

Supplemental
Management Entity Response to
Council Questions
Concerning
Preparation of Comments on
the
Mitchell Act Hatchery
DEIS

PFMC
11/3/10

**ALASKA DEPARTMENT OF FISH AND GAME RESPONSE TO PFMC QUESTIONS
ON MITCHELL ACT HATCHERY DRAFT ENVIRONMENTAL IMPACT
STATEMENT (DEIS)**

A September 23, 2010 memorandum from Executive Director Don McIsaac posed a number of questions to salmon management agencies and entities with regard to the NMFS “*Draft Environmental Impact Statement to Inform Columbia River Hatchery Operations and the Funding of Mitchell Act Hatchery Programs.*” The following are Alaska Department of Fish and Game responses to questions suggested for input from Alaska. Additional input will be provided through Alaska’s participation in the November Council meeting process:

1. *Have the population and fishery impacts methodologies used in the analysis been peer reviewed, and is there agreement with the States and Tribes that it represents the best available science? (WA, OR, ID, Tribes, AK, NMFS)*

Alaska does not have detailed knowledge regarding the level of peer review that the EIS fishery modeling detailed in Appendix K has undergone by other agencies. However, the modeling exercise is based upon standard and accepted algorithms that are components of the PSC Chinook Model and the PFMC FRAM Model, albeit in simplified form. Chinook stock groupings were manipulated; many stocks were aggregated to estimate the ocean fishery impacts using the PSC Chinook Model stock structure. These groupings were then disaggregated before estimating the fishery impacts within the Columbia River. Assuming that the stock group aggregations and disaggregations were done in a manner that was representative and consistent with the stock group representation in the PSC Chinook Model, this portion of the modeling of the fishery impacts seems appropriate.

Although the method employed could provide plausible estimates of the fishery impacts to the Columbia River stocks under different NEPA alternatives, there are several issues that are not adequately addressed in the analysis. First, the analysis is overly simplistic by assuming production from non-Columbia River stocks in the ocean is constant and totally independent from the Columbia River stocks. Second, the analysis simulates harvest rates in the ocean fisheries during the 1999 PST Agreement, which are higher than those currently allowed in the 2008 PST Agreement. Lastly, the analysis relies heavily on stock production parameters for Columbia River stocks that are not adequately explained in Appendix K. Also, model data sets have been created for virtually all Columbia River populations of Chinook and coho, whether they are entirely natural, entirely hatchery (segregated), or an integrated composite of natural and hatchery fish. The derivations of production parameters for each stock and the inherent assumptions behind them are never fully explained. This issue is vital regardless of the NEPA harvest alternative since one of the major factors that will determine the long term health of each of the stocks is its’ production potential. Does the AHA model take into account the interaction of the wild and hatchery fish as the level of hatchery production goes up or down? Will the production parameters of the *hatchery fish change as hatchery practices change? For example,*

will the introduction of more wild fish into the hatchery broodstock change the production parameters for the hatchery fish? The assumptions about the underlying productivity of the stocks are a major part of this analysis that deserves more scrutiny.

- 2. Are the mitigation requirements and responsibilities under the Mitchell Act adequately described in the DEIS? (WA, OR, ID, Tribes, AK)*

No. We do not find that the EIS adequately addresses the mitigation requirements and responsibilities within the Columbia River Basin. These requirements and responsibilities are not limited to the Mitchell Act, but also include a large number of other programs that are the subject of “policy direction” under the DEIS. The document should recognize the range of mitigation purposes of enhanced production and describe how actions / policies identified in the DEIS may impact the variety of mitigation requirements and responsibilities in both the short and long-term.

- 3. What are the other alternatives that meet the purpose and need of the proposed action that were not included in the DEIS? (USFWS, NMFS)*
- 4. Can hatchery reform concepts other than percent of hatchery origin spawners (PHOS) and percent of natural origin broodstock (PNOB), such as natural rearing strategies, be used to develop alternatives that meet the purpose and need of the DEIS but maintain more production than Alternatives 3-5? (Tribes, AK, OR, WA, ID)*

While reform of Columbia River basin hatcheries is widely considered to be a beneficial and desired action, focusing only on the genetics and intent to implement genetic standards as described in the draft Mitchell Act EIS is disappointing. The single minded focus on this technical issue and recommended application of the proposed genetic standards to all Columbia River basin hatcheries represents a failure by NMFS to address reform of Columbia River basin hatchery programs in a meaningful manner. Other technical issues (for example disease prevention and transmission, water quality and quantity) are completely ignored in the alternatives. There are a number of hatchery reforms that need to be evaluated and utilized in developing alternatives that meet the purpose and need while maintaining more production than those identified in the DEIS.

- 5. What fisheries are assumed in the analysis to be mark-selective, and at what point in time? (OR, WA, ID, Tribes, AK, NMFS)*

Appendix K provides some detail regarding the mark-selective fisheries (MSFs) that were incorporated into the EIS fishery models for coho and Chinook. It gives a more detailed description of the assumptions used in the MSFs for coho than for Chinook. It also states that the model incorporates “*MSF only for spring chinook fisheries in the Columbia River below*

Bonneville Dam.” Thus the modeling does not reflect recent expansion of MSF into ocean fisheries in 2010 or potential impacts that may result if the “policy direction” of significantly expanded MSFs were to be implemented. There is currently increasing concern over the mark rates experienced in MSFs. If hatchery production is reduced, the issues with observed mark rates and mortalities of wild stock release (potentially multiple releases in several fisheries) will be exacerbated.

6. *Were Native American tribes engaged in government to government consultations in development of the DEIS, including but not limited to the four Washington coastal treaty tribes and the four Columbia River treaty tribes? (Tribes)*
7. Are the impacts to all ocean fisheries in areas under management authority of the Pacific Council, the Pacific Salmon Commission, and the State of Alaska included in the analysis of each alternative in DEIS (harvest impacts to individual fishery strata, socioeconomic impacts, and the environmental justice analyses)? **(STT)**
 - If not, what is the list of fisheries not included and what is the relationship of Mitchell Act hatchery production to the stock composition of those fisheries? **(STT)**

As explained in the response to question 1 with the noted caveats, the approach taken appears to be a reasonable one for estimating the stock impacts that occur in the ocean fisheries. In other words, the model structure itself seems reasonable. However, the assumptions about the independence of the production from Columbia River and non-Columbia River stocks; the choice of ocean harvest rates derived from years under the 1999 PST Agreement instead of the 2008 PST Agreement; the estimated impacts from MSFs; and the AHA production parameters for Columbia River stocks could influence the model results for each of the NEPA harvest alternatives and should be investigated further.

8. *Are impacts in all Columbia River basin fisheries included in the DEIS, including tributary ceremonial and subsistence and recreational fisheries? (Tribes, OR, WA, ID)*
9. *Is production from all Columbia Basin hatcheries included in the analysis? (USFWS, OR, WA, ID, Tribes)*
10. *Is the methodology describing economic impacts complete and proper, including the use of consistent metrics? (SSC Economic and Salmon Subcommittees)*
11. *Were expected benefits to fisheries from increased wild production included in the economic analyses? (WA, OR, ID, Tribes, AK)*

No. The DEIS does not appear to include any substantive discussion of underlying assumptions with increased wild production in either the technical or economic analyses. The lack of focus on how recommended actions may actually benefit the wild salmon stocks of the Columbia River Basin or the users of these natural resources is a serious deficiency in the document.

12. *Were current fishery and hatchery management agreements used to estimate impacts (e.g., US v Oregon, Pacific Salmon Treaty Chinook Annex, US v Washington, Hoh v Baldrige, etc.)? (WA, OR, ID, Tribes, AK)*

The DEIS uses the 1999 Pacific Salmon Treaty (PST) agreement rather than the provisions contained in the 2008 revision. Thus the Chinook impacts under the current PST Chinook fishery provisions may not be estimated correctly. As detailed in Appendix K, the DEIS uses relatively simple models to project marine fishery catch levels and run sizes to the mouth of the Columbia River. There are 30 model stock groups in the PSC Chinook Model, 10 of which are from the Columbia River. The modeling of the 5 alternatives assumed constant abundance for the 20 non-Columbia River stock groups, while the 10 aggregated Columbia Rivers stocks were allowed to vary and various assumptions were applied to them, such as survival.

The analysis in Appendix K uses a harvest-rate as the center piece of the simplified approach as noted above. However, the 2008 PST agreement does not specify an underlying harvest-rate approach for the three Aggregate Abundance Based Management fisheries: West Coast Vancouver Island (WCVI), North BC (NBC) and Southeast Alaska (SEAK). Catch limits in all three are now tied to relative abundance, rather than a harvest-rate, e.g., at a given abundance index, a catch limit is the accounting benchmark and the harvest rate is whatever postseason analysis deems it to be. In addition, at all abundance levels the catch limits in WCVI and SEAK under the 2008 agreement are currently reduced by 30% and 15% respectively as compared to those in the 1999 agreement.

13. *Were impacts to commitments and expectations in the PST, US v Oregon, US v Washington, Hoh v Baldrige properly described in the DEIS? (WA, OR, ID, Tribes, AK)*

Under the PST Agreement, if any of the four alternatives in the DEIS other than alternative #1 are implemented, changes in Columbia River hatchery production of Chinook salmon will likely be inconsistent with expectations in the PST. For example, catch limits in the WCVI AABM fishery were cut by 30%, but it was agreed that no further reductions would be applicable to the table used to calculate this fishery's annual abundance-based catch limits. Changes in abundance of the Columbia River hatchery or wild stocks could significantly change the overall abundance and stock-age mixture in the WCVI fishery. Catches of Chinook in this fishery are dominated by Columbia River and Puget Sound stocks. Impacts on Puget Sound stocks, which are listed under the U.S. ESA, would most likely increase.

The approach in the MA-DEIS does not reflect what may happen if any but alternative #1 is implemented. For the other alternatives, effects on stock abundance, catch levels, exploitation rates and impacts to fisheries, fishers and economies are unknown. It appears to be a trial and

error approach and could deliver very deleterious impacts to coastal fisheries and communities.

14. *Are there relevant sources of information omitted from socioeconomic analysis?* (SSC Economic and Salmon Subcommittees)

15. *Is the temporal scale of the impact assessment adequate?* (WA, OR, Tribes, ID, AK)

This question is somewhat vague. Does it mean to address whether a sufficient number of years were modeled or whether there was a sufficient stratification of time periods within each year? Since the PSC Chinook Model operates on a yearly time step, it is unlikely that the DEIS fishery model which is based upon it would be able to estimate impacts down to a finer scale than a year. In addition, the DEIS model was not set up to make yearly projections of future fishery impacts so it does not address that issue either.

16. *Are the natural salmon populations targeted for restoration, particularly those that become limiting factors in hatchery production, appropriately identified?* (WA, OR, ID, Tribes, Council Staff)

17. *Recognizing recent changes in the hatchery practices that have already occurred, what is the period used to decide the status quo alternative?* (OR, USFWS, NMFS)

18. *Are the DEIS alternatives consistent with adopted state recovery plans?* (OR, WA, ID)

Additional ADFG Comments:

Benefits from Mitchell Act Hatchery EIS Alternatives

A remarkable void in the NMFS draft Mitchell Act Hatchery EIS is a listing or description of possible benefits from the suggested alternatives. The three action alternatives (3-5) all involve setting genetic brood stock standards for hatcheries in the Columbia River basin. However, there is no description, either qualitative or quantitative that describes potential benefits were these standards achieved. Would productivity of natural spawners increase; if so, to what degree? The document devotes a small amount of text to the genetic risks that hatchery salmon pose to natural spawning salmon; yet devotes no effort to describing benefits to ESA-listed or non-ESA-listed salmon stocks were these standards adhered to by hatcheries within the Columbia River basin.

Appendix C:

Technical staff has spent time attempting to review Appendix C1. Hatchery Performance by

Alternative for Chinook Salmon and the following questions/issues have been raised:

The color coding indicating **Supporting**, **Consistent**, and **Not Consistent** needs explanation in the context of this DEIS. Are these ratings intended to convey current conditions or conditions under the proposed alternative at some time in the future; if so when? The concept behind the color coding and the terms: **Primary**, **Contributing**, and **Supporting** have an implied meaning for salmon stocks listed under the Endangered Species Act as described elsewhere in the EIS document. However, these same terms are used to label hatchery production associated with non-ESA listed stocks as well. For instance, the entries listed under Upper Columbia River Summer/Fall-run Chinook are all listed as primary, contributing, or stabilizing and yet these fish are not ESA listed. Federal labeling of these stocks in an ESA context is not appropriate. Details concerning individual hatchery programs can only be gleaned from information listed in Appendix C, yet the labeling and color coding provided is inadequate for review.

Scope:

We believe that the scope of the EIS should be scaled back to its original intent of providing guidance for utilization of Mitchell Act funds. The expansion of the document in 2009 to consider all hatchery programs in the Columbia River Basin has led to much confusion and an inferior document. Future examination of facilities and policies in the basin could be based on much better analysis of the overall operations of individual hatcheries, the mitigation requirements and responsibilities associated with facilities, and the variety of factors (habitat, water, etc) that must be taken into account to determine potential benefits to wild salmon production from hatchery actions.

To: John Coon, Pacific Fishery Management Council (PFMC)

From: Allyson Purcell, National Marine Fisheries Service (NMFS)

Date: October 20, 2010

Re: Responses to PFMC Questions Related to the Draft Environmental Impact Statement (DEIS)

1. Has the science used in the analysis been peer reviewed?

Yes. The analysis relies on peer reviewed literature (Chapter 6, References) and models (Section 4.2, Fish and Section 4.3, Socioeconomics). In addition, each resource section in the DEIS was peer reviewed by at least one expert in the subject matter.

2. Are the mitigation requirements and responsibilities under the Mitchell Act adequately described in DEIS?

The text of the Mitchell Act is included verbatim in Section 1.1.1, The Mitchell Act. The Mitchell Act is "To provide for the conservation of the fishery resources in the Columbia River, establishment, operation, and maintenance of one or more stations in Oregon, Washington, and Idaho, and for the conduct of necessary investigations." The Mitchell Act does not identify specific mitigation requirements.

3. What are the other alternatives that meet the purpose and need for action but were not included in the DEIS?

An incalculable number of actions – and combinations of actions – could be implemented with regards to Mitchell Act funding and the operation of hatchery programs in the Columbia River basin. As a result, each of the alternatives evaluated in the draft EIS (except for the No-action alternative) centers around a policy direction that is defined by a set of goals and/or principles. A great number of actions can be taken consistent with the goals and/or principles of each alternative. For example, implementing sliding scales for the management of adult fish is not evaluated as an alternative, but it is an action that is consistent with several of the five alternatives that were evaluated in detail within the DEIS. Likewise, increasing hatchery production levels would be consistent with the policy directions of Alternatives 3, 4 and 5 as long as impacts to listed natural-origin salmon ESUs or steelhead DPSs were reduced (In theory, even Alternative 2 would allow for added production if the amount of new production exceeded that lost from termination of Mitchell Act-funded production).

Activities that are not considered to be within a reasonable range of potential funding or operational opportunities and therefore not meeting the purpose and need for action include the following: 1) construction of new hatchery facilities with Mitchell Act funds, 2) changes to the Mitchell Act Screens and Fishways Program, 3) habitat restoration, and 4) hatchery practices that would increase adverse effects on listed species (Section 1.2, Purpose and Need for Action).

A preferred alternative was not identified in the draft EIS. NMFS will receive comment on the draft EIS before developing a preferred alternative. The preferred alternative may be one of the alternatives evaluated in the draft EIS or it may be a combination of goals and/or principles from more than one of the alternatives evaluated in the draft EIS.

4. Can hatchery reform concepts other than the proportion of hatchery origin spawners (pHOS) and proportion of natural origin broodstock (pNOB), such as natural rearing strategies, be used to develop alternatives that meet the purpose and need of the DEIS but maintain more production than Alternatives 3-5?

To clarify, neither pHOS nor pNOB were used in the alternatives. The alternatives are general statements of policy direction. They do not identify production levels or other specific implementation actions. This is because NMFS believes that specific hatchery actions should be determined on a hatchery-program-by-hatchery-program basis (Section 2.6, Identifying an Implementation Scenario). To analyze, illustrate, and compare the potential environmental effects of each alternative, however, an implementation scenario was developed for each alternative's policy direction. These implementation scenarios do include metrics for purposes of comparison.

Each implementation scenario is one hypothetical example of how each hatchery program could be operated to meet the policy direction of the alternative. There are, however, multiple implementation scenarios that could be applied consistent with each alternative, and these implementation scenarios could include natural rearing strategies and increased hatchery production.

5. What fisheries are assumed to be mark-selective and at what point in time?

Although mark-selective fisheries would be an action consistent with all of the alternatives, no new selective fisheries were initiated under any of the implementation scenarios.

6. Were Native American Tribes engaged in the government to government consultations in development of the DEIS including the four Washington coastal treaty tribes and the four Columbia River treaty tribes? NMFS is aware of concerns among some tribes that inadequate consultation occurred during development of the DEIS. NMFS has no comment on this assertion but is committed to working with the tribes throughout the EIS process.

7. Are the impacts to all ocean fisheries in areas under management authority of the Pacific Council, the Pacific Salmon Commission, and the State of Alaska included in the analysis of each alternative in the DEIS?

The draft EIS considered impacts to fisheries to which Columbia River salmon meaningfully contribute. This includes fisheries in Southeast Alaska, British Columbia, Puget Sound/Strait of Juan de Fuca, North of Cape Falcon (Northern Oregon and Washington Coast), and South of Cape of Falcon (Oregon and California Coast) (Table 3-11). Impacts are summarized in Tables 4-88, 4-89, 4-90, 4-92, 4-93, 4-96, and 4-97.

Effects on the following Chinook salmon fisheries in the ocean and Puget Sound were evaluated:

Fishery no.	Fishery name
1	Alaska troll
2	North troll
3	Central troll
4	WCVI troll
5	WA/OR troll
6	Strait of Georgia troll
7	Alaska net
8	Noth net
9	Central net
10	WCVI net
11	Juan de Fuca net
12	Puget Sound North net
13	Puget Sound South net
14	Washington Coast net
15	Columbia River net
16	Johnstone Strait net
17	Fraser net
18	Alaska sport
19	North/Central sport
20	WCVI sport
21	Washington ocean sport
22	Puget Sound North sport
23	Puget Sound South sport
24	Strait of Georgia sport

Source: Appendix K, Chinook and Coho Salmon Fishery Modeling Approach for Application to the Mitchell Act EIS.

Effects on the following coho salmon fisheries in the ocean and Puget Sound were evaluated:

Fishery number	Coho FRAM Fishery Name	Abbrev Name
1	North California Coast Terminal Catch	No Cal Trm
2	Central California Coast Terminal Catch	Cn Cal Trm
3	Fort Bragg Sport	Ft Brg Spt
4	Fort Bragg Troll	Ft Brg Trl
5	KMZ Sport (Klamath Management Zone)	Ca KMZ Spt
6	KMZ Troll (Klamath Management Zone)	Ca KMZ Trl
7	Southern California Sport	So Cal Spt
8	Southern California Troll	So Cal Trl
9	South Oregon Coast Terminal Catch	So Ore Trm
10	Oregon Private Hatchery Terminal Catch	Or Prv Trm
11	South-Mid Oregon Coast Terminal Catch	SMi Or Trm
12	North-Mid Oregon Coast Terminal Catch	NMi Or Trm
13	North Oregon Coast Terminal Catch	No Ore Trm
14	Mid-North Oregon Coast Terminal Catch	Or Cst Trm
15	Brookings Sport	Brkngs Spt
16	Brookings Troll	Brkngs Trl
17	Newport Sport	Newprt Spt
18	Newport Troll	Newprt Trl
19	Coos Bay Sport	Coos B Spt
20	Coos Bay Troll	Coos B Trl
21	Tillamook Sport	Tillmk Spt
22	Tillamook Troll	Tillmk Trl
23	Buoy 10 Sport (Columbia River Estuary)	Buoy10 Spt
24	Lower Columbia River Mainstem Sport	L ColR Spt
25	Lower Columbia River Net (Excl Youngs Bay)	L ColR Net
26	Youngs Bay Net	Yngs B Net
27	Below Bonneville Oregon Tributary Sport	LCORt Spt
28	Clackamas River Sport	Clackm Spt
29	Sandy River Sport	SandyR Spt
30	Below Bonneville Washington Tributary Sport	LCRWaT Spt
31	Above Bonneville Sport	UpColR Spt
32	Above Bonneville Net	UpColR Net
33	Area 1 (Illwaco) & Astoria Sport	A1-Ast Spt
34	Area 1 (Illwaco) & Astoria Troll	A1-Ast Trl
35	Area 2 Troll Non-treaty (Westport)	Area2TrlNT
36	Area 2 Troll Treaty (Westport)	Area2TrlTR
37	Area 2 Sport (Westport)	Area 2 Spt
38	Area 3 Troll Non-treaty (LaPush)	Area3TrlNT
39	Area 3 Troll Treaty (LaPush)	Area3TrlTR
40	Area 3 Sport (LaPush)	Area 3 Spt
41	Area 4 Sport (Neah Bay)	Area 4 Spt
42	Area 4/4B (Neah Bay PFMC Regs) Troll Non-treaty	A4/4BTrlNT
43	Area 4/4B (Neah Bay PFMC Regs) Troll Treaty	A4/4BTrlTR
44	Area 5, 6, 6C Troll (Strait of Juan de Fuca)	A 5-6C Trl
45	Willapa Bay (Area 2.1) Sport	Willpa Spt
46	Willapa Tributary Sport	Wlp Tb Spt
47	Willapa Bay & FW Trib Net	WlpaBT Net
48	Grays Harbor (Area 2.2) Sport	GryHbr Spt
49	South Grays Harbor Sport (Westport Boat Basin)	SGryHb Spt
50	Grays Harbor Estuary Net	GryHbr Net

Fishery number	Coho FRAM Fishery Name	Abbrev Name
51	Humptulips River Sport	Hump R Spt
52	Lower Chehalis River Net	LwCheh Net
53	Humptulips River Ceremonial & Subsistence	Hump R C&S
54	Chehalis River Sport	Chehal Spt
55	Humptulips River Net	Hump R Net
56	Upper Chehalis River Net	UpCheh Net
57	Chehalis River Ceremonial & Subsistence	Chehal C&S
58	Wynochee River Sport	Wynoch Spt
59	Hoquiam River Sport	Hoquam Spt
60	Wishkah River Sport	Wishkh Spt
61	Satsop River Sport	Satsop Spt
62	Quinault River Sport	Quin R Spt
63	Quinault River Net	Quin R Net
64	Quinault River Ceremonial & Subsistence	Quin R C&S
65	Queets River Sport	Queets Spt
66	Clearwater River Sport	Clwrtr Spt
67	Salmon River (Queets) Sport	Salm R Spt
68	Queets River Net	Queets Net
69	Queets River Ceremonial & Subsistence	Queets C&S
70	Quillayute River Sport	Quilly Spt
71	Quillayute River Net	Quilly Net
72	Quillayute River Ceremonial & Subsistence	Quilly C&S
73	Hoh River Sport	Hoh R Spt
74	Hoh River Net	Hoh R Net
75	Hoh River Ceremonial & Subsistence	Hoh R C&S
76	Makah Tributary Sport	Mak FW Spt
77	Makah Freshwater Net	Mak FW Net
78	Makah Ceremonial & Subsistence	Makah C&S
79	Area 4, 4A Net (Neah Bay)	A 4-4A Net
80	Area 4B, 5, 6C Net Nontreaty (Strait of JDF)	A4B6CNetNT
81	Area 4B, 5, 6C Net Treaty (Strait of JDF)	A4B6CNetTR
82	Area 6D Dungeness Bay/River Net Nontreaty	Ar6D NetNT
83	Area 6D Dungeness Bay/River Net Treaty	Ar6D NetTR
84	Elwha River Net	Elwha Net
85	West JDF Straits Tributary Net	WJDF T Net
86	East JDF Straits Tributary Net	EJDF T Net
87	Area 7, 7A Net Nontreaty (San Juan Islands)	A6-7ANetNT
88	Area 7, 7A Net Treaty (San Juan Islands)	A6-7ANetTR
89	East JDF Straits Tributary Sport	EJDF FWSpt
90	West JDF Straits Tributary Sport	WJDF FWSpt
91	Area 5 Marine Sport (Sekiu)	Area 5 Spt
92	Area 6 Marine Sport (Port Angeles)	Area 6 Spt
93	Area 7 Marine Sport (San Juan Islands)	Area 7 Spt
94	Dungeness River Sport	Dung R Spt
95	Elwha River Sport	ElwhaR Spt
96	Area 7B-7C-7D Net Nontreaty (Bellingham Bay)	A7BCDNetNT
97	Area 7B-7C-7D Net Treaty (Bellingham Bay)	A7BCDNetTR
98	Nooksack River Net	Nook R Net
99	Nooksack River Sport	Nook R Spt
100	Samish River Sport	Samh R Spt

Fishery number	Coho FRAM Fishery Name	Abbrev Name
101	Area 8 Skagit Marine Net Nontreaty	Ar 8 NetNT
102	Area 8 Skagit Marine Net Treaty	Ar 8 NetTR
103	Skagit River Net	Skag R Net
104	Skagit River Test Net	SkgR TsNet
105	Swinomish Channel Net	SwinCh Net
106	Area 8.1 Marine Sport	Ar 8-1 Spt
107	Area 9 Marine Sport (Admiralty Inlet)	Area 9 Spt
108	Skagit River Sport	Skag R Spt
109	Area 8A Stillaguamish/Snohomish Net Nontreaty	Ar8A NetNT
110	Area 8A Stillaguamish/Snohomish Net Treaty	Ar8A NetTR
111	Area 8D Tulalip Bay Net Nontreaty	Ar8D NetNT
112	Area 8D Tulalip Bay Net Treaty	Ar8D NetTR
113	Stillaguamish River Net	Stil R Net
114	Snohomish River Net	Snoh R Net
115	Area 8.2 Marine Sport	Ar 8-2 Spt
116	Stillaguamish River Sport	Stil R Spt
117	Snohomish River Sport	Snoh R Spt
118	Area 10 Marine Sport (Seattle)	Ar 10 Spt
119	Area 10 Net Nontreaty (Seattle)	Ar10 NetNT
120	Area 10 Net Treaty (Seattle)	Ar10 NetTR
121	Area 10A Net Nontreaty (Elliott Bay)	Ar10ANetNT
122	Area 10A Net Treaty (Elliott Bay)	Ar10ANetTR
123	Area 10E Net Nontreaty (East Kitsap)	Ar10ENetNT
124	Area 10E Net Treaty (East Kitsap)	Ar10ENetTR
125	Area 10F-G Ship Canal/Lake Washington Net Treaty	10F-G Net
126	Green/Duwamish River Net	Duwm R Net
127	Green/Duwamish River Sport	Duwm R Spt
128	Lake Washington-Lake Sammamish Tributary Sport	L WaSm Spt
129	Area 11 Marine Sport (Tacoma)	Ar 11 Spt
130	Area 11 Net Nontreaty (Tacoma)	Ar11 NetNT
131	Area 11 Net Treaty (Tacoma)	Ar11 NetTR
132	Area 11A Net Nontreaty (Commencement Bay)	Ar11ANetNT
133	Area 11A Net Treaty (Commencement Bay)	Ar11ANetTR
134	Puyallup River Net	PuyI R Net
135	Puyallup River Sport	PuyI R Spt
136	Area 13 Marine Sport (South Puget Sound)	Ar 13 Spt
137	Area 13 Net Nontreaty (South Puget Sound)	Ar13 NetNT
138	Area 13 Net Treaty (South Puget Sound)	Ar13 NetTR
139	Area 13C Net Nontreaty (Chambers Bay)	Ar13CNetNT
140	Area 13C Net Treaty (Chambers Bay)	Ar13CNetTR
141	Area 13A Net Nontreaty (Carr Inlet)	Ar13ANetNT
142	Area 13A Net Treaty (Carr Inlet)	Ar13ANetTR
143	Area 13D Net Nontreaty (South Puget Sound)	Ar13DNetNT
144	Area 13D Net Treaty (South Puget Sound)	Ar13DNetTR
145	Area 13F-13K Net Nontreaty (South PS Inlets)	A13FKNetNT
146	Area 13F-13K Net Treaty (South PS Inlets)	A13FKNetTR
147	Nisqually River Net	Nisq R Net
148	McAllister Creek Net	McAlls Net
149	13D-13K Tributary Sport (South PS Inlets)	13D-K TSpt
150	Nisqually River Sport	Nisq R Spt

Fishery number	Coho FRAM Fishery Name	Abbrev Name
151	Deschutes River Sport (Olympia)	Desc R Spt
152	Area 12 Marine Sport (Hood Canal)	Ar 12 Spt
153	Area 12-12B Net Nontreaty (Upper Hood Canal)	1212BNetNT
154	Area 12-12B Net Treaty (Upper Hood Canal)	1212BNetTR
155	Area 9A Net Nontreaty (Port Gamble)	Ar9A NetNT
156	Area 9-9A Net Treaty (Port Gamble/On Reservation)	Ar9A NetTR
157	12A Net Nontreaty (Quilcene Bay)	Ar12ANetNT
158	12A Net Treaty (Quilcene Bay)	Ar12ANetTR
159	12C-12D Net Nontreaty (Lower Hood Canal)	A12CDNetNT
160	12C-12D Net Treaty (Lower Hood Canal)	A12CDNetTR
161	Skokomish River Net	Skok R Net
162	Quilcene River Net	Quilcn Net
163	12-12B Tributary FW Sport	1212B TSpt
164	12A Tributary FW Sport (Quilcene River)	Quilcn Spt
165	12C-12D Tributary FW Sport	12C-D TSpt
166	Skokomish River Sport	Skok R Spt
167	Lower Fraser River Stock Terminal Catch	FRSLOW Trm
168	Upper Fraser River Stock Terminal Catch	FRSUPP Trm
169	Fraser River/Estuary Sport	Fraser Spt
170	Johnstone Straits Troll	JStrBC Trl
171	Northern British Columbia Troll	No BC Trl
172	North Central British Columbia Troll	NoC BC Trl
173	South Central British Columbia Troll	SoC BC Trl
174	NW Vancouver Island Troll	NW VI Trl
175	SW Vancouver Island Troll	SW VI Trl
176	Georgia Straits Troll	GeoStr Trl
177	British Columbia Juan de Fuca Troll	BC JDF Trl
178	Northern British Columbia Net	No BC Net
179	Central British Columbia Net	Cen BC Net
180	NW Vancouver Island Net	NW VI Net
181	SW Vancouver Island Net	SW VI Net
182	Johnstone Straits Net	Johnst Net
183	Georgia Straits Net	GeoStr Net
184	Fraser River Gill Net	Fraser Net
185	British Columbia Juan de Fuca Net	BC JDF Net
186	Johnstone Strait Sport	JStrBC Spt
187	Northern British Columbia Sport	No BC Spt
188	Central British Columbia Sport	Cen BC Spt
189	British Columbia Juan de Fuca Sport	BC JDF Spt
190	West Coast Vancouver Island Sport	WC VI Spt
191	North Georgia Straits Sport	NGaStr Spt
192	South Georgia Straits Sport	SGaStr Spt
193	Alberni Canal Sport	Albern Spt
194	Southwest Alaska Troll	SW AK Trl
195	Southeast Alaska Troll	SE AK Trl
196	Northwest Alaska Troll	NW AK Trl
197	Northeast Alaska Troll	NE AK Trl
198	Alaska Net (Areas 182:183:185:192)	Alaska Net

Source: Appendix K, Chinook and Coho Salmon Fishery Modeling Approach for Application to the Mitchell Act EIS.

8. Are impacts to all Columbia River basin fisheries included in the DEIS, including tributary C & S and recreational fisheries?

NMFS is unaware of any fishery that occurred in the basin in 2007 that is not included. Table 4-91 through Table 4-93 show potential impacts to recreational fisheries in the Columbia River basin. These impacts are discussed in Section 4.3.4, Harvest and Economic Value, and Section 4.3.5, Regional Economic Conditions. Effects on tributary C & S fisheries can be found in Section 4.4.4.2, Ceremonial and Subsistence Harvest.

9. Is production for all Columbia River basin hatcheries included in the analysis?

Alternative 1 describes status quo operation of hatchery operations in the Columbia River basin (Section 2.5.1, Alternative 1 (No Action) as it existed in 2007. However, like the other alternatives, Alternative 1 does not identify hatchery production levels because the DEIS's alternatives are general and goal-oriented. This is because NMFS believes that specific hatchery actions should be determined on a hatchery-program-by-hatchery-program basis (Section 2.6, Identifying an Implementation Scenario). To analyze, illustrate, and compare the potential environmental effects of each alternative, a hypothetical implementation scenario was identified for each alternative. The implementation scenario for Alternative 1 included 2007 production levels for all Columbia River basin hatchery programs. The 2007 data was the most current data available when NMFS began modeling the implementation scenarios.

10. Is the methodology describing economic impacts complete and proper, including consistent metrics? For example, are there more appropriate indices of fishery value that should be used rather than ex-vessel value?

As is typical in a socioeconomic analysis of fishery effects, the following metrics were used in the DEIS: 1) effects on the number of fish harvest, 2) ex-vessel value, 3) net economic value, 4) income, and 5) jobs (Section 4.3.2.3, Harvest and Economic Value, and Section 4.3.2.4, Regional Economic Conditions). These metrics were applied consistently across the alternatives.

11. Were expected benefits from increased wild production included in the economic analysis?

Yes. The AHA and EIS harvest models were linked with output from each providing input to the other. Population-specific estimates of juvenile production served as the input to the harvest model, and harvest impacts output from the harvest model then became the final input needed to complete the life cycle in the AHA Model. NMFS requested [or expects] public comment on the use of these models.

12. Were current fishery and hatchery management agreements used to estimate impacts?

It is neither feasible nor practicable to attempt to produce an EIS harvest analysis that would generate catch projections that would be directly comparable to observed historical catch levels. Such an effort would involve an extremely complex modeling approach. There is an immense potential for a wide variety of stock conditions, fishing patterns, and regulations that

could potentially occur in response to changes in production of Columbia River stocks under various EIS alternative scenarios. Justification would be required for myriad decisions that affect the distribution of harvest opportunity and assumptions regarding fisherman behavior. And, the results that would be produced would confound effects of fishing patterns and stock-age cohort abundance, greatly increasing the complexity of reporting and interpreting potential impacts of EIS alternatives.

A simple steady-state analysis was employed to provide information on how fishery impacts would be expected to change under EIS alternatives. Simulation models were developed separately for Chinook and coho using Microsoft Excel software. The models incorporate three major elements:

- (a) Variation in abundance only for Columbia River stocks under the EIS alternatives. The abundance of all stocks originating outside the Columbia River are fixed at levels associated with base periods used in fishery planning models employed by the PSC and PFMC;
- (b) Exploitation rates, patterns, and regulations characterized by base period data for the PSC and PFMC planning models; and
- (c) Prescriptive rules to govern conduct of fisheries. These prescriptive rules include: (1) Pacific Salmon Treaty agreements for Chinook and coho in effect through 2008; (2) annual guidance for fishery management planning provided by the NMFS for ESA-listed Chinook and coho stocks; (3) the Columbia River Interim Management Agreement in effect through 2007; (4) the PFMC Framework Management Plan; and (5) MSF for coho only in PFMC ocean and Columbia River in-river fisheries; MSF only for spring Chinook fisheries in the Columbia River below Bonneville Dam.

13. Were impacts to commitments in the PST, US v OR, US v Washington, and Hoh v Baldrige properly described in the EIS? First, NMFS constructed the alternatives as policy statements, in part, to avoid the problem presented in determining whether any specific production regime is or is not compliant with these various agreements. NMFS recognized that, just as it takes all parties to these agreements to determine whether a proposal is consistent with these agreements, so too does it require all parties to determine the “impact” of a change to the *status quo*. As a result, the analysis does not attempt to do so, but states NMFS’s expectation that all parties will ensure that their actions are consistent with the agreements.

14. Are there relevant sources of information omitted from the socioeconomic analysis?
NMFS is not aware of any relevant sources of information that were omitted.

15. Is the temporal scale of the impact assessment adequate?
NMFS believes it is.

16. Are the natural salmon populations targeted for restoration adequately identified?

Appendix C through Appendix F identify each population as primary, contributing, stabilizing, or “not in the ESU.” Within the alternatives, performance goals were applied to hatchery programs affecting primary and contributing populations.

17. Recognizing recent changes in the hatchery practices that have already occurred, what is the period used to decide the status quo alternative?

Hatchery practices from 2007 are used to describe status quo conditions within the implementation scenario for Alternative 1 (No action – status quo). This was the most current data available when NMFS began modeling the implementation scenarios.

18. Are the DEIS alternatives consistent with adopted state recovery plans?

Under each policy direction, performance goals are identified for hatchery programs according to the location of the hatchery programs and the type of salmon and steelhead populations that may be affected. For example, stronger performance goals are applied under some alternatives when the hatchery programs affect populations that have an important role in the recovery of listed DPSs/ESUs or are strongholds of non-listed ESUs or DPSs. Performance goals are intended to reduce the negative effects of hatchery programs on natural-origin salmon and steelhead populations. Two performance goals (in addition to the baseline conditions) were identified for use in this EIS: 1) a stronger performance goal and 2) an intermediate performance goal.

Each population was designated as primary, contributing, or stabilizing. The Lower Columbia Fish Recovery Board (LCFRB) used these designations in the development of the Lower Columbia River Salmon Recovery and Fish & Wildlife Subbasin Plan (LCFRB 2004). The HSRG adapted the designations throughout the basin after discussions with hatchery managers, and they are applied in this draft EIS (Appendix C through Appendix F). In some cases, there may be differences between the HSRG classifications and what is found in the most current recovery planning documents. HSRG classifications will be replaced with current designations from recovery planning documents before any policy direction is implemented (Section 2.4, Alternative Development).