Complete – Covered under the T&C 6b

Term and Conditions 6d

6. The Corps shall provide NMFS with annual reports starting one year after the date of this Opinion regarding Project compliance, monitoring, restoration, and research activities. The report shall also summarize annual implementation of reasonable and prudent measures and their implementing terms and conditions:

d. Ecosystem Research Actions:

i. An annual evaluation progress report, and a final report, shall be completed for each research action. Each final report shall clearly define research objectives, and report on research findings. Recommendations for additional research, or discussion of management implications, also shall be provided.

Action Plan: The Corps will provide a report on each evaluation action that details the item listed.

Schedule: The report will be provided in January each year.

The following is a listing of each of the Ecosystem Evaluation Action; details follow behind each of the specific tabs:

EEA 1: Addition of one-two transects in different habitat types similar to those being done for the NOAA Fisheries studies currently underway through AFEP.

EEA 2: Conduct study on cutthroat trout use and distribution in the Columbia River and estuary.

EEA 3: Conduct back-to-back hydrographic surveys of the estuary.

EEA 4: In conjunction with ongoing studies of juvenile salmonids habitat utilization in the lower Columbia River collect and analyze juvenile salmonids and their prey for concentration of chemical contaminants.

EEA 5: In conjunction with above contaminant study, assess sub-lethal effects of contaminants on salmonids (e.g. growth, disease resistant) on salmonids.

EEA 6: ETM Workshop.

Table 8-1: ESA Sec. 7(a)(1) Ecosystem Research Actions (ERA)

ERA Number	Indicator	Monitoring Task	Justification	Duration	Data Analysis	Management Decision
ERA-1	Tidal Marsh and Swamp Habitat, Shallow Water and Flats Habitat, Water Column Habitat	Add one or two additional transects in different habitat types similar to those being done for the NMFS studies currently under way with AFEP	Provide additional habitat and salmonid distribution information for the estuary. Useful in establishing inventory information for future monitoring or restoration.	Begin before construction and for 3 years after completion of the project.	Record value and use of different habitat types for juvenile salmonids and cutthroat trout.	Determine if task should continue and what funding source is appropriate.
ERA-2	Tidal Marsh and Swamp Habitat, Shallow Water and Flats Habitat, Water Column Habitat	Conduct study on cutthroat trout use and distribution in the Columbia River and estuary.	Little is known about the species use of this habitat. Research effort is intended to provide additional information regarding cutthroat use of this habitat.	Conduct studies for four years; two years prior to construction and two years during construction .	Record value and use of different habitat types by cutthroat trout.	Determine if task should continue and what funding source is appropriate.
ERA-3	Bathymetry, Shallow Water and Flats Habitat	Conduct bank-to-bank hydrographic surveys of the estuary.	Has not been done in 20 years and is needed to assess available habitat and restoration actions.	Once, prior to construction.	Bathymetry will be available for shallow water areas in the estuary.	None required.
ERA-4	Contaminants	In conjunction with ongoing studies of juvenile salmonids habitat utilization in the lower Columbia River collect and analyze juvenile salmonids and their prey for concentrations of chemical contaminants.	Provide additional data on contaminants in listed salmonids and their prey. Useful in establishing inventory information for future monitoring or restoration.	Begin before construction during and up to 3 years after construction, depending on the results.	Record concentrations of persistent contaminants (e.g., DDTs, PCBs, PAHs, dioxin-like compounds) in juvenile salmonids and prey.	Determine if task should continue and what funding source is appropriate.
ERA-5	Contaminants	In conjunction with above contaminant study, assess sublethal effects of contaminants (e.g., growth, disease resistant) on salmonids.	Provide additional data for established contaminants thresholds effect levels to ensure that guidelines are protective of salmonids; to better characterize performance of juvenile salmonids in the estuary.	Begin before construction during and up to 3 years after construction, depending on the results.	Record health status of juvenile salmonids collected above.	Determine if task should continue and what funding source is appropriate.
ERA-6	Salinity, turbidity, and phytoplankton	ETM Workshop	To further the knowledge of the ETM and the listed stocks.	Once	Not required	None required.

Any study done should fit into the overall research effort that is being conducted or proposed by LCREP, NMFS, BPA and the Corps. In this way it will not be a duplication of effort will provide results that fit into what should be an overall goal for research in the estuary.