Panel Scientific and Technical Review

(Note: Review comments will be anonymous, but public.)

Proposal number: 2001-F200 **Short Proposal Title: Transformation of Se and C**

1a) Are the objectives and hypotheses clearly stated?

Summary of Reviewers comments:
Two reviewers said NO. However, the objectives are clearly stated in the Executive Summary. The reviewers did question the objectives with respect to carbon. Hypotheses are stated as questions rather than as testable hypotheses.

Panel Summary:
Panel felt they were stated clearly, but only in Executive Summary. Hypotheses are stated as general questions, not testable.

1b1) Does the conceptual model clearly explain the underlying basis for the proposed work?

Summary of Reviewers comments:
The conceptual model is simple and clearly described. The selenium and transport models shown in Figure 1 and 2 do capture the underlying mechanisms involved and make them easy for others to understand.

Panel Summary:
Reviewers were split; the panel thought the model was overly simplistic, but there.

1b2) Is the approach well designed and appropriate for meeting the objectives of the project?

Summary of Reviewers comments:
Note: The reviewers generally reviewed only the tasks involving hydrodynamics modeling.
It is not clear why a 2-D or 3-D model is going to be used when spatial distribution of selenium and carbon can be modeled using existing simpler 1-D arrays of channels and junctions to represent the Bay-Delta system.

Panel Summary:
* All outside reviewers are model users; none use this model.
* Big question: Is the Delta-TRIM model proven? Panel felt model is well established in south San Francisco Bay but basic problem is proposal states that the model is a big improvement; the panel and reviewers do not agree. The high spatial resolution could be desirable, but the long-term studies may not be feasible. The model is not yet proven its accuracy (relative to 1-D models) and the utility is overstated. More ground truthing/calibration is necessary. Panelists experienced with modeling were concerned that model development should be further along for rest of project to be completed on time.
* The proposed phytoplankton element is not a trivial exercise. Panelists questioned whether the model is even necessary considering existing 1-D models.
* Se model may be simplistic and may not capture enough dynamics of Se chemistry to be useful.

* Getting information to calibrate Se and phytoplankton models may not be possible within time frame of proposal.
* Approach does not incorporate Se movement or transformation unrelated to phytoplankton and grazers (e.g. microbially mediated transformation, particle adsorption and deposition).
* Regarding shallow water habitats, if they are critical to transformation, a 1-D model will not be sufficient, but proposal did not justify that Se is a "2-D problem".
* Task 3: Field studies appear well designed. Link of model to historical (core) results not clear.
* Task 4: Lab studies appear well designed except for linking to key herbivores. Given that uptake is so species dependent and phytoplankton composition shifts, predictive capability is questionable.
* Task 5: Not well linked to rest of project and not as developed as other tasks. 5D is cryptic. Task 5 could be a separate project. Portions of this task (and Task 6) were funded in an earlier CALFED cycle, why is earlier work not mentioned/coordinated with proposal?
* Stable isotopes can be used for trophic relationships, not feeding relationships; this suggests poor understanding of ecology. One panelist suggested using PUFAs instead of isotopes. Claims of forecasting Se distribution across consumer level of food web under different conditions is beyond project capabilities.
* Task 6: No funds are budgeted for Task 6, and it is not indicated who is responsible for this task. Task description is strikingly similar to work proposed in CALFED-funded project that preceded this proposal.

1c1) Has the applicant justified the selection of research, pilot or demonstration project, or a full-scale implementation project?

Summary of Reviewers comments:
The applicant has adequately justified the selection of research, and demonstration projects.

Panel Summary:
YES, this is a research project.

1c2) Is the project likely to generate information that can be used to inform future decision making?

Summary of Reviewers comments:
The project is intended to fill knowledge gaps about Se cycling among habitats. Information generated by the project is likely to be valuable to other reactive constituents studies, but of questionable value to decision makers.

Panel Summary:
Reviewers said "NO", panelists thought a lot would be learned about Se, but questionable value to decision makers.

2a) Are the monitoring and information assessment plans adequate to assess the outcome of the project?

Summary of Reviewers comments:
The proposed monitoring of flows, selenium and carbon is very detailed and will reveal a great detail of very useful information.

Panel Summary:
Not applicable

2b) Are data collection, data management, data analysis, and reporting plans well-described, scientifically sound and adequate to meet the proposed objectives?

Summary of Reviewers comments:
Yes, excellent technology for data acquisition, management, and analysis is available and would be implemented in the project.

Panel Summary:
YES, basically unanimous, but need to have more than one time survey of benthic community composition. Consider using DWR data to incorporate temporal variability.

3) Is the proposed work likely to be technically feasible?

Summary of Reviewers comments:
The proposed work is likely to be technically feasible.

Panel Summary:
YES, the team can build 3-D model and do lab and field studies. Questions arise relative to duplication of elements in this proposal verses previously funded CALFED proposal.

4) Is the proposed project team qualified to efficiently and effectively implement the proposed project?

Summary of Reviewers comments:
Yes, the team is qualified.

Panel Summary:
YES, these are the right people to be doing this type of work. Unclear what Sam Luoma's role (the lead PI) will be since he has asked to have name removed from proposal. Also, who will do sturgeon work?

5) Other comments

Technical Reviewers: Two "GOOD" and one "VERY GOOD"; all were hydrodynamic modelers.

Overall Evaluation
PANEL SUMMARY COMMENTS

Generally, the panel believes the scientists involved with the proposal are very competent, although the addition of an ecologist to the team could greatly strengthen it. The panel agrees that a Se fate/transport model should be developed. However, more focus should be on the fate and transformation development and calibration aspects of the model, not on transport. The possible exception to this would be if local areas in the Delta dominated by 2-D or 3-D hydrodynamic processes (such as flooded islands) were known to be major contributors to the overall Se dynamic cycle. This appears to be one hypothesis of the proposal but with little development (although the field studies in Task 2B and Task 3C may provide results that could begin to answer this question). The integration of a field measurement team and model development team is commendable.

Considering the portion of the proposal dedicated to 3-D modeling, there should be more justification for its development and calibration – especially considering that the proposal as a whole addresses a much wider issue than local 3-D hydrodynamic effects. Further, the proposal claims to already have such a model developed and calibrated.

The panel also had concerns regarding the biological aspects of the studies, as noted above. Other concerns relate to the lack of clarity in the proposal between tasks that may have already been completed as part of an earlier funded proposal and what is being proposed now. It appears to the panel that part of Tasks 4 and 5 and all of Task 6 had been previously proposed and funded.

Summary Rating

Excellent
Very Good
Good
Fair
Poor

Your Rating: **GOOD**