Proposal Reviews

#68: Testing Restoration Hypotheses across Multiple Watersheds: Gaining Insights from Past Projects to Improve Future Learning

ESSA Technologies Ltd.

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Final Selection Panel Review

Initial Selection Panel Review

Research and Restoration Technical Panel Review

Delta Regional Review

San Joaquin Regional Review

Sacramento Regional Review

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	#1
External Scientific Review	#2
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Environmental Compliance

Budget

</div>

Final Selection Panel Review:

Proposal Number: 68

Applicant Organization: ESSA Technologies Ltd.

Proposal Title: Testing Restoration Hypotheses across Multiple Watersheds: Gaining Insights from Past Projects to Improve Future Learning

Please provide an overall evaluation rating.

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:

As indicated previously, this proposed effort may be most valuable in coming years as management efforts ripen, data accrues, and opportunities for synthesis grow. Based on the proposal and comments received from the applicant, the Selection Panel is not compelled to change its initial recommendation.

Initial Selection Panel Review:

Proposal Number: 68

Applicant Organization: ESSA Technologies Ltd.

Proposal Title: Testing Restoration Hypotheses across Multiple Watersheds: Gaining Insights from Past Projects to Improve Future Learning

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 selection panel agrees that a synthesis of ongoing restoration projects and use of currently available data to guide selection of next actions is a CALFED need. The panel also agrees with the technical review's concern about the limited number of available and advanced case studies, and the lack of coordination with restoration projects. As data sets rapidly mature, the value of this proposal will rise considerably; but, if this proposal is brought back, the applicant should work closely with CALFED ERP staff to better delineate its content and application. Do not fund during this funding cycle.

Research and Restoration Technical Panel Review:

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

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Proposal Number: 68

Applicant Organization: ESSA Technologies Ltd.

Proposal Title: Testing Restoration Hypotheses across Multiple Watersheds: Gaining Insights from Past Projects to Improve Future Learning

Review:

Please provide an overall evaluation summary rating:

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

Overall Evaluation Summary Rating	Provide a brief explanation of your summary rating
-Superior	**The proposal addresses a critical important concept that should be fundamental to the CALFED science and restoration programs. However, the proposal is premature and inadequately coordinated with existing and emerging CALFED restoration projects. The limited number of available and advanced case studies in the sample, the lack of inclusion of projects from delta and eastside tributaries, and apparent lack of coordinating with restoration projects and regional representative makes it problematic. The panel recommends Above Average ranking for Tasks 1 and 2 only; with demonstration of the applicability of restoration sites and data, and potential increases in the regional scope, the applicants would be strongly encouraged to resubmit to complete the proposed Tasks 3 and 4.**
XAbove average	
-Adequate	
-Not recommended	

1. <u>**Goals and Justification.**</u> 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?

   This proposal recognizes the disjointed nature in the design, application and assessment of restoration projects, particularly riparian tributary systems, across the CALFED program. Goal and objectives were clearly stated; the hypothesis of an undefined "exploration of multi-watershed approaches can lead to significant improvements in CALFEDs tributary restoration program" is relatively trivial and more appropriately an assumption. One objective is designed to identify potential hypothesis tests that can be applied across watershed analyses. The justification for landscape-scale, inter-watershed syntheses is stated effectively and should be an important concept for CALFEDs support, especially for early to

mid-term assessment of the programs progress toward ecosystem restoration.

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?

   Despite recognition of the overall need for approaches such as this, likelihood of success is generally considered moderate, principally due to the early emergence of CALFED restoration projects and 5the redultin low n and very preliminary results. A serious concern may be that the feasibility of accessing specific restoration project data will be difficult, if not inconsistent. In addition, there is not explicit use of reference site data.

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?

   The strongest argument in favor of this study is the synthetic, comparatibe analysis of riparian restoration across multiple watersheds. Much of the criticism is based on the lack of representation of restoration projects outside of the Clear Creek, Merced River and Tuolumne River, and the resulting low sample size and early age in the restricted dataset.

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

   Costs were generally considered excessive, especially for what is primarily a statistical assessment.

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?

   Regional reviews were low (2) to medium (1). A principal concern is the exclusion of Delta and eastside tributaries.

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?

   Administrative reviews did not identify significant concers except for a minor budget calculation differential.

Miscellaneous comments:

None

Delta Regional Review:

Proposal Number: 68

Proposal Title: Testing Restoration Hypotheses across Multiple Watersheds: Gaining Insights from Past Projects to Improve Future Learning

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

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

Data to be used are not from the Delta or Eastside Tributaries, which the regional panel feels limits the immediate relevance of the project to this region.

1. Is the project feasible based on local constraints?

   XYes **-**No

   How?

   This project is primarily a statistical exercise using data from other projects; the applicants indicate that appropriate data exist and are available for at least some projects on Clear Creek, the Tuolumne River, and the Merced River. Therefore, there are no regional constraints related to the Delta and Eastside Tributaries.

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

   XYes **-**No

   How?

   From the Restoration Priorities for Multi-Region Bay-Delta Areas:

   "6. Ensure recovery of at-risk species by developing conceptual understanding and models that cross multiple regions

   · Knowledge for conceptual models that illustrate linkages within the systems. A particular need exists to compare conceptual models and develop common restoration performance measures for tributary streams in the Sacramento and San Joaquin river basins. An important initial need is for studies that develop these integrated interdisciplinary knowledge that can be use for these conceptual modes, describing the existing and restored ecosystems in each of these streams."

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

   -Yes **X**No

How?

A major focus of this work is to establish linkages among restoration projects occurring in different watersheds. However, none of data to be used originate from the Delta or Eastside Tributaries; the relevance of the work to this region is unknown and may be limited.

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

   XYes **-**No

   How?

   This project will utilize data from various Central/San Joaquin Valley restoration projects, and in that sense should involve a variety of local people. The applicants indicate that they will use the CalFed Science Leader and staff to assist in obtaining data from the different research projects.

   The applicant indicates that support has been obtained from several "local groups in the Clear Creek, Merced and Tuolumne watersheds" (e.g., the Modesto Irrigation District, the Tuolumne River Preservation Trust, etc.)

Other Comments:

The regional panel does feel that the "indicators" developed from this work could eventually be relevant to the Delta and Eastside Tributaries.

San Joaquin Regional Review:

Proposal Number: 68

Applicant Organization: ESSA Technologies Ltd.

Proposal Title: Testing Restoration Hypotheses across Multiple Watersheds: Gaining Insights from Past Projects to Improve Future Learning

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

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

Good concept but have questions about execution and coordination with local technical advisory groups and Science Board efforts.

1. Is the project feasible based on local constraints?

    XYes **-**No

    How?

    Qualified yes. Success for CalFed somewhat dependent on a hoped-for CalFed core group that they could work with over the three years of the project .

    Wondering if enough time has transpired on some of the implemenation projects to provide a valid post-project data set.

    Proposal is initially using data from projects that they are involved with or have a good working relationship with. Could be problem with other projects if they do not want to release data. They have a plan to deal with that.

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

    XYes **-**No

    How?

    Will be evaluating past restoration actions and making recommendations to improve future design of proposed projects

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?

Qualified Yes. Wondering about coordination with existing river technical advisory groups.

A good addition for this project would be to make their findings more directly usable by ongoing or funded projects by having the project staff be available as part of a special outreach team to communicate the lessons learned from these other projects.

Some of the project might potentially overlap with activities that Science Board or staff are doing or contemplating doing.to better assess ongoing projects.

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

    XYes **-**No

    How?

    Will be working directly with restoration projects in an area to get data.

Other Comments:

Good concept to take a step back and learn from the actions across watersheds. Their approach is a bit too theoretical. They could have made a little better case on the need for the project with some site specific examples of how particular projects are not learning from each other and taking a watershed wide view of their benefits.

If this succeeds in coming up better project designs, should have more direct outreach component to ongoing or contemplated projects.

Sacramento Regional Review:

Proposal Number: 68

Applicant Organization: ESSA Technologies Ltd.

Proposal Title: Testing Restoration Hypotheses across Multiple Watersheds: Gaining Insights from Past Projects to Improve Future Learning

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

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

The concept of the proposal is interesting, but the timing of the project might be better suited at a later date (ERP year 6 or 7).

1. Is the project feasible based on local constraints?

    -Yes **X**No

    How?

    In the proposal, it is suggested that data acquisition could be difficult. But, applicants do have availability to data from some pilot studies they themselves conducted with previous CALFED funding.

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

    XYes **-**No

    How?

    This is a multi-region project and addresses the multi-region priorities in the PSP.

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?

    The project is connected with the studies already conducted and efforts described.

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

    -Yes **X**No

    How?

There are no discussions with local people and instructions mentioned as part of the proposed program activities.

Other Comments:

As the CALFED ERP program progresses, there will be considerably more restoration activities to analyze as additional local projects are implemented. In addition the program might provide more beneficial data if the scale was smaller (i.e. a study of the Sacramento River on a couple of its tributaries).

Research and Restoration External Scientific Review Form

Proposal Number: **68**

Applicant Organization: **ESSA Technologies Ltd.**

Proposal Title: **Testing Restoration Hypotheses across Multiple Watersheds: Gaining Insights from Past Projects to Improve Future Learning**

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
XExcellent	
-Good	**Excellent potential but concern about state of knowledge required to meet expectations of full analysis, including biotic response.**
-Poor	

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

   The proposed goals and objectives are clear and well integrated; the singular hypothesis is less well framed and may be fundamentally untestable because of the lack of a baseline on the performance of CALFED?s tributary restoration program. However, a systematic view across individual restoration projects is a timely concept that bears exploration. Just the goal of promoting consistency in assessment across tributaries/watersheds should be valuable to CALFED. The proposal is difficult to evaluate, however, because it is perhaps more about evaluating how CALFED?s restoration projects are building a common body of knowledge about the outcome of tributary restoration rather than how the restoration projects themselves are performing because the latter information is quite incomplete at this point.

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 proposal recognizes the presently disjointed nature in the design, application and assessment of tributary restoration projects across the CALFED program. A reasonable conceptual model is clearly stated and good examples provided to illustrate the proposed process. There is ample justification for the (assessment) approach.

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?

   The approach is effectively organized and defined in detail. It should synthesize and contribute considerable information that has not been brought together in this way before. Perhaps one of the more important results of funding this proposal would be to determine whether it would be applicable and productive if applied to other CALFED restoration programs in the Bay-Delta.

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 sufficiently documented to determine it?s feasibility, which would appear to be worth the risk/cost. The only hesitancy is whether there is sufficient information about the biotic responses to tributary restoration to effectively complete the assessment process?

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?

   Yes, specific performance measures are elucidated, although this assessment project does not necessarily require the same rigorous evaluation of the final outcome because the synthesized/analyzed information will be a worthwhile product in and of itself.

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?

   Yes, valuable products should accrue.

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 applicants appear to represent some of the more experienced in organizing this type of assessment, although this reviewer is not familiar with any of their prior work and results.

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

The budget ($961,372 for three years) would appear to be excessive for a ?paper study? but the scope of work is not trivial.

Miscellaneous comments:

Is this analysis premature, given the state of the results from tributary restoration projects OR is it critical for asking the right questions and formulating what information CALFED should be requiring of ALL projects?

External Scientific: #2

Research and Restoration External Scientific Review Form

Proposal Number: **68**

Applicant Organization: **ESSA Technologies Ltd.**

Proposal Title: **Testing Restoration Hypotheses across Multiple Watersheds: Gaining Insights from Past Projects to Improve Future Learning**

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 **X**Good **-**Poor	**This is an assessment project and as such should be quite useful to CalFed staff in helping to guide future contract work, I would recommend that the project be funded for two years to completed tasks 1 & 2. At that time a better judgment can be made as to the pay off for tasks 3 & 4. Even if existing data is insufficient for statistical analyses as proposed in tasks 3 & 4 useful information to guide future contract studies can be made.**

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

   The overall goal is to compare restoration efforts across watersheds and make an assessment of the feasibility for conducting multi-watershed experiments. They do not propose to test specific hypotheses. Rather they assume that an exploration of multi-watershed approaches to testing tributary restoration hypotheses, using both actual data from existing projects and potential data from future projects can lead to significant improvements in CALFEDs tributary restoration program. One objective is to identify potential hypothesis tests that could be applied to across watershed analyses.

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?

   This study may have promise but presents no evidence that existing information lends itself to across watershed testing. This will rather provide an evaluation for future consideration for improvement to enhance the ability to carry out such tests. This is a synthesis of existing information from ongoing restoration efforts followed by a feasibility assessment for potential future across watershed hypothesis testing. It is therefore neither research, demonstration nor full-scale implementation.

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?

   The approach is sound and defiantly will add to the base of knowledge across the watershed of the Sacramento basin. Tasks 1 & 2 will tell how useful the information will be to decision-makers and foretell the likelihood for novel approaches to improvement in future studies for comparable analyses. Tasks 3 & 4 may or may not be fruitfull.

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 well documented. However, the likelihood for ultimate success cannot be determined until tasks 1 & 2 are completed. Therefore tasks 3 & 4 should not be initiated until a complete evaluation of tasks 1& 2 takes place.

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?

   Tasks 1 & 2 are detailed and relate to objectives 1 & 2. Thereafter approach depends on the quality and quantity of data available.

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?

   Products from tasks 1 &2 should be quite useful to CalFed staff and form the basis for proceeding with tasks 3 & 4.

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?

   Investigators are experienced in this kind of analysis and are competent to carry out the study.

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

    Budget for the first 2 years appears reasonable. Can not judge for tasks 3 & 4.

Miscellaneous comments:

None

External Scientific: #3

Research and Restoration External Scientific Review Form

Proposal Number: **68**

Applicant Organization: **ESSA Technologies Ltd.**

Proposal Title: **Testing Restoration Hypotheses across Multiple Watersheds: Gaining Insights from Past Projects to Improve Future Learning**

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
XExcellent	**This analysis will be helpful, and is a logical outcome of the need to synthesize the restoration work done to date. The goals, objectives and hypotheses are clearly stated and internally consistent. The concept is timely and important, but I predict will be very difficult to execute.** **This type of study is justified relative to existing knowledge in the CalFed action area and elsewhere. The conceptual model is discernible and touches on the underlying basis for the proposed work. The research task is justified.**
-Good	**Overall, the approach is well designed and appropriate for meeting the objectives of the project. The results are likely to add to the base of information supporting the CalFed program. The project is likely to generate novel approaches to prioritizing and monitoring restoration actions, and as such the information will be useful to decision-makers.** **At over $900,000, the proposed work is expensive, but the costs are justified.**
-Poor	**Ultimately, the spatially blind approach to post-restoration analysis and reckoning proposed here only partially addresses the issue of whether our restoration models are telling us exactly where to go and how much of what action needs to be taken there. The post-restoration cross-watershed analyses and hypothesis generation work proposed here will be helpful in answering the above questions. But the results must eventually be linked to spatially explicit models of the habitat and functional needs of the region for these analyses to provide their maximum potential to the CalFed Program.**

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

   The Goals, objectives and hypothesis follow:

   Goals,

   1. Assess CALFED?s current ability to conduct multi-watershed experiments by attempting to test landscape-scale restoration hypotheses against data from a strategically selected subset of current tributary restoration projects in the Sacramento and San Joaquin regions.

   2. Provide CALFED with tools and recommendations to guide the selection of future tributary restoration projects, increase the rate of learning through multi-watershed experimental design and monitoring, and optimize the cost effectiveness of restoration actions.

   To accomplish the above two goals, they suggest four objectives:

   1) Gather data to support multi-watershed assessments of tributary restoration projects; 2) Develop / apply statistical methods to these existing data to test restoration hypotheses; 3) Use both existing and simulated data to explore the costs and benefits of increasing the

power to test tributary restoration hypotheses; and 4) Propose improvements in current and future tributary restoration projects, and develop tools to assist CALFED in implementing such improvements.

The Hypothesis: accomplishing objectives 1-4 is good for CalFed and environment.

The goals, objectives and hypotheses are clearly stated and internally consistent. The concept is timely and important, but I predict will be very difficult to execute.

Can existing restoration sites be chosen as sample sites after the restoration is initiated, or must they have been picked randomly from the start?

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?

   This type of study is justified relative to existing knowledge both in the CalFed action area, and basically everyplace else. This is the $64 billion question which we are way behind the curve in addressing for CalFed and anywhere we profess to be conducting "ecosystem restoration". The conceptual model is discernible and touches on the underlying basis for the proposed work. The research task is justified.

   A specific comment on page 5, paragraph 5,

   A failure to observe a post-treatment effect could be the result of simply not allowing enough time to pass since the restorative action occurred (this could be, but is not necessarily the same as severe pre-treatment conditions).

   Additionally, I predict a severe problem for this post hoc analysis resulting from a nearly universal failure of the monitored restoration actions to have identified and sampled the appropriate reference areas. This will be compounded by variability in sampling protocols over space, time, repetition and technique.

   I suggest the researchers look first for results on clear and direct changes resulting from restorative actions - e.g. riparian plantings took or failed, added gravels are still clean or silted over, fish are entering a recently opened waterway, or they are not, etc., etc. The further from the direct restorative measure the variable of interest, the more the difficulty will be compounded for confirming an effect in any analysis developed in arrears of the original restoration and/or experimental design.

3. <u>**Approach.**</u> 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?

   Overall, the approach is well designed and appropriate for meeting the objectives of the project. The results are likely to add to the base of information supporting the CalFed program. The project likely to generate novel approaches to prioritizing and monitoring restoration actions, and as such the information will ultimately be useful to decision-makers.

Notes on specific objectives and activities:

Objective one collect data. This is critically important to the success of such an effort.

Big task, study will definitely require complete cooperation with CalFed.

Objectives 1 and 2: Complete data inventory; develop and apply appropriate statistical methods to test restoration hypotheses.

The statistical tools are limited for this exercise. Project proponents have identified several (Table A3-4) that may be useful. Developing new statistical tools, even new computer applications or macros for existing tools could be very time consuming and expensive.

Objective 3: Use both existing and simulated data to explore the costs and benefits of increasing the power to test tributary restoration hypotheses.

I was skeptical of the usefulness of simulated data. the more I think about it, the more I believe this may be the only way to test and develop new restoration hypotheses due to predicted weaknesses in existing datasets (see comments above).

Objective 4: Explore improvements in current and possible future projects.

This analysis will be helpful, and is a logical outcome of the previous 3 objectives.

One problem I see with the overall approach, is that it does not include an effective mechanism to incorporate learning that is already going on with on the ground programs. It usually takes several years before new field monitoring programs attain some level of consistency and completeness, even when using standardized testing or analytical methods. How will this information be transferred from on the ground practitioners and the ESSA and Stillwater researchers? Are meetings with CalFed and the Science Board an adequate way to exchange and synthesize this type of information?

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 proposal identifies the potential major challenges faced in this effort and proposes mechanisms to address them. The approach is as fully documented as it can be without actually listing all specific data sources and statistical tests that will be performed.

   The group will likely have some success with this project. It will be difficult to fully evaluate success however, until they have finished and their recommendations are employed on the ground in the next generation of proposed restoration work.

   The overall scale of the project is consistent with objectives.

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 includes appropriate performance measures which are listed in table A5-1.

There is adequate detail as to how the performance measures will be quantified.

6. <u>**Products.**</u> 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?

   Each objective described in the Approach Section has a list of deliverables associated with it. These products are appropriate for the given tasks listed.

7. <u>**Capabilities.**</u> 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 am not familiar with the work of the team members listed in the proposal, but they appear qualified to carry out the proposed work.

   ESSA Technologies Ltd. and Stillwater Sciences appear to have the infrastructure and other aspects of support necessary to accomplish the project.

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

   At over $900,000, the proposed work is expensive. The Change Management and Budget Control Attachment indicates that this may not even represent the entire cost of the project. On the other hand, this is an extremely ambitious project, in which the data handling and database development could eat up a large chunk of the funds alone, even before any statistical hypothesis generation is done

<u>Miscellaneous comments:</u>

This analysis will be helpful, and is a logical outcome of the need to synthesize the restoration work done to date, but will it be enough to set CalFed headed down the right path for the next phase of the program? I don't think so.

In addition to an ability to quantify benefits from discrete restoration actions, and make recommendations about the types of projects that are most likely to be successful in the future, there needs to be a way to quantify restoration needs in terms of both specific location and the extent of the activity in advance, and set the restoration community towards meeting those goals. This to assure that our restoration dollars are pointed in the right direction from the start, based on ecological principles and the regionally specific degree of degradation, not driven by opportunity and convenience as has been our mode of operation here and everywhere else in the past.

Ultimately, the spatially blind approach to post-restoration analysis and reckoning proposed here only partially addresses the issue of whether our restoration models are telling us exactly where to go and how much of what action needs to be taken there. The post-restoration cross-watershed analyses and hypothesis generation work proposed here will be helpful in answering the above questions. But the results must eventually be linked to spatially explicit models of the habitat and functional needs of the region for these analyses to provide their maximum potential to the CalFed Program.

Environmental Compliance:

Proposal Number: 68

Applicant Organization: ESSA Technologies Ltd.

Proposal Title: Testing Restoration Hypotheses across Multiple Watersheds: Gaining Insights from Past Projects to Improve Future Learning

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

   XYes **-**No

   If no, please explain:

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: 68

Applicant Organization: ESSA Technologies Ltd.

Proposal Title: Testing Restoration Hypotheses across Multiple Watersheds: Gaining Insights from Past Projects to Improve Future Learning

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

   XYes **-**No

   If no, please explain:

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:

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).

   There is a dollar difference that appears to be an error in carrying the amount forward.

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: