Science Evaluation

Bucket 2 – Council Selected Restoration Component

PROPOSAL TITLE

Restoration of Whooping Crane Critical Habitat with Beneficial Use of Dredged Material

LOCATION

ACOE-3

SPONSOR(S)

Department of the Army

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

Implementation

REVIEWED BY:

DATE:

January 12, 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

This is an augmentation of an ongoing beneficial use of dredge material project that according to the applicant has apparently been delayed by unforseen erosion problems associated with poor performance by existing geotextile barriers. This proposal seeks to create/restore 318 acres of tidal emergent marsh habitat.The overall design of the beneficial use sites has apparently been approved under past project documents submitted by the applicant under existing federal permit procedures. The applicant is seeking restoration council funds to correct this. This is because the current funding for the project does not allow for correction of these past failures or is insufficient to implement all the proposed actions.

The applicant has provided a general description of a course of action that they will generally use to conduct the proposed restoration using dredge material under their beneficial uses program (BUP). This includes 1) use of hard substrate barriers,

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

Not applicable since methods have been used in the GOM, but see comment 2. Again, the method they propose has been used in other locations subject to high vessel traffic and/or wave action along the Texas coast. However, even though they mention their experience in doing these types of projects they provide little documentation or literature of these approaches taken by their organization or others.

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

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

Comments

See comment 1. Several important statements regarding the success of this approach or decision to use certain criteria are not supported by an appropriate literature citation. In some cases this may be a simple as a providing and accepted USCOE standard tested protocol document for a method or past project reports that document successful projects using the same methods, criteria etc.

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

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

Comments

Very little literature is cited in regards to the methods that will be used to create the wetlands or the monitoring protocol that will be used. The authors state that they will monitor changes in wetland composition and coverage using aerial and land based surveys but do not indicate how frequently they will do this or at what spatial scale. However, they do note on page 9 that they will establish a monitoring protocol in coordination with the USFWS. Consequently detailed information is probably lacking at this time. The applicant should however provided goals of their monitoring program such at a minimum provide an

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

Limited information was provided on the approach that was used to conduct their uncertainty analysis other than stating that "the risk is low based on their experience" at the bottom of page 2. No literature or method is cited is provided on how they came to this conclusion. In regards to sea level rise the applicant cites USACE 2013 guidance which specifies the use of of NRC (1987) project rates of sea level rise. These estimates have been subsequently modified as you estimates of global warming have been generated by more recent IPCC reports. However, the applicant does state that the most pessimistic estimate were used for planning and describes adaptive management response including 1) alternative planting methods and

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

The applicant does state on page 2 that "if sea level rise is higher than expected in the future the marsh elevation at the BUS could be increased by thin layer placement of dredge material from the GIWW using USACE O&M funds". On page 10, the applicant describes the methodology used to project sea level rise in the project area.

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:

Although based on my personal knowledge I believe the applicant is taking a reasonable approach to accomplish the proposed restoration using dredge material and they have past experience doing this successfully, they fail to provide any citations or analysis results documenting the proposed approach and likelihood of success. Although the field of restoration science is very dynamic and rapidly changing there is considerable literature on the engineering success of various

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:

The proposal in general lacks extensive literature on the success of methods that will be used to create wetlands and how this translates to critical habitat for whooping cranes including examples of past success. This could include expert opinion from FWS biologists, published literature or agency reports. However, none are provided.

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:

Data on hurricane frequency and likelihood of project failure due to storm surge. This could be done based on current frequency statistics and projections of future events given climate change scenarios.

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)?

No. Other than the original approach (geotextile tubes) to create and protect the BUS created wetlands failed.

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

I have informally and formally reviewed and evaluated the effectiveness of these projects for both federal and state organizations.

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)

On page 14, paragraph 3, the applicant states that they will closely monitor and track the development of marshes and make recommendations for modifying the sites if needed to increase viability and to ensure functional equivalency to surrounding natural marshes. They cite and USACE 1995 report (i.e.feasibility report and final EIS). On page 14 they state that they will develop monitoring protocol and performance criteria and that if needed will respond using O&M funds.

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

Not clearly. The authors provide some information in very general terms and with little literature documentation on pages 9, 10 and 14. They state that the project "would also serve to restore and support the economic vitality and enhance the resilience of the Texas Gulf coast region". The implication is if the project was not funded the GIWW would shoal in. The applicants also describe in general terms their approach to dealing with problems (pages 9-11).

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

Yes. The project has clearly defined goals with time lines for completion.

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

Yes

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

Yes, but little information is provided on statistical approaches that will be used. Goals are defined in terms of absolute goals, without any measures of uncertainly, i.e. confidence intervals.

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)

Yes. but little information is provided on how statistical uncertainly will be reported.

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

The applicant provides recent information for the project site. In regards to projected sea level rise they fail to mention more recent IPCC projections of global warming and whether this affects the earlier projections of seal level rise and subsequent risks and mitigation needs. Also, not statistical measures of uncertainly are provided for these projections.

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)

No, I did not see any data or information provided other than the recent failures at the project site using the geotextile barrier approach.

Please summarize any additional information needed below:

The applicant fails to provide sufficient literature citations that support the proposed method and approach even though they have performed similar projects in the past and at a minimum can describe the success they have had in meeting similar goals. This is unfortunate because the applicant does have considerable experience in Texas wetland creation using dredge material. Also, currently the monitoring plan is conceptual and will be further developed with the USFWS. It would seem that they would have done this already due to the implementation of the already existing project sites and past activity.