

## **Concise Explanatory Statement Willapa Bay Commercial Salmon Regulations for 2014**

### **Introduction**

This Concise Explanatory Statement (CES) relates to rules being adopted by the Washington Department of Fish and Wildlife (WDFW or Department) to amend Washington Administrative Code (WAC) 220-40-021 and -027. The CES contains four principle sections. Section I describes the rule being adopted, the process used in adopting the rule, and the resource management objectives advanced by adoption of the rule. Section II describes the changes from the proposed rule to the adopted rule. Section III discusses comments received during rulemaking and the agency's analysis and resolution of those comments. Section IV briefly discusses other comments received during the North of Falcon process that were germane to the development of the proposed rules noticed in the CR 102.

### **I. The Adopted Rules, Rule-making Process and WDFW's Resource Management Objectives Overview of the Rules Adopted**

The rules being adopted provide a schedule to open the 2014 summer and fall commercial gillnet salmon fisheries (Chinook and coho) in Willapa Bay. Without the proposed rules, commercial fishing for salmon is closed in that area (See WAC 220-40-021 and 220-40-027).

#### ***Brief Summary of the Adopted Rules:***

The rules being adopted amend existing permanent rules that opened the commercial salmon fisheries in Willapa Bay, as defined in WAC 220-22-020, for the 2013 season ending November 19, 2013 – WAC 220-40-021 and WAC 220-40-027.

WAC 220-40-021 specifies the commercial gear and methods of harvest that must be utilized, the locations of fishing activity, and the duration of the summer commercial salmon season, for fisheries occurring between July 5 and August 15 annually. A three and one-half day commercial fishery targeting a mix of Columbia River bound Chinook salmon that transit through Willapa Bay (the Dip-In fishery) and local Willapa Bay origin Chinook is authorized in the period August 12-15, 2014.

WAC 220-40-027 specifies the permissible commercial gear and methods of harvest that must be utilized, the locations, and the duration of the fall commercial salmon season, for fisheries occurring between August 16 and December 31 annually. Approximately 40 days of commercial harvest is authorized for Chinook and coho salmon during the fall period using a combination of selective (i.e., only hatchery-origin Chinook salmon with a clipped adipose fin can be retained) and non-selective fishing gear and techniques. The rule also addresses retention of chum salmon that are caught incidental to the targeted harvest of Chinook and coho salmon.

#### ***Fishery mandates and Commission Policy:***

The rules are being adopted pursuant to the authorities found in RCW Title 77, including those provisions in RCW 77.04.012 that establish conservation as the paramount objective - "to conserve the wildlife and food fish, game fish, and shellfish resources in a manner that does not impair the resource." Where consistent with that conservation objective, the Department must also "seek to maintain the economic well-being and stability of the fishing industry in the state"; "promote orderly fisheries"; and "enhance and improve recreational and commercial fishing in this state."

These are broad state-wide objectives and do not necessarily focus on one region, one fish species or one segment of harvesters. The term “fishing industry of the state” includes both commercial and recreational interests. While these objectives are ultimately applied on a state-wide basis, the agency considers regional interests, individual fishing sectors, and the interests of varying gear-type groups when undertaking its efforts to promote state-wide management interests. Accordingly, while the agency considered sharing of fishing opportunity for various species and gear groups in Willapa Bay, those evaluations are made against a backdrop of historical Pacific Coast fishing opportunities throughout the year as discussed below.

The rules being adopted implement policies of the Fish and Wildlife Commission aimed at promoting the conservation and recovery of wild salmon and sustainable fisheries (Hatchery and Fishery Reform – C-3619; 2013-14 North of Falcon Policy – C-3608). Furthermore, the planning process considered guidance expressed in the draft Willapa Bay Management Plan (Willapa Plan) that was formulated in January of 2010.

The adopted rules also incorporate the recommendations from the North of Falcon (NOF)/Pacific Fishery Management Council (PFMC) process that included significant public input. WDFW’s objectives for those processes are outlined in the 2013-2014 North of Falcon (NOF) policy and the Policy Guidelines for PFMC Representation adopted by the Fish and Wildlife Commission (C-3603). The NOF/PFMC process is the forum in which Washington works with the State of Oregon, tribal co-managers, federal fishery managers and stakeholder groups to plan for, and execute, fisheries of interest to state, tribal and federal entities. Through that process, the management entities identify the predicted abundance of fish, desired escapement objectives, the harvestable surplus, shares available to state and tribal harvesters, and sets the stage for subsequent development of Washington State’s commercial and recreational fishing seasons, including time, manner and method regulations that will be used to implement those seasons.

***Gill Net Release Mortality and the Independent Fishery Scientist Panel:***

In response to concerns raised during the 2013 rule-making process, WDFW convened an independent panel of fishery scientific experts to provide recommendations on gill net release mortality rates to be used in the pre-season planning of commercial salmon fisheries in Grays Harbor and Willapa Bay. Before 2014, WDFW used a 45% net release mortality rate for salmonid species encountered but not retained in the commercial fishery. This rate was calculated by taking the average net release mortality conducted in test fisheries in the Columbia River on spring Chinook from 2001-2002 (Ashbrook et al. 2004). A workshop was conducted in February of 2014 where data and testimony were presented to this independent fisheries science panel (IFSP). The IFSP then reviewed scientific literature, fishery regulations, environmental and fishery data, and fisher behavior and compliance with rules. The panel provided recommendations for gillnet release mortality rates with fishers fully complying with Washington Administrative Code and Fish Friendly practices, and recommendations for gillnet release mortality rates considering actual practices in the fisheries. For actual fishing practices observed in Willapa Bay, their recommendations for long-term gill net release mortality were 56% for small mesh gillnet (<6”), 62% in large mesh gillnet (>7”), and 31% in tangle net gear based on a 90% compliance rate (IFSP 2014; Table 2). The IFSP also provided a relationship of mortality rates to fisher compliance with “fish-friendly” fishing practices for the Department’s consideration (IFSP 2014; Table 2).

***Rule Development Process:***

The CR 101 notice of intended rule-making was filed on December 31, 2013 (WSR 14-02-113). Thereafter, the Department relied upon several forums to gather information and interact with regional fishery managers and constituent groups in order to develop a draft rule that would be presented in the CR 102 filing for formal public review and comment.

State, federal and tribal fishery managers gather each year to plan the Northwest's recreational and commercial salmon fisheries. This pre-season planning process is generally known as the "North of Falcon" (NOF) process, and includes a series of public meetings with federal, state, and tribal fishery managers, together with citizens that have an interest in these fisheries, both recreational and commercial. The NOF planning process coincides with the March and April meetings of the PMFC, the federal authority responsible for setting ocean salmon seasons 3 to 200 miles off the Pacific coast. In addition to the two PMFC meetings, the states of Washington and Oregon, and Treaty Tribes, sponsor additional meetings to discuss alternative fishing seasons that meet conservation and sharing objectives. In addition to public meetings, WDFW also solicits input from advisory groups whose representatives represent a diverse range of user group interests. For this rule making process, the Willapa Bay Advisory Group was consulted.

The 2014 NOF process began with a public meeting on March 3, 2014 at the Natural Resources Building in Olympia, WA. WDFW presented the 2014 run forecasts for Puget Sound, Columbia River, and the Washington coastal system of rivers, bays and offshore waters. Run forecasts, together with historical data, were presented for each area and salmon species. Resource utilization implications of the 2014 forecasts were discussed broadly in a statewide context. This was followed by regional break-out sessions where WDFW staff further discussed 2014 forecasts and resource utilization implications in greater detail and solicited fishery suggestions for those in attendance.

A Willapa Bay Advisory Group meeting was held March 4, 2014 at the Region 6 Headquarters Office in Montesano, WA. The purpose of this meeting was to provide operating protocols and guidelines for advisory groups assisting the agency (see WDFW Operating Protocols and Guidelines for Advisory Groups, April 2010) in the development of rules that open fisheries. This meeting allowed WDFW to establish a schedule of meetings for the group to occur during March in alignment with other portions of the NOF process. Notice of all NOF meetings open to the public was available on the WDFW website by early February and was also provide in a news release on February 18, 2014.

A second Willapa Bay specific meeting was held March 21, 2014 at the Montesano Timberland Library. WDFW presented and discussed the 2014 pre-season forecasts of salmon abundance for Chinook, coho and chum populations in Willapa Bay and associated tributaries with the advisory group. There was also discussion and clarification about the inclusion of net drop-out and sport drop-off rates to be used in the 2014 Willapa Bay terminal area management model (Willapa TAMM) and the 2014 Willapa Bay management objectives. WDFW presented the draft findings of the Independent Fishery Scientific Panel (IFSP) review of net release mortality rates.

An additional Willapa Bay Advisory Group meeting was held on March 27, 2014 at the Montesano City Hall. WDFW held Willapa Bay regionally focused public NOF meetings on March 25, 2014 in Raymond, WA and April 4, 2014 at the Natural Resources Building in Olympia, WA. During these meetings WDFW provided the public with information on the 2014 season planning process, discussed 2014 forecasts and resource utilization implications, engaged the public in dialog regarding fisheries, collected input on fishing season structures for the commercial and recreational fisheries, possible rule changes, and provided the public with information on the status of the 2014 planning process.

Based upon all of the information and outreach generated through these forums, a draft rule was developed for consideration in the public rule-making process that follows the filing of a proposed rule. Accordingly, the CR102, filed on May 21, 2014 and published in WSR 14-11-105, provided WDFW's initial rule-making proposals for 2014 Willapa Bay commercial salmon fisheries.

As proposed in the CR-102, WAC 220-40-021 would open the early August commercial salmon fishery for Chinook in Willapa Bay that is directed at harvesting Columbia River and Willapa Bay Chinook salmon (referred to as the “Dip-in Fishery” as fishers harvest some Columbia River bound salmon that dip into Willapa Bay during their migration). Proposed WAC 220-40-027 would open the fall commercial salmon fishery for Chinook and coho salmon in Willapa Bay. The rules, as proposed, were 100% selective in that they required the release of chum and natural-origin (unmarked) Chinook which are not target species for commercial fisheries but are taken incidental to the harvest of hatchery Chinook and coho.. The forecast of natural-origin Chinook returning to Willapa Bay indicates that there will be insufficient numbers of these fish to allow directed fisheries on natural-origin Chinook. Natural-origin Chinook are determined by the presence of an intact adipose fin (unmarked fish). Natural-origin Chinook can be conserved by either requiring the release of unmarked Chinook (taking into account release mortality) or by allowing retention of natural–origin Chinook that is incidentally harvested together with additional limits on the harvest of targeted hatchery fish so that harvest impact limits for natural-origin Chinook are met.

Fishing dates and locations were modeled to propose a meaningful commercial fishery that is consistent with conservation objectives considering that there will be non-directed harvest mortality arising from the incidental catch of non-target salmon. In addition, the season structure and areas open for fishing were shaped to reduce the interaction between sport and commercial fisheries. This furthers the objective of maintaining orderly fisheries. Sharing between commercial and recreational harvest groups was also considered to provide meaningful harvest opportunity for both groups within the context of historic sharing patterns in this area of the Washington Coast.

Following publication of the CR 102 and proposed rules, a formal rule making public hearing was held on June 24, 2014. This hearing, in conjunction with the noticed comment period, represented the formal comment period of the rule-making process as required by the Administrative Procedures Act. They provided the public with additional opportunity to comment on the proposed rules published in WSR 14-11-105. The hearing was attended by approximately 23 individuals with 17 providing testimony. The public comment period was open May 21, 2014 through June 24, 2014. WDFW received both verbal and written comment during this period. In addition to the formal rule making comments, comments received during the North of Falcon process that were substantive to the adopted rules were also considered.

As discussed in the attachments to the CR 103 and Section II of this CES, the final rule(s) adopted differ from the rules noticed in the CR 102. This reflects WDFW’s consideration of the additional information received during the formal rule-making comment period.

WDFW carefully reviewed the information gathered during the rule development process together with all input (verbal and written) from fishing industry representatives, recreational anglers, the Willapa Bay Salmon Advisory Group, and the general public. This includes all information obtained during both the 2014 North of Falcon salmon season process and the state’s formal rule making process. WDFW also considered and relied on technical and scientific expertise within the agency and as part of the PFMC planning process. This included data and information available to the state’s fishery management experts, including pre-season forecast abundance of salmon stocks returning to Willapa Bay and historic harvest data from fisheries occurring in Willapa Bay and its tributaries. Important characteristics of the Willapa Bay commercial salmon fishery were considered, including:

- total number of licensed vessels potentially participating in each fishery;
- number of vessels that have actually participated in each fishery in recent years;
- outcomes in terms of target and non-target species catch in recent years;
- potential for transfer of effort from other fisheries in other areas, e.g. Grays Harbor;

- catch likely to result from the proposed rules and associated conservation impacts;
- economic value of these commercial fisheries; and
- relationship between commercial and recreational fisheries.

The Department also considered fishing preferences of the sport fishery in terms of time, area, tidal cycles, and potential for gear or fishing sector conflict.

### ***Overview of WDFW's Consideration of Management Objectives***

The management of salmon resources in Willapa Bay and its tributaries has changed dramatically over the last decade. For many decades prior to 2000, salmon were managed with hatchery supplementation of natural-origin fish. The focus was on attaining an aggregate escapement of fish for spawning purposes without any differentiation between hatchery and natural-origin fish. In the early 2000's, the Hatchery Scientific Review Group (HSRG) reviewed all of the state's hatchery programs and practices to assure our State's resources were managed for long-term health and sustainable harvest. Increasingly, there was concern that hatchery fish and natural-origin fish needed to be managed with greater care to ensure a healthy wild population of salmon. In 2003, a conservation objective to protect natural-origin Chinook was put into practice. However, at that time, hatchery fish were not being marked making it difficult to distinguish between natural- and hatchery-origin fish. Accordingly, the Department was limited to the identification of a harvest rate for all Chinook in the aggregate. On that basis, the conservation objective limited the overall harvest rate to no more than 30% by all fishery participants

In 2008, the WDFW Commission adopted the Hatchery and Fishery Reform policy (C-3619). That policy directs the Department to implement the principles created by the HSRG. The 2008 Commission policy brought about further refinement of salmon management in Willapa Bay. Working with the Willapa Bay Salmon Advisory Group, WDFW developed a draft Willapa Bay Management Plan (Willapa Plan) in January of 2010. The draft Plan remains a work in progress.

The draft 2010 Willapa Plan provides a framework for a transition in hatchery and fishery management strategies for salmon fisheries in Willapa Bay. Where the primary objective had been the harvest of hatchery-origin Chinook salmon, the Plan describes an enhanced focus on conservation consistent with the guidance of the Hatchery and Fishery Reform policy adopted by the Fish and Wildlife Commission in 2009. Achieving the conservation goals of the plan is anticipated to promote sustainable fisheries and reduce the likelihood of the listing of Washington coastal Chinook under the Endangered Species Act.

The Department recognized that the Plan called for a significant shift in management, and that a period of transition would be needed to achieve the long-term conservation goals. Historical harvest rates on Willapa Bay Chinook salmon exceeded 90%, and hatchery-origin fish likely historically comprised most of the spawners in the Willapa and Naselle rivers.

The Willapa Plan includes the following components to initiate the transition toward improved hatchery and fishery management: Establishes the Naselle River as the Primary Chinook population requiring the highest level of protection for natural origin fish; maintains a 30% harvest rate on Naselle River natural-origin Chinook; Reduces production of hatchery Chinook in the Naselle River yet maintains total production of hatchery Chinook by increasing production in Nemah and Willapa rivers; Recognizes the potential utility of mark-selective fisheries to reduce harvest rates on natural-origin Chinook and to reduce the number of hatchery-origin Chinook salmon in natural spawning areas; and Recognizes that adaptive management is necessary to address the significant uncertainty in our understanding of the abundance of naturally produced Chinook salmon and the impacts of fisheries in different subareas of Willapa Bay.

Prior to the 2014 season, WDFW again reviewed the performance of the fishery under the Willapa Plan to assess whether progress was being made towards achieving its objectives. As part of that review, WDFW recognized that all objectives may not be immediately attainable because of the following factors: The fishery is being transformed, and the effects of past practices may linger for many years; Substantial uncertainties exist regarding data about stock composition that has only been possible with fish marking that began four years ago; and There is natural variability in population abundance due to factors outside the control or predictive power of fishery managers (e.g. ocean survival conditions). Furthermore – as might be expected during a transitional period – the Department acknowledges that it will be faced with the challenging task of balancing multiple trade-offs with objectives that are often in tension with one another. The Department also recognized that we will be moving through this transition with significant uncertainty in our understanding of natural production in tributaries to Willapa Bay. This uncertainty includes: The number of spawners necessary to optimally seed each river; The current productivity of natural spawners; and Uncertainty with regard to how the productivity of natural spawners will change as we transition fishery management.

The Willapa Plan was evaluated relative to multiple criteria: The harvest rates on Naselle natural-origin Chinook were less than 30% in each year since implementation of the plan was initiated (14-29%); The proportion of hatchery-origin spawners dropped to the lowest level (0.81) since marking was initiated but remained substantially higher than our long term objective of 0.30; the number of natural-origin spawners for the Naselle population has declined in each year since 2010, reaching a low of 564 spawners in 2013; A lower level of natural-origin spawners in the North River and Smith Creek stock, but an increase in 2013 over 2012; and finally, The number of spawners remained above the spawner capacity estimate for the Willapa River population, declined and remained below the capacity estimate for the Palix River population, and remained low and below the spawner capacity estimate for the Bear River population.

The 2014 forecast is for a return of 3,112 natural-origin Chinook and 29,327 hatchery-origin Chinook. This forecast suggests that natural-origin Chinook escapement targets will not be achieved even before fishing activity is considered. (Note: The primary tool for placing natural-origin Chinook on a trajectory for obtaining long-term escapement objectives is the imposition of a natural-origin harvest rate. It is important to understand that these target harvest rates may be attained even though progress still needs to be made on the attainment of long-term escapement objectives, particularly in years of low abundance). The relatively small return of natural-origin Chinook, the smallest in the last four years, will clearly make it difficult to achieve substantial progress towards meeting the management objectives for this transitional period. The steps being taken this year to provide additional conservation emphasis (e.g. further tightening certain harvest rates together with other actions) are discussed in greater detail below.

In sum, the Department's review of the performance of the Willapa Plan over the last four years, and the forecast for natural-origin Chinook returns, indicated that additional conservation actions should be implemented in 2014. These actions are directed at enhancing conservation actions for the Primary (Naselle River) and Contributing (North River and Smith Creek) populations. Therefore, WDFW proposed additional, more conservative, fishery and hatchery management actions in 2014. These objectives were shared with the public during the North of Falcon public process:

- 1) Address the declining trend in natural-origin spawners for the Naselle River Chinook population by targeting a harvest rate of no more than 20% on the Naselle River population. The projected natural-origin escapement will exceed the 2012 spawner level (> 1,050 fish).
- 2) Implement time and area closures that may provide additional protection for the Naselle River Chinook population, including the closure of sub-areas 2P, 2R, and 2M through September 15.
- 3) Explore with the commercial fishing industry opportunities to implement alternative gear (purse seine, beach seine, or tangle net) to increase the catch of abundant hatchery fish while minimizing impacts to natural-origin Chinook.

- 4) Increase protection for the North River and Smith Creek Chinook population by delaying the recreational fishery in North Bay and the North River until October 1.
- 5) Maximize harvest opportunity on hatchery coho, in a manner that is consistent with achieving objectives and goals for healthy, diverse and sustainable natural spawning populations.
- 6) Meet or exceed the 13,090 escapement goal for natural-origin coho.
- 7) Continue moratorium on chum directed fishing, i.e. closed.
- 8) Limit the incidental impacts on chum to a harvest rate of 10% or less.

The rules, as originally noticed in the CR 102, were proposed based upon a conclusion that they would produce a commercial fishery consistent with the overriding conservation objectives identified above, and with the Commission policy direction to provide “meaningful opportunities for both recreational and commercial fishers.

However, the rules noticed in the CR 102 were proposed as a *point of departure* for further public review and comment during the formal rule-making process that followed filing of the CR 102. The rules now being adopted build upon the work that led to the CR 102 filing, and reflect additional consideration of the testimony and comments received.

WDFW concludes that the final adopted 2014 Willapa Bay commercial fishing regulations are consistent with these management objectives based on the following rationale:

Objective 1: Target a harvest rate of no more than 20% on the Naselle River Chinook population.

The adopted rules are constructed to achieve a harvest rate of no more than 20% on Naselle River Chinook. This is a more conservative harvest rate limit than the default 30% rate identified in the Willapa Plan. Its use reflects a belief that additional conservation measures should be employed considering the slow progress being made on placing fish on a trajectory to the attainment of natural-origin conservation objectives. The adopted rules define schedules with open fishing periods only for those fisheries that are directed at salmon stocks with harvestable abundance. WDFW relied on pre-season forecasts of abundance to construct the fishing schedules.

Objective 2: Implement time and area closures that may provide additional protection for the Naselle River Chinook population, including the closure of sub-areas 2P, 2R, and 2M through September 15.

The adopted rules are constructed with closures of areas 2P, 2R, and 2M through September 15. These closures were also proposed in the recreational fisheries and will be described in a separate rulemaking process for recreational fisheries.

Objective 3: Where possible, explore with the commercial fishing industry opportunities to implement alternative gear (purse seine, beach seine, or tangle net) to increase the catch of abundant hatchery fish while minimizing impacts to natural-origin Chinook.

The adopted rules do not address alternative gear. Two commercial fishers expressed interest in pursuing alternative gear, specifically fish traps, for use in Willapa Bay. Implementing alternate gear types requires substantial planning and could not be completed this year, although some progress was made in terms of identifying and scoping possible options. WDFW will continue to pursue potential options for implementing alternative gear on an experimental basis outside of this rule and in future rule-making efforts.

Objective 4: Increase protection for the North River Chinook population by delaying the recreational fishery in North Bay and the North River until October 1.

The adopted rules are constructed with a delay in the commercial fishery in North Bay until October 1, similar to the rule proposed for the recreational fishery and described in a separate rulemaking process.

Objective 5: Maximize harvest opportunity on hatchery coho, in a manner that is consistent with achieving objectives and goals for healthy, diverse and sustainable natural spawning populations.

The adopted rules are constructed to maximize the harvest of hatchery coho while meeting the constraints imposed by conservation objectives for chum and wild Chinook salmon. Selective fishing is utilized during the first 2 weeks of the coho season to achieve the highest level of coho catch while minimizing the number of natural-origin Chinook mortalities. The predicted catch of hatchery coho by both sectors is 13,593 hatchery coho.

Objective 6: Meet or exceed 13,090 escapement goal for natural-origin coho.

The adopted rules are constructed to achieve the coho escapement goal for natural-origin coho. The predicted escapement is 31,239 natural-origin coho.

Objective 7: Continue moratorium on chum directed fishing, i.e. closed.

The adopted rules do not allow a directed chum fishery and prohibit commercial fishing during the management period when chum are most prevalent (October 1 through 15). However, incidental catch of chum is an inevitable consequence of fisheries that take place when multiple stocks are present, and incidental retention of chum is allowed. The movement towards retention of chum reflects the Department's consideration of comments that incidental mortality of chum was too high in the rules proposed in the CR-102 and produced waste while also complicating the focus on implementing selective Chinook salmon fishing. The revised mix of fishing in the adopted rule addresses these concerns while maintaining overall chum conservation objectives as identified in Objective 8.

Objective 8: Limit the incidental impacts on chum to a harvest rate of 10% or less.

The adopted regulations are structured to minimize incidental mortalities on non-target species by focusing fisheries at times and in areas of peak abundance for target salmon stocks, while avoiding times and areas with higher incidence of non-target species. When applying a regulation or rule to minimize bycatch, WDFW has considered the best available scientific information concerning the potential impact of these fishing seasons on non-target species. The adopted rules also prohibit fishing the week prior to chum management when chum catches can be high. This will further reduce incidental mortalities. In all weeks of fishing, the target species is predicted to be more abundant in the catch than chum. The predicted incidental harvest rate on chum salmon is 9.6%.

Objective 9. Provide meaningful opportunities for both recreational and commercial fishers.

The adopted regulations provide meaningful fishing opportunities with recreational fishers projected to catch a slightly greater percentage of the Chinook and coho salmon than in recent years.

## **II. Changes from the Proposed Rules**

The adopted rule varies from the rule noticed in the CR 102. The following summary briefly describes any changes, other than editing changes, and the principal reasons for adopting those changes.

In general, the proposed season that would have resulted from the rule noticed in the CR102 utilized selective fishing to the fullest extent, requiring the release of chum and wild chinook during the entire fishery. Except for an initial 3.5 day opening occurring in early August, fishers were required to use nets with a 6.5” maximum mesh size, short (45 minute) soak times and the use of recovery boxes for salmon required to be released. The rule also defined “lethargic” fish that had to be placed in recovery boxes and prescribed selective fishing requirements.

Changes to the proposed rule were made based on input received from the public and further evaluation of the rule-making record. The primary changes were a reduction in reliance of selective fisheries, allowing larger mesh nets during the Chinook season, and allowing retention of chum. This resulted in adjustments to the number of fishing days, times and locations. Additional changes modified some of the prescriptions for the use of selective fishing techniques.

The following tables outline the fishing times and locations in the original rule as noticed in the CR 102 (**Table 1**) and as reflected in the final rule adopted (**Table 2**).

**Table 1. Proposed Willapa Bay Commercial Gillnet Season Filed May 21, 2014.**

Management Period - hours/opener	Catch Areas (days open in each area)				
	T	U	R	M	N
July 5-Aug 15; 24hours/day	3.5	3.5	Closed	closed	3.5
August 16-20; 12 hour/day	closed	1	Closed	closed	1
August 21-25; 24 hour/day	closed	1.5	Closed	closed	1.5
Aug 26-Sep 1; 12 hour/day	closed	3	closed	closed	3
September 2-8; 24 hour/day	closed	3	closed	closed	3
September 9-15; 24 hour/day	closed	3	closed	closed	3
September 16-22; 24hours/day	5	4	5	5	5
September 23-30; 24hours/day	6	5	6	6	6
October 1-7; 24hours/day	5	4	5	5	5
October 8-14; 24hours/day	3	3	3	3	3
Nov 1-10 - Late coho; 24hrs/day	5	5	5	5	5
Nov 11-19 - Late coho; 24hrs/day	1	1	1	1	1
Nov 20-30 - Late coho; closed	closed	closed	closed	closed	closed

**Table 2. Final 2014 Willapa Bay Commercial Gillnet Season.**

Management Period - hours/opener	Catch Areas (days open in each area)				
	T	U	R	M	N
July 5-Aug 15; 24hours/day	3.5	3.5	closed	closed	3.5
August 16-20; closed	closed	closed	closed	closed	closed
August 21-25; closed	closed	closed	closed	closed	closed
Aug 26-Sep 1; 12 hour/day	closed	1	closed	closed	1
September 2-8; 12 hour/day	closed	2	closed	closed	2
September 9-15; 12 hour/day	closed	4	closed	closed	4
September 16-22 <sup>a</sup> ; 24hours/day	4	3	4	4	4
September 23-30; 24hours/day	6	5	6	6	6
October 1-7; 24hours/day	6	5	6	6	6
October 8-14; closed	closed	closed	closed	closed	closed
Nov 1-10 - Late coho; 24hrs/day	7	7	7	7	7
Nov 11-19 - Late coho; 24hrs/day	7	7	7	7	7
Nov 20-30 - Late coho; closed	closed	closed	closed	closed	closed

a/: An additional day may be scheduled via emergency rule pending an in-season evaluation of compliance with regulations.

The following is a brief narrative summary of the changes made to the rule noticed in the CR 102 and the rationale.

1. Allows fishers to use 9” maximum mesh size during the Chinook management period (prior to September 9), rather than a 6.5” maximum mesh size.

Reason: Commercial fishers identified significant logistical challenges, and a financial burden to comply with the 6.5” maximum size net requirement for the Chinook season. This change was also made in connection with changes in the level of selective fishing advocated by other commenters and described below.

2. Reconfigures the reliance on selective fishing by allowing retention of natural-origin Chinook during most of the fishing period both during the early portion of the season when hatchery Chinook predominate and later when only small numbers of Chinook are encountered. Retention of chum is allowed throughout the season. Selective fishing requiring release of natural-origin Chinook would occur only between September 8 and 22, the period when increasing number of days fished per week while Chinook presence remains relatively high could disproportionately impact this portion of the return timing. The Department plans on allowing incidental retention of chum in recreational fisheries as well.

Reason: A 9” maximum mesh net is designed to capture Chinook salmon around the gills versus tangling them around the mouth as occurs with the use of mesh sizes less than 6.5”. As a result, larger mesh also has a higher anticipated handling mortality rate when used as selective gear (e.g. when certain non-target fish – here natural- origin Chinook and chum - are specified for release and return to the water). As the mortality rate exceeds 60% (as it does with 9” mesh), the concern that fish are being wasted increases. In these circumstances, it is rational to simply retain chum or natural-origin Chinook and reduce the number of fishing days during Chinook management, provided that overall conservation objectives can be met. Because natural-origin Chinook will be retained for the majority of the season, the number of days of Chinook fishing allowed was reduced to stay within conservation objectives. In addition, many commenters suggested that the handling mortality on chum salmon was too high and wasteful for the number of coho retained. By allowing retention of chum salmon that are caught incidentally to Chinook and coho fisheries, fishers receive value for the fish rather than forcing them to release these fish and waste is avoided. Because chum will be retained, the number of days of coho fishing was also reduced to meet chum conservation objectives. Re-aligning the fishery to a mix of both selective and retention fishing is also responsive to concerns from various commenters that enforcement and observer resources are insufficient to ensure full compliance with selective fishing techniques, and suggestions that full retention of chum reduces the concern that fishers will be overwhelmed by the task of recovering both Chinook and chum in selective fisheries.

4. Moves the summer fishery opener a week later from the week of August 3 to the week of August 10.

Reason: In recent years this opener has occurred during the second week of August. Commercial fishers commented that the fishery was scheduled too early to provide a reasonable expectation of success in catching Chinook. This shift in timing is associated with the elimination of openings during the early portion of the fall fishery to maintain separation for the recreational fishery when no commercial openings would occur.

5. Provides consecutive days each week without commercial fishing.

Reason: Commenters suggested that having non-consecutive days without commercial fishing did not allow fish enough time to transit the entire bay thus negatively effecting recreational opportunity,

and reduced the ability for certain target stocks to reach established conservation zones. Including the days closed to offset less selective fishing, the schedule was adjusted to provide consecutive days, or more consecutive days, without commercial fishing in weeks beginning August 31, September 7, 14, 21, and October 5. The week beginning November 2nd has less consecutive days without commercial fishing.

6. Removes the definition of lethargic and requires fishers to place all wild Chinook into the recovery box until they are not bleeding and they are not lethargic and before landing on shore or in port.

Reason: Commenters stated that the proposed definition of lethargic was insufficient to address their greater concern that fish needed to have their condition assessed and treated in the recovery box prior to release. Therefore the definition of lethargic was removed and replaced with a requirement that all fish required to be released be placed into a recovery box and released once they are not lethargic and not bleeding, or before landing on shore or in port if the fish are dead. Secondly, as discussed above, concerns associated with placement of fish into a recovery box for treatment are significantly addressed by the reduction in the number of days where wild Chinook are required to be released.

7. Finally, the eastern boundary line of the North River conservation area was adjusted to reduce overlap and constriction of the main Willapa River channel.

Reason: Recreational and commercial fishers alike commented that sufficient protection of North River origin-Chinook was offered by a line projected upriver along the Willapa River channel that did not encroach upon the channel itself and made landfall at a more prominent headland versus the navigation range maker in the channel.

### **III. Summary of Public Comments and WDFW's Response**

A formal rule making public hearing was held on June 24, 2014. This hearing provided the public with an opportunity to comment on the proposed rules published in WSR 14-11-105. The hearing was attended by approximately 23 individuals and 17 provided testimony. Public comment period for this proposed rule, WSR 14-11-105, was open from May 21, 2014 through June 24, 2014. In general the comments received during this comment period focused on conservation, catch allocation, net release mortality rates, the code revision process, model accuracy, the usefulness of recovery boxes, and selective fishing as an appropriate tool for reducing impacts to non-target species. All testimony and comment received during the formal rule-making period following issuance of the proposed rule via the CR 102 has been categorized into the following points with WDFW's response(s) below.

#### **1. Naselle River Chinook Harvest Rate Objective**

*There is insufficient justification for deviating from the 2010 plan and lowering the Naselle River Chinook exploitation rate from 30% to 20%.*

As discussed in other parts of this CES, data from 2010 forward (the period in which Naselle River natural-origin versus hatchery origin composition can be ascertained) suggests that insufficient progress is being made toward the objective of increasing natural-origin stocks and escapement. While numerous factors introduce uncertainty into this analysis (time scale, amount of data, variability in actual stock abundance and returns), the Commission has placed a high priority on conservation of Naselle River chinook. Accordingly, a focus on conservation over harvest is appropriate. Commission policy is to implement added conservation if escapement objectives are not being met. The addition of a conservation buffer is difficult given the uncertainty in data noted above and is largely a qualitative judgment. No data

or analysis has been provided by any commenter regarding an alternate buffer or that casts serious doubt on the buffer actually selected by the Department. Given that conservation is a higher priority than harvest, the Department is not prepared to adjust the selected buffer in light of the record compiled for these rules.

## 2. Gill Net Release Mortality

*A) It is inappropriate for the rule to be based upon mortality rates for selective fishing gear/techniques that correspond to a 90% compliance rate. A WDFW spreadsheet shows that 9.64% of the time when an observer was present on board, the fleet was out of compliance with regulations relating to fish handling. Commenters expressed concern there was insufficient evidence to support a 90% compliance rate.*

*B) Other commenters expressed concern that it is inappropriate for the rule to be based upon mortality rates for selective fishing gear/techniques that correspond to a 90% compliance rate because they feel that the fleet fully adheres to the regulations (100% compliance).*

Response to A and B: The Department agrees that there is a relationship between the fishery practices and the mortality rates associated with selective fishing. The IFSP was convened to address this issue and provided a matrix of mortality rates for selective fishing based upon varying rates of compliance. The IFSP estimated a 90% compliance rate, and associated mortality rate, considering “actual fishing” practices in Willapa Bay. The Department recognizes that this work contains some uncertainty because there are no in-basin studies that directly show this relationship or these rates. Furthermore, as various commenters noted, there is limited data available to provide a clear identification of actual compliance being attained and substantial disagreement on that subject between commercial harvesters and other commenters. Nevertheless, the IFSP work is persuasive and a useful tool.

The Department evaluated these comments by reviewing the conclusions and supporting analyses of the IFSP. The IFSP considered multiple factors when developing their recommendation for the release mortality rates in the Willapa Bay commercial fishery (page 5 of the report), including: a) commercial fisher and public testimony on compliance with fishing rules; b) enforcement issuance of citations for non-compliance; c) observer information on soak times (i.e., the length of time that a net is in the water) and use of recovery boxes; d) the effects of catch rates, soak time, and crowding in recovery tanks on release mortality. The IFSP concluded that the release mortality rate was likely to be higher in the commercial fishery than in a research study, and that the actual practices in the commercial fishery would result in a 56% release mortality rate for gillnet fisheries in Willapa Bay using gillnets with mesh size less than 6.5”, what they defined as small mesh. The IFSP indicated (IFSP 2014; Table 2) that this release mortality rate was associated with a compliance rate of 90%, and that lower compliance rates would result in higher mortality rates.

The Department then reconsidered the primary fishery practices and fish handling techniques that would affect release mortality and attempted to locate additional information on each factor (Table 3). The single most important factor in a mark-selective fishery is that the fishers must release any unmarked (e.g., natural-origin) Chinook encountered. We calculated a rate of compliance with the requirement to release certain salmon unmarked Chinook or coho salmon by dividing the number of illegally retained fish divided by the number of fish unmarked fish encountered. Compliance in Willapa Bay was calculated to be 99.8% in 2010 and 99.8% in 2011, 100% in 2012, and 99.2% in 2013.

**Table 3. Information sources for compliance with three fishery practices and fish handling techniques that affect release mortality.**

<b>Compliance Factor</b>	<b>Data Source</b>	<b>Compliance</b>
Release of unmarked (natural-origin) Chinook or coho	Incidence of natural-origin Chinook or coho at fish buyers relative to estimated encounters in Willapa Bay	2010: 99.8% 2011: 99.8% 2012: 100% 2013: 99.1%
	Citations for possession of natural-origin Chinook in Willapa Bay or Grays Harbor	8 citations 2010-2013
Soak Time < 45 Minutes	Observer information on the soak time of each set.	2012: 90.4% 2013: 90.4%
Use of Recovery Box	Citations for failing to use recovery box in Willapa Bay or Grays Harbor	4 citations 2010-2013

A second factor of primary importance in determining the effectiveness of a mark-selective fishery is the soak time of the net, or the time elapsed from when the first of the gill net web is deployed into the water until the webbing is fully retrieved from the water. The IFSP concluded (page 22 of report) that the soak time “of gillnetters in a fishery is a critical element of a non-retention fishing mortality”. Data on soak time was collected by onboard observers during the 2012 and 2013 fishing seasons in Willapa Bay. As noted by one of the commenters, we found that the soak time was less than or equal to the 45 minute maximum in more than 90% of the sets in each of the two years.

Similar evaluations were conducted from data collected from the Grays Harbor commercial fishery. The Department observed 875 net sets during Grays Harbor commercial fisheries from 2006 through 2013. These data were collected during on board monitoring that represents roughly 14% of the effort during those years. During these observations, 18 sets were not fully retrieved within 45 minutes of the first float hitting the water. Compliance with soak time regulations based on these observations was 97.9%.

We also looked at the distribution of the soak times because shorter soak times can reduce the release the mortality (see page 22 of IFSP report). Fishers are provided the flexibility to vary soak times as conditions warrant as long as the soak time does not exceed the 45 minute maximum established by WAC. We analyzed the soak times of the 363 sets observed in 2012 and 2013 in Willapa Bay and found that about 14% of the sets had soak times of 0-15 minutes, about 30% had soak times of 16-30 minutes, and about 45% had soak times of 31-45 minutes (Figure 1). The average soak time was 31 minutes in 2012 and 30 minutes in 2013. This compares favorably with the range (24-60 minutes) and average (39 minutes) of the research study from which the 56% mortality rate was derived.

A third factor of importance in determining the effectiveness of the mark-selective fishery is the use of the recovery box. The IFPS concluded (see page 21) that the prompt removal of less-than-vigorous salmon from the nets and “into a full-flow and operating recovery box is generally important to achieving reduced immediate and long-term mortality rates”. We were unable to locate quantitative information regarding usage of recovery boxes. Personal observations presented to the IFSP and as comments included reported observations of rough handling and handling fish by the gills, non-functioning recovery tanks, and underuse of recovery tanks. The enforcements officer also stated that since 2010 there had been 4 citations in Willapa Bay or Grays Harbor for failing to use a recovery box while picking the net.

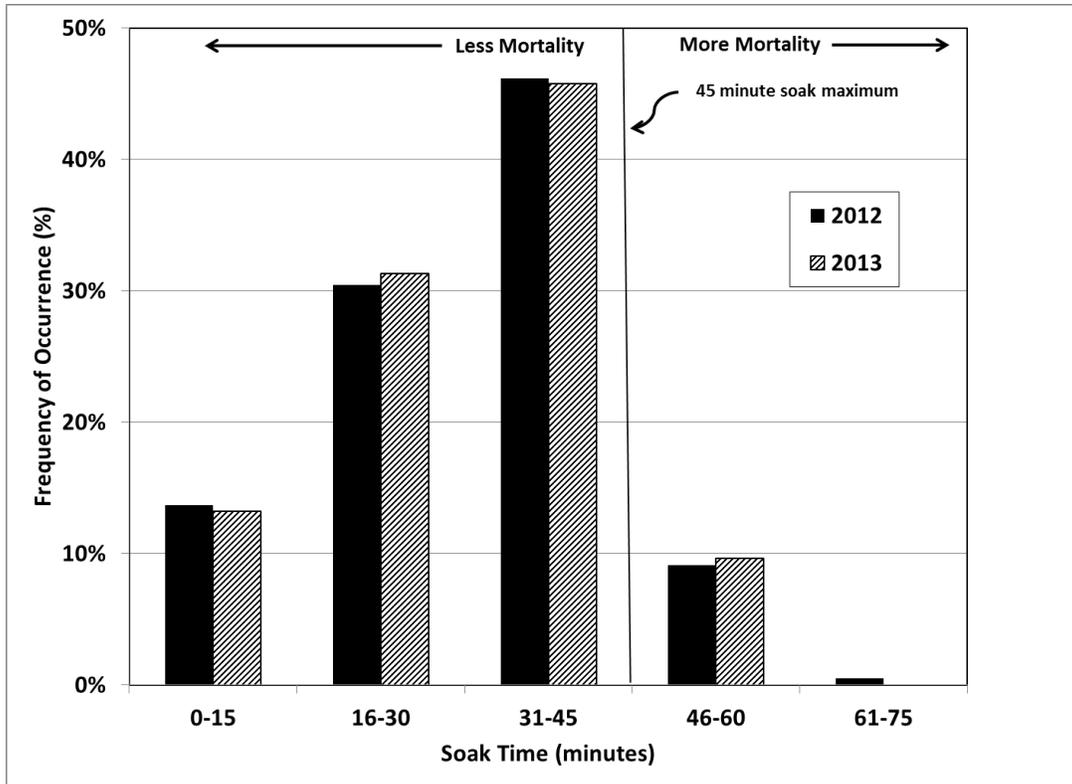


Figure 1. Percent frequency of soak times for observed sets in 2012 and 2013 in Willapa Bay.

The IFSP report and our empirical analyses both support the use of mortality rates associated with a relatively high (90%) compliance rate. However, the Department is concerned by the reports of poor fish handling practices and the non-compliance evident from the enforcement citations. To reduce the risk posed by potential non-compliance, the Department:

- 1) Eliminated all mark-selective fisheries prior to September 8 and after September 22 (discussed in Section II, Changes from the Proposed Rule);
- 2) Will enhance the on-board observer program with the intent of achieving a 15% monitoring rate (rate was previously less than 1%) (see response to comment B); and
- 3) Removed one day of fishing from the schedule which was modeled at a 90% compliance rate.
- 4) Will initiate a fleet-wide survey program and, if appropriate, take in-season action to allow an additional day of selective fishing if observed compliance with fish-handling rules provides further confidence that 90% compliance is being attained. This day (noon September 21 – noon September 22) has already been modeled to account for impacts and ensure conservation objective will be maintained even if the additional day is added. The Department believes this will act as further incentive for commercial harvesters to attain and maintain the modeled compliance rate.

In the development of the final rule, and our in-season monitoring program goal, the Department considered the judgment of the IFSP, the rule-making record, empirical data for commercial regulations, and its own experience with the items listed by commenter (public testimony, actual soak time and gear handling by harvesters, use and potential crowding of recovery tanks, citation rates and the qualitative assessment of DFW enforcement officers and observers). The IFSP recommended a mortality rate based upon a 90% compliance rate for “actual fishing” within Willapa Bay. While some commenters feel this is

too stringent and other commenters feel this is too generous, it was a reasonable starting point for implementation of the revised mortality rates in light of the rule-making record.

After conducting the additional analysis discussed above, the mix of selective and non-selective techniques employed was rebalanced for a variety of reasons, including considerations relating to availability of observers and enforcement effort. The Department has provided a reasonable hedge for uncertainties associated with compliance by modeling a day of fishing, but not actually scheduling that day until compliance is evaluated in-season. The rebalancing of the schedule, and reservation of a full day of fishing pending in-season evaluation of compliance, reduces the risks posed by potential non-compliance.

*C) The IFSP, and the resulting mortality rates, were improperly influenced by leading questions and need better justification.*

The Department respectfully disagrees. Mortality and compliance have a relationship. The Department agrees that it is hard to quantify both, and there is limited data supplied to draw a clear connection. However, there is a need to select an appropriate mortality rate. The IFSP was convened to aid the Department in identifying mortality rates that might be used. One component is compliance. The IFSP was given the opportunity to hear views on compliance and to form an opinion on the compliance likely achieved under “actual fishing” conditions. Commercial harvesters suggested that compliance is typically near 100%. Other groups are skeptical. No commenter has provided significant empirical evidence or any model to predict actual compliance or to refute the IFSP conclusion that 90% compliance is a reasonable assumption for “actual fishing” as currently practiced in Willapa (IFSP 2014; Table 2). The Department considered the qualitative evaluation of the IFSP together with other information such as enforcement reports, reports from observers, and the overall high compliance with commercial regulations. In the judgment of DFW, the IFSP recommendation is a reasonable approach, and additional adjustments have been made (as discussed above) based upon comment and analysis of the compliance rate issue.

*D) The 3% and 5% drop out drop off mortality rates are not justified and are duplicative of rates already used in PFMC modeling using the FRAM.*

WDFW applied a mortality factor commonly referred to as “drop-out” for commercial fisheries and “drop-off” for recreational fisheries. These are mortality rates that fishery managers commonly use to estimate mortality arising from encounters with recreational and commercial fishing gear that do not produce a landed fish and thus cannot be measured in hooking or net harvest mortality studies. Thus, they are an additional form of gear encounter mortality that it is appropriate to estimate. WDFW applied a drop-out mortality rate of 2% for coho fisheries and 3% for Chinook fisheries, similar to the rates used for modeling other coastal fisheries (Model Evaluation Workgroup 2008). The identified mortality rates have general acceptance by Northwest fishery managers (state, federal and tribal) and have been used for many years by PFMC modelers. The rates selected are the best professional judgment of state, tribal and federal fishery managers. To reduce uncertainty in model performance and enhance conservation, WDFW accounted for this source of mortality when modeling the fishery specific to Willapa Bay using the TAMM (Terminal Area Management Model) for Willapa Bay as recommended by the IFSP (2014):

The IFSP was instructed not to include drop-off mortality in its evaluation of release mortality, but a total accounting of the mortality associated with fishing should include drop-off mortality. It is included in other WDFW models, and should be included in the assessment of fishing mortality associated with the fisheries in Willapa Bay and Grays Harbor.

In the absence of studies specific to Willapa, coastal rates are an appropriate alternative for coastal bays. In the past, drop-out and drop-off mortality has been accounted for only at the coast wide scale for multiple fisheries. It is now being used to model impacts specific to Willapa Bay. The rate is not duplicative as suggested by the commenter. The fishery information provided to PFMC for use in the FRAM when planning for coast wide impacts and fishery objectives was adjusted by removing the drop-out and drop-off mortality for the specific purpose of ensuring it is not double counted in the FRAM. Accordingly, decision making at both the Willapa level (using the Willapa TAMM) and at the coastal scale (using the FRAM), accounts for drop-out/drop-off with similar rates and without duplication.

Finally, in a study conducted in Willapa Bay, Ashbrook et al. (2007) found that 0.9% of the coho and Chinook caught in gill nets, and 1.2% and 0.6% of coho and chinook, respectively, caught in tangle nets had suffered pinniped predation. These results suggest that a 2-3% drop-out mortality is a reasonable assessment until further studies can provide Willapa Bay specific rates which would likely include separate estimates of drop-out and pinniped mortality.

*E) The Technical Advisory Committee (TAC) found that bias in survival of the upstream control group of Ashbrook et al. (2004) warranted a reduction in the assumed mortality rate. The TAC adjusted Chinook mortality rates down to 40% and 14.7% for large mesh (8") and small mesh (4.25") fisheries, respectively. The assumed Chinook non-retention mortality rates for large and small mesh sizes should not exceed the rate of 40% agreed to by the TAC for large mesh gill net fisheries.*

The particular comment is not relevant as the final rule does not include a selective fishery with either a 8" or 4.25" maximum mesh gillnet, and the TAC has made no recommendation regarding the release mortality rate for a 6.5" maximum mesh gillnet specified in the final rule. However, we did believe it was important to evaluate the methodological concern raised by the commenter. We acknowledge that the TAC did recommend a 40% release mortality rate for an 8" mesh gillnet for spring Chinook in the Columbia River. However, although the IFSP recommendation started at a similar place with a 42.7% release mortality rate (versus the TAC recommendation of 40% for spring Chinook in the Columbia River), additional increments of mortality were added for the higher initial mortality observed in the Willapa Bay studies and to account for actual fisher practices. After careful review of this issue, we remain convinced it is appropriate to utilize the IFSP recommendation of a 56% release mortality rate.

*F) The mortality rate for chinook should not be used for chum because chum are hardier.*

The adopted rule does not require the release of chum, rendering this comment moot for 2014.

*G) The IFSP incorrectly concluded that mortality rates are "minimum" rates on the basis that they were ascertained in ideal study conditions rather than real fishing. The commenter asserts that study fishing was close to, or identical to, real fishing.*

The IFSP uses the term "minimum" in reference to their conclusions regarding mortality rates for Chinook salmon releases based on compliance with techniques used by the researchers and not WAC. They are based on mortality rates associated with research using short soak times, optimal handling and use of recovery boxes; thus they were in full compliance with "fish-friendly" techniques. The IFSP (2014) noted several differences between actual practices and the research practices:

Evidence presented to the IFSP that at least in some instances, fishery operations do not fully comply with the fish-friendly prescriptions for non-retention mortality. This evidence included submitted statements, and testimony at the workshop. Reported deviations from fish-friendly operations included longer soak times, rough handling and handling fish by gills, non-functioning recovery tanks, and underuse of recovery tanks.

This statement and others through the IFSP report demonstrate that the panel carefully considered the practices of the actual fisheries and that they provided a reasoned approach to suggest that the mortality rates represented minimums. Finally, as noted above, compliance with soak time requirements in Willapa Bay was only 90% and thus warrants a conservative approach as we work towards implementation of selective fishing techniques.

*H) A strong observer program is needed to help ensure compliance with selective fishing techniques. WDFW needs to ensure sufficient observers are funded and utilized in connection with selective fishing.*

The Department agrees that monitoring of the fishery is important to ensure compliance and collect meaningful data. As discussed above, the fishery was reconfigured in part due to monitoring issues. The Department will concentrate on-board monitoring during those time periods when release requirements are in place. The Department will strive to provide on board monitoring at a rate of 15% per day during the selective fishery portion of the season (September 8<sup>th</sup> through September 22<sup>nd</sup>). As noted above, this rate produced a 98% compliance with soak time requirements in Grays Harbor. During the past three years, 2010 to 2012, the average number of boat days has been about 350 during this time period. This equates to an average of about 35 boats per day participating in the fishery.

*I) The IFSP should have adjusted the mortality rates to account for the difference between the Columbia River and Willapa Bay in terms of the length of time/distance between capture and spawning.*

The IFSP (2014) considered two biological factors in their recommendation, maturation condition and adaptation to freshwater. With regards to maturation condition, they concluded that Willapa Bay fish would be less vulnerable to handling injuries than Columbia River fish.

Distance to spawning grounds is often associated with the maturation condition of Pacific salmon when they move from the ocean to their freshwater habitats, and the time they will be in freshwater prior to spawning. Fish with shorter migration distances in freshwater, such as Washington Coast fall-run Chinook and chum salmon, are more advanced in their maturation condition than fish with long freshwater migration distances, such as Columbia River spring-run Chinook salmon. Coastal fish can exhibit blushing or watermarking and obvious differences in morphology between sexes at freshwater entry, whereas Columbia River spring-run Chinook salmon are typically “ocean-bright” with deciduous scales. As such, the coastal fish may be more resistant to capture stress at first entry to freshwater, assuming they are captured in habitats that pose similar physiological challenges to the fish. Also, shorter time to spawning means that the fish most survive the stress of capture and release for a shorter duration until completing their maturation and reproducing.

The ISFP assumes that the fall running salmon in Willapa Bay and Grays Harbor are further mature than the spring Chinook studied in the Columbia River. This difference could make the fall salmon generally less vulnerable to the handling injuries.

With regards to adaptation to freshwater, the IFSP (2014) concluded that Willapa Bay fish would be more vulnerable to handling injuries than Columbia River fish.

Pacific salmon are well-known for their anadromous behavior, which requires them to be capable of living in both freshwater and marine habitats. These habitats require extremely different physiological responses (Clark and Hirano 1995). In marine habitats, salmon

must retain water and excrete excess salts. They produce little urine, and actively excrete ions through specialized chloride cells in their gills. In freshwater, the kidneys produce copious amounts of urine, and ions for salts are actively taken up from the surrounding water by the chloride cells. These processes are hormonally mediated. As maturing salmon enter estuarine waters, they transition from one physiological state to the other. There is evidence that during this estuarine residency and physiological transition, salmon are more susceptible to stress, including capture stress. For example, mortality following catch-and-release on recreational fishing gear was much higher for coho salmon captured in an estuary than those captured in freshwater (Vincent-Lang et al. 1993), and Baranski (1980) observed much higher mortality for Chinook salmon captured by netting in the Skagit River estuary than in freshwater. The differences observed are probably an interaction of maturation condition and physiological stress during transition. However, the substantially higher immediate mortality reported by Ashbrook et al. (2007) for fall Chinook in the Willapa Bay estuary captured by gillnet or tangle net relative to spring Chinook captured in freshwater in the Columbia River (Figure A3-1) indicated that the fall-run fish were much more sensitive in the estuarine environment regardless of more advanced maturation condition associated with shorter freshwater migration distances.

The ISFP assumes that salmon in all fishing areas within Willapa Bay and Grays Harbor can be more vulnerable to injury and stress from fishing activities compared to results from spring Chinook in the Columbia River. This vulnerability is expressed in the immediate mortality rates. The ISFP assumes such increased vulnerability carries through into long-term mortality.

Applying the research from the Columbia River comes with uncertainties about how the biological factors transfer to Willapa Bay fish. The IFSP concluded with higher mortality for one factor and lower mortality for the other. WDFW finds the immediate mortality rates cited in the IFSP report a compelling reason to discount the lower rate observed due to maturation condition and length of freshwater residence. Given the uncertainty about how much one biological factor weighs against the other, WDFW does not believe that reasoned adjustment in either direction is prudent without additional research.

### 3. General Conservation

*A) The proposed schedule does not ensure conservation objectives will be achieved for natural origin fish. Commenters suggested various highest priorities including: North River Chinook, escapement goals in general, and coho.*

The adopted rules and regulations of these commercial fisheries (along with recreational fisheries) are constructed such that the planning models predicts: 1) Attainment of a harvest rate of no more than 20% on Naselle River Chinook; 2) Attainment of a harvest rate of no more than 10% on chum salmon and a chum escapement of 50,054, exceeding the goal of 35,400; and 3) A coho spawning escapement of 31,239, exceeding the goal of 13,090 fish. Each of these criteria meets or exceeds the fishery and conservation objectives described by the agency during the pre-season process.

WDFW acknowledged, early in the process, that the very low forecast for natural-origin Chinook meant we could not meet the escapement goals described in the Willapa Plan before a single fish was harvested in the bay; while at the same time we needed to balance a competing objective to harvest healthy stocks and reduce the potential negative effects of excessive hatchery fish on the spawning grounds (WDFW 2014). This “Catch 22” was recognized by commenters during the NOF process: “A failure to capture those hatchery fish could result in large numbers of hatchery fish ‘flooding the gravel’ and genetically

overpowering the small number of remaining natural spawners” (Advocacy Letter, April 4, 2014). In developing management objectives, WDFW described the rationale for taking adaptive management measures and reducing the allowable harvest rate on natural-origin Naselle River Chinook from 30% down to 20% with the intent to put the natural-origin spawners on an upward trajectory, while allowing access to healthy and harvestable fish, including hatchery Chinook. The seasons described in the adopted rules are predicted to increase natural-origin Chinook spawners in the Naselle River to 1,077 compared with only 564 in 2013. The number of natural-origin Chinook in the North River and Smith Creek stock is predicted to be 239 fish, continuing the increasing trend of 168 in 2012 and 196 in 2013. This shows that the seasons in the adopted rules continue on the path toward the objective of increasing natural-origin spawners.

*B) The rule should include 3 consecutive days without commercial fisheries each week to allow fish to safely transit through the bay to meet conservation objectives and provide for in-river recreational fisheries. Monitoring the effectiveness of the closures should be implemented.*

Both the proposed and adopted rules have closed weeks during the commercial schedule during critical passage periods for stocks of concern, Chinook and chum. Therefore the request to have three consecutive days without commercial fishing appears to be of highest concern during the coho management period, when the most days of commercial fishing are scheduled. The comment implies that coho conservation objectives are not being met and could be met if passage windows were provided. That is not an accurate characterization of prior fishery management or the proposed rule.

As detailed in the response to comment issue 8.A below, coho escapement goals have been met in 9 out of the last 10 years, and by an average of more than double the goal (140% over). WDFW concludes that additional passage windows are not necessary for conservation purposes and relies on the escapement record showing the conservation goals for coho are being met.

WDFW did consider the need for passage windows to reduce potential conflict with the recreational fishery. The commercial schedule is also crafted with breaks each week to promote fish passage. The Department realizes that mid to late-August is a time period when Willapa Bay natural-origin Chinook are most numerous in the bay, particularly in Area 2T. The commercial fishery schedule was crafted with this in mind. The season was structured so there are no commercial openings scheduled between August 15 and August 25, and that 2T would remain closed to commercial fishing from August 16 through September 15. Closures bay wide from October 8 through November 1 to the commercial fishery is in place to protect Chum stocks. Breaks have also been implemented during weeks when commercial fisheries are open. These breaks are designed to allow passage windows for fish to move through the bay without the obstructions of nets. Although suggestions were made that up to 3 and 4 days without net are needed, the Department believes that one to two days, along with natural days off created by weather, will promote conservation objectives. However, to ensure that passage windows are sufficient in through the Willapa channel catch area 2U will be closed an additional day each week between September 14 and October 4.

#### 4) North River Closure Area and Chinook Conservation

*A) Because non-native hatchery Chinook were planted in the Fall and North rivers, North River Chinook are not a native stock and do not need protection.*

*B) North River Chinook are identified in SaSi as an early timed stock and are the only true native stock in Willapa Bay. Therefore they should be the priority stock for conservation.*

Response for A and B: From 1987 to 1992 more than 3 million hatchery Chinook were released in the North River and Smith Creek. Some of these releases originated from hatchery stocks outside Willapa Bay, including stocks from Oregon. The level of gene flow from these hatchery Chinook to natural-origin Chinook is unknown. At this time, there is no evidence that North River Chinook have a genetic lineage different from any other stock in the Willapa Bay. Additional research is needed on this issue. Nonetheless, the Fishery and Hatchery Reform policy mandated that WDFW adopt management designations for each stock in the watershed. The Willapa Plan addresses this in greater detail and goes on to describe stock status and management intent for the North River stock. Although the North River Chinook are not the Primary Chinook stock in Willapa Bay, they are designated as a “Contributing” population. This means that they contribute some viability to the overall population. It is important to provide additional protection in the light of the population trend(s) that the Department has observed. With this in mind, WDFW implemented additional conservation measures for natural-origin Chinook in North River and Smith Creek drainage for 2014, including the closure area around the mouth of the river and the delayed opening in the recreational fishery. These measures, combined, will likely work to increase in-river run size by allowing for more natural-origin Chinook to make it to the river. As described below under Model Performance, WDFW did not apply a reduction in mortality associated with these conservation measures and therefore the model is likely more conservative than it has been in the past. These increased conservation efforts will help WDFW achieve the management objectives set forth in the Willapa Bay Management Plan.

*C) The conservation measures for North River Chinook achieved by the North River exclusion area will be compromised by any fishing in area 2T prior to September 15<sup>th</sup> or 30<sup>th</sup>.*

This comment, if implemented, would essentially enlarge the designated North River exclusion area to include all of area 2T. A larger closure area was discussed with the public during the North of Falcon meetings. Comments were received from the public indicating that the proposed North River closure area was adequate and that a larger closure area was “unnecessary ‘over-reach.”

The total commercial fishery impact on the Willapa/North river stock complex occurring in area 2T prior to September 15<sup>th</sup> is 46 fish (about 12%) of the total commercial impact on this stock group. On average, the North River/Smith Creek component of this stock complex accounts for 20% of natural escapement and so the impact from fishing in area 2T is about 9 Chinook under the adopted rule. As described above, the number of natural-origin Chinook in the North River and Smith Creek stock is predicted to be 239 fish, continuing the increasing trend that has been observed (168 fish in 2012 and 196 fish in 2013). WDFW does not believe that additional closures to reduce the mortality by 9 North River Chinook is a reasonable tradeoff for the corresponding loss of hatchery fish that can otherwise be harvested and removed from potentially spawning with wild Chinook. Finally, WDFW was careful to apply closure areas to both commercial and recreational fisheries. As area 2T is the primary recreational fishing area, a closure of area 2T applied to both sectors would cause a significant reduction in recreational effort and catch; whereas as a closure just for the commercial sector would be difficult to justify as mortality of North River stocks is also occurring in the recreational sector, albeit at a lower rate. On balance, the relatively low conservation benefit from further closure of area 2T, the offsetting conservation loss from reduced harvest of hatchery fish, and the sense that the original exclusion area was well developed, supports maintaining the extent of the exclusion zone as originally envisioned.

*D) Boundaries for the closure of the North River bay are ambiguous and will preclude fishing in a portion of the main channel of the Willapa River.*

WDFW acknowledges that a boundary line east of buoy 13 would be problematic for commercial fishers and was an unintentional closure of a very small portion of the main channel of the Willapa River. As such, we have slightly revised the line east of buoy 13. The revised line will maintain the protection for

North River Chinook while allowing fishing access to the main channel of the Willapa River upstream of the North River mouth.

## 5. Allocation

*A) WDFW should explain its justification for a 15% reduction in commercial fishing.*

*B) There is not rationale for allocating more salmon to the recreational sector.*

*C) There is insufficient explanation of the 4% increase in recreational harvest from 2013 to 2014.*

Response to A -C: The Department has employed new mortality rates, changed the Naselle impact rate, and incorporated drop-out rates in the Willapa TAMM. These changes reflect a decision to take action in light of concern that implementation of prior conservation management criteria may not be producing enough movement towards stated conservation objectives. One result of these changes is that more salmon will escape the commercial fishery in the bay and migrate into freshwater. Once in freshwater, hatchery fish can be caught with selective fishery techniques that have a much lower mortality rate on released fish than gillnets (10% compared to 62% in this case). With the increased freshwater abundance of healthy stocks such as hatchery Chinook and coho, the Willapa TAMM predicts a higher catch of fish in the recreational fisheries than there would have been under the fishery objectives in 2013. In other words, WDFW did not actively seek to reallocate fish between the recreational and commercial sectors; it is simply a byproduct of a more conservative approach to all the fisheries.

As discussed in other sections of this CES, the Department's aim has been to place natural origin stocks on a trajectory to achieving identified escapement objectives and a reduction in hatchery fish straying on to spawning grounds. Although we are still only a few years into this new form of management (since 2010) in which we have been able to distinguish between natural and hatchery origin spawners, the data observed suggest insufficient progress. Commission policy directs the Department to take steps to enhance conservation where spawner objectives are not being met. The mortality rate steps taken were suggested by the IFSP, and the Department's best professional judgment is that they are a reasonable step in response to the data and uncertainty with that data. Conservation is a priority over harvest (both recreational and commercial). Recreational and commercial catch proportions are not hard targets. In general, commercial harvest has historically been a priority in Willapa and this remains the case. Slight annual variances in catch sharing are not uncommon and produced by multiple factors, including efforts to enhance the quality of recreational fishing, to separate the two gear groups, and/or the need to implement certain conservation components.

*D) The rule should allocate more salmon to the recreational sector, especially freshwater fisheries.*

*E) WDFW has received comments claiming that the recreational fishery is not being provided adequate fishing opportunity.*

Response to D and E: The sharing principles guiding the Department for fisheries are directed under the provisions of Commission Policy C-3608. It states that; "When assessed from a statewide perspective, fishing directed at chinook, coho, pink, sockeye, or chum salmon will not be exclusively reserved for either sport or commercial users." The Policy continues to spell out the provisions in Willapa Bay as; "following general intent shall apply: Willapa Bay harvest management objectives shall include meaningful opportunities for both recreational and commercial fisheries."

Salmon seasons in Willapa Bay are not developed based on a discrete allocation schedule. However, changes in the management strategy beginning in 2003 were intended to rebuild the natural-origin

Chinook population. Comparing 1990-2002 and 2003-2012 average distribution of Willapa Bay Chinook shows the proportion of runsize that escaped fisheries nearly doubled (identifies as Esc in Figure 2). That is a positive outcome for natural-origin Chinook. However, these management changes focused upon conservation come with resulting effects on the fishing opportunity available to commercial and recreational harvesters. They have benefitted the commercial sector for coho and benefitted the recreational sector for Chinook. Additional changes instituted through the North of Falcon process have attempted to address annual conservation issues and conflict between the sectors while providing meaningful fisheries. These North of Falcon outcomes have increased the fluctuation in catch proportions over time.

The Department believes that proposed rule provides reasonable and meaningful fishing opportunity for both sectors. The predicted recreational catch for Chinook and coho would be the second highest since 1990 (Table 4) indicating these are meaningful recreational fisheries. In terms of ensuring meaningful freshwater fishing opportunities, the predicted escapement of coho is over 47,000 fish, including both wild and hatchery fish. There are also 14,500 hatchery-origin Chinook, and 50,000 chum, that are predicted to escape Willapa Bay marine fisheries. In sum, there are more than 100,000 salmon expected to reach hatcheries or spawning grounds in tributaries to Willapa Bay this year. These fish will be available for catching in freshwater fisheries as they pass through to hatcheries and spawning grounds resulting in significant recreational catch. The portion of the Chinook harvest predicted to occur in freshwater sport fisheries accounts for 39% of the total Chinook harvest and 75% of the sport portion. Similarly 67% of sport caught coho are predicted to be taken in freshwater and 100% of sport caught chum. Within the recreational sector, the freshwater fisheries are expected to catch the vast majority of all three species.

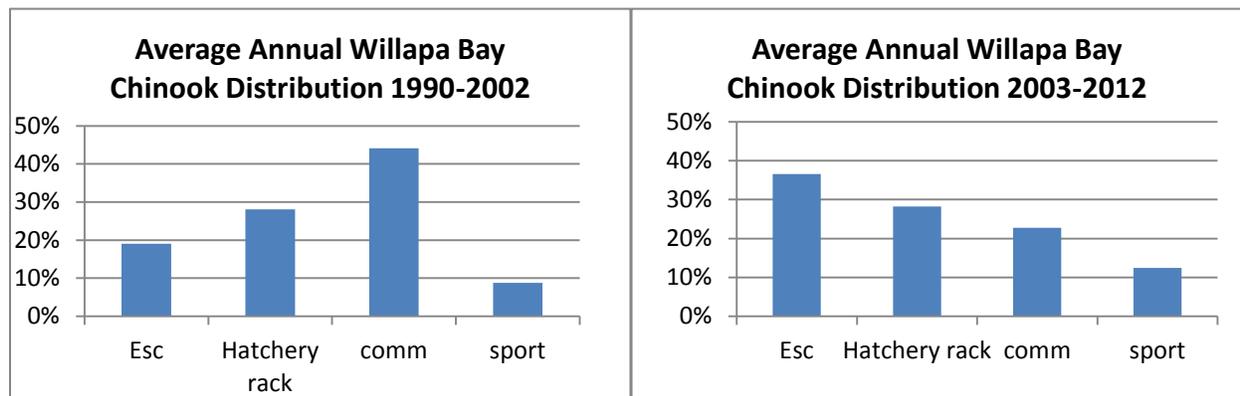


Figure 2. Comparison of the Proportional Distribution of Willapa Bay Chinook in Spawner Escapement, Hatchery Rack, Commercial Gillnet, and Sport Fisheries for 1990-2002 versus 2003-2012.

*F) The Department should disclose and consider 2013 recreational percentage catch share in addition to the ten-year average.*

The commenter suggested that a comparison of recreational catch predicted in 2014 compared to the 10-year average was misleading because the Department had compared the commercial ex-vessel value to a hypothetical value if the 2013 commercial season could be fished (conservation objectives prevented fishing the 2013 schedule). A comparison of landed catch from 1990 to 2012 is provided below in Table 4. Catch estimates for the sport fishery are not yet available for 2013, however pre-season planning estimated sport harvest of Chinook was 3,015, or approximately 27% total Chinook catch; and 3,425 coho, or about 15% of the total coho harvest. Estimated catch for both commercial and recreational

fisheries adopted for 2014 is presented in Table 4. As noted above, the predicted recreational catch for Chinook and coho would be the second highest since 1990. The percent of Chinook and coho predicted for the recreational sector in 2014 would be higher than the recent 10-year average percentages and catches; and higher than the 2013 predicted percentages and catches.

**Table 4. Commercial/Recreational Catch Comparison for Willapa Bay - Freshwater and Estuary Marine 1990-2013**

	Chinook				Coho				Chum			
	Commercial	% of catch	Sport	% of catch	Commercial	% of catch	Sport	% of catch	Commercial	% of catch	Sport	% of catch
1990	18,936	95%	1,076	5%	47,974	98%	1,139	2%	5,420	95%	284	5%
1991	25,619	93%	1,932	7%	95,552	94%	6,258	6%	43,768	99%	512	1%
1992	36,659	94%	2,190	6%	10,767	84%	2,031	16%	88,926	99%	651	1%
1993	31,153	88%	4,252	12%	19,837	92%	1,620	8%	12,685	94%	741	6%
1994	21,928	89%	2,839	11%	11,612	83%	2,358	17%	628	50%	633	50%
1995	25,490	90%	2,903	10%	33,505	95%	1,743	5%	1,954	93%	156	7%
1996	37,065	92%	3,024	8%	38,322	90%	4,052	10%	1,730	89%	216	11%
1997	12,311	84%	2,404	16%	1,526	65%	806	35%	18	9%	172	91%
1998	6,877	76%	2,178	24%	13,141	94%	852	6%	9,723	94%	584	6%
1999	265	12%	1,906	88%	5,467	66%	2,836	34%	1,118	81%	254	19%
2000	5,922	81%	1,399	19%	10,326	85%	1,780	15%	6,458	97%	201	3%
2001	5,459	72%	2,121	28%	31,913	85%	5,689	15%	23,353	99%	222	1%
2002	9,452	79%	2,543	21%	59,435	91%	5,685	9%	31,765	98%	662	2%
2003	7,488	70%	3,220	30%	66,470	92%	5,726	8%	36,736	99%	239	1%
2004	4,349	53%	3,889	47%	16,533	88%	2,361	12%	29,720	100%	110	0%
2005	6,523	58%	4,820	42%	49,001	93%	3,892	7%	16,103	100%	46	0%
2006	12,334	69%	5,551	31%	19,948	96%	806	4%	8,065	98%	168	2%
2007	4,112	61%	2,579	39%	8,218	90%	955	10%	280	100%	NR	0%
2008	3,595	55%	2,988	45%	16,699	93%	1,227	7%	3,377	97%	100	3%
2009	6,868	60%	4,623	40%	75,417	92%	6,461	8%	4,694	100%	NR	0%
2010	6,903	68%	3,349	32%	28,568	85%	5,096	15%	1,514	100%	NR	0%
2011	18,916	69%	8,434	31%	48,173	89%	5,680	11%	474	100%	NR	0%
2012	9,726	62%	6,039	38%	25,891	84%	5,064	16%	14,334	100%	NR	0%
2013	14,004	na	na	na	11,560	na	na	na	NR	na	NR	na
2014 predicted	7,030	47.7%	7,710	52.3%	28,187	81.4%	6,434	18.6%	5,046	94.8%	279	5.2%
avg. 1990-2002	18,241	88.5%	2,367	11.5%	29,183	91.1%	2,835	8.9%	17,504	97.7%	407	2.3%
avg. 2003-2012	8,081	64.0%	4,549	36.0%	35,492	90.5%	3,723	9.5%	11,530	98.9%	133	1.1%

Sport catch reports through 2012 are final, updated July 1, 2014; 2013 sport catch estimates not available as of July 1, 2014; NR denotes non-retention. Release mortalities are not included in this table.

## 6. Model Performance

*A) The Department's catch model should be replaced because it has a record of failing to accurately predict actual harvest impact.*

*B) The model is unreliable and inaccurate, and therefore conservation objectives cannot be achieved.*

Response to A and B: The Willapa Bay terminal area management model (Willapa TAMM) is a Microsoft Excel spreadsheet model used to predict harvest impacts for the coming season. Using actual harvest from previous fishing seasons, daily harvest rates for Chinook, coho, and chum are calculated for each commercial management period and recreational fishery harvest rates are calculated as a season-long rate. Using averages of these rates for years which approximate the anticipated season structure in combination with the forecast abundance of Chinook, coho and chum, managers evaluate whether a given season will achieve management objectives. Because the Willapa TAMM uses actual fishery data updated annually, it is a useful and accurate tool for managers.

Prior to filing the proposed rule in the CR-102, we conducted an analysis of the model comparing the predicted mortality rate on the primary stock of concern, natural-origin Chinook, with the two post-season estimates of mortality. One method compared pre-season with reconstructed run estimates of mortality (run-reconstruction) and the other method compared with mortality estimates from coded-wire tags

(CWT). At the time of the analysis, 2013 CWT recovery data was not available. The run reconstruction analysis showed that the planning model was very close to actual in 2 years (plus or minus 10%), and over-predicted mortalities in the other 2 years (Table 5), i.e. it resulted in greater conservation than planned and therefore was pre-cautionary. The CWT analysis suggested the model was close to the actual in all three years (within 20%). Similar to the run-reconstruction analysis, the CWT analysis suggests the model tends to over-predict actual mortality. Thus for the primary stock of conservation concern, WDFW concludes the model performance provided the necessary accuracy to ensure that the conservation objectives identified pre-season will likely be achieved.

An alternative model was suggested by a commenter. As discussed below, the Department reviewed the model and determined that the fundamental change in management approach required by the model was not prudent given the competing fishery objectives within Willapa Bay. That is, for the current rate-based management approach, no better model is readily available.

**Table 5. Comparison of pre-season predicted mortality rates of natural-origin Chinook in Willapa Bay with post-season estimates derived from run-reconstructions and coded-wire tag (CWT) estimates of mortality.**

Year	Pre-season predicted	Post-season reconstructed	Percent of Pre-season Prediction	CWT estimated HR	Percent of Pre-season Prediction
2010	28%	29%	103%	26%	91%
2011	33%	14%	43%	28%	84%
2012	30%	23%	77%	26%	87%
2013	30%	28%	94%	na	na

*C) The reduction in allowed Naselle harvest impact from 30% to 20% is insufficient as a hedge for uncertainty considering the considerable and wide variability in the model's predictive accuracy.*

*D) The model performance is such that the exploitation rate would need to be reduced to 10 to 15% to have any possibility for escapement goals being met for Natural Origin Chinook in the Willapa Harbor estuary.*

Response to C and D: The commenter's statement about the exploitation rate needed to achieve escapement goals for Chinook is somewhat misleading. As previously noted, WDFW acknowledged, early in the planning process, that the very low forecast for natural-origin Chinook meant we could not meet the escapement goals described in the Willapa Plan before a single fish was harvested in the bay. However, that does not mean that fishing should be closed entirely for both recreational and commercial harvesters. The health of a run of fish, and the attainment of fishery objectives, is not measured with a single year point forecast. Instead, in a low abundance year, careful attention must be paid to the progress being made to place salmon on a trajectory to the eventual attainment of conservation objectives. In response to the predicted low return for 2014, the Department developed a specific set of management objectives for the 2014 season with a 20% harvest rate limit objective on Naselle River natural-origin Chinook. The 20% objective is intended to reverse the declining trend in natural-origin spawners for the Naselle River Chinook population and by exceeding the 2012 escapement estimate. No evidence has been presented that using the Willapa TAMM to develop a fishery schedule results in fisheries that do not meet the pre-season management objectives. As noted above, when assessed in the post-season with actual harvest rates and actual abundance the Willapa TAMM is reasonably accurate. The track record

indicates the model and agency fishery management has achieved the specified conservation objective each of the past four years.

In addition to specifically identified conservation buffers that have been described in this CES, and that are being implemented in 2014, there are two conservative factors in the Willapa TAMM for 2014 that were considered in a qualitative assessment of the fishery season being adopted. First, there are three measures implemented to provide protection for natural-origin Chinook for which there is no reduction in predicted mortality: the closure around North River for both commercial and recreational fisheries; the closure of the recreational fishery in southern portion of Willapa Bay associated with commercial catch areas 2M, 2R, and 2P; and the delayed openings in North River, Smith Creek, and the upper Naselle River in the recreational fishery. Each of these closures will result in some uncertain level of reduced mortality. By not modeling a reduction in mortality for these closures, the Department has provided a second reasonable hedge for uncertainties associated with modeling of the fisheries (see response to 2. A and B above for first hedge).

Second, although drop-out and drop-off mortalities were added to the Willapa TAMM this year, it was impractical to make adjustment of previous run-sizes to account for these mortality sources. This affects the Willapa TAMM in two ways: a) the forecasts are lower than they would be if the historical run-sizes were corrected; and b) more importantly, the harvest rates used in the Willapa TAMM for both recreational and commercial fisheries are slight overestimates because the denominator (run-size) is too low. Until these changes can be made, this conservative modeling reduces the risk posed by the potential variance between predicted and actual harvest rates. Incorporating these two factors into the Willapa TAMM further increases the likelihood that the model will overestimate the actual harvest rate rather than underestimate. The lack of run-size adjustment provides a third hedge for uncertainties associated with modeling of the fisheries.

Finally, because the Willapa TAMM has overestimated harvest rates in the past four years, recent performance indicates that bias and imprecision in the forecasts have a more significant influence on lower than predicted escapements than the model. Based on the accuracy of the model in predicting the harvest rate of natural-origin Chinook, and the conservative, risk-averse factors included in the model for 2014, WDFW concludes that an additional buffer is not warranted.

*E) The proposed rule was developed using a model with errors that have never been corrected (including, but not limited to, ex vessel value computations).*

*As an example of model error, ex-vessel value was not computed correctly.*

The Department believes that the reference to model error is likely a reference to some belief that the model is not good at predicting outcomes - a concern that is not associated with actual error in computation. Concerns regarding model reliability and the existence of alternate models are addressed in other responses to comments above and below. Calculation error associated with estimating the ex-vessel value for various commercial season alternatives was corrected in the final analysis of the season adopted for 2014. Also, ex-vessel value is primarily used to compare the value of different season options and was not calculated to meet some specific target value. Accordingly, because the error was relatively the same for all initial model runs, it provided a generally useful comparison of relative fishery values even if not 100% correct. Nonetheless, the final rule was based upon a corrected computation.

*Alternate model provided but rejected by WDFW.*

An alternative model was developed and provided by the commenter. The model utilized various inputs and predicted catch outputs generated by the Willapa TAMM to subtract catch from the pre-season

forecast run-size. That is, the model simply accounts for dead fish across all the fisheries to calculate estimated escapements. The model established quotas or harvest guidelines that would be managed in-season and fisheries would close if quotas were approached or exceeded.

Quota management in the commercial fishery might be possible, but not without a substantial revision of harvest management and additional investment in catch monitoring. Currently there is not funding identified for Willapa Bay and its tributaries to estimate recreational harvest in-season as required by the model. The management approach employed by the Department is based on harvest and/or exploitation rates. This is a well-accepted form of fishery management.

During the season setting process, a fishing regime is developed to achieve a set of harvest rate objectives. For Willapa Bay those objectives are outlined in Section I of this document. In the Willapa Tamm harvest impacts are estimated based on average harvest rates thereby establishing a harvest rate for fisheries that are planned for the coming season. This management approach safeguards against errors in run forecast whereas quota management could result in significant overharvest if the run is smaller than predicted and that reality is not identified very early in the season, a difficult endeavor.

On balance, the harvest rate approach, and associated modeling, is a well accepted technique and the Department finds no basis to prefer a harvest quota reconfiguration of the fishery at this time. This is particularly true given the time and expense associated with substantial reconfiguration of the fishery, the uncertainties with implementing this approach, and no clear case, at this time, that a quota based approach would provide better outcomes. Additional discussion of in-season management is provided in response to other comments below.

*Numerous other errors remain.*

All calculation and cell reference errors identified by the public and Department staff have been corrected in the Willapa Tamm used to assess the final rules as adopted. Additional and more detailed responses to specific model concerns are provided in Appendix 1.

*F) WDFW should provide a concise explanation of the model and how it works.*

WDFW acknowledges that there would be value to the public and outside reviewers in providing documentation on the operation of the model with a description of key assumptions. Additional detail in the form of cell comments/notes could be added for certain fields or more descriptive names could be used for headers and alike. This will be considered going forward. It does not call for any changes to the rule as proposed or as adopted.

*G) The rule should have considered "hind-cast estimates" of the current rule/fishery for ten prior years.*

Each year's fishery is somewhat unique and there is no reason to believe that assumptions, parameters and conservation limits will remain constant from year to year. Given limited time and resources, the Department sees very little value in modeling the effects that the 2014 fishery would have had if implemented in the past. It is not a particularly good way to predict the future and has little bearing on the conservation and fishery values produced by the rule actually adopted.

## 7. Commercial Schedules and Area Closures

*A) The 2T fishery is an essential part of the commercial package and closing it until October would impose a significant financial burden.*

*B) Many commenters were opposed to commercial fishing in 2T before October 1 because of the conflict with the recreational fishery and potential reductions in catch. Others supported retaining an August commercial fishery in 2T.*

Response to A and B: The area 2T August fishery is the single most controversial issue between the sectors. Recreational anglers suggest that Chinook fishing, the most desired salmon, declines precipitously after the commercial fishery. Commercial fishers note the exceptional quality of these early fish and the high prices received for these quality fish. In recent years the dip-in opener has occurred during the second week of August. In the CR-102, the Department proposed moving the fishery a week earlier in August to reduce potential effects on the recreational sector. However, the recreational sector did not support any 2T fishery while the commercial sector indicated it was too early and catches would be low.

The adopted rule moves the fishery back to the second week of August. This shift in timing is associated with the reduction in openings during the early portion of the fall fishery that occurred with the shift to larger mesh gear. WDFW recognizes that the timing shift could have some impact to the recreational fishery. However, there are less commercial fishing days and hours in area 2T prior to September 9 (the Chinook management period) in the adopted rule than proposed in the CR-102, suggesting that the overall impact will be lower. The Department also considered that, along the coast, other fishing opportunities are highly focused on recreational opportunity. Willapa Bay has historically been a fishery that provides the commercial sector with meaningful opportunity as a part of the overall state-wide fishing industry.

The season proposed in the CR-102 had 240 hours of commercial fishing during the Chinook management period occurring over 22 calendar days, whereas the restructured, non-selective season adopted has only 120 hours of commercial fishing during the Chinook management period occurring over 13 calendar days. In both the proposed and adopted rules, only 84 hours over 4 calendar days were scheduled in area 2T. The adopted rules provide 378 hours and 18 calendar days without commercial fishing anywhere in Willapa Bay between the end of the 2T fishery and the start of the coho management period. During this same period, the commercial fishery is scheduled for only 36 hours and 6 calendar days. When considering the reduction in the number of hours and days scheduled for the commercial sector in the adopted rules, the potential for conflict between sectors and lower recreational catch is greatly reduced. Finally, the predicted catch for the restructured commercial schedule is less than in the schedule proposed in the CR-102 and will allow additional Chinook to pass through to freshwater recreational anglers and increase their catch.

Based on the lower potential for conflict and potential higher catch of Chinook in the recreational fishery, the Department concludes it is reasonable to retain the 2T fishery.

*B) Area 2R should remain open to reduce the financial burden on commercial fishers in the south end of the bay.*

The area 2R closure was identified early in the rule-making process as a key element to achieve substantial progress in meeting our conservation management objectives for the number of natural-origin spawners in the Naselle River. While recognizing the burden placed upon commercial fishers in the south end of the bay, the restructuring of fisheries is a reasoned step to recovering the natural-origin stocks.

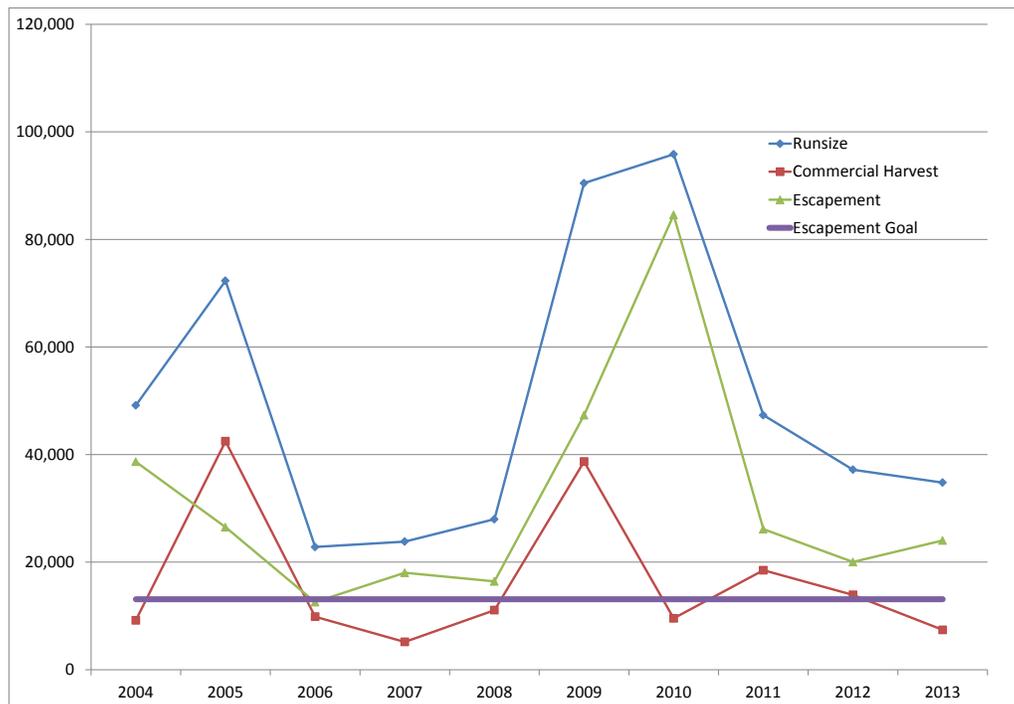
*C) The 6.5" maximum mesh size during the Chinook management period will reduce catch rates and result in smaller fish being harvested. Due to the short amount of time to the start of the season, the smaller mesh net will be difficult to purchase and rig prior to the season and will impose a significant financial burden on fishers. The rule should allow 9" maximum mesh size during the Chinook management period.*

The adopted rule allows a 9” maximum mesh size during the Chinook management period.

### 8. Monitoring and In-season Adjustment

*A) A review and intensive monitoring of coho runs, and action taken to prevent undesirable impact of what has come to be known publicly as the "coho wipeout" must be undertaken.*

The commenter implies that the commercial fishery is of such a magnitude that natural-origin coho runs are routinely overfished. During the past 10 years, wild coho have exceeded the aggregate escapement goal all but one year (Figure 3). Escapement exceeded the goal by an average of 18,334 (range of -527 to 34,243) or 140%. The average terminal harvest rate in Willapa Bay averaged 38% (range of 12 to 63) over the ten years. The 38% represents a relatively low to moderate rate for healthy coho stocks. For example, state-tribal agreed-to pre-season predicted terminal harvest rates for natural-origin coho in the Queets River basin, Hoh River basin, and Quillayute River basin are 38, 44, and 28%, respectively. Based on our review of the escapement data, WDFW concludes that additional conservation measures are not required for natural-origin coho.



**Figure 3. Runsize and escapement of natural-origin coho in Willapa Bay tributaries from 2004 through 2013.**

*B) The Department should require in-season monitoring and adjustment to ensure harvest impact limits are maintained.*

In a small number of northwest salmon fisheries, fishery managers are able to estimate the actual run-size in the middle of the season based on catch data from the fleet or from test fisheries. These estimates are called “in-season run sizes” and rely on stable or consistent fishing schedules. In-season run size estimates allow managers to evaluate whether conservation objectives are being achieved or if a larger harvestable surplus is available. Fishery schedules can be adjusted accordingly. In other areas, in-season

updates aren't available and fishery managers have a limited ability to assess whether conservation objectives are being achieved. Managers must rely on the forecast of abundance. In this situation, fishery schedules are seldom changed.

Historically WDFW scheduled test fisheries and conducted limited in-season updates in Willapa Bay. These updates did not perform very well and the Department reduced its reliance on them. Changes in marine catch areas and times for the commercial fishery during the past decade, associated with Hatchery and Fishery Reform policy compliance, have led to inconsistent fishing schedules. This has further hampered in-season run-size updates.

As discussed in item 6 above, WDFW reviewed the Willapa Bay TAMM performance with respect to the primary conservation issue for 2014, natural-origin Chinook. The review suggested that the model met or exceeded the pre-season conservation objectives each year since 2010. The model is based on rates of harvest or mortality rather than specific catch expectations. Thus the predicted catch responds to the actual the run-size; as the run goes up, the predicted catch goes up, but the rate stays the same.

The Department could theoretically adopt stringent catch-based quotas in a promulgated rule and close fisheries upon reaching the predicted catch in the TAMM. However, under that scenario (quotas prescribed in a rule), the fishery might not respond adequately to changes in abundance. This has the potential to forego significant harvest of healthy hatchery Chinook or coho stocks – a consequence with both conservation and economic consequences. In addition, a prescribed harvest quota approach would require significantly greater monitoring of the recreational fishery to ensure the overall conservation objectives were being achieved. Quota based management may not respond to a significant under forecast of fish. For example, if natural-origin Chinook return at 25% of the forecast abundance, it is very unlikely that the catch of natural-origin Chinook would exceed the catch quota and the fishery would not close. Based on the lack of reliable in-season updates and the model performance for the primary conservation stock, WDFW concludes that prescriptive in-season adjustments are not warranted. The Department remains open to appropriate in-season management actions on a case by case basis as facts and circumstances warrant such action. Implementation of such an approach prescriptively, by rule, is not appropriate at this time.

## 9. Hatchery Salmon

*The proposed schedule will result in large surpluses of salmon at the hatcheries, and potential production reductions in the future.*

WDFW recognizes that a delicate balance must be struck in an attempt to schedule fisheries which target healthy and abundant stock while minimizing impact on weak stocks. WDFW management strategies are consistent with FWC policies on fishery and hatchery reform. Rules adopted for the commercial fishery and associated recreational fisheries in Willapa Bay and its tributaries achieve conservations objectives established for 2014 and harvest approximately 50% of the hatchery Chinook and coho expected to return.

## 10. Recovery Box Procedures

*A) The regulation should be modified to require use of a recovery box until treated fish are “fully attaining a vigorous or excellent condition.”*

To address this concern the rule being adopted requires that all unmarked chinook required to be released are placed into an operating recovery box for assessment and treatment and may only be released if they are not lethargic and not bleeding, or at the end of the fishing day if they are dead.

*B) The definition of lethargic provides a standard that is too lax in terms of identifying fish in need of recovery.*

*C) The regulation should be modified to emphasize the need to fully assess the condition of the fish in a manner consistent with the “Fish Friendly” certification protocols.*

Response to B and C: Rather than continuing to require an initial assessment prior to placing fish determined to be lethargic or bleeding into a recovery box the final rule as adopted requires all unmarked Chinook be assessed in the recovery box prior to release when release requirements are in-place. This concern is further addressed by significantly reducing the amount of time when unmarked Chinook release is required

*D) The regulation should be modified to require that any person on a vessel who handles fish to obtain “Fish Friendly” certification, not just the vessel operator.*

The rules being adopted have considered, and are responsive to concerns regarding recovery boxes. WDFW has accepted and implemented the recommendations of the IFSP to address concerns associated with fisher compliance and consistence with instruction during the “fish friendly” certification process. WDFW considered this proposal but did not implement it because it could place a significant logistical burden on the licensed fisher. For example, if the fisher’s usual crew member was unable to participate, it could be difficult for the fishery to locate another crew member that had completed the certification and potentially preclude them from bringing along their children or other family members. Ultimately it is the responsibility and liability of the licensed fisher to ensure that all ‘fish-friendly’ practices are being followed. As noted above, WDFW has limited the amount of selective fishing and intends to increase monitoring to promote the modeled 90% compliance.

## 11. By-catch

*A) By-catch killed and discard in excess of 10% of the species being impacted should be considered waste and should be avoided. Non-retention of Chum that is caught incidental to targeted Coho, at a high encounter rate and with resulting large incidental mortality, is listed as an example.*

*B) Non-retention of chum that occurs when Coho is being targeted, and that occurs with a high encounter rate, will also overload the capacity to treat fish in the recovery boxes making selective fishing mortality rates suspect due to compliance issues. Recommendation to eliminate selective fishing when Chum are present at the highest encounter rate – October 8-14<sup>th</sup> and/or allow retention of Chum throughout the season. Correspondingly, allow retention of Chum in the recreational sector.*

Response to A and B: WDFW agrees that the rule proposed in the CR-102 will be improved by limiting chum non-retention and allowing commercial fishers to retain some chum while maintaining overall conservation objectives. The rules being adopted allow chum salmon retention throughout the commercial season to minimize wastage. WDFW recognizes this will result in fewer days of fishing and fewer coho and Chinook retained. These reductions will be partially offset by the chum retention. Similar to the issue of requiring both sectors to comply with closure areas, WDFW will also allow retention of chum salmon in the recreational fishery. That change will be implemented through a separate rule making process.

## 12. Procedures

*A) Errors in the information and models provided to the public are misleading, and therefore a supplemental CR102 must be filed.*

After filing of the proposed regulation, WDFW shared with interested parties the TAMM spreadsheet and the rationale used to develop the rule in an effort to improve transparency in the rule making process. Commenters noted an error in calculation of ex-vessel value in a comparison between the proposed rule and a schedule that might have been attained if the 2013 commercial schedule could be fished (note that conservation objectives precluded the adoption of a 2013 schedule). WDFW acknowledges that the calculation was in error and should have been corrected prior to the analysis. However, the ex-vessel value is not the primary purpose of the model and was used only to compare the relative value of proposed rule with the value that a 2013 schedule might attain. It was this relative change between the proposed rule and the 2103 schedule that was considered by WDFW, not the absolute value. Because the error was in both models, the relative change remains similar.

The commenter also suggested that the Department's presentation of rationale was deceitful and misleading because it compared the predicted catches in the recreational fishery with a 10-year average rather than the 2013 catches. However, 2013 recreational catches are not yet available. Draft estimates of 2013 recreational catches generally won't be available until September or October of 2014, well after 2014 rules are adopted. Furthermore, in the model spreadsheet provided to the public, the annual recreational harvest is provided for each year and each fishing area back to 1998. Accordingly, annual harvest information was available to the interested parties to make any comparison they choose to make. Finally, given the variability in fish abundance, the use of an average harvest opportunity when comparing past opportunity to predicted opportunity is arguably more meaningful than a comparison to an individual prior year.

With regard to the use of a CR 102 supplemental filing, that is sometimes useful. However, the APA does not require a CR 102 supplemental when changes to the noticed rule are made after issuance of the CR 102. Instead, substantial changes are allowed provided that they are identified and explained in the final rule submission. WDFW has complied with this requirement.

*B) Consultations between WDFW staff and individual members of the public and/or legislators violate the Open Public Meetings Act (OPMA).*

The Department does not believe this is an accurate assessment of the Department's actions or the provisions of the OPMA. The Department has worked closely with the Office of the Attorney General to ensure that it is in full compliance with the APA and the OPMA.

## 13. Other

*Three alternate fishing schedules/regimes are offered to address identified concerns.*

WDFW appreciates the extensive work and time invested into the modeling by the commenter, and the effort to provide alternate fishing rules. Each of the three models was evaluated for merit. Model 1 is a completely non-selective proposal, resulting in the least number of fish caught by the commercial sector and eliminates the need for selective fishery monitoring by WDFW. Model 2 is a partial selective fishery proposal, requiring only the release of wild Chinook. This proposal reduces all fisheries to 12 hour days for the purpose of reducing the number of hours selective fishery monitoring would require. Model 3 is a

true-tangle net proposal utilizing 4.25” maximum mesh size. This proposal has the highest costs for selective fishery monitoring. All three models allow chum retention and keep 2T closed until October 1.

WDFW agrees with a number of concepts included in models 1 and 2, and incorporated various themes from them into the adopted rules and regulations. All three models allowed chum retention. WDFW concurs that reducing wastage and allowing harvest of these fish is a reasonable alternative to the rules proposed in the CR102. The adopted rule includes the retention of chum. Reductions in fishing days were necessary to ensure that the chum conservation objectives were met. WDFW will also allow retention of chum salmon during the recreational fisheries which will be addressed through a separate rule making process. Model 1 allowed fishers to use 9” maximum mesh size during the Chinook management period and allows retention of all Chinook. Commercial fishers also requested the ability to use 9” maximum mesh size. WDFW supports the use of 9” gear during the Chinook season for 2014 as requested by the commenter and numerous commercial fishers. Reductions in fishing days were necessary to ensure that the Chinook conservation objectives were met. WDFW also supports the retention of unmarked Chinook, except for 2 weeks during the start of coho season when the fishery will remain selective for Chinook salmon. Fishing selectively during this time will allow a higher harvest of coho and hatchery Chinook while minimizing mortalities of unmarked Chinook.

Model 2 presented difficulties in the evaluation. Likely unknown to the commenter, the use of 12 hour days during the coho management period exceeded the capabilities of the Willapa Tamm as used by the agency. Twelve hour days during coho weren’t envisioned by WDFW during development of the Willapa Tamm. As presented to WDFW, the model does not respond to a reduction in fishing time with a reduction in catch. Although this capability can be added to the Willapa Tamm, doing so fundamentally changes the outcome of the proposed season. The Department does not wish to predict how the commenter might have modified their proposal if the capability was added to the Willapa Tamm. WDFW added this capability to the Tamm prior to evaluating the schedule in the adopted rule.

Model 3 is the most selective option proposed and would achieve the most positive step towards implementation of the Hatchery and Fishery Reform Policy (C3619). However, commercial fishers have found the use of tangle net gear with a mesh size less than 4.25” extremely problematic in Willapa Bay. This is due to high level of floating, aquatic grasses, such as eelgrass and significant declines in salmon catchability and efficiency. In addition, this proposal would require the highest level of monitoring and costs for WDFW.

All three proposals keep area 2T closed until October 1. This issue is addressed above in 2.c.

#### **IV. Public Comment Received During North of Falcon and WDFW’s Response**

The Department provided significant opportunity for the public to provide input on recreational and commercial fishing seasons in Willapa Bay. A substantial number of comments were received verbally, written, and electronically. Many were carried forward to the formal rule-making period and are addressed above. Responses to the major substantive comments that are not addressed in Section II above are provided below in this section. Additional comments and responses are detailed in Appendix II.

*1) Many commenters expressed that the Department did not properly assess the economic value of each fishery sector.*

The Department understands there is value in both recreational and commercial fisheries. Commercial fisheries are easier to assess. Market prices and the number of fish caught and sold are known values. Reporting requirement of the commercial fishery allows for quick processing of data. Evaluation of the

recreational fishery isn't as simple. There are limited creel survey data available for the marine area recreational fishery that could be used to estimate effort and subsequent economic value of the fishery. There are no recent data available for freshwater fisheries in Willapa Bay. In order to make an estimate of effort, the Department would have to make assumptions about individual angler catch rates, likely by using data from other basins.

The Commission North of Falcon policy notes: "Willapa Bay harvest management objectives shall include meaningful opportunities for both recreational and commercial fisheries" and "When assessed from a statewide perspective, fishing directed at chinook, coho, pink, sockeye, or chum salmon will not be exclusively reserved for either sport or commercial users." The adopted rules are predicted to provide \$662,759 in ex-vessel value for the commercial sector (compared with a preliminary estimated ex-value of \$638,000 in 2013).

However, the comment suggests that WDFW needs to allocate catch between sectors based on economic value derived from the fish harvested. This issue is much more complex given the "statewide perspective" direction in policy. A simplistic re-allocation within Willapa Bay would not address the balance of opportunities across the state. The majority of Chinook and coho are prioritized for recreational fisheries in most other regions. For example: "The Puget Sound harvest management objectives for chinook and coho stocks, in priority order, are to: (1) provide meaningful recreational fishing opportunities; and (2) identify and provide opportunities for commercial harvest." Willapa Bay is the one region of the state where pre-season planning has resulted in more Chinook and coho harvested by the commercial sector on a regular basis over the past decade. The Department has complied with specific policy direction to allocate resources when provided. No such direction has been provided in Willapa Bay, suggesting that the Commission is comfortable with the current opportunity and catch balance. WDFW anticipates that the Fish and Wildlife Commission will be reviewing Willapa Bay salmon management this fall and additional guidance will be forthcoming. In lieu of current prescriptive guidance regarding opportunity and catch sharing, the Department believes the adopted rules provide meaningful fisheries for both sectors and comply with Commission policy.

*2) One commenter asked that the line of demarcation for area 2T be moved back the line used to the western boundary of Area 2G.*

Harvest management areas within Willapa Bay were divided into small more manageable areas in 2010 and are legally described in WAC 220-22-020. During the reorganization of these management areas, area 2G was divided into three separate areas, one being 2T, which is located at the mouth of the Bay. The original western boundary of area 2G was a line from Leadbetter Point to Cape Shoalwater. Cape Shoalwater is part of a highly erodible beach that for the past several years has been losing ground to the Pacific Ocean. As part of the reorganization of the management areas, the western boundary of the new area 2T (originally 2G) was moved to a more hardened and reliable boundary located at Jacobson Jetty near Washaway Beach. This new western boundary is now from Leadbetter Point to the southern point of Jacobson Jetty near Washaway Beach. This hardened and reliable boundary provides improved compliance and enforceability of regulations.

## **Appendix I. Comments and responses related to the Willapa Bay terminal area management model (Willapa TAMM)**

*1. Commenters claimed that “run reconstruction estimates of harvest rates on Naselle natural-origin Chinook were less than 30% in each year since implementation of the plan was initiated (29% in 2010, 14% in 2011, 23% in 2012, and 28% in 2013)”. I can understand how that was done, but since catch data from the Willapa does not match the planning model, and, particularly in 2013, exceeded the estimates, then what would these percentages be if actual catch numbers were used? I attempted to determine these numbers (see attachment), but to do so required some assumptions that may not be entirely accurate. What I’d like to know is if you have made estimates of the origin of Chinook or Coho, or both, by destination river for the commercial fishing zones in the Willapa, or if you can suggest a better approach to calculate these numbers?*

Commenter has indicated that the catch in the fishery does not match the Willapa TAMM. Absent details from the commenter regarding the specific differences, this concern is difficult to address. With regard to the commenter’s calculation of the exploitation rate (ER) on natural-origin Chinook, and the commenter’s claim that this is different from what was presented in the Willapa 2014 Management Objectives Draft 3-21-14, the commenter appears to have performed this calculation relative to the estimates of extreme terminal runsize which are included in the Willapa TAMM. The calculation of the ER for comparison to the 30% ER objective in 2010-2013 is done using the estimate of total terminal runsize which is clearly a significant source of the difference in results obtained. When calculated using total terminal runsize, the commenter’s values should match. Finally in the question regarding catch by river of origin in commercial catch area, yes, the estimates are by river of origin as the commenter suggests.

*2. The Advocacy has repeatedly challenged the accuracy of the model WDFW uses to set seasons in Willapa. An example of the asserted inaccuracy and unreliability of the model was based upon an Excel spreadsheet that compared “Projected and Actual NT GN Catch.” This showed that, in 2012, the fleet landed 385.5% of the projected catch during the 3.5 day “dip-in” which is a period of time when North River native natural spawning Chinook are present. In addition, the Chum harvest that year was 529.3% of the projected harvest.*

Projected and Actual NT GH Catch spreadsheets are summaries used, in-season, to track biological and catch data during the season. One element of the information reported in these sheets is the fishery performance relative to the pre-season projection. This is reported in terms of catch, and allows staff the ability to assess sampling needs and fishery performance. Similar information regarding effort is also tracked in-season. By simply considering landed catch data relative to the pre-season projection, absent an understanding of the effort occurring in the fishery, environmental conditions, and other relevant fisheries data, one can easily (inadvertently or purposely) misinterpret the data and reach erroneous conclusions about the value to the Willapa TAMM used to set seasons. For example, the commenter has also presented only limited bits of information to illustrate their point. During the 2012 fishery, landed catch during the 3.5 day “dip-in” fishery was 385.5% of the pre-season projection; subsequent openers which comprise the vast majority of the season were approximately 50% of the pre-season projection and the total for the season was 61.2%.

It is noteworthy that, the 2012 version of the Willapa TAMM was only the second year that the TAMM included the ability for managers to independently assess catch area specific impacts and the first year to incorporate revised catch areas into the model. As a result the Willapa TAMM did over-predict Chinook and coho harvest for the season; however, this error is preferable to an under prediction of harvest that results in conservation objectives not being achieved. This is the case for chum during 2012; indications in-season based on fishery sampling in Willapa Bay and to the north in Grays Harbor suggested that chum abundance was significantly greater than predicted. WDFW deviated from the pre-season fishing plan and

allowed the commercial fishery to retain chum during a portion of the fishery. Considering this adjustment to the projected catch resulted in a predicted impact for the season of 4,488 compared with actual of 14,328 or 319% greater than predicted. The department acknowledges that the Willapa TAMM used in 2012 was not without room for improvement and has built two additional years of catch area specific modeling data into the 2014 version. Furthermore a number of minor calculation errors which department staff and members of the public at large have identified in the 2014 version of the Willapa TAMM have been corrected.

*3. The models do not account for the fact that commercial fisheries impact success in recreational fisheries. Commenters assert there was poor recreational fishing during the middle of August for the past three years because the early august 2T opener was implemented. They also assert that efforts to mitigate gear conflicts have been minimal and this does not conform to NOF policies.*

There are at least two interpretations of this comment. One is the fish removed by the commercial fishery are not available to the recreational fishery thereby reducing their potential for success. This issue has been considered numerous times prior to 2010 when dockside sampling in Willapa Bay was discontinued. Evidence from dock side sampling of the recreation fishery does not support the statement. The other interpretation, which was raised during the NOF process, is that ‘zeroing out the commercial fishery having no change in the marina area fishery is a fundamental flaw in the model’. It is worth mentioning that this goes the other way too; zeroing out the MA sport fishery has no effect on the commercial fishery. Modeling impacts of fisheries occurring simultaneously is not a straightforward calculation. We discussed the concept of doing so with Dr. Peter McHugh; a biometrician/programmer on WDFW staff that assists with programming the coast wide FRAM and represents WDFW on the Pacific Salmon Commission Chinook Technical Team. In his review of the model he suggested that given the simple single time-step construct of the model, there is no simple fix. Solutions that would deal with this correctly involve:

- (i) either creating a model that has some temporal resolution with fisheries operating on a changing abundance of fish and as mentioned previously, the Department doesn’t currently have the data to do this; or
- (ii) transitioning the current model to continuous catch equations (so-called ‘competing risks’ models) that address this analytically.

To accomplish this, WDFW would need to reconstruct the harvest rate to have weekly commercial and weekly marine sport rates that would interact in this continuous fashion. This requires a complete rebuild of the harvest rates for both fisheries. The Department will pursue converting the model to statistical week rates versus the current management periods in the coming year.

*4. Commenters expressed concern the model used by WDFW does not reflect any changes in the recreational marine area catch when days of the seasons for commercial nets are changed (increased or decreased) for either Chinook or coho.*

Same issue as addressed above regarding simultaneously removals in the marine area recreational and commercial fisheries. The model does address removals in marine area recreational and commercial fisheries and their effect on freshwater harvest.

*5. There is no data in the model addressing the relationship between the commercial fishery and the recreational fishery.*

Addressed above in response regarding simultaneous removals occurring in the marine area recreational and commercial fisheries.

6. *Evaluate the models since commercial and recreational fisheries affect each other.*

Addressed above in response regarding simultaneous removals occurring in the marine area recreational and commercial fisheries.

7. *Commenters expressed concern over the manner in which CWT data is used in conjunction with a "non-local" modifier based upon a belief that this dramatically changes harvest numbers in the model.*

Total Chinook impacts are parsed into non-local stocks and local stocks only during the summer season, also referred to as the 'dip-in' fishery, which is designated as July 22 through August 15 annually. The ratio of 42% non-local and 58% local stock is based on DNA analysis of summer season catches during 2002 and 2003 (Kassler and Marshall 2004). Because the purpose of the Willapa Tamm is to specifically account for terminal fishery impacts on local Willapa Bay origin Chinook, coho, and chum, non-local Chinook impacts were not identified nor displayed. In response to the comment, the current version of the Willapa Tamm clearly identifies the number of non-local stock impacts accounted for during the summer season. A further treatment of the accounting for local and non-local stocks between the Willapa Tamm and the coast wide FRAM may be found in an email from Dr. McHugh to Mr. Tim Hamilton dated June 12, 2014 which has been entered into the record.

During the fall season, August 16 through November 30, all harvest is considered to be local-origin for accounting purposes. CWT's ratios are used to parse catch occurring August 16 and later by area. With regard to "percentages for the non-local category that are applied consistently throughout the commercial season" staff was unable to determine what this is in reference to and would be happy to discuss it further with commenter.

In his review of how Chinook CWT data are used to parse catch or impact by area for each local Willapa Bay stock complex in the Willapa Tamm, Dr. McHugh identified that there were slight discrepancies between the data in the Willapa Tamm compared to data in the Regional Mark Information System. He indicated that this could have resulted from the use of raw tag data versus estimated total recoveries or updates in the RMIS database since the original data set were input to the Willapa Tamm. Dr. McHugh indicated that this discrepancy may be of little consequence if sampling of the Willapa Bay commercial fishery is conducted in a similar manner and is consistent in all areas, with sample fractions that are fairly constant. He also indicated that lumping all years/periods is a good approach for estimating the probability of catching a fish of a particular stock group in a particular area because the data were for years when the fishery was widely open across all areas. This discrepancy was addressed by updating the CWT data.

8. *Commenter provided a fishery planning model for evaluation: "This model is based on the National Bureau of Standards "minimodel" and WDF's run reconstruction models. It assumes that catches in areas are present relative to run-strength. There is also no correction for timing; all stocks are assumed to enter and pass through the area at the same time. This is the same concept used in managing South Puget Sound coho and fall chum. Area 2 T does contain a correction for local stocks. Current modeling is for 50% Willapa Bay but can be easily changed to match available data."*

Addressed in Section III.6.E.

9. *The model is results in over-harvest.*

Addressed in Section III.6.A and B.

10. *Concern was expressed that the “Advocacy conducted a review of the model and determined it was not only limited as expected, but unreliable for use in predicting seasons. The questionable use of data, mathematical errors, and assumptions contained within the model showed the model underestimates the impacts of fishing seasons. Further review led the Advocacy to believe the effect of the errors in the model is underestimation of the number of fish that will be captured during the season set forth in the model. The errors in the model appear to have a direct correlation to the historical failure to reach escapement goals.”*

Addressed in Section III.6.A and B.

11. *Concern was expressed that the “flaws and errors within the model prevent the Advocacy from using it as a tool for developing season options (email/document provided to staff.”*

Addressed in Section III.6.A and B.

Additional modeling corrections and enhancements were made by the Department that were not included in this set of comments. Those that have been addressed are:

The IFSP recommended adding drop-off and drop-out mortality to the model. While added to the Willapa TAMM for 2014, previous year’s run reconstructions were not adjusted for this mortality. The error introduced by this is on the side of conservation since the addition of accounting for drop-out/drop-off would marginally increase the runsize and therefore the forecast would have increased slightly.

The recreational fishery release mortality factor was inadvertently removed from calculation of natural-origin Chinook impacts. This issue was resolved.

Nemah River hatchery Chinook catch or mortality impact calculated in the marine area recreational fishery cell reference for drop-off was incorrect. This issue was resolved.

A day length adjustment for coho and chum impacts has been added.

Marine and freshwater recreational release mortality rates have been corrected.

Ex-vessel value calculations have been corrected.

- Missing parenthetical statement in ex-vessel calculation
- Misalignment of \$’s and pounds with management weeks.– parenthetical formula error, row/cell reference errors corrected, chum and wild Chinook added to ex-vessel calculation for assessment associated with chum retention via an “if/then” statement.
- If/then statement has been included in ex-vessel calculation to allow comparing management strategies which include non-selective alternative.

## **Appendix II. Summary of additional comments received prior to the listing of the CR-102.**

*1) The Department received many comments about the allocation of catch between sectors. Most indicated that the commercial sector historically received a significantly larger share and catch needs to be distributed equally between sectors and areas, and that if reductions are needed, these should come from the commercial sector.*

Allocation is addressed in Section III.5.

Regarding fishery reductions, during the North of Falcon process, it was noted that the vast majority of the natural-origin Chinook impacts would be consumed by the commercial fishery and that closing all of the recreational fisheries would do little to address the conservation burden. Although some closures and delays in openings were proposed for the recreational sector (in a separate rule making process), they have a very minor effect on the overall harvest rate. Given the low positive improvement to the conservation goal, the Department did not propose additional closures for the recreational sector, and relied heavily on changes in the commercial fishery to achieve the 20% objective for Naselle River Chinook.

*2) There were many comments requesting 1 to 4 days of commercial closures during each week throughout the season.*

Commercial closures or passage windows are thoroughly addressed in Section III.3.B.

*3) There were many comments opposed to commercial fishing in 2T before Oct 1, and a few promoting an August commercial fishery in 2T, a dip in fishery. There were also requests for and opposition to net free zones in 2T. Many of the opposing comments cited conservation needs for the North River Chinook stock. There were also suggestions for fishery closures near North River in area 2T, commercial primarily, but some to include both sectors.*

The commercial fishery in 2T is addressed in Section III.7.

*4) Many comments were received stating that the plan does not consider conservation and it will cause over harvest.*

Conservation is addressed in Section III.3 and 4.

*5) Many comments came in addressing the management objective of 20% maximum impact for Naselle River natural origin Chinook. The maximum impact rate was reduced in 2014 from 30% in previous years. Some comments said that there wasn't any justification for the reduction, while others said the reduction wasn't enough.*

The 20% harvest rate objective is addressed in Section III.1.

*6) There were many modeling issue comments ranging from errors to model performance. Its ability to predict harvest on the commercial fishery is questioned.*

Model errors are addressed in Section III.6. Additional detailed responses are addressed in Appendix I.

Model performance is addressed in Section III.6.A and B.

*7) The Department received many comments about what net release mortality rate should be used and what is the proper compliance rate for fish friendly handling. There were also many comments about the use of and potential bias in the IFSP recommendations.*

Gill net release mortality rate is addressed in Section III.2.

*8) Commenters were concerned about the level of on-board monitoring of the commercial fishery the Department was going to use to assess compliance with the fish friendly requirements of the rule. There was also concern the proposed rule did not provide commercial fisherman enough direction on when and what level of fish handling was needed.*

Monitoring rate is addressed in Section III.2.H.

Fish handling rules are addressed in Section III.10.

*9) There were comments requesting commercial gear restrictions, net size, net type, etc.*

The commenter suggested that certain changes to commercial gill nets would decrease the interception of non-target species, specifically natural-origin Chinook. A change in gear requirements would impose a financial cost to the commercial fishers. The adopted rules have been carefully crafted to reduce the reliance on selective fishing. Based on the lower level of selective fishing, the financial cost to the fishers would outweigh the benefit of fishing. WDFW believes that gear modification may be beneficial in the future if selective fisheries are increased.

*10) One commenter request permits for trap net and floating trap for commercial harvest purposes.*

Implementing alternate gear types requires substantial planning and could not be completed this year, although some progress was made in terms of identifying and scoping possible options. WDFW will continue to pursue potential options for implementing alternative gear on an experimental basis outside of this rule and in future rule-making efforts.

*11) Several commenters request the use of in-season adjustments, such as season or gear adjustments based on in-season catch accounting.*

In-season adjustments are addressed in Section III.8 of the CES.

*12) Comments on the Settlement agreement, deadline for the final report on net release mortality wasn't met, so the original rate should be used and the final report recommendations used for 2015.*

The value of the IFSP report is not diminished by the timeliness of the final report delivery. Draft gill net release mortality values were provided by the IFSP that allowed initial modeling and schedule development to proceed; with final values provided well before the schedule proposed in the CR-102 and the schedule adopted.

*13) Several comments were received on the enforceability and lack of the fish friendly regulations. More enforcement is needed.*

This issue was extensively considered in the rule development process, and in revisions to the proposed rule. It is discussed in the CES.

*14) Comments were received that there was a lack of public involvement in the process.*

WDFW increased opportunities for public comment throughout the North of Falcon process. Two specific opportunities were: allowing and recording public testimony at the end of each advisor meeting; and recording public testimony at the end of each public meeting, and considering and responding to those comments here.

*15) Several commenters suggested there is not a conservation need for chum.*

The 2010 draft Willapa Bay plan includes a 10-year moratorium on chum directed fisheries to rebuild the stock. This management objective was included in the pre-season objectives shared with advisors and the public. The adopted schedule does not have directed chum fishing and complies with the plan and objective.

*16) A commenter requested the Department control the number of boats in the commercial fishery.*

The legislature has already set limitations for commercial salmon fishing licenses. The Department will continue to comply with the legislature's direction on this issue.

*17) Commenters suggested that it was inappropriate to apply a drop-out rate for one fishery (Puget Sound) to another fishery (Willapa Bay).*

Drop-out rates are addressed in Section III.2.D of the CES.

There were many comments that were received during the NOF process that are outside the scope of commercial salmon regulations in Willapa Bay and do not pertain to either the proposed rule or adopted rule. Many comments received addressed recreational fisheries seasons, structure, and monitoring of these fisheries. Hatcheries and their operations was another topic of comments. Comment subjects ranged from the influence of the large Columbia River Chinook forecast on WB impacts to the use of "species management periods".

- Comment suggested reducing ocean fisheries to pass more fish through to Willapa Bay.
- One comment requested the Department to conduct a genetic study on North River Chinook to determine if those are actually truly natural and need conservation.
- Many recommendations pertaining to recreational fishery seasons and structure.
- Many comments on the operation of Naselle Hatchery and impacts to production changes.
- One comment was the concern that the large forecast of Columbia River Chinook could lead to over-harvest on Grays Harbor and Willapa Bay stocks.
- One comment said that mark-selective fisheries should be used on the ocean side of Leadbetter Pt. to 46° 49".
- One comment requested there be no recreational fishing in Areas 2M, 2P, and 2R.
- Comments were received about surpluses at Naselle and Nemah hatcheries.
- One comment was concerned that the Department was using species management period inappropriately, stating all knows the true target is another higher-valued species.
- A commenter would like forecasts broken down into all systems, Willapa Bay tributaries.
- Commenter requested the Department do a long-term release mortality study for recreational fisheries.

