

**Coordination Act Report
Flood Control Features for Bechara Industrial Area
Rio Puerto Nuevo Flood Control Project**

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Executive Summary

The US Army Corps of Engineers is proposing to include the Bechara Industrial Area (BIA) into the already authorized Rio Puerto Nuevo Flood Control Project. The Recommended Plan consists of a drainage canal inside the BIA ending in San Juan Bay. The recommended alternative would directly impact one acre of mangrove wetlands. A levee is the second major project feature. The Margarita levee will protect the BIA from floods originating in Quebrada Margarita. The main levee route will follow an existing power line right-of-way. About 7.5 acres of emergent wetlands will be impacted by the levee. A mitigation plan for wetland impacts has not yet been developed.

The Service recommended in the past that the Margarita levee be relocated north, to be adjacent to the BIA. Although this would impact additional mangrove wetlands it would act as a physical barrier to the BIA from further expansion into wetlands. The current design will isolate several acres of basin mangroves between the BIA and the levee. The Service believes that the loss of functional value of these wetlands isolated by the levee should be included in the calculations for compensatory mitigation.

When the Rio Puerto Nuevo Flood Control Project was authorized, the project did not contemplate any excavation or fill in the BIA wetlands. However new hydrologic information indicated that the previous design for Bechara would not function without modification. Previous plans would have impacted additional mangrove areas or depended on electrical pumps to provide drainage. The new plan provides gravity drainage north to San Juan Bay. The project proposes to create 5 acres of mangrove habitat on or off site as mitigation.

Existing Conditions

The flooding of the BIA is caused partly by the overflow from Quebrada Margarita. The other cause for flooding is the remnant Puerto Nuevo Canal, this was once the Rio Puerto Nuevo which flowed into San Juan Bay. This river was redirected east to Caño Martin Peña during port development in the 1960's, leaving a blind canal. The Bechara canal, also called the Puerto Nuevo canal in the Draft EA, is supposed to drain the BIA and although it connects to Quebrada Margarita, it drains only after flooding with several feet of water. By the time the canal overflows into Quebrada Margarita, water has flooded most of the BIA and Kennedy Avenue. The BIA is a mix of warehouses and businesses that cover several acres. The area is bordered by Kennedy Avenue to the north and ends abruptly on the south in mangrove wetlands. Many of the businesses have been clandestinely expanding their lots south into the wetlands for years.

North of Kennedy Avenue the canal ends in a basin mangrove forest that is part of an undeveloped industrial lot owned by PRIDCO. From there extends the port development which is built up on fill that is 2-3 meters above the adjacent mangroves. .

Terrestrial Resources

Levee Route

The proposed levee will follow the existing PR Power Authority electric power line right of way. Vegetation here varies from cattails and leather fern (*Acrostichum spp*) in the lower portions to vine covered grasslands in the higher portions. This area is highly disturbed by the regular maintenance of the power lines (See photos 1 & 2). An estimated 7.5 acres of transitional wetlands is expected to be impacted by the levee. North of the proposed levee is a basin mangrove comprised mostly of black mangroves (*Avicennia nitida*) and leather fern with some white (*Laguncularia racemosa*) and red (*Rhizophora mangle*) mangroves intermixed. On the upland interface there are West Indian almond (*Terminalia catappa*), African tulip tree (*Spathodea campanulata*), and castor bean (*Ricinus communis*). This basin mangrove will be isolated by the proposed levee and the BIA. Already parts of this mangrove have been impacted by clandestine expansion of the lots in BIA. The latest such expansion was made by the hardware store Maderas 3C which borders the mangroves. The proposed construction right of way will impact a portion of these mangrove wetlands. Since this area will become isolated by the levee construction (see photo 3), the Service believes it should be added to the mitigation calculations. Once the levee provides protection from flooding this area will be the logical

expansion zone for the BIA. To assume that this mangrove will contain its spot of existing regulations after the construction of the levee, is ingenuous.

The proposed levee plans call for two main access ramps from the BIA. This will bisect a lot that belongs to Maderas 3C. Based on aerial photos, this area was most likely mangrove wetlands at one time and may have been illegally filled (see photo 4). Representatives from the hardware store indicated that they have plans to use this lot for future expansion or to rent. We recommend shifting the east ramp to an existing roadway which provides access to the Bechara canal. This roadway is clearly visible on the project aerial photographs and is an existing right of way.

Earth Channel

The proposed plan calls for an earth channel to be built north of Kennedy Avenue through a mangrove area belonging to PRIDCO. This will convert into a culvert that will continue north through the facilities belonging to CSX lines and into San Juan Bay. The proposed staging area east of the channel also belongs to CSX and is currently being rented by Trailer Bridge for container storage and transport.

The PRIDCO wetlands are comprised mostly of red and black mangrove and leather fern associated with the channel and its hydrology. As one approaches the CSX facilities the vegetation grades into uplands composed of large almond trees, úcar (*Bucida buceras*), guamá (*Pithecolobium dulce*), tan-tan (*Leucaena glauca*), and (*Sesbania spp*). Both tan-tan and *Sesbania* form thickets near the disturbed areas belonging to CSX (see photo 5). Although the construction of the earth channel is not supposed to significantly alter the hydrology of the remaining mangrove wetlands, it will impact an estimated 1 acre of mangroves. It is not clear however, if this one acre of impacts includes the construction right of way, the permanent right of way, or the actual channel itself. We recommend that wetland impacts should be calculated using the construction right of way since this is the area that will be used by the contractor to perform all work and wetlands within that area will be impacted.

Bechara Channel

Bechara Channel is an open earth channel 3-4 meters across that runs along the eastern border of the BIA. At the time of the inspection, the channel was choked with floating vegetation composed of mainly of water hyacinth (see photos 6 & 7). An access road starts at the existing pump house and parallels the channel to the south. There is an auto junkyard across the channel that is connected to the BIA via a small steel bridge. Bank vegetation is virtually non existent along the BIA side, however there is some vegetation along the eastern banks which include coco palm (*Cocos nucifera*), tulip trees, almond, and some small patches of black and white mangrove. Project drawings show that the upper part of the channel from the pump house to Kennedy Avenue will be placed in a box culvert.

Project Impacts

As stated in the Draft EA, one of the project impacts will be the increased use of the BIA, since it will no longer be prone to flooding. An estimated one acre of mangrove and 7.5 acres of transitional wetlands are expected to be impacted. It is not clear if these impacts are related to the permanent works or if impacts occurring during construction are also being taken into account. As stated above, the Service believes that the mangroves to be isolated between the levee and the BIA should also be taken into consideration in the calculation of project impacts since these will be isolated and under heavy developmental pressure as a result of the levee construction. Their inclusion in the mitigation will also assure that proper mitigation for these wetlands will occur vs some piecemeal mitigation proposal for future BIA expansion.

After a review of the area plans and drawings enclosed in the documentation provided, the Service believes that there is ample opportunity to mitigate on site. The western section of the levee will occupy lands previously filled. Parts of this area can be restored and enhanced (see photo 8).

Recommendations:

The Service continues to recommend that the levee be placed adjacent to the southern border of the BIA. Although this would increase wetland impacts those wetlands are the same ones that will be isolated and subject to impacts with the proposed design. A mitigation plan which is still not selected, should be developed as soon as possible. Mitigation should be integrated with the existing Puerto Nuevo Project.

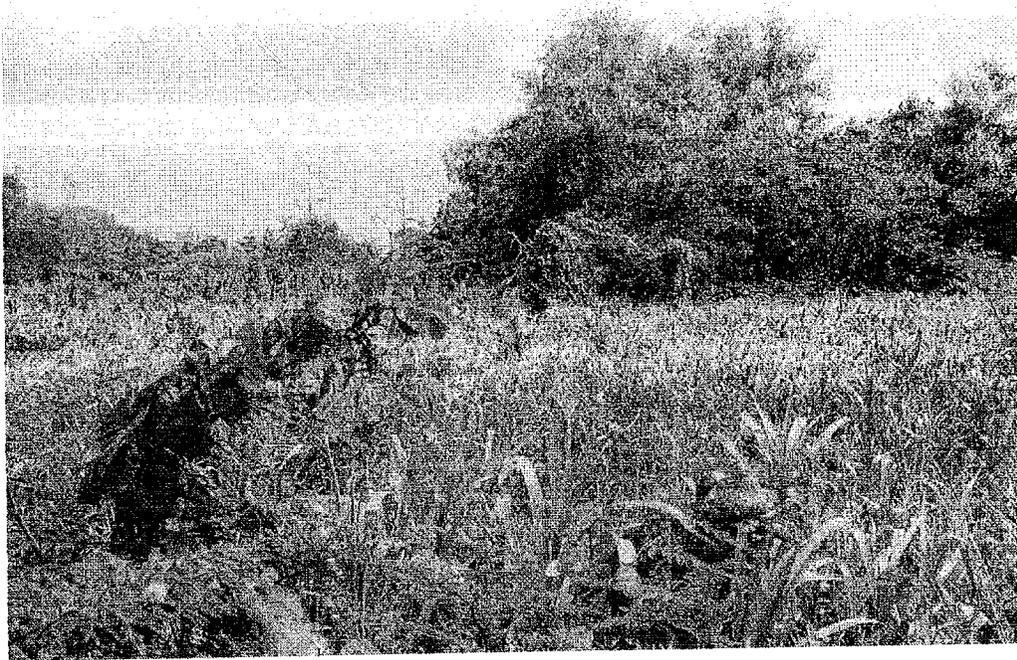


Photo 1. Eastern levee route near Bechara Canal, tall vegetation at the right is the mangrove wetland to be isolated by the levee.

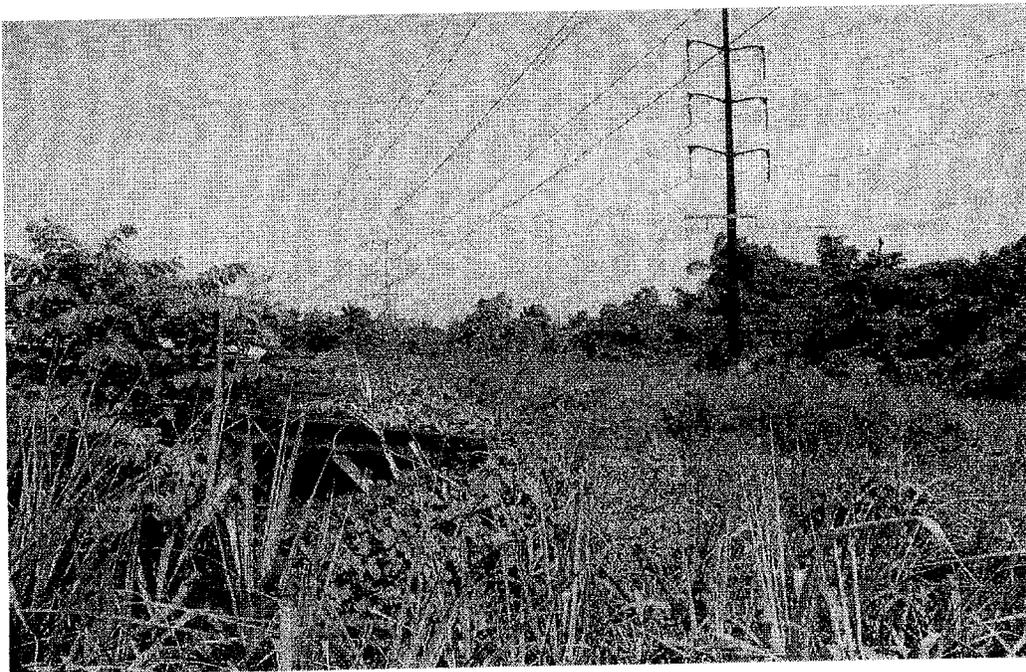
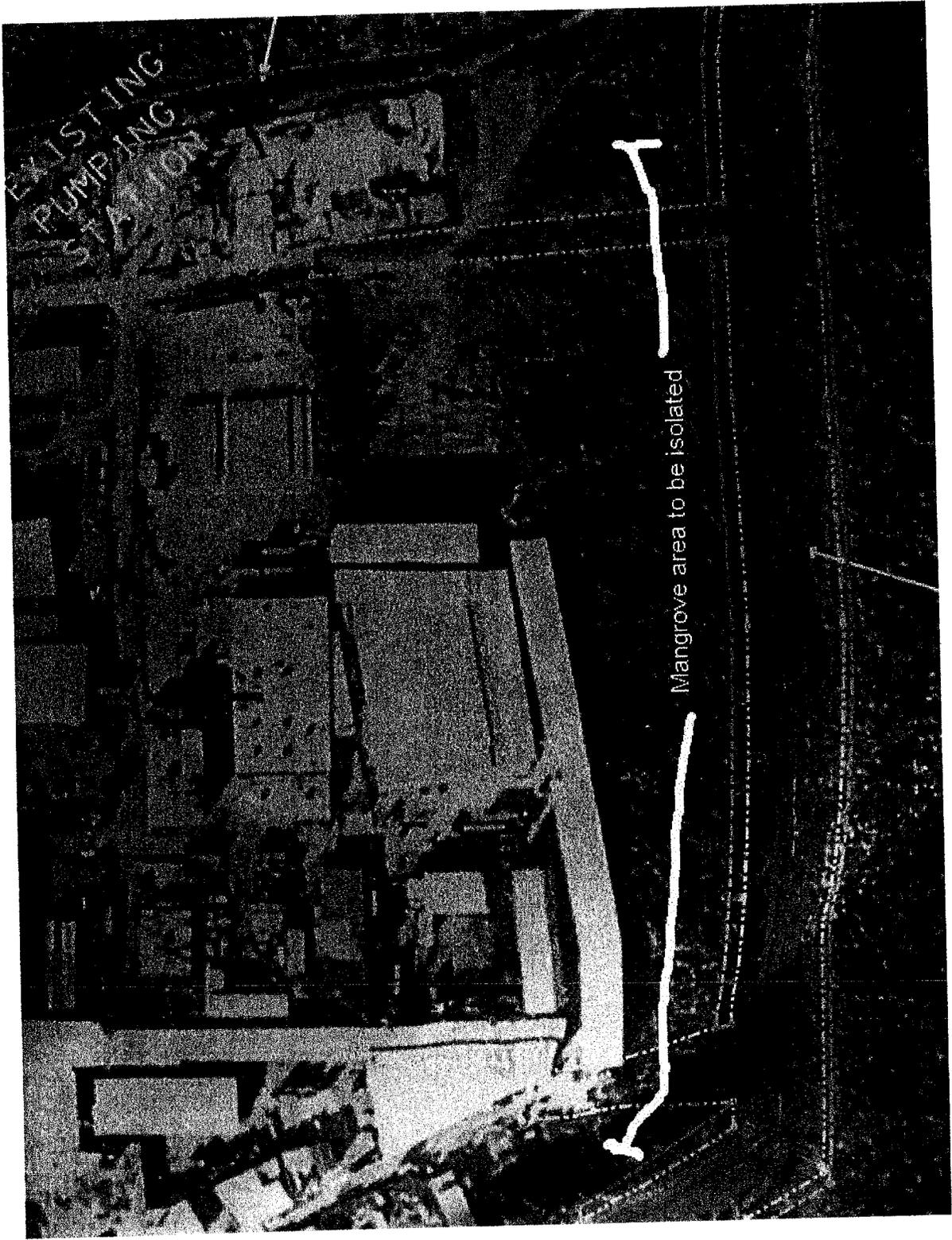


Photo 2. Western levee route. Vegetation is mostly herbaceous wetland species and cattails.

Photo 3. Project Plans showing Margarita Levee and mangrove to be isolated between the proposed levee and the Bechara Industrial Area



EXISTING
PUMPING
STATION

Mangrove area to be isolated

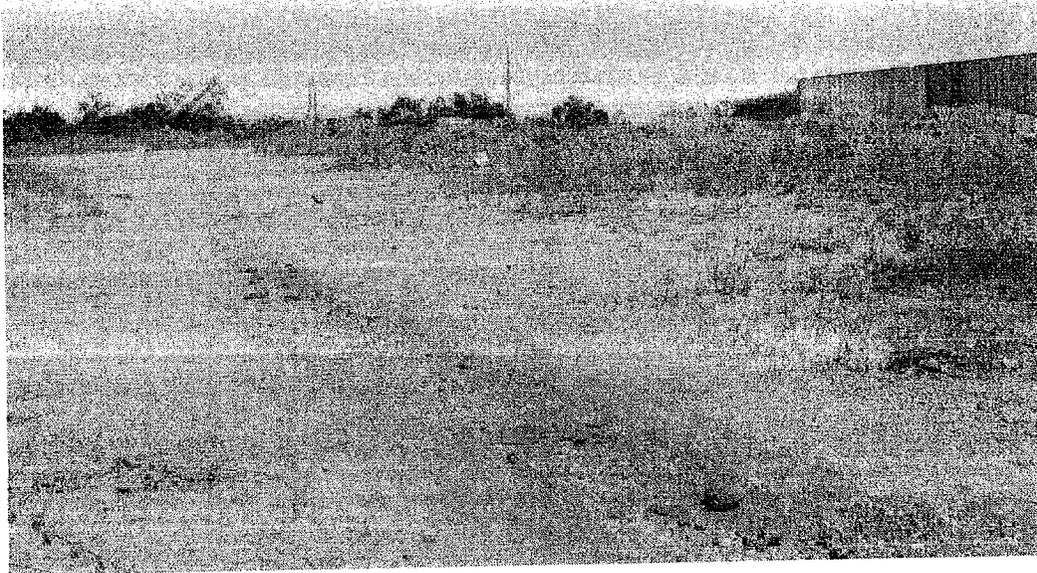


Photo 4. Fill placed by Maderas 3C to expand their industrial lot. Levee access ramp will be located through this fill.

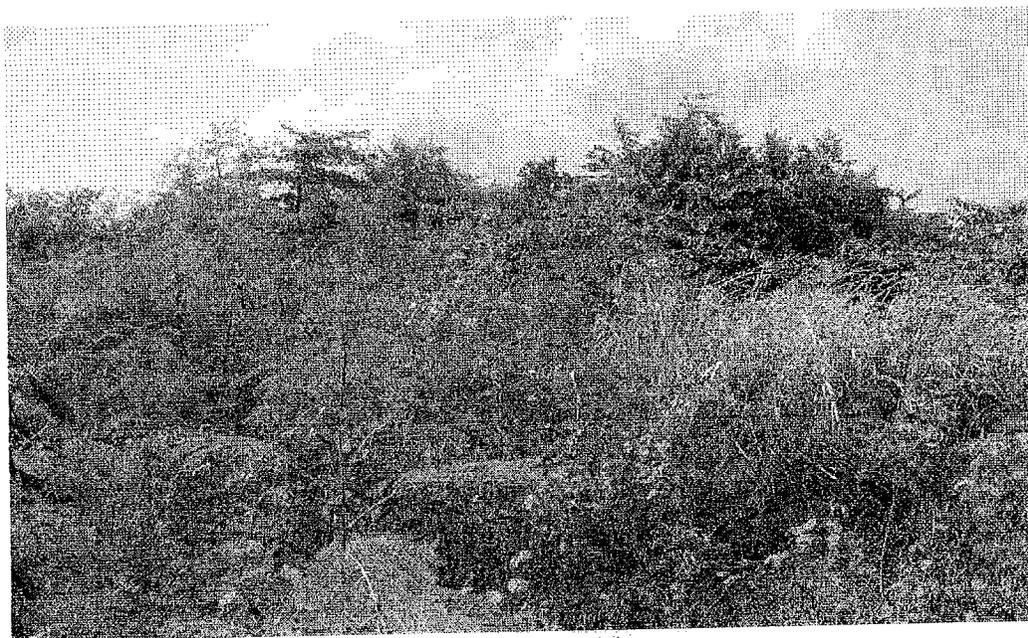


Photo 5. Thicket formed by upland vegetation near CSX fence line. Almond trees can be seen in background.