Bay Delta Conservation Plan
Document Review Comment Form

Please use this form to document your comments to the_____. Please number your comments in the first column, indicate your agency affiliation in the second column, and reference the comment's location in the review document in the Section, Page, and Line (if provided) columns. Return completed comment forms to _____ by COB _____

To be of the greatest value to the document development process, please make your comments as specific as possible (e.g., rather than stating that more current information is available regarding a topic, provide the additional information [or indicate where it may be acquired]; rather than indicating that you disagree with a statement, indicate why you disagree with the statement and recommend alternative text for the statement). Do not enter information in the Resolution column.

Document: Appendix D_Toxins

Name: _____ **Affiliation:** ___NMFS____

Date: _____

No.	Agency	Page #	Section #	Line #	Comment	Disposition
	NMFS	D-18	D.5.1.2.3	14	I find this result strange given that thousands of acres of tidal marsh will be created and the increased inundation of Yolo. I didn't expect that no 'appreciable change" would be concluded though how to quantify the percentage of change is understandably difficult.	
	NMFS	D-20	D.5.2.1	17-19	Please cite source on data for C.amurensis.	
	NMFS	D-25	D.5.4.2.1	21-28	I don't think this is the proper way to analyze changes in ammonia concentration between EBC and PP. If river flow is reduced and Ammonia load is the same dilution will then be less effective and this is the change we need to analyze. Assuming the new NPDES limit will be met (1.8 mg/l) by upgrades in treatment plant in 2020 and then saying that PP changes in river flow will have to be decreased 18 fold to maintain current permit limit (33 mg/l) doesn't address what changes are going to	

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					occur in dilution flow.	
	NMFS	D-34 to D-37	Table D-7		The table indicates adverse impacts likely on most species in the Delta plan area compared to EBC. Often it appears that this is due to habitat restoration which is in the long run predicted to be beneficial for the species. I suggest concentrating on changes in concentration of toxins due to water operations since there is no future benefit in pollution of water ways and ways to mitigate through operational changes is warranted. It seems unlikely that much can be done or quantified regarding toxins in the ROA currently.	
	NMFS	D-10	D.3.1	31-33	The Sac Region WWTP outfall is within the area of proposed intakes. It appears that 2 or 3 of the intakes would actually be upstream of the outfall and therefore would substantially be reducing dilution flows. And these are the intakes that would be used most frequently under the PP.	
	NMFS	D-18	D.5.2.1	37	and other dissolved elements such as arsenic, cadmium, lead, chromium, boron, and mercury which can be found in drainage waters. Significantly high concentrations of these heavy metals can effect fish and plant life. Plants are especially sensitive to boron. The buildup of high concentrations of selenium and its bioconcentration has had severe impacts on waterfowl and fish. High levels of boron (specifically), if present in emergent and semi-emergent plant-life will effect fishes. I do not see any treatment of boron in the toxicity section.	
	NMFS	D-19	D.5.2.1	2	Is there a plan for monitoring the mobilization of Se?	
	NMFS	D-20	D.5.2.1	14	"Total load of selenium ... is dependent on the flow rate" this is overly appreciated. a more extensive background would include "Along the entire Coast Range, erosion attacks the southern marine mudstone and sandstone, Great Valley sequence, and Franciscan complex and delivers fine clay material and a mixture of dissolved elements (mercury, chrome, sodium, magnesium, boron, and selenium) to the Central Valley where they settle out in broad and relatively impermeable alkaline clay plains	

					(U. S. Bureau of Soils 1909, California State Mining Bureau 1918, Bryan 1923, Belitz 1988, Deverel and Gallanthine 1989, Peters 1991, Donnelly- :from BDCP, Steering Committee Working Draft p 2-24 11/18/2010" in part	
	NMFS	D-20	D.5.2.1	15	" in Suisun Bay" Where is green sturgeon sensitivity discussed, and the potential for Se to interfere with the reproductive process? such as "In the Sacramento-San Joaquin estuary, introduced invertebrate species are potential food sources for green sturgeon. In recent years, a major item in the white sturgeon diet has been the "overbite clam" Potamocorbula amurensis), which became extraordinarily abundant in Suisun Bay following its invasion in the 1980s. White sturgeon that feed on P. amurensis have elevated levels of selenium, which has the potential to interfere with reproduction function (P. Moyle, 2001).	
	NMFS	D-20	D.5.2.1	15	I would like to see the inclusion of text discussing the toxicity of bioaccumulated Se on fish, such as "Although there is considerable uncertainty regarding the effects of some of these toxics on fish, at least three mechanisms have been identified through which toxics could affect fish. First, direct exposure to toxics could have negative impacts on fish, especially to more vulnerable life stages such as eggs and larvae. Second, toxic substance-induced mortality of zooplankton, a source of food for nearly all fish species at one or more life stages, could limit food to fish species and result in reduced growth rates, reproductive output, and survival rates. Third, the bioaccumulation of toxics such as mercury and selenium by the overbite clam is well documented. Because some fish (e.g., sturgeon and splittail) and aquatic birds (e.g., surf scoter, American coot, and scaup) forage on the clam, their tissue can bioaccumulate these toxics, thus reducing growth, reproduction, and survival . . ." example :from ibid, same document as above	
	NMFS	D-21	D.5.2.2.1	18-19	if the water quality objective outlined . . . Is met" Since the Se is naturally occurring and water is limited, I do not	

					see an effective means of reaching this goal within the time and financial constraints of the plan. If there is justification or additional reason to expect this please add why and how here. What happens if the goals of the plan are not met?	
	NMFS	D-21	D.5.2.2.1	31	"will temper . . .increased San Joaquin inflow to the Delta" " with decreased dilution" I look forward to seeing the flow data and modeling results to support this statement.	
	NMFS	D-22	D.5.2.2.2	1	"but will taper off with time" Clarify the time scale invovled here. Long-term erosion of marine sediments will continue to contribute Se over-time.	
	NMFS	D-18	D.5.1.2.3	18-19	A model that does not account for the transformation to methylmercury seems like a poor model	
	NMFS	D-20	D.5.2.1	13-14	This statement assumes there is a linear relationship between flow upstream and loading of Se, which may not be true	
	NMFS	D-21	D.5.2.2.1	19	Please give recent and current Se loads in the SJ River	
	NMFS	D-21	D.5.2.2.1	29-32	This is the entire analysis? Assuming that decreased inputs will solve the problem? I certainly hope that Se inputs will decrease, but I assume that the easy part of meeting the targets has already been done, and meeting the final target will be progessively more difficult. I suggest an analysis that picks two or three potential future Se input levels, and analyzes how the change in proportion of SJ River water (its not “increased SJ inflow”) will impact Se concentrations in the Delta	
	NMFS	D-22	D.5.3.1	21-24	Isn’t brake pad residue a major source of copper contamination?	
	NMFS	D-24	D.5.4.1	16	How much does agriculture contribute to NH levels? There must be a very large quantity of fertilizer used each year in the Central Valley.	
	NMFS	D-25	D.5.4.1	Table D-5	Will the limit for Stockton stay at 5 mg/l or will it decrease in the future?	
	NMFS	D-25	D.5.4.2.1	18-28	This explanation is confusing. If there are strong concerns about the current level of NH coming from the Sac WWTP, then why assume that the 1.8 mg/l limit by	

					2020 will be compatible with reduced Sac River flows under the PP? (i.e., when the 1.8mg/l limit was calculated did they account for a 70% reduction in Sac River flows that can happen under the PP?) And what if the 1.8mg/l level is not met by 2020? Delays happen all the time.	
	NMFS	D-25	D.5.4.2.2	30	This statement needs some support. What about decreased inputs from fertilizer coming from Delta Ag? Do the restored wetlands impact NH? I don't know the answers to these questions, but they need to be discussed.	
	NMFS	D-32	D.5.8.3	13	I'm not sure you can say much about potential sublethal effects of these herbicides. These are usually poorly understood and rarely the focus of toxicity assays.	
	NMFS	D-39	D.6.2.1	3-5	Isn't it possible for mature pre-spawn adults to pick up contaminants that could be passed on to their eggs? Especially for sturgeon, which are benthic feeders and may reside in the Delta for extended periods.	
	NMFS	D-39	D.6.2.1	27-37	This argument is not convincing. If sturgeon are growing very quickly and living in the Delta, they are much more likely than salmon to accumulate methylmercury, especially if they are feeding on clams which can bioaccumulate toxins. "Growth dilution" makes no sense if your diet is contaminated.	
	NMFS	D-40	D.6.2.2	30-43	Your assumption thay Se will not reach Suisun Bay seems to be contradicted by your citation of Stewart (2004) which states that selenium concentrations are highest in Suisun Bay (or is it just in the splittail?) Either way, this requires explanation.	
	USFWS	D-8	D.2	19	Just noting that toxin effects on food web are in a different appendix	
	USFWS	D-10	D.3.1	24	Muni wastewater inputs also have strong influence on phosphorus and by extension nutrient ratios involving N and P	
	USFWS	D-10	D.3.1	30	This appendix was stated to not be evaluating toxin effects on	

					the food web; the statement in this sentence cites Weston (2010); this work focuses on invertebrate toxicity which seems out of place. This comment applies elsewhere as well. For instance, on pg D-24, lines 39-40.	
	USFWS	D-17	D.5.1.2.1	24-28	All Effects modeling requires assumptions and caveats. The PP may have only "decimal dust" level effects on MeHg dynamics in the estuary. This is possible (see attached MS Word file). If not, quantitative ballpark modeling is always possible and should be attempted.	
	USFWS	D-17	D.5.1.2.2	30-34	I'm truly just asking out of ignorance, but why does a wetland restoration project generate more MeHg than a farmed Delta island? The farm uses Delta water for irrigation, gets crops wet and then dries the crop returning the water back to the Delta. The answer might be photo-degredation rates???	
	USFWS	D-17,18		all	The two fish related papers on MeHg in the plan area are the unpublished one by Slotton in the fall 2000 IEP Newsletter and the recent one in TAFS by Henery et al. (2010). The lack of citation of these suggests less is known about fish and MeHg connections relevant to this project than what actually is known	
	USFWS	D-19	D.5.2.1	3	The Grassland watershed is not in the Delta (just a typo)	
	USFWS	D-19,20,21		all	This section provides a very selective review of Stewart et al. (2004); predators of C. amurensis bioaccumulate borderline problem levels of selenium. This includes sturgeon and splittail, which are BDCP covered species. The current selenium accumulation in these critters is near a threshold for reproductive impairment, so it seems pretty critical that the PP show that it is unlikely to push selenium accumulation	

					in sturgeon and splittail over that threshold. This can be done qualitatively if it is done very thoroughly and very carefully.	
	USFWS	D-21	D.5.2.2	10-12	This sentence keeps getting repeated: "However, as discussed previously, quantitative modeling cannot account for 11 all the variables determining mobilization and the bioavailability of selenium and other toxics in an 12 aquatic system, and should be considered in the context of this qualitative analysis." This sentence is true of any model and is thus not informative. Lines 29-32 could easily be translated into a quantitative loading analysis.	
	USFWS	D-25	D.5.4.2.1	25-28	This is logical, but insufficient for an EA.	
	USFWS	D-28	D.5.6.1	6-16	There are a couple instances of a typo in this paragraph. It refers to "organophosphates" when it should say "organochlorines". Ditto for lines 25-29.	
	USFWS	D-29	D.5.7.1	34-35	Changed units	
	USFWS	D-38	D.6.2	27-28	Statement is overly broad; the exposure to some toxins is highest during high water (inundation), while the exposure to others is highest at low water times (summer-fall ag return flows, Sac regional releases during low Sacto inflow, etc.)	
	USFWS			31-35	There is probably information for sturgeon available in the literature. Note also that Connon and colleagues have produced several recent papers with delta smelt dose-response information.	
	USFWS	D-39	D.6.2.1	3-11	The "egg" conceptual model for MeHg is not consistent with	

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					the limited published literature on the subject. Egg MeHg is driven by maternal uptake (via food) during egg development. See attached MS Word file.	
	USFWS			28-29	The sentence says sturgeon spend more time in the "preliminary proposal regions". I think the intended meaning must have been that they live the longest and occupy the estuary for much of that extended life? This is much more true for white sturgeon than green sturgeon.	
	USFWS			43	The statement that MeHg accumulation potential is low in Suisun Marsh is not consistent with results for silverside (Slotton 2000). See attached MS Word file.	
	USFWS	D-40		13-17	Flawed logic regarding trophic status and life span issues with sturgeon. Has their Hg body burden been empirically evaluated during sport fish evals?	
	USFWS			18-22	Flawed logic regarding susceptibility of fish feeding at low trophic levels to MeHg accumulation (Slotton 2000). See attached MS Word file.	