

Proposal Reviews

#80: Sustainable Restoration Technologies for Bay/Delta Tidal Marsh and Riparian Habitat

H.A.R.T., Inc.

Final Selection Panel Review

Initial Selection Panel Review

Research and Restoration Technical Panel Review

Bay Regional Review

Delta Regional Review

#1

#2

External Scientific Review

#3

#4

Prior Performance/Next Phase Funding

Environmental Compliance

Budget

Final Selection Panel Review:

CALFED Bay-Delta 2002 ERP PSP Final Selection Panel Review

Proposal Number: 80

Applicant Organization: H.A.R.T., Inc.

Proposal Title: Sustainable Restoration Technologies for Bay/Delta Tidal Marsh and Riparian Habitat

Please provide an overall evaluation rating.

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

Amount: **\$1,800,000**

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

None

Provide a brief explanation of your rating:

The Delta Protection Commission's comments endorsing this project reinforce the Selection Panel's recommendation that it be funded as submitted.

Initial Selection Panel Review:

CALFED Bay-Delta 2002 ERP PSP Initial Selection Panel Review

Proposal Number: 80

Applicant Organization: H.A.R.T., Inc.

Proposal Title: Sustainable Restoration Technologies for Bay/Delta Tidal Marsh and Riparian Habitat

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	X
In Part	-
With Conditions	-
Consider as Directed Action	-
Not Recommended	-

Amount: **\$1800000**

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

None.

Provide a brief explanation of your rating:

Proposed treatments, selection of sites, and past performance supports the decision to fund this effort in full. The project has value to CALFED in issue areas including sedimentation dynamics, invasive plant species, revegetation, and bank stabilization. Reviewers laud the relatively low overhead and administration costs. The work has reached a point at which efficiencies in restoration can be assessed through rigorous experimental tests of habitat enhancement techniques, which then can be articulated as directions to other efforts.

As indicated in the technical and other reviews, the applicant should take advantage of experimental opportunities in the proposed restoration program by varying treatments within system constraints. Reviewers desire that the applicant synthesize lessons and promulgate the adaptive management message from this work to assist efforts elsewhere in the CALFED planning area.

Research and Restoration Technical Panel Review:

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

Proposal Number: 80

Applicant Organization: H.A.R.T., Inc.

Proposal Title: Sustainable Restoration Technologies for Bay/Delta Tidal Marsh and Riparian Habitat

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
XSuperior	The panel believes the proposal is a good use of funds to support a learning-rich, active program of restoration. The program appears to have successful collaborations that produce valuable information on soft structural and biological techniques to reverse erosion and enhance waterway habitats and wildlife. Several reviewers recognized the work has reached a stage where the techniques need to be standardized, assessed regarding efficacy using scientifically valid experimental designs to test hypotheses, and assessed regarding value as habitat enhancement (plants and wildlife). The panel requests that applicant develop criteria to apply sets of different methods according to a valid experimental design approved during the peer review step. Peer review is already one of the seven steps in the design process outlined in the proposal. The panel stresses the assessment of the bank stabilization methods are monitored in a rigorous way to generate scientifically valid hypothesis tests of their benefits to habitat, water quality and sedimentation.
-Above average	
-Adequate	
-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?

Although missing a general goal, the project proposes clear objectives and links them to reasoned hypotheses. The goal was derived from introductory materials as: Development of habitats along natural and artificial embankments and levees for wildlife and natural erosion control. The hypotheses address issues important to CALFED such as sedimentation dynamics, natural rates of revegetation of native and invasive species, survival of planted native species, and competitive interactions between native and invasive species. Formal

hypotheses included indicators and criteria to assess restoration with respect to erosive forces, sedimentation dynamics, bank erosion and natural recruitment. The proposed scope and locations of work is consistent with CALFED ERP goals and critical areas identified for restoration.

The project is well justified in terms of habitat protection and enhancement along the Bay/Delta waterways. It will incorporate methods already shown effective, as well as new techniques and will test these in a monitoring program. The conceptual models were explained and documented extremely well. Given the recent successes of the approach and techniques used, the scope and scale of the project appears fully justified.

- 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?

The approach is to execute a seven-step process for each of eight work areas in the region: map erosion sites, develop a design and monitoring plan, obtain permits, revise plan per peer review, implementation, monitoring then adaptive management. The application of successful and new techniques will be conducted on areas specifically requested by managers of valuable riparian habitat considered in jeopardy from erosion problems. The applicant plans continued monitoring of sites that have been restored with previous funding.

One reviewer suggested the application of an experimental design to a series of sites with directed monitoring to test the efficacy of some of these techniques. This would require some standardized criteria for choosing two or three comparable methods for a specific problem type and applying these and a control (nothing) over a stretch of shoreline in a replicated fashion. The panel concurs that this would add value to the project commensurate with costs and believe this could be accomplished during the peer review of the plans for each levee system.

The restoration work proposed is carefully considered for several new, higher energy sites. Applications of successful and new techniques appear feasible and have a high likelihood of success in general. The scale of the project matches the objectives. Because of the small scale of actual activities at any one site and dependence upon natural, passive processes for success, the procedures are popular with resource agencies and landowners and permit application procedures are kept to a minimum.

The applicant has performed similar work in the system with very good results, and has the tools and equipment necessary for success.

Performance measures were included in some of the detailed hypotheses to be tested as part of the proposed work. They are specific and based on the monitoring plan that will be developed as part of the proposal (includes peer review).

- 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?

Besides reports, journal articles and field trips, the applicant should consider documentation of the adaptive management experiences as case studies and creation of a manual to share this work. The manual could include the principles espoused in the proposal and a toolbox of techniques illustrated in the figures based on biotechnical features described on pp. 9-12.

Considering previous success using these techniques, the CALFED program would benefit from additional outreach and information sharing of the experiences and techniques for erosion control and habitat enhancement along Delta waterways.

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

This is a proposal with a budget (\$1,830,000) that is lean on management and overhead, but focused on on-the-ground application of techniques to reverse erosion and build/enhance habitat along Delta waterways.

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?

The Bay Regional Review gave the proposal a MEDIUM ranking because most of the work would fall outside its region, with the main benefit levee protection using biotech methods. The panel noted that it built upon previously successful demonstration projects and now expands into brackish areas. The Delta Regional Review panel ranked the proposal HIGH because there was a clear need for these applied methods that promised rapid results and had a proven track record. Applicant has very good connections to locals and agencies most of the proposed work was requested. The panel wanted assurance of the value of the restoration activities to target species and suggested monitoring should be used to quantify biological benefits.

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?

Prior Performance and Environmental Compliance reviews had no concerns. The Budget review noted a difference between total costs in the budget summary and 17A.

Miscellaneous comments:

This project plans to restore many linear feet of existing levees and berms to make them function as better habitat and reduce maintenance costs resulting from erosion. This is a small coalition (USACE, State Reclamation Board and the contractor, HART) to efficiently carry out levee repairs over a large area.

Soft bank techniques are not new. Just examine a map of the Netherlands 800 years ago and realize the changes in land area are due to use of these practices. The panel does recognize that many of the methods are far preferable to current hard structure practices in the area.

Demonstration of the benefits of these techniques using comparisons and mechanisms to share results for others would be important components. Otherwise, value to CALFED is limited.

Bay Regional Review:

Proposal Number: 80

Applicant Organization: H.A.R.T., Inc.

Proposal Title: Sustainable Restoration Technologies for Bay/Delta Tidal Marsh and Riparian Habitat

Overall Ranking: -Low Medium -High

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

Committee felt this had limited benefit within the Bay Region, most of the project implementation is in other regions. Would provide demonstration of a technology whose application would have limited benefit within the Bay region. Applicability higher in Delta. Would have little habitat restoration benefit main benefit providing biotech method for levee protection.

1. Is the project feasible based on local constraints?

Yes -No

How?

applies a demonstrated technology to pilot sites in new locations as well as habitats where success has been demonstrated previously

the project does not require extensive permitting or approvals and similar work has been successfully permitted previously. Expansion of project which has previously been funded twice by CalFed. project is based upon past experience and demonstrated technologies doing bank stabilization with natural materials.

Previous projects have been extensively monitored.

project has support locally.

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

Yes -No

How?

ERP Goal 4 Tidal marsh and Riparian restoration enhancement, develop new marsh veg and SRA, Goal 1 sustain and improve species at risk, Goal 5 BMPs for natives over Non-natives, Goal 6, improve WQ (Marginal connection), Improve harvestable species (marginal).

Restore Riparian and SRA, natural bank and levee stabilization, NIS removal and control

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

Yes -No

How?

builds upon previously implemented projects which have been demonstrated to be successful. Expands technology into more brackish areas of the bay-delta.

Also builds on monitoring and management in an adaptive approach of design build to tailor projects to site specific conditions.

results of management actions are being monitored and documented and will be available to others for application elsewhere. Focus bank stabilization and development of vegetation along levee, elimination of need for engineered fixes, ie. Riprap.

activities and projects coordinated with other agencies and organizations focused on ecosystem restoration. proposal would implement projects at request of local sponsors.

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

Yes -No

How?

Suisun RCD, Reclamation Districts, and have requested projects included in proposal.

Other Comments:

None

Delta Regional Review:

Proposal Number: 80

Proposal Title: Sustainable Restoration Technologies for Bay/Delta Tidal Marsh and Riparian Habitat

Overall Ranking: -Low -Medium **XHigh**

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

Application of promising methods w/ quick results, especially on Georgian Slough where track record proven; will require technical review of value of habitat create to target species; should include monitoring to quantify biological benefit

1. Is the project feasible based on local constraints?

XYes -No

How?

Applicant demonstrates previous success with these technologies

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

XYes -No

How?

? Priority 1 restore habitat corridors riparian habitat types; N Delta habitat corridor, E Delta habitat corridor; total 20,000 lineal feet of critical shoreline riparian habitat; contributes slightly to priority 5- study competitive interactions w/ invasive, non-native species; priority 6 traps sediment that fosters wetland development; develops restoration strategy for riparian zones.

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?

Builds on restoration experience on N Fork Mokelumne, Georgiana slough, steamboat slough

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

XYes -No

How?

Applicant has gained good working relationship with rec districts and local landowners; SRCD has requested this work; plan to engage USFWS, USACE, CVRWQCB, DFG

Other Comments:

Application of promising methods w/ quick results, especially on Georgian Slough where track record proven; will require technical review of value of habitat create to target species; should include monitoring to quantify biological benefit

External Scientific: #1

Research and Restoration External Scientific Review Form

Proposal Number: **80**

Applicant Organization: **H.A.R.T., Inc.**

Proposal Title: **Sustainable Restoration Technologies for Bay/Delta Tidal Marsh and Riparian Habitat**

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
X Excellent	I rate the proposal excellent because it is clearly written, technically sound, addresses important habitat restoration and erosion control issues, builds on previous and ongoing work, and the investigators are well qualified.
-Good	
-Poor	

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

The goals and objectives are clearly stated. The goals are to use biotechnical low-cost techniques to protect Sacramento-San Joaquin Delta levees, embankments and habitats, develop freshwater tidal marsh, remove invasive weeds, and to monitor and evaluate the effectiveness of various restoration techniques used. The concept is timely due to the need to preserve and enhance riparian habitat that support fish and wildlife. Without application of these environmentally friendly erosion control techniques, many of the eroding levees will eventually be ripped, resulting in habitat loss.

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 need for the project is clearly justified in the proposal, which builds on the knowledge and experience gained by the applicants on two similar CalFed-funded projects that utilized bank protection, sediment retention, and plant establishment techniques. The conceptual model is clearly stated. The applicants emphasize their design-build capabilities that provide the ability to adapt and change techniques to fit the needs of a particular site, thereby increasing the probability of success. A full-scale implementation of the project is justified because of the experience gained by the applicants while working on similar previous and ongoing projects.

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 well designed and planned, and it appropriately allows for adjustments in the plan as experience is gained. Methods and techniques may be modified and improved as their effectiveness is evaluated. Methods developed and knowledge gained by this project will be useful to decision makers as well as being applied to actual restoration projects in other locations.

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 clearly explained and fully documented, including maps, photographs and illustrations. The proposed project is technically feasible as evidenced by previous work. The project is large scale, and will restore nearly 4 miles of shoreline. This is consistent with the objectives, which are to restore habitat while developing techniques that can be applied by others.

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?

Performance measures are explicitly stated and adequate to measure success and compare the effectiveness of various methods and techniques that are tested. Monitoring techniques are described in detail.

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?

Important products of value include restored riparian and wetland habitat and control of erosion along nearly 4 miles of shoreline. Monitoring and reporting of results will produce publications, seminars, tours etc. to extend the information and experience gained to other users.

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 track record of the applicants is one of the strong points of this proposal. However, those who have seen the results of the previous and ongoing projects are in a better position to judge their success than I am. The project team is well qualified, and they have the infrastructure, equipment and support necessary to carry out the project successfully.

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

The applicants request a significant amount of money for this project. The cost relative to the benefits and other competing needs should be judged by those with more information than is available to me. The budget seems reasonable considering the amount of construction work, monitoring and information transfer that is promised during a three-year period.

Miscellaneous comments:

The proposal is technically sound. The funding decision should be made based on how it ranks relative to other needs.

External Scientific: #2

Research and Restoration External Scientific Review Form

Proposal Number: **80**

Applicant Organization: **H.A.R.T., Inc.**

Proposal Title: **Sustainable Restoration Technologies for Bay/Delta Tidal Marsh and Riparian Habitat**

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
X Excellent	Good use of funds to support a learning-rich, active program of restoration. The applicant appears to have a successful collaboration with state and federal agencies which produces valuable information regarding bio-techniques to reverse erosion and enhance waterway habitats for wildlife. If CALFED wishes to support embankment and levee stabilization using native plants and invasive removal along levees, this is an excellent choice.
-Good	
-Poor	

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

Although missing a general goal, the project proposes clear objectives and links them to reasoned hypotheses. The goal was derived from introductory materials as: Development of habitats along natural and artificial embankments and levees for wildlife and natural erosion control. The hypotheses address important issues important to CALFED such as sedimentation dynamics, natural rates of revegetation of native and invasive species, survival of planted native species, and competitive interactions between native and invasive species. Formal hypotheses included indicators and criteria to assess restoration with respect to erosive forces, sedimentation dynamics, bank erosion and natural recruitment. The

proposed scope and locations of work is consistent with CALFED ERP goals and critical areas identified for restoration. 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? Project is well justified in terms of habitat protection and enhancement along the delta waterways. The project will incorporate methods already shown effective, as well as new techniques and will test all in a monitoring program. The conceptual models were explained and documented extremely well. Given the recent successes of the approach and techniques used, the scope and scale of the project appears fully justified.

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 approach is to execute a seven-step process for each of eight work areas in the region: map erosion sites, develop a design and monitoring plan, obtain permits, revise plan per peer review, implementation, monitoring, then adaptive management. The application of successful and new techniques will be conducted on areas specifically requested by managers of valuable riparian habitat considered in jeopardy from erosion problems. Applicant also plans continued monitoring of sites restored with previous funding. Project is well justified in terms of habitat protection and enhancement along the delta waterways. The project will incorporate methods already shown effective, as well as new techniques and will test all in a monitoring program. The conceptual models were explained and documented extremely well. Given the recent successes of the approach and techniques used, the scope and scale of the project appears fully justified.

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 to execute a seven-step process for each of eight work areas in the region: map erosion sites, develop a design and monitoring plan, obtain permits, revise plan per peer review, implementation, monitoring, then adaptive management. The application of successful and new techniques will be conducted on areas specifically requested by managers of valuable riparian habitat considered in jeopardy from erosion problems. Applicant also plans continued monitoring of sites restored with previous funding.

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?

Applications of successful as well as new techniques appear feasible and have a high likelihood of success in general. The restoration work proposed is carefully considered for several new, higher energy sites. The scale of the project matches the objectives. Because of the small scale of actual activities at any one site and dependence upon natural, passive processes for success, the procedures are popular with resource agencies and landowners and permit application procedures are kept to a minimum.

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?

Performance measures were included in some of the detailed hypotheses to be tested as part of the proposed work. They are specific and based on the monitoring plan that will be developed as part of the proposed activities (includes peer review).

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?

Besides reports, journal articles and field trips, the applicant should consider documentation of the adaptive management experiences as case studies and creation of a manual to share this work. The manual could include the principles espoused in the proposal and a toolbox of techniques illustrated in the figures based on biotechnical features described on pp. 9-12. It appear the CALFED program would benefit from additional outreach and information sharing of the experiences and techniques for erosion control and habitat enhancement along Delta waterways.

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 applicant has performed similar work in the system with very good results, and has the tools and equipment necessary for success.

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

This is a proposal lean on management and overhead, but focused on on-the-ground application of techniques to reverse erosion and build/enhance habitat along Delta waterways.

Miscellaneous comments:

This project plans to restore many linear feet of existing levees and berms to make them function as better habitat and reduce maintenance costs resulting from erosion. This is a small coalition (USACE, State Reclamation Board and the contractor, HART) to efficiently carry out levee repairs over a large area. Demonstration using comparisons and mechanisms to share results for others would be important components. Otherwise, value to CALFED is limited.

External Scientific: #3

Research and Restoration External Scientific Review Form

Proposal Number: **80**

Applicant Organization: **H.A.R.T., Inc.**

Proposal Title: **Sustainable Restoration Technologies for Bay/Delta Tidal Marsh and Riparian Habitat**

Conflict of Interest Statements:

I have no financial interest in this proposal.

Correct

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
<input checked="" type="checkbox"/> Excellent	This proposal would provide outstanding, practical and real world products/information which would be used in improving delta habitat restoration efforts.
<input type="checkbox"/> -Good	
<input type="checkbox"/> -Poor	

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

Excellent, yes, yes.

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?

Excellent, yes, yes, yes.

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?

Excellent, yes, yes, yes, yes.

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?

Excellent, yes, good, yes.

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?

Excellent, yes, yes.

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?

Very good, yes, yes, yes.

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?

Excellent, good, yes, yes.

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

Very good, yes.

Miscellaneous comments:

External Scientific: #4

Research and Restoration External Scientific Review Form

Proposal Number: **80**

Applicant Organization: **H.A.R.T., Inc.**

Proposal Title: **Sustainable Restoration Technologies for Bay/Delta Tidal Marsh and Riparian Habitat**

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	Overall I actually have to place my evaluation of this proposal between Excellent and Good. With just some changes to the experimental design, this could very easily be an excellent and valuable piece of work.
X Good	
-Poor	

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

Goals are clearly stated and internally consistent. The concept is important

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?

Although the study is justified relative to existing knowledge, the research approach (see below) may require some adjustments.

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 being taken by HART, Inc. to design and implement bank restoration will be limited in its application to the science. At present, too many of our restoration programs are more art than they are science and we need to move beyond such an approach in our research. Adaptive management helps insure success of a particular restoration program but does little to advance our understanding of the processes that will impact any individual technique and limits the transferability of the results to other investigators. If you constantly adjust a technique until it is successful there is no way to establish repeatable guidelines that can be applied by people other than the investigator. Therefore, I feel that at this point HART, Inc. should be moving beyond their initial program and begin testing successful techniques they have found during their previous trials. To accomplish this a new approach should be taken towards their experimental design. For example, if they are to restore 5,000 ft. of shoreline along the Georgiana Slough then they could split the restoration into four 1,250 ft. parcels and apply four of their most successful methods to the bank. The control areas are those where the techniques are not applied. Then when they move to restore another system (i.e., Sacramento River) they use the same four methods to standardize their approach. At each system they should be able to predict which techniques will work for which system (i.e., discussions on why one technique will not work along the Sacramento River) and test those assumptions by the monitoring plan laid out in the proposal. Such an approach will go a lot further in advancing our understanding of restoration technologies (we learn more from our failures than we do our successes) and begin to steer us towards a more repeatable set of guidelines that can be used by other individuals or agencies (particularly those without funds for research). Otherwise we continually run the risk of having to rely on a very select group of individuals to implement restoration techniques without any true guarantee of success. All of us who have been working in the field of restoration know all too well that a technique that has been successful in one place may not be successful in another habitat of similar conditions. The hardest thing to do is to figure out why a successful technique has failed. By creating a more predictive model with the restoration program in the California area, you can at least begin to assess a failure based on what you have observed in various systems using standardized techniques.

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?

Since much of the proposal is based on adaptive management rather than testable science, it is difficult to assess the likelihood of success. Certainly HART, Inc. track record would suggest that they will eventually be successful in bank restoration, however, as a scientific endeavor they could also fail and we would never know why. The techniques noted in this proposal are technically sound and have had varying rates of success in other regions.

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?

For the most part, there is sufficient detail to measure success of the project as stated in the proposal (comments on approach notwithstanding). One thing that does require some additional clarification is the restoration success criteria objectives. Plant survival rates are a start but some of the sedimentation accumulation goals need work. We know that the authors have shown that

sediment accumulation has been positive at their sites and this is not surprising given the new low energy environments created and the fact that the system has not yet reached equilibrium. However, I am also sure that Dr. Hart understands that sediment cannot continue to accumulate forever because at some point the elevation of the mud flats/marsh will reach the upper limits of the water levels. Therefore at some point in the future, sediment accumulation rates will have to slow down. Those who have worked in this field know that it is not uncommon to find sediment accumulation rates to move between positive and negative budgets from year to year. Is this bank restoration program a failure the first time that these areas export sediment rather than import sediment? The restoration success goals need to be considered further to include natural sedimentation processes once equilibrium is achieved (not to mention that natural wetland and river bank systems undergo continual periods of erosion and accumulation during their lifetime, how will these be viewed in terms of restoration success criteria).

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?

If the experimental design can be reconfigured to include repeatable and predictable results, then I believe that the products will be very important in furthering our understanding of restoration technologies. HART, Inc. approach to using inexpensive and natural products in bank restoration is a plus and soft-bank technologies are certainly the wave of the future in system restoration.

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?

Based on the information presented in the proposal HART, Inc. is qualified to conduct this research. Their earlier work has shown that such techniques do have merit and should be pursued. I feel it time to move beyond their earlier programs and begin testing through predictive analyses which technique works for which system and why.

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

If a stronger scientific approach is adapted, then the budget is reasonable. However, as it stands, I feel that the money being requested is a bit excessive to continue to train HART, Inc. associates in adaptive management techniques.

Miscellaneous comments:

I feel that HART, Inc. should be given the opportunity to review these comments and resubmit a revised proposal for this round of funding. Their work to date is encouraging and because of their interim success, it makes them uniquely qualified to conduct the research (albeit with a different approach) in a manner that would be most cost effective to your program.

One last thing I am a little confused about throughout the proposal HART, Inc. refers to this highly innovative approach to bank restoration. However, the idea of soft-bank technology has been around for many decades (I have seen papers from the 1930s touting such systems and their benefits) and the vast majority of the bank stabilization techniques has been developed and utilized elsewhere (in some form of another) is this innovative to the rivers of California? Certainly anyone who has ever worked on bank stabilization projects has used adaptive management everyday because of the problems of transferring information from paper to the

field, is this innovative? I realize that HART, Inc. would like to present their proposal in the best possible light, however, from my perspective it is not only unnecessary but even a little detracting (this is a minor comment).

Prior Performance/Next Phase Funding:

New Proposal Number: 80

New Proposal Title: Sustainable Restoration Technologies for Bay/Delta Tidal Marsh and Riparian Habitat

1. Prior CALFED project numbers, titles, and programs: *(list only projects for which you are the contract manager)*

ERP 97-N13 - Tyler Island Levee Protection and Habitat Restoration; 99-N03 East Delta Habitat Improvement Project(Georgianna Slough)

2. Prior CVPIA project numbers, titles, and programs: *(list only projects for which you are the contract manager)*

N/A

3. Have negotiations about contracts or contract amendments with this applicant proceeded smoothly, without persistent difficulties related to standard contract terms and conditions?

XYes -No -N/A

If no, please explain any difficulties:

4. Are the status, progress, and accomplishments of the applicant's current CALFED or CVPIA project(s) accurately stated?

XYes -No -N/A

If no, please explain any inaccuracies:

5. Is the applicant's progress towards these project(s)' milestones and outcomes to date satisfactory?

XYes -No -N/A

If no, please explain deficiencies:

6. Is the applicant's reporting, records keeping, and financial management of these projects satisfactory?

XYes -No -N/A

If no, please explain deficiencies:

7. Will the project(s) be ready for next phase funding in 2002, based on its current progress and expenditure rates?

XYes -No -N/A

If no, please explain:

Other Comments:

HART Inc has repeatedly reported successfull and punctual progress on the projects being implemented.

Environmental Compliance:

Proposal Number: 80

Applicant Organization: H.A.R.T., Inc.

Proposal Title: Sustainable Restoration Technologies for Bay/Delta Tidal Marsh and Riparian Habitat

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

Yes -No

If no, please explain:

All required permits and environmental documents will be obtained/complied with.

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

Yes -No

If no, please explain:

Budget and timeline is adequate.

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

-Yes No

If yes, please explain:

Other Comments:

Budget:

Proposal Number: 80

Applicant Organization: H.A.R.T., Inc.

Proposal Title: Sustainable Restoration Technologies for Bay/Delta Tidal Marsh and Riparian Habitat

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

Yes -No

If no, please explain:

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

Yes -No

If no, please explain:

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

-Yes No

If no, please explain:

Doesn't list specifics just states it is a rate.

4. Are appropriate project management costs clearly identified?

Yes -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 No

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

There is no cost share listed and there is a \$30,000 difference.

6. Does the budget justification adequately explain major expenses?

Yes -No

If no, please explain:

7. Are there other budget issues that warrant consideration?

-Yes No

If yes, please explain:

Other Comments: