OUTCOMES MEMORANDUM

TO: Core Working Group

RE: **April 6, 2021 CDFW Information-Sharing Call**

Meeting Attendees:

Chris Bowles, CBEC
Chris Campbell, CBEC
Greg Kamman, CBEC
Morgan Kilgour, CDFW
Duane Linander, CDFW
Tracy McReynolds, CDFW
Jessica Nicols, CDFW
Colin Purdy, CDFW
Bjarni Serup, CDFW
Doug Brown, Doug Brown Consulting
Bruce DiGennaro, Essex Partnership
Terra Alpaugh, Kearns & West
Joe Merz, Kramer Fish Sciences
Elisabeth Beckensten, KSN
James Lorenzen, KSN
Barry O'Regan, KSN
Helen Swagarty, River Partners

Action Items:

1. CDFW will provide a single compiled file of all their relevant data to the Project Team.
2. CDFW will provide guidance to other related data they think the Project Team should look at (e.g., Rachel Johnson's tethering studies, Carson Jeffres work on food and feed, Carlos Garzo's research on migratory cues)

Discussion Highlights:

1. Butte Creek Spring Run Chinook Restoration: CDFW presented on their work, starting in the 1990s, restoring spring run population to Butte Creek; restoration activities included agreements to keep more water in Butte Creek, installation of gages to measure whether the promised flow arrived in the Sacramento, elimination of five dams, and modification of barriers with ladders and fish screens. Extensive data collection also occurred throughout that period. Project Team questions are summarized below:
    a. Q: Do you have any details on the number of functioning days that might impact the data on cumulative total fish caught in the screw traps?
        i. R: There is no way to calibrate the traps, because in flooded years, the bypass becomes a lake environment with very little velocity; in those years, few fish are caught until water recedes into the channel. Considerable debris also gets caught in the traps.
    b. Q: Would it be feasible to add the most recent data to the earlier data provided in the PowerPoint?
        i. R: Yes, but the last year of coded wire tagging was 2008. There is something going on with survival in the late spring; CDFW never saw returns from spring

tagging (March, April, and May). Returns were all from fish tagged in January, February, and March. The last few years, CDFW did acoustic tagging. CDFW took a pause in screw trapping for three years but is now implementing screw traps again. Eventually, they intend to publish the full data set. They tried to implement the same tagging approach on Deer and Mill Creeks, but it was very hard to maintain traps.

c. Q: It is important to understand how fish behavior changes in response to environmental conditions. The team is trying to understand the relationship between how often habitat inundates, for how long, and how much fish are growing, and the relationship between fish getting on and off the floodplain and length of inundation. It would also be helpful to know the speed of the fish in order to predict how long it would take them to move downstream to enhancement sites.
    i. R: CDFW could begin looking at their data to understand how broad the flooding was and whether it rose and ebbed or was one long inundation. CDFW will compile all data into one document and will provide an estimate on how long this compilation will take.
d. Q: Is there data available on adult migration speed and success and how that might relate to flow and temperature? Any data related to water depth and temperature that impacts migration past a certain point would be helpful.
    i. R: CDFW has tracked arrival timing and identified points that are causing migration delays; providing pulse flows has helped somewhat; however, they have never acoustically tagged adults to track them and assess their speed. Water temperature generally becomes an issue after April 15 when diversions begin; CDFW likely has data on water temperature and stress in May from when they have done rescues.
e. Q: If CDFW had unrestricted funds, what would you implement?
    i. R: Fix Weir 1 and address juvenile stranding in Tisdale Bypass by improving flow and implementing ongoing maintenance to ensure drainage is optimal. Managed floodplain designs need to be engineered to act like a natural floodplain and drain that way.
f. Q: Do you see value in generating food on fields and draining it off into the channel?
    i. R: Areas of Sutter Bypass provide a good natural rearing area; macroinvertebrates are very diverse on Sutter; that level of diversity is not present on artificial floodplains. With managed rice fields, farmers want fish off by mid-March in order to plant; in wetter years, fish would naturally remain on the floodplains until May or June.
    ii. R: More water for a longer time on the bypass is good. Habitats change under different flow conditions; different areas are good habitat under different flow conditions, but there is not a robust understanding of fish microhabitats. DWR has data showing that fish pick up on velocity cues when water is moving into channels; they appear happy to remain otherwise. The more

natural hydrology can be created, the better.

iii. R: The best steps landowners can take to benefit fish include reducing unscreened diversions that could be encountered by fish, removing levees that are not needed to create additional habitat, and providing flow or thermal refugia.

2. <u>What should the Lower Sutter Bypass Anadromous Fish Habitat Projects objectives be?</u> CDFW suggestions included:
    a. Less structure is better.
    b. Fish should be able to volitionally pass up and down stream.
    c. Design as closely as possible to mimic a natural riparian forest.
    d. Avoid negative impacts on Butte Creek populations.
    e. Provide access for juvenile salmon, including Feather River-origin fish.
    f. Ensure there is funding for ongoing monitoring to assess success.