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UNITED STATES DISTRICT COURT

EASTERN DISTRICT OF CALIFORNIA

THE DELTA SMELT CASES, SAN LUIS & DELTA-MENDOTA WATER AUTHORITY, *et al.* v. SALAZAR, *et al.* (Case No. 1:09-cv-407)	1:09-cv-407 OWW GSA 1:09-cv-422 OWW GSA 1:09-cv-631 OWW GSA 1:09-cv-892 OWW GSA PARTIALLY CONSOLIDATED WITH: 1:09-cv-480 OWW GSA
STATE WATER CONTRACTORS v. SALAZAR, *et al.* (Case No. 1:09-cv-422)	**DECLARATION OF DR. RICHARD B. DERISO IN SUPPORT OF METROPOLITAN'S MOTION TO ALLOW EXPERT TESTIMONY**
COALITION FOR A SUSTAINABLE DELTA, *et al.* v. UNITED STATES FISH AND WILDLIFE SERVICE, *et al.* (Case No. 1:09-cv-480)	
METROPOLITAN WATER DISTRICT v. UNITED STATES FISH AND WILDLIFE SERVICE, *et al.* (Case No. 1:09-cv-631)	Date: September 28, 2009 Time: 10:00 a.m. Ctrm: 3 Judge: Hon. Oliver W. Wanger
STEWART & JASPER ORCHARDS, *et al.* v. UNITED STATES FISH AND WILDLIFE SERVICE, *et al.* (Case No. 1:09-cv-892)	

I, Dr. Richard B. Deriso, declare:

1. My declaration is set forth in the following manner:

I. Background and Experience

2. I am the Chief Scientist of the Tuna-Billfish Program at the Inter-American Tropical Tuna Commission, and I have held this position since 1988. *See* Summary Professional Vitae, attached hereto as Exhibit A. I have a Ph.D. in Biomathematics (Quantitative Ecology) from the University of Washington, a Master's of Science in Mathematics from the University of Florida, and a Bachelor's of Science in Industrial Engineering from Auburn University. I have been teaching courses in fish population dynamics, quantitative ecology, and related areas for

over twenty years. I was an Associate Adjunct Professor at the Scripps Institution of Oceanography, University of California, San Diego, from 1990-2006 and an Affiliate Associate Professor of Fisheries at the University of Washington from 1987 – 2006. I have also taught several graduate courses, including Theoretical Models of Exploited Animal Populations at the University of Washington, Decision Analysis for Exploited Populations at the University of Washington, and Quantitative Theory of Populations and Communities at Scripps Institution of Oceanography. I have additional professional experience through a current membership on the Scientific and Statistical Committee of the Western Pacific Regional Fisheries Management Council and a past membership on the Ocean Studies Board which governs the U.S. National Research Council, where I served as co-chairman of the Committee on Fish Stock Assessment Methods. I was also formerly a Population Dynamicist for the International Pacific Halibut Commission. I have been a consultant to several agencies and institutions, both public and private.

3. I have authored or co-authored over 50 publications and reports, including Deriso, R., Maunder, M., and Pearson, W, *Incorporating covariates into fisheries stock assessment models with application to Pacific herring*, Ecol. App. 18(5): 1270-1286 (2008); Deriso, R., Maunder, M., and Skalski, J., *Variance estimation in integrated assessment models and its importance for hypothesis testing*, Can. J. Fish. Aquat. Sci. 64: 187-197 (2007); Deriso, R., *Bayesian analysis of stock survival and recovery of spring and summer chinook of the Snake River basin*, pages 137-56 in J. Berskson, et al. (editors), *Incorporating Uncertainty into Fishery Models*, American Fisheries Society, Symposium 27, Bethesda, MD (2002); and Quinn, T. and Deriso, R., *Quantitative Fish Dynamics*, Oxford University Press (1999). *See* List of Publications, attached hereto as Exhibit B.

4. I also have extensive experience evaluating the effects of entrainment on fish populations across the country. For example, I have consulted on the environmental review of once through cooling systems of nuclear power plants on the Hudson and Delaware Rivers, focusing on impingement and entrainment of fish, with a particular emphasis on their impacts to population. This analysis included modeling, and reviewing models of, the impacts of

entrainment and impingement on fish populations. I am also a member of the Estuary Enhancement Program Advisory Committee that reviews the mitigation measures for losses of fish through impingement and entrainment at the Salem Nuclear Power Plant on the Delaware River in New Jersey. With respect to the Columbia and Snake Rivers, I have evaluated both the mortality and related impacts of hydroelectric dam operations on Chinook salmon populations.

5. I have personal knowledge of the facts set forth in this Declaration and would competently testify to them if called as a witness.

II. The 2008 Delta Smelt Biological Opinion Is Based Upon Complicated Statistical Analyses and the Use of Stock Recruitment Models That Require Expertise and Training to Understand and Evaluate

6. I have reviewed the 2008 Delta Smelt Biological Opinion ("BiOp") for the Operations Criteria and Plan for the State Water Project and the Central Valley Project, together with portions of the administrative record and papers and studies upon which the BiOp relies. The conclusions set forth in the BiOp are based on complex statistical relationships between a number of factors affecting the delta smelt population. For example, the United States Fish and Wildlife Service conducted a statistical analysis to evaluate the relationship between OMR flows and salvage—with this analysis used to justify stringent reasonable and prudent alternatives imposed on the projects. Understanding the science behind, and proper use of, the formulas and models employed in the BiOp is essential to evaluating whether the resultant conclusions drawn by the United States Fish and Wildlife Service ("FWS") are scientifically sound or whether they are arbitrary and capricious.

7. The BiOp also employed the use of stock recruitment models. A stock recruitment model is a model that quantitatively characterizes the relationship between the parental stock and the progeny it produces—in this case the progeny is measured at the juvenile life stage at the Summer Townet Survey and the parental stock is measured at the Fall Midwater Trawl Survey. For example, the BiOp has one analysis purporting to demonstrate a relationship between X2 and adult abundance (as measured in the Fall) and the effect on juveniles produced in the following year.

8. There are many different stock recruitment models. In selecting a model, one necessary criterion is that the model must be biologically plausible. In my experience, I would expect a biological opinion to rely upon traditional population dynamic models. In the case of stock recruitment, those models are described in Chapter 3 of my book *Quantitative Fish Dynamics*. Two such models are *Beverton-Holt* and *Ricker* models. These models are typically used because they are well-accepted by the scientific peer community. For measuring population-level effects, multiplicative or rate-based models such as these should be used; additive models should not.

9. I am able to understand and explain the BiOp and draw conclusions from its analyses using my background and expertise in quantitative fish dynamics and population modeling. I have experience with the types of models a reasonable and qualified scientist would use to evaluate the effects of the projects on the delta smelt. I am also knowledgeable of the limitations of these models and the contexts in which they are appropriately used. I understand that the population response of the delta smelt to a given event is affected by its life cycle, behavioral characteristics, and other biological factors, and that these factors must be accounted for in any statistical analysis of the species.

10. I focused my preliminary review on the statistical analyses upon which the RPAs are based, and specifically Actions 1, 2, 3, and 4 contained in Attachment B to the BiOp. I also reviewed the incidental take analysis in Attachment C to the BiOp.

11. In my review of the BiOp and relevant portions of the administrative record, including the studies upon which the BiOp's conclusions are based, I discovered several basic flaws in FWS's methodology and reasoning which cannot be understood or appreciated without explanation by an expert with qualifications similar to mine. I was able to confirm these flaws by interpreting the limited graphs and tables provided in the BiOp, reviewing similar information and studies in the administrative record relied upon by the BiOp, and deciphering the models that FWS used.

12. I have also compared FWS's models against well-accepted models employed by the scientific community, and particularly those models that are used as the standard in fish

population modeling. My review and comparison revealed that the BiOp does not use the well-accepted models in more than one place, but rather relies on models that are not biologically sound and lead to erroneous results.

13. I evaluated the same data presented in the BiOp and input it into the well-accepted models to determine whether the end result would be different. The results are fundamentally different from the results reached in the BiOp.

14. Based on the material I reviewed, the fundamental flaws I have identified undermine the jeopardy and adverse modification conclusions in the BiOp and reveal that FWS had no scientific basis for imposing the reasonable and prudent alternatives ("RPAs") adopted, which are not supported by the best science available.

15. Several of these flaws are listed below as examples of the many areas where FWS failed to utilize the best scientific data available in its preparation of the BiOp and RPAs. These examples demonstrate why experts are necessary to clarify and explain the BiOp in order for it to be understood and evaluated by the Court. Additional aspects of the BiOp, which I have not yet reviewed, fall within my area of expertise and I expect would require explanation to assist judicial review.

III. When Expertise in Fish Population Dynamics Is Utilized and Applied, a Number of Errors Are Evident in the Biological Opinion

A. Expert Review Has Already Revealed That FWS's Analysis of the Relationship Between Old and Middle River Flows and Adult Salvage Is Flawed

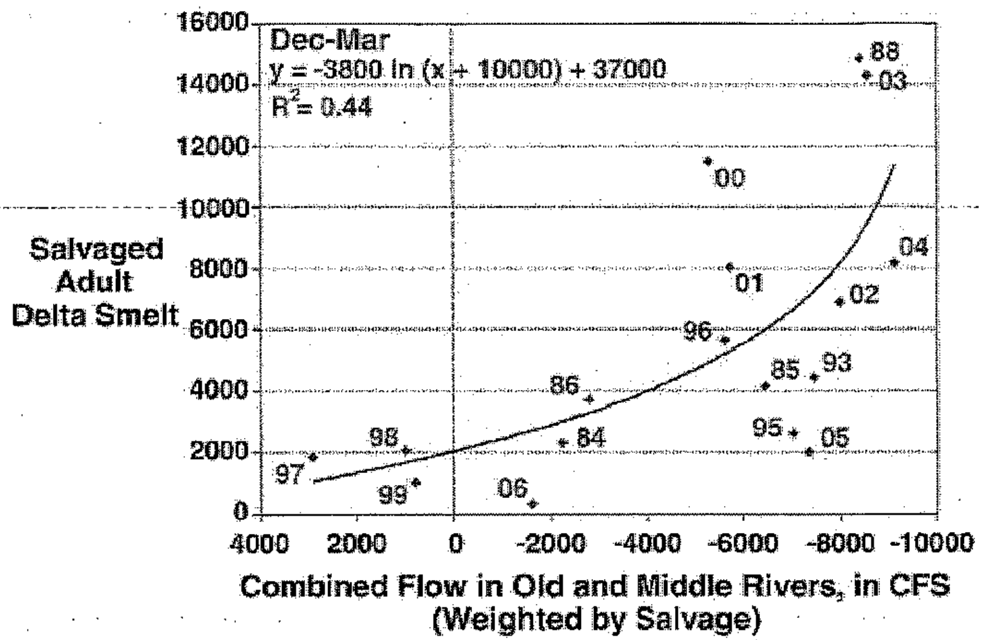
16. The BiOp's analysis of the effects of the projects on adult delta smelt and its conclusion that winter flow restrictions are necessary are based on a statistical model of the alleged relationship between Old and Middle River ("OMR") flows and adult salvage. The modeling and analysis are contained in the Effects of the Proposed Action section of the BiOp, pages 202-279 (Administrative Record "AR" at 000217-000294), and RPA Actions 1 and 2 in Attachment B to the BiOp, pages 329-356 (AR at 000344-000371). Actions 1 and 2 rely on Figure B-13 on page 348 (AR at 000363) and on various studies, including a 2008 article by Wim Kimmerer entitled *Losses of Sacramento River Chinook Salmon and Delta Smelt to Entrainment*

in Water Diversions in the Sacramento-San Joaquin Delta ("Kimmerer 2008"), attached hereto as Exhibit C, and the work of Pete Smith, which is cited by Kimmerer.

17. Extensive experience with fish population modeling is necessary to interpret the complicated statistics behind FWS's analysis of entrainment effects. I have been teaching in the area of fisheries population dynamics for twenty years and have published extensively on population modeling, concepts which are not understandable to a layperson. Expert review is necessary to explain the modeling components and input values and to explain how a reasonable and qualified scientist would apply them to evaluate fish population dynamics.

1. Improper Use of Total Adult Salvage Numbers Instead of Cumulative Salvage Index

18. FWS uses total adult salvage numbers to demonstrate an alleged relationship between OMR flows and adult salvage. *See* BiOp at 163-65; 347-50 (AR at 000178-000180; 000362-000365). The alleged relationship is based on a graph in Figure B-13 which compares the number of adults salvaged each year to the corresponding OMR flow rate for that year. BiOp at 164, 348 (AR at 000179; 000363).



Note: Data shown are for the period 1984-2007, excluding years 1987, 1989-92, 1994, and 2007 that had low (<12ntu) average water turbidity during Jan-Feb at Clifton Court Forebay.

Figure B-13. OMR-Salvage relationship for adult delta smelt. (source, P. Smith). Data from this figure were the raw data used in the piecewise polynomial regression analysis.

19. FWS relied on this graph to conclude that OMR flows correlate to total salvage numbers. In essence, this means that as negative OMR flows increase, more adults are salvaged.

20. This conclusion by FWS is scientifically flawed because raw salvage numbers do not have a directly proportional effect on population, nor do they take into account the overall size of the population as determined by representative survey data. Nonetheless, FWS relied on Figure B-13 and Figure B-14 (which appear to share the same data) to set OMR flow levels in RPA Actions 1 and 2. In other words, FWS set OMR flow levels in Actions 1 and 2 without determining population-level effects.

21. The scientifically appropriate approach would have been for FWS to use the cumulative salvage index to evaluate whether a relationship exists between OMR flows and adult salvage. FWS had already developed that index for other purposes. *See* BiOp at 386 (AR at 000401) (using the cumulative salvage index in another context, to calculate the incidental take). The cumulative salvage index represents an index of the salvage rate, taking into account data on the size of the population. Since total population data does not exist, the cumulative salvage

index uses a survey index which gives a relative increase or decrease in annual survey numbers to monitor population levels. Use of the cumulative salvage index to evaluate the effects of OMR flows is superior to using the raw salvage numbers themselves (as used in Figure B-13), for the following reasons:

a. The total number of adults salvaged does not indicate population-level effects. *See* BiOp at 338 (AR at 000353) ("the total number salvaged at the facilities does not necessarily indicate a negative impact upon the overall delta smelt population"). Stated differently, to make sense of total adult salvage numbers, total adult abundance must be taken into account. For example, a salvage of 100 adults has vastly different significance depending on whether the total population is 200 or 50,000.

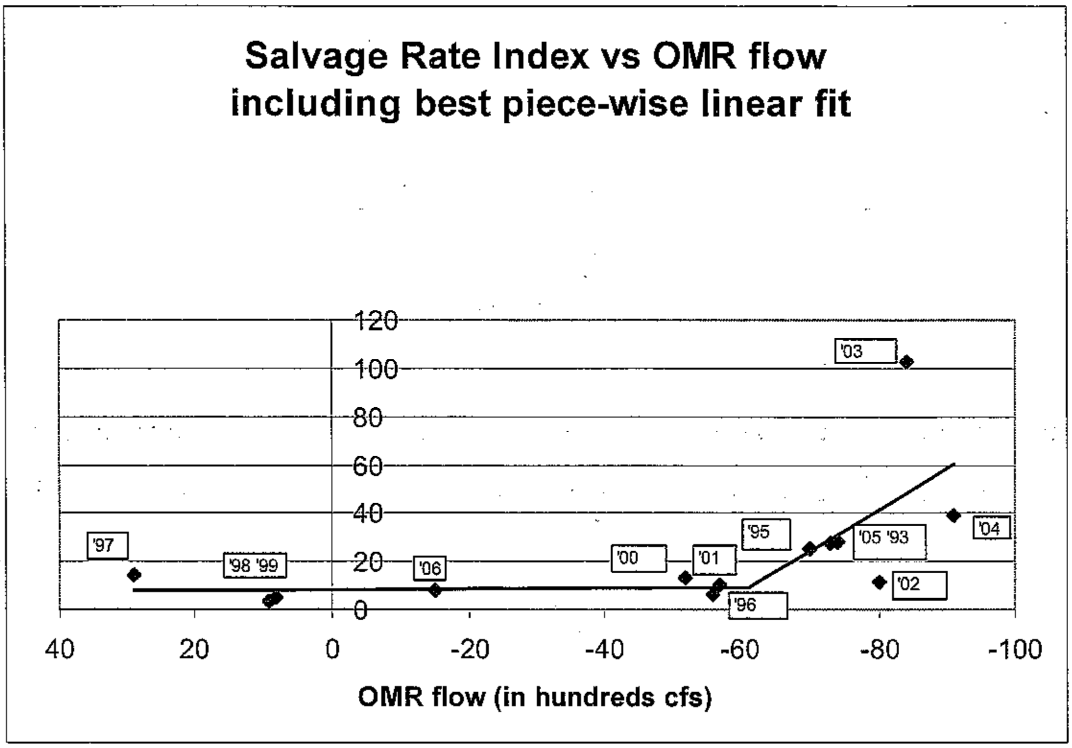
b. In contrast, the cumulative salvage index is an index of the *proportion* of adults salvaged from the total population, using the Fall Midwater Trawl Survey ("FMWT") to relate salvage to population levels. The cumulative salvage index is equal to the number salvaged divided by the prior year FMWT index. *See* BiOp at 338 (AR at 000353).

c. Use of the cumulative salvage index, rather than total salvage numbers, was recommended by the Peer Review. *See Independent Peer Review of USFWS's Draft Effects Analysis for the Operations Criteria and Plan's Biological Opinion, 2008* at 6 (AR at 008818) ("The Panel suggests that the use of predicted salvage of adult smelt should be normalized for population size. . . . Expressing salvage as a normalized index may help remove some of the confounding of the temporal trends during the baseline period.").

2. Use of the Cumulative Salvage Index Shows That There Is No Statistically Significant Relationship Between OMR Flows and Adult Salvage for Flows Less Negative Than -6100 Cubic Feet per Second at the Very Least

22. In reviewing FWS's methods, I plotted a graph of the relationship between the cumulative salvage index (salvage rate) and the OMR flows for each year that was analyzed in

the BiOp. In developing this graph, I used the cumulative salvage index data provided in the BiOp. *See, e.g.*, BiOp at 386 (AR at 000401). Because OMR flow rates are not listed anywhere in the BiOp (an omission that was surprising to me), I visually estimated a magnified version of the OMR flow curve in Figure B-13 and interpolated the data points for each year.



The Cumulative Salvage Index (Table B-2 & C-1) and corresponding Dec-Mar salvage weighted OMR (Figure B-13); note the OMR estimates were visually estimated from Figure B-13. Years span 1993-2006 but exclude 1994 because that was also excluded in Figure B-13. A piece-wise linear model is also shown whose coefficients were obtained by the statistical procedure of maximum likelihood estimation.

23. The graph of salvage rate versus OMR flow shows that salvage rate remains flat as OMR flows increase until OMR flows reach -6100 to -7000 cubic feet per second ("cfs"). At -7000 cfs, salvage rate begins to increase as negative OMR flows increase. The graph demonstrates that OMR flows do not correlate to the salvage rate at flows less negative than -6100 cfs at the very least. Based on the data available, and using the appropriate analysis, there is no scientific basis for FWS's imposition of OMR flow restrictions at flows less negative than -6100 cfs (and potentially -7000 cfs).

24. If and when FWS provides the underlying data for its statistical analysis on OMR flows and salvage, I would be able to perform this analysis again in short order.

3. The BiOp Does Not Contain Sufficient Data for Peer Review

25. My initial review of the BiOp and the administrative record reveals that FWS has not provided all of the underlying data that FWS relied on in performing its work in the BiOp, nor was I able to find it in the administrative record. In my experience, a full scientific analysis is not possible without making the underlying data available so that the work may be checked and evaluated. This omission hinders the ability to conduct a standard peer review of the FWS analysis without estimating data point values from the graphs or searching for data in other sections. FWS's failure to include the data underlying its basic analyses and determinations is, in my opinion, an inexplicable defect given the conclusions FWS reaches. The BiOp should include sufficient data for a qualified scientist to conduct a thorough review of FWS's conclusions.

26. In light of the omitted data from the BiOp, I undertook to generate a list of data that would permit me to complete a more thorough review of FWS's conclusions. Attached hereto as Exhibit D is the list that I compiled. I would expect that FWS could produce this data, given the analyses performed and graphs generated by FWS in the BiOp.

B. The Model Used in FWS's Analysis to Compare the Effect of Fall X2 on Population Survival Is Biologically Implausible and Potentially Misleading – It Is Simply Inappropriate for Fish Population Dynamics Modeling

27. FWS used statistical modeling to demonstrate an alleged relationship between Fall X2 and delta smelt abundance. The modeling and analysis are contained in the Effects of the Proposed Action section of the BiOp, pages 233-238 and 265-274 (AR at 000248-000253 and 000280-000289), and in RPA Action 4 in Attachment B to the BiOp, pages 369-376 (AR at 000384-000391). FWS relied on various studies, particularly the work of Feyrer et al. in a 2007 article, *Multidecadal trends for three declining fish species: habitat patterns and mechanisms in the San Francisco Estuary, California, USA*, and a draft 2008 manuscript, *Modeling the Effects of Water Management Actions on Suitable Habitat and Abundance of a Critically Imperiled Estuarine Fish (Delta Smelt* Hypomesus transpacificus), attached hereto as Exhibits E and F; a

2005 article by Bennett, *Critical assessment of the delta smelt population in the San Francisco Estuary, California*; a 2008 report by Baxter et al., *Pelagic organism decline progress report: 2007 synthesis of results*; and a 2008 article by Nobriga et al., *Long-term trends in summertime habitat suitability for delta smelt,* Hypomesus transpacificus.

28. The complex modeling and analysis in the BiOp, as exemplified in Feyrer's work, cannot be interpreted without a background in statistics and applied math. I have a Ph.D in Biomathematics (Quantitative Ecology) and a Master's Degree in Mathematics, and I have extensive experience in this field. Expert review of FWS's work is necessary to explain the underlying methodology and to clarify the technical concepts involved.

1. FWS Used a Linear Additive Model

29. FWS used a linear additive model to demonstrate an alleged relationship between Fall X2 and delta smelt abundance. The model finds that juvenile abundance, as measured by the Summer Townet Survey ("TNS"), is equal to the sum of a constant number plus the previous year's FMWT index, less X2. *See* BiOp at 268 (AR at 000283) (Figure E-22). Essentially, this calculation finds that A = B + C - D.

a. FWS followed the linear additive model developed by Feyrer et al. in a draft 2008 manuscript, which claims that Fall X2 has a population-level effect. This model does not represent the best science available, and in fact runs counter to well-accepted, basic modeling principles for this type of calculation. When analyzing the effect of Fall X2, FWS also cites to a 2005 article by Bennett. However, Bennett applies a well-established stock-recruit model, namely, the Beverton-Holt model. *See* BiOp at 236 (AR at 000251).

b. The linear additive model produces the result that zero adults in one year could still yield some young in the following year, a result that is biologically implausible. Using the simple translation A (juveniles measured in TNS) = B (constant) + C (adults measured in FMWT) – D (Fall X2), one can see that, if C were set at zero (no adult spawners), B – D could still produce a positive number for A (juveniles). This model thus has the nonsensical property of generating juveniles from zero adults.

c. A linear additive model also treats the environmental factor X2 as an additive factor, which has the implausible property of reducing the absolute numbers of juveniles by the same quantity for a given value of X2 irrespective of the total population.

30. For reasons such as these, a linear additive model is inappropriate for population dynamics modeling, where certain results are biologically impossible.

2. FWS Should Have Used a Multiplicative Stock-Recruit Model

31. In my review of the BiOp, I would not expect a linear additive model to be used to conduct the analysis that FWS was performing. It is well established that multiplicative stock-recruit models better reflect actual biological realities when modeling fish populations. One such very well known multiplicative stock-recruit model is the Ricker model, which any qualified scientist in this field would 1) be familiar with and 2) have no difficulty using to perform the analysis that FWS did.

a. Any recognized stock-recruit model, such as the Ricker model or the Beverton-Holt model, is not a linear additive model.

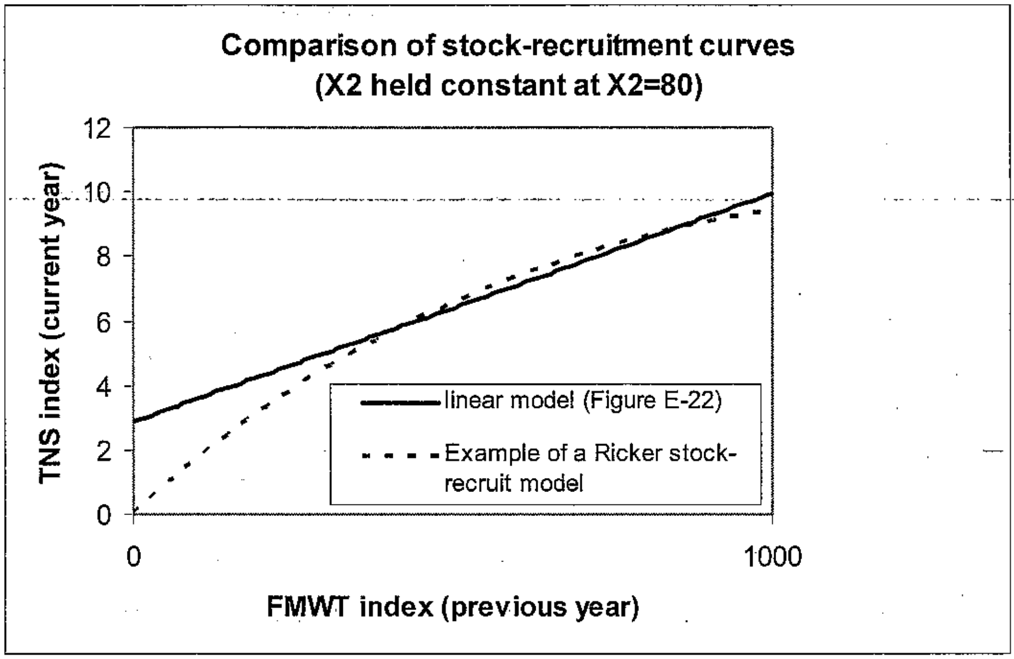
b. A multiplicative stock-recruit model produces the biologically appropriate result that zero adults yields zero young. A multiplicative model, as opposed to an additive model, yields a sensible result: multiplying any number by zero will always equal zero. Thus, regardless of the presence of other factors, if there are zero adult spawners, there will be zero juveniles the following year. It is in this way that the model reflects reality.

c. A multiplicative model, as opposed to an additive model, yields the sensible result that varying an environmental factor such as X2 will elicit a proportional response in population abundance. In contrast, the linear additive model produces an absolute response irrespective of the size of the population.

d. The BiOp itself questions the use of a linear additive model to evaluate the effect of Fall X2, stating that "some type of transformation of the data would help to define a better fitting model," but declines to correct the situation (such as through the use of a multiplicative model) without further explanation. BiOp at 236 (AR at 000251). Any scientist with experience in modeling would have no difficulty applying a multiplicative model, so the failure to do so is unjustified.

e. The Peer Review also criticized the linear additive model, finding that "[t]he [Effects Analysis] points out that the residuals from this analysis are not normally distributed and that some transformation might be required. We suspect that a few of the data points may have high influence on the outcome. These results together suggest that the model may be inappropriate for the data being used." *Independent Peer Review of USFWS's Draft Effects Analysis for the Operations Criteria and Plan's Biological Opinion, 2008* at 7 (AR at 008819).

32. A graphical depiction of the difference between a multiplicative model such as the Ricker model and a linear additive model is helpful. During my review of FWS' analysis, I plotted a stock-recruit curve of the relationship between FMWT (previous year) and TNS (current year) using a standard Ricker stock-recruit model. A visual comparison of FWS's linear model against the Ricker model is shown below. As shown on the comparison, when FMWT is set at zero in the linear model that FWS used, TNS is above zero. In contrast, when FMWT is set at zero in the standard Ricker model, TNS is also zero.



33. In order to evaluate whether there is a relationship between Fall X2 and abundance, I used the publicly available FMWT and TNS data in a standard Ricker stock-recruit model.[1] I then visually estimated the Fall X2 values from Figure E-24 on page 270 of the BiOp (AR at 000285) (again, I was hindered by the BiOp's failure to provide the actual data). After employing the well-established model, it was readily evident that there is no statistically significant relationship between Fall X2 and abundance. The contrary conclusion that FWS reached is due to their unjustifiable use of a biologically implausible linear additive model.

C. FWS's Incidental Take Analysis Is Improperly Influenced by a Data Point That Even FWS Rejected for Other Purposes

34. FWS's incidental take analysis can be found in Attachment C to the BiOp, pages 382-396 (AR at 000397-000411). In developing the incidental take limit for adult entrainment, FWS relied on a series of statistical analyses and calculations in the BiOp and in Kimmerer 2008. Expert interpretation of these analyses is necessary to explain how FWS developed the take limit and how it misused the data such that the outcome was materially affected.

[1] FMWT data is available at: http://www.delta.dfg.ca.gov/data/mwt/charts.asp. TNS data is available at: http://www.delta.dfg.ca.gov/data/projects/?ProjectID=TOWNET.

35. The incidental take limit is set at 7.25 times the prior year's Fall Midwater Trawl Index of adult abundance. BiOp at 386 (AR at 000401). The 7.25 figure represents the average salvage rate from only three years—2006, 2007, and 2008. *See* BiOp at 385-86 (AR at 000400-000401). The BiOp uses the average salvage rate for these three years as a predictor of take levels during each year that the RPAs will be in effect. Although salvage data is analyzed dating back to 1993, the BiOp claims that "these years [2006 through 2008] within the historic dataset best approximate expected salvage under the RPA Component 1," which restricts OMR flows. *Id.*

36. The BiOp lists the annual salvage numbers and salvage rates for the years 1993-2008, and shows that the salvage in 2007 was extremely low compared to the other years and to 2006 and 2008 in particular. *See* BiOp at 386 (AR at 000401) (Table C-1). The cumulative salvage index is just 0.88, compared to 8.3 for 2006 and 12.6 for 2008. *Id.*

37. In my review, I searched for additional information regarding the conditions that might have contributed to these salvage levels. In another section of the BiOp, I discovered that FWS itself had considered the salvage level in 2007 as ***unusable*** for purposes of analyzing salvage and OMR flows due to that year's low average water turbidity. *See* BiOp at 348 (AR at 000363) (Figure B-13, Note). The low turbidity explains why salvage in 2007 was extremely low, as turbidity is a strong indicator of presence or absence of delta smelt near the project facilities. Lower turbidity means fewer fish will be present and, accordingly, fewer fish are capable of being entrained. Thus, FWS recognized that the unusual conditions in 2007 made it an unrepresentative year that would skew its analysis. For FWS to then go ahead and use that salvage level in the incidental take equation is scientifically unjustified.

38. Without the year 2007 factored into the equation, the take coefficient increases from 7.25 to 10.45, which lies within the range of historical estimates on the figure shown on page 9 herein for flows less negative than -7000 cfs. This figure represents the average of the salvage indices in 2006 and 2008, and would significantly increase the permissible take level. FWS's calculation should be corrected to remove the outlier year of 2007.

39. My review of the BiOp is not complete. With further review, I may change my opinions or testify on other aspects of the BiOp.

I declare under penalty of perjury under the laws of the State of California and the United States that the foregoing is true and correct and that this declaration was executed on July 30, 2009 at San Francisco, California.

DR. RICHARD B. DERISO