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RECOMMENDATIONS/CONSERVATION MEASURES

A. Altered Hydrology and Operations

1. The USFWS recommends that the Corps and District review proposed project operations to assess effects to habitat that is being notably dewatered in the ENP panhandle area, south of the C-111 canal between S-18C and S-197 and the potential to modify operations to alleviate those possible effects on the marsh environment and associated fauna.

Response: The proposed project is a re-distribution project which was largely championed by DOI. Because of uncertainties inherent in any modeling effort, the actual in-situ effects of these changes cannot be predicted with a high degree of certainty. It is for this reason, and in order to minimize possible effects on the marsh environment and associated fauna, that monitoring based adaptive management protocols have been included within the Draft Project Operating Manual (DPOM). Please see Section D.7.8 of the DPOM, Panhandle Wetland and Salt Water Intrusion Protection Measures.

2. A review of proposed project operations in the C-111 canal that affect discharge through the S-197 should also be conducted. While elimination of excessive flows through this structure and moderation of extreme salinity fluctuations was a project goal, there remains a need to provide an adequate base flow level for maintenance of a more natural salinity regime in Manatee Bay and Barnes Sound.

Response: As discussed previously, the proposed project is a re-distribution project, and returning to a more natural distribution may cause some areas to receive less water than received under current conditions. Under existing conditions, S-197 generally discharges to Manatee Bay only in response to major storm events, and can cause rapid changes in salinity. The proposed project is anticipated to reduce both the frequency and severity of these rapid salinity changes. If it becomes apparent, through implementation of the Project Level Monitoring Plan, that the reductions in anthropogenic freshwater inputs will result in adverse impacts to Manatee Bay, the Project can be adaptively managed, and Preliminary Project Operating Manual (PPOM), and Final Project Operating Manual (FPOM) revised to alleviate these effects, to the extent that doing so would remain consistent with overall project purposes.

3. The USFWS recommends monitoring the effects of the installation of the 10 C-110 canal plugs. If data indicate that the drainage effect of the canal on surrounding marshlands has not been sufficiently reduced, evaluate the feasibility of a complete canal backfill.

Response: The cumulative effects of all project features will be monitored as part of the project level monitoring plan. It is unlikely that monitoring would be able to isolate the effects of this secondary project component. The effectiveness of the plugs will be evaluated through comparison of water budgets and nearby water level recorders.

4. A wide variety of barriers to both surface and groundwater flow such as roads, ditches, canals, levees, building pads, and rock pits, will still exist in the C-111 SC Project study area after Phase 1 project construction. Hydrologic monitoring as part of post construction monitoring should be conducted with consideration of how these features may be affecting project success and how modification or removal of these structures may facilitate successful implementation of Phase 2.

Response: The Western PIR features are intended to achieve early restoration. A spreader canal design test was “spun off” from this project in order to resolve some decision critical uncertainties regarding the second phase. The impacts of roads, ditches, canals etc. on surface and groundwater flows are well documented and are not considered decision critical uncertainties. While we encourage the PDT to support removal of these features within the subsequent PIR, the need to monitor these features is not obvious, particularly as part of the Western PIR. The Western PIR monitoring plan, however, does support an evaluation of the regional water level conditions as part of the project operations. This is consistent with the anticipated benefits that are expected to be achieved by focus on regional improvement in water levels for Taylor Slough, the Model Lands and other areas as seepage losses to regional canals are reduced by the induced hydraulic barriers at the Frog Pond, Aerojet Canal and canal plugs at C-110 and L-31E.

5. The USFWS recommends that the Corps evaluate the impingement and entrainment of fishes and other aquatic organisms at all project inflow pumps as a pilot project to estimate the significance of cumulative impacts on native fishes, and recreational and commercial fisheries, for all the pumps in the C-111SC selected plan. The pilot project should evaluate intake designs, screens, and pump type (e.g., screw-type pumps should injure or kill fewer fish than impeller-type pumps). Furthermore, the USFWS recommends that any new pumps that are installed prior to the end of the pilot project have the capability to be retrofitted with devices (such as screens) that will reduce or eliminate impingement and entrainment of fish and other aquatic life.

Response: Paragraph 6-4 of our Engineer Manual EM 1110-2-3102 indicates that conventional bar screens (trash racks) are the preferred method of screening. For most pumps, the Corps has used 3 inch bar spacing. The potential use of fish screens can be further evaluated to see where they have been used successfully for similar applications. The Corps will determine whether they can be used in a

manner that will not adversely affect the flow and head conditions of the pumps, can be readily cleaned, and are at a reasonable cost. Note that the suction bells at our pump stations generally pass water through them at no more than 5 or 6 feet per second. We have seen no indication that this relatively slow velocity has been causing significant numbers of fish to be drawn into pumps. Screw-type pumps will also be evaluated to see if they would be applicable to this project.

6. The C-111 SC PDT is developing water reservations as stipulated in Section 601(h)(4)(A)(iii) of the WRDA of 2000. These water reservations must be included in the PIR and will identify the appropriate quantity, timing, and distribution of water dedicated and managed for the natural system. Because the development of water reservations has occurred late in the C-111 SC planning process, the USFWS recommends that water reservations and the associated Project Operating Manual be carefully reviewed prior to submittal of the final PIR.

Response: The water reservations and Project Operating Manual will be subjected to In House (USACE) Review, External Peer Review (EPR), Agency Technical Review (ATR), and Headquarters Review. Please note that in accordance with the CERP Guidance Memoranda (July 2007), the operating criteria within the POM will be consistent with the operating criteria used to identify water made available to the natural system during wet, average, and dry years.

B. Water Quality

1. The water quality of the C-111E Canal as discussed has the potential for disrupting the ecology of marsh areas that may be receiving inflows. Pumping operations that are part of the C-111SC Design Test project and future full scale spreader canal implementation in Phase 2 could result in this impaired quality water potentially entering surrounding marshes. The USFWS recommends that planning for the C-111 SC Infiltration Basin Pilot Project be resumed and the proposed project implemented (after a full analysis of feasibility), with the proper safeguards for construction, operations, and monitoring regime.

Response: The spreader canal design test will include necessary water quality monitoring to ensure that water pumped into the spreader canal will be of acceptable quality. Previous PDT meetings failed to gain the support of the entire PDT for the construction, location, and purpose of an infiltration basin. PDT members who had concerns with the test as described by the Corps and the SFWMD were asked to develop proposals, but none were received. It is important to note that the C-111 SC Design Test is being developed as a separate project, and the Infiltration Basin Pilot Project would have to be developed as a separate project.

2. The USFWS recommends that the Corps, District, and C-111 SC PDT work collaboratively to develop a water quality monitoring plan and sampling points for both surface and groundwater that may include new well points or monitoring locations at areas of concern (such as the FPDA feature, the Aerojet Canal feature, the C-111 Design Test project, and the C-111 SC Phase 2 proposed full scale spreader canal potential corridor) and that additional parameters be sampled to adequately assess environmental risk. If contaminants are found during project monitoring at levels that exceed those established by the EPA to protect aquatic life (EPA 2002), the Corps should modify project operations and monitoring accordingly and coordinate with the USFWS and other stakeholders.

Response: The Federal and Local Project Sponsors intend to continue to work collaboratively with the USFWS to determine if and where monitoring would be required in order to mitigate concerns resulting from areas where contaminated soils have been identified. We concur that operations, and possibly monitoring, should be modified if, during monitoring, contaminants are found at levels that exceed those established by the EPA to protect aquatic life (EPA 2002). It is important to note that the C-111 Design Test, and the C-111 SC full scale spreader canal, are being developed as separate projects.

3. Standard protection measures should be taken during all phases of the construction and operation to contain any sediment runoff from construction and associated soil disturbance, plugging and well installation. Best management practices such as construction precautions and sediment curtains should be implemented. If sediment runoff is detected reaching the marsh or canal, project operations should be halted and corrective action taken to eliminate the problem.

Response: Concur

C. Contaminants

1. The detected levels of contaminants, specifically copper, in the eastern section of the FPDA present a concern for USFWS trust resources, including the endangered Everglade snail kite. Due to a change in the location of the project footprint, the western section of the FPDA has not been sampled. In order to adequately assess the suitability of using the FPDA for water storage, the USFWS recommends soil sampling in the western portion of the FPDA.

Response: Since this writing, we have sampled the western portion of the FPDA and found similar levels of contaminants. We will forward the report under separate cover.

2. To date, Modbranch modeling indicates that in an average year up to 90 acres of the FPDA could be inundated for 80 days or longer at an average depth of 1 foot. These conditions could sustain a short hydroperiod wetland vegetation community and its associated fauna, which have the potential for contaminant uptake and bioaccumulation. To prevent potential contaminant exposure to fish and wildlife resources, corrective actions may be necessary. Once soil sampling is complete for the entire FPDA, the USFWS can issue recommendations on the necessity of specific corrective actions and monitoring.

Response: As stated previously, the Federal and Local Project Sponsors intend to continue to work with the USFWS to determine if and where monitoring would be required in order to mitigate concerns resulting from areas where contaminated soils have been identified.

D. Migratory Birds

1. The C-111 SC project study area encompasses a wide variety of habitats including wooded, marsh, estuarine, and shoreline habitats that are extremely important as habitat for migratory birds. Maintaining these sites as high-quality habitat for migratory birds is important and final project design, construction and operation need to be accomplished with full consideration to preservation and maintenance of viable migratory bird habitat.

Response: Noted

2. Lucky Hammock, located beside Aerojet Road, is an important "jumping off" site for migratory birds in the Atlantic Flyway, benefiting both migratory birds and birder watchers. This area is part of the [Great Florida Birding Trail](#). Implementation of the proposed project Aerojet Canal component should preserve both the integrity of this habitat and access for birders.

Response: Noted

3. The USFWS has concerns about the soil contaminant levels that have been documented in the footprint of the FPDA and their potential for toxicity to migratory as well as resident wading birds. Drying conditions that concentrate any prey entrained in pumped flows from the C-111 canal may attract foraging migratory bird species. Based on Modbranch modeling, hydroperiod does not appear to be of sufficient length to sustain aquatic species for a sufficient period of time that uptake of contaminants within the FPDA would be a problem. However, in an average year modeling indicates that up to 90 acres of the FPDA could be inundated for 80 days or longer at an average depth of 1 foot. These conditions could sustain a short hydroperiod wetland vegetation community (and associated fauna) that has potential for contaminant uptake and further bioaccumulation. The USFWS recommends periodic monitoring of potential

contaminant levels in FPDA vegetation, and associated fauna. This should include at a minimum baseline and continuous annual monitoring.

Response: As stated previously, the Federal and Local Project Sponsors intend to continue to work with the USFWS to determine if and where monitoring would be required in order to mitigate concerns resulting from areas where contaminated soils have been identified.

E. Hydrologic Modeling Issues

1. Utilization of the Modbranch model to simulate hydrology in the project study area for three representative years weakened our analyses during project planning of the detail that analyses could have provided with scrutiny of each individual year over a period of record and the statistical power inherent in examination of a population of years. As project construction and operation proceeds, the effects of climatic and associated hydrologic variation within the annual cycle need to be further scrutinized and adjusted for in operations to maximize project benefits and minimize adverse effects.

Response: Noted. Real data as they accumulate will provide verification of model predictions. Due to other modeling limitations it is doubtful that more extensive modeling is justified.

2. Discrepancies between the base ground surface elevation coded into the Modbranch model and known ground-truthed locations within the project study area need to be further investigated and corrections made as part of project implementation. In some cases these comparative elevations may have differed by up to 1 foot that could significantly change modeled project effects.

Response: Concur. Uncertainties in ground surface elevations represent an additional risk to the predictive capabilities of the model. It is because of these, and other, uncertainties that we have incorporated adaptive management strategies into the Draft Project Operating Manual (DPOM). The Federal and Local Sponsor believe resolution of these topographic inconsistencies should be one of the first activities undertaken as part of the data acquisition phase of the Eastern C-111 Spreader Canal project.

F. Monitoring and Adaptive Management Plans

1. Given the uncertainties discussed related to the existing modeling and the high level of uncertainty of the effects from implementing the proposed project, the implementation of sound monitoring and adaptive management plans is critical to project success. The USFWS recommends close adherence to the water quality and ecological monitoring plans established for the C-111 SC Project, including the ecological monitoring specified in the RECOVER

Monitoring and Assessment Plan and the project-level monitoring plans appearing in the PIR. This monitoring should be periodically evaluated for relevance and usefulness. Also, the USFWS recommends that an adaptive management plan be developed for the project and implemented to maximize the restoration success of the project and to provide information for the planning and construction of Phase 2 of the project. This adaptive management plan should also be periodically reviewed and revised as appropriate. This process should facilitate the restoration and enhancement of the C-111 SC Project's wetland and estuarine habitats.

Response: We agree that the intent in developing the water quality and ecological monitoring plans (Annex E of the draft PIR/EIS) is to evaluate the overall restoration progress of the project. We also agree that the monitoring may facilitate adaptive operational changes, and is the basis of the operating strategy for the project. In addition, flexibility in the project operations has been incorporated to determine how additional project benefits can be achieved by water management changes at the S-18C structure. Results of this first phase of restoration will provide significant guidance in the future planning and recommendations for further improvements associated with the Eastern C-111 SC project implementation. We do not agree that a formal project level adaptive management plan is necessary until this first phase of implementation has been completed and results have been evaluated. An adaptive management plan developed in concert with the implementation of the Eastern C-111 SC would provide a more meaningful basis to improve regional wetlands and Florida Bay estuaries.

G. Integrating the Project with Comprehensive Restoration Efforts

1. As other features of the CERP are designed and operated, water management protocols for C-111 SC Project components need to be reconsidered in the context of the modified C&SF project. This may include provisions for a future increase in water availability, storage capacity and treatment, and modification of operations for elements of the selected plan to benefit Florida Bay, its coastal wetlands, and the Southern Glades, that are consistent with the C-111 SC Phase 1 and Phase 2 goals and objectives.

Response: The Programmatic Regulations provide for the assessment of synergistic effects between CERP projects and identification of other water needs through RECOVER. As additional CERP features come on line, opportunities for additional project benefits may be realized. As the entity responsible for the regional coordination and evaluation of system wide benefits, the Project Sponsors will continue to look to RECOVER to identify and exploit those opportunities, either through operational changes, structural changes, or both.

H. Protection and Recovery Measures for Listed Species

1. Most of the proposed construction sites are presently on private or public properties for which we have limited information regarding the presence of federally listed species. Therefore, as those sites are acquired (or easements are negotiated), the Corps should ensure that more detailed surveys are conducted by a qualified biologist approved by the USFWS and the FWC to determine the presence of listed species. If listed species are found, the Corps and USFWS will determine if re-initiation of consultation in accordance with section 7 of the Endangered Species Act is necessary.

Response: Most of the construction sites are located on public properties which have had numerous site visits by qualified biologists including USFWS biologists. As stated in the Environmental Commitments (Section 8.8), the USACE and the SFWMD will maintain an open and cooperative informal consultation process with the USFWS and Florida Fish and Wildlife Conservation Commission (FWC) throughout the design, construction and operation of this restoration project.

2. The USFWS is concerned about the potential for the exposure of federally listed species, as well as other fish and wildlife, to contaminants when former agricultural lands are flooded. If the ecological risks from contaminants to listed species becomes evident, the Corps and USFWS will determine if re-initiation of consultation in accordance with section 7 of the Endangered Species Act is necessary.

Response: Concur. We understand that the USFWS is reserving the right to reinitiate consultation should ecological risks from contaminants to listed species become evident.

3. The Corps should notify the USFWS's South Florida Ecological Services Office no later than one month prior to start of the construction phase for any of the components so that we may, if available, observe construction activities and monitor effects, if any, of construction activities on threatened and endangered species.

Response: Concur.

4. Should blasting be necessary, the Corps should follow the USFWS's "Guidelines for the Protection of Marine Animals During the Use of Explosives In the Waters of the State of Florida" (Service 2006), and monitor local wildlife activity during this action. Care should be taken to avoid unnecessary disturbance of roosting, foraging, or wading birds or other local wildlife such as perching birds, raptors, waterfowl, mammals, reptiles, amphibians, and fish that

utilize associated habitats. A qualified fish and wildlife biologist, approved by the USFWS and the FWC, should be present throughout blasting activities to monitor fish and wildlife response and offer advice to construction personnel.

Response: Concur. If blasting is required, the USACE will follow the USFWS guidelines, as recommended.

5. The USFWS recommends adding wildlife corridors beneath or through roadways, particularly Card Sound Road, to reduce crocodile mortality caused by motorized vehicles. Mortality from automobiles account for a large number of crocodile deaths in south Florida, and it is particularly a problem along Card Sound Road, which is in the project area. The USFWS recognizes that this recommendation falls outside the spatial scope for the Tentatively Selected Plan, but these corridors should be given a high priority for Phase 2 of the C-111 SC Project.

Response: Noted. Wildlife corridors will be strongly considered during the C-111 SC Eastern Project PIR.

6. The USFWS recommends that section 7 consultation for this project be concluded prior to the completion of the final FWCA report due to the expedited schedule for this project. The Corps has prepared a draft biological assessment (BA) and informal consultation with the USFWS is currently being conducted.

Response: Concur. The intent is to formally distribute the Biological Assessment prior to public review of the draft PIR/EIS.

7. For additional species listed as threatened, endangered, or of special concern by the State of Florida, the Corps should consult with the FWC regarding those species' habitat needs and additional recommendations to conserve those species.

Response: Coordination with resource agencies, including the FWC, has been on-going throughout the planning process of this project. Additionally, the FWC will be providing formal comments on the draft PIR/EIS during the public and agency review period.

Florida Panthers

8. The C-111 SC study area is within the designated Primary Zone of the Panther Focus Area for the Florida panther (USFWS 2006a) and the project construction area footprint will be contained within this zone. The habitat value for Florida panther within the project study area is considered to be moderate with occasional dispersal activity from the panther core population farther west

in ENP and Big Cypress National Preserve. Recent mortalities from vehicle collisions have occurred. Any panthers utilizing the study area habitat could be impacted by noise from construction activities. Preliminary construction planning information provided by the District indicated that based on anticipated equipment and vehicle access needs there could be a considerable increase in vehicle and equipment traffic accessing the project sites on levees, the FPDA site, and throughout the study area where construction will occur. These increases cannot be quantified until final construction plans have been completed. Precautions should be taken to avoid potential collisions with panthers including speed restrictions and limiting construction activities to daylight hours when any panthers present would be less active.

Response: The Federal and non-Federal sponsor would like to discuss the specifics of this request with the USFWS before concurring or not concurring with this recommendation.

9. The Corps and District should consider supporting an intensified trapping and marking study in the project study area to better document occurrence and use by Florida panthers in the project study area. This will further facilitate avoidance of panther impacts as a part of the present and future phases of project planning, construction, and operation.

Response: Both agencies conceptually support additional data collection, however limited project-level monitoring funding must be directed to the priorities outlined in the monitoring plan contained in Annex E. Data provided by the USFWS do not indicate intensive Florida panther usage of the proposed construction zone.

West Indian Manatee

10. The L-31N and C-111 canals are accessible to West Indian manatees. These canals should be surveyed in the project study area by qualified observers to monitor manatee presence prior to construction as well as during project construction. Standard manatee guidelines to minimize and avoid manatee entrapment and construction conditions (USFWS 2006b) should be followed. Turbidity curtains and waterway closures should be utilized on either side of the canal from the construction site, to prevent manatee access to the project area while still allowing water flow.

Response: Concur. However, data does not indicate intensive Manatee usage of the proposed canals.

11. Any new canals that are constructed as part of this project that are hydraulically connected to Florida Bay (or any other water bodies inhabited by,

or capable of being inhabited by, manatees) must have barriers to prohibit manatee movement into newly constructed canal reaches from the bay (or other relevant water bodies inhabited by manatees). This includes the C-111 SC Design Test canal proposed associated with this project. Such barriers will ensure that C-111 SC Project facilities will pose no additional threat of structure-caused mortality or injury, entrapment in culverts or canals, or any other form of take, as defined in the Endangered Species Act and Marine Mammal Protection Act. Manatee barriers should be provided for all new pump stations, culverts, and other structures as appropriate.

Response: Concur. The Corps has included standard manatee protection measures in the Biological Assessment (Annex A). Any additional protection measures will require further agency coordination.

12. The Corps and District should consider supporting an intensified manatee survey study in the project study area to better document occurrence and use in the project study area. This will further facilitate avoidance of manatee impacts as a part of project planning, construction, and operation and facilitate a better understanding of manatee response to changes related to the present and future phases of project implementation and operation.

Response: The Corps recently participated in and co-funded a three-year survey documenting manatee presence throughout the CERP project area domain. The Corps intends to continue to provide support with this effort.

Everglade Snail Kite

13. None of the project study area impacts critical habitat designated for the Everglades snail kite. The presence of foraging and nesting snail kites is possible in the project study area and project construction site as well as access and staging corridors. If possible, construction should be planned outside the potential nesting season (December 1 to July 31). Regardless, surveys should be conducted prior to and during construction according to Snail Kite Survey Protocol (Appendix B), in addition to accessing all additional data from resource managers and researchers on presently documented locations of foraging areas, snail kite nest sites, and kite protection buffers. Draft Snail Kite Management Guidelines (Appendix C) for protection buffers and management areas should be followed.

Response: The Federal and non-Federal sponsor would like to discuss the specifics of this request with the USFWS before concurring or not concurring with this recommendation the proposed construction area is well south of current snail kite nesting sites, and we do not concur that restricting construction as recommended would be beneficial.

14. Construction activities and equipment operation associated with the project could create noise levels that could be disturbing to kites and other wildlife depending on the decibel level and distance needed to attenuate those noise levels. Data is available on typical construction noise levels and its effects on wildlife (Cowan 1993; U.S. Department of Energy 2001, Imperial Oil Resources Ventures Limited 2005; Knauer 2006). These and other studies have documented various disturbance effects such as nest relocation, interrupted brooding, and flushing on avian wildlife at noise ranges above 40 decibels (dBA). Noise levels should be monitored during construction and precautions and restrictions implemented if disturbance is indicated to monitored nesting and foraging sites. Noise levels should not exceed 40 dBA within 1 mile of nesting sites documented for Everglade snail kites or wood storks during construction.

Response: The Federal and non-Federal sponsor would like to discuss the specifics of this request with the USFWS before concurring or not concurring with this recommendation.. Restricting noise levels to below 40dBA is not realistic for construction machinery. Heavy equipment such as that used to build levees, excavate or move large quantities of earth, cannot meet this standard.

15. If possible, implement construction during the period beginning August 1 to November 30. Conduct surveys for snail kites prior to and during construction according to Snail Kite Survey Protocol (Appendix B). If snail kites are observed nesting or using (foraging or roosting) the project site implement species conservation guidelines (USFWS 2004a). Surveys for snail kites are recommended to document species use and avoid unintentional negative effects of the project. No activities should be conducted within 425 ft of the nests during the breeding season or around roosting sites throughout the year.

Response: It would not be possible to complete the construction within the four month period, as specified. The Federal and non-Federal sponsor would like to discuss the specifics of this request with the USFWS before concurring or not concurring with this recommendation.

Wood Stork

16. The wood stork may forage in marshes and canals within and adjacent to the C-111SC Project site and project study area. The USFWS recommends that the project sponsors adhere to the guidelines found in Habitat Management Guidelines for the Wood Stork in the Southeast Region for construction-related actions (Ogden 1990) (Appendix D). Specifically, there should be no disturbance to feeding sites when storks are present. This would include guidelines for noise disturbance discussed above for Everglade snail kite. Construction related activity should be no closer than 300 ft when a solid vegetation screen is present and no closer than 750 ft when there is no vegetation screen.

Response: The Federal and non-Federal sponsor would like to discuss the specifics of this request with the USFWS before concurring or not concurring with this recommendation.

Cape Sable Seaside Sparrow

17. Prior to initiating project operations, further analysis of project effects on hydrologic conditions in Cape Sable seaside sparrow critical habitat areas in subpopulations C and D should be conducted to facilitate preparation of operational flexibilities that consider sparrows and other species and habitat to maximize overall project benefits. These operations could be related to specific trigger cells located at key locations at verified ground elevations. An operations schedule should be developed with consideration of project structure operations during time periods key to sparrow life history requirements.

Response: The analysis conducted to date has been extensive, predicted hydrologic changes less than natural variability, and we have agreed to include trigger based overrides during the nesting season. Attempts to further constrain operations in support of CSSS recovery goals would severely impinge on the projects overarching goal of restoring flows to Florida Bay via Taylor Slough.

18. Monitoring of hydroperiod, water depth and vegetative community composition needs to be an integral part of the baseline and post construction and operation ecological monitoring plan not only in sparrow habitat areas, but all areas of the project study area affected by hydrological changes.

Response: The monitoring described is contained within the Hydrometeorological and Ecological monitoring plans (Annex E).

19. Current survey data for occurrence of CSSS is providing valuable information and needs to be continued. This includes helicopter surveys being conducted by NPS along the existing grid network.

Response: Both agencies conceptually support additional data collection, however limited project-level monitoring funding must be directed to the priorities outlined in the monitoring plan contained in Annex E. USFWS' recommendation of continued CSSS surveys funded by ENP is outside the scope of this USACE-WMD sponsored project. The USACE already reserves about \$1.4 million dollars every year for monitoring studies of CSSS and Everglade snail kite and their habitats, including habitats inside ENP.

20. Vegetation surveys similar to those conducted by Florida International University (Ross et al. 2003) should also be continued. These surveys include transects that include observations of vegetation, periphyton, soils, and

topography. Figure 30 illustrates the location of the current vegetation transect being sampled in subpopulation D. Due to the anticipated changes of the project indicated by model output, the survey transects for vegetation surveys in subpopulation D need to be expanded to increase coverage in areas that will be impacted by hydroperiod changes as well as to better monitor areas currently being utilized by CSSS. Figure 30 illustrates the additional transect locations that are recommended in subpopulation D. These additional transects should be surveyed annually.

Response: Noted. USACE supports the cited Ross study under the 2006 Biological Opinion for IOP. There is no need to tie this operation-related monitoring to a CERP project as it is already ongoing under a multi-year contract tied to system operations.

21. Due to the anticipated changes of the project indicated by model output, vegetation surveys should be expanded to areas that model output indicates will be affected by hydroperiod changes potentially beneficial to sparrows, outside critical habitat as well as to better monitor areas that may currently be utilized by CSSS. These surveys should include transects that include observations of vegetation, periphyton, soils, and topography.

Response: As stated above, the Corps is already providing funding for the existing vegetation monitoring effort. Funding is provided by O&M (Operating) funds and RECOVER. RECOVER does not anticipate an increase in their monitoring budget; therefore, any augmentation of the present monitoring may require an alteration of sampling station locations to include areas outside of critical habitat.

22. The U.S. Geological Survey, EVER4 water level gauging station is centrally located in subpopulation D critical habitat and can continue to be used for monitoring purposes. Historical data provided by the gage compared to Modbranch model output does not indicate a reliable and consistent association. Examination of field conditions and ground elevation at the gage compared to other habitat areas in subpopulation D suggests that additional monitoring points are needed to sufficiently characterize and monitor habitat conditions needed by the CSSS in subpopulation D. Additional water level gauging stations need to be established with daily output of stage to be used to better establish the relationship with the existing EVER4 station as well as for adaptively managing and calibrating project operations to minimize effects on CSSS. Figure 30 shows the recommended locations for these additional water level gauging stations.

Response: Placement of additional water level gauges or other suggested monitoring parameters should be coordinated through the refinement of the Interim Operating Plan and BO.

23. Critical habitat in the project study area should have extensive ground elevation surveys performed to facilitate a better understanding of sparrow habitat conditions and project operations as well as enhancing the ability to protect important core sparrow habitat locations.

Response: As stated above, additional monitoring parameters should be coordinated through the refinement of the CSSS monitoring protocols as developed in the Ecological Monitoring Plan (Annex E).

24. Ground tracking and banding surveys that have been conducted for sparrows in the project study area (Lockwood et al. 2006) should be continued for critical habitat within the project study area and possibly expanded to areas that are indicated by model output will possibly exhibit hydrologic conditions conducive to the sparrow.

Response: We take this as an expression of the USFWS's scientific opinion, but this work occurs in ENP and is not currently funded by either USACE or SFWMD. USACE already is funding over \$1 million dollars in monitoring for the sparrow and snail kite. The share of all agencies in the endangered species monitoring for the sparrow was worked out in a high-level interagency meeting among the USFWS, other DOI agencies and the Corps in Shepherdstown, W. VA, in 2000. If the USFWS is proposing a change in cost-share for overall funding of all monitoring for C&SF Operations, this should be discussed above project level by our respective directors. Both agencies conceptually support additional data collection, however limited project-level monitoring funding must be directed to the priorities outlined in the monitoring plan contained in Annex E.

25. The Corps and District should prepare and implement a Cape Sable seaside sparrow management and mitigation plan for the C-111 SC Project study area in consultation with the USFWS that would include identification of potential sparrow habitat expansion outside of designated critical habitat areas, recommended management and monitoring, and other possible habitat enhancement measures both within critical habitat and in potential expansion areas, including woody vegetation removal, fire management, and creation of sawgrass refugia.

Response: The Federal and non-Federal sponsor would like to discuss the specifics of this request with the USFWS before concurring or not concurring with this recommendation. If the USFWS proposes changing the overall monitoring

and cost-share for same within the BO requirements, that should be discussed in a different forum.

Eastern Indigo Snake

26. The eastern indigo snake may be present in and around the construction area for this project. The Corps should comply with the Standard Protection Measures created for the eastern indigo snake (Appendix E). Standard Protection Measures include the development and implementation of an eastern indigo snake protection and education plan for all construction personnel to follow. This plan should be submitted to the USFWS for review and approval at least 30 days prior to the commencement of any construction activity. Informational signs should also be posted throughout the construction site and along any proposed access roads to alert construction personnel to the likely presence of this species. These signs should contain a description of the snake, its habits and protection under Federal law; instruction not to injure, harm, harass or kill this species; directions to cease activity to allow the snake sufficient time to move away from the activity; and telephone numbers of pertinent agencies to be contacted if a dead snake is encountered. If a dead snake is found, it should be covered in water and then frozen. In addition to the protection and education plan, an eastern indigo snake monitoring program should be submitted to the USFWS's South Florida Ecological Services Office in Vero Beach within 60 days of the conclusion of construction activities. This report should be submitted whether or not eastern indigo snakes are encountered.

Response: The Federal and non-Federal sponsor would like to discuss the specifics of this request with the USFWS before concurring or not concurring with this recommendation.

American Crocodile

27. Because of the possibility of crocodiles nesting or being present in the project area, and because vehicular traffic will temporarily increase during project construction, which may affect crocodiles if they are present, pre-construction crocodile surveys are requested for this project. This needs to be consistent with the section 404 permit conditions for this project. At this time, the USFWS has no formal written guidelines to reduce construction-related effects on crocodiles. However, if crocodile nesting is observed, the USFWS will work with the Corps and District to outline reasonable measures to avoid disturbing or injuring crocodiles.

Response: The Federal and non-Federal sponsor would like to discuss the specifics of this request with the USFWS before concurring or not concurring with this recommendation.

Other Wildlife Species

28. Prior to and during construction activities, the project site should be surveyed for the occurrence of State listed species of special concern such as the burrowing owl and gopher tortoise, which could potentially be found on canal banks and road berms. If found, protective measures should be taken as directed by FWC. Similar surveying and protection protocol should be implemented for wading birds, such as the roseate spoonbill, little blue heron, snowy egret, tricolored heron, white ibis, Florida sandhill crane, and limpkin in feeding and nesting areas that may be disturbed within and adjacent to the C-111 SC Project site and project study area.

Response: The Federal and Local Project Sponsors intend to continue coordination with the FWC to identify all monitoring requirements necessary to avoid impacts to state listed species.

29. The removal and control of invasive non-native plant species is important to the success of this project. The USFWS recommends that sufficient project assets be provided for the initial physical or chemical removal of non-native vegetation. Changes in hydrology resulting from the project should contribute substantially to the control of non-native vegetation, but initial removal of mature stands will be required. Removal and control of invasive non-native vegetation also influences the survival and well-being of the listed plant species in the project area.

Response: Concur. The removal of exotic species is planned within the project area. Controlling and managing exotic vegetation on project lands after construction would be implemented as part of normal land management operations, and would be consistent with the overall CERP exotic vegetation management program.

30. The USFWS recommends that an invasive non-native species management plan be implemented as part of the Tentatively Selected Plan. This management plan should have four components: (1) construction practices that reduce the spread of the non-native plants; (2) initial aggressive treatment and management of substrates that are bared by restoration activities; (3) monitoring of non-native vegetation, and (4) extensive site management activities by the land manager, including controlled burns. Without such a plan, invasive non-native vegetation would re-infest the project area, particularly the construction areas, reducing the benefits of the action.

Response: Details regarding practices to reduce the spread of non-native plants will be contained within the project specifications. Monitoring and site management activities, such as controlled burns, will be conducted as part of

normal land management operations, and would be consistent with the overall CERP exotic vegetation management plan.