



GOVERNMENT OF THE VIRGIN ISLANDS OF THE UNITED STATES

DEPARTMENT OF PLANNING AND NATURAL RESOURCES

DIVISION OF FISH AND WILDLIFE

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11 September 2008

MEMORANDUM

TO:

Norman Williams, Assistant Director
Division of Coastal Zone Management, St. Croix

THROUGH:

Judy Pierce, Acting Director
Division of Fish and Wildlife

FROM:

William Coles, PhD., Chief-Environmental Education
William Tobias, Fish and Wildlife Biologist III
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Division of Fish and Wildlife, St. Croix

SUBJECT:

Responses to CZM 3/25/08 Checklist of Deficiencies for Estates
William and Punch, Frederiksted, St. Croix, VI, dated August 25,
2008 (Major CZM Permit Application No. CZX-04-08(L) and
CZX-05-8(W)).

The Division of Fish and Wildlife has reviewed the deficiencies response, dated 25 August 2008, from William and Punch, LLC. for Major Coastal Zone Permit Applications No. CZX-04-08(L) and CZX-05-08(W) and offers the following comments. An electronic copy of this document is on file in the Division's St. Croix office.

COMMENTS

Item 1.

Oceanographic Studies

Because of the extensive scope of the marine component of the proposed project and the potential adverse impacts to the marine environment, the applicant was requested to provide site-specific studies on oceanographic conditions. The applicant's studies were conducted for a one-month period from July 8 to August 8, 2008. Unfortunately, studies

conducted for such a short period of time fail to capture seasonal variations of environmental conditions, which are extremely important in shaping the marine community, as well as defining potential development to minimize project impacts. Models used to predict patterns of tide and current fit average conditions present at the site but significant differentiation between models and actual site conditions exist when variation above the average occurs. Such conditions persist during winter front passages and tropical storm events, which have not been monitored. Although these events may have a low frequency of occurrence considering the norm, they have major impacts on the benthic community and the coastal environment. An opportunity to observe and monitor wave energy, cross-shore sediment transport and beach profiles during a storm event was missed when wave energy from Hurricane Gustave affected the west coast of St. Croix on September 4, 2008. Wave heights greater than 2 meters from the west occurred in inshore waters significantly altering the shoreline of the project area.

Flushing Rate of Marina

The U.S. Army Corps of Engineers only **recommends** flushing rates for harbors, which may be considered very different from marinas. It is not desirable to flush “chemical, biological and floating solids” out to adjacent waters. Pollutants need to be contained in the smallest area possible to reduce potential impacts and enable cleanup. “Flushing” pollutants from a confined body of water, such as a marina, simply disperses the contaminant into the environment, where pollutants are more difficult to remove and the impacts may become more widespread. There are no existing marinas in the Virgin Islands with flushing channels. Green Cay Marina, larger than the proposed marina, has no flushing channel. Water samples routinely taken seaward of the marina do not show any signs of degraded water quality and water quality within the marina is acceptable.

To ensure good water quality in the marina, the applicant should make every effort possible to contain terrestrial runoff from the upland watershed on the property through a series of permanent retention ponds and not direct this flow into the marina basin.

Marina Entrance and Flushing Channel Structures

The proposed jetties for the entrance channel into the marina are > 400 ft (south) and >500 ft (north) in length with an entrance channel width of 140 ft – 165 ft. No indication of jetty width is provided. The length of the proposed flushing channel jetties was not readily found but may be assumed to be of similar length. The impacts of these structures have been compared to models of U.S. east coast beaches where high wave energy and extensive sand deposits are present. St. Croix west coast beaches are sand limited. The movement of small amounts of sand have a profound effect on the shoreline and marine community. Alongshore sediment transport is dominant unless affected by a major storm event from a westerly quadrant. The alongshore sediment transport mechanism includes the movement of sand to the south during the winter months by northerly wind/wave conditions and subsequent movement of sand to the north by summer southerly wind/wave conditions. Any structures constructed from the shoreline extending into the inshore waters will have an impact on sand transport to the extent that

one area may be nourished while the other area may be deprived of sand. Seasonal variation of sand transport and storm event transport of sediment has not been monitored at the proposed project site.

As indicated by the applicant, the major movement of sand is via cross-shore transport offshore during a major storm event. The applicant has not addressed the impacts of the transport of sand from the proposed artificial beach to the offshore environ. This concern was also recognized by the Department of Interior, USFWS, in a letter dated May 2, 2008 from Edwin Muniz to the Army Corps of Engineers, **“Placement of hard structures perpendicular to a shoreline usually results in increased loss of the shoreline in neighboring areas. The applicant states that sand transport in the area is minimal and most of the sand moves offshore during heavy seas and is redeposited on the shore during calmer seas. If true, this type of sand transport validates the Service’s concern regarding indirect impacts to offshore coral hardgrounds found in close proximity to the proposed new beach.”**

The proposed project jetties will adversely impact sediment transport to adjacent shoreline properties and the benthic community. The length of the marina entrance and flushing channel structures and need for both structures appears to be not related to safe navigation of vessels and maintenance of water quality, but to the desire to retain the sediments for the creation of an artificial beach and an exclusive “island” on the shoreline. Environmental impacts to the marine community could be greatly reduced by reducing the dimensions and/or eliminating the proposed jetty structures.

Title 25, Chapter 15, Section 297-5 of the Virgin Islands rules and Regulations for Motorboat Navigation identifies Sprat Hole (Williams Beach north to Butler Bay) as a prohibited area for motorboat operation. Sprat Hole is designated as a non-motorized recreational water sports activity area, specifically for wave surfing or windsurfing. The applicant has not addressed the potential impacts of wave reflection/refraction from the proposed jetty structures on these recreational activities.

Alternatives Analysis

The alternatives analysis is misleading and incorrect. The values assigned to the alternatives, particularly the values assigned to the environmental impacts of the construction of the marina, are subjective. According to this study, the marina will have no negative effect on endangered and threatened species. A major project of this scale will have some damaging effects. Both sea turtles and *Acropora* have been found in this area and will be affected by the construction of a marina.

The applicant has not addressed all possible alternatives for the marina entrance to reduce proposed project impacts. The applicant should consider eliminating the flushing channel and having the entrance to the marina from the south end of the property.

Item 2.

Turtle Lighting Plan

The applicant has not provided a turtle lighting plan, only a discussion of what might go into a plan. A plan must be written and approved before a CZM permit is issued and construction begins. Lighting during construction should be addressed in this plan.

The proposed vegetation corridors proposed by the applicant to enhance sea turtle nesting are not likely to be successful, as hawksbill sea turtles prefer nesting under vegetation and green sea turtles prefer more open beach areas to nest.

Beach umbrellas and other sand penetrating equipment may be used with bucket feet or other mechanism to ensure that it does not penetrate the sand.

The Department of Interior, USFWS, concerns regarding the impacts of beach creation at the proposed project site on turtle nesting were addressed in a letter dated May 2, 2008 from Edwin Muniz to the Army Corps of Engineers, stating **“Because of the amount of manipulation being proposed, this beach will probably no longer be suitable hawksbill sea turtle nesting habitat”**.

Coral Reef Survey and Mitigation Plan

The applicant has indicated that approximately 35,381m² – 40,890m² of sea bottom will be impacted by the proposed project. As compensation for this loss, the applicant proposes to use the habitat created by the project jetties, installation of reef balls as artificial reefs and coral transplanting as mitigation measures. Mitigation for habitat loss should not be equated with objectives required by the applicant for the proposed project. The applicant requires jetties to maintain an opening for marina access. Material to be used for jetty construction, blue bitch boulders, do not provide the same colonization substrate as limestone for the settlement and attachment by marine organisms. The colonization of jetty riprap is poor compared to the natural limestone substrate, as evident from the riprap at the base of the Frederiksted Pier.

Reef balls provide better a better surface for colonization of marine organisms and have a three-dimensional component to improve habitat availability. However, concrete loses 40% of its weight in water and, unless anchored to the bottom, can be moved by wave energy and damage additional habitat. Coral abundance within the footprint studied was relatively low and coral transplanting or relocation of the small, hardbottom “islands” would not constitute sufficient mitigation for habitat lost.

The marine community surveyed consists of a typical inshore west coast environ, consisting of exposed limestone substrate colonized with submerged aquatic vegetation (SAV), gorgonids and other invertebrates and hard corals. Patch reefs interspersed with sandy areas occur seaward and habitat complexity increases offshore with a deep reef community. The inshore limestone bedrock benthic community is diverse and provides essential fish habitat for many species of reef fish. Beach nourishment will adversely impact 20, 910 m² of this area.

The proposed jetty structures will impede alongshore sediment transport. Impact to federally threatened coral species, *Acropora palmate*, identified in adjacent waters has not been addressed.

Beach Nourishment

The results from the applicant's sediment transport model indicates that approximately 900 cu yds/yr of sand is transported to the south and 360 cu yds/yr of sand is transported to the north by alongshore sediment transport mechanisms. The models have not been verified by actual measurements. During winter periods, significant movement of beach deposits occurs overnight during northerly wave episodes. Significantly greater amounts of sand are transported cross-shore seaward by storm events from the west. Creating a larger beach will result in more sand transported seaward to areas further offshore, resulting in increased sand scouring and covering of corals and other benthos. The jetties will create a blocking effect resulting in the greater deposition of sand on one side of the jetty than on the other. Adjacent beaches will be impacted by the inability of available sand to return during seasonal variations of wind and wave energy and storm events.

A site survey conducted by Department staff identified a federally threatened coral species, *Acropora palmata*, in waters adjacent to the project site. The applicant has not addressed impacts to threatened coral species by the proposed beach nourishment and potential movement of sand offshore to adjacent waters during storm events.

A final beach nourishment plan needs to be incorporated into this application, not later as proposed on the final page of the beach nourishment section. Beach nourishment has the potential to have a large negative impact on the environment and must be considered closely and carefully rather than left to be addressed at a later date when convenient.

The applicant has stated that..... "most importantly, the physical characteristics of the sand (for beach nourishment) must be suitable for beach users". In actuality, it is most important that the physical characteristics of the sand match the native sand and be suitable for sea turtle nesting.

Item 8

Federally or Locally Endangered Species

In regard to the replacement of trees for the red fig-eating bat, replacement trees must be in place and equal in diameter to trees that were removed. It is not sufficient to replace large original trees with seedlings.

Raising the water level of the pond is only one possible way this project will impact the Least Grebe. The applicant should also address how the nearby construction and occupation will affect this sensitive bird. Consider increased noise, presence of humans and large machinery and any other major disturbances.

It is stated that work on the Williams Pond would only occur outside of the Least Grebes' nesting season. Least Grebes have been documented to nest year round on St. Croix making this a difficult mitigation measure to predict. However, if a qualified biologist surveys the pond and finds that there are no active nests immediately before any water level rise, then this will be sufficient.

Adverse impacts to pigeons should be minimal provided that the project is done in phases and that there is no net loss of habitat. However, since natural habitat for all wildlife is in shore supply, unless the project is done carefully, there is the potential for significant impact to pigeons.

A new reptile, *Rhampho braminus*, has been identified on St. Croix, which had been misidentified as *Typhlops richardii*. Due to the scale of the proposed project and the relatively large undisturbed land area, the Division requests that a survey be conducted to determine the presence of both *Typhlops* and *Rhampho* species.

GENERAL COMMENTS

1. The applicant has not provided adequate mitigation plans that sufficiently address the potential impacts of the proposed project.
2. The application has not address alternatives to the proposed action that include:
 - a. The use of renewable energy sources, solar and wind, for generating power.
 - b. Installation of a wastewater treatment system.
 - c. Installation of a desalinization plant for the production of fresh water.
 - d. Economic analysis without the marina facility.
 - e. Development of a smaller marina facility.
 - f. Elimination of the flushing channel.
 - g. Reduction in the size of the marina jetties and entrance channel.
 - h. Relocation of the entrance channel to the southern end of the property.
3. The applicant should provide a wave model study of the impacts of wave energy refracting/ reflecting from the proposed jetties during high wave energy conditions.
4. The information provided by the applicant is insufficient for the Division of Fish and Wildlife to fully evaluate.