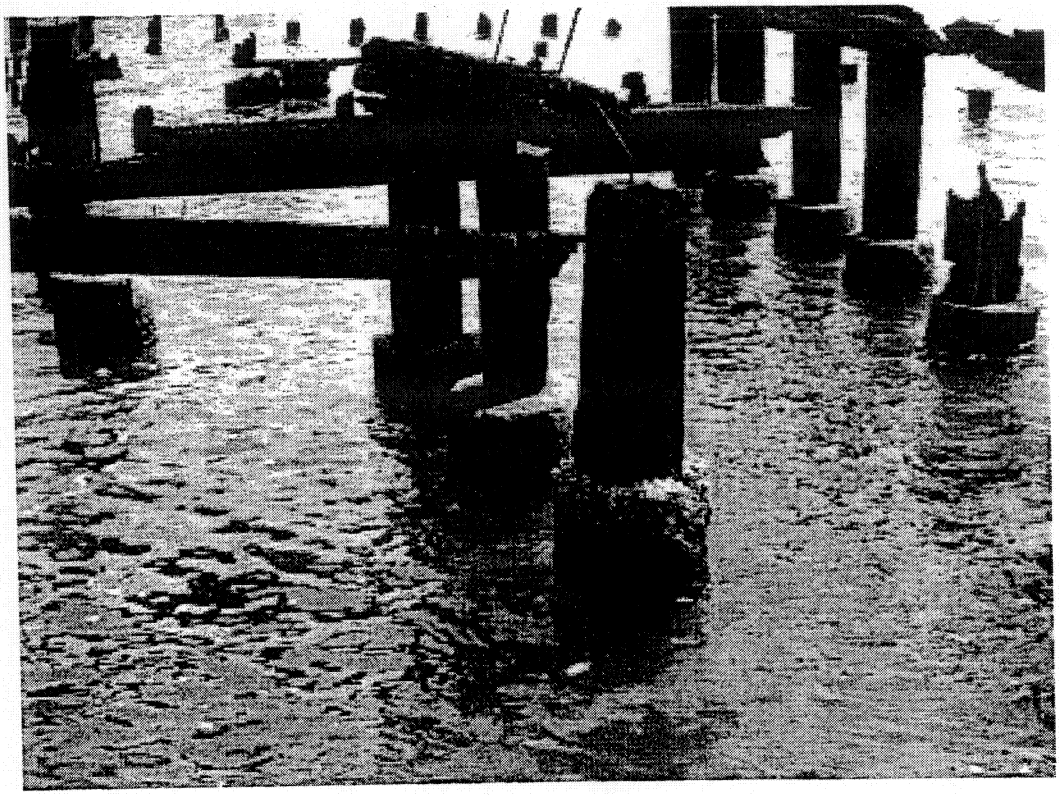

Figure 27. Pilings, Dominican Pier.

Figure 28. Small barge wreck, next to Dominican Pier.

Figure 29. Entrance to Guánica Bay, looking SE from second tower. Notice walking platform and protected conveyor belt on left side. The walking platform is in poor condition, and should not be used without a safety line.

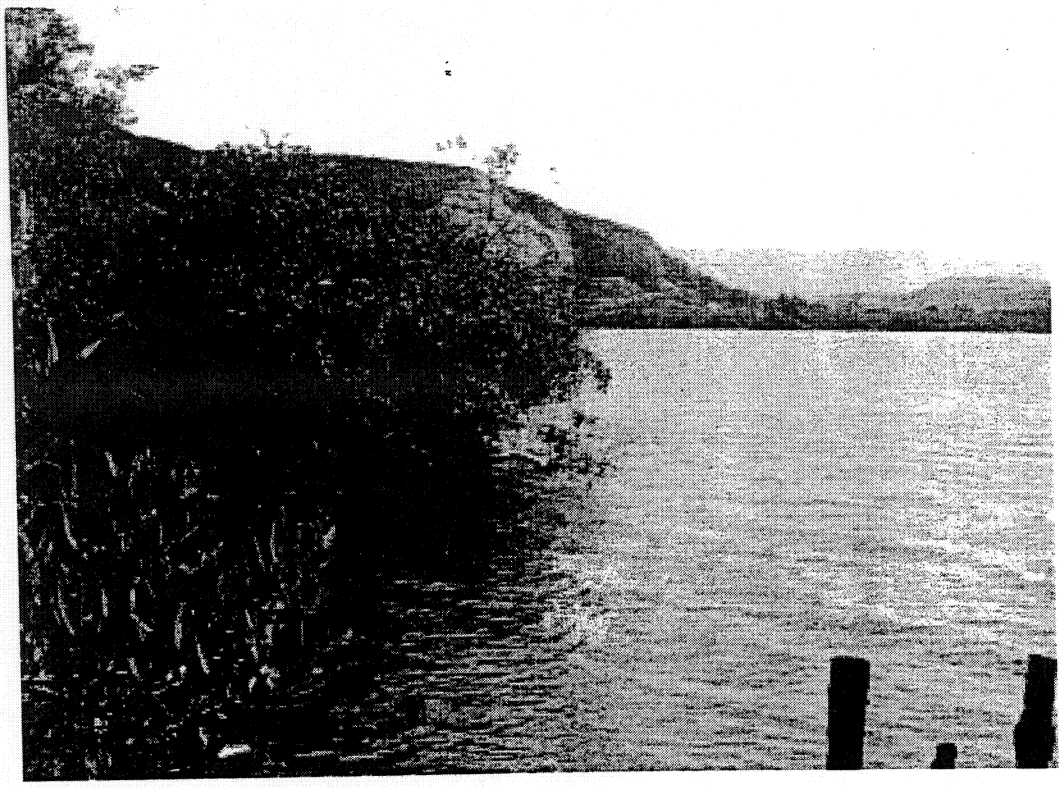

Figure 30. Mangrove coastline north of Dominican Pier.

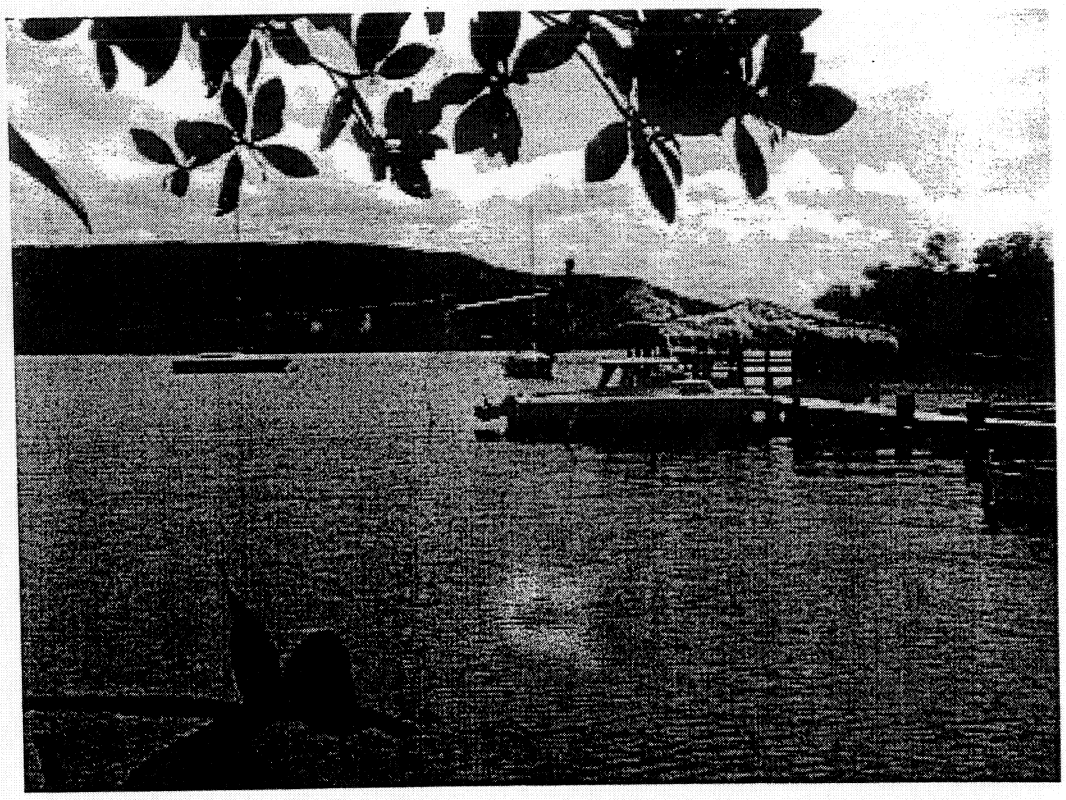

Figure 31. Small pier at Cueva de la Julia, with Punta Pera in background.

7. Interpretation

7.1 Submerged Prehistoric Sites

The Study Area may contain submerged prehistoric sites of ceramic or preceramic aboriginal societies. Given the intensive occupation of Guánica by prehistoric peoples, these sites are a real possibility. These sites are generally characterized by shell middens. If such a site or sites exist within the Study Area, detection will require underwater coring at 10m intervals. Given the shallow water and pollution at the Study Area, underwater coring may also be conducted from a boat.

7.2 Aboriginal Watercraft

The Study Area may contain the remnants of aboriginal dugout canoes. Canoe wrecks may be prehistoric or historic, possibly as late as the 19th century. Overall, Guánica Bay has a high probability of canoe sites. If such a site or sites exist within the Study Area, detection will require the use of a sub-bottom profiler (high frequency), or submarine coring as defined above.

7.3 Historic Port Materials

The presence of historic port materials within the Study Area is certain for the early 20th century, and possible for earlier eras. Artifacts might be buried beyond the diver's reach and require a hand-held metal detector and coring. This is the cultural resource material with the highest probability for the Study Area. This interpretation is based on uninterrupted port activity since the early 16th century, and intensive port activity at Punta Pera since 1901.

7.4 Historic Shipwreck Sites

The Study Area may contain shipwreck sites, particularly the pirate shipwreck of 1743. A proton magnetometer survey is the best method for detecting this or any other historic wreck site within the Study Area, regardless of sand or silt or depth of the overburden. Significant magnetic signatures should be inspected by diving. Underwater test excavations may be conducted by hand fanning or with a small water dredge.

Although based on actual historic data and archaeological sites, these interpretations are strictly theoretical. An archaeological site might be located 20 m outside of the Study Area, with minimal adverse effects from construction of the proposed marina. Additional empirical data is necessary for the Study Area, in order to verify the presence of actual sites.

8. Results and Recommendations

8.1 Results

The Submerged Cultural Resources Survey, Stage IA, for the Central Guánica Eco-Resort, documents extensive coastal and maritime human activity on the south coast of Puerto Rico, potentially extending 5,000+ years into the past.

Considering the known fluctuations in sea level, the known occupation of Guánica since preceramic times, the location of a historic anchorage since the early 16th century, and the extensive use of the bay by Taino, Carib, Spanish, British, United States, Puerto Rican and other navigators, this investigation can only conclude that Guánica Bay is highly sensitive to submerged cultural resources, both historic and prehistoric.

In terms of actual sites within the Study Area, the previous conclusion simply states a high probability of potentially significant resources, potentially eligible to the National Register of Historic Places, including the following:

- Submerged prehistoric sites due to eustatic changes in sea level

- Aboriginal canoes, including prehistoric and historic eras
- Historic shipwrecks
- Historic port discards, 16th to early 20th centuries.

8.2 Recommendations

In order to test the probability of submerged cultural resources within the actual boundaries of the Study Area, it is necessary to conduct a combined methodology of marine remote sensing, underwater coring and visual inspection.

The primary instrumentation for the remote sensing is a proton magnetometer. This is the standard tool for locating historic shipwreck sites, by detecting magnetic anomalies caused by ferrous objects such as cannon, anchors, chains, and other iron items generally found in historic shipwrecks. Significant magnetic anomalies should be inspected with underwater cameras, hand-held metal detectors and other underwater survey tools.

For detecting aboriginal watercraft and submerged prehistoric sites, both lacking in iron objects, a combination of sub-bottom profiling, visual inspection and underwater coring is recommended. This methodology is also effective for detecting historic port discards, generally including bottles and glass fragments, ceramics, shell, bones, etc.

At present, the Study Area is considered too polluted for safe diving with standard scuba gear. Underwater coring in shallow water may also be conducted from a boat. This method has been recently used by the author for underwater archaeological coring at Condado Lagoon and at San Juan Bay

(Vega 2000, 2001). Underwater coring may also be conducted with dry suits, specifically designed for polluted environments. Considering the wind and currents within the bay, it is likely that some coring will require diving with dry suits. Underwater inspection of the pier and barge wreck are also recommended, and will require dry suits.

The recommended methodology falls within the Stage I level of investigation, but is often labeled as Stage IB, in order to differentiate between the background investigation, which defines sensitivity or probability (Stage IA, this report), and the field testing which defines actual sites within the area of potential adverse effects.

In conclusion, the recommendations for the IB marine survey include a magnetometer and sub-bottom profile survey of the Study Area, followed by diving inspection of anomalies and coring of selected areas, at 10m intervals. This methodology will provide evidence, either positive or negative, of actual archaeological sites. The probability of historic port discards is extremely high. These artifacts are a product of Guánica's shipping activity, and their study should provide new information on the bay's past.

Considering the historic theme of this particular project, the essential role that ships played in the construction and operation of the Central Guánica, and the strong maritime theme of the proposed development, a complete maritime archaeological survey of Guánica Bay is highly recommended.

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