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Subject: Management Feasibility Analysis for Klawock River Hatchery

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Per your request, and as specified by **5 AAC 40.130. Management Feasibility Analysis**, the following management feasibility analysis (MFA) has been prepared for Southern Southeast Regional Aquaculture Association (SSRAA) concerning Klawock River Hatchery (KRH) located in Klawock, Alaska. The following six items to be addressed by this analysis are identified in regulation:

1) potential contributions to common property fisheries;
2) potential size and location of special harvest area;
3) special management considerations or need for additional studies;
4) potential broodstock sources;
5) assessment of production potential for each species; and
6) additional relevant factors considered.

## Background Information

A completed MFA must be included when submitting a private nonprofit (PNP) hatchery permit application to ADF&G.

In 1977, ADF&G built Klawock River Hatchery (KRH) on the original site of a hatchery built by North Pacific Trading and Packing Company of Klawock in 1897. The hatchery is located adjacent to Klawock River (103-60-10470). The hatchery's water source is gravity fed from either Klawock Lake or Half Mile Creek, upstream from the City of Klawock's domestic water treatment plant. In 1993, ADF&G contracted KRH to the City of Klawock until a PNP organization could be

established to run the hatchery. In 1995, ADF&G issued PNP Salmon Hatchery Permit #38 to Prince of Wales Hatchery Association (POWHA) to run KRH. The hatchery is permitted to hatch 5 million coho salmon eggs, 5 million sockeye salmon eggs, and 50,000 steelhead eggs. Since 1980, coho salmon have been released from KRH annually. Sockeye salmon were annually released from KRH from 1987 until 2005. Steelhead were released from KRH in 1980-1992 and 1997-2002. In 2014, the KRH permit was altered to allow up to 250,000 smolt of the current coho salmon production to be released at Port Asumcion.

Due to financial difficulties, POWHA would like to relinquish their hatchery permit contingent upon approval of a permit for SSRAA to operate KRH. SSRAA intends to submit a PNP Hatchery Permit application for 5 million coho salmon eggs and 1 million sockeye salmon eggs at KRH.

## 1. Potential Contributions To Common Property Fisheries

POWHA contributions of KRH coho salmon to common property fisheries can be found in the Appendix, Table 1.

*Potential Contributions to the Sport Fisheries*

Returning coho salmon of KRH origin are captured by sport fisheries in the marine waters near Prince of Wales Island and in the Klawock River. Contributions of coho salmon to the marine boat sport fishery are estimated through the recovery of coded wire tags (CWT) placed in KRH coho salmon. From 1997 until 2015, the estimated annual harvests of coho salmon originating from the KRH have ranged from 0 to 27,660 fish, and averaged of 7,274 fish (Table 1). The recent ten-year (2005-2014) average harvest of coho salmon in the Prince of Wales area marine sport fishery is 66,757 annually (Romberg et. al. *In prep*). The recent ten year (2005-2014) average harvest of coho salmon in the Klawock River sport fishery is 1,926 fish annually (Romberg et. al. *In prep*). CWT information is not collected from the freshwater sport fishery, however analysis of marked otoliths indicate that 99 percent in 2013 and 92 percent in 2014 of the coho salmon escapement were hatchery produced (2015 KRH AMP).

*Management of the Sport Fishery*

**Freshwater Sport Fisheries**

The entire Klawock River watershed is open to sport fishing for coho salmon and is managed under the regionwide limit of 6 fish per day and 12 in possession. By regulation, fishing is closed within 300 feet of the installed weir. By regulation, bait is not allowed in the majority of the drainage because of the presence of fall-run steelhead and designation of the Klawock River drainage as a high-use trout system. In the spring of 2015, the Board of Fisheries adopted a proposal to allow bait in the Klawock River downstream of the weir from September 15 to October 15. Sport and personal use fisheries will be managed by general regulations for the waters outlined by the SHA. The department may use emergency order (EO) authority to address issues inseason.

**Saltwater Sport Fisheries**

Currently, the marine sport fishery for coho salmon is managed under the regionwide limit of 6 fish per day and 12 in possession year-round. Sport and personal use fisheries will be managed by general regulations for the waters outlined by the SHA. The department may use EO authority to address issues inseason.

*Potential Contributions to the Commercial Fisheries*

Coho salmon produced at KRH have contributed to common property fisheries for many years based on coded wire tag recoveries (Appendix, Table 1). The troll fleet harvests the majority of KRH produced coho salmon, followed by the seine fleet. The KRH annual management plan contains more detailed tables that break harvest into district. The primary seine harvest occurs in districts 103 and 104. The primary commercial troll harvest occurs in districts 103, 104, 105 and 113. The gillnet fleet intercepts a few KRH produced coho salmon in districts 101 and 106.

*Management of the Commercial Fisheries*

Commercial seine and troll fisheries will intercept coho salmon returning to KRH on the west coast of Prince of Wales Island. Additional harvest also occurs throughout the Southeast Alaska troll fishery. Commercial fisheries specifically targeting these fish will not occur unless returns justify it based on inseason information. Returns of coho salmon to the Klawock River weir should be adequate to meet the escapement goal range of 4,000–9,000 fish, broodstock needs of 3,500 fish, and enough cost-recovery fish to support operation of KRH.

*Potential contributions and Management of Personal Use Fisheries*

**State Subsistence Fisheries**
The Alaska Board of Fisheries (BOF) established a state subsistence fishery whereby Alaskan residents are allowed harvest opportunity under provisions of a subsistence permit obtained from the department. The department has established harvest limits of 20 coho salmon per day, with a 40 fish annual limit, in the customary and traditional use area in the Klawock River estuary and lake. Allowable fishing gear in state waters includes dip nets, hand beach seines, hand purse seines, spears, and cast nets throughout the July 1–October 31 fishing season. Use of rod and reel is not an allowable gear type in this fishery.

**Federal Subsistence Fisheries**
In addition to the state fishery described above, a federal subsistence fishery on Klawock River is authorized under federal regulations by permit for residents of Prince of Wales Island. The fishery allows for a harvest of 20 coho salmon per day with no annual limit. Permitted gear includes rod and reel with bait (bait is only allowed from September 15–November 15), dip net, hand snagging lines, and spears. Please contact the local U.S. Forest Service representative for questions regarding the federal subsistence fishery on the Klawock River.

## 2. Potential Size and Location of Special Harvest Area

As described in 5 AAC 40.051, *District 3: Klawock Inlet and River Special Harvest Area*.

(a) The Klawock Inlet and River Special Harvest Area consists of the waters of Klawock Inlet and Harbor south of the latitude of Cemetery Point and north of 55°32′N lat., and any of the hatchery raceways and holding ponds contiguous with the hatchery access ladder from Klawock River for broodstock and cost recovery of coho salmon.

(b) A hatchery permit holder harvesting salmon within the special harvest area is exempt from the provisions of 5 AAC 33.310. The open fishing season within the Klawock Inlet and

River Special Harvest Area for the hatchery permit holder is from July 1 through November 30. Additional fishing periods may be established by emergency order.

(c) Notwithstanding 5 AAC 33.330, legal gear types for the hatchery permit holder in the special harvest area are purse seine, beach seine, dip net, gillnet, and troll gear.

Maps of the Klawock Inlet and River Special Harvest Area the Port Asumcion Special Harvest Area can be found in the Appendix, Figures 1and 2.

## 3. Special Management Considerations or Need For Additional Studies

A weir across Klawock River disrupts natural migration of salmon and trout in and out of Klawock Lake. The current hatchery operates the weir as described in the annual management plan. A weekly coho salmon escapement schedule is followed in order to assure the escapement goal of 6,500 coho salmon into the lake is reached. Other weir operation requirements include installation and removal dates; and instructions on data and reporting requirements.

*Potential Straying and Interactions with Other Species*

Since 1980, coho salmon have been released annually from KRH. Annual POWHA coho salmon production can be found in the Appendix, Table 2.

There are many wild coho salmon drainages near the Klawock River. The Klawock River flows into San Alberto Bay and the northern coast of the bay has numerous small unnamed drainages that support coho salmon. Larger coho salmon drainages north of the Klawock River include Shinaku, Steelhead, and Black Bear creeks. Drainages to the south of the Klawock River that produce coho salmon include Crab, Port Saint Nicholas, Trocadero, and Cable creeks. While these systems contain significant numbers of coho salmon, none of them are used as index streams. The lack of escapement goals or regular surveys on these systems does not reflect their importance, it simply reflects the fact there are limited resources for conducting fall coho salmon surveys and there is little information on annual wild stock coho salmon escapements off the coast of southern Southeast Alaska.

Port Asumcion is located on Baker Island, which has a number of small unnamed drainages, some of which support coho salmon. There are two creeks flowing into Port Asumcion that have documented the presence of coho salmon. Neither of these are used as an index stream.

The release of up to 5 million coho salmon smolt into the Klawock River estuary and nearby inshore waters potentially increases interactions of hatchery-produced juvenile coho salmon with other species. Of particular concern with the Klawock River estuary is the interaction between hatchery-produced coho salmon and wild pink and sockeye salmon. While sockeye salmon returns to Klawock River have been low in recent years, pink salmon returns have appeared healthy. Given the long history of coho salmon releases and the relative health of pink salmon returns to the area there does not appear to be a significant negative interaction between the species. It is unknown if hatchery-produced coho salmon have a negative impact on Klawock River sockeye salmon.

## 4. Potential Broodstock Sources

Hatchery broodstock for all three species was developed using returns to Klawock River. Returns of KRH coho salmon continue to date. No hatchery-produced sockeye salmon or steelhead return to Klawock River. There has not been a steelhead release from the hatchery since 2002 and the last sockeye salmon release from the hatchery was in 2005.

## 5. Assessment of Production Potential

The KRH operates off the state's water permit of up to 20 cubic feet per second of water for hatchery use (ADL#79921-DFG CF-HQ). The hatchery has plenty of incubation space but has a limited footprint for freshwater rearing. Currently, coho salmon freshwater rearing starts with swim-up fry rearing in semi-square tanks in the hatchery before moving the fish to net pens in Klawock Lake.

The Klawock Lake watershed contains a natural run of sockeye salmon, which limits possible hatchery production to steelhead, as well as sockeye, coho and pink salmon due to IHNV concerns. Since 1980, coho salmon have been released from KRH. Sockeye salmon were annually released from KRH from 1987 until 2005. POWHA sockeye salmon production from 1996 through 2005 can be found in the Appendix, Table 3. Steelhead were released from KRH in 1980 through 1992 by ADF&G and 1997 through 2002 by POWHA. POWHA production of steelhead can be found in the Appendix, Table 4. While KRH does have potential to produce pink salmon, the upriver location of the hatchery limits large-scale production to remote release sites where commercial fishing opportunity could be provided.

## 6. Additional Relevant Factors Considered

There were no additional relevant factors considered.

**Appendix:**

**Table 1**: Estimated number of Klawock River Hatchery produced coho salmon harvested common property fisheries based of coded wire tag recovery data.

| Year | Drift Gillnet | Purse Seine | Troll | Sport | Grand Total |
|---|---|---|---|---|---|
| 1997 | 0 | 310 | 1,994 | 1,211 | 3,514 |
| 1998 | 0 | 0 | 107 | 0 | 107 |
| 1999 | 0 | 1,626 | 9,574 | 2,513 | 13,713 |
| 2000 | 197 | 4,272 | 29,181 | 7,479 | 41,129 |
| 2001 | 30 | 6,564 | 13,592 | 4,545 | 24,731 |
| 2002 | 44 | 2,356 | 9,645 | 3,597 | 15,643 |
| 2003 | 44 | 8,939 | 27,665 | 8,047 | 44,696 |
| 2004 | 0 | 4,001 | 11,721 | 3,177 | 18,899 |
| 2005 | 0 | 11,427 | 45,447 | 14,874 | 71,748 |
| 2006 | 0 | 395 | 13,500 | 1,847 | 15,742 |
| 2007 | 0 | 6,861 | 23,771 | 4,491 | 35,124 |
| 2008 | 476 | 10,674 | 26,829 | 9,241 | 47,219 |
| 2009 | 56 | 2,745 | 5,686 | 1,392 | 9,879 |
| 2010 | 0 | 972 | 2,488 | 144 | 3,604 |
| 2011 | 329 | 29,547 | 63,636 | 23,324 | 116,837 |
| 2012 | 83 | 8,771 | 36,870 | 7,492 | 53,216 |
| 2013 | 185 | 34,463 | 196,746 | 27,660 | 259,055 |
| 2014 | 91 | 26,750 | 99,195 | 10,701 | 136,739 |
| 2015 | 167 | 28,005 | 94,971 | 6,468 | 129,611 |
| Grand Total | **1,703** | **188,679** | **712,620** | **138,205** | **1,041,207** |

**Table 2**: Coho salmon production from Klawock River Hatchery

| Brood Year | Release Year | Numer of smolt |
|---|---|---|
| 1994/1995 | 1996 | 1,324,704 |
| 1996 | 1997 | 622,143 |
| 1997 | 1998 | 1,330,102 |
| 1998 | 1999 | 435,742 |
| 1999 | 2000 | 1,596,381 |
| 2000 | 2001 | 2,066,162 |
| 2001 | 2002 | 2,908,348 |
| 2002 | 2003 | 4,247,837 |
| 2003 | 2004 | 2,247,310 |
| 2004 | 2005 | 1,301,877 |
| 2005 | 2006 | 3,728,278 |
| 2006 | 2007 | 3,579,202 |
| 2007 | 2008 | 3,728,278 |
| 2008 | 2009 | 3,935,232 |
| 2009 | 2010 | 4,551,657 |
| 2010 | 2011 | 4,537,106 |
| 2011 | 2012 | 3,894,603 |
| 2012 | 2013 | 4,282,242 |
| 2013 | 2014 | 3,720,457 |
| Total | | **54,037,661** |

**Table 3**: Sockeye salmon production from Klawock River Hatchery

| Brood Year | Release Year | Numer of smolt |
|---|---|---|
| 1995 | 1996 | 324,000 |
| 1996 | 1997 | 245,021 |
| 1997 | 1998 | 581,047 |
| 1998 | 1999 | 868,025 |
| 1999 | 2000 | 359,431 |
| 2000 | 2001 | 258,805 |
| 2001 | 2002 | 510,140 |
| 2002 | 2003 | 364,587 |
| 2003 | 2004 | 706,031 |
| 2004 | 2005 | 402,099 |
| Total | | 4,619,186 |

**Table 4**: Steelhead production from Klawock River Hatchery

| Brood Year | Release Year | Numer of smolt |
|---|---|---|
| 1995 | 1997 | 1,510 |
| 1996 | 1998 | 1,540 |
| 1997 | 1999 | 1,975 |
| 1999 | 2000 | 4,753 |
| 1999 | 2001 | 1,866 |
| 1999 | 2002 | 2,096 |
| 2001 | 2002 | 5,644 |
| Total | | 19,384 |

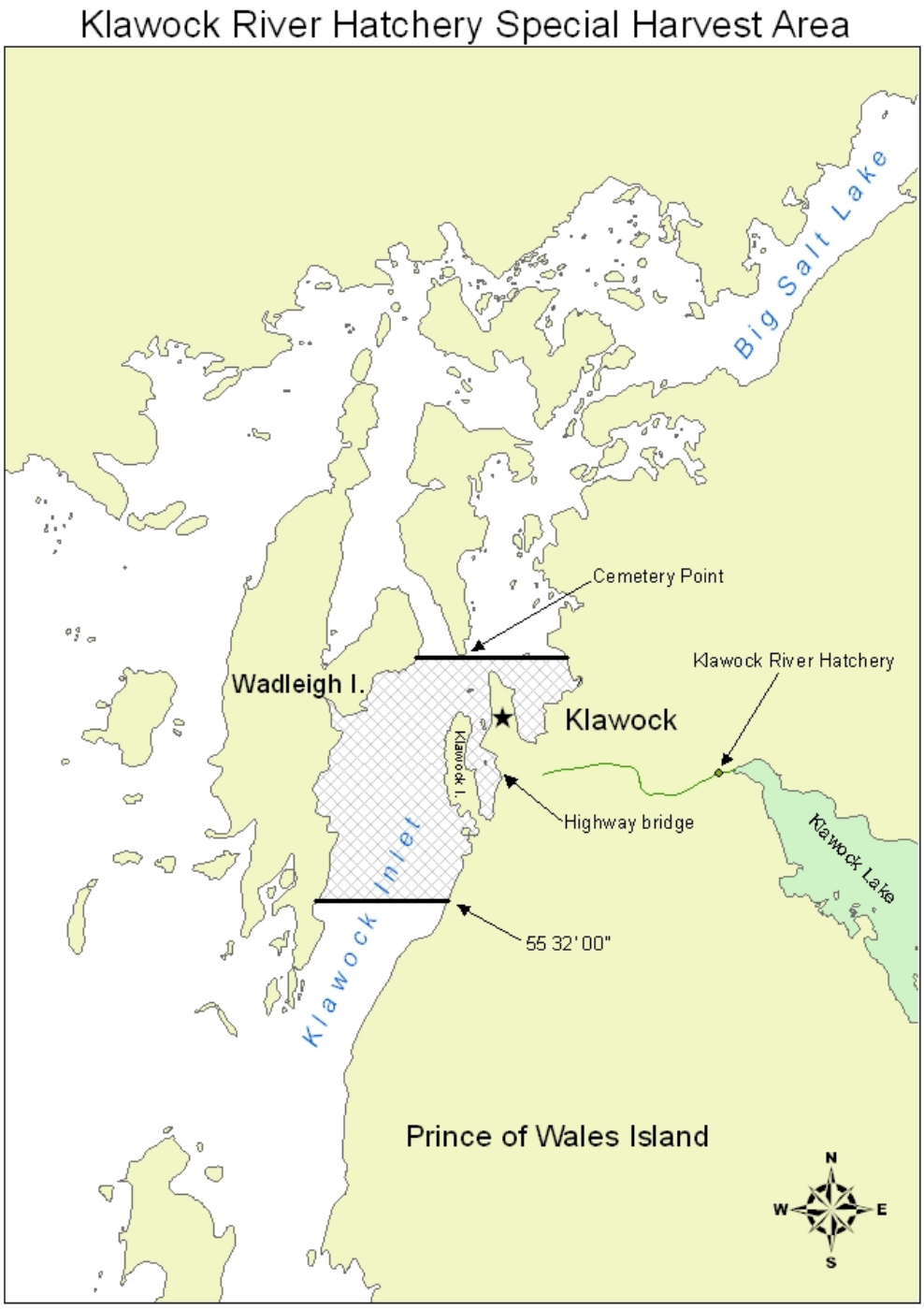


**Figure 1**: Klawock Inlet and River Special Harvest Area.

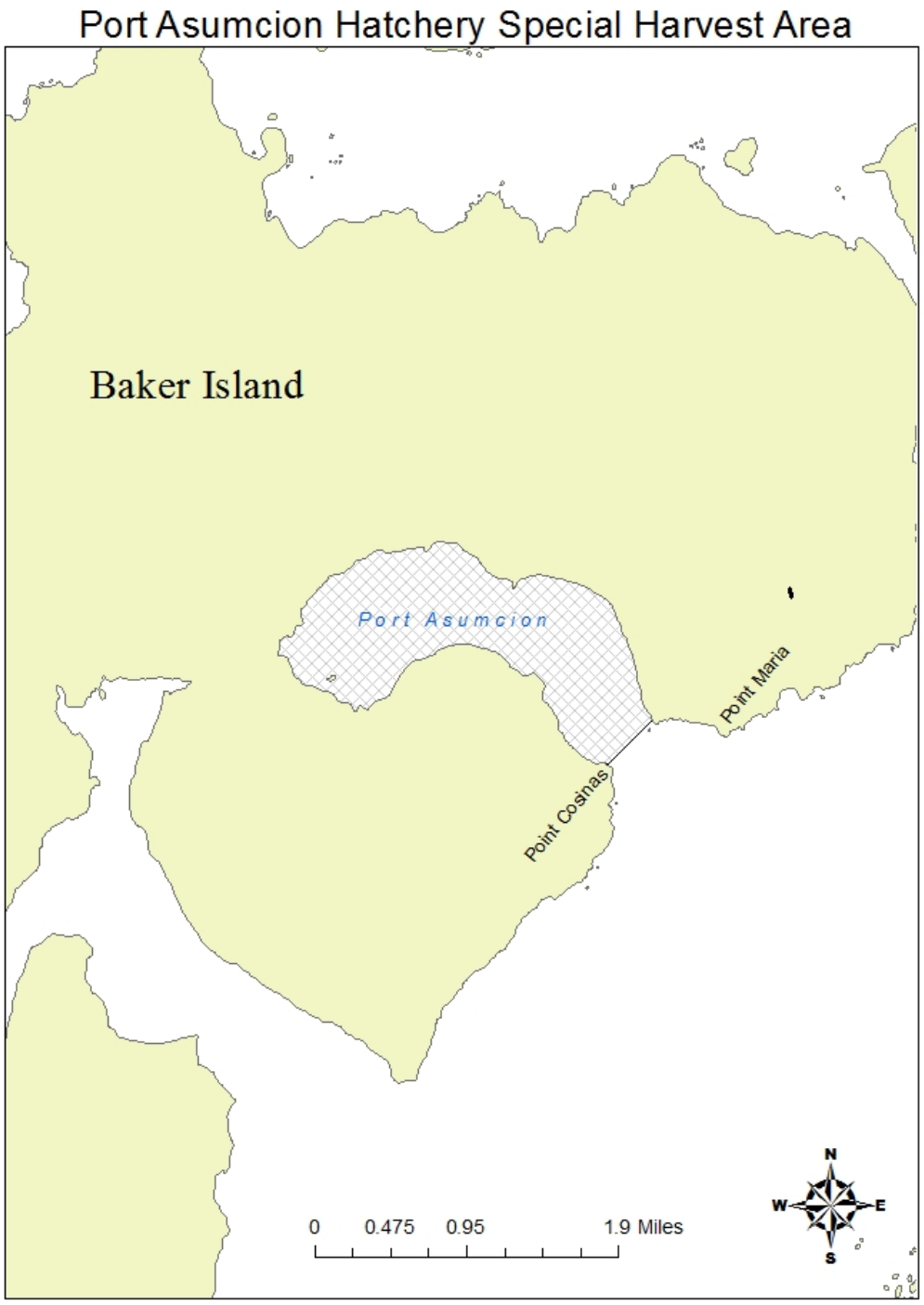


**Figure 2**: Port Asumcion Special Harvest Area.