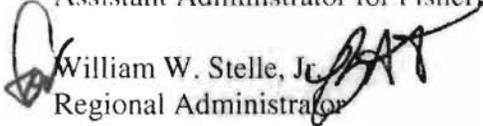




UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
 NATIONAL MARINE FISHERIES SERVICE
 Northwest Region
 7600 Sand Point Way NE
 Seattle, Washington 98115
 May 12, 2011

MEMORANDUM FOR: Eric C. Schwaab
 Assistant Administrator for Fisheries

FROM:  William W. Stelle, Jr.
 Regional Administrator

SUBJECT: Authorizing the States of Washington and Oregon to Lethally
 Remove California Sea Lions at Bonneville Dam under Section
 120 of the Marine Mammal Protection Act – DECISION
 MEMORANDUM

I recommend that the National Marine Fisheries Service (NOAA Fisheries) issue a new Letter of Authorization (LOA) pursuant to Section 120 of the Marine Mammal Protection Act (MMPA) to the States of Washington and Oregon (States) to lethally remove certain individually identifiable California sea lions (CSL) at Bonneville Dam. This recommendation is in response to the Ninth Circuit’s remand of NOAA Fisheries’ 2008 Section 120 LOA.¹

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¹ *Humane Society of the United States, et al. v. Locke, et al.*, 626 F.3d 1040 (9th Cir. 2010). On April 1, 2011, the District Court for the District of Oregon vacated NOAA Fisheries’ 2008 section 120 LOA.



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I. Overview and Summary of Recommended Action

The MMPA prohibits the take of marine mammals, with certain exceptions and exemptions. One exception is contained in Section 120, which gives NOAA Fisheries the authority to allow states to lethally remove individually identifiable pinnipeds that are having a significant negative impact on the decline or recovery of at-risk salmonids. In 2006, the States² applied under this provision for authority to lethally remove CSLs at Bonneville Dam on the Columbia River between Oregon and Washington. In 2008, after complying with the MMPA, the National

² On April 25, 2011 NOAA Fisheries received a letter from Idaho indicating their support for actions to restore and recover threatened and endangered fish including lethal action to control problem sea lions. They withdrew from active participation in the current process and requested that ODFW and WDFW continue to represent their interest on this issue.

Environmental Policy Act (NEPA), and Endangered Species Act (ESA), NOAA Fisheries partially approved the States' request, and issued three LOAs to allow lethal removal of individually identifiable predatory CSLs at Bonneville Dam.

The Humane Society of the United States filed a lawsuit challenging NOAA Fisheries' LOA. Although NOAA Fisheries succeeded in the district court, the agency's LOA was vacated and remanded by the Ninth Circuit in November 2010. The Ninth Circuit's decision provides us flexibility to remedy the MMPA flaws cited by the court. This memo, together with the entire record of the prior action and information developed subsequent to the 2008 authorization, provides the necessary support for the recommended decision.³

II. Legal Authorities Applicable to the Recommended Action

A. MMPA Section 120

Section 120 of the MMPA establishes a process for states to apply to NOAA Fisheries for authority to lethally remove "individually identifiable pinnipeds which are having a significant negative impact on the decline or recovery" of at-risk salmonids. *See* 16 U.S.C. § 1389. At-risk salmonids are those that have been listed under the ESA as threatened or endangered, those that are approaching listed status, or those migrating through the Ballard Locks in Washington. The application must include a means of identifying the individual pinniped or pinnipeds, a detailed description of the problem interaction, and the expected benefits of removal. If NOAA Fisheries concludes that the application presents sufficient information to warrant further action, NOAA Fisheries is to convene a Pinniped-Fishery Interaction Task Force (Task Force), and the Task Force is required to recommend whether to approve or deny the proposed intentional lethal taking of the pinniped or pinnipeds.

In addition to the procedural requirements, Section 120 directs NOAA Fisheries and the Task Force to consider four substantive factors when evaluating whether an application should be approved or denied. *See* 16 U.S.C. § 1389(d). These include:

1. population trends and feeding habits of the pinnipeds; location, timing and manner of the interaction; and number of individual pinnipeds involved;
2. past non-lethal deterrence efforts and whether the applicant has demonstrated that no feasible and prudent alternatives exist and that the applicant has taken all reasonable nonlethal steps without success;
3. extent to which the pinnipeds are causing undue injury or impact, or imbalance with, other species in the ecosystem, including fish populations; and

³ A copy of the March 2008 Decision Memorandum supporting the 2008 LOA is attached for your reference.

4. extent to which the pinnipeds are exhibiting behavior that presents an ongoing threat to public safety.⁴

The MMPA does not require any more of NOAA Fisheries than the four factors above when making a determination whether individually identifiable pinnipeds are having a significant negative impact on the decline or recovery of at-risk salmonids.

Section 120 also prohibits NOAA Fisheries from authorizing the lethal removal of pinnipeds listed under the ESA or designated under the MMPA as depleted or strategic.⁵

B. The National Environmental Policy Act (NEPA)

NEPA requires federal agencies to evaluate the environmental consequences of their actions. Depending on the action and whether the impacts to the environment would be significant, federal agencies may prepare an Environmental Assessment (EA) or Environmental Impact Statement. In 2008, NOAA Fisheries prepared a draft EA and released the document for a 30-day public comment period. After considering public comments, NOAA Fisheries issued a final EA (NMFS 2008a) and concluded that the decision to partially approve the States' 2006 application would not have a significant impact on the quality of the human environment.

Prior to making this current recommendation, the Northwest Region prepared a supplemental information report (NMFS 2010a) to determine whether there is a need to supplement the 2008 EA and Finding of No Significant Impact (FONSI) or whether the existing NEPA analysis could support the recommended action. Having considered the Council on Environmental Quality's supplementation criteria at 40 C.F.R. § 1502.09(c), we have concluded there is no need to supplement the 2008 EA and FONSI.

⁴ The MMPA criteria do not specify other administrative decisions as a statutory consideration in issuing a Section 120 LOA. *See* 16 U.S.C. § 1389(d). Nevertheless, to comply with the Ninth Circuit's remand order, NOAA Fisheries has explicitly considered other administrative decisions referenced in the court's opinion and has provided a cogent explanation as to their relevance.

⁵ Although Section 120's legislative history states ". . . the Committee recognizes a variety of factors may be contributing to the decline of these stocks, and intends that the current levels of protection afforded to seals and sea lions under the Act should not be lifted without first giving careful consideration to other reasons for the decline, and to all other available alternatives for mitigation" (H. Rep. No. 103-439, at 40), this concern did not make it into Section 120, nor does it indicate that NOAA Fisheries must first eliminate or greatly reduce other sources of impact on salmonids before acting under Section 120. At most, it indicates NOAA Fisheries should consider other sources of impacts, which the agency did in 2008, and has yet again considered for the current action.

C. The Endangered Species Act (ESA)

Pursuant to Section 7(a)(2) of the ESA, federal agencies are required to consult on any action they authorize, fund or carry out to ensure the action is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat. The recommended action, similar to that taken in 2008, may affect salmonids and Steller sea lions (SSL) listed as threatened or endangered under the ESA. NOAA Fisheries Northwest Region (F/NWR) completed formal consultation on the 2008 lethal removal action. We re-initiated consultation in late 2008, following the accidental death of two SSLs in May 2008. The Northwest Region completed a second biological opinion on February 20, 2009. The Northwest Region has considered the recommended action and reviewed these biological opinions and concludes the effects of the recommended action fall within the scope of the previously issued biological opinions. Thus, we have concluded there is no need to prepare a new biological opinion and documented the reasons for such a conclusion in a separate memorandum (Darm, pers. comm. 2011)

III. History of Pinniped-Salmonid Conflict

California sea lions hunt for and eat migrating adult salmonids as the fish move through the tailrace below Bonneville Dam (Dam) and pass into one of eight fishway entrances that lead to fish ladders located on the Oregon and Washington sides of the Columbia River. Five ESA-listed salmon and steelhead species are affected – upper Columbia River spring Chinook, Snake River spring/summer Chinook, Snake River steelhead, mid-Columbia River steelhead, and lower Columbia River steelhead. Upper Columbia spring Chinook are listed as endangered species while the rest are listed as threatened species.

Until 2001, few seals and sea lions were observed feeding in the area immediately downstream of the Dam. In 2001, the U.S. Army Corps of Engineers (COE), which operates the Dam, began to monitor marine mammal predation on ESA listed salmonids in the tailrace of the Dam. COE monitors have tracked numbers of sea lions (including how many are new versus repeat visitors), the number of days individual sea lions are present in the area, and the numbers of salmonids consumed (Table 1). From 2002 to 2003 the total numbers of sea lions observed below the Dam rose from 31 to 109 animals, 104 of which were CSLs. The number of CSLs decreased slightly each year through 2007, when the number was 71. The CSL numbers rose again in 2008 (82), declined in 2009 (54), and rose again in 2010 (89) (Stansell et al 2010). These numbers represent the minimum numbers of CSLs present. It is likely that more pinnipeds were present than were actually observed since observations were recorded only from observation stations at the Dam, observations did not occur at all hours, and only sea lions that could be identified were counted. It is also likely that some of the observed increase in numbers of both SSLs and CSLs is attributable to the fact that over time the ability to recognize individuals has increased – observers only record the number of identified animals (Stansell et al. 2010).

The COE' data also indicate that the average attendance by individual CSLs increased from 5.3 days in 2002 to 19.9 and 20.3 days in 2006 and 2007, and 19 days in 2008 and 2009. That

average decreased to 9.3 days in 2010. Table 1 also shows a trend in recent years with CSLs arriving earlier in the year (January instead of February/March), and departing somewhat later in the year (early June).

Table 1 Summary of Annual Pinniped Abundance and Duration at the Bonneville Dam Tailrace – 2002-2010

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Min. total number of individual pinnipeds	31	109	104	86	86	82	123	82	166
California sea lion	30	104	99	81	72	71	82	54	89
Steller sea lion	0	3	3	4	11	9	39	26	75
Harbor seal	1	2	2	1	3	2	2	2	2
Maximum daily number of pinnipeds	14	32	37	43	46	54	63	47	69
Maximum number of days individual California sea lion was present	16	25	33	39	73	70	80	67	39
Average number of days California sea lions were present	5.3	6.5	7.6	7.5	19.9	20.3	19	19	9.3
Date of first California sea lion sighting	3/20	3/14	2/22	2/20	2/9	1/8 ^a	1/9 ^a	1/5	1/8
Date of last California sea lion sighting	5/17	5/27	5/26	6/10	6/5	5/26	6/2	5/29 ^b	6/1
Total days California sea lions were present	59	71	95	96	106	123	146	145	145

Source: Stansell pers comm. 2008, Stansell pers comm. 2010

a - In 2007 a CSL was seen at the dam in the fall (11/8/07) prior to the 2008 spring season and in 2008 sea lions were observed as early as 9/18/08 prior to the 2009 season.

b - In 2009 one CSL passed the dam and remained upriver and in the forebay all summer, fall and winter.

Table 2 shows that predation of salmonids primarily by CSLs increased steadily from 2002 through 2010, and the expanded estimate of predation, based on observations, hit a high of 6,081 salmonids consumed in 2010 (5,095 by CSLs and 986 by SSLs). Additional estimates of predation based on bioenergetic models are presented in section VII(A)(1) below. Although Steller sea lions took a larger percentage of the overall salmonid catch in 2010 than in any

previous year, CSL takes - in numbers of fish - continued to rise. While the numbers of salmonids consumed has steadily risen, the size of the salmon run has fluctuated over this time period, thus the observed predation rate is higher in years when the salmonid run is lower. For example, an estimated 3,859 salmonids were consumed in 2007, with a salmonid run size of only 88,474, resulting in a calculated predation rate of 4.2 percent. By comparison, the largest estimated numbers of salmonids eaten occurred in 2010 (6,081), yet the predation rate was the lowest since 2004 because the salmonid run was large that year (267,194).

TABLE 2 – EXPANDED OBSERVATION BASED ESTIMATES OF SALMON PREDATION BELOW BONNEVILLE DAM BY ALL PINNIPEDS

Expanded Estimates of Salmonid Predation by Pinnipeds								
			All Pinnipeds		CSL		SSL	
	Total	Total	Estimated	%	Estimated	%	Estimated	%
	Hours	Salmonid	Salmonid	Run	Salmonid	Run	Salmonid	Run
Year	Observed	Passage	Catch	Taken	Catch	Taken	Catch	Taken
2002	662	281,785	1,010	0.36%	1,010	0.36%	0	0.00%
2003	1,356	217,934	2,329	1.06%	2,329	1.06%	0	0.00%
2004	516	186,770	3,533	1.86%	3,516	1.85%	13	0.01%
2005	1,109	81,252	2,920	3.47%	2,904	3.45%	16	0.02%
2006	3,650	105,063	3,023	2.80%	2,944	2.73%	76	0.07%
2007	4,433	88,476	3,859	4.18%	3,846	4.17%	13	0.01%
2008	5,131	147,534	4,466	2.94%	4,294	2.83%	172	0.12%
2009	3,455	186,060	4,489	2.36%	4,037	2.12%	452	0.24%
2010	3,609	267,184	6,081	2.23%	5,095	1.87%	986	0.37%

Source: Stansell et al 2010

In addition to observations of salmonids actually eaten below Bonneville Dam, there are many more observations of salmonids passing the dam that show injuries consistent with pinniped interactions, such as scarring and bite marks. Rub et al. (2010) report that in 2005 up to 37 percent of salmonids were injured (i.e., scarred) by pinnipeds, and that in 2008 and 2010, rates were 24.8 and 29 percent, respectively. It is not possible to estimate how many of these salmonids subsequently died of their injuries prior to spawning, or to determine where in their migration the injured salmonids encountered pinnipeds. However, we are highly certain that the

amount of mortality exceeds even the modeled consumption discussed below due to subsequent mortality upstream from Bonneville Dam.

Since 2005, the COE, NOAA Fisheries, and the States of Oregon and Washington have tested a variety of non-lethal methods to deter CSLs from preying on salmonids in the area below the Dam, but these methods have been unsuccessful in reducing total pinniped predation (Task Force 2010; Stansell et al. 2010).

IV. Procedural and Litigation History

On December 5, 2006, the States asked NOAA Fisheries to authorize the intentional lethal removal of CSLs in the Columbia River, particularly in the area from Bonneville Dam to navigation marker 85, approximately six miles downstream from the Dam. As described in more detail in the States' application and NOAA Fisheries' 2008 decision memorandum and EA, the States expected in the first year of removal to kill less than 1% of the potential biological removal level (PBR) of CSLs. At the time of the application, the PBR level was 8,333 animals out of an estimated population of 237,000. The States also highlighted past efforts to non-lethally deter pinnipeds below the dam and concluded such efforts had proven unsuccessful. The States' application described the expected benefit of pinniped removal to be a reduction in a recent, unnatural, and significant source of mortality of the affected salmonids. This benefit would be part of an ongoing comprehensive fish recovery strategy, in which substantial actions are being taken in several areas to improve the survival of at-risk Columbia River salmon and steelhead runs.

Pursuant to Section 120, NOAA Fisheries determined that the States' application provided sufficient evidence to warrant establishing a Task Force. The Task Force convened in September 2007 and, after considering the States' application, public comments on the application, and other information, delivered its recommendation to NOAA Fisheries in November 2007. The majority of the Task Force members (17 of 18) recommended authorizing lethal removal, and presented two options, each with different levels of support from Task Force members. One member of the Task Force submitted a minority opinion opposing the States' application. The minority opinion was included as an Appendix in the final Task Force report. Thereafter, the Northwest Region developed a proposal to authorize lethal removal, analyzed the proposal in an EA, completed a Section 7 consultation under the ESA, considered all public comments (including those from the Marine Mammal Commission), and recommended that the Assistant Administrator partially approve the states' request. The agency approved the request and issued LOAs on March 18, 2008.

The LOAs authorized the States to lethally remove only individual sea lions that are highly identifiable (natural markings or man-made ones like branding), and that are observed eating salmon after non-lethal deterrence methods are unsuccessful. The authorization allowed as many as 85 sea lions to be lethally removed annually, though we estimated the actual number would be closer to 30 a year. As an alternative limit to the number of sea lions that could be lethally

removed, the authorization provided that the States were to cease lethal removal efforts if the 3-year average of observed predation of adult salmonids was reduced to 1% or less of the fish tallied by counters at the Dam.

The States were given the option of immediately killing qualifying sea lions or capturing and holding them for a brief period to see if they could be placed in a public display facility. The authorization required the states to form an animal-care committee, approved by NOAA Fisheries, to advise on standards for humanely capturing, holding and killing predatory sea lions. The States were required to implement specific safety standards to protect the public if any firearms were used. The authorization also included monitoring and reporting requirements.

Shortly after the agency issued the LOA, the Humane Society of the United States filed a complaint in the U.S. District Court in Oregon. Plaintiffs contended that NOAA Fisheries' approval of the lethal removal of CSLs violated Section 120 of the MMPA and NEPA. In particular, plaintiffs argued NOAA Fisheries' decision was factually indefensible and inconsistent with other agency decisions under NEPA and the ESA involving salmonids (specifically, fishery harvest and hydropower operations). The plaintiffs contended that NOAA Fisheries failed to provide an adequate explanation under the Administrative Procedure Act as to why sea lion predation was significant, whereas take by fisheries and hydropower operations was insignificant. Moreover, plaintiffs claimed that NOAA Fisheries violated NEPA by not preparing an Environmental Impact Statement and not preparing an adequate EA.

In November 2008, the district court issued an order upholding NOAA Fisheries' approval of the lethal removal program and NOAA Fisheries' evaluation of impacts under NEPA. Plaintiffs appealed and on November 23, 2010, the Ninth Circuit issued a decision partially favorable to plaintiffs. The Ninth Circuit concluded that NOAA Fisheries' MMPA decision lacked a satisfactory explanation concerning two main points: (1) the seemingly inconsistent findings that sea lion predation is significant for purposes of the MMPA, but similar or greater levels of take of the same salmonid populations by other activities -- such as fishery harvests in the Columbia River -- are not significant under NEPA; and (2) the agency's failure to explain adequately what the court viewed as the agency's implicit finding that a CSL predation rate of greater than 1% results in a significant negative impact on the decline or recovery of salmonid populations. The Ninth Circuit upheld the agency's NEPA analysis. The circuit court directed the district court to vacate the decision authorizing lethal removal and remanded it to NOAA Fisheries "... to afford the agency the opportunity either to articulate a reasoned explanation for its action or to adopt a different action with a reasoned explanation" (*HSUS v. Locke*, 626 F.3d at 1053).

V. New Information Obtained Since the 2008 Lethal Removal Authorization

Northwest Region staff compiled and evaluated information obtained since completion of the 2008 EA and prepared a supplemental information report which includes a summary of the information and an evaluation of whether there is a need to supplement the 2008 EA. The new information includes: (1) updated information on pinnipeds in the action area (population,

presence, predation) from 2008 through 2010; (2) updated salmonid information (status and trends, recovery planning, passage counts, predation versus run size, hatchery versus wild components); (3) non-lethal deterrence efforts; (4) permanent pinniped removals carried out under the Section 120 LOA; (5) impacts of predation on other fish species; and (6) recent recommendations from the Task Force. In addition, the report examines whether there have been any substantial changes to the proposed action or whether any significant new circumstances have come to light since 2008.

The agency's abundance estimates for CSLs are the same as those used in the 2008 EA (Allen and Angliss 2010), as new surveys have not been conducted since 2005. The abundance of SSLs has increased from a minimum population size of 44,404 to 52,847. There is also no new information on the abundance of harbor seals in Washington and Oregon. The 2008 LOA did not authorize lethal removal of harbor seals or SSLs, and no such authorization is recommended here. Information included in the 2008 EA and in observations at Bonneville Dam in 2008-2010 (Table 1) indicates that harbor seals are not present in significant numbers at Bonneville Dam (from 1 to 3 animals reported in any year). Accordingly, harbor seals are not discussed further in this memorandum.

The presence of CSLs has fluctuated over time, and at least 82, 54, and 89 sea lions were identified at the dam in 2008, 2009, and 2010, respectively, with mean residency times decreasing from about 19 days in 2008 to 9.3 days in 2010. The numbers of observed salmonid kills by CSLs at Bonneville Dam in 2008-2010 continued the increasing trend that was seen between 2001-2007.

Steller sea lion presence and consumption of salmonids has increased at Bonneville Dam over the past three years. Some of the increase in numbers of SSLs can be explained by a change in methodology, initiated in 2009, for tallying that species (Stansell et al 2009). SSLs continued to consume primarily sturgeon, though there were many observations of SSLs catching free swimming salmonids and taking salmonids from the smaller CSLs. The estimated salmonid catch by SSLs reported in Table 2 reflects the catch of free swimming salmonids and does not include salmonids stolen from CSLs. Observations of SSLs swallowing steelhead whole led researchers to hypothesize that SSLs may also be consuming whole steelhead below the surface, thus escaping observation. In spite of the growing presence of SSLs at Bonneville, CSLs accounted for approximately 83.8% of all salmonids consumed (Table 3).

Information on salmonid status and conservation indicates that numbers of adult salmonids migrating upstream to spawn continue to fluctuate from year to year, the listing status of the Columbia runs has not changed, conservation actions address multiple factors affecting salmonids, and predation as a function of run size fluctuates greatly from year to year (depending in large part upon run size). A literature review published in 2009 hypothesized that salmonid smolt predation by non-indigenous species of fish may be an important factor affecting salmonid recovery and has been largely overlooked in recovery planning. Although the impact of predation by non-indigenous fish has received little scientific or conservation attention, there is

no evidence suggesting that the effect of such predation on salmonid run size and recovery has changed substantially since the 2008 EA was completed.

Table 3 – Comparison of Salmonids Caught by CSL v. SSL 2002 through 2010

	All Pinnipeds			CSL		SSL	
	Total	Estimated	%	Estimated	%	Estimated	%
	Salmonid	Salmonid	Run	Salmonid	Catch	Salmonid	Catch
Year	Passage	Catch	Taken	Catch	Taken	Catch	Taken
2002	281,785	1,010	0.36%	1,010	100%	0	0%
2003	217,934	2,329	1.06%	2,329	100%	0	0%
2004	186,770	3,533	1.86%	3,516	99.5%	13	0.5%
2005	81,252	2,920	3.47%	2,904	99.5%	16	0.5%
2006	105,063	3,023	2.80%	2,944	97.4%	76	2.6%
2007	88,476	3,859	4.18%	3,846	99.6%	13	0.4%
2008	147,534	4,466	2.94%	4,294	96.1%	172	3.9%
2009	186,060	4,489	2.36%	4,037	89.9%	452	10.1%
2010	267,184	6,081	2.23%	5,095	83.8%	986	16.2%

Source: Expanded estimates of observed predation (Stansell et al. 2010).

In October 2010, we re-convened the Pinniped-Fishery Interaction Task Force to review the effectiveness of the lethal removal program and to consider information accumulated since the program was initiated in 2008. This review was consistent with one of the recommendations of the Task Force in its 2007 report to NOAA Fisheries. After reviewing the same information included in the supplemental information report, the Task Force concluded that the program had not been sufficiently successful in reducing pinniped predation on salmonids and made several recommendations to improve its effectiveness. To facilitate focused discussion on recommendations, the Northwest Region prepared five general questions for the Task Force to consider in its deliberations, one of which we later withdrew (these questions are included in the Task Force Report and Recommendations (2010)).

As a preamble to its recommendations to improve effectiveness of the program, the Task Force noted that the current program authorized under MMPA Section 120 had not been fully implemented and that the level of implementation to date had not reduced predation on

salmonids to the interim goal recommended in the Task Force's 2007 recommendations, that is a predation rate no greater than 1% of the salmonid run size.

In response to our questions, the Task Force recommended that its interim criterion for success (the 1% threshold) not be changed at this time because it had not been fully tested. As we explained in our 2008 decision memorandum, we identified a 1% predation rate as the point at which no more sea lions would be killed; we did not consider a 1% predation rate to be a measure of success or as a threshold between a significant and non-significant level of predation on salmonids. As explained in more detail in Section VIII(D) below, we have eliminated the 1% criterion from the proposed authorization.

The Task Force also noted that non-lethal hazing had not been effective at reducing predation in the area during this time and recommended redirecting part of the resources supporting hazing to more effective alternatives. Provisions for non-lethal hazing in the 2008 authorization were general, and the States could address the Task Force's 2010 recommendations related to levels of non-lethal hazing and alternatives without a modification from the 2008 approach. We acknowledge that predation has continued to rise so that by this measure all efforts to date appear ineffective, including non-lethal hazing. The current observation methodology cannot detect the effects of non-lethal hazing on unidentified individuals or on identified sea lions that may be chased from the dam before they are observed in a given day. Non-lethal hazing as a pre-requisite to lethal removal was part of the State's initial request. It was included in the original authorization as a test of the persistence of individual animals at the Dam and the only available means to minimize the number of individual animals that become eligible for lethal removal by discouraging animals that are less motivated to remain before they become effective predators in the tailrace. We believe that non-lethal hazing can still serve this function regardless of our ability to measure relative success in terms of fish saved. We recommend that the non-lethal hazing provision be retained.

The Task Force concluded that the criteria in the 2008 authorization for identifying predatory sea lions were cumbersome and may make the program ineffective at reducing predation on threatened or endangered salmonids. The Task Force recommended four options for simplifying these criteria so that more sea lions could be added to the list of identified predatory sea lions. The Task Force also recommended the States modify trapping protocols and effort to increase the number of CSLs captured and to increase the opportunity for use of firearms to remove predatory sea lions.

VI. Recommended Action

A. Procedural Considerations

We considered whether there was a need to begin the Section 120 process anew. In light of the narrow remand and because we propose to authorize essentially the same lethal removal program

as in 2008, we conclude Section 120's procedural elements (such as application by the states, public comment on the application, and convening the Pinniped-Fishery Interaction Task Force) do not apply to the current action. My recommended decision is based on: (1) all the data and analyses relied on to support our 2008 authorization (e.g., the States' application, the Task Force's 2007 recommendation, public comments, our NEPA, MMPA, and ESA analyses) and which makes up the administrative record in the agency's prior decision; (2) new data collected since 2008 and described in more detail in the supplemental information report; and (3) the relevant fishery harvest and hydropower documents referenced in the Ninth Circuit's opinion, as well as information that sheds light on those documents.

B. Substance of Recommended Authorization

In 2008, the Northwest Region developed a proposal in response to the States' request for lethal removal authority after considering the States' application, public comments, comments from the Marine Mammal Commission, and Task Force recommendations, including the minority opinion. We also considered the requirements of the ESA and NEPA. We analyzed the proposed action in the draft EA and made the analysis available for a 30-day public comment period. After considering public comments, we slightly modified the proposed action and the analysis. We also considered all of the sources previously mentioned in recommending that the proposed action meets the requirements of the MMPA.

We once again recommend that the agency partially approve the States' request for authority to lethally remove CSLs at Bonneville Dam, with terms and conditions that are substantially similar to those contained in the 2008 authorization. We propose two modifications. First, we propose that the agency, through a letter of authorization, allow the States to lethally remove a certain number of pre-determined CSLs at Bonneville Dam. Lethal removal would be authorized under the same terms and conditions as contained in the March 12, 2008 Decision Memorandum with a minor amendment to the definition of individually identifiable predatory CSL as described below in section VII(A)(7). Second, we propose to remove Condition 15 of the 2008 LOA, which directed the States to assess whether predation had been reduced to below 1% of total salmonid passage at the dam in June 2011, for the reasons describe in section VIII(D) below. The number of predatory CSLs that would be authorized for removal would remain at 1% of PBR for the stock. As described in the supplemental information report, based on the States' lethal removal program in 2008, 2009, and 2010, we continue to conclude that 30 animals is a likely number to be permanently removed each year.

VII. Findings and Considerations to Support the Recommendation

This section describes our rationale for issuing the new Section 120 LOA and incorporates by reference our 2008 administrative record, particularly the March 12, 2008, Decision Memorandum. In addition, our current decision is also informed by the data we considered and the analyses we prepared since the 2008 decision (e.g., the supplemental information report).

A. Section 120(b)(1) – Individually Identifiable Pinnipeds Which are Having a Significant Negative Impact

In considering a state's request to lethally remove pinnipeds, the agency is required, pursuant to section 120(b)(1), to make a determination whether individually identifiable pinnipeds are having a significant negative impact on the decline or recovery of at-risk salmonid fishery stocks. My interpretation and application of this standard is based on the rationale developed in 2008 (as articulated in NOAA Fisheries' March 12, 2008, Decision Memorandum partially approving the States' application, and elsewhere in the 2008 record), and is informed further by additional considerations noted below.

As in 2008, I recommend that the agency determine that collectively CSLs at Bonneville Dam are having a significant negative impact on ESA listed salmon and steelhead species. For this recommendation I have considered information in the 2008 record, additional information available since 2008, and the Ninth circuit decision remanding our 2008 decision. In addition to the factors considered in 2008, I also find the following factors particularly important in reaching the current decision:

1. The predation by CSLs on at-risk salmonids is measurable and has grown since 2002 until the present.

Table 2 shows the estimated predation (observation based) of salmon, primarily by CSLs, from 2002 through 2010. Except for a slight decrease from 2005 to 2006, the numbers of salmonids consumed by pinnipeds has steadily grown, reaching a high in 2010 of 6,081 salmonids. The numbers of salmonids consumed also increased from 2006 to 2007 even though the salmonid run size was smaller. Salmonid consumption by pinnipeds increased six-fold from 2002 to 2010. While some of this growth in predation is attributable to SSLs, CSLs account for the vast majority of salmonids caught (Table 2).

As part of our evaluation in the 2008 EA, we calculated the potential consumption of salmonids based on: (1) the average number of CSLs at the dam from 2003 – 2007 (86 animals); (2) the average number of days that individual sea lions were present at the dam (20.3 animals); and (3) an estimate of CSL salmonid consumption based on energetic modeling (1.48 fish/day) or the observed maximum number of fish consumed by an individual (10 fish/day). The calculation yielded an estimated 2,584 to 17,458 salmonids consumed by CSLs, indicating that salmon consumption could be much higher than observed. For 2011 we updated the evaluation of potential consumption using data on: (1) the average of the minimum estimated total number of CSLs at the dam in 2008 through 2010 ($82 (2008) + 54 (2009) + 89 (2010) \div 3 = 75$ (Stansell et al 2010)); (2) the average number of days sea lions were present ($19 (2008) + 19 (2009) + 9.3 (2010) \div 3 = 15.8$ (Stansell et al 2010)); and (3) an estimated median number of salmonids consumed by individual CSLs (3 fish/day) using updated bioenergetic techniques (as presented by B. Wright to the Pinniped Fishery Interaction Task Force on 10/27/2010).

For comparison we again calculated an estimate using the observed maximum number of fish consumed by an individual (10 fish/day) but adjusted for numbers of sea lions and residency time. The results of these calculations yield an estimated range of salmonids consumed by CSLs between 2008 and 2010 from 3,555 to 11,855. This range falls within the range previously analyzed in 2008 but with differences reflective of the higher consumption rate (3 fish/day) from the updated energetic model and the lower average number of CSLs present and shorter average residency time since 2007. The updated calculation still indicates that potential consumption could be substantially higher than observed. The high end of the estimated level of predation (11,855) represents about 4.2% of the run for years like 2010 (with relatively strong returns), and 12.7% of the run in a year like 2005, where the run size was much lower (but still higher than many years during the 1990s).

2. Non-lethal deterrence efforts have been unsuccessful at reducing the numbers of sea lions or the amount of predation. Lethal removals over the past three years may have slowed the growth in numbers of salmonids consumed, but pinniped numbers and the numbers of salmonids consumed continued to grow even with the authorization in place.
3. Because salmonids passing Bonneville Dam congregate in front of 8 fish ladder entrances, it is reasonable to expect that CSLs can continue to consume large numbers of salmonids even if the salmonid run sizes decrease to the low levels seen in the 1990s (as demonstrated in 2005 and 2007). In that event, the proportion of the run they consume would be much higher than what has been observed or estimated on average in the past. Salmonid abundance is highly variable and cyclical and it is likely that at some point in the near future salmonid run sizes will decrease to levels much lower than those seen in the past few years.

Absolute levels of pinniped predation have steadily increased at Bonneville Dam and there is no information to suggest the numbers of pinnipeds or the numbers of salmonids consumed will level off or decrease. The experience at Ballard Locks in Washington suggests that where human structures cause adult salmonids to congregate and delay, CSLs can effectively consume a majority of the salmonids present. While the area at Bonneville Dam is larger than the area at Ballard Locks, the observed increase in years when salmonid numbers are lower suggests that sea lions at the dam are effective predators even when the prey is relatively less abundant. In the event of extremely low run sizes, it is likely that pinniped predation could have a very large effect at Bonneville Dam. As a demonstration of this real possibility, in 2011, from April 1 through April 22, the observed sea lion predation ranged from 18% to 48% of Chinook arriving at the dam on a daily basis (Stansell et al 2011a & 2011b). In years of low abundance, such as those seen in the mid to late 1990s, the elevated predation rates observed early in the season would be possible throughout the season resulting in devastating losses. Because it can take years before we see results of a lethal removal program (as demonstrated by the past three years of efforts), if we wait to take action until salmonid run sizes are once again low, it may be too late for those efforts to forestall the kind of impact seen at Ballard Locks.

4. In the past two years SSL presence at the dam has grown several fold, as has the level of predation on salmonids by SSLs. That predation is now an independent measurable source of mortality. There is no evidence that the presence of and predation by SSLs has reduced predation by CSLs, thus the two sources of mortality appear to be having cumulative effects. Because SSLs are listed under the ESA and may not be lethally removed, the only source of pinnipeds predation that can currently be addressed under the MMPA is predation by CSLs.
5. CSL numbers at Bonneville Dam in 2010 were the highest since 2004, indicating that their numbers are as yet unpredictable and can easily grow. Table 1 provides a summary of pinniped abundance and presence at the dam from 2002 through 2010.
6. The level of adult salmonid mortality is sufficiently large to have a measurable effect on the numbers of listed adult salmonids particularly at times when the salmonid run sizes are low, which diminishes the productivity of the affected salmonids.

Both the observed and estimated predation rates described above represent levels of mortality that can have a measurable effect on the survival and recovery of the listed stocks. In preparing its biological opinion on the Federal Columbia River Power System (FCRPS), NOAA Fisheries estimated the current spawner return rates for each population of the listed salmonid ESUs/DPSs, and the spawner returns needed to achieve a low likelihood of extinction and adequate potential for recovery. For example, needed survival improvements for different populations of Snake River spring/summer Chinook range from no improvement to a five-fold improvement. Loss of potential spawners to predation on the order of that observed at Bonneville Dam can affect the ability to achieve the productivity improvements needed for many of the populations in this ESU.

In response to the Ninth Circuit court's decision, we asked the Northwest Fisheries Science Center (Center) if it would be possible to incorporate a constant level of pinniped predation into life cycle models for the affected salmonid populations so we could better quantify its effect at low run sizes. No models are currently available, but the Center is undertaking studies to develop such models. In a memo in response to our inquiry, the Center described two distinct concerns about pinniped predation. One is that the predation occurs disproportionately on early and late arriving fish. The best available information shows that these fish are from discrete populations, with the result that pinniped predation is having a disproportionate impact on those populations. The other is that a constant level of impact has a compensatory effect on salmon populations (i.e., reproduction is less successful as abundance declines), increasing the risk of populations entering an "extinction vortex" at low run sizes (Ferguson pers. comm 2011).

7. The mortality rate for listed salmonids is comparable to mortality rates from other sources that have resulted in the agency using its ESA authorities to reduce the impact.

The estimated mortality rates for listed salmonids from pinnipeds at Bonneville Dam are in the same range as mortality rates from other sources that have led to corrective action under the

ESA. Because the listed salmonids are subject to mortality from a variety of sources, we have imposed reductions on all sources of mortality under section 7(a)(2) of the ESA, allocating those reductions based on the action's contribution to the historic decline of the species, the current magnitude of the mortality, the impact to other values (particularly the exercise of treaty rights), and the feasibility of achieving the reduction. As an example, although harvest rates on Snake River and upper Columbia River spring Chinook were already restricted prior to ESA listing (from historical highs in excess of 40% to an average of 8% prior to listing), we nevertheless required a harvest schedule that ensured harvest rates would remain low when the run size was depressed. A comparison of pinniped predation and harvest rates is discussed further below in Section VIII(A).

Another example is the survival improvements sought from the FCRPS. In our biological opinions on operation of the hydropower system, we included as a part of our reasonable and prudent alternative a program to reduce northern pikeminnow predation on Snake River spring/summer Chinook sufficient to increase survival by a relative 1 percentage point and bird predation by 2 percentage points. A comparison of pinniped predation and hydropower operations is discussed further below in Section VIII(B).

No single one of these mortality reductions will by itself recover listed salmonids. Rather, as with other actions, NOAA Fisheries' approach is to seek reductions in all sources of mortality, with the goal of reducing overall mortality to the point that the species can survive and recover. In the biological opinions on the FCRPS, NOAA Fisheries concluded that the accumulation of proposed mortality reductions (including controlled levels of pinniped predation) will measurably improve the chances of survival and recovery of all five of the ESUs/DPSs considered here.

The limited authorization we recommend giving the States will not eliminate pinniped predation in the lower Columbia River or at Bonneville Dam, but that is not a requirement of Section 120 or of prudent wildlife management. The authorization to the States to remove a limited number of predatory CSLs under carefully controlled circumstances will create an additional tool in our efforts to control a significant, unmanageable, and unchecked source of mortality for threatened and endangered Columbia River salmonids.

Individually Identifiable Pinnipeds Which are Having the Impact

My recommendation is that NOAA Fisheries' authorization extend only to predatory CSLs as defined in the March 12, 2008 Decision Memorandum with one minor change. I recommend that the definition of predatory CSLs be amended to include individually identifiable animals observed taking salmonids in the fish ladders or above the dam. The remaining criteria that apply within the observation area below the dam (number of days present, time of year, subjected to hazing) would apply to animals taking fish at and above the dam. As discussed in the 2008 Decision Memorandum, an animal meeting all of these criteria has learned that the area contains a preferred prey item and is successful in pursuing it in that area, is persistent in pursuing that prey item, and is not likely to be deterred from pursuing that prey item by non-lethal means. A list of animals (appendix) presently identified as meeting the 2008 criteria, and

therefore also meeting the proposed new criteria, is attached to the letter of authorization to the States, and the letter describes the process by which additional animals may be included on the list.

B. Section 120(d) – Consideration of Other Factors

In considering whether to approve the States' application, NOAA Fisheries and the Task Force are to consider several factors, enumerated above under section II(A). NOAA Fisheries' past consideration of these factors was well documented in the March 12, 2008 Decision Memorandum and EA, which is incorporated by reference. New information available since the 2008 decision was considered in a Supplemental Information Report dated May 09, 2011 and found to be within the scope of the 2008 analysis and decision.

VIII. Discussion of Additional Factors

Although the Task Force's options for revised criteria would increase the number of identified sea lions that could be removed, I recommend that NOAA Fisheries not modify the criteria to the extent recommended by the Task Force. The 2008 criteria for identifying predatory sea lions included three concepts designed to limit removal of sea lions to only those animals that were major contributors to detrimental impacts on salmonids: (1) preying upon salmonids in the observation area; (2) repeated visits to the observation area; and (3) persistence in the observation area after being exposed to non-lethal deterrence methods. After three years of the program to reduce predation on salmonids, 37 predatory sea lions were removed from the population and 56 sea lions were added to the list, of identified sea lions bringing the new total to 78 predatory sea lions when removal efforts were completed. The pace of sea lion removal is primarily related to the logistical difficulties of capturing sea lions. The rate that animals were added to the list of animals eligible for removal was faster than the rate of removal under the prior authorization and is likely to remain so if capture logistics cannot be improved. Very few sea lions that had met the criteria for removal were captured and released because they were not yet added to the list of predatory sea lions. Because inclusion of animals on the list of predatory sea lions does not appear to have been a substantial factor limiting success of the program, I recommend that NOAA Fisheries not modify the three criteria for identifying predatory sea lions at this time. Expanding the observation area to include the fish ladders and waters above Bonneville dam, as well as the tailrace, is warranted because it allows the States to deal with animals that have discovered how to take advantage of the Dam's fish ladder to pursue and kill salmon and those animals that have passed above the Dam using the navigation locks. In 2010, a sea lion that had been repeatedly observed at the dam and had persisted there despite non-lethal deterrence was observed preying on salmonids above the dam at fish ladder exits, but had not been observed killing salmonids below the dam. This animal's predatory behavior was not anticipated in the 2008 authorization and is now addressed in the slight criteria change in the current proposed authorization.

The Task Force's recommendation to modify trapping protocols or to increase trapping effort could be implemented within the conditions of the 2008 authorization; therefore, no additional modification would be required in a new authorization. Expanding opportunities to use firearms (e.g., shooting sea lions from boats and targeting additional haulout areas), however, would be considered a more substantive modification of the conditions included in the 2008 authorization. The States have not requested such modifications, and I am not recommending any such modifications. Prior to requesting such modifications, the States would have to consult with COE officials to ensure that expanded opportunities for shooting sea lions could be conducted safely.

A. The Conclusion that California Sea Lions Are Having a Significant Negative Impact on At-Risk Salmonids Can Be Reconciled with Past Agency Decisions Involving Salmonids

As noted above, the Ninth Circuit court concluded that the MMPA Section 120 administrative record failed to include an adequate explanation on two main points – (1) the seemingly inconsistent finding that sea lion predation is significant for purposes of the MMPA, but seemingly greater levels of take of salmonid populations by fisheries and hydropower operations are not significant; and (2) the agency's failure to explain adequately what the court viewed as the agency's implicit conclusion that a CSL predation rate of greater than 1% results in a significant negative impact on the decline or recovery of salmonid populations. The court held that NOAA Fisheries' explanation to support the Section 120 decision was "incomplete and inadequate to permit meaningful judicial review" and pointed to a number of documents that NOAA Fisheries should have considered in order to reconcile the 2008 lethal removal authorization and past, unrelated agency decisions (e.g., environmental analyses for certain fishery harvests and hydropower operations).

This section describes how the finding recommended here – that CSL predation at Bonneville Dam is having a significant negative impact on the survival or recovery of listed salmonids – can be reconciled with previous agency decisions regarding harvest, and with the Bureau of Reclamation's, COE, and Bonneville Power Administration's 2007 biological assessment on the operation and maintenance of the FCRPS.

As an initial matter, it is important to note that the statutory standards, definitions, and purposes of NEPA, ESA and MMPA are distinct. In this case, the agency's decision regarding CSLs at Bonneville Dam is made under a specific provision of the MMPA, while the other decisions cited by the Ninth Circuit were made under different statutes, which have different purposes and provisions. Decisions under the different statutes should not be equated. Section 120 of the MMPA applies to a unique and narrow set of circumstances – namely, addressing an interspecies conflict where, as in this case, one species is healthy, robust, and increasing in size and the other is listed as threatened or endangered or is in a state of decline. There is no question Congress recognized the problem of pinniped predation on at-risk salmonids; hence, its decision to provide NOAA Fisheries with the tools to stem an emerging and unchecked source of mortality. While

Congress specified fairly clear procedural standards for issuing a lethal removal authorization, the substantive standards (i.e., “individually identifiable pinnipeds” and “significant negative impact”) are less clear.

Similar to 2008, I recommend the agency conclude that our interpretation of the substantive standards is reasonable in light of the statute’s ambiguity and the particular facts and circumstances surrounding the proposal to lethally remove California sea lions at Bonneville Dam. Similar to 2008, I recommend a two-part test to define “individually identifiable pinnipeds.” Under this test, NOAA Fisheries would first determine whether pinnipeds collectively are having a significant negative impact on listed salmonids and next determine which pinnipeds are significant contributors to that impact and therefore may be authorized for removal. The subordinate clause “which are having a significant negative impact” modifies the plural noun “pinnipeds,” supporting the proposition that our inquiry is whether pinnipeds (plural) are having the described impact, not whether a specific individual is having the described impact. Next, we recommend interpreting “significant negative impact” as an impact that is “meaningful,” and not “insignificant” or “meaningless.” In 2008, the agency adopted a suite of factors, as informed by numerous sources of data (e.g., the States’ 2006 application, the Task Force’s 2007 Report, comments from the public and MMC, and internal deliberations), to conclude that California sea lions at Bonneville Dam are having a significant negative impact. These factors include (and as noted above have been supplemented):

- The predation is measurable, growing, and could continue to increase if not addressed;
- The level of adult salmonid mortality is sufficiently large to have a measurable effect on the numbers of listed adult salmonids contributing to the productivity of the affected ESUs/DPSs; and
- The mortality rate for listed salmonids is comparable to mortality rates from other sources that have prompted corrective action under the ESA.

The inquiry required by Section 120 focuses specifically on the narrow issue of pinniped predation on at-risk salmonids. In support of this interpretation, Congress required NOAA Fisheries to consider four categories of information to determine whether to approve or deny a lethal removal authorization, all of which pertain to pinnipeds, past management actions aimed at pinniped predation, and their effect on the ecosystem, including fish populations. *See* 16 U.S.C. 1389(d)(1). Congress did not require any more of NOAA Fisheries prior to making this determination.

With respect to NEPA and the ESA, both contain their own statutory standards, definitions, and purposes and are distinguishable from the MMPA’s Section 120 provisions. NEPA and ESA have broad mandates and require agencies to evaluate the effects of the proposed action in combination with other activities that may affect the broader environment (NEPA) or threatened and endangered species (ESA), respectively. In contrast, Section 120 focuses solely on determining whether pinniped predation is having a “significant negative impact” on the decline or recovery of at-risk salmonids.

NEPA requires a consideration of whether a proposed action constitutes a “major federal action significantly affecting the quality of the human environment” (42 U.S.C. § 4332(C)). NEPA’s inquiry is on effects of a proposed action on the “human environment,” which is defined broadly by regulation to mean “. . . the natural and physical environment and the relationship of people with that environment” (40 C.F.R. § 1508.14). In addition, NEPA’s regulations require an agency to consider “cumulative effects,” which is defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions” (40 C.F.R. § 1508.27). Finally, the term “significantly” as used in NEPA requires consideration of “context” and “intensity” and the determination is informed by a multitude of factors (40 C.F.R. § 1508.27). NEPA’s implementing regulations also provide explicit guidance to federal agencies concerning the preparation of environmental documents (such as consideration of alternatives, development of environmental consequences, how to address incomplete or unavailable information, etc.). Thus, NEPA and its implementing regulations focus broadly on numerous elements of the environment and require fairly detailed and broad environmental analyses to assess the effects of a proposed action on the quality of the human environment. In contrast, Section 120 focuses on a very narrow and specific conflict and asks only whether pinniped predation is having a significant negative impact on the decline or recovery of at-risk salmonids.

Under the ESA, NOAA Fisheries must determine whether a proposed action is “likely to jeopardize the continued existence” of a threatened or endangered species or “result in the destruction or adverse modification” of designated critical habitat. *See* 16 U.S.C. § 1536(a)(2). NOAA Fisheries has defined “jeopardize the continued existence of” as engaging in an action that reasonably would be expected, directly or indirectly to reduce the likelihood of the survival and recovery of a listed species” 50 C.F.R. § 402.02. This inquiry focuses on the impacts of a proposed action on the species as a whole. In so doing, NOAA Fisheries is required to consider the “effects of the action,” which includes the proposed action combined with the effects of other activities that are interrelated or interdependent with the proposed action, that will be added to the environmental baseline. An action may not jeopardize the continued existence of a species or result in the destruction or adverse modification of critical habitat, even though it has significant adverse effects to a listed individual or group of individuals. The ESA’s analytical process, like that of NEPA, is well-defined by regulation and there is substantial agency guidance on ESA implementation.

Salmon and steelhead have a complex life history that spans large geographic areas. No single human activity is entirely responsible for their decline. All factors that limit their recovery must be addressed cumulatively. Most listed salmon and steelhead populations require substantial survival improvements, so it is crucial to make incremental improvements across all limiting factors that can be managed. For this reason, our approach to recovering ESA-listed salmon and steelhead has been to prevent new sources of mortality and to decrease existing sources of mortality.

There are numerous examples of this approach. This section discusses the two which are most relevant to the Ninth circuit's remand and the decision recommended here: management of state and tribal fisheries and operation and maintenance of the FCRPS.

I. Management of State and Tribal Fisheries

Section 9 of the ESA prohibits the take of species listed as endangered under the Act. For species listed as threatened, section 4(d) directs the Secretary to adopt protections that are necessary and advisable to provide for the conservation of the listed species. NOAA Fisheries has promulgated 4(d) rules for all salmon and steelhead populations listed as threatened. Those rules prohibit take of fish with an intact adipose fin, except in certain circumstances where the take is part of a management action that is designed to conserve the listed species (70 FR 37160 and 71 FR 834). Hatchery managers clip the adipose fin of most hatchery salmon, thus take is not prohibited for most hatchery fish. The Ninth circuit upheld this distinction in our 4(d) rules in *Trout Unlimited v. Lohn*, 559 F.3d 946 (9th Cir. 2009).

In addition to prohibiting the incidental take of listed salmon and steelhead through these 4(d) rules, we may also authorize otherwise prohibited incidental take through an incidental take statement issued under section 7 of the ESA. We have promulgated regulations implementing section 7 and published a handbook guiding our implementation of the regulations. The regulations create a distinction between informal and formal consultation. As described in the ESA Section 7 Consultation Handbook and our consultation regulations, if the action agency determines that an action is "not likely to adversely affect" a listed species or designated critical habitat and we concur, the informal consultation is concluded. ESA Section 7 Consultation Handbook, pp. xv.-xvi, 3-12 (March 1998); 50 C.F.R. 402.13(a). The Handbook provides that an action is not likely to adversely affect a species if the effects are "insignificant, discountable, or entirely beneficial." ESA Section 7 Consultation Handbook, pp. xv.-xvi, 3-12 (March 1998). An effect is considered "insignificant" if "based on best judgment, a person would not . . . be able to meaningfully measure, detect, or evaluate insignificant effects." ESA Section 7 Consultation Handbook, pp. xvi, 3-13. If effects are more than insignificant, and there is a more than discountable likelihood they will occur, formal consultation must proceed. If take will occur, informal consultation is not allowed. At the conclusion of the formal consultation we issue our biological opinion on the effects of the action, and if necessary include an incidental take statement with terms and conditions.

We consider Indian treaty rights along with the potential effects of harvest on ESA listed salmonids when making fishery management decisions. During settlement of the Oregon Territory, the United States negotiated treaties with various tribes, in which the tribes relinquished claims to territory. Though the terms of the treaties vary somewhat, in most of these treaties the Indian tribes reserved their right to hunt and fish in their usual and accustomed places, in common with the citizens of the territory. The United States has a unique relationship with tribes as a result of these treaties, numerous federal laws, court decisions, and executive orders. Secretarial Order 3206 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act) provides guidance for NOAA Fisheries in this

respect. NOAA Fisheries has sought to discharge this trust obligation in part by harmonizing implementation of its ESA responsibilities with the tribes' exercise of their treaty reserved fishing right.

With the ESA listings of salmon and steelhead, NOAA Fisheries encouraged all fisheries to be managed for the escapement of naturally spawned fish. One tool that allows harvesters to catch abundant hatchery fish while conserving naturally spawned fish is mark-selective fisheries. Hatchery fish are marked by clipping the adipose fin and selective fisheries allow only retention of fin-clipped (hatchery) fish. Naturally produced fish are released. Most treaty fisheries are prosecuted with gillnets, making mark-selective fisheries impractical in these fisheries.

While using our role as a co-manager to encourage mark-selective fisheries and other conservation practices, we have also used our authority under the ESA to promote fishing regimes that would protect and allow for the recovery of listed salmon and steelhead. In particular, as a result of the take prohibitions, no fishery may proceed without an ESA authorization if that fishery will result in takes of fish with an intact adipose fin. In the 1990's, prior to the arrival of growing numbers of CSLs, we began to authorize potential take in the fisheries through section 7 incidental take statements. As part of the section 7 process, we consulted with other federal agencies and/or with ourselves and issued a biological opinion. In the biological opinion we thoroughly evaluated the impact of the proposed fishery on the listed salmon and steelhead populations. Only where we concluded that the proposed fishery would not jeopardize the continued existence of the listed species did we issue an incidental take statement authorizing take by the fishery. I am not aware of any case in which the Northwest Region has found that a fishery that takes listed salmonids is "insignificant" and therefore eligible for the ESA's informal consultation process.

The aluminum industry challenged our practice of issuing incidental take statements for fisheries, and also our lack of a NEPA analysis prior to issuing incidental take statements. In *Ramsey v. Kantor*, 96 F.3d 434 (9th Cir. 1996), the Ninth Circuit held that our issuance of an incidental take statement was appropriate in this circumstance, but that doing so was a "major federal action" requiring compliance with NEPA. In response to that holding, in 2003 we completed a "Programmatic Environmental Impact Statement for Pacific Salmon Fisheries Management off the Coasts of Southeast Alaska, Washington, Oregon, and California and in the Columbia River Basin." The programmatic EIS examined three alternative fishery management approaches applied to all fisheries coast-wide and in the Columbia River – fisheries as they had been previously prosecuted, without regard to ESA-listed stocks; fisheries based on escapement of naturally spawned fish and employing selective fishing methods; and a prohibition on all fisheries except those that would have no incidental take of listed fish. The EIS examined the impacts of these alternatives in all U.S. ocean and Columbia River fisheries on all listed fish species in the Columbia River Basin. Since 2003, we have prepared environmental evaluations in accordance with NEPA when authorizing the take of listed salmonids under the ESA, with the programmatic EIS as a foundation.

This section discusses in some depth the history of *U.S. v. Oregon* fisheries in the Columbia River, to provide a background for the context in which we issued the three EAs on Columbia River fisheries cited in the Ninth Circuit's opinion accompanying its remand.

a. Background on Columbia River Fisheries

Fisheries in the Columbia River Basin were managed under provisions of the Columbia River Fish Management Plan (CRFMP) from 1988 through 1998. The CRFMP was a stipulated agreement adopted by the federal court under continuing jurisdiction of *U.S. v. Oregon*. The purpose of the CRFMP was to define harvest limits that would be sufficiently protective to allow for rebuilding of the stocks of concern including upriver spring and summer Chinook stocks. Prior to 1992, the CRFMP allowed harvest rates on aggregate runs (combined hatchery and wild) of up to 4.1% on upriver spring Chinook stocks in non-Indian fisheries and either 5% (for aggregate runs under 50,000) or 7% (for aggregate runs between 50,000 and 128,000) in treaty-Indian ceremonial and subsistence (C&S) fisheries. The interim management goal for upriver spring/summer Chinook was 115,000 as measured at Bonneville Dam. If the aggregate run exceeded 128,000 (or 112% of the interim management goal), half the number of fish over 128,000 was considered harvestable. If the aggregate run exceeded 143,750 fish, the entire number of fish over 143,750 was harvestable. For comparison with later management agreements, the CRFMP (which was considered conservative and adequate for rebuilding stocks at the time) allowed a harvest rate of 36.7% on an aggregate run of 180,000 fish.

In 1996, following the 1992 listing of Snake River spring Chinook under the ESA, a three year Management Agreement modified the CRFMP harvest limits by reducing the allowable impacts in non-tribal fisheries. The tribal alternate harvest rates (5%-7%) were not changed but for the first time the Agreement required that fisheries be managed in response to the status of listed "natural-origin" or "wild" fish rather than solely on an aggregate run size dominated by hatchery fish. The 1996 Agreement provided that harvest rates would match those of the original CRFMP only if the anticipated return of *natural origin* Snake River spring Chinook exceeded 10,000 fish but left unresolved what would happen if the aggregate run was greater than 115,000 and the return of natural origin Snake River spring Chinook was greater than 10,000. In a biological opinion accompanying the incidental take statement authorizing take by fisheries under the revised plan, we recognized that the proposed fisheries would adversely affect listed Snake River spring/summer Chinook, but also acknowledged that the listed fish would not reach target escapement levels even with no fisheries. We therefore approved the proposed fisheries acknowledging that non-tribal fisheries were approaching zero and that it was appropriate to allow some level of fishing to meet tribal ceremonial and subsistence needs.

The Basinwide Salmon Recovery Strategy, adopted by Federal agencies in 2000, provided a broader context for consideration of harvest related mortality. The Recovery Strategy confirmed that conservative management policies were essential for an interim period while survival improvements are made in other sectors, but that at some point further reductions in harvest were

unlikely, by themselves, to result in recovery. The Recovery Strategy articulated: 1) the need to balance the conservation of at-risk species with the Federal government's trust obligations to tribes; 2) the priority of tribal fishing rights with respect to non-tribal fisheries; 3) a willingness to accept an increased level of risk associated with tribal fishing; and 4) the idea that there is an "irreducible core" of tribal harvest that is so vital to the treaty obligation that the Federal government will not eliminate it.

As the 2000 fishing season approached, we listed upper Columbia River spring Chinook as endangered under the ESA. The 2000 pre-season forecast for upriver spring Chinook (Columbia and Snake River hatchery/wild stocks combined) was higher than it had been for some time at 134,000 (NMFS 2005 (F/NWR/2005/00388)). Upriver spring Chinook run sizes in 1994 and 1995 were the lowest on record at 21,100 and 10,200 respectively and the 1998 and 1999 runs were near record lows at 38,400 and 38,700 respectively (ODFW/WDFW 2002). Based on the higher projected 2000 run size, the tribes proposed a treaty Indian harvest rate for spring Chinook of 9% while the states proposed a non-tribal harvest rate of 1-2% (10 to 11% total). In spite of intense negotiations that continued through the consultation period, NOAA Fisheries concluded a combined harvest rate in excess of 9% was inappropriate given the status of the stocks and issued a jeopardy opinion that limited the combined harvest rate to 9%.

In 2001, the pre-season forecast for upriver spring Chinook increased to 364,000 fish - the highest projected return since 1979. The parties to *U.S. v Oregon* reached an Interim Management Agreement for mainstem fisheries that remained in effect to 2005. The Interim Agreement established a variable harvest rate schedule based on a combination of total aggregate run size (hatchery and wild upper Columbia spring Chinook, Snake River spring/summer Chinook) and natural origin Snake River spring/summer Chinook run size. The sliding scale harvest rate schedule limited harvest impacts on wild upriver spring Chinook, from all in-river fisheries combined, to less than 5.5% at low run sizes (less than 25,000) and to no more than 17% when run sizes are large (450,000 and above). The harvest rate impact schedule is divided between treaty-tribal fisheries and non-tribal fisheries. The treaty share of harvestable surplus hatchery fish is 50%. A primary objective of the parties to the Management Agreement is to ensure that the tribes have adequate opportunity to exercise their right to fish and harvest their share which includes an annual ceremonial and subsistence entitlement of 10,000 Chinook. Accordingly, an allocation of harvest impacts, from the sliding scale upriver spring Chinook harvest rate schedule is secured for treaty fisheries first. Under this allocation harvest impacts from treaty fisheries range from 5% for run sizes less than 25,000 to 15% of wild upriver Chinook when run sizes are 450,000 or larger. The remaining 0.5% to 2.0% of harvest impacts are then allocated to non-tribal commercial and recreational fisheries. Non-tribal fisheries (both commercial and recreational) are mark-selective and harvest impacts from these fisheries are limited to incidental handling mortality.⁶

⁶ The sliding scale harvest rate schedule has been reviewed periodically and was adopted with modifications for the period 2008-2017. The harvest impact rate allocations between the treaty and non-tribal sectors have been changed

Before the start of the spring fishing season harvest impact limits are determined based on run size projections. The allocations are not fixed prior to the season, however, and adjustments to the allotted impact rates, including complete fishery closures, can be implemented during the fishing season if runs do not meet pre-season projections. In our ESA Section 7 biological opinion accompanying our authorization of the take associated with this fishing regime, we cited two factors that were important in reaching a no jeopardy conclusion for upriver spring Chinook; 1) the short duration of the agreement; and 2) the introduction of lower harvest rates for low run size years (NMFS 2005).

In 2008 we approved a *U.S. v Oregon* Management Agreement and issued a biological opinion as part of our comprehensive review of the harvest regime, FCRPS, and operation and maintenance of Reclamation's Upper Snake projects.⁷ The prospective harvest rate schedule adopted in the Agreement is similar to that first used in 2001 and during the 2005-2007 Interim Agreement (NMFS 2008b). The importance of the sliding scale harvest rate schedule lies in the protection it affords across all run sizes, with small run sizes receiving particular attention. For run sizes less than 82,000 fish the non-Indian harvest rate is limited to 0.5 to 1.6% but if the upper Columbia River natural spring Chinook forecast is less than 1,000 fish the non-Indian allowable harvest is capped at 1.5% and ratchets down more quickly.

A significant feature of the *U.S. v Oregon* harvest regime is that as run sizes decrease, so do harvest rates. The purpose of this approach is to ensure that enough wild adults escape in each generation to produce the next generation of fish. In addition, non-tribal harvest is almost exclusively limited to hatchery fish, and every effort is made to release wild listed fish back into the river so that they have the potential to spawn thereby contributing to the productivity of the species. For example, even the non-tribal commercial fisheries utilize tangle net gear which

slightly but the overall limits remain within the 5.5% to 17%. The harvest rate for the non-Indian sector has been further reduced to protect very depressed runs (<27,000 fish) (Joint Staff 2011).

⁷ NOAA Fisheries' 2008 BiOp and 2010 Supplemental BiOp for the FCRPS adopted and strengthened a reasonable and prudent alternative (RPA) that NOAA Fisheries concluded was sufficient to avoid jeopardy and adverse modification of critical habitat for thirteen species of salmon or steelhead affected by the FCRPS. NOAA Fisheries' RPA identified performance standards for FCRPS actions to limit or offset adverse effects on the listed species and adverse modification of their critical habitat during its ten year term. The actions being implemented under the 2008 BiOp are focused on improving fish survival at federal dams and throughout the salmon lifecycle, incorporating information from recovery plans to address such limiting factors for these species. The program calls for increasing survival rates of fish passing through the dams; managing water to improve fish survival, reducing the numbers of juvenile and adult fish consumed by fish, avian, and marine mammal predators; improving juvenile and adult fish survival by protecting and enhancing tributary and estuary habitat; implementing safety net and conservation hatchery programs to assist recovery; and ensuring that hatchery operations do not impede recovery.

allows them to release wild listed salmonids with minimal incidental take. Recreational non-tribal fisheries are prohibited from taking wild listed fish and must return those fish to the river as soon as they are caught. With respect to tribal harvest, NOAA Fisheries has actively encouraged the tribes to move to mark-selective fisheries in order encourage the harvest of hatchery fish while minimizing the take of wild listed fish. At the same time, NOAA Fisheries fully recognizes the United States' treaty and trust obligations and has reasonably harmonized these competing legal obligations with protective management regimes. NOAA Fisheries has designed all of its fisheries to eliminate or minimize the take of wild listed salmonids while encouraging the harvest of hatchery adults. The generalized exception is for treaty fisheries which reflect NOAA Fisheries commitment to the United States' treaty and trust obligations.

b. 2003 EA Regarding Approval of Tributary Fishery Plans in the Lower Columbia River

In 2003, the states of Washington and Oregon submitted five Fisheries Management and Evaluation Plans (FMEPs) covering state-managed fisheries for Chinook and steelhead in tributaries of the lower Columbia River. They submitted their request for approval of the FMEPs under our ESA section 4(d) rules.⁸ The states proposed mark-selective fisheries, enforcement measures adequate to ensure compliance, and in-season monitoring with ability to respond to in-season run size and fishery data. The five FMEPs recognized that steelhead fisheries had already been substantially reformed with the switch to mark-selective fishing methods and the release of wild fish. Harvest impacts on steelhead had already been reduced from mortality rates of 50-80% to mortality rates of less than 4% as a result of selective fishing. Harvest impacts on Chinook, which had been as high as 40-50% for some populations, were predicted to be as low as 2-5% as a result of selective fishing. Under the proposed management regime these selective practices would continue.

As part of our approval of the FMEPs, we published a notice of availability in the *Federal Register* for public review of the proposed FMEPs and a draft EA for the proposed fisheries. After completion of the public comment period we prepared evaluation and determination documents for each of the FMEPs. The purpose of the evaluation and determination document is to ensure that the FMEPs adequately address all of the criteria in the 4(d) rule. The issuance of a determination document is a federal action and as a result we completed a section 7 biological opinion. The 4(d) determination and the section 7 biological opinion contained in-depth analyses of the effects of the proposed fisheries on listed lower Columbia River salmon and steelhead.

⁸ NOAA Fisheries issued a final ESA rule pursuant to section 4(d) adopting regulations necessary and advisable to conserve threatened species, including Lower Columbia River steelhead, Chinook salmon, and chum salmon. The 4(d) rule applied the prohibitions in section 9(a)(1) of the ESA, and also set forth specific circumstances when the prohibition would not apply, known as 4(d) limits. Limit 4 of the section 4(d) rule limited the application of the take prohibitions if a fishery management agency developed and implemented a FMEP that NOAA Fisheries approved under Limit 4.

Our analysis in all documents considered the risk to the listed species from the proposed fisheries. The proposed fisheries were consistent with our approach to recovering listed populations in a number of respects. They resulted in dramatically reduced impacts compared to prior fishing regimes; they were managed to target hatchery fish and release naturally spawned fish (consistent with the preferred alternative in the programmatic EIS); and they included monitoring to assess impacts. The 4(d) authorization was for a limited time, allowing for further analysis and response if fish runs declined, escapements declined, or other unforeseen circumstances occurred. Thus the low levels of mortality (less than 4% for steelhead and from 2-5% for listed Chinook salmon) were predictable.

As described above we published a notice of availability of the draft EA in the *Federal Register* and took comment on it. The EA examined the impact of the proposed fisheries and our approval of the take associated with them on all other affected aspects of the human environment (e.g., socio-economic and cultural), and referred to the biological opinion for the in-depth analysis of the effects of the proposed fisheries on listed fish. Our decision to conclude the NEPA process with a “finding of no significant impact” and not prepare a full EIS based on impacts to salmonids must be viewed in light of our detailed analysis of the proposed harvest plan in the contemporaneous ESA 4(d) determination and section 7 consultation and our consideration and evaluation of the impact of alternative fishing regimes in a programmatic EIS. Moreover, a finding that there was not a significant impact on the listed salmonid resource under NEPA was appropriate because of our conclusion under the ESA that the proposed fishing regime would result in an acceptable level of risk to the listed species.

c. *2005 EA Regarding U.S. v. Oregon Fisheries in Columbia River Basin for 2005-2007*

In 2005, we consulted under ESA section 7 and issued an incidental take statement covering the proposed interim harvest regime on *U.S. v. Oregon* fisheries for 2005-2007. The interim harvest regime continued the sliding scale harvest rates that would result in combined harvest impacts of 5.5% at low run sizes, increasing to 17% at high run sizes. In addition to the sliding scale harvest rate, the programs included monitoring provisions designed to ensure that fisheries did not exceed the proposed harvest rates. Our authorization of the potential take associated with this fishery was through a section 7 incidental take statement and not through the 4(d) rule (as described above for the 2003 FMEP) thus we did not prepare a section 4(d) determination package. We did conduct an in-depth review of the impact of the proposed fisheries on listed species through the section 7 consultation process. Our section 7 consultation also relied on the extensive prior analysis of these fisheries in our earlier section 7 consultation.

In our section 7 analysis, we considered the risk to the listed species from the proposed fisheries. The proposed fisheries were consistent with our approach to recovering listed populations in a number of respects. They resulted in reduced impacts compared to prior fishing regimes; they adopted a harvest rate scale based on the abundance of naturally spawned fish and designed to

provide adequate escapement of naturally spawned fish. In particular, harvest rates were lower in years of lower fish runs. Non-treaty fisheries were managed to target hatchery fish and release naturally spawned fish (consistent with the preferred alternative in the programmatic EIS). The proposed program included monitoring during the fishing season and suspension of fishing if the expected impacts were likely to be exceeded. The incidental take statement was for a limited time, allowing for further analysis and response if fish runs declined, escapements declined, or other unforeseen circumstances occurred.

In addition to conducting an in-depth analysis of impacts of issuing the incidental take statement on listed species through a section 7 consultation, we also conducted an environmental review under NEPA, consistent with the court's decision in *Ramsey v. Kantor*. The EA examined the impact of the proposed fisheries and our approval of the take associated with them on all other affected aspects of the human environment, and referred to the biological opinion for the in-depth analysis of the effects of the proposed fisheries on listed fish. Our decision to conclude the NEPA process with a "finding of no significant impact" and not prepare a full EIS based on impacts to salmonids must be viewed in light of our detailed analysis of the proposed harvest plan in previous ESA consultations and in a contemporaneous ESA consultation, and the detailed analysis of alternative fishing regimes in a programmatic EIS.

d. 2007 EA Regarding Approval of Five FMEPs in Middle Columbia River Tributary Fisheries

In 2007, the states of Oregon and Washington submitted an FMEP governing mid-Columbia River tributary fisheries for approval under the 4(d) rule. As in the lower Columbia, the states proposed to continue mark-selective fisheries, enforcement measures adequate to ensure compliance, and in-season monitoring with ability to respond to in-season run size and fishery data. Prior to the implementation of mark-selective fisheries, harvest rates for some populations of mid-Columbia steelhead had ranged from 50-80%. Under the proposed FMEPs, harvest rates for adults in all populations were not expected to exceed 10%. The FMEPs set different fishing seasons for the 20 populations based on each population's conservation needs. For example, no harvest would be allowed on the four populations in the Yakima River basin and one population in Fifteenmile Creek.

Our analysis in all documents considered the risk to the listed species from the proposed fisheries. The proposed fisheries were consistent with our approach to recovering listed populations in a number of respects: They resulted in dramatically reduced impacts compared to prior fishing regimes; they were managed to target hatchery fish and release naturally spawned fish (consistent with the preferred alternative in the programmatic EIS); they were managed to protect weak stocks in specific tributaries; and they included monitoring to assess impacts. The 4(d) authorization was for a limited time, allowing for further analysis and response if fish runs declined, escapements declined, or other unforeseen circumstances occurred. Thus the low levels of mortality (less than 1% for some populations and less than 10% for others) were predictable and could be controlled by active management.

In addition to conducting an in-depth analysis of impacts of issuing a 4(d) approval, we also conducted an environmental review under NEPA. The EA examined the impact of the proposed fisheries and our approval of the take associated with them on all other affected aspects of the human environment, and referred to the biological opinion for the in-depth analysis of the effects of the proposed fisheries on listed fish. Our decision to conclude the NEPA process with a “finding of no significant impact” and not prepare a full EIS based on impacts to salmonids must be viewed in light of our detailed analysis of the proposed harvest plan in previous ESA consultations and in a contemporaneous ESA consultation, and our consideration and evaluation of the impact of alternative fishing regimes in a programmatic EIS. Considering the impact to listed species in an EIS would not have further informed the decision-making process or the affected public.

e. 2007 EA for Pacific Coast Salmon Plan Amendment 15: An Initiative to provide De Minimis Ocean Fishing Opportunity for Klamath River Fall Chinook

Klamath River fall Chinook are not an ESA-listed species. They are managed by the Pacific Fishery Management Council (Council) pursuant to the Magnuson-Stevens Fishery Conservation and Management Act (MSA) to achieve maximum sustainable yield (MSY).⁹ They are a major contributor to ocean fisheries off California and Oregon, and in the Klamath River. The conservation objective for Klamath River fall Chinook in the Council’s Salmon Fishery Management Plan requires that fisheries be managed each year for a return of 33-34% of potential adult natural spawners, but no fewer than 35,000 naturally spawning adults. This means that fisheries are managed subject to an exploitation rate that ranges from a maximum of 67 percent when abundance is high to a minimum of zero if the anticipated return is less than 35,000. Although Klamath River fall Chinook are not listed under the ESA, in ocean harvest management they serve as a surrogate for the purpose of managing impacts on California coastal Chinook, which are listed under the ESA.

The purpose of Amendment 15 was to modify the conservation objective for Klamath River fall Chinook to allow some ocean fishing when the anticipated escapement was projected to be below 35,000. Amendment 15 allowed a harvest rate of 10 percent when the anticipated escapement is between approximately 30,000 and 35,000 with further reductions in harvest if anticipated returns decline further.

The Council assessed the impact of the alternatives in the EA, including the proposal to adopt a sliding scale harvest impact for runs under 35,000 fish, using population viability models.

⁹ MSY is defined as “the largest long-term average catch or yield that can be taken from a stock or stock complex under prevailing ecological, environmental conditions and fishery technological characteristics (e.g., gear selectivity), and the distribution of catch among fleets.” 50 C.F.R. § 600.310(e)(i)(A).

Impacts were modeled over a 5-year and a 40-year timeframe. The models predicted that under the status quo fisheries, there was a 27% chance of escapement falling below 35,000 fish, while under the preferred alternative there was a 30% chance. For listed California coastal Chinook, with status quo fisheries there was a 39% chance of exceeding target harvest levels, while the preferred alternative had a 40% chance of exceeding target harvest levels. The EA concluded that these slight increases in risk of meeting target escapement goals were relatively low and therefore did not threaten the long-term productivity of Klamath River fall Chinook.

The Council's in-depth analysis of impacts to listed and unlisted Chinook demonstrates that it took a hard look at the impacts to the species. The level of risk the Council found would result from its proposed action is in stark contrast to the level of risk posed by an uncontrolled and unmanageable population of predatory pinnipeds. The risks from the two sources – pinnipeds and fisheries – cannot be compared by relying on a simple comparison of recently observed rates of impact. Risks from fisheries are actively managed, specifically in this case through a harvest rate scale that reduces impacts on the fish when the run sizes are low; and through monitoring and enforcement.

f. Summary: Analysis of Risk Associated with Managed Fisheries Versus Uncontrolled Pinniped Predation

The risks to salmonids from uncontrolled pinniped predation are in stark contrast to the risks from managed human harvest. All west coast salmon fisheries are highly regulated and include management measures consistent with recovery of naturally spawning salmon populations. Most important are measures aimed at minimizing take of wild fish, and measures aimed at decreasing harvest impacts when run sizes are low. Abundance-based harvest has a “compensatory” effect, taking advantage of favorable survival conditions to harvest excess fish, and minimizing harvest removals when run sizes are low, to avoid depensatory effects (Ferguson pers. comm 2011). Further, the three EAs on Columbia River fisheries involved fisheries with recent large reductions in harvest levels and that selectively harvest hatchery fish. Most of the harvest regimes analyzed in the EAs include abundance-based harvest rates, with rates decreasing as run sizes decrease (those regimes that are not explicitly abundance-based involve mark-selective fisheries with very low rates of mortality for naturally spawned fish). All of the harvest regimes include monitoring and enforcement, and opportunities for pre-season estimates and in-season adjustments. All fisheries can be terminated immediately when unforeseen circumstances warrant.

In contrast, pinniped predation has so far been uncontrollable with current methods. Pinnipeds feed indiscriminately on hatchery and natural origin fish. The level of predation is increasing rather than decreasing and predation impact is highest when run sizes are lowest. As described above, we do not currently have models to quantify the potential effect of pinniped predation on salmonid productivity. Nevertheless, the effect of removing large numbers of salmonids at low run sizes is well understood. The constant level of impact from predation has a depensatory effect on salmon populations, increasing the risk of populations entering an “extinction vortex” at low run sizes. In addition, the pinniped predation occurs disproportionately on early and late

arriving fish. The best available information shows that these fish are from discrete populations, with the result that pinniped predation is having a disproportionate impact on those populations (Ferguson pers. comm 2011). Finally, while we have attempted to monitor pinniped impacts, it is impossible to assess the full impact of pinniped predation because of the difficulty of observing the pinnipeds and measuring the impact on fish that are injured but not consumed (e.g., delayed mortality).

In addition, we made our determinations of significance (or insignificance) in light of the purposes and policies contained in the separate and distinct statutes. In our NEPA analysis we broadly considered the impacts of the proposed fisheries on all resources in the human environment. The finding under NEPA to conclude that there was no significant impact was made in light of the fact that we had thoroughly analyzed impacts on the human environment in general in a programmatic EIS, and on listed salmonids in particular under the authority of the ESA. Because of those detailed ESA evaluations, there was no uncertainty about the impacts of the proposed fisheries on the listed species. Moreover, in the ESA reviews we had concluded that the fisheries would not impede the ability of the listed species to survive and recover. In the MMPA determination, we only considered impacts to salmonids and to pinnipeds, as the statute requires. (In a companion NEPA document, we also evaluated impacts to all other affected elements of the human environment.) Under the MMPA inquiry, we determined that the constant rate of pinniped predation on at-risk salmonids imposed a significant risk on the ability of the species to survive and recover, particularly because of our inability to control the predation and the effect of a constant level of pinniped predation on at-risk populations when run sizes are low. In addition, we considered the impact on CSLs and concluded that killing 30 sea lions per year, or even 85 sea lions per year, would have a negligible effect on the species.

My recommended finding that pinniped predation at Bonneville Dam is having a significant negative impact on at-risk salmonids is based in part, on the risk posed by our inability to control these impacts using non-lethal means and is distinguishable from our previous findings of no significant impact under NEPA for these closely managed fisheries.

In addition, the NEPA documents referenced above contain an analysis of the impacts of the proposed action on a wide-range of environmental features (e.g., biological, physical, socio-economic, and cultural) and were focused on determining whether the proposed action would significantly affect the quality of the human environment. The inquiries and their conclusions are much broader than Section 120's narrow focus on the effect of sea lion predation on salmonids. Despite the agency's conclusion that each of its fishery harvest actions would result in a FONSI, the agency still concluded that adverse effects would result from the harvest of specified percentages of listed salmonid ESUs. However, when considered in light of NEPA's broad mandate and having evaluated NEPA's "significance" criteria ("context" and "intensity"), NOAA Fisheries concluded that the abundance-based harvest rates were acceptable limits to ensure the conservation and recovery of salmonids, while also providing socio-economic and cultural benefits.

2. Management of the Federal Columbia River Power System

A joint biological assessment on the Effects of the FCRPS and Mainstem Effects of Other Tributary Actions on Anadromous Salmonid Species Listed under the Endangered Species Act (August 2007) was prepared by the Corps, Bureau of Reclamation (Reclamation), and the Bonneville Power Administration (BPA).

The COE and Reclamation are authorized by Congress to operate and maintain multi-purpose hydroelectric projects as the Federal Columbia River Power System (FCRPS). The BPA is responsible for marketing and transmission of the power generated from these projects. Since the first salmon listings in the early 1990s, these agencies have engaged in numerous ESA consultations regarding the impacts of their projects and operations on Columbia Basin listed salmonids. In 2000, we issued an opinion concluding that FCRPS operations and maintenance jeopardized the continued existence of all the upriver stocks, and we issued an RPA. Our consistent conclusion with respect to the operation of the FCRPS has been that its impacts are significant. We issued a jeopardy opinion and reasonable and prudent alternative in 2000, which was invalidated and remanded by the Oregon Federal District Court in 2003. We issued another biological opinion in 2004, which was also invalidated by the District Court, which was affirmed by the Court of Appeals in 2005. In 2008, NOAA Fisheries issued another biological opinion (NMFS 2008b) which recommended a reasonable and prudent alternative calling for performance standards at the hydropower projects ensuring a minimum survival rate for migrating salmon, restoration actions for spawning and rearing habitat, hatchery reforms and detailed research, monitoring and evaluation concerning the effects of the FCRPS on listed salmonids and their current status. In 2010, NOAA Fisheries issued a supplemental biological opinion for the FCRPS that integrated the 2008 biological opinion and RPA. These current opinions are presently undergoing judicial review by the Oregon Federal District Court and the Court of Appeals for the Ninth Circuit. (*NWS v. NMFS*, Civ. No. CV 01-640-RE (D. Oregon)).

Passage of juvenile salmonids through the hydropower system results in high mortality rates. The juvenile mortality is well documented. Some of the sources are well understood and have been minimized (for example dam passage mortality of juveniles) while others are less well understood. For the mortality that cannot be eliminated through improved structures or operations, our reasonable and prudent alternative required mitigation in other areas.

In our role as the consulting agency under the ESA, the agency has never made a finding, or implied, that the existence and operation of the FCRPS has an insignificant impact on at-risk salmonids. To the contrary, our findings have been at the other end of the spectrum – that FCRPS structures and operations, without the currently prescribed mitigation, jeopardize the continued existence of listed species. In addition, as in the case of fisheries, the risks from the FCRPS are monitored, managed, and subject to corrective action. Our reasonable and prudent alternatives have required the FCRPS agencies to take off-site actions that mitigate the unavoidable impacts of the operation of the FCRPS and that will collectively avoid jeopardy to the species. The actions being taken under the 2008 opinion are focused on improving fish survival at federal dams and throughout the salmon life cycle, incorporating information from

recovery plans. The opinion calls for increasing survival rates of fish passing through the dams; managing water to improve survival; reducing numbers of juvenile and adult fish consumed by avian, fish and marine mammal predators; improving juvenile and adult fish survival by protecting and enhancing tributary and estuary habitat; implementing safety net and conservation hatchery programs; and ensuring that hatchery operations do not impede recovery. These attributes are in stark contrast to the risks from pinnipeds, which are not managed, are difficult to monitor, and have not been successfully mitigated. More importantly, the predominant adverse effect from the existence and operation of FCRPS is mortality to juveniles during their migration out to the estuary and ocean. While juvenile mortality is important and naturally higher than at other life stages, the fecundity of salmonid species works to offset the mortality at this life stage in an unperturbed environment or when other threats are controlled. This is particularly true when ocean rearing conditions are favorable for fish that have survived the early threats and successfully migrated to sea. Overall, the most visible measure of success for any mitigation is an adequate return of reproducing adult salmonids. The impact of dams and fish passage facilities to returning adults is relatively low and predictable. Pinniped predation at the dam targets returning adults immediately prior to their opportunity to spawn and reproduce after they have survived the majority of natural and human caused threats. The current recovery strategy does not rely upon comparisons of mortality between sources or within or across life stages but rather focuses on improved survival from all threats at all life stages. Comparing juvenile mortality attributable to the hydrosystem to adult pinniped predation provides no benefit for the survival of salmonids from either threat and presents a complex challenge for gauging the relative importance of either risk because it evaluates different life stages with markedly different survival potential. In addition, the existence of uncontrolled pinniped predation is in direct conflict with the mitigation goals presented in the 2008 biological opinion and undermines efforts being made to reduce the impacts across a host of threats to avoid jeopardizing the continued existence of listed salmonids in the Columbia River.

B. The Proposed Finding is Reasonable, in Light of Past Agency Decisions to Reduce Salmonid Mortality

The Ninth Circuit found that NOAA Fisheries failed to adequately explain the agency's finding that sea lion predation was significant in light of NOAA Fisheries findings of no significant impact with respect to environmental assessments of harvest plans having apparently greater mortality impacts. Multiple factors impact the recovery of affected Columbia River salmonids, and the agency's long-standing practice has been to limit all sources of mortality through various efforts. We views those mortality reductions in the context of the source's historic contribution to the decline of the species, the current magnitude of the mortality, the impact of the reductions on other values (such as treaty rights), and the feasibility of achieving the reductions, and other factors.

In keeping with the overall recovery strategy, and consistent with our logic in 2008, we identified sea lion predation as a new, unchecked, unmitigated, and uncontrolled source of mortality. In particular, in contrast to harvest impacts, pinniped predation has higher impacts in years of lower run sizes. As we identified in the 2008 decision, and as further elaborated by the

Northwest Fisheries Science Center, such impacts can have depensatory effects on salmonid populations and increase the risk of an extinction vortex. Based on these considerations, and not on a simple metric of the range of mortality rates, we concluded that sea lions are having a significant negative impact on the decline or recovery of at-risk salmonids. There is little doubt that predation is measurable, growing, and could continue to increase if not addressed. For example, the historical data reveal that the number of individual fish being consumed has generally increased every year since 2002 and hit a high in 2010, even with the benefit of three years of a sea lion lethal removal program. In addition, as more salmonids are consumed and/or injured by sea lions, fewer fish survive to spawn, thus potentially reducing the productivity of protected salmonid populations. Finally, as we noted throughout our original decision documents, the level of mortality for listed salmonids caused by pinniped predation is comparable to mortality levels from other sources that have prompted corrective action.

In response to the Ninth Circuit's conclusion that the agency had failed to reconcile the "disparate" findings between sea lion take and fishery harvest and hydropower impacts, several key points are worth mentioning. First, as noted earlier, the three statutes in question have different purposes and provisions and require different inquiries and analyses. Section 120 of the MMPA focuses agency attention on the narrow interaction between two species – pinnipeds and salmonids – and requires us to determine whether individually identifiable pinnipeds are having a significant negative impact on the decline or recovery of at-risk salmonids. The level of pinniped predation has the potential to have impacts on the extinction risk of listed populations, particularly during low run sizes. The current inquiry is on sea lion predation alone at the Dam where systematic monitoring has made it possible to quantify an impact and where the states have sought authority to act to reduce the impact. The statute does not require that predation be comparable to all other sources of mortality, or that predation by itself will jeopardize the continued existence of a salmonid species. Rather the statute requires an assessment of whether the impact of predation is meaningful (significant) and negative with respect to the status of one or more listed salmonid stocks.

Next, NOAA Fisheries' prior analyses and conclusions for fishery harvest and hydropower activities need to be considered in their entirety and in light of the purposes of the relevant statutes. These analyses were conducted pursuant to NEPA and the ESA, both of which, when compared to the MMPA, have different purposes, contain different statutory and regulatory standards, and require different analyses. The percentage based comparisons between fisheries harvest rates on the Columbia River and pinniped predation at the dam are relevant in some respects but not the underlying basis for an analysis of risk and a determination of significance under the MMPA.

C. Elimination of 1% Predation Rate

The use of a 1% predation rate of the adult salmonids tallied by fish counters over 3 years (i.e., 2008 LOA Condition 15) is unnecessary and has been confusing. Accordingly, we propose to eliminate the 1% level of predation as a limit on sea lion removals or as a basis for evaluating success of the overall program to reduce sea lion predation on salmonids at Bonneville Dam.

We propose instead to substitute another measure of success for the lethal removal authorization. The following discussion describes the use of 1% predation rate within the documentation leading to the 2008 authorization, a rationale for eliminating use of the 1% predation rate, and a new measure of success for this authorization.

When the Pinniped-Fishery Interaction Task Force submitted its recommendations to NOAA Fisheries in 2007, they responded to several questions NOAA Fisheries prepared to guide the Task Force's recommendations. Regarding criteria to evaluate success of an authorized lethal removal program, the Task Force recommended an interim goal that the average predation rate should be no more than 1% of the total fish passage at Bonneville Dam. The Task Force noted explicitly that the 1% value was chosen only as an interim criterion because there was insufficient information to provide a quantitative level of predation to distinguish between significant and insignificant impacts on salmonids. The Task Force suggested that 1% would be substantially closer to a historical rate of predation than is observed more recently, and the historical predation rate was believed to be greater than zero.

NOAA Fisheries used the Task Force's recommendation of a 1% predation rate as a limit on the number of sea lions that could be removed from the Bonneville Dam area to protect salmonids (the Task Force recommended an annual limit of 1% of the PBR of CSLs, or the number of removals necessary to achieve an observed average predation rate of 1% of the adult salmonids tallied by fish counters over 3 years, whichever was lower). The agency incorporated that recommendation into its authorization, establishing a threshold of 1% predation rate as a second limit on the number of sea lions that could be removed under the authorization. The Marine Mammal Commission (letter dated February 19, 2008) interpreted this limit to suggest that 1% predation rate is a threshold between significant and insignificant levels of predation. We stated in our Decision Memorandum for the 2008 authorization:

"This recommendation is not the equivalent to a finding that a 1% predation rate represents a quantitative level of salmonid predation that is "significant" under section 120, and that less than 1% would no longer be significant. Rather, it is an independent limit on the numbers of sea lions that can be lethally removed to address the predation problem and is intended to balance the policy value of protecting all pinnipeds, as expressed in the MMPA, against the policy value of recovering threatened and endangered species, as expressed in the ESA."

We considered it reasonable to limit removal of sea lions to a level no more than would be required to achieve the Task Force's recommended interim criterion of a 3-year average maximum predation rate of 1%.

The Ninth Circuit concluded, "The finding that predation at the 1 percent level is significant is not adequately explained." *Humane Society*, 626 F.3d at 1053. The Court afforded us the opportunity either to articulate a reasoned explanation for our action or to adopt a different action with a reasoned explanation that supports it.

The 1% predation rate limit on at-risk salmon and steelhead is unnecessary because the number of sea lions that would be authorized for removal under the proposed action (1% of the PBR for CSL) is adequate to protect the sea lion population. In addition, salmonid predation expressed as a percentage of the adult return fluctuates widely with the strength of the run. Run sizes of 600,000 fish would be needed to accommodate the current level of predation (approximately 6,000 fish) and meet the 1% trigger. Conversely, if run sizes of 250,000 could be maintained a 1% predation rate would equate to 2,500 fish. This level of predation was last seen in 2003 and observations have shown that predation has continued to grow from that point. Therefore, there is no reason to expect that the cessation of sea lion removals when predation reaches 1% of fish passage would eliminate the pinniped-fishery interaction and the level of predation would likely grow from that level as it did after 2003. Instead of the one percent predation threshold, I recommend that NOAA Fisheries consult with the resource agencies when there is a detectable decline in the absolute number of salmonids killed by CSLs per season and a declining trend in predation has been observed. The purpose of consultation is to assess the benefits of continuing the lethal removal action to further reduce predation and determine whether the Task Force should be reconvened to evaluate the success of the lethal removal action. This change is not substantial because no change is proposed for the annual limits on the number of sea lions to be removed and the practical limits on the number of sea lions that can be removed has so far proven to be much lower than 1% of PBR. The proposed change is not an "open ended" extension of the authorization because the proposed authorization period will end in 2013 and any subsequent action will be assessed at that time.

I do not recommend a "bright line" between significant and insignificant effects of predation based on an observed predation rate, for several reasons. First, there are many different factors that affect salmonids and many different salmonid populations affected by sea lion predation. Identifying a single threshold guiding our decisions under either of these situations would not accommodate the wide range of variability inherent in the effects of various factors on a given population's or several populations' vulnerabilities to pinniped predation.

Second, a bright-line threshold between significant and insignificant suggests a relatively high level of certainty in our estimates of the levels of predation or a population's ability to sustain such predation. In the Bonneville case, we know that predation rates are underestimates for the reasons previously described. Another estimate on the number of salmonids taken by CSLs, based upon energetic modeling, suggests the level of predation could be much higher than the observations indicate. This uncertainty regarding total levels of predation is further confounded by the annual variability in fish passage at the Dam, which causes high variability in predation rates, as a function of fish passage.

Finally, we are concerned about pinniped predation in part because the level of impact is likely much higher than what is observed, but more importantly because it is unmanaged. To date we have been unable to decrease the numbers of pinnipeds or the numbers of salmonids they consume. Salmon returns have been relatively high over the past decade, in part because of management actions, but also in large part because of favorable ocean conditions (Peterson et al 2010). It is very likely there will be a period of poor ocean conditions in the future and run sizes

will decline. The characteristics of the fish ladders at the dam create a situation in which pinnipeds may be able to consume a large proportion of even a small run of returning adults, as witnessed at Ballard Locks. The risk is that by failing to employ all available management tools, even when salmonid run sizes are relatively strong, sea lion numbers will continue to grow and we risk being unable to act to control the risk when salmonid run sizes again decline.

During the period (2008-2010) when sea lion removals were conducted at Bonneville Dam, accompanied by intense non-lethal deterrence, numbers of salmonids taken by CSLs at the Dam continued to rise. Therefore, there is no reasonable expectation that a specific predation rate or reduction in the number of fish killed can be achieved at the rate of removal implemented to date. Furthermore, there is virtually no expectation that adult salmonid returns will approach the run sizes needed (600,000) to offset the current rate of predation (6,000) in order for a 1% predation trigger to be implemented by the time the proposed authorization expires. Accordingly, a measure of success for the term of the authorization is that there is a detectable decline in the absolute number of salmonids killed by CSLs per season and a declining trend in predation has been observed. Because the numbers of salmonids taken each year fluctuates due to a number of factors, several years of additional removal activity would be required to confirm that predation levels have declined and a declining trend has been established. Once management actions have been shown to be effective at controlling predation, NOAA Fisheries can assess the logistical and fiscal resources needed to maintain control of predation at Bonneville Dam.

D. Other Considerations

NOAA Fisheries' past consideration of additional factors affecting a decision to partially approve the State's request was well documented in the March 12, 2008 Decision Memorandum and EA, and is incorporated by reference. The proposed authorization contains conditions intended to increase the likelihood that activities directed at sea lions will be humane. The authorization includes options for transferring predatory sea lions to permanent captivity provided that NOAA Fisheries-approved receiving facilities are available. We also recommend monitoring requirements to evaluate 1) the impacts of predation, 2) the effectiveness of non-lethal deterrence, and 3) the effectiveness of permanent removal of individually identifiable predatory sea lions as a method to reduce adult salmonid mortality.

IX. Conclusion and Concurrence

I request that you concur with my determination that certain individually identifiable CSLs below Bonneville Dam are having a significant negative impact on ESA-listed salmon and steelhead (salmonids), and approve the issuance of LOAs to the States to lethally remove these sea lions pursuant to Section 120 of the MMPA.

A. Upon your concurrence, the Office of Protected Resources will sign the attached letters authorizing state officials to lethally remove individually identifiable predatory sea lions under certain enumerated conditions. NWR will then announce the decision, post all relevant documents on the Regional web site, and distribute the documents to the Task Force. This package has been reviewed by General Counsel for Fisheries.

I do ✓ do not concur with the recommended action.

Signed  Date 5/12/11

X.

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