

JOB PROGRESS REPORT DEVELOPMENT PROJECT SEGMENT

STATE: Territory of Guam

PROJECT NO: F-2-D
SEGMENT: 11

PROJECT TITLE: Fabrication and Deployment of Shallow Water Moorings (2331)

PERIOD COVERED: October 1, 1996 to September 30, 1997

OBJECTIVE

To develop a shallow water mooring program at popular fishing and recreational diving locations to minimize anchor damage to reef habitats.

SUMMARY

Eight sites were added to the list of proposed DAWR shallow water mooring sites (SWMs), bringing the total number in the project to forty. Figure 1 provides an updated list of the SWM sites and maps their approximate locations; Figures 2 - 10 provide a more detailed illustration of each site. Some sites may be deleted from the list at a later time if they are found to be in areas no longer suitable for fishing or diving, or are determined to be in conflict with local, federal, or military regulations or program objectives.

Figure 11 illustrates the design of the SWM systems to be used and their components. The smaller, more economical Type I buoy design will be used for sites outside of Apra Harbor because of its ability to withstand rough seas and typhoon conditions. The Type II buoy design on the other hand, places much more strain on the mooring system in rough conditions and thus may be reserved for use in Apra Harbor only. The type of anchoring system used for either type of buoy will be determined by the type of substrate at the selected anchor site: a cemented eye bolt for uneven rocky substrate, or a "Manta Ray" anchor for flat sandy sites.

Because the U.S. Coast Guard initially objected to the sites being located in areas frequently transited by small vessels and indicated that DAWR would thus be required to equip each SWM buoy with a navigation light, the majority of the proposed anchor sites were relocated closer to shore and at depths less than ten fathoms (60 feet). The relocation of the proposed sites into shallower water was found to be acceptable by the Coast Guard and obviated the need to install navigation lights on the buoys.

Although, the relocation of the buoys into shallower waters served to clear Coast Guard objections, the modification also necessitated authorization by the Guam Seashore Protection Commission (GSPC) since the sites were now to be placed into waters less than 60 feet. The

application and review process, which is presently underway, will include several public hearings and may take six months to a year to complete.

Another potential delay to implementation of the project is a result of the fact that nineteen of the forty proposed SWM sites are located in waters controlled by the Navy. Official response regarding DAWR's request to install SWMs in Navy-controlled waters is still pending. Unfortunately, initial indications are that the Navy will not authorize any of the sites primarily due to safety and security concerns. Liability concerns were also raised, especially in light of the fact that Guam does not have a recreational-use statute that would protect the Navy from lawsuits that may arise as a result of the installation and use of the SWMs.

Purchase of ropes, chains and miscellaneous hardware to construct the SWMs and identification of a potential contractor to conduct actual installation procedures was completed in FY97.

RECOMMENDATIONS

The project to develop and enhance the Guam SWM program under F-2-D-11 should be continued with the following recommendation for FY98:

1. Continue with necessary steps to obtain Seashore Protection Commission authorization for all SWM anchor sites located in waters shallower than 60 feet. Authorization by June 1998 would allow for installation of the anchors during the dry-season calm-water period between July and September.
2. Pursue authorization of SWM sites located in Navy-controlled waters; particularly those sites that do not fall within a designated explosive arc. Such authorization is contingent upon enactment of a recreational use statute for Guam.

PROGRAM COST

The FY97 estimated cost for the SWM project is \$40,755.

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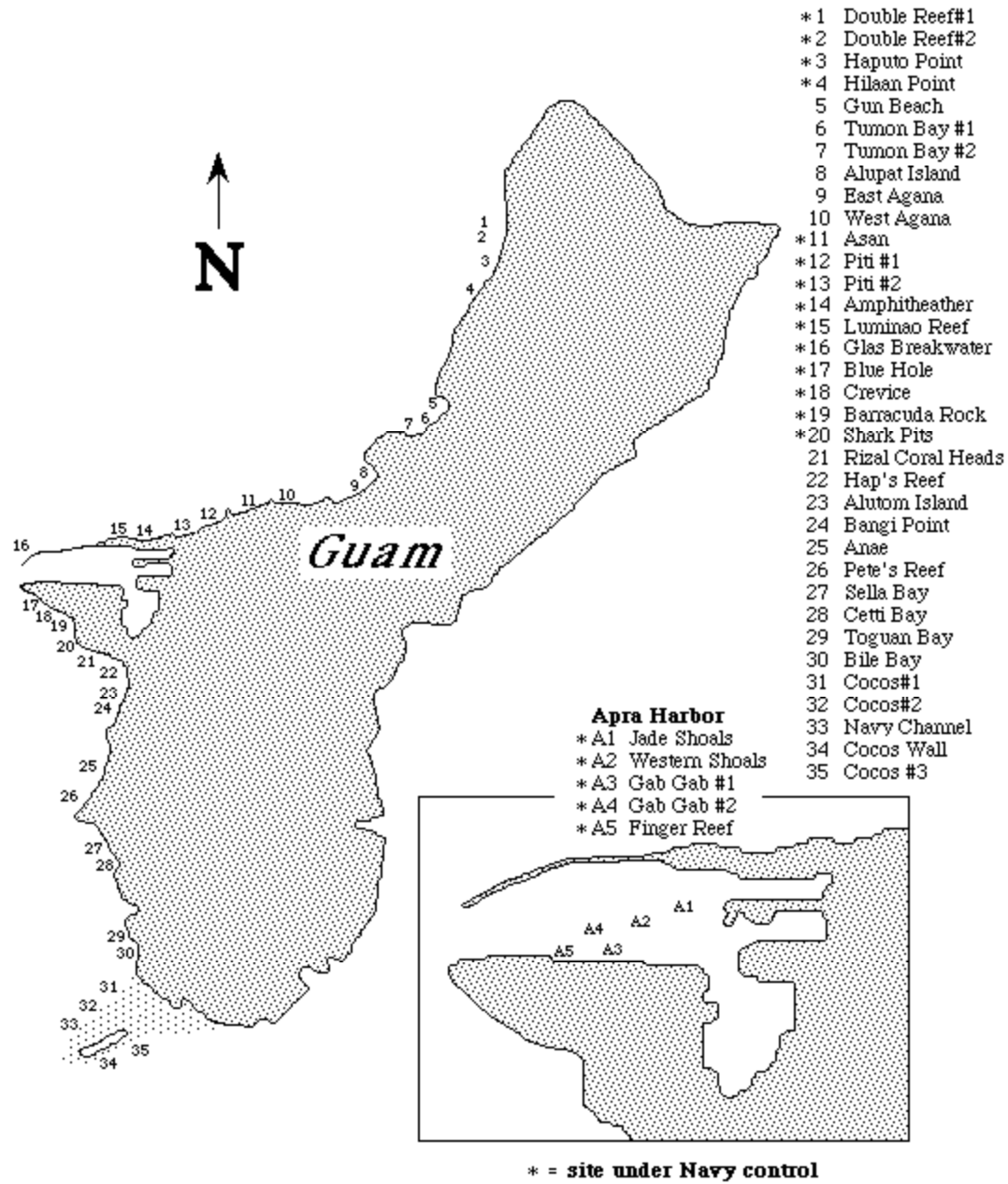


Figure 1. Shallow Water Mooring Sites

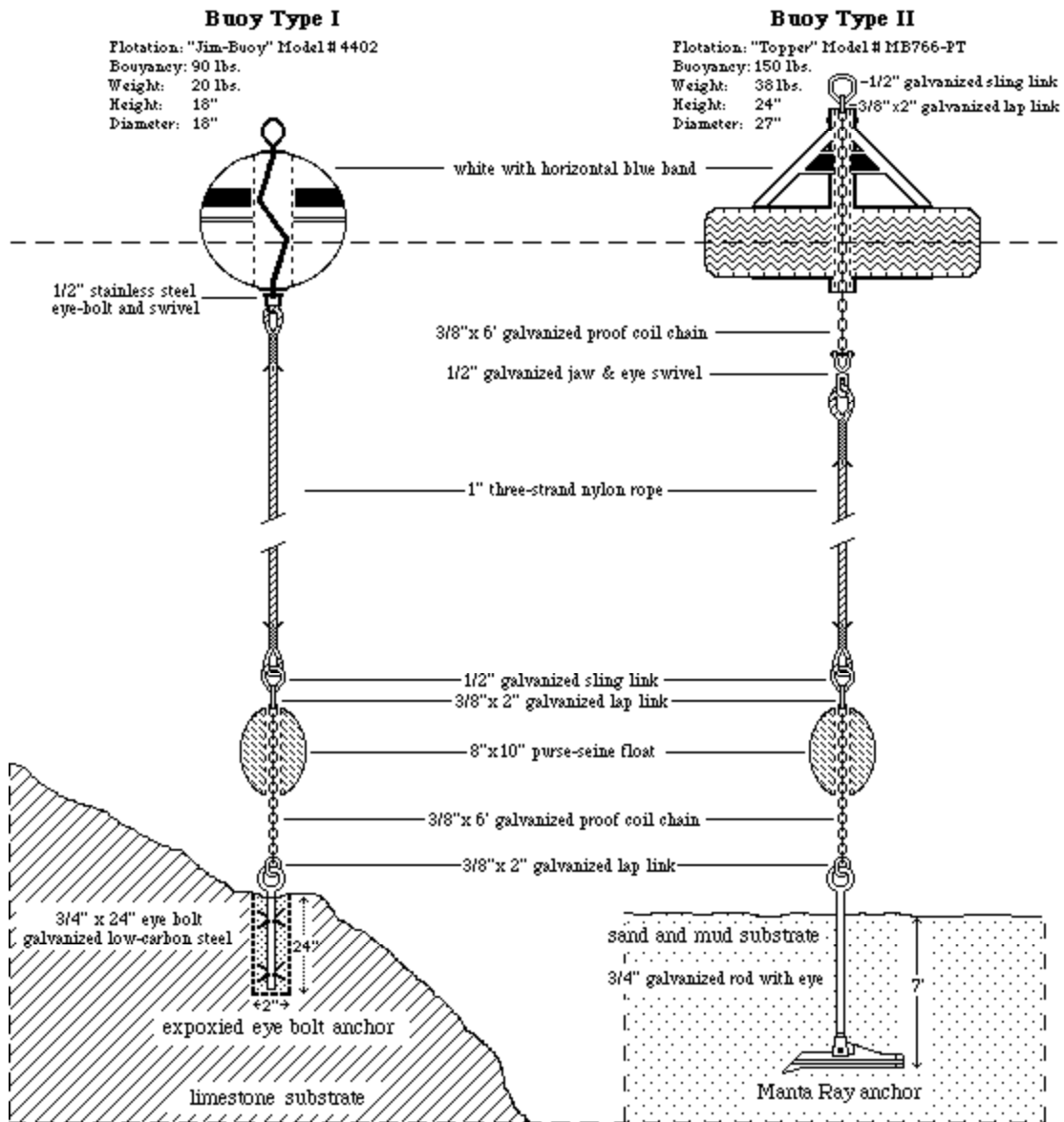


Figure 11. Shallow Water Mooring Designs

Figure 2. Sites 1-4. Map showing the 100 ft. coastal contour (solid line), rocky shorelines, beach deposits, cut benches, fringing reef-flat platforms (stippled region seaward of shoreline), reef margin, and the 18 ft. (solid line) and 60 ft. (dashed line) submarine contour lines.

Figure 3. Sites 4-5. Map showing the 100 ft. coastal contour (solid line), rocky shorelines, beach deposits, cut benches, fringing reef-flat platforms (stippled region seaward of shoreline), reef margin, and the 18 ft. (solid line) and 60 ft. (dashed line) submarine contour lines.

Figure 4. Sites 5-7. Map showing the 100 ft. coastal contour (solid line), rocky shorelines, beach deposits, cut benches, fringing reef-flat platforms (stippled region seaward of shoreline), reef margin, and the 18 ft. (solid line) and 60 ft. (dashed line) submarine contour lines.

Figure 5. Sites 8-10. Map showing the 100 ft. coastal contour (solid line), rocky shorelines, beach deposits, cut benches, fringing reef-flat platforms (stippled region seaward of shoreline), reef margin, and the 18 ft. (solid line) and 60 ft. (dashed line) submarine contour lines.

Figure 6. Sites 11-13. Map showing the 100 ft. coastal contour (solid line), rocky shorelines, beach deposits, cut benches, fringing reef-flat platforms (stippled region seaward of shoreline), reef margin, and the 18 ft. (solid line) and 60 ft. (dashed line) submarine contour lines.

Figure 7. Sites 13-20 and A1-A5. Map showing the 100 ft. coastal contour (solid line), rocky shorelines, beach deposits, cut benches, fringing reef-flat platforms (stippled region seaward of shoreline), reef margin, and the 18 ft. (solid line) and 60 ft. (dashed line) submarine contour lines.

Figure 8. Sites 21-26. Map showing the 100 ft. coastal contour (solid line), rocky shorelines, beach deposits, cut benches, fringing reef-flat platforms (stippled region seaward of shoreline), reef margin, and the 18 ft. (solid line) and 60 ft. (dashed line) submarine contour lines.

Figure 9. Sites 27-30. Map showing the 100 ft. coastal contour (solid line), rocky shorelines, beach deposits, cut benches, fringing reef-flat platforms (stippled region seaward of shoreline), reef margin, and the 18 ft. (solid line) and 60 ft. (dashed line) submarine contour lines.

Figure 10. Sites 31-35. Map showing the 100 ft. coastal contour (solid line), rocky shorelines, beach deposits, cut benches, fringing reef-flat platforms (stippled region seaward of shoreline), reef

margin, and the 18 ft. (solid line) and 60 ft. (dashed line) submarine contour lines.