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Submitted by
NVE Technical Workgroup(s) Members

We appreciate the study planning and work that is being performed toward advising the mitigation restoration of the Eklutna River fish and wildlife habitat. However, Native Village of Eklutna TWG representatives do not have enough information to concur with some portions of the final draft study plans, notably until consultation/planning occurs for the protection, mitigation, and enhancement (PME) measures, and new lake outlet engineering design study alternatives. Adequate consultation before and after deciding on these should help. The cultural resources study planning is also still in progress, but the process and timeline seem more certain and not as crucial.

The comments prioritized herein pertain to 3.7 Engineering Feasibility and Cost Assessment Study, with other sections contributing. Previous NVE comments addressed this section and can be considered with the current comments, particularly the previously submitted "Supplemental Comments", since section 3.7 has not changed since. Consideration of these comments during TWG meetings was deferred till more results come in from other Y2 studies. We believe that, with the information available, including from 2021 studies, more progress could and should have been made on this crucial section of the study plans before finalizing them.

NVE has an opportunity to apply for up to \$15 million in Infrastructure Bill funding, from a tribal allocation for fish passage, to help update the Eklutna Lake outlet engineering. Federal funding for the project, around \$150 million is possible. It seems none of this can occur till the Owners, with concurrence from 1991 Agreement signatories, agree on PME measures for new engineering designs. New engineering designs would be very helpful in the near future.

Priority Comments

Discharge to River

Salmon need water continuously downriver from Eklutna Lake to thrive above Thunderbird Creek. Periodic higher flows are needed for off-channel habitat re-creation, sediment transport, and to reset the single strand channel with large embedded boulders that has adjusted to 25 years with very little water. Upon analysis of the river channel below the lake and needs of the target salmon life stages, Hanson (2019, p. 7) presents the following table (re-created, with highlights as per those added post publication by USFWS TWG representatives):

Table 2. Estimated range of flow required for spawning and incubation

FLOW REGIME	SPAWNING (120 DAYS PER YEAR)	INCUBATION (214 DAYS PER YEAR)	MIGRATION (30 DAYS PER YEAR)	BANKFULL (1 DAY PER YEAR)	INSTREAM FLOW REQUIRED (MEAN DAILY VALUE)
	CFS	CFS	CFS	CFS	CFS
AVERAGE	206	61	24	1402	109
MAX	253	65	28	1635	128
MIN	181	58	20	1222	99

“However, additional flushing flows will likely be needed initially to move the large amount of sediment that has accumulated in the last 60-70 years. In the future, higher flushing flows to simulate larger flood events may be needed every few years to maintain habitat quality.” (Hanson, 2019, p. 7) And, “...a habitat survey should be conducted to estimate the available rearing habitat.” (Hanson, 2019, p. 8)

"The Project Owners’ letter also stated: “We value the unique perspectives of NVE’s members regarding the Eklutna River, and we also understand that NVE is primarily interested in the presence of both water and salmon in the lower Eklutna River.” (pg 17 Proposed final year 2 study plan) NVE has always advocated for water and salmon in Eklutna River, not just the “lower Eklutna River”. Additionally, there would be many more salmon to catch, while migrating through the lower river (however defined), if the following PME’s and new engineering were implemented.

Fish Passage

The largest Eklutna system fishery should be sockeye salmon that spawn in Eklutna Lake. The Eklutna Hydro Lake Aquatic Habitat and Fish Utilization Study (Y1 Interim Report Draft, 2022, 3.1.1 and 3.1.2) identified many groundwater seepages in the Lake (steeply fluctuating) varial zone, contributing to numerous potential shoreline spawning habitat areas around the lake and river tributaries delta. There is also plentiful Chinook and coho spawning habitat in the river tributaries above Eklutna Lake (NVE research in progress). These target species need fish passage, like a fish ladder to get to and from Eklutna Lake for spawning and rearing.

Lake Level Variability

Related to the fish passage comment, potential spawning habitat in the current lake varial zone requires reduced lake level fluctuation at a relatively high lake level, to cover potential sockeye spawning beds when in use, and for other salmon related ecosystem benefits. We recognize this can impact owners’ preferred lake hydro storage schedule and consequent profits, so further study of these parameters would help devise optimal trade-off/compromise storage regimes. This comment may also be germane to study plans section 3.8.

We would like study to describe pre-lake dams lake levels, to attest whether the potential spawning habitat in the lake varial zone would have been covered for use by target salmon life stages.

New Engineering

New engineering design at the lake outlet is recommended to mitigate the situations addressed in the above comments. The current dam gate can only release about 150 cfs, max 180 cfs with higher head pressure, and the moraine dam can only release flow at very high lake levels. A dam with new release gate(s), such as radial gate(s), designed to facilitate regular releases of variable discharges, up to at 1635 cfs seems indicated. A new dam could be installed at the lake outlet moraine/ old dam at a level taking all these considerations into account. A fish ladder should be included.

These new engineering related PME's are recommended in lieu of removing the lake outlet dam altogether and restoring a natural, if reduced river hydrograph, possibly fully restored combination with a pumped hydro system to compensate for electricity generation capacity.

2022 Flow Release

NVE would like to see another flow release in 2022. The historic 2021 releases were inspirational to many NVE members and others who care about the health of Eklutna River and saw it as tangible progress toward that goal. Some saw it as cultural revitalization, a traditional resource restored, if only partially and temporarily. Also, more information would probably be gained from another flow release in 2022. However, much more information would be gained from a much larger flow release for even just 1 day in 2022, since the 2021 discharge rates' effects cannot be extrapolated to effects of needed periodic higher rate discharges. (See first, Discharge to River priority comment above.) It is understood that given the capacity of the current release gate, the higher discharge releases needed to extrapolate to those presented by Hanson as required 1 day per year (above) might only be achieved in 2022 with dam overflow.

Cultural APE

3.13.3 Study Area – “The proposed focus area or Area of Potential Effects (APE) for the Cultural Resources Study encompasses locations of possible project impacts, with a conservative buffer to fully include all potential archaeological and historic properties that could be directly, indirectly, or cumulatively affected.”

The statement is evasive. It is not clear as to whether it is for the impacts of increasing water as mitigation, or the effects of “the impacts to fish and wildlife from the Eklutna and Snettisham Projects” done since the 1950's, per the agreement language. It should be both.

Recreation

It would be interesting to survey Thunderbird Falls and Lake Park visitors regarding their opinions towards the river and salmon restoration priority goals like the flow release, fish passage and lake fluctuation reduction. The latter should improve lake aesthetics and increase recreational opportunity with a renewed potential lake riparian zone.

References

Hanson, Heather 2019. Upper Eklutna River Survey Preliminary Fish Habitat Flow Assessment, U.S. Fish and Wildlife Service, Anchorage Fish and Wildlife Conservation Office