

APPENDIX A
SECTION 404(b)(1) GUIDELINES EVALUATION

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SECTION 404(b)(1) EVALUATION**Everglades Agricultural Area A-1 Shallow Flow Equalization Basin
Palm Beach County, Florida****I. Project Description**

A. Location. The proposed A-1 Shallow Flow Equalization Basin (FEB) would be located in western Palm Beach County, Florida, on land designated as Compartment A-1 (A-1 project site) within the Everglades Agricultural Area (EAA). The project site is approximately 16,000 acres and bordered to the east by US Highway 27, to the south by Stormwater Treatment Area (STA) 3/4, to the west by an area known as the Holey Land Water Management Area (Holey Land) and to the north by agricultural lands.

B. General Description. The applicant's preferred alternative includes construction and operation of shallow above-ground impoundment for the temporary storage of stormwater runoff, with a capacity of approximately 60,000 acre-feet at an approximate maximum operating depth of 4 feet. The proposed impoundment would have a footprint of approximately 15,000 acres. The key features of the A-1 Shallow FEB project include the following:

- Approximately 60,000 acre-foot impoundment with a perimeter levee and seepage collection canals
- Gated inflow structures
- Inflow conveyance channels and interior levees
- Outflow collection and conveyance canal
- Gated outflow structures

C. Authority and Purpose. Section 404 of the Clean Water Act (33 U.S.C. 1344). The basic purpose of the project as defined by the USACE is to improve water quality of flows from the STAs 2 and 3/4. The overall purpose of the project is to attenuate peak stormwater flows into STAs 2 and 3/4 to assist in meeting State water quality standards in the Central Flowpath of the Everglades Protection Area.

D. General Description of Dredged or Fill Material.

(1) General Characteristics of Material. The excavation of the remaining portion of the seepage canal, borrow areas and construction of the levee embankments will begin with the scrapping off the top layer of peat/topsoil which is estimated to be between 1 and 2 feet deep. The peat will be excavated from the entire embankment, seepage canal, and

borrow area footprints. The second type of material encountered for excavation will be the caprock layer which varies in depth between 3 and 8 feet, and averages 4 feet deep. All of this type of material will be used either for riprap revetment protection or as embankment building material. The last layer of material to be excavated will be the silty sand layer (which is part of the upper Ft. Thompson Formation). This layer extends beyond the required seepage canal bottom elevation and will constitute the remaining construction material for the embankments. The two types of embankment construction materials will be mechanically processed in different gradations of construction fill.

(2) Quantity of Material. Earthen embankment: The stockpile of soils and caprock generated as a result of the previous construction activities will be utilized to build the levees and embankments and fill in the existing ditches.

(3) Source of Material. On-site.

E. Description of the proposed Discharge Site.

(1) Location. Any excess material would be disposed on-site within the footprint of the proposed Shallow FEB.

(2) Size. The plan consists of a 16,152-acre project site including a 15,211-acre open water impoundment.

(3) Type of Site. The proposed impoundment and associated canals, pump stations and water control structures would replace wetland vegetation.

(4) Type of Habitat. The limits of construction contain 16,152 acres of land of which 14,704.8 acres are wetlands and 1,446.9 acres are uplands. Of the wetlands, 10,158 acres are mixed shrub wetlands dominated by willow leaf goldenrod (*Solidago stricta*), andropogon (*Andropogon virginicus*), salt bush (*Baccharis glomerulifolis*), elephant grass (*Pennisetum purpureum*), primrose willow (*Ludwigia spp.*) and cattail (*Typha spp.*); 234 acres of exotic shrub wetlands dominated by nuisance grass (elephant grass), 3,877 acres of herbaceous freshwater marsh wetlands dominated by water primrose (*Ludwigia peruviana*), bushy aster (*Aster dumosus*), marsh fleabane (*Pluchea rosea*), annual spikerush (*Eleocharis atropurpurea*), tufted beakrush (*Rhynchospora intermixta*), flat sedge (*Cyperus spp.*), jointed spikerush (*Eleocharis interstincta*), flat spiked rush (*Abildgaardia ovate*), and water hyssops (*Bacopa caroliniana*); 109 acres of lateral farm ditches 327 acres of channelized waterway containing spatter dock (*Nuphar spp.*) and water lettuce (*Pistia stratiotes*). The uplands consist of the sand and gravel processing areas, borrow areas, disturbed lands, rock and muck piles, and dikes and levees.

(5) Timing and Duration of Discharge. Discharge would be during construction. Construction is estimated to begin in October 2013 and be completed by the end of December 2014.

F. Description of Disposal Method. Upland disposal. The material required for the embankment construction would be utilized from the existing stockpile of material onsite, and any excavated material from the proposed southern seepage collection canal. The quantity of materials to be obtained from the excavation of the seepage canals is limited to the size of the canals which is determined by seepage control and/or conveyance requirements. The design concept aims to balance the quantities of fill needed to be excavated on-site as close as possible so that there is not any surplus material to dispose of. It is expected and assumed that very little of the excavated material will be classified as unsuitable for the construction of the embankments. Therefore, any minimal amount of unsuitable excavated material will be disposed of within the interior of the impoundment and seepage canal footprints and excess topsoil and peat that will be scrapped off the surface prior to embankment foundation preparation and seepage canal excavation will be placed within the seepage buffer area or seepage canal.

II. Factual Determinations

A. Physical Substrate Determinations.

(1) Substrate Elevation and Slope. The levee would be constructed on top of caprock surface at elevations ranging from approximately 8 feet to 10 feet in height. The levee would have a crest width of 14 feet with a design side slope of 3H:1V (horizontal:vertical) on both sides. To complete the excavation of the seepage canal, the soils would be excavated to -7 foot elevation with a bottom width of 20 ft and side slopes of 1V:2.5H to center along all sides of the impoundment to match the existing depth and grade of the partially constructed seepage canal.

(2) Sediment Type. The proposed fill for the embankments will be composed from on-site soils of select granular materials primarily limestone or quartz, gravel and sand sized particles.

(3) Dredge/Fill Material Movement. The fill material will be stabilized at the earliest practicable date. Erosion control measures would be used during canal widening to prevent and contain any turbidity during excavation or movement of dredge materials.

(4) Physical Effects on Benthos. Benthic organisms may be temporarily displaced during construction activities. Short-term impacts to benthos are expected in seepage

canals with removal of material. However, they should re-establish after the construction activities have been completed.

B. Water Circulation, Fluctuation and Salinity Determination.

(1) Water Column Effects. The water column in the immediate vicinity of excavation within the canals is anticipated to be temporarily impacted during construction as widening activities and slopes are created. Turbidity and erosion will be controlled during and post-construction.

(2) Current Patterns and Circulation. Construction and expansion of the seepage canal would have minimal effect on current hydrologic circulation patterns. Construction of the levees will have an impact to hydrological patterns within the EAA footprint. Surface flow would be collected within the footprint of the impoundment. The movement of water within the impoundment would be from north to south. The off-site migration of water will be restricted by the canal system. Water would be held in the shallow A-1 FEB until it can be delivered to either STA 2 or STA 3/4. The majority of the shallow FEB outflows (approximately 80%) will be directed to STA-3/4 for treatment while the remaining flows (approximately 20%) will be conveyed to STA-2 (including Compartment B) via the G-434 and G-435 pump stations.

(3) Normal Water Level Fluctuations and Salinity Gradients. Water level fluctuations within STA 2 and STA 3/4 should improve as the A-1 Shallow FEB holds water for managed deliveries. Surface and ground water levels would be minimally impacted in the immediate project footprint where seepage will be collected in the seepage canal.

C. Suspended Particulate/Turbidity Determinations.

(1) Expected Changes in Suspended Particulates and Turbidity Levels in the Vicinity of the Disposal Site. There may be a temporary increase in turbidity levels in the project area during dredging of canals. Turbidity will be short-term and localized and no significant adverse impacts are expected. State standards for turbidity will not be exceeded. Turbidity will be monitored during and post construction.

(2) Effects on the Chemical and Physical Properties of the Water Column. There may be temporary impacts to the chemical and physical properties of nearby waters during construction activities. There are no acute or chronic chemical impacts anticipated as a result of construction. An environmental protection plan, to be prepared during detailed design, will address concerns regarding monitoring of equipment, maintenance and security of fuels, lubricants etc.

(a) Light Penetration. Some decrease in light penetration may occur in the immediate vicinity of the construction area. This effect will be temporary, limited to the immediate area of construction, and will have no adverse impact on the environment.

(b) Dissolved Oxygen (DO). There may be a slight decrease in DO in the immediate construction area of the canal during dredging operations. DO levels are anticipated to return to normal post-dredging. This is not anticipated to cause a significant impact.

(c) Toxic Metals, Organics, and Pathogens. No toxic metals, organics, or pathogens are expected to be released by the project. The A-1 project site was designed to avoid a known area which has increased levels of toxaphene. A monitoring plan is being developed to confirm water held and released from the impoundment is safe for plant and animal life.

(d) Aesthetics. The aesthetic quality of the water in the immediate area of the project may be temporarily affected by turbidity during construction. This will be a short-term and localized condition. Seepage canals will be sloped to provide vegetation and wildlife habitats. The exterior impoundment embankment would be earthen and grassed and provide some aesthetic value. The 150-foot seepage buffer along the sides of the impoundment, would include a wetland mosaic that would provide a visual screen of the embankment and provide a natural green space, an overall improvement to aesthetics. An approximate 50-foot area between the property limits and the seepage canal would be left undisturbed. These "undisturbed" lands would be managed for exotic plant species in order to encourage recruitment of natural plant species and to provide ecologic as well as aesthetic value.

(3) Effects on Biota.

(a) Primary Productivity and Photosynthesis. Dredging and sloping canals should provide littoral habitat within the canals. Wetlands within the buffer area would be incidentally created through seepage and rainfall and redistribution of muck following. The seepage buffer wetlands would be hydraulically connected to the canals as well. The hydrology provided within the impoundment footprint would sustain wetland vegetation except during drydowns, but the frequency of drydowns would be minimal.

(b) Suspension/Filter Feeders. An increase in turbidity in the canals could adversely impact burrowing invertebrate filter feeders within and adjacent to the immediate construction area. It is not expected that a short-term, temporary increase in turbidity will have any long-term negative impact on these productive organisms.

(c) Sight Feeders. No significant impacts on these organisms are expected as the majority of sight feeders are highly mobile and can move outside the affected area.

(d) Contaminant Determinations. Fine-grained materials at the bottom of canals will be sampled prior to dredging to determine whether they contain significant levels of toxic materials. The toxic materials of primary concern are persistent pesticides. Other deposited fill material which will be dredged from the proposed borrow site will not introduce, relocate, or increase contaminants at the fill area.

(e) Aquatic Ecosystem and Organism Determinations.

(1) Effects on Plankton. No adverse impacts on autotrophic or heterotrophic organisms are anticipated.

(2) Effects on Benthos. No adverse impacts to benthic organisms are anticipated.

(3) Effects on Nekton. The wetland areas currently experience fluctuations of wet and dry conditions. In the existing portion of the seepage canal, mostly small forage fish may be temporarily displaced by construction and turbid water. However, they would be able to retreat to deeper areas of the canal during construction. Therefore, no long-term adverse impacts on nekton are anticipated.

(4) Effects on the Aquatic Food Web. No adverse impacts on aquatic organisms are anticipated. There is expected to be a relatively minor temporary effect on the aquatic food web due to construction activities. Aquatic resources within the seepage canals and adjacent natural areas should maintain their functional value.

(5) Effects on Special Aquatic Sites.

(a) Hardground and Coral Reef Communities. There are no hardground or coral reef communities located within the proposed project site.

(b) Sanctuaries and Refuges. Adjacent wildlife management areas (Rotenberger Wildlife Management Area and Holey Land) should not be negatively impacted by the project.

(c) Wetlands. As proposed, construction of the project would impact approximately 536.8 acres of wetland impacts (164.5 acres of freshwater marsh and 372.3 acres of canals and ditches) as a result of levee and canal fill, as well as 75.8 acres of canal excavation. Approximately 10,517.21 acres of wetlands will be inundated.

The jurisdictional areas proposed for impact were evaluated using the Unified Mitigation Assessment Methodology (UMAM). The proposed 536.8 acres of fill and excavation impacts may result in a loss of 269.37 Functional Capacity Units (FCUs).

As part of the project, approximately 10,119 acres of scrub shrub wetlands, 233.71 acres of scrub shrub wetlands dominated by exotic plant species, 164.5 acres of canals and ditches would be hydrated with the additional flows. The project would also excavate 1147.65 acres of uplands to create emergent marsh. The South Florida Water Management District (SFWMD) submitted their suggested UMAM analysis that mitigation plan for the Shallow FEB may result in a gain of 2916.6 FCUs, and an overall net gain of 2647.23 FCUs.

It is anticipated that there will be ecological benefits directly within the footprint of the proposed A-1 Shallow FEB impoundment. Submerged and emergent plant communities will increase thereby improving foraging and habitat for wading birds and native fish; and improvements to the water quality entering the Water Conservation Areas (WCAs). The U.S. Army Corps of Engineers (USACE) is currently evaluating the SFWMD's mitigation plan.

(d) Mud Flats. Mud flats should not be impacted by this project.

(e) Vegetated Shallows. None should be impacted by the project.

(f) Riffle and Pool Complexes. None should be impacted by the project.

(6) Endangered and Threatened Species. The U.S. Fish and Wildlife Service (USFWS) has determined that the project may affect, but is not likely to adversely affect twelve listed species found within the project footprint or areas anticipated to be affected by the project (the Audubon's crested caracara, the Florida panther, the Everglade snail kite, and the wood stork). The USACE has determined that the project may affect the eastern indigo snake. Formal consultation with the USFWS is anticipated to commence on December 28, 2012. The USFWS is reviewing the Biological Assessment and the content of this Environmental Impact Statement (EIS) to determine if they agree with the USACE's determinations and effects.

The USACE determined that the project would have no effect on the species within the National Marine Fisheries Service's purview since the project would not affect any marine threatened or endangered species.

(7) Other Wildlife. No adverse impacts to small foraging mammals, reptiles, or wading birds, or wildlife in general are expected. Environmental features, such as the seepage buffer area, deep water fish refugia, and canal seepage littoral areas will provide opportunities and minimize impacts to fish and wildlife.

(8) Actions to Minimize Impacts. All practical safeguards will be taken during construction to preserve and enhance environmental, aesthetic, recreational, and economic values in the project area. Specific precautions are discussed in the Chapter 5 of the Draft EIS. Monitoring programs have been developed to ensure the project does not harm, but in fact aids in the recovery of the Everglades ecosystem.

D. Proposed Disposal Site Determinations.

(1) Mixing Zone Determination. The dredged material will not cause unacceptable changes in the mixing zone water quality requirements as specified by the State of Florida's Water Quality Certification permit procedures. No adverse impacts related to depth, current velocity, direction and variability, degree of turbulence, stratification, or ambient concentrations of constituents are expected from implementation of the project.

(2) Determination of Compliance with Applicable Water Quality Standards. Because of the inert nature of the material to be used as fill, applicable State water quality standards would not be violated. The goals and objectives for the A-1 FEB are to assist Stormwater Treatment Area (STA) 2 and STA 3/4 in achieving the Water Quality Based Effluent Limit (WQBEL) at the STA discharge.

(3) Potential Effects on Human Use Characteristics.

(a) Municipal and Private Water Supplies. No municipal or private water supplies would be adversely impacted by the implementation of the project. The impoundment will act to recharge both the surficial and Floridan aquifers.

(b) Recreational and Commercial Fisheries. Recreational and commercial fisheries should not be negatively impacted by the implementation of the project. The SFWMD is considering if the impoundment could provide recreational fishing opportunities.

(c) Water Related Recreation. Water related recreation in the immediate vicinity of construction will likely be impacted during construction activities within the canals with an increase in traffic. However, this will be a short-term impact. The SFWMD is considering if the impoundment could provide additional recreational opportunities in the form of boating, fishing and wildlife viewing.

(d) Aesthetics. The project would involve an initial period when construction would be evident to people within viewing range of the project sites. Views of construction equipment, dust plumes, exposed excavations, and partially completed culverts and other structures would be visible to residents and workers who pass near the construction sites in the course of their regular activities, and to motorists traveling on roads adjacent to the project sites. These views would be temporary in nature. Once the project is in operation, the long-term appearance of the project site would consist of expansive open water areas bordered by a variety of constructed features, including levees; roads along the tops of the levees; and water control structures, culverts, and pump stations

spaced at varying intervals. The local landscape would retain the uniform and organized character that currently exists, while the current mix of marsh and vegetated areas would be replaced by open water. Although the future condition with the project would result in less overall visual diversity, the presence of additional water area would likely be perceived as a positive change or of more visual interest when compared with the current condition. On balance, the long-term aesthetic change resulting from the project would not be a significant adverse impact.

(e) Parks, National and Historic Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves. State and local parks do exist south and east of the project site. These include the WCAs, Holey Land, and Rotenberger Wildlife Management Area. These would be temporarily impacted by construction activities as described in (d) above. These impacts would be minimized and avoided as practicable.

E. Determination of Cumulative Effects on the Aquatic Ecosystem. Many restoration programs would affect the northern and southern Everglades in the future. These projects focus on restoration of natural hydrology and improved water quality in the project-affected environment, as well as in other physiographic regions within the study area. Cumulatively, these restoration efforts would provide substantial improvements in water quality, water deliveries, and timing of these deliveries. It should be noted that additional projects would be needed to meet the State's overall water quality goal for the Eastern and Western Flowpaths. Among the specific ecological benefits from these future projects, freshwater releases to the Northern Estuaries would assist to normalize salinity and dissolved oxygen and reduce turbidity and nitrification. Furthermore, STAs, storage reservoirs, and aquifer storage recovery wells are anticipated to improve the quality of water in the region (WCAs, estuaries, and C-51 East Basin). Finally, implementation of best management practices (BMPs) to treat agricultural runoff prior to discharge would reduce phosphorus levels in EAA waters. Please see Section 4.19 for additional information on cumulative effects.

F. Determination of Secondary Effects on the Aquatic Ecosystem. There will be no adverse secondary impacts on the aquatic ecosystem as a result of the construction. During construction the site will be contained enclosing the construction areas with sedimentation barriers. Erosion will be controlled by compaction of soils, construction of ditches, and embankments, maintenance of relatively flat grades, and other appropriate erosion control techniques. Sedimentation will be controlled during construction by use of sediment controls basins and traps, filter berms, straw bales, etc. Impacts associated with construction traffic and equipment will be localized due to construction occurring in phases. Phasing construction will

allow wildlife to utilize undisturbed portions of the site. Monitoring plan would be implemented during and after construction to ensure no adverse impacts to water quality. Chapter 6 includes a discussion of specific environmental commitments, engineering and design commitments, and operational commitments in order to avoid, minimize, and/or mitigate for adverse effects during construction.

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

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

B. No practicable alternative exists which meets the study objectives that does not involve discharge of fill into waters of the United States.

C. After consideration of disposal site dilution and dispersion, the discharge of fill materials will not cause or contribute to, violations of any applicable State water quality standards for Class III waters. The discharge operation will not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

D. It is anticipated that the construction of the EAA Shallow A-1 FEB project will not jeopardize the continued existence of any species listed as threatened or endangered or result in the likelihood of destruction or adverse modification of any critical habitat as specified by the Endangered Species Act of 1973, as amended. The USFWS is currently reviewing the project to determine if they concur.

E. The placement of fill material will not result in significant adverse effects on human health and welfare, including municipal and private water supplies, recreational and commercial fishing, plankton, fish, shellfish, wildlife, 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, aesthetic, and economic values will not occur.

F. On the basis of the guidelines, the proposed disposal site for the discharge of dredged material is specified as complying with the requirements of these guidelines.