CORAL BAY COMMUNITY COUNCIL

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Seagrass and Dock Design and Research

Comments on Dock Design and Seagrass Protection and transplanting for Mitigation:

The proposed plan is completely inadequate and does not meet the minimum federal standards for compensatory mitigation – which generally require as much as a 3:1 ratio of replanting/mitigation, since transplanting is known to have a high failure rate. Furthermore, the dock designs do not conform at all with published federal standards (acknowledged by the VI government) for dock design in seagrass habitat areas, and therefore applicant calculations of impact are not based on an approvable dock design.

The comment letters from two federal agencies (FWS and NOAA Marine Fisheries) spell out some of these concerns and additional ones --- that the applicant has failed to address, despite previous in-depth consultation with these agency experts. All of these issues need to be addressed, in sufficient detail that there is a likelihood that the project can be fully locally and federally permitted, prior to CZM approval. Failure to do this work and provide it to CZM requires a CZM denial.

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The EAR includes a brief reference to the seagrass research work of Paul Bologna, to support their contentions.

CBCC initiated contact with the same **Paul A. X. Bologna, PhD., Director of the Aquatic and Coastal Sciences Program at Montclair State University, and Associate Professor, Biology and Molecular Biology,** who is noted for his significant work on submerged aquatic vegetation, and especially seagrasses. (Contact: bolognap@mail.montclair.edu). He provided some references that are submitted here.

He also briefly reviewed the permit application documents and had the following expert comments related to the proposed mitigation plan:

"I am reading the mitigation plan and there are some odd things, like proposing 16 acres of seagrass (SAV) protection based on the applicant's assertion that

"providing pump out facilities and waste receptacles which will significantly reduce the indirect impacts of these vessels. This will result in the protection of approximately 16 acres SAV and allow for the recolonization of approximately 1 acre of seagrass by removal of the inappropriate a nchors."

I am always wary of someone saying they are 'protecting' SAV. It is tenuous at best.

Transplanting Thalassia and/or Syringodium (turtle and manatee grass) generally has poor survival so the people who will be doing the transplanting should have a lot of experience.

One problem with Thalassia transplants is that when the rhizome is cut, it will not rapidly regrow. Essentially it has what is referred to as 'apical meristem' or the growing tip. When the rhizome is cut (prop scars or in this case, cutting) it does not regenerate this tissue quickly (years sometimes) and therefore it won't grow and expand in the proposed area. Also, I see no compensatory

mitigation for all the losses. It seems like they are collecting what they are destroying and moving it, but no compensation for loss due to shading by the dock and boats. Generally, there is mitigation for this anywhere from 1:1 up to 3:1 mitigation to impact ratios."

He also provided CBCC with some scientific article citations, supporting his comments.

http://floridakeys.noaa.gov/review/documents/swbiologyeconomics.pdf

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Abstract

Although success criteria for seagrass restoration have been in place for some time, there has been little consistency regarding how much habitat should be restored for every unit area lost (the replacement ratio). Extant success criteria focus on persistence, area, and habitat quality (shoot density). These metrics, while conservative, remain largely accepted for the seagrass ecosystem. Computation of the replacement ratio using economic tools has recently been integrated with seagrass restoration and is based on the intrinsic recovery rate of the injured seagrass beds themselves as compared with the efficacy of the restoration itself. In this application, field surveys of injured seagrass beds in the Florida Keys National Marine Sanctuary (FKNMS) were conducted over several years and provide the basis for computing the intrinsic recovery rate and thus, the replacement ratio. This computation is performed using the Habitat Equivalency Analysis (HEA) and determines the lost on-site services pertaining to the ecological function of an area as the result of an injury and sets this against the difference between intrinsic recovery and recovery afforded by restoration. Joining empirical field data with economic theory has produced a reasonable and typically conservative means of determining the level of restoration and this has been fully supported in Federal Court rulings. Having clearly defined project goals allows application of the success criteria in a predictable, consistent, reasonable, and fair manner.

http://www.sciencedirect.com/science/article/pii/0044848674900325

http://www.sciencedirect.com/science/article/pii/S0304377097000211

Regrowth of the seagrass *Thalassia testudinum* into propeller scars

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Abstract

Regrowth of turtle grass, *Thalassia testudinum* Banks *ex* Konig, into existing propeller scars and artificial cuts was studied in a mangal estuary located in Tampa Bay, Florida. Sediments from scars and cuts and adjacent grass beds were not significantly different in relation to particle size distribution and levels of calcium carbonate. Significantly lower concentrations of total organic matter and extractable ammonium but not phosphate were detected in scars. Increases in ammonium levels coincided with the expansion of *T. testudinum* into a propeller scar. Seagrass blade morphology and productivity did not significantly differ in short shoots growing along the edges of scars or cuts relative to those in adjacent seagrass beds. Rhizome architectural studies

revealed that apical meristems were few in number (19 to 38% of rhizomes) and randomly orientated in undisturbed grass beds (31 to 53% oriented toward center). In contrast, a greater percentage of apical meristems (78 to 88%) along the edges and in scars or cuts were directed towards the center. Full regrowth required an average of 3.5 to 4.1 years in existing propeller scars and could take up to 7.6 years in artificial cuts. The lack of changes in shoot productivity and limited production of rhizome meristems in *T. testudinum* result in slow regrowth in propeller cuts. The management implication is that turtle grass meadows will show long-term damage from propeller scars if not protected.

http://repositories.tdl.org/tamug-ir/handle/1969.3/22580

Abstract:

The number of short shoots per transplant unit of Thalassia testudinum had a marked effect on survivorship. Four-shoot units had survival rates over 85% nine-months post-transplantation, two-shoot units averaged 60%, and one-shoot units averaged 33%. Four-shoot units were also more likely to produce new shoots than one- or two-shoot units. The presence or absence of a rhizome apical meristem had no effect on survivorship of transplant units or the probability of surviving units producing new shoots. However, transplant units with intact rhizome apical meristems produced more new short shoots than transplant units without rhizome apicals. The study indicates that survival of bare rhizome sprigs of Thalassia testudinum increases with the number of short shoots, and more rapid proliferation of new short shoots occurs in units with intact rhizome apical meristems.

http://www.jstor.org/discover/10.2307/25736348?uid=3739256&uid=2&uid=4&sid=21104558783253