

**ENVIRONMENTAL ASSESSMENT ON
EXTENDING THE LETTER OF AUTHORIZATION
FOR LETHAL REMOVAL OF CALIFORNIA SEA LIONS
AT THE BALLARD LOCKS TO PROTECT
LAKE WASHINGTON WINTER STEELHEAD**

Update to the *Environmental Assessment on Protecting Winter-Run Wild Steelhead from Predation by California Sea Lions in the Lake Washington Ship Canal, Seattle, Washington* (January 1995) and the *Environmental Assessment on Conditions for Lethal Removal of California Sea Lions at the Ballard Locks to Protect Winter Steelhead* (March 1996).

Prepared by

**U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service**

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1.0 SCOPE OF THE FEDERAL ACTION

The scope of the proposed action is to extend, for five more years (through June 30, 2006) the Letter of Authorization (LOA) issued to the State of Washington for the lethal removal of individually identifiable California sea lions that are having significant negative impact on the status and recovery of winter steelhead that migrate through the Ballard Locks in Seattle, WA. No further modification to the conditions for lethal removal, beyond changing the expiration date, are proposed.

Pursuant to Section 120(b) of the Marine Mammal Protection Act (MMPA), the State of Washington submitted an application to NMFS on June 30, 1994, requesting consideration of lethal removal of California sea lions at the Ballard Locks (Locks). In response to the application, NMFS formed the Ballard Locks Pinniped-Fisheries Interaction Task Force (Task Force). The Task Force met in late 1994, reviewed the available information and recommended approval of lethal removal with conditions. NMFS took the recommendations of the Task Force and public comments into consideration when it issued the initial three year LOA to the Washington Department of Fish and Wildlife (WDFW) on January 5, 1995. The environmental consequences of issuance of the original LOA were evaluated in the *Environmental Assessment on Protecting Winter-Run Wild Steelhead from Predation by California Sea Lions in the Lake Washington Ship Canal, Seattle, Washington* (NMFS and WDFW 1995).

As required by Section 120, the Task Force reconvened in late 1995 to evaluate the effectiveness of the permitted lethal taking or alternative actions and recommended modifications to the terms and conditions of the LOA. The LOA was modified in 1996 and subsequently extended based on Task Force recommendations through June 30, 2001. The environmental consequences of modifying the conditions of the original LOA were evaluated in the *Environmental Assessment on Conditions for Lethal Removal of California Sea Lions at the Ballard Locks to Protect Winter Steelhead* (NMFS 1996). No lethal removals were conducted during the period of the current LOA.

Information on Washington's original 1994 application for lethal removal; the process for considering the application, which included formation of the Ballard Locks Pinniped-Fishery Interaction Task Force; the development of Terms and Conditions of the LOA issued to WDFW; and the 1997 extension were published in the *Federal Register* on August 2, 1994 (59 FR 39325), September 27, 1994 (59 FR 49234), January 19, 1995 (60 FR 3841), August 15, 1995 (60 FR 42146), March 26, 1996 (61 FR 13153), August 26, 1996 (61 FR 43737), June 19, 1997 (62 FR 33396), and September 29, 1997 (62 FR 50903). The information on the sea lion/steelhead conflict at the Ballard Locks, presented in the *Federal Register* notices, and the findings on the environmental consequences of issuance and subsequent modification of the LOA contained in the two Environmental Assessments are incorporated into this environmental assessment (EA) by reference. This EA provides updated environmental information and results of actions taken to protect winter steelhead from predation by California sea lions at the Locks since 1996.

In a letter dated September 12, 2001, the State of Washington requested an extension of the LOA for an additional five years with a new expiration date of June 30, 2006. The State's request cites severely depressed steelhead run returns and the need to quickly remove any sea lion that meets the criteria outlined in the LOA while the State continues management efforts to recover the run. In addition, the State noted that there are no lethal removals planned at this time and requested the authorization be extended so that, as a last resort, it can respond in a timely manner to uncontrollable sea lion predation and protect steelhead as the run recovers. The State requested no modifications to the terms and conditions of the LOA other than the extension to June 30, 2006.

1.1 Public Notification

Notice of the State's request, the proposed LOA extension, and a request for public comments were published in the *Federal Register* on October 19, 2001 (66 FR 53210). The public comment period closed on November 19, 2001, and no comments were received from the public.

1.2 Task Force Recommendations

At its last meeting in September 1996, the Task Force considered a State request to extend the LOA to June 2005. The Task Force subsequently submitted a report to NMFS (Task Force 1996) that recommended that the LOA be extended, if so requested by the State, until such time as: a) the escapement goal of 1,600 steelhead is reached, or b) it becomes clear that the process is unlikely to achieve the stated goal. At the time, the Task Force opinions on the extension ranged from no extension to an extension period of eight years (two steelhead life cycles), with the majority favoring four years. NMFS subsequently extended the LOA to June 2001. With submission of the 1996 recommendations, the Task Force noted that it "sees little justification for further deliberation until such time as substantive new information and analyses, which might alter its position, become available." The Task Force report also recommended "that the Task Force remain adjourned until such time that substantive new information warrants another meeting" (Task Force 1996). The State's 2001 extension request indicates that conditions at the Locks have remained virtually unchanged since the Task Force last met (i.e., no sea lions have been lethally removed, no new individually identifiable sea lions have been added to the list of predatory sea lions to be removed, the steelhead run has not recovered, and efforts to recover the run are continuing).

To obtain any further Task Force views on the State's current extension request to June 2006, while acknowledging the Task Force request to remain adjourned pending significant new data or analyses, NMFS consulted with Task Force members by mail during the 30-day public comment period. Five Task Force members responded: four supported extending the lethal removal authority as requested by the State, and one opposed extending the LOA. Supporting comments were in general agreement that the steelhead run is severely reduced, and that the State must be authorized to respond to predatory animals swiftly if non-lethal measures are not effective. One member noted that further extension of the LOA is justified because neither of the

1996 Task Force criteria for determining the success or failure of the authorization had been met. The opposing comment agreed that the status of the steelhead run is precarious, but opposed the extension based on the view that sea lion predation is not having a significant negative impact on the status and recovery of the steelhead run. The opposing comment also questioned whether the non-lethal measures, taken to date to reduce sea lion predation on steelhead, have been adequate. This opposing view was raised during Task Force deliberations from 1994 to 1996, and considered by NMFS in issuance and modification of the LOA (see 1995 and 1996 EAs). Also, the adequacy of non-lethal efforts to control sea lion predation, leading up to the issuance and subsequent modification of the LOA were the subject of litigation brought in 1996, and the NMFS authorization and determinations were confirmed by the U.S. District Court for the District of Columbia in 1999.

2.0 PURPOSE AND NEED

The purpose and need for the LOA extension is the same as the historical purpose and need identified in the 1995 EA, which is to protect the depressed and declining Lake Washington basin population of winter steelhead from predation by California sea lions. Previous EAs, prepared in 1995 and 1996 for the original issuance and modification of the LOA documented that predation by California sea lions is a principal factor affecting the spawning escapement of returning adult winter steelhead in the Lake Washington basin. This 2001 EA updates information since the previous LOA was issued to the State of Washington to lethally remove individually identifiable “predatory” California sea lions that predate winter steelhead in the Lake Washington Ship Canal.

A chronology of the efforts to resolve the predation problem over the decade leading up to the issuance of the original LOA in 1995 is documented in the 1995 EA. Sea lion predation reduction efforts included a variety of non-lethal measures beginning with the use of seal control firecrackers in 1985, boat hazing, electronic acoustic harassment, physical barrier netting, capture/relocation, and acoustic deterrence/acoustic barrier (NMFS and WDFW 1995). Conditioned lethal removal authority was added in 1995, as a last resort measure, to allow the State remove those sea lions that continued to predate steelhead in spite of ongoing non-lethal deterrence measures. No sea lions were lethally removed in 1995.

At the conclusion of the 1995 steelhead migration season, the Task Force reconvened to evaluate the effectiveness of the measures conducted by the State under the LOA (Task Force 1995). Due to the low numbers of steelhead and continuing risk that sea lion predation posed for recovery of the run, the Task Force recommended modifications to the conditions on the lethal removal authorization to better protect steelhead (Task Force 1995).

In 1996, no sea lions were lethally removed, however, three predatory sea lions were removed to permanent captivity. Non-lethal deterrence efforts, to discourage new (naive) sea lions from establishing foraging behaviors near the Ballard Locks, have continued in the ensuing years following the removal of the three predatory sea lions. Observer monitoring as well as the

continuous operation of the acoustic barrier and occasional use of firecrackers have been implemented during each steelhead migration season since 1996. The purpose for the LOA, and the conditions under which lethal removal may be implemented have not changed since the 1996 modifications to the LOA conditions, but data on the status of the steelhead run, sea lion abundance and presence at the Locks, and steelhead recovery efforts have been updated for the 1997 - 2001 period.

3.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

NMFS is considering two alternatives for responding to the State's request for a five year extension to the LOA: 1) Take No Action to Extend the LOA, and 2) Extend the LOA with No Additional Modifications to the Terms and Conditions (Proposed Action). Alternatives, other than those pertaining to an extension of the LOA with no further modification to the conditions on lethal removal, are described and assessed in the January 1995 and March 1996 Environmental Assessments (NMFS and WDFW 1995; NMFS 1996) and not repeated herein.

3.1 Alternative 1. Take No Action to Extend the LOA

This alternative would allow the lethal removal authority, granted in the LOA, to expire by taking no action to extend the authority. Under this alternative, California sea lions that continue to predate steelhead in the Lake Washington Ship Canal regardless of other non-lethal deterrence measures that may be implemented could not be lethally removed by the State. The No Action alternative does not mean that no action would be taken to address sea lion predation. As previously stated in the 1995 EA (NMFS and WDFW 1995), taking no action to repel or remove sea lions from the Ship Canal is not preferred because it would not reduce steelhead mortalities caused by sea lions at the Locks. Therefore, the No Action alternative in this context refers only to the absence of an agency action to renew the conditioned lethal removal authority that was granted to the State in 1995 as modified in 1996. Non-lethal deterrence measures could continue under this alternative.

Non-lethal removal efforts, by themselves, are not preferred. Past studies show that non-lethal efforts alone are unlikely to be effective on predatory sea lions (NMFS 1996). These studies documented that a few animals may be oblivious to or able to avoid non-lethal measures and thus are likely to account for the majority of predation losses that ranged as high as 65 percent of the returning adult spawners, in the years preceding the lethal removal authorization (NMFS 1996).

3.2 Alternative 2. Extend the LOA with No Additional Modifications to the Terms and Conditions (Proposed Action)

This alternative maintains the status quo by extending, through June 30, 2006, the conditioned lethal removal authority issued to Washington. The terms and conditions for lethal removal, except for the expiration date, would not be modified under this alternative and would remain the same as those previously assessed in "Alternative 3" (the Proposed Action) of the 1996 EA

(NMFS 1996).

Under this alternative, the definition of what constitutes a “predatory” sea lion that may be lethally removed is unchanged from the 1996 EA definition. Predatory sea lions would be those individually identifiable California sea lions that: 1) have been observed by biologists monitoring sea lion predation to have preyed on returning steelhead in the inner bay area (upstream of the railroad bridge) of the Lake Washington Ship Canal, 2) have penetrated the acoustic barrier and have been observed foraging in the ensonified zone during the steelhead run since January 1, 1994, and 3) are observed engaging in foraging behavior in the inner bay during the current steelhead season between January 1 and May 31 by biologists monitoring sea lion predation at the Locks. No new sea lions have been identified as candidates for lethal removal under this definition since 1996, and any new animals would be identified through observation. The existing LOA conditions limit the number of animals authorized for removal to 15, at which time the Task Force is to be reconvened to evaluate the effectiveness of the action.

The Proposed Action is preferred because it would allow the State to respond quickly to lethally remove known predatory sea lions, which by their presence in the area and demonstrated foraging behavior at the Locks, pose a substantial threat to returning winter steelhead and the status and recovery of the run. This alternative would reduce avoidable steelhead impacts due to sea lions to the maximum extent practicable, while protecting sea lions that do not have significant negative impacts on the status or recovery of the steelhead population. The Proposed Action is consistent with the recommendations of the Task Force.

4.0 AFFECTED ENVIRONMENT

A detailed description of the affected environment was provided in the preceding EA’s (NMFS and WDFW 1995; NMFS 1996) and has not been repeated here. Only new information on changes in the affected environment that have occurred during the period of the current LOA extension are presented below.

4.1 Modifications to the Locks and Fishway Operations

The U.S. Army Corps of Engineers (COE), working with State, local, and tribal governments secured local sponsors and obtained funding for a number of studies to improve passage conditions for juvenile and adult salmonids at the Locks. In 1997, a new automatic fishway controller was installed to regulate water flows through the adult fishway and maintain entrance pool levels to within design specifications at all but extreme tide elevations. Funding has been requested for design studies for a new fishway entrance to further enhance adult fish passage. In 2000, four surface spill flumes, that use less water than conventional spill gates, were installed seasonally at the dam. The flumes provide a safe alternative passage route for juvenile fish migrating downstream and allow consistent attraction flows and surface effects for attracting adult fish to the fishway.

The COE included barnacle removal from the large lock filling culverts in its annual maintenance schedule in 1997, and implemented a "slow fill" procedure to reduce juvenile fish entrainment during lock operation. Beginning in 2002, the COE will begin replacement of the motors that open the filling valves in the large lock chamber. Replacement of these valves will allow even slower fill of the lock. In April 2002, the COE expects to begin operation of strobe lights at the intakes to the large lock culverts, this is the final measure planned to try and reduce entrainment of juvenile salmon into the culverts. Lastly, the COE is conducting a feasibility evaluation to find additional water to run the smolt passage flumes during low flow conditions in June and July (Goetz, pers. comm., 2001).

4.2 California Sea Lion Abundance and Distribution

The United States' stock of California sea lions has been growing recently at 6.2 percent per year and currently numbers over 200,000 animals (Forney et al. 2000). To date there is no indication that sea lion population growth is slowing, and sea lions continue to occupy Puget Sound nearly year-round. Sea lion counts in Puget Sound declined from a peak of over 1,200 in 1995 to 200 to 300 in 1998 - 2001. Similar fluctuations have been noted in the past, and current numbers are comparable to the early 1980s and 1990s (Gearin et al. 2001). The peak seasonal abundance of sea lions in Shilshole Bay has remained relatively constant at around 20 to 50 animals in recent years (WDFW unpublished data), however, resights of individuals captured and marked in Shilshole Bay indicate that most individuals do not remain long in the Bay (Jeffries and Scordino 1997). Only a small number of individual sea lions that occur in the Shilshole area actually enter the Locks area to forage on salmonids returning to the Lake Washington watershed (Jeffries and Scordino 1997, Foley and Jeffries 1996). Large numbers of California sea lions are now using a new sea lion haul-out site off the outer coast of Washington near Cape Alava (Gearin et al. 2001). California sea lions were not known to use the site prior to 1997. Counts at the new site have been four to five times higher than peak counts from Puget Sound. It is unknown whether this shift in habitat use from inland waters to coastal waters is a temporary or long-term phenomenon.

4.3 Sea Lion Presence and Predation at the Ballard Locks During the Steelhead Migration Season since 1996

No lethal takes of sea lions have occurred under the LOA, nor have any been captured and removed since 1996. No new individually identifiable sea lions have been added to the list of predatory sea lions that may be lethally removed. Marked sea lions have not been observed in the area upstream of the railroad bridge during the steelhead run since 1998. However, a few sea lions continue to be observed in the Lake Washington Ship Canal, and some have been observed killing salmonids in recent years, albeit with extremely low frequency.

One unidentified sea lion was observed taking a salmonid downstream of the railroad bridge during the 2000 steelhead run. Sea lions were recently observed in the Locks area during the 2001 coho salmon run, and one marked sea lion was observed taking coho salmon in the

ensonified zone in September 2001. This raises concerns over the possibility that one of these sea lions may occur during the 2002 steelhead run, and it may have already developed a tolerance to the acoustic devices.

Sea lion presence at the Ballard Locks declined from 5.18 percent of hours observed in 1997 to 0.25 percent of hours observed in 2000. No sea lions were seen during approximately 274 hours of observations conducted from February through May, 2001 (WDFW unpublished data). The observation period overlapped with the smolt out-migration timing in May. The absence of sea lions in May is in contrast to the 1995 migration season when sea lion attendance at the Locks was highest during the smolt out-migration, and predatory sea lions were observed preying on smolt in the ensonified zone 50-60 percent of the time they were present at the Ballard Locks.

An estimated eight steelhead were lost to sea lion predation in 1997, based on observations by biologists monitoring the steelhead run, and two in 1998. From 1999 through 2001, any steelhead kills that were seen or reported occurred outside of the observation periods and, therefore, could not be used to estimate sea lion predation mortality for those years.

4.4 Acoustic Barrier Modifications and Operation

The acoustic barrier has been in continuous operation during the months that sea lions are present in Puget Sound (August through June) since 1995. Additional acoustic devices were tested beneath the large lock finger pier in 1996 and permanently installed in 1998. In 1998, tests were conducted using additional acoustic devices beneath the railroad bridge. The devices were subsequently moved to the large lock waiting pier between the railroad bridge and the tip of the large lock finger pier. The bottom-mounted acoustic devices were removed from the area below the stilling apron sill in 1999. The current configuration provides more uniform ensonification for all observation zones (1-10) upstream of the railroad bridge. All of the acoustic devices function in the 10 kHz to 17 kHz frequency range and at comparable sound pressure levels (195 - 205 dB) to those previously assessed (Bain 1997).

4.5 Winter Steelhead Escapement in the Lake Washington Watershed

The status of Lake Washington steelhead remains precarious. Spawner escapements have remained well below the 1,600 goal set for the watershed. Escapement totals for 1997, 1998, and 1999 were 620, 584, and 220, respectively, with new record low returns of 48 and 42 steelhead in 2000 and 2001, respectively (WDFW unpublished data), indicating a worsening condition that could lead to stock failure. Returns during the next five years will need to come from brood years that are similar to or worse than those yielding the recent record lows. The cause for this decline is unclear, however, it is in sharp contrast to the generally stable or increasing trends seen since 1997 for Lake Washington chinook, coho, and sockeye populations as well as steelhead populations in the nearby Snohomish and Green Rivers.

4.6 Lake Washington Steelhead Enhancement and Management

Harvest Management

Harvest regulations include measures to protect returning adults and juveniles that rear in the system. Since the late 1980s, recreational fishing seasons have remain curtailed to reduce or eliminate harvest of Lake Washington steelhead. The minimum size limit for cutthroat trout in Lake Washington has been increased from March through June to protect out-migrating steelhead smolts. Hatchery rainbow trout are no longer released into Lake Washington, thus eliminating potential hooking of juvenile steelhead. Additionally, all tributaries, including the Cedar River, are closed to fishing year-round. Tribal commercial fisheries for steelhead in the system are also closed.

Hatchery Supplementation

Hatchery steelhead (Chambers Creek stock) have not been released to the system since 1993; however, a supplementation program using returning Lake Washington steelhead was initiated in 1997. To date 35,000 smolts and 50,000 fry from broodstock have been released into the northern tributaries to the system (WDFW unpublished data). The goal of this program is to reestablish spawning steelhead into these important spawning and rearing areas. The juvenile fish are marked for identification as returning adults to enable an evaluation of the supplementation program during stock recovery.

Habitat and Water Management

A Cedar River Habitat Conservation Plan (HCP) was completed and signed in 2000. The HCP contains provisions for fish passage past Landsburg Dam that will open future spawning and rearing habitat for steelhead. The agreement also provides additional water during the spring steelhead incubation period to formalize protection for redds against dewatering impacts. Flows in the Cedar River have been managed to minimize these impacts since 1995.

5.0 ENVIRONMENTAL CONSEQUENCES

5.1 Alternative 1. Take No Action to Extend the LOA

Under the No Action alternative, the current lethal removal authorization would expire and conditions would return to those implemented prior to 1995 (i.e., non-lethal removal measures alone). Non-lethal removal measures alone were previously assessed in the 1995 EA (NMFS and WDFW 1995) and were not the preferred alternative. Previous studies showed that non-lethal efforts alone are unlikely to be effective on all predatory sea lions, and that a few sea lions will likely become tolerant or oblivious to non-lethal deterrence and forage on steelhead at the Locks. In addition, temporary removal to captivity was shown to be an infeasible alternative because of the high cost of maintaining the animals in captivity, and because the animals returned to predatory behaviors upon release.

In recent years, attendance by sea lions at the Ballard Locks has been low in the presence of continuous acoustic deterrence measures and with the abundance of returning steelhead at an all time low. However, sea lions do occasionally enter the Locks and spillway area, and have been observed taking salmon in the ensonified zone during the fall salmon runs when fish are more numerous below the dam. For this reason, there is heightened concern that sea lions will develop tolerance to the acoustic barrier and return to forage on steelhead.

In 2001, the steelhead run is critically depressed, and spawning escapement reached a new record low of 42 returning adults. At such low levels, any losses to sea lion predation would further undermine the chances for run recovery. As previously assessed, non-lethal measures alone would increase the risk to returning adult steelhead. Although other factors such as freshwater and ocean survival may be contributing to the declining status of the steelhead population, and are the subject of ongoing studies and mitigation efforts, sea lion predation remains a substantial threat to the recovery of the run.

The California sea lion population continues to grow, and human caused mortality is not having a substantial effect on the recovery of the United States' stock (Forney et al. 2000). The No Action alternative would have no measurable effect on the California sea lion population.

It cannot be predicted with certainty when individual sea lions will prey on steelhead at the Locks, however, when a sea lion begins to actively forage at the Locks during the steelhead run, it must be removed in order to protect the steelhead population. Current information indicates that the steelhead population is not yet increasing despite recovery efforts including improvements at the Locks and conservation measures elsewhere in the watershed. The No Action alternative is not preferred because to date there is no feasible non-lethal alternative for the rapid and permanent removal of predatory sea lions for the protection of the steelhead from predation.

5.2 Alternative 2. Extend the LOA With No Additional Modifications to the Terms and Conditions (Proposed Action)

The Proposed Action (status quo alternative) would extend the LOA until June 30, 2006. The terms and conditions of the authorization would not change, thus the previous assessment in the 1996 EA applies to this action (see NMFS 1996). The authorization allows the conditioned lethal removal of individually identifiable "predatory" California sea lions that: 1) have been observed by monitoring biologists to have preyed on returning steelhead in the inner bay; 2) have penetrated the acoustic barrier and been observed foraging in the ensonified zone during the steelhead run since the beginning of the acoustic deterrence program (January 1, 1994); and 3) are observed engaging in foraging behavior in the inner bay area during the current steelhead season between January 1 and May 31.

As previously stated, the status of the Lake Washington winter steelhead run remains perilously low, and it is critical that efforts are continued to protect all returning steelhead spawners.

Steelhead escapement goals have not been met for the Lake Washington basin for the past 15 years. As reported in the 1996 EA, the number of returning adult steelhead is now within the range considered to be near the threshold level below which the ability of the population to recover may be impaired (BRWG 1994). Therefore, any sea lion predation on adult spawners returning in 2002 and beyond, will continue to have a substantial negative impact on the status and recovery of this steelhead population.

Temporary removal of predatory sea lions to captivity was previously shown to be an infeasible alternative for reducing predation on steelhead because the predatory animals resumed their predatory behaviors and became increasingly more difficult to re-capture once they were returned to the wild. Permanent removal of predatory sea lions is necessary to reduce predation losses on steelhead to the maximum extent possible. The implementation of conditioned lethal removal, as a last resort, is the only timely and feasible means of permanently removing predatory sea lions.

The Proposed Action would have no measurable effect on the California sea lion population. Current LOA conditions require that the Task Force reconvene to evaluate the effectiveness of lethal removal if 15 sea lions are removed. This measure would remain in effect under the Proposed Action and allows for further review should larger numbers of animals be identified for removal.

There are no lethal removals planned at this time, and no new predatory sea lions have been identified for removal. It is anticipated that when new sea lions begin to establish foraging patterns at the Ballard Locks, the process would involve individuals or small numbers of animals initially. The Proposed Action would provide the needed authorization to allow the State to rapidly respond to these individuals and avoid the possibility that additional animals will follow predatory sea lions into the Locks area to forage.

6.0 CONSIDERATIONS UNDER SECTION 120(d) OF THE MARINE MAMMAL PROTECTION ACT

In accordance with Section 120(d) of the MMPA, NMFS considered a number of factors when making its decision to issue the original lethal removal authorization in 1995 and its subsequent modification in 1996. The Proposed Action is consistent with the results of the earlier considerations, and new information available since the completion of the 1996 EA confirms that conditions at the Locks have remained virtually unchanged from those previously assessed. New information to bring this assessment up to date is provided below.

6.1 Consider population trends, feeding habits, the location of the pinniped interaction, how and when the interaction occurs, and how many individual pinnipeds are involved.

The United States' stock of California sea lions is robust. The current west coast population of California sea lions is estimated in excess of 200,000 animals and has been growing at

approximately 6.2 percent annually in recent years (Forney et al. 2000). The status of the stock, relative to its “optimum sustainable population” (OSP) size, cannot be determined at this time, but the estimated human-caused mortality (1,352 animals), is less than the calculated potential biological removal (PBR) level (6,591) for this population (Forney et al. 2000). To date there is no indication that sea lion population growth is slowing, and sea lions continue to occupy Puget Sound nearly year-round. The small number (less than or equal to 15) of sea lions that might be removed under the Proposed Action is well within the PBR. There is no information to indicate that human caused mortality for sea lions is approaching PBR, or that human caused mortality will have a substantial effect on recovery of the stock.

California sea lions are occupying Puget Sound in numbers comparable to prior years. Sea lion counts in Puget Sound declined from a peak of over 1,200 in 1995 to 200 to 300 in 1998 - 2001. Similar fluctuations have been noted in the past, and current numbers are comparable to the early 1980s and 1990s (Gearin et al. 2001). Likewise, the peak abundance of sea lions in Shilshole Bay is similar to earlier years and ranges from about 20 to 50 animals during the period of steelhead migration (WDFW unpublished data).

Sea lion presence and the number of sea lions observed at the Locks during the steelhead run has been low, in the presence of constant acoustic deterrence measures and low fish abundance, in spite of the overall abundance in Shilshole Bay. Over 400 new sea lions have been captured and marked in Shilshole Bay since 1996 (Gearin et al. 2001). In contrast, observations of sea lions at the Locks, in recent years, typically have involved individual unidentified animals (WDFW unpublished data).

Sea lion predation at the Ballard Locks resulted in estimated losses of 8 and 2 steelhead in 1997 and 1998, respectively. Predation events in 1999 through 2001 (when reported) occurred outside of the scheduled observation periods and could not be used to estimate losses due to predation (Jeffries and Foley 2000; WDFW unpublished data). Predation events involved unknown individuals when observed, and the total number of sea lions involved in the predation events could not be estimated; although based on the number of predation events recorded, the number of sea lions involved is small.

6.2 Consider past efforts to non-lethally deter such pinnipeds, and whether the applicant has demonstrated that no feasible and prudent alternatives exist and that the applicant has taken all reasonable non-lethal steps without success.

Past efforts to non-lethally deter sea lions at the Locks are documented in the earlier EAs prepared in 1995 and 1996 (NMFS and WDFW 1995; NMFS 1996). Non-lethal measures employed since 1996 were previously assessed in the 1996 EA, including fire crackers and an acoustic barrier (NMFS 1996). During the public comment period for this action, NMFS received comments from one Task Force member opposing the extension of the lethal removal authorization on the basis that feasible non-lethal deterrence measures had not been implemented in accordance with the statute. NMFS determined that all feasible non-lethal approaches had

been attempted.

6.3 Consider the extent to which such pinnipeds are causing undue injury or impact to, or imbalance with, other species in the ecosystem, including fish populations.

The effects of sea lion predation on the Lake Washington steelhead run are well documented. The severely depressed status of the run has not improved in response to ongoing recovery efforts. Consequently, the risk presented by sea lion predation to steelhead recovery has not changed since the 1996 assessment.

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

The sea lions at the Locks do not present a threat to public safety.

7.0 ENDANGERED SPECIES ACT

No species listed under the Endangered Species Act would be negatively affected by the No Action or Proposed Action alternatives. Although out-migration of ESA listed Puget Sound chinook salmon (*Onchorynchus tshawtscha*) smolt occurs between April and June, and sea lions have been known to take smolts during this period, lethal removal of sea lions would not directly or incidentally affect listed salmon because the lethal methods involve a contained process that involves individual sea lions only. The lethal removal of predatory sea lions would be expected to contribute positively to ESA listed salmonids since it may remove predation on outmigrating smolts and along with other related improvements in the watershed (e.g., COE changes at the Locks and state and local water management and harvest regulation planning efforts) would aid in the elimination of factors that are causing population decline.

Affects of the proposed action and alternatives on other ESA listed species, including marbled murrelets and Steller sea lions remain the same as described in the 1996 EA.

8.0 CUMULATIVE EFFECTS

The Proposed Action is not expected to contribute to any measurable cumulative effect with respect to the sea lion population. The sea lion population is robust, and human caused mortality is not having a substantial effect on further recovery of the stock. With respect to the Lake Washington steelhead and the broader Puget Sound population, the lethal removal of predatory sea lions would be expected to contribute positively along with other related improvements in the watershed (e.g., COE changes at the Locks and state and local water management and harvest regulation planning efforts) to the recovery and health of the steelhead.

9.0 FINDING OF NO SIGNIFICANT IMPACT

This EA considers the environmental consequences of two alternatives regarding the extension of an existing authorization for the lethal removal of California sea lions that forage on winter steelhead at the Ballard Locks. The proposed action is to extend the authorization for five years, through June 30, 2006, with no further modification to the terms and conditions for lethal removal. Lethal removal under the extension is an action of last resort for predatory animals that have developed a successful foraging strategy for steelhead at the Locks that cannot be deterred by non-lethal means such as the acoustic barrier.

The proposed action will have no effect on the physical characteristics of the geographic area, nor will it cause the loss or destruction of significant scientific, cultural, or historical resources. California sea lions that are targeted for lethal removal would be taken away from public areas and, therefore, the action will have no effects on public health or safety, except for the risk of injury to the state/federal personnel involved in the capture and handling of California sea lions.

The proposed action is based on considerable experience and scientific information collected on California sea lions and winter steelhead at the Locks over the past 20 years. Data collected since 1996 reaffirm the NMFS position that no significant impact to the environment will occur under the proposed action because: 1) steelhead populations remain depressed, 2) any sea lion predation on adult spawners will continue to have a substantial negative impact on the status and recovery of the steelhead population, 3) temporary removal of sea lions to captivity is not effective and 4) no measurable effect to California sea lion populations will occur from lethal removal. Accordingly, the action is unlikely to have unique or unknown risks. The proposed action and the no action alternative were developed in accordance with and under the authority of Section 120 of the MMPA.

The proposed action does not set a precedent for future actions beyond the sea lion/steelhead conflict at the Ballard Locks because the provision of Section 120 can only be applied under very specific conditions. Applications for lethal removal in future situations have to be considered on a relatively strict case-by-case basis in accordance with the procedures set forth in Section 120.

There is both public opposition and support for the proposed action; it ranges from those who object to actions (lethal or non-lethal) taken with sea lions to those who support the extension of the conditioned lethal removal authority. There is no scientific controversy over the effect of the proposed action on sea lions and the rest of the environment. The proposed action continues the authorization for lethal removal of a small number of California sea lions and will have no appreciable effect on the U.S. stock of California sea lions or the portion of the stock that seasonally occupies Puget Sound. The proposed action does not alter the previously imposed structure for identifying predatory sea lions that are eligible for lethal removal. The number of sea lions killed is unlikely to exceed five animals over the period of the proposed extension. Nonetheless, if 15 sea lions are removed, the LOA requires that lethal removal will cease, and

NMFS will reconvene the Task Force for the purpose of evaluating the effectiveness of the measures implemented and making recommendations on further actions.

No endangered or threatened species or their critical habitat will be adversely affected by the proposed action. Lethal removal of sea lions would not directly or incidentally take listed salmon because the lethal methods involve a contained process that involves individual sea lions only. Although marbled murrelets, a threatened species, have been sighted in Shilshole Bay at the entrance to the Lake Washington Ship Canal, there are no activities under the proposed action or alternatives that may affect them. Seabirds have been observed foraging in the "ensonified" area (caused by acoustic array) of the Locks. No noticeable change in seabird behavior has been observed relative to the operation of the acoustic devices. The acoustic devices have been tested on fish and caused no reaction. Tests on the effective range of the acoustic devices conducted in 1995 indicate the sounds generated by the devices are not detectable outside the Lake Washington Ship Canal. The proposed action will have no effect on Steller sea lions, which are listed as threatened, except that the acoustic deterrence devices may possibly cause them to avoid the Ship Canal. Steller sea lions have been observed to enter the Lake Washington Ship Canal on a few occasions, but Steller sea lions have never been observed or reported foraging at the Locks and no activities are directed at this species. Harbor seals are the only other marine mammal observed in the Locks area and the acoustic devices would be expected to deter them from the Locks area. The present authorization for lethal removal under Section 120 of the MMPA is specific to California sea lions; however, non-lethal efforts under Section 109(h) of the MMPA may be applied to harbor seals that occur in the fishway, thereby affecting steelhead passage.

The proposed action is necessary to prevent sea lions from impacting the recovery of the steelhead run that is at an all time low. The steelhead return in 2000 and 2001 was 48 and 42 fish respectively, and future returns will likely remain low for some time because the returning spawners will be from poorer broodyear returns.

Substantial concern exists for the recovery of the Lake Washington winter steelhead population. Past data clearly show that a small number of sea lions are capable of penetrating the acoustic barrier to forage on salmonids, and it is likely that steelhead predation events will again be observed in the ensonified zone. The acoustic barrier will remain in operation and is designed to screen out new animals that have not developed a foraging strategy for steelhead at this site. Prior experience has shown, however, that non-lethal strategies alone are not universally effective. The lethal removal of small numbers of California sea lions is negligible in relation to the overall sea lion population and insignificant when compared to the peak counts of sea lions in Puget Sound. The potential number of lethal removals is far below the PBR level of 6,591 established for California sea lions.

For these reasons and those described in more detail in this and the referenced 1995 and 1996 EAs, it is hereby determined that neither approval nor implementation of the five year LOA extension will significantly affect the quality of the human environment, and that preparation of

an environmental impact statement on this action is not required under Section 102(2) of the National Environmental Policy Act or its implementing regulations.

William T. Hogarth

William T. Hogarth
Assistant Administrator for Fisheries

1-23-02

Date

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