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Office of the Director

September 15, 1978
RG:0039

Mr. Kisuk Cheung
Department of the Army
Pacific Ocean Division,
Corps of Engineers
Building 230
Fort Shafter, Hawaii 96858

Dear Mr. Cheung:

In response to your request of 23 August 1978 regarding our review of the Draft Phase III, Environmental Surveys of Deep Ocean Dredged Spoil Disposal Sites in Hawaii report, we are pleased to provide the following comments for your consideration. Due to constraints in time and personnel we are confining these comments to those sections of the draft specifically applicable to our Pearl Harbor Dredge Spoil Study.

Page iii - Abstract

The paragraph discussing the results and conclusions of the Pearl Harbor disposal site study contains a number of inaccuracies. The "35 foot layer of spoil build up at the specified dump site" cited in the abstract does not exist. A discussion of the "apparent" 7 fathom difference in the bathymetric data is presented in the Final Summary report. Further comment, however, seems in order to assure that the conclusions reached by the investigators of the Pearl Harbor Disposal Site are correctly interpreted and reflected. The apparent difference in bathymetry is most likely an equipment or human error in the original baseline bathymetry data. The possibility of bottom transport of sediments cannot be ruled out. Rationale for this conclusion is as follows:

1. The apparent difference in bathymetry in question occurred along the southern boundary of the disposal site area, approximately 1 nautical mile southwest of the actual specific dump site.

2. The bathymetry in question extended over a surface area of at least 400,000 square meters (1000m x 400m).

3. The volume of spoil dumped at the specific dump site was approximately 750,000 cubic yards (573,438 cubic meters).

4. The apparent 12m (7 fathom) change in bathymetry would require 4,800,000 cubic meters of material or 6,240,000 cubic yards.

5. Grain size analysis of surface sediments throughout the area did not indicate the presence of significant quantities fine-grained Pearl Harbor material, (which in the case of Pearl Harbor sediments was 76 percent or more of the spoil).

6. While the Pearl Harbor spoils were 50 to 70 percent noncarbonate (Turner, 1975 M.S. thesis), the post-dumping bottom sample x-ray mineralogy resulted in values of about 25 percent non-carbonate (basaltic) minerals. The carbonate fraction from Pearl Harbor is indistinguishable (by x-ray) from the predump sediments.

7. Bottom photos did not show mounds of spoil or any of the fines of the spoils. Again, the absence of the fine-grained spoil seems to preclude its deposition.

8. The 3.5 kHz profile taken with the bottom photos across the area's southern portion showed no fines.

Note the conclusions stated in the the Pearl Harbor Part C report, page III-19, paragraph D, line 13, "The terrain has undergone no significant change, remaining relatively smooth, flat and featureless."

The statement that "Heavy biological depression also was observed in the dump area" needs to be revised. A decrease in foraminiferal species from the pre-dump condition was noted in 4 sets of paired (before/after) bottom samples in the immediate area of the two specific disposal sites. In 8 sets of paired (before/after) samples the number of species of foraminfera had increased after dumping. The fish, zooplankton and shrimp populations were more abundant during and after dumping than before (Pearl Harbor Part C report Table VII-2, Figure V-4 and Table VII-1).

We are unaware of any conclusion in our reports that suggests a distribution of spoil over a 15 square mile area. Our bottom samples were almost exclusively confined to the designated disposal site area which contains slightly less than 3 square miles. However, the general lack of fine grained material in the 63 bottom samples analyzed for geological purposes following disposal of spoil led us to the conclusion that most of the fine grained material was being transported out of the site with no concommittant measureable environmental degradation or significance and that placing boundaries on its ultimate distributional pattern was inappropriately speculative within the scope of this study.

Continued dumping at the specific Pearl Harbor dump site is recommended by our investigators based on the results of our studies, and in accord with the National Academy of Sciences report of 1976 to the U.S. Environmental Protection Agency "Disposal in the Marine Environment," and Federal Regulations Part 228 "Criteria for the Management of Disposal Sites for Ocean Dumping."

Page 130 - Pearl Harbor Conclusions

Items 1, 2, and 3 seem inappropriate and unnecessary in a report of this type and to the evaluation of the Honolulu or Pearl Harbor disposal sites. If such information is essential it would seem necessary to supply all such information, i.e., specific dollar amounts for each Part, accurate numbers of samples examined for all types of samples, i.e., geologic, biologic, chemical, etc., and the quantity of spoil dumped at each harbor. There seems to be an implication in item 3 that the University of Hawaii was contributing to the Pearl Harbor study without due compensation. Please be assured that personnel and expenses associated with this study were appropriately compensated.

Please indicate the marginal comments and text underlining in Appendix H as being added by the authors of the Corps report. We will be pleased to clarify any questionable aspects of the Pearl Harbor reports.

The discussion of the non-existent "spoil mound" has been covered previously, however, we have one further comment. In connection with some recent bathymetric and benthic studies in the Pearl Harbor disposal area we have 8 bathymetric readings in the specific dump site area obtained on August 10, 1978 and the region southwestward. All 8 values are in agreement with the bathymetry indicated in the Part B study, this is despite the addition of 1,000,000+ cubic yards of material since the completion of the Part B report. These measurements further substantiate our stated conclusions of no evidence of spoil mounds or significant bottom topography change resulting from the disposal of dredge spoil at the Pearl Harbor site.

The intent or basis of the sentence "the limited detection of spoil on the bottom during disposal supports this position, as do the water chemistry findings" is uncertain and should be clarified.

Table 25

These tables contain numerous inaccuracies i.e. the Pearl Harbor site slopes to the southeast not southwest. Furthermore, the subjective data should be labeled to explicitly indicate that it does not necessarily represent the conclusions of the Pearl Harbor Investigators. For example, what are the bases for the "deposition patterns" indicated, and the "effects" of dumping? There was no evidence of a conversion of the sandy bottom to a soft sedimentary bottom.

Table 26

The coordinates are inappropriate. All spoil was dumped at the specific dump site 21° 15.9'N., 157° 56.7'W. There is no evidence of a 30 to 40 foot high by 1500 foot diameter spoil mound at the dump point.

The criteria for favorable disposal site conditions as indicated on page 130 is subject to some discussion. While we would agree that under shallow water conditions particularly in continental containment sites, compatibility of bottom type with spoil sediment is desirable, this is not necessarily an appropriate criteria under deep water conditions. Our studies have shown no detectable change in the bottom sediment characteristics

over pre-disposal conditions. We suggest that under the conditions pertinent to Hawaiian waters and more specifically the coastal waters off of Pearl Harbor with strong currents and adjacent deeps that the disposalof non-similar sediments is environmentally acceptable. As for the transport of spoil out of the area, dispersal sites are equally recognized by EPA and the Federal Regulation for their particular attributes along with containment sites. Certainly if dispersal resulted in coastal turbidity, shoreline degradation, or significant biological mortality or population modification that would be significant, however, there is no evidence now or at any time in the past during earlier disposal of some 4,000,000 cubic yards of material, of any significant shoreward transport or environmental degradation.

The rock outcroppings, ledges and submerged reefs represent probably less than 1 percent of the disposal area based on our samples and photographs. There was no evidence of burial of these features by fine grained sediments.

In conclusion it should be stated that the objectives of the Pearl Harbor study were to conduct a baseline study of a particular area, provide an initial recommendation for a dredge spoil disposal site, monitor disposal at that site, and provide a final review and recommendation regarding environmental conditions resulting from disposal at that site and its suitability as a permanent disposal site. We did not, nor have we in this review, attempted to evaluate the Pearl Harbor site relative to the Honolulu site. We would like to add that it is the judgement of our investigators that the Pearl Harbor site is environmentally acceptable. If, the Honolulu site is determined to be equally environmentally acceptable it would seem appropriate to seriously consider the use of both sites. The economic and energy concerns may well be the more significant impact of site selection.

We appreciate the opportunity to comment on this reprot. If you have any questions on the Pearl Harbor project, please don't hesitate to call.

Sincerely,

Jacquelin N. Miller

Co-Principal Investigator

JN/ck

cc: James Maragos
Co-Investigators
Richard Leong