Proposal Reviews

#95: Wetlands Biofilter

National Grants

Initial Selection Panel Review	
Research and Restoration Technical Panel Review	
Delta Regional Review	
External Scientific Review	#1 #2 #3
Environmental Compliance	
Budget	

Initial Selection Panel Review:

CALFED Bay-Delta 2002 ERP PSP
Initial Selection Panel Review

Proposal Number: 95

Applicant Organization: National Grants

Proposal Title: Wetlands Biofilter

Please provide an overall evaluation rating.

Explanation of Recommendation Categories: Fund

- **As Is** (a proposal recommended for funding as proposed)
- **In Part** (a proposal for which partial funding is recommended for selected project phases or components)
- **With Conditions** (a proposal for which funds are recommended if the applicant contractually agrees to meet the specified conditions)

Consider as Directed Action in Annual Workplan (a proposal addressing a high priority action that requires some revision followed by additional review prior to being recommended for funding)
Not Recommended (a proposal not currently recommended for funding-after revision may be considered in the future)

Note on "Amount":

For proposals recommended as Fund As Is, Fund In Part or Fund With Conditions, the dollar amount is the amount recommended by the Selection Panel.

For proposals recommended as Consider as Directed Action in Annual Workplan, the dollar amount is the amount requested by the applicant(s).

Fund	
As Is	**-**
In Part	**-**
With Conditions	**-**
Consider as Directed Action	**-**
Not Recommended	**X**

Amount: **$0**

Conditions, if any, of approval (if there are no conditions, please put "None"):

None

Provide a brief explanation of your rating:

The concept of using a wetland biofilter system to filter polluted runoff, in this case from suburban runoff and agricultural tailwater, has merit for CALFED. However, because this proposal did not provide sufficient details about approach, methodology, and timeline the technical panel rated it only as adequate. The Selection Panel concurs and finds it does not warrant funding.

Research and Restoration Technical Panel Review:

CALFED Bay-Delta 2002 ERP PSP
Research and Restoration Technical Panel Review Form

Proposal Number: 95

Applicant Organization: National Grants

Proposal Title: Wetlands Biofilter

Review:

Please provide an overall evaluation summary rating:

Superior: outstanding in all respects;
Above Average: Quality proposal, medium or high regional value, and no significant administrative concerns;
Adequate: No serious deficiencies, no significant regional impediments, and no significant administrative concerns;
Not Recommended: Serious deficiencies, significant regional impediments or significant administrative concerns.

Overall Evaluation Summary Rating	**Provide a brief explanation of your summary rating**
-Superior	**Proposal is strong conceptually and addresses an ecosystem-scale approach to reducing cumulative impacts from stormwater and irrigation tailwater using wetland biofilters systems. However, both the details and the timeline of the proposed studies (particularly the engineering/hydrology feasibility study) are entirely inadequate for informed assessment of the proposal. In the absence of sufficient information to evaluate the technical strengths or weaknesses of the feasibility study, the panel had to assume there was moderate high of the project failing to make a contribution.**
-Above average	
XAdequate	
-Not recommended	

1. **Goals and Justification.** Does the proposal present a clear statement of goals, objectives and hypotheses? Does the proposal present a clear justification and conceptual model for the project?

   The goal, to establish baseline information and assess the feasability of a wetland biofilter system to filter stormwater and irrigation tailwater for a specific Delta site (Knightsen), is quite clear. Conceptually, the project is considered to be quite important to CALFED because it addresses the complex issue of cumulative impacts from agricultural and other wastewater upon downstream ecosystems. However, the proposal does a dismal job of explaining what a wetland biofilter is or does, and how they could contribute to reducing ecosystem-scale impacts. The proposal is somewhat weak in terms of developing a hypothesis structure and elucidating the problem and approach through a conceptual model.

2. **Likelihood of Success (Approach, Feasibility, Capabilities and Performance Measures).** Is the project likely to succeed based on the approach, feasibility and project team capabilities? Are the proposed performance measures adequate for measuring the project's success?

Details of the approach, methodology and task/time schedule are inadequate to evaluate effectively. Given the body of wetland biofilter research around the country (and world), it was disappointing to find that the proposal did not draw on the technical background to properly assess feasibility. The applicants also failed to address the potential risk of mercury/methylmerclury and dissolved organic disinfectant byproducts contamination (discharge) that could result from a wetland biofilter system in the Bay-Delta setting.

3. **Outcomes and Products.** Will the project advance the state of scientific knowledge in general and/or make an important contribution to the state of knowledge of the Bay-Delta Watershed? For restoration proposals, is the project likely to contribute to ecosystem restoration or species recoveries in a significant way? Will the project produce products useful to decision-makers and scientists?

   There is some question about whether developing a feasibility study will make a long-term contribution to the issue of cumulative impacts of stormwater and irrigation tailwater in the absence of future monitoring over multiple years. Alternatively, if the feasibility study results in technical assessments and recommendation that are more broadly applicable beyond Kinghtsen these should provide potential templates for other sites.

4. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

   Budget may be reasonable but uncertain whether consolidated into one year?

5. **Regional Review.** How did the regional panel(s) rank the proposal (High, Medium, Low)? Did the regional panel(s) identify significant benefits (regional priorities, linkages with other activities, local involvement) or impediments (local constraints, conflicts with other activities, lack of local involvement) to this proposal? What were they?

   Delta Regional Review was generally supportive because of interaction with local interest and working groups, but noted inadequacies in monitoring program, inconsistencies with benefits provided for flood protection and risk of septic tank contributions.

6. **Administrative Review.** Were there significant concerns about the proposal with regard to the prior performance, environmental compliance and budget administrative reviews? What were they?

   Issues of concern about CEQA compliance and CDFG 1601 permit applicability. There were also several budget detail questions.

Miscellaneous comments:

None

Delta Regional Review:

Proposal Number: 95

Proposal Title: Wetlands Biofilter

Overall Ranking: **-**Low **X**Medium **-**High

Provide a brief summary explanation of the committee's ranking:

This application provides habitat benefits while improving water quality.

1. Is the project feasible based on local constraints?

   XYes **-**No

   How?

   working with local interests and working groups

2. Does the project pursue the restoration priorities applicable to the region as outlined in the PSP?

   XYes **-**No

   How?

   wetlands restoration to improve water quality

   goals 2, 4, 5, and 6

3. Is the project adequately linked with other restoration activities in the region, such as ongoing implementation projects and regional planning efforts?

   XYes **-**No

   How?

   working with the Veale/Byron Tract Work Group

4. Does the project adequately involve local people and institutions?

   XYes **-**No

   How?

   this planning and feasibility project is coordinated with the local wroking group but it is unclear what the landowner involvement

Other Comments:

monitoring program could be improved

inconsistencies with what the benefits will be provided for flood protection because high flows will bypass the new wetlands

mention potential risk of septic tanks overflowing and mixing with runoff but do not address how it will be alleviated in the approach

External Scientific: #1

Research and Restoration External Scientific Review Form

Proposal Number: **95**

Applicant Organization: **National Grants**

Proposal Title: **Wetlands Biofilter**

Conflict of Interest Statements:
I have no financial interest in this proposal.
XCorrect
-Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

none

Review:

Please provide an overall evaluation summary rating:

Excellent: outstanding in all respects;
Good: quality but some deficiencies;
Poor: serious deficiencies.

Overall Evaluation Summary Rating	**Provide a brief explanation of your summary rating**
-Excellent	**The idea of the project has substantial merit from an ecological and management standpoint. If successful, this project could raise the local and regional water quality as well as improve hydrological conditions for local residents. However, this proposal includes too many tasks for a one-year study that make the proposal appear unachievable. Perhaps these concerns could have been overlooked if more detail and clarity had been included in the proposal. Therefore, while the project has great merit, the proposal fell short resulting in an overall poor score.**
-Good	
XPoor	

1. **Goals.** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

   The general goal of this study, to establish the baseline information and conduct a general feasibility study for a wetland biofilter system to filter stormwater and irrigation tailwater from Knightsen before it is discharged into the Delta, is clearly stated. The overall goal is internally consistent, however, details of the work and analyses are not provided, so it is difficult to ascertain whether or not, once the data are collected and analyses conducted, that the recommendations would be valid and defensible. The concept appears to be very important; primarily because of the "cumulative" effect many agricultural areas in a drainage basin can have on the water quality of downstream ecosystems, particularly deltas.

It does appear very important that solutions to the town's water quality and flooding problems be addressed using a basin-wide approach.

2. **Justification.** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

   The goal of establishing a wetland buffer system in a heavily agricultural town with water quality and flooding problems is a good goal. It appears, based on the author's statements, that the residents of Knightsen in eastern Contra Costa County have water quality and hydrology problems in their town. The water quality problems are associated with individual septic systems and the individual well systems for drinking water, in addition to stormwater runoff problems during the rainy season. The author's also claim that sediment loads from this agricultural area can be a problem to the wider Rock Slough and Bay ecosystems. In a general way, such as above, the authors identify the problems that they are interested in addressing, however, no data are presented that actually indicate the level of the problem, what the specific constituents of water quality are the problem, or give this reviewer any security that they understand the problem enough to have a solid footing from where to start their formulation of a solution to this problem. A general review is provided on page one of the proposal outlining that wetlands can be used for water treatment and storm buffering, but little reference is given to the town, region, or even state in question on whether biofilters would be a good approach to solve the problem. It is not clear if the authors are going to propose one wetland, small wetlands associated with each large agricultural track, or provide a buffer at the closest point to the receiving waters of the slough or "natural" ecosystems that they are reportedly trying to enhance? Since one of the authors works for the County and they already have "studies of Contra Costa County stormwater program" it appears that this justification section could be more robust and the proposal could be more focused from the outset on potential sites, and conceptual model of the type of biosystem they envision.

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

   It is unclear whether or not the approach taken is going to yield the desired results of (1) locating the best site for establishment of a biofilter system, (2) evaluating various wetland designs, and (3) identifying all the risks and effects of such a system. In Task 1, which is already funded, the authors are proposing to set out 3 piezometers to determine depth of the water table. It is unclear why 3 were needed in the first place and how these three will allow them to model the hydrology for the area. In Task 2 they state that they may relocate them to potential wetland sites, but don't specifically give any criteria on which this decision will be made. If the model is robust, and they can specify where the optimal wetland sites should be, then maybe they can move their wells to these identified sites. However, the point of discussion should maybe start with where are they likely to be able to acquire land for such a biofilter system and then use these practical starting points to locate wells; again the 3 wells should be better justified. Again, in Task 2.2 and really throughout the proposal, general statements are made, but clarity is lacking, which makes it extremely difficult to evaluate the proposal's potential for success. For example, a dataset will be evaluated in Task 2.2 but no parameters are mentioned. Further, grab samples will be taken to characterize the "basic constituents" in the water but the constituents are not listed. They also state that "continuous sampling with auto-samplers could be implemented if need is identified", but no criteria are identified. No study sites are given to where samples would be taken either? I would agree that wet and dry seasons should be included, but what about

inter-annual variance? They list the laboratory analyses that would be conducted, but basic water quality parameters are lacking (nutrients, pH, etc.). It is not clear how the results of this data will be used in the design of a wetland treatment system? Even in Task 2.3, the specifics of collection of soil moisture are absent, and no discussion of the variance in these parameters which can be high in the study area.

4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

   The approach is not fully documented, so it is difficult to evaluate the technical feasibility of all the tasks and subtasks. It would be this reviewer's recommendation that the authors focus on one aspect of the project, instead of doing a superficial job covering multiple tasks all in one year. Just to do the hydrological model in a robust way to include validation of the model is going to be a large task. Then to acquire and integrate all the GIS data layers into a GIS model to optimize site location is another large task. To state that you will be able to provide water quality data and predict how well the biofilter will function is another large task. Then to further assess the hydrological impacts of the wetland system and include all the permitting and costing issues, just appears to be a lot of work for the personnel and time allotted. If a better work breakdown structure was provided with time lines for completing each task, the potential feasibility of the project could be better evaluated. The time line provided on page 10-11 is totally inadequate.

5. **Project-Specific Performance Measures.** Does the project include appropriate performance measures to measure success relative to the project's goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans explicit and detailed enough to determine if performance measures will be adequately assessed?

   The project does not include the evaluation of the project in terms of success in a direct way. However, it does evaluate various scenarios.

6. **Products.** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

   The monitoring component is likely to contribute minimally, because it is so limited in scope, and monitoring projects frequently take several years to incorporate the variance in the system to be robust enough for valid interpretation. On the other hand, this project if successfully implemented could have significant positive impacts on the local area, and could provide a model for duplication in adjacent areas, and through cumulative effects, have an extremely positive effect on water quality and flooding in the region.

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

   The authors list a number of projects that they have been involved in, but do not provide the reviewer with any specifics on these projects and any measures of success. Additionally, no qualifications of the specific personnel are provided in the proposal.

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

The cost seems very reasonable for the work proposed, if the objectives can be met (all in one year).

Miscellaneous comments:

External Scientific: #2

Research and Restoration External Scientific Review Form

Proposal Number: **95**

Applicant Organization: **National Grants**

Proposal Title: **Wetlands Biofilter**

Conflict of Interest Statements:
I have no financial interest in this proposal.
XCorrect
-Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

None

Review:

Please provide an overall evaluation summary rating:

<u>Excellent:</u> outstanding in all respects;
<u>Good:</u> quality but some deficiencies;
<u>Poor:</u> serious deficiencies.

Overall Evaluation Summary Rating	**Provide a brief explanation of your summary rating**
-Excellent	**Consider funding only as supplemental approach to improving wetland hydrology and water quality in Bay/Delta rather than restoration per se. Appears to be supportable as a feasibility study but needs larger Bay/Delta context and framework**
XGood	
-Poor	

1. **<u>Goals.</u>** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

   The goals and objectives are somewhat elucidated, although explicit hypotheses are not provided.

2. **<u>Justification.</u>** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

   Background information and justification is minimal; presumably, the demonstration of wetland treatment of stormwater and irrigation tailwater in many other regions of California and the country is assumed to be substantial and conclusive?

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

   For the specific situation of Knightsen, this study appears to be adequately designed to meet the community?s needs and objectives. It is unclear whether there will be any aspects of this project that can be scaled up to broader applicability across the Bay/Delta. Is the biofilter technology scalable, and will these specific feasibility assessments for Knightsen provide any information that CALFED could use to evaluate it?s role within the restoration program?

4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

   The study is a feasibility study; thus, the products will explicitly evaluate and make recommendations about the feasibility of implementing such a ?biofilter? project at Knightsen.

5. **Project-Specific Performance Measures.** Does the project include appropriate performance measures to measure success relative to the project's goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans explicit and detailed enough to determine if performance measures will be adequately assessed?

   Project-specific performance are well spelled out within the organization and description of the project?s tasks.

6. **Products.** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

   Project-specific performance are well spelled out within the organization and description of the project?s tasks.

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

   Partners/contractors (EPA, Philip Williams & Assoc.) are highly qualified and bring to the proposed research considerable background on designed wetland treatment of stormwater and irrigation tailwater.

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

   For what is proposed, the cost of this feasibility study appears to be quite reasonable.

Miscellaneous comments:

Although technically supportable, this proposal needs a much broader Bay/Delta context and rationale. Can it be merged with evaluation of other sites where wetlands are designed to or are naturally treating stormwater and irrigation tailwater? What information from this study would inform CALFED about how this ?technology? could be implemented at the broader Bay/Delta scale?

External Scientific: #3

Research and Restoration External Scientific Review Form

Proposal Number: **95**

Applicant Organization: **National Grants**

Proposal Title: **Wetlands Biofilter**

Conflict of Interest Statements:
I have no financial interest in this proposal.
XCorrect
-Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

None

Review:

Please provide an overall evaluation summary rating:

<u>Excellent:</u> outstanding in all respects;
<u>Good:</u> quality but some deficiencies;
<u>Poor:</u> serious deficiencies.

Overall Evaluation Summary Rating	**Provide a brief explanation of your summary rating**
-Excellent	**CALFED has a critical need for research on wetland fuctions, and this group may be in a good position to make valuable contributions towards the CALFED Science Program. However, the present proposal does not provide sufficient detail to evaluate the potential value of the project.**
XGood	
-Poor	

1. **<u>Goals.</u>** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

   The important role of wetlands and riparian zones in influencing water quality in aqricultural catchments is well established. Wetlands are known to provide an array of ecological servives including decreased sediment transport, declines in biologically active chemical constituents such as nitrate, and critical habitat for diverse biota. While the general role of wetlands as a "biofilter" is well documented across ecosystems, there is great variability in specific wetland functions among and within agricultural catchments. In this regard, the proposed work is both important and timely. However, explicit hypotheses are absent, and the specific objectives are broad and vague.

2. **Justification.** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

   The study is justified relative to existing scientific knowledge, but the proposal lacks an explicit conceptual model that has been developed from prior work and the work of the others. The paucity of references reflects this disconnect from general conceptual models of wetland function.

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

   Again, the absence of explicit hyotheses (or at least easily evaluated objectives) and conceptual model make the experimental design read as diffuse and vague. Outcomes are unknown, and it is difficult to evaluate how wetland functions would be evaluated in either a quantitative or experimental manner. The absence of figures otlining previous results or explaining the experimental design makes evaluation of the approach difficult.

4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

   see #3 above

5. **Project-Specific Performance Measures.** Does the project include appropriate performance measures to measure success relative to the project's goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans explicit and detailed enough to determine if performance measures will be adequately assessed?

   NO to all questions above. See #3 above.

6. **Products.** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

   High quality products are certainly possible, and CALFED has an acute need for experimental and/or quantitative studies that examine specific wetland functions. However, this proposal does not provide the necessary detail to evaluate specific products.

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

   I was disappointed with the Literature Cited. I think the authors can do a better job incorporating their previous work and that of others into the text and Literature Cited.

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

   seems reasonable

Miscellaneous comments:

None

Environmental Compliance:

Proposal Number: 95

Applicant Organization: National Grants

Proposal Title: Wetlands Biofilter

1. Are the legal or regulatory issues that affect the proposal identified adequately in the proposal?

   -Yes **X**No

   If no, please explain:

   The Compliance Checklist shows all permits listed as "obtained". The checklist states no CEQA compliance is necessary but then states Contra Costa County as a CEQA Lead Agency and a Categorical Exemption checked off. If the applicant is applying for a Categorical Exemption, a Notice of Exemption must be filed. Task 2.2-Grab sampling may require a 1601 from CDFG.

2. Does the project's timeline and budget reflect adequate planning to address legal and regulatory issues that affect the proposal?

   XYes **-**No

   If no, please explain:

3. Do the legal and regulatory issues that affect the proposal significantly impair the project's feasibility?

   -Yes **X**No

   If yes, please explain:

Other Comments:

Budget:

Proposal Number: 95

Applicant Organization: National Grants

Proposal Title: Wetlands Biofilter

1. Does the proposal include a detailed budget for each year of requested support?

   XYes **-**No

   If no, please explain:

   For 3 years

2. Does the proposal include a detailed budget for each task identified?

   XYes **-**No

   If no, please explain:

3. Does the proposal clearly state the type of expenses encompassed in indirect rates or overhead costs?

   XYes **-**No

   If no, please explain:

   15% on ALL costs.

4. Are appropriate project management costs clearly identified?

   XYes **-**No

   If no, please explain:

5. Do the total funds requested (Form I, Question 17A) equal the combined total annual costs in the budget summary?

   -Yes **X**No

   If no, please explain (for example, are costs to be reimbursed by cost share funds included in the budget summary).

   17.a. = $134,000

Grand Total - $134,590.00

6. Does the budget justification adequately explain major expenses?

   XYes **-**No

   If no, please explain:

7. Are there other budget issues that warrant consideration?

   -Yes **X**No

   If yes, please explain:

Other Comments: