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**PROJECT MODIFICATION
NUMBER 2**

**DREDGED SWIMMING ZONE
ALUPANG BEACH CLUB CONDOMINIUM
EAST AGANA BAY, GUAM**

**Prepared for
Alupang Beach Club Condominiums**

**Prepared by
Pacific Basin Environmental Consultants, Inc.**

SEPTEMBER 1992

I. INTRODUCTION

A. BACKGROUND

The history of this project began in May 1991 when an Environmental Impact Assessment was submitted for review by the Development Review Committee (DRC). On June 7, 1991, an application was submitted to the Army Corps of Engineers (ACOE) to secure a permit to dredge the swim hole. In July, Project Modification #1 was submitted to the DRC expanding the dredging methodology to include all possibilities as well as the preferred suction dredging method.

The DRC Environmental Ad Hoc Subcommittee had nine recommendations concerning the dredge project which were addressed in a document submitted in November 1991 (Responses to the DRC Environmental Ad Hoc Subcommittee Recommendations). On May 18, 1992 the ACOE responded to the dredging application with concerns and questions pertaining to the project by three agencies (U.S. Environmental Protection Agency, National Marine Fisheries Service and the Department of Public Health and Social Services). The response to these questions were submitted to the ACOE in September, 1992.

Based upon local and federal concerns, the scope of the project has been scaled down and a mitigation project has been proposed. This report details these modifications, answers the questions and addresses concerns raised by the government agencies.

B. PROJECT MODIFICATIONS

The modifications discussed in this document include changing the size and location of the proposed swim hole and adding a mitigation project. The swim hole dimensions will be decreased by more than half, to 300 x 150 feet (Figure 1). In addition it will be relocated in front of the public park next to Alupang Beach Condominium (ABC) rather than its original location partially in front of the park and partially in front of ABC. The mitigation project will provide enhancement of the swim hole as fish habitat by constructing a number of small artificial patch reefs.

II. ADDITIONAL PERMITS REQUIRED

It is not expected that the project modification will require any additional federal or local permits (other than those already identified in the previously submitted application documentation).

III. PURPOSE AND JUSTIFICATION

Two concerns are addressed separately in this document; the change in size and location of the proposed swim hole and the proposed mitigation project.

The swim hole was designed to enhance the general area for swimmers and enthusiasts of other passive water sports. The present shallow water level makes the area unusable except during high tides, and even then water is extremely shallow. The area is now used primarily by jet skiers and occasionally fishermen; however, even these uses are limited to periods of high tides. Deepening the area exclusively for swimming will make it available to resident and visiting families that do not utilize the area because of its shallow nature. The decrease in size will still make an attractive, albeit smaller, swim hole for all to enjoy.

The swim hole was originally located half in front of the ABC complex and half in front of the public park next door (Figure 1). The relocation of the swim hole to directly in front of the public park will clearly identify it as a public swim hole available to Guam residents and visitors using the park as well as guests and residents of the ABC complex.

Construction of the public park next door has already increased use of the beach and lagoon areas. With Guam's expanding population, such recreational parks are essential. One aspect of this increased use is more people utilizing the lagoon for swimming and snorkeling. By deepening an area near the shoreline, many of these people will be confined to a closer, and certainly safer place to swim and snorkel. In addition, foot traffic will be lessened in the outer reef areas where most marine life such as corals, are found. This project could lessen impact to these areas.

The decrease in size to less than half the original plan will decrease most of the expected impacts substantially. The amount of dredge material will decrease from approximately 8,000 to 3,760 cubic yards (CY). Proportionate decreases in the amount of time for construction and resulting visual impacts can be expected. Current and wave attenuation will remain insignificant. In addition, the area of direct environmental impact and habitat modification will be proportionately reduced, as will the potential for siltation and turbidity problems.

One positive aspect of the original design was the creation of a refuge for fish during low tides. Although smaller, the modified swim hole will still act as a refuge by virtue of its deeper waters when the surrounding reef flat becomes very shallow or exposed during low tides.

LEGEND

- Original Proposal
- Revised Proposal
- x x Patch Reefs

SCALE

1 cm = 50 feet

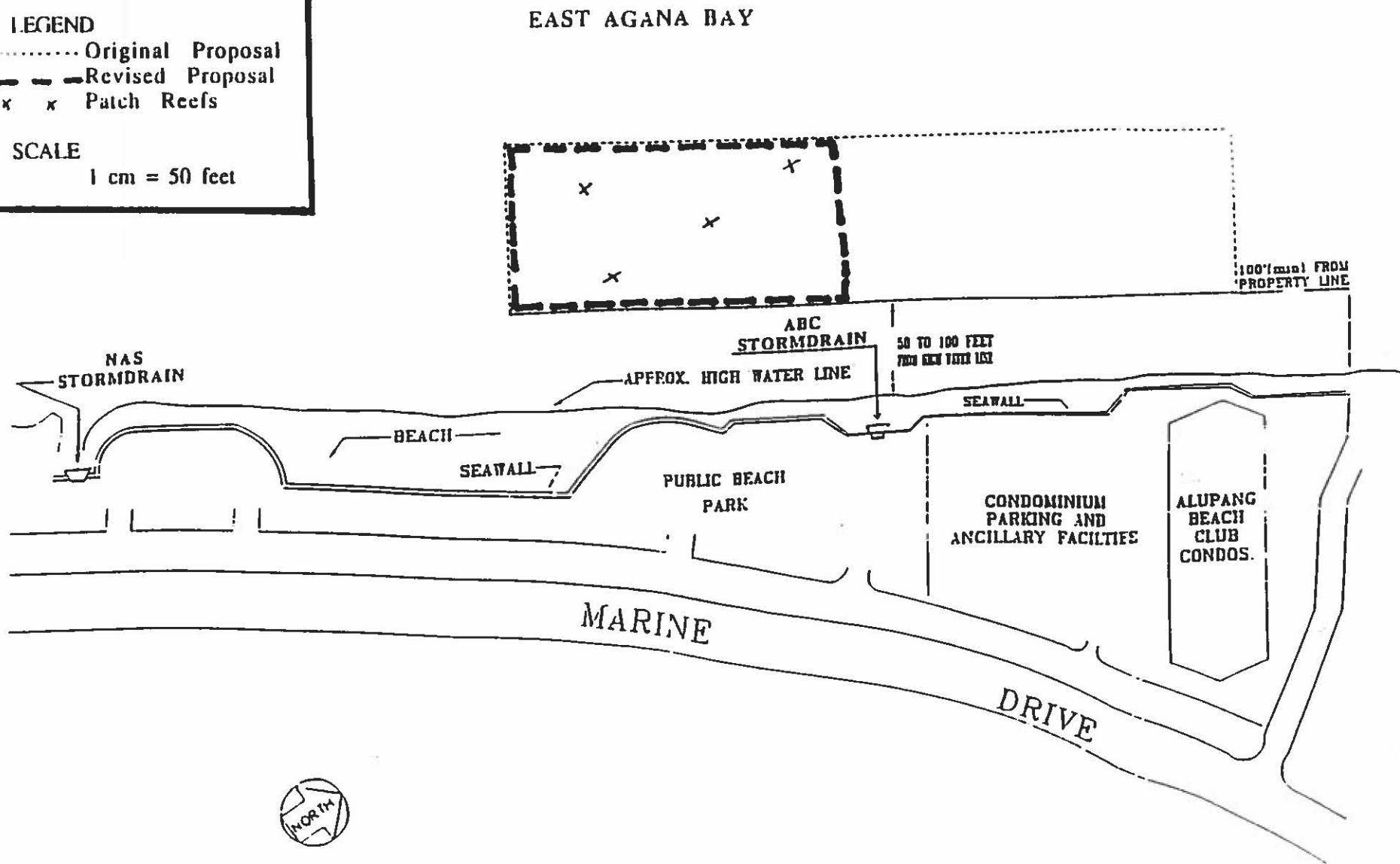


Figure 1. ABC Condominium project site showing locations of the ABC Condominium, public park, original and revised dredge areas and possible patch reef sites.

Mitigation in the original dredging plan relied on developing a swim hole for the public park. Arguably, with the benefits outlined in the above paragraphs (and detailed in other project documents), the dredge project in its original form is self mitigating in that it will enhance an area for swimming that would otherwise not be available to the general public. Dredging a deeper-water swim hole creates a refuge for fish during low tides, but is not otherwise an enhancement to fish or other creatures.

The modified dredge plan proposes to mitigate the above impacts by further enhancing the swim hole for fish and other marine life by creating artificial patch reefs. By building small patch reefs with reef rocks and small boulders, hiding spaces are created which will soon be inhabited by fish and small invertebrates. In addition, the solid rock substrate will also be suitable for sessile marine life that require a solid surface on which to attach, such as corals, algae, sponges and other marine life.

Construction of these patch reefs will not only enhance the area for marine life, but once the marine life inhabits the patch reefs, will also enhance the area for snorkelers. Snorkeling the swim hole will be a safer and closer alternative to snorkeling further offshore. Furthermore, the proposed design for some of the patch reefs will be emergent during all but high tides, creating a resting place for sea and shorebirds.

IV. CHANGES TO DREDGE PLAN

The original contours (650 x 150 feet) have been changed to 300 x 150 feet (Figure 1). This results in a decrease in area from 95,500 to 45,000 square feet, or a decrease of 53 percent. Dredge volume will decrease proportionately, from 8,000 to approximately 3,760 CY. As in the original design, approximately 60 percent of the dredge material will be of beach grade sand and will be used in beach nourishment. This amounts to approximately 2,256 CY of sand available to nourish the beach. Dredge methodology and disposal will remain as proposed in the Dredge Modification #1 (1991).

V. MITIGATION PLAN

This section outlines in conceptual form the proposed mitigation plan. If this concept is accepted by local and federal government agencies, a detailed mitigation plan will be prepared and submitted. This plan will include project details such location and dimensions of the patch reefs, methodology and materials.

The reef flat in the vicinity of the proposed swim hole is extremely shallow with few available hiding places for fish or

invertebrates. Substrate is primarily sand over reef rock pavement, an unsuitable substrate for most sessile marine organisms. The proposed mitigation project is designed to enhance the dredged swim hole for fish and invertebrates by providing hiding places and hard substrate for attachment. The emergent nature of the mounds may also attract birds. The swim hole will therefore be a marine habitat more amenable to attract marine life to the area.

Several small patch reefs will be constructed out of large rocks and small boulders. These patch reefs will be solidly constructed to withstand storm currents and waves, and some may be visible above the water during low tides. The rocks will be irregularly piled in such a way as to create numerous nooks and crannies, passageways and other openings which will provide hiding places for fish and invertebrates of many sizes (Figure 2). Each patch reef will be irregularly shaped with a wide base and one or two rock mounds that reach near to or above the low tide water line.

VI. MISCELLANEOUS

The only changes from previous permit documents outlined in this project modification are in project size and location, and the addition of a mitigation measure. All other elements of the project are unchanged from previous documents. As with other dredging projects, an Environmental Protection Plan will be prepared once all permits are secured. The EPP will address details of dredging methodology, erosion control and other environmental protection measures.

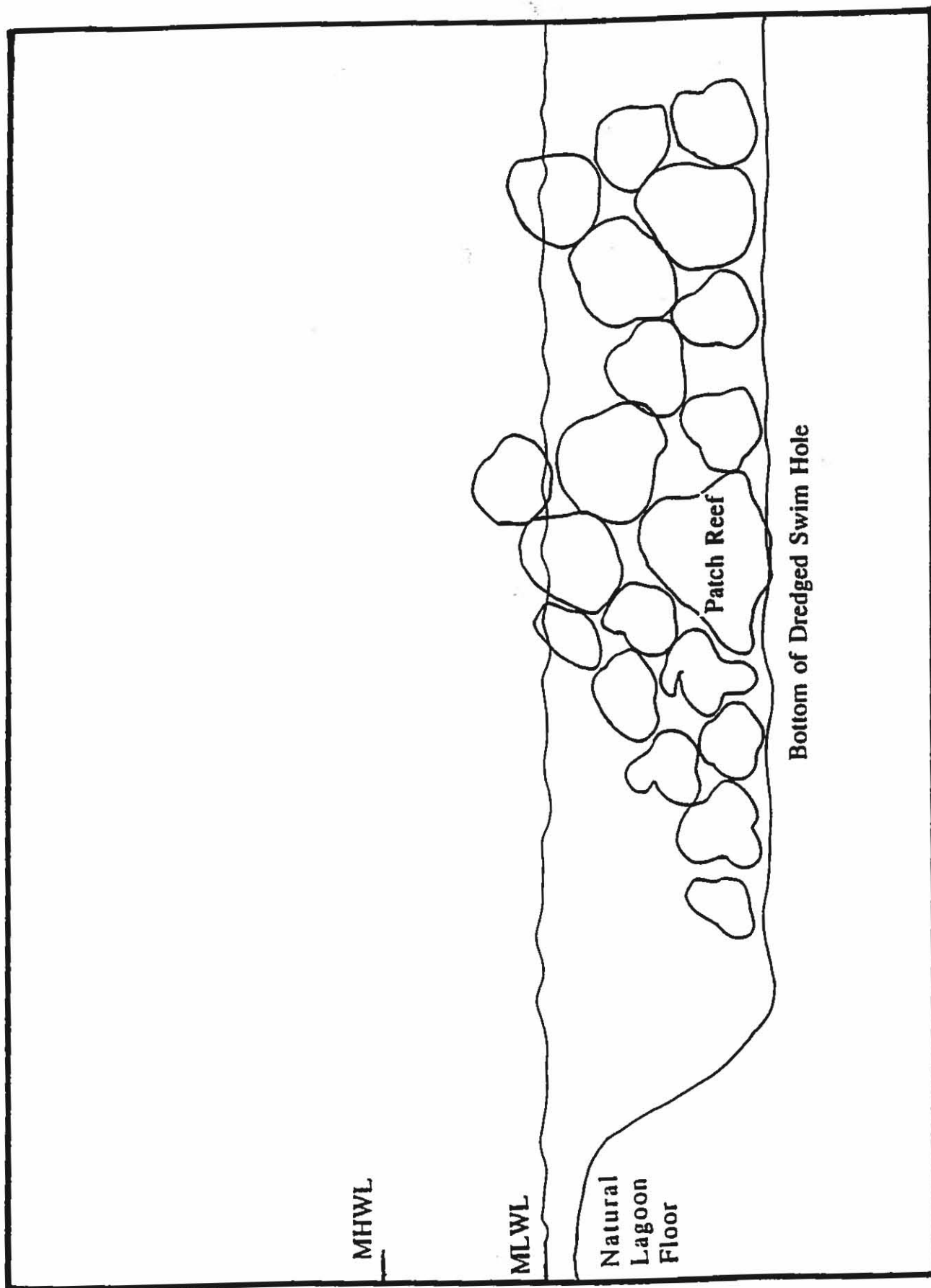


Figure 2. Generalized diagram of a patch reef as proposed for the ABC swim hole, showing emergence during low tide and extensive openings available to fish and invertebrates.