Science Evaluation

Bucket 2 – Council Selected Restoration Component

PROPOSAL TITLE

Suwannee River Watershed Restoration and Preservation

LOCATION

Dixie and Levy Counties, Florida

SPONSOR(S)

Florida Department of Environmental Protection

TYPE OF FUNDING REQUESTED (Planning, Technical Assistance, Implementation)

Implementation

REVIEWED BY:

DATE:

19 January 2015

Best Available Science:

These 6 factors/elements help frame the reviewers answers to A, B and C found in next section:

1. Have the proposal objectives, including methods used, been justified using peer reviewed and/or publicly available information?

- (●) YES
- ( ) NO
- ( ) NEED MORE INFORMATION

Comments

The proposal consists of three projects that are linked by geography: 1) Restoring resilience to oyster reefs in the Big Bend; 2) Lower Suwannee and Gulf Watershed Conservation Easement; and 3) Suwannee River partnership irrigation water enhancement program. Of these three, the oyster reef restoration project represents application of the best available science. The project builds on smaller, successful pilot reef restoration projects that were initiated in 2007. This project defines two testable hypotheses that guide the oyster reef restoration, and clearly defines the monitoring effort to evaluate project success. The oyster reef restoration effort will be conducted in an area of ecological significance. The other two projects in this proposal are important, but are real estate easement and technical support and outreach for irrigation water conservation program. While they may be valid, these projects are not scientific investigations.

2. If information supporting the proposal does not directly pertain to the Gulf Coast region, are applicant's methods reasonably supported and adaptable to that geographic area?

- (●) YES
- ( ) NO
- ( ) NEED MORE INFORMATION

Comments

Projects in this proposal focus on the Gulf Coast region.

3. Are the literature sources used to support the proposal accurately and completely cited?

- (●) YES
- ( ) NO
- ( ) NEED MORE INFORMATION

Comments

Literature sources for the oyster reef restoration project are accurately and completely cited. Web sites are cited accurately for the conservation easement and irrigation water conservation projects. Supporting documentation for the conservation easement project could be defined and supported more clearly. For example, what ecological aspects of the area justify the costs of this easement? Why does this area rank high under the Florida Forever program?

4. Are the literature sources represented in a fair and unbiased manner?

- (●) YES
- ( ) NO
- ( ) NEED MORE INFORMATION

Comments

Literature sources for the oyster reef restoration project mostly come from peer-reviewed journals that are highly recognized in the field.

5. Does the proposal evaluate uncertainties and risks in the scientific basis for the proposal, including any identified by the public and Council members?

- (●) YES
- ( ) NO
- ( ) NEED MORE INFORMATION

Comments

Yes, risks and uncertainties related to successful larval recruitment and freshwater entrainment by established oyster reefs are clearly described in the oyster reef restoration project. Supporters (local aquaculturists) will provide some of the raw materials. The conservation easement has few risks and uncertainties, as there is a single, conservation-minded seller, and the acquisition has support in the Florida Senate, the Suwannee River Water Management District, and Dixie County. The proposal states that there are no risks associated with the irrigation water enhancement project, however, it is not clear how this project will document nutrient reduction (Goal 2, Other, page 1) because there is no water quality monitoring specified in

6. Does the proposal evaluate uncertainties and risks in achieving its objectives over time? (e.g., is there an uncertainty or risk that in 5-10 years the project/program will be obsolete or not function as planned given projections of sea level rise?)

- (●) YES
- ( ) NO
- ( ) NEED MORE INFORMATION

Comments

Evaluation of risks and uncertainties over a 5-10 year project horizon are not explicitly stated in the oyster reef restoration project, although general risks and uncertainties are discussed. The risks are: 1) that freshwater will not be entrained; and 2) that oyster harvest will not be improved. The project will take at least 5 years to complete construction, so sufficient monitoring data will not be available until at least 2 (likely more) years beyond completion of construction. It is unlikely that this project will become obsolete over a decadal time scale, particularly due to rising sea level because the rate of oyster reef

Based on the answers to the previous 6 questions, and giving deference to the sponsor to provide within reason the use of best available science the following three questions can be answered:

A. Has the applicant made a reasonable determination that the proposal is based on science that uses peer-reviewed and publicly available data?

- ( ) YES
- ( ) NO
- (●) NEED MORE INFORMATION

Information Needed:

The oyster reef restoration project adequately defines testable hypotheses, project implementation methods, and monitoring program to evaluate project success. More ecological support is needed to justify the conservation easement to a person who is not familiar with the area. The easement may very well be justified, but the scientific support for this area's inclusion (unique ecosystem, proximity to other protected areas) is not discussed in detail. The irrigation water enhancement project is

B. Has the applicant made a reasonable determination that the proposal is based on science that maximizes the quality, objectivity, and integrity of information (including, as applicable, statistical information)?

- ( ) YES
- ( ) NO
- (●) NEED MORE INFORMATION

Information Needed:

Although the monitoring effort could be discussed in greater detail, the oyster reef restoration project clearly defines the quality, objectivity, and integrity of data to confirm that objectives have been attained. There is no data collection effort in the conservation easement project. The irrigation water quality enhancement project data collection effort will track number of

C. Has the applicant made a reasonable determination that the proposal is based on science that clearly documents and communicates risks and uncertainties in the scientific basis for such projects?

- ( ) YES
- ( ) NO
- (●) NEED MORE INFORMATION

Information Needed:

The scientific basis of project risks and uncertainties are defined in the oyster reef restoration Few risks and uncertainties are defined for the conservation easement project and the irrigation water enhancement project. As discussed in no. 6, above, certain risks and uncertainties for the latter two projects could be discussed further. Regarding the conservation easement project, there is no discussion of the effects of potential saltwater encroachment in this area. Regarding the irrigation water enhancement project, there is only a brief discussion about possible technological advancements that could improve agricultural water conservation (e.g. upgrades of diesel power unit to Tier II or newer unit), and whether technological

Science Context Evaluation

A. Have other methods been discussed and reasons provided to why the method is being selected (e.g., scientifically sound; cost-effectiveness)?

The oyster reef restoration project methodology is based on successful smaller pilot-scale projects in the same area. This project also leverages local aquaculture resources for reef substrate and boats for emplacement. The irrigation water enhancement project leverages existing state and federal agricultural best management practice cost-share programs, so one must assume that their methodologies are sound and cost-effective.

B. Has your agency/vendor/project manager conducted a project/program like the one proposed?

My organization routinely uses improvement of oyster reefs as a performance measure for ecosystem restoration, and also uses areal extent of oyster reefs in calculation of habitat units and benefits. My organization does not purchase state lands for ecosystem restoration (this is a State, not Federal responsibility). My organization's mission does not include quantification of best management practices (this is an NRCS mission).

C. Is there a risk mitigation plan in place for project objectives? (captures risk measures as defined under best available science by the Comprehensive Plan and Act)

A risk mitigation plan is not explicitly discussed for the oyster reef restoration project objectives. The authors believe that the success of previous smaller reef restoration project improves the likelihood of project success. However, the authors could have elaborated on what they would do in the event that a Category 3 or 4 hurricane affects this region.

D. Does the project/program consider consequences with implementation? (captures risk measures as defined under best available science by the Comprehensive Plan and Act)

The oyster reef restoration project defines positive consequences of project implementation - greater freshwater entrainment, replenishment of a resilient marine resources. Are there any negative consequences (reduced ease of navigation by newly established reefs?). Consequences associated with implementation of the conservation easement and irrigation water enhancement projects are considered low or no risk, with only positive consequences.

E. Does the project/program have clearly defined goals?

Yes, and these are explicitly stated in the narrative and also in table form on "Other, page 1" for all three projects defined in this proposal.

F. Does the project/program have clearly defined objectives?

Yes, and these are explicitly stated in the narrative and also in table form on "Other, page 1" for all three projects defined in this proposal. However, there is little differentiation between goals and objectives (in the project contributions columns) on the goals/objectives table, so this could have been refined a bit.

G. Does the project/program have measures of success? (captures statistical information requirement as defined by the Comprehensive Plan and Act)

Measures of success are clearly defined (narrative, pages 7 and 8) for the oyster reef restoration project, and these include completion of project plans and specs, programmatic and permitting objectives, as well as data acquisition to support water quality improvement, oyster spat recruitment, and reef growth over the 5 to 10 year time span of the project. Successful completion of the conservation easement is "sealing the deal". Successful completion of the irrigation water enhancement project is indicated by increasing number of participating farmers and acreage under BMP management, water quality

H. Is a monitoring program in place to determine project goals, success and help adaptive management (if applicable)? (captures statistical information requirement as defined by the Comprehensive Plan and Act)

There is a conceptual description of the monitoring program for the oyster reef restoration project, and this probably will be defined in greater detail should the project be implemented. There are no monitoring programs in the remaining two projects in this proposal.

I. Does the project/program consider recent and/or relevant information? (captures statistical information requirement as defined by the Comprehensive Plan and Act)

The success of recent, smaller oyster reef restoration pilot projects conducted in the same area are shown in the narrative for the proposed oyster reef restoration project. There are existing and ongoing surface water quality monitoring stations and CLAMMRS model simulations in the area to document freshwater entrainment in reef areas, which is critical to their development. The conservation easement project builds on existing support from State and Federal entities, NGOs, sportsmen to justify the protection of the forested wetland. The irrigation water enhancement project also builds on existing state and federal programs supporting establishment of agricultural best management projects.

J. Has the project/program evaluated past successes and failures of similar efforts? (captures the communication of risks and uncertainties in the scientific basis for such projects as defined by the Comprehensive Plan and Act)

The success of recent, smaller oyster reef restoration pilot projects conducted in the same area are shown in the narrative for the proposed oyster reef restoration project. There probably is no "failure" of a conservation easement unless it falls victim to lawsuits. Success or failure is only defined conceptually for the irrigation water enhancement project, even though there are existing State and NCRS projects that are very similar, and are part of the cost-share for this project.

Please summarize any additional information needed below: