Overview of the Chief Joseph Hatchery AHA/ISIT Process and Tool[1]

The Chief Joseph Hatchery Program uses AHA/ISIT to analyze data for annual planning, developing and adapting Key Assumptions, Biological Targets and Decision Rules. Results are presented at the Annual Program Review where Production levels and Science Program activities are developed.

The All-H Analyzer (AHA) tool is a Microsoft Excel-based application to evaluate salmon management options in the context of the four "Hs"—**H**abitat, passage through a **H**ydroelectric system (when appropriate), **H**arvest, and **H**atcheries. The AHA calculator integrates the four "Hs" using the methods to estimate equilibrium natural escapement, brood stock requirements, and harvest by fishery for natural- and hatchery-origin fish.

Most importantly, AHA estimates reflect a measure of hatchery influence on natural populations that is a function of both the percent hatchery-origin spawners in the natural escapement and the percent of natural-origin brood stock incorporated into the hatchery program. The assumptions underlying these fitness impacts are based on recently published work (Ford 2002; Lynch and O'Hely 2001) and further development of these ideas by Campton, Busack, and Currens (pers. comm. 2002).

The AHA tool consists of a battery of interconnected modules for each H incorporating the equations described previously to estimate total recruits, escapement, and harvest for populations and hatchery programs. A critical feature of the analytical tool is the distribution of hatchery recruits to harvest, those recovered back at the point of release, and those straying to spawn in natural populations. In turn, the number of strays to natural populations affects the degree of hatchery influence in all natural populations receiving strays, and thus the fitness, abundance, and harvest potential for each population.

The purpose of the AHA tool is to allow managers to explore the implications of alternative ways of balancing hatcheries, harvest, habitat, and hydrosystem constraints. This tool is used neither to make decisions nor to judge the "correctness" of management policies. Rather, it illustrates the implications of alternative ways of balancing the four "Hs" to facilitate informed decisions.

AHA should not be viewed as a new tool to predict habitat, harvest, or hydro effects to populations, but rather as a platform for integrating existing analyses. AHA makes relatively few new assumptions; instead, it brings together the results of other models. It does not replace these other models but instead relies on them for input. AHA is thus a relatively simple aid to regional decision making, which, by incorporating the results of other models, can rapidly explore the impacts of very detailed scenarios relating to one or more of the "Hs."

The resulting Figure 1. represents the data/decision flow process.

[1] Adapted from: Final Hatchery and Stocking Program Environmental January 2010 Impact Report/Environmental Impact Statement ICF J&S 00264.08 and the Chief Joseph Hatchery Research, Monitoring and Implementation Plan (2011)

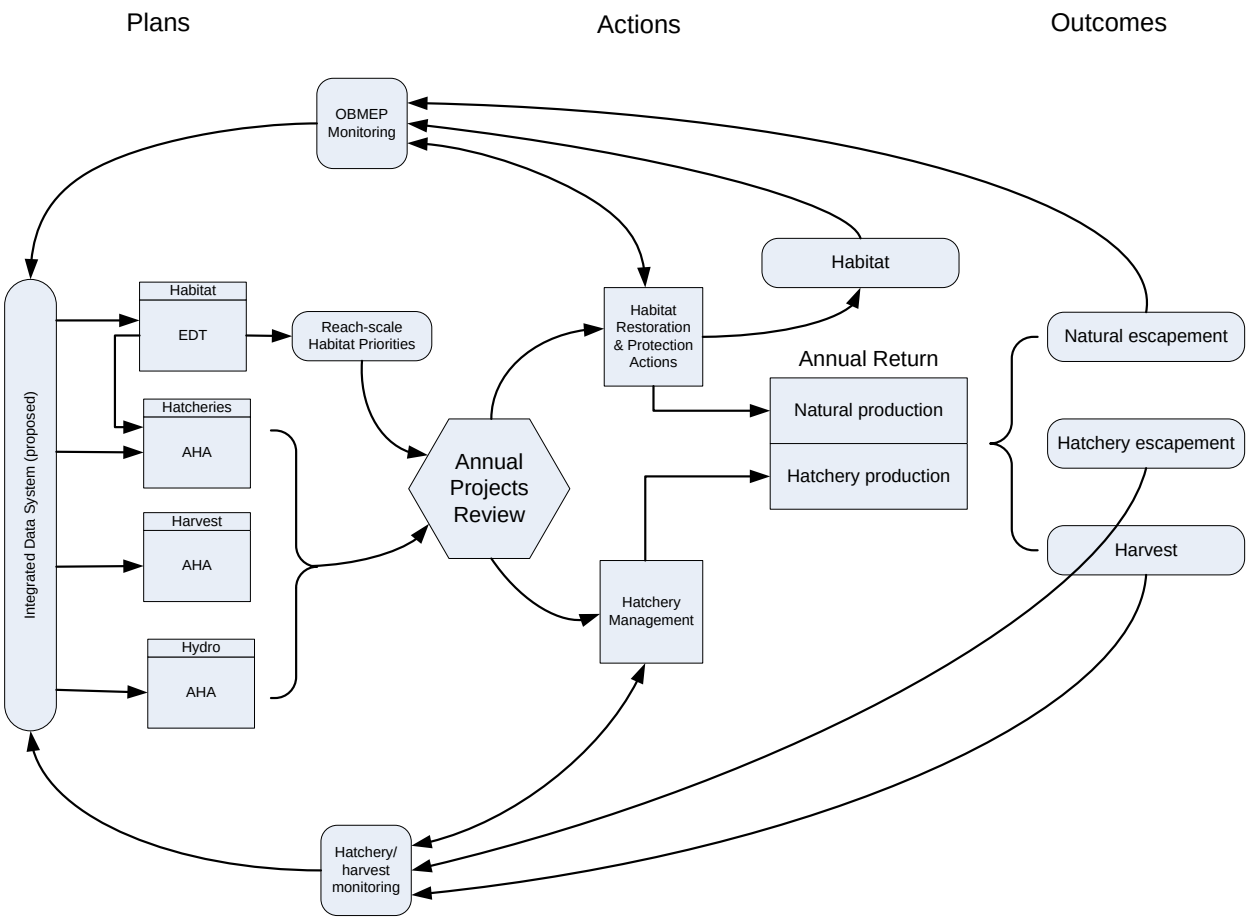

Figure 1. Overview of information flow for the Chief Joseph Annual adaptive management process. The information is brought to a focus in the Annual Project Review (APR) supported by the All-H Analyzer/In-season Implementation Tool (ISIT) and procedure.