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To:	Rowan Gould, Acting Director Correspondence Control Unit ATTN: Information quality Correction Request Processing US Fish and Wildlife Service 1849 C Street, N.W., MS: 3238-MIB Washington, DC 20240-0001	**From:**	**Brenda W. Davis**
Fax:	1-202-208-6817	**Pages:**	125/w Cover
Phone:	1-202-208-4545	**Date:**	April 1, 2009

Re: **APPEAL OF THE FAMILY FARM ALLIANCE PURSUANT TO THE INFORMATION QUALITY ACT, SECTION 515 OF THE TREASURY AND GENERAL GOVERNMENT APPROPRIATIONS ACT FOR FISCAL YEAR 2001(Pub. L. No. 106-554; H.R. 5658)**

☐ **Urgent** ☐ **For Review** ☐ **Please Comment** ☐ **Please Reply** ☐ **Please Recycle**

Family Farm ALLIANCE℠ P.O. Box 216 Klamath Falls, OR 97601 www.familyfarmalliance.org

VIA FACSIMILE AND CERTIFIED MAIL April 1, 2009

Rowan Gould, Acting Director
Correspondence Control Unit
ATTN: Information quality Correction Request Processing
U.S. Fish and Wildlife Service
1849 C Street, N.W., Mailstop 3238-MIB
Washington, DC 20240-0001

RE: **Information Quality Act Appeal** to U.S. Fish and Wildlife Service for Dissemination of Information on the Draft Effects Analysis of the Biological Opinion on the Continued Long-Term Operations of the Central Valley Project (CVP) and the State Water Project (SWP)

Dear Mr. Gould:

Please find enclosed the Alliance's Appeal of the March 12, 2009 letter to me from Ralph Morgenweck, Senior Science Advisor, U.S. Fish and Wildlife Service, denying the Alliance's request for correction of information in the above captioned matter. For the reasons detailed in the Appeal, we respectfully request the corrections be made and the challenged information be withdrawn from the public domain until such corrections are made. Alliance members will suffer irreparable harm if the request for correction remains unresolved.

We look forward to your prompt response.

Sincerely,

Dan Keppen
Executive Director

cc: George Radanovich
Jim Costa
Devin Nunes
Dennis Cardoza
Ken Calvert
Kevin McCarthy
Dianne Feinstein
Gary Sawyers
Brenda W. Davis

Before the U.S. Department of the Interior

U. S. Fish and Wildlife Service

Washington, D.C.

FAMILY FARM ALLIANCE April 1, 2009

v.

U.S. DEP'T OF THE INTERIOR

Information Quality Act Appeal to U.S. Fish and Wildlife Service for Dissemination of Information on the Draft Effects Analysis of the Biological Opinion on the Continued Long-Term Operations of the Central Valley Project (CVP) and the State Water Project (SWP)

APPEAL OF THE FAMILY FARM ALLIANCE PURSUANT TO THE INFORMATION QUALITY ACT, SECTION 515 OF THE TREASURY AND GENERAL GOVERNMENT APPROPRIATIONS ACT FOR FISCAL YEAR 2001(Pub. L. No. 106-554; H.R. 5658)

To: **Correspondence Control Unit**
Attention: **Information Quality Correction Request Processing, USFWS, 1849 C Street, N.W., Mailstop 3238-MIB, Washington, D.C. 20240-0001**

I. Introduction

This **Appeal** of the Request for Correction of Information (Request)[1] is hereby submitted under the Information Quality Act (IQA)[2] Guidelines issued by the United States Department of the Interior (DOI)[3] and the U.S. Fish and Wildlife Service (FWS)[4], and the Office of Management and Budget (OMB)[5], as well as the Final Information Quality Bulletin for Peer Review (Final

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[1] See Appendices A through C for the original Request for Correction filed by the Alliance.

[2] Section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub. L. No. 106-554; H.R. 5658) provides in full the following:

(a) IN GENERAL.—The Director of the Office of Management and Budget shall, by not later than September 20, 2001, and with public and Federal agency involvement issue guidelines under sections 3504(d)(1) and 3516 of title 44, United States Code, that provide policy and procedural guidance to Federal agencies for ensuring and maximizing the quality, objectivity, utility, and integrity of information (including statistical information) disseminated by Federal agencies in fulfillment of the purposes and provisions of chapter 35 of title 44, United States Code, commonly referred to as the Paperwork Reduction Act.

(b) CONTENT OF GUIDELINES.—The guidelines under subsection (a) shall (1) apply to the sharing by Federal agencies of, and access to, information disseminated by Federal agencies; and (2) require that each Federal agency to which the Guidelines apply (A) issue guidelines ensuring and maximizing the quality, objectivity, utility, and integrity of information (including statistical information) disseminated by the agency by not later than 1 year after the date of issuance of the guidelines under subsection (a); (B) establish administrative mechanisms allowing affected persons to seek and obtain correction of information maintained and disseminated by the agency that does not comply with the guidelines issued under subsection (a); and (C) report periodically to the Director (i) the number and nature of complaints received by the agency regarding the accuracy of information disseminated by the agency; and (ii) how such complaints were handled.

[3] 67 Fed. Reg. 36642(May 24, 2002).

[4] *Available at* www.fws.gov/informationquality.

[5] Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by Federal Agencies, 67 Fed. Reg. 8452(republished Feb. 22, 2002).

Bulletin) issued by OMB[6]. The OMB Guidelines and Final Bulletin provide the blueprint for the agencies subject to the IQA mandates, and these agencies, including the FWS, have adopted administrative measures that are primarily procedural in nature, but incorporate OMB's substantive requirements as well. For purposes of this Appeal, we refer collectively to DOI's department wide Guidelines, OMB's Guidelines and Final Bulletin and FWS Guidelines as FWS IQA Guidelines since they are all applicable to this matter.

The Family Farm Alliance (Alliance) is an affected organization and our members are affected persons within the meaning of the FWS IQA Guidelines. We are a coalition of water agencies, water users and affiliated businesses who depend upon and work to ensure the availability of reliable, affordable irrigation water supplies to farmers and ranchers in seventeen Western states, including water provided by and through the Sacramento and San Joaquin Rivers and the San Francisco Bay/Delta area in the State of California (herein referred to as the Bay-Delta or the Delta). The Alliance is a non-profit organization that seeks to facilitate the delivery of accurate and timely information to Congress, regulatory agencies and our members on issues that impact Western irrigators.

This Appeal, including this cover document and all Appendices, which are hereby incorporated by reference, is filed in response to a letter dated March 12, 2009 from Ralph Morgenweck, the Senior Science Advisor, to Dan Keppen, Executive Director of the Family Farm Alliance (FWS Letter). We find the FWS Letter to be unresponsive and dismissive of our myriad ongoing concerns with the flaws in the above entitled Biological Opinion; flaws which have not been corrected in the December 15, 2008 Final Biological Opinion because, with respect to this Appeal, it is identical in every material way to the draft document disseminated on December 14, 2008 (the 2008 Biological Opinion).

II. Appeal of General Statements

As we stated in our original Request, the 2008 Biological Opinion is a highly influential scientific assessment. The ESA provides a standard for the information used in that assessment, and the IQA along with the OMB Guidelines and Final Bulletin adopted by the FWS inform that standard by setting the bar for what constitutes the best available scientific data and how to obtain it. The FWS's failure to comply with the statutory standard for the quality of information used in the 2008 Biological Opinion constitutes a failure to comply with the most fundamental requirements of the ESA and the IQA and must be corrected.

The FWS Letter incorrectly asserts, "Any allegations of violation of the Endangered Species Act cannot be addressed via the IQA mechanism. Therefore, any statements or requests that the FFA letter makes about the biological opinion not meeting the requirements of the ESA will not be addressed in this response." (FWS Letter at page 1). We strongly disagree with the FWS's attempt to divorce the high quality science required by the ESA from the standards set in the IQA and OMB Guidelines and Final Bulletin. Congress enacted the IQA out of a concern for the quality of science used in important decision making by federal agencies; the more influential the decision, the higher the quality required. It is well documented in the ESA case law that has

[6] 70 Fed. Reg. 2664(Jan. 14, 2005).

developed with respect to the proposed action in the 2008 Biological Opinion exactly how highly influential the decision here has been and will continue to be.[7] Hence, the IQA, OMB Guidelines and Final Bulletin must be used by the FWS to provide much needed definition and uniformity to the ESA requirement that biological opinions resulting from Section 7 consultations must be based on the best available scientific data.

Inexplicably, the FWS Letter takes an approach that undermines the entire premise of the IQA and discredits the Section 7 consultation process. The fact that the FWS finds it inconvenient to discuss its failure to use the best available scientific data in a highly influential scientific assessment does not absolve the agency from having to meet both statutory standards. Claiming to comply with one statute while refusing to address the other's role in standardizing and verifying that compliance suggests the FWS misapprehends both statutes it is charged with administering. This Appeal is being filed under the IQA in an attempt to give the FWS an opportunity to correct the 2008 Biological Opinion and thereby disseminate an improved document that complies with both statutes; something it has failed to do in both the draft and final analyses.

The Alliance represents numerous family farmers and ranchers in California's Central Valley. Its members also include hundreds of other farm-related organizations, including irrigation districts, commodity associations, private water companies, consulting firms, law firms, and farm implement dealers. Four of our 10 directors are from the Central Valley. Eight members of our Advisory Committee are from California. As such, the Alliance and its members are vitally interested in the availability of reliable and affordable irrigation water supplies in the Central Valley. If the information in the 2008 Biological Opinion is not corrected, water supplies to water agencies and farmers in the Central Valley, many of whom are members of and/or represented by the Alliance, will be significantly reduced. Water users will face drastic and potentially permanent reductions in the water they need to live, grow their crops, and run their businesses, and water agencies will have insufficient supplies to satisfy demand.

As a result of the FWS failure to correct this highly influential scientific assessment to date, economic and social consequences are already immediate and devastating. Land is being fallowed due to lack of water. In some cases, farmers are losing permanent crops, such as orchards and vineyards, causing irretrievable losses of their investments in those crops. Alliance members in allied industries are also being damaged, as their livelihoods are dependent on the agricultural economy at risk because the information in the 2008 Biological Opinion has not been corrected. Lenders have become less likely to lend to agriculture because of the doubts

[7] For example, in July 2007, U.S. District Court Judge Oliver Wanger issued Findings of Fact and Conclusions of Law concerning a lawsuit filed by environmental litigants challenging the 2005 Biological Opinion issued by the FWS on Operating Criteria and Procedures (OCAP) for coordinated operation of the SWP and CVP (BO). The court's findings highlight the glaring scientific uncertainties and the agencies' ongoing and inexcusable failure to ascertain the true needs of listed species in the Bay-Delta and the water users who depend upon the Delta as a hub for water supplies. Uncertainties pinpointed by the court included unresolved conflicts in evidence regarding: (i) whether a group of agency fishery biologists' recommendations to reduce pumping would be **necessary and effective to protect the delta smelt from extinction;** and (ii) whether other causes of delta smelt decline, including but not limited to, other water diversions, effects of ocean tides, presence of toxics, absence of delta smelt prey, and existence of non-native predators are **materially causing a decline in the species.** (*See NRDC v. Kempthorne, 1:05-CV-1207 (E.D. Cal. July 3, 2007).* On December 14, 2007, Judge Wanger remanded the BO on the effects of the OCAP to the FWS for further consideration. When evaluating what is at stake in trying to resolve the Bay-Delta conflicts and the jeopardy status of the species, the court considered such things as: (i) the potential catastrophic loss of water supplies to urban water users, including but not limited to, cities, fire protection agencies, hospitals and health providers, schools, laboratories, and potable water supplies for human consumption; (ii) potential catastrophic loss of water supplies to contractors dependent on SWP and CVP water supplies; (iii) potential physical damage to the San Luis Reservoir due to gross reduction of its water supplies and being removed from service for over one year; and (iv) economic damage to crops in the range of $23 million to $1 billion. (*See NRDC v. Kempthorne, 1:05-CV-1207 (E.D. Cal December 14, 2007).* Judge Wanger ruled that the projects' water supply operations must be subordinated to the needs of the delta smelt. The Secretary's 2008 Biological Opinion is a highly influential scientific assessment, as its contents and conclusions will govern the operations of the Central Valley Project and the State Water Project and will be used to make determinations as to the water deliveries to millions of acres of farms in California. *(See also TVA v. Hill,* 437 U.S. 153 *(1978).*

about water supplies created by the errors in the 2008 Biological Opinion, magnifying the economic effects. By conservative estimates, some 37,000 workers could be displaced and without work, and it is reported that local communities are experiencing unemployment rates in the range of 34 to 41%. The Alliance itself could be at risk, as it depends on the financial contributions of its members. The impacts visited upon the rural communities reliant on these water supplies will multiply as the economies of these communities are destroyed. Accordingly, Alliance members will suffer irreparable harm if the Request remains unresolved. Hence, we are filing this Appeal.

The FWS has disseminated information in the Biological Opinion and represented that the information is sufficient to make a determination with respect to the requirements of ESA Section 7(a)(2). However, the ESA requires that data, not assumptions form the basis of the determinations under 7(a)(2). In addition, the IQA standards require the very highest level of information quality for a highly influential scientific assessment which this biological opinion constitutes. Failure to base findings in such an assessment on the best available information (in this case "data", as required by the ESA) is a failure to comply with the procedural and substantive requirements of the IQA and the FWS IQA Guidelines. Thus, the information included in the 2008 Biological Opinion is:

- Inaccurate, in that it fails to meet the data standard required by the ESA for decision-making under the IQA as well as the standard under the Guidelines for highly influential scientific assessments;

- Biased, in that it assumes a cause, and performs a post hoc rationalization, ignoring data that demonstrate no important effects on delta smelt due to operation of the pumps;

- Incomplete, in that it fails to include material data and analysis that rebuts the assumptions which support the biological opinion, and fails to acknowledge the requirement that decisions be based on data under the ESA;

- Unclear and incomplete in that if fails to acknowledge that the data does not support an assumption that the decline in smelt is correlated to the operations of the water project pumps, unclear and incomplete in that if fails to acknowledge that basic biology of the smelt is poorly understood; unclear and incomplete in that it fails to acknowledge the required data standard of the ESA in decision-making.

III. Appeal of Specific Statements

The detailed discussion is formatted as follows: First, it presents the text of each of the original requests for correction filed by the Alliance. In these original requests, the text boxes show direct quotes of FWS statements in the draft Effects Analysis disseminated by the FWS and DOJ.

Second, it presents the verbatim responses pulled from the FWS Letter, also in text boxes. These text boxes are preceded by a heading identifying them as FWS Letter Responses.

Third, it presents our Appeal of the denial of our request.

DETAILED REQUEST LIST

ORIGINAL DETAILED REQUEST LIST AND FWS RESPONSES

Correction Request 1 (EA pages 1-2)

Request that EA be corrected to remove all assumed effects, and address only those effects which are supported by data and analysis.

Correction Required because:

- Assumption of effects of an agency action is inconsistent with the ESA which requires the 2008 Biological Opinion be based on data.
- The explicit assumption that project operations are affecting delta smelt indirectly and directly is:

✓ Biased because it does not disclose that the effects of the project operations have been repeatedly demonstrated to be unimportant;

✓ Biased because is assumes that all effects of project operations are adverse, with no basis for such an assumption;

✓ Biased because it fails to disclose that of the factors enumerated as potential stressors of smelt populations, neither the effects of those factors nor their relationships with project operations are analyzed in the EA, so only suppositions, rather than data, are presented;

✓ Biased because the EA provide no data regarding the 'mixture of factors' affecting delta smelt and how they interact with each other or project operations;

✓ Inaccurate as a number of factors exist independent of project operations; and

✓ Inaccurate as the EA presents no data as to the effects, their magnitude, the relationships between the factors are all unknown and unquantified, making it impossible to state with any reliability that their effects are adverse.

The purpose of the EA is to determine the effects of the action on the listed species and critical habitat, if any, and to then assess the magnitude of those effects[8]. As an initial matter, we note

[8] 50 C.F.R. 402.14(g)(3).

that the EA is explicitly premised, not on a determination based on the data, but on a series of **assumptions** set forth at the outset. This is in clear violation of the standards of the Act.

> *'The Service is following Bennett and Moyle (1996) and Bennett (2005), and the consensus emerging from the POD investigation (Sommer et al. 2007, Baxter et al. 2008), by **assuming** that delta smelt abundance trends have been driven by a mixture of factors, some of which are affected or controlled by water project operations and others that are not* [9]
>
> *'...a second **assumption** of this analysis is that the proposed project is affecting delta smelt throughout the year either directly through entrainment or indirectly through influences on food supply and habitat suitability.'* [10]
>
> *'...A third **assumption** is that any of these three types of effects will adversely affect delta smelt, either alone or in combinations.'* [11]

Under section 7(a)(2) of the ESA and the Joint Consultation Regulations:

- ✓ The Service must use the best scientific and commercial data available in the 2008 Biological Opinion[12].

Assuming effects is not consistent with the requirement that data form the basis of effects.

- ✓ The assumptions violate the ESA data requirement for biological opinions and IQA standards for information.

The courts have opined on the ESA's requirement that decisions be based on data, noting:

- ✓ The purpose of this requirement, "is to ensure that the ESA not be implemented haphazardly, on the basis of speculation or surmise."[13]

The Office of Management and Budget's (OMB) Guidance for application of the Information Quality Act for highly influential scientific assessments[14] is consistent with the approach required by the court. The standard is further clarified by the courts who note that:

- ✓ While the Service "can draw conclusions based on less than conclusive scientific evidence, it cannot base its conclusions on no evidence."[15]

- ✓ Reliance on suppositions or untested hypotheses constitutes a violation of the ESA.

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[9] Draft EA at 1.
[10] Draft EA at 1.
[11] Draft EA at 2.
[12] 16 U.S.C. 1536(a)(2); 50 C.F.R. 402.14(g)(8).
[13] *Bennett v. Spear*, 520 U.S. 154, 176 (1997).
[14] The FWS IQA guidelines (found at http://www.fws.gov/informationquality/topics/IQAguidelines-final82307.pdf) incorporate the Office of Management and Budget Guidelines for Information Quality (The Office of Management and Budget (OMB) published guidelines pursuant to the IQA in the Federal Register on February 22, 2002 (67 FR 8452), directing agencies to address the requirements of the law. http://www.whitehouse.gov/omb/fedreg/reproducible2.pdf)
[15] *National Ass'n of Home Builders v. Norton*, 340 F.3d 835, 847 (9th Cir. 2003) (citation omitted).

- ✓ When making a determination or recommendation, the Service cannot "disregard scientifically superior evidence."[16]

In the EA, the FWS assumes that the project operations have important effects on the abundance of delta smelt, based on speculation, supposition, and untested hypotheses. The best available data does not support these assumptions. Further, the FWS disregards scientifically superior evidence in the form of no fewer than 15 analyses that demonstrate no important effects of project operations on delta smelt abundance[17].

The current state of knowledge, supported by data and analysis, regarding the effect of projects on delta smelt is:

- ➢ There is no statistically valid support for any substantial effects of CVP and SWP operations on fish populations.

- ➢ There are clearly some effects because fish are regularly entrained in the pumps, and statistical analyses have measured these effects and found they are small (1-2%) on the population[18].

- ➢ The only "evidence" for effects higher than the measured 1-2% effect consists of unsubstantiated "expert biological opinion", not data or analysis.

- ➢ The necessary statistical predicate for asserting project operations[19] have important effects on delta smelt population abundance is correlation between abundance indices and export pumping. To date, such a correlation appears nonexistent, despite the agencies 15 year search for such a correlation.

The reason for the demonstrated lack of correlation between project operations and delta smelt abundance is now clear from analyses by Kimmerer (Kimmerer 2008) and Manly (Manly 2007). It is that other factors, not linked to project operations, have large effects on delta smelt abundance. These effects are so much larger (Kimmerer estimates them as 500 times larger) than water project operations effects that they render water project operations effects trivial. Assuming that water project effects are important when, in fact, they are trivial, leads to huge, adverse socio-economic effects on California that, as demonstrated clearly in recent years, produce no increases in delta smelt abundance because abundance is controlled by other factors.

Statements in the EA concerning water project effects are inconsistent with the ESA in that they base the 2008 Biological Opinion of the effects of the project on assumptions rather than data.

The statements are inconsistent with the requirements of the IQA in that they:

- ✓ Are inaccurate in that they fail to recognize the data and analysis that contradict the assumptions;

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[16] *Trawler Diane Marie, Inc. v. Brown*, 918 F. Supp. 921, 930 (E.D.N.C. 1995).
[17] September 8, 2008 comment letter submitted by the Council for Endangered Species Act Reliability; Appendices 6 and 12.
http://bestscience.org/index.php?option=com_content&view=article&id=8&Itemid=5&73617 8abdb4n8028251 99ee3f2dd3223=28513d5 4552268b2fa51 1ed1671ee1 f1
[18] Manley and Cholkowski Arch. Hydrobiol. 167 1-4 593-607 September 2006.
[19] Generally assumed to be operation of the export pumps.

- ✓ Are incomplete in that myriad contradictory data and analysis is not included or referenced; and
- ✓ Are biased in that the assumptions are designed to implicate project operations for effects that are not in fact, effects of the project.

FWS Letter Response

Response: *This request is broad and seems to be covered in detail in later CRs. Therefore; no correction is required for CR1.*

APPEAL

The response to CR1 is clearly inadequate in that it fails to correct the series of specific failures identified in this request for correction. Failure to address this request violates the requirements of the FWS IQA Guidelines and the ESA.

Alliance members will suffer irreparable harm if the Request remains unresolved.

Correction Request 2 (EA page 1)

Request that general assumptions and statements regarding direct adverse effects of entrainment on delta smelt spawning abundance be removed and replaced with specific statements regarding only those effects whose existence is supported by data.
Request that general assumptions and statements regarding indirect project effects acting through multiple unknown, undefined, and unmeasured 'factors' or 'stressors' adverse effects be removed and replaced with specific statements regarding only those effects whose existence is supported by data.

'...a second assumption of this analysis is that the proposed project is affecting delta smelt throughout the year either directly through entrainment or indirectly through influences on food supply and habitat suitability.' [20]

The above statement from the EA is inconsistent with the requirements of the ESA that determinations be based on data. There is no data that supports the assumption that project operations have important direct adverse effects on delta smelt through entrainment. In fact,

[20] Draft EA at 1.

available data contradict the assumption that there are important adverse effects due to project pumping.

- The Service acknowledges that "currently published analyses of long-term associations between delta smelt salvage and subsequent abundance do not support the hypothesis that entrainment is driving population dynamics year in and year out (Bennett 2005; Manly and Chotkowski 2006; Kimmerer 2008)."[21]

- The assumption ignores the results of multiple analyses – including but not limited to those the EA references – **all** of which have found the absence of an important relationship between direct entrainment and subsequent spawning abundance of delta smelt[22].

- One of the peer reviewers in a published paper outside the context of this 2008 Biological Opinion concludes that "no effect of export flow on subsequent midwater trawl abundances is evident."[2324]

- The EA assesses the direct effects arising from entrainment of delta smelt and suggests that "delta smelt entrainment can best be characterized as a sporadically significant influence on population dynamics."[25] But the EA never explain how these 'sporadic' effects are significant, particularly in the context of broader analyses that demonstrate no important adverse effects at the population level. This is particularly important when the fact that the delta smelt has a life cycle of one year is considered. A "sporadically significant influence" would show up each year it affected a fish with a one-year life cycle[26].

- The EA makes the assumption that entrainment affects delta smelt, but fails to recognize that annual entrainment losses are obscured by effects of other factors.[27]

The EA assumes that project pumping has indirect effects on delta smelt abundance based on analyses that are inaccurate, incomplete, unclear, and biased. Further, in clear violation of the Joint Consultation Regulations and Handbook, the EA identifies the effects of factors which are occurring independent of project operations as indirect project effects.

Under section 7(b)(3)(A) of the ESA, the Service must prepare "a written statement setting forth the Secretary's opinion, and a summary of the information on which the opinion is based,

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[21] EA at 5.

[22] Council for Endangered Species Act Reliability: September 8, 2008 letter to the FWS commenting on the 90-day finding on the petition to list the delta smelt as endangered. The comment letter cites over 15 statistical analyses which examined potential relationships between delta smelt and project pumping. None of these analyses identified important effects due to water project pumping.

[23] Wim J. Kimmerer, *Losses of Sacramento River Chinook Salmon and Delta Smelt to Entrainment in Water Diversions in the Sacramento-San Joaquin Delta*. SAN FRANCISCO ESTUARY & WATERSHED SCIENCE at 25 (June 2008).

[24] Kimmerer proceeds to state that the lack of a relationship "suggests that ... losses have effects that are episodic and that therefore their effects should be calculated rather than inferred from correlative analyses." *Id.* But this is conjecture, even where, as here, it is posited by a qualified expert in the field.

[25] EA at 5.

[26] A "sporadically significant influence" would show up each year it affected a fish with a one-year life cycle, such as delta smelt, but no such "sporadically significant influences" have been detected in any of the multiple analyses which have examined the data. Such sporadic influence would be easily detected and demonstrate readily identified patterns, and most importantly, would demonstrate important effects on delta smelt abundance. In 2003, the year with the highest relative salvage (adult salvage/previous FMWT index) of adult delta smelt on record, far higher than any other year, the FMWT index actually increased by 50%,. The reference to such effects is a red herring designed to confuse and obfuscate the point that to date the data demonstrate entrainment and project pumping have no important effects that can be detected.

[27] Kimmerer 2008.

detailing how [the action that is the subject of consultation] affects the species or its critical habitat"[28]. In other words, the Service must prepare a biological opinion that includes, *inter alia*, "[a] detailed discussion of the effects of the action on listed species or critical habitat"[29]. That discussion must be predicated on data, not supposition.[30]

The EA violates the ESA by failing to base its findings on the best available data and further bases its findings on assumption.

The statement is inconsistent with the requirements of the IQA in that it is:

- ✓ Inaccurate and biased in that it leads the reader to believe that project effects are far more important than is the case;
- ✓ Inaccurate and biased in that it implies that water project operations are an important factor in the decline of delta smelt populations;
- ✓ Inaccurate and biased in that it implies that water project operations will result in further important declines of delta smelt populations;
- ✓ Incomplete, as it assumes project operations (entrainment) affect delta smelt without disclosing that data and analysis demonstrate those effects are unimportant;
- ✓ Incomplete in that it fails to disclose that recent analysis estimates that roughly 98% of the decline can be attributed to factors other than project operations[31]

FWS Letter Response

Response: *The Projects do have direct adverse effects through entrainment by taking adult delta smelt that would otherwise spawn and produce offspring. These effects are further articulated in the ~'Factors Affecting the Species" section starting on page 159 and the "Adult Entrainment" section of the Effects section of the biological opinion (starting on page 210 of the formal biological opinion). The CR is commenting on a section that is an introduction to the effects analysis, no further detailed statement is needed here. Therefore, no correction is needed.*

Response: *The effects analysis describes a subset of factors that are adversely affected or controlled by CVP/SWP operations. There are other factors that have affected the long-term decline of the delta smelt, but the CVP and SWP have played an important direct and indirect role in the decline. These factors and stressors are not 'unknown undefined and unmeasured,' as the CR states. Therefore, no correction is needed.*

[28] 16 U.S.C. 1536(b)(3)(A).
[29] 50 C.F.R. 402.14(h)(2).
[30] U.S.C. 1536(a)(2); 50 C.F.R. 402.14(g)(8). *Bennett v. Spear*. 520 U.S. 154, 176 (1997).
[31] See Request for Correction 3 which discusses the findings of Kimmerer 2008 with respect to this issue.

APPEAL

The FWS response ignores our Request that assumptions be replaced with statements supported by data. Instead, the FWS response restates the undisputed existence of entrainment effects, which have been identified as unimportant in both the 2008 Biological Opinion and multiple analyses based on data. The FWS further ignores our Request to provide data and analysis to support the hitherto undefined direct and indirect stressors, referring us to pages in the 2008 Biological Opinion which contain neither data nor analysis, nor cites to support the existence or magnitude of such effects.

The FWS response is incorrect for the following reasons:

- The statements made by the FWS in their response, provide partial information which in the context in which it is provided is misleading and biased;
- The 2008 Biological Opinion fails to meet the following purposes and requirements of the ESA:
    1. Identify and minimize the effects of the project;
    2. Allow incidental take as long as no jeopardy ensues;
    3. Assure that species continued existence is not jeopardized;
    4. Avoid adverse modification of critical habitat, not restore habitat; and
    5. Consider recovery, but only in the context of avoiding project effects that may preclude recovery.
- The 2008 Biological Opinion fails to meet the following requirements of the IQA:
    1. The Biological Opinion is required to be based on best available data;
    2. The Biological Opinion is required to comply with peer review policy; and
    3. The Biological Opinion is required to comply with IQA guidelines.

By the FWS's own admission, the effects of project entrainment are not important:

> *However, currently published analyses of long-term associations between delta smelt salvage and subsequent abundance do not support the hypothesis that entrainment is driving population dynamics year in and year out (Bennett 2005; Manly and Chotkowski 2006; Kimmerer 2008.)*[32]

[32] 2008 Biological Opinion, page 210.

Despite acknowledging the lack of important effects due to entrainment, the FWS inaccurately and only partially cites Kimmerer in the 2008 Biological Opinion (emphasis added) stating:

> *Kimmerer (2008) addressed delta smelt entrainment by means of particle tracking, and estimated historical entrainment rates for larvae and juvenile delta smelt to be as high as 40 percent; however,* ***he concluded that non-entrainment mortality in the summer had effects on FMWT delta smelt numbers.***[33]

This statement is incomplete and undermines the FWS's significant admission that there are no important effects due to entrainment. Kimmerer's full statement recognizes that entrainment effects are overshadowed by much larger and undefined factors:

> *'This would have an equivalent effect of reducing the summer–fall survival index by 10%. This would have made little difference to fall abundance in the context of the approximately 50-fold variation in summer–fall survival (Figure 17), and would be difficult to detect through correlation''*[34].

The statement in the 2008 Biological Opinion is also incomplete in that it fails to note that Kimmerer actually estimated historical entrainment rates for adults and larval juvenile smelt as follows:

> *Losses of adult delta smelt were 1–50% (median 15%), although the highest value may have been biased upward. Daily losses of larvae and juveniles were 0–8%, and seasonal losses accumulated were 0–25% (median 13%). The effect of these losses on population abundance was obscured by subsequent 50-fold variability in survival from summer to fall.*[35]

Instead of recognizing what Kimmerer identified as significantly larger factors affecting smelt abundance, the 2008 Biological Opinion ignores the magnitude of other factors operating on delta smelt abundance and merely states:

> *Hence, there are other factors that often mask the effect of entrainment loss on delta smelt fall abundance in these analyses.*[36]

The assumptions used by the FWS in the 2008 Biological Opinion, are contrary to published analyses of long-term associations between delta smelt salvage and subsequent abundance [37].

The 2008 Biological Opinion specifically lists the following stressors: aquatic macrophytes, predators, competition, feeding, microcystis, contaminants, and climate change. But the biological opinion fails to identify how the CVP and SWP operations have adversely affected or controlled these factors. Neither does the biological opinion explain how the effect of the CVP/SWP operations on these factors translates into an adverse effect on delta smelt. Finally,

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[33] 2008 Biological Opinion, page 159.
[34] Kimmerer 2008.
[35] *Id.*
[36] 2008 Biological Opinion page 159.
[37] Bennett 2005; Manly and Chotkowski 2006; Kimmerer 2008.

no data is provided to support statements in the biological opinion as to the effects of these enumerated factors instead supplying what appears to be merely speculative supposition.

The biological opinion, as a highly influential scientific assessment fails to provide the data, analysis, and transparency required by the FWS IQA Guidelines.

Accordingly, we reiterate our request.

Alliance members will suffer irreparable harm if the Request remains unresolved.

Correction request 3 (Effects Analysis Pages 4-5):

Request that the statement that project operations affect smelt directly through entrainment be corrected and replaced with the statement found later in the analysis that acknowledges data demonstrates entrainment is not driving population dynamics[38] and that while effects have been identified, they are unimportant.

The Effects Analysis emphasizes the fact that project pumping has effects on delta smelt and on the hydrodynamics of the delta. However, the information presented is incomplete and fails to acknowledge that no important effects have been detected, despite over 15 years of efforts to identify such effects. Further, the Effects Analysis fails to acknowledge that 15 years of manipulating pumping and reducing pumping volumes has failed to provide any benefit to delta smelt. The information on the relationship between project operations and smelt abundance presented in the Effects Analysis is incomplete, inaccurate, and biased.

The entrainment of delta smelt into the Banks and Jones pumping plants is a direct effect of SWP and CVP operations[39].

The population-level effects of delta smelt entrainment vary; delta smelt entrainment can best be characterized as a sporadically significant influence on population dynamics[40].

Major population declines during the early 1980s (Moyle et al. 1992) and during the recent "POD" years (Sommer et al. 2007) were both associated with hydrodynamic conditions that greatly increased delta smelt entrainment losses as indexed by numbers of fish salvaged[41].

However, currently published analyses of long-term associations between delta smelt salvage and subsequent abundance do not support the hypothesis that entrainment is driving population dynamics year in and year out (Bennett 2005; Manly and Chotkowski 2006; Kimmerer 2008)[42].

There is no relationship between direct entrainment and subsequent abundance. The data does not support the existence of a relationship and in fact demonstrates no important effects from

[38] EA at 5.
[39] EA at 4.
[40] EA at 5.
[41] EA at 5.
[42] EA at 5.

entrainment. Nevertheless, the service assumes an effect in violation of the requirements of the ESA and the IQA.

The Effects Analysis fails to recognize the results of multiple analyses – including but not limited to those it references – **all** of which have found the absence of an important relationship between direct entrainment and subsequent abundance. For example, the FWS own peer reviewer in a published paper outside the context of this biological opinion concludes that "no effect of export flow on subsequent midwater trawl abundances is evident."[43][44] Instead, the Effects Analysis assesses the direct effects arising from entrainment of delta smelt and suggests that "delta smelt entrainment can best be characterized as a sporadically significant influence on population dynamics[45]."

The Effects Analysis never explains how these 'sporadic' effects are significant, particularly in the context of broader analyses that demonstrate no important effects. In fact, in the same paragraph the Service acknowledges that "currently published analyses of long-term associations between delta smelt salvage and subsequent abundance do not support the hypothesis that entrainment is driving population dynamics year in and year out (Bennett 2005; Manly and Chotkowski 2006; Kimmerer 2008)."

Discussion of effects of entrainment of delta smelt into the Project facilities relies heavily on Kimmerer (2008) and *Grimaldo et al.* (in review). Because *Grimaldo et al.* is unavailable to the public, it does not meet the "best scientific and commercial data *available*" standard of the Act.[46] Also, Grimaldo's analysis is based on the assumption that salvage, as a measure of entrainment, has important effects on subsequent spawning abundance of delta smelt. This assumption is contradicted by data and analysis, and is demonstrably false.

As Grimaldo is unavailable, it does not meet the requirements of the ESA, nor does it meet the requirements of the IQA Guidelines that require analytical work be reproduceable. At this point, Grimaldo is not reviewable, much less reproduceable.

The other work cited as the basis of the Effects Analysis determinations[47] Kimmerer (2008) estimated that annual entrainment of delta smelt of all age classes was 10-60% per year from 2002-2006[48]. However, Kimmerer also acknowledges that the effects of these losses are obscured by a subsequent 50-fold variability in survival of delta smelt from summer to fall, and acknowledges that summer zooplankton abundance is an explanation for this variability[49]. The FWS has data and analyses that support this explanation, but to date, in an arbitrary and capricious manner, have failed to recognize that other factors, such as contaminants and food supply show are causing delta smelt decline, independent of export pumping.

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[43] Wim J. Kimmerer, *Losses of Sacramento River Chinook Salmon and Delta Smelt to Entrainment in Water Diversions in the Sacramento-San Joaquin Delta*, SAN FRANCISCO ESTUARY & WATERSHED SCIENCE at 25 (June 2008).

[44] Kimmerer proceeds to state that the lack of a relationship "suggests that ... losses have effects that are episodic and that therefore their effects should be calculated rather than inferred from correlative analyses." *Id.* But this is conjecture, even where, as here, it is posited by a qualified expert in the field.

[45] EA at 5

[46] 16 U.S.C. 1536(a)(2); 50 C.F.R. 402.14(g)(8).

[47] Kimmerer 2008.

[48] Wim J. Kimmerer, *Losses of Sacramento River Chinook Salmon and Delta Smelt to Entrainment in Water Diversions in the Sacramento-San Joaquin Delta*, SAN FRANCISCO ESTUARY & WATERSHED SCIENCE at 25 (June 2008).

[49] Wim J. Kimmerer, *Losses of Sacramento River Chinook Salmon and Delta Smelt to Entrainment in Water Diversions in the Sacramento-San Joaquin Delta*, SAN FRANCISCO ESTUARY & WATERSHED SCIENCE at 25 (June 2008).

- In failing to recognize the multiple analyses that support the fact that long-term associations between salvage and subsequent abundance are not driving population dynamics on an annual basis, the Effects Analysis uses biased, incomplete and inaccurate information. Instead of using data, as required by the Act, the Effects Analysis relies on speculation and surmise while ignoring the best available data.

- In asserting that export pumping is the cause of smelt decline and ignoring data demonstrating that other factors, including food supply are the best available basis for smelt decline, the FWS is asserting effects based on speculation and surmise while ignoring the best available data.

- In assuming that export pumping is the cause of delta smelt abundance declines while ignoring multiple studies demonstrating no important effects on delta smelt abundance from export pumping, the Effects Analysis is biased and drawing conclusions which require them to ignore the best available data.

- In relying on Kimmerer, the Effects Analysis fails to critically examine the analysis contained in the work, which is flawed[50].

This discussion illustrates how the Effects Analysis asserts that entrainment has a significant effect on delta smelt abundance, with no supporting data, and in such a manner as to require that they ignore the best available data. Further, the Effects Analysis fails to accurately characterize the relationship between project pumping and delta smelt abundance, fails to fully disclose the limitations of the research it cites, and presents the data in a biased manner.

The Effects Analysis fails to comply with the requirements of the IQA in that the highly influential information included on these pages as it is:

- ✓ Inaccurate and biased in that it emphasizes the fact that project pumping has effects on delta smelt and on the hydrodynamics of the delta without acknowledging that the effects of tides and weather dwarf the effects of project operations;

- ✓ Inaccurate and biased in that it implies there is a relationship between direct entrainment and subsequent abundance, when in fact, none has been detected;

- ✓ Inaccurate, incomplete and biased in that it implies a relationship based on the existence of 'sporadic effects' and never explains how these 'sporadic' effects are significant, particularly in the context of broader analyses that demonstrate no important effects;

- ✓ Incomplete and biased in that it fails to acknowledge that no important effects of project operations have been detected, despite over 15 years of efforts to identify such effects; and

[50] See Request for Correction 17.

- ✓ Incomplete and biased in that it fails to acknowledge that 15 years of manipulating project operations and reducing pumping volumes has failed to provide any benefit to delta smelt;

FWS Letter Response

Response: *The statement the CVP and SWP operations directly affects delta smelt is a correct statement since delta smelt are entrained at these facilities. Even though there are direct effects to delta smelt in all years, entrainment may not drive delta smelt population trends in all years (see the "Factors Affecting the Species11 section starting on page 159 and the "Adult Entrainment" section starting on page 210 of the final biological opinion). The statements in the biological opinion are accurate. Therefore, no correction is needed.*

APPEAL

The FWS fails to respond to our request and merely restates the undisputed existence of entrainment effects. It fails to acknowledge that these effects are unimportant as recognized in the 2008 Biological Opinion and multiple analyses based on data.

The correction request was made to ensure that all assertions that project operations directly affect delta smelt through entrainment be corrected to be complete by including the information that the data and analyses demonstrated these effects were not important. In its response, the FWS continues to admit that, '*entrainment may not drive population trends in all years*'.

The biological opinion fails to accurately characterize the relationship between Project pumping and delta smelt abundance, fails to fully disclose the limitations of the research it cites, and presents the data in a biased manner leading the reader to conclude that project operations do in fact have an important effect on delta smelt populations, so important in fact, that they are jeopardizing the continued existence of the species.

The conclusion can only be sustained when the limited, inaccurate, incomplete, and biased information included in the biological opinion is used. If complete information, based on the data and analysis available is used, there is no basis for a conclusion that project operations have any important effects and that, therefore, they cannot jeopardize the continued existence of the species.

Alliance members will suffer irreparable harm if the Request remains unresolved.

Correction Request 4 (pages 1 and 31)

Request correction of statements in the Effects Analysis which attribute the effects of independent factors such as predation, contaminants, introduced species, food supply, aquatic macrophytes, and micosystis to the indirect effects of project operations.

Request that unsupported Effects Analysis statements attributing adverse effects of other identified factors to project operation be removed or clarified to recognize:

- These adverse factors would exist even if project operation were to cease, and thus are not the indirect effects of project operations;
- The FWS has no data as to either the existence or extent of the adverse effects of many of the listed factors;
- The FWS has no data to support the assertion that project operations incrementally increase the adverse effects of the listed independent factors;
- The hydrodynamics of the delta are largely controlled by the tides and weather;
- The FWS has no data to identify which if any hydrodynamic conditions result in adverse effects to delta smelt;
- The FWS has no data to support the assertion that direct and/or indirect adverse effects resulting from project operations are having an important effect on delta smelt abundance; and
- Extremely stable low outflow conditions in the fall occur naturally, and CVP and SWP operations actually increase flow levels and alleviate conditions that may be caused by low outflow.

The Effects Analysis attributes the effects of independent factors to the OCAP, stating these effects are indirect effects of the project. The effects of these factors would exist with or without the OCAP and are therefore not effects of the action. The Effects Analysis states that a multitude of factors affect delta smelt including predation, contaminants, introduced species, entrainment, habitat suitability, food supply, aquatic macrophytes, and microcystis and that:

> *"[t]he magnitude of the adverse effects of many of these factors on delta smelt is related to hydrodynamic conditions in the delta, which in turn are controlled to a large extent by CVP and SWP operations*[51]*."*

The effects of a federal action are defined by the Service as "the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action, that will be added to the environmental baseline[52]." If an effect would occur whether or not the action takes place, it is not an effect of the action[53]. Furthermore, if an effect could occur but is not reasonably certain to occur, it is not an effect of the action[54].

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[51] EA at 1.
[52] 50 C.F.R. 402.02.
[53] *Endangered Species Consultation Handbook* at 4-27 (March 1998). *Accord* 73 Fed. Reg. 47,868, 47,870 (Aug. 15, 2008) (preamble to proposed amendments to the joint consultation regulations); 51 Fed. Reg. 19,926, 19,932 (June 3, 1986) (preamble to final rule establishing the joint consultation regulations).
[54] 50 C.F.R. 402.02 (definition of "effects of the action" including indirect effects). *Accord* 73 Fed. Reg. at 47, 870.

The introduction includes a general statement that multiple factors independent of CVP and SWP operations are affecting delta smelt and states that the adverse effects of these independent factors are still somehow attributable to CVP and SWP operations. This assertion is repeated later in the Effects Analysis as well[55]. In the introduction to the Effects Analysis the Services offer a summary, hand waving explanation of unspecified project influence acting through unspecified and unmeasured stressors, which exert unexplained, unmeasured, and undefined adverse effects on delta smelt. Further, the introduction misrepresents historic conditions, misstates the hydrodynamic effects of the water project pumping by implying that pumping, rather than the tides and weather are the primary forces acting on the hydrodynamics of the delta.

The Effects Analysis states that a multitude of factors affect delta smelt including predation, contaminants, introduced species, entrainment, habitat suitability, food supply, aquatic macrophytes, and micosystis and that "[t]he magnitude of the adverse effects of many of these factors on delta smelt is related to hydrodynamic conditions in the delta, which in turn are controlled to a large extent by CVP and SWP operations[56]."

This statement in the introductory paragraph of the Effects Analysis must be corrected because it is inaccurate, incomplete and biased. There are three specific issues:

- First, it is inaccurate and incomplete because it lists a number of factors that adversely affect delta smelt and attributes a share of responsibility for "many" of these to the CVP and SWP operations. However, the reader is left to wonder which factors are indirectly controlled by CVP and SWP operations and what incremental adverse effects result from project operation.

- Second, it is biased in that it includes the unsupported assertion that the adverse effects of many of the factors are related to hydrodynamic conditions in the delta. However, the Service is unable to quantify many of the generalized effects and whether they are in fact adverse, in terms of type, severity, duration or location.

- Third, it includes the statement, which is inaccurate, unsupported by any data, and biased; that hydrodynamic conditions in the delta are controlled to a large extent by CVP and SWP operations, while completely ignoring the effect of tides and weather.

FWS Letter Response

Response: *The biological opinion discusses how there are a number of stressors affecting delta smelt abundance and distribution. While these stressors would have effects to the delta smelt in the absence of Project operations, the effects of these stressors are exacerbated by Project operations. The CR does not request specific corrections to the data nor provide new scientific literature citations supporting the request. Therefore, no correction is needed. In addition, the biological opinion discusses these stressors in detail within the baseline section. The last bullet will be discussed in the response to CR13.*

[55] EA at 31.
[56] EA at 1.

APPEAL

While the 2008 Biological Opinion identifies a list of stressors, and states they affect delta smelt abundance and distribution, it provides no data or analysis to support the statements that the factors actually affect delta smelt, how they affect them or how or to what extent the stressors are exacerbated by project operations. The FWS provides no data or analysis demonstrating that the delta smelt populations are in fact affected by each of the stressors, or how those stressors affect delta smelt populations, and how those effects are correlated with project operations.

The FWS response misstates the contents of the correction request when it claims that no specific corrections are requested. In fact, the Request as identified above, requests removal of all statements unsupported by data and analysis.

The Alliance is unaware of any data which supports the FWS assumptions and assertions, and requested that the statements either be removed or the supporting data be provided. It is apparent from the FWS response that there is no supporting data and that only speculation, hypothesis and surmise form the basis of the statements. Since the Alliance did not make the assertions, we have no obligation to provide "scientific literature citations" to support our request that they be removed.

Alliance members will suffer irreparable harm if the Request remains unresolved.

Correction Request 5 (Effects Analysis page two and related references throughout the document)

Request correction of the Effects Analysis to eliminate the assumption that three assumed project effects will adversely affect delta smelt either alone or in combination.

Request correction of the Effects Analysis to acknowledge that project operations do not have important adverse effects on future spawning abundance of delta smelt due to entrainment.

Request Effects Analysis be revised to be consistent with the requirements of the ESA and identify only those effects whose existence is supported by the best scientific and commercial data available.

The effects analysis states:

> *'...A third assumption is that any of these three types of effects will adversely affect delta smelt, either alone or in combinations.'* [57]

- The statement relies on hypothesis, not data.

[57] Draft EA at 2.

- The statement is inaccurate in that none of the assumed effects are substantiated by the best available scientific data;
- The statement is inaccurate and biased in that it assumes effects of water project in the absence of data, and only by ignoring contradictory data;
- The statement is inconsistent with the requirement of the ESA which requires that the contents of the 2008 Biological Opinion be based on data, not assumption.

The Effects Analysis cites a study completed in 2000[58] as the basis for this assumption. The cited paper speaks to a general approach that considers many factors acting all once. The citation does not address the specifics of the delta, delta smelt, or water project effects. Furthermore, despite the fact that this paper has been available for 8 years, the recommended analytical approach has not been applied to the delta. In fact, the paper is first referenced in this Effects Analysis. The FWS proposes to base a biological opinion with adverse consequences for millions of people and costs in the billions of dollars on an untested hypothesis. This is in clear violation of both the requirements of the ESA and the IQA.

FWS Letter Response

Response: *The Service analysis described that any of the three major categories of effects described earlier (entrainment of delta smelt, habitat restriction, and entrainment of Pseudodiaptomus forbesi will adversely affect delta smelt, either alone or in combinations. This approach is also consistent with Rose (2000), who used several different individual-based models to show how multiple interacting stressors can result in fish population declines that would not be readily discernable using linear regression-based approaches. Therefore, no correction is needed.*

Response: *Project operations directly and/or indirectly can have adverse effects on delta smelt (see the "Factors Affecting the Species" section starting on page 159 and the "Adult Entrainment" section starting on page 210 of the final biological opinion). Therefore, no correction is needed.*

Response: *The Service used the best scientific and commercial data available, which is the standard under the Endangered Species Act when developing the biological opinion. Therefore, no correction is needed.*

APPEAL

The FWS has no data upon which to base the assumption that all 3 factors, if they have any effect, will have an adverse effect. The available data and analyses do not support the FWS assumptions. The FWS fails to respond to our request and merely restates the undisputed existence of entrainment effects. It fails to acknowledge that these effects are unimportant as recognized in the 2008 Biological Opinion and multiple analyses based on data.

[58] Rose 2000; EA at 2: Interestingly, the author of this paper which forms the basis of the approach the EA uses, is also one of the peer reviewers.

Further, the referenced paper (Rose 2000) is a hypothetical exploration of why it is so difficult to identify quantitative relationships between environmental quality and fish populations[59]. The paper does not provide any basis for assuming that the identified effects will all have adverse effects on delta smelt populations. Reliance on this paper as support for an assumption that all existing effects will affect smelt adversely is inconsistent with the findings of the paper. There is no basis for asserting that the findings of the paper support the assumptions in the 2008 Biological Opinion.

The FWS response does not address the failure to acknowledge that project operations do not have important adverse effects on delta smelt. It is possible to have an effect without that effect being important. Please see our Appeal to Request number 5 for a more detailed discussion of our objections.

The FWS's repeated and continuing failure to acknowledge that project effects are unimportant has resulted in a biological opinion that is biased. The reasonable and prudent alternatives included in the 2008 biological opinion have commandeered project operations and cut off water supplies to cities farms and families without justification. The effects of project operations have been repeatedly demonstrated to be unimportant and yet, in their status reviews, pleadings before the court, and most recently the 2008 Biological Opinion, the FWS has assumed that project operations are the culprit in the delta smelt's decline. The FWS ignored the best available scientific data in the form of multiple analyses of data in making the 3 underlying assumptions that project operations are the cause of the decline of the delta smelt. The best available scientific data demonstrates that project operations have no important effects on delta smelt abundance[60].

By failing to acknowledge the lack of important effects, the FWS allows itself to make a jeopardy determination without having to address the logical inconsistency of assuming an unimportant effect has an important effect (in this case jeopardy).

Alliance members will suffer irreparable harm if the Request remains unresolved.

Correction Request 6 (Effects Analysis pages 4-21 and related statements throughout the Effects Analysis)

Request correction of the Effects Analysis to recognize the data and analysis demonstrate there is no relationship between direct entrainment and subsequent spawning abundance of delta smelt[61].

Request correction of the assumption that there is a linear relationship between OMR flow and salvage.

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[59] See Appendix D.

[60] The FWS recognizes this on page 159 of the Biological Opinion "Manly and Chotkowski (2006; IEP 2005) found that monthly or semi-monthly measures of exports or Old and Middle rivers flow had a reliable, statistically significant effect on delta smelt abundance; however, individually they explained a small portion (no more than a few percent) of the variability in the fall abundance index of delta smelt across the entire survey area and time period."

[61] See detailed discussions in related Correction Requests included in this document.

Request correction of the Effects Analysis by removal of references to *Grimaldo et al* as the work is not publicly available and does not meet the transparency and reproducibility standards of the IQA.

The data demonstrate there is no relationship between direct entrainment and subsequent abundance and in fact demonstrate no important effects from entrainment[62]. This data and analysis has been provided to the FWS on multiple occasions[63]. Nevertheless, the Service assumes an effect, in contradiction of the data that supports a conclusion of no important effects, and in direct violation of the ESA which requires data to support effects.
Having made the unsupported assumption[64] that entrainment has population level effects on delta smelt, the Effects Analysis proceeds to analyze salvage as a measure of entrainment. The Effects Analysis then makes two corollary errors which in and of themselves are unimportant except for the fact that they rely on a substantial error in the assumption that entrainment has population level effects. The salvage analysis:

- Incorrectly assumes that there is a linear relationship between OMR flow and salvage which overestimates salvage during low flow conditions; and

- It relies on an analytically indefensible comparison between historical data and conditions and simulated data and conditions to predict project effects.

The Effects Analysis fails to recognize the results of multiple analyses – including but not limited to those its references – all of which have found the absence of a meaningful relationship between direct entrainment and abundance. For example, the FWS own peer reviewer in a published paper outside the context of this 2008 Biological Opinion concludes that "no effect of export flow on subsequent midwater trawl abundances is evident."[65] [66] Instead, the Effects Analysis assesses the direct effects arising from entrainment of delta smelt and suggests that "delta smelt entrainment can best be characterized as a sporadically significant influence on population dynamics[67]." The Effects Analysis never explains how these 'sporadic' effects are significant, particularly in the context of broader analyses that demonstrate no important effects. However, in the same paragraph the Service acknowledges that "currently published analyses of long-term associations between delta smelt salvage and subsequent abundance do not support the hypothesis that entrainment is driving population dynamics year in and year out (Bennett 2005; Manly and Chotkowski 2006; Kimmerer 2008)."

Discussion of effects of entrainment of delta smelt into the Project facilities relies heavily on Kimmerer (2008) and *Grimaldo et al.* (in review). Because *Grimaldo et al.* is unavailable to the public, it does not fall within the "best scientific and commercial data *available*" standard[68] and it is not possible to provide detailed comments on this document.

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[62] Council for Endangered Species Act Reliability. September 8, 2008 comment letter on the 90 day finding on the Petition to list the delta smelt; Kimmerer 2008.
[63] Wim J. Kimmerer. *Losses of Sacramento River Chinook Salmon and Delta Smelt to Entrainment in Water Diversions in the Sacramento-San Joaquin Delta.* SAN FRANCISCO ESTUARY & WATERSHED SCIENCE at 25 (June 2008).
[64] In fact, this assumption is patently contradicted by the available data.
[65] Wim J. Kimmerer, *Losses of Sacramento River Chinook Salmon and Delta Smelt to Entrainment in Water Diversions in the Sacramento-San Joaquin Delta.* SAN FRANCISCO ESTUARY & WATERSHED SCIENCE at 25 (June 2008).
[66] Kimmerer proceeds to state that the lack of a relationship "suggests that ... losses have effects that are episodic and that therefore their effects should be calculated rather than inferred from correlative analyses." *Id.* But this is conjecture, even where, as here, it is posited by a qualified expert in the field.
[67] EA at 5.
[68] 16 U.S.C. 1536(a)(2); 50 C.F.R. 402.14(g)(8).

Kimmerer (2008) estimated that annual entrainment of delta smelt of all age classes was 10-60% per year from 2002-2006[69]. However, Kimmerer also acknowledges that the effects of these losses are obscured by a subsequent 50-fold variability in survival of delta smelt from summer to fall, and acknowledges that an explanation for the variability: variations in summer zooplankton abundance[70].

The FWS has data and analyses that support this explanation, but to date, in an arbitrary and capricious manner, have failed to recognize food supply independent of export pumping as a cause of delta smelt decline.

- ✓ In failing to recognize the multiple analyses that support the fact that long-term associations between salvage and abundance are not driving population dynamics on an annual basis, the FWS relies on speculation and surmise while ignoring the best available data.

- ✓ In asserting that export pumping is the cause of smelt decline and ignoring data demonstrating that food supply is the basis for smelt decline the FWS is asserting effects based on speculation and surmise while ignoring the best available data.

- ✓ In assuming that export pumping is the cause of delta smelt abundance declines while ignoring multiple studies demonstrating no important effects on delta smelt abundance from export pumping, the FWS is drawing conclusions which require them to ignore the best available data.

The Effects Analysis relies on *Grimaldo et al.* (in review) which is based on a linear model. The Effects Analysis is a highly influential scientific assessment[71]. Failure to provide access to the basis for the determination violates the FWS's peer review guidelines, OMB Guidelines, and the ESA's requirement that available data be used as the basis for a decision.

First, even though Grimaldo is a linear model, the Effects Analysis uses it to predict annual winter salvage by relating salvage to Old and Middle River (OMR) flows[72]. The relationship between salvage and OMR flows is non-linear as the FWS is well aware, based on data and analyses provided to the FWS. Ms. Sheila Greene, a biologist with the California Department of Water Resources, produced analyses as early as March, 2007 that show January and February salvage compared to OMR flows[73]. Manly (2007) also evaluated salvage in relation to OMR flows and found the relationship is non-linear, resembling an exponential relationship[74]. Kimmerer (2008) used a non linear distribution to estimate entrainment in relation to OMR flows. Regardless, the Effects Analysis authors knowingly rely on a clearly inaccurate relationship to identify a spurious relationship.

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[69] Wim J. Kimmerer, *Losses of Sacramento River Chinook Salmon and Delta Smelt to Entrainment in Water Diversions in the Sacramento-San Joaquin Delta*, SAN FRANCISCO ESTUARY & WATERSHED SCIENCE at 25 (June 2008).
[70] Wim J. Kimmerer, *Losses of Sacramento River Chinook Salmon and Delta Smelt to Entrainment in Water Diversions in the Sacramento-San Joaquin Delta*, SAN FRANCISCO ESTUARY & WATERSHED SCIENCE at 25 (June 2008).
[71] OMB Peer Review policy, Attachment 3
[72] Effects Analysis at 6-7
[73] Declaration of Sheila Greene NRDC v. Kempthorne
[74] Manly 2007.

By referencing a study that is unavailable to the public and embarking on highly technical and site specific discussions regarding delta smelt and discrete flows, the Effects Analysis attempts to clothe hypothesis in fact. The entrainment analysis in the Effects Analysis is a cynical attempt at obfuscation by detailing numerous highly technical analyses and assumptions which confuse the reader and lead them to believe that there is data to support an assertion that export pumping has important effects on delta smelt abundance, when in fact, there are none. There are multiple methods for examining pumping and localized effects on the numbers of smelt entrained. However, to date all of these analyses, which represent the best available data, demonstrate repeatedly, that despite the localized effects, entrainment has no important effect on delta smelt abundance indices.

FWS Letter Response

Response: *The biological opinion states that direct entrainment can have adverse effects to delta smelt population numbers. The CR does not provide information or a scientific reference demonstrating that this statement is not accurate. Entrainment by the project does have an adverse effect on delta smelt. Therefore, no correction is needed.*

Response: *The Service used a linear model, as described in Grimaldo et al., an accepted manuscript in a scientific journal. The CR does not provide information demonstrating that this is not an appropriate evaluation tool. The Service continues to find this linear model is appropriate to be used under ESA standards. Therefore, no correction is needed.*

Response: *The Service is requested to use the best available scientific information when developing a biological opinion under §7(a)(2) of the ESA. Grimaldo et al is an accepted manuscript. Regardless, the Service uses the best scientific and commercial data available and this standard does not imply that only published papers be used. The CR does not identify other, better supported, peer reviewed or more well-established methodologies on this matter. Therefore, no correction is needed.*

APPEAL

The FWs response regarding the effects of direct entrainment is disingenuous and deliberately confuses the general question of whether and how project operations affect delta smelt (there is an effect, it is unimportant) and the more specific question of whether the numbers of smelt entrained (in terms of absolute mortality numbers) can be demonstrated to affect future abundance.

The data cited in the detailed request above, demonstrate there is no relationship between direct entrainment and subsequent abundance and in fact demonstrate no important effects from entrainment. This data and analysis has been provided to the FWS on multiple occasions. Nevertheless, the FWS demonstrates bias, assuming an effect, contrary to the data that supports a conclusion of no important effects; thus directly violating the ESA.

The original request for correction provides cites to data and analysis that support the assertion that a linear relationship is inappropriate for use in analyzing the relationship between entrainment and salvage.

The FWS failure to remove references to *Grimaldo et. al.* ignores the requirement in the ESA that determinations be based on available data and ignores the FWS IQA Guidelines that require highly influential scientific assessments be transparent and substantially reproducible. *Grimaldo* is neither published nor peer reviewed and was not made available despite repeated requests[75].

Alliance members will suffer irreparable harm if the Request remains unresolved.

Correction Request 7 (Effects Analysis pages 21 through 23 and related statements throughout the Effects Analysis)

Request correction of the Effects Analysis to recognize that there is no data to support an assumption that project operations are entraining *Pseudodiaptomus forbesi.*

Request correction of the Effects Analysis to recognize that there are no data to support an assumption that entrainment is affecting delta smelt abundance.

Request correction of the Effects Analysis to recognize that *Pseudodioptomus* densities in Suisun Bay are not correlated with Project exports.

The Effects Analysis attempts to bolster the assumption that that project pumping affects delta smelt abundance by asserting it reduces food supply levels by entraining *Pseudodiaptomus forbesi*. This is yet another attempt to subvert clear evidence, supported by data, that other factors independent of Water Project operations are the basis for smelt abundance.

In order to tie water project operations to the decline in delta smelt abundance, the Effects Analysis asserts that food supply declines are the result of entrainment of *Pseudodiaptomus forbesi* due to water project operations. The Effects Analysis, with no supporting data and in clear violation of both the ESA and IQA, asserts in the Effects Analysis that entrainment of one of the delta smelt's preferred copepod prey species, *Pseudodiaptomus forbesi*, in the summer (June-September) occurs at levels sufficient to result in adverse population-level effects on delta smelt.

Pseudodiaptomus is the primary prey for juvenile delta smelt during summer months. In combination with juvenile delta smelt abundance in the summer it is a primary determinant of abundance effects, as measured by the FMWT index[76]. However, the Effects Analysis's contention that *Pseudodiaptomus* densities in areas inhabited by most delta smelt in the summer are significantly adversely affected by its entrainment at the CVP and SWP export pumps in the south delta is complete supposition and not supported by any data whatsoever, in clear violation of the requirements of both the ESA and the IQA.

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[75] See Appendix E

[76] Council for Endangered Species Act Reliability September 8, 2008 comment letter on the FWS 90-day finding to reclassify the delta smelt as endangered. Appendix 12

Analytically, if entrainment of *Pseudodiaptomus* were affecting delta smelt food supplies, and, as a result, delta smelt abundance, the relationship would manifest itself as a correlation between export volumes and *Pseudodiaptomus* densities[77]. No such correlation has been identified.

Data from Delta sub-areas can be used to address the relationships between *Pseudodiaptomus* densities in areas of the Delta that are important to delta smelt in the summer. The 2005 Peer Review[78] suggested such investigation. Specifically the peer review suggested that three variables that should be important to the issue of *Pseudodiaptomus* availability and water export operations in specific areas of the Delta: The areas suggested for examination were: the lower Sacramento River, Chipps Island, and Suisun Bay. The variables examined were: abundance of *Pseudodiaptomus* in the San Joaquin River side of the Delta (lower San Joaquin River, near Franks Tract, the southeast Delta, and the east-southeast Delta), Delta inflow, and water exports. The analyses found strong correlations between Delta sub-area densities and total *Pseudodiaptomus*. This indicates that when *Pseudodiaptomus* densities are relatively high in one habitat sub-area they tend to be high in other sub-areas. No correlations were found between copepod densities and exports or inflow. Additionally, there was a highly significant correlation between *Pseudodiaptomus* densities in Suisun Bay and those in Suisun Marsh. This means that if Suisun Bay densities are being supported by other population centers, the most likely source is Suisun Marsh. The analyses referred to above are obvious, simple, and straightforward and based on data readily available to the Service, so there is no excuse for ignoring such analyses in favor of an unsupported assertion in this Effects Analysis.

In the case of the delta smelt, the Effects Analysis appropriately considers the specific species of copepod preferred by the delta smelt, *Pseudodiaptomus forbesi*, rather than some more general measure of food such as total calanoid copepod biomass. Prey selectivity, the preference of fish for a particular species of prey, is well-known for fish in general[79] and for delta smelt in particular.[80] Failure to account for prey selectivity can result in obscuring or eliminating important relationships between abundance and food limitation, leading to spurious correlations between abundance and any factor trending up or down with time, such as exports, for example. However, the conclusions and assumptions made in the application of this knowledge are not defensible in the context of the requirements of the ESA and IQA.

It is known that between 1989 and the present – the period after which the introduced *Pseudodiaptomus* became well established in the delta – on average about one-half of overall population of delta smelt have occupied the lower Sacramento River in summer (see Figure 1 for area locations). On average, the remaining one-third of the population has resided just downstream, in the Chipps Island area and in Suisun Bay. If population augmentation from upstream is a major contributor of *Pseudodiaptomus* to the lower Sacramento River, it likely

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[77] A fundamental premise of statistical analysis is that both correlation and causation are necessary to accurately identify cause and effect relationships. While it is possible for correlation to exist where there is no cause and effect relationship, it is not possible for a cause and effect relationship to exist without correlation. In the case of delta smelt and project pumping, the EA is asserting a cause and effect relationship where there is no identifiable correlation.

[78] *Review Panel Report: San Francisco Estuary Sacramento-San Joaquin Delta Interagency Ecological Program on Pelagic Organism Decline;* December 29, 2005

[79] (O'Hare, James. "Prey selectivity of planktivorous fish: Analysis of stomach contents in four Pomacentrids at Lizard Island, Great Barrier Reef" (2008). ISP Collection. Paper 54.; Kao T. Li, James K. Wetterer, Nelson G. Hairston Jr. (1985) Fish Size, Visula Resolution, and Prey Selectivity. Ecology: Vol. 66. No. 6. pp. 1729-1735.; Mechanisms of selectivity in a nocturnal fish: a lack of active prey choice., Holzman R. Genin A., Oecologia. 2005 Dec;146(2):329-36. Epub 2005 Oct 28.

[80] Feeding Habits of Juvenile and Adult Delta Smelt from the Sacramento-San Joaquin River Estuary, J. Lott, Interagency Ecological Program Newsletter, Winter 1998.; Evidence of Food Limitation in Larval Delta Smelt, M. Nobriga, Interagency Ecological Program Newsletter, Winter 1998.

comes from upstream in the Sacramento River, rather than from the San Joaquin River side of the Delta. Subsidization of copepod densities from upstream in the Sacramento River would not be significantly affected by their entrainment at the export pumps. Similarly, if subsidization of *Pseudodiaptomus* densities actually occurs in Suisun Bay, those subsidies likely come from Suisun Marsh, which is adjacent to Suisun Bay, is hydraulically connected with it, and produces high densities of *Pseudodiaptomus* relative to Suisun Bay.

Finally, in 18 of the 19 years preceding 2007, water exports during the June to September period were greater than the average San Joaquin River flow. Under those prevailing conditions, it is unlikely that any effective subsidization of downstream *Pseudodiaptomus* densities could have occurred from the San Joaquin River side of the Delta – the majority of that water is diverted to the CVP and SWP. During that period, densities of *Pseudodiaptomus* in downstream areas where most delta smelt reside ranged from high levels (3,000/m3) in the lower Sacramento River area, to moderately high levels (2,000/m3) in the Chipps Island area, to relatively lower levels (1,000/m3) in Suisun Bay, indicating that any lower Delta copepod subsidy to areas supporting higher densities of delta smelt is derived from Sacramento River and north Delta sources. Of additional importance, the FMWT index of delta smelt abundance showed increases in value (delta smelt population size) in six of those same 19 years, indicating no consistent impact on delta smelt population size due to *Pseudodiaptomus* limitation in summer. If entrainment of *Pseudodiaptomus* were having important, adverse effects on *Pseudodiaptomus* in downstream areas in the summer, and those effects led to low abundance of delta smelt in fall, the fact that all San Joaquin River water was being diverted by exports pumps should have produced consistently low values of both *Pseudodiaptomus* in summer and the FMWT index in the fall. Available data show that neither occurred.

The data as well as logical analysis based on scientific principle demonstrate that the contention that export curtailments from June through September to enhance *Pseudodiaptomus* densities in downstream areas inhabited by most delta smelt and cause increases in spawning abundance as measured by the FMWT index is without foundation. Further, the Service's failure to acknowledge the data and readily available information that refutes this is a clear demonstration that the information included in the Effects Analysis is inaccurate, incomplete, and biased,

FWS Letter Response

***Response**: This section was revised in the final version of the biological opinion (see page 228). Therefore, no correction is needed.*

***Response**: This CR is the same as CR6 (part 1). The biological opinion states that direct entrainment can have adverse effects to delta smelt population numbers. The CR does not provide information demonstrating that this is not accurate. Therefore, no correction is needed.*

***Response**: This section was revised in the final version of the biological opinion (see page 228). Therefore, no correction is needed.*

APPEAL

The FWS's referenced revisions to the 2008 Biological Opinion merely remove the explicit assertion that entrainment of *Pseudodiaptomus forbesi* was adversely affecting delta smelt. That document continues to assert there is project entrainment of delta smelt food supply as evidenced by the following:

> *This might make Pseudodiaptomus more vulnerable to pumping effects from the export facilities than Eurytemora and Neomysis were. By extension, the projects might have more effect on the food supply available to delta smelt than they did before the overbite clam changed the LSZ food web. As evidence for this hypothesis, the IEP Environmental Monitoring Program zooplankton data show the summertime density of Pseudodiaptomus is generally higher in the South Delta than in Suisun Bay.*

The 2008 Biological Opinion provides no data or analysis to support a hypothesis or assertion that entrainment of *Pseudodiaptomus forbesi* is affecting delta smelt abundance. FWS makes these assertions with no data or analysis to support even this significantly qualified assertion.

Detailed discussions and references to data and analysis supporting a conclusion that entrainment has unimportant effectscan be found throughout this document.

Alliance members will suffer irreparable harm if the Request remains unresolved.

Correction Request 8 (Effects Analysis pages 27 -31 and related statements throughout the Effects Analysis)

- **Request correction of the Effects Analysis to recognize that there is no data to support an assumption that project operations are affecting habitat suitability[81].**
- **Request correction of the Effects Analysis to recognize that 'habitat' consists of many more variables than just X2, turbidity, and temperature.**
- **Request correction of the Effects Analysis to recognize that the 'correlation' between delta smelt abundance and previous fall X2 is based on a single data point;**
- **Request correction of the Effects Analysis to recognize that previous fall X2 is not a predictor of the recent abundance decline;**
- **Request correction of the Effects Analysis to recognize the referenced study which forms the basis of the statements regarding project operation effects on habitat included in the Effects Analysis contained an explicit warming that other factors, particularly food limitation, could be important;**

[81] See Request for Corrections 7 and 8

- **Request correction of the Effects Analysis to recognize that food limitation in the spring, which is independent of project operations is a better predictor of future delta smelt abundance;**

- **Request correction of the Effects Analysis to recognize that food abundance is highly correlated with the recent decline in delta smelt abundance;**

- **Request correction of the Effects Analysis to recognize that when food abundance is accounted for, the effect of previous fall X2 on delta smelt abundance is unimportant.**

The Effects Analysis discussion of project effects on habitat suitability has major flaws:

The use and application of the term 'habitat' in this context is explicitly wrong and therefore compromises all the conclusions that are drawn regarding water export impacts on delta smelt. Habitat is a species-specific concept. For the delta smelt, the term habitat encompasses the biotic and physical resources used by the fish, and physical circumstances that support those resources. Those resources include, but are not limited to, delta waters that exhibit a constrained range of temperatures, salinity, turbidity, and dissolved oxygen; water not compromised by contaminants that affect smelt or their prey, and in which predation is below some yet-to-be-identified minimum; water that is subject to appropriate hydrodynamic circumstances, related to currents, and tidal and flood patterns; substrates with composition that has a limited range of grain sizes and organic content, and cover vegetation, rock outcroppings, and ecotonal situations that may be especially exacting; and, of course, areas that provide food in abundances adequate to support growth, dispersal, and reproduction by delta smelt.

The subset of habitat attributes that are essential for smelt survival and persistence vary through time with the life history stages of the smelt, as it meets its needs for spawning and egg incubation, juvenile rearing and dispersal, and adult growth, mating, and dispersal[82]. The suggestion that previous fall X2 can serve as a sole and adequate surrogate for the multitude of environmental attributes that constitute delta smelt habitat for purposes of analysis and environment assessment in support of CVP and SWP operations policy is indefensible.

The lens of delta water that has salinity that can support delta smelt, which moves both daily and seasonally within the delta hydroscape, is a necessary element of the habitat that is suitable for delta smelt, but it is not nearly sufficient by itself to define the geographic position of delta smelt for purposes of assessing effects of the CVP and SWP on the fish. So inappropriate is the use of X2 as a surrogate for smelt habitat, that Feyrer et al. (2007) were limited to using X2 to represent, not habitat, but what they referred to as EQ (environmental quality). In fact, Feyrer et al. commit much of the narrative discussion in their article to describing the additional physical and biotic environmental attributes that would have to be integrated into their analysis before they could defensibly characterize the geographical position of delta smelt habitat. In clear violation of the IQA requirements for accuracy, completeness and an a particularly biased manner, the Effects Analysis fails to provide this information.

[82] It should be noted that here as well as in other areas, the FWS has opted to rely on supposition rather than actual research.

Instead, ignoring the authors' cautions, the Effects Analysis improperly defines delta smelt habitat and the extent and distribution of habitat as it pertains to impacts from the CVP and SWP on the fish. Furthermore, the Effects Analysis includes the astounding assertion that delta smelt habitat itself is being entrained in the export pumps[83]. This assertion is clearly unfounded and unsupported by any data whatsoever.

Ignoring data and analysis that produce far better predictive capability, on significantly more data than one point, the Effects Analysis asserts that previous fall X2 is an indicator of fall habitat suitability and therefore assumes water project exports are a primary driver of delta smelt habitat suitability[84]. This is based on a correlation reported at the 2008 Interagency Ecological Program Annual Workshop in Pacific Grove, California. The correlations rely on one data point from 1999 to generate statistically significant effects. These assertions ignore the fact that previous FMWT alone is better at predicting the recent low values of STN than FMWT and previous fall X2[85]. In other words, when fall X2 becomes part of the prediction equation, the prediction is less, not more accurate at predicting the recent decline than simply relying on past abundance as a predictor of future abundance. This indicates that some other factor, unaccounted for in Feyrer et al's analysis, caused the recent decline.

The Effects analysis ignores Feyrer et al's warnings that inclusion of other factors would improve their analysis. An analysis by Manly (Manly 2008) includes those other factors. that analysis found food limitation and temperature to be important. Previous fall X2 had no statistically significant effects on subsequent summer abundance once other, more important factors were included in the analysis.

Finally, the Effects Analysis contains statements that appear to be crafted to marginalize data and analytical results that demonstrate that CVP and SWP operations have insignificant effects on delta smelt abundance. The Effects Analysis includes the seemingly begrudging acknowledgement that "currently published analyses of long-term associations between delta smelt salvage and subsequent abundance do not support the hypothesis that entrainment is driving population dynamics year in and year out..."[86]. In fact, all analyses of salvage and subsequent abundance completed to date indicate that there is no statistically significant relationship between the two variables.

FWS Letter Response

Response: *The biological opinion in the "Habitat Suitability" section starting on page 233 describes how the projects adversely affect the habitat of the delta smelt by various potential mechanisms. As described by Feyrer et al. 2007, during the fall, the amount of available delta smelt habitat is directly affected by operations. The final biological opinion discusses how operations are affecting habitat. Therefore no correction is needed.*

[83] EA at 1-2
[84] EA at 30:
[85] The comparison is between the regression lines produced by the analyses.
[86] EA at 5

APPEAL

The ESA and the IQA provide for the use of data and do not allow the FWS to substitute supposition, speculation, or hypothesis. The 'potential mechanisms' for habitat effects referenced in the FWS response, are simply guesses as to what may be happening and do not meet the regulatory standards required by the ESA and the FWS IQA Guidelines.

Further, the effect of project operations on habitat is necessarily dependent on the definition of the environmental baseline. The FWS definition of environmental baseline is as follows:

> *The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process*[87].

This definition is predicated on a temporal point in time whereby all effects of the proposed operation are measured against some existing baseline. The 2008 Biological Opinion does not describe the baseline *per se*. It contains much general information regarding the species, and various biological and environmental 'factors'. But, nowhere does that documentl identify a temporal point whereby a 'before the project' condition and 'after the project' condition can be identified.

Section 7 consultation requires an analysis that looks at the world before the federal agency takes its action. It identifies existing conditions, it identifies those conditions which are expected to occur due to other projects known to be underway, and it includes those projects for which consultation has occurred. All of these conditions must be identified so that those changes which result from the implementation of the federal project that is the subject of the consultation may be identified and their incremental effects parsed.

The 2008 Biological Opinion provides no such analytical framework or approach. Further, the FWS relies on X2 as a proxy for habitat conditions. Such an assumption is not supported by the data nor is it supported by the critical habitat designation that was promulgated in 1994.

Accordingly, the 2008 Biological Opinion must be corrected as requested to address explicitly the incremental habitat changes from the baseline that are the result of the proposed action. It must also identify the specific time frame which represents the environmental baseline and the explicit incremental changes in habitat and other baseline characteristics which are the result of the proposed action as opposed to those which would occur in its absence.

Alliance members will suffer irreparable harm if the Request remains unresolved.

[87] 50 C.F.R. 402.02

Correction Request 9 (Effects Analysis pages 3-4 and related pages in the Effects Analysis)

Request correction of the Effects Analysis to examine a range of temperature scenarios. Currently, the Effects Analysis assumes only higher temperatures.

Request correction of the Effects Analysis to include a discussion of the limitations of existing climate models.

Request correction of the Effects Analysis to recognize that climate change will occur independent of project operations, and thus is not an 'effect' of the Projects.

The Effects Analysis assumes that climate change will occur, and the assumption is valid based on the fact that the earth's climate is ever-changing in such complicated ways, it is not possible to accurately model the changes. However, the extent to which climate will change, and the direction, timing, and magnitude of the change is unknown.

Information on the relative sensitivity to assumptions whose validity cannot be tested in the IPCC models and other models which predict warming is readily available[88].

Further, climate change, whether manifested as cooling, warming or maintenance of the status quo, is not a matter for the 2008 Biological Opinion to address as it is not an effect of the project under the definition of direct and indirect effects. The effects of a federal action are defined by the Service as "the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action, that will be added to the environmental baseline[89]." If an effect would occur whether or not the action takes place, it is not an effect of the action[90]. Furthermore, if an effect could occur but is not reasonably certain to occur, it is not an effect of the action[91].

While the Service may examine potential scenarios based on climate change assumptions, it may not predicate any effect of the project based on a purely speculative future climate scenario which is not an effect of the project. The ESA requirement for preparation of the biological opinion does not require the Service to predict the future, it merely requires an evaluation of the effects of a federal action under existing circumstances. Because a series of assumptions can be assembled that predicts a catastrophic climate change, does not mean that the assumptions meet the standards of the ESA or the IQA. Failure to meet those standards precludes them from being used as highly influential information.

The discussion of climate change does not meet the requirements of the ESA because it is not based on data.

The discussion of climate change does not meet the requirements of the IQA because:

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[88] http://epw.senate.gov/public/index.cfm?FuseAction=Minority.Blogs&ContentRecord_id=f80a6386-802a-23ad-40e8-3c63dc2d02eb

[89] 50 C.F.R. 402.02

[90] *Endangered Species Consultation Handbook* at 4-27 (March 1998). *Accord* 73 Fed. Reg. 47,868, 47,870 (Aug. 15, 2008) (preamble to proposed amendments to the joint consultation regulations); 51 Fed. Reg. 19,926, 19,932 (June 3, 1986) (preamble to final rule establishing the joint consultation regulations)

[91] 50 C.F.R. 402.02 (definition of "effects of the action" including indirect effects). *Accord* 73 Fed. Reg. at 47,870

- ✓ It is incomplete and biased in that it fails to disclose the assumptions behind the predictions for warmer temperatures
- ✓ It is incomplete and biased in that it fails to disclose the significant scientific disagreement surrounding the assumptions
- ✓ It is incomplete and biased in that it fails to examine the full range of potential climate change, instead assuming only temperature increases

FWS Letter Response

Response: *The Service used the information on climate change that was presented in the biological assessment. All of the climate change scenarios presented in the biological assessment projected higher temperatures, and we used this analysis in the biological opinion. While climate change will occur regardless of effects, this biological opinion covers a long period of operations and, as a result the Service was required to look at the effects of the proposed action under the various climate change scenarios that may manifest themselves during the term of the proposed action. Therefore, no correction is needed.*

APPEAL

In simply relying on the climate change scenarios presented in the biological assessment, the FWS is unnecessarily limiting its review of the potential scenarios that may occur over the term of the proposed action. Further, in refusing to identify the limitations, assumptions and unknowns implicit in the climate models used, the FWS fails to meet the transparency standard of the FWS IQA guidelines. Finally, while climate change may occur, the fact that it occurs is not an effect of the proposed action.

Accordingly, we request that the FWS examine a range of climate change scenarios as well as identify the underlying assumptions, unknowns, and limitations of the climate models used to identify the effects of climate change. Finally, we request that the FWS explicitly recognize that climate change is not an effect of the projects.

Alliance members will suffer irreparable harm if the Request remains unresolved.

Correction Request 10 (Effects Analysis pages 2-27 and related statements)

Request correction of the Effects Analysis to abandon its reliance on *Grimaldo et al.* which is not only unavailable, but which relies on an analytically flawed premise, thus violating the requirement of the ESA that the biological opinion be based on the best *available* data, and the requirement of the IQA that analysis be accurate.

The Effects Analysis relies on *Grimaldo et al.* (in review) which uses a linear model. The model was used to predict annual winter salvage by relating salvage to Old and Middle River (OMR)

flows[92]. However, salvage is non-linear as was demonstrated by the data and analyses provided to the FWS. Ms. Sheila Greene, a biologist with the California Department of Water Resources, produced analyses as early as March, 2007 that show January and February salvage compared to OMR flows[93]. Because the salvage is non-linear, use of a linear model is facially inaccurate and violates the IQA. Manly also evaluated salvage in relation to OMR flows and found the relationship is non-linear, resembling an exponential relationship[94]. Kimmerer (2008) used a non linear distribution to estimate entrainment in relation to OMR flows.

By referencing a study that is unavailable to the public and embarking on highly technical and site specific discussions regarding delta smelt and discrete flows, the FWS is attempting to make a hypothesis to be a fact. The Effects Analysis details numerous highly technical analyses and assumptions which confuse the reader and lead them to believe there is data to support an assertion that export pumping has important abundance effects on delta smelt, when in fact, there is no such data.

There are multiple methods for examining pumping and localized effects on the numbers of smelt entrained. However, to date all of these analyses, which represent the best available data, demonstrate repeatedly, that despite the localized effects, entrainment has no important abundance effects on delta smelt.

FWS Letter Response

Response: *The Service used the best available scientific and commercial information available in its analysis. Grimaldo et al. is an accepted manuscript. Again, the CR does not demonstrate why Grimaldo et al. is based on an analytically flawed premise and the Service believes the analytical framework presented in Grimaldo et al. is not flawed. Therefore, no correction is needed.*

APPEAL

The FWS response to CR10 is incorrect. The standard for the Secretary's opinion under ESA Section 7 is: '...the best scientific and commercial **data** available...'. In relying on '*the best available scientific and commercial information*' in the preparation of the 2008 Biological Opinion the FWS failed to meet the ESA standard. Further, the data used by the FWS in preparation of the biological opinion must be available. The *Grimaldo* manuscript was not available when the biological opinion was disseminated and remains generally unavailable to the public, and thus does not meet the standard required under the ESA or the FWS IQA Guidelines. Finally, the detailed request for correction provided 3 different contemporary references which questioned the approach used by *Grimaldo*, so our Request does indeed provide a demonstration of why the approach is analytically flawed.

Alliance members will suffer irreparable harm if the Request remains unresolved.

[92] EA at 6-7
[93] Declaration of Sheila Greene NRDC v. Kempthorne
[94] Manly and Chotkowski, Arch. Hydrobiol. 167 1-4 593-607 September 2006

Correction Request 11 (Effects Analysis pages 2-27 and related statements)
Request that the analytically flawed comparison of actual historical conditions to simulated conditions be removed.

Request correction of flawed analytical approach comparing actual to modeled scenarios be replaced by the analytically correct comparison of modeled scenarios to modeled scenarios.

Request that the Effects Analysis estimate the effects of the proposed Project by comparing how predicted larval-juvenile entrainment in scenario 7.0 compares to the other studies.

The Effects Analysis compares monthly or seasonal results of *simulated* scenarios to *actual* historical monthly salvages and uses them to estimate CVP and SWP entrainment effects. Comparing simulated conditions to actual historical values is the way that models are adjusted to ensure their results are accurate, at least for the time period of the comparison[95]. **However, such comparisons are not appropriate as a basis for comparing historical conditions with those resulting from changes to historical conditions for a number of reasons.**

The outcome of these comparisons is highly influential information as it is the basis upon which operational controls on water Project operations will be predicated. Such highly influential information is governed by the OMB Guidelines which have been adopted by the FWS in their entirety.

The Effects Analysis appropriately uses the historical median salvage for 1987-2007 to evaluate differences between the model scenarios and baseline conditions. However, the FWS fails to note that the reason for the use of this particular time frame is that it captures the ecosystem change which occurred with the invasion of the Amur River clam *Corbula amurensis*. Thus, this truncated period rather than the entire data set for Project operations represents existing conditions in the system. The choice made by the FWS is highly influential information because the choice of time frame examined affects the outcome of the examination.

The Effects Analysis scenario 7.0 was identified as the baseline condition for comparison with future condition scenarios 8.0 through 9.5[96]. However, instead of evaluating future conditions relative to scenario 7.0, which would at least have examined comparable data; the FWS compared all scenarios to an actual historical median salvage. Even the Peer Review noted that a historical baseline is difficult to use in this situation because the system has changed so frequently[97]. However, the peer review failed to note the inappropriateness of comparing modeled scenarios to historical data. In fact, the Peer Review expressed surprise at how much scenario 7.0, the current conditions baseline, differed from historical data[98]. This suggests that the peer reviewer failed to understand or acknowledge the fact that no meaningful information can be derived from a comparison of historical data to simulated current or future conditions

[95] For example, CALSIM II has been calibrated to specific years in its historical period 1922-2003 by modeling historical operational criteria, hydrology, and demands. The calibration is not for every single year, but for years that are most likely to require alteration of normal operational procedure, such as drought years and flood years.
[96] *See* U.S. Bureau of Reclamation, OPERATIONS AND CRITERIA PLAN BIOLOGICAL ASSESSMENT 9-33 (2008).
[97] Peer Review at 5
[98] Peer Review at 5

using CALSIM II. This is because the very basis of CALSIM II assumes conditions far removed from any actual present or historic conditions.

Recomputing winter OMR flow differences to compare to scenario 7.0 – which is the analytically proper approach, – results in drastic reductions in the reported differences. Table 3b from the Effects Analysis is reproduced below, with a corrected version immediately following.

Table 3b. Winter OMR flow percent difference from historic median value to CALSIM II model median valuc

WY Type	7	7.1	8	9	9.1	9.2	9.3	9.4	9.5
Wet	409%	432%	452%	450%	433%	287%	256%	584%	491%
AN	39%	53%	56%	57%	47%	33%	34%	52%	49%
BN	169%	197%	191%	174%	167%	135%	180%	179%	164%
Dry	17%	26%	21%	20%	15%	24%	35%	5%	5%
Critical	-10%	-2%	-1%	0%	-9%	6%	3%	-15%	-24%

Table 3b. Corrected. Winter OMR flow percent difference from CALSIM II model 7 median value to CALSIM II model median value

WY Type	7	7.1	8	9	9.1	9.2	9.3	9.4	9.5
Wet		5%	8%	8%	5%	-34%	-30%	34%	16%
AN		10%	12%	13%	5%	-5%	-4%	9%	7%
BN		12%	8%	2%	-1%	-13%	4%	4%	-2%
Dry		8%	4%	3%	-1%	6%	15%	-10%	-11%
Critical		8%	10%	11%	1%	17%	14%	-6%	-15%

Clearly, the corrected values are greatly reduced from those evaluated in the Effects Analysis. Likewise, predicted salvages of the modeled scenarios were based on comparison with predicted salvage using historical OMR flows. Comparing the modeled scenarios with scenario 7 results in far less incremental impacts than those computed in the Effects Analysis. In the Effects Analysis, the FWS predicts delta smelt salvage to be up to 65% greater in wet years when compared to historical OMR flows. Comparing to scenario 7.0 wet years shows that predicted salvage would range from -12% to 13% using the equation found in Figure 1 and applying it to December-March OMR flows shown on Table 3a of the Effects Analysis. Scenario 9.4 shows the greatest difference (13%); this is the scenario that modeled climate change in the Delta region to result in drier years with lesser warming. Without considering future climate change, scenario 8 shows only a 3% difference in salvage from scenario 7.0.

Predicted larval-juvenile entrainment comparisons in the Effects Analysis have no comparative basis. The Effects Analysis states that <20% of the larval-juvenile population was entrained in 67 percent of the years from 1995-2005, but only 44% of the years from 1967-1994. Since the Effects Analysis must estimate the impacts of the proposed Project against a baseline, which is specified as scenario 7.0, the real comparison should be how predicted larval-juvenile

entrainment in scenario 7.0 compares to the other studies. This critical information isn't provided in the Effects Analysis.

The comparison violates the IQA in several ways:

- ✓ It is biased and inaccurate in that it compares data that is not comparable and thus the results are flawed; and
- ✓ It is incomplete in that it fails to provide a comparison between the baseline and other modeled scenarios, which is the primary purpose of the biological opinion.

FWS Letter Response

Response: *The Service used an analysis of the BA's model runs versus the historical data for a number of reasons. The BA did not include a modeling run that accurately demonstrated the projects' historical pumping amounts. For example, the model run 7.0, which was to represent the current conditions, had operations of the projects that were very different than historical operations. Therefore, an analysis that evaluated the relationship of the modeled runs to the historical data was used. This analysis was also done to evaluate how operations have changed from when delta smelt were more abundant prior to the year 2000 to more recent operations. Therefore, no correction is needed.*

APPEAL

The FWS had ample opportunities to address modeling limitations prior to completion of the 2008 Biological Opinion as well as during and after completion of the biological assessment. The FWS IQA Guidelines do not contemplate using analytically incorrect approaches when an analytically correct approach is not available. With respect to comparing operational changes from 2000 to more recent operations, there is only one comparison that is important, that of the environmental baseline conditions to the effects of the proposed action. The incremental changes should compare like quantities. The FWS's failure to do so compromises the integrity of the entire analysis as the comparisons that are being made are inappropriate and meaningless; they have no relationship to one another that can be articulated.

We also note that the assumption underlying the modeling analyses, that Old and Middle River flows and fall X2 have important effects on Delta smelt abundance, are unsupported by data.

Alliance members will suffer irreparable harm if the Request remains unresolved.

Correction Request 12 (Effects Analysis failure to include information)

Request correction of the Effects Analysis to recognize superior scientific data demonstrating that food availability is a better predictor of delta smelt abundance than low salinity habitat availability (X2)

The Effects Analysis recognizes the importance of food in determining delta smelt abundance[99]. And, while the Effects Analysis recognizes that the survival of larval and juvenile smelt are critical to abundance (see Bennett 2007), it nowhere considers that availability of food for larvae and juveniles in spring is more likely to control subsequent summer juvenile abundance than is the availability of larger areas of low salinity water the previous fall, despite having this information. Larvae and juvenile delta smelt feed predominately on the carangid copepods *Eurytemora* and *Pseudodiaptomus forbesi* in the spring. *Eurytemora* are more abundant in early spring, falling to low densities in May or June; *Pseudodiaptomus forbesi* densities rise soon after and persist through the summer. The late-spring low point of combined availability of these two copepods could be a time of food stress for larval and juvenile delta smelt. This springtime "food gap" has occurred each year during the recent years of dramatic delta smelt abundance declines; but the gap did not occur in years that preceded the population declines. Notwithstanding the X2 status in the previous fall, if delta smelt cannot survive the spring food gap, they will die and not contribute summer population measures.

Taking natural logs of available data for smelt population size from 1987 to 2006, ln STN (the summer delta smelt index value) shows a statistically significant relation with ln (spring minimum average *Eurytemora* (E) + *Pseudodiaptomus forbesi* (P) density) and ln previous year's FMWT (the fall delta smelt index value) of the form

$$\ln STN = -5.8 + 0.64 \ln (\text{previous FMWT}) + 0.61 \ln (\text{minimum E+P density})$$

This equation accounts for 65% of the variation in the summer delta smelt index values from 1987 to 2006, with previous FMWT index values significant at $p = 0.0008$, and the minimum sample density of *Eurytemora* plus *Pseudodiaptomus forbesi* significant at $p = 0.01$. With these data, a statistically significant relationship exists irrespective of whether the 1999 data are included. And, adding September-December average X2 values to the regression equation does not improve the significance of the relationship. These analyses which have been provided to the FWS on multiple occasions, are not referenced and not considered in the Effects Analysis. The analyses demonstrate that food availability, not outflow patterns, is a predictor of subsequent delta smelt abundance. The Feyrer at al. analysis, when corrected to include food limitation as suggested, shows no such prediction based on previous fall X2 (salinity).

The Effects Analysis does not meet the requirements of the ESA by failing to use the best available data for predicting the effects of water Project operations when they ignore the superior predictive capability of food supply, and arbitrarily and capriciously rely on the poorer predictive capability of X2 (low salinity habitat availability).

By ignoring the superior predictive ability of food supply to X2 the Effects Analysis fails to comply with the IQA by providing incomplete information in the analysis of water Project operation effects on delta smelt.

The Effects Analysis is biased in that by failing to recognize the superior ability of springtime food supply to fall low salinity in determining delta smelt abundance, it erroneously implies that Project operations affect delta smelt abundance.

[99] Effects Analysis at 22 (citing analysis by Miller and Mongan).

FWS Letter Response

Response: *Food availability and low salinity habitat availability (X2) are two conditions that are affected by the Projects. The CR did not provide any information conclusively demonstrating that food availability is a more accurate predictor of delta smelt abundance, nor data demonstrating that use of X2 is an inaccurate predictor of delta smelt abundance. The Service used X2 for its analysis and no alternative or conflicting data are presented in the CR. Therefore, no correction is needed.*

APPEAL

The FWS has received analyses demonstrating that food availability is a better predictor of smelt abundance than $X2^{100}$. The standard for use of data under the ESA and the IQA is the **best** data available. This has been interpreted by the courts to mean that the FWS must use superior data when it is available. It certainly does not mean that because superior data is not conclusive, the FWS may choose to use poorer quality data in violation of its own IQA Guidelines.

Alliance members will suffer irreparable harm if the Request remains unresolved.

Correction Request 13 (Effects Analysis page 31 and other related statements)

Request correction of the Effects Analysis statement that extremely stable low outflow conditions in the fall are the result of CVP and SWP operations;
Request that:

- **All statements, insinuations, and direct assertions that Project operations cause low flows in the fall be corrected to accurately represent that low flows occur naturally and project flows increase naturally occurring flows in the fall;**
- **Recognize that the adverse effects of fall low flows occur independently of Project operations.**
- **Recognize that Project operations likely provide a benefit in the fall by increasing naturally low flows.**

The Effects Analysis attributes extremely stable low outflow conditions in the fall to CVP and SWP operations and concludes that such conditions will likely contribute to numerous factors that harm the delta smelt, such as higher water toxicity and the potential suppression of phytoplankton production by ammonia entering the system from wastewater treatment plants.

This statement is so vague, speculative, biased, inaccurate and incomplete, that it does not belong in the Effects Analysis.

[100] Paper referenced as 'Manly Multivariate Analysis': Identification of factors affecting delta smelt abundance; WJ Miller, D Fullerton, TR Morgan: July 31, 2008.

- The assertion that extremely stable low outflow conditions in the fall is a new condition attributable to the operation of the CVP SWP is false. Ambler et al. pointed out that seasonal changes in hydrography in the Delta are mostly direct responses to the annual periodicity of river discharge, which is "consistently low during summer-fall"[101].

- In the fall, when the Effects Analysis contends that low flows caused by CVP and SWP operations would contribute to indirect effects, river flows are, in fact, *higher* with CVP and SWP operations than they would be absent such operations. Analysis of the hydrographs for the Sacramento and San Joaquin Rivers in all year types demonstrates this fact. This information is readily available to the authors of the Effects Analysis.

Each of the indirect effects of Project operations which the Effects Analysis asserts are addressed in separate requests for correction. However, the statement that Project operations contribute to "extremely stable low outflow conditions resembling dry or critical years proposed for the fall across all water year types"[102] is highly influential information.

In clear violation of the IQA, the authors of the Effects Analysis represent the information in a biased, unclear, inaccurate and directly misleading manner in order to support their completely unfounded assertion that declines in delta smelt abundance are the result of Project operations.

The statements in the Effects Analysis related to fall low flows are inconsistent with the requirements of the ESA in that they attribute effects to Project operation which are neither direct nor indirect.

The statements in the Effects Analysis related to fall low flows are inconsistent with the requirements of the IQA in that they:

- ✓ Are inaccurate in that they attribute effects to Project operations that occur independently.

- ✓ Are biased and incomplete in that they fail to recognize project flows actually increase naturally low flows in the fall.

- ✓ Are biased, inaccurate, and incomplete in that they fail to recognize that project flows actually provide a benefit by increasing naturally low flows.

FWS Letter Response

Response: *The analysis presented in the biological opinion on pages 179 and in the "Habitat Suitability" section on page 233 indicates outflows in the fall are lower during wet hydrologic years than existed in the early 1990s. Fall outflows during wet and above normal years are now the same as dry and critical years and the variability, that once existed with outflows being higher in the fall following wetter years no longer remains. All fall outflows are generally the same, regardless of the previous water year conditions, which limits the available habitat for delta smelt in all water years. Therefore, no correction is needed.*

[101] Julie W. Ambler et al., *Seasonal cycles of zooplankton from San Francisco Bay*, 129 HYDROBIOLOGIA 177, 181 (1985).
[102] Effects Analysis at 31

APPEAL

Low flows occur naturally in the fall. The proposed Project operations will result in higher flows in dry years than would otherwise occur. Dry years are when toxicity concentrations and/or ammonia concentrations would normally be highest. Thus, the proposed project operations will result in an increased dilution of toxicity and ammonia in those years when it would be expected to be the worst. Reduction of what are likely the highest occurring toxicity and ammonia levels is a beneficial effect The FWS response fails to acknowledge this.
Further, the response assumes without supporting data that delta smelt "habitat" is defined by fall outflow, while habitat actually depends on many factors. The response further assumes that delta smelt abundance is affected in an important way by this "habitat," which is not the case as shown by several submittals ignored by FWS[103]. Finally, the response makes the unsupported assertion that variability in fall outflow is important to delta smelt abundance.

Alliance members will suffer irreparable harm if the Request remains unresolved.

Correction Request 14 (Omission)

Request correction of proportional larvae-juvenile entrainment estimates by Kimmerer to account for mistakes in that analysis that caused estimates to be too high;

The Effects Analysis ignores the fact that one of the primary sources for the Effects Analysis Kimmerer (2008) contains an analytical error that causes the over estimation of proportional entrainment for larvae-juveniles. The entrainment estimates are too high because the analysis assumes that 'natural mortality' is uniform across the habitat. In fact, because of higher water clarity near the pumps in recent years, "natural mortality' was higher near the pumps[104] and therefore, mortality due to entrainment is lower.

FWS Letter Response

Response for CR 14 and CR15: *Kimmerer 2008, a peer-reviewed and published paper, presents the best larval and juvenile entrainment estimates that have been conducted to date. The FWS used Kimmerer 2008 as it was the best available science, as required under the ESA. The CR did not contain information or analysis demonstrating conclusively its assertion of inaccuracies in Kimmerer 2008. Therefore, no correction is needed.*

APPEAL

The FWS IQA Guidelines recognize that publication and peer review may not be sufficient to ensure that the standards required for highly influential scientific assessments are met. For that reason, the Guidelines include a requirement that data and analytical methods be substantially reproducible and sufficiently clear so as to allow independent reanalysis. In the course of reviewing the analysis done by Kimmerer scientists identified the above-referenced errors. The

[103] See Council for Endangered Species Act Reliability: September 8, 2008 letter to the FWS commenting on the 90-day finding on the petition to list the delta smelt as endangered. The comment letter and associated appendices contain detailed discussions with citations addressing X2 and its lack of applicability to delta smelt.
[104] Lindberg, Joan and Baskerville-Bridges, Brad, Presentation to Estuarine Ecology Team (December 2006)

detailed request for correction submitted to the FWS by the Alliance included specific explanations and cites to scholarly work that supported the identification of the errors.

In blindly relying on the fact that Kimmerer is published and peer reviewed and failing to ensure that the transparency and reproducibility standard of the Guidelines is met before dismissing this request for correction, the FWS is failing to meet the requirements of their own Guidelines. According to the Guidelines, the FWS had a responsibility to check analyses, whether they appeared in a peer-reviewed journal or not. Peer review, as required for peer reviewed journals, does not require that peer reviewers reproduce the analyses they review. The FWS does not appear to understand the rigor of peer review required for data used as the basis of highly influential scientific assessments like the 2008 Biological Opinion.
Further, the FWS references Kimmerer as the 'best available science' which is not the standard that is required for decisions under Section 7 of the ESA. The standard that the ESA requires is best available data.
Alliance members will suffer irreparable harm if the Request remains unresolved.

Correction Request 15 (Omission)

Request correction of Kimmerer (2008) estimates of proportional adult entrainment to account for mistakes in the analysis that caused estimates to be too high;

The Effects Analysis ignores the fact that one of its primary sources Kimmerer (2008) contains an analytical error that causes the over estimation of proportional entrainment for adults. The adult entrainment estimates are too high by a factor of two because the analysis fails to account for the fact that adult smelt in OMR are only in the upper 4 meters of the water column. The Kimmerer analysis acknowledges this when estimating total adult population.

FWS Letter Response

Response for CR 14 and CR15: *Kimmerer 2008, a peer-reviewed and published paper, presents the best larval and juvenile entrainment estimates that have been conducted to date. The FWS used Kimmerer 2008 as it was the best available science, as required under the ESA. The CR did not contain information or analysis demonstrating conclusively its assertion of inaccuracies in Kimmerer 2008. Therefore, no correction is needed.*

APPEAL

The FWS IQA Guidelines recognize that publication and peer review may not be sufficient to ensure that the standards required for highly influential scientific assessments are met. For that reason, the Guidelines include a requirement that data and analytical methods be substantially reproducible and sufficiently clear so as to allow independent reanalysis. In the course of reviewing the analysis done by Kimmerer scientists identified the above-referenced errors. The detailed request for correction submitted to the FWS by the Alliance included specific explanations and cites to scholarly work that supported the identification of the errors.

In blindly relying on the fact that Kimmerer is published and peer reviewed and failing to ensure that the transparency and reproducibility standard of the Guidelines is met before dismissing this request for correction, the FWS is failing to meet the requirements of their own Guidelines. According to the Guidelines, the FWS had a responsibility to check analyses, whether they appeared in a peer-reviewed journal or not. Peer review, as required for peer reviewed journals, does not require that peer reviewers reproduce the analyses they review. The FWS does not appear to understand the rigor of peer review required for data used as the basis of highly influential scientific assessments like the 2008 Biological Opinion.
Further, the FWS references Kimmerer as the 'best available science' which is not the standard that is required for decisions under Section 7 of the ESA. The standard that the ESA requires is best available data.

Alliance members will suffer irreparable harm if the Request remains unresolved.

Correction Request 16

Request correction of the discussion of Kimmerer 2008 to provide complete information in a manner consistent with that required by the IQA by:

- **Listing the numerous and explicit assumptions made by Kimmerer, and which are not necessarily realistic;**
- **Disclosing of the confidence intervals associated with the estimates;**
- **Clarifying that the cited 'losses' referenced by the Effects Analysis, are in fact, 'estimated cumulative losses';**
- **Disclosing that the Effects Analysis only identifies the two years of highest estimated cumulative losses;**
- **Disclosing the entire range of losses identified by Kimmerer; and**
- **Acknowledging and correcting errors in Kimmerer's estimates of adults and laval-juvenile proportional losses[105]**

- When discussing entrainment in 2003 and 2004, the Effects Analysis states that "[a]ccording to Kimmerer (2008), 2003 and 2004 were years when entrainment accounted for 50% and 19% of losses of adults from the population[106]." . The FWS does not provide any discussion of the numerous, explicit assumptions made by Kimmerer, the constraints imposed by the limited data set of six stations used by Kimmerer, or the confidence internals associated with his estimates.

[105] Explicitly addressed in a Request for Correction in this letter.
[106] Effects Analysis at 7

- While Kimmerer characterizes his results as "estimated cumulative losses," the Effects Analysis simply labels them as "losses[107]".

- Kimmerer estimated cumulative losses of adult delta smelt for the years 2002 through 2006, the FWS highlighted the two years in which Kimmerer estimated the highest losses. In the subsequent two years of 2005 and 2006, Kimmerer estimated losses of 7% and 4%, respectively with 95% confidence intervals of 2 to 12% and 1 to 6%, respectively.

Such incomplete and biased information is inconsistent with the requirements of the IQA, misleads decision-makers and inevitably leads to unsupportable conclusions. Such incomplete and biased information results in a biased outcome that grossly misguides management responses which (as in this case) will result in astronomical costs with little to no return in terms of benefits to the species.

FWS Letter Response

> ***Response:*** *Again, the Service used the analysis in Kimmerer 2008, a peer-reviewed and published paper, as a method to predict the proportion of the larval and juvenile entrainment that would occur based on the hydrologic predictions provided in the biological assessment. The Service then used the estimates it prepared, using the method set out in Kimmerer 2008, to compare historical entrainment effects. The Service believes that Kimmerer 2008 is the best available scientific information on the subject. The CR does not demonstrate where there were any inaccuracies in its application by the Service. Therefore, no correction is needed.*

APPEAL

While the FWS may believe that Kimmerer is the best available scientific information, the standard required by Section 7 of the ESA is that the best scientific and commercial data available be the basis for a biological opinion. Further, the FWS IQA Guidelines require that the data and statistical analysis used for highly influential scientific assessments be of the very highest quality. Simply being published in a peer reviewed journal may not be enough. This request for correction provides analysis and information to the FWS that requires a thorough review and assessment of the work done in Kimmerer 2008. If the Kimmerer work is analytically flawed, then the FWS may not rely on application of its results in determining effects of project operations.

The detailed request for correction provides sufficient information to demonstrate that there are inaccuracies in the Kimmerer work, and thus those inaccuracies were translated to the 2008 Biological Opinion when the FWS failed to check Kimmerer's results.

Two major mistakes underly Kimmerer's estimates of proportional entrainment. He failed to account for the fact that adult delta smelt are in the upper four meters of Old and Middle Rivers when he estimated the ratio of adult entrainment to adult salvage. Also, he failed to account for the fact that, because of the limited capability of 20 mm survey gear to detect small delta smelt

[107] Compare Wim J. Kimmerer, Losses of Sacramento River Chinook Salmon and Delta Smelt to Entrainment in Water Diversions in the Sacramento-San Joaquin Delta, SAN FRANCISCO ESTUARY & WATERSHED SCIENCE at 20 (June 2008) with Effects Analysis at 7

larvae, catch of larvae in areas away from the pumps was underestimated in many surveys, as evidenced by catch of numerous, larger larvae in those areas in the subsequent survey.

Alliance members will suffer irreparable harm if the Request remains unresolved.

Correction request 17 (Effects Analysis page 31 and related statements)

Request correction of the statement that an effect of Project operations is to cause stable low flows in the fall[108], by revising it to acknowledge that low outflows occur naturally and that project flows increase flows beyond that which would occur normally.

Request correction of the statement that an indirect effect of Project operations is to contribute to toxicity, by revising it to acknowledge toxics are contributed independent of Project operations and that project flows in the fall dilute independently occurring toxic loading.

Request correction of the Effects Analysis to recognize that project flows provide a benefit by diluting toxic concentrations in the fall.

The effects of an action are defined by the FWS as "the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action, that will be added to the environmental baseline[109]." If an effect would occur whether or not the action takes place, it is not an effect of the action[110]. Furthermore, if an effect could occur but is not reasonably certain to occur, it is not an effect of the action[111].

Stable low outflow conditions, high CVP and SWP exports, and high export to inflow ratios (E:I) do not change the discharge of contaminants contributed independently from upstream sources in the Delta, such as those from wastewater treatment plants and urban and agricultural runoff. While increasing releases from the reservoirs upstream of the contaminant sources can affect the contaminant concentrations in the Delta, by diluting them, these concentrations are not an effect of the project and their occurrence is independent of Project operations. The Effects Analysis contends that low flows caused by CVP and SWP operations will increase toxicity in the fall.

However is it a fact that river inflows to the Delta are higher *with* Project operations than they would be without Project operations, these existing project flows provide a benefit by diluting contaminant concentrations. Increasing fall reservoir releases beyond what is already described in existing regulations would be an even greater deviation from the natural hydrograph and lead to more stable hydrologic conditions. The FWS, states these increased flows would lead to conditions favoring the establishment of nonnative fishes, which could harm the delta smelt[112]. This statement is made with no data or analysis to support it. In addition to contaminant

[108] Effects Analysis at 31
[109] 50 C.F.R. 402.02
[110] *Endangered Species Consultation Handbook* at 4-27 (March 1998). *Accord* 73 Fed. Reg. 47,868, 47,870 (Aug. 15, 2008) (preamble to proposed amendments to the joint consultation regulations); 51 Fed. Reg. 19,926, 19,932 (June 3, 1986) (preamble to final rule establishing the joint consultation regulations)
[111] 50 C.F.R. 402.02 (definition of "effects of the action" including indirect effects). *Accord* 73 Fed. Reg. at 47,870
[112] Effects Analysis at 31.

concentrations which are the effect of the independent action of upstream dischargers, rain events, which are also independent of Project operations, often result in some of the highest contaminant concentrations[113]. This is a hydrodynamic condition over which the CVP and SWP have no control.

FWS Letter Response

Response: See the response to CR13, Parts 2 and 3 of the request discuss exposure to higher water toxicity. The stabilization of flows during the fall by the projects, no matter what the previous water year type, can result in exposure of delta smelt to higher water toxicities (see "Habitat Suitability" section of the biological opinion, page 233). Therefore, no correction is needed.

APPEAL

The FWS fails to provide an analysis on page 233 and following pages that identifies existing toxicities in the environmental baseline and demonstrates how project operations increase those concentrations. The toxicities are contributed independent of project operations and the FWS under the environmental baseline definition included in the Section 7 regulations must demonstrate how those toxicity concentrations are increased based on the proposed flow scenarios. No such analysis was presented to support the assertions that project flows increase toxicity.

Alliance members will suffer irreparable harm if the Request remains unresolved.

Correction Request 18 (Effects Analysis page 31 and related statements)

Request correction of the statement that an indirect effect of Project operations is to suppress phytoplankton production by causing stable low flows in the fall.
Ammonium concentrations in the delta are a result of activities which occur independently of water Project operations. As with toxicity more generally, increasing releases from reservoirs upstream of wastewater treatment plants dilute these independently occurring ammonium levels. In the fall, river flows are higher with Project operations than they would be without Project operations. And yet, the Effects Analysis asserts that these low flows would increase ammonium concentrations. The FWS does not say how the concentrations would be increased, and what they would be increased from. Stable low outflow conditions, high CVP and SWP exports, and high E:I ratios cannot change the discharge levels of ammonium from upstream sources such as wastewater treatment plants. To the extent that the water projects are increasing fall flows beyond those occurring naturally, the effect of the water projects' operation is to dilute existing ammonium concentrations and improve habitat quality

Request correction of the statement by removing it from the Effects Analysis as it is not based on data and does not meet the requirements of the IQA or the ESA.

[113] U.S. Bureau of Reclamation, OPERATIONS AND CRITERIA PLAN BIOLOGICAL ASSESSMENT at V-1 (2008)

FWS Letter Response

Response: See the response to CR13. The biological opinion provides a complete analysis of effects, see "Habitat Suitability" section of the biological opinion~ page 233. Therefore, no correction is needed.

APPEAL

The FWS fails to provide an analysis on page 233 and following pages that identifies existing phytoplankton in the environmental baseline and demonstrates how project operations increase those concentrations. The phytoplankton occur independent of project operations and the FWS under the environmental baseline definition included in the Section 7 regulations must demonstrate how those phytoplankton concentrations are increased based on the proposed flow scenarios. No such analysis was presented to support the assertions that project flows increase phytoplankton.

Alliance members will suffer irreparable harm if the Request remains unresolved.

Correction Request 19

Request correction of the statement that an indirect effect of Project operations is to increase reproductive success of overbite clams by causing stable low flows in the fall as available data contradict the assertion[114].

The FWS states that Project operations result in increased reproductive success of the Amur River "overbite clams without supporting the statement with any data or analysis. In fact, available data, undermine the assertion. According to Jan Thompson reproductive success of the clam is driven by food availability rather than flows. Thompson states that bivalve grazing rates are the lowest in spring and early summer of both wet and dry years[115]. This suggests that flows do not control bivalve abundance. Kimmerer (2004)[116] found that while CVP and SWP controlled flows can have some effect on clam distribution and abundance, "the big flow events and droughts, which have the greatest effect on the benthos, are not under direct human control." Clearly, based on the information available, it takes flow changes larger than those resulting from Project operations to have significant effect on the distribution of Amur River clams.

Request correction of the statement by removing it from the Effects Analysis as it is not based on data and does not meet the requirements of the IQA or the ESA.

FWS Letter Response

Response: See the response to CR13. The stabilization of flows during the fall by the projects, no matter what the

[114] Effects Analysis at 31

[115] Thompson J, F Parchaso, K Gehrts, D Messer. *Bivalves as ecosystem engineers: before and after the invasion of Corbula amurensis in the northern San Francisco Estuary*. 5TH BIENNIAL CALFED SCIENCE CONFERENCE (2008)

[116] Kimmerer WJ. 2004. *Open water processes of the San Francisco Estuary: from physical forcing to biological responses*. San Francisco Estuary and Watershed Science [online serial]. Vol. 2, Issue 1 (February 2004), Article 1. http://repositories.cdlib.org/jmie/sfews/vol2/iss1/art1

previous water year type, can result in less varied salinities in the delta, which are beneficial to the clam, and since the clam needs brackish water to recruit, upstream movements of X2 can result in clams further upstream. Therefore no correction is needed.

APPEAL

The FWS fails to provide an analysis on page 233 and following pages that identifies existing clam populations in the environmental baseline and demonstrates how project operations increase those concentrations. The clams occur independent of project operations and the FWS under the definition of environmental baseline included in the Section 7 regulations must demonstrate how those clam concentrations are increased based on the proposed flow scenarios. No such analysis was presented to support the assertions that project flows increase clam densities.

Further, the FWS response to the request for correction fails to address the issues raised in our detailed request for correction with respect to the data addressing the effect of project operations on clam densities. Moreover, the response and the 2008 Biological Opinion fail to mention that another freshwater clam, whose habitat overlaps that of Corbula, moves upstream when outflows are low. There are always clams, regardless of outflow.

Alliance members will suffer irreparable harm if the Request remains unresolved.

Final Correction Request 20 (Effects Analysis page 31 and related statements)

Request correction of the statement that an indirect effect of Project operations is elevated entrainment of lower trophic levels because no data support the statement.

Request correction of the statement that Project operations create stable low flows in the fall, to reflect that stable low flows occur naturally and that Project operations increase flows beyond that which would naturally occur.

Entrainment of lower trophic levels is a very broad assertion with no accompanying scientific support. The FWS does not identify which lower trophic organisms are supposedly suffering from elevated entrainment. According to Kimmerer, "Lower trophic level organisms (and functional groups) did not respond strongly or consistently to flow[117]." And, "statistical analyses have not yet shown an effect of export pumping on zooplankton abundance[118]." To the extent that this assertion is related to that subsection of the Effects Analysis that posits a relationship between *Psuedodiaptomous forbesi* entrainment and delta smelt abundance, we have addressed it elsewhere[119].

Most researchers point to the invasive clam *Corbula amurensis* as the major cause of declines in trophic productivity[120]. The Bureau of Reclamation acknowledges the effects of *C. amurensis*

[117] Wim J. Kimmerer, *Open Water Processes of the San Francisco Estuary: From Physical Forcing to Biological Responses*, 2 SAN FRANCISCO ESTUARY AND WATERSHED SCIENCE 1. 90 (2004).
[118] *Id.* at 92.
[119] See Correction Request 3b
[120] Nobrign 2002; Kimmerer 2004; Bennett 2005; Feyrer et al. 2007; Sommer et al. 2007; Baxter et al. 2008; Jassby 2008

on phytoplankton, as well as the fact that, after its invasion, populations of pelagic fishes have declined in spite of favorable flow conditions[121]. The Effects Analysis ignores this information and fails to provide data or other scientific support for how fall Project operations negatively impact abundance of lower trophic organisms.

In addition, Ambler et al. note that, with few exceptions, all of the common zooplankton taxa occur at higher densities during the wet season (January-May) than during the dry season (June-December)[122]. Kimmerer et al. note that reproduction of copepods varies with seasons[123]. Jassby et al. clearly show that chl-*a*, an indicator of food web productivity, increases to a peak during summer and decreases to a low point during fall[124]. As a practical matter, even without data, given the timing of peak abundance of these lower trophic level organisms, it is difficult to understand how stable, low outflow conditions in the fall could cause the alleged effect. Without supporting data it is not possible to arrive at a defensible conclusion that this is the case. The ESA requires that data support the FWS's findings in the biological opinion.

Request correction of the statement by removing it from the Effects Analysis as it is not based on data and thus does not meet the requirements of the IQA or the ESA.

FWS Letter Response

Response: *The operations of the Projects do result in entrainment of lower trophic levels. No information or data to support any corrections are cited~ nor are any specific corrections provided. Therefore, no change is needed.*

Response: *See the response to CR13. Therefore, no correction is needed.*

APPEAL

Section 7 of the ESA requires that the opinion of the Secretary be based on the best scientific and commercial data available. The FWS has provided no data to substantiate its claim that such effects are the result of project operations. Further, the detailed request for correction which was provided by the Alliance has apparently been ignored. Neither the ESA nor the FWS IQA Guidelines allow the FWS to make assertions that are unfounded and maintain those assertions by insisting that they be demonstrated to be false. In fact, the FWS may only make statements in the biological opinion which are supported by data, and that data must be the best available data. No such data has been produced to support the statements regarding trophic levels and their relationship to project operations.

The response assumes without supporting data that delta smelt "habitat" is defined by fall outflow, while habitat actually depends on many factors. The response further assumes that delta smelt abundance is affected in an important way by this "habitat," which is not the case and the FWS is in receipt of several scientific analyses that demonstrate this, the most recent of these is the 2008 Manly Multivariate Analysis. It is clear that the analyses have been ignored by FWS.

[121] U.S. Bureau of Reclamation. OPERATIONS AND CRITERIA PLAN BIOLOGICAL ASSESSMENT 7-6 (2008).
[122] Julie W. Ambler et al., *Seasonal cycles of zooplankton from San Francisco Bay*, 129 HYDROBIOLOGIA 177, p. 184 (1985).
[123] *Chronic food limitation of egg production in populations of copepods of the Genus Acartia in the San Francisco Estuary*, 28 ESTUARIES 4, p. 541 (2005)
[124] *Annual primary production: Patterns and mechanisms of change in a nutrient-rich tidal ecosystem*, 47 LIMNOLOGY AND OCEANOGRAPHY 34, p. 703 (2002)

Finally, the response makes the unsupported assertion that variability in fall outflow is important to delta smelt abundance.

Alliance members will suffer irreparable harm if the Request remains unresolved.

Correction Request 21 (Effects Analysis page 27-31 and related statements throughout the Effects Analysis)

Request correction of the statement that Project operations create stable low flows in the fall, to reflect that stable low flows occur naturally and that Project operations increase flows beyond that which would naturally occur.
Request correction of the analysis to recognize fall Project operations cannot increase the risk of entrainment in agricultural diversions during a time when such diversions are not operating.

Kimmerer and Nobriga are cited to support the FWS's assumption that the frequency of delta smelt entrainment in unscreened diversions is increased by CVP and SWP operations in the fall[125].

The Effects Analysis makes the argument that extremely stable, low outflow conditions for fall will move X2 to the east and result in a shift in delta smelt distribution upstream. The Effects Analysis then makes the assumption that this shift will likely increase the frequency with which delta smelt encounter unscreened diversions. Implicit in this analysis is the assumption that entrainment of delta smelt by Delta agricultural diversions has important effects on larger SWP and CVP entrainment on subsequent spawning abundance of delta smelt indicate that Delta agricultural diversions will also have no important effects.

In addition, agriculture in the Delta region is largely comprised of annual crops, which make up 86 percent of Delta agriculture's applied water demands (California Water Plan 2005). The majority of these crops are harvested in the fall with corresponding significant decreases in water demands. Project operations cannot increase the risk of entrainment in agricultural diversions during a time when such diversions are not operating.

The Effects Analysis fails to comply with the requirement of the ESA that effects be based on data. The conclusion reached by the Effects Analysis does not flow from the data and analysis they have relied upon to allege the indirect effects from water Project operations.

The Effects Analysis fails to comply with the IQA because it is inaccurate, incomplete and biased in that it fails to acknowledge that little agricultural pumping occurs during the time effects are alleged.

[125] Wim J. Kimmerer & Matthew L. Nobriga, *Investigating particle transport and fate in the Sacramento-San Joaquin Delta using a particle tracking model*, 6 SAN FRANCISCO ESTUARY AND WATERSHED SCIENCE 1 (2008).

FWS Letter Response

Response for CR21 and CR22: See the response to CR13. The stabilization of flows during the fall by the projects, no matter what the previous water year type; can result in less varied salinities in the delta which affects delta smelt habitat and abundance and other ecological processes. No specific data is provided by the CR about agricultural diversions in the delta during different seasons. Therefore, no correction is needed.

APPEAL

The FWS fails to provide any data as to how flow stabilization has adversely affected entrainment by local agricultural diversions in the fall; provides no data showing that agricultural diversions occur in the fall; and further, fails to provide data or analysis that less varied salinities in the Delta has any adverse effect on delta smelt habitat, abundance, or any other of the unspecified ecological processes referenced in the response to the request for correction. In order for the FWS to be able to assert, as it has in the 2008 Biological Opinion, that there are effects from entrainment, it must provide data and analysis to support the claims. The FWS has failed to do so and thus has failed to meet the requirements of either the ESA or the FWS IQA Guidelines.

Alliance members will suffer irreparable harm if the Request remains unresolved.

Correction Request 22 (Effects Analysis page 31 and related statements throughout the Effects Analysis)

Request correction of the statement that an indirect effect of Project operations is to provide environmental conditions for nonnative fishes to thrive by causing stable low flows in the fall as the statement is not supported by data.

Request correction of the statement that Project operations create stable low flows in the fall, to reflect that stable low flows occur naturally and that Project operations increase flows beyond that which would naturally occur.
The assertions that stable low outflow conditions in the fall are attributable to the CVP and SWP and that such conditions contribute to abundance of non-native fishes are set forth without explanation and without any supporting data. The Effects Analysis provides no explanation of the environmental conditions that are being affected by Project operations, which non-native fishes are benefiting, or how these non-native fishes impact delta smelt.

The study the Effects Analysis cites[126] does not relate non-native fishes to delta smelt, does not evaluate the effects of Project operations on environmental conditions, nor does it draw any conclusions as to changes in environment on non-native fishes that the service could rely on as an indirect effect of Project operations.

[126] Nobrign et al. 2005

The Effects Analysis's statement is particularly egregious in light of the fact that introduction of many of the existing non-native species predate the decline of the delta smelt by decades and in some cases, by a century or more.

Request correction of the Effects Analysis by removing the statement as it is not supported by any data.

FWS Letter Response

Response for CR21 and CR22: See the response to CR13. The stabilization of flows during the fall by the projects, no matter what the previous water year type; can result in less varied salinities in the delta which affects delta smelt habitat and abundance and other ecological processes. No specific data is provided by the CR about agricultural diversions in the delta during different seasons. Therefore, no correction is needed.

APPEAL

The FWS fails to provide any data as to how flow stabilization has caused non-native fishes to thrive at the cost of delta smelt; and further, fails to provide data or analysis that less varied salinities in the Delta has any adverse effect on delta smelt habitat, abundance, or any other of the unspecified ecological processes referenced in the response to the request for correction. In order for the FWS to be able to assert, as it has in the 2008 Biological Opinion, that there are improved habitat conditions for non-native fishes, it must provide data and analysis to support the claims. The FWS has failed to do so and thus has failed to meet the requirements of either the ESA or the FWS IQA Guidelines.

Alliance members will suffer irreparable harm if the Request remains unresolved.

Correction Request 23 (Omitted information)

Request the Effects Analysis provide a discussion of the overall population level 'take' by export pumping as required by the ESA.[127]

Request the Effects Analysis provide an explicit discussion of Kimmerer (2008) conclusions regarding the population level effect of export pumping on delta smelt.

Request the Effects Analysis provide an explicit discussion of Manly/Chotkowski (2006) conclusions regarding the population level effect of export pumping on delta smelt.

The Effects Analysis spends over 40 pages discussing the effects of Project pumping. As has been noted repeatedly in this Request, multiple statistical analyses of export pumping and delta smelt population declines have failed to find any important effects of the pumping.

[127] *Arizona Cattle Growers Association v. US Fish and Wildlife Service* 273 F.3d 1229 (9th Cir. 2001).

The analyses have been undertaken over the past 15 years, since the delta smelt were first listed. From the start, the export pumps were considered the "most obvious" culprit for the declines. However, over time, multiple analyses have failed to identify any important effects of the pumps on abundance of delta smelt. It is important to note that these statistical analyses have detected **trivial** effects of export pumping on smelt, which are confirmed by periodic observations of dead fish at the export pumps. The fact that the statistical analyses detected these minor effects demonstrates that the analytical tools being used are sensitive enough to detect this take and its effect on the species at the population level.

However, uniformly, the statistical analyses have failed to detect any **important** effects. Manly and Chotkowski (2006) found that effects may be between 1-2% of the population. Kimmerer 2008 examined adult delta smelt abundance across years and asked what effect export pumping had on abundance. He noted that entrainment of all the live stages of delta smelt might be affecting the subsequent spawning abundance by 10 percent at most. However, based on the change in population indices each year, other factors are having an effect 500 times greater. This means that only 0.2 percent of the total change in population is attributable to entrainment of **all** life stages of delta smelt (not just adults). It also means that 99.8% of the effects on delta smelt abundance are due to factors independent of water Project export pumping.

The biological opinion of which the Effects Analysis is a part, and the related incidental take statement, will govern the operation of the Projects responsible for providing most of the water supply for an entire state. The biological opinion identifies the effects of the Projects. To the extent there is 'take' of a protected species, the incidental take statement must specify the amount or extent of take that is anticipated and any reasonable and prudent measures and terms and conditions that implement them. These terms and conditions are designed to minimize take and these "cannot alter the basic design, location, scope, duration or timing of the action, and may involve only minor changes"[128] to the proposed action. The biological opinion generally, and the incidental take statement in particular, are highly influential scientific assessments. The population level effects of Project pumping are highly influential scientific information. Failure to acknowledge the minimal level of effect on delta smelt abundance could result in catastrophic limitations on the water supply available to Californians with very little benefit accruing to delta smelt.

The biological opinion fails to comply with the IQA in that it is:

- ✓ Incomplete in that it fails to provide a population level context for the effects of Project operations;
- ✓ Incomplete and biased in that it fails to recognize that other (unidentified) factors are having effects on delta smelt abundance 500 times greater than those of Project operations;
- ✓ Inaccurate and biased in that it attributes myriad effects of these other factors to indirect Project effects, when if in fact the Project operations were affecting all of

[128] 50 C.F.R. § 402.14(I)(2)

those factors and increasing their adverse effects, such influence would be captured in statistical analysis which is able to identify very small Project effects;

- ✓ Incomplete in that it fails to recognize that 99.8% of the declines in delta smelt abundance are due to other factors independent of Project pumping and that data and analysis support this determination;

- ✓ Incomplete and biased in that it fails to recognize that location of smelt at any time during the year does not affect the population level effects of taking during entrainment in any important way; and

- ✓ Incomplete and biased in that it fails to recognize that the take of the species due to export pumping at any level at any given time of year does not have important effects on delta smelt population abundance.

FWS Letter Response

Response for CR23 and CR24: *These are addressed in a conservation recommendation in the biological opinion, see page 296. Therefore, no correction is needed.*

APPEAL

The response completely ignores the requested correction.

The 2008 Biological Opinion fails to explain how effects to 1-2% of the population can jeopardize the continued existence of the entire species. Based on data and analysis, the FWS acknowledges that Project operations have unimportant effects, and yet, without any supporting data or analysis, finds that these effects jeopardize the continued existence of the delta smelt.

In response to the request for such an analysis, the FWS provides the following:

Conservation Recommendations

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities that can be implemented to further the purposes of the Act, such as preservation of endangered species habitat, implementation of recovery actions, or development of information and data bases.

The Service requests notification of the implementation of any conservation recommendations in order to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats. We propose the following conservation recommendations:

1. *The Service recommends that Reclamation and DWR develop and implement restoration measures consistent with the current Delta Native Species Recovery Plan.*

2. *The Service recommends that Reclamation and DWR develop procedures that minimize the effects of all other in-water activities that it conducts within the action area on delta smelt.*

3. *The Service recommends Reclamation work with willing partners to establish and maintain a diverse population of delta smelt for refuge and research purposes, managed to ensure adequate genetic diversity.*

To be kept informed of actions minimizing or avoiding adverse effects or benefiting listed and proposed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

Alliance members will suffer irreparable harm if the Request remains unresolved.

Correction Request 24

Request that the Effects Analysis be corrected to explicitly consider the conservation and recovery efforts currently underway to benefit delta smelt.

The Effects Analysis considers multiple potential adverse effects on delta smelt including global warming, and changes in Project operations. However, the Effects Analysis fails to consider the long term effects of the multiple public and private efforts to conserve the delta smelt.

In the past 8 years, the state and federal governments have spent over $1 billion on habitat restoration in the delta. These expenditures will benefit the delta smelt over time well into the future. Further, there are other private and public efforts underway to benefit the species as well. The FWS is a necessary partner in all of these efforts and so is well aware of them.

The Effects Analysis provides incomplete information as it fails to document and consider the myriad conservation efforts underway to benefit delta smelt.

FWS Letter Response

Response for CR23 and CR24: *These are addressed in a conservation recommendation in the biological opinion, see page 296. Therefore, no correction is needed.*

APPEAL

The FWS response to Correction Requests 23 and 24 is singularly uninformative. Reproduced below is the entire section referenced in the response:

Conservation Recommendations

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities that can be implemented to further the purposes of the Act, such as preservation of endangered species habitat, implementation of recovery actions, or development of information and data bases.

The Service requests notification of the implementation of any conservation recommendations in order to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats. We propose the following conservation recommendations:

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3. *The Service recommends Reclamation work with willing partners to establish and maintain a diverse population of delta smelt for refuge and research purposes, managed to ensure adequate genetic diversity.*

To be kept informed of actions minimizing or avoiding adverse effects or benefiting listed and proposed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

Alliance members will suffer irreparable harm if the Request remains unresolved.

Correction Request 25

Request correction of the peer review of the Effects Analysis to comply with the FWS and OMB Final Bulletin for Peer Review by using only reviewers who meet the NAS Policy for evaluating conflicts;

Request correction of the scope of the review instructions given to peer reviewers to be consistent with that required under the OMB and FWS Final Bulletin.

The FWS must seek an independent peer review of the Effects Analysis as the document is a highly influential scientific assessment[129]. As the OMB has observed, [p]eer review is one of the

[129] OMB and FWS peer review policy http://www.fws.gov/informationquality/peer_review/index.html

important procedures used to ensure that the quality of published information meets the standards of the scientific and technical community[130]." However, for a peer review to serve its intended purpose, it must be designed and implemented with certain considerations in mind including the selection of the reviewers and scope of the review.

As a matter of law, all federal agencies – including the FWS – must comply with the Final Bulletin.[131] The Final Bulletin establishes mandatory peer review standards, a transparent process for public disclosure, and opportunities for public input. In selecting its reviewers, the applicable federal agency must consider conflict of interest, independence, expertise, and balance. If peer reviewers are not federal employees, the agency must adopt or adapt the National Academy of Sciences Policy on Committee Composition and Balance and Conflict of Interest (NAS Policy)[132] with respect to evaluating the potential for conflicts. Panel members should not be placed in a situation where others could reasonably question, and perhaps discount or dismiss, the work of the peer review panel simply because of the existence of such conflicting interests.

The OMB Bulletin requires that the agency consider barring participation by scientists with an interest that could be directly affected by the work of the panel. A reviewer should not have a personal stake in the outcome of the review in terms of career advancement, or personal or professional relationships.[133] Further, agencies must make a special effort to examine prospective reviewers' work as an expert witness, consulting arrangements, scientific and technical advisory board memberships, honoraria and sources of grants and contracts.

Dr. Wim Kimmerer was selected to the review panel despite the fact that the Effects Analysis relies heavily on articles and papers authored or co-authored by him.[134] The Effects Analysis contains more than 25 references to Dr. Kimmerer's work. The FWS thus placed Dr. Kimmerer in the difficult position of reviewing and evaluating his own work. The NAS Policy provides that an individual should not serve as a member of a committee with respect to an activity in which a critical review and evaluation of the individual's own work, or that of his or her immediate employer, is the central purpose of the activity, because that would constitute a conflict of interest. Furthermore, there is general recognition in the scientific community that peer reviewers must have little personal stake in the outcome of the review. Dr. Kimmerer unquestionably has a stake here in light of the extent to which the Effects Analysis relies on his own work. Because of the heavy reliance on Dr. Kimmerer's work in the Effects Analysis, Dr. Kimmerer has a conflict of interest.

Among other peer reviewer of the Effects Analysis, John Durand is a graduate student at both the University of California, Davis and San Francisco State University. Dr. Peter Moyle serves as his faculty advisor at the University of California, Davis and is in a position to exercise substantial influence over Mr. Durand's academic success. Dr. Moyle testified as a key expert witness for plaintiff environmental groups in the remedy hearings in *Natural Resources Defense Council v. Kempthorne*, E.D. Cal. Case No. 05-1207. In the course of the litigation, Dr. Moyle

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[130] 70 Fed. Reg. 2664, 2665 (Jan. 14, 2005).
[131] The Service states that "[w]hile we have always consulted experts to ensure that our science is sound, through this peer review process we will follow the guidelines for Federal agencies spelled out in the [Final Bulletin]." (Available at http://www.fws.gov/informationquality/peer_review/index.html.)
[132] Available at http://www.nationalacademies.org/coi/bi-coi_form-0.pdf.
[133] Gary K. Meffe et al. *Independent Scientific Review in Natural Resource Management*, 12 CONSERVATION BIOLOGY 268 (1998).
[134] *See, e.g.*, Effects Analysis at 41-43.

has been a strong advocate of enacting greater protections for fish within the delta by restricting the operations of the CVP and SWP. In light of his professional relationship with Dr. Moyle and Dr. Moyle's continued advocacy of particular policy positions which support restriction of CVP and SWP operations, Mr. Durand has a conflict of interest.[135]

Moreover, with respect to Mr. Durand, Dr. Kimmerer serves as his faculty advisor at San Francisco State University. By utilizing Mr. Durand as a reviewer, the FWS has placed him in the uncomfortable position of critically reviewing and evaluating his advisor's scholarly work in the advisor's presence.[136] This circumstance not only leaves open the possibility that critical review of the articles will not occur, but also that the peer review will perpetuate and legitimize any errors that do exist.

The Final Bulletin also requires that that reviewers be independent and not have participated in the development of the work product[137]. Significant consulting and contractual relationships with the agency sponsoring peer review may raise questions regarding independence. Likewise, when the agency and a researcher work together (e.g., through a cooperative agreement) to design or implement a study, there is less independence from the agency. Additionally, agencies must rotate peer review responsibilities across the available pool of qualified reviewers.

The Effects Analysis' pervasive reliance on Dr. Kimmerer's prior work is akin to Dr. Kimmerer actually participating in the drafting and development of the Effects Analysis. Mr. Durand has been the recipient of CALFED funding to develop conceptual models for the Delta. Moreover, Mr. Durand is a student of and is co-authoring two papers with Dr. Kimmerer, which raises issues of whether he has sufficient independence from Dr. Kimmerer's influence to objectively evaluate the validity of the Effects Analysis. In light of the above-described circumstances, it is clear that the FWS erred when it selected and used Dr. Kimmerer and Mr. Durand as reviewers of the Effects Analysis.

The peer review must be conducted by independent reviewers with the requisite technical expertise to examine the modeling and statistical analyses before the FWS. These experts are readily available throughout the country. This is evidenced by the fact that 9 scientists who were actually independent of the entire Pelagic Organism Decline (POD) effort provided a genuinely independent review of the 2005 POD Synthesis document. The consequences of the assessment contained in this Effects Analysis is highly influential and will be far more costly and far-reaching. It is impossible to justify failing to provide for a truly independent and thorough peer review. The FWS's failure to do so is consistent with historic practices and weaknesses specifically identified in the comments of the 2005 independent peer reviewers regarding the Interagency Ecological Program:

"... *The program relies too heavily on local perspectives and resources for problem analysis, research and solutions. This can give rise to a culture of common assumptions that impedes exploration of alternative possibilities.*

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[135] The Service did not comply with the strictures of the Final Bulletin when it selected peer reviewers for the Effects Analysis.
[136] Mr. Durand does not meet the generally accepted criteria for use as a peer review because of the possibility that he is unable to perform the review tasks "free of intimidation or forceful persuasion by others associated with the decision process." Meffe et al. at 269.
[137] Fed. Reg. at 2675-2676.

The FWS must identify reviewers who—while perhaps less familiar with the Delta – have the scientific background and knowledge in relevant fields such as biology, biostatistics, and hydrology to evaluate whether the data and analytical results in the Effects Analysis were portrayed in an accurate, complete, unbiased, and comprehensive manner; in short to ensure that the FWS did indeed rely on the best scientific and commercial data available, as required by the ESA, and to ensure that the information was presented in a clear, accurate, unbiased and complete manner, as required by the IQA.

The FWS's direction regarding the scope of the peer review was also insufficient. The Final Bulletin provides that "the intensity of peer review should be commensurate with the significance of the information being disseminated and the likely implications for policy decisions[138]." The Final Bulletin emphasizes that "the need for rigorous peer review is greater when the information ... presents conclusions that are likely to change prevailing practices, or is likely to affect policy decisions that have a significant impact." Specifically, the language included identifies highly influential scientific assessments as requiring the most rigorous peer review available. The effects analysis will influence the water supplied by the SWP and CVP. The water Project operations are vital to more than 25 million people throughout California. They also support more than three million acres of the most productive farmland in the United States. The cost of the interim reductions based on baseless assertions that delta smelt abundance index declines are due to export pumping has exceeded $500 million. Further reductions in these water supplies will be devastating to California's economy and to the Nation's food security. However, in contravention of all the guidance in the Final Bulletin, "the review was conducted in a four-day period under a tight schedule[139]." This is certainly not sufficient time to allow the peer reviewers to fully assess the data and analytical results discussed in the Effects Analysis and assess whether any data excluded from the Effects Analysis should have been included. The FWS was thus required to give the peer reviewers sufficient time to properly evaluate the Effects Analysis and as explained herein, it failed to do so.

Additionally, the Final Bulletin directs agencies "to strive to ensure that their peer review practices are characterized by ... scientific integrity" which includes "the identification of the scientific issues and clarity of the charge to the panel [and] the quality, focus and depth of the discussion of the issues by the panel...." *Id.* Further "[t]he charge should ask that peer reviewers ensure that scientific uncertainties are clearly identified and characterized ..., ensure that the potential implications of the uncertainties for the technical conclusions drawn are clear ... [and that they] consider value-of-information analyses that identify whether more research is likely to decrease key uncertainties."

Here, the FWS asked the review panel to "assess whether the appropriate data were used in the analysis and if the analysis was scientifically defensible[140]". The FWS did not ask the panel to clearly identify and characterize the accuracy, the completeness, whether it was unbiased, and whether the best available data was used. Given the significant importance of the Biological Opinion, the FWS was required to charge the review panel to conduct a thorough and in-depth evaluation and analysis, including re-analysis of at least a sampling of the data and an assurance that the best available data formed the basis of the Effects Analysis. Instead, the FWS charged

[138] 70 Fed. Reg. at 2668.
[139] Peer Review at 2.
[140] Peer Review at 2

the reviewers to simply determine whether the decisions could be defended. The resulting peer review, is neither independent, complete, nor based on the 'best available data' standard required by the ESA.

For the foregoing reasons, the Peer Review fails to meet prevailing standards for independence, fails to hold the FWS to the requirements of the ESA, and fails to comply with the Final Bulletin and the FWS's own peer review policy.

FWS Letter Response

> ***Response:*** *The Service subjected the draft effects analysis to both internal and external peer review. External reviewers used by the Service were from academia, state, and federal agencies. In addition, the Service contracted with a consulting firm, PBS&J, to conduct an independent peer review using appropriate subject matter experts which they chose. No specifics are provided by the requestor as to what needs to be corrected. Therefore, no correction is required.*

APPEAL

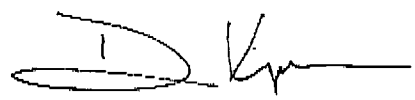
The FWS response fails to even consider following the requirements of their own adopted peer review policy. As noted in the detailed request for correction, the peer reviewers consisted of authors of the papers upon which the 2008 Biological Opinion was based, their graduate students, recipients of CALFED funding and participants in working groups examining delta smelt whose work formed the basis of the 2008 Biological Opinion.

The FWS IQA Guidelines provide that peer review of highly influential scientific assessments shall be performed by independent experts who meet the National Academy of Sciences standards for independence. The FWS did not even begin to meet the requirements of their own standards.

Alliance members will suffer irreparable harm if the Request remains unresolved.

IV. Conclusion

This Appeal amply demonstrates the FWS still needs to correct the information challenged in the Alliance's original Request. We respectfully request the corrections be made and the challenged information be withdrawn from the public domain until such corrections are made. Alliance members will suffer irreparable harm if the Request remains unresolved.



Dan Keppen
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