Summary of G. Fred Lee's Recent Peer Review Activities &
Approaches to Peer Review Used by Agencies

Background Information for
GFL Presentation to CWEMF Steering Committee
on GFL Peer Review Experience
November 18, 2011

- San Joaquin River Proposed Project Renewal Submitted to CALFED/CA Dept of Fish and Game
  - Project consisted of a group of researcher-proposed projects. Concerns about coordination, and ability to address issues that CVRWQCB considered the most important for evaluation to control residual oxygen demand that enters the SJR Deep Water Ship Channel

- DFG has contract with UCD to conduct peer reviews of projects
  - GFL selected to conduct peer review by UCD
    - Worked alone and submitted a report to UCD/DFG based on past experience in conducting SJR DO TMDL project

- CA Legislature required CA Department of Fish and Game's to develop "Quantifiable Biological Objectives and Flow Criteria for Aquatic and Terrestrial Species of Concern Dependent on the Delta." DFG developed a draft report that was submitted to UCD for peer review
  - UCD selected a team to review DFG draft report
    - Team met several times to discuss developing a review of DFG draft report
    - Team submitted a report to UCD/DFG summarizing their findings regarding the adequacy of the draft report's discussion of Delta flow impacts on aquatic resources and water quality; team discussed their findings with DFG staff.

- CVRWQCB has contract with UCD staff to develop an approach for developing water quality and sediment quality criteria guidance
  - GFL selected by UCD staff to review UCD's draft literature review of approaches used for assessing impacts of sediment-associated chemicals on aquatic life, based on his expertise and experience in sediment quality evaluation and regulation
    - GFL worked alone to develop a report discussing the technical adequacy and completeness of the draft UCD report, and to suggest ways in which the draft could be strengthened.

- US EPA has a contract with Eastern Research Group, Inc. (ERG), a Washington, D.C. contract study group, to organize Peer Reviews on behalf of the US EPA. ERG organizes the peer review, selects the peer reviewer for his/her expertise in the topic area, manages all peer-review correspondence, and organizes and facilitates a two-day peer-review session in Washington, D.C.

- US EPA Peer Review of proposed research projects for innovative research on developing approaches for treating domestic/industrial wastewaters and urban stormwater runoff
- About 50 proposed projects were the subject of the peer review and ranking for funding consideration. The proposals for the projects were divided among about dozen peer reviewers selected by the US EPA/ERG.
- The key to peer reviewer selection was expertise in the topic area and a lack of conflict of interest in the project area.
- Each peer reviewer was assigned about 6 projects for primary review; each reviewer developed a written review of his/her assigned projects. All materials were confidential.
  - Each project was discussed among the peer reviewer group, and then subjected to a secret ballot to rank the project as "high," "medium," or "low" priority for funding. Only proposals given a "high" priority ranking will likely be in contention for US EPA funding.

- US EPA Peer Review of EPA's draft report, "*Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence."* GFL has been recently asked to submit a statement of interest and qualifications to serve as a peer reviewer of this report.
  - This peer review is based on the approach used by the US EPA to evaluate the impact of mountain-top removal in coal mining in Central Appalachia Streams of US (primarily West Virginia).

    *"EPA's Office of Research and Development has developed a document, Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence, that reviews the scientific literature on connectivity and effects of small streams, wetlands, and other water bodies on the condition or function of downstream waters. The goals of the document are to 1) provide a context for considering the evidence of physical, chemical, and biological connections between rivers and their tributary waters, 2) summarize current scientific understanding about such connections, and 3) discuss factors that influence their degree or the magnitude of a downstream effect. This document does not attempt to define any legal terms, and is intended only as a source of scientific information about relevant connections among aquatic ecosystems."*

    *"To conduct this peer review ERG is seeking experts in the following areas: hydrology, especially as it relates groundwater-surface water interactions at watershed to river basin scales; stream ecology, especially as it relates to ephemeral, intermittent, and small perennial streams; wetlands ecology; biogeochemistry; freshwater functional ecology; and biologists with expertise in herpetology, aquatic entomology, and ichthyology or fisheries science, especially as these relate to the movements of organisms between streams-and-rivers or streams-and-wetlands."*

    The scope of this project is "*ERG estimates a total level of effort of 28-32 hours for this work and all non-Federal reviewers will receive a fixed fee honorarium as well as travel reimbursement. Reviewers will be asked to:*

- "Critically review EPA's draft document, which is approximately 150 pages of single-spaced text;
- Provide pre-meeting comments that respond to questions in the Technical Charge to Peer Reviewers;
- Consider, as appropriate, the public comments EPA has received, which will be provided to reviewers;
- Conduct the review and submit written pre-meeting comments within a 4-week period;
- Read reviewers' compiled pre-meeting comments prior to the meeting;
- Participate in a 1-day meeting in the Washington, DC Metro area; and
- Provide final, edited comments after the meeting."

GFL was asked to submit qualifications to be a member of peer review panel to conduct a letter review of technical issues associated with US EPA's action to prevent mountain-top removal for coal mining with the discharge of removed materials into area streams. The USEPA took action based on statistical correlation between specific conductance of stream water and changes in the numbers and types of macroinvertebrates in the streams.

- US EPA Peer Review of its draft "*Ambient Water Quality Criteria for Conductivity-Freshwater*."
  - The Scope of this peer review is stated to be: "In support of this mission, EPA has developed a criteria document to support States, Tribes, and Territories interested in a field methodology to quantify narrative conductivity criteria or develop numeric conductivity criteria. This field methodology has undergone extensive peer review in the case study entitled, 'A Field-based Aquatic Life Benchmark for Conductivity in Central Appalachia Streams' (2011). EPA has adapted the methodology in the above mentioned case study for broader application in the draft document, 'Ambient Water Quality Criteria for Conductivity-Freshwater,' which is the focus of this review."

- US EPA Peer Review of the US EPA's water quality criteria for chloride.
  - Peer review panel to be comprised of experts representing "*aquatic toxicologists, geologists, wastewater treatment experts, biostatisticians"*
  - Scope of the peer review includes: "*Critically review EPA's draft document, National Recommended Water Quality Criteria for Chloride, which is approximately 80 pages in length including tables, figures and a reference list. Additional background materials will also be provided.*
    - *Respond to a Technical Charge to Peer Reviewers with specific questions pertaining to this review.*
    - *Conduct the review within a 3-week period beginning in late-November/early-December 2011."*
  - According to the statement of the nature of the project, the current chloride water quality criteria has "*No data concerning plants, residues, saltwater species, or wildlife species was considered. In 2008, EPA performed chloride toxicity tests with five species: water flea (Ceriodaphnia dubia); fingernail clam (Sphaerium simile); planorbid snail (Gyraulus parvus); and tubificid worm (Tubifex tubifex); under different levels of water hardness (all four species) and different sulfate concentrations (Ceriodaphnia dubia*

*only) to gather additional data. The latest derived chloride criteria are adjusted for the combined effects of water hardness and sulfate concentration in the water."*

- Each peer reviewer will work alone to develop a report.

At this time it is unclear how the US EPA plans to integrate the reports of the individual peer reviewers into a final review.