SCIENCE EVALUATION

Bucket 2 – Council Selected Restoration Component

PROPOSAL TITLE

Beneficial Use of Dredged Material to Create Emergent Tidal Marsh in Upper Mobile Bay

LOCATION

Within the coastal zone boundaries of the Alabama Coastal Zone Management Program

SPONSOR(S)

Department of Army (Mobile District)

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

Planning $2.5M; Implementation $25M

REVIEWED BY:

DATE:

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

Only one of the ten references cited was a peer reviewed journal paper and at least three reports were agency/program internal. One paper that was cited to support the contention that the disposal plan would "not impact the other natural resources within the Bay (Gallani et al. 2014)" [pg 6] was not found in the reference section. The lack of support for numerous statements declaring ecological benefits to the Bay and to endangered species from the project was particularly noteworthy. Examples include:

"Creating emergent tidal marsh in the upper Mobile Bay will produce productive habitat that provides valuable ecosystem services to the Mobile Bay". [pg 13]
"Creating the tidal marsh will accomplish restoration and protection of the natural resources, ecosystems, fisheries, marine

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

Entire project in Mobile Bay and strongest justification for the work was a previous project in the Bay that the proposal says was very successful.

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

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

Comments

I am not familiar enough with the literature to evaluate this question.

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

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

Comments

Cannot fairly evaluate this question as very little literature cited. However, the justification of the proposal was mostly based on previous work by the USACE in Mobile Bay such as filling in the Brookley Hole and creating Gaillard Island. The Brookely Hole project was presented as a success because, according to text in this proposal, the USACE Engineering Research Development Center's (ERDC) inhouse report said the hole had "degraded ecological productivity" prior to filling and

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

I do not have sufficient information to address whether the project addresses any concerns raised by the public or the Council members. The discussion of Risks and Uncertainties mainly centered around the statement that "The USACE, Mobile District has demonstrated the ability to build similar projects." There was very little discussion of risks beyond the focus on the ability of the USACE to construct the project and "to the maximum extent feasible, to minimize any environmental impacts". There was a relatively lengthy discussion on "Relative Sea Level Rise" that focused primarily on the historical record and the USACE guidelines predicting a rise between 0.8 and 1 foot this century. This discussion concluded with the curious 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 project discussed sea level rise several decades out and discussed the long-term viability of the dredged created island being impacted by boat wakes, river flows, and storms. There was little 'evaluation' of those latter factors with much of the justification being simply that the previous projects in the Bay were working well.

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:

See answers above

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:

No statistical information included and data in general is pretty sparse

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 only information justifying this project comes from the earlier work in the Bay. Whereas that is a strong positive indication, it is insufficient by itself as there are many other projects that could be, but apparently have not been evaluated.

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

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

No

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)

No

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

Proposal presents many unsubstantiated claims of ecological and other benefits, but it seems mainly about disposing of dredge materials

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

Yes. Proposal generally does a nice job of laying out the goals, but it also includes statements and a few citations to justify the goals. This type of information should be placed elsewhere such as an introduction.

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

Yes, these are pretty clearly described.

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

The totality of the Measures of Success discussion, included here, was quite limited.

"4. Measures of Success for the Proposed Project or Program
 Meets intent of the Alabama State coastal zone program.
 Containment berm and cells constructed to project permit and/or plans and specifications.

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)

Not clear that there is a monitoring program in place, but the proposal does address monitoring. Primary focus was ensuring 'the project meets the goal of retaining dredged material according to the State of Alabama coastal zone program." There was other seemingly on target discussion of setting up monitoring efforts with RESTORE funding. Nothing that addresses any statistical analyses.

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

Nothing statistical presented, but information (including statistical analyses) maybe contained in the 2014 ERDC report evaluating the Brookley Hole/Deer Island dredge work project or in reports that were not cited regarding the Gaillard Island work in the Bay. These two completed projects are used as the primary justifications for the USACE's ability to do the work proposed, but there is very little information in the proposal that evaluates the success and challenges of this previously completed work.

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)

Same answer as "I" above, but there is a good discussion of recent dredging approaches used in the Bay and their pluses and minuses [pg 6].

Please summarize any additional information needed below:

The concept of beneficial use of dredge spoils is basically sound and appropriate, especially in an area like the Gulf which is experiencing so much erosion. My expertise in this technology and my familiarity with this particular geographic area is not sufficient to allow me to render a scientific-based opinion on the value or appropriateness of this particular proposal. Regardless, the proposal would significantly benefit from a thorough edit (e.g., back-to-back paragraphs that were composed of a single 8 and 9 line sentence [pg 22]); it is regularly thrice redundant, too full of unsubstantiated statements of 'fact', and provides far too much discussion of some subjects (e.g., relative sea level rise and a general, not Mobile Bay specific