

**FEDERAL ENERGY REGULATORY COMMISSION**  
**Office of Energy Projects**

Division of Dam Safety and Inspections      San Francisco Regional Office  
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**DATE** : July 27, 2006

**MEMORANDUM TO:** John Mudre, DHI.

**THROUGH** : Constantine Tjoumas, Director  
Division Dam Safety and Inspections  
*T. Yamashita*  
Takeshi Yamashita, Regional Engineer  
San Francisco Regional Office  
Division of Dam Safety and Inspections

**FROM** : *John Onderdonk*  
John Onderdonk, Senior Civil Engineer  
San Francisco Regional Office  
Division of Dam Safety and Inspections

**SUBJECT** : Emergency Spillway Safety Questions related to Intervention  
Motion, Proj. No. 2100

**Background**

On October 17, 2005, the Friends of the River, the Sierra Club, and the south Yuba River Citizens League moved to intervene in the Oroville relicensing proceeding, P-2100-52. In that intervention, they raised issues related to safe operation of the project, and you forwarded those to D2SI for consideration, reply, and direct action with the licensee if appropriate.

**Emergency Spillway Re-Evaluation**

We have recently re-evaluated the Oroville Dam emergency spillway, FERC Project No. 2100, with regard to dam and project safety. The safety of the emergency spillway was reviewed during a FERC Potential Failure Mode Analysis (PFMA) session held on September 15, 2004. The PFMA session is part of our dam safety evaluation and at the session, it was determined by FERC, the licensee, and consulting dam safety engineers that operation of the emergency spillway would not threaten the Oroville Dam. The U.S. Army Corps of Engineers directs operations during severe flood events on this

river system and periodically evaluates flood control operations on this river system, which includes Oroville dam.

## Responses to John Mudre's Email

Below are our responses to the four questions contained in your May 18, 2006 email. Because these issues have already been reviewed and considered by the SFRO, and it has been determined that the safety of the project would not be compromised in the rare event of an emergency spillway discharge, no further action will be necessary from SFRO on the issues raised in the intervention. The responses below are provided for you to use in responding to these issues in the relicensing order:

*1. Question: Are modifications to the ungated spillway needed so that the licensee can safely and confidently conduct required surcharge operations?*

Response: Our evaluation indicates that, in the rare event of a discharge, the emergency spillway would perform as designed with the emergency spillway safely passing its design outflow capacity of 350,000 cfs without damaging Oroville Dam.

*2. Question: Would damage occur to P-2100 facilities from use of the ungated spillway?*

Response: It is important to consider that the emergency spillway would operate under rare floods up to the Probable Maximum Flood. Damages to Project No. 2100 facilities downstream of the Oroville Dam could occur, depending upon the quantity of flow over the emergency spillway. Emergency spillway flows would flow down a channel consisting of soil, bushes, and trees covering bedrock. Erosion of one to four feet of soil cover, and debris flow including bushes, and trees would occur during a large release in the emergency spillway. During a rare storm event resulting in flows over the emergency spillway, it is expected that the amount of sediment generated by erosion would be insignificant compared with natural bed load and suspended sediment transport that would occur from natural channel erosion processes in the Feather River. At such extreme discharge events in the Feather River, large sediment movement would be expected even if the Oroville Dam were not constructed. The emergency spillway channel is separated from the main dam by a minimum distance of approximately 1000 feet by a large elevated ridge/abutment. Flows in the emergency spillway channel are directed away from the dam. It is important to emphasize that during a rare event with the emergency spillway flowing at its design capacity, spillway operations would not affect reservoir control or endanger the dam.

*3. Question: Is the ungated spillway properly characterized as an "emergency spillway?"*

Response: The emergency spillway is correctly classified as an emergency spillway in accordance with the FERC Engineering Guidelines.

*4. Question: Does the ungated spillway meet FERC's Engineering Guidelines for a service or auxiliary spillway?*

Response: The emergency spillway meets FERC's engineering guidelines for an emergency spillway. The guidelines specify that during a rare flood event, it is acceptable for the emergency spillway to sustain significant damage.