ASSESSMENT OF WATER MANAGEMENT ACTIONS AND WATER TRANSFERS ON GIANT GARTER SNAKE AND OTHER WETLAND DEPENDENT SPECIES

Mark Roberson

Initial Selection Panel Review

0074

ASSESSMENT OF WATER MANAGEMENT ACTIONS AND WATER TRANSFERS ON GIANT GARTER SNAKE AND OTHER WETLAND DEPENDENT SPECIES

Agricultural Water Management Council

Applicant amount requested: **$**267,685

Fund This Amount: $**0**

Panel Recommendation: The proposal shows much expertise in the water management realm but lacks expertise in another critical area, the conservation needs of the giant garter snake, and the approach lacks documentation or reference. The transferability of this project to landowners throughout the region was questioned, and the specific giant garter snake expertise was not identified. The Panel found that the proposal's fatal flaw was the lack of a demonstrated linkage between the giant garter snake and water management.

The panel, therefore, recommends that this project not be funded.

Do Not Fund

Technical Panel Review

Proposal Name: ASSESSMENT OF WATER MANAGEMENT ACTIONS AND WATER TRANSFERS ON GIANT GARTER SNAKE AND OTHER WETLAND DEPENDENT SPECIES

Applicant Organization: Agricultural Water Management Council

Amount Requested: $267,685

Panel Rating:
Fair – Lacking in one or more critical aspects

Panel Summary

The panel felt that this proposal had one or more sound or worthy concepts. Based on its technical merits, however, this proposal is lacking in one or more critical aspects and should not be funded in its current form. Overall, the panel found this proposal to have practical value in that the information gained could be applied to the giant garter snake (GGS) recovery plan currently under development. The proposed research could provide farmers and water districts with more precise information on how to achieve habitat benefits through water management practices without adversely affecting agricultural production. However, the proposal lacked scientific basis for Task Three and, as it is written, did not adequately address key GGS issues. The proposal should be revised so the effect of different water management practices on habitat can be more scientifically determined. Examples of relevant questions that the proposal did not ask include: How much water needs to be applied to realize wildlife benefits? What effect is there on GGS when water regimes are altered by X, Y, and Z amounts of water? What other factors combine with altered water management practices to produce an effect? Addressing such questions may be warranted in order to truly assess the impact of water management practices on GGS and other wetland-dependent species.

External Technical Review #1

Proposal Number: 0074

Proposal Name: ASSESSMENT OF WATER MANAGEMENT ACTIONS AND WATER TRANSFERS ON GIANT GARTER SNAKE AND OTHER WETLAND DEPENDENT SPECIES

Applicant Organization: Agricultural Water Management Council

Amount Requested: $267,685

Goals

Rating	**good**
Comments	**The proposal does a good job of describing the problem. One of the main objectives of the project is to assess the impact of water management (including transfers) and agricultural practices on giant garter snake habitat. The proposal didn't describe broader ERP goals and objectives (p. 16). The agricultural goals are better defined along with the relationship with the CALFED Water Use Efficiency program (p. 17). The project objectives are clearly stated, tangible and measurable for some of the tasks. The project describes in general terms how it will assist farmers in integrating agricultural activities with ecosystem restoration.**

Justification And Conceptual Model

Rating	**fair**
Comments	**The conceptual model is only fair because it lacks some critical aspects and important details (p. 3). Most of typical elements of a conceptual model are included in the diagram however, the narrative doesn't add much more in terms of information or examples. The drivers and outcomes**

	(interconnections) are reasonable however, I think the model is in error with respect to what is described as linkages (linkages are supposed to be cause–effect relationships among model elements). **The stated hypothesis being tested is also rather vague (p. 3): "The hypothesis is that altering water use will affect productivity for planned and unplanned actions that utilize water to sustain wildlife habitat. This project will quantify the affect of water management actions, wildlife friendly practices that utilize water and water transfers on habitat." The proposal doesn't classify this project as pilot, demonstration, or full–scale as far as I could tell.**

Approach

Rating	**fair**
Comments	**The proposal describes its overall approach but some of identified tasks lack details on the approach. For example, Task 2 calls for habitat identification but doesn't describe how this will be done. It says that areas designated for wildlife habitat and traditionally farmed fields will serve as bookends whereas the various agricultural friendly areas will serve as the variables. It further states that habitat will be determined using a scientist that specializes in GGS habitat and in coordination with CALFED implementing agencies. There is no description of methods to identify habitats, classification systems that will be used, and habitat field verification. The proposal does however state that all lands under a fallowing or crop shifting agreement will be identified and monitored for GGS, however, there is not detail about how monitoring of GGS will be done, which life stages, habitat attributes, etc. I don't get the sense that the applicant has coordinated with**

the GGS experts; or if they have, it isn't reflected in the proposal. The proposal says that fallowed lands will be field verified which is important. Field verification is also necessary for habitats and cultivated areas. There is no description of cooperating landowners, feasibility of gaining access to private lands to conduct habitat verification, monitoring of GGS, and so forth.

Task 4 is to develop consumptive water use and vegetation information using remote sensing tools. The proposal is not real convincing that this information will be very useful in terms of integrating agricultural activities with ecosystem restoration. This task, and the much of the proposal overall, for that matter, seems like it would be better suited in Agricultural Water Use Efficiency proposal. There isn't much detail on the ecological aspects of this proposal.

Task 5 is to perform an analysis of water management actions, wildlife friendly practices that utilize water and water transfers on habitat. The proposals states water transfers will be analyzed for their impact on habitat identified in Task 3 and quantified in Task 4 and that the analysis would be to look at the habitat quality ET value of fields fallowed at various stages of the growing season, following a cover crop or following a winter flood up. The proposal doesn't provide define "habitat quality ET value" or explain why ET value would be a good measure of habitat quality.

Task 6 is very weak in describing how performances measures would be developed (p. 9).

Task 7 is to develop guidance protocols on how to estimate the benefits of wildlife friendly agriculture for local agencies and growers. It is not clear whether this task is intended to describe benefits to the environment or benefits to the agencies and

	growers.

Feasibility

Rating	fair
Comments	The proposal appears to be technically feasible within the proposed timeline; however, the proposal lacks some important details (as described above) so it is difficult to rank this criterion. The proposal will not likely require any environmental permitting that I am aware of.

Performance Evalutation

Rating	poor
Comments	As described above , Task 6 is very weak in describing how performances measures would be developed (p. 9). There is no performance evaluation (monitoring) plan described.

Proposed Outcomes

Rating	fair
Comments	As stated above, the proposal seems like it would be more responsive to a Agricultural Water Use Efficiency grant program. There isn’t much detail on the ecological aspects of this proposal and there is some critical information lacking regarding approach and how the information would be useful in terms of integrating agricultural activities with ecosystem restoration. There isn’t much detail regarding the storage of data and other information.

Capabilities

Rating	very good
Comments	AWMC seems to be well-suited to implement this project, particularly because of their prominent role

	in the water and stakeholder community. The AWMC promotes effective agricultural water management practices in California. All members of the Council are signatories of the Memorandum of Understanding (MOU). The AWMC has also developed monitoring and verification protocols to assist irrigation districts and water agencies in estimating water quantities conserved by water use efficiency projects. There are very good objectives in the proposal; some of the details just need to be worked out.

Cost−Benefits

Rating	very good
Comments	The budget seems reasonable for the proposed tasks.

Overall Evaluation Summary Rating

Rating	good
Comments	Given all of my comments above, I think this is good proposal overall; however, I think some important revisions are necessary.

External Technical Review #2

Proposal Number: 0074

Proposal Name: ASSESSMENT OF WATER MANAGEMENT ACTIONS AND WATER TRANSFERS ON GIANT GARTER SNAKE AND OTHER WETLAND DEPENDENT SPECIES

Applicant Organization: Agricultural Water Management Council

Amount Requested: $267,685

Goals

Rating	**good**
Comments	**The project objectives are somewhat unclear, and the project title appears to be misleading. The title indicates an assessment of water management actions "on giant garter snake and other wetland dependent species" but there is no component of the project that involves monitoring any of these species directly. The project's stated objectives are to "identify legal, regulatory, and institutional issues associated with water management [actions]…" and to "quantify the impact of these actions on the giant garter snake habitat. It is unclear how "habitat" is to be measured; and it is unclear what is meant by "issues." The stated goal is to "assess how wildlife friendly actions … affect [giant garter snake] habitat" and that this will be accomplished by monitoring, assessing and providing guidance on the "impacts of crop idling or shifting and water management actions on giant garter snake (GGS) habitat." Further goals include developing performance measures for monitoring the effects of water management actions on habitat, and the development of protocols for growers and local agencies to improve efforts aimed at providing GGS habitat.**

	The project goals appear to be relevant to the ERP priority for “assisting agricultural activities with ecosystem restoration.” The project goals and objectives also fall under the first stated priority in the guiding documents which gives priority to “Projects that contribute to understanding the relative effectiveness of different conservation-based farming practices and systems, and their contribution to larger restoration efforts.” The third example under that heading is “assessments of potential effects of adopting these practices on a large scale.” The project would appear (from the discussion of objectives) to be aligned generally with that specific priority.

Justification And Conceptual Model

Rating	**fair**
Comments	**The conceptual model is somewhat vague. The proposal indicates that the fundamental “aspect” of the project is “to determine the affect (sic) of water management actions, including transfers, on habitat. The hypothesis is that “altering water use will affect productivity for planned and unplanned actions that utilize water to sustain wildlife habitat.” The project will “quantify the affect (sic) of water management actions … on habitat.” The specific interconnections between the ecosystems and agricultural systems are not explained in detail, nor are the ways in which the impacts will be attributed to actions. There are a range of water management actions, or “drivers,” but it is unclear how these will be quantified or measured in order to estimate a model of cause and effect. There is no specificity about what the measure of “habitat” will be in either quality or quantity.**

Approach

Rating	**poor**

Comments	**The approach has three steps. First, a background survey or "white paper" that compiles information on the legal, regulatory and institutional issues relevant to water management and habitat. Second, a "quantitative analysis" using habitat surveys and remote sensing is done to "establish a vegetative index" and to "quantify the impacts of water management actions." Third, the two previous steps are combined to develop a "set of performance measures that funding agencies can use to monitor progress for these types of actions." Aspects of each of these steps are somewhat vague. For example, habitats are said to be "identified" at three levels, but the levels pertain to (agricultural) "practices," with traditional farming at one end of the continuum and designated wildlife habitat at the other end. How will habitat be measured qualitatively or quantitatively (in the case of fragmented habitat)? "Habitat will be determined using a scientist that specializes in GGS habitat and in coordination with CALFED implementation agencies." This description of the methodology is weak. There is one sentence suggesting monitoring of GGS: "In addition lands under a fallowing or crop shifting agreement will be identified and monitored for GGS." This may mean evidence of presence or absence of GGS. A significant aspect of the approach involves using LANDSAT images to monitor vegetative density and growth using spectral reflectivity of solar radiation. This may provide a crude measure of evapotranspiration, but it is not clear that this would provide an adequate measure of the quality or quantity of habitat for GGS or other species. GGS habitat is multidimensional. For example,**

	they need a habitat that provides a food source such as frogs, as well as cover that keeps them hidden from predator birds. How these images will ascertain these kinds of qualitative aspects of habitat based on LANDSAT images is not discussed, and there is no precedent cited, such as previous studies that have used this method successfully. The analysis of water management actions does not explain how they will collect quantitative measures of those actions such as amount of a change in applied water, the acre-feet of spill reduction, planting specific cover crops, flooding (of an amount, depth?), or other cultural practices. Without some ways of measuring these actions in comparable terms (cost?), it is not clear how a modeled, quantitative impact relationship could be generated. With information on water management actions and LANDSAT estimates of ET, the project claims they will "quantify how efficient the practice is at providing a certain type of habitat." Apparently they do not mean "efficient" in an economic sense, and they do not mean efficient in the sense of irrigation efficiency, so it is not clear what kind of efficiency they mean, and it is not clear how they will distinguish types of habitat and types of actions in a systematic way that will allow quantitative and generalizable results.

Feasibility

Rating	**good**
Comments	**The proposed time frame appears to be adequate. The task, however, has obstacles: a) they must systematically identify a large enough sample of specific water management actions, b) spatially relate these actions to LANDSAT estimates of ET, c) make some**

	judgment about how these patterns of ET estimates are related to different types of habitat (in proximity to the specific actions), and then to suggest something about which of these management actions is more “efficient” (or effective) in protecting GGS and other species, without any attention paid to the costs of the different actions.

Performance Evalutation

Rating	fair
Comments	The project includes some part of a performance evaluation plan. Other aspects are left as a task to be accomplished as part of the project: “AWMC will collaborate with CALFED staff, other ERP participants and growers with the development of performance measures and monitoring and evaluation protocols.” Also, no specific criteria are described to test hypotheses or to define confidence intervals around the estimated relationships between water management actions and the impacts on habitat.

Proposed Outcomes

Rating	fair
Comments	The project would appear to have a limited potential for outcomes that contribute to ecosystem health as well as agriculture. The study may show that some water management actions give rise to measurable changes in LANDSAT images and their corresponding estimated ET. How that general information could lead to recommendations or protocols is unclear since: a) there is no literature cited which demonstrates the successful use of LANDSAT images as a method for measuring GGS habitat, b) no economic data will be collected to evaluate the relative costs of different water management actions to farmers, and c) generalizations may be difficult when the

	analysis is based on a sample of heterogeneous actions that are not comparable and cannot be made comparable on the basis of cost, yield, or change in water use.

Capabilities

Rating	poor
Comments	The only CV included in the proposal is for the project administrator, who has only a bachelor's degree in agricultural economics. The project manager, Dr. Mark Roberson, is described briefly in the text as an independent consultant with 16 years experience in water management. There is no CV, and there is no mention of a track record in terms of his prior results or publications. There is no discussion of his field of academic training. The third individual identified in the text has an MS degree "in the use of remote sensing of ET to analyze the impacts of fallowed land, water management and water transfers on water use efficiency." According to the project plan, other personnel will be contracted including an expert in giant garter snake habitat and an ET/NDVI analyst. The literature cited includes three websites, one CA state government document, and a master's thesis (unpublished). Remarkably, no peer reviewed publications are cited.

Cost−Benefits

Rating	fair
Comments	The budget for this project is very high, in part due to the cost of LANDSAT images and their evaluation. However, the analysis of water management actions is also expensive, and there is very little explanation of what will be done with this substantial budget item.

Overall Evaluation Summary Rating

Rating	**poor**
Comments	**There are serious obstacles for quantifying the water management actions in a comparable manner. There are similar problems or omissions related to using LANDSAT images to changes in giant garter snake habitat. And without some economic measures of the costs of the water management actions, one cannot develope protocols or recommendations based on ET estimates alone. There is no comparisons of the cost−effectiveness of alternative ways to improve habitat.** **There is also insufficient information provided about the capabilities of the main researcher. And there is no literature cited to show precedents for using this approach successfully in even one other study. Given the high cost of the proposal, it does not seem to be a good use of scarce funds based on the information provided.**

External Technical Review #3

Proposal Number: 0074

Proposal Name: ASSESSMENT OF WATER MANAGEMENT ACTIONS AND WATER TRANSFERS ON GIANT GARTER SNAKE AND OTHER WETLAND DEPENDENT SPECIES

Applicant Organization: Agricultural Water Management Council

Amount Requested: $267,685

Goals

Rating	**fair**
Comments	**Although the writing style is somewhat spare and lacking in detail, the proposal does state the problem adequately. The investigator will study the roles and effects of passive and various degrees of "active" water escape from agricultural operations in creating and sustaining aquatic habitat for the federally "threatened" giant garter snake (Thamnophis gigas). The proposal states that an ERP priority is to assess the impacts of cropping patterns and crop idling/shifting on giant garter snakes, but the investigator proposes to address that priority only "through data collection, analysis, and reporting." This statement exemplifies the somewhat generalized and simplistic approach that plagues parts of the proposal, which is one of its several weaknesses. The investigator suggests that the proposed work will assist CALFED ERP by obtaining "pre-project" (baseline) data for the effects on giant garter snake habitat of various levels of water manipulation. This will assist farmers in integrating future agricultural activities and ecosystem**

	integration primarily by showing them that their individual actions are potentially effective and likely to be “recognized by the State.” Although the problem is concisely stated, the highly general nature of the proposed investigative methodology may make the reader question how well the investigator has developed the procedures necessary to make this project successful. Fortunately the research algorithm that follows is logical and reasonably well planned, although it depends on expertise that may not be available.

Justification And Conceptual Model

Rating	**fair**
Comments	**The model included in this proposal is clear enough in that many of the tangible “drivers” that interact with habitat to affect giant garter snake populations (=”life cycle”) are included (except various critically important exogenous and endogenous factors such as food supply and reproductive success). However, the model does not illustrate the specific hypothesis to be tested in this work, and it even fails to identify explicitly the variables to be manipulated (or studied while they are being manipulated by exogenous factors). Recourse to the accompanying text is necessary to make those determinations, which is not necessarily a deficiency but the text also suffers from incomplete development. The accompanying text clarifies the work (but not the hypothesis except implicitly) by stating that the drivers that the investigator propose to investigate include “passive” (largely unintended) water flows that create riparian/aquatic habitat, “planned” water flows that also create such habitat (largely planned through agriculture or deliberate habitat management, though it**

	is unclear how the work will differentiate these from purely passively created habitat), and "full management," which is not defined in this section of the proposal (the investigator goes on to state that they plan to focus on unplanned and planned water transfer activity). The model and the text could have been better developed and refined.

Approach

Rating	**very good**
Comments	**The strength of the overall approach is also the major weakness of the project: rather than study the potentially overly complicated effects of riparian and aquatic habitat development from agricultural water manipulation as the new habitat benefits ecological communities, the investigator has wisely focussed on a single indicator species which fortuitously also has relevance as a species listed under the state and federal Endangered Species Acts. Presence or absence of giant garter snake habitat, and presumably also presence or absence of giant garter snakes, are the "goals" of all of the measurements and evaluations discussed in the project application. This reductionist approach solves many problems that would otherwise limit comparative study, but it also places a premium on the ability to evaluate giant garter snake habitat and to find giant garter snakes that are notoriously wary and difficult to find. As discussed later, very few people possess the experience and training necessary to serve as giant garter snake experts, a fundamental requirement of the proposal. Following are discussions of the individual task proposals.** **Task 1. Administration.** **Task 2. Issues paper. The investigator will prepare an "issues (white) paper" to explore the various factors that affect water management in planned and unplanned**

contexts. This is an important and highly worthwhile step for activities as complex as agriculture−related water manipulation and "wildlife−friendly" water−related agricultural practices. The paper will provide a good foundation for assessing useful types of data to collect and possibly for explaining how best to collect them, and it will also represent a good resource for assessing future water transfer activities possibly throughout California.

Task 3. Habitat identification. This section is properly conceived but is also by far the weakest part of the proposal. The investigator plans to study three "levels" of giant garter snake habitat, but fails to acknowledge that giant garter snake habitat is a complex mixture of aquatic and upland components and that not surprisingly it is oriented largely toward food supply. In fact. the most serious weakness of the entire proposal is that the projects' successful completion depends on the expertise of an unnamed "scientist that specializes in giant garter snake habitat." The problems with that include:

−−Giant garter snake foraging habitat (the presumed focus of this work) is defined largely by the combination of its ability to offer secure refuge and to support large populations of fish of appropriate size and behavior to represent a dependable food supply. In any region within the distribution of the giant garter snake, available "acreage" of habitat that appears suitable but is probably not (typically because of the absence of fish) usually far outdistances habitat acreage that is actually capable of supporting these snakes (because fish and cover are present), which in turn outdistances the acreage that actually does support these snakes (because fish are available, not just present, and because cover is of appropriate density and location). This is important in the context of the proposed work because without expert guidance on giant garter snake habitat and habitat development the GIS data will probably suggest

that giant garter snake habitat is far more frequent and extensive than it actually is, and thus the entire project could yield spurious results. This problem is complicated further because giant garter snakes may use refuge habitat such as riprap that includes no vegetative component at all (and thus not likely to be noticeable in the evapotranspiration studies). Although riprap is probably not a typical feature of the Sacramento Valley rice fields, these snakes may utilize other atypical cover if fish are abundant and available close by. Extensive study and evaluation will be required to differentiate seemingly appropriate habitat from habitat that actually supports these very secretive snakes.

--Only highly experienced individuals are qualified to identify authentic giant garter snake habitat at a scale fine enough to be useful at the GIS level proposed for this work. Such high-level expertise is very scarce, limited to fewer than ten people in California. Fewer still have demonstrated experience throughout the range of the giant garter snake (habitat preferences for this snake change somewhat with the availability of different habitat morphotypes). Since the giant garter snake habitat expert is unnamed it seems likely that the investigator has yet to arrange for these services in this project, which means that as currently proposed the entire project could fail.

--Additionally, the investigator states that lands in the study area that are under a fallowing or crop shifting agreement will be monitored for giant garter snakes (not just habitat), which underscores the requirement for the services of an expert in giant garter snake field identification, habitat assessment, and life history to ensure the success of this project. The large geographic area of the studied territory guarantees that the giant garter snake expert will have little time for anything else but this work during the peak periods of giant garter

snake activity during the two years of field work, which will probably limit further the number of giant garter snake experts available to the project.

A parallel problem not discussed in this section but indicated in the accompanying data sheets is that the investigator has apparently not yet arranged for access to private farmlands that undoubtedly comprise the entire project. This is hardly an easy task, and it is hardly a trivial concern. If sufficient diversified private land access is not available, the project can probably not proceed except in far less rigorous terms ("potential garter snake habitat as judged from aerial photographs').

Task 4. Consumptive water use and vegetation information. This section is the greatest strength of the proposal. The proposal to track and quantify vegetation development over time via evapotranspiration rate as determined by satellite imagery shows promise as a way to relate water use changes to habitat development in a large picture but at a fine scale. If the investigator can overcome the problems discussed in the previous section and obtain good data on giant garter snake habitat and habitat use from their study area, the data combination obtained from this and the preceding section promises to answer the investigator's questions reasonably well and also to provide important information on temporal invasion of unusual seasonal foraging habitat by giant garter snakes.

Task 5. Analysis of water management actions, wildlife friendly practices that utilize water and water transfers on habitat. This section is the "meat" of the proposal, where the investigator actually correlates agricultural and quasi-agricultural water use practices with the habitat data gathered and quantified in the earlier phases. The principal problem with the approach is that most of the water use practices can hardly be quantified, so it can be

difficult to identify thresholds above which any given practice becomes a significant contributor to authentic giant garter snake foraging habitat. The investigator intends to gather other types of data to help bracket the effects of each of the water use practices on habitat development, which in the absence of a multiyear study is probably the only way to gain even elementary understanding of any of the practices and events listed in Table 1.

Task 6. Performance measures. This section describes the development from the earlier tasks of data identification and collection algorithms to be used to monitor water management activities when they are used to develop giant garter snake habitat. As such it is an inevitable result of the earlier data collection and analyses, but its utility will depend on the veracity and completeness of the data gathered in the earlier steps.

Task 7. Develop guidance protocols on how to estimate the benefits of wildlife friendly agriculture for local agencies and growers. This task will extend the data further to develop protocols and guidelines for farmers and local agencies to be able to institute "wildlife friendly" agricultural practices involving water use, including the types of baseline and downstream information to collect in order to be able to evaluate the effects and benefits of the management practices. Like the preceding task, its success depends primarily on the quality of the habitat data from task 3 and on the subsequent. Analyses.

Task 8. Public outreach. The investigator seek funding to conduct a series of workshops throughout the study area to develop relationships with potential "implementers." This step is clearly appropriate not only to bring the project to a logical conclusion but to serve as a model for other such endeavors intended to encourage landowners to develop habitat.

	Task 9. Final report. As stated in the proposal, the final report is a required element of the work.

Feasibility

Rating	**good**
Comments	**The overall approach is certainly feasible, but success will depend on availability of giant garter snake expertise and access to private lands for giant garter snake habitat evaluation and presence/failure to detect surveys. If sufficient private land access is available and if the services of someone with necessary expertise in giant garter snake habitat and biology can be retained, there is little reason that the project should fail from a feasibility standpoint. Other environmental issues seem not to apply because of the non−invasive nature of the work. If the giant garter snake expert is to conduct “presence/absence” trapping surveys a Section 10(a)(1)(A) federal permit will be necessary. Some but not all individuals who possess the necessary expertise are likely already to have such permits, but if not the lengthy process of obtaining a permit would probably delay the project by at least a year. It is not clear from the proposal whether such surveys will actually be part of the work, but some method of confirming the presence of giant garter snakes in created habitat seems fundamental to project success.**

Performance Evalutation

Rating	**good**
Comments	**As discussed previously, the project includes a credible performance monitoring program (Task 6). Per that discussion, the performance evaluation will depend entirely on the quality and veracity of the ground data that feed into the habitat creation correlation.**

Proposed Outcomes

Rating	**good**
Comments	**If the previously discussed problems can be overcome and the project proceeds to its intended conclusion, it will --Provide much new data on the effects of agricultural active and passive water management on riparian/aquatic habitat creation and development --Give growers new tools for such "wildlife-friendly" habitat management --Demonstrate the utility of GIS mapping and evapotranspiration quantification as tools for evaluating riparian habitat development --Yield new data on giant garter snake distribution, habitat selection, and life history All of these positive results can be applied to many other ecological/agrarian settings, and over time can probably be broadened from single species to community effects as the ability to quantify vegetation and ground-truth aerial photographs improves.**

Capabilities

Rating	**good**
Comments	**Ms. Kathryn Charlton is clearly well-qualified to design and manage this project. Her biosketch indicates that she has extensive background in agricultural water management and ancillary decision making. Details on the consultant team (Mark Roberson, Peter Wijsman) are not available in the application, and no candidates are identified for the Ecologist (giant garter snake habitat expert) (Task 3) and the Remote Sensing Specialist (Task 4). Much of the**

	project's success will depend on the selection of an appropriate individual to conduct giant garter snake habitat studies, and it is not clear that such an individual will be available for this project.

Cost−Benefits

Rating	fair
Comments	The budget ($267,685 over two years) seems generally appropriate but travel and per diem were budgeted only for tasks 6, 7, and 8 even though there were several references to field work in Task 3 and some field work will probably be necessary in Tasks 4 and 5. The giant garter snake work is obviously entirely performed in field settings, and the $150/hour budgeted for the unnamed expert individual is probably realistic but apparently does not include expenses. It was not clear whether AWMC plans to absorb those expenses, but if not travel and per diem for fieldwork could increase the budget substantially.

Overall Evaluation Summary Rating

Rating	fair
Comments	The proposed approach is sound and the potential benefits to growers, land managers, and giant garter snakes are not insubstantial, but the success and scientific validity of the project depends almost entirely on highly accurate identification of authentic giant garter snake habitat, by a highly experienced individual. I have downgraded the proposal because there is no guarantee that the required expertise will be available for the giant garter snake work, because there was no indication that private land access had been arranged (and no guarantee that it could be), because of deficiencies in the presentation (notably the problems with the conceptual model), and because of the absence of travel expenses in the budget. An additional criticism not mentioned previously is that the proposal would have benefited

	from careful editing and rewording, as well as checking for correct word usage (e.g, the term “affect” and its derivatives were used incorrectly throughout the proposal—the investigator clearly meant “effect” and its derivatives).

Sacramento Regional Panel Review

Proposal Number: 0074

Proposal Name: ASSESSMENT OF WATER MANAGEMENT ACTIONS AND WATER TRANSFERS ON GIANT GARTER SNAKE AND OTHER WETLAND DEPENDENT SPECIES

Applicant Organization: Agricultural Water Management Council

1. Applicability to ERP goals and regional priorities.

The proposal meets the goals and objectives of MSCS Giant Garter Snake objectives and therefore the ERP. Though there is little known about the GGS this project should contribute to the overall understanding and ultimate assistance in recovery or management actions developed for the GGS in the region. AWMC represents most of water supply contractors in the region; therefore cooperation in its stated objectives, goals and methodology should be achieved.

notes:

This proposal will only indirectly cover the GGS conservation priority and will not have immediate benefits.

The proposal, though well planned, appears not to fit well with the present funding opportunity.

2. Links with other restoration actions.

The proposal expands on investments in the region as millions of dollars in conservation programs by multiple state, federal and private entities are common place in the region. Though not a "model" per se, the project could assist future policy makers in guiding specific actions and investments in target area to achieve a net benefit to the GGS and other wetland

species.

notes:

This project would be improved by use of other methods and research for quantitative analysis. It needs to be more tightly coupled to the GGS life cycle. Specifically, the link between the GGS and mapping of water presence on land is unclear. It would also be a stronger proposal if it were part of a collaborative effort and incorporated other facets of GGS management.

The secondary review found that the project was not directly linked to other restoration actions. The project will result in a tool for assessment rather than a model.

3. Local circumstances.

The proposal targets wetland species, specifically the GGS who are thought to make the region its primary habitat. AWMC represents the water supply agencies who services a majority of the private lands located in the project area. Therefore, I do not believe that there would be any local constraints to moving the project forward. However, I would of like to have seen more specific letters of support by these same agencies and landowner specific organizations. Agency support for the project would also be helpful.

notes:

4. Local involvement.

I would of like to have seen more specific letters of support by water supply agencies and landowner specific organizations. Agency support for the project would also be helpful. The

proposal could of included a specific cooperator who represented one or more of these groups to make it stronger.

There is sufficient public outreach activities proposed however one on one landowner or water supply agency interviews or direct cooperation would of strengthened the proposal. However, I don't believe it weakens the ability of AWMC to achieve its stated goals and objectives.

notes:

The outreach component of the proposal is weak.

The secondary review found that use of tool proposed will require substantial outreach and that the level of outreach appears sufficient.

5. Local value.

The scientific methodology used to achieve the goals and objects of the proposal should be of value to policy makers and agencies in determining future investment or actions as it pertains to the GGS and other wetland species.

notes:

The secondary review found that the project was of low local value.

6. Applicant history.

To my knowledge the AWMC is a respected organization and has performed well on previous projects namely water use efficiency and conservation projects. My overall concern is that there is not an herpetologist or other wildlife

specialist is not identified in the project.

notes:

7. Summary of Overall Panel Discussion and Review

There is little connectivity between these researchers and the land, rather the proposal's strength is in its development of economic analysis. Positive elements of the proposal were the issues paper and the performance measures. However, the proposal was lacking in habitat surveys and quantitative analysis. Effects of this work would be increased knowledge for long term management rather than direct habitat improvement.

8. Panel Quality Ranking

Good
notes:

9. Regional Priority Ranking

Medium
notes:

Environmental Compliance Review

Proposal Number: 0074

Proposal Name: ASSESSMENT OF WATER MANAGEMENT ACTIONS AND WATER TRANSFERS ON GIANT GARTER SNAKE AND OTHER WETLAND DEPENDENT SPECIES

Applicant Organization: Agricultural Water Management Council

1. Is compliance with California Environmental Quality Act (CEQA) required for this project?
Yes.

2. Is compliance with National Environmental Policy Act (NEPA) required for this project?
No.

3. Does this project qualify for an Exemption or Exclusion under CEQA and NEPA, respectively?
Yes.

Comments

Research

4. Did the applicant correctly identify if CEQA/NEPA compliance was required?
No.

Comments

They stated that no doc. was required.

5. Did the applicant correctly identify the correct CEQA/NEPA document required for the project?
No.

6. Has the CEQA/NEPA document been completed?
No.

7. If the document has not been completed, did the applicant allot enough time to complete the document before the project start date?

No.

8. If the document has not been completed, did the applicant allot enough funds to complete it?
No.

9. Did the applicant adequately identify other legal or regulatory compliance issues (Incidental Take permits, Scientific Collecting permits, etc,) that may affect the project?
No.

Comments:

May need collecting permit from DFG and FWS for handling ggs

10. Does the proposal include written permission from the owners of any private property on which project activities are proposed or, if specific locations for project activities are not yet determined, is it likely that permission for access can be obtained?
No.

Comments:

Will need to obtain permission from willing participants.

11. Do any of these issues affect the project's feasibility due to significant deficiencies in planning and/or budgeting for legal and regulatory compliance or access to property?
No.

Budget Review

Proposal Number: 0074

Proposal Name: ASSESSMENT OF WATER MANAGEMENT ACTIONS AND WATER TRANSFERS ON GIANT GARTER SNAKE AND OTHER WETLAND DEPENDENT SPECIES

Applicant Organization: Agricultural Water Management Council

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

Yes.

2. Does the Budget Form include a detailed budget for each task identified on the Task and Deliverables Form and in the proposal text?

Yes.

3. Are the costs associated with each task and deliverable reasonable costs for performing the services?

Yes.

4. Is each person (employee, consultant, subcontractor, etc.) identified on the Personnel Form also included on the Budget Form?

Yes.

5. Are there estimated hours and an associated hourly rate of compensation for each person identified on the Personnel, Tasks and Deliverables, and Budget forms?

Yes.

6. Does the budget include the benefit rate for all personnel identified on the Personnel and Budget forms?

No.
If no, please explain:

No benefit rate is identified.

7. Are the proposed labor rates comparable to state rates?

No.
If no, please explain:

No, the labor rates are high.

8. Is more than 25% of the work proposed to be performed by subcontractors?

No.

9. Are project management expenses appropriately budgeted?

No.
If no, please explain:

Hours seem too low. (30hrs/yr)

10. Does the proposal clearly state the type of expenses encompassed in indirect rates or overhead costs? Are indirect rates, if used, appropriately applied?

No.
If no, please explain:

No detail was provided.

11. Does the proposal adequately explain major expenses? Are the labor rates and other charges proposed reasonable in relation to current state rates?

No.
If no, please explain:

No major expenses were identified.

12. For equipment >=$5,000, was a separate worksheet filled out?
Please note: No overhead or indirect rate charges are allowed on the equipment purchases

No.

13. Is the purpose for all travel clearly represented in either the proposal itself, or in the Tasks and Deliverable Form?

Please note: Recurring travel costs for a specific task or subtask may be combined into one entry on the Budget Form, but the number of trips and cost for each trip must be clearly represented.

No.

14. Are travel and per diem at rates specified by the California Department of Personnel Administration for similar employees?

No.

15. Are other agencies contributing or likely to contribute a share of the projects? costs?

Yes.
If yes, when sufficient information is available, please total the amount of matching funds likely to be provided:

Services inkind $10,000

16. If the applicant identified cost share or matching funds, are they also described in the text of the proposal?

Yes.

17. Does the applicant take exception to the standard grant agreement's terms and conditions? If yes, are the approaches the applicant proposes to address these issues a reasonable starting point for negotiation a grant agreement?

No.
If no, please explain:

No exception is taken to the std T's &C's.

18. Are there other budget issues or "red flags" that warrant consideration?

No.

19. Provide revised amount requested based upon your review:
$