SECTION 10
FISH AND WILDLIFE MITIGATION PLAN

Impact Site

EXISTING CONDITION - IMPACT (GRAVING) SITE

The graving site designated for construction of the lock modules would adversely affect freshwater wetlands which have value as fish and wildlife habitat. The general area within which the graving site would be located consists of wetlands bounded by a developed area and roadways on the north, Paris Road on the east, the MRGO/GIWW on the south, and filled, commercial land on the west (Figure 1). Historic photographs show that the area was once cleared and drained, but has since reverted to a wetland condition. Remains of a pumping facility in the southwestern corner of the area provides further evidence that the area once drained.

The graving site and associated staging, stockpile, and parking areas would be restricted to 25 acres. The graving site and associated work areas would be isolated from adjacent wetlands with low-level dikes or by mandatory no-draining restrictions on the contractor. Although the area needed for lock module construction and associated staging and material stockpile would be much less than the entire graving site, secondary impacts would occur would occur over the entire site. These secondary impacts would include disturbance of wildlife, especially wading birds and waterfowl. Although not documented, some species of wading birds may nest within the graving site.

The overall wetland area containing the graving site is 103 acres. In addition, the graving site would affect about 900 feet of hurricane protection levee and a narrow strip of brackish marsh along the bank of the MRGO approximately 900 feet long. Habitats within the overall area of the graving site include wet forest, freshwater marsh, and shallow fresh water areas with floating aquatic vegetation.

The wooded portion of the area is dominated by trees which have a tolerance for very wet soils. Woods comprise about 37 acres. The most common trees composing the canopy are black willow, Chinese tallow, and red maple. Species scattered throughout the wooded area include swamp bay and cypress. Other species, found mainly along the eastern fringe of the area include water oak, sweetgum, honey locust, sugarberry, white mulberry, and live oak (one). Under-story species include buttonbush, wax myrtle, swamp bay, palmetto, and trumpet creeper.

The freshwater marsh is mostly floating on the remains of dead plants. This is called "flotant marsh" in southern Louisiana.

The primary species here are yellow nutsedge, bagscale, camphor weed, and buttonbush. This type of marsh never becomes completely dried-out, nor does it become completely inundated, since the vegetation floats up and down with varying water levels. This habitat type comprises about 16 acres

The open water areas within the graving site are typically about one-half to one-foot deep. A system of shallow, ill-defined canals runs through the graving site. Although probably never very deep, these canals are now only 2 to 3 feet deep. A large amount of tree trunks, stumps, limbs, and branches are scattered throughout the open water area, including the canals. This organic debris is likely the leftover remains of woods which occupied the site during a time when it was drained by pumps. Floating vegetation in the open water is dominated by frogbit, with mosquito fern, greater duckweed, and water meal also present. The floating vegetation covers about 90 percent of the open water during the growing season. The open water area includes about 50 acres.

A variety of wildlife species were observed in the wetland during field investigations in 1996. Wildlife included great blue heron, great egret, green heron, white ibis, black crowned night heron (possibly nesting), alligator, frogs, mosquitofish or least killifish, snowy egret, tri-colored egret, little blue heron, glossy ibis, mottled duck, wood duck, nutria, and swamp rabbit.

The U.S. Fish and Wildlife Service's Habitat Evaluation Procedures (HEP) were used to determine the value of the graving site as wildlife habitat. A brief description of the HEP is contained in the USFWS's Coordination Act Report (Section 11 of this appendix). The graving site provides minimal fisheries habitat due its isolation, shallow depth, and nearly complete coverage of floating aquatic vegetation. However, numerous wildlife species utilize the area as a permanent residence or for foraging. Although many species for which HEP models are available were observed utilizing the graving site, the applicable models for most of these species were not suitable for use for a variety of reasons. Most problems dealt with the relatively small size of the site, its isolation, proximity to disturbances, or permanently flooded nature. Two species were eventually selected for analysis - great egret and mink. Mink are known to inhabit the general area and individuals of this species likely live permanently or forage in the area.

As stated previously, the directs impacts of the graving site on freshwater wetlands would be restricted to 25 acres. The majority of this 25 acres is shallow water with floating aquatic vegetation. Some remnant spoil banks vegetated with tallow and willow run through this area. The Habitat Suitability Index (HSI) for great egret is 0.61, which indicates that the area is moderate to good habitat. The HSI for mink is 0.37, which

indicates that the habitat is low to moderate in value for this species.

FUTURE WITHOUT PROJECT CONDITION - IMPACT SITE

The owner of most of the graving site is the local sponsor, the Port of New Orleans. The Port does not have any specific plans for this site which is within the New Orleans Business and Industrial District (NOBID). An Final EIS was prepared for the NOBID (referred to as the Almonaster-Michoud Industrial District at the time) by the U.S. Department of Commerce, Economic Development Administration in 1982. That EIS proposed a system of drainage and other infrastructure improvements to encourage industrial development. The proposal has partially been implemented. Constructed improvements in the vicinity of the graving site include upgrading of the Almonaster Avenue Extension. A pumping station immediately west of the graving site, next to Grant Avenue, has also been upgraded. No additional improvements are known to be planned for the vicinity of the graving site. The graving site would most likely remain an undeveloped wetland. Development of the site in the near future is unlikely because industrial sites with higher elevations and better drainage are available within the AMID.

Without development of the site, suitable habitat would remain for evaluated species. The HSI for great egret would decline slowly because plants would over-crowd shallow, open water areas. The HSI would drop to 0.55 in Target Year (TY) 25, and 0.49 in TY 63. (TY 63 is used to indicate the economic end of the project life. Since the project has a 13-year construction schedule and a 50-year economic life, the total number of years to be evaluated is 63, assuming that the graving site would be developed in the first year of construction.) The site would provide 17.15 average annual habitat units (AAHU's) for great egret under the future without project condition. For mink, the habitat value of the area would improve over time due to an increase in the canopy cover of trees, shrubs, and herbaceous vegetation. The HSI for mink would be 0.44 in TY 25 and 0.51 in TY 63. Under the future without project condition, the site would provide 14.07 AAHU's for mink. Table 1 provides a summary.

TABLE 1
SUMMARY OF FUTURE WITHOUT PROJECT CONDITIONS - IMPACT SITE

Species	HSI Existing	HSI TY1	HSI TY25	HSI TY63	AAHU's
Great egret	0.61	0.61	0.55	0.49	17.15
Mink	0.37	0.37	0.44	0.51	14.07

FUTURE WITH PROJECT CONDITION - IMPACT SITE

Preparation of the graving site would begin during the first year of project construction. The habitat value of the site for

evaluated species would drop to zero. Upon completion of construction activities at the graving site, the site would be abandoned. The realigned levee would remain in place. The property owner would be able to utilize the site for commercial or industrial purposes. Table 2 provides a summary.

TABLE 2
SUMMARY OF FUTURE WITH PROJECT CONDITIONS - IMPACT SITE

Species	HSI Existing	HSI TY1	HSI TY25	HSI TY63	AAHU's
Great egret	0.61	0.00	0.00	0.00	0.15
Mink	0.37	0.00	0.00	0.00	0.09

NET IMPACTS - GRAVING SITE

The net impacts of the graving site are a loss of 16.99 AAHU's for great egret and 13.98 AAHU's for mink.

Mitigation Site

EXISTING CONDITION - MITIGATION SITE

The mitigation site is bounded by Bayou Bienvenue (referred to as Main Outfall Canal on some maps) to the north and west, a closed land fill and an operating sewerage treatment plant to the east, and the Back Protection Levee for the Lower Ninth Ward of New Orleans to the south. This triangular shaped area of about 400 acres consists of shallow, brackish water. Hundreds of dead cypress trees are scattered throughout this site, testimony to the cypress swamp that once existed. The trees died after salinity levels in the area increased after completion of the MRGO in the mid 1960's. The area now functions as a low salinity estuary. A large storm water pumping station, which services developed land in Orleans Parish discharges into Bayou Bienvenue which forms the north boundary of this area. The area is thereby subjected to periodic flushing with stormwater runoff from an urban area. As a result, the habitat quality of the area for estuarine aquatic species is greatly reduced. Species which can tolerate a wide salinity range, such as blue crabs, sheepshead minnows, sailfin mollies, mosquitofish, and killifishes are able to populate this area. The vegetated land around the periphery of this area provides habitat for a variety of terrestrial and semi-aquatic animals, and foraging habitat for many species of wading birds. Some species of waterfowl, including scaup, mottled duck, and mergansers, occasionally forage there.

The mitigation site provides low quality habitat for aquatic

species. For great egret and mink, the mitigation site provides minimal habitat. The open water is mostly too deep for foraging by great egrets, although numerous stumps and woody debris provide foraging platforms. The open water does not provide habitat for mink, although the wooded periphery of the site does provide necessary food and cover requirements. The mitigation would occur next to the wooded periphery of the triangular area. The area delineated for mitigation was evaluated using the HEP for great egret and mink. The HEP shows the HSI for great egret is 0.10, and the HSI for mink is 0.33.

FUTURE WITHOUT PROJECT CONDITION - MITIGATION SITE

The operator of the sewage treatment facility, located in the southeast corner of the 400-acre triangular area, has been granted a Section 404(b)(1) permit to deposit bio-solids and ash generated at the facility in the open water immediately west and north of the facility. As much as 45 acres of the open water could be used for disposal. Their disposal will serve a dual purpose: to dispose of the waste product and to determine if the material is suitable for wetland development. Test plantings and treatments will be undertaken to determine the best methods for vegetating the material. The proposed mitigation site would be located within the same large triangular shaped area as the sewerage treatment plant and its permitted discharge site. However, the mitigation site would not affect the sewerage treatment plant, nor would the sewerage treatment plant's disposal activities affect the mitigation site. They would be separated by an expanse of open water. No other changes in the large triangular area would be expected. The future without project condition for the mitigation area is shown in Table 3.

TABLE 3
SUMMARY OF FUTURE WITHOUT PROJECT CONDITIONS - MITIGATION SITE

Species	HSI Existing	HSI TY1	HSI TY3	HSI TY12	HSI TY62	AAHU's[1] Shallow-Draft	AAHU's[1] Deep-Draft
Great egret	0.10	0.10	0.10	N/A	0.10	14.63	16.99
Mink	0.33	0.33	0.33	0.33	0.33	48.29	56.06

[1] The size of the mitigation area is different of the shallow and deep-draft lock plans, hence the AAHU's are different.

FUTURE WITH PROJECT CONDITION - MITIGATION SITE

An area of approximately 137 acres, along the inside border of the triangular area, would be sectioned-off with a low-level

dike. Approximately 41 acres of emergent wetland would be created with the uncontaminated material from the east bank of the IHNC for the deep-draft lock alternatives. The shallow-draft lock plans would generate enough material to develop 31 acres of emergent wetland. Surveys taken prior to deposition of dredged material disposal would be used to determine the optimal elevation to which the dredged material is deposited. The goal would be to deposit material so that, within a few months, it would settle to an elevation which would support herbaceous, wetland plant species typical of nearby marsh. The material would be deposited within the diked area at a number of discharge points so as to develop "islands" to be colonized by emergent vegetation. Among the islands, areas of shallow water would provide aquatic habitat for estuarine fish and shellfish and feeding areas for predatory wading birds. After consolidation of sediments, the retaining dike would be breached in several location to allow tidal flow into the mitigation site. The dikes would quickly vegetate with scrub/shrub, and eventually trees would dominate.

The remaining portion of the triangular area is not expected to be impacted by the mitigation site, except that during dredging operations, turbidity levels would be increased.

The wetland would be built adjacent to the periphery of the large triangular area so that it would be contiguous with established travel corridors for terrestrial animals, and so that the created site would be adjacent to a seed source. The habitat value of the mitigation site for the future with project condition is shown in Table 4.

TABLE 4
SUMMARY OF FUTURE WITH PROJECT CONDITIONS - MITIGATION SITE

Species	HSI Existing	HSI TY1	HSI TY3	HSI TY12	HSI TY62	AAHU's Shallow-Draft	AAHU's Deep-Draft
Great egret	0.10	0.14	0.24	N/A	0.33	40.86	47.44
Mink	0.33	0.33	0.63	0.64	0.56	87.33	101.39

NET IMPACTS - MITIGATION SITE

Proposed mitigation would cause a net increase in the value of the mitigation site from both great egret and mink. The net effect of shallow-draft lock plans would be an increase of 26.23 AAHU's for great egret and 39.05 AAHU's for mink. The deep-draft lock plans would produce a net increase of 30.46 AAHU's for great egret and 45.33 AAHU's for mink.

Mitigation Summary

The mitigation plan fully compensates for impacts of the graving site on evaluated species. AAHU's for the graving site and mitigation site are shown in Table 5 on the following page.

TABLE 5
SUMMARY OF PROJECT IMPACTS AND MITIGATION

	Great Egret (AAHU's)	Mink (AAHU's)
Graving Site	-16.99	-13.98
Mitigation Site (Shallow-draft)	+26.23	+39.05
Mitigation Site (Deep-draft)	+30.46	+45.33
Net AAHU's (Shallow-draft)	+9.24	+25.07
Net AAHU's (Deep-draft)	+13.47	+31.35