

## Draft Individual Review Form

Proposal number: 2001-F203-2

Short Proposal Title: Tertiary & Quaternary  
Wastewater Treatment

**1a) Are the objectives and hypotheses clearly stated?**

Yes, the objectives and the hypotheses are clearly stated in Sections 1.2 and 1.4. The main objective will be the product of testing three hypotheses. The methods and the data to test these hypotheses are clearly detailed in the Proposal. The secondary objective of technology transfer is also clearly stated.

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

While I understand the Concept or driving force behind this project, the discussion of the "threats and penalties" noted in the model section requires a better explanation of its significance. The nutrient shed concept could also use a better explanation of its link to the project.

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

The approach is extremely well detailed and designed. I have no doubt that this program as noted in the proposal will allow the researchers to meet their objectives. The approach is defined by seven tasks. These include the details of equipment installation through report and newsletter preparations. It is a very solid approach.

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

Yes, the applicant has justified the selection of research and the facilities to be used in this research. Results of work on the AIWPS at the proposed pilot plant and the follow up demonstration facility could provide benefits that conventional processes may not achieve if employed at wastewater treatment plants discharging into the San Joaquin River.

The applicant has noted the particular discharge regulations and the associated water quality problems along the San Joaquin River. The potential economic and environmental benefits of the AIWPS and appurtenant processes need to be accurately determined and compared to other options for meeting the needs of these dischargers.

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

The objective of this project would be to define a treatment process so that it may be compared to other processes when making the decisions about meeting future discharge regulations. The hypotheses are that the AIWPS would enhance both the economic and environmental values of the wastewater treatment process especially in areas along the San Joaquin River. This research and information generated from this work could definitely be used to make future decisions.

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

The testing and monitoring plan for the project is more than adequate. The research group is extremely qualified and has a vast background of experience with the system to be tested. This experience

has enabled them to provide a very exhaustive test plan. The capability of the group to assess the results of the testing and monitoring is also more than adequate. Their credentials and experience in the arena of research projects is very impressive.

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

The above plans are adequately described, scientifically sound and will allow the researchers to meet the objectives of the project. Due to the many monitoring points and the number of test parameters it will require several spreadsheets to describe each of the above areas. The proposal provides adequate description of the many strategies required to make determinations of process performances and operational decisions. These descriptions are provided in the discussions of the seven tasks. Under the description of each task there is a list of actions and the steps that are required to complete the task. These are in adequate detail to evaluate the soundness of the project.

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

The work is technically feasible. It is an upgrade of work previously done. In addition to the AIWPS, the researchers will be bringing in processes to be tested and analyzed that also have been previously operated in other plants. Operation and analyses of these combinations of treatment processes should be technically feasible. Scaling up from the pilot scale to the demonstration facility should also be technically feasible. The project personnel besides being quality researchers, are also very experienced in the design and operation of such processes.

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

They are definitely qualified to provide an efficient and effective project as described in this proposal.

**Miscellaneous comments**

The project has the potential to be very beneficial at treatment facilities that can accommodate the spatial requirements of pond systems. The fact that UC Berkeley has an operable facility at their Richmond Field Station should be a real benefit for this project. The many years of previous experience at the Richmond site is a rare bonus when it comes to operating and testing pilot scale systems.

While this project is very good as it stands, it would be better if more emphasis were given to the Demonstration facilities and its operation. The differences between the Richmond site and the Stockton site such as weather and the physical features should be addressed and may be once the program is finalized.

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**Overall Evaluation: The summary rating is excellent. The proposal is strong in all areas. Its main strengths are in the personnel managing the project and the pilot and laboratory facilities that are already in place.**

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**Summary Rating**

- X**  **Excellent**  
 Very Good  
 Good  
 Fair  
 Poor
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