APPENDIX B

SECTION 404(b) CLEAN WATER ACT EVALUATION

MODIFICATIONS OF THE C-111 SOUTH DADE PROJECT, L-31W

SOUTH DADE, FLORIDA

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SECTION 404(b) CLEAN WATER ACT EVALUATION

ENVIRONMENTAL ASSESSMENT
CANAL 111 (C-111) SOUTH DADE COUNTY, FLORIDA

I. Project Description

a. Location. The Canal 111 (C-111) Basin is located in southern Florida. The area of focus is located in southeastern Dade County. See Figure 1 in the Environmental Assessment (EA) for the project location.

b. General Description

Authority and Purpose. The C-111 project was constructed as part of the ENP – South Dade Conveyance Canals Project Authorized by the FCA of 1968 (Public Law (PL) 90-483). This Act authorized modifications to the existing Central and Southern Florida (C&SF) Project as previously authorized by the FCAs of 1948 (PL 80-858) and 1962 (PL 87-874). Further modifications to the C-111 were authorized as an addition to the C&SF project in the Water Resources Development Act (WRDA) of 1996 (PL 104-303) to protect the natural values associated with the ENP, while maintaining the existing level of flood protection within the C-111 basin east of Levee 31N (L-31N) and C-111.

The U.S. Army Corps of Engineers (Corps) seeks to improve undesirable resource conditions in Taylor Slough, the eastern panhandle of ENP, Manatee Bay, and Barnes Sound, while maintaining flood mitigation within the C-111 basin as described in the Corps' 1994 Final Integrated General Reevaluation Report (GRR) and Environmental Impact Statement (EIS), Canal 111, South Dade County, Florida (C-111 GRR/EIS). Features of the authorized plan that resulted from the C-111 GRR/EIS have been adjusted in the years since completion of the C-111 GRR/EIS. Certain alterations were previously documented in the Corps' 2002 Final EIS and 2007 Final Supplemental EIS for the Interim Operational Plan for Protection of the Cape Sable Seaside Sparrow (IOP). The intent of the present report is to propose and evaluate changes not previously recorded, and to document recommendations and rationale for depositing plugs in the L-31W Canal at the latitude of the S-332D Detention Area and for modifying the gap in the L-31W levee that is located just north of the S-332 Pump Station, to reduce its width to 500 feet and create a weir or sill at an elevation of + 2 feet. The EA describes locations, priorities and volume of proposed fill for both the plugs and the extensions of the levee to partially close the gap.

General Description of Dredged or Fill Material

(1) General Characteristics of Material.

The material proposed for plugs consists of levee overbuild material located along the L-31W levee in the S-332D Detention Area (old Frog Pond). It is derived from the original excavation of the L_31W Canal, and consists of primarily coarse material (limestone).

(2) Approximate Quantity of Material (cubic yards): Recent surveys provided an estimate of a total of 683,062 cubic yards

(3) Characteristics of the deposit sites for the plugs. The L-31W canal is a man-made water body approximately 60 feet wide and 15 feet deep along the affected reach, from S-174 to S-175, continuing south of SR 9336 (ENP Road). This canal has nearly vertical sides, no littoral zone, and is a fresh, open water habitat. No plugs are proposed in wetland or former wetland habitat. The proposed plug plan is tabulated below, beginning at the northern end of the stretch, adjacent to S-174.

Station along L-31W (priority)			Length, ft	Cumulative cy including a 20% bulking factor
00+00 - 35+00	Reach 1, less DX 1	High	3,000	85,680
85+00 - 95+00	Reach 2	High	1,000	114,240
320+00 - 330+00	Reach 5, west	High	1,000	142,800
365+00 – 375+00	Reach 5, east	High	1,000	171,360
375+00 -385+00	Reach 6, near S175	High	1,000	199,920
385+00 – 410+00	Reach 6, N of wood	Medium	2,500	271,320
480+00 – 490+00	Reach 6,S of wood	Medium	1,000	299,880
225+00 – 235+00	Reach 4 N of gap	Medium	1,000	328,440
330+00 - 365+00	Reach 5 all of center	Medium	3,000	414,200
115+00 -140+00	Reach 3 E end	New (*)	2,500	485,520
145+00 – 160+00	Reach 3 W end	New (*)	1,500	528,360
165+00 – 180+00	Reach 4, North	New (*)	1,500	571,200

Additional material will be used to re-build levees to reduce the gap length from 2,100 feet to 500 feet and install an ACBM weir over a sill in the gap.

Source of Material.

The material that will be used to construct all plugs and rebuild previously degraded levees will be limestone material excavated from the L31N canal footprint when the Canal was built and stored as overbuild along the levee.

Description of the Proposed Discharge Site

(1) Location (map). Proposed plug locations are shown on EA Fig. 8.

(2) Size. Plugs will have lengths shown in the table above. The maximum potential total plug length is 19,000 feet. Plugs will have 1:10 side slopes at each end

(3) Type of Site (confined, unconfined, open water). The Canal is an open water site.

(4) Type(s) of Habitat. The habitat in the NDA, the SDA, the 8.5SMA detention cell, and S-357W construction footprint (with exception of approx 20 acres in the SDA) is rocky glades/marl prairie converted to agriculture by rockplowing and drainage (flood protection project area). Some of the SDA berm footprint area and all of the 8.5 SMA detention area construction will occur in formerly rockplowed areas previously scraped to caprock, which have now revegetated and rehydrated to be classified as freshwater marsh wetlands. These wetland impacts

are taken into consideration in the Uniform Mitigation and Monitoring Assessment (UMAM) report.

Rockplowing removes all native vegetation and creates a soil matrix that can be used for commercial agriculture. Vegetation in the rocky glades is primarily comprised of thinly scattered sawgrass (*Cladium jamaicensis*), spikerush (*Eleocharis cellulosa*), and beakrushes (*Rhynchospora* spp.) on marl soils in association with muhly (*Muhlenbergia* sp.) prairies. The NDA is currently being scraped to caprock (expected to be finished in 2016) to remove exotic vegetation and create a larger detention area. The internal flowway berms within the NDA will be built directly after scraped to caprock and therefore, the habitat will not contain vegetation at the time of construction. It is expected to revegetated with native vegetation with wetland hydrologic functions.

(5) Timing and Duration of Discharge. The project is expected to take 1-2 years, with some of the construction activity preferably conducted in the dry season. Once the internal berms are completed and operations ensue, if the internal flowways within the 8.5 SMA, NDA, and SDA reach 2 ft depth, water will discharge over the overflow weirs into the eastern portion of the detention areas.

c. Description of Disposal Method: The scraped material from the rockplowed areas will have the vegetation removed to the maximum extent practical. The vegetation will either be burned onsite or transported to an approved landfill. The excess fill will be stored in existing project footprint stockpile areas. The existing stockpile areas are within the flood protection influence of the L31N canal and are located on former agricultural lands. Any trash (weed barrier material, irrigation piping, etc.) separated from the scraped soils will be transported by truck to an authorized landfill.

II. Factual Determinations (Section 230.11)

a. Physical Substrate Determinations

(1) Substrate Elevation and Slope. The ground elevation is between five and seven feet, NGVD, and there is almost no slope.

(2) Sediment Type. The substrate at the construction site is limestone rock overlain with marl soil.

(3) Dredged/Fill Material Movement. There will be no appreciable movement of material. It will rest on limestone rock.

(4) Physical Effects on Benthos. All benthos in the fill site will be covered.

(5) Other Effects. Upon completion of construction, the levees would effectively create areas of uplands. The levee surfaces will be mowed on a routine basis to prevent woody vegetation.

(6) Actions Taken to Minimize Impacts (Subpart H). Precautions to confine the fill to the desired roadway-levee Canal alignment will be taken. Existing access roads would be used.

b. Water Circulation. Fluctuation and Salinity Determinations

(1) Water. Water would flow into the closed S-332D detention area from the existing S-332D pump station.

(a) Salinity. The area is fresh water, and this condition would remain unchanged.

(b) Water Chemistry. No changes would occur.

(c) Clarity. During construction, turbidity would be generated in the very slow-moving standing surface water during periods of high rainfall. After construction completion, water clarity would be similar to prior conditions.

(d) Color. No changes would occur.

(e) Odor. No changes would occur.

(f) Taste. No changes would occur.

(g) Dissolved Gas Levels. The material is essentially clean rock; there would be moderate biochemical oxygen demand, and no change in dissolved gases.

(2) Current Patterns and Circulation.

(a) Current Patterns and Flow. Gravity-driven surface water flow in L-31 W Canal is from north to south, generally. More surface and ground water is expected to be retained within Everglades National Park (ENP) due to plugging the Canal segments. The majority of water flow in this area (into and under the L-31W canal) is subsurface.

(b) Velocity. The velocity is essentially zero when the S332D pumps are off. Very slow velocities are expected in the majority of the detention areas when the pumps are on except at the immediate vicinity of the pump discharge points.

(c) Stratification. None.

(d) Hydrologic Regime. The area is characterized by a historic average hydroperiod of six to seven months, but the hydroperiod now is apparently shorter.

(3) Normal Water Level Fluctuations. Zero to a maximum of almost two ft depth in the S-332D Detention Area. L-31W canal canal stage levels varies dependent on rainfall and season of the year, and is matches the ground water/surface stage in this in the adjacent everglades except during rainfall events.

(4) Salinity Gradients. None.

(5) Actions That Will Be Taken to Minimize Impacts (Subpart H): Precautions to confine the fill to the existing L-31 W Canal alignment will be taken. Existing access roads would be used.

c. Suspended Particulate/Turbidity Determinations

(1) Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Disposal Site. Turbidity would be temporary and limited to the time of construction. The berms will be constructed using rather coarse materials (clean crushed limestone) and fill material with a low organic content, hence very low quantities of suspendable material. There will be interaction only with with surface water in the L-31W canal. Plug deposition will be done in sequence to avoid escape of turbidity downstream in the L-31W Canal, which is already partially plugged in the northern reaches of the canal. .

(2) Effects on Chemical and Physical Properties of the Water Column. N/A

(a) Light Penetration. Temporary attenuation during construction. No restrictions are expected upon project completion.

(b) Dissolved Oxygen. No BOD; light attenuation effects would be short and negligible, therefore there would be no effect on Dissolved Oxygen.

(c) Toxic Metals and Organics. None.

(d) Pathogens. None.

(e) Aesthetics. Few observers frequent the area, therefore there would be no effect.

(f) Others as Appropriate. None.

(3) Effects on Biota. Fish and invertebrates present in the Canal segments to be plugged will be covered. Open water will be converted to land.

(a) Primary Production, Photosynthesis. Aquatic habitat will be replaced by terrestrial habitat where fill/plugging is complete (to the canal surface). In areas to be shallowed some marsh vegetation may develop.

(b) Suspension/Filter Feeders. Those confined to water in the Canal and unable to move would be covered with the fill. Effects on the biological communities would be negligible.

(c) Sight Feeders. Same as b.

(4) Actions taken to Minimize Impacts (Subpart H). Precautions to confine the fill to the desired plug alignment will be taken. Existing access roads would be used.

d. Contaminant Determinations. None present.

e. Aquatic Ecosystem and Organism Determinations (Subpart G)

(1) Effects on Plankton. With the exception of plankton covered by fill, there would be no effect.

(2) Effects on Benthos. See above. No significant benthic organisms are expected to be present. With the exception of benthos covered by the fill immediately under the plugs, there would be no effect.

(3) Effects on Nekton. None.

(4) Effects on Aquatic Food Web. Each plug would eliminate a segment of Canal and wipe out the aquatic food web in that segment.

(5) Effects on Special Aquatic Sites. L-31W Canal is not a Special Aquatic Site. The construction area is adjacent to ENP. The intent of the project is to help create conditions closer to the historic environmental conditions than those that currently exist.

(a) Sanctuaries and Refuges. As stated above.

(b) Wetlands. Wetland functions and form would be restored to some degree as a result of the project.

(c) Mud Flats. None.

(d) Vegetated Shallows. These are the marl prairies described above. Historic, more natural conditions would be restored to the extent possible.

(e) Coral Reefs. None.

(f) Riffle and Pool Complexes. None.

(6) Threatened and Endangered Species. Consultation with the United States Fish and Wildlife Service was initiated on May 18, 2016. USACE has conducted a Biological Assessment and determination of Effect. Consultation is ongoing at this time.

(7) Other Wildlife. Plugging segments of the Canal will decrease opportunities for further invasion of exotic fish species along the C-111 Canal.

(8) Actions to Minimize Impacts. Precautions to confine the fill to the Canal alignment will be taken. Existing access roads would be used.

f. Proposed Disposal Site Determinations

(1) Mixing Zone Determination. There is no mixing zone because no surface water is available for this project.

(2) Determination of Compliance with Applicable Water Quality Standards (present the standards and rationale for compliance or non-compliance with each standard). All standards will

be complied with, unless a variance should be required for unforeseen reasons. A Section 401 water quality certification will be sought from the State of Florida.

(3) Potential Effects on Human Use Characteristics. Non-consumptive uses, such as bird watching, would be enhanced within ENP.

(a) Municipal and Private Water Supply. No effect.

(b) Recreational and Commercial Fisheries. There would be some restriction of recreational fishing access in the affected segment of L-31W Canal, due to the plugs. Plug locations were optimized to assure some small boat access on both sides of the boat ramp on the ENP access road. Because bank access along L-31W is restricted by fencing, the canal is not a heavily used fishing resource, as would be the case along L-29. There is no commercial fishery in this Canal.

(c) Water Related Recreation. Little effect is expected. Fishing currently is concentrated in small boats with low-horsepower motors, launched from the boat ramp on the ENP road. This access will continue both north and south of the ramp, although the length of accessible segments will be reduced.

(d) Aesthetics. Small temporary effect, due to few observers.

(e) Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves. The project is intended to restore ecological values to the southeastern portion of ENP by plugging segments of the L-31W Canal to reduce surface and ground water seepage out of ENP.

(f) Determination of Cumulative Effects on the Aquatic Ecosystem. To the extent that the project for Modified Water Deliveries (MWD) to ENP is implemented successfully, MWD should interact synergistically with this project to provide significant restoration of ecological integrity to the southeast Everglades.

(g) Determination of Secondary Effects on the Aquatic Ecosystem. All benefits to flora and fauna would be secondary, in that the direct effects would be hydrological, but the secondary effects would be ecological and beneficial.

III. Finding of Compliance or Non-Compliance with the Restrictions on Discharge.

a. No significant adaptations of the guidelines were made relative to this evaluation.

b. The alternative that will be selected from an array of practicable alternatives will be that which best meets the study objectives. It is probable that no practicable alternative is possible that will not involve discharge of fill into waters of the United States.

c. The discharge of fill materials would not cause or contribute to, after consideration of disposal site dilution and dispersion, violation of any Florida water quality standards. The

discharge operation will not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

d. The placement of fill material would not jeopardize the continued existence of any species listed as threatened or endangered under the Endangered Species Act of 1973, as amended. Approximately 480 acres of land currently designated as Critical Habitat for the CSSS is adjacent to the project area. Reduction of seepage of surface and ground water out of this habitat is one of the purposes of the proposed construction.

e. The placement of fill materials would not result in significant adverse effects on human health and welfare, municipal and private water supplies, recreational and commercial fishing, plankton, fish, shellfish, wildlife, wetlands, and special aquatic sites. The life stages of aquatic species and other wildlife will not be adversely affected. Significant adverse effects on aquatic ecosystem diversity, productivity and stability, and recreational, aesthetics, and economic values will not occur.

f. Appropriate steps to maximize positive impacts on aquatic systems will be included in plans for the recommended plan.