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December 9, 2009

David Hayes  
Deputy Secretary of the Interior  
1849 C St., NW  
Washington, D.C. 20240

Re: New Information on Toxicity of Grasslands Bypass Project to Salmonids

Dear Mr. Hayes:

The California Water Impact requested and received an independent review by Dennis Lemly, Ph.D. of the selenium impacts to salmonids from the proposed Grasslands Bypass Project 2010-2019, attached. As you are aware, a Record of Decision is imminent on this project because the Use Agreement between Reclamation and the Grasslands Drainers for the San Luis Drain expires this month.

**Dr. Lemly has confirmed that there will be 50% mortality of juvenile Chinook salmon and Central Valley Steelhead in the San Joaquin River as a result of continuation of the Grasslands Bypass Project.**

This bodes poorly for both Central Valley Steelhead, a threatened species, and San Joaquin River Chinook, a species proposed for restoration through the San Joaquin River Settlement Act.

C-WIN urges you to reconsider our request to only renew the San Luis Drain Use Agreement for two years. The additional time will allow Interior to utilize USGS' Decision Analysis Process to take a hard look at land retirement in the entire San Luis Unit (including the San Luis Drainage ROD) as the ultimate solution to the drainage problem. Land retirement is the only economically and financially feasible alternative, as stated in numerous documents by USGS, Reclamation, the U.S. Fish and Wildlife Service and others.

I am requesting a meeting with you and/or your staff prior to signing the Record of Decision for the Grasslands Bypass Project. Please contact Tom Stokely of my staff at 530-926-9727 to arrange the details of the meeting.



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Respectfully submitted,

A handwritten signature in blue ink that reads "Carolee Krieger". The signature is written in a cursive, flowing style.

Carolee Krieger, President  
California Water Impact Network  
808 Romero Canyon Road  
Santa Barbara, CA 93108  
(805) 969-0824  
[caroleekrieger@cox.net](mailto:caroleekrieger@cox.net)

Attachments: Request to Dennis Lemly from Tom Stokely  
Response from Dennis Lemly  
Dennis Lemly's Qualifications

cc: David Nawi  
Don Glaser, BOR Regional Director  
Rod McGinnis, NMFS  
Ren Lohofener, USFWS  
Dan Nelson, San Luis Delta-Mendota Water Authority  
Alexis Strauss, USEPA  
Charles Hoppin, Chairman SWRCB  
Karl Longley, Chairman CVRWQCB  
John McCamman, Department of Fish and Game  
Lester Snow, Department of Water Resources  
Mark Madison, City of Stockton  
Rudy Schnagl, CVRWQCB  
Interested parties

**Tom Stokely**

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**From:** "Tom Stokely" <tstokely@att.net>  
**To:** <dlemly@fs.fed.us>  
**Sent:** Monday, December 07, 2009 10:23 AM  
**Attach:** Beckon\_Maurer\_2008\_Effects\_Selenium\_Listed\_Species.pdf;  
gbp\_feis\_i\_02\_commentsandresponses\_USFWS.pdf  
**Subject:** Request for Review of Grasslands Bypass Project Selenium Effects on Salmonids

Dennis Lemly,  
Research Biologist  
USDA-Forest Service  
Dept of Biology, Wake Forest University  
Box 7325  
Winston-Salem, NC 27109  
[dlemly@fs.fed.us](mailto:dlemly@fs.fed.us)

Sent Via e-mail to:

Re: Grasslands Bypass Project and Selenium Toxicity to Salmonids

Dear Mr. Lemly:

I am requesting that you review the attached information and any other information you may have regarding the Grasslands Bypass Project and toxicity to Salmonids and other organisms.

The Grasslands Bypass Project (see <http://www.usbr.gov/newsroom/newsrelease/detail.cfm?RecordID=30201> ) collects and concentrates agricultural drainage water from the approximately 90,000 acres in the northerly area of the San Luis Unit of the Central Valley Project. The drainage water contains high levels of salt, selenium, boron and other substances, including mercury. In order to avoid contamination of wildlife refuges and other wetlands (duck clubs) with selenium and other toxins, the contaminated water goes into a reopened portion of the San Luis Drain which drains directly into Mud Slough, a tributary of the San Joaquin River. Selenium concentrations are 54 ppb on a 30 day running average. The Proposed Project would continue use of the San Luis Drain and discharge contaminated drainage water into Mud Slough through 2019. The project proponents admit that neither the technology nor funding exists to treat the drainage water without discharge into the San Luis Drain, Mud Slough and the San Joaquin River, but are hoping for a miracle to occur in the next 10 years.

The Final EIS/EIR (Bureau of Reclamation/San Luis Delta Mendota Water Authority) for the project responded to comments from the US Fish and Wildlife Service and others that the project would adversely affect restoration of Chinook salmon and Central Valley Steelhead (a federally threatened species) through selenium exposure (see response to USFWS comment 10, attached). It appears that the response is incorrect based on information by Beckon and Maurer, attached. Selenium toxicity appears to be greater than assumed by the lead agencies, as well as the residence/exposure time of Salmonids in the contaminated reaches of the San Joaquin River.

I would appreciate your independent opinion on the adequacy of the response to the US

Fish and Wildlife Service's comments and the response. The Bureau of Reclamation is about to make a Record of Decision on this project at any moment, so any information you provide could provide important independent analysis of the proposed action.

If you have any questions or require additional information, please don't hesitate to contact me at 530-926-9727 or my cell phone at 530-524-0315.

Sincerely,

Tom Stokely  
Water Policy Coordinator  
California Water Impact Network  
201 Terry Lynn Ave (USPS and UPS)  
Mt Shasta, CA 96067  
V/FAX 530-926-9727  
Cell 530-524-0315  
[tstokely@att.net](mailto:tstokely@att.net)  
<http://www.c-win.org/>

**Tom Stokely**

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**From:** "Dennis Lemly" <dlemly@fs.fed.us>  
**To:** "Tom Stokely" <tstokely@att.net>  
**Sent:** Wednesday, December 09, 2009 6:18 AM  
**Attach:** Lemly-TechnicalQualifications.doc  
**Subject:** Re: Request for Review of Grasslands Bypass Project Selenium Effects on Salmonids

Hello Tom,

I have reviewed the information you sent, specifically, the US Fish and Wildlife Service technical analysis of selenium risks to Chinook salmon and steelhead associated with the Grasslands Bypass Project (GBP) by Beckon and Maurer, the US Fish and Wildlife Service comments to USBR on the Final EIS, and USBR's response to those comments.

After close inspection of these reports, comments, and responses, I can only conclude that the Proposed Action and the Alternative Action pose unacceptable risks to the health and well-being of extant and to-be-established populations of migratory fish.

The report by Beckon and Maurer clearly shows that there are/will be substantial negative effects (perhaps above 50% mortality) based on existing and anticipated waterborne selenium concentrations. This is a technically sound report. Although USBR casts doubt on one key study (Hamilton et al. 1980) due to mortality in controls, the results were identical for both field-source and experimental diets (which did not have those problems).

It is interesting that USBR essentially admits there are substantial risks in its response to USFWS comments (Appendix I, Public Comments and Responses, page I-65) "However, as discussed above, there is considerable uncertainty in this analysis due to lack of data on Se bioaccumulation and toxicity in salmonids as well as limited data on likely exposure periods. Due to this uncertainty, it was assumed in the Draft EIS/EIR that there could be potential negative impacts to Chinook salmon and steelhead under the Proposed Action and Alternative Action, independent of the SJRRP"

Curiously, despite this admission of uncertainty and potential for negative impacts, USBR goes on to conclude that "GBP is unlikely to have a significant impact on the fish reintroduced as part of the SJRRP. Because both projects would be expected to improve conditions for salmonids in the SJR and, therefore, they would not have a cumulatively significant impact".

Clearly, this latter statement is based on hopes and not facts.

USBR wants it both ways.....identify a problem but then say there is no problem.

Acknowledging that substantial uncertainty (and thus ecological risk) exists cannot logically be followed by concluding that there will be no problem.

This is a blatant contradiction and there is no credible scientific basis for USBR to claim there will be no cumulatively significant impact.

The correct conclusion is that available data and a reasonable interpretation of it clearly shows that significant risks of substantial selenium toxicity exist which will not be eliminated or substantially lessened by GBP or SJRRP.

I hope these brief comments adequately express my grave concerns about what USBR is proposing.

Please let me know if I can be of further assistance.

I have attached a statement of my technical qualifications for your information.

Sincerely,

A. Dennis Lemly, Ph.D.

Technical Qualifications Statement  
Dr. A. Dennis Lemly

I have spent over 30 years investigating the effects of selenium pollution in aquatic ecosystems. I have extensive experience conducting field and laboratory research on selenium toxicology, primarily involving aquatic cycling, bioaccumulation, and effects on fish. These studies include intensive investigations of the two most substantial cases of selenium pollution that have taken place in the USA; (1) Belews Lake, North Carolina, where 19 species of fish were eliminated, and (2) Kesterson Marsh, California, where thousands of aquatic birds were poisoned. My career began in the late 1970's with studies of the landmark pollution event at Belews Lake, which established the fundamental principles of selenium bioaccumulation and reproductive toxicity in fish. In the 1980's, I was a research project manager for the U.S. Fish and Wildlife Service, directing studies that determined impacts of selenium from agricultural irrigation on aquatic life at Kesterson and in 14 other western states. In the 1990's, the emphasis of my research shifted to the development of methods and guidelines for hazard assessment and water quality criteria for selenium, which led to the publication of a reference book (see item 42 below). This handbook contains the first comprehensive assessment tools for evaluating selenium pollution on an ecosystem scale. I have consulted on selenium contamination issues ranging from landfill leachate in Hong Kong to mountaintop removal coal mining in West Virginia. I provide the methods and technical guidance necessary to identify, evaluate, and correct aquatic selenium problems before they become significant toxic threats to fish and wildlife populations. I have devised and applied techniques for protecting aquatic life in habitats from the Arctic to the tropics, and from high mountain streams to coastal lagoons. I have Masters and Doctorate degrees in biology from Wake Forest University.

PUBLICATIONS ON SELENIUM:

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2. Lemly, A.D. 1982. Determination of selenium in fish tissues with differential pulse polarography. *Environmental Technology* 3: 497-502.
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4. Lemly, A.D. 1985. Ecological basis for regulating aquatic emissions from the power industry: The case with selenium. *Regulatory Toxicology and Pharmacology* 5: 465-486.
5. Lemly, A.D. 1985. Toxicology of selenium in a freshwater reservoir: Implications for environmental hazard evaluation and safety. *Ecotoxicology and Environmental Safety* 10: 314-338.
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- and Drainage: Defining the Problems.* U.S. Committee on Irrigation Drainage, Denver, CO.
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  8. Lemly, A.D. 1989. Cycling of selenium in the environment. Pages 113-123 in A.Q. Howard, editor. *Selenium and Agricultural Drainage: Implications for San Francisco Bay and the California Environment.* The Bay Institute of San Francisco, Tiburon, CA.
  9. Lemly, A.D., and G.J. Smith. 1991. Selenium in aquatic ecosystems: Potential impacts on fish and wildlife. In R.C. Severson, S.E. Fisher, Jr., and L.P. Gough, editors. *Proceedings of the Billings Land Reclamation Symposium on Selenium in Arid and Semiarid Environments, Western United States.* U.S. Geological Survey Circular 1064: 43-53.
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  14. Lemly, A.D. 1993. Metabolic stress during winter increases the toxicity of selenium to fish. *Aquatic Toxicology* 27: 133-158.
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  17. Lemly, A.D. 1995. A protocol for aquatic hazard assessment of selenium. *Ecotoxicology and Environmental Safety* 32: 280-288.
  18. Lemly, A.D. 1996. Selenium in aquatic organisms. Chapter 19 (pages 427-445) in W.N. Beyer, G.H. Heinz, and A.W. Redmon-Norwood, editors. *Environmental Contaminants in Wildlife: Interpreting Tissue Concentrations.* Lewis Publishers, Boca Raton, FL.
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  24. Lemly, A.D. 1997. Ecosystem recovery following selenium contamination in a freshwater reservoir. *Ecotoxicology and Environmental Safety* 36: 275-281.
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  27. Lemly, A.D. 1997. A teratogenic deformity index for evaluating impacts of selenium on fish populations. *Ecotoxicology and Environmental Safety* 37: 259-266.
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  29. Lemly, A.D. 1998. Pathology of selenium poisoning in fish. Chapter 16 (Pages 281-296) in W.T. Frankenberger and R.A. Engberg, editors. *Environmental Chemistry of Selenium*. Marcel-Dekker Press, New York, NY.
  30. Lemly, A.D. 1998. A position paper on selenium in ecotoxicology: A procedure for deriving site-specific water quality criteria. *Ecotoxicology and Environmental Safety* 39: 1-9.
  31. Lemly, A.D. 1998. Belews Lake: Lessons learned. Pages 3-6 and E15-20 in U.S. EPA Publication EPA-822-R-98-007. *Report on the Peer Consultation Workshop on Selenium Aquatic Toxicity and Bioaccumulation*. U.S. Environmental Protection Agency, Office of Water, Washington, DC.
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  33. Lemly, A.D. 1999. Selenium transport and bioaccumulation in aquatic ecosystems: A proposal for water quality criteria based on hydrological units. *Ecotoxicology and Environmental Safety* 42: 150-156.
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United Kingdom.

39. Lemly, A.D. 2002. Symptoms and implications of selenium toxicity in fish: The Belews Lake case example. *Aquatic Toxicology* 57: 39-49.
40. Lemly, A.D., and H.M. Ohlendorf. 2002. Regulatory implications of using constructed wetlands to treat selenium-laden wastewater. *Ecotoxicology and Environmental Safety* 52: 46-56.
41. Lemly, A.D. 2002. A procedure for setting environmentally safe Total Maximum Daily Loads (TMDLs) for selenium. *Ecotoxicology and Environmental Safety* 52: 123-127.
42. Lemly, A.D. 2002. *Selenium Assessment in Aquatic Ecosystems: A Guide for Hazard Evaluation and Water Quality Criteria*. Springer-Verlag Publishers, New York, NY.
43. Lemly, A.D. 2004. Aquatic selenium pollution is a global environmental safety issue. *Ecotoxicology and Environmental Safety* 59: 44-56.
44. Kingsford, R.T., A.D. Lemly, and J.R. Thompson. 2006. Impacts of dams, river management, and diversions on desert rivers. Chapter 8 (pages 203-247) in R.T. Kingsford (editor). *Ecology of Desert Rivers*. Cambridge University Press, UK.
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47. Lemly, A.D. 2008. Aquatic hazard of selenium pollution from coal mining. Chapter 6 (Pages 167-183) in G.B. Fosdyke (editor). *Coal Mining: Research, Technology, and Safety*. Nova Science Publishers, New York, NY.
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