be in the take category that describes the greatest impact.
2. Each take to be entered in the table should be in one take category only (there should not be more than one entry for the same sampling event).
3. If an individual fish is to be taken more than once on separate occasions, each take must be entered in the take table.

Table 1. Estimated listed salmonid take levels of by hatchery activity.

Listed species affected: Steelhead ESU/Population: Lower Columbia Activity: Hatchery Rearing Operation				
Location of hatchery activity: N. Toutle Hatchery (Green R.) Dates of activity: October-May Hatchery program operator: WDFW				
Type of Take	**Annual Take of Listed Fish By Life Stage *(Number of Fish)***			
	Egg/Fry	Juvenile/Smolt	Adult	Carcass
Observe or harass a)				
Collect for transport b)				
Capture, handle, and release c)				
Capture, handle, tag/mark/tissue sample, and release d)				
Removal (e.g. broodstock) e)				
Intentional lethal take f)				
Unintentional lethal take g)	Unknown	Unknown		
Other Take (specify) h)				

a. Contact with listed fish through stream surveys, carcass and mark recovery projects, or migrational delay at weirs.

b. Take associated with weir or trapping operations where listed fish are captured and transported for release.

c. Take associated with weir or trapping operations where listed fish are captured, handled and released upstream or downstream.

d. Take occurring due to tagging and/or bio-sampling of fish collected through trapping operations prior to upstream or downstream release, or through carcass recovery programs.

e. Listed fish removed from the wild and collected for use as broodstock.

f. Intentional mortality of listed fish, usually as a result of spawning as broodstock.

g. Unintentional mortality of listed fish, including loss of fish during transport or holding prior to spawning or prior to release into the wild, or, for integrated programs, mortalities during incubation and rearing.

h. Other takes not identified above as a category.

Instructions:

1. An entry for a fish to be taken should be in the take category that describes the greatest impact.

2. Each take to be entered in the table should be in one take category only (there should not be more than one entry for the same sampling event).

3. If an individual fish is to be taken more than once on separate occasions, each take must be entered in the take table.

Table 1. Estimated listed salmonid take levels of by hatchery activity.

Listed species affected: Chum ESU/Population: Columbia River Activity: Hatchery Rearing Operation				
Location of hatchery activity: N. Toutle Hatchery (Green R.) Dates of activity: October-May Hatchery program operator: WDFW				
Type of Take	**Annual Take of Listed Fish By Life Stage *(Number of Fish)***			
	Egg/Fry	Juvenile/Smolt	Adult	Carcass
Observe or harass a)				
Collect for transport b)				
Capture, handle, and release c)				
Capture, handle, tag/mark/tissue sample, and release d)				
Removal (e.g. broodstock) e)				
Intentional lethal take f)				
Unintentional lethal take g)		Unknown		
Other Take (specify) h)				

a. Contact with listed fish through stream surveys, carcass and mark recovery projects, or migrational delay at weirs.

b. Take associated with weir or trapping operations where listed fish are captured and transported for release.

c. Take associated with weir or trapping operations where listed fish are captured, handled and released upstream or downstream.

d. Take occurring due to tagging and/or bio-sampling of fish collected through trapping operations prior to upstream or downstream release, or through carcass recovery programs.

e. Listed fish removed from the wild and collected for use as broodstock.

f. Intentional mortality of listed fish, usually as a result of spawning as broodstock.

g. Unintentional mortality of listed fish, including loss of fish during transport or holding prior to spawning or prior to release into the wild, or, for integrated programs, mortalities during incubation and rearing.

h. Other takes not identified above as a category.

Instructions:

1. An entry for a fish to be taken should be in the take category that describes the greatest impact.

2. Each take to be entered in the table should be in one take category only (there should not be more than one entry for the same sampling event).

3. If an individual fish is to be taken more than once on separate occasions, each take must be entered in the take table.